

The MINOR PLANET CIRCULARS/MINOR PLANETS AND COMETS are published, on behalf of
Commission 20 of the International Astronomical Union, usually in batches

on the date of each full moon, by:

Minor Planet Center, Smithsonian Astrophysical Observatory, Cambridge, MA 02138, U.S.A.

IAUSUBS@CFA.HARVARD.EDU or FAX 617-495-7231 (subscriptions)

BMARSDEN@CFA.HARVARD.EDU or GWILLIAMS@CFA.HARVARD.EDU (science)

Phone 617-495-7244/7444/7440 (for emergency use only).

World-Wide Web address <http://cfa-www.harvard.edu/iau/mpc.html> ISSN 0736-6884

Brian G. Marsden, Director

Gareth V. Williams, Associate Director

© Copyright 1999 Minor Planet Center

Syuichi Nakano, Liaison in Japan

ERRATA

MPC	Line	
16247	– 2	<i>For Violently read Passionately</i>
20160	8	<i>For Kiem King Kwee read Kiem Keng Kwee</i>
33787	–38	<i>Add by H. Kosai and K. Hurukawa.</i>
34089	26	<i>For 26933 –3 read 26933 47</i>
34089	27	<i>For 33787 1 read 33787 –49</i>
34345	25	<i>Add A proposal for a minor planet with this name was made independently by F. Börngen.</i>
34345	30	<i>For Köpenik read Köpenick</i>
34346	3	<i>For Hermann read Hermannus</i>
34347	40	<i>For L’Idée d’un système général de read L’Idée d’un système général de</i>
34347	41	<i>For Système de la Nature read Système de la Nature</i>
34427	2	<i>For A. Warnsch read A. Warnock</i>
34621	–15	<i>For 1935 Sept. 1 read 1935 Sept. 21</i>
34624	–24	<i>For A. Mrkos read Z. Vávrová</i>
34627	50	<i>For Livia read Pavia</i>

CORRECTED OBSERVATIONS

The following observations correct those previously published.

Object	Date	UT	α_{2000}	δ_{2000}	Reference	Mag.	N Obs.
1994 GY ₉	1952 09 15.27708		00 23 53.98	+00 38 14.5	MPC24981		1 675
1994 GY ₉	1952 09 15.31180		00 23 52.60	+00 37 55.2	MPC24981		1 675
1995 SD ₅₅	* 1995 09 20.20749		22 49 13.72	+03 29 37.0	MPC28028	17.2 V	693
1995 SD ₅₅	1995 09 20.22616		22 49 12.93	+03 29 28.3	MPC28028		693
1998 OX ₄	1998 08 03.35120		20 40 01.57	–15 27 53.4	MPS 1855		658
1998 OX ₄	1998 08 03.35475		20 40 00.97	–15 27 52.1	MPS 1855		658
1998 OX ₄	1998 08 03.35833		20 40 00.40	–15 27 52.1	MPS 1855		658
1998 OX ₄	1998 08 04.37329		20 37 31.67	–15 25 13.5	MPS 1956		658
1998 VO ₃₃	* 1998 11 15.23542		04 55 49.65	+09 59 00.7	MPS 3168		809
1998 VO ₃₃	1998 11 15.27708		04 55 16.01	+10 00 46.5	MPS 3168		809
1999 GY ₅	1999 04 18.12906		12 37 01.16	+00 23 36.4	MPS 4572	18.1 V 2	860
1999 GY ₅	1999 04 18.14299		12 37 00.15	+00 25 00.9	MPS 4572	18.3 V 2	860
1999 GY ₅	1999 04 18.14911		12 36 59.63	+00 25 37.6	MPS 4572	17.8 V 2	860
1999 GY ₅	1999 04 18.15462		12 36 59.23	+00 26 10.1	MPS 4572	17.8 V 2	860
1999 GY ₅	1999 04 18.15952		12 36 58.88	+00 26 39.9	MPS 4572	18.5 V 2	860

Note 1: trail-ends replacing mid-trail measure. 2: time corrected.

NEW OBSERVATORY CODES

The following listing is a continuation to that on MPC 34385. The longitudes λ are measured in degrees eastward from Greenwich, and the parallax constants $\rho \cos \phi'$ and $\rho \sin \phi'$ are the product of the geocentric distance (in earth equatorial radii) and the cosine and sine, respectively, of the geocentric latitude.

Obs.	λ	$\rho \cos \phi'$	$\rho \sin \phi'$	
162	15.8083	0.76000	+0.64794	Potenza
432	153.0817	0.86380	–0.50215	Boambee
467	174.7766	0.80058	–0.59724	Auckland Observatory
645	254.1800	0.8419	+0.5386	Apache Point-Sloan Digital Sky Survey
648	249.3983	0.85211	+0.52205	Tenagra Observatory, Cottage Grove
946	0.7931	0.75662	+0.65170	Ametilla de Mar

DELETED OBSERVATIONS

The following observations are to be deleted.

Object	Date	UT	α_{2000}	δ_{2000}	Reference	N Obs.
1978 EU ₉	1994 07 06.29700		18 37 07.49	–20 01 46.4	MPC24047	689
1978 EU ₉	1994 07 14.27051		18 30 25.14	–20 12 38.9	MPC24047	689
1992 RK	1992 09 05.68646		00 03 23.71	–23 59 07.5	MPC20872	372
1996 UX	1991 10 07.41684		02 20 22.29	+15 16 40.7	MPC28743	1 675
1999 FT ₃₂	1999 04 18.34916		14 48 51.09	–13 29 58.5	MPS 4529	691
1999 FT ₃₂	1999 04 18.37057		14 48 49.52	–13 29 59.9	MPS 4529	691

Note 1: 1996 UX = (8571).

IDENTIFICATION CHANGES

Continuation to MPC 34385.

Object	Date	UT	α_{2000}	δ_{2000}	Originally	Mag.	Obs.
1975 TH ₇	* 1975 10 13.95513	01 37 24.64	+03 26 59.3	1975 TB ₃	18.0	095	
1976 UC ₂₁	* 1976 10 24.65222	01 31 03.64	+05 46 55.5	1976 UR ₁₂	18.7	381	
1976 UD ₂₁	* 1976 10 24.65222	01 32 08.23	+04 29 47.5	1976 UQ ₁₂	18.8	381	
1976 UE ₂₁	* 1976 10 24.58344	01 46 02.55	+11 16 33.1	1976 UJ ₁₀	18.8	381	
1981 FN ₁	* 1981 03 17.33242	13 02 49.43	-02 35 01.6	1981 EA ₂		809	
1981 FN ₁	1981 03 17.33934	13 02 49.25	-02 35 01.0	1981 EA ₂		809	
1981 FN ₁	1981 03 17.34627	13 02 49.08	-02 35 00.3	1981 EA ₂		809	
1982 RO ₃	* 1982 09 12.82988	22 54 07.09	-01 54 49.4	1982 QO ₂	17.0	095	
1982 SL ₁₃	* 1982 09 22.34861	01 47 00.20	+04 15 58.7	1982 RS	17.0	688	
1982 SL ₁₃	1982 09 22.40139	01 46 57.92	+04 15 53.9	1982 RS		688	
1986 VQ ₉	* 1986 11 09.89404	02 41 52.00	+15 25 05.4	1986 VA ₈		046	
1986 VQ ₉	1986 11 09.91348	02 41 51.26	+15 25 01.9	1986 VA ₈		046	
1987 SR ₃₀	* 1987 09 17.88890	23 51 02.50	+09 12 39.2	1987 RU ₄	17.0 V	095	
1987 SS ₃₀	* 1987 09 17.88890	23 53 38.33	+10 37 16.0	1987 RV ₄	17.0 V	095	
1987 ST ₃₀	* 1987 09 16.81252	22 46 30.34	-00 21 23.7	1987 RQ ₄	16.0 V	095	
1987 SU ₃₀	* 1987 09 17.88890	23 53 09.15	+06 51 24.4	1987 RW ₄	17.0 V	095	
1987 YO ₆	* 1987 12 20.91181	04 25 27.03	+32 12 13.1	1988 AL ₂		010	
1987 YO ₆	1987 12 20.94306	04 25 25.50	+32 12 12.8	1988 AL ₂		010	
1989 CQ ₉	* 1989 02 13.11257	09 51 42.6	+11 33 19	1989 CF ₂	16.5	049	
1989 CQ ₉	1989 02 13.13203	09 51 41.6	+11 33 29	1989 CF ₂		049	
1989 WU ₇	* 1989 11 17.46875	02 02 09.67	+23 47 13.7	1989 UW ₆		364	
1989 WU ₇	1989 11 17.48611	02 02 08.62	+23 47 12.7	1989 UW ₆		364	
1990 OB ₆	* 1990 07 28.34149	22 06 39.88	-21 57 08.2	1990 OR ₂	17.8	675	
1990 OB ₆	1990 07 28.37465	22 06 38.58	-21 57 24.3	1990 OR ₂		675	
1990 QT ₁₉	* 1990 08 26.20347	23 17 39.68	-06 41 56.7	1990 QM ₆	19.6	809	
1990 QT ₁₉	1990 08 26.21667	23 17 39.04	-06 42 00.5	1990 QM ₆		809	
1990 QT ₁₉	1990 08 26.22986	23 17 38.52	-06 42 04.6	1990 QM ₆		809	
1990 QU ₁₉	* 1990 08 26.20347	23 17 38.92	-06 51 51.2	1990 QN ₆	19.4	809	
1990 QU ₁₉	1990 08 26.21667	23 17 38.09	-06 51 52.8	1990 QN ₆		809	
1990 QU ₁₉	1990 08 26.22986	23 17 37.44	-06 51 54.6	1990 QN ₆		809	
1990 UP ₁₄	* 1990 10 23.97255	03 10 01.66	+12 04 08.5	1990 UM ₁₁	16.2	095	
1991 LJ ₇	* 1991 06 08.09722	16 26 13.53	-13 33 03.3	1991 LF ₄		809	
1991 LJ ₇	1991 06 08.11042	16 26 12.75	-13 33 01.2	1991 LF ₄		809	
1991 LJ ₇	1991 06 08.12361	16 26 11.87	-13 32 59.8	1991 LF ₄		809	
1992 CQ ₈	* 1992 02 08.70958	10 13 37.81	+14 52 07.3	1992 ET ₂	17.5	372	
1992 CQ ₈	1992 02 08.72015	10 13 37.23	+14 52 11.9	1992 ET ₂		372	
1992 KC ₁	* 1992 05 25.59965	15 39 44.54	-13 30 04.7	1992 KB	18	372	
1992 KC ₁	1992 05 25.61076	15 39 43.90	-13 30 01.6	1992 KB		372	
1992 OY ₁₀	* 1992 07 23.05313	19 35 59.00	-17 51 24.5	1992 OZ ₇		809	
1992 OY ₁₀	1992 07 23.06215	19 35 58.76	-17 51 24.1	1992 OZ ₇		809	
1992 OY ₁₀	1992 07 23.07118	19 35 58.51	-17 51 23.9	1992 OZ ₇		809	
1993 DM ₃	* 1993 02 25.61111	10 42 06.00	+12 37 55.4	1993 CB ₂	17	399	
1993 DM ₃	1993 02 25.62569	10 42 05.11	+12 38 03.9	1993 CB ₂		399	
1993 PJ ₉	* 1993 08 13.22865	20 54 31.14	-16 32 07.7	4409 T-1	18.5	675	
1993 PJ ₉	1993 08 13.25729	20 54 29.77	-16 32 20.4	4409 T-1		675	
1993 TO ₄₈	* 1993 10 15.28611	01 50 34.43	+07 36 24.3	1993 TW ₁₁		675	
1994 BS ₅	* 1994 01 18.94849	09 41 10.96	+13 47 45.6	1994 BG		098	
1995 GA ₉	* 1995 04 04.15582	11 02 59.46	+09 36 03.7	1995 FD ₁₈	19.7 V	691	
1995 GA ₉	1995 04 04.17777	11 02 58.71	+09 36 07.8	1995 FD ₁₈		691	

1995 GA ₉	1995 04 04.19944	11 02 57.98	+09 36 11.0	1995 FD ₁₈		691
1995 QB ₁₁	* 1995 08 25.50752	20 25 26.51	-27 03 43.7	1995 QW ₁	17	905
1995 QB ₁₁	1995 08 25.52431	20 25 25.76	-27 03 47.1	1995 QW ₁		905
1996 TA ₆₈	* 1996 10 15.38092	02 47 02.23	+16 10 13.8	1996 TU ₄₄	19.0 V	691
1996 TA ₆₈	1996 10 15.40603	02 47 01.12	+16 10 08.8	1996 TU ₄₄		691
1996 TB ₆₈	* 1996 10 14.67550	01 45 31.87	+07 53 21.7	1996 TM ₁₃	18.1 V	327
1996 TB ₆₈	1996 10 14.69282	01 45 30.83	+07 53 15.5	1996 TM ₁₃		327
1996 TB ₆₈	1996 10 14.71179	01 45 29.71	+07 53 08.7	1996 TM ₁₃		327
1996 VZ ₃₉	* 1996 11 08.97205	03 34 31.16	+17 39 52.2	1996 VH ₂	17.1 V	560
1996 VZ ₃₉	1996 11 08.98014	03 34 30.82	+17 39 48.7	1996 VH ₂		560
1996 VZ ₃₉	1996 11 08.98795	03 34 30.37	+17 39 43.8	1996 VH ₂		560
1998 CL ₅	* 1998 02 01.47484	05 25 34.01	+25 02 58.4	1998 BQ ₄₈		327
1998 CL ₅	1998 02 01.48443	05 25 33.84	+25 02 58.4	1998 BQ ₄₈	18.9	327
1998 CL ₅	1998 02 01.49400	05 25 33.68	+25 02 59.5	1998 BQ ₄₈		327
1998 EU ₂₁	* 1998 03 04.13681	10 04 12.07	+11 21 14.2	1998 EL ₁₇		809
1998 EU ₂₁	1998 03 04.15000	10 04 11.43	+11 21 18.2	1998 EL ₁₇		809
1998 EU ₂₁	1998 03 04.16319	10 04 10.87	+11 21 22.9	1998 EL ₁₇		809
1998 FU ₁₄₄	* 1998 03 22.13643	10 42 35.47	+07 46 52.9	1998 FA ₃₇	18.8	704
1998 FU ₁₄₄	1998 03 22.15795	10 42 34.43	+07 47 02.0	1998 FA ₃₇	19.0	704
1998 FU ₁₄₄	1998 03 22.17820	10 42 33.55	+07 47 11.4	1998 FA ₃₇	19.0	704
1998 FU ₁₄₄	1998 03 22.19908	10 42 32.65	+07 47 20.6	1998 FA ₃₇	19.7	704
1998 HS ₁₅₁	* 1998 04 27.14122	10 38 21.06	+12 44 14.5	1998 FS ₁₁₉	20.8 V	691
1998 HS ₁₅₁	1998 04 27.16277	10 38 21.30	+12 44 10.5	1998 FS ₁₁₉	20.9 V	691
1998 HS ₁₅₁	1998 04 27.18445	10 38 21.53	+12 44 06.4	1998 FS ₁₁₉	20.7 V	691
1999 FT ₅₉	* 1999 03 20.40407	13 07 59.02	-05 45 31.7	1999 FP ₂₇	19.5	704
1999 FT ₅₉	1999 03 20.42216	13 07 58.13	-05 45 26.0	1999 FP ₂₇	19.4	704
1999 FT ₅₉	1999 03 20.44025	13 07 57.24	-05 45 18.6	1999 FP ₂₇	19.3	704

OBSERVATIONS OF COMETS

Observations are published here for the following observatory codes:

- 046 Kleť. 0.57-m $f/5.2$ reflector + CCD. Observers J. Tichá, M. Tichý and Z. Moravec.
- 104 San Marcello Pistoise. 0.40-m $f/5$ reflector + CCD. Observers L. Tesi, A. Caronia, A. Boattini and M. Tombelli. Measured by G. Forti, L. Tesi, A. Boattini and M. Tombelli.
- 107 Cavezzo. 0.40-m $f/5.5$ reflector + CCD. Observer M. Nicolini.
- 108 Montelupo. 0.30-m $f/5.7$ Schmidt-Cassegrain + CCD. Observers M. Tombelli, A. Boattini, L. Tesi, D. Guidetti, G. Forti and E. Masotti. Measured by M. Tombelli, A. Boattini, L. Tesi, S. Bartolini and G. Forti.
- 118 Modra. 0.6-m $f/5.5$ reflector + CCD. Observers A. Galád, D. Kalmančok, P. Kolény, L. Kornoš and J. Tóth.
- 120 Višňan. 0.41-m $f/4.3$ reflector + CCD. Observers K. Korlević, M. Jurić and A. Ritosa. Measured by K. Korlević.
- 133 Les Tardieux. 0.20-m $f/3.5$ reflector + CCD. Observer M. Boeuf.
- 143 Gnosca. 0.20-m $f/6.3$ reflector + CCD. Observer S. Sposetti.
- 145 's-Gravenwezel. 0.25-m $f/3.3$ Schmidt-Cassegrain + CCD. Observer T. Alderweireldt.
- 162 Potenza. 0.20-m $f/6.3$ reflector + CCD. Observer A. M. Giambersio.
- 249 SOHO. SOHO-LASCO coronagraphs C3 and C2. Observers D. A. Biesecker, S. Stezelberger and A. Vourlidas. New measurements by S. Gregory and

- D. A. Biesecker, with reduction by G. V. Williams and B. G. Marsden, that in some cases supersede those previously published.
- 321 Craigie. 0.25-m Schmidt-Cassegrain + CCD. Observer G. G. Bolt.
- 327 Xinglong. 0.60-m Schmidt + CCD. Observers J. Zhu and X. Y. Li.
- 351 Sakamoto. 0.15-m $f/7.0$ lens + CCD. Observer Y. Kitamura.
- 352 Konan. 0.25-m $f/6$ reflector + CCD. Observer M. Hotta.
- 355 Hadano. 0.28-m $f/5.0$ reflector + CCD. Observer A. Asami.
- 360 Kuma Kogen. 0.60-m $f/5.8$ Ritchey-Chrétien + CCD. Observer A. Nakamura.
- 365 Uto Observatory. 0.20-m $f/4.0$ reflector + CCD. Observer F. Uto.
- 367 Yatsuka. 0.26-m $f/4.8$ reflector. Observer H. Abe.
- 372 Geisei. 0.60-m $f/3.5$ reflector. Observer T. Seki.
- 402 Dynic Astronomical Observatory. 0.60-m $f/3.7$ reflector + CCD. Observer A. Sugie.
- 422 Loomberah. 0.25-m $f/4.1$ reflector + CCD. Observer G. J. Garradd.
- 423 North Ryde. 0.20-m $f/4$ hyperbolic astrograph + CCD. Observer S. G. McAndrew.
- 426 Woomera. 0.30-m $f/3.3$ Schmidt-Cassegrain + CCD. Observer F. B. Zoltowski.
- 428 Reedy Creek. 0.25-m $f/6.3$ Schmidt-Cassegrain + CCD. Observer J. Broughton.
- 430 Rainbow Observatory, near Coonabarabran. 0.30-m $f/5$ reflector + CCD. Observer S. Lee.
- 504 Le Creusot. 0.40-m $f/5$ reflector + CCD. Observer J. C. Merlin.
- 557 Ondřejov. 0.65-m $f/3.6$ reflector + CCD. Observers P. Pravec, L. Šarounová and P. Kušnirák.
- 587 Sormano. 0.5-m reflector + CCD. Observers G. Ventre, E. Colzani, F. Manca and M. Cavagna.
- 595 Farra d'Isonzo. Observers G. Lombardi, E. Pettarin, A. Toso. Measurer G. Lombardi. 0.40-m $f/4.5$ reflector + CCD.
- 610 Pianoro. 0.25-m $f/4$ Schmidt-Cassegrain. Observer V. Goretti.
- 611 Starkenburg. 0.45-m $f/4.4$ reflector + CCD. Observers E. Schwab, M. Busch and R. Stoss. Measured by M. Busch and R. Stoss.
- 618 Martigues. Observers S. Morata, D. Morata. 0.30-m $f/5.77$ reflector + CCD.
- 620 Mallorca. 0.25-m $f/6.3$ reflector + CCD. Observers À. López, A. Garcia, J. Rodriguez, R. Pacheco and S. Sanchez.
- 629 Szeged. 0.28-m Schmidt-Cassegrain + CCD. Observers K. Sárneczky and B. Csák. Measured by L. Kiss and K. Sárneczky.
- 645 Apache Point SDSS. Observer J. Dalcanton.
- 658 Dominion Astrophysical Observatory. 1.82-m Plaskett telescope + CCD. Observer D. D. Balam.
- 670 Camarillo. 0.25-m Schmidt-Cassegrain + CCD. Observer J. E. Rogers.
- 673 Table Mountain, Wrightwood. 0.6-m reflector + CCD. Observer A. Doressoundiram. Measurer M. Hicks.
- 684 Prescott. 0.46-m $f/4.5$ reflector + CCD. Observer P. G. Comba.
- 688 Lowell Observatory, Anderson Mesa Station. 1.8-m reflector + CCD. Observer L. H. Wasserman. Measured by M. W. Buie.
- 691 Kitt Peak. 0.91-m Spacewatch telescope. Observer J. Montani.
- 693 University of Arizona, Catalina Station. 1.5-m reflector + CCD. Observers S. M. Larson and C. W. Hergenrother.
- 697 McGraw-Hill Observatory. Observers L. Allen, J. W. Parker. 2.4-m reflector + CCD.
- 699 LONEOS. 0.59-m Schmidt + CCD. Observers W. D. Ferris, B. A. Skiff and B. W. Koehn. Measured by B. W. Koehn and E. Bowell.
- 703 Catalina Sky Survey. 0.41-m $f/3$ Schmidt + CCD. Observer T. B. Spahr.
- 704 LINEAR. 1.0-m $f/2.15$ reflector + CCD. Observers M. Blythe, F. Shelly, M. Bezpalko and M. Elowitz. Measured by J. Stuart, H. Vighh and R. Sayer.
- 706 Salida. 0.25-m $f/6$ reflector + CCD. Observer J. E. Hall.
- 711 McDonald. 0.76-m reflector + CCD. Observer P. J. Shelus.
- 713 Thornton. 0.20-m $f/10$ Schmidt-Cassegrain + CCD. Observer R. A. Koff.
- 719 Etscorn Observatory. 0.355-m Schmidt-Cassegrain + CCD. Observer D. A. Klinglesmith III.
- 726 Brainerd. 0.28-m Schmidt-Cassegrain + CCD. Observer J. E. Wentworth.
- 732 Oaxaca. 0.25-m $f/3.4$ reflector + CCD. Observer J. Roe.
- 734 Eskridge. 0.30-m Schmidt-Cassegrain + CCD. Observers G. Hug and G. Bell.
- 735 Needville. Observers C. Gustava, R. Pepper. Measurer W. G. Dillon. 0.46-m reflector + CCD
- 750 Hobbs Observatory, Fall Creek. 0.6-m $f/5$ telescope + CCD. Observer R. Elliott.
- 758 Cocoa. 0.3-m reflector + CCD. Observer I. Griffin.
- 784 Alfred University. 0.81-m $f/4$ reflector + CCD. Observer D. R. DeGraff.
- 809 European Southern Observatory. Observer P. Leisy. Measurers C. Delahodde and O. Hainaut. 3.6-m reflector + CCD.
- 816 Rand Observatory, Lake Placid. 0.37-m reflector + CCD. Observer G. R. Viscome.
- 834 Buenos Aires-AAAA. 0.25-m $f/6.3$ reflector + CCD. Observers R. Caprio, R. Mackintosh, H. Ruggiu and A. Macedo. Measured by R. Mackintosh.
- 835 Drum Hill Station, Chelmsford. 0.20-m $f/3.3$ Schmidt-Cassegrain + CCD. Observer R. Sinnott.
- 840 Flint. Observer C. Bayus. 0.25-m $f/4.5$ reflector + CCD.
- 844 Los Molinos. 0.35-m $f/6.4$ reflector + CCD. Observers R. Salvo, J. C. Tulic, A. Sosa and E. Acosta.
- 859 Wykrota. 0.30-m $f/3.3$ reflector + CCD. Observers C. Jacques and J. Amansio.
- 860 Valinhos. 0.20-m $f/3.3$ reflector + CCD. Observer P. R. Holvorcem.
- 867 Saji Observatory. 1.03-m $f/4.8$ reflector + CCD. Observers M. Yamanishi, A. Miyamoto, M. Aimoto and T. Oribe.
- 886 Susono. 0.25-m $f/6.3$ reflector + CCD. Observer M. Akiyama.
- 897 Chiyoda. 0.25-m $f/6.0$ reflector + CCD. Observer T. Kojima.
- 900 Moriama. 0.25-m $f/6.3$ reflector + CCD. Observer Y. Ikari.
- 903 Fukuchiama. 0.25-m $f/6.3$ Schmidt-Cassegrain + CCD. Observer M. Yoshimi.

Object	Date	UT	α_{2000}	δ_{2000}	Mag.	N Obs.
C/1995 O1 (Hale-Bopp)						
C/1995 O1	1998 12 23	16327	06 07 46.14	-73 47 17.8		834
C/1995 O1	1998 12 30	21348	05 53 33.84	-73 49 07.4		1 834
C/1995 O1	1999 01 07	19869	05 38 13.48	-73 38 53.7		834
C/1995 O1	1999 01 10	19461	05 32 49.66	-73 31 53.5		1 834
C/1995 O1	1999 01 11	05448	05 31 19.48	-73 29 37.2		834
C/1995 O1	1999 01 11	13420	05 31 10.96	-73 29 24.0		834
C/1995 O1	1999 01 12	06404	05 29 34.85	-73 26 44.8		834
C/1995 O1	1999 01 15	07426	05 24 33.92	-73 17 15.2		834
C/1995 O1	1999 01 16	04118	05 23 01.03	-73 13 54.3		834
C/1995 O1	1999 01 16	07427	05 22 57.80	-73 13 45.5		834

C/1995 O1	1999 01 16.07978	05 22 57.46	-73 13 44.9	834
C/1995 O1	1999 01 17.13480	05 21 17.99	-73 09 55.1	834
C/1995 O1	1999 01 25.08111	05 10 03.67	-72 36 04.0	834
C/1995 O1	1999 01 26.03839	05 08 51.19	-72 31 25.9	834
C/1995 O1	1999 02 01.12505	05 01 59.37	-71 59 54.8	834
C/1995 O1	1999 02 03.07887	05 00 04.41	-71 49 06.6	834
C/1995 O1	1999 02 04.03494	04 59 11.00	-71 43 42.7	834
C/1995 O1	1999 04 22.16904	05 05 46.15	-64 22 46.0	844
C/1995 O1	1999 04 22.17755	05 05 46.49	-64 22 44.2	844
C/1995 O1	1999 04 22.18513	05 05 46.81	-64 22 40.7	844
C/1995 O1	1999 05 02.97647	05 13 58.30	-63 45 41.8	12.2 T 844
C/1995 O1	1999 05 03.00451	05 14 00.11	-63 45 34.9	12.2 T 844
C/1995 O1	1999 05 03.02374	05 14 00.67	-63 45 31.0	12.4 T 844
C/1995 O1	1999 05 07.97005	05 18 02.26	-63 31 47.0	12.5 T 844
C/1995 O1	1999 05 07.99192	05 18 03.39	-63 31 44.3	12.5 T 844
C/1995 O1	1999 05 08.00874	05 18 04.41	-63 31 41.0	12.4 T 844
C/1995 O1	1999 05 14.99316	05 24 00.33	-63 15 49.9	12.5 T 844
C/1995 O1	1999 05 15.00502	05 24 00.89	-63 15 49.0	12.5 T 844
C/1995 O1	1999 05 15.01490	05 24 01.36	-63 15 47.5	12.6 T 844
C/1995 O1	1999 05 15.02797	05 24 02.08	-63 15 46.1	12.8 T 844

C/1996 O1 (SOHO)

C/1996 O1	1996 07 21.41943	07 50 44.0	+18 16 13	249
Geocentric position (AU)	-0.00106016	+0.01003343	+0.00396562	
C/1996 O1	1996 07 21.45032	07 51 06.0	+18 19 50	249
Geocentric position (AU)	-0.00106386	+0.01003160	+0.00396573	
C/1996 O1	1996 07 21.48121	07 51 37.8	+18 22 36	249
Geocentric position (AU)	-0.00106757	+0.01002978	+0.00396584	
C/1996 O1	1996 07 21.51715	07 52 03.7	+18 28 04	249
Geocentric position (AU)	-0.00107188	+0.01002765	+0.00396596	
C/1996 O1	1996 07 21.54287	07 52 23.5	+18 30 53	249
Geocentric position (AU)	-0.00107496	+0.01002612	+0.00396605	
C/1996 O1	1996 07 21.70450	07 54 55.2	+18 52 23	249
Geocentric position (AU)	-0.00109438	+0.01001648	+0.00396659	
C/1996 O1	1996 07 21.83310	07 57 07.1	+19 11 41	249
Geocentric position (AU)	-0.00110985	+0.01000875	+0.00396700	
C/1996 O1	1996 07 21.85883	07 57 42.2	+19 16 11	249
Geocentric position (AU)	-0.00111295	+0.01000720	+0.00396708	

C/1997 BA₆ (Spacewatch)

C/1997 BA ₆	1999 05 03.03498	07 51 39.95	-45 52 05.4	12.9 T 844
C/1997 BA ₆	1999 05 03.05696	07 51 39.99	-45 52 00.8	12.6 T 844
C/1997 BA ₆	1999 05 03.07604	07 51 39.92	-45 51 57.0	12.7 T 844
C/1997 BA ₆	1999 05 08.02317	07 51 59.96	-45 34 11.8	13.5 T 844
C/1997 BA ₆	1999 05 08.03661	07 52 00.11	-45 34 09.5	13.3 T 844
C/1997 BA ₆	1999 05 08.05655	07 52 00.20	-45 34 05.3	13.2 T 844

C/1997 J2 (Meunier-Dupouy)

C/1997 J2	1998 03 29.79520	21 50 02.77	+31 40 29.9	897
C/1997 J2	1998 03 29.79951	21 50 03.07	+31 40 29.4	12.4 T 897
C/1997 J2	1998 03 29.80375	21 50 03.35	+31 40 28.8	897
C/1997 J2	1998 04 19.74905	22 10 30.31	+31 09 57.6	12.5 T 897
C/1997 J2	1998 04 19.75312	22 10 30.51	+31 09 57.4	897
C/1997 J2	1998 04 19.75804	22 10 30.74	+31 09 57.2	897

C/1997 J2	1998 05 20.67501	22 28 32.76	+30 25 29.5	897
C/1997 J2	1998 05 20.68102	22 28 32.86	+30 25 29.0	897
C/1997 J2	1998 06 20.70708	22 28 17.84	+28 20 07.5	11.8 T 897
C/1997 J2	1998 06 20.71403	22 28 17.70	+28 20 05.3	897
C/1997 J2	1998 07 02.60786	22 22 28.18	+26 42 45.0	11.8 T 897
C/1997 J2	1998 07 02.61344	22 22 28.02	+26 42 42.0	897
C/1997 J2	1998 08 16.09880	21 38 33.43	+14 00 05.0	835
C/1997 J2	1998 08 20.10949	21 34 01.47	+12 22 59.3	835
C/1997 J2	1998 08 20.12737	21 34 00.26	+12 22 33.7	835
C/1997 J2	1999 05 09.31894	23 16 53.56	-25 15 43.4	844
C/1997 J2	1999 05 09.32176	23 16 53.72	-25 15 44.8	844
C/1997 J2	1999 05 09.33359	23 16 54.14	-25 15 49.7	844

C/1997 T1 (Utsunomiya)

C/1997 T1	1998 03 29.77395	18 03 00.11	-11 06 49.3	897
C/1997 T1	1998 03 29.77808	18 02 59.74	-11 06 53.2	15.2 T 897
C/1997 T1	1998 03 29.78358	18 02 59.10	-11 06 58.7	897
C/1997 T1	1998 04 19.73804	17 00 50.25	-16 06 16.3	16.1 T 897
C/1997 T1	1998 04 19.74220	17 00 49.25	-16 06 19.9	897
C/1997 T1	1998 05 20.60260	14 52 52.05	-20 45 09.6	14.4 T 897
C/1997 T1	1998 05 20.63068	14 52 45.94	-20 45 13.6	897
C/1997 T1	1998 05 20.63668	14 52 44.58	-20 45 15.9	897

C/1998 H1 (Stonehouse)

C/1998 H1	1998 05 06.60853	14 23 05.84	+32 49 48.2	12.2 T 897
C/1998 H1	1998 05 06.66231	14 22 45.74	+32 54 44.7	897
C/1998 H1	1998 05 06.67619	14 22 40.57	+32 55 59.8	897
C/1998 H1	1998 05 06.67892	14 22 39.55	+32 56 15.0	897
C/1998 H1	1998 05 14.57318	13 39 04.43	+41 53 17.9	897
C/1998 H1	1998 05 14.58248	13 39 01.72	+41 53 44.9	897
C/1998 H1	1998 05 14.59147	13 38 59.10	+41 54 10.6	12.6 T 897
C/1998 H1	1998 05 20.55697	13 13 07.19	+45 38 55.6	897
C/1998 H1	1998 05 20.56573	13 13 05.11	+45 39 11.2	12.9 T 897
C/1998 H1	1998 05 20.57425	13 13 03.09	+45 39 25.8	897
C/1998 H1	1998 05 22.46289	13 06 08.78	+46 29 30.7	897
C/1998 H1	1998 05 22.47108	13 06 07.05	+46 29 42.2	897
C/1998 H1	1998 06 29.51168	12 13 02.90	+50 48 19.3	897
C/1998 H1	1998 06 29.51898	12 13 02.50	+50 48 17.0	16.9 T 897

C/1998 J1 (SOHO)

C/1998 J1	1998 05 03.69868	02 08 57.5	+19 13 50	249
Geocentric position (AU)	+0.00591441	+0.00896665	+0.00308556	
C/1998 J1	1998 05 03.73699	02 09 21.8	+19 17 20	249
Geocentric position (AU)	+0.00591236	+0.00896834	+0.00308563	
C/1998 J1	1998 05 03.77939	02 09 46.1	+19 21 28	249
Geocentric position (AU)	+0.00591008	+0.00897021	+0.00308570	
C/1998 J1	1998 05 03.82385	02 10 10.9	+19 25 50	249
Geocentric position (AU)	+0.00590771	+0.00897216	+0.00308577	
C/1998 J1	1998 05 03.90656	02 10 57.3	+19 33 53	249
Geocentric position (AU)	+0.00590330	+0.00897577	+0.00308590	
C/1998 J1	1998 05 03.98626	02 11 42.0	+19 41 50	249
Geocentric position (AU)	+0.00589907	+0.00897923	+0.00308602	
C/1998 J1	1998 05 04.02787	02 12 05.8	+19 45 47	249
Geocentric position (AU)	+0.00589686	+0.00898103	+0.00308609	

C/1998 J1	1998 05 04.07264	02 12 31.4	+19 50 11	249
Geocentric position (AU)	+0.00589450	+0.00898296	+0.00308615	
C/1998 J1	1998 05 04.11438	02 12 55.8	+19 54 15	249
Geocentric position (AU)	+0.00589230	+0.00898475	+0.00308621	
C/1998 J1	1998 05 04.15366	02 13 18.5	+19 58 07	249
Geocentric position (AU)	+0.00589023	+0.00898643	+0.00308627	
C/1998 J1	1998 05 04.23623	02 14 06.7	+20 06 09	249
Geocentric position (AU)	+0.00588590	+0.00898995	+0.00308638	
C/1998 J1	1998 05 04.27868	02 14 32.5	+20 10 13	249
Geocentric position (AU)	+0.00588368	+0.00899175	+0.00308644	
C/1998 J1	1998 05 04.32313	02 14 58.0	+20 14 37	249
Geocentric position (AU)	+0.00588136	+0.00899363	+0.00308650	
C/1998 J1	1998 05 04.36398	02 15 22.8	+20 18 24	249
Geocentric position (AU)	+0.00587923	+0.00899535	+0.00308655	
C/1998 J1	1998 05 04.40287	02 15 46.1	+20 22 14	249
Geocentric position (AU)	+0.00587721	+0.00899698	+0.00308660	
C/1998 J1	1998 05 04.44534	02 16 11.3	+20 26 26	249
Geocentric position (AU)	+0.00587501	+0.00899875	+0.00308665	
C/1998 J1	1998 05 04.48822	02 16 37.9	+20 30 30	249
Geocentric position (AU)	+0.00587279	+0.00900054	+0.00308670	
C/1998 J1	1998 05 04.52867	02 17 01.7	+20 34 35	249
Geocentric position (AU)	+0.00587070	+0.00900222	+0.00308675	
C/1998 J1	1998 05 04.57318	02 17 30.0	+20 38 47	249
Geocentric position (AU)	+0.00586841	+0.00900407	+0.00308680	
C/1998 J1	1998 05 04.61118	02 17 53.6	+20 42 30	249
Geocentric position (AU)	+0.00586645	+0.00900564	+0.00308685	
C/1998 J1	1998 05 04.65366	02 18 19.5	+20 46 27	249
Geocentric position (AU)	+0.00586427	+0.00900739	+0.00308689	
C/1998 J1	1998 05 04.69529	02 18 45.2	+20 50 28	249
Geocentric position (AU)	+0.00586214	+0.00900910	+0.00308694	
C/1998 J1	1998 05 04.73697	02 19 11.8	+20 54 31	249
Geocentric position (AU)	+0.00586001	+0.00901080	+0.00308698	
C/1998 J1	1998 05 04.77867	02 19 37.4	+20 58 31	249
Geocentric position (AU)	+0.00585788	+0.00901250	+0.00308703	
C/1998 J1	1998 05 04.82053	02 20 04.2	+21 02 29	249
Geocentric position (AU)	+0.00585575	+0.00901420	+0.00308707	
C/1998 J1	1998 05 04.84159	02 20 17.3	+21 04 30	249
Geocentric position (AU)	+0.00585468	+0.00901506	+0.00308709	
C/1998 J1	1998 05 04.89655	02 20 52.8	+21 09 44	249
Geocentric position (AU)	+0.00585190	+0.00901728	+0.00308714	
C/1998 J1	1998 05 04.92112	02 21 09.0	+21 12 08	249
Geocentric position (AU)	+0.00585065	+0.00901822	+0.00308717	
C/1998 J1	1998 05 04.98776	02 21 50.8	+21 18 27	249
Geocentric position (AU)	+0.00584729	+0.00902095	+0.00308723	
C/1998 J1	1998 05 05.02799	02 22 17.9	+21 22 10	249
Geocentric position (AU)	+0.00584527	+0.00902256	+0.00308727	
C/1998 J1	1998 05 05.07282	02 22 46.5	+21 26 30	249
Geocentric position (AU)	+0.00584302	+0.00902435	+0.00308731	
C/1998 J1	1998 05 05.11307	02 23 13.4	+21 30 17	249
Geocentric position (AU)	+0.00584100	+0.00902595	+0.00308734	
C/1998 J1	1998 05 05.15365	02 23 40.0	+21 34 04	249
Geocentric position (AU)	+0.00583897	+0.00902756	+0.00308738	

C/1998 J1	1998 05 05.20473	02 24 14.2	+21 38 47	249
Geocentric position (AU)	+0.00583643	+0.00902958	+0.00308742	
C/1998 J1	1998 05 05.28053	02 25 04.6	+21 45 57	249
Geocentric position (AU)	+0.00583266	+0.00903256	+0.00308748	
C/1998 J1	1998 05 05.36586	02 26 03.4	+21 53 51	249
Geocentric position (AU)	+0.00582844	+0.00903589	+0.00308755	
C/1998 J1	1998 05 05.40867	02 26 32.2	+21 57 39	249
Geocentric position (AU)	+0.00582633	+0.00903756	+0.00308758	
C/1998 J1	1998 05 05.45164	02 26 59.4	+22 02 12	249
Geocentric position (AU)	+0.00582421	+0.00903923	+0.00308761	
C/1998 J1	1998 05 05.53732	02 28 00.6	+22 09 31	249
Geocentric position (AU)	+0.00582002	+0.00904254	+0.00308767	
C/1998 J1	1998 05 05.58167	02 28 31.8	+22 13 35	249
Geocentric position (AU)	+0.00581785	+0.00904424	+0.00308769	
C/1998 J1	1998 05 05.62176	02 29 00.2	+22 17 21	249
Geocentric position (AU)	+0.00581590	+0.00904578	+0.00308772	
C/1998 J1	1998 05 05.66033	02 29 27.3	+22 20 28	249
Geocentric position (AU)	+0.00581402	+0.00904725	+0.00308774	
C/1998 J1	1998 05 05.70040	02 29 55.8	+22 24 25	249
Geocentric position (AU)	+0.00581208	+0.00904878	+0.00308777	
C/1998 J1	1998 05 05.72137	02 30 08.6	+22 25 49	249
Geocentric position (AU)	+0.00581106	+0.00904957	+0.00308778	
C/1998 J1	1998 05 05.77029	02 30 52.4	+22 30 43	249
Geocentric position (AU)	+0.00580870	+0.00905143	+0.00308781	
C/1998 J1	1998 05 05.81841	02 31 20.1	+22 34 34	249
Geocentric position (AU)	+0.00580638	+0.00905325	+0.00308784	
C/1998 J1	1998 05 05.85967	02 31 51.9	+22 38 36	249
Geocentric position (AU)	+0.00580440	+0.00905480	+0.00308786	
C/1998 J1	1998 05 05.96311	02 33 08.1	+22 47 45	249
Geocentric position (AU)	+0.00579945	+0.00905868	+0.00308791	
C/1998 J1	1998 05 05.98782	02 33 26.0	+22 49 46	249
Geocentric position (AU)	+0.00579827	+0.00905960	+0.00308792	
C/1998 J1	1998 05 06.02803	02 33 55.5	+22 53 05	249
Geocentric position (AU)	+0.00579635	+0.00906110	+0.00308794	
C/1998 J1	1998 05 06.07264	02 34 28.8	+22 56 43	249
Geocentric position (AU)	+0.00579423	+0.00906275	+0.00308796	
C/1998 J1	1998 05 06.11285	02 34 59.7	+23 00 20	249
Geocentric position (AU)	+0.00579233	+0.00906424	+0.00308798	
C/1998 J1	1998 05 06.15363	02 35 30.5	+23 03 29	249
Geocentric position (AU)	+0.00579040	+0.00906574	+0.00308800	
C/1998 J1	1998 05 06.23706	02 36 33.1	+23 10 31	249
Geocentric position (AU)	+0.00578647	+0.00906881	+0.00308804	
C/1998 J1	1998 05 06.27864	02 37 06.0	+23 14 13	249
Geocentric position (AU)	+0.00578452	+0.00907033	+0.00308805	
C/1998 J1	1998 05 06.32315	02 37 39.9	+23 17 56	249
Geocentric position (AU)	+0.00578244	+0.00907195	+0.00308807	
C/1998 J1	1998 05 06.36434	02 38 10.3	+23 21 10	249
Geocentric position (AU)	+0.00578052	+0.00907345	+0.00308808	
C/1998 J1	1998 05 06.40579	02 38 44.1	+23 24 50	249
Geocentric position (AU)	+0.00577859	+0.00907496	+0.00308810	
C/1998 J1	1998 05 06.44868	02 39 16.8	+23 28 04	249
Geocentric position (AU)	+0.00577659	+0.00907651	+0.00308811	

C/1998 J1	1998 05 06.49161	02 39 50.4	+23 30 52	249
Geocentric position (AU)	+0.00577460	+0.00907806	+0.00308813	
C/1998 J1	1998 05 06.53220	02 40 24.7	+23 34 48	249
Geocentric position (AU)	+0.00577273	+0.00907951	+0.00308814	
C/1998 J1	1998 05 06.57665	02 40 58.6	+23 38 06	249
Geocentric position (AU)	+0.00577068	+0.00908111	+0.00308815	
C/1998 J1	1998 05 06.61784	02 41 32.2	+23 41 15	249
Geocentric position (AU)	+0.00576879	+0.00908258	+0.00308817	
C/1998 J1	1998 05 06.65745	02 42 04.0	+23 44 28	249
Geocentric position (AU)	+0.00576697	+0.00908399	+0.00308818	
C/1998 J1	1998 05 06.73730	02 43 08.4	+23 50 12	249
Geocentric position (AU)	+0.00576332	+0.00908683	+0.00308820	
C/1998 J1	1998 05 06.77867	02 43 42.2	+23 53 09	249
Geocentric position (AU)	+0.00576143	+0.00908829	+0.00308821	
C/1998 J1	1998 05 06.82597	02 44 20.9	+23 56 22	249
Geocentric position (AU)	+0.00575928	+0.00908996	+0.00308822	
C/1998 J1	1998 05 06.86004	02 44 48.3	+23 58 28	249
Geocentric position (AU)	+0.00575774	+0.00909116	+0.00308823	
C/1998 J1	1998 05 06.90378	02 45 25.6	+24 01 44	249
Geocentric position (AU)	+0.00575576	+0.00909269	+0.00308824	
C/1998 J1	1998 05 06.97761	02 46 27.8	+24 06 41	249
Geocentric position (AU)	+0.00575244	+0.00909528	+0.00308826	
C/1998 J1	1998 05 07.02784	02 47 10.1	+24 09 59	249
Geocentric position (AU)	+0.00575018	+0.00909702	+0.00308827	
C/1998 J1	1998 05 07.07265	02 47 48.5	+24 12 58	249
Geocentric position (AU)	+0.00574818	+0.00909858	+0.00308827	
C/1998 J1	1998 05 07.11366	02 48 23.1	+24 15 35	249
Geocentric position (AU)	+0.00574635	+0.00910000	+0.00308828	
C/1998 J1	1998 05 07.15438	02 48 58.0	+24 18 36	249
Geocentric position (AU)	+0.00574454	+0.00910141	+0.00308829	
C/1998 J1	1998 05 07.23787	02 50 09.2	+24 23 32	249
Geocentric position (AU)	+0.00574083	+0.00910428	+0.00308830	
C/1998 J1	1998 05 07.27865	02 50 46.8	+24 25 53	249
Geocentric position (AU)	+0.00573903	+0.00910568	+0.00308831	
C/1998 J1	1998 05 07.32311	02 51 24.2	+24 28 49	249
Geocentric position (AU)	+0.00573707	+0.00910720	+0.00308832	
C/1998 J1	1998 05 07.36334	02 52 00.0	+24 30 31	249
Geocentric position (AU)	+0.00573530	+0.00910857	+0.00308832	
C/1998 J1	1998 05 07.40472	02 52 34.1	+24 33 06	249
Geocentric position (AU)	+0.00573349	+0.00910997	+0.00308833	
C/1998 J1	1998 05 07.44793	02 53 11.0	+24 36 01	249
Geocentric position (AU)	+0.00573160	+0.00911144	+0.00308833	
C/1998 J1	1998 05 07.49079	02 53 51.1	+24 37 54	249
Geocentric position (AU)	+0.00572973	+0.00911289	+0.00308834	
C/1998 J1	1998 05 07.55215	02 54 44.9	+24 41 16	249
Geocentric position (AU)	+0.00572707	+0.00911496	+0.00308834	
C/1998 J1	1998 05 07.61198	02 55 39.0	+24 44 03	249
Geocentric position (AU)	+0.00572447	+0.00911697	+0.00308835	
C/1998 J1	1998 05 07.65364	02 56 16.0	+24 46 08	249
Geocentric position (AU)	+0.00572268	+0.00911836	+0.00308836	
C/1998 J1	1998 05 07.69532	02 56 58.9	+24 48 35	249
Geocentric position (AU)	+0.00572088	+0.00911976	+0.00308836	

C/1998 J1	1998 05 07.73698	02 57 33.5	+24 50 48	249
Geocentric position (AU)	+0.00571909	+0.00912115	+0.00308836	
C/1998 J1	1998 05 07.80366	02 58 31.0	+24 53 58	249
Geocentric position (AU)	+0.00571624	+0.00912336	+0.00308837	
C/1998 J1	1998 05 07.82380	02 58 49.6	+24 54 05	249
Geocentric position (AU)	+0.00571538	+0.00912403	+0.00308837	
C/1998 J1	1998 05 07.90340	03 00 02.5	+24 56 46	249
Geocentric position (AU)	+0.00571199	+0.00912666	+0.00308838	
C/1998 J1	1998 05 07.97737	03 01 13.3	+25 00 19	249
Geocentric position (AU)	+0.00570886	+0.00912910	+0.00308838	
C/1998 J1	1998 05 08.02784	03 01 58.6	+25 01 33	249
Geocentric position (AU)	+0.00570673	+0.00913075	+0.00308839	
C/1998 J1	1998 05 08.07262	03 02 39.2	+25 02 26	249
Geocentric position (AU)	+0.00570485	+0.00913222	+0.00308839	
C/1998 J1	1998 05 08.11285	03 03 17.4	+25 04 13	249
Geocentric position (AU)	+0.00570316	+0.00913353	+0.00308839	
C/1998 J1	1998 05 08.15428	03 03 55.9	+25 05 26	249
Geocentric position (AU)	+0.00570143	+0.00913488	+0.00308840	
C/1998 J1	1998 05 08.23935	03 05 12.8	+25 07 55	249
Geocentric position (AU)	+0.00569789	+0.00913764	+0.00308840	
C/1998 J1	1998 05 08.27862	03 05 52.3	+25 08 51	249
Geocentric position (AU)	+0.00569626	+0.00913891	+0.00308840	
C/1998 J1	1998 05 08.32374	03 06 33.2	+25 09 32	249
Geocentric position (AU)	+0.00569439	+0.00914036	+0.00308841	
C/1998 J1	1998 05 08.36455	03 07 12.3	+25 10 42	249
Geocentric position (AU)	+0.00569271	+0.00914168	+0.00308841	
C/1998 J1	1998 05 08.40586	03 07 54.3	+25 10 31	249
Geocentric position (AU)	+0.00569101	+0.00914300	+0.00308841	
C/1998 J1	1998 05 08.44832	03 08 30.8	+25 12 05	249
Geocentric position (AU)	+0.00568926	+0.00914437	+0.00308842	
C/1998 J1	1998 05 08.49113	03 09 11.6	+25 12 45	249
Geocentric position (AU)	+0.00568751	+0.00914574	+0.00308842	
C/1998 J1	1998 05 08.53048	03 09 48.6	+25 13 26	249
Geocentric position (AU)	+0.00568590	+0.00914699	+0.00308842	
C/1998 J1	1998 05 08.57493	03 10 30.6	+25 13 50	249
Geocentric position (AU)	+0.00568409	+0.00914841	+0.00308842	
C/1998 J1	1998 05 08.61586	03 11 10.2	+25 13 46	249
Geocentric position (AU)	+0.00568243	+0.00914971	+0.00308843	
C/1998 J1	1998 05 08.65528	03 11 48.0	+25 14 38	249
Geocentric position (AU)	+0.00568084	+0.00915096	+0.00308843	
C/1998 J1	1998 05 08.73697	03 13 10.9	+25 13 22	249
Geocentric position (AU)	+0.00567754	+0.00915354	+0.00308844	
C/1998 J1	1998 05 08.77864	03 13 44.7	+25 14 56	249
Geocentric position (AU)	+0.00567586	+0.00915485	+0.00308844	
C/1998 J1	1998 05 08.82315	03 14 26.5	+25 14 51	249
Geocentric position (AU)	+0.00567408	+0.00915625	+0.00308844	

C/1998 K1 (Mueller)

C/1998 K1	1998 05 31.50179	10 44 53.52	+28 51 34.5	16.0 T	897
C/1998 K1	1998 05 31.50597	10 44 53.63	+28 51 29.7		897

C/1998 K2 (LINEAR)

C/1998 K2	1998 06 20.56015	15 52 49.23	-41 04 26.8	14.4 T	897
C/1998 K2	1998 06 20.56944	15 52 47.82	-41 04 41.9		897

1999 JUNE 22

M.P.C. 34679

C/1998 K2	1998 06 29.49912	15 31 30.27	-43 53 44.2		897
C/1998 K2	1998 06 29.50284	15 31 29.63	-43 53 48.3	14.4 T	897
C/1998 K2	1998 06 29.50738	15 31 29.07	-43 53 51.9		897
C/1998 K3 (LINEAR)					
C/1998 K3	1998 06 20.59822	15 31 36.98	+05 25 59.6		897
C/1998 K3	1998 06 20.61178	15 31 35.27	+05 26 01.8	17.5 T	897
C/1998 K5 (LINEAR)					
C/1998 K5	1998 06 20.68758	20 36 09.93	+46 33 21.7	12.6 T	897
C/1998 K5	1998 06 20.69014	20 36 12.39	+46 33 37.3	12.6 T	897
C/1998 K5	1998 06 20.69233	20 36 14.34	+46 33 49.9		897
C/1998 K5	1998 06 30.63417	23 27 08.53	+53 47 03.3		897
C/1998 K5	1998 06 30.63643	23 27 10.68	+53 47 02.5	12.6 T	897
C/1998 K5	1998 06 30.63804	23 27 12.13	+53 47 02.1		897
C/1998 M1 (LINEAR)					
C/1998 M1	1998 06 20.62667	15 26 19.00	-24 27 37.4		897
C/1998 M1	1998 06 29.55183	15 25 37.94	-23 21 06.7	16.5 T	897
C/1998 M1	1999 05 13.77118	22 02 40.10	+07 07 53.5	17.5 T	360
C/1998 M1	1999 05 13.77569	22 02 40.27	+07 07 56.2		360
C/1998 M1	1999 05 13.78073	22 02 40.50	+07 07 59.4		360
C/1998 M1	1999 05 20.77674	22 07 02.60	+08 16 08.9	17.7 T	360
C/1998 M1	1999 05 20.78160	22 07 02.79	+08 16 11.8		360
C/1998 M1	1999 05 20.78542	22 07 02.93	+08 16 14.2		360
C/1998 M2 (LINEAR)					
C/1998 M2	1998 06 29.55878	18 00 42.74	+07 46 52.6		897
C/1998 M2	1998 06 29.56227	18 00 42.48	+07 46 57.2	15.1 T	897
C/1998 M2	1998 06 29.59719	18 00 39.97	+07 47 41.9		897
C/1998 M2	1998 07 17.64645	17 41 15.00	+13 14 28.8		897
C/1998 M2	1998 07 17.65499	17 41 14.45	+13 14 35.3		897
C/1998 M2	1998 07 17.65828	17 41 14.29	+13 14 39.2	14.1 T	897
C/1998 M2	1998 07 27.56609	17 33 10.50	+15 22 13.5		897
C/1998 M2	1998 07 27.57055	17 33 10.31	+15 22 16.7	14.7 T	897
C/1998 M3 (Larsen)					
C/1998 M3	1999 05 14.70990	16 06 15.96	+32 29 25.8	18.7 T	2 360
C/1998 M3	1999 05 14.71441	16 06 15.63	+32 29 30.9		2 360
C/1998 M3	1999 05 14.71875	16 06 15.49	+32 29 32.7		2 360
C/1998 M3	1999 05 15.30759	16 05 41.96	+32 34 19.0	18.8 T	704
C/1998 M3	1999 05 15.32263	16 05 40.78	+32 34 26.1	19.1 T	704
C/1998 M3	1999 05 15.35287	16 05 39.05	+32 34 41.0	18.9 T	704
C/1998 M3	1999 05 15.36811	16 05 38.10	+32 34 50.9	18.9 T	704
C/1998 M3	1999 06 14.58616	15 37 03.69	+35 15 53.8		867
C/1998 M3	1999 06 14.59900	15 37 03.09	+35 15 55.7		867
C/1998 M3	1999 06 14.61081	15 37 02.44	+35 15 57.2		867
C/1998 M4 (LINEAR)					
C/1998 M4	1998 06 30.60793	19 32 23.57	-11 10 23.9		897
C/1998 M4	1998 06 30.61893	19 32 21.89	-11 10 29.9	16.5 T	897
C/1998 M4	1998 06 30.62449	19 32 20.95	-11 10 34.3		897
C/1998 M5 (LINEAR)					
C/1998 M5	1998 07 17.68010	22 57 01.32	+23 56 20.6	12.9 T	897
C/1998 M5	1998 07 17.68569	22 57 00.91	+23 56 28.4		897

C/1998 M5	1998 08 04.75446	22 28 42.41	+30 47 55.9	11.8 T	897
C/1998 M5	1998 08 04.75890	22 28 41.86	+30 48 01.8		897
C/1998 M5	1999 04 20.55566	08 22 31.88	+55 48 06.4	12.7 T	900
C/1998 M5	1999 04 20.56484	08 22 32.37	+55 47 40.6		900
C/1998 M5	1999 04 20.61076	08 22 34.87	+55 45 32.7	13.1 T	372
C/1998 M5	1999 04 29.57948	08 31 10.87	+49 15 22.6	11.7 T	897
C/1998 M5	1999 04 29.59139	08 31 11.54	+49 14 53.0		897
C/1998 M5	1999 04 30.43814	08 32 00.29	+48 40 47.0	12.3 T	402
C/1998 M5	1999 04 30.43941	08 32 00.36	+48 40 44.1		402
C/1998 M5	1999 04 30.44066	08 32 00.44	+48 40 41.1		402
C/1998 M5	1999 05 01.51056	08 33 01.60	+47 58 11.8	12.8 T	900
C/1998 M5	1999 05 01.51981	08 33 02.12	+47 57 50.0		900
C/1998 M5	1999 05 06.48333	08 37 46.07	+44 49 41.1	13.8 T	372
C/1998 M5	1999 05 06.51319	08 37 47.81	+44 48 35.2	11.7 T	360
C/1998 M5	1999 05 06.51545	08 37 47.93	+44 48 30.1		360
C/1998 M5	1999 05 07.48181	08 38 43.22	+44 13 32.5	14.1 T	372
C/1998 M5	1999 05 08.16525	08 39 22.02	+43 49 12.7	16.6 T	704
C/1998 M5	1999 05 08.17415	08 39 22.85	+43 48 48.9	17.1 T	704
C/1998 M5	1999 05 08.18290	08 39 23.00	+43 48 29.5	17.4 T	704
C/1998 M5	1999 05 08.19169	08 39 23.28	+43 48 09.4	18.4 T	704
C/1998 M5	1999 05 08.20040	08 39 24.54	+43 47 43.6		704
C/1998 M5	1999 05 08.47847	08 39 40.11	+43 38 01.3		355
C/1998 M5	1999 05 08.48090	08 39 40.24	+43 37 56.1		355
C/1998 M5	1999 05 08.48207	08 39 40.28	+43 37 53.5		355
C/1998 M5	1999 05 08.54733	08 39 44.06	+43 35 35.3		352
C/1998 M5	1999 05 08.55149	08 39 44.24	+43 35 26.3		352
C/1998 M5	1999 05 08.55566	08 39 44.44	+43 35 17.7		352
C/1998 M5	1999 05 11.53105	08 42 34.42	+41 52 32.0	13.3 T	351
C/1998 M5	1999 05 11.53501	08 42 34.59	+41 52 23.3		351
C/1998 M5	1999 05 11.53785	08 42 34.86	+41 52 17.3		351
C/1998 M5	1999 05 11.54571	08 42 35.22	+41 52 01.6	13.1 T	900
C/1998 M5	1999 05 11.55662	08 42 35.83	+41 51 39.1		900
C/1998 M5	1999 05 13.51037	08 44 27.37	+40 46 43.0		903
C/1998 M5	1999 05 13.51287	08 44 27.47	+40 46 37.2		367
C/1998 M5	1999 05 13.51468	08 44 27.64	+40 46 34.4		903
C/1998 M5	1999 05 13.51596	08 44 27.69	+40 46 32.0		367
C/1998 M5	1999 05 13.51831	08 44 27.86	+40 46 28.1		903
C/1998 M5	1999 05 20.48958	08 51 05.34	+37 09 30.1	12.4 T	360
C/1998 M5	1999 05 20.49201	08 51 05.47	+37 09 25.8		360
C/1998 M5	1999 05 20.50003	08 51 05.93	+37 09 11.9		355
C/1998 M5	1999 05 20.50480	08 51 06.19	+37 09 03.0		355
C/1998 M5	1999 05 20.50954	08 51 06.48	+37 08 54.9		355
C/1998 M5	1999 05 20.57855	08 51 10.51	+37 06 52.3		897
C/1998 M5	1999 05 20.58300	08 51 10.61	+37 06 43.4		897
C/1998 M5	1999 05 29.48438	08 59 35.98	+32 59 44.1		903
C/1998 M5	1999 05 29.49015	08 59 36.21	+32 59 35.0		900
C/1998 M5	1999 05 29.49696	08 59 36.60	+32 59 24.7		903
C/1998 M5	1999 05 29.49945	08 59 36.80	+32 59 20.6	13.0 T	900
C/1998 M5	1999 05 29.50461	08 59 37.13	+32 59 11.7	13.6 T	351
C/1998 M5	1999 05 29.50517	08 59 37.16	+32 59 11.4	13.4 T	903
C/1998 M5	1999 05 29.50856	08 59 37.33	+32 59 06.0		351
C/1998 M5	1999 05 29.51254	08 59 37.62	+32 58 58.3		351
C/1998 M5	1999 06 03.84667	09 04 38.62	+30 44 31.1	13.9 T	118

C/1998 M5	1999 06 03.85859	09 04 39.25	+30 44 13.5		118
C/1998 M5	1999 06 04.16097	09 04 56.12	+30 36 54.6	16.7 T	704
C/1998 M5	1999 06 04.17780	09 04 57.09	+30 36 28.3	17.7 T	704
C/1998 M5	1999 06 04.18585	09 04 57.57	+30 36 16.7		704
C/1998 M5	1999 06 07.18560	09 07 46.10	+29 24 49.8		704
C/1998 M5	1999 06 07.19535	09 07 46.83	+29 24 36.4		704
C/1998 M5	1999 06 07.21487	09 07 47.93	+29 24 06.9		704
C/1998 M5	1999 06 08.15693	09 08 40.67	+29 02 18.2		704
C/1998 M5	1999 06 08.16725	09 08 41.30	+29 02 00.2		704
C/1998 M5	1999 06 08.17724	09 08 41.86	+29 01 46.1		704
C/1998 M5	1999 06 08.19724	09 08 43.27	+29 01 17.1		704
C/1998 M5	1999 06 11.49722	09 11 47.69	+27 46 31.4	14.6 T	372

C/1998 P1 (Williams)

C/1998 P1	1999 03 15.59792	07 43 06.82	+42 02 25.0	14.9 T	372
C/1998 P1	1999 03 16.59625	07 41 04.84	+42 03 05.4	15.0 T	372
C/1998 P1	1999 03 22.52361	07 30 57.42	+42 01 54.3	16.5 T	372
C/1998 P1	1999 04 07.52135	07 16 19.37	+41 37 16.3	17.3 T	372
C/1998 P1	1999 04 08.46996	07 15 53.48	+41 35 28.8	18.1 T	372
C/1998 P1	1999 05 15.16064	07 19 48.15	+40 37 03.2		693
C/1998 P1	1999 05 15.16469	07 19 48.26	+40 37 03.1		693

P/1998 U3 (Jäger)

P/1998 U3	1999 01 12.11117	06 28 50.92	+35 39 02.2		834
P/1998 U3	1999 01 12.13565	06 28 49.79	+35 38 41.4		834
P/1998 U3	1999 01 15.09834	06 26 36.27	+34 59 25.6		834
P/1998 U3	1999 01 17.15164	06 25 11.06	+34 31 22.7	1 834	
P/1998 U3	1999 01 26.09256	06 20 27.58	+32 23 59.1		834
P/1998 U3	1999 02 03.09081	06 18 32.74	+30 27 15.9	1 834	
P/1998 U3	1999 04 20.49467	07 33 47.62	+15 37 46.1	13.4 T	900
P/1998 U3	1999 04 20.50392	07 33 48.51	+15 37 39.9		900
P/1998 U3	1999 04 29.51586	07 48 58.01	+14 07 54.9	12.5 T	897
P/1998 U3	1999 04 29.53100	07 48 59.55	+14 07 45.3		897
P/1998 U3	1999 05 01.45473	07 52 17.57	+13 48 27.5	12.8 T	900
P/1998 U3	1999 05 01.46347	07 52 18.59	+13 48 21.7		900
P/1998 U3	1999 05 03.81546	07 56 22.19	+13 24 38.1	14.2 T	118
P/1998 U3	1999 05 03.82275	07 56 22.89	+13 24 34.1		118
P/1998 U3	1999 05 06.48898	08 01 01.05	+12 57 33.8	14.2 T	903
P/1998 U3	1999 05 06.50503	08 01 02.61	+12 57 23.6	13.3 T	360
P/1998 U3	1999 05 06.50781	08 01 02.88	+12 57 22.0		360
P/1998 U3	1999 05 06.50917	08 01 03.05	+12 57 20.8		903
P/1998 U3	1999 05 11.49382	08 09 47.75	+12 06 22.1	13.9 T	900
P/1998 U3	1999 05 11.50305	08 09 48.71	+12 06 16.5		900

C/1998 U5 (LINEAR)

C/1998 U5	1999 05 24.38441	19 22 45.36	+16 43 56.7	19.1 T	704
C/1998 U5	1999 05 24.39262	19 22 43.42	+16 43 52.2	19.5 T	704
C/1998 U5	1999 05 24.40174	19 22 42.26	+16 43 55.3	19.6 T	704
C/1998 U5	1999 05 24.41088	19 22 40.60	+16 43 50.8	19.5 T	704
C/1998 U5	1999 05 24.41964	19 22 38.74	+16 43 47.4	19.2 T	704

P/1999 D1 (Hermann)

P/1999 D1	1999 02 25.64189	12 11 15.73	+00 55 23.2		897
P/1999 D1	1999 02 25.67237	12 11 14.22	+00 54 30.4	18.0 T	897

P/1999 D1	1999 02 25.68159	12 11 13.73	+00 54 18.4		897
P/1999 D1	1999 02 25.69067	12 11 12.99	+00 54 02.5		897

P/1999 DN₃ (Korlević-Jurić)

P/1999 DN ₃	1999 02 18.97279	13 02 10.41	-06 47 52.8	18.7 T	120
P/1999 DN ₃	1999 02 19.02657	13 02 09.53	-06 47 58.4		120
P/1999 DN ₃	1999 02 19.05759	13 02 09.11	-06 47 59.6		120
P/1999 DN ₃	1999 02 24.05181	13 00 27.27	-06 55 13.6	18.6 T	120
P/1999 DN ₃	1999 02 24.09154	13 00 26.42	-06 55 18.0		120
P/1999 DN ₃	1999 04 06.25385	12 35 35.76	-06 54 06.3	18.0 T	704
P/1999 DN ₃	1999 04 06.26761	12 35 35.13	-06 54 05.3	18.2 T	704
P/1999 DN ₃	1999 04 06.28152	12 35 34.52	-06 54 05.2	18.7 T	704
P/1999 DN ₃	1999 04 06.29579	12 35 33.98	-06 54 04.9	19.5 T	704
P/1999 DN ₃	1999 04 06.31090	12 35 33.31	-06 54 03.9	19.3 T	704
P/1999 DN ₃	1999 04 10.21479	12 32 52.47	-06 50 53.7	17.6 T	699
P/1999 DN ₃	1999 04 10.24024	12 32 51.38	-06 50 52.2		699
P/1999 DN ₃	1999 04 10.26576	12 32 50.35	-06 50 51.6		699
P/1999 DN ₃	1999 04 14.33042	12 30 07.70	-06 47 38.3	18.3 T	704
P/1999 DN ₃	1999 04 14.34004	12 30 07.30	-06 47 37.1	18.3 T	704
P/1999 DN ₃	1999 04 14.35992	12 30 06.57	-06 47 36.2	18.6 T	704
P/1999 DN ₃	1999 04 15.14221	12 29 36.25	-06 47 00.4	17.9 T	704
P/1999 DN ₃	1999 04 15.15950	12 29 35.61	-06 46 59.9	18.4 T	704
P/1999 DN ₃	1999 04 15.17681	12 29 34.79	-06 46 58.5	18.3 T	704
P/1999 DN ₃	1999 04 15.19416	12 29 34.16	-06 46 58.5	18.3 T	704
P/1999 DN ₃	1999 04 15.21139	12 29 33.28	-06 46 57.7	18.3 T	704
P/1999 DN ₃	1999 05 14.10742	12 15 42.24	-06 40 51.2	18.6 T	860
P/1999 DN ₃	1999 05 14.11517	12 15 42.22	-06 40 50.7	18.4 T	860
P/1999 DN ₃	1999 05 14.15247	12 15 41.57	-06 40 51.5	19.4 T	2 860
P/1999 DN ₃	1999 05 14.16378	12 15 41.43	-06 40 56.8	18.7 T	734
P/1999 DN ₃	1999 05 14.17025	12 15 41.41	-06 40 53.4		719
P/1999 DN ₃	1999 05 14.18104	12 15 41.21	-06 40 56.0	18.9 T	734
P/1999 DN ₃	1999 05 14.18435	12 15 41.10	-06 40 56.3	18.9 T	734
P/1999 DN ₃	1999 05 14.21503	12 15 40.34	-06 40 59.5		719
P/1999 DN ₃	1999 05 16.94029	12 14 59.61	-06 42 50.7		046
P/1999 DN ₃	1999 05 16.94279	12 14 59.60	-06 42 49.9		046
P/1999 DN ₃	1999 05 16.94691	12 14 59.57	-06 42 51.0		046
P/1999 DN ₃	1999 05 20.47054	12 14 17.53	-06 46 01.6	18.6 T	402
P/1999 DN ₃	1999 05 20.47376	12 14 17.49	-06 46 01.9		402
P/1999 DN ₃	1999 05 20.47537	12 14 17.37	-06 46 02.6		402
P/1999 DN ₃	1999 05 20.53160	12 14 16.82	-06 46 06.0	18.0 T	360
P/1999 DN ₃	1999 05 20.53611	12 14 16.74	-06 46 06.5		360
P/1999 DN ₃	1999 05 20.54045	12 14 16.72	-06 46 06.8		360
P/1999 DN ₃	1999 06 14.49481	12 15 01.61	-07 35 33.7		867
P/1999 DN ₃	1999 06 14.50106	12 15 01.67	-07 35 35.3		867
P/1999 DN ₃	1999 06 14.50731	12 15 01.76	-07 35 36.1		867

D/1999 E1 (Li)

D/1999 E1	1999 04 30.46299	06 55 18.57	+12 26 34.8	16.2 T	402
D/1999 E1	1999 04 30.46424	06 55 18.60	+12 26 36.0		402
D/1999 E1	1999 04 30.46550	06 55 18.66	+12 26 36.2		402
D/1999 E1	1999 05 06.45646	07 00 51.68	+13 07 55.6	15.8 T	402
D/1999 E1	1999 05 06.45737	07 00 51.74	+13 07 55.9		402
D/1999 E1	1999 05 06.45829	07 00 51.80	+13 07 57.0		402
D/1999 E1	1999 05 06.47083	07 00 52.49	+13 08 01.5	16.0 T	360

1999 JUNE 22

M.P.C. 34681

D/1999 E1	1999 05 06.47326	07 00 52.63	+13 08 02.2		360
D/1999 E1	1999 05 06.47569	07 00 52.77	+13 08 03.2		360
D/1999 E1	1999 05 20.47326	07 14 52.44	+14 31 28.1	16.2 T	360
D/1999 E1	1999 05 20.47569	07 14 52.57	+14 31 29.0		360
D/1999 E1	1999 05 20.47778	07 14 52.68	+14 31 29.2		360

C/1999 F1 (Catalina)

C/1999 F1	1999 04 15.22360	13 10 21.99	-08 23 15.5	18.8 T	704
C/1999 F1	1999 04 15.24058	13 10 21.39	-08 23 15.4	18.9 T	704
C/1999 F1	1999 04 15.25760	13 10 20.79	-08 23 15.3	18.7 T	704
C/1999 F1	1999 04 15.27458	13 10 20.18	-08 23 15.3	18.7 T	704
C/1999 F1	1999 04 15.29170	13 10 19.56	-08 23 15.1	19.1 T	704
C/1999 F1	1999 05 06.46837	12 59 31.55	-08 18 34.4	18.9 T	402
C/1999 F1	1999 05 06.47067	12 59 31.45	-08 18 34.0		402
C/1999 F1	1999 05 06.47299	12 59 31.38	-08 18 34.9		402
C/1999 F1	1999 05 06.54462	12 59 29.34	-08 18 33.8	19.5 N	372
C/1999 F1	1999 05 06.55208	12 59 29.13	-08 18 33.9	18.7 N	360
C/1999 F1	1999 05 06.55642	12 59 29.01	-08 18 33.7		360
C/1999 F1	1999 05 06.56007	12 59 28.93	-08 18 33.8		360
C/1999 F1	1999 05 07.53507	12 59 01.00	-08 18 29.8	19.3 N	372
C/1999 F1	1999 05 13.49774	12 56 16.05	-08 18 21.8	18.5 T	360
C/1999 F1	1999 05 13.50330	12 56 15.90	-08 18 21.8		360
C/1999 F1	1999 05 13.50816	12 56 15.74	-08 18 21.9		360
C/1999 F1	1999 06 14.53405	12 45 08.97	-08 34 32.3		867
C/1999 F1	1999 06 14.54030	12 45 08.93	-08 34 32.1		867
C/1999 F1	1999 06 14.54551	12 45 08.83	-08 34 32.9		867

C/1999 F2 (Dalcanton)

C/1999 F2	1998 06 18.15605	12 06 51.99	-16 53 30.5	17.7 T	704
C/1999 F2	1998 06 18.16779	12 06 52.46	-16 53 25.3	17.7 T	704
C/1999 F2	1998 06 18.17954	12 06 52.71	-16 53 19.2	17.7 T	704
C/1999 F2	1998 06 18.19128	12 06 52.99	-16 53 12.1	17.7 T	704
C/1999 F2	1999 02 23.48143	15 30 33.63	-03 50 26.5	18.6 T	704
C/1999 F2	1999 02 23.49018	15 30 33.85	-03 50 23.7	18.9 T	704
C/1999 F2	1999 02 23.50784	15 30 33.92	-03 50 08.9	18.3 T	704
C/1999 F2	1999 03 20.44702	15 33 02.60	+00 13 29.7	15.5 T	645
C/1999 F2	1999 03 20.45034	15 33 02.58	+00 13 31.8	15.5 T	645
C/1999 F2	1999 03 24.33179	15 32 41.71	+00 54 49.6	17.9 T	704
C/1999 F2	1999 03 24.34212	15 32 41.59	+00 54 56.6	18.7 T	704
C/1999 F2	1999 03 24.35247	15 32 41.61	+00 55 05.6	17.6 T	704
C/1999 F2	1999 03 24.36283	15 32 41.39	+00 55 13.1	17.6 T	704
C/1999 F2	1999 03 28.44567	15 32 06.93	+01 39 09.5	15.3 T	699
C/1999 F2	1999 03 28.46095	15 32 06.80	+01 39 19.6	15.6 T	699
C/1999 F2	1999 03 28.47623	15 32 06.65	+01 39 29.4	15.4 T	699
C/1999 F2	1999 05 12.29144	15 16 02.30	+09 10 39.8	18.5 T	704
C/1999 F2	1999 05 12.30439	15 16 01.69	+09 10 48.6	18.9 T	704
C/1999 F2	1999 05 12.31736	15 16 01.54	+09 10 57.9	18.1 T	704
C/1999 F2	1999 06 07.92247	15 05 12.38	+11 57 24.8		046
C/1999 F2	1999 06 07.96252	15 05 11.59	+11 57 35.1	16 T	046
C/1999 F2	1999 06 07.96521	15 05 11.57	+11 57 36.1		046
C/1999 F2	1999 06 07.96639	15 05 11.58	+11 57 36.2		046
C/1999 F2	1999 06 08.16484	15 05 07.76	+11 58 26.3	15.7 T	713
C/1999 F2	1999 06 08.18653	15 05 07.35	+11 58 34.1	15.4 T	713
C/1999 F2	1999 06 08.21285	15 05 06.85	+11 58 39.1	15.4 T	713

C/1999 F2	1999 06 08.28291	15 05 05.36	+11 58 57.7		711
C/1999 F2	1999 06 08.28566	15 05 05.34	+11 58 58.7		711
C/1999 F2	1999 06 08.29464	15 05 05.16	+11 59 00.7		711
C/1999 F2	1999 06 08.84225	15 04 54.57	+12 01 16.3		587
C/1999 F2	1999 06 08.90231	15 04 53.59	+12 01 34.7		587
C/1999 F2	1999 06 08.90583	15 04 53.53	+12 01 36.6		108
C/1999 F2	1999 06 08.91481	15 04 53.32	+12 01 39.6		108
C/1999 F2	1999 06 08.92465	15 04 53.12	+12 01 40.0	15.8 T	108
C/1999 F2	1999 06 08.93854	15 04 52.82	+12 01 43.4		108
C/1999 F2	1999 06 08.95555	15 04 52.53	+12 01 46.6		620
C/1999 F2	1999 06 08.96354	15 04 52.39	+12 01 48.8	15.6 T	620
C/1999 F2	1999 06 08.97384	15 04 52.21	+12 01 51.9	15.6 T	620
C/1999 F2	1999 06 09.47052	15 04 42.93	+12 03 55.3	16.1 T	402
C/1999 F2	1999 06 09.47177	15 04 42.87	+12 03 55.0		402
C/1999 F2	1999 06 09.47304	15 04 42.88	+12 03 56.1		402
C/1999 F2	1999 06 09.55799	15 04 41.22	+12 04 17.3	15.8 T	360
C/1999 F2	1999 06 09.56059	15 04 41.15	+12 04 17.7		360
C/1999 F2	1999 06 09.56285	15 04 41.11	+12 04 18.5		360
C/1999 F2	1999 06 09.62917	15 04 39.79	+12 04 36.2	15.7 T	372
C/1999 F2	1999 06 10.11701	15 04 30.78	+12 06 33.3	16.1 T	860
C/1999 F2	1999 06 10.12236	15 04 30.71	+12 06 35.0	15.7 T	860
C/1999 F2	1999 06 10.12694	15 04 30.61	+12 06 35.7	16.5 T	860
C/1999 F2	1999 06 11.58299	15 04 04.53	+12 12 16.6	15.9 T	372
C/1999 F2	1999 06 11.58509	15 04 04.46	+12 12 16.8		867
C/1999 F2	1999 06 11.59204	15 04 04.34	+12 12 18.4		867
C/1999 F2	1999 06 11.59898	15 04 04.19	+12 12 19.5		867
C/1999 F2	1999 06 11.97582	15 03 57.60	+12 13 44.8	15.5 T	620
C/1999 F2	1999 06 12.55035	15 03 47.72	+12 15 51.9	16.0 T	367
C/1999 F2	1999 06 12.55382	15 03 47.66	+12 15 52.7		367
C/1999 F2	1999 06 12.55729	15 03 47.57	+12 15 53.1		367
C/1999 F2	1999 06 12.88502	15 03 42.02	+12 17 03.6	14.8 T	504
C/1999 F2	1999 06 12.89051	15 03 41.93	+12 17 05.1	15.1 T	504
C/1999 F2	1999 06 12.89670	15 03 42.15	+12 17 07.7		108
C/1999 F2	1999 06 12.89954	15 03 41.95	+12 17 07.6		108
C/1999 F2	1999 06 14.51630	15 03 15.30	+12 22 46.8	16.1 T	402

D/1999 G1 (LINEAR)

D/1999 G1	1999 04 14.66840	13 29 27.02	-03 02 35.9	17.1 T	372
D/1999 G1	1999 05 06.56649	13 06 05.77	-04 35 52.9	17.7 T	360
D/1999 G1	1999 05 06.57135	13 06 05.44	-04 35 55.3		360
D/1999 G1	1999 05 06.57569	13 06 05.17	-04 35 56.2		360
D/1999 G1	1999 05 13.51910	12 59 47.60	-05 07 55.1	18.1 T	360
D/1999 G1	1999 05 13.52326	12 59 47.37	-05 07 55.5		360
D/1999 G1	1999 05 13.52760	12 59 47.18	-05 07 56.1		360

C/1999 H1 (Lee)

C/1999 H1	1999 04 17.98161	13 26 23.61	-68 06 50.5	10.6 T	3 860
C/1999 H1	1999 04 17.99137	13 26 13.56	-68 06 40.9	10.5 T	3 860
C/1999 H1	1999 04 18.00046	13 26 04.23	-68 06 32.6	10.5 T	3 860
C/1999 H1	1999 04 18.00593	13 25 58.59	-68 06 27.6	10.5 T	3 860
C/1999 H1	1999 04 18.01485	13 25 49.44	-68 06 19.4	10.6 T	3 860
C/1999 H1	1999 04 19.96422	12 52 20.53	-67 18 56.1	10.5 T	3 860
C/1999 H1	1999 04 19.97540	12 52 08.81	-67 18 34.4	10.2 T	3 860
C/1999 H1	1999 04 19.97911	12 52 05.17	-67 18 24.7		834

C/1999 H1	1999 04 19.98118	12 52 02.87	-67 18 24.0	10.2 T	3 860	C/1999 H1	1999 05 05.47177	09 45 36.50	-42 19 22.4		367
C/1999 H1	1999 04 19.98683	12 51 57.01	-67 18 12.2	10.1 T	3 860	C/1999 H1	1999 05 05.47451	09 45 35.51	-42 18 59.4		367
C/1999 H1	1999 04 19.99405	12 51 49.66	-67 17 57.8	10.3 T	860	C/1999 H1	1999 05 05.97140	09 42 32.77	-41 10 23.5		834
C/1999 H1	1999 04 20.00113	12 51 42.12	-67 17 44.6	10.5 T	3 860	C/1999 H1	1999 05 06.42796	09 39 51.24	-40 07 31.5		897
C/1999 H1	1999 04 20.00903	12 51 33.99	-67 17 29.6	10.0 T	3 860	C/1999 H1	1999 05 06.43447	09 39 48.98	-40 06 37.3		897
C/1999 H1	1999 04 20.02888	12 51 13.35	-67 16 48.3		834	C/1999 H1	1999 05 06.43603	09 39 48.47	-40 06 24.4	10.5 T	402
C/1999 H1	1999 04 20.06601	12 50 34.56	-67 15 34.5		834	C/1999 H1	1999 05 06.43660	09 39 48.25	-40 06 19.5		402
C/1999 H1	1999 04 20.13413	12 49 23.45	-67 13 14.3		834	C/1999 H1	1999 05 06.43716	09 39 48.05	-40 06 14.9		402
C/1999 H1	1999 04 20.15615	12 49 00.76	-67 12 28.6		834	C/1999 H1	1999 05 06.44193	09 39 46.32	-40 05 35.4		897
C/1999 H1	1999 04 20.16368	12 48 52.96	-67 12 13.3		834	C/1999 H1	1999 05 06.45602	09 39 41.51	-40 03 38.6		360
C/1999 H1	1999 04 20.16515	12 48 51.26	-67 12 10.5		834	C/1999 H1	1999 05 06.45741	09 39 41.01	-40 03 27.3		360
C/1999 H1	1999 04 20.19558	12 48 19.53	-67 11 05.6		834	C/1999 H1	1999 05 06.45880	09 39 40.52	-40 03 15.4		360
C/1999 H1	1999 04 20.21995	12 47 54.11	-67 10 13.8		834	C/1999 H1	1999 05 06.45920	09 39 40.33	-40 03 10.2	8.2 T	372
C/1999 H1	1999 04 20.24654	12 47 26.48	-67 09 16.5		834	C/1999 H1	1999 05 06.46700	09 39 37.57	-40 02 06.9	11.4 T	351
C/1999 H1	1999 04 20.28145	12 46 50.37	-67 08 01.0		834	C/1999 H1	1999 05 06.47031	09 39 36.48	-40 01 38.9		351
C/1999 H1	1999 04 22.14038	12 15 18.62	-65 45 19.0		834	C/1999 H1	1999 05 06.47731	09 39 33.97	-40 00 41.6		351
C/1999 H1	1999 04 22.16876	12 14 49.92	-65 43 48.1		834	C/1999 H1	1999 05 07.43883	09 34 15.26	-37 47 42.0		897
C/1999 H1	1999 04 22.21865	12 14 00.03	-65 41 05.0		834	C/1999 H1	1999 05 07.44365	09 34 13.63	-37 47 01.8		897
C/1999 H1	1999 04 23.04409	12 00 33.55	-64 53 10.9		834	C/1999 H1	1999 05 07.45150	09 34 11.23	-37 45 57.0		360
C/1999 H1	1999 04 23.99368	11 45 38.67	-63 49 58.8		834	C/1999 H1	1999 05 07.45272	09 34 10.84	-37 45 46.6		360
C/1999 H1	1999 04 24.01797	11 45 16.04	-63 48 14.8		834	C/1999 H1	1999 05 07.45394	09 34 10.47	-37 45 36.7		360
C/1999 H1	1999 04 24.05032	11 44 45.91	-63 45 56.7		834	C/1999 H1	1999 05 07.45590	09 34 09.69	-37 45 19.1	7.9 T	372
C/1999 H1	1999 04 27.05403	11 02 40.64	-59 30 28.2	9.8 T	3 860	C/1999 H1	1999 05 07.46458	09 34 06.78	-37 43 57.2		430
C/1999 H1	1999 04 27.06115	11 02 35.13	-59 29 46.3		3 860	C/1999 H1	1999 05 07.47370	09 34 03.97	-37 42 52.5	10.2 T	903
C/1999 H1	1999 04 27.06933	11 02 28.91	-59 28 58.2	9.8 T	3 860	C/1999 H1	1999 05 07.47813	09 34 02.55	-37 42 14.8		372
C/1999 H1	1999 04 27.07563	11 02 24.16	-59 28 20.7		3 860	C/1999 H1	1999 05 07.48083	09 34 01.67	-37 41 53.3		903
C/1999 H1	1999 04 27.09379	11 02 10.27	-59 26 33.9	9.9 T	3 860	C/1999 H1	1999 05 07.49306	09 33 57.63	-37 40 00.1		430
C/1999 H1	1999 04 27.09920	11 02 06.16	-59 26 02.7		3 860	C/1999 H1	1999 05 07.97478	09 31 28.45	-36 33 30.1		834
C/1999 H1	1999 05 02.40895	10 07 34.16	-49 10 43.5		423	C/1999 H1	1999 05 08.08814	09 30 53.54	-36 17 47.6	9.7 T	844
C/1999 H1	1999 05 02.42087	10 07 28.18	-49 09 10.6		423	C/1999 H1	1999 05 08.09470	09 30 51.51	-36 16 53.5	9.9 T	844
C/1999 H1	1999 05 02.42504	10 07 26.16	-49 08 37.4		423	C/1999 H1	1999 05 08.10344	09 30 48.87	-36 15 40.5	10.2 T	844
C/1999 H1	1999 05 03.41452	09 59 42.58	-46 58 21.0		423	C/1999 H1	1999 05 08.12389	09 30 42.69	-36 12 50.6	10.0 T	844
C/1999 H1	1999 05 03.42285	09 59 38.87	-46 57 14.6		423	C/1999 H1	1999 05 08.44708	09 29 07.29	-35 28 35.5		900
C/1999 H1	1999 05 03.43742	09 59 32.21	-46 55 17.1		423	C/1999 H1	1999 05 08.45301	09 29 05.47	-35 27 46.4		900
C/1999 H1	1999 05 04.36958	09 52 51.52	-44 49 51.9	12.9 T	428	C/1999 H1	1999 05 08.95132	09 26 42.83	-34 19 12.1		834
C/1999 H1	1999 05 04.37065	09 52 51.05	-44 49 43.4	13.0 T	428	C/1999 H1	1999 05 08.98610	09 26 32.75	-34 14 22.2		834
C/1999 H1	1999 05 04.37169	09 52 50.63	-44 49 34.9	13.0 T	428	C/1999 H1	1999 05 11.37596	09 16 24.07	-28 52 31.7	13.9 N	428
C/1999 H1	1999 05 04.40514	09 52 36.56	-44 45 02.0		423	C/1999 H1	1999 05 11.37692	09 16 23.84	-28 52 24.8	13.9 N	428
C/1999 H1	1999 05 04.41138	09 52 33.82	-44 44 11.3		423	C/1999 H1	1999 05 11.37760	09 16 23.68	-28 52 19.2	13.9 N	428
C/1999 H1	1999 05 04.41763	09 52 31.34	-44 43 20.3		423	C/1999 H1	1999 05 11.45359	09 16 06.08	-28 42 27.9		360
C/1999 H1	1999 05 04.42597	09 52 27.79	-44 42 12.4		423	C/1999 H1	1999 05 11.45498	09 16 05.76	-28 42 16.9		360
C/1999 H1	1999 05 04.91240	09 49 12.35	-43 35 55.7	10.2 T	860	C/1999 H1	1999 05 11.45602	09 16 05.50	-28 42 08.8		360
C/1999 H1	1999 05 04.91748	09 49 10.30	-43 35 14.8	10.2 T	860	C/1999 H1	1999 05 11.45612	09 16 05.42	-28 42 06.8		900
C/1999 H1	1999 05 04.92396	09 49 07.68	-43 34 21.8	10.3 T	860	C/1999 H1	1999 05 11.46067	09 16 04.32	-28 41 31.2		900
C/1999 H1	1999 05 04.92759	09 49 06.27	-43 33 52.6	10.2 T	860	C/1999 H1	1999 05 11.48189	09 15 59.39	-28 38 43.9	10.9 T	351
C/1999 H1	1999 05 04.93035	09 49 05.20	-43 33 30.3	10.2 T	860	C/1999 H1	1999 05 11.49576	09 15 56.16	-28 36 54.3		903
C/1999 H1	1999 05 04.93312	09 49 04.12	-43 33 07.8	10.2 T	860	C/1999 H1	1999 05 11.50072	09 15 54.99	-28 36 15.2		903
C/1999 H1	1999 05 04.93573	09 49 03.05	-43 32 46.6	10.2 T	860	C/1999 H1	1999 05 11.50212	09 15 54.71	-28 36 03.6		903
C/1999 H1	1999 05 05.45942	09 45 41.08	-42 21 05.8	11.0 T	351	C/1999 H1	1999 05 11.50947	09 15 53.01	-28 35 04.2		351
C/1999 H1	1999 05 05.46413	09 45 39.31	-42 20 25.9		351	C/1999 H1	1999 05 11.51193	09 15 52.44	-28 34 45.1		351
C/1999 H1	1999 05 05.46691	09 45 38.22	-42 20 03.2		351	C/1999 H1	1999 05 12.02867	09 13 56.88	-27 27 08.3		758
C/1999 H1	1999 05 05.46882	09 45 37.36	-42 19 47.8		351	C/1999 H1	1999 05 12.03024	09 13 56.45	-27 26 55.7		758
C/1999 H1	1999 05 05.46903	09 45 37.53	-42 19 44.8	10.4 T	367	C/1999 H1	1999 05 12.06575	09 13 48.50	-27 22 17.4		758

1999 JUNE 22

M.P.C. 34683

C/1999 H1	1999 05 13.35016	09 09 21.08	-24 37 37.9	14.6 N	428
C/1999 H1	1999 05 13.35086	09 09 20.95	-24 37 33.0	15.0 N	428
C/1999 H1	1999 05 13.35153	09 09 20.80	-24 37 27.6	14.7 N	428
C/1999 H1	1999 05 13.49172	09 08 52.77	-24 19 59.1		367
C/1999 H1	1999 05 13.49378	09 08 52.35	-24 19 43.5		367
C/1999 H1	1999 05 13.49584	09 08 51.98	-24 19 27.7		367
C/1999 H1	1999 05 14.08787	09 06 57.97	-23 05 34.3	9.9 T	860
C/1999 H1	1999 05 14.09042	09 06 57.55	-23 05 16.6	9.7 T	860
C/1999 H1	1999 05 14.09172	09 06 57.34	-23 05 05.8	9.7 T	860
C/1999 H1	1999 05 14.09292	09 06 57.07	-23 04 57.3	10.0 T	860
C/1999 H1	1999 05 14.09390	09 06 56.91	-23 04 49.9	10.0 T	860
C/1999 H1	1999 05 17.06920	08 58 35.72	-17 14 05.6		860
C/1999 H1	1999 05 17.07050	08 58 35.58	-17 13 57.0		860
C/1999 H1	1999 05 17.07186	08 58 35.30	-17 13 46.6		860
C/1999 H1	1999 05 17.38229	08 57 49.31	-16 39 10.8		430
C/1999 H1	1999 05 17.43125	08 57 41.93	-16 33 44.8		430
C/1999 H1	1999 05 17.44979	08 57 39.25	-16 31 53.2		897
C/1999 H1	1999 05 17.45637	08 57 38.33	-16 31 08.5		897
C/1999 H1	1999 05 17.46061	08 57 37.64	-16 30 41.1		897
C/1999 H1	1999 05 17.46910	08 57 36.51	-16 29 34.4		321
C/1999 H1	1999 05 17.47079	08 57 36.26	-16 29 23.0		321
C/1999 H1	1999 05 17.47148	08 57 36.15	-16 29 18.4		321
C/1999 H1	1999 05 17.47218	08 57 36.05	-16 29 13.9		321
C/1999 H1	1999 05 17.47287	08 57 35.95	-16 29 09.2		321
C/1999 H1	1999 05 17.47356	08 57 35.86	-16 29 04.5		321
C/1999 H1	1999 05 17.48271	08 57 34.39	-16 28 14.1		900
C/1999 H1	1999 05 17.48678	08 57 33.78	-16 27 47.1		900
C/1999 H1	1999 05 18.03932	08 56 14.36	-15 27 19.6	10.8 T	758
C/1999 H1	1999 05 18.04186	08 56 13.99	-15 27 02.8	10.8 T	758
C/1999 H1	1999 05 18.04714	08 56 13.24	-15 26 29.0	10.6 T	758
C/1999 H1	1999 05 18.39028	08 55 25.39	-14 49 23.7		430
C/1999 H1	1999 05 18.82322	08 54 26.55	-14 03 41.2		118
C/1999 H1	1999 05 18.82456	08 54 26.31	-14 03 32.3		118
C/1999 H1	1999 05 18.82597	08 54 26.11	-14 03 24.3		118
C/1999 H1	1999 05 19.03447	08 53 58.49	-13 41 32.4	10.5 T	758
C/1999 H1	1999 05 19.03740	08 53 58.07	-13 41 13.8	10.5 T	758
C/1999 H1	1999 05 19.03949	08 53 57.79	-13 41 00.0	10.7 T	758
C/1999 H1	1999 05 19.04157	08 53 57.52	-13 40 47.7	10.6 T	758
C/1999 H1	1999 05 19.37778	08 53 13.80	-13 05 46.1		430
C/1999 H1	1999 05 19.41667	08 53 08.68	-13 01 45.6		430
C/1999 H1	1999 05 20.45766	08 50 59.32	-11 17 02.1		897
C/1999 H1	1999 05 20.46095	08 50 58.89	-11 16 42.7		402
C/1999 H1	1999 05 20.46186	08 50 58.79	-11 16 37.4		402
C/1999 H1	1999 05 20.46262	08 50 58.71	-11 16 32.9		360
C/1999 H1	1999 05 20.46278	08 50 58.67	-11 16 31.7		402
C/1999 H1	1999 05 20.46400	08 50 58.54	-11 16 24.5		360
C/1999 H1	1999 05 20.46461	08 50 58.40	-11 16 20.9		897
C/1999 H1	1999 05 20.46539	08 50 58.37	-11 16 16.5		360
C/1999 H1	1999 05 20.47278	08 50 57.41	-11 15 33.2		897
C/1999 H1	1999 05 20.48287	08 50 56.17	-11 14 32.9		355
C/1999 H1	1999 05 20.48581	08 50 55.80	-11 14 15.2		355
C/1999 H1	1999 05 20.48931	08 50 55.41	-11 13 54.2		355
C/1999 H1	1999 05 20.86068	08 50 11.48	-10 37 33.7		620

C/1999 H1	1999 05 22.01476	08 48 01.07	-08 47 45.8		860
C/1999 H1	1999 05 22.01868	08 48 00.73	-08 47 23.4		860
C/1999 H1	1999 05 22.02630	08 47 59.87	-08 46 41.0		860
C/1999 H1	1999 05 22.02904	08 47 59.50	-08 46 26.3		860
C/1999 H1	1999 05 22.03477	08 47 58.93	-08 45 54.5		860
C/1999 H1	1999 05 23.80022	08 44 57.06	-06 07 58.8	12.9 N	162
C/1999 H1	1999 05 23.84284	08 44 52.60	-06 04 18.8	12.9 N	162
C/1999 H1	1999 05 24.83544	08 43 18.89	-04 40 33.6		046
C/1999 H1	1999 05 24.83590	08 43 18.84	-04 40 31.6		046
C/1999 H1	1999 05 24.83681	08 43 18.78	-04 40 27.5		046
C/1999 H1	1999 05 24.98722	08 43 05.12	-04 27 51.7		834
C/1999 H1	1999 05 29.45039	08 37 02.38	+01 07 38.9		402
C/1999 H1	1999 05 29.45096	08 37 02.35	+01 07 41.3		402
C/1999 H1	1999 05 29.45152	08 37 02.30	+01 07 43.6		402
C/1999 H1	1999 05 29.46535	08 37 01.31	+01 08 41.7		900
C/1999 H1	1999 05 29.46997	08 37 00.91	+01 09 01.0		900
C/1999 H1	1999 05 29.47300	08 37 00.70	+01 09 12.2	9.3 T	351
C/1999 H1	1999 05 29.48132	08 37 00.10	+01 09 46.6		351
C/1999 H1	1999 05 29.48483	08 36 59.87	+01 10 01.2		351
C/1999 H1	1999 05 30.79892	08 35 27.61	+02 37 51.4	11.3 N	162
C/1999 H1	1999 05 31.47670	08 34 41.91	+03 21 27.4	7.7 T	372
C/1999 H1	1999 05 31.48259	08 34 41.54	+03 21 49.1	7.7 T	372
C/1999 H1	1999 06 01.35709	08 33 44.63	+04 16 33.2	12.9 N	428
C/1999 H1	1999 06 01.38770	08 33 42.59	+04 18 25.4	12.8 N	428
C/1999 H1	1999 06 01.38882	08 33 42.51	+04 18 29.7	12.6 N	428
C/1999 H1	1999 06 01.38992	08 33 42.44	+04 18 33.9	12.8 N	428
C/1999 H1	1999 06 03.35935	08 31 41.21	+06 14 57.9	12.9 N	422
C/1999 H1	1999 06 03.36116	08 31 41.10	+06 15 04.2	12.7 N	422
C/1999 H1	1999 06 03.36151	08 31 41.06	+06 15 05.3	12.7 N	422
C/1999 H1	1999 06 04.46596	08 30 36.47	+07 16 39.5		402
C/1999 H1	1999 06 04.46688	08 30 36.42	+07 16 42.6		402
C/1999 H1	1999 06 04.46779	08 30 36.37	+07 16 45.6		402
C/1999 H1	1999 06 06.37791	08 28 49.82	+08 58 07.2	12.8 N	422
C/1999 H1	1999 06 06.37853	08 28 49.79	+08 58 09.0	12.8 N	422
C/1999 H1	1999 06 09.46238	08 26 07.82	+11 28 24.2		402
C/1999 H1	1999 06 09.46329	08 26 07.78	+11 28 26.7		402
C/1999 H1	1999 06 09.46420	08 26 07.72	+11 28 29.4		402
C/1999 H1	1999 06 09.46956	08 26 07.42	+11 28 44.7		360
C/1999 H1	1999 06 09.47095	08 26 07.34	+11 28 48.4		360
C/1999 H1	1999 06 09.47234	08 26 07.29	+11 28 52.6		360
C/1999 H1	1999 06 11.47535	08 24 26.70	+12 59 02.8	6.9 T	372
C/1999 H1	1999 06 19.33716	08 18 02.16	+18 08 55.0	11.4 N	422
C/1999 H1	1999 06 19.33776	08 18 02.14	+18 08 56.1	11.4 N	422

C/1999 H3 (LINEAR)

C/1999 H3	1999 04 29.70629	19 07 28.53	+46 53 54.6		897
C/1999 H3	1999 04 29.71234	19 07 27.99	+46 54 02.9	15.1 T	897
C/1999 H3	1999 04 30.53748	19 06 11.44	+47 12 12.1	15.1 T	402
C/1999 H3	1999 04 30.53874	19 06 11.35	+47 12 13.4		402
C/1999 H3	1999 04 30.54000	19 06 11.19	+47 12 15.3		402
C/1999 H3	1999 05 05.69479	18 57 18.44	+49 04 33.9	16.0 T	372
C/1999 H3	1999 05 05.71667	18 57 16.00	+49 05 01.3		372
C/1999 H3	1999 05 06.61354	18 55 33.50	+49 24 11.3	16.0 T	372

C/1999 H3	1999 05 06.63085	18 55 31.47	+49 24 32.1	14.5 T	365	C/1999 H3	1999 05 21.59160	18 19 08.52	+54 14 38.3		903
C/1999 H3	1999 05 06.64288	18 55 30.13	+49 24 48.9		365	C/1999 H3	1999 05 21.59568	18 19 07.84	+54 14 41.9		903
C/1999 H3	1999 05 06.73163	18 55 19.73	+49 26 41.4		903	C/1999 H3	1999 05 21.59949	18 19 07.15	+54 14 45.6	15.0 T	903
C/1999 H3	1999 05 06.73934	18 55 18.72	+49 26 52.6	14.1 T	903	C/1999 H3	1999 05 22.20923	18 17 18.84	+54 24 53.0	16.8 T	750
C/1999 H3	1999 05 07.57707	18 53 39.94	+49 44 38.1	14.1 T	903	C/1999 H3	1999 05 22.21421	18 17 18.00	+54 24 57.0	17.1 T	750
C/1999 H3	1999 05 07.58977	18 53 38.42	+49 44 54.3		903	C/1999 H3	1999 05 22.21841	18 17 17.21	+54 25 01.3	17.3 T	750
C/1999 H3	1999 05 07.65955	18 53 30.07	+49 46 24.1	14.6 T	360	C/1999 H3	1999 05 27.15254	18 01 46.56	+55 39 54.7	16.2 T	750
C/1999 H3	1999 05 07.66163	18 53 29.85	+49 46 27.0		360	C/1999 H3	1999 05 27.16042	18 01 44.98	+55 40 01.4	16.3 T	750
C/1999 H3	1999 05 07.66389	18 53 29.57	+49 46 30.0		360	C/1999 H3	1999 05 27.20091	18 01 36.95	+55 40 35.6	16.6 T	750
C/1999 H3	1999 05 08.60359	18 51 35.02	+50 06 16.1		355	C/1999 H3	1999 05 27.99190	17 58 59.03	+55 51 21.3		046
C/1999 H3	1999 05 08.61067	18 51 34.25	+50 06 25.6		355	C/1999 H3	1999 05 27.99317	17 58 58.77	+55 51 22.4		046
C/1999 H3	1999 05 08.61343	18 51 33.87	+50 06 29.0		355	C/1999 H3	1999 05 27.99428	17 58 58.53	+55 51 23.2		046
C/1999 H3	1999 05 08.62333	18 51 32.67	+50 06 42.3		352	C/1999 H3	1999 05 29.53465	17 53 45.12	+56 11 15.8	15.2 T	351
C/1999 H3	1999 05 08.62750	18 51 32.22	+50 06 45.9		352	C/1999 H3	1999 05 29.54134	17 53 43.74	+56 11 21.5		351
C/1999 H3	1999 05 08.63167	18 51 31.63	+50 06 52.0		352	C/1999 H3	1999 05 29.54713	17 53 42.55	+56 11 26.4		351
C/1999 H3	1999 05 11.69972	18 44 53.42	+51 10 07.8	14.3 T	900	C/1999 H3	1999 05 29.59354	17 53 32.79	+56 12 01.9		355
C/1999 H3	1999 05 11.71296	18 44 51.61	+51 10 24.2		900	C/1999 H3	1999 05 29.59561	17 53 32.31	+56 12 02.7		355
C/1999 H3	1999 05 12.42396	18 43 13.91	+51 24 41.9	16.9 T	704	C/1999 H3	1999 05 29.59817	17 53 31.81	+56 12 04.9		355
C/1999 H3	1999 05 12.43271	18 43 12.56	+51 24 54.5	17.8 T	704	C/1999 H3	1999 05 29.62971	17 53 25.41	+56 12 29.1	14.4 T	900
C/1999 H3	1999 05 12.44207	18 43 11.36	+51 25 08.1		704	C/1999 H3	1999 05 29.64597	17 53 22.02	+56 12 40.8		900
C/1999 H3	1999 05 12.45099	18 43 09.76	+51 25 19.2	17.2 T	704	C/1999 H3	1999 05 29.67876	17 53 15.09	+56 13 05.1	15.2 T	903
C/1999 H3	1999 05 13.73108	18 40 08.98	+51 50 43.8	14.6 T	360	C/1999 H3	1999 05 29.68701	17 53 13.49	+56 13 10.9		903
C/1999 H3	1999 05 13.73351	18 40 08.61	+51 50 46.5		360	C/1999 H3	1999 05 30.19289	17 51 28.60	+56 19 21.4	16.5 T	750
C/1999 H3	1999 05 13.89868	18 39 44.92	+51 54 00.1	15.2 T	046	C/1999 H3	1999 05 30.20920	17 51 25.24	+56 19 32.8	16.7 T	750
C/1999 H3	1999 05 13.89983	18 39 44.75	+51 54 01.6		046	C/1999 H3	1999 05 30.22228	17 51 22.33	+56 19 41.2	16.9 T	750
C/1999 H3	1999 05 13.90113	18 39 44.56	+51 54 03.0		046	C/1999 H3	1999 05 31.72679	17 46 05.19	+56 37 06.5	14.8 T	402
C/1999 H3	1999 05 13.90271	18 39 44.37	+51 54 04.4		046	C/1999 H3	1999 05 31.72841	17 46 04.87	+56 37 07.8		402
C/1999 H3	1999 05 13.90384	18 39 44.17	+51 54 06.3		046	C/1999 H3	1999 05 31.73001	17 46 04.50	+56 37 08.7		402
C/1999 H3	1999 05 16.63189	18 32 53.43	+52 46 30.2		903	C/1999 H3	1999 06 03.39073	17 36 27.62	+57 04 18.3	17.0 T	704
C/1999 H3	1999 05 16.63707	18 32 52.74	+52 46 35.2	12.8 T	903	C/1999 H3	1999 06 03.39815	17 36 25.70	+57 04 20.8	17.3 T	704
C/1999 H3	1999 05 17.56141	18 30 26.59	+53 03 44.4		903	C/1999 H3	1999 06 04.56336	17 32 07.84	+57 14 43.0		352
C/1999 H3	1999 05 17.62505	18 30 16.36	+53 04 54.3		903	C/1999 H3	1999 06 04.56752	17 32 06.84	+57 14 46.0		352
C/1999 H3	1999 05 17.63205	18 30 15.25	+53 05 02.5		903	C/1999 H3	1999 06 04.57169	17 32 06.07	+57 14 48.9		352
C/1999 H3	1999 05 19.13647	18 26 09.69	+53 32 14.6	17.3 T	750	C/1999 H3	1999 06 04.58042	17 32 04.13	+57 14 53.4	14.0 T	886
C/1999 H3	1999 05 19.14567	18 26 08.14	+53 32 24.9	17.8 T	750	C/1999 H3	1999 06 04.58703	17 32 02.55	+57 14 56.3		355
C/1999 H3	1999 05 19.16809	18 26 04.37	+53 32 49.1	18.4 T	750	C/1999 H3	1999 06 04.59009	17 32 01.84	+57 14 58.4	14.5 T	355
C/1999 H3	1999 05 19.17429	18 26 03.40	+53 32 55.5	17.7 T	750	C/1999 H3	1999 06 04.59324	17 32 01.13	+57 14 59.9		355
C/1999 H3	1999 05 20.30814	18 22 51.88	+53 52 46.9	17.0 T	704	C/1999 H3	1999 06 04.59364	17 32 01.06	+57 14 59.6		886
C/1999 H3	1999 05 20.31823	18 22 49.91	+53 52 59.1	17.2 T	704	C/1999 H3	1999 06 08.22664	17 18 17.65	+57 41 10.7	16.7 T	750
C/1999 H3	1999 05 20.32832	18 22 48.19	+53 53 09.3	17.3 T	704	C/1999 H3	1999 06 08.22803	17 18 17.31	+57 41 11.6	16.6 T	750
C/1999 H3	1999 05 20.33843	18 22 46.41	+53 53 20.6		704	C/1999 H3	1999 06 08.22941	17 18 17.03	+57 41 11.5	16.9 T	750
C/1999 H3	1999 05 20.34917	18 22 44.35	+53 53 30.5		704	C/1999 H3	1999 06 08.23080	17 18 16.68	+57 41 12.2	16.7 T	750
C/1999 H3	1999 05 20.51615	18 22 16.06	+53 56 23.4	14.8 T	402	C/1999 H3	1999 06 08.23358	17 18 16.08	+57 41 13.3	16.2 T	750
C/1999 H3	1999 05 20.51776	18 22 15.84	+53 56 26.3		402	C/1999 H3	1999 06 08.66337	17 16 37.18	+57 43 41.7	14.6 T	360
C/1999 H3	1999 05 20.62291	18 21 57.65	+53 58 13.8	14.8 T	355	C/1999 H3	1999 06 08.66580	17 16 36.59	+57 43 42.6		360
C/1999 H3	1999 05 20.62917	18 21 56.53	+53 58 20.2		355	C/1999 H3	1999 06 08.92306	17 15 37.53	+57 45 05.8		143
C/1999 H3	1999 05 20.63377	18 21 55.75	+53 58 25.1		355	C/1999 H3	1999 06 08.92471	17 15 37.13	+57 45 06.2		143
C/1999 H3	1999 05 20.67293	18 21 48.85	+53 59 04.7	15.1 T	903	C/1999 H3	1999 06 08.92637	17 15 36.70	+57 45 06.5		143
C/1999 H3	1999 05 20.68035	18 21 47.58	+53 59 12.9		903	C/1999 H3	1999 06 08.93425	17 15 34.85	+57 45 08.9		143
C/1999 H3	1999 05 20.71222	18 21 42.05	+53 59 46.4	14.8 T	897	C/1999 H3	1999 06 08.93590	17 15 34.49	+57 45 09.6		143
C/1999 H3	1999 05 20.71675	18 21 41.25	+53 59 50.4		897	C/1999 H3	1999 06 08.93755	17 15 34.12	+57 45 10.2		143
C/1999 H3	1999 05 20.71892	18 21 40.95	+53 59 53.3	14.5 T	360	C/1999 H3	1999 06 14.56851	16 53 45.41	+58 03 48.7	14.2 T	355
C/1999 H3	1999 05 20.72135	18 21 40.52	+53 59 55.7		360	C/1999 H3	1999 06 14.57277	16 53 44.42	+58 03 49.3		355

C/1999 H3	1999 06 14.57898	16 53 43.00	+58 03 50.2		355
C/1999 H3	1999 06 15.15860	16 51 28.29	+58 04 25.0	17.6 T	750
C/1999 H3	1999 06 15.17066	16 51 25.38	+58 04 25.8	17.2 T	750
C/1999 H3	1999 06 15.19864	16 51 18.81	+58 04 26.9	15.7 T	750
C/1999 H3	1999 06 17.89758	16 40 53.98	+58 03 52.5	14.9 T	610
C/1999 H3	1999 06 17.90175	16 40 53.00	+58 03 52.3		610
C/1999 H3	1999 06 17.90590	16 40 52.02	+58 03 52.2		610
C/1999 H3	1999 06 17.91006	16 40 51.04	+58 03 52.1		610
C/1999 H3	1999 06 17.91421	16 40 50.06	+58 03 51.9		610

C/1999 J1 (SOHO)

C/1999 J1	1999 05 07.80424	03 04 50.3	+14 55 56		249
Geocentric position (AU)	+0.00684449	+0.00851457	+0.00272223		
C/1999 J1	1999 05 07.86257	03 04 20.0	+15 04 10		249
Geocentric position (AU)	+0.00684301	+0.00851655	+0.00272265		
C/1999 J1	1999 05 07.90423	03 03 57.5	+15 09 58		249
Geocentric position (AU)	+0.00684196	+0.00851797	+0.00272296		
C/1999 J1	1999 05 07.92924	03 03 44.5	+15 13 33		249
Geocentric position (AU)	+0.00684133	+0.00851882	+0.00272314		
C/1999 J1	1999 05 07.97099	03 03 18.6	+15 18 46		249
Geocentric position (AU)	+0.00684027	+0.00852024	+0.00272345		
C/1999 J1	1999 05 07.98756	03 03 08.9	+15 21 05		249
Geocentric position (AU)	+0.00683985	+0.00852080	+0.00272357		
C/1999 J1	1999 05 08.02924	03 02 47.9	+15 28 19		249
Geocentric position (AU)	+0.00683880	+0.00852222	+0.00272387		
C/1999 J1	1999 05 08.07645	03 02 22.0	+15 35 05		249
Geocentric position (AU)	+0.00683760	+0.00852383	+0.00272422		
C/1999 J1	1999 05 08.10145	03 02 04.6	+15 38 47		249
Geocentric position (AU)	+0.00683697	+0.00852468	+0.00272441		
C/1999 J1	1999 05 08.14321	03 01 39.3	+15 45 34		249
Geocentric position (AU)	+0.00683590	+0.00852610	+0.00272472		
C/1999 J1	1999 05 08.18482	03 01 10.6	+15 52 59		249
Geocentric position (AU)	+0.00683485	+0.00852751	+0.00272503		
C/1999 J1	1999 05 08.22646	03 00 43.2	+16 00 19		249
Geocentric position (AU)	+0.00683379	+0.00852893	+0.00272535		
C/1999 J1	1999 05 08.24312	03 00 30.6	+16 04 16		249
Geocentric position (AU)	+0.00683336	+0.00852950	+0.00272547		

C/1999 J2 (Skiff)

C/1999 J2	1999 05 12.33520	16 59 56.30	+63 43 22.4	16.7 T	704
C/1999 J2	1999 05 12.35400	16 59 54.97	+63 43 22.2	17.7 T	704
C/1999 J2	1999 05 12.36305	16 59 53.61	+63 43 20.9	18.7 T	704
C/1999 J2	1999 05 12.37203	16 59 52.75	+63 43 22.9	17.8 T	704
C/1999 J2	1999 05 13.40333	16 58 28.92	+63 43 15.4	16.0 T	699
C/1999 J2	1999 05 13.42119	16 58 27.59	+63 43 15.7		699
C/1999 J2	1999 05 13.43905	16 58 26.12	+63 43 15.2		699
C/1999 J2	1999 05 13.87581	16 57 50.18	+63 43 06.8	15.5 T	046
C/1999 J2	1999 05 13.87745	16 57 50.08	+63 43 07.3		046
C/1999 J2	1999 05 13.87869	16 57 49.95	+63 43 06.9		046
C/1999 J2	1999 05 13.88176	16 57 49.70	+63 43 07.0		046
C/1999 J2	1999 05 13.88312	16 57 49.54	+63 43 07.0		046
C/1999 J2	1999 05 14.03905	16 57 36.80	+63 43 05.1		758
C/1999 J2	1999 05 14.04486	16 57 36.31	+63 43 04.2		758
C/1999 J2	1999 05 14.04969	16 57 35.94	+63 43 03.2		758

C/1999 J2	1999 05 14.05766	16 57 35.35	+63 43 02.9		758
C/1999 J2	1999 05 14.09965	16 57 31.90	+63 43 02.9	14.8 T	784
C/1999 J2	1999 05 14.10833	16 57 31.08	+63 43 02.8	15.4 T	784
C/1999 J2	1999 05 14.12396	16 57 29.85	+63 43 02.5	15.1 T	784
C/1999 J2	1999 05 14.15854	16 57 27.24	+63 43 01.9		719
C/1999 J2	1999 05 14.16153	16 57 26.86	+63 43 02.0		719
C/1999 J2	1999 05 14.23733	16 57 20.52	+63 42 59.7	15.8 T	713
C/1999 J2	1999 05 14.25781	16 57 18.85	+63 42 59.6	15.4 T	713
C/1999 J2	1999 05 14.26105	16 57 18.55	+63 42 59.5		719
C/1999 J2	1999 05 14.26270	16 57 18.42	+63 43 00.4		719
C/1999 J2	1999 05 14.27058	16 57 17.79	+63 42 59.5	15.7 T	713
C/1999 J2	1999 05 14.53831	16 56 55.77	+63 42 52.8	15.7 T	367
C/1999 J2	1999 05 14.54248	16 56 55.40	+63 42 52.7		367
C/1999 J2	1999 05 14.54664	16 56 55.05	+63 42 52.4		367
C/1999 J2	1999 05 14.55081	16 56 54.66	+63 42 52.1		367
C/1999 J2	1999 05 14.63194	16 56 47.98	+63 42 51.7	16.2 T	372
C/1999 J2	1999 05 14.68646	16 56 43.28	+63 42 50.0	16.3 T	372
C/1999 J2	1999 05 14.69809	16 56 42.45	+63 42 49.1	15.9 T	360
C/1999 J2	1999 05 14.70069	16 56 42.22	+63 42 49.2		360
C/1999 J2	1999 05 14.70330	16 56 41.98	+63 42 49.1		360
C/1999 J2	1999 05 14.72294	16 56 40.41	+63 42 48.6	16.0 T	867
C/1999 J2	1999 05 14.72954	16 56 39.84	+63 42 48.5		867
C/1999 J2	1999 05 14.73613	16 56 39.30	+63 42 48.4		867
C/1999 J2	1999 05 14.90046	16 56 25.86	+63 42 43.4	15.9 T	620
C/1999 J2	1999 05 14.92777	16 56 23.58	+63 42 42.6	15.9 T	620
C/1999 J2	1999 05 14.96574	16 56 20.36	+63 42 41.4	16.0 T	620
C/1999 J2	1999 05 15.94523	16 54 59.18	+63 42 07.5	15.0 T	118
C/1999 J2	1999 05 15.94788	16 54 58.95	+63 42 07.3		118
C/1999 J2	1999 05 15.95066	16 54 58.71	+63 42 07.6		118
C/1999 J2	1999 05 16.08113	16 54 47.87	+63 42 02.0		046
C/1999 J2	1999 05 16.08218	16 54 47.69	+63 42 02.9		046
C/1999 J2	1999 05 16.23966	16 54 34.93	+63 41 56.1	15.4 T	699
C/1999 J2	1999 05 16.24985	16 54 34.08	+63 41 55.8		699
C/1999 J2	1999 05 16.26003	16 54 33.19	+63 41 55.7		699
C/1999 J2	1999 05 16.50312	16 54 12.88	+63 41 43.8	15.7 T	367
C/1999 J2	1999 05 16.50937	16 54 12.35	+63 41 43.4		367
C/1999 J2	1999 05 16.51563	16 54 11.76	+63 41 43.4		367
C/1999 J2	1999 05 16.60285	16 54 04.54	+63 41 39.1	15.9 T	903
C/1999 J2	1999 05 16.61544	16 54 03.46	+63 41 39.3		903
C/1999 J2	1999 05 16.61964	16 54 03.10	+63 41 39.3		903
C/1999 J2	1999 05 16.88745	16 53 40.71	+63 41 26.2		108
C/1999 J2	1999 05 16.89378	16 53 40.22	+63 41 24.6	15.7 T	557
C/1999 J2	1999 05 16.89671	16 53 40.21	+63 41 24.9		108
C/1999 J2	1999 05 16.90203	16 53 39.46	+63 41 22.7	16.5 T	108
C/1999 J2	1999 05 16.92075	16 53 37.97	+63 41 23.3		557
C/1999 J2	1999 05 17.02946	16 53 28.86	+63 41 17.6	14.9 T	046
C/1999 J2	1999 05 17.03117	16 53 28.77	+63 41 17.5	15.9 N	046
C/1999 J2	1999 05 17.03233	16 53 28.66	+63 41 17.5		046
C/1999 J2	1999 05 17.03350	16 53 28.59	+63 41 17.3		046
C/1999 J2	1999 05 17.03475	16 53 28.51	+63 41 17.5		046
C/1999 J2	1999 05 17.10043	16 53 23.16	+63 41 14.1	15.5 T	758
C/1999 J2	1999 05 17.10245	16 53 22.94	+63 41 14.8	15.2 T	758
C/1999 J2	1999 05 17.10524	16 53 22.78	+63 41 14.0	15.3 T	758

C/1999 J2	1999 05 17.39199	16 52 58.70	+63 40 59.8	15.8 T	699	C/1999 J2	1999 05 20.63488	16 48 26.25	+63 37 02.2		903
C/1999 J2	1999 05 17.40219	16 52 57.89	+63 40 59.0		699	C/1999 J2	1999 05 20.68630	16 48 21.74	+63 36 57.0	15.5 T	897
C/1999 J2	1999 05 17.41237	16 52 56.78	+63 40 58.3		699	C/1999 J2	1999 05 20.69672	16 48 20.88	+63 36 56.1	15.6 T	897
C/1999 J2	1999 05 17.50139	16 52 49.60	+63 40 52.3	15.8 T	367	C/1999 J2	1999 05 21.15324	16 47 42.73	+63 36 13.2	15.6 T	735
C/1999 J2	1999 05 17.50714	16 52 49.23	+63 40 52.7	16.0 T	365	C/1999 J2	1999 05 21.20967	16 47 37.98	+63 36 07.6	15.7 T	735
C/1999 J2	1999 05 17.50764	16 52 49.07	+63 40 52.1		367	C/1999 J2	1999 05 21.30247	16 47 29.68	+63 35 58.9		732
C/1999 J2	1999 05 17.51389	16 52 48.50	+63 40 51.6		367	C/1999 J2	1999 05 21.30730	16 47 29.29	+63 35 58.7		732
C/1999 J2	1999 05 17.52250	16 52 47.86	+63 40 51.0		365	C/1999 J2	1999 05 21.31214	16 47 28.89	+63 35 58.4		732
C/1999 J2	1999 05 17.54235	16 52 46.14	+63 40 50.4	15.8 T	897	C/1999 J2	1999 05 21.60551	16 47 04.07	+63 35 28.6	16.2 T	903
C/1999 J2	1999 05 17.56272	16 52 44.46	+63 40 49.0	15.6 T	897	C/1999 J2	1999 05 21.61935	16 47 02.92	+63 35 27.3		903
C/1999 J2	1999 05 17.56936	16 52 43.63	+63 40 48.4		897	C/1999 J2	1999 05 22.22712	16 46 11.75	+63 34 22.8	17.5 T	750
C/1999 J2	1999 05 17.58451	16 52 42.49	+63 40 48.7		903	C/1999 J2	1999 05 22.24795	16 46 09.89	+63 34 19.4	16.2 T	750
C/1999 J2	1999 05 17.58871	16 52 42.25	+63 40 48.3		903	C/1999 J2	1999 05 22.74340	16 45 27.58	+63 33 25.3	16.0 T	372
C/1999 J2	1999 05 17.88566	16 52 17.34	+63 40 29.7		557	C/1999 J2	1999 05 23.32744	16 44 38.29	+63 32 16.1	15.9 T	840
C/1999 J2	1999 05 17.89639	16 52 16.43	+63 40 29.1		557	C/1999 J2	1999 05 23.36566	16 44 34.86	+63 32 12.0	15.8 T	840
C/1999 J2	1999 05 18.15002	16 51 55.49	+63 40 14.1	16.1 T	726	C/1999 J2	1999 05 23.39163	16 44 32.98	+63 32 08.7	15.7 T	697
C/1999 J2	1999 05 18.16104	16 51 54.62	+63 40 13.0	16.4 T	726	C/1999 J2	1999 05 23.39709	16 44 32.50	+63 32 08.0	15.9 T	697
C/1999 J2	1999 05 18.17063	16 51 53.83	+63 40 12.6	16.1 T	726	C/1999 J2	1999 05 23.40322	16 44 31.97	+63 32 07.2	15.7 T	697
C/1999 J2	1999 05 18.22880	16 51 48.74	+63 40 09.0	15.6 T	713	C/1999 J2	1999 05 23.40757	16 44 31.59	+63 32 06.6	15.9 T	697
C/1999 J2	1999 05 18.25867	16 51 46.19	+63 40 07.8	15.5 T	713	C/1999 J2	1999 05 23.41117	16 44 31.29	+63 32 06.2	16.0 T	697
C/1999 J2	1999 05 18.27394	16 51 44.94	+63 40 05.8	15.7 T	713	C/1999 J2	1999 05 23.41451	16 44 31.01	+63 32 05.7	15.9 T	697
C/1999 J2	1999 05 18.30089	16 51 42.59	+63 40 03.7	15.7 T	713	C/1999 J2	1999 05 23.41735	16 44 30.76	+63 32 05.4	16.0 T	697
C/1999 J2	1999 05 18.95967	16 50 47.24	+63 39 19.0	16.1 T	118	C/1999 J2	1999 05 23.85757	16 43 53.56	+63 31 10.6	15.9 T	107
C/1999 J2	1999 05 18.96516	16 50 46.73	+63 39 18.5		118	C/1999 J2	1999 05 23.87586	16 43 52.10	+63 31 08.4	15.9 T	107
C/1999 J2	1999 05 19.04612	16 50 40.23	+63 39 11.6	15.5 T	758	C/1999 J2	1999 05 23.99036	16 43 42.35	+63 30 54.4	16.4 T	618
C/1999 J2	1999 05 19.05749	16 50 39.30	+63 39 10.7	15.5 T	758	C/1999 J2	1999 05 23.99598	16 43 41.84	+63 30 53.4	16.4 T	618
C/1999 J2	1999 05 19.06333	16 50 38.72	+63 39 10.0	15.4 T	758	C/1999 J2	1999 05 24.00125	16 43 41.42	+63 30 53.1	15.7 T	618
C/1999 J2	1999 05 19.18082	16 50 28.76	+63 39 02.2	17.7 T	750	C/1999 J2	1999 05 27.17416	16 39 12.79	+63 23 07.5	17.3 T	750
C/1999 J2	1999 05 19.18854	16 50 28.04	+63 39 01.5	17.4 T	750	C/1999 J2	1999 05 27.18283	16 39 12.11	+63 23 05.6	17.6 T	750
C/1999 J2	1999 05 19.20201	16 50 26.96	+63 39 00.5	17.6 T	750	C/1999 J2	1999 05 27.19213	16 39 11.29	+63 23 03.8	17.1 T	750
C/1999 J2	1999 05 19.20639	16 50 26.54	+63 39 00.2	17.6 T	750	C/1999 J2	1999 05 27.96986	16 38 05.64	+63 20 53.4		046
C/1999 J2	1999 05 19.26358	16 50 21.78	+63 38 56.0	15.7 T	713	C/1999 J2	1999 05 27.97130	16 38 05.49	+63 20 53.3		046
C/1999 J2	1999 05 19.28272	16 50 20.08	+63 38 54.5	15.7 T	713	C/1999 J2	1999 05 27.97266	16 38 05.40	+63 20 52.8		046
C/1999 J2	1999 05 19.29938	16 50 18.69	+63 38 53.3	15.7 T	713	C/1999 J2	1999 05 29.14618	16 36 26.25	+63 17 22.7	16.2 T	840
C/1999 J2	1999 05 19.90000	16 49 28.02	+63 38 04.1		108	C/1999 J2	1999 05 29.16566	16 36 24.78	+63 17 18.4	16.2 T	840
C/1999 J2	1999 05 19.90521	16 49 27.83	+63 38 04.1	15.2 T	108	C/1999 J2	1999 05 29.51602	16 35 55.36	+63 16 12.4	16.5 T	903
C/1999 J2	1999 05 20.18472	16 49 04.28	+63 37 42.2		735	C/1999 J2	1999 05 29.52082	16 35 54.91	+63 16 11.2		903
C/1999 J2	1999 05 20.19444	16 49 03.48	+63 37 41.3		735	C/1999 J2	1999 05 29.59226	16 35 48.91	+63 15 57.8		900
C/1999 J2	1999 05 20.20417	16 49 02.63	+63 37 40.5		735	C/1999 J2	1999 05 29.60854	16 35 47.50	+63 15 54.2	16.3 T	900
C/1999 J2	1999 05 20.32571	16 48 52.13	+63 37 30.0	15.6 T	732	C/1999 J2	1999 05 29.82395	16 35 29.44	+63 15 11.8		104
C/1999 J2	1999 05 20.33041	16 48 51.73	+63 37 29.7	15.5 T	732	C/1999 J2	1999 05 29.82731	16 35 29.05	+63 15 12.0		104
C/1999 J2	1999 05 20.33512	16 48 51.31	+63 37 29.4	15.4 T	732	C/1999 J2	1999 05 29.83223	16 35 28.82	+63 15 10.1		104
C/1999 J2	1999 05 20.49626	16 48 38.00	+63 37 14.6	16.2 T	402	C/1999 J2	1999 05 29.90524	16 35 22.72	+63 14 57.3		046
C/1999 J2	1999 05 20.49787	16 48 37.84	+63 37 14.6		402	C/1999 J2	1999 05 29.90631	16 35 22.66	+63 14 56.7		046
C/1999 J2	1999 05 20.49948	16 48 37.73	+63 37 14.3		402	C/1999 J2	1999 05 29.90749	16 35 22.47	+63 14 56.0		046
C/1999 J2	1999 05 20.60212	16 48 28.86	+63 37 04.7		355	C/1999 J2	1999 05 29.90881	16 35 22.46	+63 14 56.9		046
C/1999 J2	1999 05 20.60696	16 48 28.50	+63 37 04.8	15.8 T	355	C/1999 J2	1999 05 29.90987	16 35 22.34	+63 14 56.0		046
C/1999 J2	1999 05 20.61354	16 48 27.96	+63 37 04.1		355	C/1999 J2	1999 05 31.13611	16 33 39.66	+63 10 48.9		732
C/1999 J2	1999 05 20.61458	16 48 27.81	+63 37 03.9	15.9 T	360	C/1999 J2	1999 05 31.18676	16 33 35.30	+63 10 39.1	15.7 T	732
C/1999 J2	1999 05 20.61701	16 48 27.63	+63 37 03.4		360	C/1999 J2	1999 05 31.19608	16 33 34.52	+63 10 36.7	15.8 T	732
C/1999 J2	1999 05 20.61979	16 48 27.41	+63 37 03.4		360	C/1999 J2	1999 05 31.20344	16 33 33.83	+63 10 35.1	15.8 T	732
C/1999 J2	1999 05 20.63014	16 48 26.59	+63 37 02.2	16.3 T	903	C/1999 J2	1999 05 31.62953	16 32 58.13	+63 09 04.5	16.4 T	402
C/1999 J2	1999 05 20.63270	16 48 26.31	+63 37 01.9	15.8 T	372	C/1999 J2	1999 05 31.63079	16 32 58.03	+63 09 04.1		402

C/1999 J2	1999 05 31.63205	16 32 57.92	+63 09 04.2		402
C/1999 J2	1999 06 01.13439	16 32 16.25	+63 07 15.2	15.9 T	732
C/1999 J2	1999 06 01.13910	16 32 15.81	+63 07 13.8	15.8 T	732
C/1999 J2	1999 06 01.14380	16 32 15.41	+63 07 13.6	15.8 T	732
C/1999 J2	1999 06 03.36476	16 29 11.48	+62 58 36.5	17.8 T	704
C/1999 J2	1999 06 03.37222	16 29 10.39	+62 58 35.3	18.1 T	704
C/1999 J2	1999 06 03.37963	16 29 09.99	+62 58 33.8	18.4 T	704
C/1999 J2	1999 06 03.38705	16 29 09.16	+62 58 30.6	19.0 T	704
C/1999 J2	1999 06 03.39446	16 29 08.61	+62 58 29.0	17.6 T	704
C/1999 J2	1999 06 04.55411	16 27 33.50	+62 53 38.0	16.1 T	355
C/1999 J2	1999 06 04.56021	16 27 33.05	+62 53 36.1		355
C/1999 J2	1999 06 04.56696	16 27 32.48	+62 53 34.6		355
C/1999 J2	1999 06 04.58933	16 27 30.55	+62 53 28.5		352
C/1999 J2	1999 06 04.59350	16 27 30.27	+62 53 27.0		352
C/1999 J2	1999 06 04.59766	16 27 29.87	+62 53 26.4		352
C/1999 J2	1999 06 04.60361	16 27 29.54	+62 53 25.2	15.0 T	886
C/1999 J2	1999 06 04.62059	16 27 27.95	+62 53 19.9		886
C/1999 J2	1999 06 04.97654	16 26 59.24	+62 51 48.5		108
C/1999 J2	1999 06 04.99080	16 26 57.62	+62 51 41.7	15.0 T	108
C/1999 J2	1999 06 06.16355	16 25 22.50	+62 46 28.2	15.7 T	732
C/1999 J2	1999 06 06.16826	16 25 22.12	+62 46 27.2	15.7 T	732
C/1999 J2	1999 06 06.17297	16 25 21.74	+62 46 25.7	15.6 T	732
C/1999 J2	1999 06 07.00167	16 24 14.45	+62 42 35.7		629
C/1999 J2	1999 06 07.17231	16 24 01.08	+62 41 44.7	15.5 T	713
C/1999 J2	1999 06 07.18537	16 24 00.16	+62 41 40.6	15.8 T	713
C/1999 J2	1999 06 07.19951	16 23 58.95	+62 41 36.9	15.4 T	713
C/1999 J2	1999 06 07.21993	16 23 57.34	+62 41 30.7	15.6 T	713
C/1999 J2	1999 06 07.24084	16 23 55.40	+62 41 24.3		732
C/1999 J2	1999 06 07.24608	16 23 55.14	+62 41 23.1		732
C/1999 J2	1999 06 08.22571	16 22 36.91	+62 36 35.8	15.5 T	713
C/1999 J2	1999 06 08.24858	16 22 34.94	+62 36 29.0	15.7 T	713
C/1999 J2	1999 06 08.27267	16 22 32.94	+62 36 22.4	15.5 T	713
C/1999 J2	1999 06 08.67066	16 22 01.11	+62 34 22.5	15.9 T	360
C/1999 J2	1999 06 08.67309	16 22 00.90	+62 34 21.7		360
C/1999 J2	1999 06 09.64273	16 20 44.13	+62 29 22.8		867
C/1999 J2	1999 06 09.64933	16 20 43.64	+62 29 20.8		867
C/1999 J2	1999 06 09.65593	16 20 43.06	+62 29 18.5		867
C/1999 J2	1999 06 12.90082	16 16 31.07	+62 11 23.9	14.8 T	504
C/1999 J2	1999 06 12.90600	16 16 30.81	+62 11 21.7	15.4 T	504
C/1999 J2	1999 06 12.91178	16 16 30.27	+62 11 20.5	14.8 T	504
C/1999 J2	1999 06 12.91653	16 16 30.02	+62 11 18.2	15.1 T	504
C/1999 J2	1999 06 12.95934	16 16 26.66	+62 11 03.2		108
C/1999 J2	1999 06 12.96146	16 16 26.38	+62 11 02.1		108
C/1999 J2	1999 06 12.97238	16 16 25.60	+62 10 58.5	15.0 T	108
C/1999 J2	1999 06 14.57295	16 14 24.55	+62 01 27.0	16.0 T	402
C/1999 J2	1999 06 14.57421	16 14 24.44	+62 01 26.6		402
C/1999 J2	1999 06 14.57673	16 14 24.29	+62 01 25.7		402
C/1999 J2	1999 06 14.59857	16 14 22.68	+62 01 18.5		355
C/1999 J2	1999 06 14.60497	16 14 22.15	+62 01 16.0	15.6 T	355
C/1999 J2	1999 06 14.60963	16 14 21.78	+62 01 14.2		355
C/1999 J2	1999 06 15.20802	16 13 36.98	+61 57 31.1	17.7 T	750
C/1999 J2	1999 06 15.22339	16 13 35.94	+61 57 27.3	17.7 T	750
C/1999 J2	1999 06 15.23298	16 13 35.21	+61 57 23.8	17.4 T	750

C/1999 J3 (LINEAR)

C/1999 J3	1999 05 12.28325	15 49 41.93	+72 55 22.2	18.8 T	704
C/1999 J3	1999 05 12.29285	15 49 38.33	+72 55 41.2	18.6 T	704
C/1999 J3	1999 05 12.31163	15 49 32.55	+72 56 11.7	18.7 T	704
C/1999 J3	1999 05 12.32404	15 49 28.92	+72 56 34.3	18.7 T	704
C/1999 J3	1999 05 13.88516	15 40 48.68	+73 40 46.6	17.7 T	046
C/1999 J3	1999 05 13.89029	15 40 46.57	+73 40 56.4		046
C/1999 J3	1999 05 13.89142	15 40 46.43	+73 40 57.8		046
C/1999 J3	1999 05 14.13090	15 39 22.13	+73 47 31.6	16.8 T	784
C/1999 J3	1999 05 14.14063	15 39 18.73	+73 47 47.6	17.0 T	784
C/1999 J3	1999 05 14.22544	15 38 48.33	+73 50 06.7	18.5 N	704
C/1999 J3	1999 05 14.24061	15 38 43.05	+73 50 30.6	17.8 N	704
C/1999 J3	1999 05 14.25564	15 38 37.73	+73 50 56.1	18.2 N	704
C/1999 J3	1999 05 14.27079	15 38 32.22	+73 51 20.8	18.0 N	704
C/1999 J3	1999 05 14.28641	15 38 26.61	+73 51 46.3	18.1 N	704
C/1999 J3	1999 05 14.30144	15 38 21.23	+73 52 11.6	18.6 N	704
C/1999 J3	1999 05 14.31654	15 38 15.55	+73 52 35.5	18.8 N	704
C/1999 J3	1999 05 14.33162	15 38 10.00	+73 53 01.0	19.4 N	704
C/1999 J3	1999 05 14.34668	15 38 04.73	+73 53 24.6	18.5 N	704
C/1999 J3	1999 05 14.36180	15 37 59.30	+73 53 48.2	18.7 N	704
C/1999 J3	1999 05 14.38342	15 37 51.37	+73 54 23.7	18.4 N	704
C/1999 J3	1999 05 14.41430	15 37 40.23	+73 55 12.5	18.5 N	704
C/1999 J3	1999 05 14.42957	15 37 34.65	+73 55 38.0	19.0 N	704
C/1999 J3	1999 05 14.44480	15 37 29.15	+73 56 02.6	18.7 N	704
C/1999 J3	1999 05 14.68403	15 36 02.64	+74 02 30.5	17.7 T	360
C/1999 J3	1999 05 14.68819	15 36 01.07	+74 02 37.0		360
C/1999 J3	1999 05 14.69236	15 35 59.53	+74 02 43.9		360
C/1999 J3	1999 05 14.69829	15 35 57.32	+74 02 52.6	17.8 T	867
C/1999 J3	1999 05 14.70523	15 35 54.86	+74 03 03.1		867
C/1999 J3	1999 05 14.71461	15 35 51.30	+74 03 19.0		867
C/1999 J3	1999 05 14.72917	15 35 45.4	+74 03 42.1	18.0 T	372
C/1999 J3	1999 05 16.51910	15 24 16.60	+74 49 50.7	16.7 T	367
C/1999 J3	1999 05 16.52222	15 24 15.67	+74 49 55.0		367
C/1999 J3	1999 05 16.52535	15 24 14.49	+74 49 58.8		367
C/1999 J3	1999 05 16.53194	15 24 11.89	+74 50 08.9		367
C/1999 J3	1999 05 20.48751	14 54 34.45	+76 18 22.0	17.5 T	402
C/1999 J3	1999 05 20.48912	14 54 33.54	+76 18 22.6		402
C/1999 J3	1999 05 20.49234	14 54 31.96	+76 18 26.0		402
C/1999 J3	1999 05 20.55482	14 54 00.59	+76 19 41.8	17.1 T	897
C/1999 J3	1999 05 20.56442	14 53 56.20	+76 19 52.0	17.0 T	897
C/1999 J3	1999 05 20.57176	14 53 51.40	+76 20 00.4	16.4 T	897
C/1999 J3	1999 05 20.60052	14 53 37.91	+76 20 35.5	17.4 T	360
C/1999 J3	1999 05 20.60469	14 53 35.87	+76 20 40.3		360
C/1999 J3	1999 05 20.60851	14 53 33.99	+76 20 44.4		360
C/1999 J3	1999 05 29.54043	13 27 42.25	+78 11 12.2	17.0 T	402
C/1999 J3	1999 05 29.54204	13 27 41.28	+78 11 12.9		402
C/1999 J3	1999 05 29.54365	13 27 40.03	+78 11 13.2		402
C/1999 J3	1999 05 31.55876	13 06 30.95	+78 17 15.6	17.4 T	402
C/1999 J3	1999 05 31.56036	13 06 30.36	+78 17 14.9		402
C/1999 J3	1999 06 09.51493	11 40 44.11	+77 27 39.9	16.6 T	360
C/1999 J3	1999 06 09.51875	11 40 42.10	+77 27 37.0		360
C/1999 J3	1999 06 09.52292	11 40 40.05	+77 27 34.2		360

C/1999 J4 (LINEAR)

C/1999 J4	1999 05 15.31791	15 51 26.96	+45 12 11.2	18.3 N	704
C/1999 J4	1999 05 15.33305	15 51 25.25	+45 12 22.5	18.8 N	704
C/1999 J4	1999 05 15.34809	15 51 23.45	+45 12 36.1	18.5 N	704
C/1999 J4	1999 05 15.36338	15 51 21.43	+45 12 46.8	18.2 N	704
C/1999 J4	1999 05 16.88035	15 48 19.49	+45 32 39.3	18.2 T	557
C/1999 J4	1999 05 16.88267	15 48 19.18	+45 32 41.2		557
C/1999 J4	1999 05 16.88500	15 48 18.98	+45 32 43.5		557
C/1999 J4	1999 05 16.92867	15 48 13.67	+45 33 16.6	18.3 T	046
C/1999 J4	1999 05 16.93024	15 48 13.38	+45 33 17.9		046
C/1999 J4	1999 05 16.93168	15 48 13.28	+45 33 18.1		046
C/1999 J4	1999 05 16.93324	15 48 13.07	+45 33 19.3		046
C/1999 J4	1999 05 16.93495	15 48 12.85	+45 33 22.1		046
C/1999 J4	1999 05 16.93639	15 48 12.68	+45 33 22.4		046
C/1999 J4	1999 05 16.95219	15 48 10.82	+45 33 33.7	17.6 N	118
C/1999 J4	1999 05 16.95352	15 48 10.62	+45 33 35.3		118
C/1999 J4	1999 05 16.95560	15 48 10.33	+45 33 37.3		118
C/1999 J4	1999 05 17.25953	15 47 33.66	+45 37 30.9	19.1 N	704
C/1999 J4	1999 05 17.27180	15 47 32.00	+45 37 40.0	19.3 N	704
C/1999 J4	1999 05 17.28399	15 47 30.71	+45 37 49.4	19.3 N	704
C/1999 J4	1999 05 17.29616	15 47 29.10	+45 37 57.6	19.3 N	704
C/1999 J4	1999 05 17.30022	15 47 28.72	+45 38 01.1	18.2 N	684
C/1999 J4	1999 05 17.30476	15 47 28.18	+45 38 05.2		684
C/1999 J4	1999 05 17.30834	15 47 27.66	+45 38 07.2	19.4 N	704
C/1999 J4	1999 05 17.37257	15 47 19.94	+45 38 52.4		4 670
C/1999 J4	1999 05 17.38299	15 47 18.76	+45 39 01.1		4 670
C/1999 J4	1999 05 17.84134	15 46 23.15	+45 44 46.3	18.1 N	118
C/1999 J4	1999 05 17.84415	15 46 22.82	+45 44 49.1		118
C/1999 J4	1999 05 17.85273	15 46 21.60	+45 44 55.6		118
C/1999 J4	1999 05 17.92476	15 46 12.83	+45 45 48.1		557
C/1999 J4	1999 05 17.93174	15 46 12.00	+45 45 54.4		557
C/1999 J4	1999 05 20.50477	15 40 56.57	+46 16 27.7	17.5 T	402
C/1999 J4	1999 05 20.50638	15 40 56.39	+46 16 28.4		402
C/1999 J4	1999 05 20.50959	15 40 56.03	+46 16 31.1		402
C/1999 J4	1999 05 20.57708	15 40 47.71	+46 17 15.7	18.5 T	372
C/1999 J4	1999 05 20.63073	15 40 41.01	+46 17 52.9	18.5 T	360
C/1999 J4	1999 05 20.63507	15 40 40.42	+46 17 56.7		360
C/1999 J4	1999 05 20.63924	15 40 39.93	+46 17 58.4		360
C/1999 J4	1999 05 20.70486	15 40 31.66	+46 18 42.8	18.5 T	372
C/1999 J4	1999 06 11.62850	14 55 19.78	+48 48 40.7		867
C/1999 J4	1999 06 11.63718	14 55 18.76	+48 48 41.6		867
C/1999 J4	1999 06 11.64447	14 55 17.83	+48 48 42.7		867

P/1999 J5 (LINEAR)

P/1999 J5	1999 05 12.35863	16 42 19.96	-08 28 01.6	19.0 N	704
P/1999 J5	1999 05 12.37158	16 42 19.37	-08 28 01.7	19.3 N	704
P/1999 J5	1999 05 12.39747	16 42 18.48	-08 28 01.5	20.0 N	704
P/1999 J5	1999 05 17.38380	16 39 26.81	-08 25 41.5	18.7 N	704
P/1999 J5	1999 05 17.39587	16 39 26.28	-08 25 41.4	19.2 N	704
P/1999 J5	1999 05 17.42022	16 39 25.37	-08 25 38.9	19.8 N	704
P/1999 J5	1999 06 08.35396	16 25 29.10	-08 36 25.8	19.2 N	704
P/1999 J5	1999 06 08.36341	16 25 28.83	-08 36 26.2	19.5 N	704
P/1999 J5	1999 06 08.37283	16 25 28.41	-08 36 26.6	19.8 N	704

P/1999 J5	1999 06 08.38214	16 25 27.97	-08 36 28.5	19.5 N	704
P/1999 J5	1999 06 10.23447	16 24 18.75	-08 39 05.4	18.9 N	704
P/1999 J5	1999 06 10.24899	16 24 18.18	-08 39 06.8	19.3 N	704
P/1999 J5	1999 06 10.26346	16 24 17.63	-08 39 08.2	19.1 N	704
P/1999 J5	1999 06 10.27797	16 24 17.07	-08 39 09.6	18.9 N	704
P/1999 J5	1999 06 10.29247	16 24 16.56	-08 39 10.8	19.1 N	704
P/1999 J5	1999 06 12.50303	16 22 55.25	-08 42 39.7	18.6 T	428
P/1999 J5	1999 06 12.52913	16 22 54.28	-08 42 42.1	18.5 T	428
P/1999 J5	1999 06 12.92505	16 22 40.02	-08 43 25.4	18.4 T	120
P/1999 J5	1999 06 12.92738	16 22 39.89	-08 43 26.6		120
P/1999 J5	1999 06 12.93655	16 22 39.52	-08 43 27.0		120
P/1999 J5	1999 06 12.94844	16 22 39.16	-08 43 27.5	17.8 T	046
P/1999 J5	1999 06 12.95050	16 22 39.05	-08 43 27.5		046
P/1999 J5	1999 06 12.95226	16 22 39.02	-08 43 26.8		046
P/1999 J5	1999 06 12.95405	16 22 38.94	-08 43 27.1		046
P/1999 J5	1999 06 12.95587	16 22 38.88	-08 43 27.3		046
P/1999 J5	1999 06 12.95770	16 22 38.79	-08 43 27.6		046
P/1999 J5	1999 06 12.96106	16 22 38.67	-08 43 29.0	17.2 T	557
P/1999 J5	1999 06 12.96301	16 22 38.52	-08 43 30.6		120
P/1999 J5	1999 06 12.96693	16 22 38.44	-08 43 29.4		557
P/1999 J5	1999 06 13.17100	16 22 31.51	-08 43 50.8	18.1 T	859
P/1999 J5	1999 06 13.17640	16 22 31.34	-08 43 51.5	18.0 T	859
P/1999 J5	1999 06 13.18851	16 22 30.79	-08 43 55.7	18.2 T	859
P/1999 J5	1999 06 13.91057	16 22 04.63	-08 45 08.9	18.4 T	5 120
P/1999 J5	1999 06 13.91294	16 22 04.52	-08 45 08.9		5 120
P/1999 J5	1999 06 13.92333	16 22 04.17	-08 45 10.4		120
P/1999 J5	1999 06 13.92664	16 22 04.12	-08 45 10.5		120
P/1999 J5	1999 06 14.23042	16 21 53.26	-08 45 42.7	18.8 T	704
P/1999 J5	1999 06 14.23568	16 21 53.17	-08 45 43.3	18.9 T	704
P/1999 J5	1999 06 14.24280	16 21 52.90	-08 45 44.7	19.4 T	704
P/1999 J5	1999 06 14.24805	16 21 52.60	-08 45 44.9	19.0 T	704
P/1999 J5	1999 06 14.25518	16 21 52.35	-08 45 47.9	19.6 T	704
P/1999 J5	1999 06 14.26044	16 21 52.16	-08 45 47.2	19.2 T	704
P/1999 J5	1999 06 14.26762	16 21 51.90	-08 45 47.6	19.1 T	704
P/1999 J5	1999 06 14.27287	16 21 51.65	-08 45 48.4	19.6 T	704
P/1999 J5	1999 06 14.27882	16 21 51.50	-08 45 47.8	17.3 T	734
P/1999 J5	1999 06 14.28000	16 21 51.42	-08 45 48.3	19.6 T	704
P/1999 J5	1999 06 14.28446	16 21 51.29	-08 45 47.9	17.3 T	734
P/1999 J5	1999 06 14.28526	16 21 51.23	-08 45 48.6	19.3 T	704
P/1999 J5	1999 06 14.29457	16 21 50.89	-08 45 49.6	17.3 T	734
P/1999 J5	1999 06 14.29847	16 21 50.79	-08 45 49.8	17.0 T	734
P/1999 J5	1999 06 14.63513	16 21 38.80	-08 46 28.7	18.5 T	402
P/1999 J5	1999 06 14.63765	16 21 38.75	-08 46 28.3		402
P/1999 J5	1999 06 14.64017	16 21 38.67	-08 46 28.7		402
P/1999 J5	1999 06 14.64270	16 21 38.53	-08 46 29.2		402
P/1999 J5	1999 06 15.60694	16 21 04.75	-08 48 18.1		360
P/1999 J5	1999 06 15.61076	16 21 04.60	-08 48 18.6		360
P/1999 J5	1999 06 15.61476	16 21 04.47	-08 48 18.9		360

C/1999 K1 (SOHO)

C/1999 K1	1999 05 20.23758	03 54 47.9	+16 54 49	249
Geocentric position (AU)	+0.00643224	+0.00885756	+0.00285440	

C/1999 K1	1999 05 20.27923	03 54 37.4	+16 59 06	249
Geocentric position (AU)	+0.00643062	+0.00885823	+0.00285491	
C/1999 K1	1999 05 20.32090	03 54 28.4	+17 03 57	249
Geocentric position (AU)	+0.00642900	+0.00885890	+0.00285541	
C/1999 K1	1999 05 20.34590	03 54 21.7	+17 06 59	249
Geocentric position (AU)	+0.00642802	+0.00885930	+0.00285571	
C/1999 K1	1999 05 20.36257	03 54 17.0	+17 08 42	249
Geocentric position (AU)	+0.00642738	+0.00885956	+0.00285592	
C/1999 K1	1999 05 20.38756	03 54 11.9	+17 12 01	249
Geocentric position (AU)	+0.00642640	+0.00885996	+0.00285622	
C/1999 K1	1999 05 20.40423	03 54 08.3	+17 14 22	249
Geocentric position (AU)	+0.00642576	+0.00886022	+0.00285642	
C/1999 K1	1999 05 20.42929	03 53 59.8	+17 17 01	249
Geocentric position (AU)	+0.00642478	+0.00886062	+0.00285673	
C/1999 K1	1999 05 20.44590	03 53 56.2	+17 19 00	249
Geocentric position (AU)	+0.00642414	+0.00886088	+0.00285693	
C/1999 K1	1999 05 20.48758	03 53 45.0	+17 24 18	249
Geocentric position (AU)	+0.00642252	+0.00886154	+0.00285743	
C/1999 K1	1999 05 20.51256	03 53 37.3	+17 27 13	249
Geocentric position (AU)	+0.00642154	+0.00886193	+0.00285774	
C/1999 K1	1999 05 20.57090	03 53 21.6	+17 35 19	249
Geocentric position (AU)	+0.00641928	+0.00886284	+0.00285845	
C/1999 K1	1999 05 20.61256	03 53 09.8	+17 40 33	249
Geocentric position (AU)	+0.00641766	+0.00886348	+0.00285896	
C/1999 K1	1999 05 20.63756	03 53 02.7	+17 43 41	249
Geocentric position (AU)	+0.00641669	+0.00886387	+0.00285926	
C/1999 K1	1999 05 20.65423	03 52 56.2	+17 46 19	249
Geocentric position (AU)	+0.00641604	+0.00886413	+0.00285946	
C/1999 K1	1999 05 20.67923	03 52 48.1	+17 49 21	249
Geocentric position (AU)	+0.00641507	+0.00886451	+0.00285977	
C/1999 K1	1999 05 20.69590	03 52 42.6	+17 52 02	249
Geocentric position (AU)	+0.00641442	+0.00886477	+0.00285997	
C/1999 K1	1999 05 20.73758	03 52 30.1	+17 57 50	249
Geocentric position (AU)	+0.00641281	+0.00886541	+0.00286048	
C/1999 K1	1999 05 20.76257	03 52 21.3	+18 01 35	249
Geocentric position (AU)	+0.00641184	+0.00886579	+0.00286079	
C/1999 K1	1999 05 20.77923	03 52 15.4	+18 04 11	249
Geocentric position (AU)	+0.00641119	+0.00886604	+0.00286099	
C/1999 K1	1999 05 20.82090	03 52 03.2	+18 09 59	249
Geocentric position (AU)	+0.00640957	+0.00886667	+0.00286150	
C/1999 K1	1999 05 20.84590	03 51 55.5	+18 14 27	249
Geocentric position (AU)	+0.00640860	+0.00886705	+0.00286180	
C/1999 K1	1999 05 20.86257	03 51 49.2	+18 17 17	249
Geocentric position (AU)	+0.00640796	+0.00886730	+0.00286201	
C/1999 K1	1999 05 20.88756	03 51 38.2	+18 20 45	249
Geocentric position (AU)	+0.00640699	+0.00886768	+0.00286232	
C/1999 K1	1999 05 20.90423	03 51 34.6	+18 23 54	249
Geocentric position (AU)	+0.00640634	+0.00886793	+0.00286252	
C/1999 K1	1999 05 20.92925	03 51 26.0	+18 27 34	249
Geocentric position (AU)	+0.00640537	+0.00886831	+0.00286283	
C/1999 K1	1999 05 20.97099	03 51 09.5	+18 35 34	249
Geocentric position (AU)	+0.00640375	+0.00886893	+0.00286334	

C/1999 K1	1999 05 20.97645	03 51 07.0	+18 35 41	249
Geocentric position (AU)	+0.00640354	+0.00886901	+0.00286341	
C/1999 K1	1999 05 20.98756	03 51 03.1	+18 37 43	249
Geocentric position (AU)	+0.00640311	+0.00886918	+0.00286354	
C/1999 K1	1999 05 20.99313	03 51 00.4	+18 39 01	249
Geocentric position (AU)	+0.00640290	+0.00886926	+0.00286361	
C/1999 K1	1999 05 21.00423	03 50 58.5	+18 40 39	249
Geocentric position (AU)	+0.00640247	+0.00886943	+0.00286375	
C/1999 K1	1999 05 21.01812	03 50 54.1	+18 43 17	249
Geocentric position (AU)	+0.00640193	+0.00886963	+0.00286392	
C/1999 K1	1999 05 21.03481	03 50 44.5	+18 46 31	249
Geocentric position (AU)	+0.00640128	+0.00886988	+0.00286412	
C/1999 K1	1999 05 21.06027	03 50 36.6	+18 51 32	249
Geocentric position (AU)	+0.00640030	+0.00887026	+0.00286444	
C/1999 K1	1999 05 21.07645	03 50 32.0	+18 54 05	249
Geocentric position (AU)	+0.00639967	+0.00887050	+0.00286463	
C/1999 K1	1999 05 21.08758	03 50 26.3	+18 56 29	249
Geocentric position (AU)	+0.00639924	+0.00887066	+0.00286477	
C/1999 K1	1999 05 21.10146	03 50 21.6	+18 59 11	249
Geocentric position (AU)	+0.00639870	+0.00887087	+0.00286494	
C/1999 K1	1999 05 21.11814	03 50 12.0	+19 02 49	249
Geocentric position (AU)	+0.00639806	+0.00887111	+0.00286515	
C/1999 K1	1999 05 21.12923	03 50 10.2	+19 05 07	249
Geocentric position (AU)	+0.00639763	+0.00887128	+0.00286528	
C/1999 K1	1999 05 21.14312	03 50 02.3	+19 08 39	249
Geocentric position (AU)	+0.00639709	+0.00887148	+0.00286546	

C/1999 K2 (Ferris)

C/1999 K2	1999 05 19.36625	20 48 11.34	-07 56 29.5	18.1 T	699
C/1999 K2	1999 05 19.39171	20 48 10.88	-07 56 16.7		699
C/1999 K2	1999 05 19.41718	20 48 10.46	-07 56 04.2		699
C/1999 K2	1999 05 20.28802	20 47 55.00	-07 48 52.8	18.4 T	860
C/1999 K2	1999 05 20.29421	20 47 54.89	-07 48 50.1	18.6 T	860
C/1999 K2	1999 05 20.40310	20 47 52.89	-07 47 58.4	17.7 T	699
C/1999 K2	1999 05 20.40322	20 47 52.95	-07 47 56.9	17.5 T	688
C/1999 K2	1999 05 20.41839	20 47 52.62	-07 47 49.9		699
C/1999 K2	1999 05 20.43369	20 47 52.29	-07 47 42.4		699
C/1999 K2	1999 05 20.44712	20 47 52.14	-07 47 35.5		688
C/1999 K2	1999 05 21.35533	20 47 35.16	-07 40 10.9	18.1 T	704
C/1999 K2	1999 05 21.37500	20 47 34.79	-07 39 59.6	17.8 T	704
C/1999 K2	1999 05 21.38518	20 47 34.43	-07 39 55.0	17.8 T	704
C/1999 K2	1999 05 21.39424	20 47 34.41	-07 39 48.4	17.8 T	704
C/1999 K2	1999 05 21.77350	20 47 27.07	-07 36 42.8	17.6 T	327
C/1999 K2	1999 05 21.78047	20 47 26.92	-07 36 39.7		327
C/1999 K2	1999 05 21.78573	20 47 26.84	-07 36 36.8		327
C/1999 K2	1999 05 22.03281	20 47 22.03	-07 34 34.7	17.0 T	046
C/1999 K2	1999 05 22.03396	20 47 22.00	-07 34 34.4		046
C/1999 K2	1999 05 22.03670	20 47 21.98	-07 34 33.8		046
C/1999 K2	1999 05 22.03786	20 47 21.94	-07 34 32.6		046
C/1999 K2	1999 05 22.05609	20 47 21.56	-07 34 24.2	17.1 T	118
C/1999 K2	1999 05 22.05886	20 47 21.48	-07 34 22.9		118
C/1999 K2	1999 05 22.06648	20 47 21.32	-07 34 18.9		118
C/1999 K2	1999 05 22.45231	20 47 13.70	-07 31 08.2		693

C/1999 K2	1999 05 22.45367	20 47 13.67	-07 31 07.5		693
C/1999 K2	1999 05 22.45503	20 47 13.64	-07 31 06.9	16.8 T	693
C/1999 K2	1999 05 23.66566	20 46 48.91	-07 21 10.3		897
C/1999 K2	1999 05 23.67390	20 46 48.65	-07 21 08.1	17.6 T	897
C/1999 K2	1999 05 23.67894	20 46 48.67	-07 21 04.7		897
C/1999 K2	1999 05 28.05552	20 45 08.51	-06 45 27.0		046
C/1999 K2	1999 05 28.05733	20 45 08.44	-06 45 26.6		046
C/1999 K2	1999 05 28.05890	20 45 08.44	-06 45 24.6		046
C/1999 K2	1999 05 30.01906	20 44 18.49	-06 29 31.5		046
C/1999 K2	1999 05 30.02404	20 44 18.41	-06 29 28.5		046
C/1999 K2	1999 05 30.02660	20 44 18.34	-06 29 27.5		046
C/1999 K2	1999 05 30.02883	20 44 18.18	-06 29 27.4		046
C/1999 K2	1999 05 30.03253	20 44 18.17	-06 29 25.6		046
C/1999 K2	1999 05 31.70634	20 43 32.84	-06 15 53.3	17.6 T	402
C/1999 K2	1999 05 31.70955	20 43 32.78	-06 15 52.4		402
C/1999 K2	1999 05 31.71116	20 43 32.71	-06 15 51.6		402
C/1999 K2	1999 06 11.76772	20 37 36.39	-04 48 11.2		867
C/1999 K2	1999 06 11.77605	20 37 36.11	-04 48 07.2		867
C/1999 K2	1999 06 11.77953	20 37 35.97	-04 48 05.8		867
C/1999 K2	1999 06 14.69442	20 35 45.90	-04 25 33.4	17.3 T	402
C/1999 K2	1999 06 14.69567	20 35 45.83	-04 25 33.4		402
C/1999 K2	1999 06 14.69693	20 35 45.79	-04 25 32.3		402

C/1999 K3 (LINEAR)

C/1999 K3	1999 05 20.26972	19 02 40.60	+09 02 47.8	18.7 T	704
C/1999 K3	1999 05 20.27930	19 02 39.36	+09 03 12.9	18.7 T	704
C/1999 K3	1999 05 20.28891	19 02 38.02	+09 03 40.1	19.2 T	704
C/1999 K3	1999 05 20.29862	19 02 36.95	+09 04 05.1	18.7 T	704
C/1999 K3	1999 05 20.30836	19 02 35.29	+09 04 32.4	18.9 T	704
C/1999 K3	1999 05 21.29751	19 00 19.78	+09 50 27.8	17.0 T	704
C/1999 K3	1999 05 21.29757	19 00 19.52	+09 50 29.0	16.2 T	704
C/1999 K3	1999 05 21.30640	19 00 18.57	+09 50 55.2	16.6 T	704
C/1999 K3	1999 05 21.30645	19 00 18.58	+09 50 53.8	16.3 T	704
C/1999 K3	1999 05 21.31750	19 00 17.15	+09 51 27.3	17.7 T	704
C/1999 K3	1999 05 21.31755	19 00 17.05	+09 51 24.2	16.4 T	704
C/1999 K3	1999 05 21.32843	19 00 15.56	+09 51 54.7	17.0 T	704
C/1999 K3	1999 05 21.32848	19 00 15.55	+09 51 56.0	16.7 T	704
C/1999 K3	1999 05 21.33948	19 00 13.71	+09 52 23.5	16.6 T	704
C/1999 K3	1999 05 21.92993	18 58 51.75	+10 19 42.4		557
C/1999 K3	1999 05 21.95229	18 58 48.55	+10 20 43.9		557
C/1999 K3	1999 05 21.99937	18 58 41.86	+10 22 54.1		118
C/1999 K3	1999 05 22.00277	18 58 41.49	+10 23 05.7	17.2 T	046
C/1999 K3	1999 05 22.00375	18 58 41.22	+10 23 08.2		046
C/1999 K3	1999 05 22.00464	18 58 41.20	+10 23 10.0		046
C/1999 K3	1999 05 22.00556	18 58 41.00	+10 23 13.2		046
C/1999 K3	1999 05 22.00647	18 58 40.87	+10 23 14.7	16.7 T	118
C/1999 K3	1999 05 22.00670	18 58 40.78	+10 23 15.2		046
C/1999 K3	1999 05 22.00771	18 58 40.70	+10 23 17.2		046
C/1999 K3	1999 05 22.01355	18 58 39.90	+10 23 33.6	16.8 T	118
C/1999 K3	1999 05 22.38753	18 57 47.23	+10 40 49.9		658
C/1999 K3	1999 05 22.39252	18 57 46.47	+10 41 03.8		658
C/1999 K3	1999 05 22.39861	18 57 45.60	+10 41 20.5		658
C/1999 K3	1999 05 28.00869	18 43 50.87	+14 54 37.7		046

C/1999 K3	1999 05 28.01007	18 43 50.58	+14 54 42.0		046
C/1999 K3	1999 05 28.01142	18 43 50.46	+14 54 43.2		046
C/1999 K3	1999 05 28.01255	18 43 50.14	+14 54 47.5		046
C/1999 K3	1999 05 29.55733	18 39 47.49	+16 02 01.6	17.3 T	402
C/1999 K3	1999 05 29.55894	18 39 47.14	+16 02 06.8		402
C/1999 K3	1999 05 29.56054	18 39 46.79	+16 02 11.0		402
C/1999 K3	1999 05 31.65816	18 34 09.04	+17 31 08.7	17.0 T	402
C/1999 K3	1999 05 31.66299	18 34 08.23	+17 31 24.0		402
C/1999 K3	1999 05 31.66461	18 34 07.85	+17 31 27.3		402
C/1999 K3	1999 06 04.62032	18 23 10.87	+20 10 49.2		352
C/1999 K3	1999 06 04.62449	18 23 10.01	+20 10 56.3		352
C/1999 K3	1999 06 08.68507	18 11 36.04	+22 40 54.0	16.6 T	360
C/1999 K3	1999 06 08.68958	18 11 35.29	+22 41 03.3		360
C/1999 K3	1999 06 08.69323	18 11 34.63	+22 41 11.3		360
C/1999 K3	1999 06 11.31999	18 04 00.58	+24 09 49.8	19.0 T	704
C/1999 K3	1999 06 11.33247	18 03 58.40	+24 10 14.9	19.0 T	704
C/1999 K3	1999 06 11.34494	18 03 56.31	+24 10 38.9	19.0 T	704
C/1999 K3	1999 06 11.35740	18 03 54.08	+24 11 03.2	19.0 T	704
C/1999 K3	1999 06 14.62366	17 54 29.60	+25 51 32.4	17.0 T	402
C/1999 K3	1999 06 14.62491	17 54 29.45	+25 51 34.5		402
C/1999 K3	1999 06 14.62618	17 54 29.22	+25 51 35.4		402

C/1999 K4 (LINEAR)

C/1999 K4	1999 05 17.32636	16 05 48.69	+05 45 19.7	18.7 N	704
C/1999 K4	1999 05 17.33856	16 05 40.31	+05 47 18.8	19.3 N	704
C/1999 K4	1999 05 17.35079	16 05 31.88	+05 49 18.7	18.6 N	704
C/1999 K4	1999 05 17.36301	16 05 23.26	+05 51 18.0	18.8 N	704
C/1999 K4	1999 05 17.37521	16 05 14.87	+05 53 16.7	18.9 N	704
C/1999 K4	1999 05 18.23071	15 55 31.26	+08 10 21.8		704
C/1999 K4	1999 05 18.24489	15 55 21.64	+08 12 33.2		704
C/1999 K4	1999 05 18.25889	15 55 11.97	+08 14 45.9		704
C/1999 K4	1999 05 18.27291	15 55 02.16	+08 16 59.5		704
C/1999 K4	1999 05 19.41301	15 42 14.03	+11 12 10.6	19.5 N	673
C/1999 K4	1999 05 21.38152	15 20 53.43	+15 49 48.8		673
C/1999 K4	1999 05 21.38583	15 20 50.67	+15 50 22.6		673
C/1999 K4	1999 05 22.34579	15 10 52.65	+17 52 42.3		658
C/1999 K4	1999 05 22.34969	15 10 50.04	+17 53 14.0		693
C/1999 K4	1999 05 22.35039	15 10 49.60	+17 53 19.3		693
C/1999 K4	1999 05 22.35108	15 10 49.18	+17 53 24.1	19.0 T	693
C/1999 K4	1999 05 22.35231	15 10 48.62	+17 53 30.1		658
C/1999 K4	1999 05 22.35973	15 10 44.02	+17 54 24.7		658

C/1999 K5 (LINEAR)

C/1999 K5	1999 05 20.31735	19 44 23.12	-09 15 02.8	17.2 N	704
C/1999 K5	1999 05 20.32684	19 44 22.82	-09 15 07.1	17.2 N	704
C/1999 K5	1999 05 20.33707	19 44 22.49	-09 15 06.9	18.2 N	704
C/1999 K5	1999 05 20.34681	19 44 22.15	-09 15 11.5	18.4 N	704
C/1999 K5	1999 05 20.35651	19 44 21.88	-09 15 16.0	18.4 N	704
C/1999 K5	1999 05 22.01473	19 43 44.13	-09 24 43.4	16.2 N	046
C/1999 K5	1999 05 22.01624	19 43 44.08	-09 24 43.7		046
C/1999 K5	1999 05 22.01793	19 43 44.04	-09 24 44.8		046
C/1999 K5	1999 05 22.01946	19 43 43.99	-09 24 45.2		046
C/1999 K5	1999 05 22.02267	19 43 43.92	-09 24 46.8		046
C/1999 K5	1999 05 22.03844	19 43 43.56	-09 24 51.5		557

1999 JUNE 22

M.P.C. 34691

C/1999 K5	1999 05 22.04007	19 43 43.51	-09 24 52.1		557
C/1999 K5	1999 05 22.04170	19 43 43.48	-09 24 52.7		557
C/1999 K5	1999 05 22.04333	19 43 43.42	-09 24 53.2		557
C/1999 K5	1999 05 22.22677	19 43 39.06	-09 25 54.9	15.9 N	844
C/1999 K5	1999 05 22.23218	19 43 38.90	-09 25 56.6	16.0 N	844
C/1999 K5	1999 05 22.23692	19 43 38.80	-09 25 57.6	16.2 N	844
C/1999 K5	1999 05 22.25535	19 43 38.39	-09 26 04.4	16.3 N	844
C/1999 K5	1999 05 22.30286	19 43 37.20	-09 26 23.0	17.6 T	860
C/1999 K5	1999 05 22.76229	19 43 26.12	-09 29 01.2	16.7 N	321
C/1999 K5	1999 05 22.76687	19 43 26.06	-09 29 02.6	16.7 N	321
C/1999 K5	1999 05 22.77177	19 43 25.89	-09 29 05.2	16.8 N	321
C/1999 K5	1999 05 22.77726	19 43 25.73	-09 29 07.0	16.7 N	321
C/1999 K5	1999 05 23.02132	19 43 19.70	-09 30 35.4		611
C/1999 K5	1999 05 23.03507	19 43 19.43	-09 30 39.6		611
C/1999 K5	1999 05 23.25086	19 43 13.93	-09 31 54.9	17.1 N	859
C/1999 K5	1999 05 23.25818	19 43 13.75	-09 31 57.3	17.2 N	859
C/1999 K5	1999 05 23.26457	19 43 13.59	-09 31 59.6	17.1 N	859
C/1999 K5	1999 05 23.27625	19 43 13.28	-09 32 04.2	17.3 N	859
C/1999 K5	1999 05 23.46145	19 43 08.71	-09 33 11.7		658
C/1999 K5	1999 05 23.46796	19 43 08.54	-09 33 14.1		658
C/1999 K5	1999 05 23.47175	19 43 08.45	-09 33 15.7		658
C/1999 K5	1999 05 24.02802	19 42 54.30	-09 36 35.1	15.9 N	046
C/1999 K5	1999 05 24.02943	19 42 54.27	-09 36 35.7		046
C/1999 K5	1999 05 24.03054	19 42 54.25	-09 36 36.0		046
C/1999 K5	1999 05 24.03171	19 42 54.20	-09 36 36.6		046
C/1999 K5	1999 05 24.03331	19 42 54.16	-09 36 37.2		046
C/1999 K5	1999 05 24.03477	19 42 54.13	-09 36 36.9		557
C/1999 K5	1999 05 24.04107	19 42 53.98	-09 36 39.8	15.8 T	118
C/1999 K5	1999 05 24.04128	19 42 53.96	-09 36 39.3		557
C/1999 K5	1999 05 24.04292	19 42 53.94	-09 36 39.3		557
C/1999 K5	1999 05 24.05829	19 42 53.51	-09 36 45.8		118
C/1999 K5	1999 05 24.06301	19 42 53.40	-09 36 47.9		118
C/1999 K5	1999 05 24.32649	19 42 46.61	-09 38 22.0	17.0 N	734
C/1999 K5	1999 05 24.32979	19 42 46.52	-09 38 23.3	17.0 N	734
C/1999 K5	1999 05 24.33331	19 42 46.42	-09 38 24.7	17.2 N	734
C/1999 K5	1999 05 24.33668	19 42 46.33	-09 38 25.6	17.1 N	734
C/1999 K5	1999 05 24.38181	19 42 45.18	-09 38 40.6	17.5 T	704
C/1999 K5	1999 05 24.38970	19 42 44.97	-09 38 43.6	17.5 T	704
C/1999 K5	1999 05 24.39878	19 42 44.66	-09 38 48.1	17.7 T	704
C/1999 K5	1999 05 24.40791	19 42 44.66	-09 38 52.6	18.1 T	704
C/1999 K5	1999 05 24.45527	19 42 43.25	-09 39 09.3		658
C/1999 K5	1999 05 24.45750	19 42 43.20	-09 39 10.2		658
C/1999 K5	1999 05 24.46088	19 42 43.10	-09 39 11.4		658
C/1999 K5	1999 05 28.01447	19 41 04.15	-10 01 25.4		046
C/1999 K5	1999 05 28.01681	19 41 04.08	-10 01 26.0		046
C/1999 K5	1999 05 28.01876	19 41 04.00	-10 01 26.6		046
C/1999 K5	1999 05 28.02042	19 41 03.97	-10 01 27.4		046
C/1999 K5	1999 05 29.08307	19 40 32.05	-10 08 23.1		104
C/1999 K5	1999 05 29.08492	19 40 32.02	-10 08 23.5		104
C/1999 K5	1999 05 29.09213	19 40 31.81	-10 08 25.6		104
C/1999 K5	1999 05 29.09444	19 40 31.61	-10 08 27.5		104
C/1999 K5	1999 05 29.09597	19 40 31.59	-10 08 28.4		104
C/1999 K5	1999 05 29.09948	19 40 31.41	-10 08 29.1	16.0 T	104

C/1999 K5	1999 05 31.69703	19 39 08.66	-10 25 59.4	16.9 T	402
C/1999 K5	1999 05 31.69862	19 39 08.60	-10 26 00.4		402
C/1999 K5	1999 05 31.70023	19 39 08.56	-10 26 01.1		402
C/1999 K5	1999 06 08.58506	19 34 17.29	-11 24 00.3	16.9 T	367
C/1999 K5	1999 06 08.58853	19 34 17.13	-11 24 01.7		367
C/1999 K5	1999 06 08.59203	19 34 17.01	-11 24 03.3		367
C/1999 K5	1999 06 08.72778	19 34 11.40	-11 25 08.2	15.7 T	360
C/1999 K5	1999 06 08.73229	19 34 11.21	-11 25 10.4		360
C/1999 K5	1999 06 08.73611	19 34 11.06	-11 25 12.2		360
C/1999 K5	1999 06 10.29559	19 33 06.18	-11 37 31.4	16.9 T	860
C/1999 K5	1999 06 10.30105	19 33 05.90	-11 37 34.1	17.0 T	860
C/1999 K5	1999 06 14.36052	19 30 06.91	-12 11 03.4	16.4 T	704
C/1999 K5	1999 06 14.37248	19 30 06.33	-12 11 09.0		704
C/1999 K5	1999 06 14.38445	19 30 05.73	-12 11 14.6		704
C/1999 K5	1999 06 14.39641	19 30 05.22	-12 11 21.5		704
C/1999 K5	1999 06 14.40838	19 30 04.63	-12 11 26.4		704
C/1999 K5	1999 06 14.64442	19 29 53.86	-12 13 28.4	16.2 T	355
C/1999 K5	1999 06 14.64843	19 29 53.71	-12 13 31.0		355
C/1999 K5	1999 06 14.65308	19 29 53.47	-12 13 33.3		355
C/1999 K5	1999 06 14.68910	19 29 51.81	-12 13 50.8	16.7 T	402
C/1999 K5	1999 06 14.69035	19 29 51.74	-12 13 51.8		402
C/1999 K5	1999 06 14.69162	19 29 51.68	-12 13 52.3		402

C/1999 K6 (LINEAR)

C/1999 K6	1999 05 20.22732	19 01 39.50	+09 26 33.8	17.6 N	704
C/1999 K6	1999 05 20.23740	19 01 39.43	+09 26 54.7	17.7 N	704
C/1999 K6	1999 05 20.24736	19 01 39.55	+09 27 13.2	17.9 N	704
C/1999 K6	1999 05 20.25742	19 01 39.66	+09 27 33.7	17.7 N	704
C/1999 K6	1999 05 20.26730	19 01 39.55	+09 27 51.6	17.5 N	704
C/1999 K6	1999 05 21.29751	19 01 41.04	+10 01 03.9	16.2 N	704
C/1999 K6	1999 05 21.29757	19 01 41.02	+10 01 04.6	16.3 N	704
C/1999 K6	1999 05 21.30645	19 01 41.34	+10 01 23.5	16.8 N	704
C/1999 K6	1999 05 21.31750	19 01 41.09	+10 01 44.8	16.2 N	704
C/1999 K6	1999 05 21.31755	19 01 41.08	+10 01 43.0	15.8 N	704
C/1999 K6	1999 05 21.32843	19 01 41.02	+10 02 05.8	16.2 N	704
C/1999 K6	1999 05 21.32848	19 01 41.06	+10 02 05.8	16.0 N	704
C/1999 K6	1999 05 21.33942	19 01 41.02	+10 02 27.0	15.8 N	704
C/1999 K6	1999 05 21.33948	19 01 41.04	+10 02 27.3	15.8 N	704
C/1999 K6	1999 05 24.38194	19 01 36.01	+11 41 01.3	17.4 N	704
C/1999 K6	1999 05 24.38984	19 01 36.07	+11 41 17.4	17.7 N	704
C/1999 K6	1999 05 24.39892	19 01 35.95	+11 41 36.0	17.3 N	704
C/1999 K6	1999 05 24.40805	19 01 35.92	+11 41 53.6	17.9 N	704
C/1999 K6	1999 05 24.41722	19 01 35.64	+11 42 12.0	18.1 N	704
C/1999 K6	1999 05 24.89015	19 01 34.01	+11 57 32.8		557
C/1999 K6	1999 05 24.89178	19 01 33.98	+11 57 35.5		557
C/1999 K6	1999 05 24.89341	19 01 33.97	+11 57 38.6		557
C/1999 K6	1999 05 24.94625	19 01 33.72	+11 59 21.1	16.0 T	046
C/1999 K6	1999 05 24.94784	19 01 33.66	+11 59 24.4		046
C/1999 K6	1999 05 24.94904	19 01 33.66	+11 59 26.7		046
C/1999 K6	1999 05 24.95027	19 01 33.62	+11 59 29.3		046
C/1999 K6	1999 05 24.95160	19 01 33.63	+11 59 32.5		046
C/1999 K6	1999 05 25.18689	19 01 32.50	+12 07 17.5	17.7 N	860
C/1999 K6	1999 05 25.19141	19 01 32.42	+12 07 26.9	17.6 N	860

C/1999 K6	1999 05 25.19601	19 01 32.49	+12 07 37.3	17.4 N	860
C/1999 K6	1999 05 25.24154	19 01 32.11	+12 09 04.0	16.6 N	844
C/1999 K6	1999 05 25.26597	19 01 31.89	+12 09 54.1	15.8 N	844
C/1999 K6	1999 05 25.27495	19 01 31.86	+12 10 08.7	17.6 N	844
C/1999 K6	1999 05 25.30619	19 01 31.93	+12 11 07.5	18.0 T	704
C/1999 K6	1999 05 25.31511	19 01 31.86	+12 11 23.1	16.9 T	704
C/1999 K6	1999 05 25.32405	19 01 31.81	+12 11 39.6	17.5 T	704
C/1999 K6	1999 05 25.33232	19 01 31.73	+12 11 56.9	17.0 T	704
C/1999 K6	1999 05 25.89733	19 01 28.46	+12 30 16.6		595
C/1999 K6	1999 05 25.92197	19 01 28.27	+12 31 06.2		595
C/1999 K6	1999 05 25.94341	19 01 28.10	+12 31 48.2	17.0 T	595
C/1999 K6	1999 05 27.97669	19 01 11.76	+13 37 59.1		046
C/1999 K6	1999 05 27.97840	19 01 11.72	+13 38 03.1		046
C/1999 K6	1999 05 27.97961	19 01 11.71	+13 38 05.2		046
C/1999 K6	1999 05 29.56542	19 00 54.68	+14 29 41.2	16.7 T	402
C/1999 K6	1999 05 29.56703	19 00 54.65	+14 29 44.2		402
C/1999 K6	1999 05 29.56863	19 00 54.61	+14 29 47.3		402
C/1999 K6	1999 05 31.67753	19 00 25.65	+15 38 14.3	16.2 T	402
C/1999 K6	1999 05 31.67916	19 00 25.62	+15 38 16.8		402
C/1999 K6	1999 05 31.68075	19 00 25.53	+15 38 20.1		402
C/1999 K6	1999 06 04.05558	18 59 25.14	+17 27 02.1		118
C/1999 K6	1999 06 04.05910	18 59 25.00	+17 27 09.6	15.7 T	118
C/1999 K6	1999 06 04.63584	18 59 13.11	+17 45 36.8		352
C/1999 K6	1999 06 04.64001	18 59 13.05	+17 45 43.5		352
C/1999 K6	1999 06 04.64418	18 59 12.98	+17 45 52.4		352
C/1999 K6	1999 06 08.76354	18 57 32.36	+19 55 52.7	16.1 T	360
C/1999 K6	1999 06 08.76563	18 57 32.30	+19 55 56.6		360
C/1999 K6	1999 06 08.76875	18 57 32.20	+19 56 02.9		360
C/1999 K6	1999 06 09.71911	18 57 05.69	+20 25 32.3		867
C/1999 K6	1999 06 09.73473	18 57 05.22	+20 26 00.9		867
C/1999 K6	1999 06 11.36466	18 56 16.65	+21 16 03.5	17.2 T	704
C/1999 K6	1999 06 11.37676	18 56 16.19	+21 16 26.8	17.3 T	704
C/1999 K6	1999 06 11.38881	18 56 15.85	+21 16 48.3	17.5 T	704
C/1999 K6	1999 06 11.40086	18 56 15.43	+21 17 14.4	18.5 T	704
C/1999 K6	1999 06 11.41291	18 56 14.99	+21 17 33.1	17.9 T	704
C/1999 K6	1999 06 14.62058	18 54 28.97	+22 53 44.5	16.3 T	355
C/1999 K6	1999 06 14.62982	18 54 28.62	+22 54 00.3		355
C/1999 K6	1999 06 14.63181	18 54 28.54	+22 54 04.0		355
C/1999 K6	1999 06 17.94898	18 52 25.67	+24 29 50.2	16.0 T	610
C/1999 K6	1999 06 17.95244	18 52 25.52	+24 29 56.0		610
C/1999 K6	1999 06 17.95591	18 52 25.38	+24 30 01.8		610
C/1999 K6	1999 06 17.95938	18 52 25.23	+24 30 07.6		610
C/1999 K6	1999 06 17.96285	18 52 25.08	+24 30 13.5		610

C/1999 K7 (LINEAR)

C/1999 K7	1999 05 24.34136	18 27 40.35	+19 02 36.9	18.6 T	704
C/1999 K7	1999 05 24.34970	18 27 38.55	+19 02 35.6	19.4 T	704
C/1999 K7	1999 05 24.36742	18 27 34.64	+19 02 33.2	18.7 T	704
C/1999 K7	1999 05 24.37602	18 27 32.71	+19 02 29.1	18.4 T	704
C/1999 K7	1999 05 25.06363	18 25 00.13	+18 59 36.7		046
C/1999 K7	1999 05 25.06627	18 24 59.51	+18 59 36.4		046
C/1999 K7	1999 05 25.06859	18 24 59.04	+18 59 35.0	18.2 N	046
C/1999 K7	1999 05 25.06963	18 24 58.78	+18 59 33.7		046

C/1999 K7	1999 05 25.07072	18 24 58.53	+18 59 34.2		046
C/1999 K7	1999 05 25.33899	18 23 58.85	+18 58 21.8	18.7 T	704
C/1999 K7	1999 05 25.34750	18 23 56.96	+18 58 21.8	18.6 T	704
C/1999 K7	1999 05 25.36578	18 23 52.95	+18 58 15.8	19.1 T	704
C/1999 K7	1999 05 25.37447	18 23 50.83	+18 58 13.6	18.7 T	704
C/1999 K7	1999 05 26.35089	18 20 11.39	+18 53 26.0		711
C/1999 K7	1999 05 26.35665	18 20 10.10	+18 53 24.0		711
C/1999 K7	1999 05 26.36254	18 20 08.73	+18 53 22.6		711
C/1999 K7	1999 05 26.37995	18 20 04.81	+18 53 15.3		658
C/1999 K7	1999 05 26.38225	18 20 04.29	+18 53 13.7		658
C/1999 K7	1999 05 26.38513	18 20 03.66	+18 53 12.7		658
C/1999 K7	1999 05 29.54984	18 07 56.16	+18 33 21.6	17.5 T	402
C/1999 K7	1999 05 29.55145	18 07 55.66	+18 33 20.7		402
C/1999 K7	1999 05 29.55305	18 07 55.15	+18 33 20.8		402
C/1999 K7	1999 05 31.61047	17 59 51.64	+18 16 54.0	17.2 T	402
C/1999 K7	1999 05 31.61207	17 59 51.19	+18 16 53.6		402
C/1999 K7	1999 05 31.61368	17 59 50.72	+18 16 51.4		402
C/1999 K7	1999 06 08.64740	17 27 47.99	+16 45 48.8	17.8 T	360
C/1999 K7	1999 06 08.65191	17 27 46.91	+16 45 44.8		360
C/1999 K7	1999 06 08.65660	17 27 45.77	+16 45 40.7		360
C/1999 K7	1999 06 11.31639	17 17 14.01	+16 06 36.9	19.7 T	704
C/1999 K7	1999 06 11.32887	17 17 11.04	+16 06 26.6	19.4 T	704
C/1999 K7	1999 06 11.34134	17 17 08.06	+16 06 14.7	19.8 T	704
C/1999 K7	1999 06 11.35380	17 17 05.00	+16 06 04.9	19.7 T	704
C/1999 K7	1999 06 11.65557	17 15 54.08	+16 01 22.9		867
C/1999 K7	1999 06 11.66112	17 15 52.69	+16 01 17.1		867
C/1999 K7	1999 06 11.66772	17 15 51.19	+16 01 11.4		867

C/1999 K8 (LINEAR)

C/1999 K8	1999 05 26.38431	21 35 58.89	+34 29 03.0	18.6 N	704
C/1999 K8	1999 05 26.39389	21 35 59.28	+34 29 06.4	18.6 N	704
C/1999 K8	1999 05 26.40380	21 35 59.58	+34 29 09.1	18.6 N	704
C/1999 K8	1999 05 26.41441	21 35 59.94	+34 29 15.8	17.9 N	704
C/1999 K8	1999 05 26.42500	21 36 00.05	+34 29 22.1	17.9 N	704
C/1999 K8	1999 05 27.00479	21 36 12.91	+34 33 01.3		557
C/1999 K8	1999 05 27.01074	21 36 13.02	+34 33 03.7		557
C/1999 K8	1999 05 27.01272	21 36 13.06	+34 33 04.7	17 N	557
C/1999 K8	1999 05 27.02066	21 36 13.24	+34 33 07.7	15.5 T	557
C/1999 K8	1999 05 27.05677	21 36 13.95	+34 33 21.2	16.4 T	046
C/1999 K8	1999 05 27.05946	21 36 14.09	+34 33 22.6		046
C/1999 K8	1999 05 27.06174	21 36 14.13	+34 33 23.7		046
C/1999 K8	1999 05 27.06366	21 36 14.19	+34 33 24.4		046
C/1999 K8	1999 05 27.35789	21 36 20.72	+34 35 16.9	15.6 T	713
C/1999 K8	1999 05 27.41106	21 36 21.89	+34 35 38.6	15.7 T	713
C/1999 K8	1999 05 27.90488	21 36 32.48	+34 38 45.6		046
C/1999 K8	1999 05 27.90917	21 36 32.56	+34 38 46.4		046
C/1999 K8	1999 05 27.91476	21 36 32.70	+34 38 49.4		046
C/1999 K8	1999 05 27.91838	21 36 32.79	+34 38 50.8		046
C/1999 K8	1999 05 27.92027	21 36 32.88	+34 38 51.3		046
C/1999 K8	1999 05 28.06551	21 36 35.91	+34 39 47.4		046
C/1999 K8	1999 05 28.06662	21 36 35.94	+34 39 48.1		046
C/1999 K8	1999 05 28.06766	21 36 35.98	+34 39 48.3		046
C/1999 K8	1999 05 30.05877	21 37 17.08	+34 52 21.5		046

C/1999 K8	1999 05 30.06009	21 37 17.15	+34 52 21.7		046
C/1999 K8	1999 05 30.06126	21 37 17.22	+34 52 22.9		046
C/1999 K8	1999 05 30.06263	21 37 17.21	+34 52 23.0		046
C/1999 K8	1999 05 31.74638	21 37 49.82	+35 02 51.0	15.8 T	402
C/1999 K8	1999 05 31.74797	21 37 49.86	+35 02 51.9		402
C/1999 K8	1999 05 31.74958	21 37 49.90	+35 02 52.9		402
C/1999 K8	1999 06 04.64889	21 38 57.73	+35 26 31.3		355
C/1999 K8	1999 06 04.66325	21 38 57.96	+35 26 36.7		352
C/1999 K8	1999 06 04.66742	21 38 58.04	+35 26 37.4		352
C/1999 K8	1999 06 04.67074	21 38 58.11	+35 26 38.9	15.7 T	355
C/1999 K8	1999 06 04.67450	21 38 58.15	+35 26 40.1		355
C/1999 K8	1999 06 08.59931	21 39 54.99	+35 49 32.2	15.5 T	367
C/1999 K8	1999 06 08.60278	21 39 55.01	+35 49 33.3		367
C/1999 K8	1999 06 08.60625	21 39 55.06	+35 49 34.1		367
C/1999 K8	1999 06 08.77378	21 39 57.08	+35 50 32.6	15.5 T	360
C/1999 K8	1999 06 08.77604	21 39 57.12	+35 50 33.5		360
C/1999 K8	1999 06 08.77830	21 39 57.14	+35 50 34.4		360
C/1999 K8	1999 06 09.66771	21 40 08.31	+35 55 36.6	17.0 T	372
C/1999 K8	1999 06 14.66815	21 40 59.72	+36 22 42.2	15.6 T	355
C/1999 K8	1999 06 14.67955	21 40 59.79	+36 22 46.3		355
C/1999 K8	1999 06 14.68553	21 40 59.85	+36 22 47.5		355

C/1999 K9 (SOHO)

C/1999 K9	1999 05 23.69753	04 03 48.1	+18 12 43		249
Geocentric position (AU)	+0.00629943	+0.00890538	+0.00289819		
C/1999 K9	1999 05 23.71836	04 03 37.5	+18 15 25		249
Geocentric position (AU)	+0.00629864	+0.00890564	+0.00289847		
C/1999 K9	1999 05 23.73920	04 03 34.5	+18 19 13		249
Geocentric position (AU)	+0.00629785	+0.00890589	+0.00289875		
C/1999 K9	1999 05 23.76003	04 03 28.9	+18 21 16		249
Geocentric position (AU)	+0.00629707	+0.00890615	+0.00289903		
C/1999 K9	1999 05 23.78085	04 03 27.9	+18 24 24		249
Geocentric position (AU)	+0.00629628	+0.00890640	+0.00289931		
C/1999 K9	1999 05 23.80187	04 03 20.6	+18 27 45		249
Geocentric position (AU)	+0.00629549	+0.00890666	+0.00289960		
C/1999 K9	1999 05 24.02090	04 02 28.9	+19 02 30		249
Geocentric position (AU)	+0.00628723	+0.00890932	+0.00290257		
C/1999 K9	1999 05 24.02784	04 02 24.1	+19 04 23		249
Geocentric position (AU)	+0.00628697	+0.00890941	+0.00290266		
C/1999 K9	1999 05 24.03496	04 02 26.5	+19 03 54		249
Geocentric position (AU)	+0.00628670	+0.00890949	+0.00290276		
C/1999 K9	1999 05 24.04174	04 02 16.6	+19 06 53		249
Geocentric position (AU)	+0.00628644	+0.00890958	+0.00290285		
C/1999 K9	1999 05 24.04869	04 02 17.0	+19 08 17		249
Geocentric position (AU)	+0.00628618	+0.00890966	+0.00290295		
C/1999 K9	1999 05 24.05562	04 02 16.8	+19 09 11		249
Geocentric position (AU)	+0.00628592	+0.00890974	+0.00290304		
C/1999 K9	1999 05 24.06256	04 02 12.7	+19 09 49		249
Geocentric position (AU)	+0.00628566	+0.00890983	+0.00290314		
C/1999 K9	1999 05 24.06952	04 02 13.1	+19 11 48		249
Geocentric position (AU)	+0.00628540	+0.00890991	+0.00290323		
C/1999 K9	1999 05 24.07663	04 02 10.4	+19 13 03		249
Geocentric position (AU)	+0.00628513	+0.00891000	+0.00290333		

C/1999 K9	1999 05 24.08340	04 02 09.5	+19 13 31		249
Geocentric position (AU)	+0.00628487	+0.00891008	+0.00290342		
C/1999 K9	1999 05 24.09036	04 02 06.8	+19 15 33		249
Geocentric position (AU)	+0.00628461	+0.00891016	+0.00290352		
C/1999 K9	1999 05 24.09729	04 02 03.5	+19 16 07		249
Geocentric position (AU)	+0.00628435	+0.00891025	+0.00290361		
C/1999 K9	1999 05 24.10426	04 02 00.9	+19 18 27		249
Geocentric position (AU)	+0.00628409	+0.00891033	+0.00290371		
C/1999 K9	1999 05 24.11118	04 01 58.9	+19 19 36		249
Geocentric position (AU)	+0.00628383	+0.00891042	+0.00290380		
C/1999 K9	1999 05 24.11828	04 01 56.1	+19 20 43		249
Geocentric position (AU)	+0.00628356	+0.00891050	+0.00290390		
C/1999 K9	1999 05 24.12507	04 01 55.8	+19 21 48		249
Geocentric position (AU)	+0.00628330	+0.00891058	+0.00290399		
C/1999 K9	1999 05 24.13201	04 01 55.5	+19 22 55		249
Geocentric position (AU)	+0.00628304	+0.00891067	+0.00290409		
C/1999 K9	1999 05 24.13896	04 01 54.2	+19 24 28		249
Geocentric position (AU)	+0.00628278	+0.00891075	+0.00290418		
C/1999 K9	1999 05 24.14590	04 01 51.2	+19 25 48		249
Geocentric position (AU)	+0.00628252	+0.00891084	+0.00290428		
C/1999 K9	1999 05 24.15287	04 01 48.3	+19 27 24		249
Geocentric position (AU)	+0.00628226	+0.00891092	+0.00290438		
C/1999 K9	1999 05 24.15998	04 01 44.7	+19 28 35		249
Geocentric position (AU)	+0.00628199	+0.00891101	+0.00290447		
C/1999 K9	1999 05 24.16674	04 01 41.9	+19 30 28		249
Geocentric position (AU)	+0.00628174	+0.00891109	+0.00290457		
C/1999 K9	1999 05 24.17369	04 01 46.6	+19 32 14		249
Geocentric position (AU)	+0.00628147	+0.00891117	+0.00290466		
C/1999 K9	1999 05 24.18062	04 01 41.0	+19 33 11		249
Geocentric position (AU)	+0.00628121	+0.00891126	+0.00290476		
C/1999 K9	1999 05 24.18757	04 01 37.3	+19 34 41		249
Geocentric position (AU)	+0.00628095	+0.00891134	+0.00290485		
C/1999 K9	1999 05 24.19452	04 01 36.8	+19 35 22		249
Geocentric position (AU)	+0.00628069	+0.00891142	+0.00290495		
C/1999 K9	1999 05 24.20200	04 01 33.6	+19 36 51		249
Geocentric position (AU)	+0.00628041	+0.00891151	+0.00290505		

C/1999 K10 (SOHO)

C/1999 K10	1999 05 31.69754	04 33 26.4	+19 47 05		249
Geocentric position (AU)	+0.00598890	+0.00901361	+0.00303385		
C/1999 K10	1999 05 31.76003	04 33 16.6	+19 55 54		249
Geocentric position (AU)	+0.00598620	+0.00901469	+0.00303519		
C/1999 K10	1999 05 31.88207	04 33 05.7	+20 15 53		249
Geocentric position (AU)	+0.00598089	+0.00901681	+0.00303781		
C/1999 K10	1999 05 31.88895	04 33 06.4	+20 17 09		249
Geocentric position (AU)	+0.00598059	+0.00901693	+0.00303796		
C/1999 K10	1999 05 31.89590	04 33 05.7	+20 18 15		249
Geocentric position (AU)	+0.00598029	+0.00901705	+0.00303811		
C/1999 K10	1999 05 31.90284	04 33 05.1	+20 19 25		249
Geocentric position (AU)	+0.00597999	+0.00901717	+0.00303826		
C/1999 K10	1999 05 31.90995	04 33 04.3	+20 20 44		249
Geocentric position (AU)	+0.00597968	+0.00901729	+0.00303842		

C/1999 K10	1999 05 31.91674	04 33 03.7	+20 21 58	249
Geocentric position (AU)	+0.00597938	+0.00901741	+0.00303856	
C/1999 K10	1999 05 31.92367	04 33 03.0	+20 23 16	249
Geocentric position (AU)	+0.00597908	+0.00901753	+0.00303871	
C/1999 K10	1999 05 31.93062	04 33 02.1	+20 24 20	249
Geocentric position (AU)	+0.00597877	+0.00901766	+0.00303887	
C/1999 K10	1999 05 31.93756	04 33 01.6	+20 25 33	249
Geocentric position (AU)	+0.00597847	+0.00901778	+0.00303902	
C/1999 K10	1999 05 31.94451	04 33 00.8	+20 26 55	249
Geocentric position (AU)	+0.00597817	+0.00901790	+0.00303917	
C/1999 K10	1999 05 31.96538	04 32 59.4	+20 30 45	249
Geocentric position (AU)	+0.00597725	+0.00901826	+0.00303962	
C/1999 K10	1999 05 31.97229	04 32 58.5	+20 31 55	249
Geocentric position (AU)	+0.00597695	+0.00901839	+0.00303977	
C/1999 K10	1999 05 31.97923	04 32 57.5	+20 33 28	249
Geocentric position (AU)	+0.00597665	+0.00901851	+0.00303992	
C/1999 K10	1999 05 31.98617	04 32 57.2	+20 34 26	249
Geocentric position (AU)	+0.00597634	+0.00901863	+0.00304007	
C/1999 K10	1999 05 31.99329	04 32 57.3	+20 36 18	249
Geocentric position (AU)	+0.00597603	+0.00901875	+0.00304023	
C/1999 K10	1999 06 01.00701	04 32 55.5	+20 38 41	249
Geocentric position (AU)	+0.00597543	+0.00901900	+0.00304052	
C/1999 K10	1999 06 01.01395	04 32 55.1	+20 39 47	249
Geocentric position (AU)	+0.00597512	+0.00901912	+0.00304068	
C/1999 K10	1999 06 01.02091	04 32 54.0	+20 41 10	249
Geocentric position (AU)	+0.00597482	+0.00901924	+0.00304083	
C/1999 K10	1999 06 01.02822	04 32 53.4	+20 42 45	249
Geocentric position (AU)	+0.00597450	+0.00901937	+0.00304099	
C/1999 K10	1999 06 01.03533	04 32 52.7	+20 44 04	249
Geocentric position (AU)	+0.00597419	+0.00901950	+0.00304114	
C/1999 K10	1999 06 01.04173	04 32 52.7	+20 45 19	249
Geocentric position (AU)	+0.00597390	+0.00901961	+0.00304128	
C/1999 K10	1999 06 01.04868	04 32 51.5	+20 46 42	249
Geocentric position (AU)	+0.00597360	+0.00901973	+0.00304143	
C/1999 K10	1999 06 01.05599	04 32 51.2	+20 48 10	249
Geocentric position (AU)	+0.00597328	+0.00901986	+0.00304159	
C/1999 K10	1999 06 01.06257	04 32 50.5	+20 49 39	249
Geocentric position (AU)	+0.00597299	+0.00901998	+0.00304174	
C/1999 K10	1999 06 01.06951	04 32 50.0	+20 51 04	249
Geocentric position (AU)	+0.00597268	+0.00902010	+0.00304189	
C/1999 K10	1999 06 01.07663	04 32 50.0	+20 52 35	249
Geocentric position (AU)	+0.00597237	+0.00902022	+0.00304204	
C/1999 K10	1999 06 01.08378	04 32 49.5	+20 53 59	249
Geocentric position (AU)	+0.00597205	+0.00902035	+0.00304220	
C/1999 K10	1999 06 01.09034	04 32 49.0	+20 55 23	249
Geocentric position (AU)	+0.00597176	+0.00902047	+0.00304234	

C/1999 L1 (SOHO)

C/1999 L1	1999 06 05.01256	04 51 04.3	+19 39 40	249
Geocentric position (AU)	+0.00577697	+0.00909924	+0.00313769	
C/1999 L1	1999 06 05.02923	04 50 59.3	+19 40 42	249
Geocentric position (AU)	+0.00577603	+0.00909961	+0.00313813	

C/1999 L1	1999 06 05.07090	04 50 58.1	+19 46 25	249
Geocentric position (AU)	+0.00577367	+0.00910054	+0.00313924	
C/1999 L1	1999 06 05.18384	04 50 54.4	+20 03 15	249
Geocentric position (AU)	+0.00576726	+0.00910305	+0.00314227	
C/1999 L1	1999 06 05.22100	04 50 56.9	+20 08 28	249
Geocentric position (AU)	+0.00576514	+0.00910388	+0.00314326	
C/1999 L1	1999 06 05.26256	04 50 54.8	+20 15 02	249
Geocentric position (AU)	+0.00576276	+0.00910481	+0.00314438	
C/1999 L1	1999 06 05.32090	04 50 55.7	+20 25 10	249
Geocentric position (AU)	+0.00575940	+0.00910611	+0.00314595	
C/1999 L1	1999 06 05.36256	04 50 54.6	+20 31 50	249
Geocentric position (AU)	+0.00575700	+0.00910704	+0.00314708	
C/1999 L1	1999 06 05.40423	04 50 56.2	+20 38 29	249
Geocentric position (AU)	+0.00575459	+0.00910798	+0.00314821	
C/1999 L1	1999 06 05.42923	04 50 53.2	+20 43 13	249
Geocentric position (AU)	+0.00575314	+0.00910854	+0.00314888	
C/1999 L1	1999 06 05.44590	04 50 52.9	+20 46 13	249
Geocentric position (AU)	+0.00575218	+0.00910891	+0.00314933	
C/1999 L1	1999 06 05.45168	04 50 52.9	+20 47 10	249
Geocentric position (AU)	+0.00575184	+0.00910905	+0.00314949	
C/1999 L1	1999 06 05.47090	04 50 54.0	+20 50 48	249
Geocentric position (AU)	+0.00575072	+0.00910948	+0.00315001	
C/1999 L1	1999 06 05.48756	04 50 52.4	+20 53 32	249
Geocentric position (AU)	+0.00574975	+0.00910985	+0.00315047	
C/1999 L1	1999 06 05.49312	04 50 54.0	+20 55 12	249
Geocentric position (AU)	+0.00574943	+0.00910998	+0.00315062	
C/1999 L1	1999 06 05.50423	04 50 53.8	+20 57 11	249
Geocentric position (AU)	+0.00574878	+0.00911023	+0.00315092	
C/1999 L1	1999 06 05.51257	04 50 56.1	+20 58 51	249
Geocentric position (AU)	+0.00574829	+0.00911041	+0.00315114	
C/1999 L1	1999 06 05.51812	04 50 54.1	+20 59 53	249
Geocentric position (AU)	+0.00574797	+0.00911054	+0.00315130	
C/1999 L1	1999 06 05.53479	04 50 54.5	+21 03 12	249
Geocentric position (AU)	+0.00574699	+0.00911092	+0.00315175	
C/1999 L1	1999 06 05.56033	04 50 57.4	+21 08 04	249
Geocentric position (AU)	+0.00574550	+0.00911149	+0.00315245	
C/1999 L1	1999 06 05.57645	04 50 55.3	+21 11 42	249
Geocentric position (AU)	+0.00574456	+0.00911186	+0.00315288	
C/1999 L1	1999 06 05.58756	04 50 55.7	+21 14 08	249
Geocentric position (AU)	+0.00574390	+0.00911211	+0.00315319	
C/1999 L1	1999 06 05.60145	04 50 58.0	+21 17 09	249
Geocentric position (AU)	+0.00574309	+0.00911242	+0.00315357	
C/1999 L1	1999 06 05.61812	04 50 57.1	+21 20 50	249
Geocentric position (AU)	+0.00574211	+0.00911280	+0.00315402	
C/1999 L1	1999 06 05.62923	04 50 58.6	+21 23 18	249
Geocentric position (AU)	+0.00574146	+0.00911305	+0.00315432	
C/1999 L1	1999 06 05.64312	04 50 58.4	+21 26 19	249
Geocentric position (AU)	+0.00574064	+0.00911336	+0.00315470	
C/1999 L1	1999 06 05.65979	04 50 58.7	+21 30 25	249
Geocentric position (AU)	+0.00573966	+0.00911374	+0.00315516	
C/1999 L1	1999 06 05.68478	04 51 01.4	+21 35 35	249
Geocentric position (AU)	+0.00573818	+0.00911430	+0.00315584	

1999 JUNE 22

M.P.C. 34695

C/1999 L2 (LINEAR)

C/1999 L2	1999 06 11.24296	16 35 06.96	+15 25 47.4	18.6 T	704
C/1999 L2	1999 06 11.25596	16 35 06.01	+15 25 23.6	18.9 T	704
C/1999 L2	1999 06 11.26886	16 35 05.05	+15 24 59.4	19.1 T	704
C/1999 L2	1999 06 11.29478	16 35 03.06	+15 24 14.3	19.0 T	704
C/1999 L2	1999 06 12.19718	16 33 58.91	+14 57 15.5	16.5 T	816
C/1999 L2	1999 06 12.20328	16 33 58.47	+14 57 04.6		816
C/1999 L2	1999 06 12.21365	16 33 57.71	+14 56 45.3	16.5 T	816
C/1999 L2	1999 06 12.23995	16 33 56.00	+14 55 59.0	18.6 T	704
C/1999 L2	1999 06 12.25221	16 33 54.81	+14 55 42.9	20.4 T	704
C/1999 L2	1999 06 12.26451	16 33 54.19	+14 55 15.2	18.9 T	704
C/1999 L2	1999 06 12.27680	16 33 53.33	+14 54 53.6	18.4 T	704
C/1999 L2	1999 06 12.30011	16 33 51.63	+14 54 10.4	18.4 T	704
C/1999 L2	1999 06 12.31230	16 33 50.66	+14 53 47.7	18.6 T	704
C/1999 L2	1999 06 12.32448	16 33 49.86	+14 53 23.9	19.6 T	704
C/1999 L2	1999 06 12.33669	16 33 48.91	+14 53 02.4	19.1 T	704
C/1999 L2	1999 06 12.88030	16 33 10.70	+14 36 26.8	17.7 T	133
C/1999 L2	1999 06 12.90162	16 33 09.14	+14 35 47.4	17.6 T	133
C/1999 L2	1999 06 12.90502	16 33 08.92	+14 35 41.1	17.9 T	133
C/1999 L2	1999 06 12.90833	16 33 08.55	+14 35 34.1	17.5 T	120
C/1999 L2	1999 06 12.90850	16 33 08.43	+14 35 34.1	17.7 T	133
C/1999 L2	1999 06 12.91518	16 33 08.12	+14 35 21.8		120
C/1999 L2	1999 06 12.91730	16 33 07.93	+14 35 18.3		120
C/1999 L2	1999 06 12.94025	16 33 06.30	+14 34 36.0	16.5 T	046
C/1999 L2	1999 06 12.94194	16 33 06.17	+14 34 33.2		046
C/1999 L2	1999 06 12.94314	16 33 06.08	+14 34 31.1		046
C/1999 L2	1999 06 12.94421	16 33 05.98	+14 34 28.5	17.3 N	046
C/1999 L2	1999 06 12.94534	16 33 05.97	+14 34 26.2		046
C/1999 L2	1999 06 12.94840	16 33 05.66	+14 34 23.7		108
C/1999 L2	1999 06 12.95058	16 33 05.57	+14 34 17.5		108
C/1999 L2	1999 06 12.95312	16 33 05.46	+14 34 11.8	16.7 T	108
C/1999 L2	1999 06 13.04025	16 32 58.99	+14 31 30.2		557
C/1999 L2	1999 06 13.04235	16 32 58.84	+14 31 26.0		557
C/1999 L2	1999 06 13.04444	16 32 58.61	+14 31 22.5		557
C/1999 L2	1999 06 13.09003	16 32 55.69	+14 30 07.4	17.4 T	859
C/1999 L2	1999 06 13.09406	16 32 55.42	+14 30 00.2	16.9 T	859
C/1999 L2	1999 06 13.10171	16 32 54.88	+14 29 45.1	17.0 T	859
C/1999 L2	1999 06 13.17286	16 32 49.90	+14 27 26.2	17.4 N	784
C/1999 L2	1999 06 13.17552	16 32 49.72	+14 27 21.2	17.4 N	784
C/1999 L2	1999 06 13.17847	16 32 49.49	+14 27 15.7	17.4 N	784
C/1999 L2	1999 06 13.93363	16 31 56.13	+14 03 40.0	16.2 T	046
C/1999 L2	1999 06 13.93480	16 31 56.12	+14 03 38.1		046
C/1999 L2	1999 06 13.93596	16 31 56.03	+14 03 35.3		046
C/1999 L2	1999 06 13.93753	16 31 55.92	+14 03 32.1		046
C/1999 L2	1999 06 14.24348	16 31 34.43	+13 53 54.1	18.5 T	704
C/1999 L2	1999 06 14.25586	16 31 33.61	+13 53 28.5	18.4 T	704
C/1999 L2	1999 06 14.26830	16 31 32.66	+13 53 05.2	18.3 T	704
C/1999 L2	1999 06 14.28069	16 31 31.44	+13 52 41.3	18.1 T	704
C/1999 L2	1999 06 14.30556	16 31 30.00	+13 51 54.8	17.5 T	691
C/1999 L2	1999 06 14.31036	16 31 29.64	+13 51 45.5	17.4 T	691
C/1999 L2	1999 06 14.31487	16 31 29.34	+13 51 36.9	17.3 T	691
C/1999 L2	1999 06 14.55399	16 31 12.79	+13 44 01.2	16.9 T	402
C/1999 L2	1999 06 14.55524	16 31 12.70	+13 43 58.3		402

C/1999 L2

C/1999 L2	1999 06 14.55650	16 31 12.60	+13 43 55.1		402
C/1999 L2	1999 06 14.59226	16 31 10.04	+13 42 47.1	16.8 T	897
C/1999 L2	1999 06 14.62328	16 31 07.78	+13 41 47.9	16.6 T	867
C/1999 L2	1999 06 14.62562	16 31 07.52	+13 41 42.0		897
C/1999 L2	1999 06 14.62848	16 31 07.39	+13 41 37.6		867
C/1999 L2	1999 06 14.63473	16 31 06.93	+13 41 25.8		867
C/1999 L2	1999 06 14.63599	16 31 06.73	+13 41 22.9		897
C/1999 L2	1999 06 14.64726	16 31 06.08	+13 41 01.9	16.8 T	897
C/1999 L2	1999 06 20.86572	16 24 06.01	+10 08 57.8	16.5 T	104
C/1999 L2	1999 06 20.86729	16 24 05.89	+10 08 55.0		104
C/1999 L2	1999 06 20.86887	16 24 05.75	+10 08 51.8		104
C/1999 L2	1999 06 20.87258	16 24 05.52	+10 08 45.7		104

C/1999 L3 (LINEAR)

C/1999 L3	1999 06 09.17148	13 07 18.98	-26 31 47.8	18.3 N	704
C/1999 L3	1999 06 09.18126	13 07 17.63	-26 31 36.0	18.2 N	704
C/1999 L3	1999 06 09.19093	13 07 16.51	-26 31 24.8	18.5 N	704
C/1999 L3	1999 06 09.20062	13 07 15.34	-26 31 13.5	18.5 N	704
C/1999 L3	1999 06 09.21031	13 07 14.16	-26 31 03.1	18.2 N	704
C/1999 L3	1999 06 10.16338	13 05 18.56	-26 12 26.6	18.5 N	704
C/1999 L3	1999 06 10.17234	13 05 17.51	-26 12 11.0	18.2 T	860
C/1999 L3	1999 06 10.17665	13 05 16.97	-26 12 07.3	17.3 T	860
C/1999 L3	1999 06 10.17833	13 05 17.02	-26 12 09.9	18.3 N	704
C/1999 L3	1999 06 10.17840	13 05 17.03	-26 12 09.3	18.2 N	704
C/1999 L3	1999 06 10.18087	13 05 16.56	-26 12 02.7	17.3 T	860
C/1999 L3	1999 06 10.19319	13 05 15.26	-26 11 52.7	18.5 N	704
C/1999 L3	1999 06 10.19326	13 05 15.19	-26 11 53.2	18.2 N	704
C/1999 L3	1999 06 10.20804	13 05 13.49	-26 11 35.3	18.6 N	704
C/1999 L3	1999 06 10.20811	13 05 13.40	-26 11 35.5	18.3 N	704
C/1999 L3	1999 06 10.22290	13 05 11.66	-26 11 17.8	18.9 N	704
C/1999 L3	1999 06 10.22297	13 05 11.62	-26 11 18.1	18.6 N	704
C/1999 L3	1999 06 10.43383	13 04 46.63	-26 07 08.8	17.4 T	426
C/1999 L3	1999 06 10.44671	13 04 45.04	-26 06 54.5	17.4 T	426
C/1999 L3	1999 06 10.45122	13 04 44.51	-26 06 48.7	17.5 T	426
C/1999 L3	1999 06 11.16969	13 03 19.72	-25 52 56.0		704
C/1999 L3	1999 06 11.16976	13 03 19.86	-25 52 55.3	18.4 N	704
C/1999 L3	1999 06 11.18254	13 03 18.29	-25 52 40.9		704
C/1999 L3	1999 06 11.18262	13 03 18.35	-25 52 40.9	19.0 N	704
C/1999 L3	1999 06 11.19539	13 03 16.78	-25 52 25.1		704
C/1999 L3	1999 06 11.19547	13 03 16.78	-25 52 25.6	18.5 N	704
C/1999 L3	1999 06 11.37800	13 02 55.70	-25 48 51.1	17.3 T	426
C/1999 L3	1999 06 11.38225	13 02 55.17	-25 48 45.8	17.2 T	426
C/1999 L3	1999 06 11.38719	13 02 54.61	-25 48 40.3	17.2 T	426
C/1999 L3	1999 06 11.41468	13 02 51.42	-25 48 08.5	18.2 N	428
C/1999 L3	1999 06 11.41799	13 02 50.98	-25 48 04.8	18.2 N	428
C/1999 L3	1999 06 11.42119	13 02 50.57	-25 48 01.1	18.2 N	428
C/1999 L3	1999 06 12.03865	13 01 39.37	-25 36 05.9	17.2 T	860
C/1999 L3	1999 06 12.04355	13 01 38.72	-25 36 00.7	17.9 T	860
C/1999 L3	1999 06 12.04793	13 01 38.30	-25 35 55.7	17.1 T	860
C/1999 L3	1999 06 12.34833	13 01 04.23	-25 30 08.7	18.4 N	428
C/1999 L3	1999 06 12.35186	13 01 03.91	-25 30 04.7	18.1 N	428
C/1999 L3	1999 06 12.35499	13 01 03.59	-25 30 01.0	18.2 N	428
C/1999 L3	1999 06 12.97681	12 59 53.53	-25 18 05.4	17.5 T	859

C/1999 L3	1999 06 12.98095	12 59 53.00	-25 18 01.0	17.6 T	859	10P	1999 05 16.00749	17 31 42.84	-04 25 28.1		145
C/1999 L3	1999 06 12.98463	12 59 52.60	-25 17 56.7	17.7 T	859	10P	1999 05 29.31218	17 28 01.68	-04 19 21.0	16.0 T	840
C/1999 L3	1999 06 12.98866	12 59 52.16	-25 17 51.7	17.5 T	859	10P	1999 05 29.32257	17 28 01.38	-04 19 22.2	16.0 T	840
C/1999 L3	1999 06 13.42725	12 59 03.55	-25 09 28.4	17.1 T	426	10P	1999 05 29.34132	17 28 00.75	-04 19 23.2	16.0 T	840
C/1999 L3	1999 06 13.43087	12 59 03.11	-25 09 24.1	17.2 T	426	10P	1999 06 07.28339	17 22 55.87	-04 45 53.3	16.4 T	706
C/1999 L3	1999 06 13.44348	12 59 01.71	-25 09 10.1	17.4 T	426	10P	1999 06 07.29249	17 22 55.41	-04 45 55.9	16.4 T	706
C/1999 L3	1999 06 14.16700	12 57 42.68	-24 55 26.8	18.0 T	704	10P	1999 06 07.30334	17 22 54.99	-04 46 00.5	16.1 T	706
C/1999 L3	1999 06 14.17932	12 57 41.27	-24 55 12.5	18.4 T	704	10P	1999 06 08.24365	17 22 16.89	-04 50 15.7		844
C/1999 L3	1999 06 14.19164	12 57 39.95	-24 54 55.3	18.9 T	704	10P	1999 06 08.28790	17 22 14.94	-04 50 29.1		844
C/1999 L3	1999 06 14.20396	12 57 38.52	-24 54 44.2	18.6 T	704	10P	1999 06 08.29620	17 22 14.61	-04 50 31.5		844
C/1999 L3	1999 06 14.21639	12 57 37.23	-24 54 29.9	18.7 T	704	10P	1999 06 08.63177	17 22 01.36	-04 52 27.4	14.6 T	360
C/1999 L3	1999 06 14.35956	12 57 22.00	-24 51 44.1	17.7 T	428	10P	1999 06 08.63993	17 22 00.99	-04 52 29.9		360
C/1999 L3	1999 06 14.36455	12 57 21.48	-24 51 38.9	17.7 T	428	10P	1999 06 11.62083	17 19 54.49	-05 09 43.8	15.0 T	372
C/1999 L3	1999 06 14.36927	12 57 20.93	-24 51 32.9	17.8 T	428	10P	1999 06 14.29469	17 17 55.70	-05 28 20.5	15.6 T	704
C/1999 L3	1999 06 14.41067	12 57 16.43	-24 50 46.1	17.4 T	426	10P	1999 06 14.30683	17 17 55.13	-05 28 27.5		704
C/1999 L3	1999 06 14.41588	12 57 15.85	-24 50 39.9	17.4 T	426	10P	1999 06 14.31887	17 17 54.53	-05 28 32.7		704
C/1999 L4 (SOHO)						10P	1999 06 14.34296	17 17 53.18	-05 28 43.4		704
C/1999 L4	1999 06 01.44755	04 33 53.3	+19 37 04		249	10P	1999 06 15.25547	17 17 12.18	-05 35 49.6	16.9 T	750
Geocentric position (AU)	+0.00595588	+0.00902688	+0.00305024			10P	1999 06 15.26574	17 17 11.66	-05 35 54.4	17.2 T	750
C/1999 L4	1999 06 01.46837	04 33 52.5	+19 40 55		249	10P	1999 06 15.27834	17 17 11.05	-05 36 00.4	16.8 T	750
Geocentric position (AU)	+0.00595494	+0.00902725	+0.00305070			10P	1999 06 15.91317	17 16 42.48	-05 41 09.7	16.0 T	145
C/1999 L4	1999 06 01.48918	04 33 52.0	+19 44 04		249	10P	1999 06 15.91859	17 16 42.22	-05 41 12.4	16.0 T	145
Geocentric position (AU)	+0.00595400	+0.00902763	+0.00305117			10P	1999 06 15.92286	17 16 42.01	-05 41 14.5	15.9 T	145
C/1999 L4	1999 06 01.51003	04 33 51.3	+19 47 47		249	10P	1999 06 15.92840	17 16 41.72	-05 41 17.3	15.7 T	145
Geocentric position (AU)	+0.00595307	+0.00902801	+0.00305163			10P	1999 06 15.93394	17 16 41.46	-05 41 19.9	15.8 T	145
C/1999 L4	1999 06 01.57253	04 33 51.5	+20 00 46		249	14P/Wolf					
Geocentric position (AU)	+0.00595024	+0.00902916	+0.00305304			14P	1999 04 15.47970	17 13 31.96	-00 08 14.6		693
C/1999 L4	1999 06 01.64646	04 33 53.4	+20 19 12		249	14P	1999 04 15.48728	17 13 31.92	-00 08 11.5	21.5 T	693
Geocentric position (AU)	+0.00594689	+0.00903052	+0.00305470			14P	1999 05 23.36183	16 58 31.38	+04 21 02.5		693
C/1999 L4	1999 06 01.65285	04 33 53.7	+20 19 34		249	14P	1999 05 23.36943	16 58 31.06	+04 21 05.1		693
Geocentric position (AU)	+0.00594660	+0.00903063	+0.00305485			14P	1999 05 23.37693	16 58 30.78	+04 21 07.9	20.8 T	693
C/1999 L4	1999 06 01.67655	04 33 52.6	+20 25 23		249	17P/Holmes					
Geocentric position (AU)	+0.00594553	+0.00903107	+0.00305538			17P	1999 06 07.20677	17 01 43.00	-49 10 11.0	20.9 T	809
C/1999 L4	1999 06 01.69196	04 33 52.5	+20 29 34		249	17P	1999 06 07.21770	17 01 42.18	-49 10 09.8		809
Geocentric position (AU)	+0.00594482	+0.00903136	+0.00305573			17P	1999 06 07.22864	17 01 41.41	-49 10 09.2		809
C/1999 L4	1999 06 01.71402	04 33 55.0	+20 34 47		249	21P/Giacobini-Zinner					
Geocentric position (AU)	+0.00594382	+0.00903176	+0.00305623			21P	1998 05 20.64385	17 31 30.10	+19 49 53.7		897
9P/Tempel 1						21P	1998 05 20.66954	17 31 29.00	+19 50 22.9	16.5 T	897
9P	1999 05 07.48438	08 25 30.82	+29 28 40.7	19.0 N	360	21P	1998 06 20.63965	16 57 53.15	+27 13 13.5	15.2 T	897
9P	1999 05 07.49427	08 25 31.44	+29 28 37.3		360	21P	1998 06 20.65688	16 57 51.74	+27 13 22.4		897
9P	1999 05 07.49809	08 25 31.64	+29 28 35.1		360	21P	1998 06 20.67118	16 57 50.64	+27 13 29.7		897
9P	1999 05 23.16103	08 43 45.49	+27 50 06.2		693	21P	1998 06 29.60365	16 46 21.73	+28 10 06.2	14.9 T	897
9P	1999 05 23.16536	08 43 45.82	+27 50 04.4		693	21P	1998 06 29.61434	16 46 20.91	+28 10 09.7		897
9P	1999 05 23.16940	08 43 46.13	+27 50 02.6	18.5 T	693	21P	1998 07 17.63509	16 27 06.05	+28 06 49.5		897
10P/Tempel 2						21P	1998 07 17.64046	16 27 05.81	+28 06 48.0	14.8 T	897
10P	1999 04 29.66200	17 28 59.30	-05 17 32.4	17.7 T	897	21P	1998 07 27.52458	16 20 42.80	+27 05 15.4	13.5 T	897
10P	1999 04 29.67061	17 28 59.49	-05 17 30.7		897	21P	1998 07 27.52898	16 20 42.67	+27 05 13.1		897
10P	1999 05 13.72274	17 31 48.82	-04 30 34.1	16.1 T	360	21P	1998 07 27.54497	16 20 42.19	+27 05 05.7		897
10P	1999 05 13.72535	17 31 48.82	-04 30 33.8		360	21P	1998 08 20.03472	16 21 21.72	+22 36 04.2		835
10P	1999 05 15.99826	17 31 42.90	-04 25 29.4		145	21P	1998 08 20.04446	16 21 22.08	+22 35 55.1		835
10P	1999 05 16.00322	17 31 42.86	-04 25 28.6		145	21P	1998 08 20.06129	16 21 22.55	+22 35 41.9		835

1999 JUNE 22

M.P.C. 34697

21P	1999 04 30.45518	06 05 33.40	-02 49 39.2	16.0 T	402
21P	1999 04 30.45645	06 05 33.60	-02 49 38.6		402
21P	1999 04 30.45771	06 05 33.85	-02 49 38.9		402

29P/Schwassmann-Wachmann 1

29P	1998 03 22.60916	13 32 15.34	-20 51 30.8	13.8 T	897
29P	1998 03 22.61978	13 32 15.06	-20 51 29.4		897
29P	1998 04 04.61508	13 26 46.11	-20 33 09.9	13.9 T	897
29P	1998 04 19.68534	13 19 56.76	-20 00 32.5	14.9 T	897
29P	1998 06 29.47745	13 05 26.03	-17 27 53.1		897
29P	1999 05 06.62795	15 04 21.44	-28 53 22.4	13.9 T	360
29P	1999 05 06.63125	15 04 21.35	-28 53 21.9	16.3 N	360
29P	1999 05 09.06457	15 03 09.37	-28 48 57.6		844
29P	1999 05 09.10955	15 03 07.99	-28 48 52.5		844
29P	1999 05 09.13514	15 03 07.18	-28 48 49.5		844
29P	1999 05 13.61788	15 00 54.52	-28 40 04.0	13.8 T	360
29P	1999 05 13.62135	15 00 54.41	-28 40 03.5	16.7 N	360
29P	1999 05 16.92204	14 59 17.75	-28 33 03.6		118
29P	1999 05 16.92537	14 59 17.63	-28 33 02.9		118
29P	1999 05 16.92881	14 59 17.54	-28 33 02.9	17 T	118
29P	1999 05 20.64549	14 57 30.67	-28 24 40.4	14.0 T	360
29P	1999 05 20.64792	14 57 30.61	-28 24 40.4	16.8 N	360
29P	1999 06 05.58264	14 50 38.26	-27 45 12.3	14.5 T	360
29P	1999 06 05.58611	14 50 38.18	-27 45 11.7		360
29P	1999 06 08.18941	14 49 40.54	-27 38 26.5		844
29P	1999 06 08.19252	14 49 40.52	-27 38 26.0		844
29P	1999 06 08.22889	14 49 39.68	-27 38 20.4		844
29P	1999 06 08.23330	14 49 39.63	-27 38 19.4		844
29P	1999 06 09.55000	14 49 11.82	-27 34 58.0	14.2 T	360
29P	1999 06 09.55260	14 49 11.77	-27 34 57.7		360

37P/Forbes

37P	1999 04 16.79282	21 14 53.27	-22 48 16.9	14.1 T	897
37P	1999 04 16.79538	21 14 53.80	-22 48 14.1		897
37P	1999 05 01.77005	22 01 55.61	-18 30 11.6		897
37P	1999 05 01.77495	22 01 56.53	-18 30 06.8		897
37P	1999 05 09.36028	22 23 57.08	-16 07 27.5		844
37P	1999 05 09.36774	22 23 58.39	-16 07 18.5		844
37P	1999 05 09.37953	22 24 00.29	-16 07 05.8		844
37P	1999 05 13.79323	22 36 12.85	-14 42 17.3	13.0 T	360
37P	1999 05 13.79549	22 36 13.23	-14 42 14.7		360
37P	1999 05 20.76615	22 54 33.52	-12 26 50.8	13.3 T	897
37P	1999 05 20.76910	22 54 33.94	-12 26 47.5		897

49P/Arend-Rigaux

49P	1999 05 13.63177	13 58 12.67	+15 11 08.8	19.0 N	360
49P	1999 05 13.63628	13 58 12.49	+15 11 08.2		360
49P	1999 05 14.15908	13 57 50.85	+15 10 05.7	19.5 T	704
49P	1999 05 14.17391	13 57 50.25	+15 10 04.9	19.5 T	704
49P	1999 05 14.20353	13 57 49.15	+15 09 59.2	20.0 T	704
49P	1999 05 14.21829	13 57 48.58	+15 09 57.3	20.0 T	704

52P/Harrington-Abell

52P	1998 08 04.78398	04 04 18.10	+29 26 42.5		897
52P	1998 08 04.78968	04 04 18.69	+29 26 45.7	12.5 T	897

52P	1999 04 20.51964	08 32 25.71	+18 52 59.5		900
52P	1999 04 20.52608	08 32 26.28	+18 52 54.5	15.6 T	900
52P	1999 04 29.54031	08 48 38.50	+17 00 51.3	15.9 T	897
52P	1999 04 29.57078	08 48 41.82	+17 00 29.3		897
52P	1999 05 06.52934	09 01 20.32	+15 33 56.3	15.5 T	360
52P	1999 05 06.53420	09 01 20.79	+15 33 53.3		360
52P	1999 05 07.50290	09 03 06.79	+15 21 50.0		903
52P	1999 05 07.51773	09 03 08.33	+15 21 36.8		903
52P	1999 05 08.15243	09 04 17.77	+15 13 44.1	17.7 T	704
52P	1999 05 08.16292	09 04 18.97	+15 13 36.3	17.8 T	704
52P	1999 05 08.17339	09 04 20.09	+15 13 28.7	18.4 T	704
52P	1999 05 08.18388	09 04 21.24	+15 13 19.5	18.5 T	704
52P	1999 05 08.19405	09 04 22.41	+15 13 11.5	18.0 T	704
52P	1999 06 05.16637	09 55 14.56	+09 22 36.9	16.2 T	703
52P	1999 06 05.17442	09 55 15.35	+09 22 31.8	15.8 T	703
52P	1999 06 05.18240	09 55 16.31	+09 22 26.0	16.4 T	703
52P	1999 06 05.19049	09 55 16.92	+09 22 21.6	16.3 T	703

60P/Tsuchinshan 2

60P	1999 05 08.14973	08 38 39.53	+12 23 52.2	18.5 T	704
60P	1999 05 08.16003	08 38 40.97	+12 23 47.8	18.8 T	704
60P	1999 05 08.17051	08 38 42.34	+12 23 41.2	19.4 T	704
60P	1999 05 08.18103	08 38 43.64	+12 23 38.3	19.0 T	704
60P	1999 05 08.19139	08 38 44.80	+12 23 33.6	19.2 T	704
60P	1999 05 15.21668	08 53 57.33	+11 20 05.0		693
60P	1999 05 15.21758	08 53 57.42	+11 20 04.4		693

69P/Taylor

69P	1998 03 22.47356	08 20 22.26	+37 29 45.8	13.1 T	897
69P	1998 03 22.48728	08 20 23.04	+37 29 45.5		897
69P	1998 03 31.55900	08 29 56.49	+37 13 20.4		897
69P	1998 03 31.56543	08 29 56.94	+37 13 18.1		897
69P	1998 03 31.59553	08 29 58.97	+37 13 13.0	13.6 T	897
69P	1998 04 04.55163	08 34 45.13	+37 00 54.2	14.6 T	897
69P	1998 04 04.60113	08 34 48.76	+37 00 43.6		897
69P	1998 04 19.49791	08 55 14.07	+35 50 53.4		897
69P	1998 04 19.52098	08 55 16.12	+35 50 44.8		897
69P	1998 04 19.54291	08 55 18.06	+35 50 37.5		897
69P	1998 05 20.50742	09 44 57.22	+31 54 40.1		897
69P	1998 05 20.51438	09 44 57.97	+31 54 37.2		897
69P	1998 05 20.52132	09 44 58.73	+31 54 34.4		897
69P	1998 05 31.47366	10 03 28.45	+30 10 13.1		897
69P	1998 05 31.47828	10 03 28.85	+30 10 10.1	15.6 T	897
69P	1998 05 31.49352	10 03 30.51	+30 10 01.9		897

88P/Howell

88P	1998 05 14.61366	13 03 54.10	-03 19 12.1	15.9 T	897
88P	1998 05 14.62583	13 03 53.59	-03 19 08.8		897
88P	1998 05 14.63220	13 03 53.11	-03 19 10.2		897
88P	1998 06 29.48586	13 07 48.75	-06 49 31.4	14.9 T	897
88P	1998 06 29.48994	13 07 48.91	-06 49 34.4		897
88P	1998 06 29.49430	13 07 49.14	-06 49 35.9		897

93P/Lovas 1						
93P	1999 05 15.16747	08 16 45.87	+23 23 52.7	18.5 T	703	
93P	1999 05 15.17693	08 16 46.61	+23 23 46.1	18.4 T	703	
93P	1999 05 15.18640	08 16 47.44	+23 23 41.9	17.4 T	703	
93P	1999 05 15.19582	08 16 48.46	+23 23 37.0	18.1 T	703	
103P/Hartley 2						
103P	1998 03 22.43907	05 27 48.99	+07 59 33.3		897	
103P	1998 03 22.44603	05 27 50.36	+07 59 35.1		897	
105P/Singer Brewster						
105P	1999 06 08.70104	18 02 32.42	−06 50 49.3	17.7 T	360	
105P	1999 06 08.70573	18 02 32.24	−06 50 47.9		360	
105P	1999 06 11.67644	18 00 44.76	−06 41 19.8		867	
105P	1999 06 11.69137	18 00 44.21	−06 41 17.6		867	
105P	1999 06 14.29979	17 59 05.92	−06 34 35.5	19.3 T	704	
105P	1999 06 14.31183	17 59 05.42	−06 34 35.1	19.8 T	704	
105P	1999 06 14.32387	17 59 04.88	−06 34 33.1	20.2 T	704	
105P	1999 06 14.33592	17 59 04.32	−06 34 31.1	20.1 T	704	
105P	1999 06 14.34799	17 59 03.89	−06 34 29.0	19.6 T	704	
118P/Shoemaker-Levy 4						
118P	1999 05 23.32911	16 53 36.38	−11 52 09.9		693	
134P/Kowal-Vávrová						
134P	1999 04 12.50997	18 51 10.04	−18 37 42.2	12.9 T	693	
134P	1999 06 08.71597	18 55 45.24	−16 46 28.6	14.7 T	360	
134P	1999 06 08.72118	18 55 45.07	−16 46 28.3		360	
134P	1999 06 14.68444	18 52 26.83	−16 44 25.5	15.5 T	402	
134P	1999 06 14.68570	18 52 26.76	−16 44 25.0		402	
134P	1999 06 14.68696	18 52 26.72	−16 44 25.4		402	
134P	1999 06 15.35141	18 52 03.13	−16 44 19.2	17.2 T	704	
134P	1999 06 15.36341	18 52 02.75	−16 44 18.9	17.6 T	704	
134P	1999 06 15.37548	18 52 02.34	−16 44 17.9	18.9 T	704	
134P	1999 06 15.38768	18 52 01.67	−16 44 18.6	18.3 T	704	
134P	1999 06 15.39993	18 52 01.31	−16 44 18.2	18.0 T	704	
135P/Shoemaker-Levy 8						
135P	1999 05 06.54097	11 10 52.84	+01 13 12.2	18.2 T	360	
135P	1999 05 06.54618	11 10 52.89	+01 13 12.9		360	
135P	1999 06 09.50122	11 25 37.91	+01 05 58.4	18.4 T	360	
135P	1999 06 09.50573	11 25 38.08	+01 05 58.1		360	
140P/Bowell-Skiff						
140P	1999 05 05.14955	08 18 18.65	+20 26 32.2	16.4 T	699	
140P	1999 05 05.16227	08 18 20.20	+20 26 25.5		699	
140P	1999 05 05.17500	08 18 21.77	+20 26 18.7		699	
140P	1999 05 05.83101	08 19 42.76	+20 20 26.5		118	
140P	1999 05 05.83253	08 19 42.88	+20 20 24.7		118	
140P	1999 05 07.47587	08 23 06.66	+20 05 39.6	15.5 T	360	
140P	1999 05 07.47830	08 23 06.96	+20 05 38.8		360	
140P	1999 05 08.14637	08 24 30.29	+19 59 32.6	17.2 T	704	
140P	1999 05 08.15640	08 24 31.55	+19 59 26.4	17.9 T	704	
140P	1999 05 08.16709	08 24 32.85	+19 59 20.4	17.6 T	704	
140P	1999 05 08.17740	08 24 34.19	+19 59 15.1	17.8 T	704	
140P	1999 05 08.18810	08 24 35.48	+19 59 09.3	17.4 T	704	

Note 1: bad seeing. 2: faint image. 3: correction to *MPC* 34393–34394 (time changed). 4: very faint image. 5: involved with star.

OBSERVATIONS OF MINOR PLANETS

The summary lists, for each observatory code, the designation of each object observed (an asterisk signifying a new discovery), with three numbers indicating the number of observations, the number of different nights on which the object was observed and the arc (in days) covered by the observations; at the end of each observatory listing there is a count of the total number of observations, of the number of objects and of the number of discoveries followed by an asterisk, together with the total range of dates covered by the observations.

010 Caussols

E. W. Elst, Observatoire Royal de Belgique, Avenue Circulaire 3, B-1180 Brussels, Belgium [elst@atmos.oma.be]

C. Pollas, Observatoire de la Côte d'Azur, Avenue Copernic, F-06130 Grasse, France [pollas@ocar01.obs-azur.fr]

Observers C. Pollas, D. Albanese

Measurer E. W. Elst

0.9-m Schmidt telescope

1993 QW₁, 3, 1, 0; 1996 TS₅₄, 3, 1, 0; 1997 YK₇, 3, 1, 0; 1999 GE₂₄, 3, 1, 0; 1999 JY₄₁, 3, 1, 0; 1999 JE₆₇, 3, 1, 0; 1999 JM₇₈, 3, 1, 0; 4141 P-L, 3, 1, 0; [24, 8, 0*, 1993/08/18–1996/08/09]

012 Uccle

T. Pauwels, Koninklijke Sterrenwacht van België, Ringlaan 3, B-1180 Brussels, Belgium [Thierry.Pauwels@oma.be]

Observers T. Pauwels, S. Ipatov

Measurer T. Pauwels

0.85-m *f*/2.5 Schmidt + CCD

GSC-1.2

1998 EC₁₆, 3, 1, 0; 1999 FV₄₆, 5, 2, 1; 1999 JY₇₇, 2, 1, 0; [10, 3, 0*, 1998/01/27–1999/05/15]

033 Tautenburg

F. Börngen, Thüringer Landessternwarte, Sternwarte 5, D-07778 Tautenburg, Germany [boerg@tls.tautenburg.de]

1.3-m Schmidt telescope

PPM

1992 UD₁₀, 2, 1, 0; 1995 BU₁₃, 2, 1, 0; 1995 BA₁₆, 2, 1, 0; 1995 DN₁₀, 2, 1, 0; 1998 BB, 2, 1, 0; 1998 FW₆₁, 2, 1, 0; 1998 XJ₄₀, 2, 1, 0; 1999 CV₁₂₁, 2, 1, 0; 1999 GQ₃₅, 2, 1, 0; 1999 JS₅₈, 2, 1, 0; 1999 JH₆₄, 2, 1, 0; 1999 JK₁₁₉, 2, 1, 0; 1999 JR₁₂₅, 2, 1, 0; [26, 13, 0*, 1992/09/07–1995/10/25]

046 Kleť

J. Tichá, Hvězdárna Kleť, Zátkovo nábřeží 4, CZ-37001 České Budějovice, Czech Republic [klet@klet.cz]

Observers J. Tichá, M. Tichý, Z. Moravec

Measurers M. Tichý, Z. Moravec

0.57-m *f*/5.2 reflector + CCD

USNO-SA2.0

1979 PA, 3, 1, 0; 1981 EN₃₁, 4, 1, 0; 1981 QS, 3, 1, 0; 1981 SL, 4, 1, 0; 1984 HR, 3, 1, 0; 1984 SS₁, 3, 1, 0; 1986 RE₁, 3, 1, 0; 1996 OK, 3, 1, 0; 1996 TJ₉, 6, 2, 31; 1996 TR₉, 4, 1, 0; 1996 VR₁, 3, 1, 0; 1996 XO₂, 3, 1, 0; 1997 AX₁₄, 3, 1, 0; 1997 AN₁₇, 3, 1, 0; 1998 CF, 6, 2, 17; 1998 WM, 4, 1, 0; 1998 XR₁₆, 2, 1, 0; 1999 CC₁₀, 2, 1, 0; 1999 CV₁₂₁, 3, 1, 0; 1999 DB₇, 5, 1, 0; 1999 FK₁₆, 9, 2, 2; 1999 GU₃, 2, 1, 0; 1999 GJ₄, 5, 1, 0; 1999 GK₄, 8, 2, 21; 1999 GS₆, 3, 1, 0; 1999 HF₁, 7, 2, 5; 1999 HY₁, 4, 1, 0; 1999 HA₂, 4, 1, 0; 1999 HC₂, 4, 1, 0; 1999 HM₂, 4, 1, 0; 1999 HW₂, 3, 1, 0; 1999 HX₂, 3, 1, 0; 1999 JB, 9, 2, 2; 1999 JE₁, 14, 3, 6; 1999 JU₃, 3, 1, 0; 1999 JV₃, 4, 1, 0; 1999 JD₆, 12, 3, 14; 1999 JO₆, 3, 1, 0; 1999 JT₆, 7, 2, 3; 1999 JU₆, 3, 1, 0; 1999 JV₆, 4,

1, 0; 1999 JW₆, 5, 2, 35; 1999 JQ₇, 4, 1, 0; 1999 JM₈, 6, 2, 1; 1999 JO₈, 7, 2, 12; 1999 JY₁₀, 4, 1, 0; 1999 JZ₁₀, 6, 1, 0; 1999 JA₁₁, 4, 1, 0; 1999 JB₁₁, 7, 2, 1; 1999 JG₂₉, 7, 2, 2; 1999 JR₃₄, 4, 1, 0; 1999 JN₄₆, 3, 1, 0; 1999 JF₅₀, 3, 1, 0; 1999 JT₅₂, 7, 1, 0; 1999 JK₇₅, 10, 2, 2; 1999 JY₁₁₃, 12, 2, 4; 1999 KK₁, 5, 1, 0; 1999 KL₁, 5, 1, 0; 1999 KT₄, 4, 1, 0; 1999 KU₄, 7, 2, 6; 1999 KW₄, 16, 4, 22; 1999 KX₄, 6, 2, 6; 1999 KQ₆, 9, 2, 2; 1999 LJ₁, 12, 2, 1; 1999 LK₁, 9, 2, 1; 1999 LT₁, 4, 1, 0; 1999 LU₁, 6, 1, 0; 1999 LV₁, 3, 1, 0; 1999 LW₁, 12, 2, 2; 1999 LX₁, 6, 1, 0; 1999 LE₆, 5, 1, 0; 1999 LF₆, 8, 2, 8; 1999 LS₇, 6, 1, 0; 1999 LT₇, 3, 1, 0; 1999 LU₇, 3, 1, 0; 1999 LV₇, 4, 1, 0; 1999 LN₂₈, 3, 1, 0; 1999 LQ₂₈, 4, 1, 0; 1999 LD₃₀, 5, 1, 0; (1986), 3, 1, 0; (2060), 3, 1, 0; (7551), 3, 1, 0; [*428, 82, 0**, 1998/01/02–1999/06/20]

095 Crimean Astrophysical Observatory

G. R. Kastel', Institute for Theoretical Astronomy, Naberezhnaya Kutuzova 10, St. Petersburg 191187, Russia [kastel@ita.spb.su]

N. S. Chernykh, Crimean Astrophysical Observatory, Nauchnyj, UA-334413, Ukraine [nik@crao.crimea.ua]

Observer L. V. Zhuravleva

0.4-m *f*/4 double astrophotograph

PPM

1992 QP, 2, 1, 0; 1992 UV₃, 1, 1, 0; 1993 SP₃, 1, 1, 0; 1993 TM₁, 1, 1, 0; 1999 FA₁₀, 1, 1, 0; [*6, 5, 0**, 1992/08/29–1993/10/12]

097 Wise Observatory, Mitzpeh Ramon

E. O. Ofek, Wise Observatory, Tel-Aviv University, IL-69978 Tel-Aviv, Israel [ilam@trendline.co.il]

Observers E. O. Ofek, A. Gal-Yam

Measurer E. O. Ofek, I. Manulis

1.0-m *f*/7 reflector + CCD

USNO-A1.0, USNO-A2.0

1990 UY₄, 3, 1, 0; 1999 GP₆, 2, 1, 0; [*5, 2, 0**, 1999/04/23–1999/05/12]

098 Asiago Observatory, Cima Ekar

U. Munari, Osservatorio Astronomico di Padova, Sede di Asiago, I-36012 Asiago (VI), Italy [munari@astras.pd.astro.it]

Observers U. Munari, F. Castellani, M. Tombelli, P. Antolini

Measurers F. Castellani, M. Tombelli, G. Forti

0.67-m *f*/3.2 Schmidt

1999 JF₅₈, 2, 1, 0; [*2, 1, 0**, 1994/01/18]

104 San Marcello Pistoiese

L. Tesi, Osservatorio di Pian dei Termini, Viale Panoramico 45, I-51028 San Marcello Pistoiese (PT), Italy [iau@arcetri.astro.it]

Observers L. Tesi, A. Boattini, M. Tombelli, G. D'Abramo

Measurers G. Forti, L. Tesi, A. Boattini, M. Tombelli

0.40-m *f*/5 reflector + CCD

GSC

1998 CD₂, 7, 2, 12; 1998 DM₁₄, 4, 1, 0; 1999 GA₁, 4, 1, 0; 1999 GJ₄, 2, 1, 0; 1999 GA₂₂, 3, 1, 0; 1999 GL₃₃, 2, 1, 0; 1999 HW₂, 2, 1, 0; 1999 HV₂, 8, 2, 40; 1999 JH₁, 4, 1, 0; 1999 JV₃, 3, 1, 0; 1999 JD₆, 3, 1, 0; 1999 JT₆, 3, 1, 0; 1999 JO₈, 5, 1, 0; 1999 JQ₆₇, 4, 1, 0; 1999 KW₄, 4, 1, 0; 1999 LN₂₈, 3, 1, 0; (2835), 3, 1, 0; [*64, 17, 0**, 1998/02/06–1999/06/16]

106 Črni vrh

H. Mikuž, Kersnikova 11, SI-61000 Ljubljana, Slovenia [herman.mikuz@uni-lj.si]

Observers H. Mikuž, J. Skvarč, H. Dintinjana

0.19-m *f*/4 Baker-Schmidt + CCD, 0.36-m *f*/6.7 Schmidt-Cassegrain + CCD

GSC 1.1, GSC-ACT, USNO-SA1.0

1973 SF₆, 3, 1, 0; 1978 TT₇, 3, 1, 0; 1992 EG₂₂, 3, 1, 0; 1995 EZ₈, 3, 1, 0; 1997 UT₆, 3, 1, 0; 1998 BH₈, 3, 1, 0; 1999 DT₆, 6, 2, 1; 1999 JU₄₀, 3, 1, 0; 1999 JG₅₃, 6, 2, 1; 1999 JS₇₇, 6, 2, 1; 1999 JV₇₇, 6, 2, 1; (341), 3, 1, 0; (478), 3, 1, 0; (518), 3, 1, 0; (563), 3, 1, 0; (598), 3, 1, 0;

(751), 3, 1, 0; (946), 3, 1, 0; (992), 3, 1, 0; (1012), 3, 1, 0; (1096), 3, 1, 0; (1270), 3, 1, 0; (1387), 3, 1, 0; (1473), 3, 1, 0; (1502), 6, 1, 0; (2091), 3, 1, 0; (2297), 5, 1, 0; (2461), 3, 1, 0; (2831), 3, 1, 0; (2861), 3, 1, 0; (3232), 3, 1, 0; (3365), 3, 1, 0; (3493), 3, 1, 0; (3783), 3, 1, 0; (3867), 2, 1, 0; (4049), 3, 1, 0; (4302), 3, 1, 0; (4523), 3, 1, 0; (5752), 3, 1, 0; (6386), 1, 1, 0; (6496), 3, 1, 0; (7241), 3, 1, 0; (7529), 2, 1, 0; (8107), 3, 1, 0; [*145, 44, 0**, 1999/05/09–1999/06/06]

108 Montelupo

M. Tombelli, Via Bozzeto 26, I-50056 Montelupo (Fi), Italy

[iau@arcetri.astro.it]

Observers M. Tombelli, A. Boattini, L. Tesi, D. Guidetti, G. Forti, E. Masotti

Measurers M. Tombelli, A. Boattini, L. Tesi, S. Bartolini, G. Forti

0.30-m *f*/5.7 Schmidt-Cassegrain + CCD

GSC

1999 DV₃, 4, 1, 0; 1999 GK₄, 2, 1, 0; 1999 HY₂, 7, 2, 10; 1999 JE₁, 4, 2, 10; 1999 JV₃, 10, 4, 25; 1999 JD₆, 4, 1, 0; 1999 JM₈, 3, 1, 0; 1999 JO₈, 7, 2, 8; 1999 KW₄, 3, 1, 0; 1999 KQ₆, 3, 1, 0; (4786), 3, 1, 0; (7197), 2, 1, 0; (8512), 3, 1, 0; [*55, 13, 0**, 1999/05/09–1999/06/13]

113 Volkssternwarte Drebach, Schönbrunn

G. Lehmann, Persterstrasse 6h, D-09430 Drebach, Germany

[g.lehmann@abo.freiepresse.de]

Observers G. Lehmann, J. Kandler

Measurers G. Lehmann, J. Kandler

0.50-m *f*/4 reflector + CCD, 0.18-m *f*/9.0 refractor + CCD

USNO-A2.0

1988 FM₁, 2, 1, 0; 1990 TK₁₃, 2, 1, 0; 1991 AV₂, 4, 2, 6; 1991 PV₃₁, 4, 2, 9; 1991 RS₄₀, 4, 2, 9; 1991 YK₁, 2, 1, 0; 1993 SF₄, 2, 1, 0; 1995 EZ₈, 4, 2, 9; 1997 UA₄, 4, 2, 6; 1998 DL₁, 6, 2, 9; (2293), 3, 1, 0; (6488), 3, 1, 0; [*40, 12, 0**, 1999/05/03–1999/05/19]

118 Modra

A. Galád, AGO MFF UK, P.O. Box 4, SK-90001 Modra, Slovakia

[ago@fmph.uniba.sk]

Observers A. Galád, D. Kalmančok, L. Kornoš, P. Kolény, J. Tóth

0.57-m *f*/5.2 reflector + CCD

USNO-A2.0

1998 AV₈, 6, 2, 25; 1998 CB, 4, 2, 4; 1998 DO₁, 9, 3, 24; 1999 CV₁₂₁, 3, 1, 0; 1999 FK₁₆, 3, 1, 0; 1999 GS₃, 2, 1, 0; 1999 GU₃, 3, 1, 0; 1999 GJ₄, 4, 2, 3; 1999 GK₄, 11, 5, 19; 1999 GT₆, 3, 1, 0; 1999 HE₁, 3, 1, 0; 1999 HF₁, 11, 4, 24; 1999 HX₁, 4, 2, 4; 1999 HW₂, 7, 3, 23; 1999 HX₂, 5, 2, 10; 1999 JB, 9, 3, 7; 1999 JE₁, 6, 2, 10; 1999 JT₃, 3, 1, 0; 1999 JV₃, 16, 6, 18; 1999 JW₃, 6, 2, 8; 1999 JD₆, 13, 5, 18; 1999 JO₆, 6, 2, 5; 1999 JT₆, 6, 2, 3; 1999 JU₆, 3, 1, 0; 1999 JV₆, 10, 4, 18; 1999 JW₆, 8, 3, 6; 1999 JM₈, 6, 2, 12; 1999 JO₈, 16, 6, 23; 1999 JY₁₀, 3, 1, 0; 1999 JB₁₁, 3, 1, 0; 1999 JG₂₉, 2, 1, 0; 1999 JY₉₇, 3, 1, 0; 1999 KK₁, 3, 1, 0; 1999 KT₄, 3, 1, 0; 1999 KU₄, 6, 2, 19; 1999 KW₄, 8, 3, 8; 1999 KX₄, 3, 1, 0; 1999 KQ₆, 7, 3, 22; 1999 LT₁, 3, 1, 0; 1999 LU₁, 6, 2, 2; 1999 LW₁, 3, 1, 0; 1999 LE₆, 5, 2, 4; 1999 LV₇, 3, 1, 0; 1999 LN₂₈, 6, 2, 2; 1999 LQ₂₈, 8, 3, 6; (275), 2, 1, 0; (2950), 2, 1, 0; (3103), 4, 2, 12; (3352), 2, 1, 0; (5033), 2, 1, 0; (5164), 2, 1, 0; (5693), 6, 3, 25; (6489), 6, 2, 2; (8567), 2, 1, 0; (10578), 2, 1, 0; [*291, 55, 0**, 1999/05/05–1999/06/20]

120 Višňjan

K. Korlević, Istarska 5, HR-51463 Višňjan, Croatia [korado@visnjan.hr]

Observers K. Korlević, A. Ritosa, V. Jelić

Measurer K. Korlević

0.41-m *f*/4.3 reflector + CCD

USNO-SA1.0

1988 RE₅, 3, 1, 0; 1991 FY, 3, 1, 0; 1993 SM₁, 3, 1, 0; 1993 SG₃, 4, 2, 3; 1994 EY₅, 6, 2, 4; 1994 NR₁, 3, 1, 0; 1997 AO₁, 2, 1, 0; 1998 BC₁, 2, 1, 0; 1998 FH₂₃, 4, 1, 0; 1998 FY₆₆, 3, 2, 1; 1998 UM₂₄, 3, 1, 0; 1998 UL₃₁, 3, 1, 0; 1999 FS₃₂, 7, 2, 4; 1999 GL₂, 8, 2, 4; 1999 GO₄, 3, 1, 0; 1999 GP₄, 6, 2, 4; 1999 GQ₄, 3, 1, 0; 1999 GR₄, 3, 1, 0; 1999 GZ₄, 3, 1, 0; 1999 GF₆, 7, 2, 4; 1999 GH₆, 3, 1, 0; 1999 GL₆, 7, 3, 10; 1999 GQ₁₉, 6, 2, 1; 1999 GS₂₁, 5, 2, 2; 1999 HS₁, 3, 1, 0; 1999 HT₁, 2, 1, 0; 1999 HE₂, 3, 1, 0; 1999 HF₂, 2, 1, 0; 1999 HK₂, 2, 1, 0; 1999 HL₂, 7, 2, 4; 1999 HN₂, 3, 1, 0; 1999 HB₃, 3, 1, 0; 1999 JC *, 9, 3, 5; 1999 JV₂, 4, 1, 0; 1999 JC₃ *, 10, 4, 27; 1999 JC₁₁ *, 11, 4, 27; 1999 JD₁₁ *, 10, 4, 27; 1999 JE₁₁ *, 11, 4, 27; 1999 JF₁₁ *, 11, 4, 27; 1999 JG₁₁ *, 15, 5, 28; 1999 JA₁₃ *, 21, 6, 37; 1999 JB₁₃ *, 7, 3, 10; 1999 JC₁₃ *, 8, 3, 10;

1999 JF₅₅, 5, 2, 1; 1999 JU₆₀, 5, 2, 3; 1999 JJ₆₁, 6, 2, 3; 1999 JS₇₉, 6, 2, 1; 1999 KH₁ *, 6, 2, 1; 1999 KJ₁ *, 8, 3, 22; 1999 KG₄, 5, 2, 1; 1999 KQ₆, 4, 1, 0; 1999 LJ *, 12, 4, 7; 1999 LN *, 9, 3, 6; 1999 LF₆, 3, 1, 0; 1999 LG₆ *, 9, 3, 2; 1999 LH₇ *, 8, 3, 2; 1999 LT₇, 3, 1, 0; 1999 LM₂₈, 3, 1, 0; 1999 LN₂₈, 5, 2, 1; 1999 LQ₂₈, 9, 3, 2; 3216 T-1, 3, 1, 0; 2287 T-2, 3, 1, 0; 3196 T-3, 3, 1, 0; (751), 3, 1, 0; (961), 9, 2, 4; (1142), 5, 2, 1; (1384), 3, 1, 0; (1986), 2, 1, 0; (2051), 3, 1, 0; (2060), 3, 1, 0; (2185), 3, 1, 0; (3084), 7, 2, 4; (3272), 8, 3, 7; (3436), 5, 2, 27; (3532), 4, 2, 4; (4046), 6, 2, 3; (4348), 3, 2, 1; (4585), 2, 1, 0; (4683), 3, 1, 0; (5033), 2, 1, 0; (5097), 6, 2, 28; (5198), 3, 1, 0; (5624), 3, 1, 0; (5651), 3, 1, 0; (6001), 3, 1, 0; (6576), 3, 1, 0; (7125), 6, 2, 7; (7168), 9, 3, 10; (7251), 5, 2, 2; (7418), 3, 1, 0; (7502), 3, 1, 0; (7529), 8, 3, 10; (7550), 2, 1, 0; (7615), 5, 2, 27; (8167), 3, 1, 0; (8329), 4, 1, 0; (8561), 3, 1, 0; (8967), 3, 1, 0; (9244), 2, 1, 0; (10545), 3, 1, 0; [508, 100, 16*, 1998/10/13–1999/06/16]

121 Kharkov University, Chuguevskaya Station

Yu. N. Krugly, Astronomical Observatory, Kharkov State University, Sumska Street 35, Kharkov 310022, Ukraine [krugly@astron.kharkov.ua]
V. G. Shevchenko, Astronomical Observatory, Kharkov State University, Sumska Street 35, Kharkov 310022, Ukraine [krugly@astron.kharkov.ua]

Observers Yu. N. Krugly, V. G. Shevchenko

0.70-m $f/4$ reflector + CCD

GSC

1999 CV₃, 10, 2, 2; 1999 HF₁, 13, 3, 17; (5131), 5, 1, 0; [28, 3, 0*, 1999/05/13–1999/05/30]

127 Bornheim

N. Ehring, Stationenweg 54, D-53332 Bornheim, Germany [norbert.ehring@t-online.de]

0.19-m $f/4$ FFC + CCD

GSC

1988 JB₁, 4, 2, 6; 1991 LW, 4, 2, 6; 1991 LA₁, 4, 2, 6; 1994 LR, 4, 2, 1; 1997 SX₁₅, 4, 2, 6; 1997 WA₇, 4, 2, 1; 1999 HF₁, 6, 2, 6; (10487), 4, 2, 1; [34, 8, 0*, 1999/05/02–1999/05/15]

132 Bedoin

P. Antonini, 47 rue Guillaume Puy, F-84000 Avignon, France
[Pierre.Antonini@wanadoo.fr]

0.16-m $f/3.3$ reflector + CCD

GSC

1998 DN₁, 2, 1, 0; [2, 1, 0*, 1999/05/23]

133 Les Tardieux

M. Boeuf, Les Tardieux, St Julien, F-13500 Martigues, France
[Michel.Boeuf@wanadoo.fr]

0.20-m $f/3.5$ reflector + CCD

GSC

1980 KK, 3, 1, 0; 1998 DN₁, 2, 1, 0; 1999 KX, 2, 1, 0; (1074), 3, 1, 0; (5308), 3, 1, 0; (6453), 3, 1, 0; [16, 6, 0*, 1999/04/16–1999/06/04]

143 Gnosca

S. Sposetti, CH-6525 Gnosca, Switzerland [spo@dial.eunet.ch]
0.20-m $f/7.1$ reflector + CCD

GSC

1999 JV₃, 2, 1, 0; 1999 KW₄, 4, 1, 0; [6, 2, 0*, 1999/06/08]

145 's-Gravenwezel Observatory

T. Alderweireldt, Rozenlaan 14, B-2970 's-Gravenwezel, Belgium
[Tom.Alderweireldt@ping.be]

0.25-m $f/3.3$ Schmidt-Cassegrain + CCD

GSC-1.2, USNO-A2.0

1988 DZ₄, 4, 1, 0; 1989 CH, 4, 1, 0; 1991 LQ, 5, 1, 0; 1991 LW, 5, 1, 0; 1991 RS, 4, 1, 0; 1994 GD₁, 4, 1, 0; 1997 YP₈, 8, 2, 10; 1999 JW₃, 5, 1, 0; (3106), 2, 1, 0; (5430), 4, 1, 0; (7390), 4, 1, 0; (8168), 3, 1, 0; (10357), 6, 2, 2; [58, 13, 0*, 1999/04/30–1999/06/16]

151 Eschenberg Observatory, Winterthur

M. Griesser, Breitenstrasse 2, CH-8542 Wiesendangen, Switzerland

[griesser@spectraweb.ch]

0.25-m $f/8.0$ reflector + CCD

GSC

1999 CV₃, 4, 1, 0; 1999 GK₄, 18, 3, 5; 1999 HF₁, 76, 13, 46; 1999 HX₂, 6, 1, 0; 1999 JV₃, 11, 2, 32; 1999 JD₆, 12, 2, 2; 1999 JM₈, 6, 1, 0; 1999 JO₈, 45, 8, 31; 1999 KU₄, 3, 1, 0; 1999 KW₄, 26, 5, 22; 1999 LO₂₈, 6, 1, 0; (699), 3, 1, 0; (1362), 4, 1, 0; (1685), 4, 1, 0; (1866), 3, 1, 0; (2060), 2, 1, 0; (2264), 3, 1, 0; (2521), 2, 1, 0; (3581), 5, 1, 0; (6489), 23, 6, 46; [262, 20, 0*, 1999/05/04–1999/06/20]

159 Monte Agliale

M. M. M. Santangelo, Monte Agliale Astronomical Observatory, Borgo a Mozzano, Lucca, Italy [ilra@comune.lucca.it]

Observers M. Ziboli, S. Donati, M. M. M. Santangelo, F. Ciabattari

Measurers E. Mazzoni, M. Ziboli, S. Donati, M. M. M. Santangelo

0.51-m $f/4.5$ Newtonian reflector + CCD

USNO-A1.0, USNO-A2.0

1999 EK₃, 10, 2, 23; 1999 FU₁₉, 5, 1, 0; 1999 FQ₂₁, 4, 1, 0; 1999 FR₂₁, 3, 1, 0; 1999 JD *, 32, 5, 35; (9730), 3, 1, 0; [57, 6, 1*, 1999/05/01–1999/06/11]

161 Cerrini Tololo Observatory

P. Camaiti, via Maria Vittoria 35, I-10123 Torino, Italy [P.Camaiti@flashnet.it]

0.13-m $f/6$ refractor + CCD

GSC

1999 JO₈, 1, 1, 0; (39), 1, 1, 0; (97), 1, 1, 0; (105), 1, 1, 0; (121), 1, 1, 0; (213), 1, 1, 0; (350), 1, 1, 0; (387), 1, 1, 0; (519), 1, 1, 0; (1614), 1, 1, 0; (1656), 1, 1, 0; (4483), 1, 1, 0; [12, 12, 0*, 1999/05/14–1999/06/12]

162 Potenza

A. M. Giambersio, 22 R. Scotellaro Street, I-85100 Potenza, Italy
[agiamber@tin.it]

0.20-m $f/6.3$ reflector + CCD

GSC

(11), 4, 2, 2; (41), 1, 1, 0; (349), 3, 2, 1; [8, 3, 0*, 1999/05/08–1999/06/15]

292 Burlington

T. Handley, 13 Linden Road, Burlington, NJ 08016, U.S.A.

0.30-m $f/3.0$ Schmidt-Cassegrain + focal reducer + CCD

GSC

1996 PX₄, 3, 1, 0; 1998 BM₂₆, 3, 1, 0; 1998 FG₆₉, 4, 2, 5; 1999 GH₁, 6, 2, 1; 1999 GM₂, 3, 1, 0; 1999 JW₆₇, 8, 3, 5; [27, 6, 0*, 1999/04/13–1999/05/21]

294 Astrophysical Observatory, College of Staten Island

I. Robbins, The College of Staten Island, 2800 Victory Boulevard, Staten Island, NY 10314, U.S.A. [robbins@postbox.csi.cuny.edu]

Observers I. Robbins, S. Parello, S. Joyce

Measurers S. Parello, M. Benjamin

0.41-m $f/4.7$ Schmidt-Cassegrain + CCD

GSC, USNO-SA1.0

(587), 1, 1, 0; (3248), 4, 3, 13; (4008), 5, 3, 13; (4503), 4, 2, 12; (4730), 6, 3, 13; [20, 5, 0*, 1999/03/26–1999/04/15]

303 Mérida

O. Naranjo, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02318, U.S.A. [onaranjo@cfa.harvard.edu]

1.0-m Schmidt + CCD

1985 DA₂, 6, 2, 1; 1993 TM₂₅, 7, 3, 2; 1995 GV₂, 9, 3, 2; 1999 AP₂₀, 9, 3, 2; 1999 AF₃₅ *, 6, 2, 1; 1999 AG₃₅ *, 5, 2, 1; 1999 AH₃₅ *, 9, 3, 2; 1999 AJ₃₅ *, 9, 3, 2; 1999 AK₃₅ *, 8, 3, 2; 1999 AL₃₅ *, 6, 2, 1; 1999 AM₃₅ *, 9, 3, 2; 1999 AN₃₅ *, 6, 2, 1; 1999 AO₃₅ *, 6, 2, 1; 1999 AP₃₅ *, 6, 2, 1; 1999 AQ₃₅ *, 6, 2, 1; 1999 AR₃₅ *, 6, 2, 1; 1999 AS₃₅ *, 5, 2, 1; 1999 BK₅, 8, 3, 2; 1999 BG₁₀, 9, 3, 2; 1999 CK₂₃, 6, 2, 1; 1999 CN₆₂, 6, 2, 1; 1999 CX₆₅, 6, 2, 1; 1999 CW₁₀₅, 9, 3, 2; 1999 CA₁₀₆, 9, 3, 2; (357), 8, 3, 2; (6429), 6, 2, 1; [185, 26, 13*, 1999/01/08–1999/01/10]

321 Craigie

G. G. Bolt, 295 Camberwarra Drive, Craigie, WA 6025, Australia

[cheleb@ophiuchus.iinet.net.au]

0.25-m Schmidt-Cassegrain + CCD

GSC-1.1

1999 JM₈, 3, 1, 0; 1999 KU₄, 5, 1, 0; 4835 T-1, 3, 1, 0; 3507 T-3, 4, 1, 0; (587), 5, 1, 0; (1282), 4, 1, 0; (2000), 4, 1, 0; (2428), 2, 1, 0; (2518), 4, 1, 0; [34, 9, 0*, 1999/05/17–1999/05/22]

327 Peking Observatory, Xinglong Station

J. Zhu, Peking Astronomical Observatory, Chinese Academy of Sciences,

Zhongguancun, Peking 100101, Peoples Republic of China

[zj@bac.pku.edu.cn]

Observers J. Zhu, H. T. Zhang, X. Y. Li, X. M. Teng, Y. J. Chen

Measurers X. Y. Li, Y. J. Chen, X. M. Teng

0.60-m Schmidt + CCD

1981 EU₆, 3, 1, 0; 1981 EH₈, 3, 1, 0; 1981 ES₃₁, 3, 1, 0; 1983 PM₁, 3, 1, 0; 1989 WG, 3, 1, 0; 1991 FM₃, 3, 1, 0; 1991 RW₂₃, 12, 4, 85; 1993 FN₁₂, 3, 1, 0; 1993 UG₁, 3, 1, 0; 1995 UD₂₇, 3, 1, 0; 1996 CE₅, 3, 1, 0; 1996 SY, 4, 1, 0; 1996 SE₈, 6, 2, 9; 1996 TD₂₉, 3, 1, 0; 1996 VG₉, 4, 1, 0; 1996 VM₁₇, 4, 1, 0; 1996 VY₃₀, 4, 1, 0; 1996 VY₃₈, 4, 1, 0; 1997 AT₂₁, 3, 1, 0; 1997 WG₃₃, 6, 2, 22; 1997 WL₃₃, 6, 2, 46; 1997 WF₄₃, 18, 6, 10; 1997 WY₄₉, 6, 2, 54; 1997 WP₅₀, 3, 1, 0; 1997 WE₅₇, 4, 1, 0; 1997 XS₃, 6, 1, 0; 1997 XY₇, 3, 1, 0; 1997 XL₈, 3, 1, 0; 1997 XP₉, 3, 1, 0; 1997 YV₃, 3, 1, 0; 1998 BP₉, 3, 1, 0; 1998 BT₂₉, 3, 1, 0; 1998 BN₄₁, 4, 1, 0; 1998 CE₁, 3, 1, 0; 1998 DJ₆, 3, 1, 0; 1998 DH₃₄, 3, 1, 0; 1998 EJ₉, 3, 1, 0; 1998 EM₉, 3, 1, 0; 1998 FF₃₂, 3, 1, 0; 1998 FT₅₄, 3, 1, 0; 1998 FH₆₀, 4, 1, 0; 1998 FZ₁₂₃, 3, 1, 0; 1998 HC₂₉, 4, 1, 0; 1998 OH₁₂, 3, 1, 0; 1998 TX₁₇, 3, 1, 0; 1998 UL₃₁, 3, 1, 0; 1998 VS₃₂, 3, 1, 0; 1998 YE₅, 3, 1, 0; 1999 AC₂₂, 3, 1, 0; 1999 DP₆, 6, 2, 1; 1999 EL₅, 3, 1, 0; 1999 FV₁₀, 6, 2, 1; 1999 FC₂₆, 3, 1, 0; 1999 FR₂₉, 3, 1, 0; 1999 FP₄₇, 6, 2, 1; 1999 GF₅, 6, 2, 3; 1999 GM₆, 12, 3, 10; 1999 GO₉, 3, 1, 0; 1999 GG₁₁, 3, 1, 0; 1999 GH₁₉, 12, 4, 10; 1999 GM₃₆, 3, 1, 0; 1999 HF, 13, 4, 11; 1999 HK₁, 6, 2, 1; 1999 HR₂, 15, 4, 10; 1999 HU₂, 10, 3, 10; 1999 JQ *, 6, 2, 1; 1999 JR *, 9, 3, 3; 1999 JS *, 12, 4, 4; 1999 JT *, 12, 4, 7; 1999 JU *, 9, 3, 4; 1999 JV *, 12, 4, 4; 1999 JW *, 12, 4, 6; 1999 JX *, 9, 3, 3; 1999 JK₂, 9, 2, 5; 1999 JT₂ *, 6, 2, 1; 1999 JU₂ *, 6, 2, 1; 1999 JV₂ *, 6, 2, 1; 1999 JC₄, 3, 1, 0; 1999 JA₆ *, 12, 4, 17; 1999 JX₁₀, 6, 2, 5; 1999 JH₁₁ *, 6, 2, 5; 1999 JZ₁₁, 3, 1, 0; 1999 JZ₃₃, 6, 2, 9; 1999 JN₃₅, 3, 1, 0; 1999 JR₄₅, 3, 1, 0; 1999 JA₄₈, 3, 1, 0; 1999 JL₅₈, 7, 2, 18; 1999 JM₅₈, 3, 1, 0; 1999 JM₇₅ *, 6, 2, 10; 1999 JN₁₂₇, 4, 1, 0; 1999 KU, 3, 1, 0; 1999 KW₄, 3, 1, 0; 1999 KX₄, 3, 1, 0; 1999 KP₆ *, 6, 2, 4; 4141 P-L, 3, 1, 0; (1861), 6, 2, 1; (2046), 6, 2, 1; (10290), 6, 1, 0; (10298), 3, 1, 0; (10357), 6, 2, 3; (10628), 6, 2, 3; [529, 101, 15*, 1995/08/25–1999/05/25]

352 Konan

M. Hotta, Kibougaoka 2-5-3, Konan-cho, Koka-gun, Shiga 5203333, Japan

[mhotta@mx.biwa.or.jp]

0.28-m $f/5.0$ reflector + CCD

GSC

1999 GK₄, 3, 1, 0; [3, 1, 0*, 1999/05/08]

355 Hadano

A. Asami, 28-1 Nishitawara, Hadano, Kanagawa-Ken, 257 Japan

[asami@st.rim.or.jp]

0.2-m $f/6.0$ reflector + CCD, 0.28-m $f/5.0$ reflector + CCD

GSC

1999 HF₁, 3, 1, 0; [3, 1, 0*, 1999/05/08]

358 Nanyou

T. Okuni, 158-28, Mitsuma-dori, Nanyou, Yamagata-Ken, 999-22 Japan

0.28-m $f/6.3$ Schmidt-Cassegrain + CCD

GSC

1999 HQ₁₁ *, 15, 5, 26; 1999 JQ₁₅ *, 12, 4, 8; 1999 JQ₁₇ *, 14, 6, 29; 1999 JR₆₂, 14, 5, 26; [55, 4, 3*, 1999/04/21–1999/06/12]

360 Kuma Kogen Astronomical Observatory

A. Nakamura, Shimo-Hatanokawa, Kuma, Kamiukena-Gun, Ehime-Ken, 791-1212

Japan [a-nakamu@mx2.nisiq.net]

0.60-m $f/5.8$ Ritchey-Chrétien + CCD

GSC-ACT, USNO-A2.0

1995 BU₄, 5, 2, 7; 1995 LE, 3, 1, 0; 1995 WC₇, 3, 1, 0; 1996 OL, 7, 3, 27; 1997 UM₃, 3, 1, 0; 1997 XP₂, 9, 3, 7; 1998 CA₁, 6, 3, 27; 1998 DB₁₃, 6, 2, 22; 1998 QS₅₂, 3, 1, 0; 1998 WM, 3, 1, 0; 1998 YP₁₁, 3, 1, 0; 1998 YQ₁₁, 3, 1, 0; 1999 CU₃, 3, 1, 0; 1999 GJ₂, 6, 2, 14; 1999 GU₃, 3, 1, 0; 1999 GJ₄, 3, 1, 0; 1999 GK₄, 6, 2, 6; 1999 GS₆, 3, 1, 0; 1999 GT₆, 3, 1, 0; 1999 HE₁, 5, 2, 28; 1999 HF₁, 9, 3, 28; 1999 HX₁, 3, 1, 0; 1999 HY₁, 6, 2, 7; 1999 HA₂, 6, 2, 8; 1999 JB, 6, 2, 9; 1999 JE₁, 9, 3, 9; 1999 JU₃, 3, 1, 0; 1999 JV₃, 7, 2, 27; 1999 JC₆, 6, 2, 1; 1999 JD₆, 6, 2, 19; 1999 JT₆, 3, 1, 0; 1999 JW₆, 6, 2, 16; 1999 JY₇ *, 16, 5, 27; 1999 JM₈, 6, 2, 4; 1999 JO₈, 6, 2, 16; 1999 KU₄, 4, 1, 0; 1999 KV₄, 3, 1, 0; 1999 LM₁ *, 10, 3, 4; 1999 LE₆, 3, 1, 0; 1999 LF₆, 3, 1, 0; 1999 LT₇, 3, 1, 0; (2052), 3, 1, 0; (2060), 2, 1, 0; (2258), 3, 1, 0; (5698), 2, 1, 0; (5782), 2, 1, 0; (7429), 3, 1, 0; (8306), 2, 1, 0; (8432), 2, 1, 0; (8463), 2, 1, 0; [231, 50, 2*, 1999/04/14–1999/06/11]

367 Yatsuka

H. Abe, 461-2, Futago, Yatsuka-Cho, Shimane-Ken, 690-14 Japan

[abehiro@daikonshima.or.jp]

0.26-m $f/6.0$ reflector + CCD

GSC

1978 TT₇, 2, 1, 0; 1980 KK, 2, 1, 0; 1987 RT₅, 2, 1, 0; 1990 UZ, 2, 1, 0; 1991 PB₂, 2, 1, 0; 1992 UT₁, 2, 1, 0; 1993 XL, 2, 1, 0; 1995 FT, 2, 1, 0; 1996 VE₉, 2, 1, 0; 1996 XT₃₀, 2, 1, 0; 1997 WJ₂, 2, 1, 0; 1997 YL₇, 2, 1, 0; 1998 BN₁₆, 2, 1, 0; 1999 BC₂₆, 2, 1, 0; 1999 EG₅, 4, 2, 6; [32, 15, 0*, 1999/05/05–1999/05/11]

369 Chichibu

N. Sato, 743-27, Kitairiso Sayama, Saitama-Ken 350-13, Japan

[mx05524@niftyserve.or.jp]

0.31-m $f/4.0$ reflector + CCD, 0.25-m $f/4.2$ Wright-Schmidt + CCD

GSC

1994 PG₁₉, 3, 1, 0; 1995 VN₁₈, 3, 1, 0; 1995 WC₃₁, 3, 1, 0; 1143 T-1, 3, 1, 0; [12, 4, 0*, 1995/11/18–1996/02/12]

372 Geisei

T. Seki, Kamimachi 2-9-35, Kochi-Shi, Kochi-Ken 780, Japan

0.60-m $f/3.5$ reflector

GSC

1999 JC₃, 2, 1, 0; [2, 1, 0*, 1995/07/25]

376 Uenohara

N. Kawasato, 3-11-10, Hana-Koganei, Kodaira, Tokyo, 187 Japan

0.30-m reflector + CCD

GSC

1999 CK₈₄, 2, 1, 0; [2, 1, 0*, 1999/02/05]

385 Nihondaira Observatory

T. Urata, 1-8, Dobayashi 1 Chome, Shimizu, Shizuoka-Ken 424-0851, Japan

[urata@sannet.ne.jp]

0.31-m $f/4.0$ reflector + CCD

GSC-1.1, USNO-A2.0

1987 DN, 4, 1, 0; 1993 UT, 2, 1, 0; 1995 SO₅₄, 2, 1, 0; 1995 UQ₅, 2, 1, 0; 1997 EY₄₅, 2, 1, 0; 1997 TD₁₇, 1, 1, 0; 1998 ED₆, 2, 1, 0; 1998 XF₉₆, 2, 1, 0; 1999 CM₂₂, 2, 1, 0; 1999 GC₅, 2, 1, 0; 1999 GD₅, 2, 1, 0; 1999 GA₃₄, 4, 2, 5; 1999 JG₃, 3, 1, 0; 1999 JH₃, 3, 1, 0; 1999 JJ₃, 3, 1,

0; 1999 JZ₅, 6, 2, 8; 1999 JF₆, 3, 1, 0; 1999 JY₄₀, 3, 1, 0; 1999 LY₁, 3, 1, 0; 1999 LZ₁, 2, 1, 0; 1999 LA₂, 2, 1, 0; [55, 21, 0*, 1993/01/02–1999/06/09]

392 JCPM Sapporo Station

K. Watanabe, 3-8-B203, Ashibetsu Chuo 3 Jo 4 Chome, Shiroishi-Ku, Sapporo 005, Japan

0.30-m $f/2.7$ Schmidt camera

AGK3, SAOC

1999 HQ₁₁, 4, 1, 0; 1999 JQ₁₅, 4, 1, 0; [8, 2, 0*, 1999/05/17]

399 Kushiro

H. Kaneda, Taiyo MS 2-H, 2-15, Kawazoe 8 Jo 2 Chime, Minami-Ku, Sapporo, 005 Japan

Observer S. Ueda

Measurer H. Kaneda

0.25-m $f/3.4$ hyperboloid astrocamera

GSC

1991 CQ₆ *, 6, 3, 11; 1991 UN₃, 2, 1, 0; 1993 HS₁, 2, 1, 0; 1994 WH₃, 4, 2, 12; 1995 YG₂₃, 8, 4, 9; 1996 AO₂₀ *, 6, 3, 8; 1996 AP₂₀ *, 8, 4, 30; 1996 AQ₂₀ *, 6, 3, 8; 1996 CM₉ *, 10, 5, 27; 1996 GR₂₁ *, 4, 2, 1; 1996 TD₆₈ *, 6, 3, 7; 1996 TE₆₈ *, 6, 3, 7; 1998 VU₄₄ *, 8, 4, 10; 1998 WB₆, 2, 1, 0; 1998 WL₁₂, 4, 2, 1; [82, 15, 9*, 1991/02/03–1998/11/22]

402 Dynic Astronomical Observatory

A. Sugie, Dynic Astronomical Observatory, Taga 283-1, Taga, Inukami-Gun, Shiga-Ken, 522-0341 Japan [hhf00201@niftyserve.or.jp]

Observers A. Sugie, Y. Ikari

0.60-m $f/5.0$ reflector + CCD

GSC

1996 FR₃, 3, 1, 0; 1996 VV, 2, 1, 0; 1997 SS₁₇, 3, 1, 0; 1997 UO₁, 3, 1, 0; 1998 QS₅₂, 3, 1, 0; 1998 YP₁₁, 3, 1, 0; 1999 CL₁, 3, 1, 0; 1999 FK₃₀, 5, 1, 0; 1999 FN₅₃, 3, 1, 0; 1999 GS₃, 3, 1, 0; 1999 HE₁, 3, 1, 0; 1999 HF₁, 3, 1, 0; 1999 HA₂, 3, 1, 0; 1999 HW₂, 3, 1, 0; 1999 JE₁, 2, 1, 0; 1999 JV₃, 3, 1, 0; 1999 JD₆, 3, 1, 0; 1999 JW₆, 6, 2, 1; 1999 JO₈, 6, 2, 4; 1999 KW₄, 3, 1, 0; 1999 KX₄, 3, 1, 0; 1999 LS₇, 4, 1, 0; 1999 LT₇, 4, 1, 0; 1999 LU₇, 5, 1, 0; 1999 LV₇, 4, 1, 0; (10582), 2, 1, 0; [88, 26, 0*, 1999/04/08–1999/06/14]

411 Oizumi

T. Kobayashi, 1717-2 Shimo-Koizumi, Oizumi-machi, Ora-gun, Gunma-ken, 370-0515 Japan [kobataka@sannet.ne.jp]

0.25-m $f/4.4$ reflector + CCD, 0.41-m $f/4.3$ reflector + CCD

GSC

1999 GH₁, 2, 1, 0; 1999 GJ₁, 2, 1, 0; 1999 GK₁, 2, 1, 0; 1999 GL₁, 2, 1, 0; 1999 GM₁, 3, 1, 0; 1999 GN₁, 2, 1, 0; 1999 JM *, 8, 4, 6; 1999 JK₃ *, 6, 3, 5; 1999 JL₃ *, 7, 3, 5; 1999 JW₃, 4, 1, 0; [38, 10, 3*, 1999/05/06–1999/05/13]

413 Siding Spring

R. H. McNaught, Anglo-Australian Observatory, Coonabarabran, N.S.W. 2357, Australia [rmn@aao.acn.gov.au] (1)

A. Gnädig, c/o Archenghold-Sternwarte, Alt-Treptow 1, D-12435 Berlin, Germany [doppler@mind.de] (5)

C.-I. Lagerkvist, Uppsala Observatory, Box 515, S-75120 Uppsala, Sweden [classe@laban.uu.se] (8)

Observers K. S. Russell

Measurers O. Hernius, A. Gnädig, R. H. McNaught

1.2-m U.K. Schmidt

(1) 1997 TD, 1, 1, 0; [1, 1, 0*, 1987/05/10]

(5) 1973 UK₅, 4, 2, 3036; 1973 UR₅, 2, 1, 0; 1976 DA₁, 4, 2, 5060; 1976 DB₁, 2, 1, 0; 1979 MD₁, 1, 1, 0; 1979 ON₁, 2, 1, 0; 1981 EH₈, 2, 1, 0; 1981 ES₁₁, 4, 2, 3854; 1981 EW₂₆, 2, 1, 0; 1982 UD₄, 6, 3, 2981; 1986 RX₅, 2, 1, 0; 1986 TQ₅, 2, 1, 0; 1987 QY₁, 2, 1, 0; 1988 PG₂, 2, 1, 0; 1988 PQ₂,

2, 1, 0; 1988 PM₃, 4, 2, 895; 1988 RV₁, 2, 1, 0; 1988 RM₃, 4, 2, 62; 1989 AV₆, 2, 1, 0; 1989 CE₆, 1, 1, 0; 1989 CW₇, 4, 2, 1; 1989 EJ₆, 2, 1, 0; 1989 GH₈, 4, 2, 81; 1989 WU₄, 1, 1, 0; 1989 YX₆, 2, 1, 0; 1989 YE₉, 2, 1, 0; 1990 RR₁₇, 2, 1, 0; 1990 TB₄, 2, 1, 0; 1990 TE₇, 6, 3, 473; 1990 TL₇, 1, 1, 0; 1990 TP₇, 2, 1, 0; 1990 TD₁₂, 2, 1, 0; 1990 TH₁₃, 4, 2, 5; 1990 TK₁₃, 4, 2, 4546; 1991 AJ₃, 6, 3, 5762; 1991 GJ₁₀, 2, 1, 0; 1991 GN₁₀, 4, 2, 3654; 1991 GS₁₀, 2, 1, 0; 1991 PO₃₁, 2, 1, 0; 1991 PV₃₁, 1, 1, 0; 1991 RS₂, 2, 1, 0; 1991 RF₄, 4, 2, 3116; 1991 RG₄, 2, 1, 0; 1991 RH₄, 8, 4, 4216; 1991 RV₄, 5, 3, 101; 1991 RG₇, 1, 1, 0; 1991 RQ₃₃, 2, 1, 0; 1991 RH₃₆, 2, 1, 0; 1991 RS₄₀, 2, 1, 0; 1991 RX₄₀, 2, 1, 0; 1991 RJ₄₁, 4, 2, 22; 1991 SQ₄, 4, 2, 26; 1991 TC₃, 4, 2, 2627; 1991 TL₃, 1, 1, 0; 1991 TQ₆, 6, 3, 4653; 1991 TS₆, 2, 1, 0; 1991 TL₁₃, 4, 2, 22; 1992 EE₈, 2, 1, 0; 1992 EX₁₀, 2, 1, 0; 1992 HD₇, 4, 2, 25; 1992 RX₄, 4, 2, 2012; 1992 SM₁₆, 2, 1, 0; 1992 SQ₂₃, 2, 1, 0; 1993 FF₂₅, 2, 1, 0; 1993 FD₃₄, 5, 4, 3077; 1993 FU₅₁, 2, 1, 0; 1993 HA₆, 4, 2, 58; 1993 QW₄, 2, 2, 2513; 1993 SF₄, 2, 1, 0; 1993 VB₈, 4, 2, 76; 1994 GY₉, 3, 2, 961; 1994 GE₁₀, 1, 1, 0; 1994 RP₁₁, 1, 1, 0; 1994 RR₁₁, 2, 1, 0; 1994 TN₁₆, 2, 1, 0; 1994 TS₁₆, 4, 2, 86; 1994 UZ₁₂, 2, 1, 0; 1995 AM₁, 2, 1, 0; 1995 AV₄, 5, 3, 5404; 1995 EN₅, 2, 1, 0; 1995 EG₈, 6, 3, 6251; 1995 EY₈, 2, 1, 0; 1995 EZ₈, 2, 1, 0; 1995 ED₉, 2, 1, 0; 1995 OH₁₀, 2, 1, 0; 1995 TR₂, 2, 1, 0; 1995 WG₂, 2, 1, 0; 1996 BM₂, 2, 1, 0; 1996 BV₁, 4, 2, 919; 1996 TB₁₅, 2, 1, 0; 1996 UE₄, 4, 2, 2; 1996 VQ₄, 2, 1, 0; 1997 AF₃, 4, 2, 2002; 1997 BZ₂, 2, 1, 0; 1997 BS₃, 4, 2, 5284; 1997 EK₄₁, 2, 1, 0; 1997 FL₂, 3, 2, 4422; 1997 FA₅, 2, 1, 0; 1997 SE₁, 2, 1, 0; 1997 SU₁₀, 4, 2, 7233; 1997 UT₂, 2, 1, 0; 1997 US₃, 2, 1, 0; 1997 WJ₂₁, 2, 1, 0; 1997 YP₈, 2, 1, 0; 1997 YU₁₁, 6, 3, 7651; 1997 YL₁₄, 2, 1, 0; 1997 YO₂₁, 2, 1, 0; 1998 BP₂₄, 2, 1, 0; 1998 EB₉, 2, 1, 0; 1998 EM₉, 2, 1, 0; 1998 FJ₁, 2, 1, 0; 1998 FH₂, 2, 1, 0; 1998 FR₁₀, 2, 1, 0; 1998 FO₁₁, 2, 1, 0; 1998 FA₁₂, 4, 2, 6166; 1998 FO₁₅, 2, 1, 0; 1998 FF₃₀, 2, 1, 0; 1998 FT₅₄, 6, 3, 1390; 1998 FW₆₁, 6, 3, 3011; 1998 FC₆₄, 2, 1, 0; 1998 FJ₆₆, 4, 2, 3451; 1998 FR₆₇, 3, 2, 21; 1998 FC₆₈, 2, 1, 0; 1998 FV₈₈, 2, 1, 0; 1998 HW₅, 5, 3, 1842; 1998 HV₁₉, 2, 1, 0; 1998 HE₂₁, 2, 1, 0; 1998 HF₂₂, 2, 1, 0; 1998 HO₄₂, 3, 2, 6922; 1998 HL₄₅, 4, 2, 79; 1998 HS₉₆, 4, 2, 4454; 1998 HZ₉₆, 2, 1, 0; 1998 HB₉₉, 2, 1, 0; 1998 HJ₁₁₅, 2, 1, 0; 1998 HT₁₄₇, 2, 1, 0; 1998 JO₁, 2, 1, 0; 1998 KO₄, 1, 1, 0; 1998 KD₅₀, 1, 1, 0; 1998 KR₅₅, 2, 1, 0; 1998 MD₃₈, 2, 1, 0; 1998 OH₁₂, 2, 1, 0; 1998 OB₁₄, 4, 2, 3696; 1998 QT₄, 2, 88; 1998 QG₃₅, 2, 1, 0; 1998 QW₃₇, 1, 1, 0; 1998 QX₃₇, 3, 2, 1470; 1998 QD₄₂, 2, 1, 0; 1998 QR₄₂, 2, 1, 0; 1998 QQ₄₃, 2, 1, 0; 1998 QS₄₅, 2, 1, 0; 1998 QU₅₀, 4, 2, 343; 1998 QZ₉₄, 4, 2, 1371; 1998 RE₅₉, 6, 3, 4907; 1998 RQ₇₂, 2, 1, 0; 1998 RQ₇₇, 4, 2, 1245; 1998 RL₇₈, 4, 2, 76; 1998 SV₂₄, 2, 1, 0; 1998 SU₆₀, 2, 1, 0; 1998 SF₁₂₇, 2, 1, 0; 1998 SY₁₂₇, 2, 1, 0; 1998 TX₁₇, 2, 1, 0; 1998 TD₁₈, 2, 1, 0; 1998 UN₆, 2, 1, 0; 1998 UM₂₄, 2, 1, 0; 1998 UT₂₄, 2, 1, 0; 1998 VX₃₀, 4, 2, 5808; 1998 VC₃₂, 2, 1, 0; 1998 WV₁, 6, 3, 1474; 1998 WM₁₄, 2, 1, 0; 1998 XK₃₉, 8, 4, 105; 1998 XJ₄₀, 2, 1, 0; 1998 XG₄₈, 2, 1, 0; 1998 XB₅₁, 2, 1, 0; 1998 XV₇₇, 2, 1, 0; 1999 AL₂, 2, 1, 0; 1999 AV₅, 2, 1, 0; 1999 AY₅, 2, 1, 0; 1999 AX₇, 2, 1, 0; 1999 AC₂₂, 2, 1, 0; 1999 AY₂₂, 5, 3, 2568; 1999 BC₂, 2, 1, 0; 1999 CJ₄, 4, 2, 55; 1999 CL₃, 4, 2, 5510; 1999 CZ₂₃, 4, 2, 76; 1999 CV₄₀, 7, 4, 2789; 1999 CH₇₉, 2, 1, 0; 1999 CC₈₂, 6, 3, 3311; 1999 CX₈₅, 2, 1, 0; 1999 FZ₃₀, 2, 1, 0; 1999 GE₆, 2, 1, 0; 2646 P-L, 2, 1, 0; 4214 P-L, 4, 3, 18; 4610 P-L, 2, 1, 0; 4615 P-L, 2, 1, 0; 6232 P-L, 2, 1, 0; 6653 P-L, 2, 1, 0; 3280 T-3, 2, 1, 0; (10331), 4, 2, 1; (10340), 3, 2, 463; [552, 199, 0*, 1974/06/17–1996/04/18]

(8) 1978 UT₇, 1, 1, 0; 1998 EL₆, 1, 1, 0; 1999 GX₈, 1, 1, 0; 1999 JC₁₂₁, 1, 1, 0; [4, 4, 0*, 1993/04/16–1993/04/18]

417 Yanagida Astronomical Observatory

A. Tsuchikawa, Robu 1-1, Kanmachi, Fugeshi-gun, Ishikawa-ken, 928-03 Japan

Observer A. Tsuchikawa

0.60-m $f/8.0$ reflector + CCD

USNO-A2.0

(3213), 4, 1, 0; (3643), 3, 1, 0; (5592), 4, 1, 0; (5610), 3, 1, 0; (8578), 3, 1, 0; [17, 5, 0*, 1999/05/17–1999/05/22]

422 Loomberah

G. J. Garradd, P.O. Box 157, Tamworth, NSW 2340, Australia [loomberah@ozemail.com.au]

0.45-m $f/5.4$ reflector + CCD, 0.25-m $f/4.1$ reflector + CCD

GSC-ACT, USNO-A2.0

1998 XR₁₆, 2, 1, 0; 1999 CT₂₉, 3, 1, 0; 1999 FN₅₃, 3, 1, 0; 1999 JW₃, 4, 1, 0; 1999 JO₆, 3, 1, 0; 1999 JW₆, 6, 2, 10; 1999 JG₂₉, 10, 3, 3; 1999 KU₄, 3, 1, 0; 1999 KW₄, 3, 1, 0; 1999 KX₄, 3, 1, 0; 1999 LD₃₀, 7, 2, 2; (4692), 3, 1, 0; (9969), 3, 1, 0; [53, 13, 0*, 1999/05/24–1999/06/19]

423 North Ryde

S. G. McAndrew, 2/32 Twin Rd, North Ryde, NSW 2113, Australia [sgmcandrew@ozemail.com.au]

0.20-m $f/4$ hyperbolic astrograph + CCD GSC

1981 DQ₃, 2, 1, 0; 1986 EJ₁, 8, 4, 16; 1987 DQ₆, 11, 4, 9; 1990 BB₂, 2, 1, 0; 1992 FK₁, 6, 3, 9; 1992 TM₁, 8, 2, 2; 1993 SK₁₆, 2, 1, 0; 1994 EH₇, 10, 4, 28; 1995 AW₂, 7, 3, 6; (1048), 3, 1, 0; (1980), 2, 1, 0; (2000), 3, 2, 1; (6271), 2, 1, 0; [66, 13, 0*, 1999/04/07–1999/06/12]

426 Woomera

F. B. Zoltowski, 10 Gundawarra St., P.O. Box 84, Woomera, SA 5720, Australia
[100356.23@CompuServe.com]

0.30-m $f/3.3$ Schmidt-Cassegrain + CCD USNO-SA2.0, GSC

1976 UB₁₆, 6, 2, 3; 1981 EV₁₃, 6, 2, 1; 1989 TC, 5, 2, 3; 1989 YC₅, 4, 2, 1; 1990 SP₈, 6, 2, 10; 1991 RC₂₇, 5, 2, 2; 1992 CR₂, 5, 2, 5; 1993 FK₃₈, 6, 2, 1; 1993 XN₂, 7, 2, 10; 1995 SC, 6, 2, 1; 1995 UU₄, 6, 2, 2; 1996 PK₈, 6, 2, 1; 1996 SH₄, 5, 2, 3; 1997 AF₂₂, 4, 2, 1; 1997 UO₁, 5, 2, 1; 1997 XJ₅, 5, 2, 8; 1997 XH₁₁, 5, 2, 2; 1997 YJ₁₁, 4, 2, 2; 1997 YB₁₇, 5, 2, 1; 1998 BE₅, 6, 2, 1; 1998 BR₇, 4, 2, 1; 1998 BJ₁₀, 3, 1, 0; 1998 BJ₃₃, 6, 2, 1; 1998 DZ₁, 3, 1, 0; 1998 DL₁₅, 5, 2, 2; 1998 DK₂₃, 6, 2, 3; 1998 FH, 4, 2, 6; 1998 FN₁₁, 3, 1, 0; 1998 FL₁₅, 6, 2, 2; 1998 FM₁₅, 6, 2, 10; 1998 FE₆₂, 4, 2, 2; 1998 FA₇₁, 5, 2, 2; 1998 FG₇₄, 6, 2, 5; 1998 FL₁₀₉, 6, 2, 1; 1998 FD₁₁₃, 4, 2, 1; 1998 HN₉₅, 4, 2, 2; 1998 MO₄₄, 9, 3, 10; 1998 QR₅₂, 6, 2, 1; 1998 QQ₆₂, 3, 1, 0; 1998 RP₇₂, 3, 1, 0; 1998 RN₇₆, 3, 1, 0; 1998 RQ₈₀ *, 4, 2, 1; 1998 SC₁₅, 5, 3, 19; 1998 SB₁₆₅, 6, 2, 2; 1998 VN, 2, 1, 0; 1998 XM₄, 8, 2, 4; 1999 AN₁₀, 8, 3, 8; 1999 BJ₈, 3, 1, 0; 1999 CT₂₉, 6, 2, 1; 1999 EV₄, 10, 4, 31; 1999 FG₅₁, 2, 1, 0; 1999 FN₅₃, 8, 2, 1; 1999 GJ₂, 2, 1, 0; 1999 GY₃, 11, 4, 36; 1999 GC₄, 6, 2, 4; 1999 GD₄, 9, 3, 21; 1999 GE₄, 6, 2, 8; 1999 GX₄, 6, 2, 7; 1999 GW₅, 9, 3, 21; 1999 GY₅, 2, 1, 0; 1999 GN₆, 12, 5, 53; 1999 GS₆, 3, 1, 0; 1999 HE, 7, 3, 29; 1999 HP, 4, 2, 1; 1999 HQ, 5, 2, 1; 1999 HS, 6, 2, 1; 1999 HT, 11, 4, 29; 1999 HU, 5, 2, 1; 1999 HV, 6, 2, 6; 1999 HD₁, 3, 1, 0; 1999 HV₁, 4, 2, 25; 1999 HW₁, 3, 1, 0; 1999 HZ₁, 3, 1, 0; 1999 HV₃, 13, 5, 43; 1999 HW₃, 12, 4, 42; 1999 HP₄, 15, 5, 46; 1999 JA, 11, 4, 33; 1999 JT₃, 3, 1, 0; 1999 JU₃, 11, 4, 37; 1999 JV₃, 3, 1, 0; 1999 JX₃ *, 9, 3, 30; 1999 JC₆, 3, 1, 0; 1999 JO₆, 6, 2, 1; 1999 JR₆, 6, 2, 3; 1999 JS₆, 3, 1, 0; 1999 JT₆, 3, 1, 0; 1999 JU₆, 3, 1, 0; 1999 JV₆, 3, 1, 0; 1999 JW₆, 3, 1, 0; 1999 JM₈, 6, 2, 1; 1999 JO₈, 3, 1, 0; 1999 JY₁₀, 9, 3, 2; 1999 JZ₁₀, 11, 3, 18; 1999 JA₁₁, 8, 3, 2; 1999 JB₁₁, 9, 3, 2; 1999 JJ₁₁ *, 12, 5, 22; 1999 JK₁₁ *, 13, 5, 22; 1999 JL₁₁ *, 15, 5, 22; 1999 JD₁₃, 3, 1, 0; 1999 JG₂₉, 6, 2, 1; 1999 JO₃₁, 6, 2, 1; 1999 JR₃₄, 6, 2, 1; 1999 JT₅₂, 9, 3, 3; 1999 JK₇₅, 3, 1, 0; 1999 JY₁₁₃, 6, 2, 1; 1999 KB *, 15, 5, 28; 1999 KK₁, 5, 2, 8; 1999 KL₁, 3, 1, 0; 1999 KA₄, 6, 2, 2; 1999 KN₆ *, 15, 6, 26; 1999 KO₆ *, 6, 2, 2; 1999 KQ₆, 4, 1, 0; 1999 KN₁₅, 3, 1, 0; 1999 LA *, 12, 5, 16; 1999 LL *, 6, 2, 1; 1999 LJ₁, 16, 5, 13; 1999 LK₁, 16, 5, 13; 1999 LV₁, 2, 1, 0; 1999 LW₁, 4, 1, 0; 1999 LX₁, 5, 1, 0; 1999 LO₄ *, 6, 2, 3; 1999 LS₇, 11, 3, 2; 1999 LT₇, 6, 2, 2; 1999 LU₇, 6, 2, 1; 1999 LV₇, 7, 2, 1; 1999 LX₇ *, 6, 2, 5; 1999 LE₁₉ *, 9, 3, 10; 1999 LM₂₈, 7, 3, 2; 1999 LN₂₈, 3, 1, 0; 1999 LO₂₈, 6, 2, 1; 1999 LP₂₈, 9, 3, 2; 1999 LQ₂₈, 3, 1, 0; 1999 LD₃₀, 3, 1, 0; 1999 MH *, 6, 2, 2; 2037 P-L, 5, 2, 1; (275), 3, 1, 0; (944), 4, 2, 4; (2518), 3, 1, 0; (2964), 3, 1, 0; (3403), 3, 1, 0; (4040), 3, 1, 0; (6253), 3, 1, 0; (6263), 6, 2, 1; (6489), 3, 1, 0; [865, 144, 14*, 1998/08/25–1999/06/20]

428 Reedy Creek

J. Broughton, 18 Branch Crescent, Reedy Creek, QLD 4228, Australia
[reedycrk@one.net.au]

0.25-m $f/6.3$ Schmidt-Cassegrain + CCD GSC

1990 TC₄, 4, 2, 1; 1992 YD, 4, 2, 1; 1993 UU, 2, 1, 0; 1998 AL₁₀, 2, 1, 0; 1998 AM₁₀, 2, 1, 0; 1998 BS₁₃, 2, 1, 0; 1998 FG₁₁₈, 6, 3, 3; 1998 FK₁₂₆, 9, 5, 37; 1998 PO₁, 5, 2, 3; 1998 QS₅₂, 2, 1, 0; 1998 SS₄₉, 2, 1, 0; 1998 TU₃, 3, 1, 0; 1998 WZ₆, 2, 1, 0; 1998 YQ₁₁, 4, 2, 35; 1999 BO₉, 3, 2, 29; 1999 CC₉, 2, 1, 0; 1999 CV₉, 2, 1, 0; 1999 DE₂, 3, 3, 6; 1999 DF₂, 2, 1, 0; 1999 EH, 1, 1, 0; 1999 EJ, 6, 3, 49; 1999 EC₃, 2, 2, 37; 1999 EP₃, 8, 6, 40; 1999 EH₅, 2, 1, 0; 1999 EJ₅, 4, 2, 37; 1999 EO₅, 1, 1, 0; 1999 FQ₁₉, 2, 1, 0; 1999 FN₂₁, 7, 5, 40; 1999 FO₂₁, 4, 2, 32; 1999 FN₅₃, 5, 2, 3; 1999 GX₃, 2, 1, 0; 1999 GK₄, 3, 2, 11; 1999 GA₅, 7, 4, 38; 1999 GR₅, 4, 3, 40; 1999 GU₅, 2, 1, 0; 1999 GV₅, 3, 1, 0; 1999 GX₅, 1, 1, 0; 1999 GO₆, 7, 5, 39; 1999 HR, 10, 7, 4, 35; 1999 HX, 8, 4, 47; 1999 HG₁, 4, 2, 40; 1999 HH₁, 6, 3, 40; 1999 HA₃, 3, 2, 6; 1999 HB₃, 10, 4, 40; 1999 HD₃, 3, 2, 39; 1999 HE₃, 4, 2, 39; 1999 HF₃, 6, 3, 37; 1999 JK *, 14, 6, 40; 1999 JE₁, 2, 1, 0; 1999 JF₃ *, 9, 5, 40; 1999 JT₃, 2, 1, 0; 1999 JU₃, 2, 1, 0; 1999 JV₃, 2, 1, 0; 1999 JT₆, 4, 2, 2; 1999 JW₆, 3, 1, 0; 1999 JS₇ *, 10, 5, 32; 1999 JT₇ *, 10, 6, 37; 1999 JU₇ *, 9, 5, 28; 1999 JV₇ *, 12, 6, 37; 1999 JR₈ *, 14, 7, 30; 1999 JS₈ *, 11, 6, 36; 1999 JT₈ *, 8, 5, 36; 1999 JU₈ *, 10, 5, 31; 1999 JR₃₄, 4, 2, 1; 1999 KT₄, 3, 1, 0; 1999 KU₄, 2, 1, 0; 1999 LS₇, 1, 1, 0; 1999 LT₇, 17, 6, 10; 1999 LV₇, 9, 4, 3; 1999 LW₇ *, 8, 5, 6; 1999 LM₂₈, 4, 2, 1; 1999 LO₂₈, 3, 1, 0; 1999 LD₃₀, 2, 1, 0; 1999 MB *, 7, 3, 2; 1999 MC *, 6, 3, 2; 1999 ME *, 6, 3, 2; 1999 MF *, 4, 2, 1; 1999 MG *, 5, 2, 1; (898), 2, 1, 0; (2648), 1, 1, 0; (6489), 6, 1, 0; (7223), 1, 1, 0; (8584), 4, 2, 1; (10480), 2, 1, 0; [403, 85, 16*, 1999/04/15–1999/06/20]

429 Hawker

J. B. Child, 64 Woolner Circuit, Hawker, ACT 2614, Australia
[jrbchild@dynamite.com.au]

0.32-m $f/4.8$ reflector + CCD GSC-1.2

1996 PY₆, 2, 1, 0; 1996 PA₇, 3, 2, 1; 1999 HB₂, 7, 2, 5; 1999 HQ₂, 4, 2, 5; 1999 JQ₈ *, 6, 2, 6; [22, 5, 1*, 1999/05/09–1999/05/15]

432 Boambee

V. A. Gardiner, 44 Shaws Close, Boambee, N.S.W. 2452, Australia
[vgardi@key.net.au]

0.20-m Schmidt-Cassegrain + CCD GSC

(508), 2, 2, 1; (626), 2, 2, 1; (654), 2, 2, 1; (775), 3, 3, 2; (917), 2, 2, 1; (1046), 2, 2, 1; (1132), 2, 2, 1; (1567), 2, 2, 1; (1780), 2, 2, 1; (3431), 2, 2, 1; (3500), 2, 2, 1; [23, 11, 0*, 1999/06/11–1999/06/14]

467 Auckland Observatory

I. P. Griffin, Auckland Observatory, P.O. Box 24-180, Royal Oak, Auckland, New Zealand [iang@stardome.org.nz]

Observers I. P. Griffin, G. W. Christie, M. Bos

0.50-m $f/6.4$ Cassegrain reflector + CCD USNO-A2.0

(3142), 3, 1, 0; [3, 1, 0*, 1999/06/06]

511 Haute Provence

P. Descamps, Institut de Mecanique Celeste et de Calcul des ephemerides, Observatoire de Paris, 77 av. Denfert-Rochereau, F-75014 Paris, France
[Pascal.Descamps@bd1.fr]

Observers J.-E. Arlot, P. Descamps, W. Thuillot, J. Berthier, N. Emelianov, L. Fournial

1991 CQ₆, 2, 1, 0; 1999 LC₃₀ *, 12, 4, 10; (928), 12, 4, 10; [26, 3, 1*, 1991/02/20–1999/06/16]

540 Linz

E. Meyer, F. Marklstrasse 1/62, A-4040 Linz, Austria [erich.meyer@ooonet.at]

0.30-m $f/5.2$ Schmidt Cassegrain + CCD USNO-A2.0, GSC-1.1

1998 BQ, 6, 2, 25; 1998 BS₁₃, 3, 1, 0; 1999 HX₂, 3, 1, 0; 1999 JD₆, 4, 1, 0; 1999 JO₈, 10, 3, 35; 1999 JT₆₉, 6, 2, 2; 1999 JR₁₂₂, 3, 1, 0; 1999 KU₄, 8, 2, 28; [43, 8, 0*, 1999/05/09–1999/06/20]

552 San Vittore

E. Colombini, Via S. Vittore 44, I-40136 Bologna, Italy
[ermes.colombini@iol.it]

Observers C. Vacchi, G. Sassi, E. Colombini, R. Di Luca

0.45-m $f/3.3$ reflector + CCD GSC

1996 QD₁, 2, 1, 0; 1998 DY₂₃, 2, 1, 0; 1998 FG₁₆, 9, 4, 19; 1999 JL₁₄, 2, 1, 0; 1999 JZ₅₈, 4, 2, 7; 1999 JM₁₀₆, 4, 2, 1; 1999 JJ₁₂₅, 4, 2, 6; [27, 7, 0*, 1999/05/23–1999/06/11]

557 Ondřejov

P. Pravec, Astronomical Institute, Czech Academy of Sciences, CZ-25165 Ondřejov, Czech Republic [ppravec@asu.cas.cz]

Observers P. Pravec, L. Šarounová, U. Babiaková, P. Kušnirák

0.65-m $f/3.6$ reflector + CCD USNO-SA1.0, USNO-SA2.0

1997 WF₂, 3, 1, 0; 1997 XM₁₃, 4, 1, 0; 1998 DF₂₀, 6, 2, 5; 1998 HV₉₅, 2, 1, 0; 1998 QO₂₉, 3, 1, 0; 1998 VN₃₀, 3, 1, 0; 1999 FZ₈, 7, 1, 0; 1999 FK₁₆, 4, 2, 3; 1999 GU₃, 20, 6, 15; 1999 GZ₈,

2, 1, 0; 1999 HL₂, 2, 1, 0; 1999 HW₄, 2, 12; 1999 HF₁, 32, 8, 22; 1999 HD₂, 2, 1, 0; 1999 JB₇, 2, 36; 1999 JE₁, 4, 1, 0; 1999 JW₃, 2, 1, 0; 1999 JU₄, 5, 2, 2; 1999 JD₆, 16, 4, 22; 1999 JO₆, 2, 1, 0; 1999 JR₆, 3, 1, 0; 1999 JS₆, 2, 1, 0; 1999 JT₆, 1, 1, 0; 1999 JV₆, 3, 1, 0; 1999 JW₆, 3, 1, 0; 1999 JM₈, 5, 1, 0; 1999 JO₈, 11, 3, 5; 1999 JY₁₀, 2, 1, 0; 1999 JZ₁₀, 3, 1, 0; 1999 JB₁₁, 5, 2, 1; 1999 JZ₁₁, 2, 1, 0; 1999 JK₇₅, 4, 1, 0; 1999 KK₁, 2, 1, 0; 1999 KL₁, 4, 1, 0; 1999 KT₄, 5, 1, 0; 1999 KU₄, 4, 1, 0; 1999 KV₄, 2, 1, 0; 1999 KW₄, 4, 1, 0; 1999 KX₄, 2, 1, 0; 1999 KQ₆, 5, 2, 2; 1999 LK₁, 3, 1, 0; 1999 LT₁, 5, 2, 1; 1999 LU₁, 2, 1, 0; 1999 LV₁, 2, 1, 0; 1999 LW₁, 7, 2, 1; 1999 LX₁, 4, 1, 0; 1999 LE₆, 5, 1, 0; 1999 LF₆, 4, 1, 0; 1999 LS₇, 6, 2, 2; 1999 LT₇, 3, 1, 0; 1999 LU₇, 2, 1, 0; (5693), 3, 1, 0; [248, 52, 0*, 1998/02/23–1999/06/13]

560 Madonna di Dossobuono

L. Lai, Via Mantovana 130e, I-37062 Dossobuono (Verona), Italy

[lastrofil@astbo1.bo.cnr.it]

Observers L. Lai, I. Rocchetti, G. Vesentini

0.40-m $f/3.5$ reflector + CCD

GSC

1988 CF₆, 3, 1, 0; 1991 FX₂, 5, 2, 1; 1996 VH₂, 3, 1, 0; 1998 BA₂, 6, 2, 7; 1998 BB₂, 9, 3, 9; (5084), 6, 2, 1; (10154), 3, 1, 0; (10372), 6, 2, 1; [41, 8, 0*, 1996/11/08–1999/04/16]

566 Haleakala-NEAT/GEODSS

E. F. Helin, MS 183-501, Jet Propulsion Laboratory, Pasadena, CA 91109, U.S.A.

[efh@ipl.jpl.nasa.gov]

Observers E. F. Helin, S. H. Pravdo, K. J. Lawrence, D. L. Rabinowitz, S. Groom,

C. Clark, R. Bamberg, S. Levin, J. Lorre, S. Shaklan, R. Byrd, A. Esquibel,

C. Cotton, D. Bascon

1-m $f/2.2$ Ritchey-Chrétien + CCD

1931 UB₆, 6, 2, 23; 1967 US₆, 6, 2, 62; 1975 SX₁, 3, 1, 0; 1979 MD₁, 3, 1, 0; 1979 ON₁, 3, 1, 0; 1980 PP₁, 3, 1, 0; 1981 ES₁₁, 3, 1, 0; 1981 EL₂₇, 3, 1, 0; 1981 UX₂₂, 3, 1, 0; 1982 QP₁, 6, 2, 436; 1987 DN₃, 3, 1, 0; 1987 ON₃, 3, 1, 0; 1988 SH₃, 6, 2, 27; 1988 TK₃, 6, 2, 504; 1989 SH₂, 6, 2, 27; 1990 BM₁, 3, 1, 0; 1990 CF₃, 3, 1, 0; 1990 QL₁, 6, 2, 32; 1990 QW₄, 3, 1, 0; 1990 QX₄, 3, 1, 0; 1990 RR₁₇, 3, 1, 0; 1990 SR₂, 3, 1, 0; 1990 UB₃, 3, 1, 0; 1991 RU₄, 3, 1, 0; 1991 RA₁₃, 3, 1, 0; 1991 UE₃, 3, 1, 0; 1991 XE₂, 3, 1, 0; 1992 AS₂, 3, 1, 0; 1992 EW₅, 3, 1, 0; 1992 LE₃, 3, 1, 0; 1992 OM₈, 3, 1, 0; 1992 SL₂₃, 3, 1, 0; 1992 UM₆, 6, 2, 32; 1993 FP₃₀, 3, 1, 0; 1993 LX₃, 3, 1, 0; 1993 SB₂, 3, 1, 0; 1993 SK₂, 3, 1, 0; 1993 TK₁, 9, 3, 440; 1993 TP₁₉, 3, 1, 0; 1993 TC₂₀, 3, 1, 0; 1993 TY₂₉, 6, 2, 57; 1993 UG₁, 3, 1, 0; 1993 VF₁, 3, 1, 0; 1994 CR₃, 3, 1, 0; 1994 CT₁₁, 3, 1, 0; 1994 SE₂, 3, 1, 0; 1994 WU₂, 3, 1, 0; 1995 CW₆, 2, 49; 1995 UG₅, 3, 1, 0; 1996 DB₃, 3, 1, 0; 1996 JP₁₁, 3, 1, 0; 1996 KV₇, 3, 1, 0; 1996 MW₁ *, 6, 2, 30; 1996 NV₂, 3, 1, 0; 1996 PS₉, 3, 1, 0; 1996 RF₂₆, 3, 1, 0; 1996 SY₃, 3, 1, 0; 1996 SO₇, 3, 1, 0; 1996 TX₉, 3, 1, 0; 1996 TV₁₂, 3, 1, 0; 1996 TF₁₃, 3, 1, 0; 1996 TN₁₈, 3, 1, 0; 1996 TG₅₂, 3, 1, 0; 1996 TV₆₂, 3, 1, 0; 1996 VG₅, 6, 2, 30; 1996 VY₃₀, 3, 1, 0; 1996 WZ₁, 3, 1, 0; 1996 XC₁₉, 6, 2, 61; 1997 AP₁, 6, 2, 29; 1997 QK₄, 3, 1, 0; 1997 UL₂₅, 3, 1, 0; 1997 VJ₃, 3, 1, 0; 1997 WO₁, 3, 1, 0; 1997 WV₁, 3, 1, 0; 1997 WL₈, 3, 1, 0; 1997 WL₃₀, 3, 1, 0; 1997 WS₃₈, 3, 1, 0; 1997 WW₃₉, 3, 1, 0; 1997 WX₃₉, 6, 2, 29; 1997 WY₃₉, 3, 1, 0; 1997 WG₄₇, 3, 1, 0; 1997 WC₄₈, 3, 1, 0; 1997 WD₅₇ *, 6, 2, 29; 1997 WG₅₇ *, 6, 2, 28; 1997 XA₅, 3, 1, 0; 1997 XW₈, 6, 2, 27; 1997 XB₁₁, 3, 1, 0; 1997 XQ₁₂, 3, 1, 0; 1997 YL₄, 3, 1, 0; 1997 YG₆, 3, 1, 0; 1997 YC₁₂, 3, 1, 0; 1998 AB₅, 3, 1, 0; 1998 AK₉, 3, 1, 0; 1998 BL₂, 3, 1, 0; 1998 BU₄, 3, 1, 0; 1998 BV₁₀, 3, 1, 0; 1998 BV₁₁, 3, 1, 0; 1998 BM₁₂, 3, 1, 0; 1998 BX₂₇, 3, 1, 0; 1998 BB₄₁, 3, 1, 0; 1998 BN₄₁, 3, 1, 0; 1998 BY₄₅, 3, 1, 0; 1998 BT₄₈ *, 6, 2, 27; 1998 CU₄, 3, 1, 0; 1998 DM₃, 3, 1, 0; 1998 DO₅, 3, 1, 0; 1998 DW₁₂, 3, 1, 0; 1998 DN₁₆, 3, 1, 0; 1998 DH₃₆, 6, 2, 27; 1998 EZ₁₅, 6, 2, 32; 1998 EH₁₆, 3, 1, 0; 1998 FV₉, 3, 1, 0; 1998 FA₁₂, 3, 1, 0; 1998 FW₁₂, 6, 2, 27; 1998 FQ₁₃, 6, 2, 32; 1998 FX₁₆, 3, 1, 0; 1998 FZ₁₇, 3, 1, 0; 1998 FF₃₀, 9, 2, 33; 1998 FN₃₇, 3, 1, 0; 1998 FF₇₄, 3, 1, 0; 1998 FD₈₂, 6, 1, 0; 1998 FG₈₂, 3, 1, 0; 1998 FT₈₄, 3, 1, 0; 1998 FG₈₅, 3, 1, 0; 1998 FY₈₆, 6, 2, 28; 1998 FM₈₈, 6, 2, 28; 1998 FQ₉₁, 3, 1, 0; 1998 FR₉₁, 3, 1, 0; 1998 FO₉₂, 3, 1, 0; 1998 FO₉₃, 3, 1, 0; 1998 FJ₁₂₇, 3, 1, 0; 1998 FK₁₂₈, 3, 1, 0; 1998 GC₂, 3, 1, 0; 1998 HC₂₉, 3, 1, 0; 1998 HQ₄₈, 3, 1, 0; 1998 KO₄, 3, 1, 0; 1998 OG₉, 3, 1, 0; 1998 QT₃, 3, 1, 0; 1998 SK₅₈, 3, 1, 0; 1998 SF₁₂₇, 6, 2, 65; 1998 TL₃₂, 6, 1, 0; 1998 UT₂₄, 3, 1, 0; 1998 WV₁, 3, 1, 0; 1998 XJ₄₀, 3, 1, 0; 1998 XG₄₈, 3, 1, 0; 1998 XB₅₁, 12, 1, 0; 1998 XG₇₉, 3, 1, 0; 1998 YN₂₂, 3, 1, 0; 1998 YL₂₇, 3, 1, 0; 1999 BQ₆, 3, 1, 0; 1999 BX₆, 6, 2, 28; 1999 BL₉, 6, 2, 28; 1999 BY₂₅, 3, 1, 0; 1999 CJ₃, 1, 0; 1999 CX₁, 3, 1, 0; 1999 CG₂₁, 3, 1, 0; 1999 CX₅₂, 3, 1, 0; 1999 CB₆₇, 12, 3, 56; 1999 CW₆₉, 3, 1, 0; 1999 CM₁₂₆, 3, 1, 0; 1999 DC₆, 6, 2, 531; 1999 DU₆, 6, 2, 28; 1999 EA₃, 1, 0; 1999 EL₅, 3, 1, 0; 1999 FF₃, 3, 1, 0; 1999 FS₃, 3, 1, 0; 1999 FY₈, 3, 1, 0; 1999 FL₉, 3, 1, 0; 1999 FO₉, 6, 2, 88; 1999 FA₁₀, 3, 1, 0; 1999 FJ₁₀, 3, 1, 0; 1999 FV₁₀, 3, 1, 0; 1999 FO₁₄, 3, 1, 0; 1999 FW₁₈, 3, 1, 0; 1999 FC₂₆, 3, 1, 0; 1999 FU₃₀, 3, 1, 0; 1999 FT₃₂, 3, 1, 0; 1999 FR₃₅, 3, 1, 0; 1999 GV₃, 1, 0; 1999 GB₅, 3, 1, 0; 1999 GX₈, 3, 1, 0; 1999 GO₉, 3, 1, 0; 1999 GS₉, 3, 1, 0; 1999 GY₁₉, 6, 2, 29; 1999 GQ₂₁, 3, 1, 0; 1999 GS₂₁, 3, 1, 0; 1999 GE₂₄, 3, 1, 0; 1999 GQ₃₁, 3, 1, 0; 1999 JC₄, 3, 1,

0; 1999 JU₈, 3, 1, 0; 1999 JG₁₀, 3, 1, 0; 1999 JU₁₉, 3, 1, 0; 1999 JD₂₀, 3, 1, 0; 1999 JP₂₁, 3, 1, 0; 1999 JU₂₁, 6, 1, 0; 1999 JL₂₆, 3, 1, 0; 1999 JX₂₆, 3, 1, 0; 1999 JL₂₇, 3, 1, 0; 1999 JC₃₀, 6, 2, 32; 1999 JD₃₆, 6, 2, 31; 1999 JO₃₆, 6, 2, 28; 1999 JF₃₇, 6, 2, 32; 1999 JO₃₈, 3, 1, 0; 1999 JM₄₀, 3, 1, 0; 1999 JR₄₃, 3, 1, 0; 1999 JS₄₃, 6, 2, 87; 1999 JH₄₅, 3, 1, 0; 1999 JV₄₈, 6, 2, 27; 1999 JZ₅₀, 3, 1, 0; 1999 JH₅₁, 3, 1, 0; 1999 JP₅₁, 3, 1, 0; 1999 JH₅₂, 3, 1, 0; 1999 JV₅₇, 3, 1, 0; 1999 JL₆₂, 3, 1, 0; 1999 JE₆₄, 3, 1, 0; 1999 JK₆₄, 3, 1, 0; 1999 JH₆₈, 6, 2, 27; 1999 JQ₇₆, 6, 1, 0; 1999 JA₈₂, 3, 1, 0; 1999 JA₈₄, 3, 1, 0; 1999 JL₈₅, 3, 1, 0; 1999 JG₉₉, 3, 1, 0; 1999 JQ₁₀₀, 3, 1, 0; 1999 JM₁₁₄, 3, 1, 0; 1999 JA₁₁₈, 3, 1, 0; 1999 JU₁₂₂, 3, 1, 0; 1999 JC₁₂₄, 3, 1, 0; 1999 KT₃, 1, 0; 1999 KJ₁, 3, 1, 0; 1999 KK₄, 3, 1, 0; 1999 KX₁₁, 3, 1, 0; 1999 KE₁₅, 3, 1, 0; 1999 LA₁, 3, 1, 0; 2022 P-L, 3, 1, 0; 4175 P-L, 3, 1, 0; 4839 P-L, 3, 1, 0; 6574 P-L, 6, 2, 27; 6599 P-L, 3, 1, 0; 6653 P-L, 3, 1, 0; 1122 T-1, 3, 1, 0; 2085 T-1, 3, 1, 0; 4256 T-1, 3, 1, 0; 1104 T-2, 3, 1, 0; 2216 T-3, 6, 1, 0; 4166 T-3, 3, 1, 0; [900, 245, 4*, 1996/02/16–1999/02/19]

568 Mauna Kea

C. Trujillo, Institute for Astronomy, 2680 Woodlawn Drive, Honolulu, HI 96822, U.S.A. [jewitt@galileo.ifa.hawaii.edu] (1)

D. J. Tholen, Institute for Astronomy, 2680 Woodlawn Drive, Honolulu, HI 96822, U.S.A. [tholen@hale.ifa.hawaii.edu] (2)

C. Veillet, Canada-France-Hawaii Telescope Corporation, P.O. Box 1597, Kamuela, HI 96743, U.S.A. [veillet@cfht.hawaii.edu] (3)

B. Gladman, Observatoire de Nice, Department Cassini, BP 229, F-06304 Nice Cedex 4, France [gladman@obs-nice.fr] (6)

Observers D. Jewitt (1), J. Luu (1), C. Trujillo (1), D. J. Tholen (1,2), J. Bauer (2), R. J. Whiteley (2), C. Veillet (3), J. Anderson (3), M. VanDalsen (6), D. Hanes (6), B. Gladman (6), J. J. Kavelaars (6), A. Morbidelli (6), M. Holman (6)

Measurers C. Trujillo (1), D. J. Tholen (2), C. Veillet (3), J. Anderson (3),

W. Morgan (3), T. Parker (3), B. Gladman (6), J.-M. Petit (6)

3.6-m Canada-France-Hawaii Telescope + CCD, 2.24-m reflector + CCD
USNO-A1.0, USNO-SA1.0

(1) 1998 HH₁₅₁, 4, 2, 29; 1998 HJ₁₅₁ *, 13, 7, 345; 1998 HK₁₅₁ *, 15, 9, 345; 1998 HL₁₅₁ *, 13, 5, 344; 1998 HM₁₅₁ *, 11, 5, 320; 1998 HN₁₅₁ *, 13, 6, 278; 1998 HO₁₅₁ *, 13, 5, 380; 1998 HP₁₅₁ *, 14, 6, 373; 1998 HQ₁₅₁ *, 14, 7, 374; 1998 HR₁₅₁ *, 11, 5, 63; 1999 CV₁₁₈, 4, 3, 28; 1999 CW₁₁₈, 2, 1, 0; 1999 CY₁₁₈, 6, 4, 25; 1999 CZ₁₁₈, 2, 1, 0; 1999 CA₁₁₉, 2, 1, 0; 1999 CF₁₁₉, 4, 3, 28; 1999 CX₁₃₁, 2, 1, 0; 1999 FV₃₂, 2, 1, 0; [145, 18, 9*, 1998/04/21–1999/05/07]

(2) 1999 JD₁₃ *, 10, 4, 5; 1999 LX₁, 4, 1, 0; (6141), 4, 1, 0; [18, 3, 1*, 1999/05/14–1999/06/14]

(3) 1997 TR₆, 4, 2, 3; 1999 AT₃₅ *, 3, 2, 1; 1999 AU₃₅ *, 3, 2, 1; 1999 AV₃₅ *, 3, 2, 1; 1999 AW₃₅ *, 3, 2, 1; 1999 AX₃₅ *, 3, 2, 1; 1999 AY₃₅ *, 3, 2, 1; 1999 AZ₃₅ *, 3, 2, 1; 1999 AA₃₆ *, 3, 2, 1; 1999 AB₃₆ *, 3, 2, 1; 1999 AC₃₆ *, 3, 2, 1; 1999 AD₃₆ *, 3, 2, 1; 1999 AE₃₆ *, 3, 2, 1; 1999 AF₃₆ *, 3, 2, 1; 1999 AG₃₆ *, 3, 2, 1; 1999 AH₃₆ *, 3, 2, 1; 1999 AJ₃₆ *, 3, 2, 1; 1999 AK₃₆ *, 4, 2, 2; 1999 AL₃₆ *, 3, 2, 1; 1999 AM₃₆ *, 3, 2, 1; 1999 AN₃₆ *, 3, 2, 1; 1999 AO₃₆ *, 4, 2, 2; 1999 AP₃₆ *, 4, 2, 2; 1999 AQ₃₆ *, 4, 2, 2; 1999 AR₃₆ *, 4, 2, 2; 1999 AS₃₆ *, 3, 2, 1; 1999 AT₃₆ *, 3, 2, 1; 1999 AU₃₆ *, 3, 2, 1; 1999 AV₃₆ *, 3, 2, 1; 1999 AW₃₆ *, 3, 2, 1; 1999 AX₃₆ *, 3, 2, 1; 1999 AY₃₆ *, 3, 2, 1; 1999 AZ₃₆ *, 3, 2, 1; 1999 AA₃₇ *, 3, 2, 1; 1999 AB₃₇ *, 3, 2, 1; 1999 AC₃₇ *, 3, 2, 1; 1999 AD₃₇ *, 3, 2, 1; 1999 AE₃₇ *, 3, 2, 1; 1999 AF₃₇ *, 3, 2, 1; 1999 AG₃₇ *, 3, 2, 1; 1999 AH₃₇ *, 3, 2, 1; 1999 AI₃₇ *, 3, 2, 1; 1999 AJ₃₇ *, 3, 2, 1; 1999 AK₃₇ *, 3, 2, 1; 1999 AL₃₇ *, 3, 2, 1; 1999 AM₃₇ *, 3, 2, 1; 1999 AN₃₇ *, 3, 2, 1; 1999 AO₃₇ *, 3, 2, 1; 1999 AP₃₇ *, 3, 2, 1; 1999 AQ₃₇ *, 3, 2, 1; 1999 AR₃₇ *, 3, 2, 1; 1999 AS₃₇ *, 3, 2, 1; 1999 AT₃₇ *, 3, 2, 1; 1999 AU₃₇ *, 3, 2, 1; 1999 AV₃₇ *, 3, 2, 1; 1999 AW₃₇ *, 3, 2, 1; 1999 AX₃₇ *, 3, 2, 1; 1999 AY₃₇ *, 3, 2, 1; 1999 AZ₃₇ *, 3, 2, 1; 1999 AA₃₈ *, 3, 2, 1; 1999 AB₃₈ *, 3, 2, 1; 1999 AC₃₈ *, 3, 2, 1; 1999 AD₃₈ *, 3, 2, 1; 1999 AE₃₈ *, 3, 2, 1; 1999 AF₃₈ *, 3, 2, 1; 1999 AG₃₈ *, 3, 2, 1; 1999 AH₃₈ *, 3, 2, 1; 1999 AI₃₈ *, 3, 2, 1; 1999 AJ₃₈ *, 3, 2, 1; 1999 AK₃₈ *, 3, 2, 1; 1999 AL₃₈ *, 3, 2, 1; 1999 AM₃₈ *, 3, 2, 1; 1999 AN₃₈ *, 3, 2, 1; 1999 AO₃₈ *, 3, 2, 1; 1999 AP₃₈ *, 3, 2, 1; 1999 AQ₃₈ *, 3, 2, 1; 1999 AR₃₈ *, 3, 2, 1; 1999 AS₃₈ *, 3, 2, 1; 1999 AT₃₈ *, 3, 2, 1; 1999 AU₃₈ *, 3, 2, 1; 1999 AV₃₈ *, 3, 2, 1; 1999 AW₃₈ *, 3, 2, 1; 1999 AX₃₈ *, 3, 2, 1; 1999 AY₃₈ *, 3, 2, 1; 1999 AZ₃₈ *, 3, 2, 1; 1999 AA₃₉ *, 3, 2, 1; 1999 AB₃₉ *, 3, 2, 1; 1999 AC₃₉ *, 3, 2, 1; 1999 AD₃₉ *, 3, 2, 1; 1999 AE₃₉ *, 3, 2, 1; 1999 AF₃₉ *, 3, 2, 1; 1999 AG₃₉ *, 3, 2, 1; 1999 AH₃₉ *, 3, 2, 1; 1999 AI₃₉ *, 3, 2, 1; 1999 AJ₃₉ *, 3, 2, 1; 1999 AK₃₉ *, 3, 2, 1; 1999 AL₃₉ *, 3, 2, 1; 1999 AM₃₉ *, 3, 2, 1; 1999 AN₃₉ *, 3, 2, 1; 1999 AO₃₉ *, 3, 2, 1; 1999 AP₃₉ *, 3, 2, 1; 1999 AQ₃₉ *, 3, 2, 1; 1999 AR₃₉ *, 3, 2, 1; 1999 AS₃₉ *, 3, 2, 1; 1999 AT₃₉ *, 3, 2, 1; 1999 AU₃₉ *, 3, 2, 1; 1999 AV₃₉ *, 3, 2, 1; 1999 AW₃₉ *, 3, 2, 1; 1999 AX₃₉ *, 3, 2, 1; 1999 AY₃₉ *, 3, 2, 1; 1999 AZ₃₉ *, 3, 2, 1; 1999 AA₄₀ *, 3, 2, 1; 1999 AB₄₀ *, 3, 2, 1; 1999 AC₄₀ *, 3, 2, 1; 1999 AD₄₀ *, 3, 2, 1; 1999 AE₄₀ *, 3, 2, 1; 1999 AF₄₀ *, 3, 2, 1; 1999 AG₄₀ *, 3, 2, 1; 1999 AH₄₀ *, 3, 2, 1; 1999 AI₄₀ *, 3, 2, 1; 1999 AJ₄₀ *, 3, 2, 1; 1999 AK₄₀ *, 3, 2, 1; 1999 AL₄₀ *, 3, 2, 1; 1999 AM₄₀ *, 3, 2, 1; 1999 AN₄₀ *, 3, 2, 1; 1999 AO₄₀ *, 3, 2, 1; 1999 AP₄₀ *, 3, 2, 1; 1999 AQ₄₀ *, 3, 2, 1; 1999 AR₄₀ *, 3, 2, 1; 1999 AS₄₀ *, 3, 2, 1; 1999 AT₄₀ *, 3, 2, 1; 1999 AU₄₀ *, 3, 2, 1; 1999 AV₄₀ *, 3, 2, 1; 1999 AW₄₀ *, 3, 2, 1; 1999 AX₄₀ *, 3, 2, 1; 1999 AY

1999 HF₁, 2, 1, 0; 1999 JU₃, 2, 1, 0; 1999 JV₃, 2, 1, 0; 1999 JD₆, 3, 2, 17; 1999 JT₆, 2, 1, 0; 1999 JV₆, 3, 1, 0; 1999 KW₄, 2, 1, 0; 1999 LK₁, 3, 1, 0; 1999 LT₁, 1, 1, 0; 1999 LV₁, 2, 1, 0; 1999 LF₆, 2, 1, 0; 1999 LV₇, 2, 1, 0; [26, 12, 0*, 1999/05/23–1999/06/17]

595 Farra d'Isonzo

L. Bittesini, Via dei Conventi 10, I-34070 Farra D'Isonzo (GO), Italy

[ccaf@tmedia.it]

Observers A. Toso, E. Pettarin, M. Spolaor, G. Lombardi, L. Bittesini, W. Boschin

Measurers E. Pettarin, G. Lombardi, A. Toso, L. Drigo

0.4-m $f/4.5$ reflector + CCD

GSC

1993 UD₁, 2, 1, 0; 1994 EL, 3, 1, 0; 1996 LP₁, 5, 3, 3; 1998 BM₂₆, 8, 4, 25; 1998 DW₁, 6, 3, 12; 1998 DJ₁₄, 4, 2, 1; 1999 FS₅, 4, 2, 6; 1999 FT₅, 7, 3, 8; 1999 FQ₁₈, 2, 1, 0; 1999 JU₈₅, 7, 3, 3; 1999 JL₉₂, 5, 2, 1; 1999 JH₁₀₇, 2, 1, 0; 1999 KQ₆, 5, 2, 1; (7544), 2, 1, 0; (10567), 2, 1, 0; [64, 15, 0*, 1994/03/17–1999/06/13]

596 Colleverde di Guidonia

V. S. Casulli, Via M. Rosa 1, I-00010 Colleverde di Guidonia (RM), Italy

[v.casulli@priminet.it]

0.40-m $f/3.2$ reflector + CCD

GSC

1993 TD, 3, 1, 0; 1999 JE₁, 7, 2, 2; 1999 JM₈, 3, 1, 0; 1999 LF₆, 2, 1, 0; (3722), 3, 1, 0; (7982), 3, 1, 0; [21, 6, 0*, 1999/03/23–1999/06/12]

599 Campo Imperatore-CINEOS

A. Carusi, Istituto Astrofisica Spaziale–Planetogia, Viale Università 11, I-00185

Rome, Italy [carusi@saturn.ias.fra.cnr.it]

Observers A. Boattini, A. Di Clemente

Measurers A. Boattini, G. Forti

0.60-m $f/3$ Schmidt + CCD

GSC

1998 KF₃₅, 3, 1, 0; 1999 EC₈, 5, 2, 2; [8, 2, 0*, 1996/07/24–1997/01/14]

608 Haleakala-AMOS

P. Kervin, Air Force Maui Optical Station, 535 Lipoa Parkway, Suite 200, Kihei,

Maui, HI 96753, U.S.A. [paul@ulua.mhpcc.af.mil]

E. F. Helin, MS 183-501, Jet Propulsion Laboratory, Pasadena, CA 91109, U.S.A.

[efh@temblor.jpl.nasa.gov]

Observers A. Alday, K. Moore, M. Tranilla, T. Goggia, A. Sylva

Measurers J. Africano, P. Sydney, D. Nishimoto, A. Angara, B. McCarthy,

P. Kervin, B. Kraszewski, V. Soo Hoo, B. Africano

1.2-m reflector + CCD

1996 RP₁, 2, 1, 0; 1997 PK₅, 2, 1, 0; [4, 2, 0*, 1996/08/12–1997/08/08]

610 Pianoro

V. Goretti, Via Resistenza 93, I-40065 Pianoro (BO), Italy

[astrofil@astboi.bo.cnr.it]

0.25-m $f/4$ Schmidt-Cassegrain + CCD

GSC

1973 SF₆, 5, 1, 0; 1992 ME, 5, 1, 0; 1998 YP₁₁, 5, 1, 0; 1999 GK₄, 8, 2, 4; 1999 HF₁, 10, 2, 14; 1999 JV₃, 20, 4, 26; 1999 JW₃, 10, 2, 10; 1999 JD₆, 15, 3, 16; 1999 JV₆, 10, 2, 4; 1999 JD₈, 10, 2, 1; 1999 JO₈, 32, 6, 25; 1999 KU₄, 5, 1, 0; 1999 KW₄, 22, 5, 25; (41), 10, 2, 7; (222), 5, 1, 0; (260), 5, 1, 0; (261), 5, 1, 0; (341), 5, 1, 0; (350), 5, 1, 0; (455), 5, 1, 0; (463), 5, 1, 0; (511), 10, 2, 12; (529), 5, 1, 0; (547), 5, 1, 0; (559), 5, 1, 0; (628), 5, 1, 0; (738), 10, 2, 14; (787), 5, 1, 0; (807), 5, 1, 0; (815), 5, 1, 0; (928), 10, 2, 7; (1012), 5, 1, 0; (1591), 5, 1, 0; (1600), 5, 1, 0; (1907), 5, 1, 0; (2021), 5, 1, 0; (2448), 10, 2, 27; (2612), 5, 1, 0; (2655), 5, 1, 0; (2816), 5, 1, 0; (2832), 5, 1, 0; (3246), 5, 1, 0; (3389), 5, 1, 0; (3557), 5, 1, 0; (3581), 10, 2, 10; (3703), 5, 1, 0; (4061), 5, 1, 0; (4163), 5, 1, 0; (4388), 5, 1, 0; (4566), 5, 1, 0; (5033), 5, 1, 0; (5145), 3, 1, 0; (5384), 5, 1, 0;

(5693), 10, 2, 14; (5754), 5, 1, 0; (6027), 5, 1, 0; (6489), 25, 5, 30; (7238), 5, 1, 0; (8360), 5, 1, 0; (10259), 5, 1, 0; (10546), 5, 1, 0; [450, 61, 0*, 1999/04/25–1999/06/18]

611 Starkenburg Sternwarte, Heppenheim

M. Busch, Giessener Strasse 4, D-64646 Heppenheim, Germany [mab@iez.com]

Observers M. Busch, R. Stoss, S. Kluegl, P. Geffert, A. Seib

Measurer R. Stoss

0.30-m $f/6.3$ reflector + CCD, 0.45-m $f/4.4$ reflector + CCD

USNO-A2.0

1976 UB₁, 2, 1, 0; 1988 JB₁, 2, 1, 0; 1989 CH, 3, 1, 0; 1989 MH, 4, 2, 1; 1990 FM, 2, 1, 0; 1990 YM, 2, 1, 0; 1991 LW, 4, 2, 5; 1992 ME, 2, 1, 0; 1994 EJ₁, 1, 1, 0; 1994 GD₁, 3, 1, 0; 1994 GN₁, 2, 1, 0; 1994 LR, 3, 1, 0; 1997 WA₇, 5, 2, 6; 1997 WP₂₁, 2, 1, 0; 1997 YP₈, 2, 1, 0; 1998 WW₂₃, 2, 1, 0; 1999 CC₁₀, 3, 1, 0; 1999 DR₃, 3, 1, 0; 1999 GC₆, 2, 1, 0; 1999 GE₆, 3, 1, 0; 1999 HX₂, 3, 1, 0; 1999 JE₁, 2, 1, 0; 1999 KL₁, 2, 1, 0; 1999 LJ₁, 1, 1, 0; 1999 LK₁, 3, 1, 0; 1999 LT₁, 2, 1, 0; 1999 LW₁, 4, 1, 0; 1999 LX₁, 5, 1, 0; 1999 LS₇, 5, 2, 3; 1999 LN₂₈, 3, 1, 0; 1999 LP₂₈, 3, 1, 0; 1999 LQ₂₈, 2, 1, 0; (2804), 2, 1, 0; (10479), 2, 1, 0; (10487), 3, 1, 0; [94, 35, 0*, 1999/05/02–1999/06/15]

620 Observatorio Astronómico de Mallorca

À. López, Observatori Astronòmic de Mallorca, Camí de l'observatori s/n, E-07144

Costitx, Balears, Spain [astroam@dinky.bitel.es]

Observers À. López, R. Pacheco

0.30-m $f/3.3$ Schmidt-Cassegrain + CCD

GSC

1999 HH₂, 4, 1, 0; 1999 HJ₂, 8, 2, 6; 1999 JV₃, 4, 1, 0; 1999 JB₆ *, 13, 4, 14; 1999 JD₆, 4, 1, 0; 1999 JV₆, 4, 1, 0; 1999 JW₆, 4, 1, 0; 1999 JO₁₄, 6, 2, 15; 1999 KW₄, 14, 4, 21; 1999 KM₆ *, 14, 4, 24; 1999 KQ₆, 3, 1, 0; 1999 LT₁, 6, 2, 3; 1999 LN₂₈, 10, 3, 2; 1999 LO₂₈, 4, 1, 0; 1999 LQ₂₈, 3, 1, 0; [101, 15, 2*, 1999/05/06–1999/06/17]

621 Bergisch Gladbach

W. Bickel, Schau ins Land 21, D-51429 Bergisch Gladbach, Germany [0220455671-0001@t-online.de]

0.60-m $f/5$ reflector + CCD

USNO-A2.0, USNO-SA1.0

1990 UZ₁, 5, 2, 3; 1998 AH, 6, 2, 6; 1999 CX₉, 6, 2, 1; 1999 EM₃, 6, 2, 6; 1999 GP₂, 10, 3, 9; 1999 HU₁, 12, 3, 11; 1999 JL₇₅ *, 10, 3, 9; 1999 KP₅ *, 11, 3, 7; 1999 KQ₅ *, 11, 3, 7; 1999 KR₅ *, 6, 2, 2; (3703), 5, 2, 4; (4388), 4, 2, 6; (5308), 8, 2, 3; [100, 13, 4*, 1999/05/08–1999/05/23]

627 Blauvac

R. Roy, Le Badassier St Esteve, F-84570 Blauvac, France [Rene.Roy@wanadoo.fr]

0.26-m $f/4.7$ reflector + CCD

GSC, USNO-SA1.0

1998 BK₃₀, 3, 1, 0; 1998 BB₄₂, 3, 1, 0; (1656), 3, 1, 0; (4483), 3, 1, 0; (5070), 3, 1, 0; [15, 5, 0*, 1999/05/23–1999/06/12]

628 Mülheim-Ruhr

A. Martin, Turtle Star Observatory, Friedhostr. 15, D-45478 Mülheim-Ruhr,

Germany [axelm@bph.ruhr-uni-bochum.de]

Observers A. Boeker, A. Martin, K. Kleemann-Boeker

0.2-m Schmidt-Cassegrain + CCD

USNO-A2.0

1997 YO, 7, 2, 8; 1998 YP₁₁, 5, 2, 21; 1999 HF₁, 14, 4, 9; 1999 HX₂, 11, 3, 28; (1301), 13, 3, 22; (2261), 12, 3, 23; (2577), 8, 2, 26; (5308), 2, 1, 0; [72, 8, 0*, 1999/05/17–1999/06/20]

629 JATE Observatory, Szeged

L. Kiss, H-6725 Szeged, Pf. 596, Hungary [l.kiss@physx.u-szeged.hu]

Observers K. Sárneczky, B. Csák

Measurers K. Sárneczky, L. Kiss

0.28-m Schmidt-Cassegrain + CCD

GSC

1999 JV₃, 3, 1, 0; 1999 JD₆, 5, 1, 0; 1999 JO₈, 9, 2, 13; 1999 KW₄, 6, 1, 0; [23, 4, 0*, 1999/05/24–1999/06/07]

631 Hamburg-Georgswerder

M. Buck, Niedergeorgswerder Deich 96a, D-21109 Hamburg, Germany

[michael.buck@joice.net]

0.15-m $f/8$ refractor + CCD

GSC

1989 CH, 4, 2, 2; 1997 WA₇, 4, 2, 2; (140), 4, 2, 2; (4008), 4, 2, 2; (10332), 4, 2, 2; (10597), 4, 2, 4; [24, 6, 0*, 1999/05/01–1999/05/07]

636 Essen

A. Knöfel, Saarbrücker Str. 8, D-40476 Düsseldorf, Germany [aknoefel@dip.de]

0.318-m $f/5.7$ reflector + CCD

USNO-A2.0

1991 LW, 5, 2, 1; 1992 OO, 6, 2, 1; 1999 CV₃, 4, 2, 4; 1999 HF₁, 18, 5, 24; 1999 HX₂, 12, 4, 4; 1999 JM₈, 31, 9, 33; 1999 JO₈, 5, 2, 3; (1301), 5, 2, 1; (1656), 7, 2, 1; [93, 9, 0*, 1999/04/28–1999/06/19]

648 Tenagra Observatory

M. Schwartz, Tenagra Observatories, 75335 Blue Mountain Lane, Cottage Grove,

OR, U.S.A. [mbs@tenagraobservatories.com]

0.35-m Schmidt-Cassegrain + CCD

USNO-A2.0

1999 JZ₇₅, 22, 5, 4; [22, 1, 0*, 1999/06/05–1999/06/09]

650 Temecula

J. R. Vail, 32170 Caminito Osuna, Temecula, CA 92592-1208, U.S.A.

[jimvail@pe.net]

0.25-m Schmidt-Cassegrain + CCD

USNO-SA2.0, GSC-1.1

1998 WT₁₉, 2, 1, 0; (10487), 4, 2, 11; (10523), 4, 2, 11; [10, 3, 0*, 1999/05/06–1999/05/17]

653 Torus Observatory, Buckley

R. J. Williams, 224th Ave. E., Buckley, WA 98321, U.S.A.

[richjwilliams@msn.com]

0.4-m $f/10$ Cassegrain reflector + CCD

GSC

1991 VN₄, 4, 2, 3; [4, 1, 0*, 1999/06/11–1999/06/14]

658 Dominion Astrophysical Observatory, Victoria

D. D. Balam, Dept. of Physics, University of Victoria, P.O. Box 3055, Victoria, BC

V8W 3P6, Canada [universe@uvvm.uvic.ca]

1.82-m Plaskett telescope + CCD

GSC, USNO-A1.0

1998 OX₄, 2, 1, 0; 1998 SC₁₅, 5, 2, 1; 1999 DB₇, 3, 1, 0; 1999 FA, 2, 1, 0; 1999 FK₁₆, 3, 1, 0; 1999 GT₃, 3, 1, 0; 1999 GK₄, 3, 1, 0; 1999 GL₄, 3, 1, 0; 1999 HX₁, 3, 1, 0; 1999 HA₂, 3, 1, 0; 1999 HW₂, 2, 1, 0; 1999 HX₂, 3, 1, 0; 1999 JB, 9, 3, 20; 1999 JD₆, 3, 1, 0; 1999 JT₆, 3, 1, 0; 1999 JU₆, 3, 1, 0; 1999 JV₆, 9, 3, 3; 1999 JO₈, 3, 1, 0; 1999 JA₁₁, 5, 2, 1; 1999 JG₂₉, 5, 1, 0; 1999 KT₄, 3, 1, 0; 1999 KV₄, 6, 2, 2; 1999 KW₄, 9, 3, 4; 1999 KQ₆, 3, 1, 0; 1999 KN₁₅, 3, 1, 0; 1999 LE₆, 2, 1, 0; 1999 LF₆, 3, 1, 0; [104, 27, 0*, 1998/08/02–1999/06/19]

662 Lick

S. Larson, Univ. of California, Dept. of Physics and Astronomy, 8371 MSA, Los

Angeles, CA 90095-1562, U.S.A. [sammy@astro.ucla.edu]

3.0-m reflector + CCD

1999 HL₁₀, 1, 1, 0; [1, 1, 0*, 1995/08/13]

670 Camarillo

J. E. Rogers, 441 Rowland Avenue, Camarillo, CA 93010, U.S.A.

[johnerogers@csi.com]

0.30-m $f/6.7$ Helin Telescope + CCD

GSC-1.1

1999 LS₇, 3, 1, 0; 1999 LV₇, 3, 1, 0; [6, 2, 0*, 1999/06/15]

673 Table Mountain Observatory

W. M. Owen, Jr., Jet Propulsion Laboratory 301-150, 4800 Oak Grove Drive,

Pasadena, CA 91109-8099, U.S.A. [wmo@wansor.jpl.nasa.gov]

Observers J. R. Foster, W. M. Owen, Jr., E. W. Haynem J. Atienze-Rosel

Measurer M. W. Owen, Jr.

0.61-m $f/16$ reflector + CCD

ACT, GSC-1.2

1999 KL₁, 2, 1, 0; (4), 6, 2, 1; (8), 2, 1, 0; (9), 10, 4, 34; (10), 6, 2, 1; (28), 2, 1, 0; (36), 2, 1, 0; (41), 7, 3, 28; (48), 10, 4, 9; (68), 2, 1, 0; (85), 1, 1, 0; (88), 2, 1, 0; (93), 2, 1, 0; (105), 4, 2, 28; (120), 5, 2, 1; (261), 6, 3, 10; (356), 1, 1, 0; (386), 14, 5, 34; (404), 2, 1, 0; (405), 2, 1, 0; (451), 10, 4, 23; (483), 5, 2, 6; (508), 7, 3, 9; (511), 5, 2, 1; (526), 17, 7, 34; (738), 7, 3, 27; (751), 7, 3, 23; (928), 2, 1, 0; (3946), 8, 2, 5; (9969), 8, 4, 25; [164, 30, 0*, 1999/05/02–1999/06/05]

675 Palomar

E. F. Helin, MS 183-501, Jet Propulsion Laboratory, Pasadena, CA 91109, U.S.A.

[efh@alps.jpl.nasa.gov] (2)

C. S. Shoemaker, P.O. Box 984, Flagstaff, AZ 86002, U.S.A.

[gshoemaker@iflag2.wr.usgs.gov] (3)

C. J. van Houten, Sterrewacht Leiden, Postbus 9513, NL-2300 RA Leiden, The

Netherlands [vanhouten@rnhl1.leidenuniv.nl] (4)

A. Gnädig, c/o Archenghold-Sternwarte, Alt-Treptow 1, D-12435 Berlin, Germany

[doppler@mind.de] (5)

E. Bowell, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff, AZ 86001,

U.S.A. [elgb@lowell.edu] (6)

$9 = 6 + 3$

Observers T. Gehrels (4, L), H. E. Holt (3, S), C. S. Shoemaker (3, S),

E. M. Shoemaker (3, S), K. W. Zeigler (3, S)

Measurers A. Gnädig (5), B. A. Skiff (6), C. J. van Houten (4), I. van Houten-

Groeneveld (4), A. Wisse (4)

1.2-m Oschin Schmidt (L), 0.46-m Schmidt (S)

(2) 1982 UZ₉, 4, 2, 3; 1989 TL₁₈ *, 5, 3, 4; 1989 XP₃ *, 4, 2, 1; 1989 XQ₃ *, 4, 2, 1; 1996 EA₂, 5, 2, 3; 1998 FT₁₁, 5, 2, 2; 1998 PG, 4, 2, 26; 1998 YP₁₁, 4, 2, 1; 1999 AK, 4, 2, 2; 1999 FQ₅, 3, 2, 3; 1999 GN₁₈, 2, 1, 0; 1999 GP₂₂, 2, 1, 0; 1999 KP₁₄, 2, 1, 0; (689), 2, 1, 0; (3863), 4, 2, 1; (7686), 2, 1, 0; (9435), 3, 2, 2; [59, 17, 3*, 1978/10/07–1994/09/05]

(3) 1986 QR₅, 2, 1, 0; 1992 UV₃, 2, 1, 0; [4, 2, 0*, 1992/09/29–1992/09/30]

(4) 1998 VQ₂₇, 1, 1, 0; 2044 P-L *, 8, 8, 32; 2083 P-L *, 8, 8, 32; 2627 P-L *, 8, 8, 32; 2646 P-L *, 7, 7, 32; 2668 P-L *, 8, 4, 5; 2760 P-L *, 6, 6, 32; 2764 P-L *, 8, 4, 5; 2813 P-L *, 6, 3, 4; 2837 P-L *, 10, 6, 28; 3010 P-L *, 10, 6, 5; 3061 P-L *, 7, 6, 5; 3507 P-L *, 11, 5, 9; 4129 P-L *, 14, 9, 32; 4141 P-L *, 9, 8, 32; 4175 P-L *, 10, 7, 28; 4328 P-L *, 6, 4, 4; 4591 P-L *, 8, 8, 32; 4597 P-L *, 8, 8, 32; 4610 P-L *, 8, 8, 32; 4615 P-L *, 8, 8, 32; 4706 P-L *, 8, 4, 4; 4789 P-L *, 8, 4, 4; 4839 P-L *, 8, 8, 32; 4891 P-L *, 6, 3, 4; 5553 P-L *, 4, 4, 9; 5555 P-L *, 4, 4, 9; 6115 P-L *, 8, 8, 32; 6249 P-L *, 8, 4, 4; 6255 P-L *, 4, 4, 23; 6528 P-L *, 8, 8, 32; 6574 P-L *, 8, 8, 32; 6593 P-L *, 8, 8, 32; 6619 P-L *, 7, 7, 32; 6817 P-L *, 7, 4, 4; 6828 P-L *, 3, 3, 2; 1122 T-1 *, 8, 6, 23; 1258 T-1 *, 11, 9, 53; 2017 T-1 *, 5, 4, 3; 2085 T-1 *, 6, 5, 9; 2157 T-1 *, 8, 6, 23; 2174 T-1 *, 6, 5, 9; 2314 T-1 *, 7, 4, 8; 3148 T-1 *, 8, 6, 23; 3166 T-1 *, 14, 9, 53; 3248 T-1 *, 5, 4, 8; 4058 T-1 *, 10, 8, 53; 4256 T-1 *, 10, 8, 53; 4357 T-1 *, 7, 5, 51; 4714 T-1 *, 3, 3, 3; 1016 T-2 *, 13, 7, 15; 1239 T-2 *, 15, 8, 16; 1351 T-2 *, 19, 8, 16; 1601 T-2 *, 5, 3, 5; 1615 T-2 *, 5, 3, 5; 2058 T-2 *, 23, 8, 16; 2302 T-2 *, 8, 4, 6; 2312 T-2 *, 8, 4, 6; 3143 T-2 *, 18, 8, 16; 3152 T-2 *, 15, 8, 16; 3228 T-2 *, 20, 8, 16; 3337 T-2 *, 7, 4, 6; 4195 T-2 *, 15, 8, 16; 4227 T-2 *,

13, 7, 15; 5042 T-2 *, 11, 6, 11; 1051 T-3 *, 10, 5, 11; 1227 T-3 *, 6, 3, 6; 2008 T-3 *, 12, 6, 11; 2027 T-3 *, 12, 7, 15; 2031 T-3 *, 17, 7, 15; 2137 T-3 *, 7, 4, 9; 2162 T-3 *, 13, 7, 15; 2312 T-3 *, 21, 7, 15; 3280 T-3 *, 13, 7, 15; 4166 T-3 *, 13, 7, 15; 4272 T-3 *, 10, 5, 10; 5048 T-3 *, 12, 6, 11; 5094 T-3 *, 10, 5, 10; 5165 T-3 *, 10, 5, 10; *[737, 79, 78*, 1960/09/24–1977/10/22]*

(5) 1979 MS₅, 2, 1, 0; 1981 EH₈, 2, 1, 0; 1981 ES₁₁, 3, 2, 1466; 1986 RX₅, 6, 3, 14848; 1986 TQ₅, 3, 1, 0; 1987 SD₁₀, 4, 2, 506; 1988 BY₂, 2, 1, 0; 1988 PM₃, 2, 1, 0; 1988 RV₂, 7, 4, 529; 1988 RX₂, 3, 2, 1971; 1988 RY₂, 2, 1, 0; 1988 RZ₂, 4, 2, 887; 1988 VS₆, 5, 3, 14185; 1988 VJ₈, 2, 1, 0; 1989 AK₆, 2, 2, 2185; 1989 AD₇, 2, 1, 0; 1989 AG₇, 6, 3, 2003; 1989 CD₆, 2, 1, 0; 1989 CE₆, 4, 2, 19; 1989 CW₇, 2, 1, 0; 1989 EQ₄, 4, 2, 1140; 1989 WE₄, 2, 1, 0; 1989 WU₄, 4, 2, 12687; 1989 YX₆, 2, 1, 0; 1989 YO₈, 2, 1, 0; 1989 YP₈, 2, 1, 0; 1989 YE₉, 4, 2, 30; 1990 BA₅, 4, 2, 1465; 1990 RD₁₆, 2, 1, 0; 1990 TS₁, 4, 2, 45; 1990 TT₁, 2, 1, 0; 1990 TZ₁, 3, 2, 45; 1990 TC₄, 2, 1, 0; 1990 TE₇, 1, 1, 0; 1990 TH₇, 2, 1, 0; 1990 TL₇, 2, 1, 0; 1990 TY₇, 2, 1, 0; 1990 TF₈, 1, 1, 0; 1990 TG₈, 4, 2, 528; 1990 TE₉, 3, 2, 94; 1990 TO₉, 2, 1, 0; 1990 TT₁₀, 1, 1, 0; 1990 TG₁₁, 4, 2, 1; 1990 TU₁₁, 2, 2, 48; 1990 TD₁₂, 1, 1, 0; 1990 TB₁₃, 2, 1, 0; 1990 TG₁₃, 2, 1, 0; 1990 TK₁₃, 3, 2, 1388; 1990 WS₉, 2, 1, 0; 1991 AS₂, 2, 1, 0; 1991 BF₄, 2, 1, 0; 1991 GJ₁₀, 4, 2, 89; 1991 GN₁₀, 1, 1, 0; 1991 GS₁₀, 2, 1, 0; 1991 PO₃₁, 2, 1, 0; 1991 PV₃₁, 2, 1, 0; 1991 RA₄, 1, 1, 0; 1991 RE₄, 3, 1, 0; 1991 RF₄, 3, 2, 1424; 1991 RH₄, 1, 1, 0; 1991 RJ₄, 2, 1, 0; 1991 RA₁₃, 2, 1, 0; 1991 RS₄₀, 2, 1, 0; 1991 RJ₄₁, 2, 1, 0; 1991 SQ₂, 2, 1, 0; 1991 TC₃, 2, 1, 0; 1991 TL₃, 2, 1, 0; 1991 TQ₆, 2, 1, 0; 1991 TS₆, 2, 1, 0; 1991 TL₁₃, 2, 1, 0; 1991 VD₁₀, 2, 1, 0; 1991 YE₁, 2, 1, 0; 1992 AS₂, 2, 1, 0; 1992 EE₈, 2, 1, 0; 1992 EX₁₀, 2, 1, 0; 1992 HS₄, 2, 1, 0; 1992 LE₄, 2, 444; 1992 RX₃, 2, 508; 1992 SC₂, 2, 1, 0; 1992 SM₁₆, 4, 2, 11935; 1993 FO₇, 2, 1, 0; 1993 HE₂, 2, 1, 0; 1993 SK₂, 4, 2, 2355; 1993 SF₄, 2, 1, 0; 1993 TN₃₉, 2, 1, 0; 1993 VB₈, 8, 4, 14293; 1994 CK₁₄, 4, 2, 3; 1994 TN₁₆, 2, 1, 0; 1994 UZ₁₂, 1, 1, 0; 1995 EF₈, 2, 1, 0; 1995 EG₈, 2, 1, 0; 1995 SM₅₄, 2, 1, 0; 1995 WG₂, 2, 1, 0; 1996 BM₄, 4, 2, 447; 1996 BV₁, 2, 1, 0; 1996 DB₃, 2, 13231; 1996 EK₄, 4, 2, 11603; 1996 RR₃, 2, 1, 0; 1996 VQ₄, 3, 1, 0; 1996 YX₂, 6, 3, 2278; 1997 AP₁, 2, 1, 0; 1997 AA₇, 2, 1, 0; 1997 BS₃, 2, 1, 0; 1997 EY₃₄, 2, 1, 0; 1997 ET₄₀, 1, 1, 0; 1997 EK₄₁, 1, 1, 0; 1997 FL₂, 2, 1, 0; 1997 FA₅, 2, 1, 0; 1997 GW₃₀, 2, 1, 0; 1997 HO₁₁, 2, 1, 0; 1997 SE₁, 2, 1, 0; 1997 SU₁₀, 2, 1, 0; 1997 UT₂, 2, 1, 0; 1997 VZ₇, 2, 1, 0; 1997 WJ₂₁, 1, 1, 0; 1997 YP₅, 2, 1, 0; 1997 YZ₅, 2, 1, 0; 1998 BP₂₄, 4, 2, 13525; 1998 EM₉, 2, 1, 0; 1998 EA₁₂, 2, 1, 0; 1998 FH₂, 4, 2, 47; 1998 FR₁₀, 7, 4, 2061; 1998 FO₁₁, 2, 1, 0; 1998 FA₁₂, 2, 1, 0; 1998 FY₁₄, 2, 1, 0; 1998 FO₁₅, 2, 1, 0; 1998 FT₅₄, 6, 4, 1810; 1998 FJ₆₆, 2, 1, 0; 1998 FC₆₈, 2, 1, 0; 1998 FV₈₈, 2, 1, 0; 1998 FB₁₁₁, 2, 1, 0; 1998 HE₈, 2, 1, 0; 1998 HC₂₀, 2, 1, 0; 1998 HA₃₉, 2, 1, 0; 1998 HO₄₂, 4, 2, 13472; 1998 HL₄₅, 2, 1, 0; 1998 HH₅₁, 2, 1, 0; 1998 HZ₉₆, 2, 1, 0; 1998 HJ₁₁₅, 4, 2, 13963; 1998 KO₄, 2, 1, 0; 1998 KF₃₅, 2, 1, 0; 1998 KD₅₀, 4, 2, 13555; 1998 MG₂₉, 1, 1, 0; 1998 OG₉, 2, 1, 0; 1998 QT₂, 2, 1, 0; 1998 QZ₁₅, 4, 2, 14107; 1998 QW₃₇, 2, 1, 0; 1998 QX₃₇, 1, 1, 0; 1998 QK₃₈, 2, 1, 0; 1998 QR₄₂, 2, 1, 0; 1998 QQ₄₃, 5, 3, 13816; 1998 QF₄₇, 2, 1, 0; 14586; 1998 QW₈₉, 2, 1, 0; 1998 QZ₉₄, 2, 1, 0; 1998 RM₅₂, 7, 4, 15895; 1998 RE₅₉, 1, 1, 0; 1998 RQ₇₂, 2, 1, 0; 1998 ST₅₀, 4, 2, 1796; 1998 SY₁₂₇, 2, 1, 0; 1998 TU₁₂, 3, 2, 466; 1998 TX₁₇, 2, 1, 0; 1998 UT₂₄, 2, 1, 0; 1998 VX₃₀, 2, 1, 0; 1998 VY₃₂, 2, 1, 0; 1998 WK₁₇, 2, 1, 0; 1998 XT₂₁, 2, 1, 0; 1998 XK₃₉, 4, 2, 14238; 1998 XG₄₈, 2, 1, 0; 1998 XV₇₇, 4, 2, 10; 1999 AL₂, 2, 1, 0; 1999 AY₅, 2, 1, 0; 1999 AY₂₂, 7, 4, 12774; 1999 CX₁, 2, 1, 0; 1999 CT₅, 2, 1, 0; 1999 CG₂₁, 2, 1, 0; 1999 CZ₂₃, 2, 1, 0; 1999 CV₄₀, 2, 1, 0; 1999 CF₁₀₆, 2, 1, 0; 1999 FU₂₅, 3, 1, 0; 1999 FR₂₉, 4, 2, 1; 1999 FZ₃₀, 2, 1, 0; 2083 P-L, 2, 1, 0; 4175 P-L, 2, 1, 0; 4259 P-L, 2, 1, 0; 6115 P-L, 2, 1, 0; 2058 T-2, 2, 1, 0; 3280 T-3, 2, 1, 0; (10340), 5, 2, 13326; *[480, 188, 0*, 1949/11/25–1997/05/08]*

(6) 1999 JV₇₇, 2, 1, 0; *[2, 1, 0*, 1955/10/23]*

(9) 1982 UO₆, 2, 1, 0; 1992 SS, 2, 1, 0; 1997 WM₂₃, 2, 1, 0; 1997 YJ₁₀, 2, 1, 0; 1998 AH₅, 1, 1, 0; 1999 FX₃₂, 2, 1, 0; 1999 JC₇₉, 1, 1, 0; 1999 JA₈₂, 2, 1, 0; 1999 JJ₈₄, 2, 1, 0; *[16, 9, 0*, 1986/03/04–1994/02/15]*

678 Fountain Hills

C. W. Juels, 16421 N. Cobblestone Ln., Fountain Hills, AZ 85268, U.S.A.

[\[cwjuels@futureone.com\]](mailto:cwjuels@futureone.com)

0.32-m *f*/5.5 reflector + CCD

GSC

1992 GB₂, 6, 2, 1; 1999 FV₁₉, 2, 1, 0; 1999 GT₄, 2, 1, 0; 1999 GV₄, 2, 1, 0; 1999 GT₅, 3, 1, 0; 1999 HO₂, 2, 1, 0; 1999 JO *, 6, 2, 1; 1999 JP *, 4, 2, 1; 1999 JA₅, 8, 2, 3; 1999 JX₈ *, 6, 3, 3; 1999 JY₈ *, 10, 4, 27; *[51, 11, 4*, 1999/05/07–1999/06/11]*

682 Kanab

E. Sheridan, 7205 Sunflower Lane, Kanab, UT 84741, U.S.A

[\[lned@xpressweb.com\]](mailto:lned@xpressweb.com)

0.25-m *f*/4 Schmidt-Cassegrain + CCD

GSC

1990 QK₈, 5, 1, 0; 1991 RZ₁₄, 5, 2, 2; 1992 JR, 5, 3, 4; 1993 FA₂, 2, 1, 0; 1997 UT₆, 4, 2, 2; 1997 VD₆, 2, 1, 0; 1999 CN₈, 2, 1, 0; 1999 GP₃, 4, 2, 1; 6580 P-L, 4, 2, 2; *[33, 9, 0*, 1999/05/05–1999/05/17]*

683 Goodricke-Pigott Observatory, Tucson

R. A. Tucker, 5500 West Nebraska Street, Tucson, AZ 85746, U.S.A.

[\[tucker@noao.edu\]](mailto:tucker@noao.edu)

0.35-m *f*/11 Schmidt-Cassegrain + CCD

GSC

1997 YB₁₂, 5, 2, 1; 1999 FV₃₂, 6, 2, 1; 1999 JW₂ *, 8, 3, 2; 1999 JT₆, 6, 2, 1; 1999 JW₇ *, 11, 4, 3; 1999 JX₇ *, 10, 4, 3; 1999 JN₁₄ *, 11, 4, 4; 1999 LK *, 13, 5, 7; (3389), 6, 2, 1; (5708), 5, 2, 1; (8265), 5, 2, 1; *[86, 11, 5*, 1999/05/06–1999/06/13]*

684 Prescott

P. G. Comba, 1411 Galaxy Lane, Prescott, AZ 86303, U.S.A.

[\[comba@northlink.com\]](mailto:comba@northlink.com)

0.46-m *f*/4.5 reflector + CCD

GSC

1995 SZ₄, 2, 1, 0; 1996 OF, 13, 6, 27; 1996 RE₁, 6, 3, 28; 1996 RK₃, 4, 2, 1; 1996 SN, 9, 4, 30; 1996 TF₅, 4, 2, 1; 1996 TS₁₁, 4, 2, 1; 1996 UA, 3, 2, 1; 1996 VM₂, 2, 1, 0; 1997 AN₁₂, 5, 2, 3; 1997 VB₄, 5, 2, 1; 1997 YZ₇, 4, 2, 1; 1997 YA₈, 5, 2, 1; 1997 YQ₁₄, 4, 2, 1; 1998 BW₃, 8, 4, 27; 1998 BZ₃, 5, 2, 1; 1998 BG₃₀, 8, 4, 30; 1998 DV₁₂, 8, 4, 21; 1998 FA₄₃, 4, 2, 1; 1998 UT₁₈, 4, 1, 0; 1999 EE, 5, 2, 1; 1999 EE₃, 4, 2, 1; 1999 EQ₃, 4, 2, 1; 1999 ET₃, 4, 2, 1; 1999 GL, 8, 4, 30; 1999 GF₂, 10, 4, 30; 1999 GN₅, 4, 2, 1; 1999 HA, 9, 4, 26; 1999 HH, 9, 4, 30; 1999 HO, 4, 2, 1; 1999 JX₂ *, 4, 2, 1; 1999 JY₂ *, 5, 2, 1; 1999 JZ₂ *, 12, 6, 29; 1999 JZ₃ *, 6, 3, 3; 1999 JA₄ *, 4, 2, 1; 1999 JR₆, 2, 1, 0; 1999 JT₆, 5, 2, 1; 1999 JV₈ *, 11, 5, 26; 1999 JW₈ *, 10, 5, 26; 1999 JY₁₀, 2, 1, 0; 1999 JA₁₁, 5, 2, 1; 1999 JV₆₄, 4, 2, 1; 1999 JB₈₉, 4, 2, 1; 1999 JE₈₉, 4, 2, 1; 1999 KA *, 10, 5, 23; 1999 KM₄ *, 4, 2, 4; 1999 KN₄ *, 4, 2, 1; 1999 KO₄ *, 8, 4, 21; 1999 LM *, 5, 2, 1; 1999 LU *, 4, 2, 1; 1999 LV *, 4, 2, 1; 1999 LW *, 9, 4, 5; 1999 LX *, 9, 4, 5; 1999 LW₂ *, 8, 4, 7; 1999 LP₄ *, 6, 2, 1; 1999 LH₆ *, 7, 3, 4; 1999 LD₃₀, 7, 2, 1; 1999 MA *, 4, 2, 1; (2761), 3, 1, 0; (3850), 2, 1, 0; (4848), 2, 1, 0; (8762), 5, 2, 1; *[342, 62, 20*, 1999/05/05–1999/06/19]*

688 Lowell Observatory, Anderson Mesa Station

M. W. Buie, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff, AZ 86001,

U.S.A. [\[buie@lowell.edu\]](mailto:buie@lowell.edu)

1.07-m reflector + CCD

USNO-A1.0

1994 EV₅, 2, 1, 0; 1996 UA₁, 3, 1, 0; 1997 AY₅, 2, 1, 0; 1998 VH₂₆, 2, 1, 0; *[9, 4, 0*, 1997/07/08–1998/04/20]*

689 U.S. Naval Observatory, Flagstaff Station

R. C. Stone, U.S. Naval Observatory, Flagstaff Station, P.O. Box 1149, Flagstaff

AZ 86002-1149 [\[rcs@noafs.navy.mil\]](mailto:rcs@noafs.navy.mil) (2)

C. B. Luginbuhl, U.S. Naval Observatory Flagstaff Station, P.O. Box 1149,

Flagstaff AZ 86002-1149 [\[cluginbuhl@noafs.navy.mil\]](mailto:cluginbuhl@noafs.navy.mil) (3)

Observers R. C. Stone (2), C. B. Luginbuhl (3), B. Bryan (3)

1.55-m astrometric reflector + CCD

ACT, USNO-A2.0

(2) (10199), 10, 3, 29; *[10, 1, 0*, 1999/03/24–1999/04/22]*

(3) 1998 BC₂₆, 2, 1, 0; 1999 JA₄₉, 2, 1, 0; (6370), 7, 1, 0; *[11, 3, 0*, 1999/05/16–1999/06/10]*

691 Kitt Peak, Steward Observatory

R. S. McMillan, Space Sciences Building, University of Arizona, Tucson, AZ 85721,

U.S.A. [\[bob@lp1.arizona.edu\]](mailto:bob@lp1.arizona.edu)

Observers T. Gehrels, J. Larsen, J. Montani, J. V. Scotti, A. Tubiolo, A. Gleason,

N. Danzl, T. Bressi, R. E. Smith, R. Kowalski, C. Bayus

0.91-m Spacewatch telescope + CCD

GSC

1973 SL₁, 3, 1, 0; 1975 SX₁, 6, 2, 27; 1978 UF₇, 3, 1, 0; 1978 VU₅, 3, 1, 0; 1978 VT₁₀, 3, 1, 0; 1979 MZ₄, 6, 2, 992; 1980 KK, 3, 1, 0; 1980 PP₁, 3, 1, 0; 1981 DZ₁, 2, 1, 0; 1981 ET₃₄, 3, 1, 0; 1981 ES₄₃, 6, 2, 4; 1982 QP₁, 15, 4, 1518; 1984 SS₁, 8, 2, 5; 1985 RN₄, 3, 1, 0; 1985 UF, 3, 1, 0; 1987 BS₂, 3, 1, 0; 1988 RT₁₁, 3, 1, 0; 1988 SF₃, 3, 1, 0; 1989 AR₅, 3, 1, 0; 1989 GH₂, 3, 1, 0; 1989 SH₂, 3, 1, 0; 1989 SU₄, 3, 1, 0; 1989 VD₁, 3, 1, 0; 1989 WG, 6, 2, 25; 1990 CF, 3, 1, 0; 1990 RK₅, 3, 1, 0; 1990 SR₈, 3, 1, 0; 1990 TC₁, 3, 1, 0; 1990 UP₁, 3, 1, 0; 1991 GU₆, 3, 1, 0; 1991 PV₁, 3, 1, 0; 1991 PE₁₁, 3, 1, 0; 1991 RF₄, 6, 2, 443; 1991 RU₄, 3, 1, 0; 1991 RW₂₃, 3, 1, 0; 1991 RF₄₁, 3, 1, 0; 1991 SH₁, 3, 1, 0; 1991 VD₁₀, 2, 1, 0; 1991 XE₂, 3, 1, 0; 1991 XP₃, 3, 1, 0; 1992 AS₂, 2, 1, 0; 1992 AM₃, 3, 1, 0; 1992 DS₅, 3, 1, 0; 1992 DD₁₀, 3, 1, 0; 1992 EB₈, 6, 2, 3; 1992 EE₈, 3, 1, 0; 1992 EY₈, 3, 1, 0; 1992 EX₁₀, 3, 1, 0; 1992 FD₁, 2, 1, 0; 1992 GB₂, 3, 1, 0; 1992 GJ₇, 3, 1, 0; 1992 JN, 3, 1, 0; 1992 PO₁, 3, 1, 0; 1992 PR₁, 3, 1, 0; 1992 UT₁, 6, 2, 14; 1993 FF₄, 3, 1, 0; 1993 FN₁₂, 3, 1, 0; 1993 FL₁₅, 4, 2, 6; 1993 FA₂₀, 3, 1, 0; 1993 FD₂₂, 3, 1, 0; 1993 FB₂₃, 3, 1, 0; 1993 FF₂₅, 5, 2, 2536; 1993 FR₃₆, 3, 1, 0; 1993 FD₄₂, 3, 1, 0; 1993 FU₅₁, 3, 1, 0; 1993 FE₇₈, 3, 1, 0; 1993 GM₁, 2, 1, 0; 1993 QN₄, 3, 1, 0; 1993 SZ, 3, 1, 0; 1993 SK₁, 3, 1, 0; 1993 SN₁, 6, 2, 1093; 1993 SB₂, 3, 1, 0; 1993 SD₅, 2, 1, 0; 1993 TY₂₉, 3, 1, 0; 1993 US₁, 3, 1, 0; 1993 UE₆, 6, 2, 1045; 1994 CS₈, 3, 1, 0; 1994 CX₁₈, 3, 1, 0; 1994 JD₇, 4, 2, 26; 1994 PJ₂₂, 3, 1, 0; 1994 TV₃, 3, 1, 0; 1994 UY₁, 3, 1, 0; 1994 UV₂, 3, 1, 0; 1994 YF₂, 3, 1, 0; 1995 DH₅, 3, 1, 0; 1995 EN₅, 3, 1, 0; 1995 FR₇, 3, 1, 0; 1995 FD₁₈, 3, 1, 0; 1995 FF₁₉, 3, 1, 0; 1995 GJ₆, 3, 1, 0; 1995 HS₂, 1, 1, 0; 1995 KY₅ *, 5, 2, 35; 1995 MA₁, 3, 1, 0; 1995 SO₃₃, 3, 1, 0; 1995 SV₅₂, 3, 1, 0; 1995 SM₅₅ *, 18, 6, 69; 1995 SN₅₅ *, 14, 5, 36; 1995 TL₈ *, 18, 6, 41; 1995 UX₆, 3, 1, 0; 1996 GQ₂₁ *, 9, 3, 12; 1996 HZ₂₂, 3, 1, 0; 1996 OK, 6, 2, 5; 1996 PA₄, 3, 1, 0; 1996 QS₁, 3, 1, 0; 1996 RQ₂, 6, 2, 6; 1996 RO₄, 2, 1, 0; 1996 RQ₁₆, 5, 2, 7; 1996 RS₂₄, 3, 1, 0; 1996 RT₂₄, 6, 2, 453; 1996 SN, 3, 1, 0; 1996 SY₄, 5, 2, 3; 1996 TX₉, 3, 1, 0; 1996 TV₁₄, 3, 1, 0; 1996 TN₁₈, 3, 1, 0; 1996 TP₃₀, 3, 1, 0; 1996 TU₄₄, 2, 1, 0; 1996 TF₅₃, 3, 1, 0; 1996 TC₆₈ *, 6, 2, 6; 1996 UE, 3, 1, 0; 1996 VM₂, 3, 1, 0; 1996 VL₄, 3, 1, 0; 1996 VP₄, 3, 1, 0; 1996 VA₈, 3, 1, 0; 1996 VO₂₂, 3, 1, 0; 1996 VB₃₀, 3, 1, 0; 1996 VY₃₈, 3, 1, 0; 1996 WJ₃, 3, 1, 0; 1996 XC₃₁, 3, 1, 0; 1997 AN₁₇, 5, 2, 6; 1997 AJ₁₉, 3, 1, 0; 1997 EK₄₁, 3, 1, 0; 1997 OS, 3, 1, 0; 1997 UZ₁₄, 3, 1, 0; 1997 VA₉, 3, 1, 0; 1997 WJ₂, 6, 2, 6; 1997 WR₂, 3, 1, 0; 1997 WT₂, 3, 1, 0; 1997 WJ₁₂, 1, 1, 0; 1997 WN₁₃, 6, 2, 6; 1997 WT₃₁, 3, 1, 0; 1997 WT₄₄, 3, 1, 0; 1997 XW₈, 3, 1, 0; 1997 YX₁, 3, 1, 0; 1997 YE₂, 3, 1, 0; 1997 YV₂, 3, 1, 0; 1997 YX₂, 3, 1, 0; 1997 YY₂, 3, 1, 0; 1997 YK₅, 3, 1, 0; 1997 YP₅, 3, 1, 0; 1997 YL₇, 2, 1, 0; 1997 YX₇, 3, 1, 0; 1997 YN₈, 3, 1, 0; 1997 YS₁₀, 2, 1, 0; 1997 YU₁₆, 2, 1, 0; 1997 YD₁₇, 3, 1, 0; 1998 AL, 3, 1, 0; 1998 AQ, 9, 3, 8; 1998 AB₂, 3, 1, 0; 1998 AH₅, 3, 1, 0; 1998 AG₁₁, 3, 1, 0; 1998 BB, 3, 1, 0; 1998 BD, 3, 1, 0; 1998 BM₁, 3, 1, 0; 1998 BY₁, 2, 1, 0; 1998 BP₉, 3, 1, 0; 1998 BA₁₂, 3, 1, 0; 1998 BO₁₃, 5, 2, 29; 1998 BC₁₉, 2, 1, 0; 1998 BZ₂₅, 3, 1, 0; 1998 BM₂₆, 3, 1, 0; 1998 BG₃₄, 3, 1, 0; 1998 BM₄₀, 3, 1, 0; 1998 BJ₄₂, 6, 2, 6; 1998 BM₄₅, 3, 1, 0; 1998 BQ₄₅, 3, 1, 0; 1998 CP₁, 3, 1, 0; 1998 CP₃, 3, 1, 0; 1998 DR, 3, 1, 0; 1998 DN₁, 3, 1, 0; 1998 DW₁, 3, 1, 0; 1998 DC₁₆, 3, 1, 0; 1998 DT₂₁, 3, 1, 0; 1998 EM₈, 3, 1, 0; 1998 EN₉, 3, 1, 0; 1998 EU₁₁, 3, 1, 0; 1998 EA₁₂, 3, 1, 0; 1998 EX₁₉, 3, 1, 0; 1998 FJ, 3, 1, 0; 1998 FR₁₀, 3, 1, 0; 1998 FO₁₅, 3, 1, 0; 1998 FZ₁₇, 3, 1, 0; 1998 FT₅₄, 3, 1, 0; 1998 FL₅₈, 3, 1, 0; 1998 FA₅₉, 3, 1, 0; 1998 FW₆₁, 3, 1, 0; 1998 FR₆₇, 6, 2, 435; 1998 FD₆₈, 2, 1, 0; 1998 FP₇₀, 5, 2, 2; 1998 FF₈₃, 3, 1, 0; 1998 FC₁₁₈, 3, 1, 0; 1998 GR₇, 3, 1, 0; 1998 GQ₈, 3, 1, 0; 1998 HT, 3, 1, 0; 1998 HW, 3, 1, 0; 1998 HK₈, 3, 1, 0; 1998 HC₂₀, 5, 2, 25; 1998 HE₂₁, 3, 1, 0; 1998 HF₂₂, 6, 2, 1531; 1998 HL₄₅, 3, 1, 0; 1998 HJ₁₁₅, 2, 1, 0; 1998 KO₄, 6, 2, 1482; 1998 OZ₅, 3, 1, 0; 1998 QG₃₅, 6, 2, 15; 1998 QW₃₇, 3, 1, 0; 1998 QD₄₂, 3, 1, 0; 1998 QQ₄₃, 3, 1, 0; 1998 QZ₉₄, 3, 1, 0; 1998 RX₁₂, 3, 1, 0; 1998 RM₅₂, 3, 1, 0; 1998 RE₅₉, 3, 1, 0; 1998 SK₅₈, 3, 1, 1457; 1998 SU₆₀, 3, 1, 0; 1998 SN₈₁, 3, 1, 0; 1998 SS₁₁₃, 3, 1, 0; 1998 SY₁₂₇, 3, 1, 0; 1998 TU₁₂, 3, 1, 0; 1998 TF₃₅ *, 9, 3, 16; 1998 VH₂₆, 3, 1, 0; 1998 VN₃₀, 3, 1, 0; 1998 VD₃₅, 9, 2, 1; 1998 WV₁, 3, 1, 0; 1998 WM₁₄, 3, 1, 0; 1998 XT₂₁, 3, 1, 0; 1998 XN₇₄, 3, 1, 0; 1998 XE₉₇, 3, 1, 0; 1998 YN, 6, 2, 25; 1999 AX₇, 6, 2, 921; 1999 AC₂₂, 3, 1, 0; 1999 CG₂₁, 9, 3, 526; 1999 CT₂₉, 3, 1, 0; 1999 CZ₆₁, 5, 1, 0; 1999 CN₉₅, 3, 1, 0; 1999 EL₂, 3, 1, 0; 1999 ER₄, 6, 2, 1873; 1999 ES₅, 3, 1, 0; 1999 FJ₅, 3, 1, 0; 1999 FQ₅, 2, 1, 0; 1999 FA₇, 5, 2, 2677; 1999 FS₉, 3, 1, 0; 1999 FE₁₀, 3, 1, 0; 1999 FF₁₀, 6, 2, 9; 1999 FV₁₂, 3, 1, 0; 1999 FK₁₆, 2, 1, 0; 1999 FP₁₇, 9, 3, 36; 1999 FA₁₈, 3, 1, 0; 1999 FW₁₈, 6, 2, 14; 1999 FU₂₅, 6, 2, 1968; 1999 FX₂₇, 3, 1, 0; 1999 FV₂₈, 3, 1, 0; 1999 FH₃₀, 3, 1, 0; 1999 FN₃₀, 6, 2, 11; 1999 FU₃₀, 3, 1, 0; 1999 FC₃₄, 3, 1, 0; 1999 FS₃₄, 3, 1, 0; 1999 FA₃₉, 3, 1, 0; 1999 FW₄₆, 3, 1, 0; 1999 FP₅₉, 3, 1, 0; 1999 FE₃, 3, 1, 0; 1999 GT₄, 2, 1, 0; 1999 GS₅, 3, 1, 0; 1999 GF₇, 3, 1, 0; 1999 GQ₈, 6, 2, 25; 1999 GX₈, 3, 1, 0; 1999 GE₉, 3, 1, 0; 1999 GG₉, 3, 1, 0; 1999 GV₉, 3, 1, 0; 1999 GQ₁₀, 3, 1, 0; 1999 GB₁₁, 1, 1, 0; 1999 GG₁₁, 6, 2, 11; 1999 GY₁₂, 6, 2, 11; 1999 GS₁₃, 6, 2, 1524; 1999 GA₁₄, 3, 1, 0; 1999 GQ₁₅, 3, 1, 0; 1999 GG₁₆, 3, 1, 0; 1999 GN₁₈, 3, 1, 0; 1999 GK₁₉, 3, 1, 0; 1999 GN₁₉, 3, 1, 0; 1999 GO₁₉, 3, 1, 0; 1999 GP₁₉, 3, 1, 0; 1999 GA₂₀, 3, 1, 0; 1999 GR₂₀, 6, 2, 3; 1999 GA₂₁, 2, 1, 0; 1999 GM₂₃, 6, 2, 19; 1999 GG₂₄, 9, 3, 14; 1999 GW₂₄, 3, 1, 0; 1999 GX₂₄, 3, 1, 0; 1999 GX₂₅, 3, 1, 0; 1999 GF₃₁, 3, 1, 0; 1999 GM₃₁, 3, 1, 0; 1999 GL₃₂, 3, 1, 0; 1999 GM₃₂, 3, 1, 0; 1999 GM₃₃, 3, 1, 0; 1999 GH₃₄, 6, 2, 1980; 1999 GT₃₅, 3, 1, 0; 1999 GE₃₆, 3, 1, 0; 1999 GM₃₆, 3, 1, 0; 1999 GV₃₆, 3, 1, 0; 1999 HP, 3, 1, 0; 1999 HT, 3, 1, 0; 1999 HD₁, 3, 1, 0; 1999 HS₁, 3, 1, 0; 1999 HV₁, 3, 1, 0; 1999 HG₂, 3, 1, 0; 1999 HQ₂, 3, 1, 0; 1999 HD₄, 6, 2, 39; 1999 HH₄, 3, 1, 0; 1999 HO₄, 6, 2, 1856; 1999 HR₄, 3, 1, 0; 1999 HX₄, 3, 1, 0; 1999 HB₅, 3, 1, 0; 1999 HJ₅, 3, 1, 0; 1999 HR₅, 3, 1, 0; 1999 HP₆, 3, 1, 0; 1999 HW₆, 6, 2, 33; 1999 HJ₇, 2, 1, 0; 1999 HO₇, 8, 3, 39; 1999 HP₇, 2, 1, 0; 1999 HS₇, 2, 1, 0; 1999 HZ₇, 3, 1, 0; 1999 HQ₈, 3, 1, 0; 1999 HW₈, 3, 1, 0; 1999 HX₈, 3, 1, 0; 1999 HD₉, 6, 2, 4; 1999 HE₉, 3, 1, 0; 1999 HG₉,

3, 1, 0; 1999 HH₉, 3, 1, 0; 1999 HJ₉, 6, 2, 11; 1999 HL₉, 3, 1, 0; 1999 HN₉, 3, 1, 0; 1999 HC₁₀, 5, 2, 7; 1999 HN₁₀, 12, 4, 1827; 1999 HO₁₀, 3, 1, 0; 1999 HP₁₀, 3, 1, 0; 1999 HR₁₀, 9, 3, 29; 1999 HB₁₁, 6, 2, 531; 1999 HL₁₁, 3, 1, 0; 1999 HO₁₁, 6, 2, 7; 1999 HP₁₁ *, 17, 6, 27; 1999 JH₁, 6, 2, 2510; 1999 JC₃, 3, 1, 0; 1999 JD₃, 5, 2, 923; 1999 JF₄, 3, 1, 0; 1999 JL₅, 3, 1, 0; 1999 JY₅, 3, 1, 0; 1999 JO₆, 2, 1, 0; 1999 JL₇, 3, 1, 0; 1999 JM₇, 3, 1, 0; 1999 JG₈, 3, 1, 0; 1999 JC₉, 3, 1, 0; 1999 JI₁₀, 3, 1, 0; 1999 JZ₁₀, 7, 1, 0; 1999 JE₁₁, 5, 2, 8; 1999 JK₁₂, 3, 1, 0; 1999 JD₁₃, 3, 1, 0; 1999 JE₁₃ *, 5, 2, 3; 1999 JF₁₃ *, 9, 3, 7; 1999 JG₁₃ *, 6, 2, 3; 1999 JH₁₃ *, 6, 2, 2; 1999 JJ₁₅ *, 6, 2, 3; 1999 JS₁₃, 3, 1, 0; 1999 JW₁₃, 6, 2, 8; 1999 JY₁₃, 3, 1, 0; 1999 JE₁₅, 9, 3, 37; 1999 JG₁₅, 3, 1, 0; 1999 JT₁₅, 3, 1, 0; 1999 JV₁₅, 6, 2, 7; 1999 JW₁₅, 3, 1, 0; 1999 JA₁₆ *, 4, 2, 4; 1999 JB₁₆ *, 5, 2, 4; 1999 JC₁₆ *, 5, 2, 4; 1999 JD₁₆ *, 5, 2, 4; 1999 JE₁₆ *, 6, 2, 4; 1999 JF₁₆ *, 6, 2, 5; 1999 JG₁₆ *, 6, 2, 4; 1999 JH₁₆ *, 6, 2, 5; 1999 JJ₁₆ *, 5, 2, 4; 1999 JK₁₆ *, 5, 2, 4; 1999 JL₁₆ *, 6, 2, 5; 1999 JM₁₆ *, 6, 2, 5; 1999 JN₁₆ *, 6, 2, 5; 1999 JO₁₆ *, 6, 2, 4; 1999 JP₁₆ *, 6, 2, 4; 1999 JQ₁₆ *, 8, 3, 21; 1999 JR₁₆ *, 6, 2, 5; 1999 JS₁₆ *, 6, 2, 5; 1999 JT₁₆ *, 5, 2, 5; 1999 JU₁₆ *, 6, 2, 5; 1999 JV₁₆ *, 6, 2, 5; 1999 JW₁₆ *, 6, 2, 5; 1999 JX₁₆ *, 5, 2, 5; 1999 JY₁₆ *, 6, 2, 5; 1999 JZ₁₆ *, 6, 2, 5; 1999 JA₁₇ *, 5, 2, 4; 1999 JB₁₇ *, 5, 2, 5; 1999 JC₁₇ *, 5, 2, 5; 1999 JD₁₇ *, 5, 2, 5; 1999 JE₁₇ *, 5, 2, 5; 1999 JF₁₇ *, 5, 2, 5; 1999 JG₁₇ *, 5, 2, 5; 1999 JH₁₇ *, 5, 2, 5; 1999 JI₁₇ *, 11, 4, 31; 1999 JK₁₇ *, 8, 3, 26; 1999 JL₁₇ *, 5, 2, 5; 1999 JM₁₇ *, 5, 2, 5; 1999 JP₁₇ *, 5, 2, 7; 1999 JQ₁₇, 3, 1, 0; 1999 JK₁₉, 3, 1, 0; 1999 JU₁₉, 3, 1, 0; 1999 JD₂₀, 6, 2, 18; 1999 JI₂₀, 3, 1, 0; 1999 JS₂₀, 6, 2, 43; 1999 JZ₂₀, 3, 1, 0; 1999 JA₂₁, 3, 1, 0; 1999 JC₂₁, 3, 1, 0; 1999 JE₂₁, 3, 1, 0; 1999 JF₂₁, 3, 1, 0; 1999 JG₂₁, 3, 1, 0; 1999 JW₂₂, 3, 1, 0; 1999 JX₂₂, 3, 1, 0; 1999 JZ₂₂, 3, 1, 0; 1999 JB₂₃, 3, 1, 0; 1999 JJ₂₃, 6, 1, 0; 1999 JP₂₃, 3, 1, 0; 1999 JR₂₃, 3, 1, 0; 1999 JX₂₃, 3, 1, 0; 1999 JY₂₃, 3, 1, 0; 1999 JZ₂₃, 3, 1, 0; 1999 JB₂₆, 3, 1, 0; 1999 JY₂₆, 3, 1, 0; 1999 JE₂₇, 3, 1, 0; 1999 JD₂₈, 3, 1, 0; 1999 JG₃₁, 3, 1, 0; 1999 JO₃₁, 3, 1, 0; 1999 JQ₃₁, 3, 1, 0; 1999 JS₃₁, 3, 1, 0; 1999 JU₃₁, 3, 1, 0; 1999 JW₃₁, 3, 1, 0; 1999 JX₃₁, 5, 2, 1; 1999 JB₃₂, 3, 1, 0; 1999 JP₃₂, 5, 2, 4; 1999 JS₃₂, 6, 2, 1308; 1999 JZ₃₂, 3, 1, 0; 1999 JB₃₃, 3, 1, 0; 1999 JN₃₃, 3, 1, 0; 1999 JE₃₄, 3, 1, 0; 1999 JL₃₅, 3, 1, 0; 1999 JN₃₅, 3, 1, 0; 1999 JB₃₆, 6, 2, 13; 1999 JD₃₆, 3, 1, 0; 1999 JO₃₆, 3, 1, 0; 1999 JZ₃₆, 3, 1, 0; 1999 JO₃₈, 3, 1, 0; 1999 JE₄₀, 6, 2, 6; 1999 JG₄₀, 6, 2, 36; 1999 JL₄₀, 3, 1, 0; 1999 JM₄₀, 3, 1, 0; 1999 JB₄₁, 3, 1, 0; 1999 JE₄₂, 3, 1, 0; 1999 JP₄₂, 3, 1, 0; 1999 JS₄₂, 3, 1, 0; 1999 JH₄₅, 2, 1, 0; 1999 JL₄₅, 6, 2, 3; 1999 JM₄₅, 3, 1, 0; 1999 JN₄₅, 3, 1, 0; 1999 JO₄₅, 3, 1, 0; 1999 JO₄₆, 9, 3, 19; 1999 JR₄₆, 3, 1, 0; 1999 JS₄₆, 3, 1, 0; 1999 JT₄₆, 3, 1, 0; 1999 JV₄₆, 6, 2, 3; 1999 JX₄₆, 2, 1, 0; 1999 JY₄₆, 12, 4, 30; 1999 JZ₄₆, 6, 2, 6; 1999 JI₄₇, 3, 1, 0; 1999 JS₄₇, 6, 2, 535; 1999 JA₄₈, 3, 1, 0; 1999 JV₄₈, 3, 1, 0; 1999 JD₄₉, 3, 1, 0; 1999 JG₄₉, 3, 1, 0; 1999 JH₄₉, 3, 1, 0; 1999 JM₄₉, 3, 1, 0; 1999 JR₄₉, 3, 1, 0; 1999 JW₄₉, 6, 2, 6; 1999 JZ₅₀, 3, 1, 0; 1999 JJ₅₁, 2, 1, 0; 1999 JL₅₁, 9, 3, 11; 1999 JP₅₁, 6, 2, 23; 1999 JQ₅₁, 3, 1, 0; 1999 JT₅₁, 3, 1, 0; 1999 JV₅₁, 3, 1, 0; 1999 JY₅₂, 6, 2, 28; 1999 JK₅₂, 3, 1, 0; 1999 JL₅₂, 3, 1, 0; 1999 JN₅₂, 3, 1, 0; 1999 JR₅₂, 6, 2, 2809; 1999 JS₅₂, 6, 2, 6; 1999 JY₅₂, 3, 1, 0; 1999 JX₅₂, 6, 2, 6; 1999 JU₅₃, 6, 2, 4; 1999 JW₅₃, 3, 1, 0; 1999 JE₅₄, 6, 2, 6; 1999 JJ₅₄, 8, 3, 948; 1999 JQ₅₄, 3, 1, 0; 1999 JZ₅₄, 2, 1, 0; 1999 JM₅₅, 2, 1, 0; 1999 JN₅₅, 2, 1, 0; 1999 JW₅₅, 3, 1, 0; 1999 JD₅₆, 6, 2, 20; 1999 JM₅₆, 6, 2, 5; 1999 JV₅₆, 6, 2, 1074; 1999 JA₅₇, 5, 2, 7; 1999 JD₅₇, 3, 1, 0; 1999 JE₅₇, 6, 2, 2789; 1999 JG₅₇, 3, 1, 0; 1999 JO₅₇, 3, 1, 0; 1999 JR₅₇, 3, 1, 0; 1999 JS₅₇, 6, 2, 5; 1999 JY₅₇, 3, 1, 0; 1999 JL₅₈, 3, 1, 0; 1999 JM₅₈, 3, 1, 0; 1999 JX₅₈, 3, 1, 0; 1999 JH₅₉, 3, 1, 0; 1999 JK₅₉,

6, 2, 3; 1999 KZ₂ *, 12, 4, 2792; 1999 KA₃ *, 6, 2, 3; 1999 KB₃ *, 9, 3, 6; 1999 KC₃ *, 6, 2, 3; 1999 KD₃ *, 5, 2, 2; 1999 KE₃ *, 6, 2, 3; 1999 KF₃ *, 9, 3, 20; 1999 KG₃ *, 6, 2, 3; 1999 KH₃ *, 11, 4, 20; 1999 KJ₃ *, 5, 2, 3; 1999 KK₃ *, 9, 3, 6; 1999 KL₃ *, 6, 2, 3; 1999 KM₃ *, 9, 3, 26; 1999 KN₃ *, 6, 2, 3; 1999 KO₃ *, 9, 3, 6; 1999 KP₃ *, 9, 3, 4; 1999 KQ₃ *, 6, 2, 1; 1999 KR₃ *, 6, 2, 1; 1999 KS₃ *, 6, 2, 1; 1999 KT₃ *, 6, 2, 4; 1999 KU₃ *, 6, 2, 4; 1999 KV₃ *, 6, 2, 4; 1999 KW₃ *, 6, 2, 4; 1999 KX₃ *, 6, 2, 4; 1999 KY₃ *, 6, 2, 4; 1999 KZ₃ *, 6, 2, 3; 1999 KA₄ *, 6, 2, 3; 1999 KB₄ *, 6, 2, 3; 1999 KC₄ *, 6, 2, 3; 1999 KD₄ *, 6, 2, 3; 1999 KE₄ *, 3, 1, 0; 1999 KY₄ *, 6, 2, 1474; 1999 KZ₄ *, 6, 2, 6; 1999 KA₅ *, 6, 2, 6; 1999 KB₅ *, 6, 2, 6; 1999 KC₅ *, 6, 2, 6; 1999 KD₅ *, 6, 2, 4; 1999 KE₅ *, 6, 2, 4; 1999 KF₅ *, 6, 2, 4; 1999 KG₅ *, 6, 2, 4; 1999 KH₅ *, 6, 2, 2; 1999 KJ₅ *, 6, 2, 2; 1999 KK₅ *, 6, 2, 1; 1999 KL₅ *, 6, 2, 1; 1999 KM₅ *, 6, 2, 1; 1999 KN₅ *, 6, 2, 1; 1999 KO₅ *, 6, 2, 1; 1999 KT₅ *, 6, 2, 7; 1999 KU₅ *, 6, 2, 7; 1999 KV₅ *, 6, 2, 6; 1999 KW₅ *, 5, 2, 6; 1999 KX₅ *, 6, 2, 6; 1999 KY₅ *, 6, 2, 6; 1999 KZ₅ *, 5, 2, 6; 1999 KA₆ *, 6, 2, 6; 1999 KB₆ *, 5, 2, 6; 1999 KC₆ *, 6, 2, 6; 1999 KD₆ *, 12, 4, 32; 1999 KE₆ *, 6, 2, 3; 1999 KF₆ *, 6, 2, 3; 1999 KG₆ *, 6, 2, 3; 1999 KH₆ *, 6, 2, 1; 1999 KJ₆ *, 9, 2, 1; 1999 KO₆ *, 6, 2, 1945; 1999 KL₇ *, 2, 1, 0; 1999 KF₁₀ *, 3, 1, 0; 1999 KH₁₀ *, 6, 2, 5; 1999 KR₁₀ *, 6, 2, 5; 1999 KX₁₄ *, 3, 1, 0; 1999 KE₁₅ *, 6, 2, 25; 1999 KN₁₅ *, 6, 2, 1; 1999 LN₁ *, 5, 2, 3; 1999 LO₁ *, 12, 4, 8; 1999 LP₁ *, 6, 2, 1; 1999 LX₂ *, 9, 3, 10; 1999 LY₂ *, 9, 3, 10; 1999 LZ₂ *, 6, 2, 4; 1999 LA₃ *, 6, 2, 2; 1999 LB₃ *, 6, 2, 2; 1999 LC₃ *, 6, 2, 2; 1999 LD₃ *, 6, 2, 2; 1999 LE₃ *, 6, 2, 6; 1999 LF₃ *, 6, 2, 5; 1999 LG₃ *, 6, 2, 5; 1999 LH₃ *, 6, 2, 5; 1999 LJ₃ *, 5, 2, 5; 1999 LK₃ *, 5, 2, 4; 1999 LL₃ *, 6, 2, 4; 1999 LM₃ *, 6, 2, 4; 1999 LN₃ *, 6, 2, 3; 1999 LO₃ *, 6, 2, 2; 1999 LP₃ *, 6, 2, 2; 1999 LQ₃ *, 8, 2, 2; 1999 LR₃ *, 5, 2, 5; 1999 LU₄ *, 6, 2, 3; 1999 LJ₆ *, 6, 2, 8; 1999 LK₆ *, 6, 2, 8; 1999 LL₆ *, 5, 2, 8; 1999 LM₆ *, 5, 2, 8; 1999 LN₆ *, 8, 3, 8; 1999 LO₆ *, 6, 2, 6; 1999 LP₆ *, 12, 4, 11; 1999 LQ₆ *, 6, 2, 5; 1999 LR₆ *, 6, 2, 5; 1999 LS₆ *, 6, 2, 5; 1999 LT₆ *, 8, 3, 7; 1999 LU₆ *, 9, 3, 10; 1999 LV₆ *, 6, 2, 6; 1999 LW₆ *, 6, 2, 5; 1999 LX₆ *, 6, 2, 5; 1999 LY₆ *, 6, 2, 5; 1999 LZ₆ *, 6, 2, 5; 1999 LA₇ *, 6, 2, 5; 1999 LB₇ *, 6, 2, 4; 1999 LC₇ *, 5, 2, 4; 1999 LD₇ *, 6, 2, 2; 1999 LE₇ *, 5, 2, 3; 1999 LF₇ *, 6, 2, 3; 1999 LG₇ *, 9, 3, 4; 1999 LP₇ *, 6, 2, 4; 1999 LQ₇ *, 5, 2, 2; 1999 LR₇ *, 6, 2, 5; 1999 LB₉ *, 3, 1, 0; 1999 LL₉ *, 3, 1, 0; 1999 LR₂₈ *, 6, 2, 10; 1999 LS₂₈ *, 5, 2, 10; 1999 LT₂₈ *, 6, 2, 7; 1999 LU₂₈ *, 6, 2, 7; 1999 LV₂₈ *, 6, 2, 7; 1999 LW₂₈ *, 5, 2, 7; 1999 LY₂₈ *, 6, 2, 7; 1999 LX₂₈ *, 6, 2, 7; 1999 LZ₂₈ *, 6, 2, 7; 1999 LA₂₉ *, 6, 2, 6; 1999 LB₂₉ *, 6, 2, 6; 1999 LC₂₉ *, 6, 2, 6; 1999 LD₂₉ *, 6, 2, 6; 1999 LE₂₉ *, 9, 3, 9; 1999 LF₂₉ *, 6, 2, 5; 1999 LG₂₉ *, 9, 3, 9; 1999 LH₂₉ *, 6, 2, 5; 1999 LJ₂₉ *, 6, 2, 5; 1999 LK₂₉ *, 6, 2, 5; 1999 LL₂₉ *, 6, 2, 5; 1999 LM₂₉ *, 6, 2, 5; 1999 LN₂₉ *, 6, 2, 5; 1999 LO₂₉ *, 6, 2, 5; 1999 LP₂₉ *, 6, 2, 6; 1999 LQ₂₉ *, 6, 2, 5; 1999 LR₂₉ *, 6, 2, 5; 1999 LS₂₉ *, 6, 2, 5; 1999 LT₂₉ *, 5, 2, 5; 1999 LU₂₉ *, 6, 2, 5; 1999 LV₂₉ *, 5, 2, 5; 1999 LW₂₉ *, 5, 2, 5; 1999 LX₂₉ *, 6, 2, 5; 1999 LY₂₉ *, 6, 2, 5; 1999 LZ₂₉ *, 5, 2, 5; 1999 LA₃₀ *, 9, 3, 6; 1999 LB₃₀ *, 9, 3, 6; 1999 LE₃₀ *, 6, 2, 9; 1999 LF₃₀ *, 6, 2, 9; 1999 LG₃₀ *, 6, 2, 9; 1999 LH₃₀ *, 6, 2, 9; 1999 LJ₃₀ *, 6, 2, 9; 1999 LK₃₀ *, 6, 2, 9; 1999 LL₃₀ *, 6, 2, 9; 1999 LM₃₀ *, 6, 2, 8; 1999 LN₃₀ *, 6, 2, 6; 1999 LO₃₀ *, 6, 2, 6; 1999 LP₃₀ *, 6, 2, 6; 1999 LQ₃₀ *, 6, 2, 6; 1999 LR₃₀ *, 6, 2, 6; 1999 LS₃₀ *, 6, 2, 6; 1999 LT₃₀ *, 6, 2, 6; 1999 LU₃₀ *, 6, 2, 6; 1999 LV₃₀ *, 6, 2, 6; 1999 LW₃₀ *, 6, 2, 6; 1999 LX₃₀ *, 6, 2, 6; 1999 LY₃₀ *, 6, 2, 6; 1999 LZ₃₀ *, 6, 2, 6; 1999 LA₃₁ *, 6, 2, 5; 1999 LB₃₁ *, 6, 2, 4; 1999 LC₃₁ *, 6, 2, 4; 1999 MD *, 6, 2, 2; 2044 P-L, 3, 1, 0; 2627 P-L, 3, 1, 0; 2837 P-L, 3, 1, 0; 4129 P-L, 3, 1, 0; 4615 P-L, 3, 1, 0; 6232 P-L, 6, 2, 6; 6528 P-L, 6, 2, 10; 6574 P-L, 3, 1, 0; 6653 P-L, 3, 1, 0; 6755 P-L, 3, 1, 0; 1258 T-1, 6, 2, 530; 2085 T-1, 3, 1, 0; 3216 T-1, 3, 1, 0; 4023 T-1, 3, 1, 0; 4058 T-1, 6, 2, 1045; 4269 T-1, 2, 1, 0; 1052 T-2, 3, 1, 0; 1279 T-2, 3, 1, 0; 1346 T-2, 3, 1, 0; 2058 T-2, 3, 1, 0; 2074 T-2, 3, 1, 0; 3088 T-2, 6, 2, 5; 4060 T-2, 6, 2, 5; 4195 T-2, 6, 2, 423; 4314 T-2, 3, 1, 0; 3280 T-3, 6, 2, 454; (37), 3, 1, 0; (182), 6, 2, 6; (299), 3, 1, 0; (529), 3, 1, 0; (570), 6, 2, 5; (656), 6, 2, 4; (992), 3, 1, 0; (1125), 3, 1, 0; (1296), 3, 1, 0; (1302), 6, 2, 3; (1348), 6, 2, 8; (1361), 3, 1, 0; (1385), 3, 1, 0; (1502), 3, 1, 0; (1669), 3, 1, 0; (1961), 6, 2, 3; (2042), 3, 1, 0; (2264), 3, 1, 0; (2297), 3, 1, 0; (2403), 3, 1, 0; (2465), 3, 1, 0; (2488), 3, 1, 0; (2837), 3, 1, 0; (2976), 3, 1, 0; (3117), 3, 1, 0; (3186), 6, 2, 29; (3204), 3, 1, 0; (3236), 6, 2, 5; (3358), 3, 1, 0; (3448), 3, 1, 0; (3474), 3, 1, 0; (3493), 3, 1, 0; (3514), 6, 2, 3; (3856), 3, 1, 0; (3935), 1, 1, 0; (4111), 3, 1, 0; (4238), 6, 2, 14; (4267), 6, 2, 5; (4366), 3, 1, 0; (4413), 3, 1, 0; (4477), 3, 1, 0; (4627), 3, 1, 0; (4692), 9, 3, 24; (4698), 3, 1, 0; (4888), 3, 1, 0; (4933), 3, 1, 0; (5328), 3, 1, 0; (5344), 3, 1, 0; (5357), 3, 1, 0; (5532), 3, 1, 0; (5572), 2, 1, 0; (5705), 3, 1, 0; (5754), 3, 1, 0; (6508), 3, 1, 0; (6518), 3, 1, 0; (6625), 2, 1, 0; (6628), 6, 2, 2; (6676), 3, 1, 0; (6883), 3, 1, 0; (7058), 3, 1, 0; (7073), 3, 1, 0; (7216), 3, 1, 0; (7220), 3, 1, 0; (7417), 3, 1, 0; (7431), 3, 1, 0; (7476), 3, 1, 0; (7574), 6, 2, 3; (7615), 3, 1, 0; (8129), 3, 1, 0; (8154), 3, 1, 0; (8177), 3, 1, 0; (8200), 3, 1, 0; (8205), 3, 1, 0; (8239), 6, 2, 3; (8248), 3, 1, 0; (8262), 3, 1, 0; (8283), 3, 1, 0; (8306), 3, 1, 0; (8383), 3, 1, 0; (8408), 6, 2, 5; (8439), 3, 1, 0; (8578), 6, 2, 4; (8580), 6, 2, 5; (8582), 3, 1, 0; (8583), 5, 2, 9; (8587), 3, 1, 0; (8590), 3, 1, 0; (8727), 3, 1, 0; (8740), 12, 4, 27; (8745), 3, 1, 0; (8755), 6, 2, 3; (8763), 3, 1, 0; (8890), 4, 2, 4; (8926), 2, 1, 0; (8939), 3, 1, 0; (9099), 3, 1, 0; (9278), 6, 2, 2; (10446), 3, 1, 0; (10596), 3, 1, 0; (10619), 3, 1, 0; (10626), 6, 2, 13; [4350, 972, 270*, 1991/09/05–1999/06/20]

693 University of Arizona, Catalina Station

C. W. Hergenrother, Space Sciences Building, University of Arizona, Tucson, AZ 85721, U.S.A. [chergen@pirl.lpl.arizona.edu]

Observers C. W. Hergenrother, A. E. Gleason

1.54-m reflector + CCD

GSC-1.1

1995 MA₁, 4, 2, 7; 1995 SC, 2, 1, 0; 1996 TO₅, 1, 1, 0; 1997 TD, 3, 1, 0; 1998 HD₁₄, 6, 2, 7; 1998 ST₄, 3, 1, 0; 1998 SC₁₅, 3, 1, 0; 1998 VD₃₅, 3, 1, 0; 1998 WZ₁, 3, 1, 0; 1998 YW₃, 2, 1, 0; 1999 AR₇, 3, 1, 0; 1999 AP₁₀, 3, 1, 0; 1999 BP₇, 3, 1, 0; 1999 BY₉, 3, 1, 0; 1999 FA, 3, 1, 0; 1999 FB, 3, 1, 0; 1999 FQ₅, 3, 1, 0; 1999 FK₁₆, 3, 1, 0; 1999 FJ₂₁, 3, 1, 0; 1999 FP₅₉, 3, 1, 0; 1999 GL₄, 2, 1, 0; 1999 GE₃₃, 3, 1, 0; 1999 HW₁, 3, 1, 0; 1999 HX₂, 2, 1, 0; 1999 JP₆, 3, 1, 0; 1999 JQ₆, 12, 4, 25; 1999 JA₁₁, 3, 1, 0; 1999 JD₁₃, 3, 1, 0; 1999 JK₇₅, 3, 1, 0; 1999 KV₄, 3, 1, 0; 1999 KW₄, 3, 1, 0; 1999 KX₄, 3, 1, 0; 1999 LT, 3, 1, 0; 1999 LW₁, 3, 1, 0; [109, 34, 0*, 1997/03/24–1999/06/09]

695 Kitt Peak

M. W. Buie, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff AZ 86001, U.S.A. [buie@lowell.edu]

Observers R. L. Millis, M. W. Buie, R. M. Wagner, J. L. Elliot, D. W. Willmarth, P. S. Smith, D. L. Harmer, A. Saha

Measurers M. W. Buie, R. L. Millis, J. L. Elliot

4-m reflector + CCD, 3.6-m WIYN telescope + CCD

USNO-A2.0

1999 HR₁₁ *, 3, 1, 0; 1999 HS₁₁ *, 3, 1, 0; 1999 HT₁₁ *, 3, 1, 0; 1999 HU₁₁ *, 3, 1, 0; 1999 HV₁₁ *, 3, 1, 0; 1999 HW₁₁ *, 3, 1, 0; 1999 HX₁₁ *, 4, 2, 1; 1999 HY₁₁ *, 3, 1, 0; 1999 HZ₁₁ *, 3, 1, 0; 1999 HA₁₂ *, 3, 1, 0; 1999 HB₁₂ *, 3, 1, 0; 1999 HC₁₂ *, 3, 1, 0; 1999 HD₁₂ *, 4, 2, 1; [41, 13, 13*, 1999/04/17–1999/04/18]

696 F. L. Whipple Observatory, Mount Hopkins

M. J. Holman, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138, U.S.A. [mholman@cfa.harvard.edu]

Observers C. W. Hergenrother, O. Naranjo

Measurers C. W. Hergenrother, O. Naranjo, M. J. Holman

1.2-m *f*/8 reflector + CCD

USNO-A2.0

1996 TO₅, 2, 1, 0; 1998 CU₄, 2, 1, 0; 1998 WQ₁₆, 3, 1, 0; 1999 GU₂₁ *, 4, 2, 1; 1999 GY₃₆ *, 6, 3, 2; 1999 LN₂₈, 2, 1, 0; 1999 LP₂₈, 1, 1, 0; 1999 LD₃₀, 4, 1, 0; [24, 8, 2*, 1997/05/15–1999/06/17]

699 Lowell Observatory–LONEOS

E. Bowell, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff AZ 86001,

U.S.A. [elgb@lowell.edu]

Observers B. W. Koehn, S. M. Hermann, W. D. Ferris, B. A. Skiff, M. E. Van Ness, L. Levy

Measurer B. W. Koehn

0.59-m LONEOS Schmidt + CCD

USNO-A2.0

1973 SL₁, 12, 4, 83; 1979 KD, 3, 1, 0; 1980 PP₁, 3, 1, 0; 1982 QP₁, 3, 1, 0; 1984 OG, 6, 2, 16; 1986 QO₁, 3, 1, 0; 1986 VZ, 3, 1, 0; 1988 CQ₂, 3, 1, 0; 1989 CX₁, 3, 1, 0; 1990 BM₁, 3, 1, 0; 1990 UO₄, 3, 1, 0; 1991 RS₂₀, 3, 1, 0; 1991 SH₁, 3, 1, 0; 1991 UD₂, 3, 1, 0; 1992 EY₁₀, 3, 1, 0; 1992 EL₃₅, 6, 2, 16; 1992 JR, 3, 1, 0; 1992 LE, 3, 1, 0; 1992 QB, 3, 1, 0; 1992 SF₂, 3, 1, 0; 1992 SG₂, 3, 1, 0; 1992 UL₄, 3, 1, 0; 1993 FF₂₅, 9, 3, 37; 1993 HE, 3, 1, 0; 1993 SS₆, 3, 1, 0; 1994 CR, 3, 1, 0; 1994 SE₂, 6, 2, 25; 1994 UR₆, 3, 1, 0; 1994 XL, 3, 1, 0; 1994 XX₄, 3, 1, 0; 1995 DH₄, 3, 1, 0; 1995 UG₅, 3, 1, 0; 1996 EK, 3, 1, 0; 1996 PK₈, 3, 1, 0; 1996 VG₅, 3, 1, 0; 1997 SV, 3, 1, 0; 1997 TX₁₆, 3, 1, 0; 1997 VZ, 3, 1, 0; 1997 VJ₃, 6, 2, 30; 1997 WU₄₃, 3, 1, 0; 1998 BB₂₇, 3, 1, 0; 1998 FG₁₆, 3, 1, 0; 1998 KG₄₁, 3, 1, 0; 1998 QQ₆₂, 6, 2, 20; 1998 RE₅₉, 3, 1, 0; 1998 RQ₇₂, 3, 1, 0; 1998 RQ₇₇, 3, 1, 0; 1998 SK₅₈, 3, 1, 0; 1998 SN₈₁, 3, 1, 0; 1998 SS₁₁₃, 3, 1, 0; 1998 TU₁₂, 3, 1, 0; 1998 UL₃₁, 3, 1, 0; 1998 UH₄₀, 3, 1, 0; 1998 VU₁₄, 3, 1, 0; 1998 VH₂₆, 3, 1, 0; 1998 VH₂₈, 3, 1, 0; 1998 WB₆, 6, 2, 79; 1998 WD₂₄, 3, 1, 0; 1998 YN, 3, 1, 0; 1998 YF₃₀, 3, 1, 0; 1999 AV, 3, 1, 0; 1999 AK₃, 3, 1, 0; 1999 AV₄, 3, 1, 0; 1999 BF₃, 3, 1, 0; 1999 BQ₆, 6, 2, 15; 1999 CC₅, 3, 1, 0; 1999 CD₁₆, 3, 1, 0; 1999 CZ₂₇, 6, 2, 39; 1999 CT₂₉, 3, 1, 0; 1999 CR₃₅, 3, 1, 0; 1999 CY₅₁, 3, 1, 0; 1999 CT₅₄, 3, 1, 0; 1999 CY₇₅, 3, 1, 0; 1999 CX₁₀₁, 3, 1, 0; 1999 CZ₁₀₂, 3, 1, 0; 1999 CN₁₁₇, 3, 1, 0; 1999 CV₁₂₁, 6, 2, 82; 1999 CY₁₅₃, 3, 1, 0; 1999 DY, 3, 1, 0; 1999 DQ₆, 3, 1, 0; 1999 EE₃, 3, 1, 0; 1999 EC₈, 3, 1, 0; 1999 EE₁₁, 3, 1, 0; 1999 FO, 3, 1, 0; 1999 FS₃, 9, 3,

134; 1999 FS₈, 3, 1, 0; 1999 FZ₈, 3, 1, 0; 1999 FL₉, 3, 1, 0; 1999 FO₉, 3, 1, 0; 1999 FP₉, 3, 1, 0; 1999 FR₉, 3, 1, 0; 1999 FS₉, 6, 2, 46; 1999 FX₉, 3, 1, 0; 1999 FA₁₀, 3, 1, 0; 1999 FE₁₀, 3, 1, 0; 1999 FF₁₀, 3, 1, 0; 1999 FV₁₀, 12, 4, 86; 1999 FP₁₇, 3, 1, 0; 1999 FO₁₈, 3, 1, 0; 1999 FT₁₈, 3, 1, 0; 1999 FW₁₈, 3, 1, 0; 1999 FD₁₉, 3, 1, 0; 1999 FE₁₉, 3, 1, 0; 1999 FG₁₉, 3, 1, 0; 1999 FO₂₃, 6, 2, 97; 1999 FH₂₄, 3, 1, 0; 1999 FN₂₄, 3, 1, 0; 1999 FU₂₄, 3, 1, 0; 1999 FA₂₆, 3, 1, 0; 1999 FB₂₆, 3, 1, 0; 1999 FY₂₈, 6, 2, 16; 1999 FW₂₈, 3, 1, 0; 1999 FY₂₈, 6, 2, 16; 1999 FK₂₉, 3, 1, 0; 1999 FO₂₉, 3, 1, 0; 1999 FW₂₉, 3, 1, 0; 1999 FY₂₉, 3, 1, 0; 1999 FA₃₀, 6, 2, 14; 1999 FB₃₀, 3, 1, 0; 1999 FC₃₀, 3, 1, 0; 1999 FH₃₀, 3, 1, 0; 1999 FN₃₀, 3, 1, 0; 1999 FP₃₀, 3, 1, 0; 1999 FV₃₀, 3, 1, 0; 1999 FD₃₁, 3, 1, 0; 1999 FE₃₁, 3, 1, 0; 1999 FW₃₁, 3, 1, 0; 1999 FF₃₂, 3, 1, 0; 1999 FH₃₂, 3, 1, 0; 1999 FK₃₂, 3, 1, 0; 1999 FQ₃₃, 3, 1, 0; 1999 FW₃₃, 3, 1, 0; 1999 FC₃₄, 3, 1, 0; 1999 FO₃₄, 3, 1, 0; 1999 FS₃₄, 3, 1, 0; 1999 FT₃₄, 3, 1, 0; 1999 FU₃₄, 3, 1, 0; 1999 FF₃₅, 3, 1, 0; 1999 FJ₃₅, 3, 1, 0; 1999 FR₃₅, 3, 1, 0; 1999 FM₃₆, 6, 2, 31; 1999 FG₃₈, 6, 2, 54; 1999 FA₃₉, 6, 2, 22; 1999 FX₄₃, 6, 2, 14; 1999 FR₄₆, 3, 1, 0; 1999 FU₄₆, 9, 3, 74; 1999 FW₄₆, 6, 2, 46; 1999 FP₄₇, 6, 2, 17; 1999 FB₅₁, 6, 2, 17; 1999 FX₅₄, 6, 2, 47; 1999 FA₅₅, 3, 1, 0; 1999 FQ₅₈, 6, 2, 17; 1999 FR₅₉, 6, 2, 16; 1999 GY, 3, 1, 0; 1999 GR₂, 3, 1, 0; 1999 GT₂, 3, 1, 0; 1999 GA₄, 9, 3, 46; 1999 GF₄, 3, 1, 0; 1999 GS₄, 3, 1, 0; 1999 GB₅, 3, 1, 0; 1999 GU₅, 3, 1, 0; 1999 GB₆, 3, 1, 0; 1999 GH₆, 3, 1, 0; 1999 GF₇, 3, 1, 0; 1999 GH₇, 3, 1, 0; 1999 GJ₇, 3, 1, 0; 1999 GX₇, 9, 3, 68; 1999 GC₈, 3, 1, 0; 1999 GS₉, 3, 1, 0; 1999 GU₉, 3, 1, 0; 1999 GV₉, 3, 1, 0; 1999 GQ₁₀, 3, 1, 0; 1999 GY₁₀, 3, 1, 0; 1999 GB₁₁, 6, 2, 16; 1999 GC₁₁, 3, 1, 0; 1999 GC₁₃, 3, 1, 0; 1999 GE₁₅, 3, 1, 0; 1999 GG₁₆, 3, 1, 0; 1999 GD₁₆, 3, 1, 0; 1999 GF₁₆, 3, 1, 0; 1999 GG₁₆, 3, 1, 0; 1999 GO₁₆, 6, 2, 16; 1999 GP₁₆, 3, 1, 0; 1999 GS₁₆, 3, 1, 0; 1999 GT₁₆, 6, 2, 16; 1999 GU₁₆, 3, 1, 0; 1999 GV₁₆, 3, 1, 0; 1999 GX₁₆, 6, 2, 14; 1999 GY₁₆, 6, 2, 14; 1999 GA₁₇, 6, 2, 15; 1999 GB₁₇, 6, 2, 15; 1999 GC₁₇, 3, 1, 0; 1999 GF₁₇, 3, 1, 0; 1999 GJ₁₇, 3, 1, 0; 1999 GK₁₇, 3, 1, 0; 1999 GL₁₇, 3, 1, 0; 1999 GP₁₇, 3, 1, 0; 1999 GY₁₇, 3, 1, 0; 1999 GA₁₈, 12, 4, 84; 1999 GD₁₈, 3, 1, 0; 1999 GH₁₈, 6, 2, 14; 1999 GL₁₈, 3, 1, 0; 1999 GN₁₈, 3, 1, 0; 1999 GW₁₈, 6, 2, 21; 1999 GH₁₉, 3, 1, 0; 1999 GM₁₉, 3, 1, 0; 1999 GN₁₉, 3, 1, 0; 1999 GO₁₉, 6, 2, 11; 1999 GP₁₉, 3, 1, 0; 1999 GX₁₉, 3, 1, 0; 1999 GY₁₉, 3, 1, 0; 1999 GZ₁₉, 3, 1, 0; 1999 GA₂₀, 3, 1, 0; 1999 GF₂₀, 3, 1, 0; 1999 GG₂₀, 3, 1, 0; 1999 GM₂₀, 3, 1, 0; 1999 GO₂₀, 3, 1, 0; 1999 GP₂₀, 3, 1, 0; 1999 GR₂₀, 3, 1, 0; 1999 GS₂₀, 3, 1, 0; 1999 GT₂₀, 3, 1, 0; 1999 GW₂₀, 3, 1, 0; 1999 GB₂₁, 3, 1, 0; 1999 GD₂₁, 3, 1, 0; 1999 GL₂₁, 3, 1, 0; 1999 GM₂₁, 3, 1, 0; 1999 GN₂₁, 3, 1, 0; 1999 GO₂₁, 6, 2, 56; 1999 GS₂₁, 3, 1, 0; 1999 GO₂₂, 9, 3, 46; 1999 GP₂₂, 9, 3, 49; 1999 GX₂₂, 3, 1, 0; 1999 GM₂₃, 9, 3, 48; 1999 GN₂₃, 6, 2, 18; 1999 GP₂₃, 6, 2, 20; 1999 GE₂₄, 3, 1, 0; 1999 GG₂₄, 3, 1, 0; 1999 GV₂₄, 3, 1, 0; 1999 GX₂₄, 3, 1, 0; 1999 GA₂₅, 3, 1, 0; 1999 GX₂₅, 3, 1, 0; 1999 GE₃₀, 3, 1, 0; 1999 GU₃₀, 3, 1, 0; 1999 GK₃₁, 3, 1, 0; 1999 GN₃₁, 3, 1, 0; 1999 GL₃₂, 3, 1, 0; 1999 GM₃₂, 3, 1, 0; 1999 GH₃₃, 3, 1, 0; 1999 GW₃₃, 3, 1, 0; 1999 GX₃₃, 3, 1, 0; 1999 GA₃₄, 3, 1, 0; 1999 GC₃₄, 6, 2, 18; 1999 GE₃₄, 3, 1, 0; 1999 GH₃₄, 6, 2, 19; 1999 GK₃₄, 3, 1, 0; 1999 GL₃₄, 3, 1, 0; 1999 GM₃₄, 3, 1, 0; 1999 GO₃₄, 3, 1, 0; 1999 GP₃₄, 3, 1, 0; 1999 GQ₃₄, 3, 1, 0; 1999 GS₃₄, 3, 1, 0; 1999 GT₃₄, 3, 1, 0; 1999 GU₃₄, 3, 1, 0; 1999 GW₃₄, 9, 2, 19; 1999 GZ₃₄, 6, 2, 17; 1999 GA₃₅, 3, 1, 0; 1999 GE₃₅, 3, 1, 0; 1999 GF₃₅, 3, 1, 0; 1999 GH₃₅, 3, 1, 0; 1999 GJ₃₅, 3, 1, 0; 1999 GM₃₅, 3, 1, 0; 1999 GN₃₅, 3, 1, 0; 1999 GO₃₅, 3, 1, 0; 1999 GP₃₅, 3, 1, 0; 1999 GQ₃₅, 3, 1, 0; 1999 GS₃₅, 3, 1, 0; 1999 GT₃₅, 3, 1, 0; 1999 GY₃₅, 3, 1, 0; 1999 GA₃₆, 3, 1, 0; 1999 GE₃₆, 3, 1, 0; 1999 GQ₃₆, 3, 1, 0; 1999 GW₃₆, 3, 1, 0; 1999 HH, 3, 1, 0; 1999 HL, 3, 1, 0; 1999 HS, 3, 1, 0; 1999 HJ₁, 3, 1, 0; 1999 HL₁, 3, 1, 0; 1999 HN₁, 3, 1, 0; 1999 HC₂, 3, 1, 0; 1999 HF₂, 3, 1, 0; 1999 HG₂, 3, 1, 0; 1999 HU₂, 3, 1, 0; 1999 HU₂, 3, 1, 0; 1999 HU₂, 3, 1, 0; 1999 HU₂, 3, 1, 0; 1999 HK₃, 3, 1, 0; 1999 HL₃, 3, 1, 0; 1999 HN₃, 3, 1, 0; 1999 HJ₅, 3, 1, 0; 1999 HF₈, 6, 2, 17; 1999 HH₈, 3, 1, 0; 1999 HL₈, 3, 1, 0; 1999 HM₈, 3, 1, 0; 1999 HR₈, 3, 1, 0; 1999 HS₈, 3, 1, 0; 1999 HT₈, 3, 1, 0; 1999 HV₈, 3, 1, 0; 1999 HX₈, 3, 1, 0; 1999 HE₉, 3, 1, 0; 1999 HG₉, 3, 1, 0; 1999 HK₉, 3, 1, 0; 1999 HL₉, 3, 1, 0; 1999 HP₉, 3, 1, 0; 1999 HS₉, 3, 1, 0; 1999 HT₉, 3, 1, 0; 1999 HU₉, 3, 1, 0; 1999 HW₉, 3, 1, 0; 1999 HC₁₀, 3, 1, 0; 1999 HL₁₀, 3, 1, 0; 1999 HM₁₀, 6, 2, 11; 1999 HN₁₀, 3, 1, 0; 1999 HR₁₀, 3, 1, 0; 1999 HO₁₁, 3, 1, 0; 1999 JB *, 3, 1, 0; 1999 JD, 6, 2, 43; 1999 JN, 3, 1, 0; 1999 JP, 3, 1, 0; 1999 JQ, 6, 2, 16; 1999 JU, 3, 1, 0; 1999 JZ, 3, 1, 0; 1999 JS₁, 3, 1, 0; 1999 JJ₂, 3, 1, 0; 1999 JG₃, 3, 1, 0; 1999 JH₃, 3, 1, 0; 1999 JR₃, 3, 1, 0; 1999 JT₃ *, 3, 1, 0; 1999 JV₃, 3, 1, 0; 1999 JQ₃, 3, 1, 0; 1999 JT₅, 3, 1, 0; 1999 JB₆, 6, 2, 21; 1999 JD₆ *, 3, 1, 0; 1999 JL₆, 3, 1, 0; 1999 JM₆, 3, 1, 0; 1999 JN₆, 6, 2, 1; 1999 JP₈, 3, 1, 0; 1999 JY₈, 3, 1, 0; 1999 JN₉, 3, 1, 0; 1999 JZ₁₂, 3, 1, 0; 1999 JT₁₄, 3, 1, 0; 1999 JK₁₅, 3, 1, 0; 1999 JR₁₅, 3, 1, 0; 1999 JI₁₈, 3, 1, 0; 1999 JU₁₈, 3, 1, 0; 1999 JX₁₈, 3, 1, 0; 1999 JD₁₉, 3, 1, 0; 1999 JO₁₉, 3, 1, 0; 1999 JR₁₉, 3, 1, 0; 1999 JU₁₉, 3, 1, 0; 1999 JV₁₉, 3, 1, 0; 1999 JB₂₀, 3, 1, 0; 1999 JD₂₀, 3, 1, 0; 1999 JH₂₀, 3, 1, 0; 1999 JB₂₁, 3, 1, 0; 1999 JC₂₁, 3, 1, 0; 1999 JF₂₁, 3, 1, 0; 1999 JG₂₁, 3, 1, 0; 1999 JN₂₁, 3, 1, 0; 1999 JP₂₁, 3, 1, 0; 1999 JQ₂₁, 3, 1, 0; 1999 JR₂₁, 3, 1, 0; 1999 JU₂₁, 3, 1, 0; 1999 JH₂₂, 3, 1, 0; 1999 JJ₂₂, 3, 1, 0; 1999 JM₂₂, 3, 1, 0; 1999 JR₂₂, 3, 1, 0; 1999 JU₂₂, 3, 1, 0; 1999 JJ₂₃, 3, 1, 0; 1999 JL₂₃, 3, 1, 0; 1999 JS₂₃, 3, 1, 0; 1999 JC₂₄, 3, 1, 0; 1999 JL₂₄, 3, 1, 0; 1999 JN₂₄, 3, 1, 0; 1999 JP₂₄, 3, 1, 0; 1999 JU₂₄, 3, 1, 0; 1999 JW₂₄, 3, 1, 0; 1999 JZ₂₄, 3, 1, 0; 1999 JB₂₅, 3, 1, 0; 1999 JM₂₅, 3, 1, 0; 1999 JT₂₅, 3, 1, 0; 1999 JY₂₅, 3, 1, 0; 1999 JE₂₆, 3, 1, 0; 1999 JO₂₆, 6, 2, 20; 1999 JQ₂₆, 3, 1, 0; 1999 JZ₂₇, 3, 1, 0; 1999 JS₂₈, 3, 1, 0; 1999 JL₃₀, 3, 1, 0; 1999 JV₃₁, 6, 1, 0; 1999 JW₃₁, 3, 1, 0; 1999 JC₃₂, 3, 1, 0; 1999 JG₃₂, 3, 1, 0; 1999 JQ₃₂, 3, 1, 0; 1999 JN₃₃, 3, 1, 0; 1999 JR₃₄, 3, 1, 0; 1999 JD₃₆, 3, 1, 0; 1999 JT₃₆, 3, 1, 0; 1999 JF₃₇, 3, 1, 0; 1999 JX₃₇, 3, 1, 0; 1999 JT₃₈, 3, 1, 0; 1999 JU₄₀, 3, 1, 0; 1999 JY₄₀, 3, 1, 0; 1999 JA₄₁, 3, 1, 0; 1999 JD₄₁, 3, 1, 0; 1999 JP₄₁, 3, 1, 0; 1999 JX₄₁, 3, 1, 0; 1999 JY₄₁, 3, 1, 0; 1999 JM₄₃, 3, 1, 0; 1999 JG₄₄, 3, 1, 0; 1999 JL₄₄, 3, 1, 0; 1999 JF₄₅, 3, 1, 0; 1999 JV₄₅, 3, 1, 0;

1999 JA₄₆, 3, 1, 0; 1999 JL₄₆, 3, 1, 0; 1999 JN₄₆, 3, 1, 0; 1999 JS₄₆, 3, 1, 0; 1999 JV₄₆, 3, 1, 0; 1999 JA₄₇, 3, 1, 0; 1999 JC₄₇, 3, 1, 0; 1999 JY₄₇, 3, 1, 0; 1999 JA₄₈, 3, 1, 0; 1999 JO₄₉, 3, 1, 0; 1999 JS₄₉, 3, 1, 0; 1999 JA₅₀, 3, 1, 0; 1999 JG₅₀, 3, 1, 0; 1999 JP₅₀, 3, 1, 0; 1999 JJ₅₁, 3, 1, 0; 1999 JP₅₁, 3, 1, 0; 1999 JH₅₂, 3, 1, 0; 1999 JG₅₃, 3, 1, 0; 1999 JS₅₃, 3, 1, 0; 1999 JW₅₃, 3, 1, 0; 1999 JS₅₅, 3, 1, 0; 1999 JK₅₇, 3, 1, 0; 1999 JT₅₇, 3, 1, 0; 1999 JT₅₉, 3, 1, 0; 1999 JW₆₅, 3, 1, 0; 1999 JT₆₆, 3, 1, 0; 1999 JL₆₇, 3, 1, 0; 1999 JP₆₇, 3, 1, 0; 1999 JQ₆₇, 3, 1, 0; 1999 JX₆₇, 3, 1, 0; 1999 JY₆₇, 3, 1, 0; 1999 JZ₆₇, 3, 1, 0; 1999 JH₆₈, 3, 1, 0; 1999 JK₆₈, 3, 1, 0; 1999 JL₆₈, 3, 1, 0; 1999 JR₆₈, 3, 1, 0; 1999 JV₆₈, 3, 1, 0; 1999 JX₆₈, 3, 1, 0; 1999 JZ₆₈, 3, 1, 0; 1999 JE₆₉, 3, 1, 0; 1999 JM₆₉, 3, 1, 0; 1999 JP₆₉, 3, 1, 0; 1999 JR₆₉, 3, 1, 0; 1999 JZ₆₉, 3, 1, 0; 1999 JC₇₀, 3, 1, 0; 1999 JD₇₀, 3, 1, 0; 1999 JF₇₀, 3, 1, 0; 1999 JR₇₀, 3, 1, 0; 1999 JA₇₁, 6, 2, 55; 1999 JV₇₁, 3, 1, 0; 1999 JW₇₁, 3, 1, 0; 1999 JP₇₂, 3, 1, 0; 1999 JU₇₂, 3, 1, 0; 1999 JF₇₄, 3, 1, 0; 1999 JA₇₇, 3, 1, 0; 1999 JW₇₇, 3, 1, 0; 1999 JG₇₈, 3, 1, 0; 1999 JH₇₈, 3, 1, 0; 1999 JY₇₈, 3, 1, 0; 1999 JH₇₉, 3, 1, 0; 1999 JN₇₉, 3, 1, 0; 1999 JP₇₉, 3, 1, 0; 1999 JZ₈₁, 3, 1, 0; 1999 JA₈₂, 3, 1, 0; 1999 JW₈₂, 3, 1, 0; 1999 JC₈₃, 3, 1, 0; 1999 JU₈₃, 3, 1, 0; 1999 JH₈₄, 3, 1, 0; 1999 JL₈₅, 3, 1, 0; 1999 JG₈₆, 3, 1, 0; 1999 JQ₈₆, 3, 1, 0; 1999 JR₈₆, 3, 1, 0; 1999 JS₈₆, 3, 1, 0; 1999 JG₉₉, 3, 1, 0; 1999 JZ₁₀₁, 3, 1, 0; 1999 JU₁₀₈, 3, 1, 0; 1999 JX₁₁₁, 3, 1, 0; 1999 JM₁₁₄, 3, 1, 0; 1999 KZ, 3, 1, 0; 1999 KR₁, 3, 1, 0; 1999 KC₃, 3, 1, 0; 1999 KN₃, 3, 1, 0; 1999 KO₆, 3, 1, 0; 1999 KQ₆ *, 3, 1, 0; 1999 KJ₁₁, 3, 1, 0; 1999 LR, 3, 1, 0; 2083 P-L, 6, 2, 32; 6232 P-L, 3, 1, 0; 4409 T-1, 3, 1, 0; 2058 T-2, 3, 1, 0; 5155 T-2, 3, 1, 0; 2216 T-3, 3, 1, 0; 3320 T-3, 3, 1, 0; (200), 3, 1, 0; (203), 3, 1, 0; (238), 3, 1, 0; (273), 3, 1, 0; (291), 3, 1, 0; (816), 3, 1, 0; (835), 3, 1, 0; (877), 3, 1, 0; (996), 3, 1, 0; (1120), 3, 1, 0; (1150), 3, 1, 0; (1577), 3, 1, 0; (1699), 3, 1, 0; (1764), 3, 1, 0; (2058), 3, 1, 0; (2088), 3, 1, 0; (2108), 3, 1, 0; (2121), 3, 1, 0; (2136), 3, 1, 0; (2144), 3, 1, 0; (2162), 3, 1, 0; (2209), 3, 1, 0; (2293), 3, 1, 0; (2413), 3, 1, 0; (2449), 3, 1, 0; (2574), 3, 1, 0; (2592), 3, 1, 0; (2637), 3, 1, 0; (2719), 3, 1, 0; (2842), 3, 1, 0; (2936), 3, 1, 0; (3088), 3, 1, 0; (3229), 3, 1, 0; (3319), 3, 1, 0; (3347), 3, 1, 0; (3738), 3, 1, 0; (3743), 3, 1, 0; (4116), 3, 1, 0; (4140), 3, 1, 0; (4507), 3, 1, 0; (4648), 3, 1, 0; (4916), 3, 1, 0; (5178), 3, 1, 0; (5216), 3, 1, 0; (5358), 3, 1, 0; (5413), 3, 1, 0; (5550), 3, 1, 0; (5702), 3, 1, 0; (5761), 3, 1, 0; (5851), 3, 1, 0; (6489), 3, 1, 0; (6618), 3, 1, 0; (6974), 3, 1, 0; (7089), 3, 1, 0; (7137), 3, 1, 0; (7215), 3, 1, 0; (7587), 3, 1, 0; (7891), 3, 1, 0; (7949), 3, 1, 0; (8138), 3, 1, 0; (9869), 3, 1, 0; (10391), 3, 1, 0; [1956, 575, 4*, 1998/01/07-1999/06/09]

701 Sierra Vista

D. Healy, Junk Bond Observatory, 6929 Madera Dr, Sierra Vista, AZ 85635, U.S.A.
[76443.1440@compuserve.com]

Observer D. Healy, J. Medkeff

0.4-m Schmidt-Cassegrain + CCD

GSC

1999 MJ *, 6, 2, 2; 1999 MK *, 6, 2, 1; (2075), 6, 2, 1; (2228), 6, 2, 1; (2241), 6, 2, 1; (2264), 6, 2, 1; (2299), 6, 2, 1; (2319), 6, 2, 1; [48, 8, 2*, 1999/06/19-1999/06/21]

703 Catalina Sky Survey

C. W. Hergenrother, Space Sciences Building, University of Arizona, Tucson, AZ 85721, U.S.A. [chergen@pir1.lpl.arizona.edu]

Observers T. B. Spahr, S. M. Larson, C. W. Hergenrother, J. W. Brownlee,

A. E. Gleason, J. L. Levine

0.41-m *f*/3 Schmidt + CCD

USNO-SA2.0, USNO-SA1.0

1967 US, 8, 2, 1; 1971 UT₁, 4, 1, 0; 1978 NX₇, 4, 1, 0; 1978 QE, 8, 2, 3; 1978 QF₁, 4, 1, 0; 1978 SU₄, 4, 1, 0; 1978 TR₇, 4, 1, 0; 1978 VO₄, 4, 1, 0; 1979 KD, 4, 1, 0; 1979 MD₂, 4, 1, 0; 1979 MN₃, 4, 1, 0; 1979 ME₈, 4, 1, 0; 1979 PA, 4, 1, 0; 1979 WY₃, 4, 1, 0; 1980 KK, 4, 1, 0; 1980 LY, 4, 1, 0; 1980 TZ₃, 4, 1, 0; 1980 VO, 8, 2, 4; 1981 DZ₁, 4, 1, 0; 1981 EZ₁₂, 4, 1, 0; 1981 EO₂₄, 4, 1, 0; 1981 EL₃₃, 4, 1, 0; 1981 ED₃₇, 4, 1, 0; 1981 EC₄₃, 4, 1, 0; 1981 QS, 8, 2, 24; 1981 US₁₄, 4, 1, 0; 1982 SN₃, 4, 1, 0; 1982 UE₆, 4, 1, 0; 1983 RF₂, 4, 1, 0; 1985 QM₅, 8, 2, 19; 1985 RJ₅, 4, 1, 0; 1985 TW, 4, 1, 0; 19

1992 RU₁, 4, 1, 0; 1992 SF₂, 12, 3, 27; 1992 SG₂, 4, 1, 0; 1992 SK₂₆, 4, 1, 0; 1992 UT₁, 4, 1, 0; 1992 UB₃, 4, 1, 0; 1992 UL₄, 12, 3, 27; 1992 UK₉, 4, 1, 0; 1992 WF₁, 4, 1, 0; 1992 WK₁, 4, 1, 0; 1992 WP₁, 4, 1, 0; 1992 WB₂, 4, 1, 0; 1992 WY₃, 4, 1, 0; 1992 WG₅, 8, 1, 0; 1993 FR₁, 4, 1, 0; 1993 FT₄, 4, 1, 0; 1993 FN₇, 4, 1, 0; 1993 FG₁₂, 4, 1, 0; 1993 FS₁₄, 4, 1, 0; 1993 FL₁₅, 4, 1, 0; 1993 FU₃₂, 8, 2, 19; 1993 FK₃₃, 4, 1, 0; 1993 FZ₃₅, 8, 1, 0; 1993 FK₃₈, 4, 1, 0; 1993 HG₁, 4, 1, 0; 1993 QB₃, 4, 1, 0; 1993 SH₁, 4, 1, 0; 1993 SK₁, 4, 1, 0; 1993 SG₃, 4, 1, 0; 1993 TC₃, 8, 1, 0; 1993 TJ₁₅, 4, 1, 0; 1993 TS₃₃, 4, 1, 0; 1993 TZ₃₈, 4, 1, 0; 1993 TB₃₉, 4, 1, 0; 1993 UT₆, 4, 1, 0; 1993 VS₄, 4, 1, 0; 1993 VF₂, 4, 1, 0; 1993 VN₂, 4, 1, 0; 1993 VZ₄, 4, 1, 0; 1993 XK₄, 4, 1, 0; 1994 GY₉, 12, 3, 10; 1994 PP₁, 12, 3, 10; 1994 PQ₁₄, 4, 1, 0; 1994 VH₇, 4, 1, 0; 1995 AV₂, 4, 1, 0; 1995 BD₁, 4, 1, 0; 1995 CE₄, 4, 1, 0; 1995 CH₂, 4, 1, 0; 1995 DE₄, 4, 1, 0; 1995 DO₁, 4, 1, 0; 1995 DR₁, 12, 3, 11; 1995 EZ₈, 4, 1, 0; 1995 FT₄, 4, 1, 0; 1995 GA₄, 4, 1, 0; 1995 GC₂, 4, 1, 0; 1995 GH₇, 8, 2, 6; 1995 GJ₇, 4, 1, 0; 1995 KN₄, 4, 1, 0; 1995 QE₂, 4, 1, 0; 1995 QJ₃, 4, 1, 0; 1995 SH₄, 4, 1, 0; 1995 SO₃₃, 4, 1, 0; 1995 UG₈, 4, 1, 0; 1995 WV₅, 4, 1, 0; 1996 AG₂, 4, 1, 0; 1996 JN₄, 4, 1, 0; 1996 OB₄, 4, 1, 0; 1996 PW₆, 4, 1, 0; 1996 PK₈, 4, 1, 0; 1996 RQ₂, 4, 1, 0; 1996 RF₅, 4, 1, 0; 1996 SN₄, 4, 1, 0; 1996 SY₄, 4, 1, 0; 1996 SW₇, 4, 1, 0; 1996 TR₁, 4, 1, 0; 1996 TH₇, 4, 1, 0; 1996 TJ₉, 4, 1, 0; 1996 TC₁₅, 4, 1, 0; 1996 UB₄, 4, 1, 0; 1996 UR₄, 4, 1, 0; 1996 VM₃, 4, 1, 0; 1996 VG₅, 8, 2, 9; 1996 VE₉, 12, 2, 1; 1996 VB₃₀, 4, 1, 0; 1996 VP₃₀, 8, 2, 1; 1996 VO₃₈, 4, 1, 0; 1996 XH₆, 12, 3, 19; 1996 YC₂, 4, 1, 0; 1996 YF₂, 4, 1, 0; 1997 AO₁, 8, 2, 24; 1997 AY₂, 16, 4, 30; 1997 AP₁₇, 4, 1, 0; 1997 EN₇, 4, 1, 0; 1997 RC₄, 4, 1, 0; 1997 RZ₇, 4, 1, 0; 1997 SB₁₀, 8, 2, 23; 1997 UQ₃, 4, 1, 0; 1997 UO₉, 4, 1, 0; 1997 UM₂₁, 4, 1, 0; 1997 UV₂₁, 4, 1, 0; 1997 VW₃, 4, 1, 0; 1997 WA₂, 4, 1, 0; 1997 WQ₂, 8, 2, 1; 1997 WK₇, 4, 1, 0; 1997 WU₇, 8, 2, 9; 1997 WN₁₃, 4, 1, 0; 1997 WD₁₅, 4, 1, 0; 1997 WF₂₁, 4, 1, 0; 1997 WB₂₁, 8, 2, 18; 1997 WB₂₂, 4, 1, 0; 1997 WR₃₁, 4, 1, 0; 1997 WM₃₅, 4, 1, 0; 1997 WB₃₇, 4, 1, 0; 1997 WM₃₉, 8, 2, 2; 1997 WF₄₃, 12, 3, 8; 1997 WS₄₄, 4, 1, 0; 1997 XB₄, 4, 1, 0; 1997 XM₄, 4, 1, 0; 1997 XX₃, 4, 1, 0; 1997 XT₅, 4, 1, 0; 1997 YX₈, 2, 19; 1997 YG₁, 4, 1, 0; 1997 YS₁, 8, 2, 1; 1997 YW₅, 4, 1, 0; 1997 YO₇, 4, 1, 0; 1997 YQ₁₀, 4, 1, 0; 1997 YS₁₀, 8, 2, 19; 1997 YV₁₁, 4, 1, 0; 1997 YW₁₁, 4, 1, 0; 1997 YW₁₃, 4, 1, 0; 1997 YU₁₆, 4, 1, 0; 1997 YB₁₇, 4, 1, 0; 1998 AJ₄, 4, 1, 0; 1998 AS₁, 4, 1, 0; 1998 AL₁₀, 4, 1, 0; 1998 AM₁₀, 4, 1, 0; 1998 AQ₁₀, 4, 1, 0; 1998 BE₈, 2, 9; 1998 BC₁, 4, 1, 0; 1998 BH₁, 4, 1, 0; 1998 BV₆, 4, 1, 0; 1998 BG₈, 4, 1, 0; 1998 BL₉, 16, 4, 27; 1998 BH₁₀, 4, 1, 0; 1998 BJ₁₀, 4, 1, 0; 1998 BG₁₁, 8, 2, 1; 1998 BM₁₂, 4, 1, 0; 1998 BS₁₃, 4, 1, 0; 1998 BN₁₆, 4, 1, 0; 1998 BB₁₉, 4, 1, 0; 1998 BH₂₅, 4, 1, 0; 1998 BN₂₅, 4, 1, 0; 1998 BU₂₅, 4, 1, 0; 1998 BC₂₆, 4, 1, 0; 1998 BB₂₇, 4, 1, 0; 1998 BA₃₄, 4, 1, 0; 1998 BG₃₄, 4, 1, 0; 1998 BW₄₃, 8, 2, 9; 1998 BN₄₈, 4, 1, 0; 1998 CB₈, 2, 12; 1998 CF₁, 8, 2, 4; 1998 CR₂, 12, 3, 12; 1998 DX₄, 4, 1, 0; 1998 DN₁, 4, 1, 0; 1998 DS₃, 4, 1, 0; 1998 DU₇, 12, 2, 27; 1998 DY₉, 4, 1, 0; 1998 DH₁₀, 8, 2, 11; 1998 DL₁₃, 4, 1, 0; 1998 DJ₁₄, 4, 1, 0; 1998 DF₂₀, 4, 1, 0; 1998 EX₁₃, 8, 1, 0; 1998 EX₁₄, 4, 1, 0; 1998 FD₃, 4, 1, 0; 1998 FG₁₆, 4, 1, 0; 1998 FG₈₈, 4, 1, 0; 1998 FB₁₀₉, 4, 1, 0; 1998 GM₆, 4, 1, 0; 1998 GN₇, 4, 1, 0; 1998 HK₈, 4, 1, 0; 1998 UT₁₈, 12, 3, 10; 1998 WS₄, 4, 1, 0; 1998 WB₃, 4, 1, 0; 1998 WX₆, 4, 1, 0; 1998 WT₇, 4, 1, 0; 1998 XF₄, 4, 1, 0; 1998 XU₁₆, 4, 1, 0; 1998 XX₄₉, 4, 1, 0; 1998 XW₆₂, 4, 1, 0; 1998 YJ₅, 4, 1, 0; 1998 YL₈, 4, 1, 0; 1998 YX₂₉, 4, 1, 0; 1999 AX₄, 4, 1, 0; 1999 AQ₂, 4, 1, 0; 1999 AS₃, 4, 1, 0; 1999 AO₄, 4, 1, 0; 1999 AB₅, 8, 2, 25; 1999 AH₅, 4, 1, 0; 1999 AP₅, 4, 1, 0; 1999 AF₁₉, 4, 1, 0; 1999 AZ₂₂, 8, 1, 0; 1999 AA₂₃, 4, 1, 0; 1999 AR₃₄, 4, 1, 0; 1999 BW₂, 4, 1, 0; 1999 BX₂, 4, 1, 0; 1999 BZ₂, 4, 1, 0; 1999 BF₃, 4, 1, 0; 1999 BT₆, 4, 1, 0; 1999 BW₆, 12, 3, 9; 1999 BF₇, 8, 2, 2; 1999 BF₁₂, 4, 1, 0; 1999 BN₁₂, 4, 1, 0; 1999 BA₁₄, 8, 2, 8; 1999 BH₁₄, 4, 1, 0; 1999 BK₁₄, 8, 2, 1; 1999 BQ₁₅, 4, 1, 0; 1999 CW₄, 4, 1, 0; 1999 CS₁, 4, 1, 0; 1999 CZ₂, 4, 1, 0; 1999 CA₃, 4, 1, 0; 1999 CL₃, 4, 1, 0; 1999 CD₁₈, 4, 1, 0; 1999 CS₁₈, 4, 1, 0; 1999 CO₂₄, 4, 1, 0; 1999 CT₂₉, 8, 2, 1; 1999 CT₃₀, 4, 1, 0; 1999 CC₃₂, 4, 1, 0; 1999 CX₃₈, 4, 1, 0; 1999 CE₄₇, 4, 1, 0; 1999 CV₄₈, 4, 1, 0; 1999 CY₅₁, 4, 1, 0; 1999 CX₅₄, 4, 1, 0; 1999 CP₆₁, 4, 1, 0; 1999 CR₇₀, 4, 1, 0; 1999 CP₇₉, 8, 2, 1; 1999 CB₉₀, 8, 2, 25; 1999 DH₄, 8, 2, 10; 1999 DN₈, 2, 10; 1999 DQ₆, 12, 3, 27; 1999 DR₆, 12, 3, 28; 1999 DS₆, 4, 1, 0; 1999 DT₆, 4, 1, 0; 1999 DU₆, 4, 1, 0; 1999 DY₆, 8, 2, 19; 1999 DZ₆, 8, 2, 1; 1999 EL₄, 4, 1, 0; 1999 ET₃, 4, 1, 0; 1999 EK₅, 4, 1, 0; 1999 EE₆, 4, 1, 0; 1999 EB₈, 4, 1, 0; 1999 EC₈, 12, 3, 32; 1999 EE₁₁, 8, 2, 1; 1999 EW₁₁, 4, 1, 0; 1999 FN₈, 2, 1; 1999 FO₅, 1, 0; 1999 FB₁, 8, 2, 7; 1999 FB₃, 4, 1, 0; 1999 FG₃, 8, 2, 8; 1999 FY₆, 4, 1, 0; 1999 FZ₆, 8, 2, 8; 1999 FA₇, 8, 2, 9; 1999 FD₇, 4, 1, 0; 1999 FE₇, 4, 1, 0; 1999 FG₇, 4, 1, 0; 1999 FS₈, 12, 3, 30; 1999 FO₉, 4, 1, 0; 1999 FP₁₀, 4, 1, 0; 1999 FW₁₂, 4, 1, 0; 1999 FO₁₄, 4, 1, 0; 1999 FQ₁₄, 8, 2, 1; 1999 FB₁₅, 8, 2, 8; 1999 FK₁₆, 8, 2, 1; 1999 FJ₁₇, 4, 1, 0; 1999 FS₁₇, 4, 1, 0; 1999 FU₁₇, 12, 3, 9; 1999 FA₁₈, 8, 2, 8; 1999 FE₁₈, 4, 1, 0; 1999 FJ₁₉, 12, 3, 8; 1999 FU₂₇, 4, 1, 0; 1999 FP₂₈, 4, 1, 0; 1999 FU₂₈, 4, 1, 0; 1999 FW₂₈, 4, 1, 0; 1999 FY₂₈, 4, 1, 0; 1999 FK₂₉, 4, 1, 0; 1999 FR₂₉, 4, 1, 0; 1999 FY₂₉, 4, 1, 0; 1999 FG₃₀, 4, 1, 0; 1999 FV₃₀, 8, 2, 1; 1999 FF₃₁, 4, 1, 0; 1999 FG₃₁, 4, 1, 0; 1999 FM₃₁, 8, 2, 1; 1999 FA₃₂, 12, 3, 8; 1999 FP₃₂, 4, 1, 0; 1999 FQ₃₂, 4, 1, 0; 1999 FS₃₂, 12, 3, 8; 1999 FU₃₂, 4, 1, 0; 1999 FR₃₄, 4, 1, 0; 1999 FT₃₄, 4, 1, 0; 1999 FG₃₅, 16, 4, 9; 1999 GK₄, 4, 1, 0; 1999 GT₄, 4, 1, 0; 1999 GV₄, 4, 1, 0; 1999 GY₄, 4, 1, 0; 1999 GD₁, 4, 1, 0; 1999 GH₁, 4, 1, 0; 1999 GK₁, 4, 1, 0; 1999 GZ₁, 8, 2, 1; 1999 GE₂, 12, 2, 8; 1999 GJ₂, 4, 1, 0; 1999 GT₂, 4, 1, 0; 1999 GQ₃, 4, 1, 0; 1999 GW₃, 4, 1, 0; 1999 GX₃, 4, 1, 0; 1999 GC₄, 4, 1, 0; 1999 GF₄, 8, 1, 0; 1999 GK₄, 12, 3, 8; 1999 GN₄, 4, 1, 0; 1999 GS₄, 4, 1, 0; 1999 GX₄, 4, 1, 0; 1999 GZ₄, 4, 1, 0; 1999 GR₅, 4, 1, 0; 1999 GV₅, 4, 1, 0; 1999 GL₆, 4, 1, 0; 1999 GM₆, 12, 3, 8; 1999 GN₆, 4, 1, 0; 1999 GA₇, 4, 1, 0; 1999 GJ₇, 4, 1, 0; 1999 GM₇, 4, 1, 0; 1999 GQ₇, 4, 1, 0; 1999 GS₇, 8, 1, 0; 1999 GN₈, 4, 1, 0; 1999 GB₉, 4, 1, 0; 1999 GC₉, 4, 1, 0; 1999 GG₉, 4, 1, 0; 1999 GT₉, 12, 3, 8; 1999 GU₉, 8, 2, 1; 1999 GY₁₀, 4, 1, 0; 1999 GC₁₃, 4, 1, 0;

1999 GS₁₃, 16, 4, 27; 1999 GY₁₄, 4, 1, 0; 1999 GQ₁₅, 8, 2, 4; 1999 GC₁₆, 4, 1, 0; 1999 GD₁₆, 4, 1, 0; 1999 GE₁₆, 4, 1, 0; 1999 GF₁₆, 4, 1, 0; 1999 GG₁₆, 4, 1, 0; 1999 GL₁₆, 8, 2, 8; 1999 GN₁₆, 4, 1, 0; 1999 GS₁₆, 4, 1, 0; 1999 GT₁₆, 4, 1, 0; 1999 GU₁₆, 4, 1, 0; 1999 GD₁₇, 4, 1, 0; 1999 GJ₁₇, 4, 1, 0; 1999 GP₁₇, 4, 1, 0; 1999 GT₁₇, 4, 1, 0; 1999 GY₁₇, 4, 1, 0; 1999 GZ₁₇, 4, 1, 0; 1999 GA₁₈, 4, 1, 0; 1999 GD₁₈, 4, 1, 0; 1999 GE₁₈, 4, 1, 0; 1999 GF₁₈, 4, 1, 0; 1999 GG₁₈, 4, 1, 0; 1999 GJ₁₈, 4, 1, 0; 1999 GL₁₈, 4, 1, 0; 1999 GP₁₈, 4, 1, 0; 1999 GQ₁₈, 4, 1, 0; 1999 GR₁₈, 4, 1, 0; 1999 GB₁₉, 4, 1, 0; 1999 GH₁₉, 8, 2, 7; 1999 GJ₁₉, 12, 3, 9; 1999 GL₁₉, 8, 2, 1; 1999 GQ₁₉, 12, 3, 8; 1999 GR₁₉, 4, 1, 0; 1999 GX₁₉, 8, 2, 8; 1999 GY₁₉, 4, 1, 0; 1999 GZ₁₉, 8, 2, 9; 1999 GD₂₀, 4, 1, 0; 1999 GE₂₀, 8, 2, 8; 1999 GN₂₀, 4, 1, 0; 1999 GO₂₀, 4, 1, 0; 1999 GP₂₀, 4, 1, 0; 1999 GV₂₀, 4, 1, 0; 1999 GD₂₁, 4, 1, 0; 1999 GQ₂₁, 8, 2, 31; 1999 GR₂₁, 4, 1, 0; 1999 GY₂₁, 8, 2, 8; 1999 GA₂₂, 4, 1, 0; 1999 GX₂₂, 4, 1, 0; 1999 GX₂₅, 4, 1, 0; 1999 GL₂₈, 8, 2, 1; 1999 GH₃₀, 4, 1, 0; 1999 GJ₃₀, 4, 1, 0; 1999 GU₃₀, 8, 2, 8; 1999 GV₃₀, 8, 2, 9; 1999 GY₃₀, 12, 2, 8; 1999 GA₃₁, 8, 2, 9; 1999 GB₃₁, 12, 2, 8; 1999 GF₃₁, 12, 2, 7; 1999 GK₃₁, 8, 2, 7; 1999 GM₃₁, 8, 2, 8; 1999 GN₃₁, 4, 1, 0; 1999 GO₃₁, 8, 2, 8; 1999 GP₃₁, 8, 2, 8; 1999 GQ₃₁, 8, 2, 8; 1999 GW₃₁, 8, 2, 7; 1999 GX₃₁, 8, 2, 8; 1999 GA₃₂, 4, 1, 0; 1999 GB₃₂, 4, 1, 0; 1999 GE₃₂, 8, 2, 8; 1999 GF₃₂, 8, 2, 9; 1999 GJ₃₂, 4, 1, 0; 1999 GK₃₂, 4, 1, 0; 1999 GM₃₂, 8, 2, 8; 1999 GC₃₃, 8, 2, 8; 1999 GE₃₃, 8, 2, 7; 1999 GJ₃₃, 4, 1, 0; 1999 GV₃₃, 4, 1, 0; 1999 GN₃₅, 4, 1, 0; 1999 GS₃₅, 4, 1, 0; 1999 HE₈, 2, 1; 1999 HF₄, 4, 1, 0; 1999 HO₈, 2, 8; 1999 HQ₄, 4, 1, 0; 1999 HS₄, 4, 1, 0; 1999 HT₄, 4, 1, 0; 1999 HU₈, 8, 2, 24; 1999 HV₁₂, 3, 22; 1999 HX₄, 4, 1, 0; 1999 HA₁, 4, 1, 0; 1999 HL₁, 12, 3, 8; 1999 HD₂, 8, 2, 31; 1999 HE₂, 4, 1, 0; 1999 HN₂, 4, 1, 0; 1999 HR₂, 12, 3, 8; 1999 HY₂, 4, 1, 0; 1999 HJ₃, 4, 1, 0; 1999 HH₄, 4, 1, 0; 1999 HC₅, 4, 1, 0; 1999 HJ₅, 4, 1, 0; 1999 HP₅, 8, 2, 9; 1999 HS₇, 4, 1, 0; 1999 HX₇, 4, 1, 0; 1999 HY₇, 4, 1, 0; 1999 HZ₇, 4, 1, 0; 1999 HT₈, 4, 1, 0; 1999 HU₈, 4, 1, 0; 1999 HK₉, 4, 1, 0; 1999 HX₉, 4, 1, 0; 1999 HZ₉, 4, 1, 0; 1999 HL₁₀, 4, 1, 0; 1999 HP₁₀, 4, 1, 0; 1999 HM₁₁, 8, 2, 2; 1999 HN₁₁, 8, 2, 2; 1999 HO₁₁, 8, 2, 1; 1999 HQ₁₁, 4, 1, 0; 1999 JA₄, 4, 1, 0; 1999 JM₄, 4, 1, 0; 1999 JO₄, 4, 1, 0; 1999 JP₄, 4, 1, 0; 1999 JQ₄, 4, 1, 0; 1999 JS₁₀, 1, 0; 1999 JC₁, 12, 3, 9; 1999 JD₁, 8, 2, 1; 1999 JE₁, 15, 3, 10; 1999 JF₁, 8, 2, 1; 1999 JG₁, 12, 3, 8; 1999 JH₁, 12, 3, 8; 1999 JJ₁, 12, 3, 8; 1999 JK₁, 12, 3, 8; 1999 JL₁, 8, 2, 1; 1999 JM₁, 12, 3, 8; 1999 JN₁, 8, 2, 1; 1999 JO₁, 8, 2, 1; 1999 JP₁, 12, 3, 8; 1999 JQ₁, 8, 2, 1; 1999 JR₁, 12, 3, 8; 1999 JS₁, 12, 3, 8; 1999 JT₁, 16, 3, 8; 1999 JU₁, 8, 2, 1; 1999 JV₁, 12, 3, 8; 1999 JW₁, 12, 3, 8; 1999 JX₁, 12, 3, 8; 1999 JY₁, 8, 2, 1; 1999 JZ₁, 8, 2, 1; 1999 JA₂, 8, 2, 1; 1999 JB₂, 8, 2, 1; 1999 JC₂, 8, 2, 1; 1999 JD₂, 8, 2, 1; 1999 JE₂, 8, 2, 1; 1999 JF₂, 8, 2, 1; 1999 JG₂, 8, 2, 1; 1999 JH₂, 12, 3, 8; 1999 JJ₂, 12, 3, 8; 1999 JK₂, 12, 3, 8; 1999 JL₂, 8, 2, 1; 1999 JM₂, 8, 2, 1; 1999 JN₂, 12, 3, 8; 1999 JO₂, 12, 3, 8; 1999 JP₂, 8, 2, 1; 1999 JQ₂, 12, 3, 8; 1999 JV₂, 4, 1, 0; 1999 JD₃, 12, 3, 27; 1999 JF₃, 4, 1, 0; 1999 JG₃, 8, 2, 19; 1999 JH₃, 12, 3, 30; 1999 JJ₃, 16, 4, 30; 1999 JL₃, 8, 2, 6; 1999 JS₃, 8, 2, 1; 1999 JW₃, 4, 1, 0; 1999 JX₃, 4, 1, 0; 1999 JY₃, 4, 1, 0; 1999 JA₄, 4, 1, 0; 1999 JE₄, 8, 1, 0; 1999 JJ₄, 4, 1, 0; 1999 JO₄, 4, 1, 0; 1999 JU₄, 8, 2, 1; 1999 JV₄, 4, 1, 0; 1999 JA₅, 8, 2, 1; 1999 JB₅, 4, 1, 0; 1999 JE₅, 4, 1, 0; 1999 JG₅, 4, 1, 0; 1999 JH₅, 3, 1, 0; 1999 JJ₅, 8, 2, 19; 1999 JZ₅, 4, 1, 0; 1999 JQ₅, 4, 1, 0; 1999 JS₅, 4, 1, 0; 1999 JT₅, 3, 1, 0; 1999 JU₅, 4, 1, 0; 1999 JZ₅, 4, 1, 0; 1999 JE₆, 4, 1, 0; 1999 JF₆, 4, 1, 0; 1999 JG₆, 3, 1, 0; 1999 JH₆, 4, 1, 0; 1999 JP₆, 4, 1, 0; 1999 JQ₆, 11, 3, 5; 1999 JT₆, 4, 1, 0; 1999 JX₆, 15, 4, 30; 1999 JY₆, 16, 3, 8; 1999 JZ

8, 2, 19; 4104 T-1, 4, 1, 0; 4349 T-1, 4, 1, 0; 4409 T-1, 4, 1, 0; 4827 T-1, 4, 1, 0; 1179 T-2, 4, 1, 0; 1283 T-2, 4, 1, 0; 1510 T-2, 4, 1, 0; 3295 T-2, 4, 1, 0; 4095 T-2, 4, 1, 0; 4122 T-2, 4, 1, 0; 4294 T-2, 4, 1, 0; 2332 T-3, 4, 1, 0; 2416 T-3, 4, 1, 0; 2672 T-3, 4, 1, 0; 3507 T-3, 4, 1, 0; 4250 T-3, 4, 1, 0; (3), 4, 1, 0; (10), 4, 1, 0; (11), 4, 1, 0; (19), 4, 1, 0; (21), 4, 1, 0; (40), 4, 1, 0; (79), 4, 1, 0; (104), 4, 1, 0; (109), 4, 1, 0; (113), 4, 1, 0; (124), 4, 1, 0; (144), 4, 1, 0; (178), 8, 2, 9; (182), 8, 2, 18; (196), 4, 1, 0; (203), 4, 1, 0; (209), 4, 1, 0; (215), 4, 1, 0; (229), 4, 1, 0; (255), 4, 1, 0; (274), 4, 1, 0; (275), 8, 2, 19; (349), 4, 1, 0; (351), 4, 1, 0; (401), 4, 1, 0; (407), 4, 1, 0; (424), 4, 1, 0; (431), 4, 1, 0; (443), 4, 1, 0; (447), 4, 1, 0; (459), 4, 1, 0; (471), 8, 1, 0; (479), 3, 1, 0; (491), 4, 1, 0; (501), 4, 1, 0; (511), 8, 2, 22; (512), 8, 2, 25; (529), 4, 1, 0; (537), 8, 2, 25; (547), 8, 2, 1; (548), 4, 1, 0; (563), 8, 1, 0; (567), 4, 1, 0; (628), 8, 2, 9; (649), 4, 1, 0; (666), 4, 1, 0; (689), 4, 1, 0; (701), 3, 1, 0; (703), 4, 1, 0; (716), 8, 2, 1; (717), 4, 1, 0; (725), 4, 1, 0; (729), 4, 1, 0; (730), 4, 1, 0; (738), 4, 1, 0; (740), 8, 2, 8; (741), 4, 1, 0; (751), 12, 2, 3; (761), 4, 1, 0; (787), 4, 1, 0; (815), 4, 1, 0; (816), 4, 1, 0; (823), 4, 1, 0; (840), 4, 1, 0; (862), 7, 1, 0; (876), 4, 1, 0; (898), 4, 1, 0; (900), 12, 2, 1; (904), 4, 1, 0; (907), 4, 1, 0; (910), 4, 1, 0; (924), 4, 1, 0; (932), 4, 1, 0; (940), 4, 1, 0; (943), 4, 1, 0; (953), 4, 1, 0; (955), 4, 1, 0; (957), 4, 1, 0; (959), 4, 1, 0; (967), 4, 1, 0; (994), 4, 1, 0; (1003), 4, 1, 0; (1020), 4, 1, 0; (1027), 4, 1, 0; (1034), 4, 1, 0; (1035), 4, 1, 0; (1058), 4, 1, 0; (1061), 4, 1, 0; (1074), 4, 1, 0; (1085), 8, 2, 2; (1095), 4, 1, 0; (1105), 8, 2, 6; (1120), 4, 1, 0; (1121), 4, 1, 0; (1125), 4, 1, 0; (1161), 4, 1, 0; (1202), 4, 1, 0; (1229), 4, 1, 0; (1268), 4, 1, 0; (1287), 4, 1, 0; (1293), 4, 1, 0; (1302), 12, 3, 19; (1317), 4, 1, 0; (1344), 8, 2, 1; (1350), 4, 1, 0; (1361), 4, 1, 0; (1387), 4, 1, 0; (1408), 4, 1, 0; (1409), 12, 2, 8; (1414), 2, 1, 0; (1443), 4, 1, 0; (1445), 4, 1, 0; (1464), 12, 3, 8; (1469), 4, 1, 0; (1473), 4, 1, 0; (1492), 12, 3, 10; (1496), 4, 1, 0; (1502), 4, 1, 0; (1518), 4, 1, 0; (1539), 8, 2, 7; (1542), 4, 1, 0; (1573), 4, 1, 0; (1582), 4, 1, 0; (1585), 4, 1, 0; (1605), 8, 2, 3; (1609), 4, 1, 0; (1613), 4, 1, 0; (1614), 12, 3, 24; (1616), 4, 1, 0; (1619), 4, 1, 0; (1621), 4, 1, 0; (1649), 4, 1, 0; (1663), 4, 1, 0; (1669), 4, 1, 0; (1671), 8, 2, 19; (1673), 8, 2, 2; (1676), 4, 1, 0; (1684), 8, 1, 0; (1694), 4, 1, 0; (1702), 4, 1, 0; (1730), 4, 1, 0; (1739), 4, 1, 0; (1744), 4, 1, 0; (1755), 8, 1, 0; (1764), 4, 1, 0; (1812), 4, 1, 0; (1814), 4, 1, 0; (1840), 4, 1, 0; (1841), 4, 1, 0; (1871), 4, 1, 0; (1874), 4, 1, 0; (1878), 4, 1, 0; (1907), 8, 2, 1; (1908), 4, 1, 0; (1912), 4, 1, 0; (1945), 4, 1, 0; (1955), 8, 2, 1; (1965), 4, 1, 0; (1972), 4, 1, 0; (1976), 4, 1, 0; (1979), 4, 1, 0; (2014), 8, 2, 8; (2021), 4, 1, 0; (2023), 4, 1, 0; (2045), 4, 1, 0; (2058), 4, 1, 0; (2060), 8, 1, 0; (2079), 3, 1, 0; (2081), 4, 1, 0; (2107), 4, 1, 0; (2112), 4, 1, 0; (2143), 4, 1, 0; (2164), 4, 1, 0; (2165), 4, 1, 0; (2171), 8, 2, 25; (2173), 4, 1, 0; (2188), 4, 1, 0; (2195), 4, 1, 0; (2203), 4, 1, 0; (2215), 8, 2, 1; (2248), 4, 1, 0; (2249), 4, 1, 0; (2250), 4, 1, 0; (2279), 4, 1, 0; (2280), 4, 1, 0; (2291), 4, 1, 0; (2297), 4, 1, 0; (2299), 4, 1, 0; (2314), 4, 1, 0; (2317), 4, 1, 0; (2318), 4, 1, 0; (2342), 4, 1, 0; (2348), 8, 2, 24; (2354), 4, 1, 0; (2360), 4, 1, 0; (2415), 4, 1, 0; (2417), 4, 1, 0; (2463), 4, 1, 0; (2471), 4, 1, 0; (2484), 4, 1, 0; (2506), 4, 1, 0; (2508), 4, 1, 0; (2517), 8, 2, 1; (2531), 4, 1, 0; (2538), 4, 1, 0; (2574), 4, 1, 0; (2591), 4, 1, 0; (2605), 4, 1, 0; (2606), 4, 1, 0; (2619), 8, 2, 4; (2637), 4, 1, 0; (2651), 8, 2, 24; (2664), 4, 1, 0; (2678), 4, 1, 0; (2712), 4, 1, 0; (2719), 8, 2, 1; (2731), 4, 1, 0; (2761), 4, 1, 0; (2771), 4, 1, 0; (2777), 4, 1, 0; (2803), 4, 1, 0; (2816), 4, 1, 0; (2818), 4, 1, 0; (2831), 4, 1, 0; (2832), 4, 1, 0; (2837), 4, 1, 0; (2850), 4, 1, 0; (2851), 4, 1, 0; (2886), 4, 1, 0; (2911), 8, 1, 0; (2921), 4, 1, 0; (2936), 4, 1, 0; (2942), 8, 2, 1; (2980), 4, 1, 0; (2992), 4, 1, 0; (3012), 8, 2, 25; (3019), 4, 1, 0; (3027), 4, 1, 0; (3084), 8, 2, 7; (3088), 4, 1, 0; (3110), 4, 1, 0; (3113), 4, 1, 0; (3114), 4, 1, 0; (3140), 8, 1, 0; (3148), 4, 1, 0; (3157), 8, 2, 9; (3161), 4, 1, 0; (3172), 4, 1, 0; (3173), 4, 1, 0; (3177), 12, 3, 8; (3205), 4, 1, 0; (3213), 4, 1, 0; (3221), 4, 1, 0; (3232), 4, 1, 0; (3242), 4, 1, 0; (3246), 8, 2, 6; (3266), 4, 1, 0; (3272), 4, 1, 0; (3279), 4, 1, 0; (3309), 4, 1, 0; (3319), 8, 2, 1; (3336), 8, 1, 0; (3346), 4, 1, 0; (3347), 4, 1, 0; (3358), 4, 1, 0; (3365), 8, 1, 0; (3389), 4, 1, 0; (3399), 4, 1, 0; (3403), 4, 1, 0; (3407), 4, 1, 0; (3414), 4, 1, 0; (3450), 4, 1, 0; (3462), 4, 1, 0; (3463), 4, 1, 0; (3493), 4, 1, 0; (3501), 8, 2, 1; (3505), 4, 1, 0; (3525), 4, 1, 0; (3544), 8, 1, 0; (3557), 4, 1, 0; (3561), 8, 2, 8; (3583), 4, 1, 0; (3589), 4, 1, 0; (3597), 4, 1, 0; (3599), 4, 1, 0; (3601), 4, 1, 0; (3625), 4, 1, 0; (3654), 4, 1, 0; (3685), 12, 2, 11; (3701), 4, 1, 0; (3702), 4, 1, 0; (3739), 4, 1, 0; (3764), 4, 1, 0; (3769), 4, 1, 0; (3773), 4, 1, 0; (3781), 4, 1, 0; (3783), 4, 1, 0; (3787), 4, 1, 0; (3788), 12, 3, 10; (3792), 8, 2, 10; (3799), 4, 1, 0; (3823), 4, 1, 0; (3841), 4, 1, 0; (3855), 4, 1, 0; (3856), 4, 1, 0; (3867), 4, 1, 0; (3876), 4, 1, 0; (3929), 4, 1, 0; (3946), 4, 1, 0; (4028), 4, 1, 0; (4041), 8, 2, 10; (4046), 4, 1, 0; (4078), 4, 1, 0; (4080), 4, 1, 0; (4111), 4, 1, 0; (4113), 4, 1, 0; (4123), 4, 1, 0; (4132), 4, 1, 0; (4163), 8, 2, 8; (4165), 4, 1, 0; (4176), 4, 1, 0; (4189), 8, 2, 8; (4228), 4, 1, 0; (4238), 8, 2, 19; (4250), 4, 1, 0; (4260), 4, 1, 0; (4264), 8, 2, 9; (4265), 4, 1, 0; (4297), 4, 1, 0; (4302), 12, 3, 27; (4310), 4, 1, 0; (4333), 4, 1, 0; (4342), 4, 1, 0; (4343), 4, 1, 0; (4345), 8, 2, 3; (4349), 4, 1, 0; (4350), 4, 1, 0; (4363), 4, 1, 0; (4407), 8, 2, 1; (4413), 4, 1, 0; (4424), 4, 1, 0; (4439), 4, 1, 0; (4444), 4, 1, 0; (4447), 4, 1, 0; (4480), 8, 2, 4; (4483), 4, 1, 0; (4488), 8, 1, 0; (4512), 4, 1, 0; (4522), 4, 1, 0; (4526), 4, 1, 0; (4535), 4, 1, 0; (4538), 4, 1, 0; (4550), 4, 1, 0; (4563), 4, 1, 0; (4584), 4, 1, 0; (4598), 4, 1, 0; (4601), 4, 1, 0; (4614), 4, 1, 0; (4616), 4, 1, 0; (4627), 4, 1, 0; (4632), 4, 1, 0; (4641), 8, 2, 1; (4647), 4, 1, 0; (4657), 8, 1, 0; (4662), 4, 1, 0; (4669), 4, 1, 0; (4677), 4, 1, 0; (4696), 4, 1, 0; (4729), 4, 1, 0; (4742), 4, 1, 0; (4764), 4, 1, 0; (4773), 4, 1, 0; (4797), 4, 1, 0; (4814), 4, 1, 0; (4817), 8, 2, 18; (4826), 8, 2, 5; (4848), 4, 1, 0; (4853), 8, 2, 21; (4864), 4, 1, 0; (4888), 4, 1, 0; (4911), 4, 1, 0; (4915), 8, 2, 19; (4917), 12, 3, 19; (4920), 4, 1, 0; (4950), 8, 2, 1; (4966), 4, 1, 0; (4975), 4, 1, 0; (5000), 4, 1, 0; (5032), 8, 2, 1; (5033), 4, 1, 0; (5036), 4, 1, 0; (5039), 4, 1, 0; (5049), 4, 1, 0; (5057), 12, 3, 30; (5068), 8, 2, 24; (5072), 4, 1, 0; (5075), 4, 1, 0; (5097), 4, 1, 0; (5116), 8, 2, 1; (5122), 8, 2, 22; (5140), 12, 3, 10; (5160), 4, 1, 0; (5162), 4, 1, 0; (5178), 4, 1, 0; (5194), 3, 1, 0; (5241), 4, 1, 0; (5248), 4, 1, 0; (5252), 4, 1, 0;

(5297), 4, 1, 0; (5318), 12, 2, 1; (5328), 4, 1, 0; (5329), 4, 1, 0; (5338), 4, 1, 0; (5342), 4, 1, 0; (5344), 4, 1, 0; (5356), 4, 1, 0; (5358), 4, 1, 0; (5390), 8, 2, 25; (5396), 4, 1, 0; (5397), 4, 1, 0; (5412), 4, 1, 0; (5422), 4, 1, 0; (5426), 4, 1, 0; (5442), 4, 1, 0; (5445), 4, 1, 0; (5466), 4, 1, 0; (5468), 3, 1, 0; (5522), 4, 1, 0; (5572), 4, 1, 0; (5592), 4, 1, 0; (5595), 4, 1, 0; (5669), 12, 3, 9; (5674), 4, 1, 0; (5716), 4, 1, 0; (5718), 4, 1, 0; (5723), 4, 1, 0; (5728), 4, 1, 0; (5758), 4, 1, 0; (5765), 8, 2, 22; (5792), 8, 2, 3; (5840), 4, 1, 0; (5851), 4, 1, 0; (5864), 8, 2, 3; (5881), 4, 1, 0; (5888), 4, 1, 0; (5903), 8, 1, 0; (5906), 4, 1, 0; (5931), 4, 1, 0; (5940), 4, 1, 0; (5963), 4, 1, 0; (5965), 4, 1, 0; (5973), 3, 1, 0; (5976), 4, 1, 0; (5977), 20, 5, 27; (5988), 4, 1, 0; (6006), 4, 1, 0; (6031), 8, 1, 0; (6052), 4, 1, 0; (6086), 8, 2, 19; (6087), 4, 1, 0; (6121), 4, 1, 0; (6124), 4, 1, 0; (6148), 4, 1, 0; (6159), 4, 1, 0; (6170), 4, 1, 0; (6177), 4, 1, 0; (6194), 4, 1, 0; (6209), 4, 1, 0; (6218), 4, 1, 0; (6253), 4, 1, 0; (6258), 8, 2, 8; (6259), 4, 1, 0; (6263), 4, 1, 0; (6264), 4, 1, 0; (6281), 4, 1, 0; (6290), 8, 1, 0; (6305), 12, 3, 8; (6324), 4, 1, 0; (6344), 3, 1, 0; (6363), 4, 1, 0; (6364), 4, 1, 0; (6397), 4, 1, 0; (6403), 4, 1, 0; (6408), 4, 1, 0; (6409), 4, 1, 0; (6421), 4, 1, 0; (6433), 12, 2, 1; (6445), 4, 1, 0; (6458), 4, 1, 0; (6465), 4, 1, 0; (6466), 8, 2, 5; (6468), 4, 1, 0; (6470), 4, 1, 0; (6477), 4, 1, 0; (6484), 4, 1, 0; (6492), 4, 1, 0; (6503), 4, 1, 0; (6513), 4, 1, 0; (6521), 4, 1, 0; (6529), 4, 1, 0; (6565), 4, 1, 0; (6603), 8, 1, 0; (6613), 8, 2, 8; (6616), 4, 1, 0; (6628), 4, 1, 0; (6639), 4, 1, 0; (6662), 4, 1, 0; (6665), 12, 3, 10; (6739), 8, 2, 8; (6770), 8, 2, 8; (6772), 4, 1, 0; (6818), 4, 1, 0; (6873), 4, 1, 0; (6967), 4, 1, 0; (6974), 4, 1, 0; (6977), 4, 1, 0; (6991), 4, 1, 0; (7001), 4, 1, 0; (7023), 4, 1, 0; (7031), 4, 1, 0; (7047), 4, 1, 0; (7058), 4, 1, 0; (7069), 4, 1, 0; (7070), 4, 1, 0; (7075), 4, 1, 0; (7094), 4, 1, 0; (7097), 4, 1, 0; (7111), 8, 2, 9; (7118), 4, 1, 0; (7125), 4, 1, 0; (7151), 8, 2, 1; (7159), 12, 2, 1; (7162), 12, 2, 3; (7168), 4, 1, 0; (7175), 4, 1, 0; (7183), 4, 1, 0; (7190), 4, 1, 0; (7197), 4, 1, 0; (7220), 8, 2, 19; (7221), 4, 1, 0; (7226), 4, 1, 0; (7231), 8, 2, 25; (7241), 12, 2, 1; (7244), 4, 1, 0; (7248), 16, 3, 27; (7250), 4, 1, 0; (7251), 8, 2, 3; (7259), 8, 2, 5; (7277), 12, 3, 9; (7285), 12, 3, 12; (7290), 4, 1, 0; (7297), 4, 1, 0; (7302), 4, 1, 0; (7319), 4, 1, 0; (7322), 4, 1, 0; (7346), 7, 2, 24; (7347), 4, 1, 0; (7360), 8, 2, 1; (7366), 4, 1, 0; (7416), 4, 1, 0; (7425), 4, 1, 0; (7429), 4, 1, 0; (7431), 4, 1, 0; (7440), 4, 1, 0; (7460), 4, 1, 0; (7476), 4, 1, 0; (7505), 4, 1, 0; (7507), 4, 1, 0; (7529), 8, 1, 0; (7544), 4, 1, 0; (7550), 4, 1, 0; (7551), 4, 1, 0; (7559), 4, 1, 0; (7574), 8, 2, 19; (7577), 4, 1, 0; (7582), 12, 3, 11; (7587), 4, 1, 0; (7617), 4, 1, 0; (7631), 4, 1, 0; (7664), 4, 1, 0; (7668), 4, 1, 0; (7891), 4, 1, 0; (7915), 4, 1, 0; (7916), 4, 1, 0; (7936), 4, 1, 0; (7982), 4, 1, 0; (7994), 4, 1, 0; (8015), 4, 1, 0; (8050), 4, 1, 0; (8071), 16, 3, 8; (8081), 8, 2, 22; (8093), 4, 1, 0; (8107), 4, 1, 0; (8113), 4, 1, 0; (8123), 12, 3, 19; (8144), 4, 1, 0; (8149), 12, 3, 8; (8156), 4, 1, 0; (8165), 4, 1, 0; (8184), 4, 1, 0; (8188), 4, 1, 0; (8204), 4, 1, 0; (8211), 12, 3, 8; (8212), 4, 1, 0; (8232), 4, 1, 0; (8239), 8, 2, 1; (8247), 4, 1, 0; (8248), 4, 1, 0; (8259), 12, 3, 19; (8265), 4, 1, 0; (8267), 4, 1, 0; (8268), 4, 1, 0; (8274), 8, 2, 1; (8287), 3, 1, 0; (8288), 4, 1, 0; (8293), 4, 1, 0; (8301), 4, 1, 0; (8306), 4, 1, 0; (8313), 4, 1, 0; (8320), 4, 1, 0; (8329), 12, 3, 8; (8349), 4, 1, 0; (8352), 4, 1, 0; (8360), 8, 2, 22; (8361), 4, 1, 0; (8363), 16, 4, 19; (8366), 4, 1, 0; (8372), 4, 1, 0; (8376), 4, 1, 0; (8377), 4, 1, 0; (8382), 4, 1, 0; (8386), 4, 1, 0; (8387), 3, 1, 0; (8391), 4, 1, 0; (8401), 4, 1, 0; (8408), 4, 1, 0; (8428), 4, 1, 0; (8431), 8, 2, 17; (8432), 8, 2, 19; (8441), 4, 1, 0; (8449), 4, 1, 0; (8452), 4, 1, 0; (8460), 4, 1, 0; (8473), 4, 1, 0; (8517), 4, 1, 0; (8535), 4, 1, 0; (8551), 4, 1, 0; (8582), 4, 1, 0; (8651), 4, 1, 0; (8694), 4, 1, 0; (8696), 8, 2, 8; (8717), 4, 1, 0; (8726), 8, 2, 17; (8735), 4, 1, 0; (8740), 4, 1, 0; (8755), 4, 1, 0; (8786), 4, 1, 0; (8815), 4, 1, 0; (8834), 4, 1, 0; (8897), 4, 1, 0; (8942), 4, 1, 0; (8947), 7, 1, 0; (8998), 4, 1, 0; (9035), 4, 1, 0; (9119), 4, 1, 0; (9129), 4, 1, 0; (9142), 4, 1, 0; (9230), 4, 1, 0; (9278), 4, 1, 0; (9382), 3, 1, 0; (9396), 4, 1, 0; (9412), 4, 1, 0; (9451), 8, 2, 9; (9717), 4, 1, 0; (9741), 4, 1, 0; (9743), 4, 1, 0; (9765), 4, 1, 0; (9833), 4, 1, 0; (9859), 4, 1, 0; (9871), 4, 1, 0; (9935), 4, 1, 0; (9956), 4, 1, 0; (9959), 8, 2, 1; (9971), 4, 1, 0; (9985), 4, 1, 0; (10017), 4, 1, 0; (10024), 4, 1, 0; (10027), 4, 1, 0; (10043), 4, 1, 0; (10059), 8, 1, 0; (10064), 4, 1, 0; (10077), 4, 1, 0; (10085), 4, 1, 0; (10090), 4, 1, 0; (10094), 4, 1, 0; (10105), 4, 1, 0; (10142), 4, 1, 0; (10167), 4, 1, 0; (10182), 4, 1, 0; (10188), 4, 1, 0; (10210), 8, 2, 1; (10216), 4, 1, 0; (10229), 4, 1, 0; (10281), 4, 1, 0; (10291), 4, 1, 0; (10294), 12, 3, 8; (10314), 4, 1, 0; (10319), 4, 1, 0; (10366), 4, 1, 0; (10385), 4, 1, 0; (10423), 4, 1, 0; (10463), 4, 1, 0; (10471), 4, 1, 0; (10493), 4, 1, 0; (10504), 4, 1, 0; (10513), 4, 1, 0; (10517), 8, 2, 1; (10532), 12, 2, 8; (10537), 4, 1, 0; (10540), 4, 1, 0; (10542), 4, 1, 0; (10545), 4, 1, 0; (10569), 8, 2, 8; (10576), 8, 2, 1; (10578), 4, 1, 0; (10581), 4, 1, 0; (10582), 8, 2, 19; (10593), 4, 1, 0; (10595), 8, 2, 8; (10603), 4, 1, 0; (10607), 4, 1, 0; (10626), 4, 1, 0; (10642), 4, 1, 0; (10659), 4, 1, 0; (10663), 4, 1, 0; (10665), 8, 2, 8; [11772, 2181, 178*, 1999/03/23-1999/06/20]

704 Lincoln Laboratory Experimental Test System, New Mexico

H. Viggh, MIT Lincoln Laboratory, 244 Wood Street, Lexington, MA 02173,

U.S.A. [viggh@ll.mit.edu]

Observers M. Blythe, F. Shelly, M. Bezpalko, M. Elowitz

Measurers J. Stuart, H. Viggh, R. Sayer

1.0-m $f/2.15$ reflector + CCD

USNO-SA1.0

1951 SX, 4, 1, 0; 1967 US, 44, 9, 57; 1968 OL, 9, 2, 1; 1970 PU, 10, 2, 22; 1971 US, 2, 1, 0; 1973 SL₁, 14, 3, 379; 1973 SF₆, 4, 1, 0; 1974 OU₁, 5, 1, 0; 1974 RX₁, 4, 1, 0; 1974 RY₁, 10, 2, 6; 1974 SF, 5, 1, 0; 1975 UA, 14, 3, 28; 1975 XF, 10, 2, 5; 1976 GV₂, 10, 2, 6; 1976 QS, 4, 1, 0;

1976 UB₁, 14, 3, 30; 1977 EU₁, 5, 1, 0; 1977 FN, 10, 2, 34; 1977 PP₁, 26, 6, 36; 1977 RR₆, 24, 5, 36; 1978 EU₉, 5, 1, 0; 1978 NS, 5, 1, 0; 1978 QE, 5, 1, 0; 1978 RX₇, 3, 1, 0; 1978 SU₄, 25, 5, 9; 1978 TQ₅, 4, 1, 0; 1978 TR₇, 9, 2, 30; 1978 TT₇, 26, 6, 36; 1978 UN₄, 3, 1, 0; 1978 UT₇, 26, 6, 32; 1978 VO₄, 3, 1, 0; 1978 VU₅, 10, 2, 1; 1978 VC₆, 9, 2, 1; 1978 VE₇, 5, 1, 0; 1978 VR₁₀, 4, 1, 0; 1978 VT₁₀, 23, 5, 36; 1978 VE₁₅, 9, 2, 28; 1979 KD, 5, 1, 0; 1979 KJ, 5, 1, 0; 1979 MF, 5, 1, 0; 1979 MS₁, 4, 1, 0; 1979 MD₂, 9, 2, 1; 1979 MN₃, 24, 5, 9; 1979 MP₃, 8, 2, 1; 1979 MT₄, 5, 1, 0; 1979 MA₅, 5, 1, 0; 1979 MK₅, 4, 1, 0; 1979 MG₆, 5, 1, 0; 1979 MH₆, 12, 3, 28; 1979 MR₆, 5, 1, 0; 1979 ME₇, 4, 1, 0; 1979 ME₈, 14, 3, 8; 1979 PA, 24, 5, 9; 1979 TH₂, 14, 3, 9; 1979 TT₂, 10, 2, 6; 1979 UR, 8, 2, 3; 1979 WY₃, 5, 1, 0; 1979 XL, 8, 2, 30; 1980 KK, 33, 7, 36; 1980 LY, 30, 6, 9; 1980 PU, 15, 3, 55; 1980 PP₁, 4, 1, 0; 1980 RV₂, 20, 4, 9; 1980 TZ₃, 5, 1, 0; 1980 VO, 13, 4, 9; 1980 VX₂, 24, 4, 28; 1980 VA₃, 19, 4, 30; 1980 XX, 12, 3, 28; 1981 CH, 4, 1, 0; 1981 DJ, 9, 2, 6; 1981 DK, 12, 3, 33; 1981 DA₁, 4, 1, 0; 1981 DZ₁, 19, 4, 33; 1981 DO₃, 13, 3, 28; 1981 EF₄, 4, 1, 0; 1981 EJ₄, 5, 1, 0; 1981 EO₇, 5, 1, 0; 1981 ED₈, 15, 4, 36; 1981 EF₈, 8, 2, 32; 1981 EQ₈, 7, 2, 3; 1981 ER₁₀, 5, 1, 0; 1981 EC₁₁, 8, 2, 27; 1981 EE₁₂, 5, 1, 0; 1981 EU₁₃, 11, 3, 32; 1981 EV₁₃, 5, 1, 0; 1981 EJ₁₉, 15, 4, 33; 1981 EK₁₉, 9, 2, 8; 1981 EU₁₉, 4, 1, 0; 1981 ES₂₀, 14, 3, 6; 1981 EH₂₁, 18, 4, 31; 1981 ER₂₁, 3, 1, 0; 1981 EN₂₃, 5, 1, 0; 1981 EO₂₄, 30, 6, 7; 1981 ET₂₄, 9, 2, 5; 1981 EZ₂₄, 5, 1, 0; 1981 EO₂₈, 5, 1, 0; 1981 ET₂₉, 5, 1, 0; 1981 EO₃₀, 5, 1, 0; 1981 ES₃₁, 5, 1, 0; 1981 EV₃₁, 5, 1, 0; 1981 EB₃₇, 14, 3, 4; 1981 ED₃₇, 19, 4, 9; 1981 EJ₃₈, 5, 1, 0; 1981 EO₄₀, 20, 4, 31; 1981 EY₄₀, 4, 1, 0; 1981 EP₄₂, 4, 1, 0; 1981 EJ₄₃, 13, 3, 27; 1981 ES₄₃, 7, 2, 35; 1981 ET₄₇, 17, 4, 33; 1981 PF, 20, 3, 5; 1981 QS, 20, 4, 29; 1981 QS₂, 4, 1, 0; 1981 QU₃, 34, 3, 5; 1981 SL, 5, 1, 0; 1981 SE₂, 22, 5, 7; 1981 SG₃, 10, 3, 9; 1981 UK₁₁, 10, 2, 6; 1981 US₁₄, 20, 4, 9; 1981 UV₂₃, 26, 6, 36; 1981 UE₂₆, 25, 5, 29; 1982 BE₁, 24, 5, 7; 1982 JE₁, 33, 7, 36; 1982 JH₂, 5, 1, 0; 1982 QP₁, 6, 1, 0; 1982 QY₁, 4, 1, 0; 1982 SN₃, 18, 4, 41; 1982 SJ₇, 5, 1, 0; 1982 SG₁₂, 5, 1, 0; 1982 TT₂, 9, 2, 30; 1982 UE₆, 20, 4, 36; 1982 UZ₉, 8, 2, 3; 1983 BD, 5, 1, 0; 1983 GU, 5, 1, 0; 1983 QG, 5, 1, 0; 1983 RF₂, 6, 2, 8; 1983 RL₄, 18, 4, 31; 1983 WQ, 25, 6, 36; 1983 XC, 20, 5, 7; 1984 HR, 14, 2, 6; 1984 JR, 5, 1, 0; 1984 OG, 9, 2, 57; 1984 SS₁, 33, 7, 36; 1984 SN₆, 9, 2, 2; 1985 CM₁, 5, 1, 0; 1985 CX₁, 4, 1, 0; 1985 PL₁, 9, 2, 33; 1985 QM₅, 24, 5, 35; 1985 RV₂, 4, 1, 0; 1985 RP₃, 4, 1, 0; 1985 RJ₅, 3, 1, 0; 1985 SV₂, 23, 5, 36; 1985 TW, 20, 4, 9; 1985 UF₅, 5, 1, 0; 1986 AT₂, 9, 2, 26; 1986 CZ₁, 4, 1, 0; 1986 GY, 24, 5, 9; 1986 PB, 9, 2, 7; 1986 PY, 4, 1, 0; 1986 QZ, 3, 1, 0; 1986 QC₁, 9, 2, 6; 1986 QY₂, 5, 1, 0; 1986 QY₂, 5, 1, 0; 1986 QO₄, 20, 4, 36; 1986 QR₅, 6, 2, 26; 1986 RE₁, 5, 1, 0; 1986 RY₄, 8, 2, 3; 1986 RV₅, 9, 2, 3; 1986 TH, 17, 4, 28; 1986 TZ₃, 2, 1, 0; 1986 VQ₂, 18, 4, 36; 1986 VR₅, 20, 4, 30; 1986 WB, 14, 3, 27; 1987 BA₂, 5, 1, 0; 1987 BS₂, 12, 3, 28; 1987 DN, 20, 4, 9; 1987 ON, 25, 5, 31; 1987 PM, 5, 1, 0; 1987 QE₇, 18, 4, 33; 1987 RA₃, 10, 2, 6; 1987 RN₃, 5, 1, 0; 1987 RT₅, 34, 7, 35; 1987 RU₅, 19, 4, 8; 1987 SU, 25, 5, 30; 1987 SC₁, 4, 1, 0; 1987 SM₃, 5, 1, 0; 1987 SN₁₂, 5, 1, 0; 1987 TG, 9, 2, 31; 1987 UW, 9, 2, 1; 1987 UN₁, 4, 1, 0; 1987 UZ₁, 24, 5, 29; 1988 BL₃, 29, 6, 30; 1988 BM₃, 14, 3, 8; 1988 BT₃, 7, 2, 1; 1988 BZ₃, 9, 2, 33; 1988 CP₁, 21, 5, 7; 1988 CD₂, 3, 1, 0; 1988 CQ₂, 5, 1, 0; 1988 CY₃, 4, 1, 0; 1988 CT₄, 5, 1, 0; 1988 CF₆, 14, 3, 34; 1988 DD₃, 5, 1, 0; 1988 DZ₄, 13, 3, 19; 1988 EC, 4, 1, 0; 1988 EP, 10, 2, 56; 1988 FB, 4, 1, 0; 1988 FN, 5, 1, 0; 1988 FW₂, 29, 6, 29; 1988 GG, 24, 5, 34; 1988 JB₁, 13, 3, 28; 1988 PK, 10, 2, 6; 1988 PN₁, 5, 1, 0; 1988 RK, 5, 1, 0; 1988 RE₅, 5, 1, 0; 1988 SE₂, 9, 2, 6; 1988 SF₃, 35, 7, 9; 1988 TG, 4, 1, 0; 1988 TW, 2, 5, 1, 0; 1988 VH₁, 5, 1, 0; 1988 VK₂, 26, 6, 36; 1988 VS₂, 24, 5, 9; 1988 VQ₃, 10, 2, 3; 1988 VE₇, 4, 1, 0; 1988 XE, 11, 3, 8; 1988 XO, 29, 6, 33; 1988 XX₁, 5, 1, 0; 1989 AW₅, 4, 1, 0; 1989 AU₆, 23, 4, 9; 1989 CH, 9, 2, 24; 1989 CX₁, 10, 2, 59; 1989 CE₈, 29, 5, 36; 1989 EE₁, 4, 1, 0; 1989 EJ₁, 13, 3, 26; 1989 JB, 5, 1, 0; 1989 KF, 5, 1, 0; 1989 MH, 10, 2, 56; 1989 PT, 15, 3, 24; 1989 RT, 5, 1, 0; 1989 RV₂, 5, 1, 0; 1989 SY₂, 27, 6, 33; 1989 SR₃, 8, 2, 6; 1989 SE₈, 9, 2, 6; 1989 TD, 4, 1, 0; 1989 UA, 8, 2, 31; 1989 UE, 4, 1, 0; 1989 UO, 5, 1, 0; 1989 UV₁, 21, 5, 36; 1989 VQ₁, 10, 2, 6; 1989 WG, 8, 2, 1; 1989 WJ, 4, 1, 0; 1989 WJ₁, 15, 3, 8; 1989 WN₂, 4, 1, 0; 1989 WE₄, 8, 2, 3; 1989 YV, 5, 1, 0; 1989 YF₁, 5, 1, 0; 1989 YX₆, 5, 1, 0; 1990 BL₁, 5, 1, 0; 1990 BM₁, 10, 2, 29; 1990 DV, 19, 3, 32; 1990 EK, 13, 3, 35; 1990 ET₂, 29, 5, 35; 1990 FM, 15, 2, 1; 1990 FQ, 4, 1, 0; 1990 HH₁, 5, 1, 0; 1990 HU₁, 5, 1, 0; 1990 OE₄, 10, 2, 5; 1990 OE₅, 19, 4, 28; 1990 QL₁, 10, 3, 35; 1990 QF₂, 10, 2, 6; 1990 QV₂, 25, 5, 6; 1990 QW₃, 25, 5, 36; 1990 QS₄, 9, 2, 56; 1990 QH₅, 4, 1, 0; 1990 QV₅, 34, 7, 36; 1990 QZ₅, 5, 1, 0; 1990 QK₇, 9, 2, 6; 1990 QX₈, 10, 2, 6; 1990 QN₉, 9, 2, 32; 1990 RK₂, 5, 1, 0; 1990 RK₅, 32, 7, 35; 1990 RO₆, 25, 6, 36; 1990 RH₇, 4, 1, 0; 1990 SJ₂, 28, 6, 36; 1990 SR₂, 9, 2, 62; 1990 SF₃, 4, 1, 0; 1990 SS₆, 27, 6, 33; 1990 SA₇, 10, 2, 4; 1990 SH₇, 4, 1, 0; 1990 SM₇, 24, 6, 36; 1990 SH₈, 10, 2, 6; 1990 SP₈, 24, 6, 33; 1990 SR₈, 12, 3, 32; 1990 SS₈, 19, 4, 33; 1990 SB₁₁, 13, 3, 8; 1990 SB₁₄, 11, 3, 33; 1990 SX₁₆, 13, 3, 8; 1990 TC₁, 3, 1, 0; 1990 TJ₃, 27, 5, 28; 1990 TC₄, 25, 4, 33; 1990 TT₄, 4, 1, 0; 1990 TX₄, 14, 3, 8; 1990 TE₇, 9, 2, 5; 1990 TY₇, 4, 1, 0; 1990 TO₉, 4, 1, 0; 1990 TB₁₃, 35, 7, 33; 1990 TH₁₃, 26, 6, 35; 1990 TK₁₃, 10, 2, 5; 1990 UB, 4, 1, 0; 1990 UZ, 35, 7, 36; 1990 UB₁, 25, 5, 36; 1990 UF₁, 35, 7, 11; 1990 UZ₁, 13, 2, 33; 1990 UM₂, 28, 6, 36; 1990 UW₂, 5, 1, 0; 1990 UB₃, 5, 1, 0; 1990 US₃, 7, 2, 1; 1990 UY₃, 9, 2, 1; 1990 UE₄, 5, 1, 0; 1990 UZ₄, 4, 1, 0; 1990 UJ₅, 29, 6, 33; 1990 VM, 7, 2, 5; 1990 VL₄, 10, 2, 6; 1990 VX₄, 3, 1, 0; 1990 VU₅, 13, 3, 31; 1990 VE₆, 4, 1, 0; 1990 VK₆, 17, 4, 33; 1990 VH₁₂, 5, 1, 0; 1990 VN₁₄, 17, 5, 36; 1990 WF, 35, 7, 27; 1990 WM, 10, 2, 6; 1990 WV, 4, 1, 0; 1990 WD₁, 5, 1, 0; 1990 WO₃, 13, 3, 9; 1990 WH₄, 4, 1, 0; 1990 WC₉, 5, 1, 0; 1990 XN, 5, 1, 0; 1990 YM, 15, 3, 30; 1991 AL, 5, 1, 0; 1991 AK₂, 8, 2, 28; 1991 AV₂, 24, 5, 9; 1991 CP₁, 20, 4, 6; 1991 DC, 14, 4, 36; 1991 EG₁, 10, 2, 30; 1991 EO₂, 21, 5, 36; 1991 EB₅, 18, 4, 35; 1991 FK, 9, 2, 8; 1991 FY, 5, 1, 0; 1991 FZ, 4, 1, 0; 1991 FS₁, 10, 2, 6; 1991 GV, 5, 1, 0;

1991 GZ₁, 4, 1, 0; 1991 GE₂, 4, 1, 0; 1991 GT₂, 12, 2, 1; 1991 GQ₃, 8, 2, 2; 1991 GU₃, 3, 1, 0; 1991 GS₅, 9, 2, 8; 1991 LM, 25, 5, 31; 1991 LQ, 20, 4, 27; 1991 LW, 10, 2, 25; 1991 LY, 5, 1, 0; 1991 LA₁, 15, 3, 24; 1991 LE₂, 5, 1, 0; 1991 NL, 10, 2, 6; 1991 NS₂, 4, 1, 0; 1991 NF₃, 10, 2, 6; 1991 PU, 19, 4, 9; 1991 PB₂, 25, 5, 33; 1991 PV₉, 24, 5, 31; 1991 PH₁₀, 5, 1, 0; 1991 PN₁₀, 5, 1, 0; 1991 PF₁₁, 5, 1, 0; 1991 PJ₁₁, 5, 1, 0; 1991 PV₃₁, 22, 5, 32; 1991 RF₂, 5, 1, 0; 1991 RS₇, 10, 2, 5; 1991 RB₉, 19, 4, 9; 1991 RA₁₁, 10, 2, 30; 1991 RQ₁₁, 11, 3, 30; 1991 RT₁₄, 51, 7, 34; 1991 RY₁₅, 9, 2, 6; 1991 RQ₁₆, 9, 2, 3; 1991 RA₁₈, 9, 2, 6; 1991 RS₂₀, 10, 2, 4; 1991 RG₂₅, 10, 2, 4; 1991 RS₄₀, 19, 4, 9; 1991 SN, 4, 1, 0; 1991 SQ, 7, 2, 3; 1991 SR, 4, 1, 0; 1991 SR₃, 5, 1, 0; 1991 TD₄, 19, 2, 19; 1991 TQ₆, 5, 1, 0; 1991 UC, 20, 5, 34; 1991 UD₂, 10, 2, 4; 1991 UC₃, 5, 1, 0; 1991 UM₃, 5, 1, 0; 1991 VN, 8, 2, 28; 1991 VU₂, 5, 1, 0; 1991 VX₅, 33, 7, 33; 1991 VC₆, 3, 1, 0; 1991 VD₆, 4, 1, 0; 1991 VJ₆, 5, 1, 0; 1991 VZ₈, 5, 1, 0; 1991 VL₁₀, 8, 2, 1; 1991 VB, 9, 2, 6; 1991 XS, 29, 6, 36; 1991 YY, 8, 2, 8; 1991 YK₁, 4, 1, 0; 1992 AY, 5, 1, 0; 1992 AU₁, 13, 3, 27; 1992 AS₂, 3, 1, 0; 1992 BF₂, 21, 5, 33; 1992 BK₂, 5, 1, 0; 1992 CS, 18, 4, 22; 1992 CZ₁, 5, 1, 0; 1992 CQ₂, 41, 6, 34; 1992 CU₂, 4, 1, 0; 1992 CQ₃, 4, 1, 0; 1992 DY, 29, 6, 33; 1992 DW₅, 24, 5, 36; 1992 DX₅, 27, 6, 36; 1992 DO₆, 5, 1, 0; 1992 DA₁₀, 5, 1, 0; 1992 DD₁₀, 9, 2, 36; 1992 DG₁₀, 4, 1, 0; 1992 EA, 10, 2, 6; 1992 EP, 4, 1, 0; 1992 EE₁, 19, 4, 33; 1992 EP₄, 5, 1, 0; 1992 EV₄, 5, 1, 0; 1992 EB₅, 20, 4, 30; 1992 EB₈, 19, 4, 9; 1992 EP₈, 5, 1, 0; 1992 EL₉, 5, 1, 0; 1992 EC₁₀, 5, 1, 0; 1992 EM₁₇, 5, 1, 0; 1992 EG₂₂, 31, 7, 36; 1992 ET₂₃, 5, 1, 0; 1992 EU₂₈, 9, 2, 6; 1992 EL₃₅, 5, 1, 0; 1992 FG, 21, 5, 34; 1992 FD₁, 25, 5, 9; 1992 GP, 14, 3, 32; 1992 GQ₂, 24, 5, 35; 1992 GF₂, 5, 1, 0; 1992 GO₄, 33, 7, 36; 1992 GW₄, 4, 1, 0; 1992 GX₄, 26, 6, 36; 1992 HA, 18, 4, 32; 1992 JR, 24, 6, 57; 1992 JD₃, 5, 1, 0; 1992 JF₃, 5, 1, 0; 1992 LK, 30, 6, 36; 1992 ME, 18, 4, 29; 1992 OY₂, 18, 4, 7; 1992 PM, 11, 2, 5; 1992 PT, 8, 2, 3; 1992 PU, 4, 1, 0; 1992 PD₆, 20, 4, 9; 1992 QB, 39, 8, 28; 1992 RU₁, 20, 4, 6; 1992 RA₄, 5, 1, 0; 1992 SE, 4, 1, 0; 1992 SH, 4, 1, 0; 1992 SC₁, 27, 6, 7; 1992 SF₂, 24, 5, 31; 1992 SM₁₆, 25, 5, 7; 1992 SK₂₆, 19, 5, 35; 1992 TM₁, 10, 2, 6; 1992 UW, 18, 4, 36; 1992 UT₁, 33, 7, 35; 1992 UB₃, 15, 3, 31; 1992 UL₄, 30, 7, 27; 1992 UW₄, 3, 1, 0; 1992 UO₅, 14, 3, 31; 1992 UL₆, 20, 5, 35; 1992 UP₆, 4, 1, 0; 1992 UU₆, 9, 2, 24; 1992 UZ₆, 8, 2, 6; 1992 UG, 18, 4, 7; 1992 VR, 5, 1, 0; 1992 WB, 4, 1, 0; 1992 WP₁, 3, 1, 0; 1992 WS₁, 3, 1, 0; 1992 WB₃, 29, 6, 30; 1992 WH₂, 4, 1, 0; 1992 WN₃, 21, 5, 7; 1992 WY₃, 18, 4, 33; 1992 WZ₃, 5, 1, 0; 1992 WE₄, 9, 2, 1; 1992 WG₅, 30, 6, 36; 1992 YD, 5, 1, 0; 1992 YU₁, 19, 4, 9; 1992 YE₄, 5, 1, 0; 1993 AJ, 9, 2, 5; 1993 BR₂, 5, 1, 0; 1993 BY₂, 10, 2, 3; 1993 BR₄, 5, 1, 0; 1993 BM₅, 4, 1, 0; 1993 BB₇, 5, 1, 0; 1993 DJ, 4, 1, 0; 1993 FO, 23, 5, 36; 1993 FR₁, 17, 4, 36; 1993 FA₂, 25, 5, 7; 1993 FF₄, 6, 2, 5; 1993 FT₄, 24, 5, 30; 1993 FT₅, 28, 6, 33; 1993 FG₆, 10, 3, 6; 1993 FN₇, 16, 4, 6; 1993 FN₈, 7, 2, 4; 1993 FG₁₂, 4, 1, 0; 1993 FY₁₂, 4, 1, 0; 1993 FS₁₄, 14, 3, 6; 1993 FX₁₄, 9, 2, 6; 1993 FL₁₅, 17, 4, 36; 1993 FF₁₈, 9, 2, 6; 1993 FR₁₈, 4, 1, 0; 1993 FM₁₉, 28, 6, 32; 1993 FA₂₀, 13, 3, 5; 1993 FA₂₃, 5, 1, 0; 1993 FB₂₃, 4, 1, 0; 1993 FJ₂₃, 4, 1, 0; 1993 FF₂₅, 4, 1, 0; 1993 FZ₂₅, 10, 3, 36; 1993 FE₃₁, 10, 2, 5; 1993 FW₃₁, 20, 4, 9; 1993 FU₃₂, 9, 2, 35; 1993 FK₃₃, 12, 3, 8; 1993 FD₃₄, 4, 1, 0; 1993 FS₃₄, 4, 1, 0; 1993 FW₃₄, 18, 4, 7; 1993 FS₃₅, 9, 2, 6; 1993 FZ₃₅, 15, 3, 9; 1993 FR₃₆, 17, 4, 9; 1993 FJ₃₈, 19, 3, 5; 1993 FK₃₈, 18, 4, 36; 1993 FF₄₀, 8, 2, 28; 1993 FM₄₀, 5, 1, 0; 1993 FN₄₀, 5, 1, 0; 1993 FR₄₁, 5, 1, 0; 1993 FB₄₄, 5, 1, 0; 1993 FR₄₄, 23, 5, 30; 1993 FV₄₄, 5, 1, 0; 1993 FU₅₁, 4, 1, 0; 1993 FR₅₈, 4, 1, 0; 1993 FK₈₁, 18, 4, 33; 1993 FX₈₁, 5, 1, 0; 1993 GG₁, 20, 5, 33; 1993 GM₁, 17, 4, 30; 1993 HG, 26, 6, 36; 1993 HG₁, 4, 1, 0; 1993 HJ₃, 5, 1, 0; 1993 JK, 4, 1, 0; 1993 JW, 10, 2, 6; 1993 KF, 5, 1, 0; 1993 KO, 4, 1, 0; 1993 NB, 3, 1, 0; 1993 QW, 7, 2, 26; 1993 QS₁, 24, 5, 9; 1993 QB₃, 9, 2, 5; 1993 QE₃, 5, 1, 0; 1993 QD₄, 5, 1, 0; 1993 QN₄, 19, 4, 6; 1993 QY₉, 8, 2, 5; 1993 RK₅, 5, 1, 0; 1993 RZ₆, 9, 2, 6; 1993 SZ, 16, 4, 33; 1993 SK₁, 24, 5, 30; 1993 SM₁, 16, 4, 35; 1993 SG₃, 13, 3, 32; 1993 SG₃, 34, 7, 11; 1993 SF₄, 39, 6, 7; 1993 SJ₅, 10, 2, 4; 1993 SS₆, 14, 3, 33; 1993 SX₆, 15, 4, 9; 1993 SH₇, 10, 2, 4; 1993 SK₁₆, 15, 3, 33; 1993 TM₁, 4, 1, 0; 1993 TA₃, 4, 1, 0; 1993 TC₃,

36; 1995 FT₃₁, 7, 35; 1995 GB₅, 1, 0; 1995 GH₇, 24, 5, 30; 1995 GJ₇, 9, 2, 30; 1995 JR₈, 2, 12; 1995 KC₅, 1, 0; 1995 KF₄, 4, 1, 0; 1995 KN₃₄, 7, 35; 1995 KH₁₀, 10, 2, 4; 1995 KF₁₄, 14, 3, 8; 1995 LE₁₃, 3, 36; 1995 MG₁, 4, 1, 0; 1995 OH₁₀, 13, 3, 28; 1995 QE₂, 3, 1, 0; 1995 QJ₃, 13, 3, 28; 1995 QS₃, 5, 1, 0; 1995 QP₁₀, 5, 1, 0; 1995 SZ₄, 4, 1, 0; 1995 SX₁₉, 5, 1, 0; 1995 SO₂₆, 5, 1, 0; 1995 SR₂₆, 5, 1, 0; 1995 SM₂₉, 5, 1, 0; 1995 SY₂₉, 10, 2, 8; 1995 SO₃₃, 24, 5, 9; 1995 SK₅₁, 5, 1, 0; 1995 SV₅₂, 14, 4, 9; 1995 SM₅₄, 4, 1, 0; 1995 TQ₄, 4, 1, 0; 1995 TR₄, 4, 1, 0; 1995 UJ₁, 5, 1, 0; 1995 UU₄, 5, 1, 0; 1995 UJ₆, 5, 1, 0; 1995 UA₉, 4, 1, 0; 1995 VT₁, 8, 2, 6; 1995 WT₄, 4, 1, 0; 1995 WM₂, 4, 1, 0; 1995 WW₃, 3, 1, 0; 1995 WG₇, 24, 7, 36; 1995 WR₇, 5, 1, 0; 1995 WX₈, 5, 1, 0; 1995 YH₁₁, 3, 7; 1995 YY₂, 5, 1, 0; 1995 YJ₄, 9, 2, 29; 1996 BM₅, 1, 0; 1996 EK₁₈, 4, 110; 1996 EA₂, 4, 1, 0; 1996 FF₅, 5, 1, 0; 1996 FR₃, 4, 1, 0; 1996 GF₁, 4, 1, 0; 1996 HZ₂₂, 15, 3, 55; 1996 HH₂₄, 12, 2, 31; 1996 HN₂₄, 3, 1, 0; 1996 HU₂₄, 3, 1, 0; 1996 JJ₄, 4, 1, 0; 1996 JN₁₅, 3, 31; 1996 LP₁, 9, 2, 33; 1996 MN₇, 2, 3; 1996 NX₃, 10, 2, 6; 1996 NZ₃, 3, 1, 0; 1996 NB₄, 20, 4, 9; 1996 OB₂₂, 5, 9; 1996 OK₁₆, 4, 35; 1996 OL₂₂, 5, 33; 1996 OC₁, 20, 5, 35; 1996 PF₅, 4, 1, 0; 1996 PQ₉, 2, 5; 1996 PA₁, 24, 3, 5; 1996 PG₁, 19, 4, 6; 1996 PM₃, 17, 4, 31; 1996 PA₄, 4, 1, 0; 1996 PX₄, 24, 5, 37; 1996 PY₄, 5, 1, 0; 1996 PB₅, 4, 1, 0; 1996 PW₆, 13, 3, 9; 1996 PY₆, 14, 3, 4; 1996 PA₇, 18, 4, 28; 1996 PK₈, 25, 6, 34; 1996 PS₉, 4, 1, 0; 1996 QE₄, 4, 1, 0; 1996 QD₁, 28, 6, 36; 1996 RW₄, 4, 1, 0; 1996 RC₁, 5, 1, 0; 1996 RD₁, 4, 1, 0; 1996 RD₄, 3, 7, 27; 1996 RF₅, 24, 5, 33; 1996 RQ₁₆, 13, 3, 35; 1996 SN₄, 1, 0; 1996 SJ₄, 15, 3, 28; 1996 SY₄, 16, 4, 36; 1996 SW₇, 24, 5, 35; 1996 SG₈, 8, 2, 33; 1996 TD₅, 4, 1, 0; 1996 TQ₁, 4, 1, 0; 1996 TR₁, 29, 6, 35; 1996 TG₇, 14, 3, 8; 1996 TH₇, 10, 3, 9; 1996 TE₈, 4, 1, 0; 1996 TJ₉, 12, 3, 33; 1996 TR₉, 10, 2, 6; 1996 TL₁₀, 4, 1, 0; 1996 TF₁₁, 30, 6, 30; 1996 TS₁₁, 10, 3, 6; 1996 TS₁₄, 9, 2, 28; 1996 TV₁₄, 4, 1, 0; 1996 TC₁₅, 5, 1, 0; 1996 TL₁₅, 3, 1, 0; 1996 TN₁₉, 24, 6, 36; 1996 TG₂₈, 26, 6, 33; 1996 TL₂₉, 5, 1, 0; 1996 TS₃₂, 4, 1, 0; 1996 TM₃₆, 3, 1, 0; 1996 TN₄₁, 5, 1, 0; 1996 TR₄₁, 5, 1, 0; 1996 TH₄₈, 5, 1, 0; 1996 UA₁₀, 2, 3; 1996 UB₂₈, 6, 30; 1996 UR₂₅, 6, 35; 1996 UU₅, 1, 0; 1996 UK₁, 9, 2, 6; 1996 UN₁, 4, 1, 0; 1996 UP₁, 4, 1, 0; 1996 UD₃, 19, 4, 36; 1996 UQ₃, 3, 1, 0; 1996 UC₄, 8, 2, 3; 1996 UH₅, 4, 1, 0; 1996 VP₅, 5, 1, 0; 1996 VV₃₀, 6, 36; 1996 VP₁, 4, 1, 0; 1996 VR₁, 3, 1, 0; 1996 VG₂, 5, 1, 0; 1996 VJ₂, 3, 1, 0; 1996 VM₂, 11, 3, 2; 1996 VG₃, 5, 1, 0; 1996 VL₃, 5, 1, 0; 1996 VM₃, 23, 5, 30; 1996 VN₄, 29, 6, 33; 1996 VQ₄, 4, 1, 0; 1996 VS₄, 5, 1, 0; 1996 VX₄, 4, 1, 0; 1996 VA₅, 23, 5, 31; 1996 VG₅, 17, 4, 36; 1996 VJ₅, 14, 3, 8; 1996 VS₅, 4, 1, 0; 1996 VU₅, 12, 3, 8; 1996 VV₅, 4, 1, 0; 1996 VA₆, 4, 1, 0; 1996 VB₆, 10, 2, 6; 1996 VD₆, 3, 1, 0; 1996 VP₆, 5, 1, 0; 1996 VA₈, 8, 2, 3; 1996 VE₈, 5, 1, 0; 1996 VT₈, 33, 7, 37; 1996 VD₉, 14, 3, 27; 1996 VE₉, 32, 7, 36; 1996 VA₃₀, 5, 1, 0; 1996 VB₃₀, 12, 3, 32; 1996 VJ₃₀, 5, 1, 0; 1996 VO₃₀, 5, 1, 0; 1996 VP₃₀, 21, 5, 36; 1996 VR₃₀, 20, 4, 9; 1996 VO₃₈, 21, 5, 7; 1996 WD₂₁, 5, 36; 1996 WU₁, 19, 5, 36; 1996 WZ₁, 5, 1, 0; 1996 XR₁₀, 10, 2, 6; 1996 XY₅, 5, 1, 0; 1996 XO₂, 14, 3, 8; 1996 XX₂, 4, 1, 0; 1996 XW₅, 5, 1, 0; 1996 XA₆, 5, 1, 0; 1996 XH₆, 24, 5, 35; 1996 XR₆, 3, 1, 0; 1996 XW₁₂, 5, 1, 0; 1996 XM₁₃, 5, 1, 0; 1996 XQ₁₃, 10, 2, 6; 1996 XH₁₈, 5, 1, 0; 1996 XE₁₉, 29, 6, 7; 1996 XS₁₉, 4, 1, 0; 1996 XS₂₅, 5, 1, 0; 1996 XU₂₅, 26, 6, 36; 1996 XT₃₀, 32, 7, 35; 1996 YA₁, 5, 1, 0; 1996 YC₂, 4, 1, 0; 1996 YF₂, 5, 1, 0; 1996 YX₂, 3, 1, 0; 1997 AF₉, 9, 2, 6; 1997 AT₅, 5, 1, 0; 1997 AO₁, 29, 6, 7; 1997 AP₁, 20, 4, 416; 1997 AO₂, 5, 1, 0; 1997 AR₂, 5, 1, 0; 1997 AY₂, 28, 6, 33; 1997 AR₅, 4, 1, 0; 1997 AX₁₄, 5, 1, 0; 1997 AS₁₆, 4, 1, 0; 1997 AQ₂₁, 4, 1, 0; 1997 AH₂₁, 5, 1, 0; 1997 BO₁, 5, 1, 0; 1997 BC₂, 4, 1, 0; 1997 BZ₂, 4, 1, 0; 1997 BF₇, 4, 1, 0; 1997 CQ₁, 4, 1, 0; 1997 CR₁, 4, 1, 0; 1997 QZ₂, 4, 1, 0; 1997 QR₃, 3, 1, 0; 1997 RB₁, 4, 1, 0; 1997 RK₂, 15, 3, 6; 1997 RZ₇, 4, 1, 0; 1997 SV₅, 1, 0; 1997 SE₁, 4, 1, 0; 1997 SX₂, 5, 1, 0; 1997 SS₄, 5, 1, 0; 1997 SB₁₀, 25, 5, 9; 1997 SU₁₀, 4, 1, 0; 1997 SD₁₁, 13, 3, 32; 1997 ST₁₅, 4, 1, 0; 1997 SX₁₅, 13, 3, 30; 1997 SS₁₇, 5, 1, 0; 1997 SH₂₅, 5, 1, 0; 1997 SO₂₅, 5, 1, 0; 1997 SE₃₀, 4, 1, 0; 1997 SO₃₃, 4, 1, 0; 1997 TC₁₈, 25, 5, 9; 1997 TM₂₆, 5, 1, 0; 1997 UQ₃, 19, 4, 9; 1997 UA₄, 4, 1, 0; 1997 UX₄, 3, 1, 0; 1997 UT₆, 20, 4, 9; 1997 UC₇, 13, 3, 31; 1997 UP₇, 8, 2, 8; 1997 UB₈, 7, 2, 4; 1997 UO₈, 4, 1, 0; 1997 UA₉, 13, 3, 30; 1997 UU₁₀, 9, 2, 3; 1997 UJ₁₁, 4, 1, 0; 1997 UV₁₄, 3, 1, 0; 1997 UZ₁₄, 24, 5, 9; 1997 US₁₇, 5, 1, 0; 1997 UW₁₇, 4, 1, 0; 1997 UV₂₁, 35, 5, 9; 1997 UD₂₅, 4, 1, 0; 1997 UK₂₅ *, 20, 5, 31; 1997 UL₂₅ *, 8, 2, 1; 1997 UM₂₅ *, 9, 2, 8; 1997 UN₂₅ *, 9, 2, 1; 1997 VQ₃, 3, 1, 0; 1997 VZ₄, 4, 1, 0; 1997 VJ₁, 4, 1, 0; 1997 VK₃, 20, 3, 5; 1997 VM₃, 5, 1, 0; 1997 VW₄, 14, 3, 30; 1997 VA₅, 3, 1, 0; 1997 VF₅, 5, 1, 0; 1997 VA₆, 5, 1, 0; 1997 VF₆, 29, 6, 55; 1997 VJ₆, 3, 1, 0; 1997 VZ₇, 10, 2, 492; 1997 VX₈, 3, 1, 0; 1997 VA₉, 3, 1, 0; 1997 WD₈, 8, 2, 4; 1997 WE₅, 1, 0; 1997 WO₁, 4, 1, 0; 1997 WA₂, 5, 1, 0; 1997 WF₂, 9, 2, 1; 1997 WJ₂, 33, 7, 36; 1997 WP₂, 15, 3, 33; 1997 WT₂, 5, 1, 0; 1997 WU₂, 4, 1, 0; 1997 WV₂, 14, 3, 4; 1997 WC₃, 9, 2, 4; 1997 WD₃, 5, 1, 0; 1997 WB₆, 30, 7, 37; 1997 WA₇, 25, 4, 25; 1997 WK₇, 29, 6, 36; 1997 WQ₇, 5, 1, 0; 1997 WU₇, 10, 2, 1; 1997 WO₁₂, 3, 1, 0; 1997 WN₁₃, 25, 5, 35; 1997 WD₁₅, 10, 2, 30; 1997 WF₂₁, 8, 2, 8; 1997 WM₂₁, 10, 2, 6; 1997 WP₂₁, 10, 2, 58; 1997 WR₂₁, 7, 2, 5; 1997 WS₂₁, 4, 1, 0; 1997 WX₂₁, 9, 2, 34; 1997 WB₂₂, 9, 2, 32; 1997 WQ₂₂, 9, 2, 5; 1997 WQ₂₈, 3, 1, 0; 1997 WA₃₀, 20, 4, 9; 1997 WR₃₁, 18, 4, 9; 1997 WO₃₂, 5, 1, 0; 1997 WM₃₅, 9, 2, 57; 1997 WB₃₇, 9, 2, 27; 1997 WB₃₈, 5, 1, 0; 1997 WS₃₈, 5, 1, 0; 1997 WM₃₉, 10, 3, 9; 1997 WZ₃₉, 5, 1, 0; 1997 WS₄₀, 4, 1, 0; 1997 WN₄₁, 9, 2, 28; 1997 WM₄₂, 4, 1, 0; 1997 WE₄₃, 5, 1, 0; 1997 WF₄₃, 9, 2, 33; 1997 WU₄₃, 5, 1, 0; 1997 WE₄₄, 5, 1, 0; 1997 WO₄₄, 28, 6, 36; 1997 WQ₄₄, 5, 1, 0; 1997 WS₄₄, 15, 3, 9; 1997 WV₄₄, 5, 1, 0; 1997 WH₄₇, 4, 1, 0; 1997 WV₄₇, 5, 1, 0; 1997 WC₄₈, 5, 1, 0; 1997 WZ₄₉, 5, 1, 0; 1997 WL₅₁, 3, 1, 0; 1997 WF₅₁, 5, 1, 0; 1997 WE₅₇ *, 8, 2, 5; 1997 WF₅₇ *, 8, 2, 32; 1997 XB₁₃, 2, 3; 1997 XL₁₃, 3, 37; 1997 XM₇, 2, 5; 1997 XZ₄, 1, 0; 1997 XF₁, 23, 5, 33; 1997 XV₁, 19, 5, 33; 1997 XE₂, 5, 1, 0; 1997 XX₃, 26, 6, 35; 1997 XA₅, 4, 1, 0; 1997 XG₅, 12, 3, 33; 1997 XJ₅, 5, 1, 0; 1997 XM₅, 4, 1, 0; 1997 XH₇, 5, 1, 0; 1997 XO₈, 5, 1, 0; 1997 XV₈, 5, 1, 0; 1997 XH₉, 16, 4, 27;

1997 XL₉, 5, 1, 0; 1997 XZ₉, 28, 6, 34; 1997 XB₁₀, 20, 4, 28; 1997 XH₁₀, 13, 3, 28; 1997 XN₁₀, 3, 1, 0; 1997 XR₁₀, 20, 5, 37; 1997 XT₁₀, 4, 1, 0; 1997 XM₁₃, 4, 1, 0; 1997 YD₉, 9, 2, 3; 1997 YO₉, 24, 5, 31; 1997 YX₇, 2, 5; 1997 YC₁, 5, 1, 0; 1997 YS₁, 29, 6, 33; 1997 YB₂, 9, 2, 6; 1997 YK₂, 4, 1, 0; 1997 YP₂, 23, 5, 9; 1997 YX₂, 3, 1, 0; 1997 YZ₂, 9, 2, 30; 1997 YD₃, 5, 1, 0; 1997 YL₃, 19, 4, 57; 1997 YR₃, 5, 1, 0; 1997 YA₄, 8, 2, 30; 1997 YA₅, 5, 1, 0; 1997 YH₅, 12, 3, 6; 1997 YP₅, 4, 1, 0; 1997 YR₅, 17, 4, 28; 1997 YS₅, 4, 1, 0; 1997 YW₅, 24, 5, 30; 1997 YC₇, 5, 1, 0; 1997 YL₇, 30, 7, 35; 1997 YN₇, 19, 4, 31; 1997 YO₇, 20, 5, 33; 1997 YQ₇, 4, 1, 0; 1997 YA₈, 4, 1, 0; 1997 YN₈, 5, 1, 0; 1997 YP₈, 5, 1, 0; 1997 YY₈, 10, 2, 2; 1997 YZ₈, 8, 2, 3; 1997 YO₉, 10, 2, 5; 1997 YQ₉, 3, 1, 0; 1997 YG₁₀, 15, 4, 33; 1997 YQ₁₀, 28, 6, 37; 1997 YS₁₀, 33, 7, 36; 1997 YT₁₀, 27, 6, 35; 1997 YJ₁₁, 5, 1, 0; 1997 YT₁₁, 5, 1, 0; 1997 YV₁₁, 25, 5, 31; 1997 YH₁₃, 9, 2, 28; 1997 YE₁₄, 10, 2, 30; 1997 YM₁₄, 4, 1, 0; 1997 YP₁₄, 3, 1, 0; 1997 YQ₁₄, 29, 6, 30; 1997 YJ₁₆, 28, 5, 36; 1997 YT₁₆, 5, 1, 0; 1997 YU₁₆, 22, 5, 9; 1997 YZ₁₆, 23, 5, 7; 1997 YB₁₇, 25, 5, 9; 1997 YG₁₇, 13, 3, 35; 1997 YL₁₈, 8, 2, 5; 1997 YS₁₉, 9, 2, 31; 1997 YU₂₀, 7, 2, 5; 1998 AN₁₃, 3, 28; 1998 AQ₁₂, 12, 3, 29; 1998 AV₉, 9, 2, 34; 1998 AS₁, 22, 5, 9; 1998 AL₄, 8, 2, 6; 1998 AZ₅, 4, 1, 0; 1998 AG₆, 10, 2, 26; 1998 AQ₈, 29, 6, 36; 1998 AR₈, 3, 1, 0; 1998 AV₈, 21, 5, 32; 1998 AL₁₀, 10, 3, 35; 1998 AM₁₀, 30, 6, 33; 1998 AQ₁₀, 24, 6, 35; 1998 AG₁₁, 20, 5, 36; 1998 BE₉, 9, 2, 1; 1998 BL₄, 1, 0; 1998 BQ₂₆, 5, 9; 1998 BC₁, 22, 5, 9; 1998 BH₁, 2, 1, 0; 1998 BO₁, 9, 6, 2; 1998 BR₁, 23, 5, 42; 1998 BU₁, 20, 5, 33; 1998 BB₂, 8, 2, 21; 1998 BC₂, 13, 4, 36; 1998 BG₂, 8, 2, 6; 1998 BK₂, 8, 2, 27; 1998 BV₆, 10, 2, 5; 1998 BW₆, 24, 6, 36; 1998 BH₇, 3, 1, 0; 1998 BA₈, 5, 1, 0; 1998 BD₈, 8, 2, 30; 1998 BG₈, 29, 6, 35; 1998 BH₈, 26, 6, 33; 1998 BW₈, 19, 4, 36; 1998 BL₉, 20, 5, 33; 1998 BH₁₀, 32, 7, 58; 1998 BJ₁₀, 18, 3, 30; 1998 BG₁₁, 10, 2, 1; 1998 BH₁₂, 5, 1, 0; 1998 BM₁₂, 25, 5, 9; 1998 BS₁₃, 24, 5, 36; 1998 BT₁₄, 10, 2, 25; 1998 BN₁₆, 25, 5, 33; 1998 BV₂₄, 12, 3, 31; 1998 BY₂₄, 29, 6, 36; 1998 BZ₂₄, 4, 1, 0; 1998 BL₂₅, 14, 3, 31; 1998 BP₂₅, 14, 3, 28; 1998 BU₂₅, 9, 2, 5; 1998 BX₂₅, 4, 1, 0; 1998 BC₂₆, 29, 6, 36; 1998 BE₂₆, 5, 1, 0; 1998 BM₂₆, 5, 1, 0; 1998 BB₂₇, 9, 2, 8; 1998 BK₃₀, 19, 4, 36; 1998 BT₃₃, 28, 5, 33; 1998 BA₃₄, 5, 1, 0; 1998 BG₃₄, 6, 2, 5; 1998 BC₃₆, 5, 1, 0; 1998 BQ₄₀, 15, 3, 28; 1998 BD₄₁, 3, 1, 0; 1998 BF₄₁, 8, 2, 1; 1998 BB₄₂, 15, 4, 36; 1998 BJ₄₂, 10, 3, 8; 1998 BW₄₃, 7, 2, 1; 1998 BU₄₅, 5, 1, 0; 1998 BN₄₈, 21, 5, 35; 1998 CB₃₈, 4, 30; 1998 CF₅, 1, 0; 1998 CH₁₄, 3, 24; 1998 CR₂₄, 4, 35; 1998 CC₁, 10, 2, 30; 1998 CF₁, 25, 5, 9; 1998 CD₂₂, 22, 5, 63; 1998 CR₂, 9, 2, 28; 1998 CB₃, 7, 2, 1; 1998 CP₃, 5, 1, 0; 1998 DA₃₁, 31, 7, 36; 1998 DP₅, 5, 1, 0; 1998 DX₅, 50, 10, 57; 1998 DZ₅, 1, 0; 1998 DL₁, 24, 5, 33; 1998 DN₁, 34, 7, 35; 1998 DO₁, 10, 2, 1; 1998 DR₂, 5, 1, 0; 1998 DW₂, 12, 3, 33; 1998 DZ₂, 9, 2, 30; 1998 DS₃, 23, 5, 33; 1998 DV₃, 8, 2, 5; 1998 DS₄, 7, 2, 5; 1998 DE₅, 24, 5, 30; 1998 DZ₅, 5, 1, 0; 1998 DU₇, 19, 4, 33; 1998 DL₈, 4, 1, 0; 1998 DP₉, 5, 1, 0; 1998 DQ₉, 14, 3, 27; 1998 DW₉, 14, 3, 8; 1998 DF₁₀, 4, 1, 0; 1998 DH₁₀, 22, 5, 33; 1998 DJ₁₀, 7, 2, 27; 1998 DU₁₀, 5, 1, 0; 1998 DU₁₁, 5, 1, 0; 1998 DV₁₂, 8, 2, 33; 1998 DL₁₃, 20, 4, 33; 1998 DQ₁₃, 4, 1, 0; 1998 DJ₁₄, 5, 1, 0; 1998 DT₁₄, 5, 1, 0; 1998 DD₁₅, 4, 1, 0; 1998 DG₁₅, 10, 2, 24; 1998 DQ₁₅, 5, 1, 0; 1998 DF₂₀, 5, 1, 0; 1998 DY₂₃, 8, 2, 5; 1998 DC₂₄, 19, 4, 33; 1998 DG₃₂, 4, 1, 0; 1998 DD₃₃, 19, 5, 35; 1998 DQ₃₃, 12, 3, 23; 1998 DX₃₃, 9, 2, 6; 1998 DF₃₄, 5, 1, 0; 1998 DN₃₄, 13, 3, 28; 1998 DV₃₄, 5, 1, 0; 1998 DW₃₄, 13, 3, 24; 1998 EC₁₄, 3, 31; 1998 EG₈, 2, 5; 1998 EX₁, 5, 1, 0; 1998 EJ₆, 5, 1, 0; 1998 EL₆, 11, 3, 28; 1998 EO₈, 16, 4, 33; 1998 EB₉, 5, 1, 0; 1998 EE₉, 16, 4, 29; 1998 EK₉, 15, 3, 28; 1998 EU₁₁, 4, 1, 0; 1998 EW₁₁, 21, 5, 33; 1998 EA₁₃, 13, 3, 33; 1998 ER₁₃, 16, 4, 33; 1998 EX₁₃, 10, 2, 6;

9, 2, 7; 1998 WT₂₃, 9, 2, 30; 1998 WU₂₃, 10, 2, 30; 1998 WV₂₃, 9, 2, 30; 1998 WW₂₃, 20, 4, 31; 1998 WY₂₃, 14, 3, 31; 1998 WC₂₄, 15, 3, 33; 1998 WD₂₄, 13, 3, 32; 1998 WE₂₄, 4, 1, 0; 1998 XF₃, 3, 1, 0; 1998 XN₁₂, 15, 3, 31; 1998 XW₁₆, 5, 1, 0; 1998 XT₂₁, 8, 2, 27; 1998 XK₃₉, 5, 1, 0; 1998 XJ₄₀, 8, 2, 382; 1998 XV₅₈, 4, 1, 0; 1998 XC₇₅, 4, 1, 0; 1998 XN₉₆, 4, 1, 0; 1998 YE₅, 1, 0; 1998 YH₅, 1, 0; 1998 YN₁₈, 4, 62; 1998 YZ₃, 5, 1, 0; 1998 YL₄, 4, 1, 0; 1998 YD₅, 3, 1, 0; 1998 YE₅, 4, 1, 0; 1998 YJ₅, 9, 2, 2; 1998 YH₈, 4, 1, 0; 1998 YO₈, 4, 1, 0; 1998 YN₉, 9, 2, 24; 1998 YP₁₁, 5, 1, 0; 1998 YC₁₂, 3, 1, 0; 1998 YM₂₂, 4, 1, 0; 1998 YX₂₉, 3, 1, 0; 1998 YZ₂₉, 17, 4, 194; 1998 YF₃₀, 17, 4, 6; 1999 AK₄, 4, 1, 0; 1999 AU₄, 4, 1, 0; 1999 AV₄, 4, 1, 0; 1999 AX₄, 4, 1, 0; 1999 AY₄, 4, 1, 0; 1999 AL₂, 10, 2, 29; 1999 AN₂, 5, 1, 0; 1999 AQ₂, 9, 2, 30; 1999 AM₃, 4, 1, 0; 1999 AS₃, 13, 3, 3; 1999 AN₄, 9, 2, 1; 1999 AV₄, 4, 1, 0; 1999 AX₄, 4, 1, 0; 1999 AB₅, 10, 2, 55; 1999 AH₅, 5, 1, 0; 1999 AJ₅, 5, 1, 0; 1999 AK₅, 3, 1, 0; 1999 AL₅, 3, 1, 0; 1999 AX₇, 14, 3, 518; 1999 AY₇, 3, 1, 0; 1999 AZ₇, 5, 1, 0; 1999 AA₈, 9, 2, 32; 1999 AB₈, 10, 2, 29; 1999 AE₈, 4, 1, 0; 1999 AH₁₈, 24, 5, 65; 1999 AC₂₂, 5, 1, 0; 1999 AQ₂₂, 8, 2, 29; 1999 AY₂₂, 18, 4, 564; 1999 AZ₂₂, 10, 2, 30; 1999 AR₂₃, 4, 1, 0; 1999 AB₂₄, 7, 2, 1; 1999 AR₃₄, 5, 1, 0; 1999 BN₄, 4, 1, 0; 1999 BZ₄, 5, 1, 0; 1999 BY₁, 5, 1, 0; 1999 BB₂, 5, 1, 0; 1999 BC₂, 5, 1, 0; 1999 BE₂, 10, 2, 1; 1999 BQ₂, 4, 1, 0; 1999 BT₂, 4, 1, 0; 1999 BW₂, 5, 1, 0; 1999 BX₂, 8, 2, 30; 1999 BZ₂, 3, 1, 0; 1999 BA₃, 4, 1, 0; 1999 BF₃, 38, 8, 199; 1999 BH₃, 3, 1, 0; 1999 BR₃, 4, 1, 0; 1999 BG₅, 7, 2, 1; 1999 BO₅, 5, 1, 0; 1999 BD₆, 3, 1, 0; 1999 BH₆, 5, 1, 0; 1999 BQ₆, 9, 2, 6; 1999 BR₆, 17, 4, 42; 1999 BU₆, 24, 5, 23; 1999 BX₆, 9, 2, 30; 1999 BF₇, 8, 2, 138; 1999 BP₇, 10, 2, 27; 1999 BG₉, 5, 1, 0; 1999 BL₉, 12, 3, 31; 1999 BQ₉, 5, 1, 0; 1999 BC₁₁, 13, 3, 34; 1999 BM₁₂, 7, 2, 32; 1999 BN₁₂, 5, 1, 0; 1999 BQ₁₂, 15, 3, 138; 1999 BN₁₃, 8, 2, 2; 1999 BP₁₃, 9, 2, 33; 1999 BA₁₄, 9, 2, 24; 1999 BB₁₄, 10, 2, 26; 1999 BH₁₄, 15, 3, 62; 1999 BJ₁₄, 5, 1, 0; 1999 BK₁₄, 10, 2, 5; 1999 BP₁₅, 4, 1, 0; 1999 BT₁₅, 5, 1, 0; 1999 BT₂₄, 5, 1, 0; 1999 BM₂₅, 4, 1, 0; 1999 BP₂₅, 3, 1, 0; 1999 BT₂₅, 4, 1, 0; 1999 CO₅, 5, 1, 0; 1999 CP₁₅, 3, 4; 1999 CW₉, 2, 30; 1999 CS₁, 12, 3, 164; 1999 CY₁, 4, 1, 0; 1999 CZ₁, 5, 1, 0; 1999 CO₂, 13, 3, 168; 1999 CA₃, 9, 2, 30; 1999 CV₃, 4, 1, 0; 1999 CR₄, 4, 1, 0; 1999 CC₅, 5, 1, 0; 1999 CH₅, 3, 1, 0; 1999 CO₅, 8, 2, 32; 1999 CT₅, 20, 3, 8; 1999 CU₅, 3, 1, 0; 1999 CC₅, 4, 1, 0; 1999 CA₆, 20, 4, 63; 1999 CN₇, 5, 1, 0; 1999 CW₇, 9, 2, 1; 1999 CY₇, 5, 1, 0; 1999 CH₈, 10, 2, 30; 1999 CM₈, 13, 3, 30; 1999 CN₈, 10, 2, 30; 1999 CQ₈, 3, 1, 0; 1999 CZ₈, 5, 1, 0; 1999 CQ₉, 8, 2, 138; 1999 CV₉, 4, 1, 0; 1999 CC₁₀, 5, 1, 0; 1999 CD₁₀, 5, 1, 0; 1999 CG₁₀, 9, 2, 3; 1999 CJ₁₀, 5, 1, 0; 1999 CC₁₂, 8, 2, 32; 1999 CJ₁₂, 4, 1, 0; 1999 CZ₁₃, 5, 1, 0; 1999 CE₁₄, 3, 1, 0; 1999 CF₁₄, 4, 1, 0; 1999 CJ₁₄, 10, 2, 56; 1999 CQ₁₄, 13, 3, 164; 1999 CT₁₄, 10, 2, 56; 1999 CU₁₄, 5, 1, 0; 1999 CW₁₄, 5, 1, 0; 1999 CP₁₅, 4, 1, 0; 1999 CQ₁₅, 20, 4, 31; 1999 CD₁₆, 28, 6, 194; 1999 CG₁₇, 5, 1, 0; 1999 CU₁₇, 3, 1, 0; 1999 CD₁₈, 4, 1, 0; 1999 CH₁₈, 5, 1, 0; 1999 CS₁₈, 5, 1, 0; 1999 CC₁₉, 3, 1, 0; 1999 CF₂₀, 4, 1, 0; 1999 CO₂₄, 4, 1, 0; 1999 CY₂₅, 3, 1, 0; 1999 CZ₂₇, 27, 6, 197; 1999 CC₃₂, 4, 1, 0; 1999 CR₃₅, 9, 2, 30; 1999 CH₃₇, 4, 1, 0; 1999 CP₃₉, 21, 4, 33; 1999 CT₄₀, 4, 1, 0; 1999 CV₄₀, 10, 2, 23; 1999 CE₄₇, 4, 1, 0; 1999 CV₄₈, 14, 3, 31; 1999 CJ₅₀, 4, 1, 0; 1999 CQ₅₁, 14, 3, 34; 1999 CY₅₁, 4, 1, 0; 1999 CE₅₂, 4, 1, 0; 1999 CX₅₂, 34, 7, 195; 1999 CX₅₄, 4, 1, 0; 1999 CX₅₉, 4, 1, 0; 1999 CZ₆₁, 5, 1, 0; 1999 CG₆₂, 3, 1, 0; 1999 CJ₆₂, 4, 1, 0; 1999 CD₆₃, 3, 1, 0; 1999 CR₆₃, 4, 1, 0; 1999 CR₆₄, 2, 1, 0; 1999 CS₆₄, 5, 1, 0; 1999 CB₆₇, 4, 1, 0; 1999 CE₆₇, 5, 1, 0; 1999 CJ₆₇, 5, 1, 0; 1999 CW₆₇, 8, 2, 32; 1999 CL₆₉, 4, 1, 0; 1999 CR₇₀, 9, 2, 33; 1999 CH₇₂, 3, 1, 0; 1999 CQ₇₂, 18, 4, 64; 1999 CY₇₂, 4, 1, 0; 1999 CZ₇₄, 8, 2, 32; 1999 CE₇₅, 4, 1, 0; 1999 CW₇₇, 19, 4, 171; 1999 CJ₇₈, 3, 1, 0; 1999 CH₇₉, 8, 2, 2; 1999 CP₇₉, 9, 2, 30; 1999 CT₇₉, 4, 1, 0; 1999 CX₈₀, 17, 3, 34; 1999 CY₈₀, 14, 3, 34; 1999 CB₈₁, 4, 1, 0; 1999 CG₈₁, 6, 2, 135; 1999 CV₈₁, 15, 3, 34; 1999 CC₈₂, 5, 1, 0; 1999 CO₈₄, 3, 1, 0; 1999 CX₈₄, 9, 2, 32; 1999 CX₈₅, 4, 1, 0; 1999 CO₉₉, 13, 3, 26; 1999 CX₁₀₁, 8, 2, 110; 1999 CZ₁₀₂, 14, 3, 110; 1999 CO₁₁₆, 4, 1, 0; 1999 CM₁₁₇, 4, 1, 0; 1999 CN₁₁₇, 5, 1, 0; 1999 CK₁₁₈, 5, 1, 0; 1999 CV₁₂₁, 28, 5, 147; 1999 CN₁₂₅, 5, 2, 32; 1999 CR₁₂₅, 22, 5, 195; 1999 CM₁₂₆, 25, 5, 195; 1999 CO₁₂₇, 9, 2, 3; 1999 CR₁₂₈, 5, 1, 0; 1999 CE₁₅₀, 5, 1, 0; 1999 DY₁₁, 3, 9; 1999 DZ₁₀, 2, 1; 1999 DM₁, 18, 4, 31; 1999 DP₁, 10, 2, 30; 1999 DC₂, 20, 3, 31; 1999 DK₂, 5, 1, 0; 1999 DO₂, 14, 3, 58; 1999 DS₂, 4, 1, 0; 1999 DZ₂, 5, 1, 0; 1999 DA₃, 5, 1, 0; 1999 DB₃, 5, 1, 0; 1999 DC₃, 9, 2, 57; 1999 DH₃, 29, 6, 32; 1999 DM₃, 10, 2, 3; 1999 DQ₃, 10, 2, 30; 1999 DR₃, 20, 4, 56; 1999 DS₃, 14, 3, 30; 1999 DV₃, 10, 2, 1; 1999 DH₄, 20, 4, 27; 1999 DL₄, 5, 1, 0; 1999 DC₆, 19, 4, 169; 1999 DN₆, 33, 7, 76; 1999 DP₆, 24, 5, 31; 1999 DQ₆, 35, 7, 80; 1999 DR₆, 24, 5, 31; 1999 DS₆, 30, 6, 33; 1999 DT₆, 34, 7, 33; 1999 DU₆, 30, 6, 33; 1999 DV₆, 29, 6, 36; 1999 DY₆, 29, 6, 36; 1999 DZ₆, 30, 6, 35; 1999 DV₇, 4, 1, 0; 1999 EH₁₀, 2, 1; 1999 EJ₁₀, 2, 1; 1999 EK₈, 2, 1; 1999 EL₁₄, 3, 57; 1999 EJ₂₀, 4, 64; 1999 EC₃, 8, 2, 1; 1999 EE₃, 5, 1, 0; 1999 EF₃, 5, 1, 0; 1999 EK₃, 14, 3, 57; 1999 EM₃, 4, 1, 0; 1999 EP₃, 23, 5, 56; 1999 ET₃, 13, 3, 35; 1999 EP₄, 15, 3, 35; 1999 EQ₄, 15, 3, 2; 1999 ER₄, 10, 2, 1; 1999 ET₄, 4, 1, 0; 1999 EV₄, 5, 1, 0; 1999 EY₄, 3, 1, 0; 1999 EZ₄, 5, 1, 0; 1999 EG₅, 5, 1, 0; 1999 EH₅, 12, 3, 22; 1999 EJ₅, 14, 3, 22; 1999 EL₅, 9, 2, 24; 1999 EO₅, 5, 1, 0; 1999 EX₅, 4, 1, 0; 1999 EZ₅, 4, 1, 0; 1999 EB₆, 10, 2, 8; 1999 ED₆, 5, 1, 0; 1999 EE₆, 4, 1, 0; 1999 EG₆, 5, 1, 0; 1999 EC₈, 30, 6, 83; 1999 EE₁₁, 4, 1, 0; 1999 FD₅, 1, 0; 1999 FH₁₄, 3, 57; 1999 FK₄, 4, 1, 0; 1999 FN₁₄, 3, 62; 1999 FO₁₄, 3, 8; 1999 FP₁₄, 14, 3, 8; 1999 FU₁₄, 3, 8; 1999 FX₁₀, 2, 8; 1999 FB₁, 8, 2, 5; 1999 FE₁, 12, 3, 8; 1999 FF₁, 8, 2, 7; 1999 FH₁, 5, 1, 0; 1999 FZ₂, 10, 2, 5; 1999 FB₃, 4, 1, 0; 1999 FG₃, 15, 3, 9; 1999 FH₃, 4, 1, 0; 1999 FS₃, 10, 2, 56; 1999 FV₃, 4, 1, 0; 1999 FF₄, 4, 1, 0; 1999 FS₄, 10, 2, 5; 1999 FW₄, 13, 3, 8; 1999 FZ₄, 8, 2, 5; 1999 FS₅, 5, 1, 0; 1999 FT₅, 10, 2, 1; 1999 FN₆, 8, 2, 5; 1999 FY₆, 10, 2, 8; 1999 FZ₆, 14, 3, 35; 1999 FA₇, 9, 2, 5; 1999 FC₇, 9, 2, 8; 1999 FD₇, 13, 3, 36; 1999 FE₇, 5, 1, 0; 1999 FS₇, 9, 2, 6; 1999 FY₇, 4, 1, 0; 1999 FL₈, 5, 1, 0; 1999 FS₈, 9, 2, 24; 1999 FY₈, 5, 1, 0;

1999 FZ₈, 10, 2, 6; 1999 FA₉, 5, 1, 0; 1999 FB₉, 5, 1, 0; 1999 FF₉, 14, 3, 57; 1999 FG₉, 14, 3, 57; 1999 FJ₉, 4, 1, 0; 1999 FK₉, 5, 1, 0; 1999 FL₉, 10, 2, 6; 1999 FM₉, 20, 3, 63; 1999 FN₉, 9, 2, 57; 1999 FO₉, 17, 4, 48; 1999 FP₉, 14, 3, 23; 1999 FQ₉, 5, 1, 0; 1999 FR₉, 10, 2, 6; 1999 FS₉, 10, 2, 6; 1999 FU₉, 5, 1, 0; 1999 FX₉, 9, 2, 6; 1999 FY₉, 5, 1, 0; 1999 FA₁₀, 13, 3, 112; 1999 FC₁₀, 5, 1, 0; 1999 FD₁₀, 9, 2, 3; 1999 FE₁₀, 10, 2, 6; 1999 FF₁₀, 9, 2, 8; 1999 FG₁₀, 5, 1, 0; 1999 FJ₁₀, 4, 1, 0; 1999 FL₁₀, 8, 2, 1; 1999 FM₁₀, 13, 3, 3; 1999 FP₁₀, 9, 2, 5; 1999 FV₁₀, 5, 1, 0; 1999 FV₁₂, 22, 5, 533; 1999 FW₁₂, 9, 2, 5; 1999 FO₁₄, 9, 2, 8; 1999 FK₁₆, 5, 1, 0; 1999 FJ₁₇, 10, 2, 3; 1999 FK₁₇, 9, 2, 5; 1999 FP₁₇, 10, 2, 5; 1999 FU₁₇, 9, 2, 5; 1999 FZ₁₇, 9, 2, 5; 1999 FA₁₈, 8, 2, 5; 1999 FE₁₈, 20, 4, 35; 1999 FF₁₈, 20, 4, 35; 1999 FL₁₈, 12, 3, 9; 1999 FM₁₈, 10, 3, 3; 1999 FN₁₈, 10, 3, 3; 1999 FO₁₈, 13, 3, 9; 1999 FQ₁₈, 9, 2, 1; 1999 FR₁₈, 14, 3, 3; 1999 FT₁₈, 18, 4, 9; 1999 FV₁₈, 12, 3, 9; 1999 FW₁₈, 13, 3, 9; 1999 FX₁₈, 5, 1, 0; 1999 FY₁₈, 13, 3, 55; 1999 FB₁₉, 9, 2, 1; 1999 FD₁₉, 23, 5, 533; 1999 FE₁₉, 24, 5, 113; 1999 FF₁₉, 17, 4, 57; 1999 FG₁₉, 28, 6, 167; 1999 FJ₁₉, 15, 3, 35; 1999 FK₁₉, 14, 3, 64; 1999 FM₁₉, 10, 2, 5; 1999 FO₁₉, 8, 2, 1; 1999 FU₁₉, 5, 1, 0; 1999 FV₁₉, 13, 3, 3; 1999 FX₂₀, 5, 1, 0; 1999 FY₂₀, 10, 2, 5; 1999 FE₂₁, 30, 6, 34; 1999 FN₂₁, 15, 3, 28; 1999 FO₂₁, 13, 3, 4; 1999 FP₂₁, 5, 1, 0; 1999 FR₂₁, 5, 1, 0; 1999 FT₂₁, 4, 1, 0; 1999 FO₂₃, 19, 4, 551; 1999 FH₂₄, 15, 3, 9; 1999 FL₂₄, 10, 2, 1; 1999 FM₂₄, 15, 3, 55; 1999 FN₂₄, 5, 1, 0; 1999 FU₂₄, 5, 1, 0; 1999 FZ₂₄, 5, 1, 0; 1999 FH₂₅, 13, 2, 25; 1999 FL₂₅, 14, 3, 58; 1999 FN₂₅, 5, 1, 0; 1999 FO₂₅, 5, 1, 0; 1999 FP₂₅, 5, 1, 0; 1999 FU₂₅, 9, 2, 494; 1999 FV₂₅, 12, 3, 9; 1999 FA₂₆, 13, 3, 9; 1999 FB₂₆, 21, 5, 517; 1999 FC₂₆, 18, 4, 31; 1999 FJ₂₆, 14, 3, 55; 1999 FM₂₆, 13, 3, 55; 1999 FQ₂₆, 5, 1, 0; 1999 FU₂₆, 5, 1, 0; 1999 FV₂₆, 9, 2, 57; 1999 FZ₂₆, 4, 1, 0; 1999 FG₂₇, 5, 1, 0; 1999 FJ₂₇, 5, 1, 0; 1999 FM₂₇, 5, 1, 0; 1999 FN₂₇, 5, 1, 0; 1999 FS₂₇, 4, 1, 0; 1999 FT₂₇, 5, 1, 0; 1999 FU₂₇, 9, 2, 1; 1999 FV₂₇, 5, 1, 0; 1999 FX₂₇, 10, 2, 1; 1999 FP₂₈, 10, 2, 5; 1999 FQ₂₈, 10, 2, 5; 1999 FS₂₈, 20, 4, 9; 1999 FU₂₈, 14, 3, 57; 1999 FV₂₈, 9, 2, 57; 1999 FW₂₈, 12, 3, 9; 1999 FX₂₈, 9, 2, 5; 1999 FY₂₈, 10, 2, 5; 1999 FA₂₉, 5, 1, 0; 1999 FB₂₉, 10, 2, 5; 1999 FE₂₉, 5, 1, 0; 1999 FJ₂₉, 10, 2, 5; 1999 FL₂₉, 10, 2, 5; 1999 FM₂₉, 16, 3, 42; 1999 FR₂₉, 27, 5, 530; 1999 FW₂₉, 10, 2, 57; 1999 FY₂₉, 10, 2, 5; 1999 FZ₂₉, 9, 2, 5; 1999 FA₃₀, 10, 2, 5; 1999 FB₃₀, 5, 1, 0; 1999 FC₃₀, 9, 2, 57; 1999 FD₃₀, 10, 2, 5; 1999 FE₃₀, 10, 2, 5; 1999 FG₃₀, 10, 2, 5; 1999 FH₃₀, 10, 2, 5; 1999 FJ₃₀, 14, 3, 62; 1999 FK₃₀, 10, 2, 5; 1999 FN₃₀, 14, 3, 8; 1999 FO₃₀, 10, 2, 5; 1999 FP₃₀, 13, 3, 8; 1999 FQ₃₀, 4, 1, 0; 1999 FS₃₀, 14, 3, 8; 1999 FU₃₀, 14, 3, 8; 1999 FV₃₀, 14, 3, 8; 1999 FW₃₀, 10, 2, 5; 1999 FX₃₀, 9, 2, 5; 1999 FZ₃₀, 15, 3, 525; 1999 FB₃₁, 10, 2, 5; 1999 FC₃₁, 10, 2, 5; 1999 FD₃₁, 10, 2, 5; 1999 FE₃₁, 10, 2, 5; 1999 FF₃₁, 5, 1, 0; 1999 FG₃₁, 5, 1, 0; 1999 FJ₃₁, 19, 4, 64; 1999 FL₃₁, 18, 4, 62; 1999 FM₃₁, 15, 3, 9; 1999 FN₃₁, 9, 2, 5; 1999 FO₃₁, 19, 4, 38; 1999 FP₃₁, 10, 2, 5; 1999 FT₃₁, 19, 4, 528; 1999 FU₃₁, 5, 1, 0; 1999 FV₃₁, 22, 5, 62; 1999 FA₃₂, 10, 2, 30; 1999 FC₃₂, 5, 1, 0; 1999 FD₃₂, 9, 2, 57; 1999 FF₃₂, 13, 3, 8; 1999 FH₃₂, 36, 5, 51; 1999 FJ₃₂, 13, 3, 8; 1999 FK₃₂, 10, 2, 38; 1999 FL₃₂, 9, 2, 3; 1999 FN₃₂, 5, 1, 0; 1999 FO₃₂, 5, 1, 0; 1999 FP₃₂, 9, 2, 1; 1999 FQ₃₂, 15, 3, 9; 1999 FR₃₂, 12, 3, 43; 1999 FS₃₂, 9, 2, 5; 1999 FT₃₂, 30, 6, 37; 1999 FU₃₂, 33, 7, 37; 1999 FV₃₂, 5, 1, 0; 1999 FX₃₂, 20, 4, 478; 1999 FK₃₃, 5, 1, 0; 1999 FL₃₃, 5, 1, 0; 1999 FQ₃₃, 5, 1, 0; 1999 FU₃₃, 5, 1, 0; 1999 FV₃₃, 5, 1, 0; 1999 FW₃₃, 4, 1, 0; 1999 FA₃₄, 9, 2, 5; 1999 FC₃₄, 12, 3, 8; 1999 FD₃₄, 13, 3, 9; 1999 FE₃₄, 9, 2, 5; 1999 FF₃₄, 10, 2, 5; 1999 FG₃₄, 10, 2, 5; 1999 FK₃₄, 10, 2, 5; 1999 FL₃₄, 9, 2, 57; 1999 FN₃₄, 10, 2, 5; 1999 FO₃₄, 9, 2, 5; 1999 FR₃₄, 14, 3, 8; 1999 FS₃₄, 19, 4, 29; 1999 FT₃₄, 13, 3, 8; 1999 FU₃₄, 10, 2, 5; 1999 FV₃₄, 9, 2, 5; 1999 FZ₃₄, 19, 4,

1999 GL₇, 5, 1, 0; 1999 GM₇, 5, 1, 0; 1999 GN₇, 5, 1, 0; 1999 GO₇, 4, 1, 0; 1999 GQ₇, 4, 1, 0; 1999 GR₇, 5, 1, 0; 1999 GS₇, 5, 1, 0; 1999 GX₇, 13, 3, 63; 1999 GB₈, 10, 2, 9; 1999 GC₈, 17, 4, 51;
 1999 GD₈, 5, 1, 0; 1999 GE₈, 5, 1, 0; 1999 GF₈, 8, 2, 1; 1999 GH₈, 9, 2, 8; 1999 GJ₈, 9, 2, 1; 1999 GK₈, 4, 1, 0; 1999 GL₈, 13, 3, 8; 1999 GM₈, 4, 1, 0; 1999 GN₈, 24, 5, 35; 1999 GO₈, 28, 6, 37; 1999 GP₈, 18, 4, 35; 1999 GQ₈, 32, 7, 536; 1999 GR₈, 25, 6, 37; 1999 GS₈, 5, 1, 0; 1999 GT₈, 52, 7, 38; 1999 GU₈, 28, 6, 37; 1999 GV₈, 29, 6, 37; 1999 GW₈, 18, 4, 35; 1999 GX₈, 22, 4, 35; 1999 GY₈, 23, 5, 37; 1999 GZ₈, 26, 6, 37; 1999 GA₉, 29, 6, 37; 1999 GB₉, 39, 8, 37; 1999 GC₉, 28, 6, 37; 1999 GD₉, 25, 5, 37; 1999 GE₉, 29, 6, 37; 1999 GF₉, 24, 5, 35; 1999 GG₉, 26, 6, 37; 1999 GH₉, 10, 2, 1; 1999 GJ₉, 9, 2, 1; 1999 GK₉, 9, 2, 1; 1999 GL₉, 9, 2, 1; 1999 GM₉, 9, 2, 1; 1999 GN₉, 10, 2, 1; 1999 GO₉, 19, 4, 9; 1999 GP₉, 5, 1, 0; 1999 GQ₉, 5, 1, 0; 1999 GS₉, 24, 5, 57; 1999 GT₉, 5, 1, 0; 1999 GU₉, 5, 1, 0; 1999 GV₉, 10, 2, 30; 1999 GJ₁₀, 4, 1, 0; 1999 GQ₁₀, 5, 1, 0; 1999 GR₁₀, 5, 1, 0; 1999 GS₁₀, 5, 1, 0; 1999 GV₁₀, 5, 1, 0; 1999 GY₁₀, 9, 2, 5; 1999 GZ₁₀, 4, 1, 0; 1999 GA₁₁, 4, 1, 0; 1999 GB₁₁, 9, 2, 6; 1999 GC₁₁, 9, 2, 6; 1999 GX₁₁, 8, 2, 1; 1999 GT₁₂, 4, 1, 0; 1999 GC₁₃, 25, 5, 57; 1999 GG₁₃, 5, 1, 0; 1999 GS₁₃, 23, 5, 31; 1999 GA₁₄, 18, 2, 3; 1999 GD₁₄, 5, 1, 0; 1999 GF₁₄, 20, 4, 31; 1999 GL₁₄, 4, 1, 0; 1999 GS₁₄, 9, 2, 1; 1999 GY₁₄, 4, 1, 0; 1999 GE₁₅, 24, 5, 57; 1999 GQ₁₅, 24, 5, 34; 1999 GZ₁₅, 8, 2, 5; 1999 GA₁₆, 8, 2, 5; 1999 GB₁₆, 8, 2, 5; 1999 GC₁₆, 10, 2, 5; 1999 GD₁₆, 10, 2, 5; 1999 GE₁₆, 10, 2, 5; 1999 GF₁₆, 10, 2, 5; 1999 GG₁₆, 9, 2, 5; 1999 GL₁₆, 13, 3, 36; 1999 GM₁₆, 5, 1, 0; 1999 GN₁₆, 10, 2, 3; 1999 GO₁₆, 5, 1, 0; 1999 GP₁₆, 19, 4, 57; 1999 GR₁₆, 5, 1, 0; 1999 GS₁₆, 10, 2, 6; 1999 GT₁₆, 16, 4, 492; 1999 GU₁₆, 19, 4, 57; 1999 GV₁₆, 10, 2, 56; 1999 GW₁₆, 5, 1, 0; 1999 GX₁₆, 10, 2, 45; 1999 GY₁₆, 9, 2, 45; 1999 GZ₁₆, 5, 1, 0; 1999 GA₁₇, 15, 3, 57; 1999 GB₁₇, 30, 6, 108; 1999 GC₁₇, 9, 2, 56; 1999 GD₁₇, 5, 1, 0; 1999 GE₁₇, 5, 1, 0; 1999 GF₁₇, 5, 1, 0; 1999 GH₁₇, 5, 1, 0; 1999 GJ₁₇, 5, 1, 0; 1999 GK₁₇, 18, 4, 108; 1999 GL₁₇, 9, 2, 58; 1999 GM₁₇, 5, 1, 0; 1999 GN₁₇, 5, 1, 0; 1999 GP₁₇, 5, 1, 0; 1999 GQ₁₇, 5, 1, 0; 1999 GU₁₇, 5, 1, 0; 1999 GV₁₇, 5, 1, 0; 1999 GY₁₇, 5, 1, 0; 1999 GX₁₇, 5, 1, 0; 1999 GZ₁₇, 10, 2, 57; 1999 GA₁₈, 14, 3, 63; 1999 GD₁₈, 10, 2, 56; 1999 GE₁₈, 5, 1, 0; 1999 GF₁₈, 5, 1, 0; 1999 GH₁₈, 9, 2, 6; 1999 GJ₁₈, 5, 1, 0; 1999 GK₁₈, 4, 1, 0; 1999 GL₁₈, 9, 2, 25; 1999 GN₁₈, 5, 1, 0; 1999 GO₁₈, 5, 1, 0; 1999 GP₁₈, 10, 2, 56; 1999 GQ₁₈, 25, 5, 59; 1999 GR₁₈, 5, 1, 0; 1999 GT₁₈, 9, 2, 5; 1999 GU₁₈, 5, 1, 0; 1999 GV₁₈, 5, 1, 0; 1999 GX₁₈, 10, 2, 57; 1999 GY₁₈, 5, 1, 0; 1999 GZ₁₈, 5, 1, 0; 1999 GA₁₉, 5, 1, 0; 1999 GB₁₉, 8, 2, 59; 1999 GC₁₉, 9, 2, 56; 1999 GD₁₉, 5, 1, 0; 1999 GE₁₉, 5, 1, 0; 1999 GF₁₉, 5, 1, 0; 1999 GG₁₉, 5, 1, 0; 1999 GH₁₉, 10, 2, 5; 1999 GJ₁₉, 10, 2, 5; 1999 GK₁₉, 14, 3, 24; 1999 GL₁₉, 10, 2, 5; 1999 GM₁₉, 9, 2, 5; 1999 GN₁₉, 18, 4, 37; 1999 GO₁₉, 10, 2, 5; 1999 GP₁₉, 17, 4, 37; 1999 GQ₁₉, 9, 2, 33; 1999 GR₁₉, 14, 3, 57; 1999 GT₁₉, 5, 1, 0; 1999 GU₁₉, 5, 1, 0; 1999 GV₁₉, 5, 1, 0; 1999 GX₁₉, 28, 6, 38; 1999 GY₁₉, 14, 3, 31; 1999 GZ₁₉, 15, 3, 31; 1999 GA₂₀, 18, 4, 33; 1999 GB₂₀, 19, 4, 36; 1999 GC₂₀, 15, 3, 30; 1999 GD₂₀, 14, 3, 30; 1999 GE₂₀, 20, 4, 57; 1999 GJ₂₀, 17, 4, 33; 1999 GK₂₀, 14, 3, 31; 1999 GL₂₀, 18, 4, 33; 1999 GM₂₀, 14, 3, 31; 1999 GN₂₀, 20, 4, 35; 1999 GO₂₀, 14, 3, 31; 1999 GP₂₀, 19, 4, 39; 1999 GR₂₀, 8, 2, 30; 1999 GS₂₀, 20, 4, 35; 1999 GT₂₀, 20, 4, 35; 1999 GU₂₀, 5, 1, 0; 1999 GV₂₀, 20, 4, 35; 1999 GW₂₀, 15, 3, 31; 1999 GX₂₀, 30, 6, 59; 1999 GY₂₀, 5, 1, 0; 1999 GZ₂₀, 44, 5, 57; 1999 GA₂₁, 20, 4, 35; 1999 GB₂₁, 28, 5, 57; 1999 GD₂₁, 25, 5, 57; 1999 GE₂₁, 14, 3, 24; 1999 GF₂₁, 14, 3, 31; 1999 GG₂₁, 10, 2, 30; 1999 GJ₂₁, 5, 1, 0; 1999 GK₂₁, 39, 8, 82; 1999 GL₂₁, 10, 2, 6; 1999 GM₂₁, 29, 6, 37; 1999 GN₂₁, 25, 5, 7; 1999 GO₂₁, 35, 7, 39; 1999 GQ₂₁, 29, 6, 39; 1999 GR₂₁, 18, 4, 35; 1999 GS₂₁, 24, 5, 57; 1999 GT₂₁, 20, 4, 35; 1999 GV₂₁, 9, 2, 5; 1999 GW₂₁, 7, 2, 3; 1999 GX₂₁, 13, 2, 2; 1999 GY₂₁, 10, 2, 2; 1999 GZ₂₁, 15, 2, 2; 1999 GA₂₂, 20, 3, 5; 1999 GB₂₂, 9, 2, 3; 1999 GC₂₂, 9, 2, 6; 1999 GD₂₂, 10, 2, 6; 1999 GE₂₂, 9, 2, 6; 1999 GF₂₂, 10, 2, 6; 1999 GG₂₂, 9, 2, 6; 1999 GH₂₂, 8, 2, 6; 1999 GJ₂₂, 10, 2, 6; 1999 GK₂₂, 15, 3, 9; 1999 GL₂₂, 10, 2, 6; 1999 GM₂₂, 9, 2, 6; 1999 GN₂₂, 10, 2, 6; 1999 GO₂₂, 10, 2, 6; 1999 GP₂₂, 25, 6, 497; 1999 GQ₂₂, 8, 2, 6; 1999 GR₂₂, 10, 2, 6; 1999 GS₂₂, 8, 2, 6; 1999 GT₂₂, 9, 2, 6; 1999 GU₂₂, 9, 2, 6; 1999 GV₂₂, 8, 2, 6; 1999 GW₂₂, 9, 2, 6; 1999 GX₂₂, 7, 2, 6; 1999 GY₂₂, 9, 2, 6; 1999 GZ₂₂, 10, 2, 6; 1999 GA₂₃, 9, 2, 6; 1999 GB₂₃, 9, 2, 6; 1999 GC₂₃, 10, 2, 6; 1999 GD₂₃, 9, 2, 6; 1999 GE₂₃, 9, 2, 6; 1999 GF₂₃, 8, 2, 6; 1999 GH₂₃, 8, 2, 6; 1999 GJ₂₃, 9, 2, 6; 1999 GK₂₃, 8, 2, 6; 1999 GL₂₃, 7, 2, 6; 1999 GM₂₃, 18, 4, 9; 1999 GN₂₃, 17, 4, 9; 1999 GO₂₃, 8, 2, 6; 1999 GP₂₃, 30, 7, 167; 1999 GQ₂₃, 8, 2, 6; 1999 GR₂₃, 10, 2, 6; 1999 GS₂₃, 9, 2, 6; 1999 GT₂₃, 10, 2, 6; 1999 GU₂₃, 9, 2, 6; 1999 GV₂₃, 9, 2, 6; 1999 GW₂₃, 9, 2, 6; 1999 GX₂₃, 10, 2, 6; 1999 GY₂₃, 9, 2, 6; 1999 GZ₂₃, 9, 2, 6; 1999 GA₂₄, 8, 2, 6; 1999 GB₂₄, 9, 2, 6; 1999 GC₂₄, 10, 2, 6; 1999 GD₂₄, 31, 7, 169; 1999 GE₂₄, 22, 5, 63; 1999 GF₂₄, 9, 2, 6; 1999 GG₂₄, 33, 4, 48; 1999 GJ₂₄, 9, 2, 6; 1999 GK₂₄, 10, 2, 6; 1999 GL₂₄, 9, 2, 6; 1999 GM₂₄, 9, 2, 6; 1999 GN₂₄, 10, 2, 6; 1999 GO₂₄, 10, 2, 6; 1999 GP₂₄, 10, 2, 6; 1999 GQ₂₄, 9, 2, 6; 1999 GR₂₄, 9, 2, 6; 1999 GS₂₄, 10, 2, 6; 1999 GT₂₄, 9, 2, 6; 1999 GU₂₄, 9, 2, 6; 1999 GV₂₄, 25, 3, 9; 1999 GW₂₄, 18, 4, 9; 1999 GX₂₄, 13, 3, 9; 1999 GY₂₄, 10, 2, 6; 1999 GZ₂₄, 10, 2, 6; 1999 GA₂₅, 10, 2, 6; 1999 GB₂₅, 10, 2, 6; 1999 GC₂₅, 10, 2, 6; 1999 GD₂₅, 10, 2, 6; 1999 GE₂₅, 9, 2, 6; 1999 GF₂₅, 10, 2, 6; 1999 GG₂₅, 10, 2, 6; 1999 GH₂₅, 9, 2, 6; 1999 GJ₂₅, 8, 2, 6; 1999 GK₂₅, 9, 2, 6; 1999 GL₂₅, 9, 2, 6; 1999 GM₂₅, 9, 2, 6; 1999 GN₂₅, 10, 2, 6; 1999 GO₂₅, 8, 2, 6; 1999 GP₂₅, 10, 2, 6; 1999 GQ₂₅, 9, 2, 6; 1999 GR₂₅, 10, 2, 6; 1999 GS₂₅, 9, 2, 6; 1999 GT₂₅, 9, 2, 6; 1999 GU₂₅, 10, 2, 6; 1999 GV₂₅, 8, 2, 6;

6; 1999 GW₂₅, 9, 2, 6; 1999 GX₂₅, 15, 3, 8; 1999 GY₂₅, 10, 2, 5; 1999 GZ₂₅, 9, 2, 5; 1999 GA₂₆, 10, 2, 5; 1999 GB₂₆, 10, 2, 5; 1999 GC₂₆, 10, 2, 5; 1999 GD₂₆, 10, 2, 5; 1999 GE₂₆, 10, 2, 5; 1999 GF₂₆, 10, 2, 5; 1999 GH₂₆, 9, 2, 5; 1999 GJ₂₆, 9, 2, 5; 1999 GK₂₆, 10, 2, 5; 1999 GL₂₆, 9, 2, 5; 1999 GM₂₆, 10, 2, 5; 1999 GN₂₆, 10, 2, 5; 1999 GO₂₆, 10, 2, 5; 1999 GP₂₆, 10, 2, 5; 1999 GQ₂₆, 9, 2, 5; 1999 GR₂₆, 10, 2, 5; 1999 GS₂₆, 10, 2, 5; 1999 GT₂₆, 9, 2, 5; 1999 GU₂₆, 10, 2, 5; 1999 GV₂₆, 10, 2, 5; 1999 GW₂₆, 10, 2, 5; 1999 GX₂₆, 9, 2, 5; 1999 GY₂₆, 10, 2, 5; 1999 GZ₂₆, 10, 2, 5; 1999 GA₂₇, 10, 2, 5; 1999 GB₂₇, 10, 2, 5; 1999 GC₂₇, 10, 2, 5; 1999 GD₂₇, 9, 2, 5; 1999 GE₂₇, 10, 2, 5; 1999 GF₂₇, 9, 2, 5; 1999 GG₂₇, 9, 2, 5; 1999 GH₂₇, 10, 2, 5; 1999 GJ₂₇, 10, 2, 5; 1999 GK₂₇, 10, 2, 5; 1999 GL₂₇, 10, 2, 5; 1999 GM₂₇, 9, 2, 5; 1999 GN₂₇, 10, 2, 5; 1999 GO₂₇, 10, 2, 5; 1999 GP₂₇, 10, 2, 5; 1999 GQ₂₇, 9, 2, 5; 1999 GR₂₇, 10, 2, 5; 1999 GS₂₇, 9, 2, 5; 1999 GT₂₇, 10, 2, 5; 1999 GU₂₇, 10, 2, 5; 1999 GV₂₇, 10, 2, 5; 1999 GW₂₇, 10, 2, 5; 1999 GX₂₇, 10, 2, 5; 1999 GY₂₇, 10, 2, 5; 1999 GZ₂₇, 10, 2, 5; 1999 GA₂₈, 10, 2, 5; 1999 GB₂₈, 10, 2, 5; 1999 GC₂₈, 10, 2, 5; 1999 GD₂₈, 10, 2, 5; 1999 GE₂₈, 10, 2, 5; 1999 GF₂₈, 10, 2, 5; 1999 GG₂₈, 10, 2, 5; 1999 GH₂₈, 10, 2, 5; 1999 GJ₂₈, 10, 2, 5; 1999 GK₂₈, 9, 2, 5; 1999 GL₂₈, 10, 2, 5; 1999 GM₂₈, 10, 2, 5; 1999 GN₂₈, 10, 2, 5; 1999 GO₂₈, 10, 2, 5; 1999 GP₂₈, 10, 2, 5; 1999 GQ₂₈, 8, 2, 5; 1999 GR₂₈, 8, 2, 5; 1999 GS₂₈, 8, 2, 5; 1999 GT₂₈, 9, 2, 5; 1999 GU₂₈, 9, 2, 5; 1999 GV₂₈, 9, 2, 5; 1999 GW₂₈, 9, 2, 5; 1999 GX₂₈, 9, 2, 5; 1999 GY₂₈, 9, 2, 5; 1999 GZ₂₈, 9, 2, 5; 1999 GA₂₉, 9, 2, 5; 1999 GB₂₉, 8, 2, 5; 1999 GC₂₉, 9, 2, 5; 1999 GD₂₉, 8, 2, 5; 1999 GE₂₉, 9, 2, 5; 1999 GF₂₉, 9, 2, 5; 1999 GQ₂₉, 9, 2, 5; 1999 GH₂₉, 8, 2, 5; 1999 GJ₂₉, 9, 2, 5; 1999 GK₂₉, 9, 2, 5; 1999 GL₂₉, 9, 2, 5; 1999 GM₂₉, 9, 2, 5; 1999 GN₂₉, 9, 2, 5; 1999 GO₂₉, 9, 2, 5; 1999 GP₂₉, 9, 2, 5; 1999 GQ₂₉, 9, 2, 5; 1999 GR₂₉, 9, 2, 5; 1999 GS₂₉, 8, 2, 5; 1999 GT₂₉, 9, 2, 5; 1999 GU₂₉, 8, 2, 5; 1999 GV₂₉, 8, 2, 5; 1999 GW₂₉, 8, 2, 5; 1999 GX₂₉, 9, 2, 5; 1999 GY₂₉, 9, 2, 5; 1999 GZ₂₉, 9, 2, 5; 1999 GA₃₀, 9, 2, 5; 1999 GB₃₀, 9, 2, 5; 1999 GC₃₀, 9, 2, 5; 1999 GD₃₀, 9, 2, 5; 1999 GE₃₀, 15, 3, 8; 1999 GF₃₀, 10, 2, 5; 1999 GG₃₀, 9, 2, 5; 1999 GH₃₀, 9, 2, 5; 1999 GJ₃₀, 9, 2, 5; 1999 GK₃₀, 10, 2, 5; 1999 GL₃₀, 10, 2, 5; 1999 GM₃₀, 10, 2, 5; 1999 GN₃₀, 9, 2, 5; 1999 GO₃₀, 10, 2, 5; 1999 GP₃₀, 9, 2, 5; 1999 GQ₃₀, 10, 2, 5; 1999 GR₃₀, 10, 2, 5; 1999 GS₃₀, 10, 2, 5; 1999 GT₃₀, 10, 2, 5; 1999 GU₃₀, 9, 2, 5; 1999 GV₃₀, 10, 2, 5; 1999 GW₃₀, 10, 2, 5; 1999 GX₃₀, 9, 2, 5; 1999 GY₃₀, 10, 2, 5; 1999 GZ₃₀, 10, 2, 5; 1999 GA₃₁, 9, 2, 5; 1999 GB₃₁, 19, 4, 36; 1999 GC₃₁, 10, 2, 5; 1999 GD₃₁, 10, 2, 5; 1999 GE₃₁, 10, 2, 5; 1999 GF₃₁, 14, 3, 38; 1999 GG₃₁, 8, 2, 5; 1999 GH₃₁, 9, 2, 5; 1999 GJ₃₁, 9, 2, 5; 1999 GK₃₁, 23, 5, 38; 1999 GM₃₁, 9, 2, 5; 1999 GN₃₁, 17, 4, 36; 1999 GO₃₁, 8, 2, 5; 1999 GP₃₁, 8, 2, 5; 1999 GQ₃₁, 17, 4, 36; 1999 GR₃₁, 9, 2, 5; 1999 GS₃₁, 8, 2, 5; 1999 GT₃₁, 8, 2, 5; 1999 GU₃₁, 9, 2, 5; 1999 GV₃₁, 9, 2, 5; 1999 GW₃₁, 9, 2, 5; 1999 GX₃₁, 20, 5, 38; 1999 GY₃₁, 9, 2, 5; 1999 GZ₃₁, 9, 2, 5; 1999 GA₃₂, 18, 4, 36; 1999 GB₃₂, 22, 5, 36; 1999 GC₃₂, 8, 2, 5; 1999 GD₃₂, 8, 2, 5; 1999 GE₃₂, 12, 3, 36; 1999 GF₃₂, 25, 6, 530; 1999 GH₃₂, 12, 3, 36; 1999 GJ₃₂, 15, 4, 36; 1999 GK₃₂, 14, 3, 35; 1999 GL₃₂, 17, 4, 37; 1999 GM₃₂, 19, 4, 36; 1999 GN₃₂, 8, 2, 5; 1999 GO₃₂, 9, 2, 5; 1999 GP₃₂, 9, 2, 5; 1999 GQ₃₂, 14, 3, 4; 1999 GR₃₂, 8, 2, 2; 1999 GS₃₂, 8, 2, 2; 1999 GT₃₂, 9, 2, 2; 1999 GU₃₂, 10, 2, 2; 1999 GV₃₂, 17, 4, 37; 1999 GW₃₂, 10, 2, 4; 1999 GX₃₂, 9, 2, 4; 1999 GY₃₂, 10, 2, 4; 1999 GZ₃₂, 9, 2, 4; 1999 GA₃₃, 10, 2, 4; 1999 GB₃₃, 10, 2, 7; 1999 GC₃₃, 9, 2, 4; 1999 GD₃₃, 10, 2, 4; 1999 GE₃₃, 8, 2, 4; 1999 GF₃₃, 10, 2, 4; 1999 GG₃₃, 8, 2, 6; 1999 GH₃₃, 19, 4, 31; 1999 GJ₃₃, 10, 2, 4; 1999 GK₃₃, 8, 2, 4; 1999 GL₃₃, 23, 5, 31; 1999 GM₃₃, 35, 6, 32; 1999 GN₃₃, 10, 2, 6; 1999 GO₃₃, 15, 2, 6; 1999 GP₃₃, 9, 2, 6; 1999 GQ₃₃, 19, 4, 33; 1999 GR₃₃, 10, 2, 4; 1999 GS₃₃, 9, 2, 4; 1999 GT₃₃, 10, 2, 4; 1999 GU₃₃, 10, 2, 4; 1999 GV₃₃, 16, 4, 35; 1999 GW₃₃, 23, 5, 35; 1999 GX₃₃, 18, 4, 31; 1999 GY₃₃, 10, 2, 4; 1999 GZ₃₃, 9, 2, 4; 1999 GA₃₄, 20, 4, 31; 1999 GB₃₄, 9, 2, 8; 1999 GC₃₄, 13, 3, 9; 1999 GD₃₄, 8, 2, 8; 1999 GE₃₄, 14, 3, 9; 1999 GF₃₄, 14, 3, 9; 1999 GG₃₄, 8, 2, 8; 1999 GH₃₄, 14, 3, 9; 1999 GJ₃₄, 12, 3, 9; 1999 GK₃₄, 18, 4, 51; 1999 GL₃₄, 14, 3, 9; 1999 GM₃₄, 17, 4, 51; 1999 GN₃₄, 14, 3, 9; 1999 GO₃₄, 15, 3, 9; 1999 GP₃₄, 12, 3, 9; 1999 GQ₃₄, 13, 3, 9; 1999 GR₃₄, 8, 2, 8; 1999 GS₃₄, 13, 3, 9; 1999 GT₃₄, 12, 3, 9; 1999 GU

55; 1999 HL, 4, 1, 0; 1999 HM, 4, 1, 0; 1999 HO, 15, 3, 31; 1999 HP, 9, 2, 3; 1999 HQ, 22, 5, 34; 1999 HR, 19, 4, 9; 1999 HS, 29, 6, 36; 1999 HT, 27, 6, 55; 1999 HU, 29, 6, 35; 1999 HV, 19, 4, 29; 1999 HW, 18, 4, 35; 1999 HX, 43, 9, 60; 1999 HA₁, 3, 1, 0; 1999 HF₁, 30, 6, 32; 1999 HG₁, 19, 4, 55; 1999 HH₁, 15, 3, 8; 1999 HJ₁, 35, 7, 77; 1999 HK₁, 27, 6, 54; 1999 HL₁, 13, 3, 24; 1999 HN₁, 5, 1, 0; 1999 HQ₁, 9, 2, 3; 1999 HS₁, 27, 5, 37; 1999 HT₁, 14, 3, 5; 1999 HU₁, 10, 2, 5; 1999 HX₁, 28, 6, 28; 1999 HA₂, 5, 1, 0; 1999 HB₂, 11, 3, 28; 1999 HC₂, 5, 1, 0; 1999 HD₂, 18, 4, 35; 1999 HE₂, 24, 5, 35; 1999 HF₂, 14, 3, 9; 1999 HG₂, 24, 5, 33; 1999 HH₂, 10, 2, 57; 1999 HJ₂, 4, 1, 0; 1999 HK₂, 24, 5, 30; 1999 HL₂, 25, 5, 35; 1999 HM₂, 10, 2, 5; 1999 HN₂, 25, 5, 35; 1999 HO₂, 10, 2, 28; 1999 HP₂, 4, 1, 0; 1999 HQ₂, 14, 3, 28; 1999 HR₂, 9, 2, 57; 1999 HS₂, 5, 1, 0; 1999 HU₂, 29, 6, 63; 1999 HV₂, 15, 3, 31; 1999 HW₂, 10, 2, 2; 1999 HX₂, 10, 2, 4; 1999 HY₂, 15, 3, 5; 1999 HA₃, 17, 4, 33; 1999 HB₃, 40, 8, 35; 1999 HD₃, 9, 2, 33; 1999 HE₃, 23, 5, 33; 1999 HF₃, 29, 6, 36; 1999 HG₃, 18, 4, 57; 1999 HH₃, 24, 5, 54; 1999 HK₃, 9, 2, 8; 1999 HL₃, 5, 1, 0; 1999 HN₃, 5, 1, 0; 1999 HP₃, 5, 1, 0; 1999 HU₃, 5, 1, 0; 1999 HV₃, 14, 3, 9; 1999 HW₃, 4, 1, 0; 1999 HX₃, 7, 2, 5; 1999 HO₃, 7, 2, 3; 1999 HP₄, 10, 2, 5; 1999 HR₄, 7, 2, 1; 1999 HX₄, 4, 1, 0; 1999 HE₅, 8, 2, 5; 1999 HJ₅, 26, 6, 530; 1999 HP₅, 14, 3, 36; 1999 HR₅, 11, 3, 31; 1999 HX₅, 12, 3, 31; 1999 HP₆, 5, 1, 0; 1999 HW₆, 43, 9, 566; 1999 HG₇, 18, 4, 32; 1999 HJ₇, 19, 4, 9; 1999 HP₇, 21, 5, 33; 1999 HS₇, 25, 5, 33; 1999 HX₇, 14, 3, 8; 1999 HY₇, 22, 5, 37; 1999 HZ₇, 21, 5, 33; 1999 HC₈, 9, 2, 6; 1999 HD₈, 13, 3, 8; 1999 HF₈, 27, 6, 167; 1999 HG₈, 10, 2, 1; 1999 HH₈, 20, 5, 113; 1999 HJ₈, 13, 3, 9; 1999 HL₈, 15, 3, 9; 1999 HM₈, 25, 5, 167; 1999 HN₈, 10, 2, 1; 1999 HO₈, 9, 2, 1; 1999 HP₈, 23, 5, 56; 1999 HQ₈, 9, 2, 3; 1999 HR₈, 5, 1, 0; 1999 HS₈, 5, 1, 0; 1999 HT₈, 5, 1, 0; 1999 HU₈, 9, 2, 8; 1999 HV₈, 13, 3, 11; 1999 HW₈, 5, 1, 0; 1999 HX₈, 14, 3, 11; 1999 HZ₈, 14, 3, 11; 1999 HZ₈, 13, 3, 8; 1999 HB₉, 17, 3, 11; 1999 HC₉, 14, 3, 11; 1999 HD₉, 16, 4, 46; 1999 HE₉, 8, 2, 8; 1999 HG₉, 14, 3, 8; 1999 HH₉, 5, 1, 0; 1999 HJ₉, 4, 1, 0; 1999 HK₉, 13, 3, 35; 1999 HL₉, 18, 4, 35; 1999 HM₉, 5, 1, 0; 1999 HN₉, 4, 1, 0; 1999 HP₉, 17, 4, 21; 1999 HQ₉, 17, 4, 48; 1999 HR₉, 4, 1, 0; 1999 HS₉, 14, 3, 33; 1999 HT₉, 14, 3, 35; 1999 HU₉, 5, 1, 0; 1999 HV₉, 5, 1, 0; 1999 HW₉, 5, 1, 0; 1999 HX₉, 12, 3, 28; 1999 HY₉, 4, 1, 0; 1999 HZ₉, 20, 5, 36; 1999 HA₁₀, 4, 1, 0; 1999 HB₁₀, 4, 1, 0; 1999 HC₁₀, 5, 1, 0; 1999 HE₁₀, 4, 1, 0; 1999 HJ₁₀, 14, 3, 28; 1999 HL₁₀, 13, 3, 28; 1999 HM₁₀, 20, 4, 49; 1999 HN₁₀, 15, 3, 28; 1999 HO₁₀, 5, 1, 0; 1999 HP₁₀, 9, 2, 8; 1999 HR₁₀, 9, 2, 6; 1999 HT₁₀, 19, 4, 29; 1999 HU₁₀, 5, 1, 0; 1999 HV₁₀, 18, 4, 55; 1999 HW₁₀, 5, 1, 0; 1999 HX₁₀, 15, 3, 28; 1999 HZ₁₀, 14, 3, 28; 1999 HA₁₁, 8, 2, 3; 1999 HB₁₁, 5, 1, 0; 1999 HC₁₁, 14, 3, 28; 1999 HF₁₁, 5, 1, 0; 1999 HG₁₁, 9, 2, 3; 1999 HH₁₁, 5, 1, 0; 1999 HJ₁₁, 4, 1, 0; 1999 HL₁₁, 5, 1, 0; 1999 HM₁₁, 8, 2, 8; 1999 HO₁₁, 5, 1, 0; 1999 HQ₁₁, 30, 6, 33; 1999 JA, 10, 2, 5; 1999 JB, 13, 3, 22; 1999 JD, 10, 2, 60; 1999 JE *, 10, 2, 1; 1999 JF *, 15, 3, 8; 1999 JG *, 10, 2, 1; 1999 JH *, 9, 2, 1; 1999 JJ *, 9, 2, 1; 1999 JK, 34, 7, 55; 1999 JL *, 7, 2, 1; 1999 JM, 23, 5, 33; 1999 JN, 20, 4, 8; 1999 JO, 28, 6, 30; 1999 JP, 25, 6, 34; 1999 JQ, 8, 2, 6; 1999 JR, 19, 4, 31; 1999 JS, 28, 6, 33; 1999 JT, 24, 5, 33; 1999 JU, 24, 5, 80; 1999 JW, 14, 3, 31; 1999 JX, 18, 4, 31; 1999 JY *, 10, 2, 1; 1999 JZ *, 40, 8, 178; 1999 JA₁ *, 8, 2, 1; 1999 JB₁ *, 10, 2, 1; 1999 JC₁, 29, 4, 10; 1999 JD₁, 12, 3, 38; 1999 JE₁, 10, 2, 5; 1999 JF₁, 8, 2, 5; 1999 JG₁, 8, 2, 5; 1999 JH₁, 9, 2, 5; 1999 JM₁, 13, 3, 62; 1999 JP₁, 14, 3, 35; 1999 JQ₁, 14, 3, 35; 1999 JR₁, 8, 2, 5; 1999 JS₁, 12, 3, 35; 1999 JT₁, 18, 4, 36; 1999 JU₁, 10, 2, 26; 1999 JV₁, 9, 2, 31; 1999 JW₁, 13, 3, 36; 1999 JX₁, 4, 1, 0; 1999 JZ₁, 9, 2, 31; 1999 JA₂, 4, 1, 0; 1999 JC₂, 5, 1, 0; 1999 JD₂, 5, 1, 0; 1999 JE₂, 4, 1, 0; 1999 JF₂, 4, 1, 0; 1999 JG₂, 5, 1, 0; 1999 JH₂, 10, 2, 5; 1999 JI₂, 13, 3, 530; 1999 JN₂, 9, 2, 4; 1999 JO₂, 5, 1, 0; 1999 JQ₂, 5, 1, 0; 1999 JR₂, 30, 6, 36; 1999 JT₂, 19, 4, 28; 1999 JU₂, 9, 2, 5; 1999 JV₂, 47, 9, 115; 1999 JW₂, 38, 7, 33; 1999 JZ₂, 23, 5, 37; 1999 JC₃, 30, 6, 36; 1999 JD₃, 30, 6, 80; 1999 JF₃, 9, 2, 5; 1999 JG₃, 28, 6, 29; 1999 JH₃, 64, 11, 60; 1999 JJ₃, 58, 10, 33; 1999 JK₃, 39, 8, 111; 1999 JL₃, 30, 6, 80; 1999 JM₃ *, 10, 2, 2; 1999 JN₃ *, 8, 2, 1; 1999 JO₃ *, 9, 2, 1; 1999 JP₃ *, 10, 2, 2; 1999 JQ₃ *, 8, 2, 1; 1999 JR₃ *, 59, 12, 75; 1999 JS₃ *, 24, 5, 35; 1999 JT₃ *, 45, 8, 59; 1999 JU₃ *, 20, 3, 8; 1999 JV₃ *, 40, 6, 31; 1999 JW₃ *, 52, 9, 34; 1999 JX₃, 24, 5, 33; 1999 JY₃, 23, 5, 36; 1999 JA₄, 27, 6, 34; 1999 JB₄ *, 10, 2, 3; 1999 JC₄ *, 35, 7, 54; 1999 JD₄ *, 15, 3, 8; 1999 JE₄ *, 10, 2, 3; 1999 JF₄ *, 7, 2, 3; 1999 JG₄ *, 19, 4, 9; 1999 JH₄ *, 13, 3, 9; 1999 JI₄ *, 30, 6, 49; 1999 JK₄ *, 13, 3, 8; 1999 JL₄ *, 9, 2, 3; 1999 JM₄ *, 13, 3, 8; 1999 JN₄ *, 7, 2, 3; 1999 JO₄ *, 24, 5, 30; 1999 JP₄ *, 9, 2, 3; 1999 JQ₄ *, 12, 3, 8; 1999 JR₄ *, 9, 2, 3; 1999 JS₄ *, 13, 3, 9; 1999 JT₄ *, 15, 3, 8; 1999 JU₄ *, 43, 7, 60; 1999 JV₄ *, 22, 5, 35; 1999 JW₄ *, 31, 7, 52; 1999 JX₄ *, 13, 3, 8; 1999 JY₄ *, 15, 3, 8; 1999 JZ₄ *, 8, 2, 3; 1999 JA₅ *, 18, 4, 35; 1999 JB₅ *, 9, 2, 3; 1999 JC₅ *, 12, 3, 8; 1999 JD₅ *, 11, 3, 8; 1999 JE₅ *, 18, 4, 36; 1999 JF₅ *, 8, 2, 3; 1999 JG₅ *, 23, 5, 9; 1999 JH₅ *, 14, 3, 8; 1999 JI₅ *, 34, 7, 35; 1999 JK₅ *, 23, 5, 9; 1999 JL₅ *, 24, 5, 36; 1999 JM₅ *, 14, 3, 8; 1999 JN₅ *, 23, 5, 9; 1999 JO₅ *, 37, 8, 36; 1999 JP₅ *, 7, 2, 3; 1999 JQ₅ *, 9, 2, 3; 1999 JR₅ *, 14, 3, 8; 1999 JS₅ *, 26, 6, 36; 1999 JT₅ *, 30, 6, 36; 1999 JU₅ *, 27, 6, 37; 1999 JV₅ *, 15, 4, 6; 1999 JW₅ *, 26, 5, 55; 1999 JX₅ *, 25, 4, 31; 1999 JY₅ *, 45, 8, 33; 1999 JZ₅, 33, 7, 35; 1999 JA₆, 18, 4, 30; 1999 JB₆, 5, 1, 0; 1999 JC₆ *, 18, 5, 9; 1999 JD₆, 45, 8, 30; 1999 JE₆, 34, 7, 33; 1999 JF₆, 57, 9, 33; 1999 JG₆, 30, 6, 35; 1999 JH₆ *, 26, 5, 31; 1999 JI₆ *, 29, 6, 108; 1999 JK₆ *, 30, 6, 80; 1999 JL₆ *, 37, 8, 80; 1999 JM₆ *, 33, 7, 55; 1999 JN₆ *, 8, 2, 2; 1999 JO₆ *, 31, 7, 33; 1999 JR₆ *, 8, 2, 4; 1999 JS₆ *, 39, 5, 5; 1999 JT₆ *, 78, 9, 114; 1999 JU₆ *, 59, 7, 29; 1999 JV₆ *, 40, 3, 2; 1999 JW₆ *, 42, 4, 26; 1999 JX₆, 18, 4, 35; 1999 JY₆, 5, 1, 0; 1999 JZ₆, 19, 4, 29; 1999 JA₇, 23, 5, 57; 1999 JB₇, 14, 3, 35; 1999 JC₇, 10, 2, 5; 1999 JD₇, 4, 1, 0; 1999 JE₇, 9, 2, 5; 1999 JF₇, 49, 10, 556; 1999 JG₇, 4, 1, 0; 1999 JH₇, 14, 3, 35; 1999 JI₇, 8, 2, 5; 1999 JM₇, 18, 4, 35; 1999 JN₇, 5, 1, 0; 1999 JO₇, 4, 1, 0; 1999 JP₇, 8, 2, 5; 1999 JR₇,

13, 3, 35; 1999 JS₇, 18, 4, 33; 1999 JT₇, 39, 6, 36; 1999 JU₇, 27, 4, 33; 1999 JV₇, 25, 5, 36; 1999 JX₇, 9, 2, 8; 1999 JY₇, 18, 4, 36; 1999 JZ₇ *, 23, 5, 57; 1999 JA₈ *, 24, 5, 59; 1999 JB₈ *, 29, 6, 104; 1999 JC₈ *, 24, 5, 59; 1999 JD₈ *, 39, 8, 53; 1999 JE₈ *, 33, 7, 109; 1999 JF₈ *, 38, 8, 110; 1999 JG₈ *, 28, 6, 80; 1999 JH₈ *, 23, 5, 31; 1999 JI₈ *, 24, 5, 33; 1999 JK₈ *, 14, 3, 5; 1999 JL₈ *, 42, 8, 110; 1999 JM₈ *, 44, 9, 62; 1999 JN₈ *, 23, 3, 3; 1999 JO₈ *, 40, 6, 32; 1999 JP₈, 33, 7, 37; 1999 JQ₈, 8, 2, 25; 1999 JR₈, 8, 2, 33; 1999 JS₈, 29, 6, 33; 1999 JT₈, 19, 4, 27; 1999 JU₈, 34, 7, 529; 1999 JV₈, 54, 6, 33; 1999 JW₈, 70, 8, 29; 1999 JX₈, 13, 3, 9; 1999 JY₈, 27, 6, 30; 1999 JZ₈, 29, 6, 33; 1999 JA₉, 7, 2, 29; 1999 JB₉, 19, 4, 33; 1999 JC₉, 19, 4, 33; 1999 JD₉, 40, 6, 33; 1999 JF₉, 4, 1, 0; 1999 JG₉, 14, 3, 33; 1999 JH₉, 20, 4, 31; 1999 JI₉, 20, 4, 30; 1999 JN₉, 8, 2, 30; 1999 JQ₉, 10, 2, 31; 1999 JR₉, 15, 3, 31; 1999 JU₉, 15, 3, 33; 1999 JV₉, 8, 2, 4; 1999 JW₉, 8, 2, 4; 1999 JY₉, 15, 3, 33; 1999 JB₁₀, 9, 2, 24; 1999 JC₁₀, 10, 2, 5; 1999 JD₁₀, 24, 5, 33; 1999 JE₁₀, 13, 3, 35; 1999 JF₁₀, 20, 4, 33; 1999 JG₁₀, 27, 6, 57; 1999 JH₁₀, 19, 4, 35; 1999 JI₁₀, 28, 6, 57; 1999 JM₁₀, 11, 3, 31; 1999 JO₁₀, 9, 2, 5; 1999 JP₁₀, 10, 2, 5; 1999 JQ₁₀, 20, 4, 31; 1999 JS₁₀, 14, 3, 33; 1999 JV₁₀, 10, 2, 1; 1999 JY₁₀, 5, 1, 0; 1999 JZ₁₀ *, 19, 3, 3; 1999 JZ₁₀ *, 25, 3, 3; 1999 JA₁₁ *, 11, 3, 3; 1999 JB₁₁ *, 27, 3, 3; 1999 JC₁₁, 27, 6, 35; 1999 JD₁₁, 23, 5, 35; 1999 JE₁₁, 24, 5, 30; 1999 JF₁₁, 17, 4, 9; 1999 JG₁₁, 29, 6, 35; 1999 JH₁₁, 19, 4, 59; 1999 JI₁₁, 17, 4, 9; 1999 JL₁₁, 19, 4, 9; 1999 JM₁₁ *, 29, 5, 35; 1999 JO₁₁ *, 8, 2, 5; 1999 JP₁₁ *, 23, 5, 33; 1999 JQ₁₁ *, 22, 5, 33; 1999 JR₁₁ *, 9, 2, 5; 1999 JS₁₁ *, 19, 4, 31; 1999 JT₁₁ *, 29, 6, 33; 1999 JU₁₁ *, 6, 2, 5; 1999 JV₁₁ *, 24, 5, 33; 1999 JW₁₁ *, 34, 6, 33; 1999 JX₁₁ *, 18, 4, 34; 1999 JY₁₁ *, 8, 2, 4; 1999 JZ₁₁ *, 14, 3, 5; 1999 JA₁₂ *, 44, 9, 108; 1999 JB₁₂ *, 28, 6, 35; 1999 JC₁₂ *, 28, 6, 80; 1999 JD₁₂ *, 10, 2, 4; 1999 JE₁₂ *, 30, 6, 49; 1999 JF₁₂ *, 24, 5, 50; 1999 JG₁₂ *, 7, 2, 5; 1999 JH₁₂ *, 7, 2, 4; 1999 JI₁₂, 20, 4, 35; 1999 JL₁₂, 14, 3, 33; 1999 JM₁₂, 10, 2, 5; 1999 JN₁₂, 13, 3, 35; 1999 JO₁₂, 14, 3, 35; 1999 JP₁₂, 8, 2, 5; 1999 JQ₁₂, 10, 2, 5; 1999 JR₁₂, 33, 4, 5; 1999 JS₁₂, 43, 7, 57; 1999 JT₁₂, 39, 8, 57; 1999 JU₁₂, 5, 1, 0; 1999 JV₁₂, 4, 1, 0; 1999 JW₁₂, 11, 3, 35; 1999 JX₁₂, 4, 1, 0; 1999 JY₁₂, 29, 6, 57; 1999 JZ₁₂, 34, 7, 37; 1999 JA₁₃, 22, 5, 36; 1999 JB₁₃, 24, 5, 33; 1999 JC₁₃, 20, 4, 33; 1999 JD₁₃, 18, 4, 9; 1999 JF₁₃, 19, 4, 36; 1999 JG₁₃, 30, 6, 118; 1999 JH₁₃ *, 31, 7, 55; 1999 JI₁₃ *, 7, 2, 8; 1999 JN₁₃ *, 29, 6, 36; 1999 JO₁₃ *, 16, 4, 35; 1999 JP₁₃ *, 12, 3, 35; 1999 JQ₁₃ *, 10, 3, 8; 1999 JR₁₃ *, 19, 4, 36; 1999 JS₁₃ *, 22, 5, 36; 1999 JT₁₃ *, 21, 5, 35; 1999 JU₁₃ *, 15, 3, 8; 1999 JV₁₃ *, 7, 2, 8; 1999 JW₁₃ *, 17, 4, 9; 1999 JX₁₃ *, 7, 2, 5; 1999 JY₁₃ *, 17, 4, 35; 1999 JZ₁₃ *, 8, 2, 6; 1999 JA₁₄ *, 11, 3, 6; 1999 JB₁₄ *, 8, 2, 5; 1999 JC₁₄ *, 13, 3, 6; 1999 JD₁₄ *, 8, 2, 5; 1999 JE₁₄ *, 6, 2, 5; 1999 JF₁₄ *, 7, 2, 5; 1999 JG₁₄ *, 15, 3, 6; 1999 JH₁₄ *, 15, 3, 6; 1999 JI₁₄ *, 23, 5, 33; 1999 JK₁₄ *, 39, 8, 108; 1999 JL₁₄ *, 20, 4, 32; 1999 JM₁₄ *, 30, 4, 6; 1999 JN₁₄, 5, 1, 0; 1999 JO₁₄, 25, 5, 33; 1999 JP₁₄ *, 47, 10, 55; 1999 JQ₁₄ *, 29, 6, 9; 1999 JR₁₄ *, 30, 6, 9; 1999 JS₁₄ *, 34, 7, 36; 1999 JT₁₄ *, 27, 6, 9; 1999 JU₁₄ *, 12, 3, 3; 1999 JV₁₄ *, 14, 3, 3; 1999 JW₁₄ *, 22, 5, 8; 1999 JX₁₄ *, 18, 4, 35; 1999 JY₁₄ *, 24, 5, 27; 1999 JZ₁₄ *, 7, 2, 5; 1999 JA₁₅ *, 22, 4, 6; 1999 JB₁₅ *, 24, 5, 33; 1999 JC₁₅ *, 7, 2, 5; 1999 JD₁₅ *, 24, 5, 33; 1999 JE₁₅, 22, 5, 37; 1999 JF₁₅, 8, 2, 3; 1999 JG₁₅, 28, 6, 31; 1999 JH₁₅, 15, 3, 26; 1999 JI₁₅, 34, 7, 109; 1999 JL₁₅, 9, 2, 22; 1999 JM₁₅, 25, 5, 33; 1999 JO₁₅, 14, 3, 28; 1999 JP₁₅, 20, 4, 31; 1999 JQ₁₅, 28, 6, 35; 1999 JR₁₅ *, 27, 6, 36; 1999 JS₁₅ *, 15, 4, 9; 1999 JT₁₅ *, 12, 3, 9; 1999 JU₁₅ *, 29, 6, 36; 1999 JV₁₅ *, 8, 2, 9; 1999 JW₁₅ *, 7, 2, 9; 1999 JX₁₅ *, 23, 5, 36; 1999 JY₁₅ *, 8, 2, 6; 1999 JZ₁₅ *, 8, 2, 5; 1999 JA₁₆, 34, 7, 36; 1999 JB₁₆, 24, 5, 36; 1999 JM₁₆, 20, 4, 30; 1999 JV₁₆, 27, 6, 36; 1999 JN₁₇ *, 10, 2, 7; 1999 JO₁₇ *, 10, 2, 7; 1999 JQ₁₇, 15, 3, 35; 1999 JR₁₇ *, 9, 2, 3; 1999 JS₁₇ *, 8, 2, 3; 1999 JT₁₇ *, 10, 2, 3; 1999 JU₁₇ *, 8, 2, 3; 1999 JV₁₇ *, 10, 2, 3; 1999 JW₁₇ *, 10, 2, 3; 1999 JX₁₇ *, 9,

1999 JX₂₁ *, 8, 2, 3; 1999 JY₂₁ *, 18, 4, 8; 1999 JZ₂₁ *, 16, 4, 9; 1999 JA₂₂ *, 8, 2, 3; 1999 JB₂₂ *, 20, 5, 33; 1999 JC₂₂ *, 15, 4, 8; 1999 JD₂₂ *, 7, 2, 3; 1999 JE₂₂ *, 19, 4, 9; 1999 JF₂₂ *, 10, 2, 3; 1999 JG₂₂ *, 16, 4, 9; 1999 JH₂₂ *, 19, 4, 9; 1999 JJ₂₂ *, 24, 5, 34; 1999 JK₂₂ *, 8, 2, 3; 1999 JL₂₂ *, 16, 4, 9; 1999 JM₂₂ *, 29, 6, 34; 1999 JN₂₂ *, 19, 4, 8; 1999 JO₂₂ *, 16, 4, 9; 1999 JP₂₂ *, 19, 4, 8; 1999 JQ₂₂ *, 9, 2, 3; 1999 JR₂₂ *, 25, 5, 33; 1999 JS₂₂ *, 24, 5, 4; 1999 JT₂₂ *, 10, 2, 3; 1999 JU₂₂ *, 25, 5, 34; 1999 JV₂₂ *, 8, 2, 3; 1999 JW₂₂ *, 23, 5, 33; 1999 JX₂₂ *, 19, 4, 9; 1999 JY₂₂ *, 23, 4, 9; 1999 JZ₂₂ *, 25, 5, 34; 1999 JA₂₃ *, 7, 2, 3; 1999 JB₂₃ *, 18, 4, 9; 1999 JC₂₃ *, 9, 2, 3; 1999 JD₂₃ *, 20, 4, 9; 1999 JE₂₃ *, 20, 4, 7; 1999 JF₂₃ *, 28, 6, 37; 1999 JG₂₃ *, 8, 2, 3; 1999 JH₂₃ *, 17, 4, 9; 1999 JJ₂₃ *, 29, 6, 9; 1999 JK₂₃ *, 10, 2, 3; 1999 JL₂₃ *, 31, 7, 54; 1999 JM₂₃ *, 30, 6, 37; 1999 JN₂₃ *, 30, 6, 37; 1999 JO₂₃ *, 23, 5, 37; 1999 JP₂₃ *, 24, 5, 36; 1999 JQ₂₃ *, 8, 2, 3; 1999 JR₂₃ *, 25, 5, 34; 1999 JS₂₃ *, 24, 5, 34; 1999 JT₂₃ *, 15, 4, 9; 1999 JU₂₃ *, 20, 4, 9; 1999 JV₂₃ *, 8, 2, 3; 1999 JW₂₃ *, 7, 2, 3; 1999 JX₂₃ *, 18, 4, 9; 1999 JY₂₃ *, 24, 5, 34; 1999 JZ₂₃ *, 14, 4, 9; 1999 JA₂₄ *, 30, 6, 34; 1999 JB₂₄ *, 20, 4, 8; 1999 JC₂₄ *, 33, 7, 55; 1999 JD₂₄ *, 9, 2, 3; 1999 JE₂₄ *, 19, 4, 8; 1999 JF₂₄ *, 10, 2, 3; 1999 JG₂₄ *, 17, 4, 8; 1999 JH₂₄ *, 29, 6, 34; 1999 JI₂₄ *, 7, 2, 3; 1999 JK₂₄ *, 16, 4, 9; 1999 JL₂₄ *, 34, 7, 55; 1999 JM₂₄ *, 8, 2, 3; 1999 JN₂₄ *, 30, 7, 55; 1999 JO₂₄ *, 18, 4, 8; 1999 JP₂₄ *, 28, 6, 55; 1999 JQ₂₄ *, 20, 4, 9; 1999 JR₂₄ *, 17, 4, 9; 1999 JS₂₄ *, 19, 4, 9; 1999 JT₂₄ *, 10, 2, 3; 1999 JU₂₄ *, 24, 5, 34; 1999 JV₂₄ *, 17, 4, 9; 1999 JW₂₄ *, 29, 6, 55; 1999 JX₂₄ *, 9, 2, 3; 1999 JY₂₄ *, 10, 2, 3; 1999 JZ₂₄ *, 38, 7, 55; 1999 JA₂₅ *, 10, 2, 3; 1999 JB₂₅ *, 22, 5, 34; 1999 JC₂₅ *, 28, 4, 9; 1999 JD₂₅ *, 10, 2, 3; 1999 JE₂₅ *, 20, 4, 9; 1999 JF₂₅ *, 9, 2, 3; 1999 JG₂₅ *, 20, 4, 9; 1999 JH₂₅ *, 15, 4, 9; 1999 JJ₂₅ *, 9, 2, 3; 1999 JK₂₅ *, 23, 5, 34; 1999 JL₂₅ *, 7, 2, 3; 1999 JM₂₅ *, 29, 6, 55; 1999 JN₂₅ *, 24, 5, 34; 1999 JO₂₅ *, 18, 4, 9; 1999 JP₂₅ *, 24, 5, 9; 1999 JQ₂₅ *, 10, 2, 3; 1999 JR₂₅ *, 7, 2, 3; 1999 JS₂₅ *, 20, 4, 9; 1999 JT₂₅ *, 30, 6, 36; 1999 JU₂₅ *, 9, 2, 3; 1999 JV₂₅ *, 24, 5, 34; 1999 JW₂₅ *, 24, 5, 34; 1999 JX₂₅ *, 22, 5, 37; 1999 JY₂₅ *, 24, 5, 9; 1999 JZ₂₅ *, 17, 4, 9; 1999 JA₂₆ *, 9, 2, 3; 1999 JB₂₆ *, 20, 4, 8; 1999 JC₂₆ *, 8, 2, 3; 1999 JD₂₆ *, 16, 4, 9; 1999 JE₂₆ *, 28, 6, 34; 1999 JF₂₆ *, 8, 2, 3; 1999 JG₂₆ *, 6, 2, 3; 1999 JH₂₆ *, 16, 4, 9; 1999 JJ₂₆ *, 15, 4, 9; 1999 JK₂₆ *, 25, 5, 37; 1999 JL₂₆ *, 24, 5, 37; 1999 JM₂₆ *, 8, 2, 3; 1999 JN₂₆ *, 25, 5, 9; 1999 JO₂₆ *, 34, 7, 58; 1999 JP₂₆ *, 19, 4, 8; 1999 JQ₂₆ *, 30, 6, 34; 1999 JR₂₆ *, 16, 4, 9; 1999 JS₂₆ *, 8, 2, 3; 1999 JT₂₆ *, 19, 4, 9; 1999 JU₂₆ *, 20, 4, 9; 1999 JV₂₆ *, 10, 2, 3; 1999 JW₂₆ *, 17, 4, 8; 1999 JX₂₆ *, 25, 5, 9; 1999 JY₂₆ *, 23, 5, 37; 1999 JZ₂₆ *, 13, 3, 8; 1999 JA₂₇ *, 21, 5, 9; 1999 JB₂₇ *, 22, 5, 37; 1999 JC₂₇ *, 24, 5, 37; 1999 JD₂₇ *, 8, 2, 3; 1999 JE₂₇ *, 23, 5, 36; 1999 JF₂₇ *, 25, 5, 36; 1999 JG₂₇ *, 10, 2, 3; 1999 JH₂₇ *, 16, 4, 9; 1999 JJ₂₇ *, 21, 5, 37; 1999 JK₂₇ *, 19, 4, 9; 1999 JL₂₇ *, 27, 6, 37; 1999 JM₂₇ *, 24, 5, 9; 1999 JN₂₇ *, 9, 2, 3; 1999 JO₂₇ *, 9, 2, 3; 1999 JP₂₇ *, 25, 5, 9; 1999 JQ₂₇ *, 35, 7, 54; 1999 JR₂₇ *, 33, 7, 57; 1999 JS₂₇ *, 20, 4, 8; 1999 JT₂₇ *, 17, 4, 9; 1999 JU₂₇ *, 25, 5, 9; 1999 JV₂₇ *, 14, 4, 9; 1999 JW₂₇ *, 20, 4, 9; 1999 JX₂₇ *, 24, 5, 30; 1999 JY₂₇ *, 29, 6, 37; 1999 JZ₂₇ *, 35, 7, 58; 1999 JA₂₈ *, 9, 2, 3; 1999 JB₂₈ *, 15, 4, 9; 1999 JC₂₈ *, 10, 2, 3; 1999 JD₂₈ *, 23, 5, 36; 1999 JE₂₈ *, 10, 2, 3; 1999 JF₂₈ *, 7, 2, 3; 1999 JG₂₈ *, 8, 2, 3; 1999 JH₂₈ *, 15, 4, 9; 1999 JJ₂₈ *, 28, 6, 37; 1999 JK₂₈ *, 9, 2, 3; 1999 JL₂₈ *, 20, 4, 9; 1999 JM₂₈ *, 19, 4, 9; 1999 JN₂₈ *, 10, 2, 3; 1999 JO₂₈ *, 9, 2, 3; 1999 JP₂₈ *, 9, 2, 3; 1999 JQ₂₈ *, 7, 2, 3; 1999 JR₂₈ *, 9, 2, 3; 1999 JS₂₈ *, 24, 5, 34; 1999 JT₂₈ *, 18, 4, 9; 1999 JU₂₈ *, 14, 4, 9; 1999 JV₂₈ *, 28, 6, 30; 1999 JW₂₈ *, 8, 2, 3; 1999 JX₂₈ *, 9, 2, 3; 1999 JY₂₈ *, 14, 4, 9; 1999 JZ₂₈ *, 8, 2, 3; 1999 JA₂₉ *, 6, 2, 3; 1999 JB₂₉ *, 24, 5, 30; 1999 JC₂₉ *, 23, 5, 30; 1999 JD₂₉ *, 14, 2, 3; 1999 JE₂₉ *, 24, 5, 30; 1999 JF₂₉ *, 8, 2, 3; 1999 JG₂₉ *, 47, 9, 60; 1999 JH₂₉ *, 16, 4, 9; 1999 JJ₂₉ *, 7, 2, 3; 1999 JK₂₉ *, 8, 2, 3; 1999 JL₂₉ *, 8, 2, 3; 1999 JM₂₉ *, 9, 2, 3; 1999 JN₂₉ *, 15, 4, 9; 1999 JO₂₉ *, 8, 2, 3; 1999 JP₂₉ *, 16, 4, 9; 1999 JQ₂₉ *, 17, 4, 9; 1999 JR₂₉ *, 8, 2, 3; 1999 JS₂₉ *, 7, 2, 3; 1999 JT₂₉ *, 8, 2, 3; 1999 JU₂₉ *, 22, 5, 9; 1999 JV₂₉ *, 8, 2, 3; 1999 JW₂₉ *, 7, 2, 3; 1999 JX₂₉ *, 8, 2, 3; 1999 JY₂₉ *, 8, 2, 3; 1999 JZ₂₉ *, 9, 2, 3; 1999 JA₃₀ *, 15, 4, 9; 1999 JB₃₀ *, 15, 4, 9; 1999 JC₃₀ *, 32, 7, 37; 1999 JD₃₀ *, 18, 4, 9; 1999 JE₃₀ *, 14, 3, 35; 1999 JF₃₀ *, 10, 2, 3; 1999 JG₃₀ *, 9, 2, 3; 1999 JH₃₀ *, 7, 2, 3; 1999 JJ₃₀ *, 32, 6, 35; 1999 JK₃₀ *, 9, 2, 3; 1999 JL₃₀ *, 33, 5, 33; 1999 JM₃₀ *, 30, 4, 8; 1999 JN₃₀ *, 21, 4, 9; 1999 JO₃₀ *, 16, 4, 9; 1999 JP₃₀ *, 28, 6, 55; 1999 JQ₃₀ *, 7, 2, 3; 1999 JR₃₀ *, 18, 4, 9; 1999 JS₃₀ *, 27, 6, 55; 1999 JT₃₀ *, 24, 5, 30; 1999 JU₃₀ *, 16, 4, 9; 1999 JV₃₀ *, 20, 5, 34; 1999 JW₃₀ *, 7, 2, 3; 1999 JX₃₀ *, 7, 2, 3; 1999 JY₃₀ *, 8, 2, 3; 1999 JZ₃₀ *, 19, 4, 9; 1999 JA₃₁ *, 17, 4, 9; 1999 JB₃₁ *, 10, 2, 3; 1999 JC₃₁ *, 18, 4, 8; 1999 JD₃₁ *, 16, 4, 8; 1999 JE₃₁ *, 10, 2, 3; 1999 JF₃₁ *, 15, 4, 9; 1999 JG₃₁ *, 23, 5, 30; 1999 JH₃₁ *, 18, 4, 9; 1999 JJ₃₁ *, 8, 2, 3; 1999 JK₃₁ *, 21, 5, 29; 1999 JL₃₁ *, 10, 2, 3; 1999 JM₃₁ *, 18, 4, 9; 1999 JN₃₁ *, 8, 2, 3; 1999 JO₃₁ *, 23, 5, 30; 1999 JP₃₁ *, 8, 2, 3; 1999 JQ₃₁ *, 38, 8, 106; 1999 JR₃₁ *, 8, 2, 3; 1999 JS₃₁ *, 17, 4, 9; 1999 JT₃₁ *, 9, 2, 3; 1999 JU₃₁ *, 24, 5, 37; 1999 JV₃₁ *, 24, 5, 37; 1999 JW₃₁ *, 29, 6, 58; 1999 JX₃₁ *, 19, 4, 9; 1999 JY₃₁ *, 7, 2, 3; 1999 JZ₃₁ *, 8, 2, 3; 1999 JA₃₂ *, 8, 2, 3; 1999 JB₃₂ *, 17, 4, 9; 1999 JC₃₂ *, 39, 8, 58; 1999 JD₃₂ *, 8, 2, 3; 1999 JE₃₂ *, 17, 4, 9; 1999 JF₃₂ *, 9, 2, 3; 1999 JG₃₂ *, 29, 6, 58; 1999 JH₃₂ *, 10, 2, 3; 1999 JJ₃₂ *, 19, 4, 9; 1999 JK₃₂ *, 10, 2, 3; 1999 JL₃₂ *, 10, 2, 3; 1999 JM₃₂ *, 10, 2, 3; 1999 JN₃₂ *, 9, 2, 3; 1999 JO₃₂ *, 10, 2, 3; 1999 JP₃₂ *, 30, 6, 35; 1999 JQ₃₂ *, 40, 8, 106; 1999 JR₃₂ *, 34, 7, 60; 1999 JS₃₂ *, 27, 6, 35; 1999 JT₃₂ *, 17, 4, 9; 1999 JU₃₂ *, 9, 2, 3; 1999 JV₃₂ *, 10, 2, 3; 1999 JW₃₂ *, 24, 5, 30; 1999 JX₃₂ *, 10, 2, 3; 1999 JY₃₂ *, 7, 2, 3; 1999 JZ₃₂ *, 28, 6, 37; 1999 JA₃₃ *, 23, 5, 37; 1999 JB₃₃ *, 17, 4, 9; 1999 JC₃₃ *, 17, 4, 9; 1999 JD₃₃ *, 10, 2, 3; 1999 JE₃₃ *, 9, 2, 3;

1999 JF₃₃ *, 19, 4, 9; 1999 JG₃₃ *, 10, 2, 3; 1999 JH₃₃ *, 9, 2, 3; 1999 JJ₃₃ *, 9, 2, 3; 1999 JK₃₃ *, 10, 2, 3; 1999 JL₃₃ *, 8, 2, 3; 1999 JM₃₃ *, 8, 2, 3; 1999 JN₃₃ *, 34, 7, 502; 1999 JO₃₃ *, 8, 2, 3; 1999 JP₃₃ *, 10, 2, 3; 1999 JQ₃₃ *, 33, 7, 55; 1999 JR₃₃ *, 19, 4, 8; 1999 JS₃₃ *, 9, 2, 3; 1999 JT₃₃ *, 20, 4, 55; 1999 JU₃₃ *, 8, 2, 3; 1999 JV₃₃ *, 9, 2, 3; 1999 JW₃₃ *, 19, 4, 9; 1999 JX₃₃ *, 17, 4, 9; 1999 JY₃₃ *, 30, 6, 55; 1999 JZ₃₃ *, 19, 4, 9; 1999 JA₃₄ *, 20, 4, 9; 1999 JB₃₄ *, 10, 2, 3; 1999 JC₃₄ *, 15, 4, 9; 1999 JD₃₄ *, 8, 2, 3; 1999 JE₃₄ *, 23, 5, 30; 1999 JF₃₄ *, 10, 2, 3; 1999 JG₃₄ *, 6, 2, 3; 1999 JH₃₄ *, 9, 2, 3; 1999 JJ₃₄ *, 10, 2, 3; 1999 JK₃₄ *, 8, 2, 3; 1999 JL₃₄ *, 8, 2, 3; 1999 JM₃₄ *, 8, 2, 3; 1999 JN₃₄ *, 25, 6, 860; 1999 JO₃₄ *, 10, 2, 3; 1999 JP₃₄ *, 8, 2, 3; 1999 JQ₃₄ *, 10, 2, 3; 1999 JR₃₄ *, 20, 4, 30; 1999 JS₃₄ *, 9, 2, 3; 1999 JT₃₄ *, 9, 2, 3; 1999 JU₃₄ *, 8, 2, 3; 1999 JV₃₄ *, 8, 2, 3; 1999 JW₃₄ *, 20, 4, 8; 1999 JX₃₄ *, 9, 2, 3; 1999 JY₃₄ *, 8, 2, 3; 1999 JZ₃₄ *, 10, 2, 3; 1999 JA₃₅ *, 9, 2, 3; 1999 JB₃₅ *, 14, 3, 30; 1999 JC₃₅ *, 22, 5, 30; 1999 JD₃₅ *, 8, 2, 3; 1999 JE₃₅ *, 20, 4, 8; 1999 JF₃₅ *, 10, 2, 3; 1999 JG₃₅ *, 8, 2, 3; 1999 JH₃₅ *, 9, 2, 3; 1999 JJ₃₅ *, 9, 2, 3; 1999 JK₃₅ *, 16, 4, 9; 1999 JL₃₅ *, 8, 2, 3; 1999 JM₃₅ *, 9, 2, 3; 1999 JN₃₅ *, 25, 5, 35; 1999 JO₃₅ *, 9, 2, 3; 1999 JP₃₅ *, 8, 2, 3; 1999 JQ₃₅ *, 17, 4, 35; 1999 JR₃₅ *, 8, 2, 3; 1999 JS₃₅ *, 19, 4, 9; 1999 JT₃₅ *, 9, 2, 3; 1999 JU₃₅ *, 19, 4, 9; 1999 JV₃₅ *, 14, 3, 7; 1999 JW₃₅ *, 10, 2, 3; 1999 JX₃₅ *, 28, 6, 35; 1999 JY₃₅ *, 23, 5, 35; 1999 JZ₃₅ *, 9, 2, 3; 1999 JA₃₆ *, 24, 5, 35; 1999 JB₃₆ *, 39, 8, 60; 1999 JC₃₆ *, 8, 2, 3; 1999 JD₃₆ *, 23, 5, 35; 1999 JE₃₆ *, 10, 2, 3; 1999 JF₃₆ *, 17, 4, 35; 1999 JG₃₆ *, 6, 2, 3; 1999 JH₃₆ *, 27, 6, 35; 1999 JI₃₆ *, 10, 2, 3; 1999 JJ₃₆ *, 10, 2, 3; 1999 JK₃₆ *, 10, 2, 3; 1999 JL₃₆ *, 10, 2, 3; 1999 JM₃₆ *, 8, 2, 3; 1999 JN₃₆ *, 7, 2, 3; 1999 JO₃₆ *, 32, 7, 35; 1999 JP₃₆ *, 16, 4, 9; 1999 JQ₃₆ *, 8, 2, 3; 1999 JR₃₆ *, 10, 2, 3; 1999 JS₃₆ *, 18, 4, 9; 1999 JT₃₆ *, 33, 7, 55; 1999 JU₃₆ *, 9, 2, 3; 1999 JV₃₆ *, 9, 2, 3; 1999 JW₃₆ *, 9, 2, 3; 1999 JX₃₆ *, 18, 4, 8; 1999 JY₃₆ *, 27, 6, 519; 1999 JZ₃₆ *, 19, 4, 9; 1999 JA₃₇ *, 8, 2, 3; 1999 JB₃₇ *, 19, 4, 8; 1999 JC₃₇ *, 10, 2, 3; 1999 JD₃₇ *, 27, 6, 34; 1999 JE₃₇ *, 9, 2, 3; 1999 JF₃₇ *, 28, 6, 55; 1999 JG₃₇ *, 18, 4, 8; 1999 JH₃₇ *, 10, 2, 3; 1999 JJ₃₇ *, 9, 2, 3; 1999 JK₃₇ *, 10, 2, 3; 1999 JL₃₇ *, 28, 6, 35; 1999 JM₃₇ *, 13, 3, 30; 1999 JN₃₇ *, 23, 5, 30; 1999 JO₃₇ *, 10, 2, 3; 1999 JP₃₇ *, 9, 2, 3; 1999 JQ₃₇ *, 10, 2, 3; 1999 JR₃₇ *, 10, 2, 3; 1999 JS₃₇ *, 9, 2, 3; 1999 JT₃₇ *, 24, 5, 36; 1999 JU₃₇ *, 7, 2, 3; 1999 JV₃₇ *, 8, 2, 3; 1999 JW₃₇ *, 10, 2, 3; 1999 JX₃₇ *, 28, 6, 61; 1999 JY₃₇ *, 18, 4, 9; 1999 JZ₃₇ *, 12, 3, 28; 1999 JA₃₈ *, 7, 2, 3; 1999 JB₃₈ *, 16, 4, 9; 1999 JC₃₈ *, 9, 2, 3; 1999 JD₃₈ *, 28, 6, 55; 1999 JE₃₈ *, 8, 2, 3; 1999 JF₃₈ *, 9, 2, 3; 1999 JG₃₈ *, 8, 2, 3; 1999 JH₃₈ *, 8, 2, 3; 1999 JJ₃₈ *, 7, 2, 3; 1999 JK₃₈ *, 9, 2, 3; 1999 JL₃₈ *, 7, 2, 3; 1999 JM₃₈ *, 32, 7, 55; 1999 JN₃₈ *, 8, 2, 3; 1999 JO₃₈ *, 31, 7, 35; 1999 JP₃₈ *, 7, 2, 3; 1999 JQ₃₈ *, 9, 2, 3; 1999 JR₃₈ *, 8, 2, 3; 1999 JS₃₈ *, 8, 2, 3; 1999 JT₃₈ *, 22, 5, 34; 1999 JU₃₈ *, 8, 2, 3; 1999 JV₃₈ *, 17, 4, 9; 1999 JW₃₈ *, 8, 2, 3; 1999 JX₃₈ *, 29, 6, 61; 1999 JY₃₈ *, 10, 2, 3; 1999 JZ₃₈ *, 18, 4, 36; 1999 JA₃₉ *, 10, 2, 3; 1999 JB₃₉ *, 9, 2, 3; 1999 JC₃₉ *, 20, 4, 9; 1999 JD₃₉ *, 29, 6, 61; 1999 JE₃₉ *, 9, 2, 3; 1999 JF₃₉ *, 8, 2, 3; 1999 JG₃₉ *, 28, 6, 61; 1999 JH₃₉ *, 19, 4, 9; 1999 JJ₃₉ *, 10, 2, 3; 1999 JK₃₉ *, 9, 2, 3; 1999 JL₃₉ *, 8, 2, 3; 1999 JM₃₉ *, 9, 2, 3; 1999 JN₃₉ *, 24, 5, 36; 1999 JO₃₉ *, 10, 2, 3; 1999 JP₃₉ *, 20, 4, 8; 1999 JQ₃₉ *, 33, 7, 61; 1999 JR₃₉ *, 22, 5, 9; 1999 JS₃₉ *, 9, 2, 3; 1999 JT₃₉ *, 9, 2, 3; 1999 JU₃₉ *, 8, 2, 3; 1999 JV₃₉ *, 16, 4, 9; 1999 JW₃₉ *, 10, 2, 3; 1999 JX₃₉ *, 20, 4, 8; 1999 JY₃₉ *, 17, 4, 9; 1999 JZ₃₉ *, 10, 2, 3; 1999 JA₄₀ *, 10, 2, 3; 1999 JB₄₀ *, 10, 2, 3; 1999 JC₄₀ *, 9, 2, 3; 1999 JD₄₀ *, 7, 2, 8; 1999 JE₄₀ *, 20, 4, 8; 1999 JF₄₀ *, 14, 2, 3; 1999 JG₄₀ *, 10, 2, 3; 1999 JH₄₀ *, 13, 2, 3; 1999 JI₄₀ *, 10, 2, 3; 1999 JJ₄₀ *, 24, 5, 35; 1999 JK₄₀ *, 24, 5, 35; 1999 JL₄₀ *, 25, 4, 8; 1999 JN₄₀ *, 9, 2, 3; 1999 JO₄₀ *, 10, 2, 3; 1999 JP₄₀ *, 10, 2, 3; 1999 JQ₄₀ *, 9, 2, 3; 1999 JR₄₀ *, 10, 2, 3; 1999 JS₄₀ *, 8, 2, 3; 1999 JT₄₀ *, 30, 6, 35; 1999 JU₄₀ *, 45, 8, 35; 1999 JV₄₀ *, 38, 8, 30; 1999 JW₄₀ *, 27, 6, 36; 1999 JX₄₀ *, 22, 5, 35; 1999 JY₄₀ *, 27, 6, 35; 1999 JZ₄₀ *, 9, 2, 3; 1999 JA₄₁ *, 28, 6, 35; 1999 JB₄₁ *, 23, 5, 35; 1999 JC₄₁ *, 13, 3, 35; 1999 JD₄₁ *, 34, 7, 35; 1999 JE₄₁ *, 10, 2, 3; 199

9; 1999 JQ₄₄ *, 12, 3, 36; 1999 JR₄₄ *, 8, 2, 3; 1999 JS₄₄ *, 25, 5, 36; 1999 JT₄₄ *, 28, 6, 36; 1999 JU₄₄ *, 19, 4, 36; 1999 JV₄₄ *, 17, 4, 9; 1999 JW₄₄ *, 9, 2, 3; 1999 JX₄₄ *, 16, 4, 9; 1999 JY₄₄ *, 19, 4, 8; 1999 JZ₄₄ *, 33, 7, 60; 1999 JA₄₅ *, 10, 2, 3; 1999 JB₄₅ *, 18, 4, 36; 1999 JC₄₅ *, 20, 4, 9; 1999 JD₄₅ *, 18, 4, 9; 1999 JE₄₅ *, 8, 2, 3; 1999 JF₄₅ *, 23, 5, 9; 1999 JG₄₅ *, 20, 4, 9; 1999 JH₄₅ *, 34, 7, 60; 1999 JJ₄₅ *, 9, 2, 3; 1999 JK₄₅ *, 9, 2, 3; 1999 JL₄₅ *, 18, 4, 35; 1999 JM₄₅ *, 29, 6, 36; 1999 JN₄₅ *, 35, 8, 60; 1999 JO₄₅ *, 14, 3, 8; 1999 JP₄₅ *, 23, 5, 35; 1999 JQ₄₅ *, 23, 5, 35; 1999 JR₄₅ *, 22, 5, 35; 1999 JS₄₅ *, 25, 5, 35; 1999 JT₄₅ *, 24, 5, 9; 1999 JU₄₅ *, 9, 2, 3; 1999 JV₄₅ *, 35, 7, 35; 1999 JW₄₅ *, 29, 6, 35; 1999 JX₄₅ *, 9, 2, 3; 1999 JY₄₅ *, 8, 2, 3; 1999 JZ₄₅ *, 19, 3, 5; 1999 JA₄₆ *, 45, 8, 35; 1999 JB₄₆ *, 34, 7, 35; 1999 JC₄₆ *, 34, 7, 35; 1999 JD₄₆ *, 9, 2, 3; 1999 JE₄₆ *, 30, 6, 35; 1999 JF₄₆ *, 7, 2, 3; 1999 JG₄₆ *, 23, 5, 35; 1999 JH₄₆ *, 33, 7, 35; 1999 JJ₄₆ *, 33, 7, 35; 1999 JK₄₆ *, 8, 2, 3; 1999 JL₄₆ *, 29, 6, 35; 1999 JM₄₆ *, 23, 5, 35; 1999 JN₄₆ *, 25, 5, 35; 1999 JO₄₆ *, 18, 4, 35; 1999 JP₄₆ *, 24, 5, 35; 1999 JQ₄₆ *, 8, 2, 3; 1999 JR₄₆ *, 28, 6, 36; 1999 JS₄₆ *, 34, 7, 36; 1999 JT₄₆ *, 33, 7, 36; 1999 JU₄₆ *, 10, 2, 3; 1999 JV₄₆ *, 29, 6, 35; 1999 JW₄₆ *, 10, 2, 3; 1999 JX₄₆ *, 29, 6, 36; 1999 JY₄₆ *, 20, 5, 36; 1999 JZ₄₆ *, 10, 2, 3; 1999 JA₄₇ *, 28, 6, 36; 1999 JB₄₇ *, 17, 4, 9; 1999 JC₄₇ *, 34, 7, 35; 1999 JD₄₇ *, 7, 2, 3; 1999 JE₄₇ *, 25, 5, 36; 1999 JF₄₇ *, 8, 2, 3; 1999 JG₄₇ *, 10, 2, 3; 1999 JH₄₇ *, 9, 2, 3; 1999 JI₄₇ *, 30, 6, 36; 1999 JK₄₇ *, 8, 2, 3; 1999 JL₄₇ *, 19, 4, 9; 1999 JM₄₇ *, 8, 2, 3; 1999 JN₄₇ *, 14, 4, 9; 1999 JO₄₇ *, 25, 5, 36; 1999 JP₄₇ *, 10, 2, 3; 1999 JQ₄₇ *, 29, 6, 36; 1999 JR₄₇ *, 9, 2, 3; 1999 JS₄₇ *, 27, 6, 36; 1999 JT₄₇ *, 10, 2, 3; 1999 JU₄₇ *, 7, 2, 3; 1999 JV₄₇ *, 8, 2, 3; 1999 JW₄₇ *, 10, 2, 3; 1999 JX₄₇ *, 9, 2, 3; 1999 JY₄₇ *, 24, 5, 36; 1999 JZ₄₇ *, 10, 2, 3; 1999 JA₄₈ *, 28, 5, 36; 1999 JB₄₈ *, 9, 2, 3; 1999 JC₄₈ *, 8, 2, 3; 1999 JD₄₈ *, 27, 6, 36; 1999 JE₄₈ *, 25, 5, 36; 1999 JF₄₈ *, 19, 4, 36; 1999 JG₄₈ *, 9, 2, 3; 1999 JH₄₈ *, 21, 5, 36; 1999 JI₄₈ *, 25, 5, 36; 1999 JK₄₈ *, 7, 2, 3; 1999 JL₄₈ *, 9, 2, 3; 1999 JM₄₈ *, 10, 2, 3; 1999 JN₄₈ *, 23, 5, 36; 1999 JO₄₈ *, 9, 2, 3; 1999 JP₄₈ *, 9, 2, 3; 1999 JQ₄₈ *, 24, 5, 36; 1999 JR₄₈ *, 28, 6, 36; 1999 JS₄₈ *, 9, 2, 3; 1999 JT₄₈ *, 18, 4, 9; 1999 JU₄₈ *, 17, 4, 9; 1999 JV₄₈ *, 32, 7, 427; 1999 JW₄₈ *, 10, 2, 3; 1999 JX₄₈ *, 29, 6, 36; 1999 JY₄₈ *, 15, 4, 9; 1999 JZ₄₈ *, 10, 2, 3; 1999 JA₄₉ *, 23, 5, 36; 1999 JB₄₉ *, 9, 2, 3; 1999 JC₄₉ *, 7, 2, 3; 1999 JD₄₉ *, 25, 5, 36; 1999 JE₄₉ *, 24, 5, 36; 1999 JF₄₉ *, 17, 4, 9; 1999 JG₄₉ *, 26, 6, 36; 1999 JH₄₉ *, 23, 5, 9; 1999 JJ₄₉ *, 9, 2, 3; 1999 JK₄₉ *, 9, 2, 3; 1999 JL₄₉ *, 34, 7, 35; 1999 JM₄₉ *, 24, 5, 35; 1999 JN₄₉ *, 8, 2, 3; 1999 JO₄₉ *, 27, 6, 30; 1999 JP₄₉ *, 9, 2, 3; 1999 JQ₄₉ *, 27, 6, 36; 1999 JR₄₉ *, 18, 4, 9; 1999 JS₄₉ *, 28, 6, 36; 1999 JT₄₉ *, 23, 5, 36; 1999 JU₄₉ *, 10, 2, 3; 1999 JV₄₉ *, 34, 7, 35; 1999 JW₄₉ *, 19, 4, 30; 1999 JX₄₉ *, 8, 2, 3; 1999 JY₄₉ *, 8, 2, 3; 1999 JZ₄₉ *, 34, 7, 35; 1999 JA₅₀ *, 34, 7, 35; 1999 JB₅₀ *, 33, 7, 35; 1999 JC₅₀ *, 8, 2, 3; 1999 JD₅₀ *, 10, 2, 3; 1999 JE₅₀ *, 27, 6, 35; 1999 JF₅₀ *, 15, 3, 35; 1999 JG₅₀ *, 33, 7, 35; 1999 JH₅₀ *, 24, 5, 35; 1999 JI₅₀ *, 10, 2, 3; 1999 JK₅₀ *, 10, 2, 3; 1999 JL₅₀ *, 24, 5, 35; 1999 JM₅₀ *, 24, 5, 35; 1999 JN₅₀ *, 9, 2, 3; 1999 JO₅₀ *, 29, 6, 35; 1999 JP₅₀ *, 36, 8, 82; 1999 JQ₅₀ *, 10, 2, 3; 1999 JR₅₀ *, 10, 2, 3; 1999 JS₅₀ *, 29, 6, 35; 1999 JT₅₀ *, 9, 2, 3; 1999 JU₅₀ *, 9, 2, 3; 1999 JV₅₀ *, 24, 5, 35; 1999 JW₅₀ *, 24, 5, 35; 1999 JX₅₀ *, 10, 2, 3; 1999 JY₅₀ *, 9, 2, 3; 1999 JZ₅₀ *, 29, 6, 35; 1999 JA₅₁ *, 17, 4, 9; 1999 JB₅₁ *, 23, 5, 35; 1999 JC₅₁ *, 33, 6, 35; 1999 JD₅₁ *, 33, 7, 35; 1999 JE₅₁ *, 9, 2, 3; 1999 JF₅₁ *, 8, 2, 3; 1999 JG₅₁ *, 10, 2, 3; 1999 JH₅₁ *, 26, 5, 35; 1999 JI₅₁ *, 34, 7, 36; 1999 JK₅₁ *, 9, 2, 3; 1999 JL₅₁ *, 23, 5, 36; 1999 JM₅₁ *, 9, 2, 3; 1999 JN₅₁ *, 8, 2, 3; 1999 JO₅₁ *, 10, 2, 3; 1999 JP₅₁ *, 43, 8, 35; 1999 JQ₅₁ *, 19, 4, 35; 1999 JR₅₁ *, 8, 2, 3; 1999 JS₅₁ *, 25, 5, 36; 1999 JT₅₁ *, 29, 6, 35; 1999 JU₅₁ *, 24, 5, 30; 1999 JV₅₁ *, 29, 6, 35; 1999 JW₅₁ *, 28, 6, 36; 1999 JX₅₁ *, 16, 4, 9; 1999 JY₅₁ *, 19, 4, 36; 1999 JZ₅₁ *, 9, 2, 3; 1999 JA₅₂ *, 8, 2, 3; 1999 JB₅₂ *, 10, 2, 3; 1999 JC₅₂ *, 20, 5, 36; 1999 JD₅₂ *, 10, 2, 3; 1999 JE₅₂ *, 23, 5, 36; 1999 JF₅₂ *, 29, 6, 36; 1999 JG₅₂ *, 26, 6, 36; 1999 JH₅₂ *, 29, 6, 423; 1999 JI₅₂ *, 8, 2, 3; 1999 JK₅₂ *, 23, 5, 36; 1999 JL₅₂ *, 34, 7, 427; 1999 JM₅₂ *, 29, 6, 36; 1999 JN₅₂ *, 25, 5, 36; 1999 JO₅₂ *, 9, 2, 3; 1999 JP₅₂ *, 7, 2, 3; 1999 JQ₅₂ *, 19, 4, 9; 1999 JR₅₂ *, 15, 3, 8; 1999 JS₅₂ *, 26, 6, 30; 1999 JT₅₂ *, 14, 3, 35; 1999 JU₅₂ *, 15, 4, 9; 1999 JV₅₂ *, 33, 7, 35; 1999 JW₅₂ *, 6, 2, 3; 1999 JX₅₂ *, 10, 2, 3; 1999 JY₅₂ *, 8, 2, 3; 1999 JZ₅₂ *, 21, 5, 36; 1999 JA₅₃ *, 24, 6, 35; 1999 JB₅₃ *, 31, 7, 451; 1999 JC₅₃ *, 25, 6, 35; 1999 JD₅₃ *, 8, 2, 3; 1999 JE₅₃ *, 6, 2, 3; 1999 JF₅₃ *, 34, 7, 35; 1999 JG₅₃ *, 38, 8, 111; 1999 JH₅₃ *, 38, 8, 35; 1999 JI₅₃ *, 9, 2, 3; 1999 JI₅₃ *, 7, 2, 3; 1999 JL₅₃ *, 25, 6, 35; 1999 JM₅₃ *, 22, 5, 35; 1999 JN₅₃ *, 27, 6, 35; 1999 JO₅₃ *, 25, 5, 35; 1999 JP₅₃ *, 9, 2, 3; 1999 JQ₅₃ *, 9, 2, 3; 1999 JR₅₃ *, 28, 6, 36; 1999 JS₅₃ *, 24, 5, 35; 1999 JT₅₃ *, 8, 2, 3; 1999 JU₅₃ *, 35, 7, 36; 1999 JV₅₃ *, 38, 8, 563; 1999 JW₅₃ *, 27, 6, 36; 1999 JX₅₃ *, 16, 4, 9; 1999 JY₅₃ *, 34, 7, 35; 1999 JZ₅₃ *, 28, 6, 30; 1999 JA₅₄ *, 7, 2, 3; 1999 JB₅₄ *, 18, 4, 9; 1999 JC₅₄ *, 18, 4, 9; 1999 JD₅₄ *, 34, 7, 36; 1999 JE₅₄ *, 20, 4, 8; 1999 JF₅₄ *, 18, 4, 9; 1999 JG₅₄ *, 22, 5, 36; 1999 JH₅₄ *, 21, 5, 36; 1999 JI₅₄ *, 25, 4, 36; 1999 JI₅₄ *, 26, 6, 36; 1999 JL₅₄ *, 20, 4, 9; 1999 JM₅₄ *, 24, 5, 36; 1999 JN₅₄ *, 27, 6, 36; 1999 JO₅₄ *, 30, 6, 36; 1999 JP₅₄ *, 16, 4, 9; 1999 JQ₅₄ *, 27, 6, 556; 1999 JR₅₄ *, 23, 5, 36; 1999 JS₅₄ *, 9, 2, 3; 1999 JT₅₄ *, 15, 4, 36; 1999 JU₅₄ *, 17, 4, 9; 1999 JV₅₄ *, 27, 6, 36; 1999 JW₅₄ *, 7, 2, 3; 1999 JX₅₄ *, 29, 6, 36; 1999 JY₅₄ *, 24, 5, 36; 1999 JZ₅₄ *, 24, 5, 36; 1999 JA₅₅ *, 17, 4, 9; 1999 JB₅₅ *, 18, 4, 9; 1999 JC₅₅ *, 33, 7, 36; 1999 JD₅₅ *, 10, 2, 3; 1999 JE₅₅ *, 29, 6, 35; 1999 JF₅₅ *, 34, 7, 35; 1999 JG₅₅ *, 21, 5, 29; 1999 JH₅₅ *, 22, 5, 29; 1999 JI₅₅ *, 24, 5, 35; 1999 JK₅₅ *, 22, 5, 35; 1999 JL₅₅ *, 23, 5, 35; 1999 JM₅₅ *, 23, 5, 35; 1999 JN₅₅ *, 24, 5, 35; 1999 JO₅₅ *, 30, 6, 35; 1999 JP₅₅ *, 34, 7, 447; 1999 JQ₅₅ *, 27, 6, 35; 1999 JR₅₅ *, 22, 5, 35; 1999 JS₅₅ *, 34, 7,

111; 1999 JT₅₅ *, 26, 6, 35; 1999 JU₅₅ *, 9, 2, 3; 1999 JV₅₅ *, 6, 2, 3; 1999 JW₅₅ *, 8, 2, 3; 1999 JX₅₅ *, 9, 2, 3; 1999 JY₅₅ *, 9, 2, 3; 1999 JZ₅₅ *, 18, 4, 9; 1999 JA₅₆ *, 6, 2, 3; 1999 JB₅₆ *, 8, 2, 3; 1999 JC₅₆ *, 8, 2, 3; 1999 JD₅₆ *, 22, 5, 36; 1999 JE₅₆ *, 9, 2, 3; 1999 JF₅₆ *, 19, 4, 35; 1999 JG₅₆ *, 20, 5, 35; 1999 JH₅₆ *, 12, 3, 7; 1999 JI₅₆ *, 27, 6, 35; 1999 JK₅₆ *, 22, 5, 35; 1999 JL₅₆ *, 23, 6, 35; 1999 JM₅₆ *, 17, 4, 36; 1999 JN₅₆ *, 8, 2, 3; 1999 JO₅₆ *, 8, 2, 3; 1999 JP₅₆ *, 9, 2, 3; 1999 JQ₅₆ *, 22, 5, 36; 1999 JR₅₆ *, 6, 2, 3; 1999 JS₅₆ *, 17, 4, 9; 1999 JT₅₆ *, 7, 2, 3; 1999 JU₅₆ *, 18, 4, 9; 1999 JV₅₆ *, 34, 7, 35; 1999 JW₅₆ *, 6, 2, 3; 1999 JX₅₆ *, 17, 4, 35; 1999 JY₅₆ *, 21, 5, 35; 1999 JZ₅₆ *, 17, 4, 9; 1999 JA₅₇ *, 21, 5, 36; 1999 JB₅₇ *, 22, 5, 36; 1999 JC₅₇ *, 14, 3, 36; 1999 JD₅₇ *, 28, 6, 35; 1999 JE₅₇ *, 30, 6, 35; 1999 JF₅₇ *, 22, 5, 36; 1999 JG₅₇ *, 30, 6, 35; 1999 JH₅₇ *, 34, 7, 35; 1999 JI₅₇ *, 22, 5, 35; 1999 JK₅₇ *, 33, 7, 36; 1999 JL₅₇ *, 34, 7, 36; 1999 JM₅₇ *, 9, 2, 3; 1999 JN₅₇ *, 7, 2, 3; 1999 JO₅₇ *, 37, 8, 109; 1999 JP₅₇ *, 31, 7, 529; 1999 JQ₅₇ *, 25, 5, 36; 1999 JR₅₇ *, 29, 6, 36; 1999 JS₅₇ *, 28, 6, 36; 1999 JT₅₇ *, 25, 5, 36; 1999 JU₅₇ *, 13, 3, 30; 1999 JV₅₇ *, 28, 6, 36; 1999 JW₅₇ *, 8, 2, 3; 1999 JX₅₇ *, 22, 5, 36; 1999 JY₅₇ *, 21, 5, 36; 1999 JZ₅₇ *, 14, 3, 36; 1999 JA₅₈ *, 27, 6, 36; 1999 JB₅₈ *, 16, 4, 9; 1999 JC₅₈ *, 20, 5, 36; 1999 JD₅₈ *, 24, 5, 36; 1999 JE₅₈ *, 29, 6, 36; 1999 JF₅₈ *, 23, 5, 36; 1999 JG₅₈ *, 8, 2, 3; 1999 JH₅₈ *, 24, 5, 36; 1999 JI₅₈ *, 33, 7, 109; 1999 JK₅₈ *, 24, 5, 36; 1999 JL₅₈ *, 30, 6, 36; 1999 JM₅₈ *, 26, 6, 36; 1999 JN₅₈ *, 27, 6, 36; 1999 JO₅₈ *, 29, 6, 36; 1999 JP₅₈ *, 26, 6, 36; 1999 JQ₅₈ *, 8, 2, 3; 1999 JR₅₈ *, 32, 7, 36; 1999 JS₅₈ *, 35, 7, 36; 1999 JT₅₈ *, 17, 4, 9; 1999 JU₅₈ *, 35, 7, 36; 1999 JV₅₈ *, 38, 8, 109; 1999 JW₅₈ *, 21, 5, 35; 1999 JX₅₈ *, 27, 6, 36; 1999 JY₅₈ *, 16, 4, 9; 1999 JZ₅₈ *, 29, 6, 35; 1999 JA₅₉ *, 19, 4, 9; 1999 JB₅₉ *, 30, 6, 35; 1999 JC₅₉ *, 33, 7, 36; 1999 JD₅₉ *, 6, 2, 3; 1999 JE₅₉ *, 13, 3, 35; 1999 JF₅₉ *, 35, 7, 426; 1999 JG₅₉ *, 18, 4, 8; 1999 JH₅₉ *, 33, 7, 35; 1999 JI₅₉ *, 27, 6, 35; 1999 JK₅₉ *, 34, 7, 35; 1999 JL₅₉ *, 7, 2, 3; 1999 JM₅₉ *, 10, 2, 3; 1999 JN₅₉ *, 33, 7, 35; 1999 JO₅₉ *, 18, 5, 35; 1999 JP₅₉ *, 29, 6, 35; 1999 JQ₅₉ *, 33, 7, 35; 1999 JR₅₉ *, 28, 6, 35; 1999 JS₅₉ *, 25, 5, 35; 1999 JT₅₉ *, 30, 6, 36; 1999 JU₅₉ *, 22, 5, 35; 1999 JV₅₉ *, 25, 5, 35; 1999 JW₅₉ *, 23, 5, 35; 1999 JX₅₉ *, 27, 6, 35; 1999 JY₅₉ *, 30, 6, 36; 1999 JZ₅₉ *, 33, 7, 36; 1999 JA₆₀ *, 14, 4, 9; 1999 JB₆₀ *, 35, 7, 35; 1999 JC₆₀ *, 30, 6, 36; 1999 JD₆₀ *, 10, 2, 3; 1999 JE₆₀ *, 10, 2, 3; 1999 JF₆₀ *, 23, 5, 36; 1999 JG₆₀ *, 7, 2, 3; 1999 JH₆₀ *, 28, 6, 36; 1999 JI₆₀ *, 30, 6, 36; 1999 JK₆₀ *, 29, 6, 36; 1999 JL₆₀ *, 28, 6, 36; 1999 JM₆₀ *, 27, 6, 36; 1999 JN₆₀ *, 16, 4, 9; 1999 JO₆₀ *, 29, 6, 36; 1999 JP₆₀ *, 30, 6, 36; 1999 JQ₆₀ *, 29, 6, 36; 1999 JR₆₀ *, 32, 7, 35; 1999 JS₆₀ *, 28, 6, 36; 1999 JT₆₀ *, 34, 7, 115; 1999 JU₆₀ *, 39, 8, 109; 1999 JV₆₀ *, 34, 7, 36; 1999 JW₆₀ *, 39, 8, 417; 1999 JX₆₀ *, 33, 7, 35; 1999 JY₆₀ *, 34, 7, 36; 1999 JZ₆₀ *, 22, 5, 36; 1999 JA₆₁ *, 28, 6, 35; 1999 JB₆₁ *, 27, 6, 35; 1999 JC₆₁ *, 23, 5, 35; 1999 JD₆₁ *, 25, 5, 35; 1999 JE₆₁ *, 39, 8, 35; 1999 JF₆₁ *, 10, 2, 3; 1999 JG₆₁ *, 29, 6, 36; 1999 JH₆₁ *, 35, 7, 35; 1999 JI₆₁ *, 34, 7, 36; 1999 JK₆₁ *, 23, 5, 35; 1999 JL₆₁ *, 27, 6, 35; 1999 JM₆₁ *, 33, 7, 36; 1999 JN₆₁ *, 34, 7, 36; 1999 JO₆₁ *, 35, 7, 36; 1999 JP₆₁ *, 40, 8, 83; 1999 JQ₆₁ *, 7, 2, 3; 1999 JR₆₁ *, 27, 6, 36; 1999 JS₆₁ *, 26, 6, 36; 1999 JT₆₁ *, 29, 6, 36; 1999 JU₆₁ *, 28, 6, 36; 1999 JV₆₁ *, 20, 4, 36; 1999 JW₆₁ *, 29, 6, 36; 1999 JX₆₁ *, 7, 2, 3; 1999 JY₆₁ *, 18, 4, 9; 1999 JZ₆₁ *, 30, 6, 36; 1999 JA₆₂ *, 19, 4, 9; 1999 JB₆₂ *, 16, 4, 9; 1999 JC₆₂ *, 39, 8, 115; 1999 JD₆₂ *, 6, 2, 3; 1999 JE₆₂ *, 29, 6, 36; 1999 JF₆₂ *, 37, 8, 109; 1999 JG₆₂ *, 29, 6, 36; 1999 JH₆₂ *, 34, 7, 36; 1999 JI₆₂ *, 25, 6, 35; 1999 JK₆₂ *, 29, 6, 36; 1999 JL₆₂ *, 24, 5, 35; 1999 JM₆₂ *, 28, 6, 35; 1999 JN₆₂ *, 29, 6, 35; 1999 JO₆₂ *, 29, 6, 36; 1999 JP₆₂ *, 30, 6, 35; 1999 JQ₆₂ *, 21, 5, 35; 1999 JR₆₂ *, 30, 6, 35; 1999 JS₆₂ *, 34, 7, 35; 1999 JT₆₂ *, 8, 2, 3; 1999 JU₆₂ *, 26, 6, 35; 1999 JV₆₂ *, 35, 7, 35; 1999 JW₆₂ *, 9, 2, 3; 1999 JX₆₂ *, 8, 2, 3; 1999 JY₆₂ *, 39, 8, 83; 1999 JZ₆₂ *, 23, 5, 36; 1999 JA₆₃ *, 24, 6, 36; 1999 JB₆₃ *, 33, 7, 83; 1999 JC₆₃ *, 27, 6, 36; 1999 JD₆₃ *, 7, 2, 3; 1999 JE₆₃ *, 25, 6, 36; 1999 JF₆₃ *, 9, 2, 3; 1999 JG₆₃ *, 15, 2, 3; 1999 JH₆₃ *, 18, 4, 9; 1999 JI₆₃ *, 30, 6, 36; 1999 JK₆₃ *, 34, 7, 36; 1999 JL₆₃ *, 10, 2, 3; 1999 JM₆₃ *, 16, 4, 9; 1999 JN₆₃ *, 15, 4, 9; 1999 JO₆₃ *, 27, 6, 36; 19

2, 1; 1999 JV₆₆ *, 6, 2, 1; 1999 JW₆₆ *, 9, 2, 1; 1999 JX₆₆ *, 17, 4, 35; 1999 JY₆₆ *, 25, 6, 37; 1999 JZ₆₆ *, 30, 6, 37; 1999 JA₆₇ *, 24, 5, 7; 1999 JB₆₇ *, 34, 6, 37; 1999 JC₆₇ *, 9, 2, 1; 1999 JD₆₇ *, 8, 2, 1; 1999 JE₆₇ *, 33, 7, 38; 1999 JF₆₇ *, 8, 2, 1; 1999 JG₆₇ *, 8, 2, 1; 1999 JH₆₇ *, 15, 3, 5; 1999 JJ₆₇ *, 8, 2, 1; 1999 JK₆₇ *, 15, 3, 5; 1999 JL₆₇ *, 28, 6, 37; 1999 JM₆₇ *, 12, 3, 5; 1999 JN₆₇ *, 6, 2, 1; 1999 JO₆₇ *, 14, 3, 5; 1999 JP₆₇ *, 19, 4, 35; 1999 JQ₆₇ *, 31, 7, 37; 1999 JR₆₇ *, 16, 4, 7; 1999 JS₆₇ *, 7, 2, 1; 1999 JT₆₇ *, 14, 3, 5; 1999 JU₆₇ *, 9, 2, 1; 1999 JV₆₇ *, 7, 2, 1; 1999 JW₆₇ *, 28, 6, 37; 1999 JX₆₇ *, 30, 6, 37; 1999 JY₆₇ *, 29, 6, 37; 1999 JZ₆₇ *, 30, 6, 37; 1999 JA₆₈ *, 29, 6, 37; 1999 JB₆₈ *, 28, 6, 37; 1999 JC₆₈ *, 13, 3, 5; 1999 JD₆₈ *, 20, 4, 7; 1999 JE₆₈ *, 33, 7, 37; 1999 JF₆₈ *, 16, 4, 35; 1999 JG₆₈ *, 16, 4, 35; 1999 JH₆₈ *, 33, 7, 496; 1999 JI₆₈ *, 25, 6, 37; 1999 JK₆₈ *, 24, 5, 35; 1999 JL₆₈ *, 35, 7, 37; 1999 JM₆₈ *, 38, 8, 37; 1999 JN₆₈ *, 21, 5, 7; 1999 JO₆₈ *, 34, 7, 37; 1999 JP₆₈ *, 32, 7, 37; 1999 JQ₆₈ *, 8, 2, 1; 1999 JR₆₈ *, 25, 6, 37; 1999 JS₆₈ *, 26, 6, 37; 1999 JT₆₈ *, 27, 6, 37; 1999 JU₆₈ *, 19, 5, 7; 1999 JV₆₈ *, 34, 7, 37; 1999 JW₆₈ *, 20, 5, 7; 1999 JX₆₈ *, 29, 6, 37; 1999 JY₆₈ *, 15, 3, 5; 1999 JZ₆₈ *, 20, 5, 7; 1999 JA₆₉ *, 8, 2, 1; 1999 JB₆₉ *, 16, 4, 6; 1999 JC₆₉ *, 8, 2, 1; 1999 JD₆₉ *, 17, 4, 7; 1999 JE₆₉ *, 34, 7, 37; 1999 JF₆₉ *, 28, 6, 37; 1999 JG₆₉ *, 22, 5, 7; 1999 JH₆₉ *, 19, 4, 35; 1999 JJ₆₉ *, 23, 4, 35; 1999 JK₆₉ *, 34, 5, 35; 1999 JL₆₉ *, 8, 2, 1; 1999 JM₆₉ *, 12, 3, 31; 1999 JN₆₉ *, 7, 2, 1; 1999 JO₆₉ *, 9, 2, 1; 1999 JP₆₉ *, 27, 6, 37; 1999 JQ₆₉ *, 20, 5, 7; 1999 JR₆₉ *, 24, 6, 37; 1999 JS₆₉ *, 7, 2, 1; 1999 JT₆₉ *, 29, 5, 35; 1999 JU₆₉ *, 10, 2, 1; 1999 JV₆₉ *, 29, 6, 37; 1999 JW₆₉ *, 8, 2, 1; 1999 JX₆₉ *, 26, 6, 37; 1999 JY₆₉ *, 19, 4, 7; 1999 JZ₆₉ *, 29, 6, 37; 1999 JA₇₀ *, 8, 2, 1; 1999 JB₇₀ *, 19, 4, 7; 1999 JC₇₀ *, 37, 8, 37; 1999 JD₇₀ *, 40, 8, 39; 1999 JE₇₀ *, 32, 6, 37; 1999 JF₇₀ *, 39, 8, 37; 1999 JG₇₀ *, 12, 3, 5; 1999 JH₇₀ *, 24, 5, 7; 1999 JJ₇₀ *, 14, 4, 7; 1999 JK₇₀ *, 6, 2, 1; 1999 JL₇₀ *, 8, 2, 1; 1999 JM₇₀ *, 23, 5, 7; 1999 JN₇₀ *, 20, 5, 7; 1999 JO₇₀ *, 24, 5, 7; 1999 JP₇₀ *, 15, 3, 5; 1999 JQ₇₀ *, 26, 6, 37; 1999 JR₇₀ *, 22, 5, 37; 1999 JS₇₀ *, 33, 7, 37; 1999 JT₇₀ *, 28, 6, 37; 1999 JU₇₀ *, 7, 2, 1; 1999 JV₇₀ *, 18, 4, 7; 1999 JW₇₀ *, 9, 2, 1; 1999 JX₇₀ *, 28, 6, 37; 1999 JY₇₀ *, 19, 5, 7; 1999 JZ₇₀ *, 21, 5, 7; 1999 JA₇₁ *, 43, 6, 35; 1999 JB₇₁ *, 65, 11, 105; 1999 JC₇₁ *, 12, 3, 5; 1999 JD₇₁ *, 23, 4, 35; 1999 JE₇₁ *, 7, 2, 1; 1999 JF₇₁ *, 21, 4, 35; 1999 JG₇₁ *, 29, 5, 7; 1999 JH₇₁ *, 33, 7, 37; 1999 JJ₇₁ *, 8, 2, 1; 1999 JK₇₁ *, 27, 6, 37; 1999 JL₇₁ *, 14, 3, 5; 1999 JM₇₁ *, 28, 6, 37; 1999 JN₇₁ *, 25, 6, 37; 1999 JO₇₁ *, 32, 7, 57; 1999 JP₇₁ *, 34, 7, 37; 1999 JQ₇₁ *, 36, 8, 57; 1999 JR₇₁ *, 21, 5, 7; 1999 JS₇₁ *, 24, 5, 7; 1999 JT₇₁ *, 22, 5, 7; 1999 JU₇₁ *, 43, 7, 37; 1999 JV₇₁ *, 34, 7, 57; 1999 JW₇₁ *, 34, 7, 37; 1999 JX₇₁ *, 23, 5, 7; 1999 JY₇₁ *, 11, 3, 5; 1999 JZ₇₁ *, 9, 2, 1; 1999 JA₇₂ *, 13, 3, 31; 1999 JB₇₂ *, 22, 5, 7; 1999 JC₇₂ *, 23, 5, 7; 1999 JD₇₂ *, 14, 4, 7; 1999 JE₇₂ *, 13, 3, 5; 1999 JF₇₂ *, 28, 6, 37; 1999 JG₇₂ *, 34, 7, 37; 1999 JH₇₂ *, 7, 2, 1; 1999 JI₇₂ *, 18, 10, 57; 1999 JK₇₂ *, 9, 2, 1; 1999 JL₇₂ *, 14, 3, 5; 1999 JM₇₂ *, 13, 3, 5; 1999 JN₇₂ *, 17, 4, 35; 1999 JO₇₂ *, 29, 6, 36; 1999 JP₇₂ *, 48, 10, 57; 1999 JQ₇₂ *, 13, 3, 5; 1999 JR₇₂ *, 25, 6, 36; 1999 JS₇₂ *, 30, 6, 59; 1999 JT₇₂ *, 6, 2, 1; 1999 JU₇₂ *, 29, 6, 7; 1999 JW₇₂ *, 25, 5, 29; 1999 JX₇₂ *, 28, 6, 7; 1999 JY₇₂ *, 22, 5, 7; 1999 JZ₇₂ *, 13, 3, 5; 1999 JA₇₃ *, 13, 3, 5; 1999 JB₇₃ *, 18, 4, 5; 1999 JC₇₃ *, 27, 6, 7; 1999 JD₇₃ *, 24, 5, 33; 1999 JE₇₃ *, 21, 5, 29; 1999 JF₇₃ *, 13, 3, 5; 1999 JG₇₃ *, 23, 5, 29; 1999 JH₇₃ *, 31, 7, 29; 1999 JI₇₃ *, 39, 7, 33; 1999 JK₇₃ *, 34, 7, 33; 1999 JL₇₃ *, 9, 2, 1; 1999 JM₇₃ *, 27, 6, 7; 1999 JN₇₃ *, 8, 2, 1; 1999 JO₇₃ *, 33, 7, 33; 1999 JP₇₃ *, 42, 9, 33; 1999 JQ₇₃ *, 25, 6, 33; 1999 JR₇₃ *, 9, 2, 1; 1999 JS₇₃ *, 23, 5, 33; 1999 JT₇₃ *, 28, 6, 33; 1999 JU₇₃ *, 22, 6, 33; 1999 JV₇₃ *, 13, 3, 5; 1999 JW₇₃ *, 29, 6, 33; 1999 JX₇₃ *, 23, 5, 33; 1999 JY₇₃ *, 12, 3, 5; 1999 JZ₇₃ *, 39, 8, 57; 1999 JA₇₄ *, 8, 2, 1; 1999 JB₇₄ *, 8, 2, 1; 1999 JC₇₄ *, 17, 4, 35; 1999 JD₇₄ *, 7, 2, 1; 1999 JE₇₄ *, 17, 4, 5; 1999 JF₇₄ *, 53, 11, 565; 1999 JG₇₄ *, 22, 5, 33; 1999 JH₇₄ *, 9, 2, 1; 1999 JJ₇₄ *, 25, 6, 37; 1999 JK₇₄ *, 8, 2, 1; 1999 JL₇₄ *, 13, 3, 5; 1999 JM₇₄ *, 23, 5, 29; 1999 JN₇₄ *, 14, 2, 1; 1999 JO₇₄ *, 17, 2, 1; 1999 JP₇₄ *, 34, 7, 33; 1999 JQ₇₄ *, 63, 7, 33; 1999 JR₇₄ *, 15, 3, 5; 1999 JS₇₄ *, 43, 9, 112; 1999 JT₇₄ *, 44, 8, 109; 1999 JU₇₄ *, 44, 6, 31; 1999 JW₇₄ *, 51, 7, 31; 1999 JX₇₄ *, 16, 3, 5; 1999 JY₇₄ *, 30, 6, 33; 1999 JZ₇₄ *, 35, 6, 34; 1999 JA₇₅ *, 44, 9, 114; 1999 JB₇₅ *, 7, 2, 5; 1999 JC₇₅ *, 8, 2, 5; 1999 JD₇₅ *, 6, 2, 5; 1999 JE₇₅ *, 7, 2, 5; 1999 JF₇₅ *, 8, 2, 5; 1999 JG₇₅ *, 12, 3, 33; 1999 JH₇₅ *, 8, 2, 5; 1999 JI₇₅ *, 8, 2, 5; 1999 JK₇₅ *, 16, 4, 7; 1999 JL₇₅ *, 4, 1, 0; 1999 JM₇₅ *, 25, 5, 34; 1999 JN₇₅ *, 10, 2, 8; 1999 JO₇₅ *, 8, 2, 8; 1999 JP₇₅ *, 8, 2, 8; 1999 JQ₇₅ *, 9, 2, 4; 1999 JR₇₅ *, 10, 2, 4; 1999 JS₇₅ *, 10, 2, 4; 1999 JT₇₅ *, 9, 2, 4; 1999 JU₇₅ *, 10, 2, 4; 1999 JV₇₅ *, 9, 2, 4; 1999 JW₇₅ *, 10, 2, 4; 1999 JX₇₅ *, 9, 2, 4; 1999 JY₇₅ *, 10, 2, 4; 1999 JZ₇₅ *, 15, 3, 29; 1999 JA₇₆ *, 10, 2, 4; 1999 JB₇₆ *, 19, 4, 9; 1999 JC₇₆ *, 29, 6, 34; 1999 JD₇₆ *, 17, 4, 9; 1999 JE₇₆ *, 27, 4, 8; 1999 JF₇₆ *, 17, 4, 8; 1999 JG₇₆ *, 6, 2, 4; 1999 JH₇₆ *, 28, 6, 35; 1999 JI₇₆ *, 24, 5, 36; 1999 JK₇₆ *, 34, 7, 112; 1999 JL₇₆ *, 26, 6, 35; 1999 JM₇₆ *, 30, 6, 35; 1999 JN₇₆ *, 20, 4, 35; 1999 JO₇₆ *, 38, 8, 510; 1999 JP₇₆ *, 18, 4, 35; 1999 JQ₇₆ *, 18, 4, 35; 1999 JR₇₆ *, 19, 4, 35; 1999 JS₇₆ *, 27, 6, 35; 1999 JT₇₆ *, 19, 4, 35; 1999 JU₇₆ *, 20, 4, 35; 1999 JW₇₆ *, 19, 4, 35; 1999 JX₇₆ *, 34, 6, 39; 1999 JY₇₆ *, 12, 2, 2; 1999 JZ₇₆ *, 22, 4, 35; 1999 JA₇₇ *, 45, 7, 57; 1999 JB₇₇ *, 32, 5, 35; 1999 JC₇₇ *, 23, 4, 35; 1999 JD₇₇ *, 32, 5, 35; 1999 JE₇₇ *, 26, 5, 35; 1999 JF₇₇ *, 20, 4, 35; 1999 JG₇₇ *, 15, 3, 5; 1999 JH₇₇ *, 37, 8, 557; 1999 JI₇₇ *, 30, 6, 33; 1999 JK₇₇ *, 64, 7, 31; 1999 JL₇₇ *, 19, 4, 33; 1999 JM₇₇ *, 18, 4, 33; 1999 JN₇₇ *, 29, 6, 33; 1999 JO₇₇ *, 24, 5, 33; 1999 JP₇₇ *, 34, 7, 33; 1999 JQ₇₇ *, 24, 5, 33; 1999 JR₇₇ *, 25, 5, 33; 1999 JS₇₇ *, 27, 6, 108; 1999 JT₇₇ *, 23, 5, 33; 1999 JU₇₇ *, 24, 5, 33; 1999 JV₇₇ *, 33, 7, 82; 1999 JW₇₇ *, 21, 5, 33; 1999 JX₇₇ *, 30, 6, 33; 1999 JY₇₇ *, 26,

6, 33; 1999 JZ₇₇ *, 29, 6, 33; 1999 JA₇₈ *, 34, 6, 33; 1999 JB₇₈ *, 32, 7, 82; 1999 JC₇₈ *, 30, 6, 33; 1999 JD₇₈ *, 22, 5, 33; 1999 JE₇₈ *, 36, 8, 108; 1999 JF₇₈ *, 9, 2, 1; 1999 JG₇₈ *, 45, 8, 56; 1999 JH₇₈ *, 25, 5, 34; 1999 JI₇₈ *, 9, 2, 1; 1999 JK₇₈ *, 18, 4, 6; 1999 JL₇₈ *, 17, 4, 6; 1999 JM₇₈ *, 25, 5, 58; 1999 JN₇₈ *, 30, 6, 104; 1999 JO₇₈ *, 19, 4, 37; 1999 JP₇₈ *, 25, 5, 58; 1999 JQ₇₈ *, 9, 2, 1; 1999 JR₇₈ *, 22, 5, 58; 1999 JS₇₈ *, 34, 6, 35; 1999 JT₇₈ *, 37, 4, 30; 1999 JU₇₈ *, 15, 3, 4; 1999 JV₇₈ *, 9, 2, 1; 1999 JW₇₈ *, 10, 2, 1; 1999 JX₇₈ *, 8, 2, 1; 1999 JY₇₈ *, 23, 5, 32; 1999 JZ₇₈ *, 24, 5, 58; 1999 JA₇₉ *, 37, 7, 111; 1999 JB₇₉ *, 15, 3, 4; 1999 JC₇₉ *, 22, 5, 58; 1999 JD₇₉ *, 32, 7, 32; 1999 JE₇₉ *, 27, 6, 63; 1999 JF₇₉ *, 9, 2, 1; 1999 JG₇₉ *, 19, 4, 30; 1999 JH₇₉ *, 19, 4, 30; 1999 JJ₇₉ *, 14, 3, 32; 1999 JK₇₉ *, 32, 7, 35; 1999 JL₇₉ *, 32, 7, 35; 1999 JM₇₉ *, 25, 5, 35; 1999 JN₇₉ *, 20, 4, 32; 1999 JO₇₉ *, 9, 2, 1; 1999 JP₇₉ *, 28, 6, 33; 1999 JQ₇₉ *, 8, 2, 1; 1999 JR₇₉ *, 15, 3, 33; 1999 JS₇₉ *, 28, 6, 35; 1999 JT₇₉ *, 19, 4, 49; 1999 JU₇₉ *, 53, 6, 108; 1999 JV₇₉ *, 32, 7, 529; 1999 JW₇₉ *, 25, 5, 33; 1999 JX₇₉ *, 29, 6, 32; 1999 JY₇₉ *, 28, 6, 33; 1999 JZ₇₉ *, 17, 4, 6; 1999 JA₈₀ *, 15, 4, 6; 1999 JB₈₀ *, 23, 5, 32; 1999 JC₈₀ *, 44, 6, 39; 1999 JD₈₀ *, 39, 8, 109; 1999 JE₈₀ *, 29, 6, 33; 1999 JF₈₀ *, 29, 6, 33; 1999 JG₈₀ *, 30, 6, 33; 1999 JH₈₀ *, 27, 6, 33; 1999 JI₈₀ *, 29, 6, 31; 1999 JK₈₀ *, 34, 7, 114; 1999 JL₈₀ *, 8, 2, 5; 1999 JM₈₀ *, 24, 5, 33; 1999 JN₈₀ *, 39, 7, 33; 1999 JO₈₀ *, 38, 8, 108; 1999 JP₈₀ *, 29, 6, 33; 1999 JR₈₀ *, 28, 6, 33; 1999 JS₈₀ *, 25, 5, 33; 1999 JT₈₀ *, 8, 2, 5; 1999 JU₈₀ *, 23, 5, 33; 1999 JV₈₀ *, 24, 5, 33; 1999 JW₈₀ *, 8, 2, 9; 1999 JX₈₀ *, 28, 6, 33; 1999 JY₈₀ *, 20, 4, 33; 1999 JZ₈₀ *, 35, 7, 82; 1999 JA₈₁ *, 20, 4, 33; 1999 JB₈₁ *, 25, 5, 33; 1999 JC₈₁ *, 32, 7, 112; 1999 JD₈₁ *, 52, 8, 33; 1999 JE₈₁ *, 10, 2, 7; 1999 JF₈₁ *, 20, 4, 32; 1999 JG₈₁ *, 9, 2, 7; 1999 JH₈₁ *, 23, 4, 31; 1999 JI₈₁ *, 8, 2, 7; 1999 JK₈₁ *, 14, 3, 7; 1999 JL₈₁ *, 8, 2, 7; 1999 JM₈₁ *, 9, 2, 7; 1999 JN₈₁ *, 10, 2, 8; 1999 JO₈₁ *, 10, 2, 3; 1999 JP₈₁ *, 10, 2, 3; 1999 JQ₈₁ *, 33, 5, 57; 1999 JR₈₁ *, 20, 4, 35; 1999 JS₈₁ *, 31, 4, 35; 1999 JT₈₁ *, 34, 5, 59; 1999 JU₈₁ *, 23, 4, 35; 1999 JV₈₁ *, 14, 3, 5; 1999 JW₈₁ *, 14, 3, 5; 1999 JX₈₁ *, 8, 2, 3; 1999 JY₈₁ *, 24, 5, 59; 1999 JZ₈₁ *, 25, 5, 59; 1999 JA₈₂ *, 24, 5, 58; 1999 JB₈₂ *, 15, 3, 5; 1999 JC₈₂ *, 9, 2, 3; 1999 JD₈₂ *, 25, 5, 57; 1999 JE₈₂ *, 22, 5, 35; 1999 JF₈₂ *, 17, 4, 35; 1999 JG₈₂ *, 19, 4, 35; 1999 JH₈₂ *, 32, 4, 35; 1999 JI₈₂ *, 13, 3, 5; 1999 JK₈₂ *, 18, 4, 37; 1999 JL₈₂ *, 20, 4, 35; 1999 JM₈₂ *, 7, 2, 3; 1999 JN₈₂ *, 24, 4, 35; 1999 JO₈₂ *, 25, 4, 35; 1999 JP₈₂ *, 19, 4, 35; 1999 JQ₈₂ *, 18, 4, 35; 1999 JR₈₂ *, 8, 2, 3; 1999 JS₈₂ *, 28, 6, 57; 1999 JT₈₂ *, 23, 5, 58; 1999 JU₈₂ *, 28, 6, 63; 1999 JV₈₂ *, 25, 5, 31; 1999 JW₈₂ *, 29, 6, 63; 1999 JX₈₂ *, 15, 3, 5; 1999 JY₈₂ *, 28, 6, 63; 1999 JZ₈₂ *, 28, 6, 80; 1999 JA₈₃ *, 24, 5, 31; 1999 JB₈₃ *, 23, 5, 31; 1999 JC₈₃ *, 16, 4, 33; 1999 JD₈₃ *, 18, 4, 33; 1999 JE₈₃ *, 22, 5, 31; 1999 JF₈₃ *, 28, 6, 80; 1999 JG₈₃ *, 24, 5, 31; 1999 JH₈₃ *, 24, 5, 31; 1999 JI₈₃ *, 23, 5, 31; 1999 JK₈₃ *, 34, 7, 109; 1999 JL₈₃ *, 24, 5, 33; 1999 JM₈₃ *, 33, 7, 33; 1999 JN₈₃ *, 23, 5, 31; 1999 JO₈₃ *, 24, 5, 33; 1999 JP₈₃ *, 19, 4, 33; 1999 JQ₈₃ *, 23, 5, 33; 1999 JR₈₃ *, 24, 5, 31; 1999 JS₈₃ *, 25, 5, 31; 1999 JT₈₃ *, 24, 5, 31; 1999 JU₈₃ *, 34, 7, 112; 1999 JV₈₃ *, 30, 6, 80; 1999 JW₈₃ *, 23, 5, 33; 1999 JX₈₃ *, 35, 7, 82; 1999 JY₈₃ *, 24, 5, 33; 1999 JZ₈₃ *, 24, 5, 33; 1999 JA₈₄ *, 28, 6, 108; 1999 JB₈₄ *, 27, 6, 33; 1999 JC₈₄ *, 24, 5, 33; 1999 JD₈₄ *, 29, 6, 108; 1999 JE₈₄ *, 18, 4, 27; 1999 JF₈₄ *, 25, 5, 33; 1999 JG₈₄ *, 28, 6, 33; 1999 JH₈₄ *, 24, 5, 31; 1999 JI₈₄ *, 22, 5, 31; 1999 JK₈₄ *, 39, 7, 34; 1999 JL₈₄ *, 29, 6, 80; 1999 JM₈₄ *, 34, 7, 82; 1999 JN₈₄ *, 24, 5, 31; 1999 JO₈₄ *, 24, 5, 33; 1999 JP₈₄ *, 23, 5, 33; 1999 JQ₈₄ *, 30, 6, 80; 1999 JR₈₄ *, 14, 3, 5; 1999 JS₈₄ *, 26, 5, 33; 1999 JT₈₄ *, 14, 3, 5; 1999 JU₈₄ *, 9, 2, 2; 1999 JV₈₄ *, 33, 7, 59; 1999 JW₈₄ *, 10, 2, 2; 1999 JX₈₄ *, 7, 2, 1; 1999 JY₈₄ *, 19, 2, 1; 1999 JZ₈₄ *, 7, 2, 1; 1999 JA₈₅ *, 20, 2, 1; 1999 JB₈₅ *, 9, 2, 1; 1999 JC₈₅ *, 13, 2, 1; 1999 JD₈₅ *, 8, 2, 1; 1999 JE₈₅ *, 11, 3, 3; 1999 JF₈₅ *, 15, 2, 1; 1999 JG₈₅ *, 18, 2, 1; 1999 JH₈₅ *, 21, 2, 1; 1999 JI₈₅ *, 7, 2, 1; 1999 JK₈₅ *, 12, 2, 1; 1999 JL₈₅ *, 25, 4, 28; 1999 JM₈₅ *, 19, 4, 30; 1999 JN₈₅ *, 23, 5, 30; 1999 JO₈₅ *, 23, 5, 30; 1999 JP₈₅ *, 20, 4, 30; 1999 JQ₈₅ *, 9, 2, 6; 1999 JR₈₅ *, 15, 2, 6; 1999 JS₈₅ *, 17, 4, 8; 1999 JT₈₅ *, 17, 4, 8; 1999 JU₈₅ *, 11, 3, 35; 1999 JV₈₅ *, 9, 2, 5; 1999 JW₈₅ *, 10, 2, 5; 1999 JX₈₅ *, 1

10, 2, 5; 1999 JH₈₉ *, 18, 4, 7; 1999 JJ₈₉ *, 7, 2, 5; 1999 JK₈₉ *, 24, 5, 37; 1999 JL₈₉ *, 8, 2, 5; 1999 JM₈₉ *, 7, 2, 5; 1999 JN₈₉ *, 6, 2, 5; 1999 JO₈₉ *, 9, 2, 5; 1999 JP₈₉ *, 10, 2, 5; 1999 JQ₈₉ *, 9, 2, 5; 1999 JR₈₉ *, 10, 2, 5; 1999 JS₈₉ *, 10, 2, 5; 1999 JT₈₉ *, 9, 2, 5; 1999 JU₈₉ *, 6, 2, 5; 1999 JV₈₉ *, 7, 2, 5; 1999 JW₈₉ *, 8, 2, 5; 1999 JX₈₉ *, 24, 5, 65; 1999 JY₈₉ *, 9, 2, 5; 1999 JZ₈₉ *, 9, 2, 5; 1999 JA₉₀ *, 10, 2, 5; 1999 JB₉₀ *, 8, 2, 5; 1999 JC₉₀ *, 10, 2, 5; 1999 JD₉₀ *, 9, 2, 5; 1999 JE₉₀ *, 9, 2, 5; 1999 JF₉₀ *, 8, 2, 5; 1999 JG₉₀ *, 6, 2, 5; 1999 JH₉₀ *, 18, 4, 31; 1999 JI₉₀ *, 15, 4, 63; 1999 JK₉₀ *, 23, 5, 63; 1999 JL₉₀ *, 7, 2, 5; 1999 JM₉₀ *, 10, 2, 5; 1999 JN₉₀ *, 8, 2, 5; 1999 JO₉₀ *, 20, 4, 31; 1999 JP₉₀ *, 10, 2, 5; 1999 JQ₉₀ *, 7, 2, 5; 1999 JR₉₀ *, 10, 2, 5; 1999 JS₉₀ *, 7, 2, 5; 1999 JT₉₀ *, 8, 2, 5; 1999 JU₉₀ *, 9, 2, 5; 1999 JV₉₀ *, 7, 2, 5; 1999 JW₉₀ *, 8, 2, 5; 1999 JX₉₀ *, 7, 2, 5; 1999 JY₉₀ *, 9, 2, 5; 1999 JZ₉₀ *, 10, 2, 5; 1999 JA₉₁ *, 24, 5, 33; 1999 JB₉₁ *, 8, 2, 5; 1999 JC₉₁ *, 9, 2, 5; 1999 JD₉₁ *, 10, 2, 5; 1999 JE₉₁ *, 9, 2, 5; 1999 JF₉₁ *, 20, 4, 31; 1999 JG₉₁ *, 9, 2, 5; 1999 JH₉₁ *, 10, 2, 5; 1999 JI₉₁ *, 20, 4, 31; 1999 JK₉₁ *, 10, 2, 5; 1999 JL₉₁ *, 9, 2, 5; 1999 JM₉₁ *, 25, 5, 80; 1999 JN₉₁ *, 10, 2, 5; 1999 JO₉₁ *, 10, 2, 5; 1999 JP₉₁ *, 20, 4, 33; 1999 JQ₉₁ *, 20, 4, 33; 1999 JR₉₁ *, 23, 5, 33; 1999 JS₉₁ *, 19, 4, 33; 1999 JT₉₁ *, 10, 2, 5; 1999 JU₉₁ *, 9, 2, 5; 1999 JV₉₁ *, 7, 2, 5; 1999 JW₉₁ *, 30, 4, 33; 1999 JX₉₁ *, 9, 2, 5; 1999 JY₉₁ *, 9, 2, 5; 1999 JZ₉₁ *, 18, 4, 30; 1999 JA₉₂ *, 24, 5, 33; 1999 JB₉₂ *, 11, 3, 35; 1999 JC₉₂ *, 7, 2, 5; 1999 JD₉₂ *, 8, 2, 5; 1999 JE₉₂ *, 8, 2, 5; 1999 JF₉₂ *, 9, 2, 5; 1999 JG₉₂ *, 8, 2, 5; 1999 JH₉₂ *, 17, 4, 29; 1999 JI₉₂ *, 8, 2, 5; 1999 JK₉₂ *, 7, 2, 5; 1999 JL₉₂ *, 14, 3, 31; 1999 JM₉₂ *, 8, 2, 5; 1999 JN₉₂ *, 9, 2, 5; 1999 JO₉₂ *, 18, 4, 33; 1999 JP₉₂ *, 19, 4, 33; 1999 JQ₉₂ *, 9, 2, 5; 1999 JR₉₂ *, 8, 2, 5; 1999 JS₉₂ *, 8, 2, 5; 1999 JT₉₂ *, 9, 2, 5; 1999 JU₉₂ *, 8, 2, 5; 1999 JV₉₂ *, 19, 4, 33; 1999 JW₉₂ *, 8, 2, 5; 1999 JX₉₂ *, 19, 4, 31; 1999 JY₉₂ *, 8, 2, 5; 1999 JZ₉₂ *, 9, 2, 5; 1999 JA₉₃ *, 7, 2, 5; 1999 JB₉₃ *, 9, 2, 5; 1999 JC₉₃ *, 19, 4, 31; 1999 JD₉₃ *, 9, 2, 5; 1999 JE₉₃ *, 10, 2, 5; 1999 JF₉₃ *, 8, 2, 5; 1999 JG₉₃ *, 9, 2, 5; 1999 JH₉₃ *, 14, 3, 33; 1999 JI₉₃ *, 8, 2, 5; 1999 JK₉₃ *, 20, 4, 33; 1999 JL₉₃ *, 13, 3, 33; 1999 JM₉₃ *, 7, 2, 5; 1999 JN₉₃ *, 20, 4, 33; 1999 JO₉₃ *, 12, 3, 33; 1999 JP₉₃ *, 19, 4, 33; 1999 JQ₉₃ *, 18, 4, 33; 1999 JR₉₃ *, 8, 2, 5; 1999 JS₉₃ *, 9, 2, 5; 1999 JT₉₃ *, 18, 4, 33; 1999 JU₉₃ *, 9, 2, 5; 1999 JV₉₃ *, 10, 2, 5; 1999 JW₉₃ *, 19, 4, 33; 1999 JX₉₃ *, 8, 2, 5; 1999 JY₉₃ *, 14, 3, 33; 1999 JZ₉₃ *, 19, 4, 33; 1999 JA₉₄ *, 19, 4, 33; 1999 JB₉₄ *, 20, 4, 33; 1999 JC₉₄ *, 20, 4, 33; 1999 JD₉₄ *, 20, 4, 33; 1999 JE₉₄ *, 20, 4, 33; 1999 JF₉₄ *, 9, 2, 5; 1999 JG₉₄ *, 9, 2, 5; 1999 JH₉₄ *, 8, 2, 5; 1999 JI₉₄ *, 8, 2, 5; 1999 JK₉₄ *, 8, 2, 5; 1999 JL₉₄ *, 18, 4, 31; 1999 JM₉₄ *, 20, 4, 31; 1999 JN₉₄ *, 8, 2, 5; 1999 JO₉₄ *, 23, 5, 31; 1999 JP₉₄ *, 10, 2, 5; 1999 JQ₉₄ *, 9, 2, 5; 1999 JR₉₄ *, 8, 2, 5; 1999 JS₉₄ *, 16, 4, 31; 1999 JT₉₄ *, 24, 5, 33; 1999 JU₉₄ *, 6, 2, 5; 1999 JV₉₄ *, 20, 4, 33; 1999 JW₉₄ *, 20, 4, 31; 1999 JX₉₄ *, 13, 3, 33; 1999 JY₉₄ *, 18, 4, 31; 1999 JZ₉₄ *, 7, 2, 5; 1999 JA₉₅ *, 8, 2, 5; 1999 JB₉₅ *, 19, 4, 33; 1999 JC₉₅ *, 20, 4, 33; 1999 JD₉₅ *, 7, 2, 5; 1999 JE₉₅ *, 20, 4, 33; 1999 JF₉₅ *, 9, 2, 5; 1999 JG₉₅ *, 7, 2, 5; 1999 JH₉₅ *, 10, 2, 5; 1999 JI₉₅ *, 9, 2, 5; 1999 JK₉₅ *, 9, 2, 5; 1999 JL₉₅ *, 18, 4, 33; 1999 JM₉₅ *, 20, 4, 33; 1999 JN₉₅ *, 18, 4, 33; 1999 JO₉₅ *, 10, 2, 5; 1999 JP₉₅ *, 9, 2, 5; 1999 JQ₉₅ *, 20, 4, 33; 1999 JR₉₅ *, 19, 4, 33; 1999 JS₉₅ *, 10, 2, 5; 1999 JT₉₅ *, 9, 2, 5; 1999 JU₉₅ *, 8, 2, 5; 1999 JV₉₅ *, 8, 2, 5; 1999 JW₉₅ *, 10, 2, 5; 1999 JX₉₅ *, 8, 2, 5; 1999 JY₉₅ *, 19, 4, 33; 1999 JZ₉₅ *, 18, 4, 33; 1999 JA₉₆ *, 19, 4, 31; 1999 JB₉₆ *, 20, 4, 31; 1999 JC₉₆ *, 9, 2, 5; 1999 JD₉₆ *, 10, 2, 5; 1999 JE₉₆ *, 20, 4, 31; 1999 JF₉₆ *, 20, 4, 31; 1999 JG₉₆ *, 20, 4, 31; 1999 JH₉₆ *, 19, 4, 33; 1999 JI₉₆ *, 10, 2, 5; 1999 JK₉₆ *, 19, 4, 33; 1999 JL₉₆ *, 14, 3, 33; 1999 JM₉₆ *, 17, 4, 33; 1999 JN₉₆ *, 20, 4, 33; 1999 JO₉₆ *, 18, 4, 33; 1999 JP₉₆ *, 19, 4, 33; 1999 JQ₉₆ *, 9, 2, 5; 1999 JR₉₆ *, 15, 3, 33; 1999 JS₉₆ *, 10, 2, 5; 1999 JT₉₆ *, 7, 2, 5; 1999 JU₉₆ *, 16, 4, 33; 1999 JV₉₆ *, 20, 4, 33; 1999 JW₉₆ *, 19, 4, 33; 1999 JX₉₆ *, 17, 4, 33; 1999 JY₉₆ *, 8, 2, 5; 1999 JZ₉₆ *, 9, 2, 5; 1999 JA₉₇ *, 14, 3, 33; 1999 JB₉₇ *, 18, 4, 31; 1999 JC₉₇ *, 9, 2, 5; 1999 JD₉₇ *, 13, 3, 31; 1999 JE₉₇ *, 8, 2, 5; 1999 JF₉₇ *, 9, 2, 5; 1999 JG₉₇ *, 7, 2, 5; 1999 JH₉₇ *, 18, 4, 33; 1999 JI₉₇ *, 13, 3, 33; 1999 JK₉₇ *, 24, 5, 33; 1999 JL₉₇ *, 14, 3, 33; 1999 JM₉₇ *, 20, 4, 33; 1999 JN₉₇ *, 18, 4, 29; 1999 JO₉₇ *, 9, 2, 5; 1999 JP₉₇ *, 18, 4, 33; 1999 JQ₉₇ *, 19, 4, 33; 1999 JR₉₇ *, 8, 2, 5; 1999 JS₉₇ *, 9, 2, 5; 1999 JT₉₇ *, 9, 2, 5; 1999 JU₉₇ *, 19, 4, 31; 1999 JV₉₇ *, 7, 2, 5; 1999 JW₉₇ *, 17, 4, 31; 1999 JX₉₇ *, 7, 2, 5; 1999 JY₉₇ *, 14, 3, 31; 1999 JZ₉₇ *, 7, 2, 5; 1999 JA₉₈ *, 8, 2, 5; 1999 JB₉₈ *, 8, 2, 5; 1999 JC₉₈ *, 8, 2, 5; 1999 JD₉₈ *, 8, 2, 5; 1999 JE₉₈ *, 8, 2, 5; 1999 JF₉₈ *, 8, 2, 5; 1999 JG₉₈ *, 17, 4, 33; 1999 JH₉₈ *, 9, 2, 5; 1999 JI₉₈ *, 8, 2, 5; 1999 JK₉₈ *, 8, 2, 5; 1999 JL₉₈ *, 17, 4, 31; 1999 JM₉₈ *, 7, 2, 5; 1999 JN₉₈ *, 22, 5, 33; 1999 JO₉₈ *, 24, 5, 33; 1999 JP₉₈ *, 19, 4, 33; 1999 JQ₉₈ *, 7, 2, 5; 1999 JR₉₈ *, 24, 5, 33; 1999 JS₉₈ *, 16, 4, 33; 1999 JT₉₈ *, 24, 5, 33; 1999 JU₉₈ *, 18, 4, 33; 1999 JV₉₈ *, 20, 4, 33; 1999 JW₉₈ *, 18, 4, 33; 1999 JX₉₈ *, 20, 4, 33; 1999 JY₉₈ *, 23, 5, 33; 1999 JZ₉₈ *, 9, 2, 5; 1999 JA₉₉ *, 20, 4, 31; 1999 JB₉₉ *, 8, 2, 5; 1999 JC₉₉ *, 40, 6, 34; 1999 JD₉₉ *, 28, 5, 33; 1999 JE₉₉ *, 19, 4, 33; 1999 JF₉₉ *, 7, 2, 5; 1999 JG₉₉ *, 24, 6, 445; 1999 JH₉₉ *, 15, 3, 33; 1999 JI₉₉ *, 7, 2, 5; 1999 JK₉₉ *, 12, 3, 33; 1999 JL₉₉ *, 20, 4, 33; 1999 JM₉₉ *, 10, 2, 5; 1999 JN₉₉ *, 18, 4, 33; 1999 JO₉₉ *, 8, 2, 5; 1999 JP₉₉ *, 10, 2, 5; 1999 JQ₉₉ *, 9, 2, 5; 1999 JR₉₉ *, 17, 4, 33; 1999 JS₉₉ *, 20, 4, 31; 1999 JT₉₉ *, 23, 5, 31; 1999 JU₉₉ *, 40, 6, 31; 1999 JV₉₉ *, 19, 4, 33; 1999 JW₉₉ *, 8, 2, 5; 1999 JX₉₉ *, 17, 4, 33; 1999 JY₉₉ *, 16, 4, 33; 1999 JZ₉₉ *, 19, 4, 33; 1999 JA₁₀₀ *, 21, 5, 33; 1999 JB₁₀₀ *, 24, 5, 33; 1999 JC₁₀₀ *, 18, 4, 33; 1999 JD₁₀₀ *, 18, 4, 33; 1999 JE₁₀₀ *, 17, 4, 33; 1999 JF₁₀₀ *, 19, 4, 31; 1999 JG₁₀₀ *, 20, 4, 31; 1999 JH₁₀₀ *, 17, 4, 31; 1999 JI₁₀₀ *, 32, 6, 33; 1999 JI₁₀₀ *, 19, 4, 31; 1999 JL₁₀₀ *, 18, 4, 31; 1999 JM₁₀₀ *, 19, 4, 33; 1999 JN₁₀₀ *, 18, 4, 33; 1999 JO₁₀₀ *, 20, 4, 33; 1999 JP₁₀₀ *, 17, 4, 33; 1999 JQ₁₀₀ *, 19, 4, 33; 1999 JR₁₀₀ *, 18, 4, 33; 1999 JS₁₀₀ *, 20, 4, 33; 1999 JT₁₀₀ *, 20,

4, 33; 1999 JU₁₀₀ *, 18, 4, 33; 1999 JV₁₀₀ *, 18, 4, 33; 1999 JW₁₀₀ *, 25, 5, 80; 1999 JX₁₀₀ *, 9, 2, 5; 1999 JY₁₀₀ *, 36, 6, 34; 1999 JZ₁₀₀ *, 9, 2, 5; 1999 JA₁₀₁ *, 18, 4, 33; 1999 JB₁₀₁ *, 15, 3, 33; 1999 JC₁₀₁ *, 10, 2, 5; 1999 JD₁₀₁ *, 8, 2, 5; 1999 JE₁₀₁ *, 18, 4, 33; 1999 JF₁₀₁ *, 19, 4, 33; 1999 JG₁₀₁ *, 19, 4, 33; 1999 JH₁₀₁ *, 17, 4, 33; 1999 JI₁₀₁ *, 8, 2, 4; 1999 JK₁₀₁ *, 8, 2, 4; 1999 JL₁₀₁ *, 10, 2, 4; 1999 JM₁₀₁ *, 8, 2, 4; 1999 JN₁₀₁ *, 8, 2, 4; 1999 JO₁₀₁ *, 8, 2, 4; 1999 JP₁₀₁ *, 7, 2, 4; 1999 JQ₁₀₁ *, 7, 2, 4; 1999 JR₁₀₁ *, 18, 4, 6; 1999 JS₁₀₁ *, 15, 4, 6; 1999 JT₁₀₁ *, 8, 2, 4; 1999 JU₁₀₁ *, 8, 2, 4; 1999 JV₁₀₁ *, 16, 4, 6; 1999 JW₁₀₁ *, 9, 2, 4; 1999 JX₁₀₁ *, 8, 2, 4; 1999 JY₁₀₁ *, 9, 2, 4; 1999 JZ₁₀₁ *, 29, 6, 37; 1999 JA₁₀₂ *, 28, 6, 37; 1999 JB₁₀₂ *, 35, 5, 33; 1999 JC₁₀₂ *, 6, 2, 4; 1999 JD₁₀₂ *, 6, 2, 4; 1999 JE₁₀₂ *, 8, 2, 4; 1999 JF₁₀₂ *, 19, 4, 6; 1999 JG₁₀₂ *, 8, 2, 4; 1999 JH₁₀₂ *, 14, 3, 35; 1999 JI₁₀₂ *, 9, 2, 4; 1999 JK₁₀₂ *, 23, 5, 37; 1999 JL₁₀₂ *, 18, 5, 7; 1999 JM₁₀₂ *, 8, 2, 4; 1999 JN₁₀₂ *, 9, 2, 4; 1999 JO₁₀₂ *, 7, 2, 4; 1999 JP₁₀₂ *, 7, 2, 4; 1999 JQ₁₀₂ *, 7, 2, 4; 1999 JR₁₀₂ *, 27, 6, 536; 1999 JS₁₀₂ *, 9, 2, 4; 1999 JT₁₀₂ *, 9, 2, 4; 1999 JU₁₀₂ *, 15, 4, 6; 1999 JV₁₀₂ *, 10, 2, 4; 1999 JW₁₀₂ *, 9, 2, 4; 1999 JX₁₀₂ *, 9, 2, 4; 1999 JY₁₀₂ *, 7, 2, 4; 1999 JZ₁₀₂ *, 6, 2, 4; 1999 JA₁₀₃ *, 8, 2, 4; 1999 JB₁₀₃ *, 6, 2, 4; 1999 JC₁₀₃ *, 10, 2, 4; 1999 JD₁₀₃ *, 12, 2, 4; 1999 JE₁₀₃ *, 7, 2, 4; 1999 JF₁₀₃ *, 21, 5, 7; 1999 JG₁₀₃ *, 7, 2, 4; 1999 JH₁₀₃ *, 6, 2, 4; 1999 JI₁₀₃ *, 7, 2, 4; 1999 JK₁₀₃ *, 7, 2, 4; 1999 JL₁₀₃ *, 6, 2, 4; 1999 JM₁₀₃ *, 8, 2, 4; 1999 JN₁₀₃ *, 6, 2, 4; 1999 JO₁₀₃ *, 12, 2, 4; 1999 JP₁₀₃ *, 8, 2, 4; 1999 JQ₁₀₃ *, 8, 2, 4; 1999 JR₁₀₃ *, 9, 2, 4; 1999 JS₁₀₃ *, 8, 2, 4; 1999 JT₁₀₃ *, 8, 2, 4; 1999 JU₁₀₃ *, 6, 2, 4; 1999 JV₁₀₃ *, 7, 2, 4; 1999 JW₁₀₃ *, 6, 2, 4; 1999 JX₁₀₃ *, 24, 5, 33; 1999 JY₁₀₃ *, 8, 2, 3; 1999 JZ₁₀₃ *, 8, 2, 3; 1999 JA₁₀₄ *, 10, 2, 3; 1999 JB₁₀₄ *, 10, 2, 3; 1999 JC₁₀₄ *, 8, 2, 3; 1999 JD₁₀₄ *, 8, 2, 3; 1999 JE₁₀₄ *, 13, 2, 3; 1999 JF₁₀₄ *, 9, 2, 3; 1999 JG₁₀₄ *, 10, 2, 3; 1999 JH₁₀₄ *, 16, 4, 5; 1999 JI₁₀₄ *, 20, 4, 29; 1999 JK₁₀₄ *, 18, 4, 31; 1999 JL₁₀₄ *, 9, 2, 2; 1999 JM₁₀₄ *, 8, 2, 2; 1999 JN₁₀₄ *, 9, 2, 2; 1999 JO₁₀₄ *, 8, 2, 2; 1999 JP₁₀₄ *, 24, 5, 58; 1999 JQ₁₀₄ *, 10, 2, 2; 1999 JR₁₀₄ *, 10, 2, 2; 1999 JS₁₀₄ *, 9, 2, 6; 1999 JT₁₀₄ *, 10, 2, 6; 1999 JU₁₀₄ *, 9, 2, 6; 1999 JV₁₀₄ *, 7, 2, 6; 1999 JW₁₀₄ *, 7, 2, 6; 1999 JX₁₀₄ *, 9, 2, 6; 1999 JY₁₀₄ *, 8, 2, 6; 1999 JZ₁₀₄ *, 10, 3, 36; 1999 JA₁₀₅ *, 7, 2, 6; 1999 JB₁₀₅ *, 6, 2, 6; 1999 JC₁₀₅ *, 14, 3, 33; 1999 JD₁₀₅ *, 8, 2, 6; 1999 JE₁₀₅ *, 7, 2, 6; 1999 JF₁₀₅ *, 7, 2, 6; 1999 JG₁₀₅ *, 7, 2, 6; 1999 JH₁₀₅ *, 8, 2, 6; 1999 JI₁₀₅ *, 28, 6, 451; 1999 JI₁₀₅ *, 9, 2, 5; 1999 JL₁₀₅ *, 10, 2, 5; 1999 JM₁₀₅ *, 10, 2, 5; 1999 JN₁₀₅ *, 7, 2, 5; 1999 JO₁₀₅ *, 7, 2, 5; 1999 JP₁₀₅ *, 8, 2, 5; 1999 JQ₁₀₅ *, 9, 2, 5; 1999 JR₁₀₅ *, 8, 2, 5; 1999 JS₁₀₅ *, 8, 2, 5; 1999 JT₁₀₅ *, 8, 2, 5; 1999 JU₁₀₅ *, 7, 2, 5; 1999 JV₁₀₅ *, 10, 2, 5; 1999 JW₁₀₅ *, 7, 2, 5; 1999 JX₁₀₅ *, 9, 2, 5; 1999 JY₁₀₅ *, 8, 2, 5; 1999 JZ₁₀₅ *, 6, 2, 5; 1999 JA₁₀₆ *, 8, 2, 5; 1999 JB₁₀₆ *, 8, 2, 5; 1999 JC₁₀₆ *, 7, 2, 5; 1999 JE₁₀₆ *, 10, 2, 5; 1999 JF₁₀₆ *, 7, 2, 5; 1999 JG₁₀₆ *, 8, 2, 5; 1999 JH₁₀₆ *, 8, 2, 5; 1999 JI₁₀₆ *, 9, 2, 5; 1999 JK₁₀₆ *, 9, 2, 5; 1999 JL₁₀₆ *, 12, 3, 28; 1999 JM₁₀₆ *, 14, 3, 8; 1999 JN₁₀₆ *, 8, 2, 5; 1999 JO₁₀₆ *, 7, 2, 5; 1999 JP₁₀₆ *, 7, 2, 5; 1999 JQ₁₀₆ *, 7, 2, 5; 1999 JR₁₀₆ *, 9, 2, 5; 1999 JS₁₀₆ *, 9, 2, 5; 1999 JT₁₀₆ *, 8, 2, 5; 1999 JU₁₀₆ *, 8, 2, 5; 1999 JV₁₀₆ *, 9, 2, 5; 1999 JW₁₀₆ *, 7, 2, 5; 1999 JX₁₀₆ *, 6, 2, 5; 1999 JY₁₀₆ *, 8, 2, 5; 1999 JZ₁₀₆ *, 9, 2, 5; 1999 JA₁₀₇ *, 6, 2, 5; 1999 JB₁₀₇ *, 20, 2, 5; 1999 JC₁₀₇ *, 7, 2, 5; 1999 JD₁₀₇ *, 9, 2, 5; 1999 JE₁₀₇ *, 8, 2, 5; 1999 JF₁₀₇ *, 7, 2, 5; 1999 JG₁₀₇ *, 8, 2, 5; 1999 JH₁₀₇ *, 8, 2, 5; 1999 JI₁₀₇ *, 8, 2, 5; 1999 JK₁₀₇ *, 8, 2, 5; 1999 JL₁₀₇ *, 9, 2, 5; 1999 JM₁₀₇ *, 9, 2, 5; 1999 JN₁₀₇ *, 9, 2, 5; 1999 JO₁₀₇ *, 7, 2, 5; 1999 JP₁₀₇ *, 8, 2, 5; 1999 JQ₁₀₇ *, 8, 2, 5; 1999 JR₁₀₇ *, 8, 2, 5; 1999 JS₁₀₇ *, 8, 2, 5; 1999 JT₁₀₇ *, 7, 2, 5; 1999 JU₁₀₇ *, 9, 2, 5; 1999 JV₁₀₇ *, 9, 2, 5; 1999 JW₁₀₇ *, 10, 2, 5; 1999 JX₁₀₇ *, 8, 2, 5; 1999 JY₁₀₇ *, 10, 2, 5; 1999 JZ₁₀₇ *, 8, 2, 5; 1999 JA₁₀₈ *, 8, 2, 5; 1999 JB₁₀₈ *, 8, 2, 5; 1999 JC₁₀₈ *, 8, 2, 5; 1999 JD₁₀₈ *, 7, 2, 5; 1999 JE₁₀₈ *, 7, 2, 5; 1999 JF₁₀₈ *, 8, 2, 5; 1999 JG₁₀₈ *, 9, 2, 5; 1999 JH₁₀₈ *, 14, 3, 33; 1999 JI₁₀₈ *, 9, 2, 5; 1999 JK₁₀₈ *, 10, 2, 5; 1999 JL₁₀

5; 1999 JR₁₁₁ *, 8, 2, 5; 1999 JS₁₁₁ *, 19, 4, 32; 1999 JT₁₁₁ *, 10, 2, 5; 1999 JU₁₁₁ *, 10, 2, 5; 1999 JV₁₁₁ *, 9, 2, 5; 1999 JW₁₁₁ *, 13, 3, 32; 1999 JX₁₁₁ *, 15, 3, 32; 1999 JY₁₁₁ *, 8, 2, 5; 1999 JZ₁₁₁ *, 7, 2, 5; 1999 JA₁₁₂ *, 7, 2, 5; 1999 JB₁₁₂ *, 9, 2, 5; 1999 JC₁₁₂ *, 13, 3, 32; 1999 JD₁₁₂ *, 9, 2, 5; 1999 JE₁₁₂ *, 8, 2, 5; 1999 JF₁₁₂ *, 9, 2, 5; 1999 JG₁₁₂ *, 8, 2, 5; 1999 JH₁₁₂ *, 8, 2, 5; 1999 JI₁₁₂ *, 15, 3, 8; 1999 JJ₁₁₂ *, 22, 5, 35; 1999 JL₁₁₂ *, 9, 2, 5; 1999 JM₁₁₂ *, 7, 2, 5; 1999 JN₁₁₂ *, 13, 3, 32; 1999 JO₁₁₂ *, 8, 2, 5; 1999 JP₁₁₂ *, 9, 2, 5; 1999 JQ₁₁₂ *, 7, 2, 5; 1999 JR₁₁₂ *, 14, 2, 5; 1999 JS₁₁₂ *, 10, 2, 5; 1999 JT₁₁₂ *, 9, 2, 5; 1999 JU₁₁₂ *, 10, 2, 5; 1999 JV₁₁₂ *, 9, 2, 5; 1999 JW₁₁₂ *, 15, 3, 33; 1999 JX₁₁₂ *, 7, 2, 5; 1999 JY₁₁₂ *, 9, 2, 5; 1999 JZ₁₁₂ *, 9, 2, 5; 1999 JA₁₁₃ *, 18, 4, 33; 1999 JB₁₁₃ *, 8, 2, 5; 1999 JC₁₁₃ *, 8, 2, 5; 1999 JD₁₁₃ *, 12, 3, 33; 1999 JE₁₁₃ *, 8, 2, 5; 1999 JF₁₁₃ *, 6, 2, 5; 1999 JG₁₁₃ *, 8, 2, 5; 1999 JH₁₁₃ *, 9, 2, 5; 1999 JI₁₁₃ *, 9, 2, 5; 1999 JK₁₁₃ *, 8, 2, 5; 1999 JL₁₁₃ *, 10, 2, 5; 1999 JM₁₁₃ *, 10, 2, 5; 1999 JN₁₁₃ *, 7, 2, 5; 1999 JO₁₁₃ *, 8, 2, 5; 1999 JP₁₁₃ *, 13, 3, 33; 1999 JQ₁₁₃ *, 8, 2, 5; 1999 JR₁₁₃ *, 9, 2, 5; 1999 JS₁₁₃ *, 7, 2, 5; 1999 JT₁₁₃ *, 9, 2, 5; 1999 JU₁₁₃ *, 7, 2, 5; 1999 JV₁₁₃ *, 9, 2, 5; 1999 JW₁₁₃ *, 6, 2, 5; 1999 JX₁₁₃ *, 7, 2, 5; 1999 JY₁₁₃ *, 13, 3, 32; 1999 JZ₁₁₃ *, 9, 2, 5; 1999 JA₁₁₄ *, 8, 2, 5; 1999 JB₁₁₄ *, 10, 2, 5; 1999 JC₁₁₄ *, 8, 2, 5; 1999 JD₁₁₄ *, 9, 2, 5; 1999 JE₁₁₄ *, 8, 2, 5; 1999 JF₁₁₄ *, 7, 2, 5; 1999 JG₁₁₄ *, 10, 2, 5; 1999 JH₁₁₄ *, 8, 2, 5; 1999 JI₁₁₄ *, 9, 2, 5; 1999 JK₁₁₄ *, 9, 2, 5; 1999 JL₁₁₄ *, 7, 2, 5; 1999 JM₁₁₄ *, 30, 6, 557; 1999 JN₁₁₄ *, 10, 2, 5; 1999 JO₁₁₄ *, 8, 2, 5; 1999 JP₁₁₄ *, 8, 2, 5; 1999 JQ₁₁₄ *, 10, 2, 5; 1999 JR₁₁₄ *, 8, 2, 5; 1999 JS₁₁₄ *, 10, 2, 5; 1999 JT₁₁₄ *, 13, 3, 33; 1999 JU₁₁₄ *, 8, 2, 5; 1999 JV₁₁₄ *, 24, 5, 33; 1999 JW₁₁₄ *, 10, 2, 5; 1999 JX₁₁₄ *, 14, 3, 33; 1999 JY₁₁₄ *, 9, 2, 5; 1999 JZ₁₁₄ *, 7, 2, 5; 1999 JA₁₁₅ *, 9, 2, 5; 1999 JB₁₁₅ *, 11, 3, 33; 1999 JC₁₁₅ *, 7, 2, 6; 1999 JD₁₁₅ *, 7, 2, 5; 1999 JE₁₁₅ *, 6, 2, 5; 1999 JF₁₁₅ *, 8, 2, 5; 1999 JG₁₁₅ *, 19, 4, 33; 1999 JH₁₁₅ *, 19, 5, 36; 1999 JI₁₁₅ *, 6, 2, 5; 1999 JJ₁₁₅ *, 9, 2, 5; 1999 JK₁₁₅ *, 8, 2, 5; 1999 JL₁₁₅ *, 7, 2, 5; 1999 JM₁₁₅ *, 9, 2, 5; 1999 JN₁₁₅ *, 13, 3, 33; 1999 JO₁₁₅ *, 9, 2, 5; 1999 JP₁₁₅ *, 9, 2, 5; 1999 JQ₁₁₅ *, 13, 3, 33; 1999 JR₁₁₅ *, 8, 2, 5; 1999 JS₁₁₅ *, 9, 2, 5; 1999 JT₁₁₅ *, 19, 4, 32; 1999 JU₁₁₅ *, 8, 2, 5; 1999 JV₁₁₅ *, 9, 2, 5; 1999 JW₁₁₅ *, 8, 2, 5; 1999 JX₁₁₅ *, 7, 2, 5; 1999 JY₁₁₅ *, 10, 2, 5; 1999 JZ₁₁₅ *, 9, 2, 5; 1999 JA₁₁₆ *, 34, 7, 35; 1999 JB₁₁₆ *, 8, 2, 5; 1999 JC₁₁₆ *, 9, 2, 5; 1999 JD₁₁₆ *, 12, 3, 32; 1999 JE₁₁₆ *, 9, 2, 5; 1999 JF₁₁₆ *, 9, 2, 5; 1999 JG₁₁₆ *, 7, 2, 5; 1999 JH₁₁₆ *, 8, 2, 5; 1999 JI₁₁₆ *, 7, 2, 5; 1999 JK₁₁₆ *, 14, 3, 32; 1999 JL₁₁₆ *, 7, 2, 5; 1999 JM₁₁₆ *, 10, 2, 5; 1999 JN₁₁₆ *, 7, 2, 5; 1999 JO₁₁₆ *, 7, 2, 5; 1999 JP₁₁₆ *, 9, 2, 5; 1999 JQ₁₁₆ *, 12, 3, 33; 1999 JR₁₁₆ *, 21, 5, 36; 1999 JS₁₁₆ *, 9, 2, 5; 1999 JT₁₁₆ *, 9, 2, 5; 1999 JU₁₁₆ *, 10, 2, 5; 1999 JV₁₁₆ *, 8, 2, 5; 1999 JW₁₁₆ *, 8, 2, 5; 1999 JX₁₁₆ *, 8, 2, 5; 1999 JY₁₁₆ *, 11, 3, 33; 1999 JZ₁₁₆ *, 7, 2, 5; 1999 JA₁₁₇ *, 21, 5, 36; 1999 JB₁₁₇ *, 13, 3, 33; 1999 JC₁₁₇ *, 7, 2, 5; 1999 JD₁₁₇ *, 23, 5, 33; 1999 JE₁₁₇ *, 7, 2, 5; 1999 JF₁₁₇ *, 8, 2, 5; 1999 JG₁₁₇ *, 8, 2, 5; 1999 JH₁₁₇ *, 9, 2, 5; 1999 JI₁₁₇ *, 8, 2, 5; 1999 JK₁₁₇ *, 13, 3, 3; 1999 JL₁₁₇ *, 20, 4, 33; 1999 JM₁₁₇ *, 9, 2, 5; 1999 JN₁₁₇ *, 8, 2, 5; 1999 JO₁₁₇ *, 8, 2, 5; 1999 JP₁₁₇ *, 9, 2, 5; 1999 JQ₁₁₇ *, 8, 2, 5; 1999 JR₁₁₇ *, 9, 2, 5; 1999 JS₁₁₇ *, 8, 2, 5; 1999 JT₁₁₇ *, 11, 2, 5; 1999 JU₁₁₇ *, 8, 2, 5; 1999 JV₁₁₇ *, 7, 2, 5; 1999 JW₁₁₇ *, 8, 2, 5; 1999 JX₁₁₇ *, 7, 2, 5; 1999 JY₁₁₇ *, 7, 2, 5; 1999 JZ₁₁₇ *, 7, 2, 5; 1999 JA₁₁₈ *, 28, 6, 109; 1999 JB₁₁₈ *, 13, 3, 33; 1999 JC₁₁₈ *, 12, 3, 33; 1999 JD₁₁₈ *, 8, 2, 5; 1999 JE₁₁₈ *, 8, 2, 5; 1999 JF₁₁₈ *, 8, 2, 5; 1999 JG₁₁₈ *, 20, 5, 36; 1999 JH₁₁₈ *, 7, 2, 5; 1999 JI₁₁₈ *, 8, 2, 5; 1999 JM₁₁₈ *, 20, 5, 35; 1999 JN₁₁₈ *, 8, 2, 5; 1999 JO₁₁₈ *, 24, 5, 32; 1999 JP₁₁₈ *, 24, 5, 33; 1999 JQ₁₁₈ *, 9, 2, 5; 1999 JR₁₁₈ *, 10, 2, 5; 1999 JS₁₁₈ *, 8, 2, 5; 1999 JT₁₁₈ *, 8, 2, 5; 1999 JU₁₁₈ *, 8, 2, 5; 1999 JV₁₁₈ *, 23, 5, 32; 1999 JW₁₁₈ *, 14, 3, 32; 1999 JX₁₁₈ *, 9, 2, 5; 1999 JY₁₁₈ *, 7, 2, 5; 1999 JZ₁₁₈ *, 9, 2, 5; 1999 JA₁₁₉ *, 10, 2, 5; 1999 JB₁₁₉ *, 9, 2, 5; 1999 JC₁₁₉ *, 9, 2, 5; 1999 JD₁₁₉ *, 9, 2, 5; 1999 JE₁₁₉ *, 10, 2, 5; 1999 JF₁₁₉ *, 7, 2, 5; 1999 JG₁₁₉ *, 23, 5, 33; 1999 JH₁₁₉ *, 8, 2, 5; 1999 JI₁₁₉ *, 7, 2, 5; 1999 JK₁₁₉ *, 18, 4, 33; 1999 JL₁₁₉ *, 9, 2, 5; 1999 JM₁₁₉ *, 9, 2, 5; 1999 JN₁₁₉ *, 10, 2, 5; 1999 JO₁₁₉ *, 22, 5, 33; 1999 JP₁₁₉ *, 15, 4, 33; 1999 JQ₁₁₉ *, 7, 2, 5; 1999 JR₁₁₉ *, 10, 2, 5; 1999 JS₁₁₉ *, 22, 5, 32; 1999 JT₁₁₉ *, 24, 5, 32; 1999 JU₁₁₉ *, 9, 2, 5; 1999 JV₁₁₉ *, 7, 2, 5; 1999 JW₁₁₉ *, 10, 2, 5; 1999 JX₁₁₉ *, 7, 2, 5; 1999 JY₁₁₉ *, 7, 2, 5; 1999 JZ₁₁₉ *, 9, 2, 5; 1999 JA₁₂₀ *, 8, 2, 5; 1999 JB₁₂₀ *, 24, 5, 33; 1999 JC₁₂₀ *, 9, 2, 5; 1999 JD₁₂₀ *, 8, 2, 5; 1999 JE₁₂₀ *, 9, 2, 5; 1999 JF₁₂₀ *, 10, 2, 5; 1999 JG₁₂₀ *, 9, 2, 5; 1999 JH₁₂₀ *, 17, 4, 33; 1999 JI₁₂₀ *, 9, 2, 5; 1999 JK₁₂₀ *, 10, 2, 5; 1999 JL₁₂₀ *, 10, 2, 5; 1999 JM₁₂₀ *, 9, 2, 5; 1999 JN₁₂₀ *, 9, 2, 5; 1999 JO₁₂₀ *, 24, 5, 33; 1999 JP₁₂₀ *, 9, 2, 5; 1999 JQ₁₂₀ *, 10, 2, 5; 1999 JR₁₂₀ *, 8, 2, 5; 1999 JS₁₂₀ *, 8, 2, 5; 1999 JT₁₂₀ *, 23, 5, 33; 1999 JU₁₂₀ *, 19, 4, 33; 1999 JV₁₂₀ *, 23, 5, 33; 1999 JW₁₂₀ *, 8, 2, 5; 1999 JX₁₂₀ *, 12, 3, 33; 1999 JY₁₂₀ *, 22, 5, 33; 1999 JZ₁₂₀ *, 25, 5, 33; 1999 JA₁₂₁ *, 22, 5, 36; 1999 JB₁₂₁ *, 15, 3, 32; 1999 JC₁₂₁ *, 18, 4, 33; 1999 JD₁₂₁ *, 28, 6, 35; 1999 JE₁₂₁ *, 8, 2, 5; 1999 JF₁₂₁ *, 10, 2, 5; 1999 JG₁₂₁ *, 9, 2, 5; 1999 JH₁₂₁ *, 8, 2, 5; 1999 JI₁₂₁ *, 9, 2, 5; 1999 JK₁₂₁ *, 9, 2, 5; 1999 JL₁₂₁ *, 8, 2, 5; 1999 JM₁₂₁ *, 8, 2, 5; 1999 JN₁₂₁ *, 8, 2, 5; 1999 JO₁₂₁ *, 8, 2, 5; 1999 JP₁₂₁ *, 10, 2, 5; 1999 JQ₁₂₁ *, 8, 2, 5; 1999 JR₁₂₁ *, 18, 4, 33; 1999 JS₁₂₁ *, 24, 5, 33; 1999 JT₁₂₁ *, 12, 3, 33; 1999 JU₁₂₁ *, 34, 5, 33; 1999 JV₁₂₁ *, 10, 2, 5; 1999 JW₁₂₁ *, 12, 3, 33; 1999 JX₁₂₁ *, 9, 2, 5; 1999 JY₁₂₁ *, 8, 2, 5; 1999 JZ₁₂₁ *, 8, 2, 5; 1999 JA₁₂₂ *, 8, 2, 5; 1999 JB₁₂₂ *, 7, 2, 5; 1999 JC₁₂₂ *, 8, 2, 5; 1999 JD₁₂₂ *, 21, 5, 33; 1999 JE₁₂₂ *, 16, 4, 33; 1999 JF₁₂₂ *, 9, 2, 5; 1999 JG₁₂₂ *, 12, 3, 33; 1999 JH₁₂₂ *, 10, 2, 5; 1999 JI₁₂₂ *, 10, 2, 5; 1999 JK₁₂₂ *, 20, 4, 33; 1999 JL₁₂₂ *, 8, 2, 5; 1999 JM₁₂₂ *, 7, 2, 5; 1999 JN₁₂₂ *, 24, 5,

33; 1999 JO₁₂₂ *, 8, 2, 5; 1999 JP₁₂₂ *, 24, 5, 33; 1999 JQ₁₂₂ *, 7, 2, 5; 1999 JR₁₂₂ *, 18, 4, 32; 1999 JS₁₂₂ *, 7, 2, 5; 1999 JT₁₂₂ *, 23, 5, 33; 1999 JU₁₂₂ *, 25, 5, 33; 1999 JV₁₂₂ *, 17, 4, 33; 1999 JW₁₂₂ *, 13, 3, 32; 1999 JX₁₂₂ *, 7, 2, 5; 1999 JY₁₂₂ *, 7, 2, 5; 1999 JZ₁₂₂ *, 7, 2, 5; 1999 JA₁₂₃ *, 11, 3, 6; 1999 JB₁₂₃ *, 11, 3, 33; 1999 JC₁₂₃ *, 22, 5, 33; 1999 JD₁₂₃ *, 7, 2, 5; 1999 JE₁₂₃ *, 7, 2, 5; 1999 JF₁₂₃ *, 8, 2, 5; 1999 JG₁₂₃ *, 8, 2, 5; 1999 JH₁₂₃ *, 7, 2, 5; 1999 JI₁₂₃ *, 7, 2, 5; 1999 JK₁₂₃ *, 8, 2, 5; 1999 JL₁₂₃ *, 21, 5, 32; 1999 JM₁₂₃ *, 7, 2, 5; 1999 JN₁₂₃ *, 7, 2, 5; 1999 JO₁₂₃ *, 8, 2, 5; 1999 JP₁₂₃ *, 7, 2, 5; 1999 JQ₁₂₃ *, 7, 2, 5; 1999 JR₁₂₃ *, 26, 6, 35; 1999 JS₁₂₃ *, 9, 2, 4; 1999 JT₁₂₃ *, 8, 2, 5; 1999 JV₁₂₃ *, 18, 4, 32; 1999 JW₁₂₃ *, 8, 2, 4; 1999 JX₁₂₃ *, 24, 5, 32; 1999 JY₁₂₃ *, 25, 5, 32; 1999 JZ₁₂₃ *, 25, 5, 31; 1999 JA₁₂₄ *, 23, 5, 32; 1999 JB₁₂₄ *, 8, 2, 4; 1999 JC₁₂₄ *, 28, 6, 81; 1999 JD₁₂₄ *, 25, 5, 32; 1999 JE₁₂₄ *, 22, 5, 32; 1999 JF₁₂₄ *, 32, 7, 30; 1999 JG₁₂₄ *, 34, 7, 107; 1999 JH₁₂₄ *, 7, 2, 9; 1999 JI₁₂₄ *, 6, 2, 9; 1999 JK₁₂₄ *, 8, 2, 9; 1999 JL₁₂₄ *, 8, 2, 9; 1999 JM₁₂₄ *, 8, 2, 9; 1999 JN₁₂₄ *, 10, 2, 9; 1999 JO₁₂₄ *, 7, 2, 9; 1999 JP₁₂₄ *, 8, 2, 9; 1999 JQ₁₂₄ *, 6, 2, 4; 1999 JR₁₂₄ *, 8, 2, 9; 1999 JS₁₂₄ *, 6, 2, 9; 1999 JT₁₂₄ *, 8, 2, 9; 1999 JU₁₂₄ *, 8, 2, 9; 1999 JV₁₂₄ *, 9, 2, 9; 1999 JW₁₂₄ *, 10, 2, 9; 1999 JX₁₂₄ *, 7, 2, 9; 1999 JY₁₂₄ *, 6, 2, 9; 1999 JZ₁₂₄ *, 6, 2, 9; 1999 JA₁₂₅ *, 10, 2, 8; 1999 JB₁₂₅ *, 8, 2, 9; 1999 JC₁₂₅ *, 8, 2, 9; 1999 JD₁₂₅ *, 6, 2, 6; 1999 JE₁₂₅ *, 8, 2, 9; 1999 JF₁₂₅ *, 7, 2, 9; 1999 JG₁₂₅ *, 7, 2, 9; 1999 JH₁₂₅ *, 8, 2, 9; 1999 JI₁₂₅ *, 12, 3, 36; 1999 JK₁₂₅ *, 8, 2, 9; 1999 JL₁₂₅ *, 7, 2, 9; 1999 JM₁₂₅ *, 22, 5, 36; 1999 JN₁₂₅ *, 7, 2, 9; 1999 JO₁₂₅ *, 15, 3, 36; 1999 JP₁₂₅ *, 6, 2, 9; 1999 JQ₁₂₅ *, 19, 4, 35; 1999 JR₁₂₅ *, 19, 5, 556; 1999 JS₁₂₅ *, 6, 2, 9; 1999 JT₁₂₅ *, 8, 2, 7; 1999 JU₁₂₅ *, 9, 2, 6; 1999 JV₁₂₅ *, 9, 2, 6; 1999 JW₁₂₅ *, 8, 2, 6; 1999 JX₁₂₅ *, 8, 2, 6; 1999 JY₁₂₅ *, 8, 2, 6; 1999 JZ₁₂₅ *, 10, 2, 6; 1999 JA₁₂₆ *, 7, 2, 6; 1999 JB₁₂₆ *, 7, 2, 6; 1999 JC₁₂₆ *, 7, 2, 6; 1999 JD₁₂₆ *, 8, 2, 6; 1999 JE₁₂₆ *, 7, 2, 6; 1999 JF₁₂₆ *, 7, 2, 6; 1999 JG₁₂₆ *, 9, 2, 6; 1999 JH₁₂₆ *, 8, 2, 6; 1999 JI₁₂₆ *, 6, 2, 6; 1999 JK₁₂₆ *, 8, 2, 6; 1999 JL₁₂₆ *, 8, 2, 6; 1999 JM₁₂₆ *, 9, 2, 6; 1999 JN₁₂₆ *, 8, 2, 6; 1999 JO₁₂₆ *, 7, 2, 6; 1999 JP₁₂₆ *, 17, 4, 32; 1999 JQ₁₂₆ *, 9, 2, 6; 1999 JR₁₂₆ *, 6, 2, 6; 1999 JS₁₂₆ *, 9, 2, 6; 1999 JT₁₂₆ *, 7, 2, 6; 1999 JU₁₂₆ *, 9, 2, 6; 1999 JV₁₂₆ *, 14, 3, 32; 1999 JW₁₂₆ *, 6, 2, 6; 1999 JX₁₂₆ *, 7, 2, 6; 1999 JY₁₂₆ *, 8, 2, 6; 1999 JZ₁₂₆ *, 16, 4, 33; 1999 JA₁₂₇ *, 9, 2, 6; 1999 JB₁₂₇ *, 13, 3, 33; 1999 JC₁₂₇ *, 8, 2, 6; 1999 JD₁₂₇ *, 10, 2, 6; 1999 JE₁₂₇ *, 14, 3, 33; 1999 JF₁₂₇ *, 14, 3, 33; 1999 JG₁₂₇ *, 17, 4, 33; 1999 JH₁₂₇ *, 9, 2, 6; 1999 JI₁₂₇ *, 10, 2, 6; 1999 JK₁₂₇ *, 9, 2, 6; 1999 JL₁₂₇ *, 23, 5, 32; 1999 JM₁₂₇ *, 8, 2, 6; 1999 JN₁₂₇ *, 18, 4, 33; 1999 JO₁₂₇ *, 18, 4, 33; 1999 JP₁₂₇ *, 14, 4, 33; 1999 JQ₁₂₇ *, 8, 2, 5; 1999 JR₁₂₇ *, 8, 2, 6; 1999 JS₁₂₇ *, 8, 2, 6; 1999 JT₁₂₇ *, 12, 3, 33; 1999 JU₁₂₇ *, 8, 2, 6; 1999 JW₁₂₇ *, 7, 2, 3; 1999 JX₁₂₇ *, 8, 2, 3; 1999 JY₁₂₇ *, 8, 2, 3; 1999 JZ₁₂₇ *, 7, 2, 3; 1999 JA₁₂₈ *, 7, 2, 3; 1999 JB₁₂₈ *, 6, 2, 3; 1999 JC₁₂₈ *, 8, 2, 3; 1999 JD₁₂₈ *, 6, 2, 3; 1999 JE₁₂₈ *, 14, 2, 3; 1999 JF₁₂₈ *, 7, 2, 3; 1999 JG₁₂₈ *, 7, 2, 3; 1999 JH₁₂₈ *, 7, 2, 3; 1999 JI₁₂₈ *, 8, 2, 3; 1999 JK₁₂₈ *, 8, 2, 3; 1999 JL₁₂₈ *, 7, 2, 5; 1999 JM₁₂₈ *, 8, 2, 1; 1999 JN₁₂₈ *, 7, 2, 5; 1999 JO₁₂₈ *, 7, 2, 5; 1999 JP₁₂₈ *, 8, 2, 5; 1999 JQ₁₂₈ *, 6, 2, 5; 1999 JR₁₂₈ *, 7, 2, 5; 1999 JS₁₂₈ *, 6, 2, 1; 1999 JT₁₂₈ *, 6, 2, 6; 1999 JU₁₂₈ *, 9, 2, 5; 1999 JV₁₂₈ *, 8, 2, 5; 1999 JW₁₂₈ *, 6, 2, 5; 1999 JX₁₂₈ *, 7, 2, 1; 1999 JY₁₂₈ *, 5, 2, 5; 1999 JZ₁₂₈ *, 9, 2, 5; 1999 JA₁₂₉ *, 9, 2, 5; 1999 JB₁₂₉ *, 9, 2, 5; 1999 JC₁₂₉ *, 6, 2, 5; 1999 JD₁₂₉ *, 5, 2, 1; 1999 JE₁₂₉ *, 6, 2, 6; 1999 JF₁₂₉ *, 9, 2, 5; 1999 JG₁₂₉ *, 6, 2, 5; 1999 JH₁₂₉ *, 7, 2, 5; 1999 JI₁₂₉ *, 8, 2, 5; 1999 JK₁₂₉ *, 8, 2, 5; 1999 JL₁₂₉ *, 9, 2, 5; 1999 JM₁₂₉ *, 10, 2, 5; 1999 JN₁₂₉ *, 9, 2, 5; 1999 JO₁₂₉ *, 7, 2, 5; 1999 JP₁₂₉ *, 18, 4, 33; 1999 JQ₁₂₉ *, 17, 4, 33; 1999 JR₁₂₉ *, 8, 2, 5; 1999 JS₁₂₉ *, 14, 4, 33; 1999 JT₁₂₉ *, 9, 2, 5; 1999 JU₁₂₉ *, 15, 4, 33; 1999 JV₁₂₉ *, 8, 2, 5; 1999 JW₁₂₉ *, 8, 2, 5; 1999 JX₁₂₉ *, 6, 2, 6; 1999 JY₁₂₉ *, 6, 2, 6; 1999 JZ₁₂₉ *, 6, 2, 6; 1999 JA₁₃₀ *, 7, 2, 6; 1999 JB₁₃₀ *, 7, 2, 5; 1999 JC₁₃₀ *, 8, 2, 6; 1999 JD₁₃₀ *, 7, 2, 4; 1999 JE₁₃₀ *, 7, 2, 6; 1999 JF₁₃₀ *, 7, 2, 6; 1999 JG₁₃₀ *, 6, 2, 5; 1999 JH₁₃₀ *, 6, 2, 5; 1999 JI₁₃₀ *, 6, 2, 5; 1999 JK₁₃₀ *, 6, 2, 6; 1999 JL₁₃₀ *, 7, 2, 2; 1999 JM₁₃₀ *, 8, 2, 5; 1999 JN₁₃₀ *, 9, 2, 5; 1999 JO₁₃₀ *, 6, 2, 5; 1999 JP₁₃₀ *, 7, 2, 5; 1999 JQ₁₃₀ *, 6, 2, 5; 19

1999 KQ₄ *, 10, 2, 1; 1999 KR₄ *, 9, 2, 1; 1999 KS₄ *, 9, 2, 1; 1999 KT₄ *, 32, 6, 59; 1999 KU₄ *, 43, 8, 36; 1999 KW₄ *, 18, 3, 5; 1999 KX₄ *, 11, 2, 1; 1999 KY₄, 19, 4, 9; 1999 KF₅, 27, 6, 36; 1999 KL₅, 29, 6, 37; 1999 KM₅, 12, 3, 8; 1999 KP₅, 11, 3, 27; 1999 KS₅, 4, 1, 0; 1999 KT₅, 23, 5, 35; 1999 KD₆, 4, 1, 0; 1999 KH₆, 8, 2, 6; 1999 KK₆ *, 9, 2, 8; 1999 KL₆ *, 21, 5, 51; 1999 KM₆, 20, 4, 82; 1999 KO₆, 20, 4, 6; 1999 KP₆, 31, 7, 109; 1999 KQ₆, 24, 4, 6; 1999 KR₆ *, 10, 2, 7; 1999 KS₆ *, 25, 5, 35; 1999 KT₆ *, 7, 2, 1; 1999 KU₆ *, 9, 2, 1; 1999 KV₆ *, 9, 2, 1; 1999 KW₆ *, 10, 2, 1; 1999 KX₆ *, 7, 2, 1; 1999 KY₆ *, 20, 5, 37; 1999 KZ₆ *, 9, 2, 1; 1999 KA₇ *, 8, 2, 1; 1999 KB₇ *, 8, 2, 1; 1999 KC₇ *, 7, 2, 1; 1999 KD₇ *, 17, 4, 6; 1999 KE₇ *, 10, 2, 1; 1999 KF₇ *, 8, 2, 1; 1999 KG₇ *, 19, 5, 33; 1999 KH₇ *, 7, 2, 1; 1999 KJ₇ *, 9, 2, 1; 1999 KK₇ *, 8, 2, 1; 1999 KL₇ *, 18, 4, 27; 1999 KM₇ *, 15, 3, 2; 1999 KN₇ *, 7, 2, 2; 1999 KO₇ *, 8, 2, 2; 1999 KP₇ *, 9, 2, 2; 1999 KQ₇ *, 14, 3, 21; 1999 KR₇ *, 10, 2, 1; 1999 KS₇ *, 10, 2, 1; 1999 KT₇ *, 7, 2, 1; 1999 KU₇ *, 8, 2, 1; 1999 KV₇ *, 9, 2, 1; 1999 KW₇ *, 8, 2, 1; 1999 KX₇ *, 8, 2, 1; 1999 KY₇ *, 9, 2, 1; 1999 KZ₇ *, 9, 2, 1; 1999 KA₈ *, 10, 2, 1; 1999 KB₈ *, 15, 3, 9; 1999 KC₈ *, 10, 2, 1; 1999 KD₈ *, 7, 2, 1; 1999 KE₈ *, 7, 2, 1; 1999 KF₈ *, 7, 2, 1; 1999 KG₈ *, 9, 2, 1; 1999 KH₈ *, 9, 2, 1; 1999 KJ₈ *, 9, 2, 1; 1999 KK₈ *, 7, 2, 1; 1999 KL₈ *, 8, 2, 1; 1999 KM₈ *, 10, 2, 1; 1999 KN₈ *, 8, 2, 1; 1999 KO₈ *, 10, 2, 1; 1999 KP₈ *, 8, 2, 1; 1999 KQ₈ *, 10, 2, 1; 1999 KR₈ *, 9, 2, 1; 1999 KS₈ *, 9, 2, 1; 1999 KT₈ *, 7, 2, 1; 1999 KU₈ *, 9, 2, 1; 1999 KV₈ *, 6, 2, 1; 1999 KW₈ *, 7, 2, 1; 1999 KX₈ *, 8, 2, 1; 1999 KY₈ *, 8, 2, 1; 1999 KZ₈ *, 8, 2, 1; 1999 KA₉ *, 12, 3, 37; 1999 KB₉ *, 6, 2, 1; 1999 KC₉ *, 9, 2, 1; 1999 KD₉ *, 7, 2, 1; 1999 KE₉ *, 7, 2, 1; 1999 KF₉ *, 8, 2, 1; 1999 KG₉ *, 8, 2, 1; 1999 KH₉ *, 8, 2, 1; 1999 KJ₉ *, 6, 2, 1; 1999 KK₉ *, 7, 2, 1; 1999 KL₉ *, 6, 2, 1; 1999 KM₉ *, 6, 2, 1; 1999 KN₉ *, 6, 2, 1; 1999 KO₉ *, 10, 2, 1; 1999 KP₉ *, 6, 2, 1; 1999 KQ₉ *, 7, 2, 1; 1999 KR₉ *, 6, 2, 1; 1999 KS₉ *, 7, 2, 1; 1999 KT₉ *, 10, 2, 1; 1999 KU₉ *, 7, 2, 1; 1999 KV₉ *, 9, 2, 1; 1999 KW₉ *, 7, 2, 1; 1999 KX₉ *, 7, 2, 1; 1999 KY₉ *, 8, 2, 1; 1999 KZ₉ *, 22, 5, 35; 1999 KA₁₀ *, 7, 2, 1; 1999 KB₁₀ *, 9, 2, 1; 1999 KC₁₀ *, 10, 2, 1; 1999 KD₁₀ *, 8, 2, 1; 1999 KE₁₀ *, 8, 2, 1; 1999 KF₁₀ *, 12, 3, 28; 1999 KG₁₀ *, 9, 2, 1; 1999 KH₁₀ *, 18, 4, 35; 1999 KJ₁₀ *, 9, 2, 1; 1999 KK₁₀ *, 7, 2, 1; 1999 KL₁₀ *, 8, 2, 1; 1999 KM₁₀ *, 10, 2, 1; 1999 KN₁₀ *, 7, 2, 1; 1999 KO₁₀ *, 9, 2, 1; 1999 KP₁₀ *, 8, 2, 1; 1999 KQ₁₀ *, 25, 5, 36; 1999 KR₁₀ *, 17, 4, 33; 1999 KS₁₀ *, 7, 2, 1; 1999 KT₁₀ *, 9, 2, 1; 1999 KU₁₀ *, 21, 5, 35; 1999 KV₁₀ *, 7, 2, 1; 1999 KW₁₀ *, 9, 2, 1; 1999 KX₁₀ *, 9, 2, 1; 1999 KY₁₀ *, 7, 2, 1; 1999 KZ₁₀ *, 7, 2, 1; 1999 KA₁₁ *, 7, 2, 1; 1999 KB₁₁ *, 24, 5, 36; 1999 KC₁₁ *, 8, 2, 1; 1999 KD₁₁ *, 7, 2, 1; 1999 KE₁₁ *, 10, 2, 1; 1999 KF₁₁ *, 13, 3, 28; 1999 KG₁₁ *, 17, 4, 28; 1999 KH₁₁ *, 8, 2, 1; 1999 KJ₁₁ *, 25, 5, 35; 1999 KK₁₁ *, 9, 2, 1; 1999 KL₁₁ *, 9, 2, 1; 1999 KM₁₁ *, 9, 2, 1; 1999 KN₁₁ *, 10, 2, 1; 1999 KO₁₁ *, 14, 3, 28; 1999 KP₁₁ *, 8, 2, 1; 1999 KQ₁₁ *, 9, 2, 1; 1999 KR₁₁ *, 9, 2, 1; 1999 KS₁₁ *, 19, 4, 28; 1999 KT₁₁ *, 12, 3, 28; 1999 KU₁₁ *, 18, 4, 28; 1999 KV₁₁ *, 15, 3, 28; 1999 KW₁₁ *, 9, 2, 1; 1999 KX₁₁ *, 17, 4, 28; 1999 KY₁₁ *, 7, 2, 1; 1999 KZ₁₁ *, 10, 2, 1; 1999 KA₁₂ *, 8, 2, 1; 1999 KB₁₂ *, 8, 2, 1; 1999 KC₁₂ *, 19, 4, 32; 1999 KD₁₂ *, 9, 2, 1; 1999 KE₁₂ *, 9, 2, 1; 1999 KF₁₂ *, 7, 2, 1; 1999 KG₁₂ *, 10, 2, 1; 1999 KH₁₂ *, 9, 2, 1; 1999 KJ₁₂ *, 7, 2, 1; 1999 KK₁₂ *, 7, 2, 1; 1999 KL₁₂ *, 8, 2, 1; 1999 KM₁₂ *, 7, 2, 1; 1999 KN₁₂ *, 8, 2, 1; 1999 KO₁₂ *, 7, 2, 1; 1999 KP₁₂ *, 18, 4, 28; 1999 KQ₁₂ *, 9, 2, 1; 1999 KR₁₂ *, 9, 2, 1; 1999 KS₁₂ *, 29, 6, 36; 1999 KT₁₂ *, 15, 3, 28; 1999 KU₁₂ *, 7, 2, 1; 1999 KV₁₂ *, 9, 2, 1; 1999 KW₁₂ *, 8, 2, 1; 1999 KX₁₂ *, 19, 4, 28; 1999 KY₁₂ *, 6, 2, 1; 1999 KZ₁₂ *, 8, 2, 1; 1999 KA₁₃ *, 7, 2, 1; 1999 KB₁₃ *, 11, 3, 28; 1999 KC₁₃ *, 7, 2, 1; 1999 KD₁₃ *, 15, 4, 32; 1999 KE₁₃ *, 11, 3, 28; 1999 KF₁₃ *, 24, 5, 32; 1999 KG₁₃ *, 8, 2, 1; 1999 KH₁₃ *, 20, 5, 36; 1999 KJ₁₃ *, 9, 2, 1; 1999 KK₁₃ *, 8, 2, 1; 1999 KL₁₃ *, 12, 3, 28; 1999 KM₁₃ *, 19, 4, 36; 1999 KN₁₃ *, 20, 4, 28; 1999 KO₁₃ *, 24, 5, 36; 1999 KP₁₃ *, 6, 2, 1; 1999 KQ₁₃ *, 9, 2, 1; 1999 KR₁₃ *, 8, 2, 1; 1999 KS₁₃ *, 8, 2, 1; 1999 KT₁₃ *, 9, 2, 1; 1999 KU₁₃ *, 10, 2, 1; 1999 KV₁₃ *, 8, 2, 1; 1999 KW₁₃ *, 7, 2, 1; 1999 KX₁₃ *, 17, 4, 27; 1999 KY₁₃ *, 8, 2, 1; 1999 KZ₁₃ *, 9, 2, 1; 1999 KA₁₄ *, 9, 2, 1; 1999 KB₁₄ *, 10, 2, 1; 1999 KC₁₄ *, 27, 6, 115; 1999 KD₁₄ *, 9, 2, 1; 1999 KE₁₄ *, 10, 2, 1; 1999 KF₁₄ *, 19, 4, 28; 1999 KG₁₄ *, 8, 2, 1; 1999 KH₁₄ *, 30, 5, 28; 1999 KJ₁₄ *, 19, 4, 28; 1999 KK₁₄ *, 8, 2, 1; 1999 KL₁₄ *, 9, 2, 1; 1999 KM₁₄ *, 6, 2, 1; 1999 KN₁₄ *, 21, 5, 33; 1999 KO₁₄ *, 17, 4, 28; 1999 KP₁₄ *, 18, 4, 28; 1999 KQ₁₄ *, 33, 6, 33; 1999 KR₁₄ *, 19, 4, 28; 1999 KS₁₄ *, 19, 4, 28; 1999 KT₁₄ *, 17, 4, 28; 1999 KU₁₄ *, 15, 4, 28; 1999 KV₁₄ *, 9, 2, 1; 1999 KW₁₄ *, 17, 4, 28; 1999 KX₁₄ *, 19, 4, 28; 1999 KY₁₄ *, 13, 3, 28; 1999 KZ₁₄ *, 10, 2, 1; 1999 KA₁₅ *, 10, 2, 1; 1999 KB₁₅ *, 9, 2, 1; 1999 KC₁₅ *, 6, 2, 1; 1999 KD₁₅ *, 17, 4, 28; 1999 KE₁₅ *, 19, 4, 28; 1999 KF₁₅ *, 20, 5, 33; 1999 KG₁₅ *, 18, 4, 28; 1999 KH₁₅ *, 9, 2, 1; 1999 KJ₁₅ *, 10, 2, 1; 1999 KK₁₅ *, 9, 2, 1; 1999 KL₁₅ *, 9, 2, 1; 1999 KM₁₅ *, 10, 2, 1; 1999 KN₁₅ *, 7, 2, 1; 1999 KO₁₅ *, 8, 2, 1; 1999 KP₁₅ *, 8, 2, 1; 1999 KR₁₅ *, 6, 2, 1; 1999 KS₁₅ *, 8, 2, 1; 1999 KT₁₅ *, 9, 2, 1; 1999 KU₁₅ *, 5, 2, 1; 1999 KV₁₅ *, 8, 2, 1; 1999 KW₁₅ *, 18, 4, 27; 1999 KX₁₅ *, 4, 2, 1; 1999 KY₁₅ *, 19, 4, 28; 1999 KZ₁₅ *, 8, 2, 1; 1999 KA₁₆ *, 7, 1, 0; 1999 LC₁, 5, 1, 0; 1999 LE₁, 4, 1, 0; 1999 LF₁, 19, 3, 28; 1999 LH₁, 13, 3, 28; 1999 LJ₁, 5, 1, 0; 1999 LN₁, 5, 1, 0; 1999 LO₁ *, 23, 4, 6; 1999 LP₁ *, 10, 2, 3; 1999 LQ₁ *, 8, 2, 3; 1999 LR₁ *, 34, 6, 63; 1999 LS₁ *, 24, 5, 27; 1999 LT₁, 14, 3, 30; 1999 LW₁, 4, 1, 0; 1999 LY₁ *, 9, 2, 1; 1999 LZ₁ *, 33, 6, 108; 1999 LA₁ *, 39, 8, 197; 1999 LB₁ *, 9, 2, 1; 1999 LC₁ *, 10, 2, 1; 1999 LD₁ *, 10, 2, 1; 1999 LE₁ *, 8, 2, 1; 1999 LF₁ *, 10, 2, 1; 1999 LG₁ *, 8, 2, 1; 1999 LH₁ *, 7, 2, 1; 1999 LI₁ *, 9, 2, 1; 1999 LM₁, 18, 3, 3; 1999 LN₁, 10, 2, 1; 1999 LO₁ *, 10, 2, 1; 1999 LS₁ *, 10, 2, 1; 1999 LT₁ *, 19, 4, 5; 1999 LU₁ *, 17, 3, 4; 1999 LV₁ *, 29, 5, 6; 1999 LW₁, 5, 1, 0; 1999 LX₁ *, 21, 3, 2; 1999 LY₁, 10, 2, 24; 1999 LZ₁, 5, 1, 0; 1999 LA₂,

5, 1, 0; 1999 LB₂ *, 15, 2, 2; 1999 LC₂ *, 10, 2, 2; 1999 LD₂ *, 8, 2, 2; 1999 LE₂ *, 10, 2, 2; 1999 LF₂ *, 25, 5, 31; 1999 LG₂ *, 9, 2, 2; 1999 LH₂ *, 9, 2, 2; 1999 LJ₂ *, 19, 4, 6; 1999 LK₂ *, 19, 4, 28; 1999 LL₂ *, 15, 3, 6; 1999 LM₂ *, 13, 2, 2; 1999 LN₂ *, 28, 6, 33; 1999 LO₂ *, 15, 2, 2; 1999 LP₂ *, 14, 3, 6; 1999 LQ₂ *, 19, 4, 32; 1999 LR₂ *, 24, 5, 33; 1999 LS₂ *, 13, 3, 6; 1999 LT₂ *, 17, 3, 6; 1999 LU₂ *, 20, 3, 6; 1999 LV₂ *, 14, 2, 1; 1999 LF₃ *, 4, 1, 0; 1999 LP₃ *, 4, 1, 0; 1999 LS₃ *, 10, 2, 2; 1999 LT₃ *, 9, 2, 4; 1999 LU₃ *, 9, 2, 4; 1999 LV₃ *, 10, 2, 4; 1999 LW₃ *, 9, 2, 4; 1999 LX₃ *, 12, 3, 6; 1999 LY₃ *, 19, 4, 32; 1999 LZ₃ *, 14, 3, 5; 1999 LA₄ *, 13, 3, 5; 1999 LB₄ *, 15, 3, 5; 1999 LC₄ *, 14, 3, 5; 1999 LD₄ *, 12, 3, 5; 1999 LE₄ *, 15, 3, 5; 1999 LF₄ *, 13, 3, 6; 1999 LG₄ *, 14, 3, 5; 1999 LH₄ *, 8, 2, 1; 1999 LJ₄ *, 10, 2, 1; 1999 LK₄ *, 10, 2, 1; 1999 LL₄ *, 10, 2, 1; 1999 LM₄ *, 20, 2, 1; 1999 LN₄ *, 19, 2, 1; 1999 LP₄ *, 4, 1, 0; 1999 LQ₄ *, 10, 2, 5; 1999 LR₄ *, 9, 2, 5; 1999 LS₄ *, 15, 3, 29; 1999 LT₄ *, 9, 2, 5; 1999 LU₄ *, 20, 3, 29; 1999 LV₄ *, 19, 4, 28; 1999 LW₄ *, 10, 2, 4; 1999 LX₄ *, 9, 2, 4; 1999 LY₄ *, 10, 2, 4; 1999 LZ₄ *, 9, 2, 4; 1999 LA₅ *, 10, 2, 4; 1999 LB₅ *, 20, 3, 26; 1999 LC₅ *, 14, 3, 6; 1999 LD₅ *, 22, 5, 33; 1999 LE₅ *, 14, 3, 4; 1999 LF₅ *, 23, 5, 33; 1999 LG₅ *, 18, 3, 4; 1999 LH₅ *, 10, 2, 1; 1999 LJ₅ *, 9, 2, 1; 1999 LK₅ *, 20, 3, 29; 1999 LL₅ *, 10, 2, 1; 1999 LM₅ *, 9, 2, 1; 1999 LN₅ *, 13, 3, 4; 1999 LO₅ *, 8, 2, 1; 1999 LP₅ *, 14, 3, 3; 1999 LQ₅ *, 10, 2, 1; 1999 LR₅ *, 13, 2, 1; 1999 LS₅ *, 10, 2, 1; 1999 LT₅ *, 10, 2, 1; 1999 LU₅ *, 9, 2, 1; 1999 LV₅ *, 9, 2, 1; 1999 LW₅ *, 8, 2, 1; 1999 LX₅ *, 9, 2, 1; 1999 LY₅ *, 9, 2, 1; 1999 LZ₅ *, 9, 2, 1; 1999 LA₆ *, 10, 2, 1; 1999 LB₆ *, 9, 2, 1; 1999 LC₆ *, 10, 2, 1; 1999 LD₆ *, 9, 2, 1; 1999 LE₆ *, 19, 2, 1; 1999 LF₆ *, 14, 2, 1; 1999 LG₆ *, 5, 1, 0; 1999 LD₇ *, 9, 2, 6; 1999 LH₇ *, 5, 1, 0; 1999 LK₇ *, 4, 1, 0; 1999 LS₇ *, 54, 7, 7; 1999 LT₇ *, 38, 4, 6; 1999 LV₇ *, 30, 4, 4; 1999 LW₇ *, 5, 1, 0; 1999 LX₇ *, 5, 1, 0; 1999 LY₇ *, 10, 2, 6; 1999 LZ₇ *, 10, 2, 6; 1999 LA₈ *, 13, 3, 28; 1999 LB₈ *, 10, 2, 6; 1999 LC₈ *, 9, 2, 6; 1999 LD₈ *, 8, 2, 6; 1999 LE₈ *, 9, 2, 6; 1999 LF₈ *, 9, 2, 6; 1999 LG₈ *, 19, 4, 33; 1999 LH₈ *, 9, 2, 6; 1999 LJ₈ *, 9, 2, 6; 1999 LK₈ *, 9, 2, 6; 1999 LL₈ *, 9, 2, 6; 1999 LM₈ *, 9, 2, 6; 1999 LN₈ *, 9, 2, 6; 1999 LO₈ *, 9, 2, 6; 1999 LP₈ *, 10, 2, 6; 1999 LQ₈ *, 9, 2, 6; 1999 LR₈ *, 9, 2, 6; 1999 LS₈ *, 10, 2, 6; 1999 LT₈ *, 10, 2, 6; 1999 LU₈ *, 9, 2, 6; 1999 LV₈ *, 10, 2, 6; 1999 LW₈ *, 10, 2, 6; 1999 LX₈ *, 13, 3, 28; 1999 LY₈ *, 9, 2, 6; 1999 LZ₈ *, 15, 3, 35; 1999 LA₉ *, 10, 2, 6; 1999 LB₉ *, 10, 2, 6; 1999 LC₉ *, 10, 2, 6; 1999 LD₉ *, 9, 2, 6; 1999 LE₉ *, 10, 2, 6; 1999 LF₉ *, 10, 2, 6; 1999 LG₉ *, 9, 2, 6; 1999 LH₉ *, 9, 2, 6; 1999 LJ₉ *, 9, 2, 6; 1999 LK₉ *, 10, 2, 6; 1999 LL₉ *, 10, 2, 6; 1999 LM₉ *, 10, 2, 6; 1999 LN₉ *, 10, 2, 6; 1999 LO₉ *, 9, 2, 6; 1999 LP₉ *, 8, 2, 6; 1999 LQ₉ *, 10, 2, 6; 1999 LR₉ *, 10, 2, 6; 1999 LS₉ *, 9, 2, 6; 1999 LT₉ *, 10, 2, 6; 1999 LU₉ *, 8, 2, 6; 1999 LV₉ *, 9, 2, 6; 1999 LW₉ *, 8, 2, 6; 1999 LX₉ *, 10, 2, 6; 1999 LY₉ *, 10, 2, 6; 1999 LZ₉ *, 10, 2, 6; 1999 LA₁₀ *, 10, 2, 6; 1999 LB₁₀ *, 10, 2, 6; 1999 LC₁₀ *, 9, 2, 6; 1999 LD₁₀ *, 9, 2, 6; 1999 LE₁₀ *, 9, 2, 6; 1999 LF₁₀ *, 9, 2, 6; 1999 LG₁₀ *, 9, 2, 6; 1999 LH₁₀ *, 9, 2, 6; 1999 LJ₁₀ *, 10, 2, 6; 1999 LK₁₀ *, 10, 2, 6; 1999 LM₁₀ *, 10, 2, 6; 1999 LN₁₀ *, 9, 2, 6; 1999 LO₁₀ *, 9, 2, 6; 1999 LP₁₀ *, 8, 2, 6; 1999 LQ₁₀ *, 10, 2, 6; 1999 LR₁₀ *, 10, 2, 6; 1999 LS₁₀ *, 9, 2, 6; 1999 LT₁₀ *, 9, 2, 6; 1999 LU₁₀ *, 10, 2, 6; 1999 LV₁₀ *, 10, 2, 6; 1999 LW₁₀ *, 9, 2, 6; 1999 LX₁₀ *, 8, 2, 6; 1999 LY₁₀ *, 8, 2, 6; 1999 LZ₁₀ *, 9, 2, 6; 1999 LA₁₁ *, 10, 2, 6; 1999 LB₁₁ *, 10, 2, 6; 1999 LC₁₁ *, 10, 2, 6; 1999 LD₁₁ *, 10, 2, 6; 1999 LE₁₁ *, 10, 2, 6; 1999 LF₁₁ *, 10, 2, 6; 1999 LG₁₁ *, 10, 2, 6; 1999 LH₁₁ *, 10, 2, 6; 1999 LJ₁₁ *, 10, 2, 6; 1999 LK₁₁ *, 10, 2, 6; 1999 LL₁₁ *, 9, 2, 6; 1999 LM₁₁ *, 9, 2, 6; 1999 LN₁₁ *, 8, 2, 6; 1999 LO₁₁ *, 9, 2, 6; 1999 LP₁₁ *, 9, 2, 5; 1999 LQ₁₁ *, 19, 4, 35; 1999 LR₁₁ *, 9, 2, 5; 1999 LS₁₁ *, 8, 2, 5; 1999 LT₁₁ *, 9, 2, 5; 1999 LU₁₁ *, 9, 2, 5; 1999 LV₁₁ *, 8, 2, 5; 1999 LW₁₁ *, 22, 4, 28; 1999 LX₁₁ *, 9, 2, 5; 1999 LY₁₁ *, 10, 2, 5; 1999 LZ₁₁ *, 10, 2, 5; 1999 LA₁₂ *, 10, 2, 5; 1999 LB₁₂ *, 15, 3, 6; 1999 LC₁₂ *, 10, 2, 5; 1999 LD₁₂ *, 10, 2, 5; 1999 LE₁₂ *, 8, 2, 5; 1999 LF₁₂ *, 10, 2, 5; 1999 LG₁₂ *, 10, 2, 5; 1999 LH₁₂ *, 9, 2, 5; 1999 LJ₁₂ *, 10, 2, 5; 1999 LK₁₂ *, 9, 2, 5; 1999 LL₁₂ *, 9, 2, 5; 1999 LM₁₂ *, 10, 2, 5; 1999 LN₁₂ *, 10, 2, 5; 1999 LO₁₂ *, 9, 2, 5; 1999 LP₁₂ *, 9, 2, 5; 1999 LQ₁₂ *, 10, 2, 5; 1999 LR₁₂ *, 10, 2, 5; 1999 LS₁₂ *, 10, 2, 5; 1999 LT₁₂ *, 9, 2, 5; 1999 LU₁₂

9, 2, 6; 1999 LG₁₆ *, 9, 2, 6; 1999 LH₁₆ *, 9, 2, 6; 1999 LJ₁₆ *, 9, 2, 6; 1999 LK₁₆ *, 9, 2, 6; 1999 LL₁₆ *, 9, 2, 6; 1999 LM₁₆ *, 8, 2, 6; 1999 LN₁₆ *, 9, 2, 6; 1999 LO₁₆ *, 9, 2, 6; 1999 LP₁₆ *, 9, 2, 6; 1999 LQ₁₆ *, 10, 2, 6; 1999 LR₁₆ *, 9, 2, 6; 1999 LS₁₆ *, 8, 2, 6; 1999 LT₁₆ *, 9, 2, 6; 1999 LU₁₆ *, 10, 2, 6; 1999 LV₁₆ *, 9, 2, 6; 1999 LW₁₆ *, 9, 2, 6; 1999 LX₁₆ *, 9, 2, 6; 1999 LY₁₆ *, 9, 2, 6; 1999 LZ₁₆ *, 10, 2, 6; 1999 LA₁₇ *, 10, 2, 6; 1999 LB₁₇ *, 8, 2, 6; 1999 LC₁₇ *, 9, 2, 6; 1999 LD₁₇ *, 9, 2, 6; 1999 LE₁₇ *, 10, 2, 6; 1999 LF₁₇ *, 10, 2, 6; 1999 LG₁₇ *, 9, 2, 6; 1999 LH₁₇ *, 10, 2, 6; 1999 LI₁₇ *, 10, 2, 6; 1999 LJ₁₇ *, 10, 2, 6; 1999 LK₁₇ *, 10, 2, 6; 1999 LL₁₇ *, 10, 2, 6; 1999 LM₁₇ *, 10, 2, 6; 1999 LN₁₇ *, 9, 2, 6; 1999 LO₁₇ *, 9, 2, 6; 1999 LP₁₇ *, 8, 2, 6; 1999 LQ₁₇ *, 9, 2, 6; 1999 LR₁₇ *, 9, 2, 6; 1999 LS₁₇ *, 10, 2, 6; 1999 LT₁₇ *, 10, 2, 6; 1999 LU₁₇ *, 10, 2, 6; 1999 LV₁₇ *, 10, 2, 6; 1999 LW₁₇ *, 9, 2, 6; 1999 LX₁₇ *, 9, 2, 6; 1999 LY₁₇ *, 9, 2, 6; 1999 LZ₁₇ *, 10, 2, 6; 1999 LA₁₈ *, 10, 2, 6; 1999 LB₁₈ *, 9, 2, 6; 1999 LC₁₈ *, 10, 2, 6; 1999 LE₁₈ *, 10, 2, 6; 1999 LF₁₈ *, 10, 2, 6; 1999 LG₁₈ *, 9, 2, 6; 1999 LH₁₈ *, 10, 2, 6; 1999 LJ₁₈ *, 10, 2, 6; 1999 LK₁₈ *, 9, 2, 6; 1999 LL₁₈ *, 10, 2, 6; 1999 LM₁₈ *, 10, 2, 6; 1999 LN₁₈ *, 14, 3, 27; 1999 LO₁₈ *, 9, 2, 6; 1999 LP₁₈ *, 13, 3, 33; 1999 LQ₁₈ *, 10, 2, 6; 1999 LR₁₈ *, 10, 2, 6; 1999 LS₁₈ *, 10, 2, 6; 1999 LT₁₈ *, 9, 2, 6; 1999 LU₁₈ *, 10, 2, 6; 1999 LV₁₈ *, 14, 2, 6; 1999 LW₁₈ *, 10, 2, 6; 1999 LX₁₈ *, 10, 2, 6; 1999 LY₁₈ *, 10, 2, 6; 1999 LZ₁₈ *, 9, 2, 6; 1999 LA₁₉ *, 10, 2, 6; 1999 LB₁₉ *, 9, 2, 6; 1999 LC₁₉ *, 8, 2, 6; 1999 LD₁₉ *, 10, 2, 6; 1999 LE₁₉ *, 8, 2, 6; 1999 LF₁₉ *, 10, 2, 6; 1999 LG₁₉ *, 9, 2, 6; 1999 LH₁₉ *, 10, 2, 6; 1999 LI₁₉ *, 10, 2, 6; 1999 LJ₁₉ *, 9, 2, 6; 1999 LK₁₉ *, 9, 2, 6; 1999 LL₁₉ *, 9, 2, 6; 1999 LM₁₉ *, 10, 2, 6; 1999 LN₁₉ *, 10, 2, 6; 1999 LO₁₉ *, 8, 2, 6; 1999 LP₁₉ *, 9, 2, 6; 1999 LQ₁₉ *, 10, 2, 6; 1999 LR₁₉ *, 10, 2, 6; 1999 LS₁₉ *, 10, 2, 6; 1999 LT₁₉ *, 10, 2, 6; 1999 LU₁₉ *, 10, 2, 6; 1999 LV₁₉ *, 9, 2, 6; 1999 LW₁₉ *, 9, 2, 6; 1999 LX₁₉ *, 10, 2, 6; 1999 LY₁₉ *, 10, 2, 6; 1999 LZ₁₉ *, 10, 2, 6; 1999 LA₂₀ *, 9, 2, 6; 1999 LB₂₀ *, 9, 2, 6; 1999 LC₂₀ *, 10, 2, 6; 1999 LD₂₀ *, 10, 2, 6; 1999 LE₂₀ *, 9, 2, 6; 1999 LF₂₀ *, 9, 2, 6; 1999 LG₂₀ *, 10, 2, 6; 1999 LH₂₀ *, 10, 2, 6; 1999 LI₂₀ *, 9, 2, 6; 1999 LJ₂₀ *, 9, 2, 6; 1999 LK₂₀ *, 10, 2, 6; 1999 LL₂₀ *, 10, 2, 6; 1999 LM₂₀ *, 10, 2, 6; 1999 LN₂₀ *, 10, 2, 6; 1999 LO₂₀ *, 9, 2, 6; 1999 LP₂₀ *, 10, 2, 6; 1999 LQ₂₀ *, 10, 2, 6; 1999 LR₂₀ *, 10, 2, 6; 1999 LS₂₀ *, 10, 2, 6; 1999 LT₂₀ *, 8, 2, 6; 1999 LU₂₀ *, 10, 2, 6; 1999 LV₂₀ *, 10, 2, 6; 1999 LW₂₀ *, 10, 2, 6; 1999 LX₂₀ *, 10, 2, 6; 1999 LY₂₀ *, 10, 2, 6; 1999 LZ₂₀ *, 9, 2, 6; 1999 LA₂₁ *, 10, 2, 6; 1999 LB₂₁ *, 9, 2, 6; 1999 LC₂₁ *, 9, 2, 6; 1999 LD₂₁ *, 9, 2, 6; 1999 LE₂₁ *, 10, 2, 6; 1999 LF₂₁ *, 9, 2, 6; 1999 LG₂₁ *, 10, 2, 6; 1999 LH₂₁ *, 9, 2, 6; 1999 LI₂₁ *, 9, 2, 6; 1999 LJ₂₁ *, 9, 2, 6; 1999 LK₂₁ *, 9, 2, 6; 1999 LL₂₁ *, 10, 2, 6; 1999 LM₂₁ *, 10, 2, 6; 1999 LN₂₁ *, 10, 2, 6; 1999 LO₂₁ *, 9, 2, 6; 1999 LP₂₁ *, 9, 2, 6; 1999 LQ₂₁ *, 8, 2, 6; 1999 LR₂₁ *, 9, 2, 6; 1999 LS₂₁ *, 9, 2, 6; 1999 LT₂₁ *, 9, 2, 6; 1999 LU₂₁ *, 10, 2, 6; 1999 LV₂₁ *, 9, 2, 6; 1999 LW₂₁ *, 9, 2, 6; 1999 LX₂₁ *, 10, 2, 6; 1999 LY₂₁ *, 10, 2, 6; 1999 LZ₂₁ *, 10, 2, 6; 1999 LA₂₂ *, 9, 2, 6; 1999 LB₂₂ *, 10, 2, 6; 1999 LC₂₂ *, 10, 2, 6; 1999 LD₂₂ *, 10, 2, 6; 1999 LE₂₂ *, 9, 2, 6; 1999 LF₂₂ *, 10, 2, 6; 1999 LG₂₂ *, 10, 2, 6; 1999 LH₂₂ *, 10, 2, 6; 1999 LI₂₂ *, 12, 3, 28; 1999 LJ₂₂ *, 9, 2, 6; 1999 LK₂₂ *, 9, 2, 6; 1999 LL₂₂ *, 9, 2, 6; 1999 LM₂₂ *, 10, 2, 6; 1999 LN₂₂ *, 8, 2, 6; 1999 LO₂₂ *, 9, 2, 6; 1999 LP₂₂ *, 10, 2, 6; 1999 LQ₂₂ *, 10, 2, 6; 1999 LR₂₂ *, 10, 2, 6; 1999 LS₂₂ *, 10, 2, 6; 1999 LT₂₂ *, 10, 2, 6; 1999 LU₂₂ *, 10, 2, 6; 1999 LV₂₂ *, 9, 2, 6; 1999 LW₂₂ *, 10, 2, 6; 1999 LX₂₂ *, 8, 2, 6; 1999 LY₂₂ *, 9, 2, 6; 1999 LZ₂₂ *, 8, 2, 6; 1999 LA₂₃ *, 9, 2, 6; 1999 LB₂₃ *, 9, 2, 6; 1999 LC₂₃ *, 8, 2, 6; 1999 LD₂₃ *, 8, 2, 6; 1999 LE₂₃ *, 9, 2, 6; 1999 LF₂₃ *, 9, 2, 6; 1999 LG₂₃ *, 9, 2, 6; 1999 LH₂₃ *, 9, 2, 6; 1999 LI₂₃ *, 8, 2, 6; 1999 LJ₂₃ *, 8, 2, 6; 1999 LK₂₃ *, 9, 2, 6; 1999 LL₂₃ *, 9, 2, 6; 1999 LM₂₃ *, 8, 2, 6; 1999 LN₂₃ *, 9, 2, 6; 1999 LO₂₃ *, 9, 2, 6; 1999 LP₂₃ *, 9, 2, 6; 1999 LQ₂₃ *, 9, 2, 6; 1999 LR₂₃ *, 9, 2, 6; 1999 LS₂₃ *, 9, 2, 6; 1999 LT₂₃ *, 9, 2, 6; 1999 LU₂₃ *, 9, 2, 6; 1999 LV₂₃ *, 10, 2, 6; 1999 LW₂₃ *, 10, 2, 6; 1999 LX₂₃ *, 8, 2, 6; 1999 LY₂₃ *, 9, 2, 6; 1999 LZ₂₃ *, 10, 2, 6; 1999 LA₂₄ *, 10, 2, 6; 1999 LB₂₄ *, 10, 2, 6; 1999 LC₂₄ *, 10, 2, 6; 1999 LD₂₄ *, 10, 2, 6; 1999 LE₂₄ *, 9, 2, 6; 1999 LF₂₄ *, 9, 2, 6; 1999 LG₂₄ *, 10, 2, 6; 1999 LH₂₄ *, 10, 2, 6; 1999 LJ₂₄ *, 9, 2, 6; 1999 LK₂₄ *, 9, 2, 6; 1999 LL₂₄ *, 9, 2, 6; 1999 LM₂₄ *, 10, 2, 6; 1999 LN₂₄ *, 9, 2, 6; 1999 LO₂₄ *, 10, 2, 6; 1999 LP₂₄ *, 10, 2, 6; 1999 LQ₂₄ *, 10, 2, 6; 1999 LR₂₄ *, 10, 2, 6; 1999 LS₂₄ *, 10, 2, 6; 1999 LT₂₄ *, 10, 2, 6; 1999 LU₂₄ *, 9, 2, 6; 1999 LV₂₄ *, 10, 2, 6; 1999 LW₂₄ *, 10, 2, 6; 1999 LX₂₄ *, 10, 2, 6; 1999 LY₂₄ *, 9, 2, 6; 1999 LZ₂₄ *, 9, 2, 6; 1999 LA₂₅ *, 10, 2, 6; 1999 LB₂₅ *, 10, 2, 6; 1999 LC₂₅ *, 8, 2, 6; 1999 LD₂₅ *, 8, 2, 6; 1999 LE₂₅ *, 9, 2, 6; 1999 LF₂₅ *, 10, 2, 6; 1999 LG₂₅ *, 10, 2, 6; 1999 LH₂₅ *, 10, 2, 6; 1999 LI₂₅ *, 10, 2, 6; 1999 LJ₂₅ *, 10, 2, 6; 1999 LK₂₅ *, 10, 2, 6; 1999 LL₂₅ *, 9, 2, 6; 1999 LM₂₅ *, 10, 2, 6; 1999 LN₂₅ *, 10, 2, 6; 1999 LO₂₅ *, 9, 2, 6; 1999 LP₂₅ *, 10, 2, 6; 1999 LQ₂₅ *, 10, 2, 6; 1999 LR₂₅ *, 10, 2, 6; 1999 LS₂₅ *, 10, 2, 6; 1999 LT₂₅ *, 10, 2, 6; 1999 LU₂₅ *, 9, 2, 6; 1999 LV₂₅ *, 10, 2, 6; 1999 LW₂₅ *, 10, 2, 6; 1999 LX₂₅ *, 9, 2, 6; 1999 LY₂₅ *, 10, 2, 6; 1999 LZ₂₅ *, 10, 2, 6; 1999 LA₂₆ *, 9, 2, 6; 1999 LB₂₆ *, 10, 2, 6; 1999 LC₂₆ *, 10, 2, 6; 1999 LD₂₆ *, 10, 2, 6; 1999 LE₂₆ *, 9, 2, 6; 1999 LF₂₆ *, 10, 2, 6; 1999 LG₂₆ *, 9, 2, 6; 1999 LH₂₆ *, 10, 2, 6; 1999 LI₂₆ *, 9, 2, 6; 1999 LJ₂₆ *, 10, 2, 6; 1999 LK₂₆ *, 10, 2, 6; 1999 LL₂₆ *, 10, 2, 6; 1999 LM₂₆ *, 9, 2, 6; 1999 LN₂₆ *, 10, 2, 6; 1999 LO₂₆ *, 10, 2, 6; 1999 LP₂₆ *, 8, 2, 6; 1999 LQ₂₆ *, 10, 2, 6; 1999 LR₂₆ *, 8, 2, 6; 1999 LS₂₆ *, 15, 2, 6; 1999 LT₂₆ *, 8, 2, 6; 1999 LU₂₆ *, 9, 2, 6; 1999 LV₂₆ *, 9, 2, 6; 1999 LW₂₆ *, 9, 2, 6; 1999 LX₂₆ *, 20, 3, 115; 1999 LY₂₆ *, 10, 2, 6; 1999 LZ₂₆ *, 10, 2, 6; 1999 LA₂₇ *, 10, 2, 6; 1999 LB₂₇ *, 10, 2, 6; 1999 LC₂₇ *, 10, 2, 6; 1999 LD₂₇ *, 9, 2, 6; 1999 LE₂₇ *, 10, 2, 6; 1999 LF₂₇ *, 9, 2, 6; 1999 LG₂₇ *, 10, 2, 6; 1999 LH₂₇ *, 9, 2, 6; 1999 LI₂₇ *, 9, 2, 6; 1999 LJ₂₇ *, 9, 2, 6; 1999 LK₂₇ *, 9, 2, 6; 1999 LL₂₇ *, 9, 2, 6; 1999 LM₂₇ *, 9, 2, 6; 1999 LN₂₇ *, 9, 2, 6; 1999 LO₂₇ *, 9, 2, 6; 1999 LP₂₇ *, 9, 2, 6; 1999 LQ₂₇ *, 9, 2, 6; 1999 LR₂₇ *, 9, 2, 6; 1999 LS₂₇ *, 9, 2, 6; 1999 LT₂₇ *, 9, 2, 6; 1999 LU₂₇ *, 9, 2, 6; 1999 LV₂₇ *, 9, 2, 6; 1999 LW₂₇ *, 9, 2, 6; 1999 LX₂₇ *, 9, 2, 6; 1999 LY₂₇ *, 8, 2, 6; 1999 LZ₂₇ *, 14, 2, 5; 1999 LA₂₈ *, 15,

2, 5; 1999 LB₂₈ *, 14, 2, 5; 1999 LC₂₈ *, 9, 2, 5; 1999 LD₂₈ *, 8, 2, 3; 1999 LE₂₈ *, 14, 2, 1; 1999 LF₂₈ *, 9, 2, 1; 1999 LG₂₈ *, 10, 2, 1; 1999 LH₂₈ *, 8, 2, 1; 1999 LJ₂₈ *, 9, 2, 1; 1999 LK₂₈ *, 13, 2, 1; 1999 LL₂₈ *, 15, 2, 1; 1999 LM₂₈ *, 15, 3, 36; 1999 LN₂₈ *, 15, 3, 3; 1999 LP₂₈ *, 12, 2, 1; 1999 LQ₂₈ *, 14, 2, 1; 1999 LD₃₀ *, 5, 1, 0; 2044 P-L, 4, 1, 0; 2055 P-L, 9, 2, 34; 2056 P-L, 5, 1, 0; 2061 P-L, 5, 1, 0; 2207 P-L, 4, 1, 0; 2503 P-L, 7, 2, 34; 2547 P-L, 4, 1, 0; 2583 P-L, 4, 1, 0; 2610 P-L, 4, 1, 0; 2627 P-L, 10, 2, 6; 2757 P-L, 5, 1, 0; 3066 P-L, 25, 5, 30; 4049 P-L, 14, 3, 35; 4070 P-L, 4, 1, 0; 4072 P-L, 10, 2, 6; 4141 P-L, 5, 1, 0; 4152 P-L, 24, 5, 33; 4175 P-L, 5, 1, 0; 4276 P-L, 9, 2, 30; 4545 P-L, 21, 5, 35; 4591 P-L, 5, 1, 0; 4792 P-L, 5, 1, 0; 4844 P-L, 14, 3, 32; 4917 P-L, 4, 1, 0; 5011 P-L, 19, 4, 30; 5023 P-L, 17, 4, 32; 6068 P-L, 9, 2, 5; 6115 P-L, 4, 1, 0; 6188 P-L, 22, 5, 9; 6232 P-L, 4, 1, 0; 6528 P-L, 10, 2, 2; 6570 P-L, 3, 1, 0; 6579 P-L, 24, 5, 7; 6580 P-L, 29, 6, 7; 6584 P-L, 5, 1, 0; 6653 P-L, 5, 1, 0; 6792 P-L, 8, 2, 6; 6809 P-L, 20, 4, 36; 7069 P-L, 5, 1, 0; 7622 P-L, 14, 3, 2; 9516 P-L, 6, 2, 9; 9530 P-L, 10, 2, 5; 9542 P-L, 17, 4, 9; 9549 P-L, 13, 3, 8; 1080 T-1, 4, 1, 0; 2085 T-1, 9, 2, 3; 2088 T-1, 12, 3, 28; 2144 T-1, 5, 1, 0; 2149 T-1, 17, 4, 9; 2234 T-1, 3, 1, 0; 2289 T-1, 19, 4, 9; 3078 T-1, 4, 1, 0; 3188 T-1, 5, 1, 0; 3216 T-1, 21, 5, 36; 3274 T-1, 5, 1, 0; 3297 T-1, 13, 3, 28; 3308 T-1, 24, 5, 36; 4023 T-1, 18, 5, 35; 4155 T-1, 4, 1, 0; 4194 T-1, 5, 1, 0; 4269 T-1, 4, 1, 0; 4349 T-1, 3, 1, 0; 4393 T-1, 15, 4, 33; 4827 T-1, 5, 1, 0; 4843 T-1, 10, 2, 5; 1052 T-2, 5, 1, 0; 1079 T-2, 25, 5, 36; 1166 T-2, 9, 2, 4; 1179 T-2, 19, 4, 9; 1188 T-2, 17, 4, 28; 1210 T-2, 18, 4, 9; 1279 T-2, 3, 1, 0; 1325 T-2, 5, 1, 0; 1510 T-2, 10, 2, 4; 2024 T-2, 5, 1, 0; 2042 T-2, 4, 1, 0; 2058 T-2, 23, 4, 537; 2087 T-2, 9, 2, 5; 2200 T-2, 4, 1, 0; 2225 T-2, 28, 6, 36; 2246 T-2, 29, 6, 35; 2287 T-2, 24, 6, 35; 3122 T-2, 10, 2, 3; 3151 T-2, 5, 1, 0; 3177 T-2, 24, 6, 36; 3207 T-2, 20, 5, 30; 3295 T-2, 21, 5, 33; 4095 T-2, 23, 5, 33; 4117 T-2, 5, 1, 0; 4122 T-2, 19, 4, 9; 4171 T-2, 22, 5, 29; 4188 T-2, 5, 1, 0; 4232 T-2, 5, 1, 0; 4294 T-2, 14, 3, 8; 5061 T-2, 5, 1, 0; 5065 T-2, 12, 3, 8; 5087 T-2, 17, 4, 36; 5112 T-2, 9, 2, 3; 5155 T-2, 14, 4, 34; 1047 T-3, 9, 2, 6; 1148 T-3, 3, 1, 0; 2332 T-3, 28, 6, 35; 2672 T-3, 18, 4, 33; 3046 T-3, 10, 2, 4; 3140 T-3, 9, 2, 3; 3157 T-3, 5, 1, 0; 3196 T-3, 29, 6, 36; 3355 T-3, 10, 2, 3; 3446 T-3, 4, 1, 0; 3460 T-3, 4, 1, 0; 3507 T-3, 35, 7, 9; 4017 T-3, 15, 3, 28; 4207 T-3, 14, 4, 9; 4250 T-3, 12, 3, 35; 4280 T-3, 25, 6, 35; 4313 T-3, 9, 2, 1; 4354 T-3, 4, 1, 0; 5034 T-3, 20, 4, 35; (9), 3, 1, 0; (11), 3, 1, 0; (16), 1, 1, 0; (27), 1, 1, 0; (30), 10, 2, 13; (33), 9, 4, 28; (36), 3, 1, 0; (40), 5, 1, 0; (48), 4, 1, 0; (53), 5, 1, 0; (55), 5, 2, 14; (60), 3, 1, 0; (66), 6, 2, 3; (74), 4, 1, 0; (77), 4, 1, 0; (80), 3, 1, 0; (90), 6, 3, 6; (94), 3, 1, 0; (95), 9, 3, 4; (101), 1, 1, 0; (104), 9, 2, 3; (105), 7, 3, 29; (109), 5, 1, 0; (111), 5, 1, 0; (113), 5, 1, 0; (116), 1, 1, 0; (123), 1, 1, 0; (135), 2, 1, 0; (136), 6, 2, 31; (140), 2, 1, 0; (143), 15, 3, 26; (144), 5, 1, 0; (148), 5, 1, 0; (149), 4, 1, 0; (153), 10, 4, 32; (156), 5, 1, 0; (158), 12, 6, 36; (159), 5, 1, 0; (160), 3, 1, 0; (164), 10, 3, 25; (166), 3, 1, 0; (168), 5, 1, 0; (173), 4, 1, 0; (177), 5, 1, 0; (178), 1, 1, 0; (179), 4, 1, 0; (182), 15, 6, 32; (184), 3, 1, 0; (189), 10, 2, 24; (190), 2, 1, 0; (200), 2, 1, 0; (203), 5, 1, 0; (206), 1, 1, 0; (207), 1, 0; (209), 3, 1, 0; (210), 13, 3, 22; (211), 7, 3, 27; (213), 3, 1, 0; (214), 5, 1, 0; (215), 7, 2, 30; (219), 6, 2, 1; (220), 9, 2, 24; (221), 2, 1, 0; (227), 1, 1, 0; (228), 5, 1, 0; (235), 5, 1, 0; (237), 5, 1, 0; (239), 4, 1, 0; (240), 1, 1, 0; (241), 2, 1, 0; (243), 5, 1, 0; (244), 5, 1, 0; (247), 2, 1, 0; (253), 3, 1, 0; (255), 5, 1, 0; (258), 4, 1, 0; (261), 5, 1, 0; (262), 17, 4, 36; (266), 3, 2, 8; (271), 4, 1, 0; (272), 5, 1, 0; (273), 4, 1, 0; (274), 2, 1, 0; (275), 3, 2, 1; (276), 5, 1, 0; (289), 15, 2, 5; (291), 13, 3, 31; (294), 2, 1, 0; (296), 23, 5, 6; (299), 28, 7, 36; (304), 6, 2, 30; (309), 5, 1, 0; (311), 16, 6, 7; (318), 7, 2, 31; (320), 24, 5, 9; (323), 14, 3, 27; (332), 15, 5, 36; (334), 3, 1, 0; (336), 6, 2, 24; (338), 6, 2, 24; (339), 2, 1, 0; (340), 5, 1, 0; (341), 10, 3, 4; (343), 15, 3, 9; (344), 7, 2, 27; (347), 5, 1, 0; (349), 1, 1, 0; (350), 8, 3, 24; (351), 5, 1, 0; (353), 10, 2, 6; (355), 13, 5, 30; (357), 5, 2, 30; (363), 5, 1, 0; (364), 4, 1, 0; (366), 1, 1, 0; (367), 10, 2, 6; (368), 2, 1, 0; (370), 11, 3, 28; (374), 4, 1, 0; (376), 4, 1, 0; (381), 5, 1, 0; (382), 4, 1, 0; (384), 10, 2, 6; (386), 3, 1, 0; (388), 5, 3, 9; (391), 5, 1, 0; (392), 10, 2, 24; (393), 3, 1, 0; (395), 17, 6, 15; (397), 1, 1, 0; (401), 1, 1, 0; (403), 10, 2, 6; (404), 6, 2, 21; (406), 10, 2, 6; (407), 2, 1, 0; (408), 4, 1, 0; (412), 4, 1, 0; (417), 7, 3, 8; (418), 2, 2, 1; (421), 10, 2, 23; (424), 9, 3, 30; (430), 5, 1, 0; (431), 4, 1, 0; (440), 10, 2, 6; (441), 6, 2, 1; (446), 2, 1, 0; (449), 4, 1, 0; (451), 4, 1, 0; (463), 11, 3, 4; (465), 5, 1, 0; (471), 1, 1, 0; (478), 8, 3, 27; (480), 4, 2, 8; (481), 5, 1, 0; (486), 15, 3, 30; (493), 5, 1, 0; (495),

1, 0; (801), 13, 3, 31; (807), 4, 1, 0; (808), 3, 1, 0; (815), 14, 4, 28; (820), 5, 1, 0; (821), 9, 2, 32; (823), 22, 6, 30; (825), 3, 1, 0; (828), 5, 1, 0; (835), 4, 1, 0; (836), 4, 1, 0; (837), 11, 3, 26; (838), 14, 3, 25; (839), 5, 1, 0; (841), 4, 1, 0; (844), 4, 1, 0; (845), 5, 2, 21; (850), 4, 1, 0; (851), 6, 2, 24; (852), 14, 3, 30; (855), 5, 1, 0; (859), 7, 2, 30; (864), 4, 2, 1; (872), 8, 3, 7; (875), 11, 3, 23; (876), 5, 1, 0; (880), 10, 2, 30; (882), 26, 6, 36; (888), 4, 1, 0; (889), 27, 6, 27; (891), 3, 1, 0; (892), 3, 1, 0; (893), 4, 1, 0; (894), 3, 1, 0; (895), 2, 1, 0; (897), 4, 1, 0; (898), 14, 5, 36; (900), 11, 3, 4; (903), 5, 1, 0; (904), 21, 6, 33; (905), 4, 1, 0; (906), 5, 1, 0; (907), 5, 1, 0; (909), 2, 1, 0; (910), 5, 1, 0; (914), 2, 1, 0; (915), 5, 1, 0; (917), 22, 5, 36; (918), 4, 1, 0; (923), 5, 1, 0; (924), 2, 1, 0; (928), 11, 3, 30; (931), 4, 1, 0; (932), 3, 1, 0; (935), 4, 1, 0; (937), 16, 4, 34; (940), 16, 6, 30; (946), 18, 5, 9; (947), 4, 1, 0; (949), 7, 3, 32; (953), 5, 1, 0; (957), 19, 5, 30; (959), 24, 5, 9; (961), 4, 1, 0; (962), 15, 3, 27; (964), 23, 6, 30; (966), 9, 2, 27; (967), 5, 1, 0; (972), 4, 1, 0; (974), 4, 1, 0; (975), 25, 6, 36; (977), 8, 3, 27; (979), 2, 1, 0; (986), 8, 2, 6; (988), 29, 6, 36; (989), 12, 3, 25; (990), 5, 1, 0; (992), 21, 6, 35; (994), 13, 2, 30; (995), 25, 7, 35; (996), 12, 3, 32; (999), 6, 2, 1; (1003), 17, 4, 9; (1005), 13, 2, 2; (1006), 4, 1, 0; (1011), 4, 1, 0; (1012), 22, 7, 9; (1013), 8, 2, 9; (1015), 5, 1, 0; (1020), 27, 7, 9; (1022), 4, 3, 30; (1024), 20, 5, 27; (1027), 22, 6, 36; (1034), 4, 1, 0; (1035), 10, 2, 27; (1038), 28, 6, 7; (1040), 1, 1, 0; (1042), 5, 1, 0; (1045), 4, 1, 0; (1046), 20, 5, 36; (1050), 5, 1, 0; (1051), 9, 2, 28; (1053), 5, 1, 0; (1055), 6, 2, 26; (1058), 4, 1, 0; (1066), 4, 1, 0; (1068), 7, 3, 9; (1071), 7, 2, 1; (1074), 8, 2, 2; (1076), 10, 2, 25; (1077), 20, 5, 31; (1078), 5, 1, 0; (1083), 9, 2, 30; (1085), 13, 5, 8; (1087), 1, 1, 0; (1089), 5, 1, 0; (1091), 27, 6, 36; (1092), 3, 2, 1; (1095), 6, 2, 30; (1096), 22, 6, 36; (1099), 2, 1, 0; (1104), 22, 7, 35; (1105), 17, 5, 27; (1107), 3, 1, 0; (1109), 4, 1, 0; (1111), 5, 1, 0; (1112), 4, 1, 0; (1116), 2, 1, 0; (1118), 5, 1, 0; (1120), 20, 4, 33; (1121), 9, 2, 30; (1122), 5, 1, 0; (1125), 28, 7, 36; (1132), 14, 6, 33; (1133), 5, 1, 0; (1138), 1, 1, 0; (1139), 28, 4, 31; (1142), 14, 6, 36; (1150), 4, 1, 0; (1151), 3, 1, 0; (1152), 2, 1, 0; (1156), 33, 6, 36; (1161), 10, 2, 30; (1163), 5, 1, 0; (1166), 5, 1, 0; (1168), 19, 4, 31; (1169), 19, 4, 34; (1170), 12, 3, 32; (1176), 30, 6, 36; (1179), 5, 1, 0; (1182), 8, 2, 30; (1184), 5, 2, 30; (1185), 4, 1, 0; (1187), 5, 1, 0; (1189), 8, 2, 36; (1195), 1, 1, 0; (1196), 6, 2, 27; (1197), 4, 1, 0; (1200), 9, 3, 2; (1202), 19, 5, 9; (1210), 3, 2, 25; (1215), 4, 1, 0; (1216), 4, 1, 0; (1224), 4, 1, 0; (1228), 9, 2, 6; (1229), 4, 3, 5; (1230), 13, 3, 34; (1231), 5, 1, 0; (1233), 4, 1, 0; (1242), 10, 2, 2; (1246), 4, 1, 0; (1254), 16, 5, 36; (1255), 6, 2, 25; (1258), 13, 3, 28; (1263), 35, 6, 29; (1267), 4, 1, 0; (1268), 4, 1, 0; (1270), 35, 8, 27; (1277), 5, 1, 0; (1278), 18, 4, 33; (1283), 5, 1, 0; (1285), 18, 5, 36; (1286), 5, 1, 0; (1289), 5, 1, 0; (1291), 10, 2, 2; (1293), 29, 6, 30; (1295), 7, 2, 6; (1296), 28, 7, 36; (1297), 5, 1, 0; (1300), 10, 2, 30; (1301), 24, 5, 29; (1302), 29, 6, 35; (1307), 5, 1, 0; (1310), 4, 1, 0; (1316), 5, 1, 0; (1326), 10, 2, 6; (1328), 4, 1, 0; (1330), 5, 1, 0; (1332), 10, 2, 4; (1333), 26, 6, 33; (1336), 5, 1, 0; (1339), 5, 1, 0; (1340), 10, 2, 6; (1341), 7, 2, 30; (1344), 5, 1, 0; (1346), 7, 2, 1; (1348), 32, 7, 32; (1350), 7, 2, 30; (1351), 5, 1, 0; (1353), 8, 2, 5; (1356), 4, 1, 0; (1359), 8, 2, 30; (1361), 21, 5, 31; (1362), 5, 1, 0; (1363), 4, 2, 7; (1368), 13, 3, 4; (1369), 5, 1, 0; (1374), 10, 2, 7; (1375), 5, 1, 0; (1381), 5, 1, 0; (1384), 5, 1, 0; (1385), 2, 1, 0; (1387), 19, 6, 35; (1392), 5, 1, 0; (1405), 5, 1, 0; (1407), 27, 6, 36; (1409), 2, 1, 0; (1417), 9, 2, 6; (1418), 3, 1, 0; (1420), 4, 1, 0; (1431), 10, 3, 33; (1432), 32, 6, 33; (1436), 4, 1, 0; (1438), 8, 2, 7; (1441), 3, 1, 0; (1443), 5, 1, 0; (1445), 5, 1, 0; (1446), 3, 1, 0; (1447), 5, 1, 0; (1452), 14, 3, 4; (1456), 9, 2, 30; (1460), 5, 1, 0; (1461), 6, 2, 30; (1463), 5, 1, 0; (1464), 15, 5, 27; (1468), 5, 1, 0; (1470), 5, 1, 0; (1471), 12, 2, 31; (1473), 28, 6, 29; (1475), 19, 4, 28; (1485), 4, 1, 0; (1486), 10, 2, 4; (1492), 3, 3, 6; (1494), 21, 5, 28; (1496), 5, 1, 0; (1502), 19, 6, 35; (1503), 4, 1, 0; (1504), 12, 3, 25; (1505), 5, 1, 0; (1507), 5, 1, 0; (1535), 15, 4, 8; (1541), 3, 1, 0; (1543), 4, 1, 0; (1544), 4, 1, 0; (1554), 5, 2, 1; (1556), 8, 2, 27; (1561), 3, 1, 0; (1565), 10, 2, 6; (1567), 22, 7, 36; (1568), 5, 1, 0; (1570), 23, 5, 9; (1573), 19, 4, 5; (1578), 4, 1, 0; (1585), 8, 2, 30; (1590), 13, 3, 32; (1591), 27, 6, 30; (1594), 11, 3, 30; (1595), 7, 2, 7; (1600), 20, 4, 26; (1601), 1, 1, 0; (1604), 4, 1, 0; (1605), 17, 5, 33; (1609), 10, 2, 27; (1610), 12, 3, 4; (1612), 5, 1, 0; (1614), 18, 5, 31; (1616), 10, 2, 30; (1619), 28, 6, 30; (1622), 11, 3, 9; (1628), 4, 1, 0; (1629), 14, 3, 30; (1634), 10, 2, 7; (1637), 2, 2, 6; (1639), 9, 2, 30; (1640), 10, 2, 30; (1642), 5, 1, 0; (1644), 5, 1, 0; (1649), 28, 6, 33; (1653), 23, 5, 30; (1656), 15, 3, 29; (1662), 23, 5, 36; (1663), 8, 5, 10; (1669), 17, 5, 9; (1671), 29, 6, 35; (1673), 3, 1, 0; (1676), 15, 4, 28; (1677), 5, 1, 0; (1681), 27, 6, 30; (1684), 24, 7, 36; (1685), 17, 4, 28; (1690), 30, 6, 33; (1691), 1, 1, 0; (1694), 8, 2, 1; (1699), 4, 1, 0; (1703), 5, 2, 32; (1711), 20, 3, 5; (1723), 5, 1, 0; (1724), 1, 1, 0; (1728), 4, 1, 0; (1729), 31, 7, 36; (1730), 13, 3, 3; (1731), 9, 2, 7; (1736), 3, 1, 0; (1739), 4, 1, 0; (1741), 5, 1, 0; (1744), 19, 5, 9; (1752), 5, 1, 0; (1754), 3, 1, 0; (1755), 22, 6, 33; (1758), 5, 1, 0; (1762), 5, 1, 0; (1764), 10, 2, 21; (1765), 5, 1, 0; (1768), 5, 1, 0; (1774), 5, 1, 0; (1780), 7, 2, 6; (1786), 20, 5, 30; (1800), 4, 1, 0; (1809), 26, 6, 36; (1810), 10, 2, 6; (1812), 9, 2, 30; (1814), 9, 2, 30; (1818), 27, 6, 30; (1826), 4, 1, 0; (1834), 4, 1, 0; (1840), 18, 5, 30; (1841), 4, 1, 0; (1843), 5, 1, 0; (1848), 5, 1, 0; (1850), 5, 1, 0; (1854), 7, 3, 25; (1859), 4, 1, 0; (1861), 5, 1, 0; (1878), 17, 5, 9; (1886), 9, 2, 27; (1887), 5, 1, 0; (1888), 8, 2, 6; (1891), 4, 1, 0; (1894), 17, 5, 36; (1900), 5, 1, 0; (1903), 4, 1, 0; (1904), 12, 4, 27; (1908), 2, 1, 0; (1911), 4, 1, 0; (1913), 5, 1, 0; (1918), 6, 2, 32; (1925), 9, 2, 7; (1932), 5, 1, 0; (1933), 12, 3, 7; (1940), 4, 1, 0; (1945), 16, 6, 35; (1946), 5, 1, 0; (1948), 3, 1, 0; (1953), 16, 4, 28; (1955), 4, 1, 0; (1959), 5, 1, 0; (1960), 4, 1, 0; (1961), 10, 3, 2; (1962), 2, 1, 0; (1965), 30, 4, 33; (1971), 5, 1, 0; (1976), 33, 4, 33; (1979), 24, 6, 29; (1980), 5, 1, 0; (1982), 29, 7, 36; (1983), 4, 1, 0; (1986), 33, 7, 36; (1988), 2, 1, 0; (1993), 8, 2, 5; (2002), 5, 1, 0; (2007), 4, 1, 0; (2008), 7, 2, 9; (2009), 8, 2, 6; (2012), 20, 4, 28; (2014), 23, 5, 31; (2020), 5, 1, 0; (2021), 30, 6, 35; (2028), 30, 6, 36; (2036), 5, 1, 0; (2037), 4, 1, 0; (2042), 7, 2, 32; (2044), 10, 2, 21; (2045), 10, 2, 30; (2051), 5, 1, 0; (2052), 22, 5, 9; (2054), 22, 5, 36; (2058), 5, 1, 0; (2060), 8, 2, 1; (2064), 5, 1, 0; (2067), 3, 1, 0; (2068), 10, 2, 30; (2072), 4, 1, 0;

(2075), 4, 1, 0; (2080), 24, 5, 36; (2081), 12, 3, 30; (2082), 8, 2, 6; (2084), 32, 7, 35; (2085), 5, 1, 0; (2088), 15, 3, 32; (2089), 14, 3, 33; (2090), 5, 1, 0; (2091), 14, 3, 31; (2105), 5, 1, 0; (2107), 24, 5, 27; (2111), 5, 1, 0; (2112), 5, 1, 0; (2114), 30, 6, 36; (2115), 22, 5, 36; (2116), 23, 5, 33; (2121), 5, 1, 0; (2124), 5, 1, 0; (2127), 15, 2, 2; (2138), 29, 6, 7; (2140), 9, 2, 2; (2152), 9, 2, 6; (2160), 9, 2, 1; (2164), 34, 7, 36; (2165), 34, 7, 36; (2167), 9, 2, 24; (2169), 9, 2, 1; (2171), 10, 2, 30; (2176), 20, 4, 28; (2177), 10, 2, 6; (2185), 22, 5, 8; (2187), 4, 1, 0; (2188), 27, 7, 36; (2190), 10, 2, 24; (2192), 5, 1, 0; (2195), 10, 2, 30; (2196), 10, 2, 5; (2198), 4, 1, 0; (2203), 22, 5, 9; (2204), 5, 1, 0; (2209), 5, 1, 0; (2214), 13, 3, 25; (2215), 6, 2, 3; (2221), 5, 1, 0; (2229), 9, 2, 7; (2232), 5, 1, 0; (2235), 9, 2, 32; (2237), 5, 1, 0; (2239), 25, 5, 9; (2245), 25, 5, 27; (2248), 28, 6, 36; (2249), 30, 6, 7; (2261), 24, 5, 30; (2267), 5, 1, 0; (2268), 5, 1, 0; (2273), 5, 1, 0; (2274), 5, 1, 0; (2278), 5, 1, 0; (2279), 12, 3, 27; (2280), 9, 2, 1; (2281), 4, 1, 0; (2285), 10, 2, 31; (2286), 8, 2, 32; (2290), 3, 1, 0; (2291), 10, 2, 21; (2293), 10, 2, 24; (2295), 4, 1, 0; (2296), 9, 2, 6; (2297), 28, 6, 30; (2298), 5, 1, 0; (2299), 10, 2, 7; (2300), 4, 1, 0; (2307), 5, 1, 0; (2308), 15, 3, 30; (2310), 9, 2, 6; (2311), 22, 5, 7; (2314), 3, 1, 0; (2316), 8, 2, 32; (2317), 46, 7, 35; (2332), 5, 1, 0; (2333), 13, 3, 32; (2334), 5, 1, 0; (2337), 5, 1, 0; (2339), 5, 1, 0; (2345), 10, 2, 30; (2348), 34, 7, 29; (2350), 30, 6, 7; (2351), 20, 4, 36; (2352), 5, 1, 0; (2354), 9, 2, 2; (2356), 5, 1, 0; (2360), 4, 1, 0; (2361), 15, 3, 27; (2366), 4, 1, 0; (2369), 7, 2, 55; (2373), 3, 1, 0; (2375), 24, 6, 33; (2376), 15, 3, 28; (2378), 5, 1, 0; (2380), 5, 1, 0; (2381), 5, 1, 0; (2382), 3, 1, 0; (2391), 5, 1, 0; (2393), 5, 1, 0; (2394), 23, 5, 9; (2397), 10, 2, 31; (2407), 10, 2, 4; (2408), 9, 2, 23; (2409), 13, 3, 25; (2413), 4, 1, 0; (2415), 5, 1, 0; (2416), 28, 6, 33; (2417), 15, 3, 3; (2420), 4, 1, 0; (2421), 5, 1, 0; (2431), 29, 6, 30; (2432), 4, 1, 0; (2435), 4, 1, 0; (2437), 5, 1, 0; (2444), 5, 1, 0; (2445), 33, 7, 36; (2446), 5, 1, 0; (2448), 23, 5, 30; (2449), 5, 1, 0; (2450), 5, 1, 0; (2457), 5, 1, 0; (2460), 5, 1, 0; (2461), 33, 7, 35; (2470), 39, 6, 36; (2471), 5, 1, 0; (2473), 5, 1, 0; (2484), 26, 6, 30; (2487), 5, 1, 0; (2488), 35, 7, 36; (2490), 10, 2, 1; (2492), 31, 7, 36; (2495), 5, 1, 0; (2504), 29, 6, 36; (2506), 3, 1, 0; (2508), 14, 3, 3; (2510), 8, 2, 32; (2517), 4, 1, 0; (2518), 4, 1, 0; (2521), 5, 1, 0; (2522), 4, 1, 0; (2523), 4, 1, 0; (2531), 10, 2, 30; (2538), 5, 1, 0; (2540), 5, 1, 0; (2541), 34, 7, 11; (2555), 5, 1, 0; (2564), 9, 2, 24; (2572), 14, 3, 7; (2574), 9, 2, 30; (2577), 9, 2, 25; (2578), 29, 6, 29; (2579), 15, 3, 34; (2580), 15, 3, 3; (2581), 9, 2, 6; (2584), 8, 2, 32; (2591), 5, 1, 0; (2599), 5, 1, 0; (2600), 19, 4, 27; (2606), 21, 5, 28; (2607), 9, 2, 7; (2610), 5, 1, 0; (2612), 10, 2, 24; (2613), 10, 2, 6; (2617), 5, 1, 0; (2618), 5, 1, 0; (2619), 23, 5, 9; (2621), 10, 2, 6; (2622), 5, 1, 0; (2624), 29, 6, 7; (2625), 5, 1, 0; (2628), 8, 2, 7; (2630), 4, 1, 0; (2633), 4, 1, 0; (2635), 24, 5, 36; (2638), 27, 6, 36; (2647), 15, 3, 4; (2648), 14, 3, 4; (2649), 10, 2, 24; (2650), 4, 1, 0; (2651), 55, 7, 31; (2654), 24, 5, 9; (2655), 5, 1, 0; (2656), 9, 2, 9; (2660), 8, 2, 32; (2663), 27, 6, 36; (2664), 9, 2, 1; (2665), 29, 6, 36; (2672), 3, 1, 0; (2675), 19, 4, 28; (2678), 29, 4, 33; (2682), 9, 2, 2; (2684), 14, 3, 7; (2688), 29, 6, 36; (2689), 4, 1, 0; (2692), 5, 1, 0; (2693), 5, 1, 0; (2694), 4, 1, 0; (2695), 14, 3, 30; (2696), 10, 2, 8; (2697), 5, 1, 0; (2698), 5, 1, 0; (2699), 10, 2, 27; (2700), 4, 1, 0; (2706), 9, 2, 28; (2708), 5, 1, 0; (2709), 10, 2, 7; (2712), 24, 5, 9; (2714), 10, 2, 7; (2716), 5, 1, 0; (2717), 10, 2, 7; (2718), 3, 1, 0; (2719), 9, 2, 30; (2722), 24, 5, 9; (2723), 19, 4, 28; (2727), 5, 1, 0; (2731), 15, 4, 31; (2732), 5, 1, 0; (2733), 10, 2, 30; (2735), 3, 1, 0; (2736), 5, 1, 0; (2738), 10, 2, 6; (2740), 3, 1, 0; (2741), 5, 1, 0; (2743), 10, 2, 1; (2744), 5, 1, 0; (2745), 23, 5, 29; (2748), 10, 2, 1; (2753), 4, 1, 0; (2754), 4, 1, 0; (2760), 5, 1, 0; (2762), 25, 4, 34; (2763), 5, 1, 0; (2769), 8, 2, 6; (2771), 39, 8, 27; (2772), 4, 1, 0; (2773), 35, 7, 36; (2777), 15, 3, 30; (2778), 9, 2, 7; (2784), 9, 2, 7; (2803), 29, 6, 30; (2804), 18, 4, 35; (2807), 13, 3, 30; (2811), 10, 2, 4; (2816), 48, 10, 35; (2818), 22, 5, 30; (2819), 5, 1, 0; (2824), 25, 5, 36; (2828), 17, 4, 31; (2831), 37, 8, 27; (2832), 35, 7, 36; (2834), 19, 4, 32; (2837), 24, 5, 9; (2838), 5, 1, 0; (2840), 5, 1, 0; (2850), 9, 2, 21; (2851), 8, 2, 30; (2852), 4, 1, 0; (2861), 25, 5, 7; (2865), 5, 1, 0; (2868), 25, 5, 31; (2870), 32, 7, 35; (2873), 19, 5, 27; (2878), 5, 1, 0; (2884), 9, 2, 6; (2886), 10, 2, 30; (2889), 4, 1, 0; (2891), 4, 1, 0; (2898), 5, 1, 0; (2900), 5, 1, 0; (2909), 11, 3, 28; (2911), 30, 7, 34; (2919), 5, 1, 0; (2927), 4, 1, 0; (2929), 3, 1, 0; (2932), 24, 5, 36; (2933), 5, 1, 0; (2934), 5, 1, 0; (2935), 20, 4, 33; (2936), 5, 1, 0; (2942), 9, 2, 30; (2944), 35, 7, 35; (2947), 15, 3, 32; (2949), 10, 2, 5; (2950), 5, 1, 0; (2952), 15, 3, 9; (2955), 4, 1, 0; (2957), 4, 1, 0; (2962), 15, 3, 30; (2971), 18, 4, 28; (2973), 5, 1, 0; (2976), 15, 3, 2; (2978), 15, 3, 28; (2979), 10, 2, 24; (2981), 4, 1, 0; (2983), 15, 3, 4; (2984), 4, 1, 0; (2986), 5, 1, 0; (2989), 8, 2, 6; (2992), 24, 5, 7; (2996), 15, 3, 4; (2999), 4, 1, 0; (3002), 5, 1, 0; (3007), 4, 1, 0; (3011), 19, 4, 33; (3012), 5, 1, 0; (3020), 4, 1, 0; (3027), 29, 6, 30; (3032), 5, 1, 0; (3040), 9, 2, 16; (3048), 9, 1, 0; (3056), 8, 2, 32; (3059), 5, 1, 0; (3069), 4, 1, 0; (3084), 5, 1, 0; (3085), 25, 5, 9; (3088), 10, 2, 30; (3089), 15, 3, 27; (3091), 10, 2, 6; (3097), 33, 7, 35; (3103), 14, 3, 24; (3104), 10, 2, 23; (3106), 14, 3, 27; (3110), 5, 1, 0; (3112), 8, 2, 7; (3113), 3, 1, 0; (3114), 34, 7, 35; (3118), 9, 2, 1; (3120), 28, 7, 35; (3125), 5, 1, 0; (3126), 14, 3, 3; (3130), 33, 7, 9; (3132), 25, 5, 7; (3133), 5, 1, 0; (3140), 10, 2, 30; (3148), 24, 5, 36; (3157), 15, 3, 3; (3158), 25, 4, 34; (3159), 10, 2, 24; (3161), 5, 1, 0; (3162), 25, 5, 31; (3169), 11, 3, 30; (3172), 33, 7, 36; (3173), 3, 1, 0; (3177), 4, 1, 0; (3178), 22, 5, 9; (3182), 10, 2, 4; (3183), 32, 7, 35; (3185), 10, 2, 1; (3186), 21, 5, 36; (3189), 5, 1, 0; (3197), 15, 2, 3; (3198), 5, 1, 0; (3199), 4, 1, 0; (3202), 4, 1, 0; (3204), 19, 4, 33; (3206), 21, 5, 36; (3209), 4, 1, 0; (3211), 4, 1, 0; (3212), 14, 3, 30; (3213), 28, 6, 36; (3218), 5, 1, 0; (3219), 5, 1,

0; (3328), 4, 1, 0; (3342), 10, 2, 1; (3345), 5, 1, 0; (3346), 9, 2, 30; (3347), 4, 1, 0; (3352), 5, 1, 0; (3358), 12, 3, 33; (3365), 43, 9, 32; (3366), 30, 6, 7; (3369), 24, 5, 30; (3371), 5, 1, 0; (3374), 3, 1, 0; (3376), 18, 4, 28; (3379), 5, 1, 0; (3384), 16, 4, 33; (3389), 38, 8, 33; (3393), 4, 1, 0; (3396), 5, 1, 0; (3399), 5, 1, 0; (3409), 5, 1, 0; (3414), 5, 1, 0; (3416), 4, 1, 0; (3422), 5, 1, 0; (3424), 29, 6, 33; (3425), 4, 1, 0; (3433), 33, 6, 36; (3436), 31, 7, 36; (3438), 4, 1, 0; (3442), 10, 2, 6; (3444), 10, 2, 36; (3448), 28, 6, 30; (3450), 5, 1, 0; (3457), 5, 1, 0; (3458), 24, 5, 32; (3459), 5, 1, 0; (3462), 33, 7, 9; (3467), 4, 1, 0; (3474), 16, 4, 35; (3475), 5, 1, 0; (3479), 10, 2, 2; (3481), 5, 1, 0; (3483), 5, 1, 0; (3486), 4, 1, 0; (3489), 21, 5, 36; (3493), 35, 7, 35; (3497), 10, 2, 1; (3500), 29, 6, 36; (3501), 5, 1, 0; (3505), 5, 1, 0; (3506), 5, 1, 0; (3508), 24, 5, 33; (3512), 5, 1, 0; (3514), 2, 1, 0; (3517), 10, 2, 6; (3520), 38, 8, 35; (3521), 4, 1, 0; (3523), 10, 2, 30; (3525), 5, 1, 0; (3526), 25, 5, 36; (3527), 31, 7, 35; (3531), 5, 1, 0; (3532), 25, 5, 6; (3535), 4, 1, 0; (3544), 25, 6, 33; (3545), 23, 5, 9; (3546), 5, 1, 0; (3550), 4, 1, 0; (3557), 35, 7, 29; (3559), 9, 2, 6; (3561), 18, 5, 33; (3562), 28, 7, 36; (3563), 5, 1, 0; (3565), 5, 1, 0; (3566), 11, 3, 27; (3567), 5, 1, 0; (3571), 10, 2, 6; (3576), 9, 2, 32; (3581), 17, 4, 31; (3582), 9, 1, 0; (3583), 10, 2, 30; (3585), 5, 1, 0; (3589), 4, 1, 0; (3594), 5, 1, 0; (3597), 4, 1, 0; (3598), 5, 1, 0; (3599), 9, 2, 1; (3609), 24, 5, 6; (3613), 10, 2, 6; (3623), 13, 3, 27; (3624), 9, 2, 6; (3629), 20, 4, 8; (3631), 14, 3, 5; (3637), 9, 2, 32; (3639), 8, 2, 6; (3643), 34, 7, 36; (3648), 5, 1, 0; (3649), 5, 1, 0; (3650), 24, 5, 36; (3653), 34, 7, 9; (3655), 5, 1, 0; (3660), 4, 1, 0; (3665), 10, 2, 7; (3678), 5, 1, 0; (3682), 5, 1, 0; (3685), 20, 4, 6; (3697), 15, 3, 36; (3701), 10, 2, 30; (3702), 24, 5, 31; (3703), 8, 2, 31; (3706), 4, 1, 0; (3707), 9, 2, 6; (3715), 5, 1, 0; (3717), 4, 1, 0; (3722), 4, 1, 0; (3724), 5, 1, 0; (3726), 5, 1, 0; (3727), 5, 1, 0; (3728), 5, 1, 0; (3730), 5, 1, 0; (3732), 10, 2, 4; (3734), 5, 1, 0; (3739), 10, 2, 30; (3743), 5, 1, 0; (3749), 5, 1, 0; (3751), 10, 2, 6; (3754), 5, 1, 0; (3755), 4, 1, 0; (3763), 5, 1, 0; (3764), 54, 9, 35; (3765), 4, 1, 0; (3768), 5, 1, 0; (3769), 9, 2, 30; (3773), 25, 6, 30; (3774), 10, 2, 24; (3778), 28, 6, 36; (3780), 5, 1, 0; (3783), 34, 8, 27; (3787), 18, 4, 9; (3788), 21, 5, 33; (3791), 28, 6, 36; (3792), 29, 6, 27; (3799), 5, 1, 0; (3803), 5, 1, 0; (3805), 4, 1, 0; (3810), 29, 6, 36; (3812), 5, 1, 0; (3813), 5, 1, 0; (3817), 5, 1, 0; (3824), 14, 3, 36; (3825), 24, 5, 6; (3826), 5, 1, 0; (3828), 5, 1, 0; (3840), 15, 3, 31; (3841), 24, 5, 30; (3844), 18, 4, 28; (3846), 5, 1, 0; (3849), 5, 1, 0; (3850), 4, 1, 0; (3852), 24, 5, 9; (3855), 30, 5, 36; (3856), 25, 5, 9; (3857), 5, 1, 0; (3859), 39, 8, 29; (3863), 10, 2, 1; (3867), 34, 7, 35; (3868), 10, 2, 1; (3873), 5, 1, 0; (3876), 4, 1, 0; (3880), 5, 1, 0; (3881), 5, 1, 0; (3882), 14, 3, 31; (3886), 5, 1, 0; (3888), 9, 2, 25; (3893), 19, 4, 26; (3897), 10, 2, 5; (3915), 5, 1, 0; (3924), 5, 1, 0; (3925), 9, 2, 1; (3931), 5, 1, 0; (3932), 5, 1, 0; (3933), 5, 1, 0; (3936), 10, 2, 6; (3938), 5, 1, 0; (3946), 5, 1, 0; (3953), 9, 2, 6; (3958), 5, 1, 0; (3960), 30, 6, 35; (3961), 5, 1, 0; (3965), 10, 2, 30; (3974), 3, 1, 0; (3977), 5, 1, 0; (3987), 5, 1, 0; (3989), 18, 4, 28; (3993), 12, 2, 6; (3995), 20, 4, 9; (4008), 5, 1, 0; (4016), 9, 2, 31; (4018), 28, 6, 36; (4028), 25, 5, 9; (4033), 4, 1, 0; (4040), 27, 6, 30; (4041), 12, 3, 5; (4046), 33, 7, 35; (4049), 25, 5, 9; (4061), 13, 3, 4; (4062), 5, 1, 0; (4069), 5, 1, 0; (4072), 5, 1, 0; (4076), 5, 1, 0; (4078), 4, 1, 0; (4080), 26, 6, 36; (4083), 5, 1, 0; (4084), 3, 1, 0; (4087), 25, 5, 9; (4089), 31, 6, 36; (4093), 5, 1, 0; (4095), 5, 1, 0; (4097), 5, 1, 0; (4100), 5, 1, 0; (4110), 5, 1, 0; (4113), 5, 1, 0; (4116), 14, 3, 30; (4117), 3, 1, 0; (4119), 15, 3, 24; (4123), 25, 5, 9; (4127), 22, 5, 36; (4130), 5, 1, 0; (4131), 10, 2, 1; (4132), 14, 3, 33; (4142), 14, 2, 2; (4148), 4, 1, 0; (4157), 15, 3, 30; (4162), 5, 1, 0; (4163), 14, 3, 5; (4170), 5, 1, 0; (4171), 37, 8, 8; (4172), 10, 2, 31; (4175), 5, 1, 0; (4176), 34, 7, 36; (4178), 5, 1, 0; (4185), 5, 1, 0; (4186), 8, 2, 30; (4189), 5, 1, 0; (4194), 5, 1, 0; (4195), 4, 1, 0; (4204), 5, 1, 0; (4206), 5, 1, 0; (4216), 4, 1, 0; (4217), 9, 2, 32; (4218), 15, 3, 7; (4222), 5, 1, 0; (4225), 5, 1, 0; (4228), 28, 6, 30; (4231), 13, 3, 7; (4232), 20, 4, 29; (4233), 5, 1, 0; (4236), 15, 3, 36; (4238), 28, 6, 35; (4239), 8, 2, 6; (4250), 29, 6, 30; (4260), 10, 2, 30; (4264), 9, 2, 1; (4265), 4, 1, 0; (4266), 9, 2, 34; (4267), 22, 6, 36; (4270), 5, 1, 0; (4272), 5, 1, 0; (4273), 4, 1, 0; (4279), 5, 1, 0; (4280), 16, 4, 28; (4283), 5, 1, 0; (4289), 5, 1, 0; (4290), 10, 2, 1; (4297), 30, 6, 33; (4302), 28, 6, 33; (4304), 9, 2, 6; (4310), 4, 1, 0; (4312), 35, 7, 36; (4314), 5, 1, 0; (4319), 9, 2, 34; (4327), 5, 1, 0; (4328), 10, 2, 5; (4332), 18, 4, 31; (4342), 9, 2, 30; (4345), 31, 7, 35; (4349), 5, 1, 0; (4350), 5, 1, 0; (4363), 45, 7, 35; (4365), 4, 1, 0; (4368), 4, 1, 0; (4382), 4, 1, 0; (4383), 24, 5, 32; (4385), 4, 1, 0; (4387), 5, 1, 0; (4388), 13, 3, 28; (4391), 10, 2, 7; (4398), 17, 5, 33; (4399), 4, 1, 0; (4400), 23, 5, 36; (4407), 5, 1, 0; (4409), 10, 2, 4; (4413), 23, 5, 30; (4421), 13, 3, 24; (4423), 20, 4, 5; (4424), 10, 2, 30; (4426), 5, 1, 0; (4429), 6, 2, 5; (4433), 40, 8, 27; (4434), 39, 8, 27; (4440), 5, 1, 0; (4444), 4, 1, 0; (4446), 29, 6, 7; (4448), 4, 1, 0; (4452), 4, 1, 0; (4458), 4, 1, 0; (4466), 5, 1, 0; (4467), 29, 6, 30; (4470), 30, 6, 11; (4471), 4, 1, 0; (4472), 24, 5, 36; (4476), 5, 1, 0; (4477), 24, 6, 36; (4479), 5, 1, 0; (4480), 16, 4, 9; (4481), 5, 1, 0; (4483), 19, 3, 29; (4488), 35, 7, 36; (4496), 5, 1, 0; (4503), 5, 1, 0; (4509), 15, 3, 31; (4512), 10, 2, 30; (4517), 5, 1, 0; (4522), 29, 6, 33; (4523), 32, 7, 35; (4526), 25, 5, 31; (4528), 4, 1, 0; (4535), 7, 2, 28; (4538), 5, 1, 0; (4540), 29, 6, 36; (4549), 4, 1, 0; (4550), 25, 5, 9; (4552), 24, 5, 9; (4566), 14, 3, 27; (4573), 5, 1, 0; (4576), 4, 1, 0; (4578), 20, 4, 32; (4583), 5, 1, 0; (4584), 4, 1, 0; (4585), 31, 7, 36; (4594), 10, 2, 30; (4598), 38, 8, 27; (4600), 5, 1, 0; (4601), 15, 3, 5; (4604), 25, 5, 9; (4605), 4, 1, 0; (4606), 8, 2, 24; (4607), 5, 1, 0; (4608), 5, 1, 0; (4616), 18, 4, 9; (4617), 4, 1, 0; (4623), 4, 1, 0; (4624), 17, 4, 28; (4626), 5, 1, 0; (4627), 29, 6, 36; (4630), 9, 2, 6; (4631), 13, 3, 4; (4632), 34, 7, 35; (4638), 25, 5, 9; (4640), 5, 1, 0; (4641), 33, 7, 36; (4642), 3, 1, 0; (4647), 33, 7, 9; (4650), 5, 1, 0; (4651), 5, 1, 0; (4654), 5, 1, 0; (4657), 20, 4, 9; (4661), 5, 1, 0; (4664), 11, 3, 28; (4665), 10, 2, 4; (4669), 4, 1, 0; (4672), 4, 1, 0; (4674), 14, 3, 33; (4677), 14, 3, 8; (4679), 4, 1, 0; (4680), 10, 2, 3; (4681), 18, 5, 36; (4683), 29, 6, 36; (4685), 10, 2, 6; (4686), 4, 1, 0; (4687), 13, 3, 36; (4689), 40, 7, 9; (4692), 32, 7, 36; (4693), 13, 3, 27; (4703), 27, 7, 35; (4705), 9, 2, 34; (4706), 15, 3, 31; (4711), 4, 1, 0; (4712), 7, 2, 55; (4713), 10, 2, 27; (4718), 9, 2, 34; (4720), 5, 1, 0; (4721), 3, 1, 0; (4724), 5, 1, 0; (4728), 24, 5, 36;

(4729), 25, 5, 30; (4730), 5, 1, 0; (4732), 9, 2, 1; (4735), 34, 7, 36; (4742), 30, 6, 36; (4745), 29, 6, 36; (4746), 23, 5, 36; (4755), 11, 3, 5; (4759), 25, 5, 36; (4760), 15, 3, 5; (4762), 9, 2, 1; (4764), 4, 1, 0; (4766), 5, 1, 0; (4773), 9, 2, 30; (4776), 24, 5, 36; (4786), 7, 2, 6; (4787), 7, 2, 1; (4788), 5, 1, 0; (4795), 10, 2, 21; (4797), 9, 2, 3; (4800), 9, 2, 1; (4806), 3, 1, 0; (4807), 17, 4, 28; (4810), 29, 6, 36; (4811), 5, 1, 0; (4815), 4, 1, 0; (4817), 23, 5, 35; (4822), 5, 1, 0; (4825), 10, 2, 3; (4826), 25, 5, 31; (4838), 10, 2, 32; (4839), 5, 1, 0; (4844), 5, 1, 0; (4845), 8, 2, 1; (4848), 82, 10, 35; (4851), 14, 3, 31; (4853), 30, 6, 33; (4856), 14, 3, 5; (4859), 5, 1, 0; (4863), 3, 1, 0; (4864), 29, 6, 29; (4868), 5, 1, 0; (4870), 5, 1, 0; (4879), 4, 1, 0; (4880), 10, 2, 25; (4885), 9, 2, 6; (4888), 23, 5, 9; (4895), 4, 1, 0; (4898), 5, 1, 0; (4899), 15, 3, 5; (4900), 5, 1, 0; (4903), 18, 4, 28; (4904), 5, 1, 0; (4905), 30, 6, 7; (4911), 34, 7, 35; (4913), 4, 1, 0; (4914), 20, 3, 35; (4915), 14, 4, 35; (4917), 34, 7, 35; (4920), 25, 5, 36; (4922), 23, 5, 32; (4925), 3, 1, 0; (4933), 3, 1, 0; (4943), 24, 5, 36; (4945), 20, 4, 27; (4947), 9, 2, 26; (4964), 34, 7, 35; (4966), 19, 4, 33; (4972), 5, 1, 0; (4975), 16, 4, 33; (4982), 10, 2, 3; (5001), 15, 3, 5; (5010), 13, 3, 5; (5013), 39, 6, 36; (5017), 5, 1, 0; (5024), 5, 1, 0; (5029), 3, 1, 0; (5033), 25, 5, 9; (5036), 13, 3, 3; (5039), 33, 7, 36; (5042), 5, 1, 0; (5044), 5, 1, 0; (5049), 4, 1, 0; (5057), 27, 6, 33; (5067), 10, 2, 5; (5068), 29, 6, 29; (5070), 4, 1, 0; (5071), 14, 3, 5; (5072), 25, 5, 36; (5074), 4, 1, 0; (5081), 5, 1, 0; (5087), 4, 1, 0; (5088), 5, 1, 0; (5092), 5, 1, 0; (5094), 3, 1, 0; (5096), 5, 1, 0; (5097), 34, 7, 35; (5101), 25, 5, 35; (5102), 10, 2, 30; (5103), 10, 2, 6; (5106), 28, 7, 36; (5107), 29, 6, 33; (5109), 4, 1, 0; (5112), 27, 6, 36; (5116), 5, 1, 0; (5117), 20, 4, 36; (5121), 5, 1, 0; (5122), 30, 6, 33; (5132), 9, 2, 1; (5135), 5, 1, 0; (5136), 15, 3, 27; (5140), 16, 4, 27; (5144), 4, 1, 0; (5159), 5, 1, 0; (5160), 4, 1, 0; (5162), 40, 8, 27; (5164), 5, 1, 0; (5166), 4, 1, 0; (5178), 4, 1, 0; (5184), 5, 1, 0; (5191), 5, 1, 0; (5193), 4, 1, 0; (5194), 28, 7, 35; (5198), 5, 1, 0; (5211), 30, 6, 33; (5217), 5, 1, 0; (5219), 29, 6, 36; (5220), 24, 5, 36; (5226), 5, 1, 0; (5227), 10, 2, 33; (5230), 9, 2, 32; (5235), 5, 1, 0; (5236), 5, 1, 0; (5237), 5, 1, 0; (5238), 28, 6, 33; (5240), 10, 2, 2; (5243), 4, 1, 0; (5247), 9, 2, 23; (5252), 49, 5, 7; (5256), 4, 1, 0; (5267), 10, 2, 21; (5277), 5, 1, 0; (5279), 5, 1, 0; (5288), 10, 2, 24; (5289), 4, 1, 0; (5290), 9, 2, 1; (5291), 9, 2, 24; (5297), 20, 4, 5; (5308), 38, 7, 35; (5318), 30, 6, 36; (5322), 4, 1, 0; (5325), 5, 1, 0; (5326), 5, 1, 0; (5328), 29, 6, 30; (5331), 5, 1, 0; (5333), 14, 3, 32; (5338), 10, 2, 1; (5339), 9, 2, 6; (5342), 5, 1, 0; (5344), 31, 7, 35; (5348), 5, 1, 0; (5349), 4, 1, 0; (5351), 5, 1, 0; (5352), 5, 1, 0; (5356), 10, 2, 30; (5358), 5, 1, 0; (5362), 5, 1, 0; (5364), 5, 1, 0; (5378), 10, 2, 8; (5380), 4, 1, 0; (5382), 7, 2, 9; (5384), 29, 6, 27; (5387), 8, 2, 6; (5388), 3, 1, 0; (5390), 24, 5, 33; (5397), 35, 7, 35; (5399), 5, 1, 0; (5401), 29, 6, 30; (5405), 5, 1, 0; (5406), 5, 1, 0; (5409), 13, 3, 27; (5410), 24, 5, 35; (5412), 30, 6, 30; (5413), 4, 1, 0; (5414), 4, 1, 0; (5424), 10, 2, 6; (5426), 25, 5, 33; (5427), 9, 2, 32; (5430), 5, 1, 0; (5432), 29, 6, 7; (5447), 5, 1, 0; (5449), 3, 1, 0; (5454), 4, 1, 0; (5457), 5, 1, 0; (5459), 4, 1, 0; (5461), 5, 1, 0; (5475), 3, 1, 0; (5477), 23, 5, 27; (5478), 10, 2, 33; (5483), 33, 7, 36; (5484), 5, 1, 0; (5485), 5, 1, 0; (5488), 5, 1, 0; (5489), 20, 4, 27; (5494), 29, 6, 36; (5497), 30, 6, 7; (5505), 10, 2, 30; (5520), 10, 2, 30; (5521), 3, 1, 0; (5523), 5, 1, 0; (5526), 10, 2, 1; (5528), 29, 5, 33; (5531), 4, 1, 0; (5532), 32, 7, 36; (5534), 18, 4, 30; (5548), 4, 1, 0; (5552), 4, 1, 0; (5558), 14, 3, 29; (5565), 5, 1, 0; (5571), 15, 3, 36; (5572), 30, 6, 35; (5578), 5, 1, 0; (5579), 30, 6, 33; (5582), 9, 2, 4; (5583), 5, 1, 0; (5585), 9, 2, 1; (5592), 29, 6, 30; (5595), 24, 5, 33; (5602), 5, 1, 0; (5609), 30, 6, 36; (5610), 43, 8, 36; (5619), 4, 1, 0; (5622), 10, 2, 7; (5623), 25, 5, 33; (5624), 5, 1, 0; (5629), 10, 2, 3; (5633), 14, 3, 32; (5634), 29, 6, 36; (5643), 5, 1, 0; (5644), 25, 3, 5; (5646), 4, 1, 0; (5647), 2, 1, 0; (5651), 5, 1, 0; (5661), 4, 1, 0; (5665), 14, 3, 32; (5669), 5, 1, 0; (5670), 5, 1, 0; (5677), 4, 1, 0; (5681), 5, 1, 0; (5683), 30, 6, 7; (5684), 3, 1, 0; (5691), 4, 1, 0; (5693), 20, 2, 3; (5696), 10, 2, 6; (5698), 28, 6, 36; (5702), 15, 3, 32; (5703), 5, 1, 0; (5707), 5, 1, 0; (5708), 33, 7, 36; (5711), 15, 3, 4; (5713), 22, 5, 36; (5716), 15, 4, 8; (5718), 9, 2, 1; (5719), 20, 4, 9; (5722), 5, 1, 0; (5723), 25, 5, 27; (5724), 5, 1, 0; (5726), 14, 3, 27; (5727), 5, 1, 0; (5728), 24, 5, 35; (5732), 10, 2, 1; (5735), 5, 1, 0; (5737), 4, 1, 0; (5740), 10, 2, 30; (5742), 24, 5, 33; (5743), 24, 5, 33; (5744), 5, 1, 0; (5746), 24, 5, 9; (5748), 4, 1, 0; (5752), 28, 6, 7; (5753), 9, 2, 34; (5754), 33, 7, 9; (5758), 40, 8, 27; (5761), 5, 1, 0; (5764), 5, 1, 0; (5765), 30, 6, 33; (5766), 5, 1, 0; (5767), 5, 1, 0; (5768), 20, 4, 35; (5778), 4, 1, 0; (5781), 5, 1, 0; (5782), 24, 5, 33; (5785), 5, 1, 0; (5787), 24, 5, 28; (5792), 42, 9, 33; (5793), 9, 2, 27; (5796), 4, 1, 0; (5804), 5, 1, 0; (5805), 5, 1, 0; (5818), 10, 2, 3; (5819), 4, 1, 0; (5820), 5, 1, 0; (5822), 4, 1, 0; (5827), 4, 1, 0; (5832), 25, 5, 29; (5839), 5, 1, 0; (5840), 9, 2, 30; (5848), 10, 1, 0; (5850), 5, 1, 0; (5851), 13, 3, 33; (5853), 9, 2, 24; (5855), 10, 2, 30; (5856), 5, 1, 0; (5860), 17, 4, 9; (5864), 30, 6, 33; (5870), 4, 1, 0; (5871), 4, 1, 0; (5874), 4, 1, 0; (5876), 4, 1, 0; (5884), 3, 1, 0; (5885), 30, 6, 30; (5891), 13, 3, 33; (5897), 19, 4, 9; (5903), 25, 5, 9; (5917), 10, 2, 6; (5931), 29, 6, 7; (5936), 9, 2, 30; (5940), 5, 1, 0; (5942), 10, 2, 27; (5944), 5, 1, 0; (5945), 3, 1, 0; (5948), 4, 1, 0; (5950), 3, 1, 0; (5957), 4, 1, 0; (5959), 5, 1, 0; (5964), 8, 2, 1; (5966), 11, 3, 28; (5967), 4, 1, 0; (5968), 14, 3, 30; (5972), 12, 3, 30; (5973), 10, 2, 7; (5974), 9, 2, 33; (5976), 15, 3, 30; (5977), 25, 5, 31; (5979), 5, 1, 0; (5982), 24, 5, 33; (5992), 29, 6, 36; (5994), 30, 6, 30; (5995), 17, 4, 32; (5998), 13, 3, 27; (6001), 35, 7, 36; (6006), 25, 5, 30; (6019), 5, 1, 0; (6026), 9, 2, 6; (6027), 33, 7, 36; (6029), 10, 2, 27; (6030), 18, 4, 28; (6031), 32, 7, 36; (6033), 3, 1, 0; (6036), 4, 1, 0; (6042), 4, 1, 0; (6044), 10, 2, 4; (6051), 19, 4, 26; (6052), 24, 5, 31; (6055), 10, 2, 6; (6057), 25, 3, 5; (6067), 5, 1, 0; (6068), 20, 4, 27; (6075), 20,

3, 30; (6247), 4, 1, 0; (6249), 10, 2, 25; (6251), 10, 2, 1; (6253), 44, 7, 35; (6259), 5, 1, 0; (6263), 23, 5, 29; (6264), 28, 6, 30; (6266), 78, 8, 9; (6267), 5, 1, 0; (6270), 15, 3, 4; (6272), 29, 6, 36; (6280), 20, 4, 9; (6281), 4, 1, 0; (6285), 16, 4, 33; (6290), 20, 4, 28; (6293), 4, 1, 0; (6294), 22, 5, 30; (6303), 15, 3, 8; (6306), 5, 1, 0; (6307), 10, 2, 30; (6312), 8, 2, 6; (6313), 28, 6, 35; (6314), 5, 1, 0; (6315), 15, 3, 33; (6316), 15, 4, 30; (6317), 29, 6, 33; (6319), 39, 8, 35; (6324), 4, 1, 0; (6329), 24, 5, 32; (6330), 5, 1, 0; (6331), 5, 1, 0; (6344), 9, 2, 7; (6347), 17, 4, 28; (6348), 8, 2, 2; (6354), 20, 4, 25; (6358), 5, 1, 0; (6360), 10, 2, 4; (6361), 10, 2, 6; (6363), 20, 4, 8; (6367), 5, 1, 0; (6370), 30, 6, 36; (6373), 5, 1, 0; (6376), 5, 1, 0; (6377), 10, 2, 20; (6380), 5, 1, 0; (6386), 19, 4, 31; (6387), 3, 1, 0; (6388), 9, 2, 32; (6391), 5, 1, 0; (6397), 34, 7, 36; (6399), 3, 1, 0; (6401), 4, 1, 0; (6403), 34, 7, 35; (6405), 14, 3, 25; (6406), 5, 1, 0; (6408), 5, 1, 0; (6409), 10, 2, 24; (6411), 9, 2, 30; (6412), 17, 5, 30; (6413), 5, 1, 0; (6421), 34, 6, 7; (6422), 24, 5, 31; (6423), 5, 1, 0; (6426), 9, 2, 24; (6431), 19, 4, 28; (6433), 14, 3, 33; (6439), 5, 1, 0; (6440), 25, 5, 36; (6441), 5, 1, 0; (6445), 25, 5, 31; (6448), 5, 1, 0; (6450), 5, 1, 0; (6452), 20, 4, 28; (6453), 35, 7, 35; (6454), 5, 1, 0; (6458), 29, 6, 7; (6465), 7, 2, 30; (6466), 24, 5, 31; (6467), 29, 6, 35; (6468), 30, 6, 30; (6471), 4, 1, 0; (6473), 15, 3, 32; (6474), 14, 3, 28; (6476), 18, 4, 31; (6483), 29, 6, 35; (6484), 29, 6, 33; (6488), 24, 5, 30; (6489), 39, 6, 11; (6496), 19, 4, 30; (6499), 5, 1, 0; (6500), 5, 1, 0; (6501), 10, 2, 5; (6502), 10, 2, 6; (6505), 5, 1, 0; (6508), 33, 7, 35; (6509), 5, 1, 0; (6511), 5, 1, 0; (6514), 18, 4, 31; (6533), 4, 1, 0; (6538), 25, 5, 9; (6539), 5, 1, 0; (6542), 4, 1, 0; (6544), 9, 2, 6; (6546), 5, 1, 0; (6553), 4, 1, 0; (6557), 23, 5, 36; (6561), 10, 2, 1; (6570), 15, 3, 32; (6574), 14, 2, 2; (6575), 5, 1, 0; (6576), 30, 6, 36; (6588), 13, 3, 27; (6602), 5, 1, 0; (6603), 5, 1, 0; (6605), 5, 1, 0; (6609), 10, 2, 5; (6613), 5, 1, 0; (6618), 5, 1, 0; (6625), 5, 1, 0; (6628), 34, 7, 36; (6635), 15, 3, 31; (6639), 25, 5, 9; (6641), 4, 1, 0; (6643), 8, 2, 8; (6644), 23, 5, 30; (6645), 3, 1, 0; (6646), 8, 2, 31; (6648), 5, 1, 0; (6653), 28, 6, 36; (6654), 18, 4, 35; (6656), 5, 1, 0; (6665), 25, 5, 33; (6670), 5, 1, 0; (6676), 34, 7, 36; (6684), 9, 2, 6; (6697), 13, 3, 6; (6710), 10, 2, 5; (6717), 4, 1, 0; (6720), 9, 2, 6; (6721), 23, 5, 36; (6730), 5, 1, 0; (6733), 5, 1, 0; (6749), 4, 1, 0; (6770), 25, 5, 33; (6797), 5, 1, 0; (6802), 19, 4, 8; (6851), 4, 1, 0; (6859), 15, 3, 18; (6870), 5, 1, 0; (6873), 4, 1, 0; (6875), 5, 1, 0; (6887), 4, 1, 0; (6901), 5, 1, 0; (6911), 14, 3, 32; (6921), 5, 1, 0; (6943), 10, 2, 32; (6949), 4, 1, 0; (6961), 5, 1, 0; (6963), 4, 1, 0; (6967), 5, 1, 0; (6969), 5, 1, 0; (6974), 14, 3, 33; (6976), 4, 1, 0; (6991), 5, 1, 0; (7001), 8, 2, 30; (7014), 4, 1, 0; (7016), 20, 4, 34; (7019), 15, 3, 31; (7023), 5, 1, 0; (7031), 16, 4, 33; (7033), 9, 2, 21; (7034), 4, 1, 0; (7040), 8, 2, 32; (7042), 27, 6, 30; (7053), 3, 1, 0; (7055), 5, 1, 0; (7057), 5, 1, 0; (7058), 24, 5, 9; (7068), 5, 1, 0; (7069), 3, 1, 0; (7073), 15, 3, 2; (7075), 3, 1, 0; (7080), 8, 2, 1; (7089), 9, 2, 8; (7090), 15, 3, 28; (7091), 10, 2, 8; (7097), 30, 6, 30; (7101), 10, 2, 6; (7111), 10, 2, 1; (7118), 10, 2, 1; (7123), 34, 7, 36; (7124), 4, 1, 0; (7125), 28, 6, 36; (7129), 10, 2, 6; (7130), 19, 4, 31; (7132), 9, 2, 24; (7133), 11, 3, 32; (7134), 10, 2, 8; (7136), 4, 1, 0; (7137), 4, 1, 0; (7138), 5, 1, 0; (7141), 23, 5, 36; (7143), 10, 2, 24; (7145), 5, 1, 0; (7148), 30, 6, 36; (7151), 30, 6, 33; (7154), 5, 1, 0; (7159), 29, 6, 36; (7160), 29, 6, 36; (7162), 33, 7, 36; (7164), 5, 1, 0; (7166), 14, 3, 33; (7167), 3, 1, 0; (7168), 35, 7, 35; (7169), 13, 3, 27; (7171), 4, 1, 0; (7173), 5, 1, 0; (7175), 15, 3, 3; (7178), 3, 1, 0; (7181), 5, 1, 0; (7183), 8, 2, 30; (7194), 4, 1, 0; (7195), 10, 2, 3; (7197), 33, 7, 35; (7198), 5, 1, 0; (7200), 11, 3, 9; (7218), 10, 2, 6; (7220), 27, 6, 36; (7221), 19, 4, 9; (7223), 19, 4, 9; (7228), 4, 1, 0; (7230), 12, 4, 33; (7233), 9, 2, 25; (7234), 23, 5, 30; (7237), 4, 1, 0; (7239), 13, 3, 8; (7241), 30, 6, 36; (7242), 4, 1, 0; (7243), 19, 4, 36; (7245), 19, 4, 33; (7248), 29, 6, 33; (7250), 10, 2, 5; (7251), 28, 6, 36; (7253), 5, 1, 0; (7254), 5, 1, 0; (7256), 14, 1, 0; (7257), 5, 1, 0; (7259), 30, 6, 31; (7261), 5, 1, 0; (7262), 19, 4, 27; (7264), 10, 1, 0; (7268), 4, 1, 0; (7269), 3, 1, 0; (7272), 24, 5, 30; (7276), 5, 1, 0; (7281), 4, 1, 0; (7282), 20, 4, 35; (7284), 4, 1, 0; (7285), 30, 6, 33; (7288), 3, 1, 0; (7290), 29, 6, 33; (7295), 12, 3, 7; (7297), 19, 4, 6; (7300), 22, 5, 36; (7302), 27, 6, 33; (7303), 10, 2, 30; (7307), 5, 1, 0; (7310), 5, 1, 0; (7314), 25, 6, 7; (7319), 5, 1, 0; (7321), 5, 1, 0; (7325), 5, 1, 0; (7326), 12, 3, 31; (7327), 19, 4, 36; (7331), 9, 2, 30; (7334), 4, 1, 0; (7338), 5, 1, 0; (7339), 4, 1, 0; (7340), 4, 1, 0; (7345), 13, 3, 9; (7346), 30, 6, 29; (7347), 25, 5, 36; (7348), 20, 4, 28; (7351), 30, 6, 7; (7360), 5, 1, 0; (7365), 10, 2, 31; (7369), 5, 1, 0; (7370), 5, 1, 0; (7371), 4, 1, 0; (7379), 12, 3, 9; (7380), 17, 4, 6; (7383), 25, 5, 9; (7384), 5, 1, 0; (7388), 24, 5, 33; (7390), 5, 1, 0; (7393), 5, 1, 0; (7394), 15, 3, 5; (7402), 8, 2, 5; (7404), 3, 1, 0; (7406), 5, 1, 0; (7409), 5, 1, 0; (7416), 14, 3, 3; (7418), 4, 1, 0; (7422), 5, 1, 0; (7427), 28, 6, 7; (7429), 25, 5, 9; (7431), 24, 5, 30; (7432), 22, 5, 30; (7440), 4, 1, 0; (7444), 3, 1, 0; (7445), 3, 1, 0; (7446), 5, 1, 0; (7452), 7, 2, 28; (7454), 4, 1, 0; (7456), 4, 1, 0; (7457), 18, 4, 36; (7460), 7, 2, 1; (7462), 4, 1, 0; (7463), 4, 1, 0; (7466), 15, 3, 6; (7467), 10, 2, 6; (7468), 9, 2, 28; (7476), 37, 8, 36; (7491), 5, 1, 0; (7496), 14, 3, 28; (7499), 4, 1, 0; (7502), 29, 6, 36; (7505), 43, 6, 35; (7507), 8, 2, 7; (7508), 12, 3, 28; (7519), 4, 1, 0; (7521), 4, 1, 0; (7522), 5, 1, 0; (7528), 5, 1, 0; (7529), 28, 6, 36; (7530), 5, 1, 0; (7533), 5, 1, 0; (7544), 28, 6, 30; (7549), 28, 6, 30; (7550), 33, 7, 36; (7551), 35, 7, 35; (7559), 14, 3, 26; (7561), 5, 1, 0; (7574), 18, 5, 36; (7577), 23, 5, 27; (7582), 19, 4, 33; (7586), 20, 4, 9; (7592), 10, 2, 6; (7597), 5, 1, 0; (7607), 4, 1, 0; (7615), 33, 7, 36; (7616), 25, 5, 9; (7617), 43, 6, 33; (7631), 4, 1, 0; (7638), 8, 2, 5; (7644), 15, 4, 9; (7650), 5, 1, 0; (7662), 5, 1, 0; (7668), 14, 3, 27; (7674), 4, 1, 0; (7731), 5, 1, 0; (7737), 4, 1, 0; (7751), 9, 2, 27; (7775), 23, 5, 30; (7783), 4, 1, 0; (7802), 5, 1, 0; (7829), 5, 1, 0; (7870), 3, 1, 0; (7886), 3, 1, 0; (7887), 5, 1, 0; (7891), 3, 1, 0; (7916), 4, 1, 0; (7929), 4, 1, 0; (7936), 3, 1, 0; (7949), 10, 2, 8; (7957), 3, 1, 0; (7958), 24, 5, 31; (7959), 17, 4, 30; (7961), 4, 1, 0; (7982), 4, 1, 0; (7983), 4, 1, 0; (7985), 5, 1, 0; (7993), 5, 1, 0; (7994), 5, 1, 0; (7999), 5, 1, 0; (8003), 5, 1, 0; (8008), 4, 1, 0; (8015), 14, 3, 9; (8019), 4, 1, 0; (8021), 3, 1, 0; (8023), 4, 1, 0; (8024), 5, 1, 0; (8026), 48, 10, 33; (8033), 10, 2, 30; (8043), 4, 1, 0; (8044), 3, 1, 0; (8046), 10, 2, 27; (8053), 4, 1, 0; (8059), 19, 3, 30; (8062), 15, 3, 32; (8065), 5, 1, 0; (8067), 4, 1,

0; (8069), 4, 1, 0; (8071), 4, 1, 0; (8073), 4, 1, 0; (8077), 15, 3, 30; (8081), 24, 5, 31; (8087), 9, 2, 30; (8092), 5, 1, 0; (8107), 30, 6, 33; (8109), 10, 2, 26; (8115), 5, 1, 0; (8116), 4, 1, 0; (8118), 15, 3, 3; (8121), 23, 5, 9; (8122), 14, 3, 8; (8123), 23, 5, 9; (8127), 4, 1, 0; (8132), 19, 4, 31; (8133), 4, 1, 0; (8138), 9, 2, 32; (8139), 20, 4, 9; (8141), 14, 3, 6; (8144), 3, 1, 0; (8146), 5, 1, 0; (8148), 25, 5, 9; (8149), 9, 2, 27; (8151), 20, 5, 9; (8154), 5, 1, 0; (8156), 9, 2, 1; (8163), 13, 3, 26; (8164), 34, 7, 36; (8165), 4, 1, 0; (8166), 22, 6, 36; (8167), 24, 5, 7; (8168), 14, 3, 30; (8174), 3, 1, 0; (8175), 5, 1, 0; (8177), 5, 1, 0; (8180), 4, 1, 0; (8184), 9, 2, 27; (8188), 5, 1, 0; (8189), 4, 1, 0; (8190), 23, 5, 30; (8194), 9, 2, 34; (8197), 4, 1, 0; (8200), 11, 3, 6; (8212), 33, 7, 36; (8214), 5, 1, 0; (8215), 20, 4, 28; (8222), 33, 7, 35; (8228), 25, 5, 33; (8229), 21, 5, 7; (8233), 10, 2, 6; (8234), 4, 1, 0; (8239), 29, 6, 36; (8240), 13, 4, 33; (8242), 5, 1, 0; (8243), 15, 3, 8; (8244), 18, 4, 6; (8246), 29, 6, 36; (8248), 19, 4, 35; (8252), 5, 1, 0; (8254), 28, 6, 35; (8255), 9, 2, 3; (8258), 20, 5, 36; (8259), 32, 7, 35; (8263), 9, 2, 6; (8264), 10, 2, 6; (8265), 54, 10, 33; (8267), 11, 3, 9; (8268), 13, 3, 3; (8269), 10, 2, 5; (8272), 19, 4, 33; (8276), 5, 1, 0; (8278), 14, 3, 30; (8281), 4, 1, 0; (8283), 24, 5, 7; (8284), 5, 1, 0; (8285), 35, 7, 35; (8288), 29, 6, 30; (8291), 7, 2, 28; (8292), 4, 1, 0; (8293), 34, 7, 9; (8296), 7, 2, 36; (8297), 17, 4, 28; (8299), 4, 1, 0; (8301), 27, 6, 9; (8303), 5, 1, 0; (8304), 4, 1, 0; (8306), 21, 5, 35; (8309), 28, 6, 36; (8310), 3, 1, 0; (8320), 10, 2, 1; (8323), 17, 4, 33; (8324), 9, 2, 3; (8331), 63, 7, 8; (8332), 10, 2, 6; (8334), 10, 2, 6; (8337), 10, 3, 7; (8338), 5, 1, 0; (8340), 15, 4, 36; (8341), 13, 3, 28; (8342), 5, 1, 0; (8343), 15, 3, 28; (8346), 9, 2, 6; (8347), 4, 1, 0; (8348), 5, 1, 0; (8351), 9, 2, 6; (8352), 9, 2, 30; (8355), 11, 2, 4; (8357), 5, 1, 0; (8360), 40, 7, 33; (8361), 25, 5, 9; (8363), 28, 6, 35; (8366), 29, 6, 7; (8367), 5, 1, 0; (8369), 5, 1, 0; (8370), 5, 1, 0; (8371), 29, 6, 36; (8372), 24, 5, 9; (8375), 4, 1, 0; (8376), 26, 6, 36; (8377), 28, 6, 30; (8379), 5, 1, 0; (8380), 5, 1, 0; (8381), 4, 1, 0; (8382), 12, 3, 8; (8383), 25, 5, 9; (8386), 20, 4, 6; (8387), 29, 6, 33; (8388), 5, 1, 0; (8390), 16, 4, 36; (8391), 24, 5, 35; (8393), 14, 3, 8; (8395), 5, 1, 0; (8399), 5, 1, 0; (8401), 9, 2, 2; (8402), 5, 1, 0; (8403), 23, 5, 7; (8406), 5, 1, 0; (8408), 15, 4, 9; (8409), 4, 1, 0; (8411), 3, 1, 0; (8414), 10, 2, 6; (8418), 24, 5, 36; (8419), 12, 3, 31; (8422), 18, 4, 7; (8423), 4, 1, 0; (8428), 18, 5, 9; (8430), 4, 1, 0; (8431), 34, 7, 36; (8432), 28, 6, 33; (8434), 5, 1, 0; (8436), 13, 3, 8; (8438), 5, 1, 0; (8439), 12, 3, 8; (8440), 10, 2, 30; (8443), 4, 1, 0; (8444), 15, 3, 4; (8445), 5, 1, 0; (8446), 5, 1, 0; (8448), 10, 2, 6; (8449), 5, 1, 0; (8451), 4, 1, 0; (8452), 12, 3, 8; (8455), 4, 1, 0; (8457), 10, 2, 6; (8467), 5, 1, 0; (8468), 5, 1, 0; (8471), 4, 1, 0; (8473), 23, 5, 35; (8480), 5, 1, 0; (8482), 14, 3, 28; (8484), 13, 3, 6; (8487), 12, 3, 28; (8489), 5, 1, 0; (8490), 10, 2, 27; (8495), 5, 1, 0; (8496), 3, 1, 0; (8500), 20, 4, 35; (8502), 5, 1, 0; (8503), 10, 2, 6; (8504), 5, 1, 0; (8511), 12, 3, 35; (8512), 10, 2, 5; (8514), 5, 1, 0; (8516), 5, 1, 0; (8517), 17, 3, 6; (8518), 10, 2, 6; (8519), 17, 4, 35; (8520), 5, 1, 0; (8521), 10, 2, 6; (8522), 5, 1, 0; (8523), 4, 1, 0; (8526), 4, 1, 0; (8532), 9, 2, 6; (8533), 5, 1, 0; (8534), 5, 1, 0; (8535), 23, 6, 36; (8537), 15, 3, 31; (8539), 4, 1, 0; (8542), 11, 3, 27; (8543), 4, 1, 0; (8545), 4, 1, 0; (8551), 30, 6, 30; (8556), 22, 5, 6; (8559), 10, 2, 6; (8561), 17, 4, 36; (8564), 5, 1, 0; (8567), 22, 5, 33; (8570), 13, 3, 8; (8571), 15, 4, 33; (8577), 4, 1, 0; (8578), 23, 6, 36; (8579), 4, 1, 0; (8580), 10, 2, 6; (8581), 11, 3, 28; (8582), 28, 6, 30; (8584), 5, 1, 0; (8586), 5, 1, 0; (8588), 5, 1, 0; (8590), 29, 6, 36; (8591), 5, 1, 0; (8598), 7, 2, 5; (8601), 18, 4, 6; (8605), 5, 1, 0; (8608), 5, 1, 0; (8609), 4, 1, 0; (8613), 5, 1, 0; (8614), 5, 1, 0; (8618), 16, 4, 28; (8619), 5, 1, 0; (8621), 5, 1, 0; (8622), 5, 1, 0; (8628), 18, 4, 33; (8629), 8, 2, 27; (8635), 8, 2, 1; (8638), 5, 1, 0; (8641), 3, 1, 0; (8642), 5, 1, 0; (8643), 9, 2, 30; (8648), 4, 1, 0; (8651), 3, 1, 0; (8658), 5, 1, 0; (8659), 9, 2, 7; (8660), 4, 1, 0; (8662), 5, 1, 0; (8667), 8, 2, 28; (8673), 30, 6, 35; (8676), 19, 4, 33; (8678), 5, 1, 0; (8679), 4, 1, 0; (8680), 3, 1, 0; (8681), 17, 4, 28; (8684), 4, 1, 0; (8685), 5, 1, 0; (8691), 4, 1, 0; (8693), 9, 2, 7; (8694), 28, 6, 30; (8697), 29, 6, 36; (8698), 5, 1, 0; (8701), 3, 1, 0; (8708), 30, 6, 35; (8713), 30, 6, 30; (8717), 3, 1, 0; (8718), 5, 1, 0; (8719), 5, 1, 0; (8721), 28, 6, 36; (8722), 8, 2, 36; (8724), 5, 1, 0; (8726), 29, 6, 36; (8730), 5, 1, 0; (8733), 5, 1, 0; (8735), 15, 3, 33; (8739), 5, 1, 0; (8740), 35, 7, 35; (8742), 5, 1, 0; (8743), 25, 5, 31; (8744), 13, 3, 28; (8747), 5, 1, 0; (8755), 14, 3, 8; (8756), 5, 1, 0; (8762), 5, 1, 0; (8770), 5, 1, 0; (8774), 5, 1, 0; (8786), 9, 3, 6; (8795), 5, 1, 0; (8801), 4, 1, 0; (8803), 20, 5, 36; (8811), 5, 1, 0; (8813), 5, 1, 0; (8814), 8, 2, 7; (8828), 5, 1, 0; (8845), 13, 3, 5; (8850), 5, 1, 0; (8865), 4, 1, 0; (8868), 4, 1, 0; (8899), 4, 1, 0; (8910), 25, 5, 33; (8915), 5, 1, 0; (8917), 5, 1, 0; (8919), 5, 1, 0; (8926), 18, 4, 9; (8934), 10, 2, 5; (8941), 5, 1, 0; (8958), 4, 1, 0; (8962), 5, 1, 0; (8963), 3, 1, 0; (8967), 5, 1, 0; (8998), 7, 2, 3; (9025), 5, 1, 0; (9066), 4, 1, 0; (9099), 4, 1, 0; (9119), 22, 5, 9; (9121), 23, 5, 9; (9201), 26, 6, 30; (9230), 11, 3, 33; (9244), 4, 1, 0; (9278), 23, 6, 33; (9312), 24, 5, 36; (9341), 5, 1, 0; (9357), 4, 1, 0; (9372), 4, 1, 0; (9396), 4, 1, 0; (9398), 8, 2, 6; (9412), 33, 7, 35; (9450), 4, 1, 0; (9451), 5, 1, 0; (9453), 5, 1, 0; (9454), 3, 1, 0; (9455), 5, 1, 0; (9671), 5, 1, 0; (9717), 5, 1, 0; (9718), 5, 1, 0; (9730), 5, 1, 0; (9741), 10, 2, 30; (9765), 5, 1, 0; (9780), 4, 1, 0; (9845), 13, 3, 30; (9859), 8, 2, 30; (9870), 5, 1, 0; (9871), 5, 1, 0; (9874), 3, 1, 0; (9930), 3, 1, 0; (9935), 4, 1, 0; (9942), 3, 1, 0; (9956), 5, 1, 0; (9959), 4, 1, 0; (9985), 5, 1, 0; (9986), 5, 1, 0; (10013), 5, 1, 0; (10022), 3, 1, 0; (10034), 4, 1, 0; (10037), 15, 3, 30; (10041), 15, 3, 33; (10043), 5, 1, 0; (10056), 5, 1, 0; (10059), 3, 1, 0; (10064), 5, 1, 0; (10072), 5, 1, 0; (10075), 9, 2, 32; (10084), 5, 1, 0; (10085), 4, 1, 0; (10088), 4, 1, 0; (10091), 5, 1, 0; (10094), 9, 2, 30; (10095), 4, 1, 0; (10107), 5, 1, 0; (10108), 5, 1, 0; (10111), 4, 1, 0; (10113), 5, 1, 0; (10136), 4, 1, 0; (10139), 4, 1, 0; (1

13, 3, 26; (10329), 8, 2, 9; (10340), 4, 1, 0; (10346), 4, 1, 0; (10348), 20, 4, 9; (10349), 5, 1, 0; (10350), 4, 1, 0; (10351), 4, 1, 0; (10352), 5, 1, 0; (10357), 14, 3, 32; (10358), 4, 1, 0; (10365), 3, 1, 0; (10374), 5, 1, 0; (10388), 4, 1, 0; (10391), 4, 1, 0; (10399), 5, 1, 0; (10400), 4, 1, 0; (10403), 20, 4, 8; (10412), 4, 1, 0; (10418), 10, 2, 30; (10420), 5, 1, 0; (10422), 5, 1, 0; (10423), 4, 1, 0; (10426), 5, 1, 0; (10438), 5, 1, 0; (10441), 4, 1, 0; (10452), 9, 2, 1; (10453), 10, 2, 1; (10454), 3, 1, 0; (10458), 4, 1, 0; (10462), 15, 3, 30; (10464), 4, 1, 0; (10465), 4, 1, 0; (10466), 3, 1, 0; (10475), 5, 1, 0; (10476), 28, 6, 36; (10478), 9, 2, 2; (10479), 40, 8, 27; (10480), 27, 6, 29; (10486), 5, 1, 0; (10487), 20, 4, 25; (10489), 4, 1, 0; (10490), 4, 1, 0; (10493), 45, 6, 9; (10496), 9, 2, 32; (10504), 9, 2, 1; (10505), 5, 1, 0; (10506), 9, 2, 1; (10507), 9, 2, 4; (10508), 5, 1, 0; (10509), 4, 1, 0; (10510), 30, 6, 7; (10513), 25, 5, 30; (10517), 4, 1, 0; (10520), 3, 1, 0; (10522), 9, 2, 32; (10523), 5, 1, 0; (10524), 19, 4, 9; (10528), 29, 6, 30; (10529), 5, 1, 0; (10530), 9, 2, 4; (10531), 4, 1, 0; (10532), 30, 6, 33; (10536), 5, 1, 0; (10542), 5, 1, 0; (10544), 15, 3, 4; (10546), 20, 4, 35; (10547), 30, 6, 36; (10551), 4, 1, 0; (10554), 20, 4, 7; (10555), 30, 6, 30; (10560), 5, 1, 0; (10562), 5, 1, 0; (10564), 8, 1, 0; (10565), 4, 1, 0; (10566), 5, 1, 0; (10569), 14, 3, 3; (10570), 5, 1, 0; (10575), 5, 1, 0; (10576), 5, 1, 0; (10577), 5, 1, 0; (10578), 10, 2, 1; (10580), 10, 2, 4; (10581), 13, 3, 33; (10582), 34, 7, 36; (10583), 30, 6, 36; (10594), 25, 5, 9; (10595), 5, 1, 0; (10597), 14, 3, 4; (10602), 3, 1, 0; (10603), 10, 2, 1; (10605), 5, 1, 0; (10607), 25, 5, 27; (10617), 5, 1, 0; (10619), 39, 8, 27; (10623), 10, 2, 1; (10626), 28, 6, 35; (10631), 4, 1, 0; (10633), 15, 3, 35; (10634), 19, 4, 28; (10640), 7, 2, 9; (10643), 15, 3, 34; (10644), 9, 2, 30; (10654), 4, 1, 0; (10663), 7, 2, 1; (10666), 28, 6, 7; [127591, 9798, 4282*, 1997/01/30-1999/06/15]

706 Salinas

J. E. Hall, 10180 County Rd. 190, Salida, CO 81201, U.S.A. [teila@rmi.net]

0.25-m $f/6$ Newtonian reflector + CCD

GSC

1999 LG *, 4, 2, 1; [4, 1, 1*, 1999/06/04-1999/06/05]

709 W & B Observatory, Cloudcroft

W. Offutt, P.O. Drawer 1130, Cloudcroft, NM 88317, U.S.A.

[offutt@galileo.apo.nmsu.edu]

Observer W. Offutt

Measurers W. Offutt, B. Ford

0.60-m $f/7$ Ritchey-Chrétien + CCD

USNO-SA1.0

1999 HA₂, 7, 1, 0; [7, 1, 0*, 1999/06/14]

711 McDonald Observatory

P. J. Shelus, McDonald Observatory, University of Texas, Austin, TX 78712-1013, U.S.A. [pjs@astro.as.utexas.edu]

Observers P. J. Shelus, J. G. Ries

0.76-m $f/3.0$ reflector + CCD

GSC

1991 GO₃, 3, 1, 0; 1993 SM₁, 3, 1, 0; 1995 LE₃, 3, 2, 1; 1998 QS₅₂, 2, 1, 0; 1998 YP₁₁, 2, 1, 0; 1999 FP₅₉, 4, 1, 0; 1999 GJ₂, 2, 1, 0; 1999 GU₃, 4, 2, 1; 1999 GK₄, 3, 2, 1; 1999 GT₆, 4, 2, 1; 1999 HE₁, 4, 2, 1; 1999 HP₁₁, 3, 1, 0; 1999 JB₆, 2, 1; 1999 JW₃, 4, 2, 1; 1999 JD₆, 2, 1, 0; 1999 JT₆, 4, 2, 1; 1999 JT₅₂, 3, 1, 0; 1999 KQ₆, 6, 2, 1; 1999 LJ₁, 5, 2, 1; 1999 LK₁, 2, 1, 0; (5693), 4, 2, 1; (6489), 2, 1, 0; (10302), 4, 2, 1; [79, 23, 0*, 1999/05/06-1999/06/08]

713 Thornton

R. A. Koff, 1915 W. 101st Ave., Thornton, CO 80221, U.S.A.

[Bob.Koff@worldnet.att.net]

0.20-m $f/10$ Schmidt-Cassegrain + CCD

USNO-A2.0

1999 JV₃, 3, 1, 0; 1999 JW₃, 3, 1, 0; 1999 JD₆, 3, 1, 0; (5033), 5, 2, 1; (6489), 10, 3, 4; [24, 5, 0*, 1999/05/07-1999/05/13]

714 Bagdad

J. R. Bruton, Bagdad Observatory, P.O. Box 1191, Bagdad, AZ 86321, U.S.A.

[jbruton1@juno.com]

0.30-m $f/10$ Schmidt-Cassegrain + CCD

GSC-1.1

4294 T-2, 5, 2, 1; (5033), 6, 2, 1; (5112), 6, 2, 1; (6489), 4, 2, 1; [21, 4, 0*, 1999/05/08-1999/05/09]

715 Las Cruces

D. Dixon, 3208 Jupiter Rd., Las Cruces, NM 88012, U.S.A.

[ddixon@lascruces.com]

0.2-m $f/3.9$ Schmidt-Cassegrain + CCD

GSC, USNO-A2.0

1973 SF₆, 2, 1, 0; 1984 HR, 2, 1, 0; 1989 SE₈, 2, 1, 0; 1997 YD₁₀, 2, 1, 0; [8, 4, 0*, 1999/06/12]

716 Palmer Divide Observatory

B. D. Warner, 17995 Bakers Farm Rd., Colorado Springs, CO 80908, U.S.A.

[brianw_mpo@compuserve.com]

0.25-m $f/6.3$ Schmidt-Cassegrain + CCD

GSC, USNO-A2.0

1976 UB₁, 2, 1, 0; 1981 CH, 4, 2, 1; 1988 EP, 4, 2, 5; 1988 FE, 4, 2, 1; 1988 FN, 4, 2, 1; 1989 SV₅, 4, 2, 1; 1990 UZ, 2, 1, 0; 1990 XN, 4, 2, 1; 1990 YM, 2, 1, 0; 1991 LM, 4, 2, 5; 1991 PV₉, 4, 2, 5; 1991 SR₃, 4, 2, 1; 1992 ER₁₇, 4, 2, 1; 1992 JR, 4, 2, 5; 1992 ME, 2, 1, 0; 1992 UL₄, 2, 1, 0; 1994 LR, 4, 2, 5; 1995 BL₄, 4, 2, 2; 1995 CF₁, 2, 1, 0; 1995 GJ₇, 4, 2, 1; 1997 WA₇, 4, 2, 5; 1997 WD₁₅, 3, 2, 1; 1997 YO, 4, 2, 5; 1998 QT₆₀, 4, 2, 1; 1998 UQ₃₂, 4, 2, 5; 1998 XZ₈, 3, 2, 1; 1998 YZ₃, 2, 1, 0; 1998 YS₇, 3, 2, 1; 1998 YR₂₇, 4, 2, 1; 1998 YS₂₉, 4, 2, 1; 1998 YX₂₉, 4, 2, 1; 1999 AR, 4, 2, 1; 1999 AU, 2, 2, 2; 1999 AV, 4, 2, 1; 1999 AW, 4, 2, 1; 1999 AX, 4, 2, 1; 1999 AY, 2, 1, 0; 1999 AE₂, 4, 2, 1; 1999 AF₂, 4, 2, 1; 1999 AL₂, 4, 2, 1; 1999 AN₂, 4, 2, 1; 1999 AH₅, 4, 2, 2; 1999 AJ₅, 8, 4, 4; 1999 AR₅, 2, 1, 0; 1999 AA₈, 8, 4, 4; 1999 AB₈, 4, 2, 2; 1999 AB₂₄, 3, 2, 1; 1999 BL₁₂, 4, 2, 1; 1999 DF₆, 4, 2, 5; 1999 FX₃₂, 4, 2, 5; 1999 GC₆, 4, 2, 5; 1999 GE₆, 2, 1, 0; 1999 HX₂, 2, 1, 0; 1999 JD₃, 4, 2, 5; 1999 JK₃, 5, 3, 9; 1999 JF₈, 2, 1, 0; 1999 JL₈, 4, 2, 5; 4152 P-L, 2, 1, 0; 3507 T-3, 2, 1, 0; (9956), 4, 2, 1; (10064), 4, 2, 1; (10085), 4, 2, 1; (10164), 4, 2, 2; (10217), 4, 2, 1; (10479), 2, 1, 0; (10546), 2, 1, 0; (10547), 2, 1, 0; [237, 67, 0*, 1999/02/07-1999/06/09]

719 Etscorn Observatory

D. A. Klinglesmith III, 1215 Vista Drive, Socorro, NM 87801, U.S.A.

[TheKs@aol.com]

Observers D. A. Klinglesmith III, R. Huber

0.355-m Schmidt-Cassegrain + CCD

GSC

1999 HW₂, 2, 1, 0; 1999 JB, 4, 1, 0; 1999 JE₁, 4, 1, 0; 1999 JT₃, 6, 2, 1; 1999 JU₃, 5, 2, 1; 1999 JV₃, 6, 2, 1; 1999 JC₆, 2, 1, 0; 1999 JD₆, 4, 1, 0; 1999 JT₆, 6, 2, 1; 1999 JU₆, 3, 1, 0; 1999 JV₆, 4, 1, 0; 1999 JW₆, 4, 1, 0; (3871), 2, 1, 0; (5033), 2, 1, 0; (5164), 3, 1, 0; (9671), 2, 1, 0; [59, 16, 0*, 1999/05/07-1999/05/14]

720 Universidad de Monterrey

P. V. Sada, Apartado Postal 134-C, MX-66270 San Pedro Garza García, Nuevo

Leon, Mexico [psada@ix.netcom.com]

0.18-m $f/15.0$ Maksutov + focal reducer + CCD

USNO-A2.0

(36), 4, 1, 0; (105), 9, 2, 1; (455), 5, 1, 0; (511), 9, 2, 1; (654), 9, 2, 1; (1048), 6, 2, 1; (1810), 5, 2, 1; (2000), 6, 2, 1; (5033), 6, 2, 1; (6489), 6, 2, 1; [65, 10, 0*, 1999/04/20-1999/05/12]

721 Lime Creek

R. Linderholm, R2 Box 79, Cambridge, NE 69022, U.S.A. [lindh@swnebr.net]

0.25-m $f/3.3$ Schmidt-Cassegrain + CCD

GSC

1996 PF, 5, 2, 1; [5, 1, 0*, 1999/06/06-1999/06/07]

723 Cottonwood Observatory, Ada

J. Waller, Rt#3 Box 175c, Ada, OK 74820, U.S.A. [jwaller@chickasaw.com]

0.30-m $f/6$ Schmidt-Cassegrain + CCD

GSC

1988 DK₂, 2, 1, 0; 1990 SF₃, 3, 2, 1; 1990 SU₈, 5, 3, 12; 1990 WV₁, 2, 1, 0; 1996 GB₁₈, 2, 1, 0; 1997 SU₂, 2, 1, 0; 1997 UA₉, 4, 2, 1; 1997 VE₇, 2, 1, 0; (10305), 5, 3, 12; [27, 9, 0*, 1999/04/06–1999/05/09]

726 Brainerd

J. E. Wentworth, 6469 Madson Ave. N.W., Brainerd, MN 56401, U.S.A.

[jimw@brainerd.net]

0.280-m Schmidt-Cassegrain + CCD
GSC-1.1

1999 GK₄, 3, 1, 0; 1999 HF₁, 27, 6, 21; 1999 HX₂, 4, 1, 0; 1999 JV₃, 12, 3, 14; 1999 JD₆, 3, 1, 0; 1999 JO₈, 33, 6, 29; 1999 KW₄, 37, 7, 15; [119, 7, 0*, 1999/05/09–1999/06/18]

727 Zeno Observatory, Edmond

T. Stafford, 2947 Village Circle, Edmond, OK 73013, U.S.A.

[tstaffor@aigntetplex.com]

0.15-m $f/6$ refractor + CCD
GSC, USNO-SA2.0

1980 KK₆, 6, 2, 1; 1995 EZ₈, 3, 1, 0; 1996 PK₈, 4, 2, 18; 1996 VE₉, 2, 1, 0; 1999 EL₆, 6, 2, 5; (1348), 6, 2, 1; [27, 6, 0*, 1999/04/20–1999/05/13]

732 Oaxaca

J. Roe, Apdo. No. 221, MX-68000 Oaxaca, Mexico [jamesroe@antequera.com]

0.25-m $f/3.4$ reflector + CCD
GSC

1988 VQ₃, 11, 3, 17; 1998 AQ₈, 3, 1, 0; 1998 DU₇, 6, 2, 3; 1999 GQ₂, 1, 1, 0; 1999 GR₂, 2, 1, 0; 1999 GH₄, 29, 11, 49; 1999 JJ₁₀, 7, 3, 2; 1999 KH₄ *, 8, 2, 1; 1999 KJ₄ *, 16, 4, 4; 1999 KK₄ *, 14, 4, 4; 1999 KL₄ *, 4, 2, 1; 1999 KY₄ *, 9, 2, 2; 1999 KS₅ *, 14, 6, 17; 3295 T-2, 5, 2, 9; 2672 T-3, 11, 2, 1; (1048), 7, 2, 9; (1166), 5, 2, 2; (2000), 6, 2, 1; (2518), 6, 2, 9; (3703), 9, 3, 3; (4388), 5, 2, 2; (4566), 5, 2, 1; (5033), 10, 4, 4; (5112), 5, 2, 1; (5308), 6, 2, 1; (6263), 6, 1, 0; (6489), 14, 4, 4; (10400), 3, 1, 0; [227, 28, 6*, 1999/04/20–1999/06/08]

734 Farpoint Observatory, Eskridge

G. Hug, RTE 1 Box 35c, Eskridge, KS 66423, U.S.A. [frogstar@inlandnet.net]

Observers G. Hug, G. Bell
0.30-m Schmidt-Cassegrain + CCD
GSC-1.1, USNO-A2.0

1999 CV₁₂₁, 3, 1, 0; 1999 HC₁₁, 5, 2, 62; 1999 JE₁, 6, 2, 1; 1999 JR₂ *, 34, 8, 32; 1999 JY₃ *, 22, 6, 34; 1999 JD₆, 4, 1, 0; 1999 JT₆, 3, 1, 0; 1999 JW₆, 3, 1, 0; 1999 JG₂₉, 6, 2, 1; 1999 JT₅₂, 4, 1, 0; 1999 JK₇₅, 2, 1, 0; 1999 KT₄, 3, 1, 0; 1999 LV₁, 3, 1, 0; 1999 LL₇ *, 16, 3, 4; 1283 T-2, 5, 2, 10; 3100 T-3, 3, 1, 0; (2488), 3, 1, 0; (6489), 4, 1, 0; [129, 18, 3*, 1999/04/11–1999/06/18]

735 George Observatory, Needville

W. G. Dillon, 4703 Birkenhead Circle, Missouri City, TX 77459, U.S.A.

[bdillon@houston.geoquest.slb.com]

Observers W. G. Dillon, C. Gustava, R. Pepper, K. Rivich
Measurer W. G. Dillon, K. Rivich
0.46-m reflector + CCD
USNO-A2.0

1999 FO₁₀, 4, 2, 1; 1999 JK₇₅, 3, 1, 0; 6809 P-L, 5, 2, 6; [12, 3, 0*, 1999/05/07–1999/05/21]

739 Sunflower Observatory, Olathe

L. Robinson, Sunflower Observatory, 14680 W 144 St, Olathe, KS 66062, U.S.A.

[lrobinson@ix.netcom.com]

0.25-m $f/4.1$ Schmidt-Cassegrain + CCD, 0.30-m Schmidt-Cassegrain + CCD
GSC-1.1

1980 LY₂, 2, 1, 0; 1981 UE₂₆, 3, 1, 0; 1987 DN₂, 2, 1, 0; 1987 RT₅, 2, 1, 0; 1987 SU₂, 2, 1, 0; 1992 EG₂₂, 2, 1, 0; 1992 JR₃, 3, 1, 0; 1992 TM₁, 2, 1, 0; 1993 FT₄, 2, 1, 0; 1995 BO₁, 2, 1, 0; 1998 FN₁₁, 2, 1, 0; 1999 HF₁, 5, 2, 26; 1999 JM₈, 8, 3, 15; 1999 JO₈, 7, 1, 0; (41), 3, 1, 0; (105), 3,

1, 0; (173), 4, 1, 0; (386), 3, 1, 0; (653), 3, 1, 0; (904), 4, 1, 0; (928), 3, 1, 0; (5382), 2, 1, 0; (6489), 9, 1, 0; (8340), 2, 1, 0; (10532), 2, 1, 0; (10583), 2, 1, 0; [84, 26, 0*, 1999/05/09–1999/06/05]

740 SFA Observatory, Nacogdoches

W. D. Bruton, Department of Physics and Astronomy, SFASU Box 13044,

Nacogdoches, TX 75962, U.S.A. [f_brutonwd@titan.sfasu.edu]

Observers W. D. Bruton, C. F. Stewart
0.25-m $f/6.3$ Schmidt-Cassegrain + CCD
GSC-1.1

(587), 32, 8, 70; (1810), 6, 2, 1; (3871), 5, 2, 1; (4566), 6, 2, 1; (4878), 6, 2, 1; (5033), 8, 3, 2; [63, 6, 0*, 1999/03/26–1999/06/18]

747 Baton Rouge Observatory

W. R. Cooney, 10330 Dunn Dr., Baton Rouge, LA 70810, U.S.A.

[walt@sprintmail.com]

Observers W. R. Cooney, M. Hess, P. Motl, S. Lazar, P. Lazar, R. Pitre,
M. Collier, J. Clawson

Measurer F. J. Barnett, W. R. Cooney

0.51-m $f/8.4$ reflector + CCD
USNO-A2.0

1990 UF₁, 6, 2, 1; 1996 RD₄, 5, 2, 1; 1997 KW₃, 3, 1, 0; 1997 SS₄, 5, 2, 4; 1997 VN₁, 3, 1, 0; 1998 WS₆, 2, 1, 0; 1999 AE₃, 10, 3, 3; 1999 FD₁₈, 4, 33; 1999 GF₄, 7, 2, 1; 1999 JS₅, 5, 1, 0; 1999 JE₁₂₂, 5, 2, 1; 1999 KH₁, 3, 1, 0; 1999 LH *, 15, 4, 7; (1800), 8, 2, 7; (2672), 6, 2, 6; (2865), 7, 2, 6; (2933), 7, 2, 6; (9921), 4, 1, 0; [119, 18, 1*, 1998/12/14–1999/06/19]

750 Hobbs Observatory, Fall Creek

R. Elliott, S475 County Road K, Fall Creek, WI 54742, U.S.A.

[elliottb@uwec.edu]

0.60-m $f/5$ reflector + CCD
GSC

1992 UL₄, 3, 1, 0; 1997 WX₂₁, 4, 1, 0; 1997 YO₆, 6, 2, 5; 1999 CV₃, 5, 1, 0; 1999 KW₄, 3, 1, 0; (6489), 3, 1, 0; [24, 6, 0*, 1999/04/29–1999/05/30]

752 Puckett Observatory, Mountain Town

T. Puckett, P.O. Box 818, Ellijay, GA 30540, U.S.A. [tpuckett@mindspring.com]

Observer T. Puckett

Measurers R. Denny, T. Puckett

0.60-m $f/5.83$ reflector + CCD
USNO-SA2.0

1990 VR₁₄, 6, 1, 0; 1991 GV₆, 6, 2, 1; 1998 BE₃, 3, 1, 0; 1998 BW₄₃, 3, 1, 0; 1999 HX₉, 6, 2, 2; 1999 JE₃ *, 6, 2, 1; 1999 JE₁₀, 3, 1, 0; 1999 JX₇₇, 3, 1, 0; 1999 KM₁ *, 6, 2, 2; 1999 KN₁ *, 6, 2, 2; 7622 P-L, 3, 1, 0; (86), 3, 1, 0; (178), 3, 1, 0; (1200), 3, 1, 0; (1961), 3, 1, 0; (2169), 3, 1, 0; (3246), 3, 1, 0; (3514), 3, 1, 0; (3599), 6, 2, 2; (4061), 3, 1, 0; (7073), 3, 1, 0; (8154), 3, 1, 0; (10453), 3, 1, 0; [90, 23, 3*, 1999/04/19–1999/05/25]

757 High Point

D. K. Chesney, 4210 Lauren Place, High Point, NC 27265, U.S.A.

[dkchesney@aol.com]

0.25-m Schmidt-Cassegrain + CCD
USNO-SA2.0

1995 GH₇, 2, 1, 0; 1999 CO₈, 2, 1, 0; 1999 DR₆, 4, 2, 1; 1999 FS₃, 3, 2, 27; 1999 JD₃ *, 4, 2, 1; [15, 5, 1*, 1999/04/08–1999/05/11]

758 BCC Observatory, Cocoa

I. P. Griffin, BCC Observatory, 1519 Clearlake Road, Cocoa, FL 32922, U.S.A.

[griffini@brevard.cc.fl.us]

0.30-m $f/5$ Maksutov + CCD
USNO-A2.0

1998 BU₂₅, 6, 2, 2; 1999 DH₄, 3, 1, 0; 1999 JE₁, 3, 1, 0; 1999 JV₃, 3, 1, 0; 1999 JW₃, 3, 1, 0; 1999 JD₆, 3, 1, 0; 1999 JT₆, 3, 1, 0; (6489), 3, 1, 0; [27, 8, 0*, 1999/05/11–1999/05/13]

761 Zephyrhills

R. A. Kowalski, 7630 Conrad St, Zephyrhills, FL 33544-2729, U.S.A.

[bitnik@bitnik.com]

0.18-m $f/9.45$ reflector + CCD

USNO-A2.0

1999 JM₈, 2, 1, 0; (3545), 5, 2, 2; (3792), 6, 2, 1; (5765), 3, 1, 0; (6458), 5, 2, 1; (6466), 3, 1, 0; (6488), 5, 2, 2; [29, 7, 0*, 1999/05/16–1999/05/18]

784 Alfred University Observatory

D. R. DeGraff, Physics and Astronomy, Alfred University, Alfred, NY 14803,

U.S.A. [david@merlin.alfred.edu]

Observers D. R. DeGraff, A. M. Robbins

Measurer D. R. DeGraff

0.81-m $f/4$ reflector + CCD

USNO-A1.0

1999 LD₆, 3, 1, 0; 1999 LE₆, 3, 1, 0; 1999 LU₇, 3, 1, 0; [9, 3, 0*, 1999/06/13]

801 Oak Ridge

R. E. McCrosky, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138, U.S.A.

Observers R. E. McCrosky, C.-Y. Shao

1.5-m reflector + CCD

GSC

1999 EJ₅, 2, 1, 0; [2, 1, 0*, 1993/11/13]

807 Cerro Tololo

G. Bernstein, Dept. of Astronomy, University of Michigan, Ann Arbor, MI 48013,

U.S.A. [garyb@astro.lsa.umich.edu]

Observers R. L. Allen, Jarvis, G. Bernstein, P. Guhathakurta

Measurer G. Berstein

4-m Blanco reflector + CCD

USNO-A2.0

1999 JV₁₂₇ *, 44, 3, 8; [44, 1, 1*, 1999/05/10–1999/05/18]

809 European Southern Observatory

H. Debehogne, Observatoire Royal de Belgique, Avenue Circulaire 3, B-1180

Brussels, Belgium [henri@astro.oma.be] (3)

E. W. Elst, Observatoire Royal de Belgique, Avenue Circulaire 3, B-1180 Brussels,

Belgium [elst@atmos.oma.be] (4)

7 = 3 + 4

C.-I. Lagerkvist, Uppsala Observatory, Box 515, S-75120 Uppsala, Sweden

[classe@laban.uu.se] (8)

Observers H. Debehogne, C.-I. Lagerkvist, M. Lindgren, G. Pizarro, O. Pizarro

Measurers E. W. Elst, O. Hernius, C.-I. Lagerkvist

1.0-m Schmidt

(4) 1979 MS₅, 3, 1, 0; 1982 QP₁, 6, 2, 54; 1993 SK₂, 3, 1, 0; 1993 SD₅, 3, 1, 0; 1993 TM₁, 3, 1, 0; 1993 TV₁, 3, 1, 0; 1994 EC₆, 3, 1, 0; 1994 ED₇, 3, 1, 0; 1994 UV₂, 3, 1, 0; 1996 BM, 3, 1, 0; 1996 HE₁₀, 3, 1, 0; 1996 KV₇, 3, 1, 0; 1996 NV₂, 6, 2, 30; 1996 PG₅, 3, 1, 0; 1996 RD₂₄, 3, 1, 0; 1997 EG₄₇, 3, 1, 0; 1998 FF₃₂, 3, 1, 0; 1998 QQ₄₃, 3, 1, 0; 1998 RQ₇₇, 3, 1, 0; 1999 BQ₆, 3, 1, 0; 1999 CC₈₂, 3, 1, 0; 1999 FO₁₄, 6, 2, 7; 1999 JS₃₂, 3, 1, 0; 2627 P-L, 3, 1, 0; [81, 24, 0*, 1992/09/23–1997/04/01]

(7) 1993 TD₂₁, 3, 1, 0; 1993 TB₃₆, 3, 1, 0; 1997 WO₁, 3, 1, 0; 1999 HY₂, 3, 1, 0; 1999 JN₂₅, 3, 1, 0; 1999 JY₆₂, 3, 1, 0; [18, 6, 0*, 1993/09/16–1993/10/22]

(8) 1978 UT₇, 1, 1, 0; 1992 DY₂, 2, 2, 30; 1992 EK₁₇, 1, 1, 0; 1992 EW₂₂, 1, 1, 0; 1992 ES₃₂, 1, 1, 0; 1993 FU₃, 1, 1, 0; 1993 QW, 1, 1, 0; 1995 SE₄₉, 9, 8, 34; 1996 RK₂₇, 1, 1, 0; 1996 XU₂₅, 2, 2, 2; 1998 EL₆, 3, 3, 5; 1998 VO₃₃, 1, 1, 0; 1998 VV₄₄ *, 6, 3, 5; 1998 VW₄₄ *, 6, 3, 5; 1998 VX₄₄ *, 6, 3, 5; 1998 VY₄₄ *, 4, 2, 1; 1998 VZ₄₄ *, 4, 2, 1; 1999 GC₈, 2, 2, 38; 1999 GR₈, 2, 2, 1; 1999 GX₈, 1, 1, 0; 1999 GM₃₂, 1, 1, 0; 1999 JC₃₀, 10, 6, 33; 1999 JV₄₅, 2, 2, 3; 1999 JQ₄₉, 1, 1, 0; 1999 JC₆₂, 2, 2, 26; 1999 JB₁₀₂, 4, 3, 2; 4175 P-L, 1, 1, 0; 2312 T-3, 1, 1, 0; [77, 28, 5*, 1992/02/29–1998/11/18]

816 Rand Observatory

G. R. Viscome, 30 Hyland Avenue, Lake Placid, NY 12946, U.S.A.

[GeorgeV@nct.org]

0.37-m $f/6$ reflector + CCD

USNO-SA1.0

1997 TX₁₆, 10, 3, 20; [10, 1, 0*, 1999/04/24–1999/05/14]

817 Sudbury

D. di Cicco, Sky & Telescope, Cambridge, MA 02138, U.S.A.

[dicicco@skypub.com]

0.41-m Schmidt-Cassegrain + CCD

GSC

(1422), 8, 2, 2; (10596), 8, 2, 2; [16, 2, 0*, 1999/04/06–1999/04/08]

823 Fitchburg

L. L. Amburgey, 777 Scott Road, Fitchburg, MA 01420-6680, U.S.A.

[lla@tiac.net]

0.28-m Schmidt-Cassegrain + CCD

GSC-1.2

1978 TR₇, 2, 2, 1; 1992 GW₄, 6, 3, 2; 1996 TS₃₂, 4, 2, 1; 1999 GV, 4, 2, 1; 1999 HG₉, 13, 6, 28; (10595), 4, 2, 1; [33, 6, 0*, 1999/05/14–1999/06/12]

828 Assonet

T. R. Perry, 2 Ken Street, Assonet MA 02702, U.S.A. [trperry@sprynet.com]

0.20-m $f/4.86$ Schmidt-Cassegrain + CCD

USNO-SA1.0

1999 JO₈, 5, 2, 2; (3703), 3, 2, 2; (5112), 4, 2, 2; [12, 3, 0*, 1999/06/03–1999/06/11]

835 Drum Hill Station, Chelmsford

R. Sinnott, Sky & Telescope, P. O. Box 9111, Belmont, MA 02478-9111, U.S.A.

[rsinnott@skypub.com]

0.20-m $f/3.3$ Schmidt-Cassegrain + CCD

GSC

1998 MK₃₀, 4, 2, 14; 1998 PG, 3, 1, 0; (1025), 4, 2, 4; (1036), 3, 1, 0; (9083), 4, 2, 9; [18, 5, 0*, 1998/08/16–1998/09/29]

836 Furnace Brook Observatory, Cranston

D. P. Pray, 40 Hillcrest Dr., Cranston, RI 02921, U.S.A.

[DPPRAY@worldnet.att.net]

0.25-m $f/6$ Newtonian reflector + CCD

GSC-1.1

(6489), 5, 2, 11; [5, 1, 0*, 1999/05/11–1999/05/22]

837 Jupiter

B. A. Segal, 3084 NW 63 Street, Boca Raton, FL 33496, U.S.A.

[astrobas@gate.net]

0.3-m $f/6.3$ SCT + CCD

USNO-SA2.0

(2067), 4, 2, 1; (2369), 4, 2, 1; (6635), 4, 2, 1; [12, 3, 0*, 1999/04/21–1999/04/22]

838 Dayton

J. Chumack, 3118 Mesmer Avenue, Dayton, OH 45410, U.S.A.

[galactic@infinet.com]

0.25-m Schmidt-Cassegrain + CCD

GSC

(8), 4, 2, 1; (121), 3, 2, 1; (164), 3, 2, 1; (519), 3, 2, 1; (768), 4, 2, 1; (888), 4, 2, 1; (1765), 4, 2, 1; (2332), 4, 2, 1; [29, 8, 0*, 1999/05/10–1999/05/11]

844 Los Molinos

T. Gallardo, Departamento de Astronomia, Facultad de Ciencias, Montevideo,

Uruguay [gallardo@fisica.edu.uy]

Observers R. Salvo, E. Acosta, J. C. Tulic

Measurer J. Ferreira

0.35-m $f/6.4$ reflector + CCD

USNO-A2.0

(1362), 4, 1, 0; (1685), 3, 1, 0; (1980), 3, 1, 0; (3581), 3, 1, 0; (6489), 2, 1, 0; [15, 5, 0*, 1999/05/09–1999/06/08]

859 Serra da Piedade

C. Jacques, P.O. Box 1084, Belo Horizonte, Minas Gerais, BR-30000 Brazil

[cjacques@unix.horizontes.com.br]

Observers C. Jacques, J. Amancio, A. Campos, L. Duczmal, E. Pimentel,

C. Villaca

Measurer C. Jacques

0.30-m $f/3.3$ reflector + CCD

GSC

1999 FE₂₁, 4, 1, 0; 1999 FN₅₃, 4, 1, 0; 1999 GG₁₁, 3, 1, 0; 1999 LF₆, 3, 1, 0; 1999 LO₂₈, 3, 1, 0; [17, 5, 0*, 1999/04/11–1999/06/20]

860 Valinhos

P. R. Holvorcem, Departamento de Matematica/IMECC, Universidade Estadual de

Campiñas SP, BR-13081-970, Brazil [canis@mpc.com.br]

Measurers P. R. Holvorcem, M. Breganhola

0.20-m $f/3.3$ reflector + CCD

GSC

1998 QS₅₂, 3, 1, 0; 1999 FU₂₈, 3, 1, 0; 1999 GK₄, 6, 2, 36; 1999 HW₂, 2, 1, 0; 1999 HX₂, 5, 2, 3; 1999 JE₁, 3, 1, 0; 1999 JU₃, 2, 1, 0; 1999 JV₃, 3, 1, 0; 1999 JW₃, 3, 1, 0; 1999 JD₆, 2, 1, 0; 1999 JO₆, 3, 1, 0; 1999 JT₆, 3, 1, 0; 1999 JW₆, 3, 1, 0; 1999 JM₈, 4, 1, 0; 1999 JO₈, 6, 2, 5; 1999 JG₂₉, 3, 1, 0; 1999 JK₇₅, 7, 2, 2; 1999 KT₄, 4, 1, 0; 1999 KU₄, 6, 2, 19; 1999 KQ₆, 3, 1, 0; 1999 LT₇, 3, 1, 0; 9530 P-L, 3, 1, 0; 3122 T-2, 5, 2, 3; (3792), 3, 1, 0; (7551), 4, 1, 0; (8484), 2, 1, 0; [94, 26, 0*, 1999/05/04–1999/06/10]

886 Susono

M. Akiyama, 1655-23, Chabatake, Susono, Shizuoka-Ken, 410-11 Japan

0.25-m $f/6.3$ reflector + CCD

GSC

1997 WK₇, 2, 1, 0; 1998 FN₁₁, 2, 1, 0; 1999 GC₆, 2, 1, 0; 1999 GE₆, 2, 1, 0; 1999 JS₂ *, 4, 2, 1; 1999 JH₃, 2, 1, 0; 1999 JE₆, 2, 1, 0; [16, 7, 1*, 1999/04/25–1999/05/20]

888 Gekko Observatory

T. Kagawa, 1308-222, Kuwahara, Kannami-cho, Tagata-gun, Shizuoka-Ken, 419-

010, Japan

0.50-m $f/4.0$ reflector + CCD

GSC-1.1

1988 VQ₃, 4, 2, 8; 1989 WJ, 2, 1, 0; 1991 FY, 2, 1, 0; 1995 UK₃, 2, 1, 0; 1995 WV₅, 2, 1, 0; 1995 YK₂₀, 3, 1, 0; 1996 RF₅, 4, 2, 13; 1996 UR, 2, 2, 1; 1996 UU, 2, 1, 0; 1996 VA₅, 4, 2, 23; 1997 XM₅, 5, 2, 5; 1997 XB₁₀, 1, 1, 0; 1997 YB₁₀, 1, 1, 0; 1998 FN₁₁, 2, 1, 0; 1999 DV, 2, 1, 0; 1999 DS₃, 2, 1, 0; 1999 GB₂, 2, 1, 0; 1999 GB₅, 2, 1, 0; 1999 GC₅, 2, 1, 0; 1999 GD₅, 2, 1, 0;

1999 GP₅, 2, 1, 0; 1999 GQ₅, 2, 1, 0; 1999 GC₆, 3, 2, 14; 1999 GS₉, 2, 1, 0; 1999 GA₃₄, 1, 1, 0; 1999 HC₃, 4, 2, 34; 1999 HH₃, 4, 2, 14; 1999 JN *, 8, 4, 11; 1999 JJ₃, 2, 1, 0; 1999 JR₃, 7, 2, 1; 1999 JZ₅, 2, 1, 0; 1999 JE₆, 3, 1, 0; 1999 JF₆, 7, 3, 22; 1999 JG₆, 5, 2, 7; 1999 KY₁₄, 5, 2, 2; 1999 LY₁, 3, 1, 0; 1999 LZ₁, 3, 1, 0; 1999 LA₂, 7, 3, 5; [118, 38, 1*, 1998/08/23–1999/06/14]

897 YGCO Chiyoda Station

T. Kojima, 45 Shimonakamori, Chiyoda, Ohra-Gun, Gunma-Ken, 370-0724 Japan

[kojitaku@sannet.ne.jp]

0.25-m $f/6.0$ reflector + CCD

GSC

1998 FX₂, 5, 2, 4; 1998 FM₅, 3, 1, 0; (6663), 6, 2, 10; [14, 3, 0*, 1998/03/27–1998/07/27]

900 Moriyama

Y. Ikari, Katube-Cho 626, Moriyama, Shiga-Ken 524, Japan

[ikari@gold.ocn.ne.jp]

0.25-m $f/6.3$ Schmidt-Cassegrain + CCD

GSC

1996 VV, 2, 1, 0; 1999 GK₄, 2, 1, 0; 1999 HF₁, 8, 4, 32; 1999 HX₂, 4, 2, 12; 1999 JV₃, 2, 1, 0; 1999 JD₆, 2, 1, 0; 1999 JO₈, 4, 2, 12; 1999 KW₄, 2, 1, 0; (6489), 2, 1, 0; [28, 9, 0*, 1999/04/20–1999/05/29]

903 Fukuchiyama

M. Yoshimi, Osas 185-4-101, Fukuchiyama, Kyoto 620-0845, Japan

[myoshimi@silver.ocn.ne.jp]

Observer M. Yoshimi

0.25-m $f/6.3$ Schmidt-Cassegrain + CCD

GSC

1999 JT₃, 3, 1, 0; 1999 JV₃, 6, 2, 2; 1999 JM₈, 5, 2, 1; (6489), 3, 1, 0; [17, 4, 0*, 1999/05/11–1999/05/17]

905 Nachi-Katsuura Observatory

T. Urata, 1-8, Dobayashi 1 Chome, Shimizu, Shizuoka-Ken 424, Japan

[urata@sannet.ne.jp]

Observer Y. Shimizu

Measurer T. Urata

0.40-m $f/3.3$ Baker-Schmidt

GSC

1994 DF, 2, 1, 0; 1997 QH₁, 2, 1, 0; 1998 KZ₄₇, 2, 1, 0; 1999 GE₆, 2, 1, 0; 1999 GS₉, 6, 3, 1351; 1999 GC₁₃, 2, 1, 0; 1999 HH₃, 2, 1, 0; 1999 JG₃ *, 2, 1, 0; 1999 JH₃ *, 2, 1, 0; 1999 JJ₃ *, 2, 1, 0; 1999 JZ₅ *, 2, 1, 0; 1999 JE₆ *, 4, 2, 1; 1999 JF₆ *, 4, 2, 1; 1999 JG₆ *, 2, 1, 0; 1999 JT₆, 2, 1, 0; 1999 LY₁ *, 2, 1, 0; 1999 LZ₁ *, 2, 1, 0; 1999 LA₂ *, 2, 1, 0; [44, 18, 10*, 1994/11/09–1999/06/05]

910 Caussols-ODAS

A. Maury, Observatoire de la Côte d'Azur, B.P. 229, F-06304 Nice, France

[maury@obs-azur.fr]

G. Hahn, DLR Institute of Planetary Exploration, Rudower Chaussee 5, D-12489

Berlin, Germany [Gerhard.Hahn@DLR.de]

Observers A. Maury, D. Albanese, G. Hahn, M. Hoffmann

Measurers A. Maury, G. Hahn

0.90-m Schmidt + CCD

GSC

1979 MS₅, 3, 1, 0; 1981 EH₈, 3, 1, 0; 1981 EN₃₁, 3, 1, 0; 1986 QR₅, 3, 1, 0; 1991 RA₁₃, 3, 1, 0; 1992 AS₂, 3, 1, 0; 1992 EW₅, 3, 1, 0; 1993 FF₂₅, 3, 1, 0; 1993 TF₁₈, 3, 1, 0; 1995 EN₅, 3, 1, 0; 1996 BV₁, 3, 1, 0; 1996 YX₂, 3, 1, 0; 1997 FA₅, 3, 1, 0; 1997 WD₄₉, 3, 1, 0; 1997 WP₅₁, 3, 1, 0; 1998 CU₄, 3, 1, 0; 1998 QX₃₇, 3, 1, 0; 1998 QS₄₅, 3, 1, 0; 1998 TX₁₇, 3, 1, 0; 1998 TD₁₈, 3, 1, 0; 1998 XR₂₈, 3, 1, 0; 1998 XV₇₇, 3, 1, 0; 1998 XE₉₇, 3, 1, 0; 1998 YN, 3, 1, 0; 1999 AC₂₂, 3, 1, 0; 1999 CG₂₁, 3, 1, 0; 1999 CT₂₉, 3, 1, 0; 1999 CR₃₅, 3, 1, 0; 1999 CF₁₀₆, 3, 1, 0; 1999 FE₁₀, 3, 1, 0; 1999 FZ₃₀, 3, 1, 0; 1999 FT₃₁, 3, 1, 0; 1999 FX₃₂, 3, 1, 0; 1999 GQ₁₅, 6, 2, 528; 1999 GA₂₀,

3, 1, 0; 1999 GO₂₂, 3, 1, 0; 1999 GQ₃₁, 3, 1, 0; 1999 GM₃₆, 3, 1, 0; 1999 HO, 3, 1, 0; 1999 HY₇, 3, 1, 0; 1999 JJ₁, 3, 1, 0; 1999 JM₅₀, 3, 1, 0; 1999 JO₅₅, 3, 1, 0; 1999 JV₅₆, 3, 1, 0; 1999 JN₅₉, 3, 1, 0; 1999 JX₆₀, 3, 1, 0; 1999 JN₇₇, 3, 1, 0; 1999 JP₈₃, 3, 1, 0; 1999 KN₁₄, 3, 1, 0; 2627 P-L, 3, 1, 0; 4175 P-L, 3, 1, 0; 4214 P-L, 3, 1, 0; 4259 P-L, 3, 1, 0; 6232 P-L, 3, 1, 0; 6653 P-L, 3, 1, 0; 2058 T-2, 3, 1, 0; [171, 56, 0*, 1996/10/19–1999/03/24]

946 Ametlla de Mar

J. Nomen, Rio de Oro 25, bjos2, 08034 Barcelona, Spain

[jnamen@astro.gea.cesca.es]

0.30-m $f/5.0$ reflector + CCD

USNO-SA2.0, USNO-SA1.0

1976 UB₁, 4, 2, 9; 1999 JO₁₄ *, 21, 8, 35; (2935), 2, 1, 0; (3246), 2, 1, 0; (3561), 2, 1, 0; (5140), 2, 1, 0; (6665), 6, 2, 3; [39, 7, 1*, 1999/05/14–1999/06/18]

950 La Palma

M. J. Holman, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138, U.S.A. [mholman@cfa.harvard.edu] (1)

K. Muinonen, University of Helsinki Observatory, P.O. Box 14, FIN-00014, Finland [muinonen@cc.helsinki.fi] (2)

A. Fitzsimmons, Physics Department, Queen's University, Belfast BT7 1NN, Northern Ireland [a.fitzsimmons@queens-belfast.ac.uk] (3)

Observers K. Aksnes (1), T. Grav (1), M. J. Holman (1), B. Gladman (1), O. Lopez-Cruz (1), H. Dahle (1), J. Virtanen (2), H. Korhonen (2), S. Keränen (2), H. Karttunen (2), J. Piironen (2), M. Andersen (2), S. Collander-Brown (3), S. Lowry (3)

Measurers M. J. Holman (1), J. Virtanen (2), J. Piironen (2), K. Muinonen (2), M. Carpino (2), A. Fitzsimmons (3)

2.5-m Nordic Optical Telescope + CCD

GSC, USNO-A2.0

(1) 1998 HH₁₅₁, 3, 1, 0; 1998 YK₃₀ *, 5, 2, 1; 1998 YL₃₀ *, 4, 2, 1; 1999 HR₁₁, 3, 1, 0; 1999 HS₁₁, 3, 1, 0; 1999 HT₁₁, 2, 1, 0; 1999 HU₁₁, 2, 1, 0; 1999 HV₁₁, 6, 2, 1; 1999 HW₁₁, 3, 1, 0; 1999 HX₁₁, 5, 2, 1; 1999 HY₁₁, 3, 1, 0; 1999 HZ₁₁, 3, 1, 0; 1999 HA₁₂, 3, 1, 0; 1999 HB₁₂, 3, 1, 0; 1999 HC₁₂, 3, 1, 0; 1999 HD₁₂, 3, 1, 0; 1999 JA₃ *, 5, 2, 1; 1999 JB₃ *, 5, 2, 1; [64, 18, 4*, 1998/12/17–1999/05/07]

(2) 1999 AN₁₀, 5, 2, 1; [5, 1, 0*, 1999/05/26–1999/05/27]

(3) 1999 LM₂₈, 2, 1, 0; 1999 LP₂₈, 3, 1, 0; [5, 2, 0*, 1999/06/15]

952 Marxuquera

J. J. Gómez D., Cardenal Cisneros 55-4-8, E-46700 Gandia, Spain

[astsafor@arrakis.es]

0.25-m $f/6.3$ Schmidt-Cassegrain + CCD

GSC, USNO-SA2.0

1980 KK, 3, 1, 0; 1992 UT₁, 3, 1, 0; 1992 UL₄, 2, 1, 0; 1995 FT, 3, 1, 0; 1999 GK₄, 3, 1, 0; 1999 JD₆, 4, 1, 0; 1999 KU₄, 5, 1, 0; (6489), 5, 1, 0; [28, 8, 0*, 1999/05/14–1999/05/23]

ORBITAL ELEMENTS

Orbital elements have been computed by the following contributors:

C. M. Bardwell, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138, U.S.A. [cbardwell@cfa.harvard.edu]

E. Bowell, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff, AZ 86001, U.S.A. [elgb@lowell.edu]

A. Doppler, c/o Archenhold-Sternwarte, Alt-Treptow 1, D-12435 Berlin, Germany [doppler@mind.de]

A. Gnädig, c/o Archenhold-Sternwarte, Alt-Treptow 1, D-12435 Berlin, Germany [gnadig@mind.de]

E. Goffin, Agfa-Gevaert N.V., Mortsel, Belgium [goffin@twi.agfa.be]

D. W. E. Green, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138, U.S.A. [dgreen@cfa.harvard.edu]

T. Kobayashi, 1717-2 Shimo-Koizumi, Oizumi-machi, Ora-gun, Gunma-ken, 370-0515 Japan [kobataka@sannet.ne.jp]

B. G. Marsden, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138, U.S.A. [bmarsden@cfa.harvard.edu]

K. Muraoka, Nakashima 1207-2, B-101, Okatoyo-Cho, Nangoku, Kochi-Ken 783, Japan

S. Nakano, 3-19, 1 chome, Takenokuchi, Sumoto, Hyogo-ken 656, Japan [snakano@cfa.harvard.edu]

P. Sicoli, Via Valli 9, I-23846 Garbagnate Monastero (Lecco), Italy [sormano@tin.it]

T. Urata, 1-8, Dobayashi 1 Chome, Shimizu, Shizuoka-Ken, 424 Japan [urata@sannet.ne.jp]

G. V. Williams, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138, U.S.A. [gwilliams@cfa.harvard.edu]

C/1996 O1 (SOHO)

T 1996 July 22.18 TT				Marsden	
q				P	Q
0.0061		(2000.0)			
	ω	70.53		+0.22329	−0.97126
	Ω	351.95		−0.95605	−0.20174
e 1.0	i	143.96		+0.19002	+0.12630
From 8 observations 1996 July 21.					

C/1998 M1 (LINEAR)

Epoch 1998 Nov. 3.0 TT = JDT 2451120.5

T 1998 Oct. 28.1209 TT				Nakano	
q				P	Q
3.118114		(2000.0)			
z +0.002340	ω	19.4055		+0.0751821	+0.9381108
±0.000015	Ω	256.0676		−0.9547381	−0.0301284
e 0.992702	i	20.3849		−0.2877896	+0.3450224
From 147 observations 1998 May 22–1999 May 20, mean residual 0".7.					

C/1998 M3 (Larsen)

Epoch 1998 July 6.0 TT = JDT 2451000.5

T 1998 July 17.0893 TT				Nakano	
q				P	Q
5.768189		(2000.0)			
z −0.000383	ω	20.8356		−0.3704924	−0.2707855
±0.000005	Ω	255.5255		−0.9276730	+0.0600325
e 1.002209	i	113.4203		−0.0464561	+0.9607660
From 104 observations 1998 May 26–1999 June 14, mean residual 0".7.					

C/1998 M5 (LINEAR)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5

T 1999 Jan. 24.5714 TT				Nakano	
q				P	Q
1.742279		(2000.0)			
z +0.002275	ω	101.2846		−0.1155124	−0.8885469
±0.000001	Ω	333.3768		−0.1972904	+0.4586159
e 0.996037	i	82.2289		+0.9735160	−0.0124884
From 1039 observations 1998 June 30–1999 June 8, mean residual 0".7.					

M.P.C. 34734**1999 JUNE 22****P/1999 DN₃ (Korlević-Jurić)**

Epoch 1998 Sept. 24.0 TT = JDT 2451080.5

<i>T</i>	1998 Sept. 30.8693 TT		Nakano	
<i>q</i>	3.908471	(2000.0)	P	Q
<i>n</i>	0.1025981	ω 161.3096	−0.9736401	−0.2256457
<i>a</i>	4.519008	Ω 5.9552	+0.1458660	−0.7282257
<i>e</i>	0.135104	<i>i</i> 18.7223	+0.1753515	−0.6471254
<i>P</i>	9.61			

From 37 observations 1999 Feb. 18–June 14, mean residual 0^{''}6.**D/1999 E1 (Li)**

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5

<i>T</i>	1999 Jan. 31.5890 TT		Nakano	
<i>q</i>	3.919848	(2000.0)	P	Q
<i>n</i>	0.0149615	ω 329.7392	−0.2577615	−0.7753169
<i>a</i>	16.311214	Ω 127.8321	+0.9660435	−0.2178315
<i>e</i>	0.759684	<i>i</i> 46.8881	+0.0178602	+0.5928179
<i>P</i>	65.9			

From 147 observations 1999 Jan. 22–May 20, mean residual 0^{''}6.**C/1999 F1 (Catalina)**

Epoch 2002 Feb. 15.0 TT = JDT 2452320.5

<i>T</i>	2002 Feb. 13.6991 TT		Marsden	
<i>q</i>	5.780114	(2000.0)	P	Q
<i>z</i>	+0.000223	ω 255.2383	−0.2508945	+0.9055818
	±0.000095	Ω 20.0122	+0.3333316	+0.4125296
<i>e</i>	0.998708	<i>i</i> 91.9879	−0.9088135	−0.0986961

From 58 observations 1999 Mar. 13–June 14, mean residual 0^{''}7.**C/1999 F2 (Dalcanton)**

Epoch 1998 Aug. 15.0 TT = JDT 2451040.5

<i>T</i>	1998 Aug. 23.9905 TT		Nakano	
<i>q</i>	4.718792	(2000.0)	P	Q
<i>z</i>	+0.000300	ω 352.3937	−0.8927639	+0.1622690
	±0.000005	Ω 210.2961	−0.3569085	−0.8240324
<i>e</i>	0.998586	<i>i</i> 56.4214	−0.2749343	+0.5428069

From 52 observations 1998 June 18–1999 June 14, mean residual 0^{''}7.**D/1999 G1 (LINEAR)**

Epoch 1998 Aug. 15.0 TT = JDT 2451040.5

<i>T</i>	1998 July 31.9997 TT		Marsden	
<i>q</i>	4.040763	(2000.0)	P	Q
<i>n</i>	0.0074130	ω 136.0280	−0.7255377	−0.5689215
<i>a</i>	26.050042	Ω 23.4856	−0.3932192	−0.1190276
<i>e</i>	0.844885	<i>i</i> 76.3118	+0.5647776	−0.8137326
<i>P</i>	133			

From 42 observations 1999 Apr. 8–May 13, mean residual 0^{''}9.**C/1999 H1 (Lee)**

Epoch 1999 July 11.1652 TT

<i>T</i>	1999 July 11.1652 TT		Nakano	
<i>q</i>	0.708293	(2000.0)	P	Q
		ω 40.6747	−0.5566089	+0.8167393
		Ω 162.6432	+0.5664697	+0.2392256
<i>e</i>	1.0	<i>i</i> 149.3540	+0.6076995	+0.5250790

From 314 observations 1999 Apr. 16–June 19.

C/1999 H3 (LINEAR)*T* 1999 Aug. 18.3649 TT

<i>q</i>	3.500033	(2000.0)	Nakano	
		ω 101.9328	P	Q
		Ω 332.7238	−0.3792304	−0.8282953
<i>e</i>	1.0	<i>i</i> 115.8439	−0.6111168	+0.5588984
			+0.6947810	+0.0394908

From 182 observations 1999 Apr. 22–June 17.

C/1999 J1 (SOHO)*T* 1999 May 8.50 TT

<i>q</i>	0.0062	(2000.0)	Marsden	
		ω 83.51	P	Q
		Ω 7.70	+0.21787	−0.97259
<i>e</i>	1.0	<i>i</i> 142.66	−0.94407	−0.23113
			+0.24750	−0.02548

From 13 observations 1999 May 7–8.

C/1999 J2 (Skiff)*T* 2000 Apr. 3.9262 TT

<i>q</i>	7.115993	(2000.0)	Nakano	
		ω 126.9687	P	Q
		Ω 50.0203	−0.4246572	−0.4845486
<i>e</i>	1.0	<i>i</i> 86.4169	−0.7105472	−0.3451126
			+0.5610605	−0.8038096

From 219 observations 1999 May 12–June 15.

C/1999 J3 (LINEAR)*T* 1999 Sept. 20.1817 TT

<i>q</i>	0.978223	(2000.0)	Nakano	
		ω 161.9158	P	Q
		Ω 229.0095	+0.5761330	+0.3487632
<i>e</i>	1.0	<i>i</i> 101.6711	+0.5751897	+0.4695537
			+0.5807130	−0.8111002

From 47 observations 1999 May 12–June 9.

C/1999 J4 (LINEAR)*T* 1999 Nov. 17.6088 TT

<i>q</i>	3.780400	(2000.0)	Nakano	
		ω 95.1591	P	Q
		Ω 264.4841	−0.4706166	+0.1390039
<i>e</i>	1.0	<i>i</i> 118.9108	−0.2222104	+0.9370113
			+0.8538985	+0.3204494

From 39 observations 1999 May 15–June 11.

P/1999 J5 (LINEAR)*T* 1999 May 11.5838 TT

<i>q</i>	3.712944	(2000.0)	Marsden	
<i>n</i>	0.1042548	ω 132.1023	P	Q
<i>a</i>	4.471008	Ω 112.0147	−0.4169154	+0.8819572
<i>e</i>	0.169551	<i>i</i> 13.7177	−0.8881549	−0.3438479
<i>P</i>	9.45		−0.1932936	−0.3223664

From 54 observations 1999 May 12–June 15.

1999 JUNE 22

M.P.C. 34735

C/1999 K1 (SOHO)

<i>T</i>	1999 May 21.37 TT		Marsden	
<i>q</i>	0.0051	(2000.0)	P	Q
	ω	83.51	+0.18924	−0.98030
	Ω	5.49	−0.95568	−0.19711
<i>e</i>	1.0	<i>i</i> 143.78	+0.22553	−0.01266
From 40 observations 1999 May 20–21.				

C/1999 K2 (Ferris)

Epoch 1999 Apr. 12.0 TT = JDT 2451280.5				
<i>T</i>	1999 Apr. 7.1842 TT		Marsden	
<i>q</i>	5.285048	(2000.0)	P	Q
<i>z</i>	+0.007046	ω 4.1884	+0.5118156	+0.0811384
	± 0.000000	Ω 300.2997	−0.8141827	−0.2718619
<i>e</i>	0.962761	<i>i</i> 82.1246	−0.2741375	+0.9589096
From 44 observations 1999 May 19–June 14, mean residual 0″.6.				

C/1999 K3 (LINEAR)

<i>T</i>	1999 Feb. 27.9422 TT		Nakano	
<i>q</i>	1.931969	(2000.0)	P	Q
	ω	341.3575	−0.0369848	−0.0558908
	Ω	266.9670	−0.7417185	−0.6675650
<i>e</i>	1.0	<i>i</i> 92.3609	−0.6696908	+0.7424508
From 38 observations 1999 May 20–June 14.				

C/1999 K4 (LINEAR)

<i>T</i>	1999 May 16.338 TT		Marsden	
<i>q</i>	1.44831	(2000.0)	P	Q
	ω	8.833	−0.539641	−0.378920
	Ω	241.637	−0.815171	+0.011965
<i>e</i>	1.0	<i>i</i> 121.310	−0.210435	+0.925352
From 17 observations 1999 May 17–22.				

C/1999 K5 (LINEAR)

<i>T</i>	2000 July 4.6557 TT		Nakano	
<i>q</i>	3.259466	(2000.0)	P	Q
	ω	241.4295	+0.1428573	−0.2433089
	Ω	106.3797	−0.0694892	+0.9644552
<i>e</i>	1.0	<i>i</i> 89.4565	−0.9873009	−0.1030868
From 80 observations 1999 May 20–June 14.				

C/1999 K6 (LINEAR)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5				
<i>T</i>	1999 July 24.6257 TT		Marsden	
<i>q</i>	2.246946	(2000.0)	P	Q
<i>z</i>	+0.003004	ω 56.7447	+0.2962382	+0.6926588
	± 0.000211	Ω 245.3687	−0.9187435	+0.3948497
<i>e</i>	0.993251	<i>i</i> 46.3401	+0.2610620	+0.6035872
From 67 observations 1999 May 20–June 17, mean residual 0″.7.				

C/1999 K7 (LINEAR)

<i>T</i>	1999 Feb. 24.9847 TT		Nakano	
<i>q</i>	2.323869	(2000.0)	P	Q
	ω	104.7070	+0.3657404	−0.7562854
	Ω	50.3085	−0.8524355	−0.5061672
<i>e</i>	1.0	<i>i</i> 135.1736	+0.3736144	−0.4145204
From 34 observations 1999 May 24–June 11.				

C/1999 K8 (LINEAR)

<i>T</i>	2000 Apr. 26.6746 TT		Nakano	
<i>q</i>	4.169588	(2000.0)	P	Q
	ω	165.4164	+0.9738691	+0.0898034
	Ω	195.1809	+0.0179530	+0.8851861
<i>e</i>	1.0	<i>i</i> 52.8058	+0.2263992	−0.4564877
From 43 observations 1999 May 26–June 14.				

C/1999 K9 (SOHO)

<i>T</i>	1999 May 24.48 TT		Marsden	
<i>q</i>	0.0065	(2000.0)	P	Q
	ω	84.91	+0.20414	−0.97487
	Ω	8.45	−0.94702	−0.21973
<i>e</i>	1.0	<i>i</i> 142.66	+0.24797	−0.03660
From 33 observations 1999 May 23–24.				

C/1999 K10 (SOHO)

<i>T</i>	1999 June 1.35 TT		Marsden	
<i>q</i>	0.0055	(2000.0)	P	Q
	ω	84.21	+0.17538	−0.98307
	Ω	5.29	−0.96262	−0.18251
<i>e</i>	1.0	<i>i</i> 144.89	+0.20641	−0.01591
From 30 observations 1999 May 31–June 1.				

C/1999 L1 (SOHO)

<i>T</i>	1999 June 5.90 TT		Marsden	
<i>q</i>	0.0053	(2000.0)	P	Q
	ω	80.66	+0.17756	−0.98405
	Ω	1.10	−0.95980	−0.17569
<i>e</i>	1.0	<i>i</i> 143.91	+0.21740	+0.02806
From 28 observations 1999 June 5.				

C/1999 L2 (LINEAR)

<i>T</i>	1999 Aug. 4.9242 TT		Nakano	
<i>q</i>	1.906435	(2000.0)	P	Q
	ω	178.7414	+0.0582835	+0.7186253
	Ω	94.2469	−0.9218867	+0.3050841
<i>e</i>	1.0	<i>i</i> 44.0160	−0.3830509	−0.6249011
From 63 observations 1999 June 11–20.				

C/1999 L3 (LINEAR)

<i>T</i>	1999 Dec. 31.192 TT		Nakano	
<i>q</i>	2.10336	(2000.0)	P	Q
	ω	348.816	−0.872601	+0.463283
	Ω	140.012	+0.464651	+0.689730
<i>e</i>	1.0	<i>i</i> 166.069	+0.150557	+0.556453
From 52 observations 1999 June 9–14.				

C/1999 L4 (SOHO)

<i>T</i>	1999 June 2.02 TT		Marsden	
<i>q</i>	0.0078	(2000.0)	P	Q
	ω	70.86	+0.18134	-0.97430
	Ω	348.49	-0.94239	-0.13332
<i>e</i>	1.0	<i>i</i> 137.95	+0.28111	+0.18158
From 10 observations 1999 June 1.				

37P/Forbes

Epoch 1999 May 22.0 TT = JDT 2451320.5

<i>T</i>	1999 May 4.1893 TT		Marsden	
<i>q</i>	1.446022	(2000.0)	P	Q
<i>n</i>	0.1608737	ω 310.7044	+0.2625891	+0.9633989
<i>a</i>	3.348210	Ω 334.3674	-0.8434278	+0.2020169
<i>e</i>	0.568121	<i>i</i> 7.1628	-0.4686966	+0.1762150
<i>P</i>	6.13			

From 114 observations 1980–1999, mean residual 0".8. Nongravitational parameters

$$A_1 = +0.41, A_2 = -0.0403.$$

(10667)* 1975 UA = 1993 DL₂

Discovered 1975 Oct. 28 by T. Gehrels at Palomar.

Id. T. Kobayashi (*MPC* 24099)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	207.39312	(2000.0)	Williams	
			P	Q
<i>n</i>	0.35808099	ω 205.44098	+0.36510990	-0.89895643
<i>a</i>	1.9640319	Ω 224.28470	+0.90237642	+0.40565880
<i>e</i>	0.0876816	<i>i</i> 20.28057	+0.22893570	-0.16528242
<i>P</i>	2.75	<i>H</i> 15.6	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1975 10 28	675	0.1–	0.4–	1997 10 22	704	0.2+	0.4–	1997 11 06	704	1.4–	1.2+
1975 10 29	675	0.3+	0.9+	1997 10 29	704	0.3+	0.9–	1997 11 06	704	1.9–	0.5+
1975 10 30	675	0.2–	0.0	1997 10 29	704	0.1+	0.2–	1999 05 17	704	0.0	0.5+
1993 02 26	413	1.9–	0.5–	1997 10 29	704	0.1–	0.5–	1999 05 17	704	0.4–	0.1–
1993 02 26	413	0.2+	0.1+	1997 10 29	704	0.6+	0.2–	1999 05 17	704	0.1–	0.1+
1993 03 01	413	0.0	0.0	1997 10 29	704	0.7+	0.4–	1999 05 17	704	0.1+	1.6+
1993 03 01	413	0.0	0.1–	1997 10 29	566	0.6+	0.2+	1999 05 17	704	0.1+	1.0+
1993 03 02	413	0.3+	0.5–	1997 10 29	566	0.6+	0.1–	1999 06 08	704	0.0	0.5–
1993 03 02	413	0.3+	0.5–	1997 10 29	566	0.3+	0.1+	1999 06 08	704	0.3+	0.7+
1993 03 03	413	0.6+	0.2+	1997 10 30	566	0.1+	0.0	1999 06 08	704	0.8+	0.2+
1993 03 03	413	0.6+	0.2+	1997 10 30	566	0.2+	0.1–	1999 06 08	704	0.5+	0.8–
1993 03 03	413	0.2+	1.0+	1997 10 30	566	0.2+	0.3+	1999 06 08	704	0.2–	0.1+
1993 03 03	413	0.0	1.0+	1997 11 01	367	0.9+	0.0	1999 06 14	704	(2.1–	6.7+)
1997 10 22	704	0.4+	0.1–	1997 11 01	367	0.5+	0.6–	1999 06 14	704	0.7–	0.1+
1997 10 22	704	1.3+	0.5–	1997 11 06	704	1.3–	1.7+	1999 06 14	704	0.6–	0.1–
1997 10 22	704	1.3+	0.0	1997 11 06	704	1.8–	1.3+	1999 06 14	704	0.5–	0.1–
1997 10 22	704	0.3–	0.1–	1997 11 06	704	1.3–	0.6+				

(10668)* 1976 UB₁ = 1952 HD₃ = 1990 FJ₅ = 1994 DR

Discovered 1976 Oct. 24 by R. M. West at the European Southern Observatory.

Id. K. Ichikawa (*MPC* 23510)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	68.56976	(2000.0)	Williams	
			P	Q
<i>n</i>	0.23181833	ω 31.05391	-0.99259897	+0.05836278
<i>a</i>	2.6244454	Ω 151.69646	-0.07946529	-0.97528213
<i>e</i>	0.1712383	<i>i</i> 12.97961	+0.09182895	-0.21311629
<i>P</i>	4.25	<i>H</i> 13.2	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1952 04 26	711	1.5+	1.6+	Y	1994 03 04	596	0.5–	1.6–	1999 05 15	704	0.1+	0.5–
1976 10 24	809	0.4–	0.5–		1994 03 04	596	0.2–	0.4+	1999 05 15	704	0.3+	0.8–
1976 10 24	809	0.8–	0.1–		1994 03 05	596	0.6+	0.6–	1999 05 15	704	1.9–	0.3+
1976 10 25	809	0.3–	0.1+		1994 03 05	596	1.4+	1.5+	1999 05 15	704	0.8–	1.1–
1976 10 31	809	1.7–	0.2–		1995 05 27	801	0.1+	0.2+	1999 05 17	704	0.1–	0.7–
1976 11 01	809	1.2–	0.0		1995 05 27	801	0.3+	0.3–	1999 05 17	704	0.5+	0.2+
1976 11 01	809	0.5–	0.1–		1995 06 28	801	0.5–	0.4+	1999 05 17	704	0.9–	0.9–
1976 11 02	809	0.0	1.0–		1995 06 28	801	0.6+	0.4+	1999 05 17	704	0.8–	0.5+
1976 11 02	809	1.3–	0.6+		1995 06 30	801	0.3+	0.7+	1999 05 17	704	0.8–	0.5–
1990 03 17	095	(2.6+	3.0–)		1995 08 15	689	0.1+	0.6+	1999 05 23	946	0.4+	0.1–
1990 03 17	095	(2.5+	1.8–)		1996 10 10	801	0.6+	1.0–	1999 05 23	946	0.6+	0.4–
1994 02 27	596	(3.1+	0.4–)		1996 10 15	801	0.4+	0.4+	1999 06 09	716	0.0	1.9+
1994 02 27	596	0.5–	0.2–		1996 10 15	801	0.2+	1.7–	1999 06 09	716	0.3+	1.2+
1994 02 27	596	0.5+	1.2–		1999 02 20	704	1.4–	0.3–	1999 06 14	704	0.1–	0.5–
1994 02 28	596	0.0	0.5–		1999 02 20	704	0.3–	0.7+	1999 06 14	704	0.2–	0.5–
1994 02 28	596	0.4+	0.8+		1999 02 20	704	0.2+	1.1–	1999 06 14	704	0.2+	0.8–
1994 02 28	596	(2.0+	2.8+)		1999 05 09	611	0.2+	0.3–	1999 06 14	704	0.4+	0.1–
1994 03 02	596	1.9+	1.4+		1999 05 09	611	0.3+	0.6+	1999 06 14	704	0.1–	1.3–
1994 03 02	596	(0.5–	2.3+)		1999 05 14	946	0.4+	0.3–				
1994 03 02	596	0.1–	1.1–		1999 05 14	946	0.3–	0.4–				

(10669)* 1977 FN = 1991 NN₁

Discovered 1977 Mar. 16 by H.-E. Schuster at the European Southern Observatory.

Id. T. Kobayashi (*MPC* 19012)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	340.68652	(2000.0)	Williams	
			P	Q
<i>n</i>	0.22535765	ω 354.09327	-0.15366057	+0.96475426
<i>a</i>	2.6743681	Ω 266.92962	-0.89760321	-0.22667931
<i>e</i>	0.1368246	<i>i</i> 12.35316	-0.41315482	+0.13366268
<i>P</i>	4.37	<i>H</i> 13.3	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1977 03 16	809	0.1–	0.3–	1996 10 01	684	0.0	0.1–	1999 05 06	704	1.4+	1.7+
1977 03 20	809	0.1+	0.1–	1996 11 11	689	0.2+	1.2+	1999 05 06	704	0.2+	0.5+
1977 03 21	809	0.2–	0.2–	1996 11 12	689	1.4–	0.7+	1999 05 06	704	1.1–	0.9–
1991 07 13	675	0.1–	0.2–	1999 03 22	704	0.4+	0.3–	1999 05 06	704	0.6–	1.8–
1991 07 13	675	0.4+	0.2+	1999 03 22	704	0.7–	0.5–	1999 06 09	704	0.1+	0.4–
1991 07 19	675	1.5–	0.4+	1999 04 20	704	0.4+	0.6+	1999 06 09	704	0.3+	0.3–
1991 07 19	675	1.3+	0.3–	1999 04 20	704	0.1–	0.8+	1999 06 09	704	0.3+	0.2–
1996 09 23	684	0.1+	0.1+	1999 04 20	704	0.5+	0.5+	1999 06 09	704	1.1–	0.5+
1996 09 23	684	0.1+	0.4–	1999 04 20	704	0.2+	0.8+	1999 06 09	704	0.7–	0.5+
1996 10 01	684	0.1+	0.1–	1999 04 20	704	0.2+	0.3+				
1996 10 01	684	0.2+	0.0	1999 05 06	704	1.0+	0.1–				

(10670)* 1977 PP₁ = 1991 RK₃₂

Discovered 1977 Aug. 14 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. T. B. Spahr (*MPC* 30648)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	270.76173	(2000.0)	Williams	
			P	Q
<i>n</i>	0.21626390	ω 164.35410	+0.99784941	-0.05894628
<i>a</i>	2.7488225	Ω 199.09479	+0.04669241	+0.94617620
<i>e</i>	0.1034882	<i>i</i> 5.02763	+0.04600402	+0.31823880
<i>P</i>	4.56	<i>H</i> 13.4	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1977 08 14	095	1.6+	2.2–	1998 03 04	704	(3.6–	0.1–)	1999 05 13	704	0.8–	0.5–
1977 08 21	095	0.7+	1.1–	1998 03 04	704	(3.7–	0.4+)	1999 05 13	704	0.0	1.4–
1977 09 09	095	1.5–	0.9+	1998 03 04	704	(3.1–	0.3–)	1999 05 18	704	0.3+	0.6–
1991 09 11	402	1.9+	1.1–	1998 03 04	704	(4.8–	0.7+)	1999 05 18	704	0.1–	0.3–
1991 09 11	402	0.7–	2.0–	1998 03 04	704	(7.5–	0.9+)	1999 05 18	704	0.2+	0.4–
1991 10 10	691	0.0	0.3–	1998 03 20	704	0.1+	0.7+	1999 05 18	704	0.7+	0.5–

1991 10 10	691	0.1+	0.2-	1998 03 20	704	0.3-	0.4+	1999 05 19	704	0.8+	0.2-
1991 10 10	691	0.2-	0.1-	1998 03 20	704	0.3-	0.3+	1999 05 19	704	0.4+	0.2-
1998 03 02	910	0.6+	0.4-	1998 03 20	704	0.3+	0.5+	1999 05 19	704	0.7+	0.6+
1998 03 02	910	0.4+	0.1-	1998 03 20	704	0.4+	0.8+	1999 05 19	704	0.3+	1.2-
1998 03 02	910	0.4+	0.3-	1998 03 24	566	0.5-	0.1-	1999 06 09	704	0.1+	0.2+
1998 03 02	910	0.5+	0.2-	1998 03 24	566	0.8-	0.7-	1999 06 09	704	0.4+	0.1-
1998 03 02	910	0.5+	0.3-	1998 03 24	566	0.5-	0.7-	1999 06 09	704	0.9-	0.1+
1998 03 02	910	0.7+	0.3-	1998 03 26	704	0.8+	1.0-	1999 06 09	704	0.1-	0.1+
1998 03 03	704	0.8-	0.4-	1998 03 26	704	0.4-	0.3+	1999 06 09	704	0.2+	0.4+
1998 03 03	704	0.4-	0.5-	1998 03 26	704	0.6+	0.2-	1999 06 15	704	0.6-	0.5+
1998 03 03	704	1.5-	0.7-	1999 05 10	704	0.8+	0.2+	1999 06 15	704	0.4-	0.8+
1998 03 03	704	1.4-	1.3-	1999 05 10	704	0.1+	0.5-	1999 06 15	704	0.6-	0.7+
1998 03 03	704	1.9-	1.9-	1999 05 10	704	0.7+	0.2+	1999 06 15	704	0.1-	0.8+
1998 03 03	910	1.3+	0.1+	1999 05 10	704	0.9-	0.7-	1999 06 15	704	0.0	1.7+
1998 03 03	910	1.1+	0.5+	1999 05 13	704	0.2-	0.8-				
1998 03 03	910	0.5-	0.2+	1999 05 13	704	0.3-	0.3+				

(10671)* 1977 RR₆ = 1976 JN₉ = 1981 UR₉

Discovered 1977 Sept. 11 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. T. Kobayashi (*MPC* 12123)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	274.19490			(2000.0)				P		Q	
<i>n</i>	0.25939569	ω	12.35139		+0.99025713	-0.13910918					
<i>a</i>	2.4349734	Ω	355.63025		+0.11971807	+0.87352288					
<i>e</i>	0.1730130	<i>i</i>	4.72827		+0.07112238	+0.46648303					
<i>P</i>	3.80	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	1				

Residuals in seconds of arc

1954 08 27	675	0.1+	0.4-	1998 02 19	699	0.4-	0.5-	1998 03 04	704	(2.7-	0.0)
1954 08 27	675	0.7+	0.0	1998 02 19	699	0.3+	0.2-	1998 03 04	704	(2.7-	0.9-)
1976 05 02	809	0.4+	0.2+	1998 02 19	699	0.6-	0.1-	1999 05 10	704	1.6+	0.1+
1977 09 11	095	0.5-	0.1+	1998 02 20	958	1.1+	0.4+	1999 05 10	704	0.9+	0.3+
1977 09 18	095	0.5+	1.1+	1998 02 20	958	0.6+	1.4-	1999 05 10	704	(2.1+	0.2+)
1977 09 21	095	1.2-	1.4+	1998 02 21	958	0.6+	0.0	1999 05 10	704	0.1+	0.4+
1981 10 28	095	(0.4-	8.3+)	1998 02 22	691	0.3-	0.1+	1999 05 10	704	0.1+	0.3+
1981 10 30	381	0.0	0.6-	1998 02 22	691	0.3-	0.0	1999 05 13	704	1.0+	0.4-
1981 10 30	381	0.4-	1.0-	1998 02 22	691	0.3-	0.0	1999 05 13	704	0.6-	0.6+
1991 04 08	809	(0.1-	2.5+)	1998 03 01	691	0.3-	0.2-	1999 05 13	704	0.1+	0.2-
1991 04 08	809	1.1-	1.0+	1998 03 01	691	0.2-	0.1-	1999 05 13	704	0.5-	1.8-
1991 04 08	809	1.2-	1.4+	1998 03 01	691	0.3-	0.0	1999 05 13	704	(1.8-	2.7-)
1991 04 10	809	1.1+	1.1-	1998 03 03	704	0.2+	0.0	1999 05 18	704	0.8+	0.4-
1991 04 10	809	0.7+	1.4-	1998 03 03	809	(1.7+	4.8+)	1999 05 18	704	0.8+	0.1-
1991 04 10	809	0.5-	0.0	1998 03 03	704	0.5+	0.1+	1999 05 18	704	(0.1+	2.6-)
1991 04 15	675	0.4-	0.2+	1998 03 03	809	(1.4+	4.3+)	1999 05 18	704	0.1+	0.0
1991 04 15	675	1.3+	0.4-	1998 03 03	809	(1.5+	5.2+)	1999 06 09	704	0.0	1.1+
1991 04 19	809	1.9-	1.1-	1998 03 03	704	0.1+	0.6+	1999 06 09	704	0.9-	0.3+
1991 04 19	809	1.5-	1.5-	1998 03 03	704	0.1-	0.3-	1999 06 09	704	0.3+	0.3+
1991 04 19	809	1.8-	1.3-	1998 03 03	704	0.9+	0.0	1999 06 09	704	0.5+	1.1+
1992 08 03	675	0.1-	1.3-	1998 03 04	809	(0.9-	2.3+)	1999 06 09	704	0.7-	0.3+
1992 08 03	675	1.1+	1.4-	1998 03 04	809	(1.1-	2.5+)	1999 06 15	704	0.1+	1.0+
1992 08 06	675	0.1+	0.9-	1998 03 04	809	(0.6-	2.9+)	1999 06 15	704	0.3+	0.9+
1992 08 06	675	0.0	0.8-	1998 03 04	704	(2.4-	0.6+)	1999 06 15	704	0.0	0.7+
1992 09 24	801	0.9+	0.9-	1998 03 04	704	(2.5-	0.0)	1999 06 15	704	0.0	0.3+
1992 09 24	801	0.1+	0.1-	1998 03 04	704	(2.3-	0.7-)	1999 06 15	704	0.4-	0.6+

(10672)* 1978 QE = 1975 BJ₁ = 1979 YF₁ = 1983 NM = 1983 PN₂
= 1995 WB_s

Discovered 1978 Aug. 31 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. T. Kobayashi (*MPC* 26557)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	326.57377			(2000.0)				P		Q	
<i>n</i>	0.18658046	ω	65.21701		+0.95125637	+0.17884244					
<i>a</i>	3.0331364	Ω	283.67290		-0.27687400	+0.85407987					
<i>e</i>	0.1129224	<i>i</i>	14.98571		+0.13583856	+0.48842906					
<i>P</i>	5.28	<i>H</i>	11.7	<i>G</i>	0.15	<i>U</i>	1				

Residuals in seconds of arc

1975 01 16	330	(5.2-	2.4-)	1995 11 29	411	0.1+	0.3-	1999 05 21	704	0.6-	0.8-
1975 01 17	330	(4.3+	1.9+)	1995 11 29	411	0.1+	0.2+	1999 05 21	704	1.9-	1.0+
1978 08 31	095	(3.2-	0.4-)	1995 11 30	411	0.8+	0.3+	1999 05 21	704	0.0	0.4-
1978 09 03	095	(2.9-	0.8-)	1995 11 30	411	0.1-	0.0	1999 05 21	704	(0.6-	2.1+)
1978 09 07	095	1.1-	1.6+	1995 12 01	411	0.1-	0.0	1999 06 09	703	0.1-	0.0
1979 12 17	095	(3.6+	2.7+)	1995 12 01	411	0.0	0.1+	1999 06 09	703	0.3+	0.1+
1983 07 10	688	0.2-	1.3-	1995 12 09	411	0.3-	0.5-	1999 06 09	703	0.1+	0.4+
1983 07 10	688	1.5+	0.4-	1995 12 09	411	0.2-	0.7-	1999 06 09	703	0.5+	0.4-
1983 08 04	808	0.0	1.1+	1998 04 30	732	0.5+	0.1-	1999 06 12	703	0.1-	0.5+
1983 08 04	808	0.2-	0.8-	1998 04 30	732	0.0	0.0	1999 06 12	703	0.3-	0.1-
1992 02 27	033	0.1-	0.9+	1998 05 01	732	0.0	0.6-	1999 06 12	703	0.4+	0.1-
1992 02 28	033	0.5+	1.0+	1998 05 01	732	0.2+	0.5-	1999 06 12	703	0.2+	0.3+
1992 02 28	033	0.3-	0.5+	1999 05 21	704	(1.3-	2.9-)				

(10673)* 1978 VU₅ = 1981 OL = 1996 PL₅

Discovered 1978 Nov. 7 by E. F. Helin and S. J. Bus at Palomar.

Id. G. V. Williams (*MPC* 27708)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	238.23086			(2000.0)				P		Q	
<i>n</i>	0.26150129	ω	169.21021		+0.99798412	-0.06281111					
<i>a</i>	2.4218849	Ω	194.40032		+0.05516942	+0.92934647					
<i>e</i>	0.0371190	<i>i</i>	2.09255		+0.03136928	+0.36382675					
<i>P</i>	3.77	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	2				

Residuals in seconds of arc

1978 11 05	675	0.1+	0.6-	1999 04 12	704	0.1-	0.4-	1999 04 18	704	(2.3-	0.7-)
1978 11 06	675	0.4+	0.8+	1999 04 12	704	0.4-	1.5-	1999 05 13	704	0.2+	0.9+
1978 11 07	675	1.8-	0.0	1999 04 12	704	0.3+	0.6-	1999 05 13	704	1.3+	1.9+
1978 11 08	675	0.3+	0.1+	1999 04 15	704	1.4+	1.6+	1999 05 13	704	0.0	1.0+
1978 11 29	675	0.2+	0.7-	1999 04 15	704	0.9-	1.7-	1999 05 13	704	0.6+	0.6+
1978 11 30	675	0.8+	0.5-	1999 04 15	704	1.9+	1.8-	1999 05 13	704	0.2+	0.5-
1981 07 30	033	0.1+	0.6+	1999 04 16	704	1.5+	0.9+	1999 05 14	704	(1.7-	2.3+)
1981 07 30	033	0.8-	1.5+	1999 04 16	704	0.9-	0.5+	1999 05 14	704	0.1-	0.4+
1996 08 10	566	0.4-	0.6-	1999 04 16	704	0.9-	1.6-	1999 05 14	704	1.4+	0.5+
1996 08 10	566	0.1-	0.2-	1999 04 16	704	1.4-	0.9+	1999 05 14	704	0.4-	0.8+
1996 08 10	566	0.1+	0.5-	1999 04 16	704	1.8-	0.4-	1999 05 14	704	0.7-	0.3+
1996 08 19	566	0.4+	0.6-	1999 04 18	704	0.4-	1.6-	1999 05 16	691	0.2-	0.0
1996 08 19	566	0.1+	0.8-	1999 04 18	704	0.3-	0.1+	1999 05 16	691	0.3-	0.3+
1996 08 19	566	0.6+	0.8-	1999 04 18	704	0.3-	0.2+	1999 05 16	691	0.2-	0.0
1999 04 12	704	0.4+	0.3-	1999 04 18	704	0.0	1.1-				

(10674)* 1978 VT₁₀ = 1977 LF = 1980 FC₂ = 1985 SO₆

Discovered 1978 Nov. 7 by E. F. Helin and S. J. Bus at Palomar.

Id. R. P. Binzel (*MPC* 15876), E. Bowell (*ibid.*), T. Kobayashi (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	306.28441			(2000.0)				P		Q	
<i>n</i>	0.26727216	ω	91.68252		+0.86436306	+0.50219858					
<i>a</i>	2.3868964	Ω	238.17269		-0.47266290	+0.79375095					
<i>e</i>	0.1301636	<i>i</i>	1.74980		-0.17165746	+0.34315597					
<i>P</i>	3.69	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	1				

Residuals in seconds of arc

1977 06 12	675	0.0	0.0	1985 09 22	095	1.0+	0.9+	1999 05 18	704	0.4-	0.3-
1977 06 12	675	(3.1-	0.3+)	1991 03 12	675	(3.0+	2.8-)	1999 05 18	704	0.3-	0.5-
1977 06 13	675	0.7-	0.1+	1991 03 12	675	0.8+	0.2+	1999 05 18	704	0.4+	0.1-
1977 06 13	675	0.6+	1.3+	1996 10 04	809	0.9+	1.7-	1999 05 18	704	0.0	0.6+

1978 11 05	675	(3.4− 0.6−)	1996 10 04	809	0.5− 1.5−	1999 05 19	704	0.2+ 0.6+
1978 11 06	675	0.2− 0.4+	1996 10 04	809	(0.3− 2.3−)	1999 05 19	704	0.1− 0.1+
1978 11 07	675	(3.7− 0.5+)	1996 10 05	809	0.8+ 1.0+	1999 05 19	704	0.5− 0.1+
1978 11 08	675	2.4− 0.1+	1996 10 05	809	0.3− 1.0+	1999 05 19	704	0.7− 0.2+
1978 11 29	675	0.7− 0.2−	1996 10 05	809	0.6− 0.2+	1999 05 19	704	0.1+ 0.2−
1978 11 30	675	1.5+ 1.4+	1999 05 10	704	1.1+ 0.6−	1999 06 05	691	1.0− 0.8+
1980 03 16	809	0.2+ 0.5+	1999 05 10	704	0.7+ 0.7−	1999 06 05	691	0.7+ 0.4+
1980 03 16	809	0.1− 0.5−	1999 05 10	704	0.9+ 0.9−	1999 06 05	691	0.7− 0.9+
1980 03 16	809	0.2− 0.1+	1999 05 10	704	(3.9+ 1.3−)	1999 06 15	704	0.0 0.1−
1980 03 16	809	0.7+ 1.0−	1999 05 13	704	0.5+ 0.4−	1999 06 15	704	0.4− 0.5+
1980 03 17	809	0.3+ 1.2+	1999 05 13	704	0.3− 0.1−	1999 06 15	704	0.3− 0.7−
1980 03 17	809	0.2− 0.4−	1999 05 13	704	0.1+ 0.2−	1999 06 15	704	0.4+ 0.5−
1980 03 17	809	0.3− 0.0	1999 05 13	704	0.1+ 1.4+	1999 06 15	704	0.4− 0.3−
1980 03 17	809	0.0 0.9−	1999 05 13	704	0.7− 0.4+			

(10675)* 1978 VE₁₅ = 1978 WB₁₅ = 1982 YY₄ = 1989 UB

Discovered 1978 Nov. 1 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Id. C. M. Bardwell (d, *MPC* 12671), K. Ichikawa (*MPC* 15405)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Bardwell

<i>M</i>	240.72750		(2000.0)		P		Q
<i>n</i>	0.26828852	ω	320.91525	+0.81776525	−0.57307733		
<i>a</i>	2.3808643	Ω	74.13014	+0.54098456	+0.73372739		
<i>e</i>	0.2067407	<i>i</i>	3.17733	+0.19645789	+0.36500205		
<i>P</i>	3.67	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1978 10 28	675	0.7− 0.4−	1989 11 02	372	(3.0+ 0.6−)	1998 02 22	566	0.2+ 0.5+
1978 10 29	675	0.5− 0.0	1989 11 20	399	0.9+ 0.8−	1998 02 22	566	0.8+ 0.3+
1978 11 01	095	2.2− 0.1+	1989 11 20	399	0.8+ 0.6−	1998 02 23	566	0.5+ 0.4+
1978 11 24	049	1.5+ 0.7−	1989 11 20	399	0.6− 1.4+	1998 02 23	566	0.6+ 0.3+
1978 11 24	049	2.0+ 0.3−	1989 11 25	399	0.1+ 0.6+	1998 02 23	566	0.4+ 0.4+
1982 12 24	095	0.8+ 0.0	1989 11 25	399	1.0+ 0.1−	1998 03 04	704	1.9− 0.5+
1989 10 20	403	0.1− 1.6−	Y 1989 11 25	399	1.4+ 0.7+	1998 03 04	704	1.2− 0.4−
1989 10 20	403	(5.3− 0.4−)Y	1989 12 03	399	1.1+ 1.0+	1998 03 04	704	1.4− 0.5−
1989 10 23	403	2.2− 0.9+	1989 12 03	399	2.1− 0.3−	1998 03 04	704	1.3− 0.1−
1989 10 23	403	1.8− 0.7+	1989 12 03	399	(3.4− 0.5−)	1998 03 04	704	1.7− 0.3−
1989 10 23	372	2.4− 1.2+	1993 12 12	596	1.0+ 0.4−	1999 05 18	704	0.3− 1.3−
1989 10 24	095	1.0+ 1.1−	1993 12 13	801	0.2+ 0.3−	1999 05 18	704	1.0− 0.3+
1989 10 24	095	(0.3+ 2.8−)	1993 12 13	801	0.1− 0.7+	1999 05 18	704	0.4− 0.7−
1989 10 26	403	(3.1− 0.6−)	1994 02 09	560	0.1− 0.3−	1999 05 18	704	0.8+ 0.1+
1989 10 26	403	0.3− 0.5+	1994 02 09	560	1.1+ 0.4−	1999 06 15	704	0.7+ 0.1+
1989 10 26	095	1.3+ 2.0+	1994 02 09	560	0.5+ 0.4−	1999 06 15	704	0.2+ 0.0
1989 10 26	095	1.6+ 2.5−	1998 02 19	699	0.2− 0.2+	1999 06 15	704	0.1− 1.0−
1989 10 31	372	1.1− 0.6−	1998 02 19	699	0.4+ 0.3−	1999 06 15	704	1.1+ 0.2−
1989 10 31	372	(6.2+ 0.9+)	1998 02 19	699	0.8+ 0.0	1999 06 15	704	0.1− 0.3+
1989 11 02	372	1.1+ 1.5−	1998 02 22	566	0.6+ 0.4+			

(10676)* 1979 MD₂ = 1976 SK₁₁ = 1990 SA₂₉ = 1990 UO₁₂

Discovered 1979 June 25 by E. F. Helin and S. J. Bus at Siding Spring.

Id. S. Nakano (*MPC* 20992), G. V. Williams (*MPC* 34481), A. Doppler (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	149.71004		(2000.0)		P		Q
<i>n</i>	0.28276842	ω	248.39519	+0.26577388	−0.96401432		
<i>a</i>	2.2988755	Ω	186.20227	+0.90487319	+0.25173884		
<i>e</i>	0.1805717	<i>i</i>	3.38259	+0.33251881	+0.08546311		
<i>P</i>	3.49	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1954 05 28	675	0.5− 0.6−	1997 10 10	886	1.1− 1.1+	1999 04 16	704	0.6+ 1.9+
1976 09 28	095	(4.3+ 0.5+)	1997 10 11	886	1.5− 0.4+	1999 04 16	704	0.9+ 1.6+
1979 06 23	413	1.4− 0.5−	1997 10 11	886	1.0− 0.9+	1999 04 16	704	0.3+ 1.0+
1979 06 24	413	1.4− 0.1+	1997 10 25	610	1.6+ 1.1+	1999 04 16	704	(5.9− 1.7−)
1979 06 25	413	(2.7− 0.0)	1997 10 25	610	1.5+ 0.8+	1999 04 19	704	0.3+ 1.3+
1979 06 29	413	1.1+ 0.8−	1997 10 25	610	1.3+ 0.3+	1999 04 19	704	0.2− 1.1+

1979 07 24	675	1.2+ 1.0−	1997 10 30	704	0.7− 0.0	1999 04 19	704	0.6+ 1.1+
1979 07 24	413	0.9+ 0.4−	1997 10 30	704	0.8− 0.0	1999 04 19	704	0.0 1.4+
1979 07 25	675	0.4+ 0.1−	1997 10 30	704	1.0− 0.8+	1999 04 19	704	0.7− 1.4+
1990 09 29	095	0.2+ 0.5+	1997 10 30	704	0.6− 0.3−	1999 05 08	703	1.1+ 0.1−
1990 10 23	095	(1.3− 2.3+)	1997 10 30	704	0.5− 1.0+	1999 05 08	703	0.1+ 1.0+
1993 07 23	675	0.9+ 0.4+	1997 11 08	610	(2.3+ 1.0−)	1999 05 08	703	0.0 0.2−
1993 07 23	675	(0.1+ 2.5−)	1997 11 08	610	1.9+ 1.1−	1999 05 08	703	0.5− 0.4+
1996 06 06	104	0.3− 0.8+	1997 11 08	610	1.4+ 1.3−	1999 05 12	704	0.5+ 1.9−
1996 06 06	104	1.8− 0.9+	1997 12 28	566	0.3− 0.2+	1999 05 12	704	1.3− 0.3−
1996 06 06	104	(2.5− 0.9+)	1997 12 28	566	0.3− 0.2+	1999 05 12	704	(1.8− 2.9−)
1997 10 01	124	0.4− 0.7+	1997 12 28	566	0.6− 0.1+	1999 05 12	704	(1.9− 2.2−)
1997 10 01	124	0.2+ 1.0+	1999 04 12	704	0.4− 0.7+	1999 05 13	704	(0.6+ 2.3−)
1997 10 01	124	0.2− 0.3+	1999 04 12	704	0.4− 0.4−	1999 05 13	704	0.5+ 1.4−
1997 10 02	124	0.1+ 1.1+	1999 04 12	704	0.6+ 0.4−	1999 05 13	704	0.7+ 0.9−
1997 10 02	124	1.0− 0.4+	1999 04 12	704	0.3+ 1.6+	1999 05 13	704	0.5+ 0.0
1997 10 10	886	1.8− 1.0+	1999 04 12	704	1.2+ 0.4+	1999 05 13	704	0.0 0.9+

(10677)* 1979 MN₃ = 1954 DH = 1980 XL₃ = 1993 PY₄

Discovered 1979 June 25 by E. F. Helin and S. J. Bus at Siding Spring.

Id. E. Bowell (*MPC* 22587), B. G. Marsden (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	97.56925		(2000.0)		P		Q
<i>n</i>	0.28738343	ω	266.13372	−0.78413178	−0.61994301		
<i>a</i>	2.2741978	Ω	235.55189	+0.58218957	−0.71897170		
<i>e</i>	0.0689697	<i>i</i>	1.97541	+0.21492478	−0.31424571		
<i>P</i>	3.43	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1954 02 26	675	0.3+ 0.8−	1997 10 30	704	1.5− 0.9+	1999 05 10	704	1.1+ 1.2+
1954 02 26	675	0.5− 1.5−	1997 11 06	704	0.8+ 1.3+	1999 05 10	704	0.3+ 1.2+
1979 06 23	413	0.5− 0.2−	1997 11 06	704	0.3− 0.5+	1999 05 10	704	0.7+ 0.3+
1979 06 24	413	1.7+ 0.8+	1997 11 06	704	0.5+ 0.8+	1999 05 10	704	0.0 0.6+
1979 06 25	413	0.8+ 0.3+	1997 11 06	704	0.0 0.2−	1999 05 13	704	0.5+ 0.6−
1979 06 29	413	1.9− 0.4−	1997 11 06	704	0.1+ 1.2+	1999 05 13	704	1.2+ 0.7+
1979 07 24	675	0.3+ 0.7−	1997 11 30	566	0.5− 1.2+	1999 05 13	704	0.5+ 0.9+
1979 07 24	413	1.4− 0.3−	1997 11 30	566	0.3− 1.2+	1999 05 13	704	0.3+ 0.2−
1979 07 25	675	1.5− 0.2−	1997 11 30	566	0.4− 1.5+	1999 05 13	704	0.3− 0.5−
1979 07 27	675	1.6+ 1.2−	1997 12 07	610	0.4− 1.1−	1999 05 14	704	(0.4− 2.1−)
1979 08 23	675	1.4− 0.4−	1997 12 07	610	0.5+ 1.4−	1999 05 14	704	0.1− 0.7−
1980 12 10	095	(1.9− 2.7+)	1997 12 07	610	(2.3+ 1.9−)	1999 05 14	704	1.2+ 0.5+
1993 08 15	010	(0.2+ 3.8−)	1999 04 14	699	1.1+ 0.1−	1999 05 14	704	0.8+ 0.4+
1993 08 15	010	(1.4− 4.3−)	1999 04 14	699	0.5+ 0.5+	1999 05 18	704	0.1+ 0.0
1993 08 16	010	(1.0− 3.4−)	1999 04 14	699	0.8+ 1.3+	1999 05 18	704	0.1+ 1.0−
1993 08 16	010	(0.7− 2.8−)	1999 04 15	704	0.6− 0.1−	1999 05 18	704	1.1+ 0.0
1993 08 16	010	(0.4+ 3.1−)	1999 04 15	704	0.5− 0.0	1999 05 18	704	0.8+ 0.5+
1993 08 19	010	0.8+ 0.9+	1999 04 15	704	0.3− 0.3−	1999 05 18	704	0.8+ 0.8+
1993 08 19	010	0.9+ 0.7+	1999 04 15	704	(2.7− 0.3+)	1999 05 19	704	0.4− 0.3+
1993 08 20	010	(1.4+ 2.1+)	1999 04 17	704	1.5− 0.2+	1999 05 19	704	0.6− 0.0
1997 10 26	411	1.1+ 1.9−	1999 04 17	704	1.0− 0.2−	1999 05 19	704	(1.4− 2.1−)
1997 10 26	411	0.9− 0.2+	1999 04 17	704	0.8− 0.2−	1999 05 19	704	0.5− 1.5−
1997 10 29	704	(2.0+ 1.1+)	1999 04 17	704	0.6− 0.6+	1999 05 19	704	1.2− 0.8+
1997 10 29	704	1.5+ 1.4+	1999 04 17	704	(2.3− 0.0)	1999 05 19	703	0.5+ 0.3+
1997 10 29	704	(1.4+ 2.2+)	1999 04 20	704	0.5− 0.2+	1999 05 19	703	0.0 0.4+
1997 10 29	704	0.3− 2.0+	1999 04 20	704	0.4− 0.1+	1999 05 19	703	0.5+ 0.6+
1997 10 30	704	1.0− 0.1+	1999 04 20	704	0.4− 0.1−	1999 05 19	703	0.3+ 0.7+
1997 10 30	704	1.4− 0.0	1999 04 20	704	1.1− 0.0			
1997 10 30	704	0.8− 0.0	1999 05 10	704	0.7+ 1.0+			

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	316.50484		(2000.0)	P	Q
n	0.28859815	ω	42.60968	+0.45827835	+0.88336446
a	2.2678119	Ω	254.88524	−0.84041297	+0.39470119
e	0.1364027	i	5.83966	−0.28928704	+0.25274137
P	3.42	H	14.9	G 0.15	U 2

Residuals in seconds of arc

1979 06 23	413	0.5+	0.6−	1999 03 20	704	(2.3+	0.3+)	1999 04 17	704	0.5−	0.2+
1979 06 24	413	0.2−	0.2−	1999 03 20	704	(0.1−	2.1−)	1999 04 17	704	0.1−	0.9+
1979 06 25	413	0.5+	0.1+	1999 03 23	704	0.8+	0.1+	1999 04 17	704	0.7−	1.2+
1979 06 29	413	0.7+	0.8+	1999 03 23	704	0.7+	0.2−	1999 04 17	704	0.4+	1.3+
1979 07 24	413	1.7−	1.5−	1999 03 23	704	0.2+	1.0+	1999 04 20	704	0.4+	0.4−
1979 07 26	675	1.5+	0.1−	1999 04 14	704	1.3−	0.0	1999 04 20	704	1.1+	0.5−
1979 07 28	413	0.3+	1.1+	1999 04 14	704	0.4−	0.1+	1999 04 20	704	0.3−	0.3−
1979 08 22	675	2.0−	0.8+	1999 04 14	704	0.2+	0.1+	1999 04 20	704	0.4−	0.2−
1989 07 01	675	0.5+	0.3−	1999 04 15	704	0.0	0.6−	1999 04 20	704	0.0	0.3−
1989 07 01	675	(0.8−	2.7+)	1999 04 15	704	0.6+	0.7−	1999 06 09	704	0.5−	0.1−
1993 10 14	675	0.4−	0.5−	1999 04 15	704	0.0	0.1−	1999 06 09	704	0.9−	0.8−
1993 10 14	675	0.3+	1.1+	1999 04 15	704	0.6−	0.2+	1999 06 09	704	1.0+	0.0
1999 03 20	704	(2.3+	0.3+)	1999 04 15	704	0.0	0.2−	1999 06 09	704	0.0	0.9+
1999 03 20	704	(2.9+	2.0−)	1999 04 17	704	0.1+	0.4−	1999 06 09	704	0.2−	0.2−

(10679)* 1979 MH₆ = 1988 FA₁

Discovered 1979 June 25 by E. F. Helin and S. J. Bus at Siding Spring.

Id. H. Kaneda (*MPC* 15701)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	127.60699		(2000.0)	P	Q
n	0.19000511	ω	3.27494	−0.55199860	−0.81654950
a	2.9965799	Ω	120.29483	+0.76052267	−0.57609826
e	0.0488558	i	11.28397	+0.34191053	−0.03684706
P	5.19	H	14.0	G 0.15	U 2

Residuals in seconds of arc

1979 06 24	413	2.4+	0.3+	1998 02 26	566	(2.5+	0.3−)	1999 06 08	704	0.1−	0.5−
1979 06 25	413	1.3+	0.8+	1998 02 26	566	1.9+	0.0	1999 06 08	704	0.6−	0.6−
1979 06 29	413	(4.1+	3.3+)	1998 03 04	704	0.4−	0.4+	1999 06 08	704	0.0	1.4+
1979 07 24	675	1.5−	0.0	1998 03 04	704	0.1−	0.0	1999 06 08	704	0.3+	0.8+
1979 07 25	675	2.0−	0.2+	1998 03 04	704	0.1+	0.3−	1999 06 14	704	0.5−	0.4+
1988 03 17	033	0.1−	0.9+	1998 03 04	704	1.1−	0.2+	1999 06 14	704	0.2+	0.1−
1988 03 18	033	0.4−	0.4+	1998 03 04	704	0.3−	0.1−	1999 06 14	704	0.1−	0.4−
1988 03 18	033	0.4+	0.2−	1999 05 17	704	0.6+	1.6−	1999 06 14	704	0.1−	0.3−
1988 03 19	033	0.4+	0.1−	1999 05 17	704	0.0	1.0+	1999 06 14	704	0.2−	0.1−
1998 02 26	566	(2.7+	0.1−)	1999 05 17	704	0.2+	0.9−				

(10680)* 1979 ME₈

Discovered 1979 June 25 by E. F. Helin and S. J. Bus at Siding Spring.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	123.07937		(2000.0)	P	Q
n	0.28637714	ω	281.76640	-0.42454683	-0.90526741
a	2.2795222	Ω	193.38919	$+0.85505606$	-0.39512353
e	0.1361671	i	3.92229	$+0.29772323$	-0.15610350
P	3.44	H	15.0	G 0.15	U 1

Residuals in seconds of arc

1978 03 15	675	1.6−	0.4+	1997 10 29	704	1.6−	0.5+	1999 05 10	704	1.3−	0.3+
1978 03 16	675	0.3−	0.6−	1997 10 29	704	0.0	0.1+	1999 05 10	704	0.2+	0.7+
1978 03 16	675	1.6+	1.3−	1997 10 29	704	0.3+	0.2−	1999 05 10	704	0.4+	1.2+
1979 06 24	413	0.6−	0.8−	1997 10 29	704	1.3+	0.4+	1999 05 10	704	0.1−	1.7+
1979 06 25	413	(3.6+	0.1−)	1997 10 29	704	0.6−	0.8+	1999 05 10	704	2.0−	0.9+
1979 06 29	413	0.2−	0.6+	1997 10 30	704	0.2+	0.2−	1999 05 13	704	0.5+	0.2−
1979 07 24	413	0.9−	1.6−	1997 10 30	704	0.8+	1.0−	1999 05 13	704	0.5−	0.6−
1979 07 26	675	2.3+	0.6+	1997 10 30	704	0.1+	0.9−	1999 05 13	704	0.2+	0.8−
1979 07 27	675	0.0	0.5+	1997 10 30	704	0.3−	1.5−	1999 05 13	704	0.5+	0.1−
1979 07 28	413	0.8+	0.2−	1997 10 30	704	0.7+	1.2−	1999 05 18	704	1.6+	0.2−

1979 08 23	675	1.4−	0.8−	1999 04 19	704	0.8−	0.6−	1999 05 18	704	0.2+	0.6+
1992 04 04	809	1.4+	1.1+	1999 04 19	704	0.8+	1.4−	1999 05 18	704	1.2+	0.6+
1992 04 04	809	0.4+	0.2+	1999 04 19	704	0.7−	1.0−	1999 05 18	704	1.0+	0.4+
1992 04 04	809	1.0+	1.0−	1999 04 19	704	(0.7−	2.6−)	1999 05 18	704	0.0	1.0+
1992 04 06	809	0.3−	0.7+	1999 04 19	704	(1.0+	2.7−)	1999 06 07	703	0.6+	0.8−
1992 04 06	809	0.2−	0.0	1999 04 20	704	0.7+	0.9−	1999 06 07	703	0.3+	0.1−
1992 04 06	809	0.1−	0.8−	1999 04 20	704	0.3−	0.2−	1999 06 07	703	0.9−	0.3−
1992 04 25	809	1.2−	0.9+	1999 04 20	704	0.6+	1.1−	1999 06 07	703	0.3+	0.6+
1992 04 25	809	0.9−	0.4−	1999 04 20	704	0.4−	0.9−				
1992 04 25	809	1.2−	1.0−	1999 04 20	704	1.3−	0.9−				

(10681)* 1979 TH₂ = 1979 WT = 1990 SK₂₇ = 1996 TC₃₆

Discovered 1979 Oct. 14 by N. S. Chernykh at the Crimean Astrophysical

Observatory.

Id. H. Oishi (d, *JAM* 1788), G. V. Williams (*MPC* 28293)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	154.80776		(2000.0)	P	Q
n	0.17603248	ω	49.36185	+0.26265717	−0.96485105
a	3.1531225	Ω	25.41423	+0.87912221	+0.23563436
e	0.1639173	i	1.14597	+0.39768751	+0.11635679
P	5.60	H	13.2	G 0.15	U 1

Residuals in seconds of arc

1979 10 14	095	0.9+	0.7−	1998 01 08	910	0.8+	0.5+	1998 03 04	809	1.0−	0.4−
1979 11 16	095	0.2+	0.6+	1998 01 09	910	0.7+	0.5+	1998 03 04	809	0.9−	1.6−
1979 11 22	095	1.3−	0.3+	1998 01 09	910	0.9+	0.6+	1998 03 04	809	1.4−	1.2−
1990 09 23	095	(2.4+	4.1−)	1998 01 09	910	0.9+	0.5+	1998 03 04	704	(3.2+	0.6−)
1996 10 04	691	0.2−	0.1+	1998 02 06	809	1.4−	0.9−	1998 03 04	704	1.4−	0.9+
1996 10 04	691	0.2−	0.1+	1998 02 06	809	1.4−	1.0−	1998 03 04	704	0.7−	0.5−
1996 10 04	691	0.3−	0.0	1998 02 06	809	1.0−	0.8−	1998 03 04	704	1.8−	1.5−
1996 10 10	691	0.6−	0.1−	1998 02 07	809	0.4−	0.5−	1999 04 20	704	1.0+	0.5−
1996 10 10	691	0.3−	0.1+	1998 02 07	809	0.7−	1.1−	1999 04 20	704	0.8+	0.1−
1996 10 11	691	0.6−	0.1−	1998 02 07	809	0.7−	0.1−	1999 04 20	704	2.3−	0.1−
1996 10 11	691	0.5−	0.1−	1998 02 22	691	0.1−	0.5+	1999 04 20	704	1.1−	0.7−
1996 10 11	691	0.7−	0.1+	1998 02 22	691	1.6+	0.4−	1999 05 10	704	0.9+	1.7+
1996 10 16	411	0.3+	0.5+	1998 02 22	691	1.0+	0.9−	1999 05 10	704	0.2+	0.6−
1996 10 16	411	0.7+	0.2−	1998 02 23	691	1.1+	0.4+	1999 05 10	704	1.3+	1.6+
1996 10 17	691	0.6+	0.2+	1998 02 23	691	1.0+	0.4+	1999 05 10	704	1.4−	0.7−
1996 10 17	691	0.6+	0.0	1998 02 23	691	1.0+	0.5+	1999 05 10	704	1.4−	1.4+
1996 10 17	691	0.5+	0.2−	1998 02 26	699	0.8+	0.9+	1999 05 13	704	1.4+	1.1+
1996 10 20	411	0.4−	0.2−	1998 02 26	699	0.3+	0.4+	1999 05 13	704	0.0	0.8+
1996 10 20	411	0.6−	0.8+	1998 02 26	699	0.2−	0.3+	1999 05 13	704	2.4+	0.2−
1997 01 04	684	0.8+	0.2−	1998 03 01	691	0.2+	0.5+	1999 05 13	704	0.2−	0.8−
1997 01 04	684	0.6+	0.2−	1998 03 01	691	0.0	0.4+	1999 05 13	704	0.7+	0.4+
1997 01 04	684	0.6+	0.0	1998 03 01	691	0.0	0.1+	1999 05 19	704	1.0−	0.2+
1997 12 08	910	0.8−	0.9+	1998 03 03	704	0.7+	0.0	1999 05 19	704	0.8+	0.0
1997 12 08	910	0.8−	1.1+	1998 03 03	704	1.2+	0.3+	1999 05 19	704	0.2−	1.7−
1997 12 08	910	0.9−	0.8+	1998 03 03	704	0.4+	0.1+	1999 05 19	704	1.4−	0.3−
1998 01 08	910	0.7+	0.6+	1998 03 03	704	(2.3+	0.4−)				
1998 01 08	910	0.8+	0.6+	1998 03 03	704	1.5+	0.4+				

(10682)* 1980 KK = 1990 SQ₁₂

Discovered 1980 May 22 by H. Debehogne at the European Southern

Observatory.

Id. G. V. Williams (*MPC* 17816)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	355.93942		(2000.0)	P	Q
n	0.31146377	ω	142.89243	+0.14801077	+0.98890924
a	2.1554156	Ω	135.61545	−0.91154514	+0.14123567
e	0.1695979	i	1.00773	−0.38363820	+0.04594570
P	3.16	H	14.7	G 0.15	U 1

M.P.C. 34740

1980 05 22	809	1.2−	0.8+	1990 09 20	809	0.1+	0.6+	1999 05 14	704	0.9−	0.3+
1980 05 23	809	0.2+	0.0	1990 09 20	809	0.8+	0.6+	1999 05 15	952	0.4+	0.5−
1980 05 23	809	0.2−	0.1−	1998 01 06	704	0.3+	0.3−	1999 05 15	952	0.6+	0.2−
1980 05 23	809	0.7−	0.1−	1998 01 06	704	0.3−	0.2+	1999 05 15	952	1.1+	0.1−
1980 05 24	809	1.3−	0.2−	1998 01 06	704	1.5−	0.4−	1999 05 15	133	0.6+	0.1+
1980 05 24	809	1.1−	0.1+	1998 01 26	704	0.1−	0.8−	1999 05 15	133	0.5+	0.0
1980 05 25	809	0.3+	0.2−	1998 01 26	704	1.3+	0.6−	1999 05 15	133	0.8+	0.3+
1980 05 25	809	0.8+	0.0	1998 01 26	704	0.1−	0.8+	1999 05 18	704	0.4+	0.7−
1980 05 26	809	0.5−	0.2−	1998 01 26	704	0.8+	0.8−	1999 05 18	704	0.9+	0.3+
1980 05 26	809	0.3+	0.1−	1999 03 24	704	0.4−	0.2+	1999 05 18	704	0.1+	0.4+
1980 05 31	809	0.0	1.5−	1999 03 24	704	1.0+	0.5−	1999 05 18	704	0.2+	0.4−
1980 05 31	809	0.0	1.1−	1999 03 24	704	0.4+	0.0	1999 05 18	704	0.4−	0.3+
1980 05 31	809	0.7+	1.5−	1999 03 24	704	0.5−	0.7+	1999 05 19	704	0.3+	0.1−
1980 06 01	809	0.2−	1.2−	1999 05 07	727	0.0	0.5+	1999 05 19	704	0.2−	0.5+
1980 06 01	809	0.2−	1.1−	1999 05 07	727	0.0	0.2+	1999 05 19	704	0.1−	0.7+
1980 06 02	809	0.5−	0.9−	1999 05 07	727	0.1+	0.5+	1999 05 19	704	1.0+	0.2−
1980 06 03	809	0.1+	1.6−	1999 05 08	727	0.1+	0.5+	1999 05 22	691	0.1+	0.1−
1980 06 03	809	0.5+	1.1−	1999 05 08	727	0.2+	0.7+	1999 05 22	691	0.1−	0.5+
1980 06 03	809	0.3+	0.9−	1999 05 08	727	0.0	0.4+	1999 05 22	691	0.1+	0.2+
1980 06 03	809	0.0	0.4−	1999 05 08	367	0.0	0.1+	1999 06 06	703	1.6+	1.5+
1980 06 03	809	0.0	0.9−	1999 05 08	367	0.3+	0.5+	1999 06 06	703	0.4+	1.0+
1980 06 03	809	1.0+	1.3−	1999 05 10	704	0.2−	0.2+	1999 06 06	703	0.7+	1.3+
1980 06 04	809	0.1−	0.6−	1999 05 10	704	0.3+	0.9+	1999 06 06	703	0.2+	1.1+
1980 06 04	809	0.4+	0.4−	1999 05 10	704	0.6−	1.9+	1999 06 09	704	0.3+	0.4−
1980 06 04	809	1.2+	0.7−	1999 05 10	704	0.3−	0.0	1999 06 09	704	0.4+	0.4+
1980 06 11	809	1.1−	0.3−	1999 05 10	704	0.9−	1.3+	1999 06 09	704	0.2−	0.2+
1980 06 11	809	0.6−	0.1−	1999 05 13	704	(1.7−	2.3+)	1999 06 09	704	0.4−	0.2−
1980 06 11	809	0.4−	0.5−	1999 05 13	704	0.7+	0.9−	1999 06 09	704	0.8−	0.3+
1980 06 12	809	0.3+	0.4−	1999 05 13	704	1.1−	0.4−	1999 06 15	704	(1.8+ 5.4−)	
1980 06 12	809	0.2+	0.1+	1999 05 13	704	0.5−	1.2+	1999 06 15	704	0.6−	1.1−
1980 06 12	809	0.4+	0.1−	1999 05 13	704	0.4−	1.0−	1999 06 15	704	0.0	0.2+
1990 09 18	809	0.6−	0.4−	1999 05 14	704	0.2+	0.7+	1999 06 15	704	0.4−	0.8+
1990 09 18	809	0.2−	0.4−	1999 05 14	704	0.8−	0.2+				

(10683)* 1980 LY = 1987 UQ₂

Discovered 1980 June 10 by C. S. Shoemaker at Palomar.

Id. T. Kobayashi (*MPC* 13152)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		Williams	
351.70005					
<i>n</i>		<i>ω</i>		<i>P</i>	
0.30916327		174.15303		+0.09655149	
<i>a</i>		<i>Ω</i>		−0.91636345	
2.1660948		101.36966		+0.11896319	
<i>e</i>		<i>i</i>		−0.38853035	
0.1573179		4.52598		−0.03398409	
<i>P</i>		<i>H</i>		<i>U</i>	
3.19		14.8		1	

Residuals in seconds of arc

1954 02 10	675	0.9−	0.8+	1997 12 22	426	0.4+	0.5−	1999 05 12	704	0.3−	0.7+
1954 02 10	675	0.7−	0.0	1997 12 22	426	0.6−	0.9−	1999 05 12	704	0.2+	1.2+
1980 06 10	675	0.1+	0.6+	1997 12 24	426	0.2−	0.2−	1999 05 13	704	0.8+	0.0
1980 06 12	675	(5.1+ 1.6+)		1997 12 24	426	0.1+	0.1−	1999 05 13	704	1.3+	0.9+
1980 06 18	675	0.8+	0.1−	1997 12 24	426	0.4+	0.1−	1999 05 13	704	0.2−	0.1−
1980 06 19	675	0.2−	1.3−	1999 04 14	699	0.3+	0.1−	1999 05 13	704	0.6+	1.4+
1980 06 20	675	1.2+	1.5−	1999 04 14	699	0.3+	0.2−	1999 05 13	704	1.2+	0.6−
1987 10 27	054	0.3+	1.0+	1999 04 14	699	0.3+	0.0	1999 05 14	704	0.5+	0.0
1987 10 27	054	1.9−	1.0+	1999 04 15	704	0.5−	0.8−	1999 05 14	704	0.1−	0.6−
1987 10 30	054	0.1+	1.5+	1999 04 15	704	1.3−	0.3+	1999 05 14	704	0.1+	0.2+
1989 03 09	675	0.6+	0.7−	1999 04 15	704	1.9−	1.8+	1999 05 14	704	0.2−	0.0
1989 03 09	675	0.2−	0.4−	1999 04 15	704	0.3+	0.7+	1999 05 14	704	0.4−	0.2−
1990 09 22	675	0.4+	0.3−	1999 04 15	704	1.2−	0.3+	1999 05 17	704	0.5+	0.5−
1990 09 22	675	0.8−	0.2−	1999 04 19	704	0.4−	0.2−	1999 05 17	704	0.7+	1.0−
1990 09 24	675	0.6+	0.7+	1999 04 19	704	0.3−	0.4−	1999 05 17	704	0.0	1.5−
1990 09 24	675	0.6+	0.8+	1999 04 19	704	0.2−	0.1−	1999 05 17	704	1.1+	0.7+
1993 09 13	675	0.8−	0.0	1999 04 19	704	0.2+	0.7+	1999 05 17	704	0.1−	0.3+
1993 09 13	675	(2.4− 0.1+)		1999 04 19	704	0.7−	0.5+	1999 05 18	704	0.2+	0.3+
1993 09 15	675	(0.9− 3.1−)		1999 05 08	703	0.7+	0.1+	1999 05 18	704	0.7−	0.3−
1993 09 15	675	1.7−	1.5−	1999 05 08	703	0.2−	0.7+	1999 05 18	704	0.1+	0.3−
1994 11 29	691	0.2+	1.0+	1999 05 08	703	0.6+	0.7+	1999 05 18	704	0.2−	0.6+
1994 11 29	691	0.1+	0.0	1999 05 08	703	0.1+	0.3+	1999 05 18	704	0.8−	0.6+

1999 JUNE 22

1994 11 29	691	0.0	0.0	1999 05 09	739	0.2+	0.1−	1999 05 21	704	0.5+	0.1+
1994 12 04	691	0.3+	0.2+	1999 05 09	739	0.0	0.1−	1999 05 21	704	0.3−	0.5−
1994 12 04	691	0.3+	0.4+	1999 05 12	704	0.3−	0.3+	1999 05 21	704	0.2+	0.3+
1994 12 04	691	0.4+	0.0	1999 05 12	704	0.4+	0.8+	1999 05 21	704	0.4+	1.3−
1997 12 22	426	0.2+	0.8−	1999 05 12	704	0.5+	0.4−	1999 05 21	704	1.8−	0.8−

(10684)* 1980 RV₂ = 1990 VP₇

Discovered 1980 Sept. 8 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Id. H. Kaneda (*MPC* 17816), R. Nagata (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		Williams	
274.00848					
<i>n</i>		<i>ω</i>		<i>P</i>	
0.29963781		11.71490		+0.98806026	
<i>a</i>		<i>Ω</i>		−0.14487648	
2.2117616		339.45165		+0.88738018	
<i>e</i>		<i>i</i>		−0.05241874	
0.1878813		2.69173		+0.43484619	
<i>P</i>		<i>H</i>		<i>U</i>	
3.29		14.5		2	

Residuals in seconds of arc

1980 09 08	095	2.4+	0.8−	1998 03 11	327	0.2−	0.8−	1999 05 10	704	0.3+	0.6+
1980 10 08	095	1.2−	0.7+	1998 03 11	327	0.3−	0.6−	1999 05 13	704	0.3−	0.1−
1980 10 12	095	0.6−	1.5−	1999 04 15	704	1.4+	0.1+	1999 05 13	704	1.2−	0.2+
1990 10 22	675	0.2+	1.1+	1999 04 15	704	1.6−	0.1+	1999 05 13	704	2.4+	0.3+
1990 10 22	675	0.5+	1.1+	1999 04 15	704	0.2+	0.6−	1999 05 13	704	1.7+	0.5+
1990 11 11	675	0.1−	1.2−	1999 04 15	704	0.5+	0.9−	1999 05 13	704	0.7+	1.4−
1990 11 11	675	0.2+	0.7−	1999 04 15	704	(2.4− 0.2+)		1999 05 18	704	0.7−	0.9+
1990 11 13	675	0.9+	0.1−	1999 04 17	704	1.4+	0.7+	1999 05 18	704	0.0	0.7+
1990 11 13	675	0.4+	0.9−	1999 04 17	704	0.3+	1.6−	1999 05 18	704	0.6−	0.1+
1993 08 11	894	(1.5− 2.2+)		1999 04 17	704	0.6+	0.5+	1999 05 18	704	2.0−	0.8+
1993 08 11	894	1.6−	0.5+	1999 04 17	704	0.5−	1.2−	1999 05 18	704	0.4−	0.1−
1995 01 31	596	0.5−	0.8+	1999 04 20	704	0.8+	0.4−	1999 05 19	704	0.9+	1.5−
1995 01 31	596	0.3−	0.7+	1999 04 20	704	1.5−	1.9−	1999 05 19	704	1.0−	1.5−
1995 01 31	596	0.0	0.8+	1999 04 20	704	0.2+	0.1+	1999 05 19	704	0.0	0.8−
1998 01 24	566	0.2−	0.2+	1999 05 10	704	1.0+	0.2−	1999 05 19	704	0.1+	0.3−
1998 01 24	566	0.3−	0.0	1999 05 10	704	0.5−	0.7+	1999 05 19	704	1.4−	0.4+
1998 01 24	566	0.3−	0.2+	1999 05 10	704	0.2+	0.6+				
1998 03 11	327	0.7+	0.3−	1999 05 10	704	0.6−	1.2+				

(10685)* 1980 VO

1985 01 24	801	0.9+	1.6+	1999 04 18	691	0.4−	1.7−	1999 05 19	703	0.1−	0.0
1991 05 13	675	0.1+	0.6+	1999 04 18	691	0.6−	0.8−	1999 05 19	703	0.3−	0.7−
1992 08 25	675	0.5−	1.9−	1999 05 10	704	0.0	0.9−				
1992 08 25	675	1.0+	1.4+	1999 05 10	704	1.7−	0.2+				

(10686)* 1980 VX₂ = 1995 MW

Discovered 1980 Nov. 1 by S. J. Bus at Palomar.

Id. G. V. Williams (*MPC* 25527)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	119.44281		(2000.0)	P	Q		
<i>n</i>	0.24339243	ω	287.16149	−0.82431749	−0.48017431		
<i>a</i>	2.5405710	Ω	225.41043	+0.52544549	−0.84610043		
<i>e</i>	0.0638155	<i>i</i>	24.90413	−0.21073138	−0.23140158		
<i>P</i>	4.05	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1954 05 23	675	0.0	0.2+	1995 07 01	658	0.0	0.2−	1999 05 15	704	1.3+	0.7+
1980 10 14	675	1.2+	1.2+	1995 07 02	658	0.1+	0.8−	1999 05 20	704	0.5−	0.3+
1980 10 31	675	(3.1+ 1.8+)		1995 07 02	658	0.2+	0.6−	1999 05 20	704	0.1+	1.8+
1980 11 01	675	0.3−	0.3+	1995 07 02	658	0.3+	0.5−	1999 05 20	704	1.7−	0.7+
1980 11 02	675	(3.1+ 0.9+)		1995 07 20	657	0.8−	1.0+	1999 05 20	704	0.8−	0.3+
1980 11 02	675	0.4−	0.3−	1995 07 20	657	0.2−	1.7+	1999 05 21	704	0.6+	1.2+
1988 10 09	675	0.9+	1.0+	1995 08 30	816	0.5+	0.4−	1999 05 21	704	1.7−	1.2−
1988 10 09	675	0.0	1.0+	1995 08 30	816	0.7+	0.7−	1999 05 21	704	0.1−	0.1+
1988 11 08	675	1.1−	2.2−	1996 09 30	689	0.3+	0.6−	1999 05 21	704	1.7+	0.1+
1988 11 08	675	0.9−	1.3−	1996 10 12	689	0.2−	0.5−	1999 05 21	704	(0.3+ 2.5+)	
1992 10 22	675	0.8−	1.3+	1996 12 08	327	0.2+	0.7+	1999 05 21	704	0.3+	0.6−
1992 10 22	675	1.4−	0.3−	1996 12 08	327	1.0+	1.1+	1999 05 21	704	(2.1− 0.8+)	
1992 11 26	675	(2.2+ 0.6−)		1996 12 08	327	(2.1+ 2.2+)		1999 05 21	704	1.9−	0.3−
1992 11 26	675	1.1+	1.8−	1998 05 22	688	0.3+	0.1−	1999 05 21	704	0.6−	1.3+
1992 11 28	675	0.9+	0.7+	1998 05 22	688	0.0	0.1+	1999 05 21	704	0.5−	0.7+
1992 11 28	675	0.4+	1.5+	1998 05 22	688	0.6−	0.1+	1999 06 12	704	0.6+	0.9−
1995 06 26	693	0.1−	0.3+	1999 05 15	704	(2.2− 0.9+)		1999 06 12	704	1.0+	1.4−
1995 06 26	693	0.7+	0.3+	1999 05 15	704	(2.0+ 1.1−)		1999 06 12	704	0.7+	1.4−
1995 07 01	658	0.2−	0.4−	1999 05 15	704	0.8−	0.8+	1999 06 12	704	0.8+	1.0−
1995 07 01	658	0.0	0.2−	1999 05 15	704	0.1+	0.7+	1999 06 12	704	0.2+	0.9−

(10687)* 1980 XX = 1990 WG

Discovered 1980 Dec. 7 at the Purple Mountain Observatory.

Id. R. Nagata (*MPC* 17429)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	238.59092		(2000.0)	P	Q		
<i>n</i>	0.29500427	ω	308.19672	+0.80880241	−0.58103675		
<i>a</i>	2.2348610	Ω	87.50676	+0.56395869	+0.72259535		
<i>e</i>	0.1457577	<i>i</i>	5.21151	+0.16670108	+0.37450267		
<i>P</i>	3.34	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1980 11 30	095	1.7−	1.4+	1995 04 04	327	0.0	0.3−	1999 05 18	704	0.7+	0.6−
1980 12 07	330	0.2−	0.4+	1995 04 05	327	0.2+	0.7−	1999 05 18	704	1.1−	0.1+
1980 12 10	095	0.6+	1.1−	1995 04 05	327	0.6+	0.3−	1999 05 18	704	0.6−	0.8−
1990 11 14	675	0.4−	0.6+	1995 04 05	327	0.3−	0.1−	1999 05 19	704	0.5+	0.1+
1990 11 14	675	0.9−	0.4+	1998 01 28	566	0.7−	0.3+	1999 05 19	704	(2.4+ 2.1+)	
1990 11 16	877	(3.1− 1.6−)		1998 01 28	566	0.6−	0.7+	1999 05 19	704	0.8+	0.3−
1990 11 16	877	1.6+	0.4−	1998 01 28	566	0.2−	0.7+	1999 05 19	704	0.6+	1.7+
1990 11 22	877	1.3+	0.0	1998 02 23	557	0.5−	0.2+	1999 06 15	704	0.2−	0.5+
1990 11 22	877	0.7+	1.7−	1998 02 23	557	0.4−	0.1−	1999 06 15	704	0.5−	0.1+
1995 03 27	675	0.1−	0.2−	1998 02 23	557	0.4−	0.0	1999 06 15	704	1.2−	0.4−
1995 04 04	327	0.4−	0.0	1998 03 04	557	0.2−	0.1−	1999 06 15	704	0.4−	0.1+
1995 04 04	327	1.1+	0.4−	1998 03 04	557	0.6+	0.3−				
1995 04 04	327	1.2+	0.4−	1999 05 18	704	0.4+	0.2+				

(10688)* 1981 DK = 1973 YC₂ = 1994 NK₉

Discovered 1981 Feb. 28 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey.

Id. H. Oishi (*MPC* 29608), L. D. Schmadel (*ibid.*), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	230.57939		(2000.0)	P	Q		
<i>n</i>	0.17599843	ω	118.98774	+0.75351504	−0.63679812		
<i>a</i>	3.1535291	Ω	281.06088	+0.53025867	+0.73561943		
<i>e</i>	0.1698714	<i>i</i>	9.58463	+0.38863972	+0.23098096		
<i>P</i>	5.60	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1973 12 20	095	(5.1+ 5.4+)		1981 05 02	413	0.7−	1.0−	1998 04 01	704	0.8+	0.0
1981 02 09	413	1.0−	0.6+	1981 05 02	413	1.0+	0.6−	1998 04 01	704	1.0−	1.0−
1981 02 09	413	1.8+	0.4+	1981 05 03	413	0.9+	0.2−	1998 04 01	704	1.0−	0.0
1981 02 28	413	1.4−	1.7+	1989 08 30	675	0.4−	0.2−	1999 05 13	704	0.8+	1.6+
1981 02 28	413	(2.6+ 0.1−)		1989 08 30	675	0.3+	0.8−	1999 05 13	704	0.8+	0.2−
1981 03 06	413	1.2−	0.5−	1994 07 08	809	(0.8− 3.0+)		1999 05 13	704	1.1+	1.0+
1981 03 06	413	(0.1+ 3.4−)		1994 07 08	809	(1.1+ 2.7+)		1999 05 13	704	0.2−	0.7+
1981 03 08	413	0.9−	0.4+	1994 07 08	809	(0.3− 2.5+)		1999 05 19	704	0.2−	0.0
1981 03 08	413	0.6+	1.0−	1994 07 09	809	(0.0 3.4+)		1999 05 19	704	1.5−	0.6−
1981 03 12	413	1.1−	0.1+	1994 07 09	809	0.0	1.9+	1999 05 19	704	0.7−	0.2+
1981 03 12	413	1.3+	0.5−	1994 07 09	809	0.7+	1.9+	1999 06 15	704	0.8−	1.2−
1981 04 07	413	1.0+	0.4+	1998 03 24	566	0.3+	0.5−	1999 06 15	704	0.2−	0.6−
1981 04 08	413	0.3−	1.7+	1998 03 24	566	0.3+	0.3−	1999 06 15	704	0.8−	0.7−
1981 04 08	413	1.1+	0.4+	1998 03 24	566	0.3−	0.1−	1999 06 15	704	0.1−	1.6−
1981 04 09	413	0.7−	1.7+	1998 04 01	704	0.0	0.5−	1999 06 15	704	0.2−	1.0−
1981 04 09	413	1.5+	0.3+	1998 04 01	704	0.4+	1.2−				

(10689)* 1981 DZ₁

Discovered 1981 Feb. 28 by S. J. Bus at Siding Spring in the course of the

U.K. Schmidt-Caltech Asteroid Survey.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	97.24347		(2000.0)	P	Q		
<i>n</i>	0.17073343	ω	303.16899	−0.83538716	−0.52393713		
<i>a</i>	3.2180319	Ω	206.41234	+0.53912459	−0.83994206		
<i>e</i>	0.0748301	<i>i</i>	21.93773	−0.10711192	−0.14137616		
<i>P</i>	5.77	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1978 10 04	675	0.1+	0.3+	1981 04 09	413	1.1+	0.5−	1999 05 23	691	0.3−	0.0
1978 10 05	675	0.1−	0.2−	1981 05 01	413	1.3+	1.0−	1999 06 05	703	0.1−	0.7+
1981 02 04	413	0.7−	1.3−	1990 10 20	413	(3.0− 2.8−)		1999 06 05	703	0.6+	0.5+
1981 02 08	413	1.0−	0.0	1990 10 20	413	(1.8+ 3.4+)		1999 06 05	703	0.9+	1.3+
1981 02 28	413	0.1−	0.1+	1990 11 15	675	0.0	0.5−	1999 06 05	703	0.8+	0.7+
1981 02 28	413	0.9+	0.8−	1990 11 15	675	(0.6− 2.2−)		1999 06 08	704	0.7+	0.6−
1981 03 06	413	0.8−	1.7+	1999 05 12	704	0.8−	0.2+	1999 06 08	704	0.2−	0.8−
1981 03 06	413	0.1+	0.7−	1999 05 12	704	0.3−	1.5+	1999 06 08	704	0.4+	0.7−
1981 03 08	413	1.0−	0.6+	1999 05 12	704	0.5−	0.6+	1999 06 08	704	0.3−	1.2−
1981 03 08	413	0.3+	1.0−	1999 05 12	704	(1.3− 3.4+)		1999 06 08	704	0.2−	0.1+
1981 03 12	413	0.8−	0.4+	1999 05 17	704	0.2−	0.1−	1999 06 14	704	0.9+	0.9−
1981 03 12	413	1.1+	0.8−	1999 05 17	704	0.2+	0.3−	1999 06 14	704	0.1−	0.7−
1981 04 07	413	0.7−	1.1+	1999 05 17	704	0.4−	0.3+	1999 06 14	704	0.0	0.2−
1981 04 07	413	(3.2+ 3.7−)		1999 05 17	704	0.3−	0.6−	1999 06 14	704	0.0	0.5−
1981 04 08	413	0.1+	0.8+	1999 05 17	704	0.8−	0.3+	1999 06 14	704	0.1+	0.0
1981 04 09	413	0.1−	0.9+	1999 05 23	691	0.4−	0.1−				

(10690)* 1981 DO₃ = 1992 DZ₉

Discovered 1981 Feb. 28 by S. J. Bus at Siding Spring in the course of the

U.K. Schmidt-Caltech Asteroid Survey.

Id. G. V. Williams (*MPC* 23856)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	325.54502		(2000.0)		P		Q	
<i>n</i>	0.17194668	ω	19.15273	+0.62314960		+0.77558184		
<i>a</i>	3.2028764	Ω	289.52377	-0.73079812		+0.53151379		
<i>e</i>	0.1164185	<i>i</i>	6.13850	-0.27860131		+0.34053767		
<i>P</i>	5.73	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	2	

Residuals in seconds of arc

1981 02 12	413	1.0+	0.1-	1997 01 14	566	0.6-	0.4+	1998 04 01	704	(2.1+	1.5-)
1981 02 28	413	1.1-	0.7-	1997 01 14	566	0.9-	0.1+	1998 04 01	704	(0.6+	2.3-)
1981 02 28	413	(3.4+	0.3+)	1997 01 14	566	0.8-	0.1+	1998 04 01	704	0.7+	0.0
1981 03 06	413	(4.1-	2.3+)	1998 03 03	704	0.5-	0.1+	1998 04 01	704	0.1-	0.7+
1981 03 06	413	1.6-	1.0+	1998 03 03	704	0.4+	0.1+	1999 05 18	704	0.9+	0.0
1981 03 08	413	(3.0+	0.2+)	1998 03 03	704	0.1+	0.5-	1999 05 18	704	0.0	0.5-
1981 03 12	413	0.7-	1.1+	1998 03 03	704	(2.2+	0.6-)	1999 05 18	704	1.6+	0.2+
1981 03 12	413	1.7+	1.0+	1998 03 03	704	(4.8-	0.3+)	1999 06 09	704	0.0	0.1-
1981 05 01	413	(2.6+	1.1-)	1998 03 04	704	0.9-	1.5+	1999 06 09	704	0.1-	0.4-
1992 02 28	675	0.2-	0.2+	1998 03 04	704	0.5-	1.7-	1999 06 09	704	0.5-	0.3+
1992 02 28	675	1.6+	1.5-	1998 03 04	704	0.7-	0.5+	1999 06 09	704	0.1+	1.4+
1992 02 29	809	1.1+	0.3-	1998 03 04	704	0.7-	0.8-	1999 06 09	704	0.7-	0.1-
1992 03 03	809	0.3+	0.2+	1998 03 04	704	1.5-	0.1-	1999 06 15	704	0.1-	0.6+
1992 03 05	809	1.4+	0.2-	1998 03 31	704	(0.6+	2.9-)	1999 06 15	704	0.3-	0.1+
1992 03 08	809	1.1+	0.8-	1998 03 31	704	0.6+	0.9+	1999 06 15	704	0.2+	0.4+
1996 12 20	327	0.0	0.8+	1998 03 31	704	0.4+	1.3-	1999 06 15	704	0.4-	0.8-
1996 12 20	327	0.3-	0.9+	1998 03 31	704	(3.9-	0.5-)	1999 06 15	704	0.3-	0.1-
1996 12 20	327	1.5+	0.5-	1998 04 01	704	1.1-	0.8-				

(10691)* 1981 EJ₁₉

Discovered 1981 Mar. 2 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	91.45872		(2000.0)		P		Q	
<i>n</i>	0.17230880	ω	15.71352	-0.93097959		-0.36500381		
<i>a</i>	3.1983875	Ω	142.87625	+0.33368156		-0.85857075		
<i>e</i>	0.1235919	<i>i</i>	0.66605	+0.14810002		-0.36003956		
<i>P</i>	5.72	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	1	

Residuals in seconds of arc

1978 10 03	675	0.7-	0.6-	1998 02 07	809	1.3-	1.3-	1998 03 22	704	0.8-	0.0
1978 10 04	675	0.8+	0.5+	1998 02 07	809	0.3-	1.0-	1998 03 22	704	(6.1-	0.8+)
1981 02 02	413	0.2+	0.9-	1998 02 25	566	0.4+	0.3+	1998 03 26	566	0.3+	0.2-
1981 02 13	413	0.7-	0.2-	1998 02 25	566	0.3+	0.0	1998 03 26	566	0.4+	0.5-
1981 03 02	413	2.2-	0.6+	1998 02 25	566	0.2+	0.4+	1998 03 26	566	1.1+	0.7-
1981 03 02	413	1.6+	1.6-	1998 03 03	704	1.8+	1.5+	1999 05 13	704	(0.1+	2.9-)
1981 03 03	413	1.6-	0.4+	1998 03 03	704	0.4-	0.2-	1999 05 13	704	(1.0+	3.1-)
1981 03 03	413	0.6+	1.1-	1998 03 03	704	0.4-	0.5+	1999 05 13	704	1.5+	0.9-
1981 03 07	413	0.1+	0.1+	1998 03 03	704	0.4-	0.4+	1999 05 18	704	(1.7+	3.9-)
1981 03 07	413	1.5+	1.1-	1998 03 03	704	0.9-	0.3+	1999 05 18	704	1.6+	1.4-
1981 03 11	413	0.0	0.3-	1998 03 04	704	1.2-	0.2-	1999 05 18	704	(1.4+	2.3-)
1981 03 16	413	0.4+	0.1+	1998 03 04	704	(2.3-	0.5+)	1999 06 09	704	0.1-	0.1+
1981 03 29	413	1.0-	0.1+	1998 03 04	704	1.7-	0.0	1999 06 09	704	0.4-	0.2+
1981 04 08	413	2.0-	0.2+	1998 03 04	704	(3.1-	0.2+)	1999 06 09	704	0.5-	0.8+
1981 04 11	413	0.4-	0.6-	1998 03 20	704	0.5+	0.3+	1999 06 09	704	0.5-	1.2+
1981 04 11	413	1.4+	1.0-	1998 03 20	704	0.3+	1.7+	1999 06 15	704	0.2-	0.2+
1981 05 02	413	0.0	0.3+	1998 03 20	704	0.8+	0.6+	1999 06 15	704	0.2+	0.1+
1998 02 06	809	1.2+	1.2+	1998 03 20	704	0.5-	1.6+	1999 06 15	704	0.9-	0.7+
1998 02 06	809	1.8+	1.6+	1998 03 20	704	0.6-	0.2+	1999 06 15	704	0.2-	1.3+
1998 02 06	809	0.8+	1.3+	1998 03 22	704	0.0	1.4-	1999 06 15	704	0.2-	0.9-
1998 02 07	809	0.9+	1.5-	1998 03 22	704	(2.3+	1.5+)				

(10692)* 1981 EK₁₉ = 1995 DL₁₂Discovered 1981 Mar. 2 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey.
Id. B. G. Marsden (*MPC* 25211)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	342.08775		(2000.0)		P		Q	
<i>n</i>	0.27811829	ω	303.98912	+0.17195823		+0.98446898		
<i>a</i>	2.3244293	Ω	335.83873	-0.87291880		+0.13563559		
<i>e</i>	0.1470585	<i>i</i>	4.95768	-0.45655573		+0.11146218		
<i>P</i>	3.54	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	1	

Residuals in seconds of arc

1981 02 09	413	0.5-	0.2-	1995 02 24	033	0.6+	0.4+	1999 04 17	699	0.5-	0.2+
1981 02 13	413	0.6-	0.1-	1996 08 11	816	0.2-	0.2-	1999 04 17	699	0.3-	0.6+
1981 03 02	413	1.2-	0.6+	1996 08 11	816	0.0	0.1+	1999 04 17	704	0.3+	0.0
1981 03 03	413	0.0	0.8-	1996 08 11	816	0.2-	0.0	1999 04 17	699	0.3+	0.6+
1981 03 07	413	0.2+	0.3+	1996 08 11	816	0.2-	0.1-	1999 04 20	704	0.5+	0.3-
1981 03 07	413	0.2+	0.3-	1996 08 12	816	0.2-	0.4+	1999 04 20	704	1.1+	0.2-
1981 03 11	413	0.3+	0.0	1996 08 12	816	0.0	0.4+	1999 04 20	704	1.0+	0.6-
1981 03 11	413	1.3+	0.8-	1996 08 12	816	0.2-	0.4+	1999 04 20	704	0.6+	0.4+
1981 03 16	413	1.4-	1.0+	1996 08 12	816	0.2+	0.5+	1999 05 10	704	1.0-	0.5-
1981 03 16	413	1.1+	0.5-	1996 08 20	566	0.4+	0.8-	1999 05 10	704	0.0	1.2-
1981 03 29	413	0.6-	0.4+	1996 08 20	566	0.4+	0.7-	1999 05 10	704	(2.3-	0.5+)
1981 04 08	413	(4.5-	1.5+)	1996 08 20	566	0.2+	0.7-	1999 05 10	704	0.8-	0.2+
1981 04 11	413	0.3-	0.6+	1999 04 15	704	0.1+	0.5-	1999 05 18	704	0.9-	0.7-
1981 04 11	413	1.4+	0.9-	1999 04 15	704	1.3+	0.4-	1999 05 18	704	1.7-	0.3-
1981 04 30	413	0.1+	0.0	1999 04 15	704	1.8+	0.6+	1999 05 18	704	(2.1-	0.7-)
1988 02 16	675	0.5-	1.1-	1999 04 15	704	0.3-	0.9+	1999 05 18	704	1.8-	0.4+
1988 02 16	675	0.7-	0.5+	1999 04 17	704	0.6+	0.0	1999 05 18	704	1.3-	0.4+
1995 02 22	033	0.2-	0.3-	1999 04 17	704	0.5+	0.6+				
1995 02 23	033	0.2-	0.3-	1999 04 17	704	0.6+	0.4+				

(10693)* 1981 ES₂₀

Discovered 1981 Mar. 2 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	271.13686		(2000.0)		P		Q	
<i>n</i>	0.22443651	ω	354.09565	+0.91183561		+0.41039580		
<i>a</i>	2.6816805	Ω	341.66163	-0.37517251		+0.82159991		
<i>e</i>	0.0535637	<i>i</i>	2.08561	-0.16673754		+0.39566258		
<i>P</i>	4.39	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	1	

Residuals in seconds of arc

1977 04 24	675	1.0+	0.3-	1996 10 06	691	0.1-	0.2+	1999 05 13	704	1.5+	0.8+
1977 04 25	675	1.0-	0.1+	1996 10 06	691	0.2-	0.4+	1999 05 13	704	0.1+	1.9+
1981 02 09	413	0.3-	0.0	1996 10 06	691	0.1-	0.2+	1999 05 13	704	0.3+	1.5-
1981 02 13	413	0.1+	1.5-	1996 10 16	691	0.1-	0.4-	1999 05 13	704	0.6+	0.6-
1981 03 02	413	0.1-	0.8+	1996 10 16	691	0.5+	0.6-	1999 05 13	704	1.4-	0.5+
1981 03 03	413	(2.9+	2.7-)	1998 01 17	327	0.1-	0.3-	1999 05 18	704	0.4-	0.3-
1981 03 03	413	0.4+	0.9+	1998 01 17	327	0.2-	0.3+	1999 05 18	704	0.3-	0.0
1981 03 11	413	0.9-	0.2+	1998 01 17	327	1.2+	0.4+	1999 05 18	704	0.3-	1.2+
1981 03 11	413	0.4+	0.8-	1998 01 25	566	0.1+	0.3+	1999 05 18	704	1.8+	0.7+
1981 03 16	413	(2.7+	2.3-)	1998 01 25	566	0.4-	0.4+	1999 05 19	704	0.6+	0.9-
1981 03 29	413	0.8-	0.1+	1998 01 25	566	0.1-	0.4+	1999 05 19	704	0.3+	0.5+
1981 04 30	413	0.4+	0.8-	1999 04 20	704	1.0-	0.5-	1999 05 19	704	0.0	2.0+
1981 05 02	413	0.2-	0.6-	1999 04 20	704	0.7+	1.5-	1999 05 19	704	0.3-	1.0-
1990 03 27	675	0.1+	0.2-	1999 04 20	704	0.9-	0.2-	1999 05 19	704	0.7-	0.4+

(10694)* 1981 EH₂₁

Discovered 1981 Mar. 2 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	323.46406		(2000.0)		P		Q	
<i>n</i>	0.17140093	ω	112.47657	+0.35633176		+0.93429144		
<i>a</i>	3.2096716	Ω	178.27438	-0.93394800		+0.35650707		
<i>e</i>	0.0405032	<i>i</i>	21.99424	-0.02772730		-0.00149129		
<i>P</i>	5.75	<i>H</i>	12.5	<i>G</i>	0.15	<i>U</i>	1	

Residuals in seconds of arc

1981 02 09	413	0.5+	1.8+	1981 04 11	413	1.0-	1.1+	1999 05 12	704	0.4-	0.6+
1981 02 13	413	1.3+	0.2+	1981 04 11	413	0.1+	0.5-	1999 05 17	704	0.7+	0.6-
1981 03 02	413	0.8-	1.4-	1981 04 26	413	(1.8+	3.2-)	1999 05 17	704	0.5-	0.3+
1981 03 03	413	1.6-	1.3+	1981 05 02	413	0.5+	0.2+	1999 05 17	704	0.7-	0.3-
1981 03 03	413	0.4+	0.2-	1989 09 27	675	0.5+	1.1+	1999 05 17	704	0.3-	0.5+
1981 03 07	413	1.4-	0.9+	1989 09 27	675	0.6-	0.6+	1999 05 17	704	0.5-	0.4+
1981 03 07	413	1.0+	1.4-	1993 04 18	675	0.1+	0.8-	1999 06 07	704	0.3+	0.2+
1981 03 11	413	0.7-	0.5+	1993 04 18	675	0.2-	0.5-	1999 06 07	704	0.1-	0.2+
1981 03 11	413	0.9+	1.6-	1998 03 03	704	0.6-	0.0	1999 06 07	704	0.4+	0.4+
1981 03 16	413	0.9-	0.8+	1998 03 03	704	0.4+	0.8+	1999 06 07	704	0.1-	0.9-
1981 03 16	413	0.1+	0.3-	1998 03 03	704	0.8-	0.5+	1999 06 12	704	0.1+	0.3-
1981 03 29	413	0.6-	0.4+	1998 03 03	704	0.1+	0.3+	1999 06 12	704	0.3+	0.0
1981 03 29	413	1.2+	1.1-	1998 03 03	704	0.8+	0.9+	1999 06 12	704	0.2+	0.5+
1981 04 07	413	0.2-	0.9+	1999 05 12	704	0.4-	0.2+	1999 06 12	704	0.2-	0.3+
1981 04 07	413	0.9+	1.2-	1999 05 12	704	0.1+	0.2-	1999 06 12	704	0.3+	0.1+
1981 04 08	413	0.8+	0.9-	1999 05 12	704	1.1+	0.7+				

(10695)* 1981 ER₂₁ = 1982 JE₃ = 1998 EL₁₇

Discovered 1981 Mar. 2 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey.

Id. H. Oishi (*JAM* 1958), G. V. Williams (unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		214.26201		(2000.0)		P		Q	
<i>n</i>		0.16958289	ω	220.92909		+0.95543612		-0.29240997	
<i>a</i>		3.2325707	Ω	155.98190		+0.29007491		+0.90455476	
<i>e</i>		0.1261214	<i>i</i>	5.70699		+0.05475733		+0.31028550	
<i>P</i>	5.81	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	1		

Residuals in seconds of arc (or two decimals in units of degrees)

1981 02 02	413	0.5+	0.8-	1982 05 18	675	1.2-	0.8+	1998 03 04	704	1.0+	1.0-
1981 02 13	413	0.8-	0.4-	1986 01 08	688	0.1-	0.7+	1998 03 04	704	2.4+	0.2-
1981 03 02	413	0.8+	0.9-	1986 01 08	688	0.3-	0.7+	1998 03 04	704	0.7-	0.7+
1981 03 03	413	1.5-	0.3+	1990 11 15	809	1.0+	2.2-	1998 03 04	704	(3.5-	0.3+)
1981 03 03	413	1.8+	0.4-	1990 11 15	809	1.3+	1.1-	1999 04 12	704	1.3-	0.1-
1981 03 07	413	(3.6+	0.2-)	1993 02 26	691	0.5-	0.4+	1999 04 12	704	0.4+	1.2+
1981 03 07	413	2.0+	0.9-	1993 02 26	691	0.1+	0.3-	1999 04 12	704	1.7+	1.0+
1981 03 11	413	0.2-	0.9+	1993 02 26	691	0.1-	0.3-	1999 04 12	704	0.8+	2.4-
1981 03 11	413	0.7+	0.1-	1995 09 17	327	0.1+	1.2-	1999 04 16	704	0.5+	1.2+
1981 03 16	413	2.6-	0.9+	1995 09 17	327	0.2+	1.3-	1999 04 16	704	0.0	0.3-
1981 03 29	413	1.4-	0.3+	1995 09 17	327	0.0	0.7-	1999 04 16	704	1.1+	0.4-
1981 03 29	413	1.2+	0.9-	1995 09 17	327	0.0	1.1-	1999 04 16	704	1.0-	1.1-
1981 04 08	413	1.5-	0.7+	1995 09 29	327	0.5+	0.3+	1999 04 19	704	1.1-	1.5-
1981 04 08	413	0.3-	0.8-	1995 09 29	327	0.1-	0.0	1999 04 19	704	0.8+	0.7-
1981 04 26	413	1.8+	0.4-	1995 09 29	327	0.3-	0.4-	1999 04 19	704	1.0-	1.2-
1981 05 02	413	0.1+	0.2+	1998 03 03	809	1.5-	0.3+	1999 05 12	704	0.5+	0.3-
1982 05 15	675	(0.11+	0.02-)	1998 03 03	809	1.8-	0.7-	1999 05 12	704	0.6+	0.7-
1982 05 16	675	(3.9-	1.1-)	1998 03 03	809	2.5-	0.4-	1999 05 12	704	(2.9+	0.0)
1982 05 17	675	(3.6-	0.1-)	1998 03 04	704	0.4-	0.4+				

(10696)* 1981 EO₂₄ = 1950 MJ = 1954 RY = 1986 VN_s

Discovered 1981 Mar. 2 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey.

Id. E. Bowell (*MPC* 26899), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		270.45391		(2000.0)		P		Q	
<i>n</i>		0.27905295	ω	182.36670		+0.96597806		+0.25807447	
<i>a</i>		2.3192362	Ω	162.64923		-0.23634508		+0.90734511	
<i>e</i>		0.0819704	<i>i</i>	3.23926		-0.10501140		+0.33184698	
<i>P</i>	3.53	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	2		

Residuals in seconds of arc

1950 06 19	675	1.0+	0.1+	1993 10 14	675	0.6-	1.4+	1999 05 14	704	0.7+	1.0+
1950 06 19	675	0.6+	0.6-	1993 10 14	675	1.2-	1.8+	1999 05 14	704	0.4+	1.1+

1954 09 04	675	1.0-	0.7-	1999 04 12	704	1.4+	0.2-	1999 05 14	704	1.2+	0.5+
1954 09 04	675	0.4+	0.5+	1999 04 12	704	0.1+	0.3-	1999 05 14	704	0.8-	0.1+
1981 02 09	413	1.5+	0.1-	1999 04 12	704	1.4-	0.6+	1999 05 14	704	0.1+	0.2+
1981 02 13	413	(1.1-	2.8-)	1999 04 12	704	0.4-	1.2+	1999 05 15	703	0.7-	0.2-
1981 03 02	413	0.6-	2.1-	1999 04 12	704	0.9-	0.4+	1999 05 15	703	0.4-	0.5+
1981 03 06	413	1.9-	0.9-	1999 04 14	699	0.4+	0.6+	1999 05 15	703	0.1+	0.0
1981 03 06	413	0.8+	1.2-	1999 04 14	699	0.2+	0.0	1999 05 15	703	0.1+	1.6-
1981 03 11	413	(2.9-	0.9-)	1999 04 14	699	1.0+	0.1+	1999 05 17	704	0.4+	0.4-
1981 03 11	413	(0.8+	3.0-)	1999 04 19	704	0.2+	0.1+	1999 05 17	704	0.4+	0.7+
1981 04 07	413	1.4-	0.7+	1999 04 19	704	0.7+	0.6+	1999 05 17	704	1.1-	0.6+
1981 04 07	413	0.5+	0.6+	1999 04 19	704	0.2+	0.0	1999 05 17	704	1.1+	0.8+
1981 04 08	413	1.5-	0.8+	1999 04 19	704	0.9+	0.9-	1999 05 17	704	1.3-	0.6-
1981 04 08	413	0.1+	0.7+	1999 04 19	704	0.0	0.0	1999 05 18	704	0.4+	0.7-
1981 04 11	413	1.6-	0.1+	1999 05 12	704	0.7+	0.3+	1999 05 18	704	0.8-	0.0
1981 04 11	413	(3.3-	0.6+)	1999 05 12	704	1.8+	0.6+	1999 05 18	704	0.2-	0.1-
1981 04 26	413	(2.4+	2.6-)	1999 05 12	704	1.5+	0.9-	1999 05 18	704	0.8-	0.4+
1981 05 02	413	0.7-	0.6-	1999 05 12	704	0.7+	1.0-	1999 05 18	704	0.5-	0.4-
1986 11 04	675	1.0+	0.2+	1999 05 12	704	0.2+	0.2+	1999 05 19	704	0.8-	1.4+
1986 11 04	675	1.8+	0.5+	1999 05 13	704	0.8+	1.0-	1999 05 19	704	0.7-	1.2+
1989 07 29	675	1.5-	2.0-	1999 05 13	704	1.1+	0.4-	1999 05 19	704	0.3+	0.5-
1989 07 29	675	0.8-	1.0+	1999 05 13	704	0.8+	0.6+	1999 05 19	704	0.2+	0.9+
1989 07 29	675	0.0	1.8-	1999 05 13	704	0.1+	0.1+	1999 05 19	704	1.9-	0.6-
1992 04 08	675	1.4+	0.2-	1999 05 13	704	1.7-	0.4+				

(10697)* 1981 EO₄₀

Discovered 1981 Mar. 2 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		314.33890		(2000.0)		P		Q	
<i>n</i>		0.22813201	ω	153.47364		+0.83743710		+0.54572941	
<i>a</i>		2.6526415	Ω	173.22020		-0.53537070		+0.83003011	
<i>e</i>		0.1529594	<i>i</i>	14.54079		-0.10989681		+0.11501929	
<i>P</i>	4.32	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	1		

Residuals in seconds of arc

1978 09 01	675	0.9+	0.0	1991 09 07	511	0.5-	1.2-	1999 05 12	704	0.9-	0.3-
1978 09 02	675	0.2-	0.4+	1991 09 11	675	0.2-	0.7-	1999 05 12	704	(2.2-	0.3-)
1981 02 13	413	(1.5+	3.2-)	1991 09 11	675	0.4-	1.0-	1999 05 12	704	0.5+	1.4+
1981 03 02	413	0.5-	0.3+	1991 09 17	675	1.3+	1.0+	1999 05 17	704	0.3+	0.1-
1981 03 02	413	(7.0-	7.5-)	1995 08 30	801	0.1-	1.4+	1999 05 17	704	0.8-	0.2+
1981 03 03	413	(3.2+	6.5-)	1995 08 30	801	1.1-	0.8+	1999 05 17	704	0.1-	0.7-
1981 03 06	413	1.5-	0.1-	1998 03 03	704	0.5-	0.3+	1999 05 17	704	0.3+	0.8-
1981 03 11	413	0.9-	0.4-	1998 03 03	704	1.5+	1.7+	1999 05 17	704	0.4-	1.3+
1981 03 11	413	(0.2+	3.3-)	1998 03 03	704	1.8+	1.4+	1999 06 08	704	0.6+	0.3-
1981 04 26	413	(2.7+	3.7-)	1998 03 03	704	(1.5-	2.1+)	1999 06 08	704	0.1-	0.2+
1981 05 01	413	1.7+	0.9-	1998 03 04	704	1.3-	0.2-	1999 06 08	704	0.0	0.4-
1991 08 07	675	1.2+	0.6-	1998 03 04	704	0.1-	1.5-	1999 06 08	704	0.4-	0.2-
1991 08 08	675	(1.5-	2.2-)	1998 03 04	704	(3.5-	0.4+)	1999 06 08	704	0.2-	0.6-
1991 08 08	675	0.1+	0.5-	1998 03 04	704	1.6-	0.2+	1999 06 12	704	0.6+	0.0
1991 08 08	675	(0.8-	3.0-)	1998 03 31	557	0.8+	0.6-	1999 06 12	704	0.6+	0.2-
1991 09 04	413	0.0	1.1+	1998 03 31	557	0.4+	0.5-	1999 06 12	704	0.1+	0.2-
1991 09 05	511	1.5-	0.2-	1999 05 12	704	0.0	0.6-	1999 06 12	704	0.0	0.2-
1991 09 06	511	(2.8-	1.9-)	1999 05 12	704	0.8+	0.8+	1999 06 12	704	0.2+	0.1-

(10698)* 1981 EJ₄₃ = 1988 DM₅ = 1993 RT₂₀

Discovered 1981 Mar.

Residuals in seconds of arc

1981 02 09	413	0.6+	1.8+	1981 04 30	413	0.2-	1.4+	1999 05 19	704	0.4-	0.4-
1981 03 03	413	0.5-	0.4+	1981 05 02	413	0.7-	0.8-	1999 05 19	704	1.1-	1.7+
1981 03 03	413	1.2+	0.8-	1988 02 16	675	0.3-	0.1+	1999 05 19	704	0.0	0.4+
1981 03 07	413	1.3-	0.3+	1988 02 16	675	1.3-	0.0	1999 05 19	704	0.3-	0.5-
1981 03 07	413	2.2+	0.9-	1993 09 15	809	0.9+	0.1-	1999 06 09	704	0.1+	0.2-
1981 03 11	413	1.1-	0.4-	1993 09 15	809	1.0-	1.0-	1999 06 09	704	1.2-	0.2-
1981 03 11	413	2.0+	1.7-	1993 09 15	809	1.2-	0.6-	1999 06 09	704	0.9+	0.1-
1981 03 16	413	2.2-	0.4+	1993 09 18	809	1.3+	1.0+	1999 06 09	704	0.1+	0.1+
1981 03 16	413	(3.7+	2.3-)	1993 09 18	809	0.0	0.5-	1999 06 15	704	0.1-	0.3-
1981 03 29	413	(0.3-	2.9-)	1993 09 18	809	0.1-	0.9-	1999 06 15	704	0.5+	0.4-
1981 04 08	413	1.3-	1.1+	1997 11 29	704	0.6+	0.7-	1999 06 15	704	0.7+	0.2-
1981 04 08	413	0.7+	1.0-	1997 11 29	704	0.8+	0.6-	1999 06 15	704	0.5+	0.7+
1981 04 11	413	0.7-	0.2-	1997 11 29	704	0.5-	1.2+	1999 06 15	704	0.7+	0.8-
1981 04 11	413	1.6+	0.8-	1997 11 29	704	(3.6-	0.3+)				

(10699)* 1981 ES₄₃ = 1998 CK₅

Discovered 1981 Mar. 6 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey.

Id. G. V. Williams (*MPC* 32214)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		231.33767		(2000.0)		P		Q	
<i>n</i>	0.17089655	ω	171.94329	+0.96329344	-0.26788787				
<i>a</i>	3.2159838	Ω	203.61752	+0.24381790	+0.90014947				
<i>e</i>	0.0319923	<i>i</i>	2.48544	+0.11233245	+0.34346328				
<i>P</i>	5.77	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	1		

Residuals in seconds of arc

1981 02 09	413	0.7+	0.3+	1981 05 03	413	0.8-	1.2-	1999 05 10	704	0.8+	1.3+
1981 02 13	413	1.3+	0.0	1996 12 17	566	0.1-	0.4-	1999 05 10	704	1.5+	0.5-
1981 03 06	413	1.2-	0.4+	1996 12 17	566	0.2+	0.5-	1999 05 16	691	0.1-	0.5-
1981 03 11	413	1.9-	0.3-	1996 12 17	566	0.1-	0.1-	1999 05 16	691	0.1+	0.1-
1981 03 11	413	2.2+	1.4-	1998 02 06	327	0.3-	0.2+	1999 05 16	691	1.0-	0.4-
1981 03 15	413	1.5-	0.9+	1998 02 06	327	0.6+	0.9+	1999 05 20	691	0.2-	0.4-
1981 03 15	413	0.6+	0.1+	1998 02 06	327	0.6+	0.5+	1999 05 20	691	0.0	0.3-
1981 04 05	413	1.0-	1.7+	1998 02 25	566	0.1+	0.3-	1999 05 20	691	0.4+	0.1-
1981 04 06	413	1.9+	1.2+	1998 02 25	566	0.1-	0.2-	1999 06 14	704	1.0-	0.1-
1981 04 06	413	1.4+	0.8-	1998 02 25	566	0.2+	0.1-	1999 06 14	704	0.4-	0.7-
1981 04 26	413	1.0-	2.3-	1998 03 20	704	0.9-	0.2-	1999 06 14	704	0.6-	0.2+
1981 05 01	413	(2.9+	1.1+)	1998 03 20	704	0.8+	0.3+	1999 06 14	704	0.5+	1.7+
1981 05 01	413	0.3-	1.4-	1998 03 20	704	0.1-	1.5+				
1981 05 02	413	1.7-	0.4-	1999 05 10	704	0.0	0.6+				

(10700)* 1981 ET₄₇ = 1991 PG₁₄

Discovered 1981 Mar. 2 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey.

Id. E. Bowell (*MPC* 18807)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		281.88612		(2000.0)		P		Q	
<i>n</i>	0.22678357	ω	351.55315	+0.98530213	+0.17080660				
<i>a</i>	2.6631461	Ω	358.60641	-0.15097543	+0.86474706				
<i>e</i>	0.1974038	<i>i</i>	5.18092	-0.07991332	+0.47226860				
<i>P</i>	4.35	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	2		

Residuals in seconds of arc

1981 02 12	413	0.7-	0.3+	1998 03 03	704	(0.8-	2.5+)	1999 05 13	704	0.7-	1.0+
1981 02 13	413	1.8-	0.2+	1998 03 03	704	0.7-	0.4-	1999 05 13	704	0.5+	1.4-
1981 03 02	413	(7.9+	1.2-)	1998 03 03	704	(3.6-	0.3+)	1999 05 13	704	0.7+	0.6+
1981 03 02	413	1.1+	1.0-	1998 03 04	809	0.7+	0.9+	1999 05 13	704	0.9-	0.3+
1981 03 06	413	0.3+	0.3+	1998 03 04	809	0.9+	1.5+	1999 05 18	704	0.2-	1.0-
1981 03 06	413	(8.3-	1.1+)	1998 03 04	809	1.5+	0.1-	1999 05 18	704	(2.5-	0.2+)
1981 03 11	413	1.3+	1.5-	1998 03 04	704	0.9-	0.8-	1999 05 18	704	0.2+	1.3+
1981 05 01	413	1.1-	1.1-	1998 03 04	704	(2.6-	0.6-)	1999 05 18	704	1.7+	0.4-
1981 05 03	413	1.2-	0.4-	1998 03 04	704	(3.1-	0.5-)	1999 05 18	704	0.9+	1.4+

1991 08 06	675	0.1+	0.7-	1998 03 04	704	1.3-	0.4-	1999 05 19	704	0.3+	0.9-
1991 08 06	675	0.0	1.0-	1998 03 04	704	(3.3-	0.2-)	1999 05 19	704	(2.6+	1.3-)
1991 08 10	675	0.1-	0.3-	1998 03 21	691	0.0	0.2-	1999 05 19	704	0.5+	1.2+
1991 08 10	675	0.6+	0.4+	1998 03 21	691	0.2-	0.1-	1999 05 19	704	1.3-	0.3+
1998 03 03	809	(3.1+	1.0-)	1998 03 21	691	0.2+	0.1+	1999 06 15	704	1.0+	0.0
1998 03 03	704	(1.7-	2.8+)	1999 04 20	704	1.1-	0.5-	1999 06 15	704	1.3-	0.4+
1998 03 03	809	(2.3+	1.3+)	1999 04 20	704	0.5+	0.9-	1999 06 15	704	0.0	0.6+
1998 03 03	809	(2.5+	0.5+)	1999 04 20	704	(2.0+	0.0)	1999 06 15	704	(2.0-	2.1+)

(10701)* 1981 PF = 1992 NL

Discovered 1981 Aug. 8 at the Agassiz Station of the Harvard College Observatory.

Id. G. V. Williams (*MPC* 20629)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		300.37583		(2000.0)		P		Q	
<i>n</i>	0.26532483	ω	181.32589	+0.85481197	+0.50543852				
<i>a</i>	2.3985611	Ω	147.44632	-0.47408207	+0.85276973				
<i>e</i>	0.2892580	<i>i</i>	12.62331	-0.21105137	+0.13158909				
<i>P</i>	3.71	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	2		

Residuals in seconds of arc

1981 07 26	688	0.5-	0.7+	1992 07 26	675	0.7+	0.7+	1999 04 19	704	0.1+	0.3-
1981 07 26	688	1.3-	0.1-	1992 07 26	675	0.5-	1.8+	1999 05 12	704	0.0	0.6-
1981 08 06	046	0.5+	1.5-	1992 07 28	675	0.6-	0.6-	1999 05 12	704	0.2+	0.7+
1981 08 06	046	0.6+	0.6-	1992 07 28	675	0.4-	0.2-	1999 05 12	704	0.0	0.7-
1981 08 08	801	0.8-	1.2+	1992 08 25	801	1.8+	0.2-	1999 05 12	704	0.8+	1.0-
1981 08 08	046	(0.2+	2.5+)	1992 08 25	801	1.5+	1.2-	1999 05 12	704	1.4-	0.5-
1981 08 08	046	(0.0	3.5+)	1992 09 01	801	(2.2+	1.6-)	1999 05 15	704	1.3+	0.1+
1981 08 10	046	0.1-	0.8-	1992 09 01	801	1.6+	1.2-	1999 05 15	704	0.4+	0.2-
1981 08 11	046	0.3+	0.9+	1996 11 11	689	(0.7-	3.0+)	1999 05 15	704	1.3-	0.7+
1981 08 12	046	0.4-	1.9+	1996 11 12	689	0.7-	0.2+	1999 05 15	704	0.5+	0.5+
1981 08 12	046	0.7-	0.4+	1999 04 12	704	0.5+	0.7-	1999 05 15	704	0.3-	1.2-
1981 08 26	688	1.9+	0.3-	1999 04 12	704	0.2-	0.9-	1999 05 15	704	0.4-	0.0
1981 08 26	688	(1.4+	4.2-)	1999 04 12	704	0.1-	0.1-	1999 05 15	704	0.6+	0.8+
1981 08 29	801	0.9+	0.0	1999 04 12	704	0.2+	0.2+	1999 05 15	704	0.7-	0.8+
1981 08 30	688	(1.8+	4.2-)	1999 04 16	704	0.7-	0.0	1999 05 15	704	1.2+	1.0-
1981 08 30	688	(0.2-	8.8-)	1999 04 16	704	0.4-	1.1+	1999 05 15	704	1.0-	0.7+
1981 08 31	675	0.8-	2.0-	1999 04 16	704	0.2-	0.2+	1999 05 17	704	1.4+	0.5-
1981 08 31	675	0.4+	1.3-	1999 04 16	704	1.3-	1.5-	1999 05 17	704	0.0	1.0-
1992 07 02	675	0.7-	0.3+	1999 04 19	704	0.4+	0.8-	1999 05 17	704	0.3-	1.3+
1992 07 02	675	1.0-	0.1+	1999 04 19	704	0.8+	0.1-	1999 05 17	704	0.3+	0.7+
1992 07 05	675	1.1-	1.4+	1999 04 19	704	0.1-	0.3+	1999 05 17	704	0.3+	0.4-
1992 07 05	675	(3.0-	0.5+)	1999 04 19	704	0.1-	0.6+				

(10702)* 1981 QD = 1981 SR = 1996 PU₈ = 1998 BP₁₃

Discovered 1981 Aug. 30 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. B. G. Marsden (d, *MPC* 6630), G. V. Williams (*MPC* 31225), A. Doppler (*MPC* 34483)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		275.52917		(2000.0)		P		Q	
<i>n</i>	0.26057042	ω	7.96089	+0.91729841	+0.39744731				
<i>a</i>	2.4276494	Ω	328.58484	-0.36788040	+0.82232072				
<i>e</i>	0.2103166	<i>i</i>	2.69188	-0.15240616	+0.40721527				
<i>P</i>	3.78	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	2		

Residuals in seconds of arc

1981 08 30	688	0.7-	1.0-	1996 09 08	809	1.5-	1.1+	1999 03 23	704	0.2-	0.2+
1981 08 30	688	0.2+	0.4-	1998 01 24	704	0.7+	1.0-	1999 03 23	704	(4.0-	0.8+)
1981 09 02	095	1.6+	0.1-	1998 01 24	704	0.1-	0.2-	1999 04 07	704	0.1+	0.3+
1981 09 03	688	(6.1+	0.4-)	1998 01 24	704	0.3+	0.0	1999 04 07	704	1.8+	1.9-
1981 09 03	688	(4.1+	0.3+)	1998 01 24	704	(2.5-	1.5-)	1999 04 07	704	1.9+	1.1-
1981 09 25	688	0.7+	2.0-	1998 01 25	704	0.2-	0.4+	1999 04 07	704	(1.5+	2.0-)
1981 09 25	688	(2.9-	4.6-)	1998 01 25	704	0.9-	0.4-	1999 04 14	704	0.9-	0.1+

1981 09 25	046	0.1+	0.5-	1998 01 25	704	1.3-	0.7-	1999 04 14	704	1.2+	0.2-
1981 09 25	046	0.3+	1.4-	1998 01 25	704	0.4-	1.3-	1999 04 14	704	0.7-	1.4-
1981 09 25	095	1.2+	0.8+	1998 01 28	566	0.1+	0.3+	1999 04 14	704	0.9-	1.0+
1981 10 05	688	(1.2-	3.2-)	1998 01 28	566	0.5+	0.5+	1999 04 15	704	0.0	1.6-
1981 10 05	688	0.2-	2.2-	1998 01 28	566	0.3+	0.0	1999 04 15	704	0.3+	1.8-
1996 08 08	809	(0.6-	3.0-)	1998 01 30	691	0.2+	0.1-	1999 04 15	704	0.6-	0.1-
1996 08 08	809	(1.5-	4.0-)	1998 01 30	691	0.2+	0.3-	1999 04 15	704	0.5-	0.5+
1996 08 08	809	(1.4-	3.9-)	1998 01 30	691	0.0	0.2-	1999 04 17	704	0.4-	0.1-
1996 08 09	809	0.0	0.5-	1999 03 20	704	(2.6+	0.9+)	1999 04 17	704	1.2-	0.8-
1996 08 09	809	0.2+	0.5-	1999 03 20	704	(2.2+	1.1+)	1999 04 17	704	0.8-	0.9-
1996 08 09	809	0.0	0.3-	1999 03 20	704	0.7+	1.4+	1999 04 17	704	1.0-	0.3-
1996 09 08	809	0.0	0.4+	1999 03 23	704	0.5-	0.6+	1999 04 17	704	0.1+	0.5-
1996 09 08	809	0.7+	1.3+	1999 03 23	704	1.3-	0.7+				

(10703)* 1981 QU₃

Discovered 1981 Aug. 23 by H. Debehogne at the European Southern Observatory.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	315.13598	(2000.0)	
<i>n</i>	0.26566457	ω	151.10012
<i>a</i>	2.3965158	Ω	151.67975
<i>e</i>	0.1764204	<i>i</i>	10.29170
<i>P</i>	3.71	<i>H</i>	14.4
Residuals in seconds of arc			
<i>G</i>	0.15	<i>U</i>	1

1981 08 23	809	(4.5-	0.1+)	1996 08 16	411	0.5+	0.8+	1999 05 12	704	1.0-	0.5-
1981 08 23	809	2.5-	0.0	1997 12 19	327	0.4+	0.7+	1999 05 15	704	0.7+	0.3+
1981 08 23	809	0.5-	0.1+	1997 12 19	327	0.4+	0.7+	1999 05 15	704	0.2+	0.8-
1981 08 24	809	(4.2-	1.1-)	1997 12 19	327	0.2+	0.5+	1999 05 15	704	0.5+	0.6+
1981 08 24	809	1.8-	0.8-	1997 12 20	327	0.0	0.6+	1999 05 15	704	0.5-	0.7-
1981 08 24	809	0.2+	1.6-	1997 12 20	327	0.4-	0.3+	1999 05 15	704	1.6+	1.4+
1981 08 26	809	1.9+	1.4+	1997 12 20	327	0.3-	0.7+	1999 05 15	704	0.6-	0.3-
1981 08 26	809	0.2-	1.2+	1999 04 11	715	0.2+	0.5-	1999 05 15	704	0.2+	0.3+
1981 08 26	809	1.3+	1.3+	1999 04 11	715	0.6-	0.3+	1999 05 15	704	0.4+	0.3-
1981 08 27	809	(2.7-	0.5+)	1999 04 11	715	0.5+	0.6+	1999 05 15	704	0.1+	1.0+
1981 08 27	809	0.7-	1.2+	1999 04 12	704	0.9-	0.3-	1999 05 15	704	0.2-	0.3+
1981 08 27	809	0.5+	0.2+	1999 04 12	704	1.2-	0.3+	1999 05 15	704	0.5+	0.5+
1981 08 28	809	1.1-	0.5+	1999 04 12	704	1.0-	0.5+	1999 05 15	704	0.9+	0.4+
1981 08 28	809	0.8-	0.7+	1999 04 12	704	0.5+	0.7+	1999 05 15	704	1.2+	0.3+
1981 08 28	809	0.4+	0.1-	1999 04 12	704	1.9-	1.1-	1999 05 15	704	0.6-	0.4-
1981 09 01	809	0.7+	1.1-	1999 04 16	704	0.6+	0.6+	1999 05 15	704	1.4+	0.2+
1981 09 01	809	1.4+	1.8-	1999 04 16	704	0.2+	0.3-	1999 05 15	704	0.8-	1.2-
1981 09 01	809	2.0+	2.4-	1999 04 16	704	0.2-	1.6+	1999 05 15	704	0.1+	0.5+
1981 09 03	809	0.1-	0.8-	1999 04 16	704	0.8-	0.4+	1999 05 15	704	0.0	1.6-
1981 09 03	809	0.4+	0.6-	1999 04 16	704	2.0-	0.3-	1999 05 15	704	0.6+	0.2-
1981 09 03	809	0.9+	0.6-	1999 04 17	715	0.0	0.2+	1999 05 15	704	0.7-	0.3+
1981 09 05	809	0.0	1.3+	1999 04 17	715	0.1-	0.2-	1999 05 15	704	0.8+	0.2-
1981 09 05	809	0.4+	0.4+	1999 04 17	715	0.7+	0.7-	1999 05 15	704	1.2+	1.4+
1981 09 05	809	0.5+	0.3+	1999 04 19	704	0.1-	0.3+	1999 05 15	704	0.5+	1.0-
1981 09 06	809	0.8+	2.0+	1999 04 19	704	0.3-	1.1+	1999 05 15	704	0.4+	0.6-
1981 09 06	809	0.3-	0.9+	1999 04 19	704	0.2-	0.6+	1999 05 17	704	0.0	0.5-
1981 09 06	809	0.6+	0.2-	1999 04 19	704	0.3-	0.8+	1999 05 17	704	0.9-	0.1+
1995 03 27	675	0.3-	0.1-	1999 04 19	704	0.1-	1.0+	1999 05 17	704	1.0+	0.3+
1996 08 15	411	0.4+	0.2+	1999 05 12	704	0.4+	0.5-	1999 05 17	704	1.2-	0.4+
1996 08 15	411	0.1-	0.5-	1999 05 12	704	0.3+	0.9-	1999 05 17	704	(0.9-	2.6+)
1996 08 16	411	1.1-	0.6+	1999 05 12	704	1.0+	0.2-				
1996 08 16	411	0.2-	0.5+	1999 05 12	704	0.7+	1.7-				

(10704)* 1981 RQ₁ = 1962 WK₂ = 1982 YU₃ = 1991 RX₁₄

Discovered 1981 Sept. 1 by H. Debehogne at the European Southern Observatory.

Id. K. Ichikawa (*MPC* 21253), A. Milani (*MPC* 34483)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	221.87116	(2000.0)	
<i>n</i>	0.19937793	ω	196.01318
<i>a</i>	2.9019148	Ω	154.24947
<i>e</i>	0.0923845	<i>i</i>	2.53997
<i>P</i>	4.94	<i>H</i>	13.4
Residuals in seconds of arc			
<i>G</i>	0.15	<i>U</i>	1

1955 04 16	675	0.7+	0.3-	1981 09 06	809	0.6+	0.4+	1999 03 23	704	0.6-	1.9-
1955 04 16	675	0.9-	0.3+	1981 09 07	809	0.9+	0.9-	1999 04 06	704	0.1-	1.4-
1962 11 30	760	1.4+	0.1+	1981 09 07	809	1.5+	0.5-	1999 04 06	704	0.6-	0.1+
1962 11 30	760	0.5-	1.4-	1981 09 07	809	2.0+	0.7-	1999 04 06	704	1.1-	1.8-
1981 09 01	809	2.4-	0.6-	1982 12 23	095	(4.4+	0.5-)	1999 04 06	704	1.1+	1.4-
1981 09 01	809	2.0-	0.0	1991 09 07	399	1.4-	0.1-	1999 04 07	699	1.6+	0.2+
1981 09 01	809	1.6-	0.4+	1991 09 07	399	0.6+	0.3+	1999 04 07	699	0.6+	0.6-
1981 09 02	809	1.5-	0.6-	1991 09 11	675	1.8+	0.6+	1999 04 07	699	0.1-	0.7+
1981 09 02	809	1.3-	0.6-	1991 09 11	675	0.1-	0.9-	1999 04 12	704	0.7-	0.9-
1981 09 02	809	1.2-	0.7-	1991 09 15	675	0.9+	0.6-	1999 04 12	704	0.4-	0.1-
1981 09 02	809	0.3-	0.2+	1991 09 15	675	0.1+	0.0	1999 04 12	704	0.3-	0.3+
1981 09 02	809	0.1+	0.2+	1997 12 20	411	0.1-	0.3-	1999 04 12	704	0.0	0.1-
1981 09 02	809	1.3+	0.4-	1997 12 20	411	1.4-	0.1+	1999 04 12	704	0.4-	0.7+
1981 09 03	809	1.0+	0.9-	1998 01 08	426	0.3+	0.3-	1999 04 16	704	0.1+	0.5-
1981 09 03	809	1.1+	0.6-	1998 01 08	426	0.1-	0.3-	1999 04 16	704	(1.1+	2.1+)
1981 09 03	809	1.7+	0.1-	1998 01 08	426	0.5-	0.9-	1999 04 16	704	0.1-	1.5+
1981 09 04	809	0.4-	1.7-	1998 01 19	426	0.4+	0.7-	1999 04 16	704	1.1-	0.9-
1981 09 04	809	0.3-	1.5-	1998 01 19	426	0.1+	0.1+	1999 04 16	704	(2.8-	2.0+)
1981 09 04	809	0.2-	1.4-	1998 01 19	426	0.4-	0.4+	1999 04 17	703	0.2+	0.2-
1981 09 05	809	0.4-	0.2+	1999 03 20	704	(0.2-	2.6-)	1999 04 17	703	0.3+	0.1+
1981 09 05	809	0.3-	0.0	1999 03 20	704	(0.2+	2.2-)	1999 04 17	703	0.5-	0.1-
1981 09 05	809	0.3+	0.8+	1999 03 20	704	0.1-	1.8-	1999 04 17	703	0.4+	0.5-
1981 09 05	095	(3.0-	4.6+)	1999 03 20	704	(0.1+	2.5-)	1999 04 19	704	0.6-	0.5-
1981 09 06	809	0.7+	0.1+	1999 03 22	699	1.8+	1.4+	1999 04 19	704	1.7-	0.7+
1981 09 06	809	0.6+	0.0	1999 03 22	699	0.9+	0.6-	1999 04 19	704	(2.5-	2.1-)
1981 09 06	809	0.2-	0.0	1999 03 23	704	0.2-	1.1-	1999 04 19	704	0.7+	0.9-
1981 09 06	809	0.4+	0.3+	1999 03 23	704	(0.1-	2.1-)	1999 04 19	704	0.2-	0.4+
1981 09 06	809	1.4+	0.3+	1999 03 23	704	0.2+	1.0-				

(10705)* 1981 SL = 1992 UX₃

Discovered 1981 Sept. 22 by A. Mrkos at Kletř.

Id. G. V. Williams (*MPC* 21101)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	345.69841	(2000.0)	
<i>n</i>	0.27098627	ω	140.42335
<i>a</i>	2.3650366	Ω	196.17470
<i>e</i>	0.2568355	<i>i</i>	6.93895
<i>P</i>	3.64	<i>H</i>	14.4
Residuals in seconds of arc			
<i>G</i>	0.15	<i>U</i>	1

1981 09 22	046	(0.1+	2.9-)	Y	1992 10 31	033	0.0	0.4-	1998 03 29	704	1.6+	0.8-
1981 09 22	046	(3.5-	3.3-)	Y	1992 11 01	033	0.8+	0.8-	1998 03 29	704	1.4-	0.6-
1981 09 25	046	0.3-	1.9-		1995 05 04	046	0.2-	0.6+	1998 03 31	046	0.1-	0.3-
1981 09 25	046	0.4-	0.9-		1995 05 04	046	0.1+	0.9+	1998 03 31	046	0.0	0.4-
1981 10 24	095	0.7+	1.9+		1995 05 04	046	0.5-	0.5+	1998 03 31	046	0.3-	0.2-
1992 10 20	675	0.5-	1.3+		1995 05 27	046	0.5+	0.2-	1998 04 01	704	(2.5+	0.9+)
1992 10 20	675	1.0-	0.0		1995 05 27	046	0.3+	0.8+	1998 04 01	704	(0.6+	2.2-)
1992 10 23	010	(2.3-	0.3+)		1995 05 27	046	0.7+	0.4-	1998 04 01	704	0.4-	0.3-
1992 10 23	010	(2.2-	0.8+)		1995 05 27	046	1.1-	0.4-	1998 04 01	704	(4.4-	1.0+)
1992 10 25	675	0.1-	0.1+		1996 12 04	046	0.5+	1.3-	1999 05 21	704	0.9-	0.5+
1992 10 25	675	0.5+	0.1+		1996 12 04	046	0.8-	1.2-	1999 05 21	704	0.1+	0

(10706)* 1981 SE₂ = 1985 VR

Discovered 1981 Sept. 26 by N. G. Thomas at the Anderson Mesa Station of the Lowell Observatory.

Id. G. R. Kastel' (*MPC* 12325)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 256.64005		(2000.0)		P		Q	
<i>n</i>	0.25968997	ω	253.80369	+0.99851669	−0.00137562		
<i>a</i>	2.4331335	Ω	106.25045	+0.02212697	+0.92365678		
<i>e</i>	0.2098855	<i>i</i>	3.25008	−0.04974747	+0.38321830		
<i>P</i>	3.80	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1950 06 15	675	(3.9+ 4.6−)	1996 07 21	566	0.1−	0.4−	1999 05 13	704	0.7+	1.2−
1950 06 15	675	0.1−	1996 07 21	566	0.4−	0.4−	1999 05 13	704	(2.2+ 1.4+)	
1981 09 26	688	0.7+ 2.2−	1996 07 21	566	0.2−	0.7−	1999 05 13	704	0.1−	0.8+
1981 09 26	688	1.0+ 2.4−	1999 04 11	699	1.0+ 0.8−	1999 05 13	704	0.2+ 0.1+		
1981 09 26	688	0.8+ 0.9+	1999 04 11	699	0.5+ 0.2−	1999 05 17	704	0.6+ 0.6−		
1981 09 26	688	2.1− 0.2−	1999 04 12	704	0.8+ 0.2−	1999 05 17	704	0.1− 0.4−		
1981 09 28	095	0.5− 0.1+	1999 04 12	704	0.8+ 0.9+	1999 05 17	704	0.6− 0.1−		
1981 10 05	095	1.2+ 2.2−	1999 04 12	704	0.9+ 0.5+	1999 05 17	704	0.4+ 1.6+		
1985 10 22	095	1.6+ 1.8+	1999 04 12	704	1.7− 0.6+	1999 05 17	704	1.9− 0.2+		
1985 11 09	095	(5.1− 1.3+)	1999 04 12	704	0.5− 0.3−	1999 05 18	704	1.3− 1.1−		
1985 11 11	095	(3.2− 4.0+)	1999 04 19	704	1.4+ 0.8−	1999 05 18	704	1.0− 0.5−		
1985 11 15	054	0.7− 1.3−	1999 04 19	704	(2.5+ 0.9+)	1999 05 18	704	0.6− 1.0−		
1994 01 05	691	1.1− 0.2−	1999 04 19	704	0.5− 1.3+	1999 05 18	704	0.1− 0.9−		
1994 01 05	691	0.1− 0.4−	1999 04 19	704	0.1− 1.5+	1999 05 19	704	1.8+ 1.8+		
1994 01 05	691	0.4− 0.4−	1999 05 12	704	0.2− 0.1−	1999 05 19	704	(2.5− 0.3−)		
1995 04 25	691	0.9− 1.5−	1999 05 12	704	0.1+ 0.3−	1999 05 19	704	(2.2− 2.1+)		
1995 04 25	691	0.8− 1.3−	1999 05 12	704	0.2+ 0.2−	1999 05 19	704	(2.2+ 0.0)		
1995 04 25	691	0.0	1999 05 12	704	1.0+ 1.3−	1999 05 19	704	(2.3− 2.5+)		

(10707)* 1981 UV₂₃ = 1981 TP₂ = 1981 WK₆ = 1977 TU₁ = 1991 HU

Discovered 1981 Oct. 24 by S. J. Bus at Palomar.

Id. S. Nakano (d, *MPC* 20606; *MPC* 27910)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 265.00111		(2000.0)		P		Q	
<i>n</i>	0.26009182	ω	318.64452	+0.94928515	−0.29600356		
<i>a</i>	2.4306266	Ω	58.87019	+0.31108078	+0.83522630		
<i>e</i>	0.2342408	<i>i</i>	7.11445	+0.04567760	+0.46344247		
<i>P</i>	3.79	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 10 06	095	0.1− 0.5+	1998 03 24	704	0.5+ 0.8−	1999 05 13	704	0.9− 0.9−
1981 10 04	095	(7.4− 2.0−)	1998 03 24	704	0.2+ 0.4−	1999 05 18	704	0.0 0.4−
1981 10 24	675	0.5− 0.2+	1998 03 25	704	0.1− 0.1−	1999 05 18	704	1.3+ 0.4+
1981 10 25	675	0.2− 1.2+	1998 03 25	704	0.9− 0.2+	1999 05 18	704	0.1− 0.2−
1981 11 24	095	(2.7− 4.8+)	1998 03 25	704	0.2− 0.6+	1999 05 19	704	0.1+ 0.1−
1991 04 14	675	0.6+ 0.6+	1998 03 25	704	0.6− 0.3−	1999 05 19	704	1.3+ 0.3+
1991 04 14	675	0.1+ 0.1+	1998 03 25	704	0.9− 0.5+	1999 05 19	704	1.3+ 0.7+
1991 04 16	675	0.2+ 0.3+	1998 04 18	704	0.6+ 0.5+	1999 05 19	704	1.2+ 0.2+
1991 04 16	675	0.3− 0.5+	1998 04 18	704	1.0+ 1.3−	1999 05 19	704	0.5+ 0.9+
1991 04 16	372	0.3+ 0.4+	1998 04 18	704	0.1+ 1.2+	1999 06 09	704	1.9− 0.4−
1991 04 16	372	0.3+ 0.6+	1998 04 18	704	1.6− 0.8−	1999 06 09	704	0.3− 0.4+
1998 02 22	566	0.2+ 0.1+	1999 05 10	704	0.0 0.5−	1999 06 09	704	1.0− 0.5−
1998 02 22	566	0.3+ 0.2−	1999 05 10	704	0.6+ 1.2+	1999 06 09	704	0.4− 1.0−
1998 02 22	566	0.1+ 0.3−	1999 05 10	704	0.7− 0.8+	1999 06 15	704	0.7− 0.7−
1998 02 26	699	0.1− 0.3−	1999 05 10	704	0.3+ 0.7+	1999 06 15	704	0.3− 0.1+
1998 02 26	699	0.4+ 0.8+	1999 05 13	704	0.2+ 0.2−	1999 06 15	704	0.7− 0.5+
1998 02 26	699	1.0+ 0.3+	1999 05 13	704	0.7+ 0.4−	1999 06 15	704	0.4− 0.1+
1998 03 24	704	0.2− 0.2−	1999 05 13	704	0.4+ 0.3−	1999 06 15	704	0.9− 0.1+
1998 03 24	704	0.1+ 0.5−	1999 05 13	704	0.0 0.5−			

(10708)* 1981 UE₂₆ = 1981 SZ₈ = 1990 PN = 1991 VW

Discovered 1981 Oct. 25 by S. J. Bus at Palomar.

Id. S. Nakano (*MPC* 20630), A. Lowe (d, *ibid.*), G. V. Williams (*MPC* 34483)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i> 224.75861		(2000.0)		P		Q	
<i>n</i>	0.19825336	ω	278.07941	+0.94373306	−0.32632130		
<i>a</i>	2.9128783	Ω	100.97875	+0.32086223	+0.86417205		
<i>e</i>	0.0733464	<i>i</i>	3.13496	+0.08009575	+0.38304188		
<i>P</i>	4.97	<i>H</i>	12.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc (or two decimals in units of degrees)

1981 09 24	033	0.1− 0.8+	1998 03 01	699	1.4− 0.4+	1999 04 19	704	0.4− 0.5+
1981 09 24	033	0.5− 1.0+	1998 03 01	699	0.1+ 0.2+	1999 05 10	704	0.1+ 0.4−
1981 10 25	675	0.0 0.2+	1998 03 03	699	0.2− 0.6+	1999 05 10	704	0.4+ 0.2−
1981 10 26	675	0.7+ 0.4+	1998 03 03	699	0.1+ 0.1+	1999 05 10	704	0.2− 0.1−
1990 08 13	808	0.5− 0.5−	1998 03 03	699	0.4− 0.2+	1999 05 10	704	0.6+ 0.0
1990 08 13	808	(0.00− 0.03+)	1998 03 03	704	0.0 0.1−	1999 05 10	704	0.7− 0.6−
1991 11 02	400	1.0− 0.5−	1998 03 03	704	0.3+ 0.5+	1999 05 13	739	0.1− 0.0
1991 11 02	400	0.1− 0.5−	1998 03 03	704	0.4− 0.6−	1999 05 13	739	0.5+ 0.3+
1991 11 04	691	0.1− 0.3+	1998 03 03	704	1.3+ 1.5−	1999 05 13	739	0.6+ 0.4+
1991 11 04	691	0.5− 0.1+	1998 03 03	704	0.3− 0.2−	1999 05 13	704	0.3+ 0.1−
1991 11 04	400	(2.6+ 2.0+)	1998 03 04	704	0.3+ 0.3−	1999 05 13	704	0.2+ 0.5−
1991 11 04	691	0.3+ 0.3+	1998 03 04	704	0.4− 0.2−	1999 05 13	704	0.4+ 0.2−
1991 11 04	400	0.2+ 0.2−	1998 03 04	704	0.6− 0.4−	1999 05 13	704	0.5− 0.4+
1996 10 19	595	0.9+ 0.3−	1998 03 04	704	0.3+ 0.3−	1999 05 13	704	0.9− 0.8+
1996 10 19	595	0.8+ 0.4−	1998 03 04	704	0.5− 0.4−	1999 05 18	704	0.3+ 0.1+
1998 01 08	699	0.7− 0.5+	1998 04 21	910	0.6− 0.5−	1999 05 18	704	0.4− 1.0−
1998 01 08	699	0.5+ 0.5+	1998 04 21	910	0.6− 0.4−	1999 05 18	704	0.0 0.0
1998 01 08	699	0.4− 1.7+	1998 04 21	910	0.8− 0.5−	1999 05 18	704	0.3+ 0.5−
1998 01 25	566	0.7+ 0.1+	1999 03 24	120	0.1+ 0.7−	1999 05 18	704	0.1− 0.2+
1998 01 25	566	0.7+ 0.2+	1999 03 24	120	1.7+ 0.4−	1999 05 19	704	0.0 0.2−
1998 01 25	566	0.6+ 0.1+	1999 04 12	704	1.0− 1.7+	1999 05 19	704	0.1− 0.6+
1998 01 29	595	0.6+ 0.2+	1999 04 12	704	0.1− 0.0	1999 05 19	704	0.1− 0.3+
1998 01 29	595	0.2+ 0.4+	1999 04 12	704	0.3− 0.1+	1999 05 19	704	0.2− 0.4−
1998 01 29	595	0.4+ 0.2−	1999 04 12	704	0.5− 0.2+	1999 05 19	704	0.2− 0.2+
1998 01 30	595	0.5+ 0.2−	1999 04 12	704	0.2− 1.2−	1999 06 08	704	0.9+ 0.9+
1998 01 30	595	0.3+ 0.1−	1999 04 19	704	0.1+ 0.4+	1999 06 08	704	1.5+ 0.4−
1998 02 02	595	0.5− 0.3−	1999 04 19	704	0.5− 0.5−	1999 06 08	704	1.5+ 0.7+
1998 02 02	595	0.7− 0.4+	1999 04 19	704	0.6− 0.2−	1999 06 08	704	0.0 0.2+
1998 03 01	699	0.8+ 0.0	1999 04 19	704	0.5− 0.5+	1999 06 08	704	0.2− 0.5+

(10709)* 1982 BE₁ = 1986 AL₁

Discovered 1982 Jan. 24 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. E. Bowell (*MPC* 10529)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 149.91651		(2000.0)		P		Q	
<i>n</i>	0.24134346	ω	303.02126	+0.26861344	−0.95947465		
<i>a</i>	2.5549301	Ω	131.15575	+0.91719859	+0.22775586		
<i>e</i>	0.1888130	<i>i</i>	6.49573	+0.29426785	+0.16593873		
<i>P</i>	4.08	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1982 01 24	688	(0.8− 3.3−)	1993 12 19	596	1.2− 0.3−	1999 05 12	704	0.8+ 0.3+
1982 01 24	688	0.4− 1.8−	1993 12 19	596	(1.3− 3.7−)	1999 05 12	704	0.2+ 0.6+
1982 01 30	688	(4.5+ 3.4−)	1993 12 19	596	(2.2− 0.9−)	1999 05 12	704	0.3+ 0.5−
1982 01 30	688	1.7− 1.5−	1994 02 20	689	(6.5− 0.3−)	1999 05 15	704	1.6+ 0.1−
1982 02 21	688	(1.3+ 4.0−)	1997 11 24	900	0.2− 0.1−	1999 05 15	704	1.0− 1.3+
1982 02 21	688	0.7+ 1.9+	1997 11 24	900	0.2− 0.1−	1999 05 15	704	0.1+ 0.0
1986 01 11	688	1.0+ 0.0	1997 12 04	355	0.3+ 0.0	1999 05 15	704	0.3+ 1.4−
1986 01 11	688	0.6+ 0.8+	1997 12 04	355	0.2+ 0.1−	1999 05 17	704	0.9+ 1.0−
1986 01 17	688	(1.4+ 3.0−)	1997 12 04	355	0.2− 0.2−	1999 05 17	704	0.2− 0.1+
1986 01 17	688	(3.3− 0.4−)	1999 04 12	704	0.5+ 0.2+	1999 05 17	704	0

1992 08 03	809	0.2+	0.1+	1999 04 16	704	0.5+	1.1+	1999 05 18	704	0.1-	1.3-
1992 08 03	809	0.8+	0.1-	1999 04 16	704	0.5-	1.1+	1999 05 18	704	1.0+	0.5-
1992 08 27	675	0.9+	0.7-	1999 04 16	704	0.9-	0.5+	1999 05 18	704	0.1-	0.7-
1992 08 27	675	1.2-	1.8-	1999 04 19	704	0.4-	0.7-	1999 05 19	704	0.5+	0.5-
1993 11 13	801	1.0+	0.7-	1999 04 19	704	0.3-	0.9-	1999 05 19	704	0.2+	0.8-
1993 11 13	801	0.1-	0.2-	1999 04 19	704	0.5-	0.1-	1999 05 19	704	0.3-	1.0+
1993 12 13	801	0.2+	0.3+	1999 04 19	704	0.1+	0.2-	1999 05 19	704	0.2+	0.2+
1993 12 13	801	0.4+	0.4+	1999 04 19	704	0.4-	0.5+	1999 05 19	704	1.7-	0.9-
1993 12 18	801	0.4-	0.5-	1999 05 12	704	0.3-	0.1+				
1993 12 18	801	0.0	1.0-	1999 05 12	704	0.2-	0.1-				

(10710)* 1982 JE₁ = 1976 WN = 1983 WA₁

Discovered 1982 May 15 at Palomar.

Id. T. Kobayashi (*MPC* 10938)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	272.70542		(2000.0)	P		Q	
<i>n</i>	0.29034944	ω	291.28112	+0.99348321		-0.07284628	
<i>a</i>	2.2586836	Ω	72.98033	+0.10320997		+0.90129969	
<i>e</i>	0.1827850	<i>i</i>	5.26006	-0.04836121		+0.42702727	
<i>P</i>	3.39	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1976 11 18	381	1.4+	0.8+	1993 10 19	675	1.7+	2.1-	1999 05 13	704	0.3-	0.1+
1976 11 18	381	2.2+	1.1+	1993 10 19	675	0.8-	2.2-	1999 05 13	704	0.8+	1.1-
1982 05 15	675	0.9-	1.1-	1993 10 20	675	(0.3+ 2.3-)		1999 05 14	704	0.1-	0.3+
1982 05 16	675	2.4-	0.7-	1993 10 21	809	(3.9+ 0.5+)		1999 05 14	704	0.4+	0.4+
1982 05 16	675	0.8-	0.5+	1993 10 21	809	(2.7+ 0.7+)		1999 05 14	704	0.7-	0.2-
1982 05 17	675	2.4-	0.3+	1993 10 21	809	(2.6+ 0.3+)		1999 05 14	704	0.1+	0.7-
1982 05 18	675	2.7-	1.6+	1993 11 17	801	0.9-	0.3-	1999 05 18	704	0.2-	1.0-
1983 11 29	688	(3.4+ 0.7-)		1993 11 17	801	1.1-	0.4-	1999 05 18	704	0.3-	0.2-
1983 11 29	688	(3.1+ 1.5-)		1993 12 17	801	0.2-	0.3-	1999 05 18	704	0.1+	0.2-
1983 12 01	688	0.3+	0.6-	1993 12 17	801	1.1-	0.5+	1999 05 18	704	0.3+	0.9-
1983 12 01	688	1.5+	2.4-	1996 07 18	689	0.1-	0.4+	1999 05 18	704	1.6+	0.5+
1983 12 04	046	0.1-	0.7+	1996 09 01	689	1.1-	0.3-	1999 05 19	704	0.1-	0.7-
1983 12 04	046	0.3+	0.9-	1998 02 20	725	0.2-	0.3-	1999 05 19	704	0.1+	0.7-
1983 12 05	046	(6.2- 1.9-)		1998 02 20	725	0.0	0.1-	1999 05 19	704	0.4-	0.5-
1983 12 05	046	(6.1- 0.1+)		1999 04 20	704	0.3+	0.2-	1999 05 19	704	(1.3- 3.2-)	
1983 12 08	046	0.6-	2.1-	1999 04 20	704	0.8+	1.5+	1999 06 09	704	0.3-	0.4+
1983 12 08	046	(3.3+ 0.5-)		1999 04 20	704	0.5+	0.6+	1999 06 09	704	0.4+	0.5+
1989 06 03	675	1.2+	0.6+	1999 04 20	704	0.1+	0.4-	1999 06 09	704	0.6-	0.4-
1989 06 03	675	0.4+	0.5+	1999 04 20	704	0.4-	0.6-	1999 06 09	704	0.3+	0.3-
1993 10 09	809	(2.4+ 0.3-)		1999 05 10	704	0.5+	1.7-	1999 06 09	704	0.0	0.5-
1993 10 09	809	1.7+	0.1+	1999 05 10	704	0.8+	0.4-	1999 06 15	704	0.3+	0.1-
1993 10 09	809	1.5+	0.6+	1999 05 10	704	0.2+	0.4+	1999 06 15	704	0.2+	0.1-
1993 10 11	809	0.7+	0.3-	1999 05 10	704	0.0	0.3-	1999 06 15	704	0.5+	0.3+
1993 10 11	809	0.4-	0.2-	1999 05 10	704	0.1-	0.7-	1999 06 15	704	0.7+	0.2-
1993 10 11	809	0.4-	0.0	1999 05 13	704	0.1+	0.5-	1999 06 15	704	0.1+	0.2+
1993 10 17	033	1.2-	0.9-	1999 05 13	704	0.2+	1.2-				
1993 10 18	033	1.1-	0.8-	1999 05 13	704	0.3+	0.5-				

(10711)* 1982 TT₂ = 1991 TT₄

Discovered 1982 Oct. 15 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Id. S. Nakano (*MPC* 19497)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Nakano			
<i>M</i>	292.90677		(2000.0)	P		Q	
<i>n</i>	0.21730911	ω	330.00753	+0.95083014		+0.30629158	
<i>a</i>	2.7400013	Ω	12.41488	-0.22428596		+0.78317963	
<i>e</i>	0.2209952	<i>i</i>	12.32958	-0.21358335		+0.54112395	
<i>P</i>	4.54	<i>H</i>	12.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1955 11 11	675	0.9-	0.2-	1998 03 24	704	0.6-	0.4-	1999 04 20	704	0.1+	0.3-
1955 11 11	675	0.7+	0.2+	1998 03 24	704	0.2-	0.6-	1999 04 20	704	0.3-	0.7-
1982 10 15	095	1.3+	0.4+	1998 03 24	704	0.7-	0.3-	1999 04 20	704	0.0	1.2+

1982 10 21	095	(1.2+ 2.4+)		1998 03 24	704	0.5-	0.8+	1999 04 20	704	0.1-	0.6+
1982 11 11	095	1.3-	0.7+	1998 03 25	704	0.2+	0.2-	1999 05 10	704	0.7+	0.2+
1991 10 05	095	2.0-	2.0-	1998 03 25	704	0.7-	0.6+	1999 05 10	704	0.8+	0.2+
1991 10 05	095	(2.8- 1.5-)		1998 03 25	704	1.3+	0.1+	1999 05 10	704	1.3+	0.0
1991 10 13	364	2.0+	0.9-	1998 03 25	704	0.8+	0.8-	1999 05 10	704	0.7+	1.2-
1991 10 13	364	1.7+	0.2+	1998 03 25	704	0.6-	0.9-	1999 05 10	704	1.0+	0.4-
1991 10 13	403	0.3-	0.0	1999 04 15	704	0.2+	0.1+	1999 06 09	704	0.3-	0.4-
1991 10 13	403	0.0	1.4-	1999 04 15	704	0.9-	0.8+	1999 06 09	704	0.4-	0.4+
1991 11 04	403	(3.1- 1.0-)		1999 04 15	704	0.5-	0.8-	1999 06 09	704	1.0-	0.4-
1991 11 04	403	0.2-	0.9+	1999 04 15	704	0.9-	0.2-	1999 06 09	704	1.6-	0.8-

(10712)* 1982 UE₆ = 1991 DY₁ = 1993 TN₂₁

Discovered 1982 Oct. 20 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Id. E. Bowell (*MPC* 22950), G. V. Williams (*MPC* 34484), A. Doppler (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	158.01460		(2000.0)	P		Q	
<i>n</i>	0.26603472	ω	62.36365	+0.08061951		-0.99663368	
<i>a</i>	2.3942923	Ω	23.02661	+0.90055490		+0.06642740	
<i>e</i>	0.1694207	<i>i</i>	2.18199	+0.42720178		+0.04804897	
<i>P</i>	3.70	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1982 10 20	095	0.1-	0.5-	1997 12 04	704	1.5+	1.2+	1999 05 13	704	1.0-	0.8-
1982 10 25	095	0.2+	0.1+	1997 12 04	704	0.6+	0.8+	1999 05 13	704	0.7-	0.9-
1982 11 09	095	0.3-	1.0+	1997 12 04	704	(1.4+ 2.8-)		1999 05 17	703	0.8+	1.2-
1982 11 14	095	0.9-	0.4-	1997 12 04	355	0.2-	1.4-	1999 05 17	703	0.3+	0.6+
1989 09 02	675	1.0+	0.5+	1997 12 04	355	0.2+	1.5-	1999 05 17	703	0.2+	0.7+
1989 09 02	675	0.7+	0.1-	1997 12 04	355	0.4-	1.7-	1999 05 17	703	0.5-	1.6+
1991 02 20	413	1.2+	0.3-	1999 04 20	704	0.3+	1.2-	1999 05 18	704	0.5-	0.7-
1993 10 10	675	0.2+	1.0-	1999 04 20	704	1.3+	1.2+	1999 05 18	704	0.7-	0.9+
1993 10 10	675	0.4+	1.5-	1999 04 20	704	1.7+	0.3-	1999 05 18	704	0.6-	1.2-
1993 10 12	809	(3.8+ 0.1+)		1999 04 20	704	0.3-	1.7-	1999 05 18	704	0.2+	0.0
1993 10 12	809	(2.6+ 0.6-)		1999 05 10	704	0.1+	0.0	1999 05 18	704	1.3-	1.0-
1993 10 12	809	(2.3+ 0.3-)		1999 05 10	704	0.2+	1.4-	1999 06 15	704	0.8-	0.8+
1993 10 13	675	0.5+	0.8-	1999 05 10	704	0.8-	0.1+	1999 06 15	704	0.0	0.5+
1993 10 13	675	0.6+	0.7-	1999 05 10	704	0.2-	0.0	1999 06 15	704	0.0	0.9-
1993 10 22	809	1.0-	1.4+	1999 05 10	704	0.9+	0.0	1999 06 15	704	0.4-	0.2+
1997 11 24	900	0.2-	0.5-	1999 05 13	704	0.2-	1.1-	1999 06 15	704	1.6-	0.4+
1997 11 24	900	0.4-	0.4-	1999 05 13	704	1.0-	0.7-				
1997 12 04	704	0.7-	0.3-	1999 05 13	704	1.1+	0.9+				

(10713)* 1982 UZ₉ = 1982 VH₁₁ = 1996 VG₃₈

Discovered 1982 Oct. 22 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Id. S. Nakano (d, *MPC* 10752; *MPC* 28839)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Nakano			
<i>M</i>	238.68370		(2000.0)	P		Q	
<i>n</i>	0.21183317	ω	143.60939	+0.97052685		-0.11935419	
<i>a</i>	2.7870199	Ω	224.72812	+0.08034022		+0.97928814	
<i>e</i>	0.2018441	<i>i</i>	17.30732	+0.22720713		+0.16355216	
<i>P</i>	4.65	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1982 10 22	095	(1.9- 2.4+)		1996 11 15	399	0.4-	0.5+	1999 04 17	704	0.3-	1.0-
1982 10 24	095	0.4+	1.1-	1996 11 15	399	0.4-	1.3+	1999 04 17	704	0.8-	0.2+
1982 11 15	688	(0.5- 4.2-)		1996 12 02	399	(0.7+ 2.8-)		1999 04 17	704	0.9+	1.0+
1990 05 18	675	0.8+	1.8-	1996 12 02	399	1.1+	1.5-	1999 04 20	704	0.0	0.3+
1990 05 18	675	0.9-	0.0	1997 12 29	688	0.2-	0.1+	1999 04 20	704	0.8+	0.9-

1996 11 07	399	(2.5–	2.8–)	1999 04 15	704	0.5+	1.3–	1999 05 13	704	0.3+	0.6–
1996 11 12	399	0.2–	0.8–	1999 04 15	704	0.2+	0.3–	1999 05 13	704	0.5–	0.7+
1996 11 12	399	0.6–	0.6–	1999 04 17	704	1.4+	1.1+	1999 05 13	704	1.5–	1.4–

(10714)* 1983 QG = 1979 YL₉

Discovered 1983 Aug. 31 by IRAS.

Id. C. M. Bardwell (*MPC* 8678)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Bardwell			
<i>M</i>	257.42584	(2000.0)		P		Q	
<i>n</i>	0.22914173	ω	279.67134	+0.96976605	–0.00228455		
<i>a</i>	2.6448432	Ω	80.75450	+0.10827797	+0.90016625		
<i>e</i>	0.3442296	<i>i</i>	14.31411	–0.21869999	+0.43554048		
<i>P</i>	4.30	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1979 12 25	095	(0.1+	4.3+)	1984 01 08	801	0.1+	1.1+	1999 04 12	704	0.4–	1.3+
1983 08 31	500	(33.5–	3.0–)	1984 02 03	801	0.1–	1.0+	1999 04 12	704	0.8–	1.0–
1983 08 31	500	(33.2+	5.4+)	1989 01 11	675	0.2+	1.0+	1999 04 19	704	0.3+	0.3+
1983 09 02	801	0.0	0.6–	1989 01 11	675	1.4–	1.1–	1999 04 19	704	0.3–	0.9+
1983 09 02	675	0.4–	0.1+	1989 02 01	675	0.7+	1.0+	1999 04 19	704	0.2+	0.0
1983 09 03	801	1.6–	0.1+	1989 02 01	675	0.7+	1.5–	1999 04 19	704	0.8+	0.4–
1983 09 05	801	0.2–	0.4+	1989 02 02	675	0.6–	0.5–	1999 04 19	704	0.5+	1.0+
1983 09 07	675	0.1–	0.3+	1989 02 02	675	0.6+	0.3+	1999 05 17	704	(2.9+ 1.6+)	
1983 09 07	675	0.1+	1.0+	1993 01 28	675	0.4+	1.0+	1999 05 17	704	(2.5+ 2.0+)	
1983 09 08	801	0.9+	0.4–	1993 01 28	675	0.1–	0.4–	1999 05 17	704	0.2+	1.0+
1983 09 12	801	(3.5+ 0.6–)		1999 04 12	704	0.8+	1.2+	1999 05 17	704	0.8+	0.3+
1983 10 07	801	0.0	1.9+	1999 04 12	704	0.3+	1.1+	1999 05 17	704	0.1–	0.3–
1983 12 06	801	1.6–	0.7–	1999 04 12	704	(0.1+ 2.4+)					

(10715)* 1983 RL₄ = 1983 TA₁

Discovered 1983 Sept. 11 by B. A. Skiff at the Anderson Mesa Station of the Lowell Observatory.

Id. F. N. Bowman (d, *MPC* 9414), K. Hurukawa (d, *ibid.*), W. Landgraf (d, *ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	250.44971	(2000.0)		P		Q	
<i>n</i>	0.23046831	ω	213.15157	+0.93556026	–0.34604925		
<i>a</i>	2.6346842	Ω	166.53570	+0.35205890	+0.92964038		
<i>e</i>	0.2723716	<i>i</i>	17.63708	–0.02795594	+0.12656495		
<i>P</i>	4.28	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1981 02 02	413	0.7–	0.1+	1998 03 03	704	1.3+	0.8+	1998 04 18	704	0.5+	0.3+
1981 02 13	413	1.4+	1.5–	1998 03 03	704	0.6+	0.1+	1999 05 12	704	0.4–	0.4–
1983 09 08	675	(1.1+ 3.9–)		1998 03 03	704	(5.6– 0.2+)		1999 05 12	704	0.7–	0.0
1983 09 09	675	0.8+	1.4–	1998 03 20	704	0.4–	0.7+	1999 05 12	704	0.3+	0.4+
1983 09 09	675	1.1+	1.5–	1998 03 20	704	0.9+	0.1+	1999 05 12	704	0.0	0.9+
1983 09 11	688	(1.0+ 4.4–)		1998 03 20	704	0.3+	0.1–	1999 05 17	704	0.8–	1.1–
1983 09 11	688	(0.6+ 3.9–)		1998 03 20	704	0.1+	1.0+	1999 05 17	704	0.4–	0.2+
1983 09 12	688	1.2+	2.3–	1998 03 20	704	0.5+	0.3+	1999 05 17	704	0.5+	0.2–
1983 09 12	688	(0.7+ 4.7–)		1998 03 22	704	0.8+	0.7–	1999 05 17	704	0.6+	0.0
1983 10 09	675	0.3–	0.8+	1998 03 22	704	1.0–	0.3+	1999 06 08	704	0.8–	1.7–
1983 10 09	675	1.2–	0.3–	1998 03 22	704	0.6–	0.2+	1999 06 08	704	0.0	0.2+
1989 02 07	809	(4.8+ 4.4+)		1998 03 22	704	0.5+	0.1+	1999 06 08	704	0.4–	0.8–
1989 02 07	809	(4.9+ 4.8+)		1998 03 22	704	0.0	0.6–	1999 06 08	704	0.3–	1.2–
1989 02 07	809	(4.9+ 4.2+)		1998 03 29	704	0.6+	1.4+	1999 06 08	704	0.9–	0.7–
1989 03 02	809	0.5–	1.4–	1998 03 29	704	0.0	0.2–	1999 06 12	704	0.1+	0.5–
1989 03 02	809	0.9–	0.9–	1998 03 29	704	0.4–	1.0+	1999 06 12	704	0.1–	1.0–
1989 03 02	809	0.9–	1.5–	1998 03 29	704	0.5+	1.1+	1999 06 12	704	0.1–	0.2+
1989 03 03	809	0.3–	1.1–	1998 03 29	704	0.1+	0.2+	1999 06 12	704	0.1–	0.1+
1989 03 03	809	0.8–	1.9–	1998 04 18	704	1.0+	0.5–	1999 06 12	704	0.0	0.0
1989 03 03	809	1.3–	1.2–	1998 04 18	704	1.1+	1.2–				
1998 03 03	704	0.1–	0.1+	1998 04 18	704	0.1–	0.7–				

(10716)* 1983 WQ = 1989 CB₉ = 1996 VN₃₀

Discovered 1983 Nov. 29 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. G. V. Williams (*MPC* 28839)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	277.97761	(2000.0)		P		Q	
<i>n</i>	0.22562438	ω	295.49526	+0.97931583	+0.14393647		
<i>a</i>	2.6722599	Ω	56.53323	–0.05934678	+0.87624147		
<i>e</i>	0.1158950	<i>i</i>	9.81513	–0.19343852	+0.45987301		
<i>P</i>	4.37	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1983 11 29	688	0.2+	0.9–	1997 12 29	688	0.2+	0.1+	1999 05 13	704	0.4+	0.5–
1983 11 29	688	0.2+	0.5+	1998 01 26	566	0.5–	0.2+	1999 05 13	704	0.1+	0.4+
1983 12 01	688	1.1–	1.3–	1998 01 26	566	0.7–	0.4+	1999 05 13	704	0.3+	0.7+
1983 12 01	688	1.5+	0.6–	1998 01 26	566	0.7–	0.3+	1999 05 18	704	0.6+	0.1–
1984 01 04	688	(1.0+ 3.2–)		1998 02 22	566	0.2+	0.0	1999 05 18	704	0.5–	0.2–
1984 01 04	688	1.5+	1.3–	1998 02 22	566	0.1+	0.1–	1999 05 18	704	0.9–	0.1+
1989 02 02	675	1.4–	0.6–	1998 02 22	566	0.1–	0.0	1999 05 18	704	0.3+	0.3–
1989 02 02	675	0.5–	0.2+	1998 02 27	566	0.8+	0.7+	1999 05 19	704	0.7+	0.2+
1996 11 07	399	1.9–	0.9+	1998 02 27	566	0.4+	0.6+	1999 05 19	704	1.7+	0.3–
1996 11 07	399	1.0–	0.1–	1998 02 27	566	0.7+	0.7+	1999 05 19	704	0.8+	0.5+
1996 11 12	399	1.4–	1.0+	1998 03 25	704	0.1+	0.2+	1999 05 19	704	0.2+	0.4–
1996 11 12	399	0.3–	0.1+	1998 03 25	704	0.4+	0.2+	1999 06 09	704	0.0	0.3–
1996 11 15	399	0.3–	1.1+	1998 03 25	704	1.2+	0.4+	1999 06 09	704	0.4+	0.3–
1996 11 15	399	0.2–	1.2+	1998 03 25	704	0.1+	1.0–	1999 06 09	704	0.0	0.4–
1996 12 12	691	1.0+	0.8–	1998 03 25	704	0.7+	1.0–	1999 06 09	704	0.7–	0.2–
1996 12 12	691	0.7+	1.1+	1999 05 10	704	0.3+	0.4+	1999 06 09	704	0.5–	0.2–
1996 12 12	691	0.0+	0.1+	1999 05 10	704	0.6–	0.8+	1999 06 15	704	1.0–	0.1+
1997 12 27	688	0.2–	0.1–	1999 05 10	704	0.3–	0.3+	1999 06 15	704	0.6+	0.4+
1997 12 27	688	0.1–	0.1–	1999 05 10	704	1.2–	0.5–	1999 06 15	704	(3.2– 1.3+)	
1997 12 29	688	0.0	0.0	1999 05 13	704	0.0	0.3–	1999 06 15	704	0.9–	1.0+

(10717)* 1983 XC = 1990 WB₁₆ = 1993 QP₁₀

Discovered 1983 Dec. 1 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. E. Bowell (*MPC* 28294)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	211.76317	(2000.0)		P		Q	
<i>n</i>	0.28408908	ω	309.18032	+0.82604578	–0.54788739		
<i>a</i>	2.2917454	Ω	84.42412	+0.54934390	+0.73028094		
<i>e</i>	0.1717494	<i>i</i>	7.63108	+0.12597478	+0.40805535		
<i>P</i>	3.47	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1983 11 06	675	1.4–	0.8+	1993 07 21	675	(2.3+ 2.3–)	1999 05 12	704	1.9+	0.9–
1983 11 06	675	0.4–	0.3–	1993 08 17	675	0.5+ 1.2–	1999 05 13	704	0.3+ 1.5–	
1983 11 28	688	0.9+	1.0–	1993 08 17	675	0.3– 1.0–	1999 05 13	704	1.5– 1.6–	
1983 11 28	688	1.3+	1.1–	1993 10 10	675	0.3+ 0.0	1999 05 13	704	(0.4+ 2.6–)	
1983 12 01	688	0.5+	0.9–	1993 10 10	675	0.6+ 0.4–	1999 05 13	704	1.1– 0.9–	
1983 12 01	688	0.3+	1.0–	1997 11 23	327	0.0 1.2+	1999 05 17	704	0.1+ 0.7+	
1983 12 05	688	0.8–	0.2+	1997 11 23	327	0.0 1.3+	1999 05 17	704	0.0 0.6+	
1983 12 05	688	0.5+	0.8+	1997 11 23	327	0.2– 1.2+	1999 05 17	704	0.2– 0.3–	
1983 12 06	688	1.3–	0.3–	1999 04 12	704	0.6– 0.4–	1999 05 18	704	0.4– 0.4+	
1983 12 06	688	1.7+	1.4–	1999 04 12	704	0.5– 0.4+	1999 05 18	704	0.7+ 1.7–	
1983 12 09	688	0.2–	1.4–	1999 04 12	704	(4.8– 0.3–)	1999 05 18	704	1.0+ 0.7–	
1983 12 09	688	1.7+	1.4–	1999 04 19	704	0.3– 0.5+	1999 05 18	704	0.0 1.3–	
1984 01 02	688	0.2+	0.1–	1999 04 19	704	1.4– 1.9–	1999 05 18	704	0.7+ 1.9–	
1984 01 04	688	0.1–	1.7–	1999 04 19	704	1.6– 0.6+	1999 05 19	704	0.4– 0.5+	
1984 01 04	688	(0.9+ 4.2–)		1999 04 19	704	1.3– 1.2+	1999 05 19	704	(0.7+ 2.5–)	
1990 11 16	675	0.5–	0.9+	1999 05 12	704	0.6+ 0.9–	1999 05 19	704	0.5+ 1.3+	
1990 11 16	675	(3.1– 0.7+)		1999 05 12	704	0.2+ 0.5+	1999 05 19	704	0.3– 0.5+	
1993 07 21	675	(0.7+ 3.0–)		1999 05 12	704	1.2+ 0.1+				

(10718)* 1985 QM₅ = 1990 QO₂

Discovered 1985 Aug. 23 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. H. E. Holt (*MPC* 17016), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.19541626	ω	188.82555	+0.92875079	+0.37001735		
<i>a</i>	2.9410038	Ω	149.42724	−0.33735019	+0.86885138		
<i>e</i>	0.1400660	<i>i</i>	2.54257	−0.15367763	+0.32891404		
<i>P</i>	5.04	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1978 03 15	675	0.1−	1.1+	1998 02 25	566	0.2−	0.3−	1999 05 13	704	0.5−	0.5+
1978 03 16	675	0.2+	0.5+	1998 02 25	566	0.7−	0.2+	1999 05 13	704	0.6−	2.0−
1985 08 23	095	(2.7−	1.9+)	1998 03 03	704	0.4+	0.8−	1999 05 13	704	0.0	1.1−
1985 09 15	095	0.1−	0.8−	1998 03 03	704	1.0+	0.7+	1999 05 13	704	0.6−	0.4+
1985 09 20	095	1.6+	0.4−	1998 03 03	704	0.7+	0.2+	1999 05 13	704	0.4−	0.1−
1990 08 22	675	1.6−	1.3−	1998 03 03	704	0.7+	0.3+	1999 05 14	704	0.7+	0.5−
1990 08 22	675	1.3−	1.4−	1998 03 03	704	0.1−	0.6−	1999 05 14	704	1.1−	1.6+
1990 08 24	675	(3.3−	0.6−)	1998 03 20	704	(2.3−	2.1−)	1999 05 14	704	1.3−	1.0−
1990 08 24	675	1.0−	0.5−	1998 03 20	704	0.5+	1.4+	1999 05 14	704	0.5−	1.1+
1990 08 28	675	0.3−	1.8−	1998 03 20	704	0.6+	1.4+	1999 05 14	704	1.4−	0.8+
1990 08 28	675	(1.0−	2.2−)	1998 03 20	704	1.9−	0.3+	1999 05 17	703	(3.6+	0.1+)
1990 09 14	675	0.2−	0.3−	1998 03 20	704	0.0	0.5+	1999 05 17	703	0.4+	0.4+
1990 09 14	675	1.0−	0.1+	1998 03 22	704	0.8−	1.5−	1999 05 17	703	0.2+	0.4+
1990 09 20	675	0.1−	0.3+	1998 03 22	704	0.0	0.1+	1999 05 17	703	0.9+	1.0+
1990 09 20	675	0.8+	0.9+	1998 03 22	704	(0.1+	2.1+)	1999 06 05	703	0.7+	0.6+
1990 09 23	809	0.4+	0.2+	1998 03 22	704	0.8+	0.6−	1999 06 05	703	0.0	0.2−
1990 09 23	809	0.9+	0.3+	1998 04 03	691	0.4+	0.5+	1999 06 05	703	0.0	0.4−
1990 09 23	809	0.8+	0.4+	1998 04 03	691	0.4+	0.2+	1999 06 05	703	0.3−	0.3+
1990 09 24	809	0.6−	1.2+	1998 04 03	691	0.2+	0.4+	1999 06 09	704	0.9+	0.1−
1990 09 24	809	0.2−	1.0+	1999 04 19	704	0.4+	0.5−	1999 06 09	704	0.5−	0.2−
1990 09 24	809	0.2+	0.7+	1999 04 19	704	0.6+	1.1+	1999 06 09	704	1.4+	0.8−
1990 09 25	809	0.8−	0.8+	1999 04 19	704	0.6+	1.9−	1999 06 09	704	0.4−	0.9+
1990 09 25	809	0.5−	0.7+	1999 04 19	704	0.6+	0.3−	1999 06 14	704	0.1+	0.0
1990 09 25	809	0.0	0.3+	1999 05 10	704	0.0	0.8−	1999 06 14	704	0.3+	0.4+
1990 09 27	809	0.6−	0.8+	1999 05 10	704	0.9+	0.2−	1999 06 14	704	0.1+	0.6+
1990 09 27	809	0.4+	1.1+	1999 05 10	704	0.8+	1.2−	1999 06 14	704	0.1−	0.5+
1990 09 27	809	1.5+	1.4+	1999 05 10	704	(3.3+	0.8+)	1999 06 14	704	0.2−	0.6+
1998 02 25	566	0.6−	0.6+	1999 05 10	704	0.9−	1.0+				

(10719)* 1985 TW = 1995 GH₈ = 1996 WT₂

Discovered 1985 Oct. 15 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. G. V. Williams (*MPC* 28582)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.26411025	ω	344.91318	+0.99068310	+0.13615690		
<i>a</i>	2.4059091	Ω	7.26313	−0.12247327	+0.89996768		
<i>e</i>	0.1936443	<i>i</i>	1.30489	−0.05955910	+0.41414911		
<i>P</i>	3.73	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1985 09 20	095	0.4+	0.5+	1995 04 10	695	0.3+	0.1+	1999 04 15	704	1.4−	0.2+
1985 09 21	095	1.5−	1.4+	1995 04 11	695	0.3+	0.6−	1999 04 20	704	0.9−	1.2+
1985 09 22	095	1.5+	1.3+	1995 04 11	695	0.2+	0.4−	1999 04 20	704	0.6+	1.7−
1985 10 11	010	0.4−	1.4+	1996 11 27	327	0.1−	0.1−	1999 04 20	704	0.4+	1.0−
1985 10 11	010	0.6−	0.7−	1996 11 27	327	0.4+	0.2+	1999 04 20	704	1.7−	0.0
1985 10 15	688	1.1+	0.3−	1996 11 27	327	0.9+	0.3+	1999 04 20	704	1.1+	1.1+
1985 10 15	688	1.7−	0.3−	1996 11 30	327	0.3+	0.3−	1999 05 10	704	0.6−	0.3−
1985 10 16	049	0.5−	0.4+	1996 11 30	327	0.5−	0.4−	1999 05 10	704	1.6−	0.7−
1985 10 16	049	1.3−	0.3+	1996 11 30	327	0.2+	0.1+	1999 05 10	704	1.0−	0.2+
1985 10 18	095	(0.1−	3.2+)	1998 01 24	426	0.2+	0.0	1999 05 10	704	0.2−	1.7+
1985 10 20	688	1.6+	0.2−	1998 01 24	426	0.1−	0.3−	1999 05 10	704	0.7+	0.0

1985 10 20	688	1.4+	0.0	1998 01 24	426	0.0	0.3−	1999 05 13	704	0.3−	0.3+
1985 10 24	049	1.6−	0.8−	1998 01 25	691	0.3−	0.1+	1999 05 13	704	1.2−	1.0+
1985 10 24	049	0.1+	2.3−	1998 01 25	691	0.1−	0.2+	1999 05 13	704	0.2+	0.9+
1985 11 07	688	0.1−	0.3−	1998 01 25	691	0.3−	0.2−	1999 05 13	704	0.3−	0.3−
1985 11 07	688	1.3+	0.5−	1998 01 26	566	0.1−	0.4+	1999 05 13	704	1.1−	0.8−
1985 11 12	095	(0.1+	2.9+)	1998 01 26	566	0.4−	0.5+	1999 05 15	703	1.2+	0.3−
1989 11 28	675	0.0	0.7+	1998 01 26	566	0.0	0.2+	1999 05 15	703	1.1+	0.6+
1989 11 28	675	0.1−	0.9+	1998 01 26	426	0.6+	0.4+	1999 05 15	703	1.0+	0.7+
1994 01 07	675	(0.5−	2.0−)	1998 01 26	426	0.4−	0.3−	1999 05 15	703	0.4−	1.2+
1994 01 07	675	(2.0+	0.3−)	1998 01 26	426	0.2−	0.0	1999 05 18	704	1.1+	0.4+
1995 04 08	695	(9.7−	13.0+)	1998 01 30	691	0.5+	0.0	1999 05 18	704	0.7−	0.7−
1995 04 09	695	0.5+	0.6−	1998 01 30	691	0.1−	0.0	1999 05 18	704	0.4−	0.9−
1995 04 09	695	0.9+	0.0	1998 01 30	691	0.4+	0.2+	1999 05 18	704	0.3−	0.3+
1995 04 10	695	0.6−	0.3−	1999 04 14	699	0.8+	0.3+	1999 05 18	704	0.6−	1.4+
1995 04 10	695	0.2−	0.3−	1999 04 14	699	1.9+	0.0	1999 05 19	704	1.5+	0.8−
1995 04 10	695	0.3+	0.2−	1999 04 14	699	0.3+	0.1+	1999 05 19	704	0.5+	0.4+
1995 04 10	695	0.2−	0.1+	1999 04 15	704	0.2−	0.6−	1999 05 19	704	0.4+	1.5+
1995 04 10	695	0.3+	0.2−	1999 04 15	704	0.5−	1.7−	1999 05 19	704	1.3+	0.9−
1995 04 10	695	0.1+	0.0	1999 04 15	704	1.3−	0.5−	1999 05 19	704	0.7−	0.1+

(10720)* 1986 GY = 1982 BK₃ = 1987 UZ₆ = 1987 WG₅ = 1990 QX₂

Discovered 1986 Apr. 5 by Spacewatch at Kitt Peak.

Id. H. Kaneda (*MPC* 17204)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.30644164	ω	318.71821	+0.90186309	+0.43176656		
<i>a</i>	2.1789012	Ω	15.72151	−0.38059581	+0.81030698		
<i>e</i>	0.1424229	<i>i</i>	3.14220	−0.20442551	+0.39620731		
<i>P</i>	3.22	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1982 01 18	033	0.2+	0.1−	1990 09 21	809	0.4+	1.0+	1999 04 20	704	0.6+	1.1+
1982 01 18	033	0.4−	0.1−	1990 09 21	809	0.9+	1.1+	1999 05 10	704	0.0	0.0
1986 04 05	691	0.0	1.0+	1990 09 22	809	1.2−	0.1+	1999 05 10	704	0.0	0.2+
1986 04 05	691	0.3+	0.9+	1990 09 22	809	0.6−	0.3−	1999 05 10	704	0.3+	0.6+
1986 04 05	691	0.7+	0.7+	1990 09 22	809	0.3−	0.4−	1999 05 10	704	1.3+	0.6−
1986 04 14	691	0.5−	0.7+	1990 10 22	675	(3.1+	0.4+)	1999 05 10	704	0.0	0.3+
1986 04 14	691	0.4−	0.9+	1992 03 07	691	0.7+	0.3+	1999 05 13	704	0.4+	0.1+
1986 04 14	691	1.1−	1.6+	1992 03 07	691	0.2−	0.6+	1999 05 13	704	0.2−	0.7+
1986 04 15	691	1.0+	0.1+	1992 03 07	691	0.0	0.2+	1999 05 13	704	0.6−	0.6+
1986 04 15	691	0.9+	0.3+	1993 07 24	675	1.1+	0.4+	1999 05 13	704	0.2−	0.3+
1986 04 15	691	0.8+	0.1+	1993 07 24	675	0.6+	0.2+	1999 05 13	704	0.6−	0.1+
1986 04 17	691	0.7+	0.7+	1999 04 15	704	0.3+	0.4−	1999 05 14	704	0.4+	0.1+
1986 04 17	691	0.4+	0.4+	1999 04 15	704	0.5+	0.2+	1999 05 14	704	0.8+	0.6−
1986 04 17	691	0.8+	1.1+	1999 04 15	704	0.1−	0.4−	1999 05 14	704	0.7−	0.0
1987 10 27	095	1.5+	1.2+	1999 04 15	704	0.9+	0.6−	1999 05 14	704	0.4−	1.7+
1987 11 21	095	(3.2+	2.9+)	1999 04 15	704	0.4+	1.6−	1999 05 14	704	2.0−	0.2+
1990 08 24	675	(0.8−	3.1−)	1999 04 17	704	0.2−	0.2−	1999 05 18	704	0.1+	0.5−
1990 08 24	675	(0.9−	3.1−)	1999 04 17	704	0.3−	0.3−	1999 05 18	704	0.5−	1.3−
1990 08 29	675	(1.4−	3.1−)	1999 04 17	704	0.7−	0.6−	1999 05 18	704	0.0	0.9−
1990 08 29	675	(2.0+	1.3−)	1999 04 17	704	0.2−	0.4−	1999 05 18	704	0.1+	0.2+
1990 09 14	675	0.9−	0.3−	1999 04 17	704	(3.6−	0.1−)	1999 05 18	704	0.9+	0.0
1990 09 14	675	0.5−	0.3−	1999 04 20	704	0.5−	0.8−	1999 05 19	704	1.5−	0.4−
1990 09 20	675	0.8−	0.4+	1999 04 20	704	0.0	0.9−	1999 05 19	704	0.5+	0.0
1990 09 20	675	0.6−	0.1−	1999 04 20	704	0.1−	0.5−	1999 05 19	704	0.8−	0.2−
1990 09 21	809	0.4−	1.0+	1999 04 20	704	0.5−	0.1−	1999 05 19	704	0.4+	0.1+

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Nakano				
<i>M</i>	271.61172	(2000.0)		P		Q			
<i>n</i>	0.28849903	ω	1.29350	+0.99701014		−0.07700815			
<i>a</i>	2.2683313	Ω	3.14442	+0.06981166		+0.86238317			
<i>e</i>	0.1846359	<i>i</i>	6.66529	+0.03312284		+0.50036488			
<i>P</i>	3.42	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	2		
Residuals in seconds of arc									
1986 08 17	095	(12.4− 0.7+)	1993 11 09	399	(2.8− 0.1−)	1999 05 13	704	0.0 0.4−	
1986 09 06	095	(0.4− 5.5−)	1995 03 23	033	0.2+ 0.4+	1999 05 13	704	0.6+ 0.5−	
1986 09 09	095	0.7+ 0.6+	1995 03 24	033	1.4− 0.4+	1999 05 13	704	0.5+ 0.5+	
1986 09 15	095	(4.7− 32.6−)	1998 01 26	566	0.7+ 0.9+	1999 05 13	704	0.3+ 0.4+	
1986 09 29	095	(3.5+ 1.5−)	1998 01 26	566	0.8+ 0.8+	1999 05 18	704	0.9− 0.6+	
1986 10 02	095	1.6− 1.5+	1998 01 26	566	0.8+ 0.7+	1999 05 18	704	0.3− 0.8+	
1993 10 13	691	0.1− 0.1−	1999 04 20	704	1.2+ 0.4−	1999 05 18	704	0.2− 0.7+	
1993 10 13	691	0.1+ 0.0	1999 04 20	704	0.9− 0.1−	1999 05 18	704	0.7+ 1.0+	
1993 10 13	691	0.2+ 0.0	1999 04 20	704	1.1+ 1.1+	1999 05 18	704	1.8+ 0.0	
1993 10 13	095	(2.5+ 4.3+)	1999 04 20	704	(0.9− 2.5+)	1999 06 15	704	0.6+ 0.2+	
1993 10 14	095	1.0− 1.4+	1999 05 10	704	0.5− 0.3−	1999 06 15	704	0.2− 0.2+	
1993 10 20	399	0.2+ 0.4+	1999 05 10	704	1.9− 0.8+	1999 06 15	704	0.1− 0.4+	
1993 10 20	399	0.6+ 0.1−	1999 05 10	704	0.5+ 0.4+	1999 06 15	704	0.6− 0.1+	
1993 11 07	399	(3.9− 0.0)	1999 05 10	704	0.0 1.5−	1999 06 15	704	0.2+ 0.4−	
1993 11 07	399	(2.4− 1.3+)	1999 05 10	704	(2.4− 2.3−)				
1993 11 09	399	1.1− 0.1+	1999 05 13	704	0.1+ 0.5+				

(10722)* 1986 TB = 1961 VA

Discovered 1986 Oct. 1 at the Osservatorio S. Vittore, Bologna.

Id. G. V. Williams (*MPC* 34485)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams					
<i>M</i>	217.70824		(2000.0)		P		Q				
<i>n</i>	0.27488286		ω 353.80231		+0.99617446		+0.08721673				
<i>a</i>	2.3426331		Ω 1.23423		−0.06529805		+0.78435824				
<i>e</i>	0.2214981		<i>i</i> 14.65195		−0.05807417		+0.61414607				
<i>P</i>	3.59		<i>H</i> 13.8		<i>G</i> 0.15		<i>U</i>		2		
Residuals in seconds of arc											
1961 11 04	760	1.4−	2.0+	1986 10 06	026	(2.9+	0.7−)	1999 03 19	552	0.6+	0.4+
1961 11 04	760	(3.8−	2.1+)	1986 10 08	026	0.8+	1.1−	1999 03 19	552	0.9+	0.5−
1986 09 03	026	1.8−	1.0+	1986 10 10	095	1.4−	0.5−	1999 03 20	704	0.9−	0.7+
1986 09 08	026	(3.3−	0.3−)	1986 10 10	552	0.5−	0.1−	1999 03 20	704	1.5+	0.5+
1986 09 10	095	0.2+	2.4+	1986 10 10	552	0.7−	0.2−	1999 03 20	704	0.3+	0.8+
1986 09 14	095	(4.1−	4.7+)	1986 10 11	026	(2.6+	1.0−)	1999 03 20	704	0.5−	0.1+
1986 09 29	046	2.3−	1.2+	1986 10 11	552	0.8+	1.1−	1999 03 20	552	0.2−	0.3−
1986 09 29	046	2.0−	1.5−	1986 10 11	552	0.7+	0.4−	1999 03 20	552	0.1−	0.8−
1986 09 29	026	0.4+	0.2+	1986 10 23	026	1.4+	0.8+	1999 03 20	552	0.4−	0.1−
1986 09 30	046	1.6−	1.0−	1986 10 24	552	0.8+	0.3−	1999 03 23	704	0.4−	0.7+
1986 09 30	046	0.9−	0.1−	1986 10 24	552	0.7−	0.0	1999 03 23	704	0.2+	0.2+
1986 09 30	552	0.6+	0.7+	1986 10 30	552	0.2+	0.2+	1999 03 23	704	0.4+	0.7+
1986 10 01	552	1.6+	1.0+	1986 10 30	552	0.7−	0.3−	1999 03 23	704	1.2+	0.3+
1986 10 01	046	0.3−	1.1−	1986 11 03	026	0.1+	0.2+	1999 04 06	704	1.1+	1.0+
1986 10 01	552	0.4+	1.0+	1986 11 07	026	0.2+	2.3−	1999 04 06	704	0.5+	0.3+
1986 10 01	046	0.2+	1.0−	1997 11 20	552	0.0	0.5+	1999 04 06	704	0.1+	0.1−
1986 10 01	026	0.6−	0.3+	1997 11 21	552	0.5−	0.2+	1999 04 06	704	0.5−	0.7−
1986 10 02	552	0.8+	1.0+	1997 12 06	552	0.5+	0.1−	1999 04 06	704	0.8−	1.2+
1986 10 02	552	0.5+	1.2+	1997 12 06	552	0.0	0.0	1999 04 07	699	0.2+	1.5+
1986 10 03	552	0.1+	0.1−	1998 01 03	552	0.2+	0.0	1999 04 07	699	0.0	0.2−
1986 10 03	552	1.1+	0.6−	1998 01 03	552	0.3+	0.4−	1999 04 07	699	0.2+	1.2+
1986 10 04	026	0.9+	0.4+	1998 01 03	552	0.2−	0.4+	1999 04 10	552	0.7−	1.0−
1986 10 04	552	0.8+	0.3+	1998 01 17	552	0.3+	0.4−	1999 04 10	552	0.1−	1.3−
1986 10 04	552	(1.0+	3.5−)	1998 01 17	552	0.4+	0.5−	1999 04 16	552	0.4−	0.5−
1986 10 05	095	(9.7+	13.0−)	1999 03 19	552	0.7+	0.1+	1999 04 16	552	0.4−	0.1−

(10723)* 1986 TH = 1984 BG₁

Discovered 1986 Oct. 3 by P. Jensen at Brorfelde.

Id. T. Kobayashi (*MPC* 31097)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams						
<i>M</i>	254.93302	(2000.0)		P	Q						
<i>n</i>	0.28716750	ω	72.63375	+0.90896400	−0.41146948						
<i>a</i>	2.2753377	Ω	311.60715	+0.34038712	+0.82523066						
<i>e</i>	0.1369447	<i>i</i>	5.13424	+0.24066792	+0.38689434						
<i>P</i>	3.43	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	1				
Residuals in seconds of arc											
1984 01 24	381	1.0+	0.7+	1997 12 04	910	0.2+	0.1+	1999 05 19	704	1.1+	0.6−
1984 01 24	381	0.7−	1.8−	1997 12 04	910	0.4+	0.1+	1999 06 09	704	0.1−	0.2+
1986 09 07	095	0.4+	0.4−	1997 12 04	910	0.4+	0.1+	1999 06 09	704	0.6−	0.3+
1986 09 11	095	1.7−	0.3−	1998 01 05	411	0.4−	0.5+	1999 06 09	704	(2.1−	0.5−)
1986 10 03	054	0.4+	0.4+	1998 01 05	411	0.2+	1.0+	1999 06 09	704	0.6−	0.3−
1986 10 04	054	0.5+	0.8+	1999 05 18	704	1.3+	0.1−	1999 06 09	704	0.2−	0.9+
1986 10 05	095	(2.9−	0.3−)	1999 05 18	704	0.1+	0.7+	1999 06 15	704	0.5−	0.5−
1986 10 08	054	0.1+	0.0	1999 05 18	704	1.0−	1.3+	1999 06 15	704	0.2−	0.2+
1986 10 11	054	0.6−	0.5+	1999 05 18	704	0.3−	0.2+	1999 06 15	704	0.4−	0.7−
1996 07 22	566	0.2+	0.2+	1999 05 18	704	(0.2+	2.6+)	1999 06 15	704	0.2−	0.4−
1996 07 22	566	0.0	0.2−	1999 05 19	704	0.5+	0.7+				
1996 07 22	566	0.2+	0.2−	1999 05 19	704	0.9+	0.7−				

(10724)* 1986 VR₅ = 1989 PZ₁ = 1991 BU₄ = 1993 TB₄₈

Discovered 1986 Nov. 5 by E. Bowell at the Anderson Mesa Station of the

Lowell Observatory.

Id. E. Bowell (*MPC* 28296)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams				
<i>M</i>	161.59081	(2000.0)			P		Q		
<i>n</i>	0.27312472	ω	177.25356		+0.09256508		−0.99062733		
<i>a</i>	2.3526756	Ω	267.42129		+0.91161587		+0.12488969		
<i>e</i>	0.0931623	<i>i</i>	5.77066		+0.40048497		−0.05531774		
<i>P</i>	3.61	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	2		
Residuals in seconds of arc									
1986 10 09	092 0.0	1.2+	1997 12 04	704	0.6+	0.4−	1999 05 10	704	0.2− 0.1+
1986 10 09	092 0.1+	1.9+	1997 12 04	704	0.2+	0.4−	1999 05 10	704	0.3− 0.3+
1986 10 11	092 0.5+	1.3+	1997 12 22	732	1.2−	1.6+	1999 05 10	704	0.7− 0.3+
1986 10 11	092 0.6+	0.3+	1997 12 22	732	0.8−	0.0	1999 05 10	704	0.1+ 0.7+
1986 10 12	092 0.3−	0.8+	1997 12 22	732	1.9−	1.1+	1999 05 10	704	0.3− 1.7+
1986 10 12	092 1.4+	1.3+	1997 12 23	732	1.0+	0.6−	1999 05 13	704	0.1+ 0.1+
1986 11 05	688 (3.0+ 1.0+)		1997 12 23	732	0.3+	0.9−	1999 05 13	704	0.1− 0.6−
1986 11 05	688 0.8−	0.8−	1999 04 15	704	0.3−	1.2+	1999 05 13	704	0.1− 0.3+
1986 12 03	010 2.1−	0.9+	1999 04 15	704	1.3+	1.3−	1999 05 13	704	0.7+ 0.3−
1986 12 03	010 (1.0− 3.5+)		1999 04 15	704	0.7−	1.0+	1999 05 13	704	0.4− 0.4+
1986 12 03	010 (0.2+ 3.4+)		1999 04 15	704	0.0	0.2−	1999 05 18	704	0.2− 0.1−
1989 08 01	675 0.5+	0.5+	1999 04 17	704	1.0+	0.6+	1999 05 18	704	0.1− 0.6+
1989 08 01	675 0.5−	0.4−	1999 04 17	704	1.1+	0.4+	1999 05 18	704	0.5− 0.2+
1991 01 17	675 0.3+	0.8+	1999 04 17	704	0.1−	0.3−	1999 05 18	704	0.2+ 1.4+
1991 01 17	675 0.1−	0.5+	1999 04 17	704	0.9+	0.2+	1999 05 18	704	0.7− 1.0+
1993 10 14	675 0.1−	0.4+	1999 04 20	704	1.7−	0.6+	1999 06 09	704	0.5+ 0.0
1993 10 14	675 0.0	0.4−	1999 04 20	704	0.1+	0.6−	1999 06 09	704	0.5+ 0.1+
1997 12 04	704 0.2+	0.4−	1999 04 20	704	0.4−	1.8−	1999 06 09	704	0.7+ 0.6+
1997 12 04	704 1.5+	0.4+	1999 04 20	704	0.7+	1.0−	1999 06 09	704	0.0 0.9+
1997 12 04	704 0.0	0.9−	1999 04 20	704	0.6+	0.2−	1999 06 09	704	0.2+ 0.5+

Residuals in seconds of arc

1986 11 22	881	0.8−	1.3−	Y	1987 01 04	881	0.4−	0.9+	1998 01 26	566	0.1+	0.2+
1986 11 22	881	1.8−	0.2+	Y	1987 01 04	881	(0.7+	4.8−)	1998 01 26	566	0.1−	0.3+
1986 11 29	881	0.7−	0.4−		1989 08 29	675	0.1+	0.3+	1998 02 17	886	0.5−	0.2+
1986 11 29	881	1.3+	0.7+		1989 08 29	675	0.4−	0.1+	1998 02 17	886	0.7−	1.3−
1986 11 30	046	1.9−	1.9−		1989 09 01	675	0.5−	1.2−	1999 05 19	704	1.1+	0.4+
1986 11 30	046	(3.1−	0.8−)		1989 09 01	675	0.7+	0.1+	1999 05 19	704	(1.2−	2.4−)
1986 12 01	046	0.8+	1.8−		1989 09 04	675	0.1+	0.1−	1999 05 19	704	1.3−	0.9−
1986 12 01	046	1.8+	1.7−		1989 09 04	675	0.1+	0.1+	1999 05 19	704	2.0+	1.2+
1986 12 02	688	0.5−	0.4+		1998 01 23	385	0.5+	0.6+	1999 06 09	704	0.2−	0.7+
1986 12 02	688	0.9+	0.2+		1998 01 23	385	1.1+	0.1+	1999 06 09	704	0.1+	1.4−
1986 12 03	046	(4.6−	1.0−)		1998 01 23	385	0.3+	0.0	1999 06 09	704	0.4−	1.2−
1986 12 03	046	2.1−	1.7−		1998 01 25	566	0.5−	0.3−	1999 06 09	704	0.3+	1.0−
1986 12 04	010	(1.2+	3.9−)		1998 01 25	566	0.1−	0.1−	1999 06 09	704	0.7−	0.4−
1986 12 05	881	0.4+	0.5+		1998 01 25	566	0.3−	0.4−	1999 06 15	704	0.2+	0.4−
1986 12 05	881	1.6+	0.4+		1998 01 25	566	0.2+	0.7−	1999 06 15	704	0.9−	0.3−
1986 12 06	054	0.7−	1.4+		1998 01 25	566	0.2−	0.3−	1999 06 15	704	0.3−	0.6−
1986 12 08	888	(2.6+	0.1+)		1998 01 25	566	0.3−	0.6−	1999 06 15	704	0.1−	0.3−
1986 12 08	888	0.3+	1.0+		1998 01 25	886	0.2+	0.6+	1999 06 15	704	0.6−	0.2−
1986 12 26	881	0.9+	0.8−		1998 01 25	886	0.2−	0.2−				
1986 12 26	881	1.9+	0.8+		1998 01 26	566	0.1−	0.5+				

(10726)* 1987 BS₂ = 1982 VX₁₀ = 1989 SU₉

Discovered 1987 Jan. 28 by E. W. Elst at the European Southern Observatory.

Id. H. Kaneda (*MPC* 16697)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	152.83792	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.26607347	<i>ω</i> 315.42884	−0.20486112	−0.97848347	
<i>a</i>	2.3940598	<i>Ω</i> 146.37019	+0.90993760	−0.19962603	
<i>e</i>	0.1632481	<i>i</i> 2.53921	+0.36061819	−0.05214932	
<i>P</i>	3.70	<i>H</i> 14.5	<i>G</i> 0.15	<i>U</i> 1	

Residuals in seconds of arc

1982 11 12	095	1.7+	0.9−	1989 09 28	809	0.0	0.5−	1998 02 24	012	0.7+	0.9−
1987 01 28	809	0.3−	1.4+	1989 09 28	809	0.2+	0.6−	1998 02 24	012	0.2−	0.1−
1987 01 28	809	1.7+	0.3+	1989 09 29	675	0.8+	1.0−	1998 02 24	012	0.4−	0.8−
1987 01 29	809	0.5−	1.0+	1989 09 29	675	0.3+	0.9−	1999 05 18	704	1.9−	2.0−
1987 01 29	809	0.7+	0.2−	1989 09 30	809	1.0−	0.4+	1999 05 18	704	0.5+	0.7+
1987 01 30	809	0.7+	0.3−	1989 09 30	809	0.6−	0.3+	1999 05 18	704	0.3−	1.1−
1987 01 30	809	0.7+	0.2+	1989 09 30	809	0.1−	0.3+	1999 05 18	704	1.5+	0.2−
1987 01 30	809	0.3−	0.5+	1991 02 11	675	0.8−	0.5+	1999 05 19	704	1.5+	0.1+
1987 01 30	809	2.2+	0.2+	1991 02 11	675	0.1+	0.9−	1999 05 19	704	0.1+	0.0
1987 01 31	809	0.8−	0.4+	1991 03 11	809	0.7−	0.3+	1999 05 19	704	1.1−	1.0+
1987 01 31	809	0.5−	0.5+	1991 03 11	809	0.5−	0.2+	1999 06 15	704	0.8+	0.4+
1987 02 01	809	0.0	0.7+	1991 03 11	809	0.3−	0.0	1999 06 15	704	1.6+	1.1+
1987 02 02	809	0.6−	0.6+	1991 03 12	675	1.3−	0.6−	1999 06 15	704	1.2+	0.6+
1987 02 02	809	0.1+	0.1−	1991 03 12	675	1.4−	1.4−	1999 06 15	704	0.7+	0.2+
1987 02 03	809	0.6+	1.1+	1991 03 13	809	1.1−	0.6−	1999 06 15	704	0.4+	0.8+
1987 02 03	809	0.1−	1.0+	1991 03 13	809	0.8−	1.0−	1999 06 20	691	0.2+	0.2+
1989 09 26	809	1.2−	0.0	1991 03 13	809	0.4−	1.0−	1999 06 20	691	0.1+	0.8+
1989 09 26	809	0.7−	0.1+	1998 02 18	012	0.3−	0.0	1999 06 20	691	0.2+	0.7+
1989 09 26	809	0.2−	0.3+	1998 02 18	012	0.5+	0.4−				
1989 09 28	809	0.3−	0.5−	1998 02 18	012	0.3−	0.0				

(10727)* 1987 DN = 1996 VZ₃₀ = 1998 BF₄

Discovered 1987 Feb. 25 by T. Nijima and T. Urata at Ojima.

Id. D. J. Asher (*MPC* 31226)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Nakano			
<i>M</i>	67.00875	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.17776320	<i>ω</i> 216.94263	−0.98691503	−0.14478039	
<i>a</i>	3.1326230	<i>Ω</i> 314.56875	+0.16117508	−0.87319821	
<i>e</i>	0.0321681	<i>i</i> 5.71762	+0.00461606	−0.46536387	
<i>P</i>	5.54	<i>H</i> 12.4	<i>G</i> 0.15	<i>U</i> 1	

Residuals in seconds of arc

1987 02 23	809	0.4−	1.2+	1989 07 29	675	0.0	0.7−	1999 04 20	704	0.7+	0.3+
1987 02 23	809	0.8−	1.1+	1989 07 29	675	0.2−	0.1+	1999 04 20	704	0.3−	0.8+
1987 02 23	809	0.5−	1.1+	1996 11 02	327	0.1−	0.4+	1999 04 20	704	0.3+	1.1+
1987 02 24	809	0.1−	0.6+	1996 11 02	327	0.1+	0.6+	1999 04 20	704	0.2+	0.3+
1987 02 24	809	0.1+	0.4+	1996 11 02	327	0.8+	0.5+	1999 05 07	385	0.3+	0.2−
1987 02 24	809	0.1+	0.6+	1996 11 13	327	0.3−	0.6+	1999 05 07	385	0.1+	0.1−
1987 02 25	809	0.7+	0.1−	1996 11 13	327	0.5−	0.6+	1999 05 07	385	0.4−	0.0
1987 02 25	809	0.8+	0.1+	1996 11 13	327	0.2−	0.8+	1999 05 07	385	0.3−	0.3−
1987 02 25	809	0.9+	0.2−	1998 01 21	905	0.6−	0.3−	1999 05 09	739	0.2+	0.4−
1987 02 25	887	(2.8−	0.6−)Y	1998 01 21	905	0.2+	1.3+	1999 05 09	739	0.2+	0.3+
1987 02 25	887	0.5+	0.0	Y 1998 01 24	385	0.1−	0.5−	1999 05 10	704	0.3−	0.1−
1987 02 25	887	(3.6−	2.1−)Y	1998 01 24	385	0.1−	0.3−	1999 05 10	704	0.0	0.3+
1987 02 27	809	0.3+	0.3+	1998 01 26	886	0.2−	0.6−	1999 05 10	704	1.0+	1.0−
1987 02 27	809	0.3+	0.1+	1998 01 26	886	0.4−	1.3−	1999 05 10	704	1.2+	0.1−
1987 02 27	809	0.3+	0.1−	1998 01 28	566	0.1−	0.2−	1999 05 10	704	1.3+	0.9+
1987 02 28	809	0.1+	0.0	1998 01 28	566	0.1−	0.5−	1999 05 13	704	0.7+	0.6−
1987 02 28	809	0.2−	0.4+	1998 01 28	566	0.3−	0.1−	1999 05 13	704	1.2−	0.0
1987 02 28	809	0.0	0.4+	1998 02 05	886	0.5+	0.5+	1999 05 13	704	0.6+	0.1−
1987 03 01	887	0.0	1.8−	1998 02 05	886	0.5−	0.6+	1999 05 13	704	0.7+	0.2−
1987 03 01	887	(2.9−	0.1+)	1999 04 15	704	0.2+	0.2−	1999 05 13	704	0.3−	1.5−
1987 03 02	809	0.7−	0.3−	1999 04 15	704	0.1+	0.7−	1999 05 18	704	1.4+	0.4−
1987 03 02	809	0.6−	0.4−	1999 04 15	704	0.4−	0.0	1999 05 18	704	0.7+	0.4+
1987 03 02	809	0.7−	0.1−	1999 04 15	704	1.3−	0.5−	1999 05 18	704	0.1−	0.8+
1987 03 02	887	0.8−	0.5+	1999 04 17	699	0.3+	0.3+	1999 05 18	704	0.6+	0.1+
1987 03 02	887	1.1−	0.1+	1999 04 17	699	0.1−	0.1−	1999 05 18	704	0.2+	0.6+
1987 03 03	809	0.1−	0.4−	1999 04 17	699	0.7+	1.1+	1999 05 19	704	0.2+	0.2+
1987 03 03	809	0.1+	0.3−	1999 04 17	704	0.7−	0.8−	1999 05 19	704	1.3−	1.0+
1987 03 03	809	0.4+	0.4−	1999 04 17	704	0.6−	0.1+	1999 05 19	704	(2.7−	0.5+)
1987 03 04	809	0.6+	0.7−	1999 04 17	704	0.3−	0.5−	1999 05 19	704	0.9−	1.5+
1987 03 04	809	0.6+	0.7−	1999 04 17	704	0.6−	0.7+	1999 05 19	704	1.7−	0.5+
1987 03 04	809	0.6+	1.1−	1999 04 17	704	(3.0−	0.6−)				
1989 07 05	675	0.1+	0.0	1999 04 20	704	0.1−	0.5−				

(10728)* 1987 RT₅ = 1981 UQ₂₃ = 1981 WN₃

Discovered 1987 Sept. 4 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Id. S. J. Bus (*MPC* 20500), G. V. Williams (d, *ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	326.12582	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.31681486	<i>ω</i> 194.88227	+0.69932362	+0.71334840	
<i>a</i>	2.1310764	<i>Ω</i> 119.51512	−0.65034978	+0.66144838	
<i>e</i>	0.1831296	<i>i</i> 3.00454	−0.29663384	+0.23156015	
<i>P</i>	3.11	<i>H</i> 15.0	<i>G</i> 0.15	<i>U</i> 2	

Residuals in seconds of arc

1981 10 24	675	0.5+	0.1−	1998 01 24	704	0.9+	0.5+	1999 05 14	704	0.3+	0.4−
1981 10 25	675	1.6+	0.1+	1998 01 24	704	0.3+	0.4+	1999 05 14	704	0.9−	0.3−
1981 11 24	033	0.5−	0.2−	1998 01 24	704	0.5+	0.1+	1999 05 14	704	1.0−	0.5+
1981 11 24	033	0.8−	0.0	1998 01 24	704	0.7−	1.0−	1999 05 17	703	1.0−	0.7+
1987 09 04	095	0.6−	0.7−	1998 02 20	557	0.7−	0.4+	1999 05 17	703	0.8+	0.6+
1987 09 24	095	0.6−	0.2−	1998 03 19	557	0.2−	0.1+	1999 05 17	703	0.1−	0.1−
1987 09 27	095	0.0	0.4−	1998 03 19	557	0.7+	0.4+	1999 05 17	703	0.1−	0.1−
1993 07 12	809	0.2+	1.6+	1998 03 19	557	0.5−	0.8−	1999 05 18	704	0.6−	0.1−
1993 07 12	809	0.2−	1.3+	1999 04 13	426	0.0	0.0	1999 05 18	704	0.0	0.1+
1993 07 12	809	0.2−	1.1+	1999 04 13	426	0.1+	0.0	1999 05 18	704	0.4−	0.1+
1993 07 19	809	1.3+	0.6+	1999 04 13	426	0.6−	0.3+	1999 05 18	704	0.7−	0.0
1993 07 19	809	0.4+	0.5+	1999 04 14	426	0.1+	0.4+	1999 05 18	704	1.0−	0.3+
1993 07 19	809	0.3−	0.7+	1999 04 14	426	0.7+	0.2+	1999 05 19	704	0.1−	0.3+
1993 07 23	809	0.5+	1.1+	1999 04 19	699	0.8+	0.4+	1999 05 19	704	0.1−	0.6−
1993 07 23	809	0.4−	0.0	1999 04 19	699	0.4+	0.2+	1999 05 19	704	0.4+	0.1−
1993 07 23	809	0.6−	0.5+	1999 04 19	699	0.5+	1.2+	1999 05 19	704	0.1+	0.3−
1993 07 24	801	0.1−	0.4−	1999 05 08	367	1.4−	1.4−	1999 06 05	703	0.5+	0.5−
1993 07 24	801	0.1+	0.2−	1999 05 08	367	1.2−	1.1−	1999 06 05	703	0.0	0.4+
1995 02 06	691	0.1−	0.7+	1999 05 09	739	(2.6−	0.3+)	1999 06 05	703	0.6+	0.7+
1995 02 06	691	0.1+	0.6+	1999 05 09	739	0.7−	0.0	1999 06 05	703	1.4+	1.3+

M.P.C. 34752

1999 JUNE 22

1995 02 06	691	0.4−	0.6+	1999 05 10	704	(0.2−	2.1+)	1999 06 09	704	0.7+	0.3+
1996 05 15	801	0.2−	1.3−	1999 05 10	704	(1.6−	2.5+)	1999 06 09	704	1.2+	0.2+
1996 05 15	801	0.1−	0.7−	1999 05 10	704	0.1−	0.0	1999 06 09	704	0.9+	0.2−
1996 05 23	801	0.1+	0.4−	1999 05 10	704	0.2−	0.0	1999 06 09	704	0.8+	0.2−
1997 12 26	566	0.1+	0.9+	1999 05 10	704	0.5−	0.1−	1999 06 09	704	0.7+	1.2+
1997 12 26	566	0.1−	0.1+	1999 05 13	704	0.4−	0.1+	1999 06 14	704	0.5+	0.2−
1997 12 26	566	0.5−	0.8+	1999 05 13	704	1.0+	1.8−	1999 06 14	704	0.6+	0.2+
1998 01 02	704	0.4+	0.1+	1999 05 13	704	1.0−	0.1+	1999 06 14	704	0.3+	0.2−
1998 01 02	704	0.2+	1.1+	1999 05 13	704	0.2−	0.3+	1999 06 14	704	0.0	0.5+
1998 01 02	704	0.7+	1.3+	1999 05 13	704	0.3−	0.3+	1999 06 14	704	0.5−	0.0
1998 01 02	704	0.0	1.2+	1999 05 14	704	0.0	1.1−				
1998 01 02	704	0.6+	1.0+	1999 05 14	704	0.6+	0.3−				

(10729)* 1987 RU₅ = 1998 DD₂₀

Discovered 1987 Sept. 4 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Id. G. V. Williams (*MPC* 31377)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	309.32242	(2000.0)	P	Q	
<i>n</i>	0.23015244	ω	310.03009	+0.69696855	+0.71701533
<i>a</i>	2.6370943	Ω	4.20619	−0.60302087	+0.59441860
<i>e</i>	0.2097950	<i>i</i>	8.72730	−0.38807301	+0.36408179
<i>P</i>	4.28	<i>H</i>	13.7	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1987 09 04	095	0.8+	0.6−	1998 03 02	589	0.2−	0.6−	1999 04 20	704	0.5+	0.3+
1987 09 24	095	1.0+	0.2−	1998 03 03	589	0.6+	0.0	1999 04 20	704	0.3−	0.2+
1987 09 27	095	1.1−	0.3−	1998 03 03	589	0.2−	0.0	1999 05 10	704	0.6+	0.3−
1997 01 11	327	0.5−	0.3+	1998 03 03	589	0.6+	0.8+	1999 05 10	704	0.5−	0.8+
1997 01 11	327	0.3+	0.1+	1998 03 06	589	0.5−	0.6+	1999 05 10	704	1.2−	1.0+
1997 01 11	327	0.1−	0.3+	1998 03 06	589	1.2−	0.1−	1999 05 10	704	0.9−	0.1+
1998 02 24	589	0.0	0.2+	1998 03 06	589	0.2−	0.1−	1999 05 10	704	0.3−	0.6+
1998 02 24	589	0.3−	0.2−	1998 03 06	589	0.0	0.2−	1999 05 13	704	0.5+	0.1−
1998 02 24	589	0.9+	0.3−	1999 04 13	732	0.3−	0.5−	1999 05 13	704	0.8−	0.5+
1998 02 26	589	0.5+	0.1+	1999 04 13	732	0.3−	0.5−	1999 05 13	704	1.4+	1.3−
1998 02 26	589	0.1+	0.4+	1999 04 13	732	0.4−	0.4−	1999 05 13	704	0.9+	1.6−
1998 02 26	589	0.8+	0.3+	1999 04 14	732	0.1+	1.0−	1999 05 13	704	0.4+	0.4−
1998 02 27	589	0.4+	0.4−	1999 04 15	704	0.8+	0.1−	1999 05 14	704	0.9+	0.9+
1998 02 27	589	0.1−	0.5+	1999 04 15	704	1.0+	0.5+	1999 05 14	704	1.9−	1.0+
1998 02 27	589	0.4−	0.1+	1999 04 15	704	0.3+	0.8+	1999 05 14	704	0.5+	1.1+
1998 02 27	589	0.0	0.3−	1999 04 15	704	0.5+	0.1+	1999 05 14	704	0.0	1.0−
1998 02 28	589	0.2−	1.2−	1999 04 17	704	0.2−	0.2+	1999 05 18	704	0.1+	0.6−
1998 02 28	589	0.8−	0.1−	1999 04 17	704	0.2−	0.3−	1999 05 18	704	0.6−	0.8+
1998 02 28	589	1.0+	0.6−	1999 04 17	704	0.3+	1.0−	1999 05 18	704	0.3−	0.6+
1998 02 28	589	1.4−	0.7−	1999 04 17	704	0.2+	1.2−	1999 05 18	704	0.7−	0.2+
1998 03 02	589	0.0	0.1+	1999 04 17	704	(1.6−	2.3−)	1999 05 18	704	0.3−	0.4+
1998 03 02	589	0.1−	0.6+	1999 04 20	704	0.2+	0.3−				

(10730)* 1987 SU = 1941 DA = 1979 BR = 1992 CH₅ = 1995 AN₁

Discovered 1987 Sept. 19 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. S. Nakano (*MPC* 24736)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Nakano			
<i>M</i>	255.37000	(2000.0)	P	Q	
<i>n</i>	0.30952954	ω	16.93526	+0.99260966	−0.12079259
<i>a</i>	2.1643857	Ω	349.98111	+0.10215032	+0.88343817
<i>e</i>	0.1097652	<i>i</i>	3.83252	+0.06550863	+0.45270980
<i>P</i>	3.18	<i>H</i>	13.8	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc (or two decimals in units of degrees)

1941 02 20	012(0.08+	0.00+)	X	1999 04 13	426	0.6+	0.5−	1999 05 10	704	0.5+	0.2+
1955 07 24	675	0.7+	1.5−	1999 04 13	426	0.1+	0.5−	1999 05 10	704	0.6+	0.2+
1955 07 24	675	0.6+	0.8−	1999 04 13	426	0.4+	0.3−	1999 05 10	704	0.4−	0.2−
1979 01 24	095	(2.5−	0.8−)	1999 04 14	426	0.2+	0.6−	1999 05 13	704	0.4+	0.4−

1987 08 28	095	2.0+	2.0−	1999 04 14	426	0.1+	0.4−	1999 05 13	704	0.2−	0.1−
1987 09 16	095	1.3−	1.2−	1999 04 14	426	0.3+	0.4−	1999 05 13	704	0.6+	0.3+
1987 09 19	688	0.3−	1.7+	1999 04 15	704	0.5−	0.3−	1999 05 13	704	1.1+	0.6−
1987 09 19	688	0.8+	0.7+	1999 04 15	704	0.2+	0.6−	1999 05 13	704	0.8−	0.0
1987 09 26	688	1.4+	0.2+	1999 04 15	704	0.0	0.1+	1999 05 18	704	0.2+	0.1+
1987 09 26	688	2.1−	0.8−	1999 04 15	704	0.9−	0.3+	1999 05 18	704	0.1−	0.0
1992 02 08	372	0.9−	0.6−	1999 04 15	704	1.7−	1.3+	1999 05 18	704	0.1+	0.4−
1992 02 08	372	0.9+	0.5+	1999 04 17	704	0.4−	0.6−	1999 05 18	704	0.7+	0.1+
1992 02 26	691	0.4−	0.8−	1999 04 17	704	0.8−	0.6−	1999 05 18	704	0.5+	0.8+
1992 02 26	691	0.7−	0.3−	1999 04 17	704	0.5−	0.8−	1999 05 19	704	0.0	0.8−
1992 02 26	691	0.5−	0.4−	1999 04 17	704	0.2+	0.0	1999 05 19	704	0.4−	0.2−
1992 02 27	033	0.6−	0.4−	1999 04 20	704	0.2+	0.1−	1999 05 19	704	0.5−	1.2+
1992 02 27	033	1.1−	0.1+	1999 04 20	704	0.8−	0.4+	1999 05 19	704	0.2−	1.9+
1992 02 28	033	0.2−	0.3−	1999 04 20	704	0.8−	0.1−	1999 05 19	704	0.2−	0.3−
1995 01 06	408	0.5+	1.8−	1999 04 20	704	0.3+	0.8+	1999 06 09	704	1.1+	0.5−
1995 01 07	408	0.3+	0.5−	1999 04 20	704	0.5−	0.2−	1999 06 09	704	0.9+	0.6−
1995 01 07	408	0.9+	0.4+	1999 05 09	739	0.0	0.3−	1999 06 09	704	0.9+	0.1+
1995 01 07	408	0.5+	1.1+	1999 05 09	739	0.0	0.3−	1999 06 09	704	0.4+	0.4+
1996 05 06	689	0.8−	1.8+	1999 05 10	704	0.4+	0.0	1999 06 09	704	0.0	0.8+
1998 02 01	689	0.4−	0.1+	1999 05 10	704	0.1+	0.5−				

(10731)* 1988 BL₃ = 1959 RC₁ = 1983 VL₄ = 1997 YO₁₁

Discovered 1988 Jan. 16 by H. Debehogne at the European Southern Observatory.

Id. T. Urata (*MPC* 31098)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	280.24759	(2000.0)	P	Q	
<i>n</i>	0.29078117	ω	83.06897	+0.97132440	+0.21328447
<i>a</i>	2.2564473	Ω	264.57678	−0.23749308	+0.89122881
<i>e</i>	0.2057890	<i>i</i>	6.05813	+0.01122291	+0.40027609
<i>P</i>	3.39	<i>H</i>	13.5	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1959 09 09	024	0.0	0.1−	1998 01 24	566	0.5−	0.4+	1999 05 10	704	0.1+	0.6+
1983 11 08	381	0.0	1.0+	1998 01 24	566	0.1−	0.5+	1999 05 13	704	0.1+	0.6+
1988 01 16	809	0.2+	0.2+	1998 01 24	566	0.4−	0.6+	1999 05 13	704	(0.2+	2.2+)
1988 01 16	809	0.6+	0.6+	1998 02 28	691	0.2−	0.3+	1999 05 13	704	0.2−	0.2+
1988 01 16	809	0.9+	1.1+	1998 02 28	691	0.4+	0.5+	1999 05 13	704	0.4−	0.4−
1988 01 17	809	0.3−	0.3+	1998 02 28	691	0.1+	0.3+	1999 05 13	704	0.4+	0.1+
1988 01 17	809	0.1−	0.6+	1999 04 15	704	0.0	0.4−	1999 05 14	704	0.2+	1.2+
1988 01 17	809	0.2+	0.2+	1999 04 15	704	0.0	0.6−	1999 05 14	704	1.3+	0.6+
1988 01 19	809	0.3+	0.5−	1999 04 15	704	0.1+	0.5−	1999 05 14	704	0.2+	0.2+
1988 01 19	809	0.6+	0.6−	1999 04 15	699	0.5−	0.5−	1999 05 14	704	(0.7−	2.7−)
1988 01 21	809	0.3+	0.3−	1999 04 15	699	0.7−	0.5+	1999 05 18	704	0.5−	0.2+
1988 01 21	809	0.7+	0.3−	1999 04 15	704	0.3+	0.5−	1999 05 18	704	0.3−	0.3−
1988 01 23	809	0.6−	0.6−	1999 04 15	699	0.0	0.6−	1999 05 18	704	0.3−	0.2+
1988 01 23	809	0.3−	0.6−	1999 04 17	704	0.4+	0.2+	1999 05 18	704	0.1−	0.5+
1988 01 25	809	0.1+	0.2−	1999 04 17	704	0.3+	0.8+	1999 05 18	704	0.7−	0.4−
1988 01 25	809	0.4+	0.3−	1999 04 17	704	0.3+	0.7+	1999 05 19	704	0.5+	0.1+
1988 01 27	809	1.2−	0.1−	1999 04 17	704	0.5−	0.6+	1999 05 19	704	0.3−	0.1+
1988 01 27	809	0.6−	0.1+	1999 04 20	704	0.1−	0.4−	1999 05 19	704	0.4−	0.1−
1988 01 29	809	0.5−	1.0+	1999 04 20	704	0.4−	1.0−	1999 05 19	704	0.0	0.3−
1988 01 29	809	0.1−	0.5+	1999 04 20	704	0.0	1.2−	1999 05 19	704	0.9−	0.4+
1997 12 27	888	0.5−	0.8−	1999 04 20	704	0.2+	1.6−	1999 06 09	704	0.0	0.2+
1997 12 27	888	0.1+	0.1−	1999 04 20	704	0.3−	1.1−	1999 06 09	704	0.0	0.6+
1997 12 31	888	0.0	0.5−	1999 05 10	704	0.6+	0.6+	1999 06 09	704	1.7+	1.1+
1997 12 31	888	0.1+	0.7−	1999 05 10	704	0.0	0.1+	1999 06 09	704	1.0−	0.5+
1998 01 02	886	0.3+	0.8−	1999 05 10	704	0.3+	0.6−	1999 06 09	704	(2.2−	1.2+)
1998 01 02	886	0.1+	0.5−	1999 05 10	704	1.0+	0.1+				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	59.68562	(2000.0)	P	Q
<i>n</i>	0.27841457	ω	242.63630	-0.99960022 +0.01270351
<i>a</i>	2.3227800	Ω	298.08205	-0.00123163 -0.91209417
<i>e</i>	0.1861772	<i>i</i>	1.64057	-0.02824677 -0.40978390
<i>P</i>	3.54	<i>H</i>	14.4	<i>G</i> 0.15 <i>U</i> 2

Residuals in seconds of arc

1988 01 17	809	0.3-	0.8-	1993 09 16	809	1.7-	1.3+	1999 04 17	704	0.4+	0.6+
1988 01 17	809	0.1+	0.4-	1993 09 16	809	(0.5-	3.2+)	1999 04 17	704	0.8-	1.3+
1988 01 17	809	0.8+	0.1+	1993 09 16	809	(0.2-	2.8+)	1999 04 20	704	0.0	0.5-
1988 01 18	809	0.6+	0.3-	1993 09 18	675	0.1-	0.1+	1999 04 20	704	0.6+	0.6-
1988 01 18	809	0.4+	0.1-	1993 09 18	675	0.3-	0.6+	1999 04 20	704	0.2-	0.3-
1988 01 20	809	0.5-	0.6-	1993 09 23	809	(1.3+	3.3+)	1999 05 10	704	0.0	0.1+
1988 01 20	809	0.3+	0.3-	1993 09 23	809	0.5+	1.1+	1999 05 10	704	1.1+	0.1-
1988 01 22	809	0.1-	0.3-	1993 09 23	809	0.5-	1.6+	1999 05 10	704	0.3+	0.5-
1988 01 22	809	0.0	0.3-	1994 12 31	411	1.0+	0.5-	1999 05 10	704	0.8+	0.3-
1988 01 24	809	0.3-	0.1-	1994 12 31	411	0.8+	0.1-	1999 05 10	704	0.2-	0.3+
1988 01 24	809	0.0	0.0	1995 01 25	372	1.4-	0.0	1999 05 13	704	0.2+	0.4+
1988 01 26	809	0.8-	0.1+	1995 01 25	372	(2.7-	0.7-)	1999 05 13	704	0.5+	0.1+
1988 01 26	809	0.1-	0.1+	1995 01 27	372	1.6+	1.2+	1999 05 13	704	0.7-	0.7+
1988 01 28	809	0.7-	0.4+	1995 01 27	372	1.2-	1.8+	1999 05 13	704	0.3-	0.7+
1988 01 28	809	0.2+	0.1+	1999 04 15	704	0.4-	1.9-	1999 05 18	704	0.3+	0.2-
1988 01 30	809	0.3-	0.1+	1999 04 15	704	0.8-	1.5+	1999 05 18	704	0.1-	0.5+
1988 01 30	809	0.5-	0.3+	1999 04 15	704	1.0-	0.0	1999 05 18	704	0.5+	0.8+
1988 02 23	399	0.8+	1.7+	1999 04 15	704	1.0-	0.4+	1999 05 18	704	0.1-	0.9+
1988 02 23	399	0.8+	1.1+	1999 04 17	704	0.8+	0.1+	1999 05 18	704	0.1+	0.2-
1988 02 23	399	(3.3+	1.9-)	1999 04 17	704	0.7+	1.1-				

(10733)* 1988 CP₁ = 1992 YQ₃

Discovered 1988 Feb. 11 by E. W. Elst at the European Southern

Observatory.

Id. T. Kobayashi (*MPC* 22225)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	164.61131	(2000.0)	P	Q
<i>n</i>	0.19898357	ω	290.38280	+0.40900326 -0.91180261
<i>a</i>	2.9057477	Ω	135.41905	+0.85542727 +0.36917341
<i>e</i>	0.0811317	<i>i</i>	2.98085	+0.31774284 +0.17979708
<i>P</i>	4.95	<i>H</i>	13.6	<i>G</i> 0.15 <i>U</i> 1

Residuals in seconds of arc

1988 01 18	071	(2.2+	3.4-)	1996 09 15	566	0.0	0.0	1999 04 16	704	(4.7-	2.3-)
1988 01 18	071	0.8-	2.3-	1996 09 15	566	0.3-	0.2+	1999 04 19	704	1.1+	1.0-
1988 01 18	071	(4.1-	3.7-)	1996 12 12	327	0.4+	0.4+	1999 04 19	704	0.4-	1.3-
1988 01 19	071	(3.5-	5.4-)	1996 12 12	327	0.1+	0.3+	1999 04 19	704	1.8+	1.1-
1988 02 11	809	0.1-	0.6-	1996 12 12	327	0.1-	0.2+	1999 04 19	704	0.8+	0.1+
1988 02 15	809	1.5+	2.3-	1997 12 30	566	0.9+	0.2+	1999 04 19	704	0.5-	0.7-
1988 02 16	809	1.0+	0.5+	1997 12 30	566	0.8+	0.0	1999 05 12	704	0.3-	0.3+
1988 02 16	809	0.1+	0.4-	1997 12 30	566	1.0+	0.1+	1999 05 12	704	0.1+	1.6+
1988 02 16	809	0.0	0.6+	1998 02 25	566	0.4+	0.3-	1999 05 12	704	0.6-	0.4-
1988 02 17	809	2.0+	0.5-	1998 02 25	566	0.3+	0.4-	1999 05 12	704	1.6-	0.0
1988 02 17	809	0.8+	0.8-	1998 02 25	566	0.0	0.3-	1999 05 13	704	0.2-	0.9+
1988 02 17	809	0.4+	0.6-	1998 03 24	910	0.1+	0.7+	1999 05 13	704	1.6-	0.1+
1988 02 21	809	0.9+	0.4+	1998 03 24	910	0.6-	0.7+	1999 05 13	704	1.0-	0.7+
1988 02 21	809	0.0	0.4+	1998 03 24	910	0.5-	0.3+	1999 05 13	704	0.5+	0.1+
1988 02 21	809	1.3-	0.6+	1998 03 25	910	0.1-	0.1-	1999 05 13	704	0.4+	0.6+
1988 02 23	809	0.3+	1.2+	1998 03 25	910	0.1-	0.0	1999 05 17	704	1.6-	0.7-
1988 02 23	809	1.1-	1.1+	1998 03 25	910	0.0	0.4+	1999 05 17	704	1.0+	1.9+
1988 02 23	809	2.1-	1.2+	1999 04 11	699	0.0	0.4-	1999 05 17	704	1.1-	0.0
1992 12 24	691	0.3-	0.2+	1999 04 11	699	0.3+	0.6+	1999 05 17	704	0.7-	1.7+
1992 12 24	691	0.4-	0.3+	1999 04 11	699	0.4+	0.0	1999 05 18	704	0.6-	2.2+
1992 12 24	691	0.7-	0.3+	1999 04 12	704	0.6+	1.1-	1999 05 18	704	1.4+	0.3+
1992 12 25	691	0.8-	0.2+	1999 04 12	704	0.0	1.1-	1999 05 18	704	0.3+	2.1+
1992 12 25	691	0.7-	0.1+	1999 04 12	704	1.4-	0.4-	1999 05 18	704	0.7-	0.5+
1992 12 25	691	0.8-	0.2+	1999 04 12	704	(0.7+	3.4+)	1999 05 19	704	0.3-	0.0

1993 01 23	691	0.3-	0.1-	1999 04 12	704	0.5+	0.9-	1999 05 19	704	0.1+	1.4+
1993 01 23	691	0.4+	0.4+	1999 04 16	704	(0.7+	2.1+)	1999 05 19	704	0.4-	1.2-
1993 01 23	691	0.3-	0.4+	1999 04 16	704	0.8+	1.4-	1999 05 19	704	1.2+	0.6-
1996 09 15	566	0.5-	0.1+	1999 04 16	704	1.6+	1.9-				

(10734)* 1988 CT₄ = 1988 CE₆ = 1980 TA₉ = 1996 SV₆

Discovered 1988 Feb. 13 by E. W. Elst at the European Southern

Observatory.

Id. S. Nakano (d, *MPC* 13035), G. V. Williams (*MPC* 28071)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	325.24080	(2000.0)	P	Q
<i>n</i>	0.18786580	ω	62.55309	-0.15992179 +0.98577258
<i>a</i>	3.0192859	Ω	198.46369	-0.95352539 -0.16782602
<i>e</i>	0.0561201	<i>i</i>	9.40331	-0.25537101 +0.00931919
<i>P</i>	5.25	<i>H</i>	12.8	<i>G</i> 0.15 <i>U</i> 1

Residuals in seconds of arc

1980 10 13	095	0.9-	0.1-	1999 03 19	704	0.9+	0.6-	1999 04 07	699	0.6+	0.0
1988 02 13	809	0.6+	0.2+	1999 03 19	704	0.1-	0.3+	1999 04 09	691	0.6-	0.1-
1988 02 15	809	1.0+	0.0	1999 03 19	704	0.1+	0.7+	1999 04 09	691	0.7-	0.0
1988 02 15	809	0.4+	1.1-	1999 03 19	704	0.6-	0.4+	1999 04 09	691	0.7-	0.1+
1988 02 15	809	0.0	0.3-	1999 03 20	704	0.2-	0.4-	1999 04 15	704	0.6-	0.1-
1988 02 16	809	0.4+	0.5+	1999 03 20	704	0.4-	0.0	1999 04 15	704	0.8-	0.5-
1988 02 16	809	0.9	0.7-	1999 03 20	704	0.2+	0.7+	1999 04 15	704	1.4+	1.1-
1988 02 16	809	0.6+	0.3-	1999 03 20	704	0.0	0.4-	1999 04 15	704	0.5+	0.5-
1988 02 21	809	0.2-	0.2-	1999 03 23	704	0.1+	1.3-	1999 04 16	704	0.1+	0.4-
1988 02 21	809	0.3+	0.2+	1999 03 23	704	0.5+	0.1-	1999 04 16	704	1.1+	1.7+
1988 02 21	809	0.0	0.1+	1999 03 23	704	0.8+	0.6-	1999 04 16	704	0.3-	1.2+
1988 02 23	809	0.6-	0.3+	1999 03 23	704	0.3+	0.4-	1999 04 16	704	1.4-	0.3+
1988 02 23	809	0.9-	0.5+	1999 03 23	704	0.6-	1.2-	1999 04 16	704	1.0-	1.0+
1988 02 23	809	1.1-	0.4-	1999 03 25	650	1.1+	0.9-	1999 04 19	704	0.2+	0.4-
1996 09 21	327	0.0	0.1+	1999 03 25	650	0.2+	0.2-	1999 04 19	704	0.3-	0.1-
1996 09 21	327	0.4+	0.1-	1999 04 05	650	1.2+	0.2+	1999 04 19	704	0.1+	0.1-
1996 09 21	327	0.2+	0.5-	1999 04 05	650	1.3+	0.5+	1999 04 19	704	1.0+	0.6+
1996 09 23	327	0.3+	0.2-	1999 04 07	704	0.1-	0.3+	1999 04 19	704	0.0	0.6+
1996 09 23	327	0.2+	0.3+	1999 04 07	704	1.1-	0.3+	1999 06 10	704	0.7-	0.5-
1996 09 23	327	0.1+	0.1+	1999 04 07	704	1.0-	0.7+	1999 06 10	704	0.8-	1.4-
1996 09 23	327	0.4+	0.2+	1999 04 07	704	1.1-	0.2+	1999 06 10	704	0.0	0.5-
1997 12 29	566	0.7-	0.2+	1999 04 07	704	1.4-	0.9+	1999 06 10	704	0.0	0.5+
1997 12 29	566	0.4-	0.3+	1999 04 07	699	1.3+	0.1-	1999 06 10	704	0.6+	0.6+
1997 12 29	566	0.5-	0.0	1999 04 07	699	0.8+	0.0				

(10735)* 1988 CF₆ = 1979 SR₁₁ = 1992 JF₂

Discovered 1988 Feb. 15 by E. W. Elst at the European Southern

Observatory.

Id. G. V. Williams (*MPC* 21568)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	58.86946	(2000.0)	P	Q
<i>n</i>	0.26966065	ω	237.85084	-0.74154453 -0.66796860
<i>a</i>	2.3727811	Ω	260.15685	+0.63498214 -0.66860654
<i>e</i>	0.1409933	<i>i</i>	3.64782	+0.21658576 -0.32677705
<i>P</i>	3.65	<i>H</i>	13.6	<i>G</i> 0.15 <i>U</i> 2

Residuals in seconds of arc

1979 09 24	095	0.8-	2.3+	1998 12 23	704	0.2+	0.8-	1999 03 23	704	0.1-	0.4+
1988 02 10	033	0.4+	0.4-	1998 12 23	704	1.3+	0.4+	1999 03 23	704	0.8+	1.0+
1988 02 11	033	0.7-	0.7-	1999 02 12	704	0.3-	0.6-	1999 03 23	704	0.8-	0.1+
1988 02 15	809	0.4-	0.7-	1999 02 12	704	0.3-	0.3-	1999 03 23	704	0.1+	1.1+
1988 02 15	809	0.3+	0.3-	1999 02 12	704	1.0-	2.0+	1999 03 23	704	(1.6-	2.5+)
1988 02 15	809	0.3-	0.0	1999 02 12	704	0.3-	1.2+	1999 03 24	699	0.3+	1.2+
1988 02 16	809	0.2-	0.3+	1999 02 16	704	0.4+	0.1-	1999 03 24	699	0.1+	0.7+
1988 02 16	809	0.2+	0.5-	1999 02 16	704	0.6-	0.5-	1999 03 24	699	0.6+	1.1+
1988 03 14	033	0.5-	0.2+	1999 02 16	704	0.4+	0.5-	1999 05 07	704	0.0	0.2+
1988 03 14	033	0.1-	0.3-	1999 02 16	704	0.1+	0.7-	1999 05 07	704	1.7+	1.0-
1992 05 03	809	0.0	0.4-	1999 02 16	704	0.8+	1.2-	1999 05 07	704	1.1-	0.4+

1992 05 03	809	0.3+	0.3-	1999 03 18	560	0.3+	0.3+	1999 05 07	704	0.5+	1.7+
1992 05 03	809	0.5+	0.6-	1999 03 18	560	0.4-	0.5+	1999 05 07	704	2.7-	0.8-
1992 05 04	809	0.4-	0.4+	1999 03 18	560	0.4-	0.5+	1999 06 08	704	2.4+	0.3+
1992 05 04	809	0.2-	0.1+	1999 03 19	704	0.2+	0.4+	1999 06 08	704	0.4+	0.0
1992 05 04	809	0.2+	0.0	1999 03 19	704	0.1+	0.3+	1999 06 08	704	0.4-	0.1-
1998 11 25	704	0.9-	0.8-	1999 03 19	704	0.5-	0.0	1999 06 08	704	0.0	0.2-
1998 11 25	704	0.3-	0.1-	1999 03 19	704	0.8-	0.4+	1999 06 08	704	1.1-	0.4+
1998 11 25	704	0.4-	1.0-	1999 03 20	704	0.4-	0.7+	1999 06 10	704	1.0+	0.7-
1998 11 25	704	0.0	1.1-	1999 03 20	704	0.1-	0.3+	1999 06 10	704	0.9-	0.5-
1998 11 25	704	0.1+	1.2-	1999 03 20	704	0.7+	1.9-	1999 06 10	704	0.9+	0.9-
1998 12 23	704	0.5+	0.4+	1999 03 22	699	0.6+	0.3+	1999 06 10	704	1.6-	1.3-
1998 12 23	704	0.8+	0.3-	1999 03 22	699	0.2+	0.6+				
1998 12 23	704	1.2+	0.0	1999 03 22	699	0.5+	0.8+				

(10736)* 1988 DD₃

Discovered 1988 Feb. 22 by R. H. McNaught at Siding Spring.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	72.04843		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.19121732	ω	254.11875	-0.95738802	-0.24296878
a	2.9839021	Ω	271.62106	+0.28606139	-0.87212393
e	0.0414639	i	8.98555	-0.03971222	-0.42469521
P	5.15	H	13.8	G 0.15	U 2

Residuals in seconds of arc

1980 09 13	675	0.0	0.7+	1988 03 10	413	0.1+	0.0	1999 04 22	426	0.4-	0.2-
1980 09 14	675	0.1-	0.2+	1988 03 10	413	1.1+	0.6+	1999 04 22	426	0.1-	0.1-
1983 05 06	413	0.8+	0.9+	1988 07 11	413	0.2+	0.8+	1999 04 22	426	0.5+	0.1+
1983 05 06	413	1.4-	2.0-	1995 07 18	104	0.1+	0.6-	1999 05 10	704	1.5+	0.1+
1988 02 22	413	1.1-	0.6+	1995 07 18	104	0.5-	0.5+	1999 05 10	704	1.3-	0.3+
1988 02 22	413	0.3+	0.7-	1995 07 18	104	0.2-	0.5+	1999 05 10	704	0.4+	0.3+
1988 02 23	413	0.6+	1.0+	1999 04 21	426	0.1+	0.5-	1999 05 10	704	0.3-	0.5+
1988 02 25	413	0.2-	0.3+	1999 04 21	426	0.3+	0.3-	1999 05 10	704	0.3+	0.5+
1988 02 25	413	0.1-	0.2-	1999 04 21	426	0.6-	0.6-				

(10737)* 1988 DZ₄ = 1996 EX

Discovered 1988 Feb. 25 by R. H. McNaught at Siding Spring.

Id. G. V. Williams (*MPC* 26900)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	14.82936		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.37501028	ω	104.65781	+0.19412994	+0.98075130
a	1.9044691	Ω	176.33588	-0.97789498	+0.19517019
e	0.1300647	i	19.17154	-0.07768514	-0.00595685
P	2.63	H	15.2	G	0.15
				U	2

Residuals in seconds of arc

1988 02 23	413	0.4-	0.8+	1996 03 21	566	0.1+	0.1+	1999 06 11	704	0.2-	0.0
1988 02 23	413	0.2-	0.1+	1996 03 21	566	0.5+	0.6+	1999 06 11	704	0.5-	0.0
1988 02 25	413	0.2-	0.0	1996 03 21	566	0.1-	0.3+	1999 06 11	704	0.5-	0.4+
1988 02 25	413	0.8+	1.0-	1996 03 21	608	0.3+	0.2+	1999 06 11	704	1.2+	1.0-
1988 03 10	413	0.3-	0.4+	1996 03 21	608	0.6+	0.4+	1999 06 12	704	0.1+	0.4-
1988 03 10	413	0.2+	1.2-	1996 03 22	608	0.6+	0.4-	1999 06 12	704	(3.6+	1.8-)
1996 03 15	566	0.0	0.1-	1996 03 22	608	0.3+	0.4+	1999 06 12	704	(0.1-	2.1+)
1996 03 15	566	0.1-	0.2-	1997 11 29	688	0.1+	0.2+	1999 06 12	704	0.3-	0.4+
1996 03 15	566	0.1-	0.2-	1997 11 29	688	0.0	0.1+	1999 06 12	704	0.6-	0.8-
1996 03 16	566	0.1-	0.1-	1997 12 27	688	0.1-	0.5+	1999 06 15	145	0.2-	0.1+
1996 03 16	566	0.5-	0.2-	1997 12 27	688	0.0	0.3+	1999 06 16	145	0.3-	0.3+
1996 03 16	566	0.5-	0.1-	1999 05 24	704	1.9+	0.3-	1999 06 16	145	0.3-	0.0
1996 03 17	566	0.2-	0.2+	1999 05 24	704	0.8+	0.8+	1999 06 16	145	0.3-	0.2+
1996 03 17	566	0.3-	0.2-	1999 05 24	704	0.1-	0.7+				
1996 03 17	566	0.2-	0.1+	1999 06 11	704	0.0	0.3+				

(10738)* 1988 FW₂ = 1993 SJ₃

Discovered 1988 Mar. 17 by W. Ferreri at the European Southern

Observatory.

Id. G. V. Williams (*MPC* 22951), L. D. Schmadel (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	113.11923		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.27695423	ω	289.10626	-0.64912540	-0.75967646
a	2.3309379	Ω	201.51826	+0.73182421	-0.60965582
e	0.0663374	i	6.11742	+0.20753205	-0.22629949
P	3.56	H	14.1	G 0.15	U 1

Residuals in seconds of arc

1988 03 17	809	(3.3-	1.1+)	1993 10 17	033	1.2-	0.2+	1999 05 10	704	0.0	0.0
1988 03 17	809	2.0-	0.3+	1995 02 19	292	(2.5+	2.5-)	1999 05 10	704	0.2+	0.7+
1988 03 18	809	1.2-	0.5-	1995 02 19	292	0.9+	0.4+	1999 05 10	704	0.3-	0.2+
1988 03 18	809	1.9-	0.4+	1995 03 18	292	(4.5+	2.6-)	1999 05 10	704	1.0-	0.0
1988 03 23	809	0.3-	0.7+	1995 03 18	292	(4.2+	2.6-)	1999 05 10	704	0.2-	0.2+
1988 03 23	809	1.1+	0.5-	1997 11 26	704	0.2-	0.9+	1999 05 13	704	0.5+	0.1-
1988 03 23	809	0.9+	0.9-	1997 11 26	704	0.3-	1.1+	1999 05 13	704	0.6-	0.4+
1988 03 24	809	0.5+	0.6-	1997 11 26	704	0.6-	0.6+	1999 05 13	704	0.5+	0.1+
1988 03 24	809	1.9+	0.9-	1997 11 29	704	1.1+	0.6+	1999 05 13	704	0.1-	0.4+
1993 09 15	809	0.1-	1.4+	1997 11 29	704	0.4+	0.2+	1999 05 13	704	0.0	0.9+
1993 09 15	809	(2.8-	0.3+)	1997 11 29	704	(2.0-	0.3+)	1999 05 14	704	0.6-	0.3+
1993 09 15	809	(2.9-	0.7+)	1997 11 29	704	0.8-	1.0-	1999 05 14	704	0.3+	0.0
1993 09 17	809	1.2+	1.1+	1997 11 29	704	0.2-	0.2+	1999 05 14	704	1.6+	0.1+
1993 09 17	809	0.0	0.9+	1999 04 12	704	0.2-	0.3-	1999 05 14	704	0.0	0.9+
1993 09 17	809	1.1+	1.4+	1999 04 12	704	0.7-	0.2+	1999 05 14	704	1.0+	0.9+
1993 09 18	809	1.8+	0.5+	1999 04 12	704	0.5-	0.1+	1999 05 18	704	0.4+	0.4+
1993 09 18	809	1.2+	0.0	1999 04 12	704	0.2-	0.5+	1999 05 18	704	0.1+	0.2+
1993 09 18	809	1.0+	0.7-	1999 04 14	699	0.2-	0.2+	1999 05 18	704	0.5+	0.2+
1993 09 18	675	0.3+	0.5+	1999 04 14	699	0.0	0.0	1999 05 18	704	0.0	1.5+
1993 09 18	675	0.5-	0.6-	1999 04 14	699	0.1+	0.7+	1999 05 18	704	0.0	0.0
1993 09 20	033	1.1-	1.1-	1999 04 19	704	0.6-	0.0	1999 05 19	704	2.5-	2.0-
1993 09 22	033	1.0-	0.3-	1999 04 19	704	0.2-	0.2+	1999 05 19	704	0.1+	0.7-
1993 09 22	033	0.2+	1.1-	1999 04 19	704	0.8+	0.2-	1999 05 19	704	0.6-	0.8-
1993 09 22	675	0.8+	0.1+	1999 04 19	704	0.7+	0.5+	1999 05 19	704	1.2+	0.8-
1993 09 22	675	0.4-	0.9-	1999 04 21	426	0.1-	0.2+	1999 05 19	704	0.5+	1.5-
1993 09 23	809	1.6-	0.8-	1999 04 21	426	0.1-	0.1+	1999 06 08	704	0.9+	1.1-
1993 09 23	809	(2.4-	1.6-)	1999 04 21	426	0.3-	0.3+	1999 06 08	704	0.2+	0.1-
1993 09 23	809	(2.3-	2.3-)	1999 04 22	426	0.2+	0.2+	1999 06 08	704	0.7+	0.0
1993 10 17	033	1.4-	0.7-	1999 04 22	426	0.4-	0.1+	1999 06 08	704	0.2-	0.8+

(10739)* 1988 JB₁

Discovered 1988 May 12 by C. S. Shoemaker at Palomar.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	13.20924		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.17725743	ω	83.89752	-0.56017796	+0.81032704
a	3.1385792	Ω	149.91539	-0.82827525	-0.55108825
e	0.3997287	i	20.06255	+0.01267915	-0.19917788
P	5.56	H	14.5	G 0.15	U 1

Residuals in seconds of arc

1988 05 12	675	0.0	1.2-	1994 08 12	587	0.6+	1.2-	1997 01 10	608	0.5+	1.5+
1988 05 12	675	0.5-	0.5-	1994 08 13	809	(2.9+ 0.0)		1998 01 02	711	0.3+	1.0-
1988 06 08	675	(0.2+ 3.0-)		1994 08 13	809	(2.2+ 1.1-)		1998 01 02	711	0.6+	0.8-
1988 06 09	675	0.2+	0.8-	1994 08 13	809	(2.2+ 0.1+)		1999 01 22	561	0.5+	0.6+
1988 06 11	675	0.4+	2.6-	1994 08 15	413	0.0	0.3-	1999 01 22	561	0.6+	0.5+
1988 06 16	675	1.1-	1.6-	1994 08 15	413	0.1+	0.0	1999 01 22	561	0.4+	0.5+
1988 06 19	675	1.0-	1.7-	1994 08 15	595	0.2+	1.2+	1999 05 02	611	0.3+	0.1+
1988 07 11	801	0.2-	0.6+	1994 08 15	595	0.4-	0.0	1999 05 02	611	0.4+	0.3+
1988 08 09	801	0.7-	1.4+	1994 08 16	595	(2.4+ 1.9+)		1999 05 09	127	0.4-	1.0+
1994 05 02	413	0.8+	0.1+	1994 08 16	595	1.8+	0.4+	1999 05 09	127	0.4-	0.9+
1994 05 02	413	0.4+	0.4+	1994 09 08	608	0.3+	0.1+	1999 05 14	704	1.4+	0.5+
1994 05 02	413	0.6+	0.4+	1994 09 08	608	0.2-	0.5-	1999 05 14	704	0.4+	0.6-
1994 05 04	413	0.4-	0.1+	1994 09 08	608	0.1+	0.3-	1999 05 14	704	0.8+	0.4+
1994 05 04	413	0.2-	0.2+	1994 09 09	675	0.8-	0.5+	1999 05 14	704	1.4-	0.8+
1994 06 17	413	0.8-	0.0	1994 09 27	608	1.0+	0.5-	1999 05 15	127	0.5-	1.5+
1994 06 17	413	0.9-	0.0	1994 09 27	608	1.3+	0.2-	1999 05 15	127	0.6-	1.4+
1994 08 10	809	0.2-	0.7+	1996 10 11	711	0.9+	0.9+	1999 06 07	704	0.3-	1.0+
1994 08 10	809	0.6-	0.8+	1996 10 11	711	0.2-	0.8+	1999 06 07	704	0.4-	1.3+

1994 08 10	809	0.8−	0.5+	1996 10 13	711	1.0−	0.9−	1999 06 07	704	0.1+	1.3+
1994 08 11	809	0.2−	1.8+	1996 10 13	711	0.3+	1.0−	1999 06 07	704	1.4+	0.4+
1994 08 11	809	0.6+	2.2+	1996 12 05	711	0.4−	0.3−	1999 06 11	704	0.2+	0.3−
1994 08 11	809	(0.5+ 2.7+)		1996 12 05	711	0.1−	0.2−	1999 06 11	704	0.2−	0.2+
1994 08 12	587	0.0	0.7−	1997 01 08	608	0.7−	0.3+	1999 06 11	704	0.1−	0.1−
1994 08 12	587	0.5−	0.5−	1997 01 08	608	0.4+	0.4+	1999 06 11	704	0.0	0.2−
1994 08 12	587	0.7−	0.0	1997 01 10	608	0.3−	1.8+	1999 06 11	704	0.2+	0.5+

(10740)* 1988 RX₂

Discovered 1988 Sept. 8 by F. Börngen at Tautenburg.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	183.23611		(2000.0)	P	Q
<i>n</i>	0.22629262	ω	235.76589	+0.98071950	−0.19535778
<i>a</i>	2.6669965	Ω	135.49915	+0.18154170	+0.90138013
<i>e</i>	0.1092840	<i>i</i>	0.40543	+0.07233167	+0.38645724
<i>P</i>	4.36	<i>H</i>	13.5	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1988 08 19	675	0.9−	0.2+	1997 11 07	411	0.2−	0.4−	1999 02 18	699	0.1+	0.5+
1988 09 08	033	0.5−	0.2+	1997 11 29	704	1.6+	0.3−	1999 03 06	113	1.5−	0.5−
1988 09 08	033	0.2−	0.1−	1997 11 29	704	(0.5− 2.3−)		1999 03 06	113	1.4−	0.3+
1988 09 09	033	0.2−	0.3+	1997 11 29	704	0.1−	0.5−	1999 03 11	611	0.6+	0.7+
1988 09 10	033	0.1−	0.2−	1997 11 29	704	0.7+	0.4+	1999 03 11	611	0.4+	0.6−
1988 09 11	033	0.6−	0.1+	1997 11 29	704	0.5−	0.4−	1999 03 18	113	1.9−	0.1+
1988 10 07	675	0.2−	0.1−	1997 12 04	704	(2.7− 0.4−)		1999 03 18	113	0.2−	0.3+
1988 10 07	675	0.3+	0.3−	1997 12 04	704	0.3+	0.1+	1999 03 18	113	0.2−	1.5+
1988 10 13	675	0.0	1.2+	1997 12 04	704	0.7−	0.2+	1999 03 20	704	0.4+	0.1−
1988 10 13	675	0.3+	1.0+	1997 12 04	704	1.3−	0.2−	1999 03 20	704	0.8−	0.2+
1988 10 14	046	0.4+	1.2+	1997 12 05	704	0.1−	0.3+	1999 03 20	704	0.3+	0.8+
1988 10 14	046	(1.5+ 2.7+)		1997 12 05	704	0.8−	0.0	1999 03 20	704	0.0	0.6+
1994 01 11	675	1.3−	0.7+	1997 12 05	704	0.3+	0.6−	1999 03 23	704	1.2+	0.7−
1994 01 11	675	1.2+	0.1−	1997 12 05	704	0.4+	0.6+	1999 03 23	704	0.5+	0.8+
1997 11 06	411	0.9+	1.2−	1997 12 05	704	0.0	0.4+	1999 03 23	704	1.2+	1.4+
1997 11 06	411	0.7−	0.6−	1999 02 18	699	1.5+	0.2−	1999 04 05	113	0.1+	0.1−
1997 11 07	411	0.5+	0.4−	1999 02 18	699	0.7+	0.5+	1999 04 05	113	0.2+	0.2−

(10741)* 1988 SF₃

Discovered 1988 Sept. 16 by S. J. Bus at Cerro Tololo.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	124.78437		(2000.0)	P	Q
<i>n</i>	0.23821147	ω	44.91248	−0.20024797	−0.95135145
<i>a</i>	2.5772761	Ω	58.00361	+0.80338415	−0.29624137
<i>e</i>	0.0941827	<i>i</i>	16.02795	+0.56078040	+0.08468452
<i>P</i>	4.14	<i>H</i>	13.3	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1988 09 16	807	0.2+	0.4−	1999 03 24	704	0.7−	0.3+	1999 05 13	704	0.0	0.3+
1988 09 18	807	0.0	0.1+	1999 03 24	704	0.1−	1.8+	1999 05 13	704	0.2+	0.3+
1988 09 19	807	0.5+	0.1+	1999 03 24	699	0.5+	0.1+	1999 05 13	704	0.1−	0.4+
1988 10 04	807	0.1−	0.5−	1999 03 24	699	0.1−	0.4+	1999 05 13	704	0.6+	0.8−
1988 10 05	807	0.3+	0.6−	1999 03 24	699	(1.4+ 2.5+)		1999 05 15	704	1.0−	0.9−
1988 10 07	807	(2.6− 0.8−)		1999 04 12	704	0.4−	0.6−	1999 05 15	704	1.0+	0.6+
1988 11 05	807	1.1+	0.8−	1999 04 12	704	0.2−	0.8−	1999 05 15	704	0.7+	0.4−
1988 11 07	807	0.6+	1.7−	1999 04 12	704	(0.1− 2.7−)		1999 05 15	704	0.6+	0.1+
1995 04 10	411	0.4−	0.9+	1999 04 12	704	1.8−	0.7−	1999 05 15	704	0.1−	0.6+
1995 04 10	411	1.6−	1.0+	1999 04 12	704	0.6−	0.1−	1999 05 17	704	0.5+	0.8−
1995 04 10	411	0.4−	0.6+	1999 04 15	704	(0.1− 2.9−)		1999 05 17	704	0.6−	0.9+
1995 04 12	411	1.0−	1.9+	1999 04 15	704	(1.7− 3.5−)		1999 05 17	704	0.1−	0.5+
1995 04 12	411	(2.2− 0.6+)		1999 04 15	704	0.9+	1.0−	1999 05 17	704	0.7−	0.6+
1995 04 12	411	(2.5− 0.9+)		1999 04 15	704	0.8+	1.1−	1999 05 17	704	0.1+	0.3+
1995 05 05	010	(0.7+ 3.0+)		1999 04 16	703	0.4+	0.0	1999 05 18	704	0.3+	0.3−
1995 05 05	010	(0.4− 2.2+)		1999 04 16	703	0.2+	0.4+	1999 05 18	704	0.4+	0.8−
1995 05 05	010	0.8−	0.5+	1999 04 16	703	0.6+	0.2−	1999 05 18	704	0.6+	0.4−
1995 05 08	010	0.9+	0.1+	1999 04 16	703	0.3+	0.1+	1999 05 18	704	0.4−	0.3−
1995 05 08	010	1.6+	0.2+	1999 04 16	704	0.1+	0.1−	1999 05 18	704	0.3−	0.4−
1995 05 08	010	1.3+	1.2−	1999 04 16	704	0.9−	0.6−	1999 05 19	704	0.1−	0.5−

1995 05 30	691	1.6+	0.9+	1999 04 16	704	0.4−	1.4−	1999 05 19	704	0.1−	0.6−
1995 05 30	691	(2.0+ 1.1+)		1999 04 16	704	0.9−	1.2−	1999 05 19	704	1.0−	0.0
1995 05 30	691	1.0+	1.2+	1999 04 16	704	1.0−	2.0−	1999 05 19	704	0.4−	0.1−
1997 12 06	704	0.0	0.2−	1999 04 19	704	0.7−	0.5−	1999 05 19	704	0.1+	0.7+
1997 12 06	704	0.3−	0.6−	1999 04 19	704	0.6−	0.1+	1999 05 21	691	0.3−	0.3+
1997 12 06	704	0.2+	0.1+	1999 04 19	704	0.5−	0.4−	1999 05 21	691	0.1−	0.0
1997 12 06	704	(2.1− 2.1+)		1999 04 19	704	1.1−	0.6−	1999 05 21	691	0.0	0.1+
1997 12 06	704	0.1−	0.2−	1999 04 19	704	1.3−	0.2−	1999 05 21	704	0.3+	0.4+
1999 03 20	699	0.6+	0.3−	1999 05 12	704	0.2+	0.6−	1999 05 21	704	2.0−	0.1+
1999 03 20	699	0.8+	0.7+	1999 05 12	704	0.5−	0.6+	1999 05 21	704	0.2+	0.2−
1999 03 20	699	0.6+	0.8+	1999 05 12	704	0.5+	0.1−	1999 05 21	704	0.1−	0.0
1999 03 24	704	1.7+	0.5−	1999 05 12	704	1.0+	0.8−	1999 05 21	704	0.0	2.2+
1999 03 24	704	(2.1+ 0.7−)		1999 05 12	704	0.1+	0.5−				
1999 03 24	704	0.8−	1.6−	1999 05 13	704	0.5+	0.0				

(10742)* 1988 VK₂ = 1984 XB = 1992 UW₅

Discovered 1988 Nov. 7 by T. Hioki and N. Kawasato at Okutama.

Id. S. Nakano (*MPC* 21260)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	255.13423		(2000.0)	P	Q
<i>n</i>	0.24179434	ω	305.68873	+0.92474224	−0.35904385
<i>a</i>	2.5517530	Ω	75.64893	+0.37751551	+0.82321848
<i>e</i>	0.1346390	<i>i</i>	7.48794	+0.04830981	+0.43977136
<i>P</i>	4.08	<i>H</i>	13.5	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1984 12 01	046	2.0+	2.0−	1994 02 05	376	0.5−	1.3+	1998 03 26	566	1.1−	0.7−
1984 12 01	046	(1.4−	3.7−)	1994 02 05	376	(2.8+	2.6−)	1999 05 10	704	0.6+	1.1+
1988 11 07	877	(2.8+	1.8−)	1996 10 05	376	0.2+	0.7−	1999 05 10	704	0.1+	1.8+
1988 11 07	877	(2.7+	4.7−)	1996 10 05	376	0.1+	0.1+	1999 05 10	704	0.4−	1.5+
1988 11 12	877	(3.8+	0.2−)Y	1996 10 05	376	0.2+	0.4−	1999 05 10	704	0.8−	1.1+
1988 11 12	877	(3.2+	0.2+)Y	1996 10 21	376	0.3−	0.1−	1999 05 13	704	0.5−	0.4+
1988 12 06	877	1.6−	2.1+	1996 10 21	376	0.1−	0.2+	1999 05 13	704	0.1+	0.2−
1988 12 06	877	0.7−	2.1+	1996 10 21	376	0.3−	0.2+	1999 05 13	704	0.8+	0.1+
1988 12 07	877	1.0−	0.3−	1998 03 02	376	0.0	0.3+	1999 05 13	704	0.5−	0.5+
1988 12 07	877	1.3−	1.0+	1998 03 02	376	0.3+	0.1+	1999 05 18	704	0.4−	0.5+
1992 10 21	675	0.5+	0.5−	1998 03 03	699	0.1+	0.7−	1999 05 18	704	0.2−	0.1+
1992 10 21	675	1.3+	0.4+	1998 03 03	699	1.8+	0.6+	1999 05 18	704	0.7−	0.0
1992 10 22	675	0.2−	0.5−	1998 03 03	699	1.0−	1.1+	1999 05 18	704	0.8−	0.4+
1992 10 22	675	0.1−	0.3−	1998 03 06	376	0.0	0.1−	1999 05 19	704	0.3−	0.1+
1992 10 28	400	0.4−	0.7−	1998 03 06	376	0.6+	0.6−	1999 05 19	704	0.2−	0.6+
1992 10 28	400	1.7+	0.2+	1998 03 18	376	0.9+	0.1+	1999 05 19	704	0.0	0.8+
1992 11 02	400	2.1−	0.8−	1998 03 18	376	0.2+	0.5+	1999 05 19	704	0.7+	1.2+
1992 11 02	400	1.8+	1.7+	1998 03 24	704	0.8+	0.3−	1999 06 09	704	0.6+	1.0−
1992 11 16	691	0.2−	0.1+	1998 03 24	704	0.2−	0.7+	1999 06 09	704	0.1−	0.7−
1992 11 16	691	0.1−	0.1+	1998 03 24	704	0.1+	0.2−	1999 06 09	704	0.8−	1.3−
1992 11 16	691	0.3−	0.1+	1998 03 24	704	0.3−	1.6−	1999 06 09	704	0.8+	0.7−
1992 11 22	877	1.3−	1.5+	1998 03 24	704	0.0	0.6−	1999 06 09	704	0.4−	0.4+
1992 11 23	877	1.6+	0.9+	1998 03 25	704	0.6−	0.6+	1999 06 15	704	0.8+	0.0
1992 11 27	675	1.4−	1.8+	1998 03 25	704	0.4−	0.1+	1999 06 15	704	0.8+	0.2−
1992 11 27	675	(1.0−	2.6+)	1998 03 25	704	0.6+	0.2−	1999 06 15	704	0.7+	0.2−
1992 11 29	877	0.9−	0.1−	1998 03 25	704	0.6+	1.2−	1999 06 15	704	1.1+	0.1+
1992 11 29	877	(3.2−	0.5+)	1998 03 25	704	0.2−	0.1−	1999 06 15	704	1.2+	0.1+
1992 11 30	675	0.2+	1.2−	1998 03 26	566	1.3−	0.5+				
1992 11 30	675	0.4+	0.2+	1998 03 26	566	0.4−	0.4+				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	253.85585		(2000.0)	P	Q
<i>n</i>	0.23841134	ω	154.26985	+0.98872724	-0.09055536
<i>a</i>	2.5758354	Ω	211.63786	+0.06405553	+0.97564415
<i>e</i>	0.1895726	<i>i</i>	13.13929	+0.13533414	+0.19979546
<i>P</i>	4.13	<i>H</i>	13.3	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1988 11 12	675	1.0+	0.2-	1995 06 15	608	0.1-	0.6+	1999 05 13	704	0.4+	0.7-
1988 11 13	675	0.9-	0.2-	1995 06 15	608	0.0	0.5+	1999 05 13	704	0.4+	0.4-
1988 12 06	675	0.6+	0.4+	1996 11 11	689	0.1+	1.8+	1999 05 13	704	0.6+	0.5-
1988 12 07	675	1.9+	0.3-	1996 11 12	689	0.9-	0.5+	1999 05 13	704	1.3-	0.4+
1992 09 23	675	0.8-	0.7-	1996 12 01	689	0.2+	0.5-	1999 05 13	704	0.2+	1.0-
1992 09 23	675	0.8-	1.4-	1996 12 26	327	0.7+	0.1-	1999 05 14	704	2.0+	2.7+
1992 09 25	675	(0.6+	3.5-)	1996 12 26	327	1.0+	0.2-	1999 05 14	704	1.9+	0.4+
1992 09 25	675	0.4+	1.4-	1996 12 26	327	0.4+	0.4-	1999 05 14	704	0.6-	0.5-
1992 10 22	675	0.3-	0.5-	1996 12 26	327	0.6+	0.4-	1999 05 14	704	1.5+	0.2+
1992 10 22	675	0.1-	0.8-	1997 01 09	689	(2.3-	0.8-)	1999 05 14	704	1.3+	0.1-
1992 10 31	376	0.2-	1.3+	1998 03 19	699	0.2+	0.4-	1999 05 15	703	0.5+	0.0
1992 10 31	376	0.6-	1.5+	1998 03 19	699	1.4-	0.8+	1999 05 15	703	0.2-	0.3+
1992 11 21	801	0.4-	0.2+	1998 03 19	699	0.2-	0.3-	1999 05 15	703	0.7-	0.5-
1992 11 21	801	0.4-	0.2+	1999 04 12	704	1.5-	0.3-	1999 05 15	703	0.2-	0.4-
1992 11 29	801	0.1-	0.5+	1999 04 12	704	1.8-	0.1+	1999 05 18	704	0.0	0.2+
1992 11 29	801	0.2-	0.7+	1999 04 12	704	0.7-	1.4+	1999 05 18	704	0.1-	0.5-
1992 11 30	675	0.1+	0.1+	1999 04 12	704	1.6-	0.3+	1999 05 18	704	0.6+	0.9-
1992 11 30	675	0.1-	1.2+	1999 04 19	704	0.4-	0.1-	1999 05 18	704	1.4+	0.1+
1995 05 19	608	0.8-	0.0	1999 04 19	704	0.5-	0.2+	1999 05 18	704	1.7+	0.3+
1995 05 19	608	1.0-	0.1-	1999 04 19	704	0.5-	0.6+	1999 05 19	704	0.1+	0.4-
1995 05 19	608	0.5-	0.5+	1999 04 19	704	1.7-	1.7-	1999 05 19	704	0.3+	0.5-
1995 05 22	608	0.5-	0.3+	1999 04 19	704	1.0-	0.0	1999 05 19	704	0.3-	0.1-
1995 05 22	608	0.2+	0.8+	1999 05 10	704	1.1+	2.8+	1999 05 19	704	0.1+	0.9-
1995 06 01	608	0.3-	1.0+	1999 05 10	704	1.4+	0.4-	1999 05 19	704	0.2-	0.6-
1995 06 08	608	0.2+	0.6-	1999 05 10	704	0.1+	0.6+				
1995 06 08	608	0.3-	0.3-	1999 05 10	704	1.3+	0.7-				

(10744)* 1988 XO = 1981 AM₃ = 1991 LP

Discovered 1988 Dec. 5 by T. Kojima at the YGCO Chiyoda Station.

Id. G. V. Williams (*MPC* 18630)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	269.09216		(2000.0)	P	Q
<i>n</i>	0.23749029	ω	265.74968	+0.95992829	+0.06127789
<i>a</i>	2.5824909	Ω	90.57496	+0.04932068	+0.92363142
<i>e</i>	0.1779561	<i>i</i>	15.87134	-0.27587163	+0.37835172
<i>P</i>	4.15	<i>H</i>	13.1	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1981 01 08	381	0.6+	0.2+	1995 06 01	801	0.3-	0.3+	1999 05 15	704	(0.4-	2.1-)
1981 01 08	381	0.4-	1.2+	1999 04 18	426	0.0	0.5+	1999 05 15	704	0.0	0.7-
1988 12 05	897	2.0+	2.5-	1999 04 18	426	0.0	0.6+	1999 05 17	704	0.1-	0.1-
1988 12 05	897	1.3-	1.2-	1999 04 18	426	0.7-	0.6+	1999 05 17	704	0.5-	1.1-
1988 12 07	897	0.7+	0.1-	1999 04 19	704	0.6+	1.1-	1999 05 17	704	1.3-	0.0
1988 12 07	897	1.1-	0.5-	1999 04 19	704	0.7+	0.2-	1999 05 17	704	0.4-	0.6-
1988 12 17	897	1.0+	0.9+	1999 04 19	704	0.6-	0.6-	1999 05 17	704	0.7-	1.2-
1988 12 17	897	(3.2+	1.8-)	1999 04 19	704	0.7+	0.1+	1999 06 08	704	0.9+	0.3-
1991 06 13	675	1.0-	0.4-	1999 04 19	704	0.3+	1.2-	1999 06 08	704	0.3+	0.3+
1991 06 13	675	0.3+	0.3-	1999 04 19	426	0.1+	0.6+	1999 06 08	704	0.3+	0.8-
1991 06 15	675	0.7+	1.1-	1999 04 19	426	0.1-	0.6+	1999 06 08	704	0.1-	0.0
1991 06 15	675	0.8+	0.6-	1999 04 19	426	0.0	0.9+	1999 06 08	704	1.0-	0.6-
1991 07 08	675	(2.2-	1.3-)	1999 05 07	703	0.3+	0.8+	1999 06 10	704	1.0+	0.8-
1991 07 08	675	0.9-	0.6-	1999 05 07	703	0.4-	0.4+	1999 06 10	704	0.6+	0.1-
1991 07 10	675	0.9-	0.5-	1999 05 07	703	0.7+	1.2+	1999 06 10	704	0.5+	0.5-
1991 07 10	675	(5.2+	2.6-)	1999 05 07	703	0.5+	1.8+	1999 06 10	704	0.3+	1.1-
1992 10 29	801	0.1+	0.5-	1999 05 12	704	0.6-	0.4+	1999 06 10	704	0.5+	0.4-
1992 10 29	801	0.2+	0.4-	1999 05 12	704	1.6-	0.2+	1999 06 14	704	0.6+	0.1+
1992 12 21	801	0.5+	0.4-	1999 05 12	704	0.3+	0.4+	1999 06 14	704	0.8+	0.2+
1992 12 21	801	0.5+	0.4-	1999 05 12	704	0.3-	0.2+	1999 06 14	704	1.0+	0.6+

1992 12 23	801	0.2+	0.2-	1999 05 15	704	1.6-	0.6-	1999 06 14	704	0.2-	0.8-
1992 12 23	801	0.5+	0.1-	1999 05 15	704	1.0-	0.5-	1999 06 14	704	0.6+	0.0
1995 06 01	801	0.0	0.5+	1999 05 15	704	1.7-	1.2-				

(10745)* 1989 AK₆ = 1996 KC

Discovered 1989 Jan. 11 by F. Börngen at Tautenburg.

Id. B. G. Marsden (*MPC* 27443)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	160.75375		(2000.0)	P	Q
<i>n</i>	0.17522591	ω	158.94771	+0.20335635	+0.97138149
<i>a</i>	3.1627910	Ω	122.59671	-0.91784370	+0.23277396
<i>e</i>	0.0200472	<i>i</i>	8.37689	-0.34089460	-0.04726831
<i>P</i>	5.62	<i>H</i>	14.0	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1950 03 17	675	0.5+	0.1+	1996 05 19	684	0.1+	0.3-	1996 06 06	684	0.3+	0.3-
1956 03 10	675	0.3-	0.9+	1996 05 19	684	0.0	0.3-	1996 06 11	684	0.1-	0.3+
1989 01 11	033	0.1-	0.3-	1996 05 19	684	0.1-	0.3-	1996 06 11	684	0.3+	0.2+
1989 01 11	033	0.2-	0.0	1996 05 20	684	0.3-	0.4-	1996 06 12	684	0.2+	0.4-
1989 01 14	033	0.8+	0.2+	1996 05 20	684	0.5-	0.3-	1996 06 12	684	0.1-	0.9-
1989 02 02	033	0.5-	0.5-	1996 05 20	684	0.4-	0.3-	1996 06 12	684	0.2-	0.7-
1989 02 03	033	0.3-	0.2-	1996 05 22	684	0.6+	0.4+	1996 09 24	113	1.0-	0.4+
1996 05 18	684	0.2-	0.1-	1996 05 22	684	0.7+	0.3+	1998 09 25	113	1.2-	0.4+
1996 05 18	684	0.0	0.1+	1996 05 22	684	0.6+	0.3+	1998 10 12	699	1.0+	0.2+
1996 05 18	684	0.1-	0.1+	1996 05 24	691	0.5+	0.1+	1998 10 12	699	0.5+	0.3-
1996 05 18	691	1.0-	0.2+	1996 05 24	691	1.2+	1.0+	1998 10 12	699	0.6+	0.1+
1996 05 18	691	0.9-	0.3+	1996 05 24	691	0.4+	0.2+	1998 10 20	113	0.3-	0.2-
1996 05 18	691	1.1-	0.3+	1996 06 06	684	0.2+	0.4-	1998 10 20	113	0.1+	0.4-

(10746)* 1989 CE₆ = 1986 PH₃ = 1997 WJ₂₂

Discovered 1989 Feb. 10 by F. Börngen at Tautenburg.

Id. G. V. Williams (*MPC* 30975, unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	5.07114		(2000.0)	P	Q
<i>n</i>	0.22232849	ω	314.02854	+0.18491912	+0.97579038
<i>a</i>	2.6986049	Ω	326.10994	-0.83111268	+0.09186177
<i>e</i>	0.1573035	<i>i</i>	12.08933	-0.52445843	+0.19848059
<i>P</i>	4.43	<i>H</i>	13.3	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1977 08 08	413	0.6-	1.3+	1997 12 01	327	1.1+	0.0	1998 03 03	704	0.2-	0.1+
1986 08 01	675(32.3+	0.7+)		1997 12 01	327	0.0	0.6+	1998 03 03	704	0.0	0.3+
1986 08 01	675(34.8+	1.4+)		1998 02 01	113	0.2-	1.4-	1998 03 03	704	0.7-	0.5+
1986 08 02	675(26.7+	0.8+)		1998 02 01	113	0.7+	0.6+	1998 03 03	704	0.5-	0.4+
1986 08 02	675(30.2+	1.2+)		1998 02 01	113	0.9-	0.1+	1998 03 04	704	0.8+	0.1-
1986 08 04	675 (8.6+	0.5+)		1998 02 04	113	2.4+	2.4-	1998 03 04	704	0.9+	0.2-
1986 08 04	675(11.8+	2.8+)		1998 02 04	113	0.6-	2.2-	1998 03 04	704	(2.0+	4.6+)
1989 02 02	675	0.7-	0.3+	1998 02 06	809	2.2+	3.2+	1998 03 04	704	0.9-	0.5+
1989 02 02	675	0.2-	0.6+	1998 02 06	809	0.7+	2.6+	1998 03 04	704	1.2+	0.6+
1989 02 10	033	0.4-	0.2-	1998 02 06	809	2.0+	2.1+	1998 03 24	113	1.2-	0.1-
1989 02 10	033	0.5+	0.2-	1998 02 07	809	0.7+	0.5-	1998 03 24	113	0.3-	0.3+
1989 03 07	033	0.3-	0.0	1998 02 07	809	0.5+	0.5-	1998 03 24	113	0.8+	1.4-
1989 03 10	033	0.9+	0.4-	1998 02 07	809	0.1+	0.1-	1998 03 25	113	0.3-	0.4-
1989 03 10	033	0.2+	0.6-	1998 02 19	113	1.1-	0.0	1998 03 25	113	1.6-	0.2-
1991 09 17	675	1.5-	0.6+	1998 02 19	113	0.9-	0.3+	1998 03 25	113	0.1-	0.3-
1991 09 17	675	1.5+	1.0-	1998 02 19	113	1.1-	0.4+	1998 03 26	566	0.6+	0.1-
1991 10 06	675	1.0-	0.1+	1998 02 20	113	1.5-	0.0	1998 03 26	566	0.4+	0.3-
1991 10 06	675	1.2+	0.1+	1998 02 20	113	1.4-	0.0	1998 03 26	566	0.5+	0.5-
1997 11 28	327	0.4+	0.1+	1998 02 21	113	0.3-	0.2+	1998 03 29	113	0.6-	0.8-
1997 11 28	327	0.5+	0.1+	1998 02 21	113	0.6-	0.4+	1998 03 29	113	0.0	0.2-
1997 11 28	327	0.8+	0.2-	1998 02 21	113	0.9-	0.2+				
1997 12 01	327	0.1-	0.1+	1998 03 03	704	0.5+	0.2-				

Id. S. Nakano (d, *MPC* 22572), G. V. Williams (*MPC* 33222)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	95.39767		(2000.0)	P	Q
<i>n</i>	0.29430428	ω	220.39327	+0.50864847	-0.86074405
<i>a</i>	2.2384033	Ω	199.05908	+0.80481326	+0.48355767
<i>e</i>	0.1162564	<i>i</i>	3.49565	+0.30586329	+0.15903354
<i>P</i>	3.35	<i>H</i>	14.7	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1983 05 07	413	2.0-	1.4+	1998 11 24	721	0.2-	1.0+	1998 12 22	704	0.6+	1.8-
1983 05 07	413	0.8+	1.0-	1998 11 26	721	0.4+	0.2-	1998 12 22	704	(0.8+ 2.4-)	
1983 05 08	413	1.3-	0.1+	1998 11 26	721	0.1-	0.2+	1998 12 22	704	0.6+	1.0-
1983 05 08	413	2.5+	0.9-	1998 12 11	721	0.3-	0.2-	1998 12 22	704	1.2-	0.8-
1989 01 09	033	0.1+	0.1-	1998 12 11	721	0.1-	0.1-	1999 01 18	704	0.5-	0.2+
1989 01 09	033	0.2+	0.2+	1998 12 15	704	0.3-	0.2-	1999 01 18	704	0.9+	1.2+
1989 02 01	033	0.7-	0.2-	1998 12 15	704	0.3+	0.3-	1999 01 18	704	0.4-	0.8+
1989 02 02	033	0.4+	0.5+	1998 12 15	704	0.4-	0.6+	1999 01 18	704	0.4+	1.2+
1991 10 08	675	0.8-	0.1-	1998 12 15	704	0.0	0.7+	1999 01 18	704	0.8-	0.1+
1991 10 08	675	0.7+	0.4+	1998 12 15	704	0.2-	1.5-				
1998 11 24	721	0.0	0.2+	1998 12 22	704	1.1+	0.5-				

(10748)* 1989 CE₈ = 1992 WL₅

Discovered 1989 Feb. 8 by H. Debehogne at the European Southern

Observatory.

Id. S. Nakano (*MPC* 21571)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	176.60867		(2000.0)	P	Q
<i>n</i>	0.21867472	ω	179.64213	+0.27603444	-0.94795608
<i>a</i>	2.7285819	Ω	254.32929	+0.88142581	+0.31550394
<i>e</i>	0.0935555	<i>i</i>	9.48689	+0.38326691	-0.04285471
<i>P</i>	4.51	<i>H</i>	13.0	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1989 02 08	809	0.6-	0.2-	1989 03 02	809	0.0	0.5+	1999 05 10	704	0.2-	0.5+
1989 02 08	809	0.4-	0.3-	1989 03 02	809	0.1+	0.1+	1999 05 10	704	0.7+	0.4+
1989 02 08	809	0.1-	0.1+	1992 11 25	877	0.8+	0.3+	1999 05 10	704	0.0	0.6+
1989 02 09	809	0.4-	0.0	1992 11 25	877	(0.4- 2.4-)		1999 05 10	704	0.2-	0.6+
1989 02 09	809	0.4-	0.2+	1992 12 04	877	0.8-	0.9+	1999 05 10	704	0.1+	0.3-
1989 02 09	809	0.3-	0.3+	1992 12 04	877	0.3+	0.8+	1999 05 10	704	(0.0 2.5-)	
1989 02 10	809	0.1+	0.1+	1992 12 05	877	(5.2+ 3.4+)		1999 05 10	704	0.5+	0.4+
1989 02 10	809	0.2-	0.1-	1992 12 05	877	(4.9+ 4.0+)		1999 05 10	704	0.2+	0.2+
1989 02 10	809	0.0	0.2-	1998 01 24	566	0.0	0.1-	1999 05 13	704	0.6+	0.1-
1989 02 11	809	0.0	0.0	1998 01 24	566	0.0	0.2+	1999 05 13	704	0.3-	0.2+
1989 02 11	809	0.1+	0.0	1998 01 24	566	0.2-	0.1-	1999 05 13	704	1.1+	0.7+
1989 02 11	809	0.3+	0.1+	1998 02 18	732	1.2-	0.3-	1999 05 13	704	0.6+	1.1+
1989 02 12	809	0.5-	0.5-	1998 02 18	732	1.1-	0.3-	1999 05 13	704	0.4+	0.7+
1989 02 12	809	0.1-	0.5-	1998 02 18	732	0.3+	0.2+	1999 05 18	704	0.8+	0.3-
1989 02 12	809	0.1-	0.5-	1998 02 19	732	0.5+	0.1-	1999 05 18	704	0.6+	0.2+
1989 02 13	809	1.0-	0.4-	1998 02 19	732	0.3-	0.0	1999 05 18	704	1.0+	0.1-
1989 02 13	809	0.9-	0.5-	1998 02 19	732	0.1+	0.5-	1999 05 18	704	1.1+	0.5+
1989 02 13	809	0.8-	0.5-	1998 02 19	138	0.1-	1.1+	1999 05 18	704	0.3-	0.5+
1989 02 14	809	0.4-	0.0	1998 02 19	138	0.1+	0.7+	1999 06 09	704	0.1-	0.2+
1989 02 14	809	0.8-	0.2-	1998 02 20	627	0.5+	0.2+	1999 06 09	704	0.5-	0.3+
1989 02 26	809	0.4+	0.0	1998 02 20	627	0.0	0.3-	1999 06 09	704	0.9-	1.2-
1989 02 26	809	0.2+	0.3+	1998 02 20	627	0.0	0.3-	1999 06 09	704	0.1-	0.8-
1989 02 26	809	0.2+	0.1+	1998 02 25	566	0.4+	0.0	1999 06 09	704	0.4-	0.3+
1989 02 27	809	0.5+	0.8+	1998 02 25	566	0.4+	0.1+	1999 06 15	704	0.9-	0.3-
1989 02 27	809	0.6+	0.6+	1998 02 25	566	0.5+	0.0	1999 06 15	704	1.0-	0.7-
1989 02 27	809	0.9+	0.4+	1999 04 20	704	0.7+	0.7-	1999 06 15	704	0.9-	0.1-
1989 02 28	809	1.1+	0.5-	1999 04 20	704	0.3-	0.4-	1999 06 15	704	0.5-	0.2-
1989 02 28	809	1.0+	0.2-	1999 04 20	704	1.1+	0.2-	1999 06 15	704	0.2-	0.6-
1989 02 28	809	1.1+	0.6-	1999 04 20	704	0.9-	0.3-				
1989 03 02	809	0.0	0.2+	1999 05 10	704	0.8-	0.5+				

(10749)* 1989 GH₈ = 1995 YV₂

Discovered 1989 Apr. 6 by F. Börngen at Tautenburg.

Id. T. Kobayashi (*MPC* 26559)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	346.34281		(2000.0)	P	Q
<i>n</i>	0.26434383	ω	18.01472	-0.32744895	-0.94252246
<i>a</i>	2.4044916	Ω	91.14087	+0.85850636	-0.32619758
<i>e</i>	0.1256476	<i>i</i>	3.81648	+0.39464416	-0.07243307
<i>P</i>	3.73	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1983 07 17	413	0.5+	0.2+	1995 12 30	411	0.5+	0.4+	1998 09 21	113	0.8-	0.9+
1983 07 17	413	0.6-	0.8-	1996 01 10	411	0.4-	0.0	1998 09 22	113	1.0-	0.0
1983 10 06	413	(4.5- 0.7-)		1996 01 10	411	1.0-	0.3-	1998 09 22	113	0.6-	0.0
1983 10 06	413	0.6+	0.8-	1998 09 14	704	1.1+	1.4+	1998 09 26	704	1.1-	0.8-
1989 03 07	675	1.9+	0.1-	1998 09 14	704	0.4+	1.1+	1998 09 26	704	0.7-	0.7+
1989 03 07	675	0.8+	0.2+	1998 09 14	704	(3.4- 1.9+)		1998 09 26	704	0.4-	0.7-
1989 04 06	033	0.1-	0.3+	1998 09 17	699	1.0+	0.9-	1998 09 26	704	0.2+	1.2-
1989 04 07	033	0.2+	0.1+	1998 09 17	699	0.6+	0.3+	1998 09 26	704	0.8-	0.3-
1989 04 09	033	1.7-	0.7-	1998 09 17	699	0.9+	0.3-	1998 09 27	704	1.0+	1.0-
1989 04 09	033	1.1-	0.2-	1998 09 18	704	0.5+	0.3-	1998 09 27	704	1.2+	0.8-
1995 12 26	411	0.3-	1.0-	1998 09 18	704	0.9-	0.1+	1998 09 27	704	0.9+	1.3-
1995 12 26	411	0.1-	0.4-	1998 09 18	704	0.3+	0.6+	1998 09 27	704	0.1+	0.5-
1995 12 27	411	0.4+	0.1-	1998 09 18	704	1.5-	1.2+	1998 09 27	704	0.6+	1.0-
1995 12 27	411	0.3-	0.2+	1998 09 18	704	0.6-	1.6+	1998 10 20	113	0.3-	0.7+
1995 12 30	411	1.1+	0.5+	1998 09 21	113	1.2-	0.2-	1998 10 20	113	0.9+	1.5+

(10750)* 1989 PT

Discovered 1989 Aug. 9 by E. F. Helin at Palomar.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	346.16188		(2000.0)	P	Q
<i>n</i>	0.28523564	ω	156.68722	+0.53481487	+0.84264175
<i>a</i>	2.2855998	Ω	145.55073	-0.79164084	+0.52561395
<i>e</i>	0.1226103	<i>i</i>	6.36106	-0.29542823	+0.11698229
<i>P</i>	3.46	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1986 09 11	413	(3.8+ 1.0+)		1991 01 17	675	0.1+	0.3+	1999 05 21	704	0.4-	0.4-
1989 08 09	675	0.6-	0.4+	1991 01 17	675	0.9-	1.0+	1999 05 21	704	(0.3- 2.9-)	
1989 08 09	675	2.0+	0.1-	1992 06 23	413	0.2+	1.5-	1999 05 21	704	0.2-	0.5+
1989 08 10	675	0.1-	0.9-	1992 06 23	413	1.4+	0.0	1999 06 09	704	0.0	0.4-
1989 09 06	675	0.1-	2.3-	1995 03 04	691	0.1-	0.7-	1999 06 09	704	0.1-	0.1+
1989 09 06	675	0.4-	1.8-	1995 03 04	691	0.1-	1.4-	1999 06 09	704	0.6-	0.0
1989 09 08	675	0.0	1.0-	1996 10 15	801	1.9+	0.7+	1999 06 09	704	0.1+	0.0
1989 09 08	675	0.2-	0.2+	1996 10 15	801	0.4+	0.1+	1999 06 09	704	0.1+	0.1-
1989 10 02	809	2.0-	0.5+	1996 11 14	801	0.4+	0.3-	1999 06 14	704	0.1+	0.8-
1989 10 02	809	1.7-	0.6+	1996 11 14	801	0.5-	1.6-	1999 06 14	704	0.0	0.2+
1989 10 02	809	1.3-	0.8+	1996 11 15	801	1.4-	1.2-	1999 06 14	704	0.9+	0.2-
1989 10 02	809	0.9+	1.2+	1996 11 15	801	1.8+	0.3+	1999 06 14	704	1.2-	1.7+
1989 10 03	809	1.3+	1.4+	1999 05 21	704	0.1-	0.6+	1999 06 14	704	0.2+	1.7+
1989 10 03	809	0.8+	1.5+	1999 05 21	704	0.5-	0.5-				

(10751)* 1989 UV₁ = 1978 RU₂ = 1992 EW₂₃

Discovered 1989 Oct. 29 by Y. Oshima at the Gekko Observatory.

Id. G. V. Williams (*MPC* 23973, *MPC* 31528)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	302.91795		(2000.0)	P	Q
<i>n</i>	0.17947273	ω	319.15886	+0.93797671	+0.34666845
<i>a</i>	3.1126987	Ω	20.55882	-0.31462667	+0.85664392
<i>e</i>	0.2185646	<i>i</i>	0.74182	-0.14563564	+0.38207616
<i>P</i>	5.49	<i>H</i>	13.4	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1978 09 12	095	0.1-	0.8-	1989 11 01	888	0.9-	0.5+	1999 05 13	704	0.3-	0.2+
1989 10 02	807	0.0	1.2-	1989 11 04	888	0.4+	0.7+	1999 05 13	704	1.1-	1.9+
1989 10 04	807	0.4+	0.9-	1989 11 04	888	0.2+	1.3+	1999 05 13	704	0.1+	0.6-
1989 10 04	809	0.2+	0.1+	1992 03 02	809	0.0	0.8+	1999 05 19	704	0.1+	0.3-
1989 10 04	809	0.8+	0.1+	1992 03 04	809	0.0	0.6+	1999 05 19	704	0.0	1.0+
1989 10 04	809	0.9+	0.1+	1995 10 26	411	0.7-	0.5+	1999 05 19	704	0.7-	1.4+
1989 10 06	809	0.1-	1.2-	1995 10 26	411	0.5-	0.3-	1999 05 19	704	0.7+	0.7+
1989 10 06	809	0.2-	1.3-	1998 03 28	704	0.0	0.6-	1999 05 19	704	0.2-	1.3+
1989 10 06	809	0.1+	1.3-	1998 03 28	704	0.6+	1.1-	1999 06 09	704	0.5-	0.5-
1989 10 08	809	0.2-	0.9-	1998 03 28	704	0.7+	0.5-	1999 06 09	704	0.7-	0.3-
1989 10 08	809	0.0	1.0-	1998 03 28	704	0.6-	1.4-	1999 06 09	704	0.4+	0.5+
1989 10 08	809	0.0	1.1-	1998 03 28	704	(2.6-	2.3-)	1999 06 09	704	0.3+	0.4+
1989 10 28	807	1.1+	0.7+	1998 04 19	704	1.5-	1.0-	1999 06 09	704	0.3-	1.5-
1989 10 29	807	0.9+	1.1-	1998 04 19	704	0.4-	1.9-	1999 06 15	704	0.4+	0.0
1989 10 29	888	1.3-	1.0+	1998 04 19	704	(0.3+	2.7-)	1999 06 15	704	0.1+	0.2-
1989 10 29	888	1.5-	2.0+	1998 04 19	704	(0.8+	2.1-)	1999 06 15	704	0.6+	0.6-
1989 10 31	807	0.6+	1.0+	1999 05 10	704	1.6+	1.1-	1999 06 15	704	0.1+	0.1-
1989 11 01	807	0.2+	0.2-	1999 05 10	704	0.9-	0.8-	1999 06 15	704	0.4+	1.0-
1989 11 01	888	0.6+	1.1+	1999 05 10	704	0.7-	1.2+				

(10752)* 1989 WJ₁ = 1981 RO = 1985 VT₁

Discovered 1989 Nov. 25 by S. Ueda and H. Kaneda at Kushiro.

Id. H. Kaneda (*MPC* 15724)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.25720513	ω	176.24831	+0.82297203	-0.56443116		
<i>a</i>	2.4487792	Ω	218.34621	+0.51847028	+0.79253361		
<i>e</i>	0.1464774	<i>i</i>	5.94887	+0.23217579	+0.23088512		
<i>P</i>	3.83	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1954 07 28	675	0.5+	0.6-	1989 12 22	399	(3.0+	4.1+)	1999 04 15	704	0.4+	0.9+
1954 07 28	675	0.3-	0.5-	1989 12 23	399	(2.9+	3.3+)	1999 04 15	704	1.1+	0.0
1981 09 07	046	2.1+	1.6-	1989 12 23	399	(0.3-	2.5+)	1999 04 20	704	0.5-	0.0
1981 09 07	046	(2.5+	1.5-)	1991 04 19	675	(2.3+	2.4+)	1999 04 20	704	0.3-	0.6-
1981 09 07	046	1.3+	0.8+	1991 04 19	675	(3.0+	0.2+)	1999 04 20	704	0.9-	0.6+
1981 09 07	046	1.5-	0.8-	1993 12 15	399	0.6+	0.4+	1999 04 20	704	1.9-	0.9+
1985 11 07	688	1.7+	1.7+	1993 12 15	399	0.6-	1.5-	1999 05 10	704	0.9+	0.3-
1985 11 07	688	1.2-	0.6-	1994 01 15	399	0.2+	0.3-	1999 05 10	704	1.3-	0.6+
1989 11 25	399	2.1+	0.2+	1994 01 15	399	1.1-	0.4-	1999 05 10	704	0.4+	0.2+
1989 11 25	399	1.8+	0.0	1998 02 23	557	0.5+	0.4-	1999 05 10	704	1.7+	0.2-
1989 11 25	399	1.1-	0.0	1998 02 23	557	0.4+	0.2+	1999 05 10	704	1.4-	0.0
1989 11 29	399	0.2+	0.6-	1998 03 03	691	0.7+	0.5-	1999 05 13	704	0.5+	1.5-
1989 11 29	399	0.2-	1.7-	1998 03 03	691	0.7+	0.3-	1999 05 13	704	0.9-	0.6-
1989 12 01	399	0.3+	0.3-	1998 03 03	691	0.3+	0.0	1999 05 13	704	0.0	0.1+
1989 12 01	399	1.7-	1.3-	1998 03 04	557	0.5-	0.8+	1999 05 13	704	0.9-	1.9-
1989 12 01	399	1.0-	0.6+	1998 03 04	557	0.8+	0.8+	1999 05 13	704	1.2-	0.9-
1989 12 02	888	(3.1-	4.6-)	1998 03 04	557	0.6+	0.5-	1999 05 18	704	0.1-	1.6-
1989 12 02	888	(2.6-	3.7-)	1999 04 14	699	0.2+	1.1-	1999 05 18	704	1.5-	1.7-
1989 12 03	888	1.1-	0.6-	1999 04 14	699	0.8+	1.0+	1999 05 18	704	0.2-	0.8-
1989 12 03	888	1.6-	1.0-	1999 04 14	699	(2.6+	0.1+)	1999 05 18	704	0.9+	0.3+
1989 12 22	399	(1.3+	3.7+)	1999 04 15	704	1.8+	0.7-	1999 05 18	704	0.2-	0.6+

(10753)* 1989 WU₄ = 1984 QP₁ = 1997 MK₁₀

Discovered 1989 Nov. 28 by F. Börngen at Tautenburg.

Id. G. V. Williams (*MPC* 30273), A. Doppler (*MPC* 34489)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.22039679	ω	149.17595	+0.42476485	-0.90322792		
<i>a</i>	2.7143501	Ω	275.62702	+0.81754655	+0.41177916		
<i>e</i>	0.0699451	<i>i</i>	3.52981	+0.38883475	+0.12090185		
<i>P</i>	4.47	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1955 03 24	675	1.9-	0.3+	1997 07 12	691	0.7-	0.0	1998 12 14	704	1.0-	0.8-
1955 03 24	675	1.9+	0.9-	1997 07 12	691	0.1+	0.3-	1998 12 17	704	0.6+	0.3+
1982 05 15	413	0.0	0.0	1997 07 12	691	0.3+	0.2-	1998 12 17	704	0.2+	0.1-
1984 08 21	675	1.6+	0.0	1998 11 22	113	0.1+	0.6-	1998 12 17	704	0.7+	0.1+
1989 11 28	033	(3.7-	1.4+)	1998 11 22	113	0.5-	0.6-	1998 12 17	704	0.1-	0.7-
1989 11 28	033	0.4+	1.9+	1998 11 24	704	0.2+	0.4+	1998 12 17	704	0.2-	0.4+
1989 11 29	033	2.0-	0.2+	1998 11 24	704	0.3+	0.6-	1998 12 17	113	0.0	0.5-
1989 11 29	033	1.4-	1.0+	1998 11 24	704	(1.8-	2.4+)	1998 12 17	113	0.1-	0.4-
1989 12 03	033	0.2+	2.3+	1998 11 24	704	0.5-	0.4-	1998 12 17	113	0.2+	0.6-
1989 12 17	675	1.5-	0.4+	1998 12 08	113	0.5-	0.6+	1999 01 06	120	0.3+	0.2+
1989 12 17	675	0.4+	0.2+	1998 12 08	113	0.6-	1.1+	1999 01 06	120	0.2+	0.1-
1997 06 30	691	0.2+	0.1-	1998 12 10	113	0.1+	0.6-	1999 01 06	120	0.2+	0.0
1997 06 30	691	0.3-	0.1-	1998 12 10	113	0.8+	0.6-	1999 01 06	113	0.3-	0.0
1997 06 30	691	0.4+	0.1-	1998 12 14	704	0.6+	0.6-	1999 01 06	113	0.2-	0.5-
1997 07 11	691	0.1-	0.1-	1998 12 14	704	1.4+	0.6-	1999 01 17	113	0.1-	0.4-
1997 07 11	691	0.1-	0.5-	1998 12 14	704	1.1+	0.3-	1999 01 17	113	0.0	0.5-
1997 07 11	691	0.4-	0.0	1998 12 14	704	0.2+	0.3-				

(10754)* 1990 QV₅ = 1987 SY₂

Discovered 1990 Aug. 29 by H. E. Holt at Palomar.

Id. S. Nakano (*MPC* 17448)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.31224903	ω	165.89120	+0.96443558	+0.26431709		
<i>a</i>	2.1518004	Ω	178.78175	-0.24560190	+0.89712509		
<i>e</i>	0.0933186	<i>i</i>	1.89580	-0.09769198	+0.35398170		
<i>P</i>	3.16	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1987 09 20	071	(0.3-	3.4-)	1999 04 20	120	0.9-	0.1+	1999 05 19	704	0.7+	0.1-
1987 09 20	071	(4.0-	2.6+)	1999 05 10	704	0.5+	0.9-	1999 05 19	704	0.6+	1.0+
1987 09 21	071	1.2+	0.7-	1999 05 10	704	1.1+	0.2-	1999 05 19	704	0.6+	0.2+
1987 09 21	071	2.0+	0.2+	1999 05 10	704	1.9-	1.5-	1999 06 09	704	0.4+	0.4-
1990 08 22	675	1.3-	0.8-	1999 05 10	704	0.2+	0.8+	1999 06 09	704	0.2-	0.4-
1990 08 22	675	0.8-	1.1-	1999 05 10	704	0.4-	1.1-	1999 06 09	704	0.6+	0.5-
1990 08 29	675	0.5-	0.7-	1999 05 13	704	0.2+	0.5+	1999 06 09	704	0.0	0.2-
1990 08 29	675	0.4-	1.0-	1999 05 13	704	0.3+	1.0-	1999 06 09	704	0.2-	0.7-
1990 09 13	675	0.6+	1.7+	1999 05 13	704	0.6+	0.2+	1999 06 11	703	1.9+	0.5-
1990 09 13	675	0.7+	0.6+	1999 05 13	704	0.2+	0.9+	1999 06 11	703	0.9-	1.4+
1990 09 14	675	1.2-	0.9+	1999 05 13	704	0.7+	1.3+	1999 06 11	703	0.1+	0.4+
1990 09 14	675	0.6+	2.0-	1999 05 14	704	0.4+	1.1-	1999 06 11	703	0.8-	0.2-
1995 01 06	411	1.4-	0.4-	1999 05 14	704	1.0-	0.9+	1999 06 11	703	0.4-	0.6+
1995 01 06	411	1.1-	0.8-	1999 05 14	704	0.4+	0.9+	1999 06 11	703	0.1-	0.5-
1998 01 19	426	0.1-	0.3-	1999 05 14	704	0.6+	0.8-	1999 06 11	703	0.2-	1.0+
1998 01 19	426	0.0	0.7-	1999 05 14	704	(0.3+	2.8+)	1999 06 11	703	1.1-	1.2-
1998 01 19	426	0.1+	0.0	1999 05 18	704	0.7+	0.1-	1999 06 15	704	0.6-	0.1-
1998 01 24	426	0.1-	0.4-	1999 05 18	704	0.7-	0.6-	1999 06 15	704	0.1-	0.2-
1998 01 24	426	0.5+	1.1-	1999 05 18	704	0.3-	0.3-	1999 06 15	704	0.3-	0.5+
1998 01 24	426	0.2+	0.2-	1999 05 18	704	0.7-	0.5-	1999 06 15	704	0.0	0.3+
1999 04 20	120	0.2+	0.4-	1999 05 18	704	0.4+	1.0-	1999 06 15	704	0.0	0.2-
1999 04 20	120	0.5-	1.1+	1999 05 19	704	0.4+	0.5-				

(10755)* 1990 RO₆ = 1990 QD₉ = 1990 RU₅ = 1986 XC₄ = 1998 DB₅

Discovered 1990 Sept. 10 by H. Debehogne at the European Southern

Observatory.

Id. S. Nak

Residuals in seconds of arc

1986 12 04	010	(9.0− 3.3−)	1995 10 01	691	0.3+ 0.3+	1999 05 10	704	0.6+ 0.5−
1990 08 16	809	1.4+ 0.1−	1996 01 21	691	0.5− 0.4+	1999 05 10	704	0.2− 0.6−
1990 08 16	809	1.1+ 0.2−	1996 01 21	691	1.2− 0.4+	1999 05 13	704	(2.3− 1.8+)
1990 08 16	809	0.4+ 0.4+	1996 01 21	691	0.9− 0.1+	1999 05 13	704	1.6+ 0.6−
1990 08 18	809	1.5+ 0.6−	1998 02 22	566	0.8+ 0.8−	1999 05 13	704	1.1+ 0.7+
1990 08 18	809	0.1+ 0.3−	1998 02 22	566	0.5− 0.6−	1999 05 13	704	0.0 0.8+
1990 08 18	809	0.4− 0.4+	1998 02 22	566	0.3+ 1.6−	1999 05 17	703	0.5− 0.1+
1990 08 24	809	0.9+ 1.0−	1998 02 23	566	0.6+ 0.5−	1999 05 17	703	(2.9− 0.1−)
1990 08 24	809	1.1+ 1.7−	1998 02 23	566	0.1− 0.7−	1999 05 17	703	(3.9− 0.0)
1990 08 24	809	0.5+ 1.0−	1998 02 23	566	0.4+ 0.4−	1999 05 18	704	(2.0+ 2.0+)
1990 08 26	809	0.4+ 0.6−	1998 03 03	704	0.4− 0.2+	1999 05 18	704	1.7− 1.5+
1990 08 26	809	1.4+ 0.2−	1998 03 03	704	1.5− 0.2+	1999 05 18	704	0.8− 0.5+
1990 08 26	809	0.3+ 0.4+	1998 03 03	704	0.8+ 0.9+	1999 05 19	704	0.7+ 0.0
1990 09 10	809	(2.6− 2.4+)	1998 03 03	704	0.1+ 1.5−	1999 05 19	704	0.3− 0.7+
1990 09 10	809	(2.0− 2.5+)	1998 03 03	704	(4.9− 1.4−)	1999 05 19	704	0.4+ 0.9−
1990 09 10	809	(1.4− 2.4+)	1998 03 04	704	(0.5− 2.4−)	1999 05 19	703	0.2+ 0.5+
1990 09 11	809	0.1− 0.5−	1998 03 04	704	0.6− 0.0	1999 05 19	703	0.0 0.3−
1990 09 11	809	0.1− 0.4−	1998 03 04	704	1.1− 0.8+	1999 05 19	704	0.3− 0.6+
1990 09 11	809	0.3+ 0.4−	1998 03 04	704	(2.2− 0.2+)	1999 05 19	703	0.5+ 1.7−
1990 09 12	809	1.9− 0.5+	1999 04 17	704	0.9− 1.7−	1999 05 19	703	1.1+ 0.9−
1990 09 12	809	1.2− 0.7+	1999 04 17	704	0.9− 1.6+	1999 06 09	704	0.3+ 0.5+
1990 09 12	809	1.0− 0.6+	1999 04 17	704	1.2− 0.4+	1999 06 09	704	0.0 0.3+
1990 09 13	809	0.3− 0.0	1999 04 20	704	0.2− 0.2−	1999 06 09	704	0.8+ 1.5+
1990 09 13	809	0.3− 0.2+	1999 04 20	704	0.6− 1.1−	1999 06 09	704	(0.2− 3.3+)
1990 09 13	809	0.3− 0.1−	1999 04 20	704	1.4− 0.8−	1999 06 15	704	(0.1+ 2.7+)
1990 09 13	675	0.1− 0.6−	1999 04 20	704	1.3− 0.9−	1999 06 15	704	0.8+ 0.4−
1990 09 13	675	1.0− 1.5−	1999 05 10	704	0.6+ 0.9−	1999 06 15	704	0.1− 1.4+
1995 10 01	691	0.1− 0.3+	1999 05 10	704	1.6+ 0.5−	1999 06 15	704	0.8+ 1.1+
1995 10 01	691	0.6+ 1.0+	1999 05 10	704	0.1+ 1.0−	1999 06 15	704	1.3− 0.7+

(10756)* 1990 SJ₂ = 1980 TN₈ = 1997 WZ₅₆

Discovered 1990 Sept. 17 by H. E. Holt at Palomar.

Id. G. V. Williams (*MPC* 31529)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		228.05080		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>		0.29871811	ω	318.76659	+0.77682186	−0.62441759			
<i>a</i>		2.2162990	Ω	80.05966	+0.59729090	+0.68958941			
<i>e</i>		0.1638772	<i>i</i>	4.74915	+0.19947775	+0.36683664			
<i>P</i>		3.30	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	2	

Residuals in seconds of arc

1980 10 12	095	0.6− 1.6+	1998 03 26	566	0.3− 0.0	1999 05 14	704	1.1− 0.3+
1990 09 17	675	(0.7+ 2.6−)	1998 03 26	566	0.1+ 0.2−	1999 05 18	704	0.3+ 0.4−
1990 09 17	675	1.2+ 0.6−	1998 03 26	566	0.0 0.1−	1999 05 18	704	0.8− 0.0
1990 09 19	675	1.4+ 1.3−	1998 03 27	566	0.4+ 0.2+	1999 05 18	704	0.2+ 0.5−
1990 09 19	675	1.1+ 1.6−	1998 03 27	566	0.0 0.2+	1999 05 18	704	0.6− 0.2−
1990 09 22	095	(4.1+ 6.1−)	1998 03 27	566	0.1+ 0.3+	1999 05 18	704	1.2+ 0.9−
1990 09 22	095	(3.7+ 4.0−)	1999 04 20	704	0.6+ 1.3+	1999 06 05	703	0.7+ 1.3+
1990 10 11	399	0.8+ 0.1+	1999 04 20	704	0.3+ 1.6+	1999 06 05	703	0.0 0.7+
1990 10 11	399	(0.8+ 3.2−)	1999 04 20	704	0.3+ 0.2+	1999 06 05	703	0.1+ 0.9−
1990 10 11	399	0.3+ 1.2−	1999 05 10	704	0.3+ 0.3−	1999 06 05	703	1.1+ 1.5−
1990 10 15	399	(3.5− 1.2+)	1999 05 10	704	0.6− 0.3+	1999 06 09	704	0.1+ 0.6−
1990 10 15	399	1.5− 0.2+	1999 05 10	704	0.1+ 0.8−	1999 06 09	704	0.6− 1.5−
1990 10 15	399	1.7− 1.1+	1999 05 10	704	0.3+ 0.4−	1999 06 09	704	0.2− 0.5−
1997 11 28	691	0.3− 0.2−	1999 05 13	704	0.9− 0.8−	1999 06 09	704	0.8+ 0.2+
1997 11 28	691	0.5− 0.6−	1999 05 13	704	0.7+ 0.2+	1999 06 09	704	0.2− 1.4−
1997 11 28	691	0.2− 0.3−	1999 05 13	704	0.9− 0.3−	1999 06 15	704	0.6− 0.3−
1997 11 29	688	0.2+ 0.1−	1999 05 13	704	0.5− 0.6−	1999 06 15	704	0.2+ 0.2+
1997 11 29	688	0.1+ 0.1−	1999 05 14	704	1.1− 0.8+	1999 06 15	704	0.5− 0.2−
1998 01 24	566	0.0 0.6−	1999 05 14	704	1.7+ 0.6+	1999 06 15	704	0.2− 0.2−
1998 01 24	566	0.0 0.6−	1999 05 14	704	0.9− 0.6+	1999 06 15	704	0.3− 0.1+
1998 01 24	566	0.0 0.8−	1999 05 14	704	0.5− 0.4+			

(10757)* 1990 SF₃ = 1993 OH₇ = 1998 AO₈

Discovered 1990 Sept. 18 by H. E. Holt at Palomar.

Id. G. V. Williams (*MPC* 31099)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		171.30099		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>		0.28422402	ω	285.30064	+0.71339395	−0.69838402			
<i>a</i>		2.2910199	Ω	119.03713	+0.66559906	+0.64954201			
<i>e</i>		0.0648771	<i>i</i>	3.78373	+0.21919615	+0.30059098			
<i>P</i>		3.47	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	2	

Residuals in seconds of arc

1990 09 18	675	(0.1− 2.3−)	1999 03 14	688	1.7− 1.1+	1999 04 12	704	0.8− 0.3+
1990 09 18	675	0.2+ 0.5−	1999 03 20	704	0.1− 0.4+	1999 04 12	704	0.3+ 0.2+
1990 09 20	675	0.5+ 1.4−	1999 03 20	704	0.2− 0.1+	1999 04 15	704	0.8+ 1.4−
1990 09 20	675	(0.5+ 2.1−)	1999 03 20	704	0.0 0.1+	1999 04 15	704	0.5+ 1.7−
1990 09 28	675	0.1− 0.2+	1999 03 20	704	0.2− 0.5−	1999 04 15	704	0.2+ 1.5−
1993 07 13	809	0.0 0.3+	1999 03 23	704	0.6− 0.4−	1999 04 15	704	0.2− 0.4−
1993 07 13	809	0.1+ 0.3+	1999 03 23	699	0.8+ 0.3+	1999 04 16	704	1.2+ 0.9−
1993 07 13	809	0.1+ 0.3+	1999 03 23	704	0.2− 0.4+	1999 04 16	704	1.5− 1.2−
1993 07 20	809	0.4+ 1.3−	1999 03 23	704	0.3− 0.8+	1999 04 16	704	0.2+ 0.3−
1993 07 20	809	0.5− 0.2−	1999 03 23	699	0.5+ 0.2+	1999 04 16	704	(2.1− 1.8−)
1993 07 20	809	0.7− 0.1+	1999 03 23	704	0.4− 0.4+	1999 04 16	704	0.9− 1.2−
1993 07 24	809	0.9+ 0.2−	1999 03 23	699	1.0+ 0.2+	1999 04 19	704	0.2− 0.2−
1998 01 10	557	0.3− 0.0	1999 04 06	699	0.5+ 0.4−	1999 04 19	704	0.0 0.1+
1998 01 10	557	0.3+ 0.3−	1999 04 06	699	0.7+ 0.0	1999 04 19	704	0.0 0.6−
1998 01 10	557	0.2− 0.0	1999 04 06	704	1.0+ 0.2−	1999 04 19	704	0.3+ 0.8−
1998 01 11	557	0.5+ 0.4−	1999 04 06	699	0.4+ 0.0	1999 04 19	704	1.6− 0.5+
1998 01 11	557	0.2+ 0.0	1999 04 06	704	0.8+ 0.2−	1999 05 08	723	0.4− 0.5+
1998 01 14	557	0.1+ 0.2−	1999 04 06	704	0.3+ 0.3+	1999 05 09	723	0.7− 0.1−
1998 01 14	557	0.2− 0.1−	1999 04 06	704	1.0+ 0.6−	1999 05 09	723	0.4+ 0.0
1998 01 14	557	0.1+ 0.0	1999 04 06	704	1.3+ 1.0−	1999 06 08	704	0.2+ 1.4+
1999 03 14	688	1.4− 1.0+	1999 04 12	704	0.0 0.5−	1999 06 08	704	0.3+ 1.3+
1999 03 14	688	1.2− 0.8+	1999 04 12	704	0.5− 0.5+	1999 06 08	704	0.9+ 0.3+
1999 03 14	688	1.2− 0.9+	1999 04 12	704	0.7+ 0.0	1999 06 08	704	0.7− 0.1+

(10758)* 1990 SM₇ = 1992 FZ₂ = 1997 WS₂₃

Discovered 1990 Sept. 22 by E. W. Elst at the European Southern

Observatory.

Id. S. Nakano (*MPC* 30975)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		118.15214		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>		0.29637619	ω	85.34406	−0.64443085	−0.76096797			
<i>a</i>		2.2279589	Ω	45.07771	+0.65279367	−0.59862389			
<i>e</i>		0.0983410	<i>i</i>	6.08662	+0.39820762	−0.25015431			
<i>P</i>		3.33	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	1	

Residuals in seconds of arc

1990 09 14	809	(1.6+ 3.0+)	1997 11 19	358	2.0+ 1.7+	1999 05 13	704	0.2+ 0.4−
1990 09 14	809	(1.9+ 3.0+)	1997 11 19	358	0.9+ 1.9+	1999 05 18	704	0.6+ 0.4−
1990 09 14	809	(1.4− 2.5+)	1997 11 19	358	0.7+ 1.6−	1999 05 18	704	0.7+ 0.2+
1990 09 22	809	0.4+ 0.3+	1997 11 23	358	0.6+ 0.6−	1999 05 18	704	0.2− 0.9−
1990 09 22	809	0.6− 1.1−	1997 11 23	358	0.2+ 0.9+	1999 05 18	704	0.6+ 0.2+
1990 09 22	809	1.3+ 0.5+	1997 11 30	566	0.5− 0.2+	1999 05 19	704	0.5+ 0.2+
1990 09 25	809	0.4+ 0.5−	1997 11 30	566	0.7− 0.3+	1999 05 19	704	0.8+ 0.5−
1990 09 25	809	0.3− 1.0−	1997 11 30	566	0.6− 0.1+	1999 05 19	704	0.3+ 1.0−
1990 09 25	809	0.2+ 0.6−	1997 12 04	900	0.4− 0.1−	1999 06 09	704	0.3− 0.8+
1992 03 24	399	0.5− 0.5+	1997 12 04	900	0.8− 0.2+	1999 06 09	704	0.1− 0.5+
1992 03 24	399	0.2− 1.7−	1997 12 05	900	0.3− 0.6−	1999 06 09	704	0.7− 1.7

(10759)* 1990 SX₁₆ = 1972 AS = 1975 SL = 1980 RV₁ = 1980 RM₄
= 1985 SS₃

Discovered 1990 Sept. 17 by H. E. Holt at Palomar.

Id. H. Kaneda (*MPC* 19028)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		253.49456		(2000.0)		P		Q	
<i>n</i>		0.19196331	ω	339.39308		+0.98680580		+0.15788275	
<i>a</i>		2.9761665	Ω	11.69667		-0.11233706		+0.82723947	
<i>e</i>		0.1191656	<i>i</i>	10.19407		-0.11659634		+0.53921043	
<i>P</i>		5.13	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	1	

Residuals in seconds of arc

1954 07 29	675	1.3+	0.2+	1991 12 03	675	1.4+	1.5-	1999 04 20	704	0.3+	0.2-
1954 07 29	675	1.1-	0.1-	1998 02 24	566	0.2+	0.2+	1999 04 20	704	0.1+	0.5+
1972 01 14	029	0.1+	0.5-	1998 02 24	566	0.1-	0.1+	1999 04 20	704	1.1+	0.0
1972 01 15	029	1.5-	0.4+	1998 02 24	566	0.4-	0.1-	1999 04 20	704	1.2+	1.4-
1975 09 30	675	0.8-	0.2+	1998 03 01	699	0.2-	0.3+	1999 04 20	704	0.1-	0.1-
1975 10 01	675	1.0-	0.4+	1998 03 01	699	1.1+	0.3-	1999 05 10	704	1.6-	0.0
1975 10 02	675	0.3-	0.3+	1998 03 01	699	0.1+	0.1-	1999 05 10	704	(0.2-	2.1+)
1980 09 07	095	1.3-	0.3+	1998 03 03	699	0.7-	0.9+	1999 05 10	704	0.4-	0.0
1980 09 15	511	2.0+	0.9+	1998 03 03	699	0.4-	1.1-	1999 05 10	704	1.9-	0.2-
1980 09 15	511	1.1+	0.6+	1998 03 03	699	0.1-	0.8+	1999 05 13	704	0.1-	0.4-
1980 09 15	511	0.3+	0.4+	1999 04 15	704	0.1+	0.5+	1999 05 13	704	0.0	0.7-
1985 09 20	095	(1.0+	3.0+)	1999 04 15	704	1.2+	0.7+	1999 05 13	704	1.0-	1.3-
1990 09 14	675	0.2-	1.2-	1999 04 15	704	0.8+	0.5+	1999 05 13	704	0.2-	0.8-
1990 09 14	675	0.0	1.8-	1999 04 15	704	0.5+	0.0	1999 05 13	704	0.2-	1.1-
1990 09 17	675	0.6-	0.7-	1999 04 15	704	1.4+	0.4-	1999 05 18	704	0.5-	0.3-
1990 09 17	675	0.5-	0.8+	1999 04 17	704	0.0	0.3+	1999 05 18	704	0.2-	1.2+
1990 09 20	675	0.3-	0.1-	1999 04 17	704	0.4+	0.4+	1999 05 18	704	0.7-	1.0+
1990 09 20	675	0.1+	0.2-	1999 04 17	704	0.9+	0.6+	1999 05 18	704	0.1-	0.3+

(10760)* 1990 TJ₃ = 1980 TV₁

Discovered 1990 Oct. 15 by K. Endate and K. Watanabe at Kitami.

Id. T. Kobayashi (*MPC* 25063)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		246.96629		(2000.0)		P		Q	
<i>n</i>		0.30097462	ω	305.73858		+0.80526824		-0.58713197	
<i>a</i>		2.2052075	Ω	90.35650		+0.56716015		+0.72218781	
<i>e</i>		0.1298240	<i>i</i>	4.73685		+0.17283642		+0.36567858	
<i>P</i>		3.27	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	1	

Residuals in seconds of arc

1954 12 21	675	0.0	0.4-	1995 02 22	411	1.0+	1.0+	1999 06 09	704	0.4-	0.8-
1954 12 21	675	0.1+	0.1-	1995 02 22	411	0.7+	0.8+	1999 06 09	704	0.2-	0.7-
1980 10 05	809	0.6+	0.9-	1997 10 03	691	0.1+	0.3+	1999 06 09	704	0.3-	0.6-
1980 10 05	809	0.1+	0.7-	1997 10 03	691	0.2-	0.5+	1999 06 09	704	0.2+	0.3-
1990 10 15	400	(1.5+	3.3+)	1997 10 03	691	0.1+	0.2+	1999 06 09	704	0.1+	0.8-
1990 10 15	400	(0.3+	2.8+)	1998 01 24	566	0.2+	0.6+	1999 06 10	704	0.2-	0.2-
1990 10 16	809	0.7-	1.1+	1998 01 24	566	0.0	0.7+	1999 06 10	704	0.1+	0.2-
1990 10 16	809	1.0-	0.9+	1998 01 24	566	0.1+	0.6+	1999 06 10	704	0.1-	0.2-
1990 10 16	809	2.0-	0.6+	1998 01 29	566	0.1-	0.0	1999 06 10	704	0.5-	0.0
1990 10 19	809	0.1+	1.0+	1998 01 29	566	0.8-	0.3-	1999 06 10	704	0.1-	0.3+
1990 10 19	809	(0.4+	2.3+)	1998 01 29	566	0.4-	0.8-	1999 06 10	704	0.3-	0.3+
1990 10 19	809	0.3+	0.9+	1998 02 24	566	0.1+	1.1-	1999 06 10	704	0.0	0.1-
1990 10 21	400	0.4+	1.5+	1998 02 24	566	0.3-	1.0-	1999 06 10	704	0.1+	0.2-
1990 10 21	400	(2.5-	0.7+)	1998 02 24	566	0.4+	1.1-	1999 06 10	704	0.1-	0.1+
1990 10 24	809	1.4+	0.9-	1999 05 18	704	1.0+	0.8+	1999 06 10	704	0.3-	0.4-
1990 10 24	809	0.6+	0.8-	1999 05 18	704	1.7-	1.0+	1999 06 15	704	1.0-	0.5+
1990 10 24	809	0.3+	0.4-	1999 05 18	704	1.2-	1.2+	1999 06 15	704	0.0	0.1+
1990 10 24	400	(2.3+	3.7+)	1999 05 19	704	1.5+	0.7+	1999 06 15	704	0.1-	0.2+
1990 10 24	400	(0.0	2.8+)	1999 05 19	704	0.6+	0.4-	1999 06 15	704	0.9+	0.6-
1990 11 13	400	1.7-	0.7-	1999 05 19	704	1.0+	1.5+	1999 06 15	704	0.5+	0.2+
1990 11 13	400	1.2+	0.4-	1999 05 19	704	(1.2-	2.2+)				

(10761)* 1990 TB₄ = 1986 WQ

Discovered 1990 Oct. 12 by F. Börngen and L. D. Schmadel at Tautenburg.

Id. R. Nagata (*MPC* 17642)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		332.48125		(2000.0)		P		Q	
<i>n</i>		0.23611179	ω	191.34017		-0.38077168		-0.92440298	
<i>a</i>		2.5925329	Ω	281.04437		+0.85012526		-0.34053781	
<i>e</i>		0.1267997	<i>i</i>	1.29504		+0.36373062		-0.17179385	
<i>P</i>		4.17	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	2	

Residuals in seconds of arc

1981 09 29	413	1.0-	0.5-	1996 03 25	566	0.2-	0.5+	1998 09 14	704	1.8+	0.3-
1981 09 29	413	0.8+	0.6+	1996 03 25	566	0.0	0.3+	1998 09 14	704	0.7-	0.1+
1986 11 25	046	(4.6-	0.4+)	1996 03 25	566	0.4+	0.6+	1998 09 18	704	0.3+	0.2+
1986 11 25	046	(2.8-	1.1-)	1998 08 23	704	1.0+	0.9-	1998 09 18	704	0.8-	0.1+
1986 11 28	046	2.1+	1.8-	1998 08 23	704	1.0-	1.4+	1998 09 18	704	0.4-	0.3-
1986 11 28	046	0.5+	0.6+	1998 08 23	704	1.6+	0.5-	1998 09 18	704	0.0	0.3-
1990 10 11	033	1.2-	0.4-	1998 08 23	704	1.0+	0.7+	1998 09 18	704	1.3+	0.5+
1990 10 12	033	0.0	0.5+	1998 08 30	691	0.2+	0.4+	1998 09 21	113	(2.2+	2.3+)
1990 10 12	033	1.1-	0.0	1998 08 30	691	0.3+	0.4+	1998 09 21	113	0.5-	0.2-
1990 10 13	033	1.0-	0.1+	1998 08 30	691	0.4+	0.3+	1998 09 22	113	0.9-	0.9-
1990 10 14	033	0.4-	0.5+	1998 08 31	691	0.3-	0.0	1998 09 22	113	0.5-	0.4-
1990 10 18	033	0.2-	1.0+	1998 08 31	691	0.1+	0.2+	1998 10 20	113	0.2+	0.3-
1994 10 12	033	0.5-	0.1-	1998 08 31	691	0.0	0.5+	1998 10 20	113	0.4+	0.3-
1994 10 13	033	0.1+	0.4-	1998 09 14	704	0.5-	0.7+				
1994 10 28	033	0.4-	0.2+	1998 09 14	704	0.8-	0.7-				

(10762)* 1990 TC₄ = 1996 XE₃

Discovered 1990 Oct. 12 by F. Börngen and L. D. Schmadel at Tautenburg.

Id. S. Nakano (*MPC* 28844)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		240.01803		(2000.0)		P		Q	
<i>n</i>		0.18620430	ω	160.58456		+0.88065813		-0.47339139	
<i>a</i>		3.0372200	Ω	227.68428		+0.43128616		+0.81725679	
<i>e</i>		0.0953493	<i>i</i>	1.43276		+0.19604464		+0.32862127	
<i>P</i>		5.29	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	1	

Residuals in seconds of arc

1990 10 11	033	0.4-	1.1-	1998 03 28	704	0.2+	0.5+	1999 05 13	704	0.1-	1.5+
1990 10 12	033	0.8+	0.7-	1998 03 29	704	0.0	0.1+	1999 05 18	704	0.0	1.9+
1990 10 12	033	0.4-	0.8-	1998 03 29	704	0.1-	0.6+	1999 05 18	704	(0.3+	2.5+)
1990 10 13	033	0.5+	0.7-	1998 03 29	704	0.7-	1.1+	1999 05 18	704	1.3-	0.9+
1990 10 14	675	1.0-	0.4-	1998 03 29	704	0.2-	0.4+	1999 06 09	704	(3.1+	1.0+)
1990 10 14	675	0.8+	0.4+	1998 03 29	704	0.6-	0.7+	1999 06 09	704	0.6-	0.9+
1990 10 14	033	0.1-	0.6-	1998 03 31	113	(2.8+	2.4+)	1999 06 09	704	1.4-	1.6+
1990 10 18	033	0.9+	0.5+	1998 04 01	113	1.8-	0.2-	1999 06 09	704	0.9+	0.7+
1996 12 03	411	0.9-	0.2+	1998 04 01	704	0.6+	0.4+	1999 06 09	704	1.6-	0.5+
1996 12 03	411	0.4-	0.1-	1998 04 01	704	0.7+	0.1+	1999 06 15	704	1.5+	0.6+
1996 12 06	411	0.1+	0.3+	1998 04 01	704	0.6+	1.7-	1999 06 15	704	1.1+	0.2-
1996 12 06	411	1.0-	0.9+	1998 04 01	704	0.2+	1.7-	1999 06 15	704	0.2+	0.5-
1996 12 12	411	0.4-	0.4+	1998 04 01	704	(1.1+	2.4-)	1999 06 15	704	1.8+	0.9-
1996 12 12	411	0.3+	1.1-	1998 04 18	704	0.2-	0.4+	1999 06 15	704	0.6-	0.6-
1996 12 28	411	0.3+	0.4+	1998 04 18	704	1.0-	0.3-	1999 06 15	704	0.6-	1.0-
1996 12 28	411	2.0+	0.5+	1998 04 18	704	1.2-	0.9+	1999 06 15	704	0.3-	0.1-
1998 03 24	113	1.5+	0.9-	1998 04 18	704	0.5+	1.2+	1999 06 15	704	0.2-	0.3-
1998 03 24	113	0.5+	1.5-	1998 04 19	704	1.0-	0.9+	1999 06 15	704	0.9-	1.0-
1998 03 25	113	0.1+	0.7-	1998 04 19	704	0.5-	1.3+	1999 06 15	704	0.2+	0.3+
1998 03 25	113	0.4+	0.6-	1998 04 19	704	1.1-	1.6-	1999 06 15	704	0.1+	0.2-
1998 03 25	113	0.3+	1.0-	1998 04 19	704	1.6-	1.8+	1999 06 15	704	1.2+	1.5-
1998 03 26	566	0.3+	0.6-	1998 04 19	704	0.2-	0.1-	1999 06 15	704	0.2-	0.4+
1998 03 26	566	0.1-	0.5-	1998 04 21	113	0.8+	0.2-	1999 06 15	704	0.6+	1.6-
1998 03 26	566	0.2+	0.6-	1998 04 21	113	0.8-	0.5+	1999 06 19	428	0.4-	0.2-
1998 03 28	704	0.6+	0.6+	1998 04 22	113	0.4-	0.1-	1999 06 19	428	1.5-	1.5-
1998 03 28	704	0.8+	0.3-	1998 04 22	113	0.9+	1.6-	1999 06 20	428	1.0+	1.1-

1998 03 28 704 0.1+ 0.3- 1999 05 13 704 1.1+ 2.0+ 1999 06 20 428 0.3- 0.6-
 1998 03 28 704 0.0 0.5- 1999 05 13 704 (0.5- 2.9+)

(10763)* 1990 TH₁₃ = 1994 LD₁₀ = 1998 FO₉₁

Discovered 1990 Oct. 12 by F. Börngen and L. D. Schmadel at Tautenburg.

Id. A. Doppler (*MPC* 33225)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	225.75740	(2000.0)	P		Q	
<i>n</i>	0.18538851	ω	307.97854	+0.84067250	-0.50840714	
<i>a</i>	3.0461235	Ω	83.30558	+0.53681795	+0.73694060	
<i>e</i>	0.1026117	<i>i</i>	10.82480	+0.07138793	+0.44546688	
<i>P</i>	5.32	<i>H</i>	12.8	<i>G</i> 0.15	<i>U</i>	1

Residuals in seconds of arc

1990 10 11	033	0.1+	0.3-	1998 03 25	704	0.6+	0.2-	1999 05 14	704	1.0-	0.3+
1990 10 12	033	1.4-	1.4-	1998 03 25	704	0.6+	0.1-	1999 05 18	704	0.3-	0.5-
1990 10 12	033	0.7+	0.3+	1998 03 25	704	0.6-	0.2+	1999 05 18	704	0.8+	0.3-
1990 10 13	033	0.5-	0.9-	1998 03 25	704	0.7+	0.1+	1999 05 18	704	0.8-	0.7+
1990 10 14	033	0.4-	0.1+	1998 03 25	704	0.5+	0.2-	1999 05 18	704	0.0	1.1+
1994 06 08	809	1.5+	1.5+	1998 04 28	566	0.6-	1.0-	1999 05 19	704	0.3+	0.4-
1994 06 08	809	1.5+	1.0+	1998 04 28	566	0.7-	1.2-	1999 05 19	704	0.6+	0.9+
1994 06 08	809	1.2+	1.3+	1998 04 28	566	0.3-	0.9-	1999 05 19	704	0.8-	0.9+
1994 06 09	809	0.5-	0.2-	1999 05 10	704	0.5+	0.2-	1999 05 19	704	0.8+	1.1-
1994 06 09	809	0.2+	0.5+	1999 05 10	704	0.6-	0.2+	1999 05 19	704	0.2+	0.2-
1994 06 09	809	0.7+	0.7-	1999 05 10	704	0.5-	0.4+	1999 06 06	703	0.2-	0.4-
1995 10 16	413	0.2-	0.3+	1999 05 10	704	0.9-	0.6-	1999 06 06	703	0.1+	0.5-
1995 10 16	413	1.1+	0.4+	1999 05 13	704	0.0	0.1-	1999 06 06	703	0.3-	0.6+
1995 10 21	413	1.0+	0.2-	1999 05 13	704	0.6-	0.0	1999 06 06	703	0.1-	0.3+
1995 10 21	413	1.0+	0.7-	1999 05 13	704	0.4+	0.4-	1999 06 14	704	0.7-	0.9-
1998 03 24	704	0.2-	0.2-	1999 05 13	704	0.2-	0.8+	1999 06 14	704	0.3-	0.9-
1998 03 24	704	0.5+	0.5+	1999 05 14	704	0.3-	0.9+	1999 06 14	704	0.8-	0.7-
1998 03 24	704	0.4+	0.2+	1999 05 14	704	0.9-	0.4-	1999 06 14	704	0.2-	1.0-
1998 03 24	704	0.8+	0.9+	1999 05 14	704	1.0-	1.0-	1999 06 14	704	0.6-	0.5-

(10764)* 1990 TK₁₃ = 1996 VC₆

Discovered 1990 Oct. 12 by F. Börngen and L. D. Schmadel at Tautenburg.

Id. S. Nakano (*MPC* 28584)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	246.36796	(2000.0)	P		Q	
<i>n</i>	0.18384851	ω	261.09165	+0.98269078	-0.00761826	
<i>a</i>	3.0631103	Ω	99.18950	+0.07561953	+0.92861833	
<i>e</i>	0.1013862	<i>i</i>	10.80711	-0.16911687	+0.37095817	
<i>P</i>	5.36	<i>H</i>	12.9	<i>G</i> 0.15	<i>U</i>	1

Residuals in seconds of arc

1950 03 17	675	1.1-	0.9+	1996 12 08	411	0.3+	0.1-	1999 04 19	704	1.8+	0.6-
1950 03 17	675	1.2+	0.7-	1998 02 19	113	0.5-	0.3-	1999 04 19	704	1.5+	0.6-
1954 01 03	675	0.2+	0.0	1998 02 19	113	0.7-	0.4-	1999 04 19	704	1.1+	1.3-
1983 05 06	413	0.7+	1.2+	1998 02 19	113	1.1-	0.4-	1999 05 08	703	0.9+	0.2+
1983 05 06	413	0.6-	0.0	1998 02 20	113	0.2+	0.2-	1999 05 08	703	0.3-	0.5+
1990 10 11	033	0.5+	0.9-	1998 02 20	113	0.6+	0.1-	1999 05 08	703	0.8+	0.0
1990 10 12	033	0.3-	1.2-	1998 02 20	113	0.7+	0.1+	1999 05 08	703	0.3+	0.8+
1990 10 12	033	0.5+	1.5-	1998 02 27	566	0.4-	0.3+	1999 05 12	704	0.3-	0.2-
1990 10 13	033	0.7+	0.2+	1998 02 27	566	0.3+	0.1+	1999 05 12	704	0.0	0.4-
1990 10 14	033	0.2+	0.4-	1998 02 27	566	0.2-	0.1-	1999 05 12	704	0.1+	2.1-
1995 10 16	413	0.2-	0.8-	1998 03 25	704	0.6-	0.2-	1999 05 12	704	0.2+	0.7-
1995 10 16	413	0.0	0.8-	1998 03 25	704	(1.2+ 2.5+)		1999 05 12	704	1.0-	0.1-
1996 11 15	411	1.1+	1.3-	1998 03 25	704	0.7-	0.7+	1999 05 17	704	0.3-	1.5-
1996 11 15	411	0.1-	0.3-	1998 03 25	704	0.3-	0.8-	1999 05 17	704	0.2-	0.4+
1996 11 16	411	0.1+	0.6+	1998 03 25	704	0.2-	0.1-	1999 05 17	704	1.8-	0.4-
1996 11 16	411	0.4+	0.0	1999 04 12	704	0.1-	0.2-	1999 05 17	704	1.9-	0.1+
1996 11 19	411	0.3+	0.9-	1999 04 12	704	0.2+	1.3-	1999 05 17	704	1.6-	1.3-
1996 11 30	411	1.0-	0.4-	1999 04 12	704	1.2-	0.8+	1999 05 18	113	0.4+	0.3-
1996 11 30	411	0.3+	0.7+	1999 04 12	704	0.5-	0.7+	1999 05 18	113	0.3-	1.0+
1996 12 08	411	0.2+	0.1-	1999 04 19	704	1.4+	0.7-				

(10765)* 1990 UZ = 1978 JF₃ = 1998 DX₁₂

Discovered 1990 Oct. 20 by A. Sugie at the Dynic Astronomical Observatory.

Id. T. B. Spahr (*MPC* 31379), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	283.99398	(2000.0)	P		Q	
<i>n</i>	0.18804045	ω	262.83297	+0.96154594	+0.19191004	
<i>a</i>	3.0174160	Ω	85.96040	-0.09932125	+0.90992065	
<i>e</i>	0.1144923	<i>i</i>	11.35913	-0.25605603	+0.36771586	
<i>P</i>	5.24	<i>H</i>	11.7	<i>G</i> 0.15	<i>U</i>	1

Residuals in seconds of arc

1978 05 09	095	0.1+	0.4+	1998 03 24	704	0.2-	0.0	1999 05 13	704	0.4+	0.1-
1990 10 14	095	0.6+	0.9+	1998 03 24	704	0.9-	1.7+	1999 05 13	704	0.0	0.8+
1990 10 14	095	0.6-	0.5-	1998 03 24	704	0.5-	1.5-	1999 05 14	704	0.1+	0.4+
1990 10 15	402	0.1-	1.3-	1998 03 24	704	0.1-	1.3-	1999 05 14	704	0.9+	0.9+
1990 10 15	402	0.1-	1.3+	1998 03 24	566	0.1+	0.3+	1999 05 14	704	0.0	0.9+
1990 10 16	095	1.1-	0.9-	1998 03 24	566	0.0	0.2+	1999 05 14	704	0.2+	0.1+
1990 10 16	095	0.2+	1.9+	1998 03 24	566	0.1-	0.4+	1999 05 14	704	0.5-	0.4+
1990 10 19	402	0.0	0.6+	1998 03 25	704	0.2+	0.2+	1999 05 18	704	0.4+	0.2-
1990 10 19	402	0.1-	0.9+	1998 03 25	704	0.7+	0.0	1999 05 18	704	0.9+	0.3+
1990 10 20	402	0.4+	0.4+	1998 03 25	704	0.3+	1.1-	1999 05 18	704	0.5+	0.7-
1990 10 20	402	0.0	0.3+	1998 03 25	704	0.2+	0.9-	1999 05 18	704	(1.3- 2.3-)	
1990 10 21	402	(3.5- 0.7-)		1998 03 25	704	0.3+	1.0-	1999 05 18	704	1.7-	0.6-
1990 10 21	402	1.0-	0.6-	1999 02 20	704	0.1-	0.6-	1999 05 19	704	0.4-	0.5+
1990 10 28	402	0.3-	0.1+	1999 02 20	704	0.1+	0.4+	1999 05 19	704	0.4+	1.0+
1990 10 28	402	1.3-	0.2+	1999 02 20	704	(0.2- 2.2-)		1999 05 19	704	0.3+	0.8-
1990 11 13	402	0.7+	0.7+	1999 02 20	704	0.1-	0.8-	1999 05 19	704	0.4-	0.8-
1990 11 13	402	0.6+	0.7+	1999 02 26	704	0.0	0.2-	1999 05 19	704	1.2-	1.0-
1998 02 23	960	0.3+	0.2+	1999 02 26	704	(2.2+ 0.8-)		1999 06 09	716	0.7+	0.5+
1998 02 23	960	(1.7+ 2.2+)		1999 02 26	704	0.1-	0.0	1999 06 09	716	0.4-	1.0+
1998 02 23	960	0.6+	0.4+	1999 02 26	704	1.8+	0.8-	1999 06 09	704	0.0	0.7+
1998 02 23	960	0.2+	0.6+	1999 05 10	704	1.4+	0.0	1999 06 09	704	0.3-	0.8+
1998 02 24	960	0.6+	0.8+	1999 05 10	704	0.2+	0.5-	1999 06 09	704	0.8-	0.1+
1998 02 24	960	0.3+	0.5+	1999 05 10	704	(1.0+ 2.2-)		1999 06 09	704	0.8-	0.1+
1998 02 28	960	0.1+	0.5+	1999 05 10	704	0.6+	0.2+	1999 06 09	704	0.9-	0.3+
1998 03 01	960	0.0	0.3+	1999 05 10	704	1.0-	1.0-	1999 06 15	704	0.3-	0.1+
1998 03 01	960	0.4+	0.4+	1999 05 11	367	0.3+	0.2-	1999 06 15	704	0.2-	0.1+
1998 03 02	954	0.2+	0.5+	1999 05 11	367	0.3+	0.2-	1999 06 15	704	0.3-	0.4+
1998 03 02	954	0.1+	0.5+	1999 05 13	704	1.5+	0.1+	1999 06 15	704	0.3-	0.2+
1998 03 05	960	0.8-	0.8+	1999 05 13	704	0.6+	0.5+	1999 06 15	704	0.1-	0.2+
1998 03 05	960	0.5-	0.4+	1999 05 13	704	0.3+	0.4+				

(10766)* 1990 UB₁ = 1976 GF₇

Discovered 1990 Oct. 20 by A. Sugie at the Dynic Astronomical Observatory.

Id. G. V. Williams (unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	202.23055	(2000.0)	P		Q	
<i>n</i>	0.17650938	ω	15.53019	+0.66827299	-0.73092127	
<i>a</i>	3.1474404	Ω	32.90469	+0.65251170	+0.48655131	
<i>e</i>	0.1505173	<i>i</i>	14.76396	+0.35726697	+0.47856234	
<i>P</i>	5.58	<i>H</i>	12.0	<i>G</i> 0.15	<i>U</i>	1

Residuals in seconds of arc

1976 04 04	095	0.1+	0.8+	1998 03 24	704	0.9+	1.0-	1999 04 20	704	1.8-	0.2+
1990 10 16	095	(1.6-	3.2+)	1998 03 25	704	0.3-	0.3-	1999 04 20	704	0.0	0.8+
1990 10 16	095	1.3+	0.5+	1998 03 25	704	0.4+	0.2+	1999 05 10	704	0.4+	0.6+
1990 10 19	402	(2.3-	1.3+)	1998 03 25	704	0.6+	0.5-	1999 05 10	704	0.3+	0.3-
1990 10 19	402	0.5-	1.7+	1998 03 25	704	0.2+	0.1+	1999 05 10	704	0.3-	0.5+
1990 10 20	402	1.8-	0.3+	1998 03 25	704	0.4+	0.7-	1999 05 10	704	1.5+	0.6+
1990 10 20	402	0.4-	1.7+	1998 03 31	127	1.3-	0.1+	1999 05 10	704	0.2+	0.2-
1990 10 21	402	1.5-	0.9+	1998 03 31	127	1.4-	0.2+	1999 05 13	704	0.4-	0.3+
1990 10 21	402	0.6+	0.9+	1998 04 28	699	0.4+	0.2-	1999 05 13	704	0.0	0.1-
1990 10 28	402	1.1+	0.8+	1998 04 28	699	0.8+	0.7+	1999 05 13	704	0.1-	0.0
1990 10 28	402	0.5-	0.7+	1998 04 28	699	0.3-	0.1+	1999 05 13	704	0.3+	1.5+
1990 11 14	095	(1.9-	3.1+)	1998 05 01	566	0.5+	0.2+	1999 05 13	704	0.3+	1.6+

M.P.C. 34762

1990 11 14	095	2.0-	1.6+	1998 05 01	566	0.4+	0.2-	1999 05 18	704	0.6+	0.5+
1990 11 24	402	1.1-	0.5+	1998 05 01	566	0.1+	0.2-	1999 05 18	704	0.6+	1.0-
1990 11 24	402	0.8-	0.2+	1998 05 02	566	0.0	0.5-	1999 05 18	704	0.0	0.0
1993 03 24	675	2.0+	0.3+	1998 05 02	566	0.5+	0.4-	1999 05 18	704	0.7+	0.2-
1993 03 24	675	0.5+	0.7+	1998 05 02	566	0.4-	0.0	1999 05 18	704	1.2+	0.3+
1997 12 27	688	0.2+	0.8+	1999 04 15	704	0.5+	0.6+	1999 06 09	704	0.1+	0.3+
1997 12 27	688	0.1+	0.8+	1999 04 15	704	0.6-	1.3+	1999 06 09	704	0.4+	0.6+
1997 12 29	688	0.2+	0.5+	1999 04 15	704	0.5+	0.9-	1999 06 09	704	0.3-	0.6+
1997 12 29	688	0.2+	0.3+	1999 04 15	704	0.3+	1.4-	1999 06 09	704	0.2+	0.1+
1998 02 24	566	0.8-	0.6+	1999 04 17	704	0.6+	0.1-	1999 06 09	704	0.7-	1.2+
1998 02 24	566	1.1-	0.5+	1999 04 17	704	0.2+	1.2+	1999 06 15	704	0.2+	0.8+
1998 02 24	566	1.0-	0.6+	1999 04 17	704	0.8-	0.1-	1999 06 15	704	0.5+	1.1+
1998 03 24	704	0.2+	0.4-	1999 04 20	704	0.4+	0.3+	1999 06 15	704	0.3+	0.1-
1998 03 24	704	0.2+	0.3-	1999 04 20	704	0.8+	0.9-	1999 06 15	704	0.3-	0.1+
1998 03 24	704	0.4+	0.2+	1999 04 20	704	0.8-	0.8-	1999 06 15	704	0.4-	0.4+

(10767)* 1990 UF₁

Discovered 1990 Oct. 22 by K. Endate and K. Watanabe at Kitami.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	276.34456		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.29731884	ω	286.46262	+0.96422539	+0.25656726
<i>a</i>	2.2232473	Ω	58.71464	-0.20357475	+0.87774676
<i>e</i>	0.1502703	<i>i</i>	4.47327	-0.16978430	+0.40464041
<i>P</i>	3.31	<i>H</i>	13.7	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1990 10 16	095	0.6-	0.4-	1999 04 12	704	1.7+	1.3-	1999 05 17	704	0.5-	0.3+
1990 10 16	095	0.2+	0.2-	1999 04 12	704	1.5+	1.2-	1999 05 17	704	1.5-	0.3-
1990 10 22	400	0.5-	2.1+	1999 04 12	704	0.2+	0.2+	1999 05 17	704	1.2-	0.3+
1990 10 22	400	(0.3+	3.2+)	1999 04 12	704	1.2+	0.8-	1999 05 18	704	0.2+	0.6+
1990 10 23	095	0.9-	0.2-	1999 04 19	704	0.0	0.6-	1999 05 18	704	0.5+	1.1+
1990 10 24	400	1.6+	1.0+	1999 04 19	704	0.3+	0.4-	1999 05 18	704	0.4-	1.0-
1990 10 24	400	2.1+	1.8+	1999 04 19	704	0.0	0.6-	1999 05 18	704	0.4-	0.4+
1990 11 12	809	0.2-	0.2-	1999 04 19	704	0.8-	0.0	1999 05 18	704	0.3+	0.6-
1990 11 12	809	0.0	0.1+	1999 04 19	704	0.7-	0.4-	1999 05 19	704	0.1+	0.1+
1990 11 12	809	1.7-	0.2+	1999 05 10	704	0.5+	1.1+	1999 05 19	704	0.0	1.2+
1990 11 13	400	1.9-	1.5+	1999 05 10	704	0.6-	0.3+	1999 05 19	704	0.5-	0.2-
1990 11 13	400	(5.3-	4.6+)	1999 05 10	704	0.3+	0.2+	1999 05 19	704	0.2+	0.1-
1990 11 14	809	0.2+	0.9-	1999 05 10	704	0.7+	0.6+	1999 05 19	704	0.6-	1.2+
1990 11 14	809	1.4+	1.2-	1999 05 10	704	0.8-	0.3+	1999 05 21	704	0.5-	0.2-
1990 11 14	809	1.2+	0.7-	1999 05 13	704	0.2+	0.1+	1999 05 21	704	1.1+	0.4+
1990 11 14	095	1.7-	0.7-	1999 05 13	704	0.6-	0.5+	1999 05 21	704	1.5-	0.2+
1990 11 14	095	0.6+	0.6+	1999 05 13	704	0.6-	0.3+	1999 05 21	704	0.0	1.0+
1990 11 20	809	1.1-	0.2+	1999 05 13	704	0.4-	0.1-	1999 05 21	704	0.2+	2.0+
1990 11 20	809	0.3-	0.1+	1999 05 13	704	0.0	0.4+	1999 06 04	747	1.3+	0.2-
1990 11 20	809	0.5+	0.0	1999 05 14	704	0.5-	0.7+	1999 06 04	747	1.4+	0.0
1993 07 21	675	0.0	0.7-	1999 05 14	704	0.4-	0.9+	1999 06 04	747	0.7+	0.7-
1993 07 21	675	0.2+	0.1-	1999 05 14	704	0.6+	0.9-	1999 06 05	747	0.5+	0.4-
1993 08 17	675	0.3-	0.5+	1999 05 14	704	1.0+	0.3+	1999 06 05	747	1.1+	0.9-
1993 08 17	675	0.1-	0.2+	1999 05 14	704	0.2+	0.2+	1999 06 05	747	0.6+	0.7-
1998 01 08	688	0.1+	0.2+	1999 05 17	704	0.5-	0.1-				
1998 01 08	688	0.0	0.2+	1999 05 17	704	1.1-	0.2+				

(10768)* 1990 UZ₁ = 1995 FP₅

Discovered 1990 Oct. 21 by T. Urata at the Nihondaira Observatory.

Id. G. V. Williams (*MPC* 25213)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	243.90685		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.30084287	ω	262.06775	+0.78764356	-0.61376675
<i>a</i>	2.2058513	Ω	135.77371	+0.59136595	+0.72851845
<i>e</i>	0.1589073	<i>i</i>	4.43417	+0.17292755	+0.30422235
<i>P</i>	3.28	<i>H</i>	14.9	<i>G</i>	0.15
				<i>U</i>	1

1999 JUNE 22

Residuals in seconds of arc

1990 10 21	385	0.0	0.1-	1998 01 30	372	1.3-	0.0	1999 05 13	704	0.3-	1.9+
1990 10 21	385	0.1+	0.3+	1998 01 30	372	(2.3-	0.7+)	1999 05 13	704	(2.2-	0.2-)
1990 10 26	385	0.7-	2.0+	1998 01 31	886	0.2+	0.1-	1999 05 13	704	0.4+	0.2+
1990 10 26	385	(1.8+	3.8+)	1998 01 31	886	0.4-	0.4-	1999 05 13	704	0.2-	1.5-
1990 11 16	385	(0.3-	3.0+)	1998 02 02	372	0.4+	0.8+	1999 05 16	621	0.5+	0.6+
1990 11 22	385	0.1-	0.2-	1998 02 02	372	0.6+	1.1+	1999 05 16	621	0.3+	0.8+
1990 11 22	385	(0.7+	2.9+)	1998 02 05	372	0.0	1.8+	1999 05 19	621	0.2+	0.4+
1995 03 23	691	0.6-	0.8-	1998 02 05	372	0.3-	0.8+	1999 05 19	621	0.1+	0.2+
1995 03 23	691	0.1-	0.2-	1998 03 01	910	(2.7+	1.1-)	1999 05 19	621	0.0	0.1+
1995 03 23	691	0.0	0.2-	1998 03 01	910	(2.7+	1.3-)	1999 06 15	704	0.5-	1.2+
1995 03 29	691	0.5+	0.2+	1998 03 01	910	(2.7+	1.2-)	1999 06 15	704	0.3+	1.1+
1995 03 29	691	0.3-	0.3-	1999 05 13	704	(2.4-	1.0+)	1999 06 15	704	0.7+	0.5+
1995 03 29	691	0.1+	0.4-	1999 05 13	704	0.1-	0.9-	1999 06 15	704	0.4-	0.8-
1998 01 24	886	(2.4+	1.3-)	1999 05 13	704	0.2+	0.4-	1999 06 15	704	0.9-	1.1+
1998 01 24	886	1.5+	0.8-	1999 05 13	704	0.3+	0.0				

(10769)* 1990 UJ₅ = 1992 AZ₄ = 1993 FQ₄₅

Discovered 1990 Oct. 16 by E. W. Elst at the European Southern

Observatory.

Id. K. Kinoshita (*MPC* 23672)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	287.63558		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.18263490	ω	154.40436	+0.86392497	+0.50344037
<i>a</i>	3.0766650	Ω	175.30106	-0.48569928	+0.83995565
<i>e</i>	0.0817456	<i>i</i>	9.46380	-0.13315347	+0.20253962
<i>P</i>	5.40	<i>H</i>	12.7	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1990 10 16	809	0.1-	0.1-	1998 03 04	704	(2.7-	0.5+)	1999 05 12	704	0.6+	0.2-
1990 10 16	809	0.4-	0.4-	1998 03 04	704	(2.3-	0.1-)	1999 05 15	704	0.5+	1.0+
1990 10 16	809	1.7-	0.6-	1998 03 04	704	(3.4-	0.7+)	1999 05 15	704	1.3+	2.1-
1990 10 19	809	0.3+	1.1+	1998 03 04	704	(2.7-	1.2+)	1999 05 15	704	0.6+	0.5+
1990 10 19	809	0.4-	0.8-	1998 03 20	704	0.2+	0.6+	1999 05 15	704	0.1-	1.0-
1990 10 19	809	0.5-	0.3+	1998 03 20	704	0.1+	0.5-	1999 05 15	704	0.7-	0.4-
1990 10 24	809	2.0+	0.6+	1998 03 20	704	0.2+	0.3-	1999 05 17	704	0.4+	0.4-
1990 10 24	809	2.0+	0.3+	1998 03 20	704	0.3-	1.0+	1999 05 17	704	0.5+	0.4+
1990 10 24	809	0.9+	0.4-	1998 03 20	704	0.0	0.2-	1999 05 17	704	0.3+	0.7+
1990 10 24	809	0.2+	0.7+	1998 03 22	704	0.3+	0.2-	1999 05 17	704	0.0	0.6+
1990 10 24	809	1.1-	0.0	1998 03 22	704	0.3+	0.5-	1999 05 17	704	0.3-	0.1+
1990 10 24	809	0.9-	0.4-	1998 03 22	704	0.3-	0.6+	1999 05 21	704	0.3+	0.4+
1992 01 03	033	0.5-	0.9+	1998 03 22	704	0.3+	0.1-	1999 05 21	704	1.2+	0.1+
1992 01 03	033	0.6-	0.9+	1998 03 22	704	0.2+	0.6+	1999 05 21	704	1.0+	0.5+
1993 03 19	809	0.7-	0.6+	1998 03 26	566	0.0	0.8-	1999 05 21	704	1.2+	1.6-
1993 03 20	809	0.5+	0.4+	1998 03 26	566	0.1-	0.9-	1999 05 21	704	0.9-	0.6+
1993 03 24	809	0.9+	0.5-	1998 03 26	566	0.4+	0.9-	1999 06 08	704	0.4-	1.1-
1993 04 16	413	(4.0+	0.8-)	1998 03 27	566	0.2+	1.1-	1999 06 08	704	0.6-	1.4+
1998 02 25	566	0.1-	0.9-	1998 03 27	566	0.3+	0.3-	1999 06 08	704	1.6-	0.0
1998 02 25	566	0.4+	1.0-	1998 03 27	566	0.2+	1.1-	1999 06 08	704	0.6-	0.2+
1998 02 25	566	0.1+	0.7-	1999 05 09	703	0.0	0.3-	1999 06 08	704	0.1-	0.3+
1998 03 03	704	0.6-	0.5+	1999 05 09	703	0.1+	0.4+	1999 06 14	704	0.2-	0.4+
1998 03 03	704	0.3+	0.4+	1999 05 09	703	0.5-	0.0	1999 06 14	704	1.5-	0.2-
1998 03 03	704	0.7-	1.5+	1999 05 09	703	0.4-	0.2+	1999 06 14	704	0.9-	0.4+
1998 03 03	704	0.5-	0.9+	1999 05 12	704	0.6+	0.5-	1999 06 14	704	0.7-	0.3+
1998 03 03	704	0.3-	1.0+	1999 05 12	704	1.0+	1.4+	1999 06 14	704	0.9-	0.3-
1998 03 04	704	(2.8-	0.1+)	1999 05 12	704	0.5-	0.4-				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	282.18955		(2000.0)		P		Q				
<i>n</i>	0.18310972	ω	170.44157		+0.99175619		+0.12798021				
<i>a</i>	3.0713439	Ω	182.23548		-0.12569931		+0.96199229				
<i>e</i>	0.0963269	<i>i</i>	9.41625		-0.02488662		+0.24122998				
<i>P</i>	5.38	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	1				
Residuals in seconds of arc											
1984 09 21	010	0.8-	0.0	1993 04 22	691	0.3+	0.1-	1998 03 29	704	0.4-	0.4+
1990 11 15	809	2.0+	0.1-	1998 02 26	566	0.1-	0.5-	1998 03 29	704	0.7-	0.4+
1990 11 15	809	0.8+	1.1-	1998 02 26	566	0.2+	0.4-	1998 03 29	704	0.1-	0.7+
1990 11 15	809	1.0+	0.4+	1998 02 26	566	0.7-	0.4-	1998 04 19	704	0.4+	0.3-
1990 11 15	809	0.5-	1.1-	1998 03 20	704	0.6+	1.0-	1998 04 19	704	1.3+	0.4-
1990 11 15	809	0.1+	0.9-	1998 03 20	704	0.4-	0.2+	1998 04 19	704	0.2-	0.6-
1990 11 15	809	2.0-	1.8-	1998 03 20	704	0.5-	0.1+	1998 04 19	704	1.0+	0.6-
1990 11 17	809	0.8+	0.1+	1998 03 20	704	0.1+	0.6+	1998 04 19	704	0.1-	1.1-
1990 11 17	809	0.9+	0.5-	1998 03 20	704	0.5+	0.1-	1999 05 14	704	0.7-	1.5-
1990 11 17	809	0.2-	0.7-	1998 03 22	704	0.1-	0.1+	1999 05 14	704	0.0	0.1+
1990 11 17	809	0.2-	0.9-	1998 03 22	704	0.0	0.5+	1999 05 14	704	1.4-	0.7+
1990 11 17	809	0.3+	1.7-	1998 03 22	704	0.2-	1.4+	1999 06 08	704	0.2-	1.1-
1990 11 17	809	0.4-	1.2-	1998 03 22	704	0.0	0.5+	1999 06 08	704	0.9+	0.1+
1990 11 21	809	1.0+	0.6+	1998 03 22	704	1.7-	1.4+	1999 06 08	704	0.1-	0.6-
1990 11 21	809	1.2+	1.1+	1998 03 28	704	1.2-	0.1+	1999 06 08	704	0.9+	1.2-
1990 11 21	809	0.3+	1.8+	1998 03 28	704	0.5-	0.3+	1999 06 08	704	0.3+	1.3-
1990 11 23	809	0.6-	0.3+	1998 03 28	704	0.2-	0.4+	1999 06 14	704	0.3-	0.2-
1990 11 23	809	0.9-	0.3+	1998 03 28	704	0.9+	0.2-	1999 06 14	704	0.2+	0.1-
1990 11 23	809	1.9-	0.7-	1998 03 28	704	0.9-	1.6-	1999 06 14	704	1.0+	1.1-
1993 04 22	691	0.4+	0.2-	1998 03 29	704	0.1-	0.4-	1999 06 14	704	(2.8- 0.0)	
1993 04 22	691	0.4+	0.4-	1998 03 29	704	0.8+	0.2+	1999 06 14	704	0.2-	0.5+

(10771)* 1990 VK₆ = 1979 TJ₁ = 1993 FP₂₄

Discovered 1990 Nov. 15 by E. W. Elst at the European Southern

Observatory.

Id. G. V. Williams (*MPC* 23516)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	298.67766		(2000.0)		P		Q				
<i>n</i>	0.18685832	ω	145.09604		+0.92753456		+0.37054259				
<i>a</i>	3.0301288	Ω	193.41678		−0.37249647		+0.90592906				
<i>e</i>	0.1888668	<i>i</i>	12.13144		−0.03043037		+0.20491640				
<i>P</i>	5.27	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	1				
Residuals in seconds of arc											
1979 10 14	095	0.1+	1.3+	1998 03 20	704	1.6−	1.1+	1998 04 19	704	1.2+	0.1+
1990 11 15	809	0.7+	0.4+	1998 03 20	704	0.7−	1.6+	1998 04 19	704	1.2−	1.7−
1990 11 15	809	0.2+	0.8+	1998 03 20	704	(2.4−	0.2+)	1998 04 19	704	1.0−	0.9+
1990 11 15	809	1.9−	0.8+	1998 03 22	704	0.2−	0.3−	1999 05 12	704	0.1+	0.1+
1990 11 17	809	0.8+	0.4+	1998 03 22	704	0.1−	0.2+	1999 05 12	704	0.5−	0.1+
1990 11 17	809	0.3+	0.2−	1998 03 22	704	0.9+	0.7+	1999 05 12	704	0.7−	0.4+
1990 11 17	809	0.1+	0.8+	1998 03 22	704	0.2+	0.8−	1999 05 12	704	0.2−	0.4+
1990 11 23	809	0.1−	0.2+	1998 03 22	704	(2.9−	0.4−)	1999 05 14	704	0.1−	0.2+
1990 11 23	809	0.1−	0.3+	1998 03 24	566	0.1−	1.0−	1999 05 14	704	0.1−	0.1−
1990 11 23	809	0.7−	0.1−	1998 03 24	566	0.2−	1.2−	1999 05 14	704	0.0	0.3+
1993 03 21	809	0.0	0.6+	1998 03 24	566	0.2−	0.9−	1999 05 14	704	0.1−	0.8+
1993 03 22	809	0.2+	1.4+	1998 03 29	704	1.2+	1.1−	1999 06 08	704	0.9+	0.4+
1993 03 26	809	0.4−	0.2+	1998 03 29	704	0.4−	0.1+	1999 06 08	704	0.7+	1.1+
1993 04 17	691	0.5−	0.5+	1998 03 29	704	0.3−	0.1+	1999 06 08	704	0.1+	0.4+
1993 04 17	691	0.5−	0.5+	1998 03 29	704	1.1+	0.6−	1999 06 08	704	0.2+	0.6+
1993 04 17	691	0.4+	1.5+	1998 03 29	704	1.3+	1.4−	1999 06 14	704	0.3+	0.3−
1998 03 04	704	(2.7−	1.9+)	1998 04 18	704	0.6+	1.1+	1999 06 14	704	0.2−	0.7−
1998 03 04	704	(2.8−	1.2+)	1998 04 18	704	1.4+	0.8+	1999 06 14	704	0.2+	0.3−
1998 03 04	704	(2.1−	1.4−)	1998 04 18	704	0.5−	0.1+	1999 06 14	704	0.2−	0.3−
1998 03 04	704	(2.9−	0.0)	1998 04 18	704	(2.3−	0.9−)	1999 06 14	704	0.3−	0.5−
1998 03 20	704	0.3+	1.5−	1998 04 19	704	0.9+	0.4−				
1998 03 20	704	0.6−	0.8−	1998 04 19	704	0.4−	2.0+				

(10772)* 1990 YM

Discovered 1990 Dec. 23 by S. Ueda and H. Kaneda at Kushiro.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	101.50635		(2000.0)		P		Q	
<i>n</i>	0.26688493	ω	38.49955	-0.73807283			-0.54294058	
<i>a</i>	2.3892046	Ω	103.86531	+0.47026795			-0.83968397	
<i>e</i>	0.2508827	<i>i</i>	24.36840	+0.48383526			-0.01209758	
<i>P</i>	3.69	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i>	2	
Residuals in seconds of arc								
1990 12 14	675 (1.6- 2.7-)		1995 01 26	801 0.5+	1.3+	1997 12 16	423 0.5-	1.5+
1990 12 14	675 0.3-	0.1-	1995 01 26	801 0.1+	1.4+	1999 03 26	704 1.0-	1.2-
1990 12 17	675 0.8+	0.1-	1995 01 31	801 (1.2+ 2.7+)		1999 03 26	704 1.8-	0.6-
1990 12 17	675 0.1-	0.4+	1995 01 31	801 0.5+	1.2+	1999 03 26	704 1.5+	0.5+
1990 12 23	399 0.5+	0.2+	1995 02 26	801 (1.1+ 2.4+)		1999 03 26	704 0.2+	0.6-
1990 12 23	399 0.8+	0.5-	1995 02 26	801 0.8+	0.4-	1999 05 09	611 1.6+	0.4-
1990 12 23	399 0.1+	0.6+	1995 03 02	801 0.7+	0.7+	1999 05 09	611 1.2+	0.0
1990 12 24	399 1.5+	0.1+	1995 03 02	801 0.2-	0.3+	1999 05 15	704 (2.7+ 2.3-)	
1990 12 24	399 0.8+	0.4-	1995 03 28	801 0.4+	0.4-	1999 05 15	704 (0.7+ 3.1-)	
1990 12 24	399 0.5+	1.1-	1995 03 28	801 0.2+	0.1+	1999 05 15	704 0.2-	0.5-
1991 01 05	399 0.6+	1.2-	1995 04 03	801 0.4+	0.1-	1999 05 15	704 (2.2+ 0.1-)	
1991 01 05	399 0.2+	0.7-	1995 04 03	801 0.3+	0.1-	1999 05 15	704 0.5-	0.9-
1991 01 12	898 1.3-	0.4+	Y 1995 05 02	684 0.9+	0.5-	1999 05 21	704 0.3+	0.2-
1991 01 12	898 (2.6- 2.6-)		1995 05 02	684 0.1+	0.0	1999 05 21	704 0.1+	0.6+
1991 01 14	898 1.7-	0.6-	1995 05 02	684 1.1+	0.1-	1999 05 21	704 0.5-	0.7+
1991 01 14	898 (5.7- 2.6-)		1995 05 23	563 0.0	0.2-	1999 05 21	704 0.1+	0.2-
1991 01 14	898 0.5+	1.2-	1995 05 23	563 0.5-	0.2-	1999 05 21	704 0.7-	0.1-
1991 02 03	399 0.2-	1.5-	1995 05 23	563 0.0	0.5-	1999 06 09	716 0.2-	0.2+
1991 02 03	399 1.0-	0.2+	1996 07 18	684 0.1-	1.0-	1999 06 09	716 0.0	0.2+
1991 05 12	801 1.1-	0.8+	1996 07 18	684 0.1+	0.9-	1999 06 14	704 0.6-	0.5+
1991 05 12	801 0.6-	0.2-	1996 07 18	684 0.3+	0.7-	1999 06 14	704 1.0-	0.1+
1991 05 16	801 0.5-	0.4+	1996 07 19	684 0.4+	0.1-	1999 06 14	704 0.7-	0.4+
1991 05 16	801 0.7-	0.5+	1996 07 19	684 0.2+	0.2-	1999 06 14	704 1.0-	0.5+
1993 09 03	413 1.2-	0.7+	1996 07 19	684 0.6+	0.6-	1999 06 14	704 0.7-	0.3+
1993 09 03	413 0.8-	0.9+	1997 12 16	423 0.2+	0.0			

(10773)* 1991 AK₂ = 1995 SF₁

Discovered 1991 Jan. 7 by R. H. McNaught at Siding Spring.

Id. G. V. Williams (*MPC* 25957)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	191.77014		(2000.0)		P		Q				
<i>n</i>	0.17156972	ω	206.28893		+0.46662642		-0.85749296				
<i>a</i>	3.2075662	Ω	217.04657		+0.86157042		+0.49607376				
<i>e</i>	0.0658306	<i>i</i>	21.08271		+0.19989045		-0.13644280				
<i>P</i>	5.74	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	2				
Residuals in seconds of arc											
1990 11 20	413	1.2-	0.2-	1995 09 22	966	0.2-	0.5-	1999 05 17	704	0.2+	1.6+
1991 01 07	413	1.1+	0.0	1995 09 24	966	0.3-	0.6-	1999 06 06	703	0.1+	0.4-
1991 01 08	413	0.1+	0.3-	1995 09 24	966	0.5-	0.1+	1999 06 06	703	0.1-	0.2-
1991 01 12	413	(2.7- 0.4+)		1995 09 27	966	0.9-	0.8+	1999 06 06	703	0.2-	0.7+
1993 04 25	691	0.6-	0.3+	1995 09 27	966	0.3-	1.9+	1999 06 06	703	0.2+	0.4-
1993 04 25	691	0.9+	0.0	1995 10 19	966	0.6-	0.3-	1999 06 14	704	0.5-	0.3+
1993 04 25	691	0.3-	0.2+	1995 10 19	966	1.4+	0.1+	1999 06 14	704	0.4+	0.4+
1995 09 20	966	0.6+	0.6-	1999 05 17	704	1.3+	0.6-	1999 06 14	704	1.5-	0.5-
1995 09 21	966	0.1-	2.0-	1999 05 17	704	0.1+	2.0-	1999 06 14	704	0.1+	0.3+
1995 09 22	966	0.9+	1.1+	1999 05 17	704	(0.3-	2.9-)				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	196.85723		(2000.0)		P		Q				
<i>n</i>	0.26521621	ω	85.42575		+0.93513039		-0.34597558				
<i>a</i>	2.3992160	Ω	294.79994		+0.28247416		+0.85813085				
<i>e</i>	0.1647657	<i>i</i>	4.82578		+0.21386797		+0.37935781				
<i>P</i>	3.72	<i>H</i>	14.6		<i>G</i>	0.15	<i>U</i>	2			
Residuals in seconds of arc											
1954 02 26	675	2.2-	0.8-	1997 11 23	327	0.5+	0.2+	1997 12 24	327	0.1+	0.2-
1954 02 26	675	1.8+	1.4+	1997 11 23	327	0.2+	0.1+	1997 12 24	327	0.3-	0.2-
1989 07 05	675	0.2+	0.7-	1997 11 23	327	0.3+	0.4+	1997 12 24	327	0.1-	0.6-
1989 07 05	675	0.9+	0.4-	1997 11 26	704	(2.3-	0.2-)	1999 03 20	704	1.2+	0.3+
1989 07 29	675	(1.4-	3.9-)	1997 11 26	704	0.3-	0.4-	1999 03 20	704	1.3-	0.2-
1991 01 15	033	0.6+	0.5-	1997 11 26	704	0.3-	0.2-	1999 03 20	704	0.9+	0.8-
1991 01 15	033	1.4+	0.9-	1997 12 15	327	0.2-	0.4-	1999 03 23	704	1.7-	0.1+
1991 01 15	033	0.5+	0.6+	1997 12 15	327	0.1-	0.5-	1999 03 23	704	0.9-	1.4-
1991 01 15	033	0.3+	0.5-	1997 12 15	327	0.1-	0.3-	1999 03 23	704	1.5-	1.4-
1991 01 16	033	0.3+	0.9+	1997 12 22	327	0.2-	0.4-	1999 03 23	704	0.1+	1.4-
1991 01 22	675	0.8-	0.4+	1997 12 22	327	0.3-	0.4-	1999 04 09	113	0.0	1.4+
1991 01 22	675	1.0+	0.8+	1997 12 22	327	0.2-	0.5-	1999 04 09	113	0.3+	0.8+
1997 11 23	327	0.3+	0.3+	1997 12 22	327	0.0	0.3-				

(10775)* 1991 AV₂ = 1995 EE₁

Discovered 1991 Jan. 15 by F. Börngen at Tautenburg.

Id. S. Nakano (*MPC* 25063)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	82.32664		(2000.0)	<i>P</i>	<i>Q</i>				
<i>n</i>	0.26211280	ω	188.59557	-0.84987590	-0.52668407				
<i>a</i>	2.4181165	Ω	319.60655	+0.48511058	-0.76875107				
<i>e</i>	0.1453487	<i>i</i>	1.56900	+0.20586082	-0.36280252				
<i>P</i>	3.76	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	2		

Residuals in seconds of arc

1991 01 15	033	0.2+	0.1-	1997 10 31	113	0.5-	0.5+	1999 05 03	113	1.6-	1.0+
1991 01 15	033	0.1-	0.3-	1997 11 01	113	0.9-	0.3-	1999 05 09	113	1.2-	0.3+
1991 01 15	033	0.4+	0.1+	1997 11 01	113	0.6-	0.3-	1999 05 09	113	(0.5-	2.1+)
1991 01 15	033	0.4+	0.2+	1997 11 01	113	1.5-	0.1-	1999 05 10	704	1.3+	0.8-
1991 01 16	033	0.6+	0.7+	1997 11 03	113	0.2-	0.9-	1999 05 10	704	0.1-	1.2-
1991 01 22	675	0.9-	0.3+	1997 11 03	113	0.3-	0.5-	1999 05 10	704	1.4-	0.1+
1995 03 05	399	1.2+	0.5-	1997 11 03	113	0.1+	0.3-	1999 05 10	704	0.9+	1.3+
1995 03 05	399	0.7-	0.8-	1997 11 19	113	1.3+	0.2-	1999 05 10	704	0.4-	0.1-
1995 03 06	399	0.5-	0.8-	1997 11 19	113	0.9+	0.0	1999 05 13	704	0.4+	0.2-
1995 03 06	399	0.3-	0.9+	1997 11 19	113	0.0	0.6-	1999 05 13	704	(2.0+	0.6+)
1995 03 28	399	0.4+	0.8+	1997 11 20	113	0.9+	0.2+	1999 05 13	704	0.6+	1.0-
1995 03 28	399	0.7-	0.4-	1997 11 20	113	(2.0+	0.4+)	1999 05 13	704	0.2+	0.1-
1997 10 21	113	0.0	0.8+	1997 11 20	113	0.3+	0.2+	1999 05 13	704	1.3+	0.8-
1997 10 21	113	0.3+	0.1+	1999 04 09	113	0.9-	0.6+	1999 05 14	704	0.2-	0.3+
1997 10 21	113	0.5+	0.2+	1999 04 09	113	0.8-	0.2+	1999 05 14	704	0.8+	0.5-
1997 10 22	113	0.5-	1.5+	1999 04 15	704	0.5+	0.4-	1999 05 14	704	0.4-	1.3-
1997 10 22	113	1.0+	0.9+	1999 04 15	704	0.3+	0.7-	1999 05 14	704	0.9-	0.1+
1997 10 22	113	(0.8-	2.0+)	1999 04 15	704	0.4-	0.1+	1999 05 15	703	0.6+	0.0
1997 10 27	113	0.7-	0.8+	1999 04 15	704	0.4+	0.4-	1999 05 15	703	0.1+	0.9+
1997 10 27	113	0.2-	0.2-	1999 04 17	704	0.1+	0.3-	1999 05 15	703	0.2+	0.8+
1997 10 27	113	0.7-	0.5+	1999 04 17	704	1.0-	0.2-	1999 05 15	703	0.7+	1.5+
1997 10 28	113	0.2-	1.2-	1999 04 17	704	0.6+	0.7-	1999 05 18	704	0.7-	0.9+
1997 10 28	113	0.3-	0.4+	1999 04 17	704	0.3+	0.3-	1999 05 18	704	1.1-	0.7+
1997 10 29	132	1.7+	1.2+	1999 04 20	704	0.5+	0.2-	1999 05 18	704	0.3-	0.5+
1997 10 29	132	0.6-	1.9+	1999 04 20	704	0.7+	0.1-	1999 05 18	704	0.3+	0.7+
1997 10 29	132	0.7+	1.1+	1999 04 20	704	0.5+	0.1+	1999 05 18	704	0.5-	1.6+
1997 10 30	113	1.1-	0.5+	1999 04 20	704	1.3+	0.8+	1999 05 19	704	1.2+	1.0-
1997 10 30	113	0.8-	0.1-	1999 04 20	704	(3.0-	0.3+)	1999 05 19	704	0.1+	0.2+
1997 10 30	113	1.0+	1.5-	1999 04 22	113	1.0-	0.5+	1999 05 19	704	1.3+	1.4+
1997 10 31	113	0.6-	0.0	1999 04 22	113	1.1-	0.5+	1999 05 19	704	0.9+	0.8-
1997 10 31	113	(2.1-	0.2+)	1999 05 03	113	0.5-	0.7+	1999 05 19	704	0.2+	0.2-

(10776)* 1991 CP₁

Discovered 1991 Feb. 12 by M. Arai and H. Mori at Yorii.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	103.47089		(2000.0)	<i>P</i>	<i>Q</i>				
<i>n</i>	0.25986418	ω	7.75478	-0.50383193	-0.85990391				
<i>a</i>	2.4320459	Ω	112.53169	+0.78768337	-0.49630993				
<i>e</i>	0.1296410	<i>i</i>	5.09119	+0.35455366	-0.11933868				
<i>P</i>	3.79	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	1		

Residuals in seconds of arc

1991 01 17	033	0.4+	0.6-	1997 10 30	704	1.7+	1.9-	1999 04 16	704	0.1-	0.8-
1991 01 17	033	0.2-	0.6-	1997 10 30	704	0.0	1.0-	1999 04 16	704	0.2-	0.2-
1991 01 18	033	0.2-	0.6-	1997 10 30	704	(2.6+	1.1-)	1999 04 16	704	0.7+	0.7+
1991 02 07	875	1.2-	0.6+	1997 10 30	704	1.6+	1.0-	1999 04 16	704	0.9-	0.0
1991 02 07	875	0.2+	1.9+	1997 10 30	704	1.5+	0.0	1999 05 12	704	0.1-	0.1-
1991 02 12	875	0.9+	1.1-	1997 11 06	704	2.0-	0.4+	1999 05 12	704	0.3+	1.1+
1991 02 17	875	0.1-	0.5+	1997 11 06	704	(2.3-	0.8+)	1999 05 12	704	2.0+	0.4-
1991 02 17	875	0.8+	0.8-	1997 11 06	704	1.7-	0.2+	1999 05 12	704	1.9+	0.3-
1991 02 20	875	0.6+	0.3+	1997 11 06	704	(2.6-	0.7+)	1999 05 12	704	0.2+	0.3-
1991 02 20	875	1.4-	0.3+	1997 11 06	704	1.8-	0.2+	1999 05 13	704	1.8-	0.2-
1993 09 21	675	0.6+	2.1-	1999 04 12	704	0.1+	0.4-	1999 05 13	704	0.7-	1.0+
1993 09 21	675	0.1-	0.1-	1999 04 12	704	0.2-	0.2-	1999 05 13	704	0.6-	0.4+
1993 09 23	675	0.5+	0.1+	1999 04 12	704	0.5+	0.5-	1999 05 13	704	1.5+	0.2-
1997 10 28	688	0.1-	0.2+	1999 04 12	704	0.6-	0.4-	1999 05 13	704	0.1-	1.3-
1997 10 28	688	0.1-	0.3+	1999 04 13	732	0.8-	0.3-	1999 05 17	704	0.3-	1.3+
1997 10 29	688	0.1-	0.0	1999 04 13	732	0.5-	0.3-	1999 05 17	704	0.1-	1.1+
1997 10 29	688	0.2-	0.4+	1999 04 13	732	0.3-	0.3-	1999 05 17	704	1.5+	0.4+
1997 10 29	704	0.5+	0.2+	1999 04 14	732	0.7-	0.4-	1999 05 17	704	0.5-	0.3+
1997 10 29	704	0.7+	0.5+	1999 04 14	732	1.3-	0.4+	1999 05 17	704	0.8-	1.2-
1997 10 29	704	(3.0+	0.5+)	1999 04 14	732	0.8-	0.2+	1999 05 18	704	0.4-	0.8+
1997 10 29	704	0.0	0.4+	1999 04 15	704	0.3-	1.0-	1999 05 18	704	1.2+	0.1-
1997 10 29	566	0.1-	0.4+	1999 04 15	704	1.4+	0.3-	1999 05 18	704	0.8-	0.5-
1997 10 29	566	0.1-	0.3+	1999 04 15	704	0.5-	0.2+	1999 05 18	704	1.7+	0.8-
1997 10 29	566	0.0	0.2+	1999 04 16	704	0.0	0.1+	1999 05 18	704	0.1-	0.5+

(10777)* 1991 EB₅ = 1991 DS₂ = 1989 VO₃ = 1989 XO₁

Discovered 1991 Mar. 13 by H. Debehogne at the European Southern Observatory.

Id. G. V. Williams (d, *MPC* 24716), A. Gnädig (*MPC* 31380)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	358.68278		(2000.0)	<i>P</i>	<i>Q</i>				
<i>n</i>	0.26951819	ω	129.65233	+0.10527204	+0.99240305				
<i>a</i>	2.3736171	Ω	146.22824	-0.94386834	+0.11987176				
<i>e</i>	0.1030622	<i>i</i>	6.57706	-0.31309800	-0.02769378				
<i>P</i>	3.66	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	1		

Residuals in seconds of arc

1989 11 03	809	1.0+	1.6-	1991 03 13	809	1.3+	0.7-	1999 05 14	704	0.6+	1.1+
1989 11 03	809	0.1+	2.0-	1991 03 15	809	0.6-	0.7-	1999 05 14	704	0.1+	0.1+
1989 11 03	809	0.5+	1.2-	1991 03 15	809	0.6-	0.2-	1999 06 08	704	0.0	0.3+
1989 12 02	809	0.3+	0.5+	1991 03 15	809	0.3-	0.1+	1999 06 08	704	0.5+	0.2+
1989 12 02	809	0.5-	1.4+	1998 01 26	566	0.0	0.6+	1999 06 08	704	0.3+	0.1+
1989 12 02	809	1.1-	0.0	1998 01 26	566	0.1+	0.8+	1999 06 08	704	0.1+	0.1+
1989 12 03	809	0.7+	1.8+	1998 01 26	566	0.0	0.6+	1999 06 08	704	0.2-	0.1-
1989 12 03	809	0.2+	0.5+	1999 05 10	704	0.8+	0.2-	1999 06 14	704	0.2+	0.2+
1989 12 03	809	0.9-	0.0	1999 05 10	704	1.7-	0.5-	1999 06 14	704	0.1+	0.3+
1991 02 20	898	0.8-	0.3-	1999 05 10	704	0.3+	0.0	1999 06 14	704	0.3+	0.1+
1991 02 20	898	(4.0-	1.0+)	1999 05 10	704	1.2-	0.5+	1999 06 14	704	0.2+	1.3-
1991 03 13	809	0.0	0.1-	1999 05 14	704	(0.3-	2.2+)	1999 06 14	704	0.1+	0.4-
1991 03 13	809	0.6+	0.6-	1999 05 14	704	0.7-	0.1-				

1999 JUNE 22

M.P.C. 34765

Epoch	1999 Aug. 10.0 TT = JDT 2451400.5				Williams						
M	21.81495		(2000.0)		P		Q				
n	0.28786301		ω 243.21659		+0.96157460		+0.26215651				
a	2.2716712		Ω 101.49442		-0.21294824		+0.89963921				
e	0.1831527		i 4.77285		-0.17328397		+0.34917511				
P	3.42		H 14.6		G 0.15		U 2				
Residuals in seconds of arc											
1981 05 03	413	1.6-	1.9+	1994 02 09	809	1.0+	0.4-	1998 04 22	704	0.6+	0.2+
1981 05 03	413	1.2+	1.0-	1994 02 12	809	0.8+	0.1+	1998 04 22	704	0.2-	0.7-
1989 11 04	675	0.9-	1.3-	1994 02 12	809	0.0	0.1+	1998 04 22	704	0.5+	0.3+
1991 04 09	033	0.4-	0.1+	1994 02 12	809	0.3+	0.3+	1998 04 22	704	0.2+	0.1+
1991 04 09	033	0.3-	0.0	1998 03 24	704	0.5-	0.6+	1998 04 22	704	0.4+	0.7-
1991 04 11	033	0.1-	0.0	1998 03 24	704	0.9-	0.8+	1998 04 23	704	0.1+	0.7-
1991 04 11	033	1.5+	1.0-	1998 03 24	704	0.0	0.3-	1998 04 23	704	0.8-	0.1+
1991 04 12	033	0.4+	1.5-	1998 03 24	704	1.7-	0.6-	1998 04 23	704	0.5-	0.9+
1991 05 05	413	(2.1-	0.4+)	1998 04 20	113	1.4-	0.2+	1998 04 23	704	0.8-	0.0
1991 05 05	413	0.2+	0.6-	1998 04 20	113	1.3-	0.2+	1998 04 23	704	0.0	0.0
1992 09 30	675	0.5-	0.0	1998 04 21	704	0.4+	0.1-	1998 04 30	566	0.3+	1.4-
1992 09 30	675	0.4+	0.4+	1998 04 21	704	0.3-	0.1-	1998 04 30	566	0.2+	0.4-
1992 10 01	675	(2.7-	1.2+)	1998 04 21	704	0.2+	0.6-	1998 04 30	566	0.7+	1.8-
1992 10 01	675	0.3+	0.1-	1998 04 21	704	1.0+	0.3-	1998 05 01	704	0.6-	0.4+
1992 10 03	675	0.0	0.2+	1998 04 21	704	(2.1+	0.7-)	1998 05 01	704	0.3+	0.4+
1992 10 03	675	0.1-	0.3+	1998 04 21	113	(2.3-	0.7+)	1998 05 01	704	0.4+	0.4+
1994 02 07	809	0.1+	0.4+	1998 04 22	704	0.0	0.9+	1998 05 01	704	0.5+	1.1+
1994 02 07	809	1.4-	0.9+	1998 04 22	704	0.2-	0.5-	1998 05 01	704	0.2+	0.6+
1994 02 07	809	1.8-	0.1+	1998 04 22	704	0.1+	0.8-	1998 05 15	113	0.2-	0.9+
1994 02 09	809	1.6+	0.2+	1998 04 22	704	0.6+	0.6+	1998 05 15	113	1.5+	1.0+
1994 02 09	809	0.4+	0.7+	1998 04 22	704	0.2-	0.1+				

(10779)* 1991 LW = 1989 YH₅

Discovered 1991 June 14 by E. F. Helin at Palomar.

Id. G. V. Williams (*MPC* 18641)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5	Williams									
<i>M</i>	24.65228		(2000.0)		P		Q			
<i>n</i>	0.23920327	ω	116.35684		-0.86677314		+0.45222586			
<i>a</i>	2.5701471	Ω	91.16905		-0.49858561		-0.77667721			
<i>e</i>	0.1812576	<i>i</i>	12.13832		-0.01080358		-0.43847952			
<i>P</i>	4.12	<i>H</i>	13.6		<i>G</i>	0.15	<i>U</i>		<i>2</i>	

Residuals in seconds of arc											
1954 07 01	675	0.4+	0.1+	1995 05 19	608	0.5+	1.4-	1999 05 02	145	1.3+	1.7+
1954 07 01	675	0.2-	0.2+	1995 05 20	552	0.6-	1.2-	1999 05 02	145	1.1-	1.1+
1989 12 28	511	0.3+	0.7-	1995 05 20	552	0.9-	1.1-	1999 05 02	145	1.5-	0.0
1989 12 28	511	0.5-	1.4-	1995 05 20	552	0.8-	1.0-	1999 05 02	145	1.1-	0.4-
1989 12 29	511	0.4+	1.1-	1995 05 22	658	0.2+	0.7-	1999 05 02	145	0.5-	0.3+
1989 12 29	511	1.3-	0.5+	1995 05 22	658	0.3+	0.7-	1999 05 02	636	1.6+	0.9+
1989 12 29	511	1.1+	1.1-	1995 05 22	658	0.3+	0.7-	1999 05 02	636	1.7+	0.8+
1991 06 06	809	0.4-	0.5+	1995 05 22	560	1.2+	0.9+	1999 05 03	611	0.4+	1.0+
1991 06 06	809	0.5-	1.4+	1995 05 22	560	(2.2+	0.6+)	1999 05 03	636	0.7+	0.4+
1991 06 06	809	1.0-	1.1+	1995 05 22	560	1.6+	0.5-	1999 05 03	127	0.1+	0.2+
1991 06 08	809	1.6-	1.9+	1995 05 28	801	0.4+	0.5-	1999 05 03	127	0.1+	0.2+
1991 06 08	809	1.6-	1.5+	1995 05 28	801	0.5+	0.6-	1999 05 03	611	1.0+	0.8+
1991 06 08	809	(2.0-	2.1+)	1995 06 01	608	1.5+	0.4-	1999 05 03	636	0.7+	0.7+
1991 06 14	675	1.3+	0.0	1995 06 08	608	(3.7+	0.8+)	1999 05 03	636	0.7+	0.4+
1991 06 14	675	1.4+	0.2+	1995 06 08	608	(3.3+	0.7+)	1999 05 08	611	0.3-	0.4+
1991 06 16	675	(2.2+	1.5-)	1997 11 29	704	(3.4-	1.0-)	1999 05 08	611	0.7-	0.7+
1991 06 16	675	0.2+	0.4-	1997 11 29	704	(3.5-	0.8-)	1999 05 09	127	1.3-	0.8+
1991 07 10	675	0.9-	0.0	1997 11 29	704	(3.9-	1.6-)	1999 05 09	127	1.4-	1.0+
1991 07 10	675	0.1-	0.2-	1997 11 29	704	(3.7-	2.6-)	1999 05 14	704	0.2-	0.0
1991 07 11	675	0.7-	1.0-	1997 11 29	704	(3.2-	0.6+)	1999 05 14	704	0.2-	0.3+
1991 07 11	675	(2.1-	1.4-)	1997 12 05	704	0.2+	0.4+	1999 05 14	704	0.0	0.2-
1995 03 05	801	0.0	0.6-	1997 12 05	704	0.9+	0.8+	1999 05 14	704	0.2-	0.0
1995 05 08	552	0.8-	0.7-	1997 12 05	704	1.5-	0.9+	1999 05 14	704	0.4-	1.7-
1995 05 08	552	0.8-	0.8-	1997 12 05	704	0.5+	0.0	1999 06 08	704	0.3-	0.4+
1995 05 08	552	0.8-	0.6-	1997 12 05	704	0.3+	0.4+	1999 06 08	704	0.0	0.2+

1995 05 19	658	0.5+	0.9-	1999 04 10	704	0.5+	0.2-	1999 06 08	704	0.1-	0.0
1995 05 19	658	0.5+	1.0-	1999 04 10	704	0.7+	0.3-	1999 06 08	704	0.2+	0.2-
1995 05 19	658	0.6+	0.9-	1999 04 10	704	(2.7+	1.0+)	1999 06 08	704	0.1-	0.9-
1995 05 19	608	0.2+	1.3-	1999 04 10	704	1.2-	1.1+				

(10780)* 1991 PB₂ = 1991 RL₁₁ = 1994 BO₁

Discovered 1991 Aug. 2 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (d, *MPC* 21540; *MPC* 23124)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5	Williams									
<i>M</i>	24.26594		(2000.0)		P		Q			
<i>n</i>	0.23312218	ω	113.99253		-0.68305635		+0.72315150			
<i>a</i>	2.6146505	Ω	112.51513		-0.70390815		-0.61441515			
<i>e</i>	0.1994086	<i>i</i>	6.36432		-0.19480076		-0.31550900			
<i>P</i>	4.23	<i>H</i>	14.8		<i>G</i>	0.15	<i>U</i>		<i>2</i>	

Residuals in seconds of arc											
1991 08 02	809	0.8+	0.9-	1994 01 18	691	0.8-	0.8+	1999 05 17	704	0.7+	0.3-
1991 08 02	809	1.1-	0.6+	1998 01 06	688	0.0	0.7+	1999 05 17	704	0.3-	0.4-
1991 08 02	809	1.0-	0.9-	1998 01 06	688	0.1-	0.8+	1999 05 17	704	0.4-	0.4+
1991 08 07	809	(2.5+	1.2+)	1998 01 07	688	0.1+	0.6+	1999 05 17	704	0.9+	0.1+
1991 08 07	809	0.3-	0.5+	1998 01 07	688	0.4-	1.1+	1999 05 17	704	0.8-	1.0+
1991 08 07	809	0.9-	0.5-	1998 01 07	688	0.1+	0.7+	1999 05 21	704	0.3+	0.4-
1991 08 14	809	0.3-	1.1+	1999 04 14	699	0.5+	0.6+	1999 05 21	704	0.2-	1.4-
1991 08 14	809	0.2-	0.9+	1999 04 14	699	0.5+	1.0+	1999 05 21	704	0.4+	1.3-
1991 08 14	809	1.7+	0.8+	1999 04 14	699	0.4+	1.1+	1999 05 21	704	0.1-	0.5-
1991 09 04	809	(3.4+	1.1+)	1999 05 08	367	1.3-	1.1-	1999 05 21	704	0.8-	0.5-
1991 09 04	809	1.6+	1.7+	1999 05 08	367	1.5-	0.5-	1999 06 08	704	0.4+	1.6+
1991 09 04	809	1.9-	1.6+	1999 05 09	703	1.0+	0.9+	1999 06 08	704	1.3+	0.1-
1991 09 07	809	0.0	0.9+	1999 05 09	703	0.6+	0.4+	1999 06 08	704	0.1+	0.3-
1991 09 07	809	0.0	0.4+	1999 05 09	703	0.4+	0.2-	1999 06 08	704	0.2-	0.7+
1991 09 07	809	0.8+	0.3+	1999 05 09	703	0.1-	0.2-	1999 06 08	704	0.4-	0.4+
1994 01 17	691	0.1-	0.4+	1999 05 12	704	0.7+	0.5-	1999 06 14	704	0.0	0.9+
1994 01 17	691	0.2-	1.8+	1999 05 12	704	0.2+	0.3+	1999 06 14	704	0.3-	0.9+
1994 01 17	691	0.2+	1.0+	1999 05 12	704	0.7+	0.0	1999 06 14	704	0.5-	0.0
1994 01 18	691	0.5+	0.3-	1999 05 12	704	0.2-	0.0	1999 06 14	704	0.1+	0.7+
1994 01 18	691	0.6+	0.6+	1999 05 12	704	0.7-	0.9+	1999 06 14	704	0.4-	0.3-

(10781)* 1991 PV₃₁ = 1991 PJ₂₀ = 1997 XM₁

Discovered 1991 Aug. 6 by F. Börngen at Tautenburg.

Id. B. G. Marsden (*MPC* 31532)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Marsden						
<i>M</i>	295.07061		(2000.0)		P		Q				
<i>n</i>	0.22983009	ω	152.07823		+0.92162388		+0.38799157				
<i>a</i>	2.6395595	Ω	185.11440		-0.37143154		+0.87553108				
<i>e</i>	0.1195753	<i>i</i>	5.46097		-0.11246350		+0.28793727				
<i>P</i>	4.29	<i>H</i>	13.9		<i>G</i>	0.15	<i>U</i>		<i>2</i>		
Residuals in seconds of arc											
1986 06 26	413	0.0	0.2+	1998 03 03	704	1.2+	0.3-	1999 05 19	704	0.0	0.8-
1988 12 11	675	1.4-	0.0	1998 03 03	704	(4.1-	0.5+)	1999 05 19	704	0.5+	0.1+
1988 12 11	675	1.0+	0.9+	1998 03 04	704	0.1+	0.5-	1999 05 19	704	1.2+	0.4-
1991 08 05	675	0.9+	1.6-	1998 03 04	704	0.0	0.4-	1999 05 19	704	0.8-	1.2-
1991 08 05	675	0.2+	0.9-	1998 03 04	704	0.1-	1.3-	1999 06 06	703	1.3+	0.5+
1991 08 06	033	0.6+	0.2+	1998 03 04	704	0.8-	1.0-	1999 06 06	703	0.4+	0.1+
1991 08 06	033	0.5-	1.3-	1998 03 04	704	0.9-	1.1-	1999 06 06	703	0.3+	0.2+
1991 08 07	033	0.8+	0.7-	1999 05 10	113	1.2-	1.8+	1999 06 06	703	0.5+	0.0
1991 08 11	033	0.2-	0.9-	1999 05 10	113	1.6-	0.6+	1999 06 09	704	1.0+	0.4-
1991 08 12	033	0.1-	0.8-	1999 05 13	704	(2.4-	1.5-)	1999 06 09	704	1.0-	0.8-
1997 12 04	691	0.2-	0.1-	1999 05 13	704	1.1-	0.7-	1999 06 09	704	0.7+	0.6-
1997 12 04	691	0.1-	0.0	1999 05 13	704	1.0-	0.1+	1999 06 09	704	1.1+	0.1+
1997 12 04	691	0.0	0.2+	1999 05 13	704	0.8-	0.1+	1999 06 09	704	0.4+	0.4+
1997 12 05	691	0.5-	0.2+	1999 05 18	704	0.2+	0.0	1999 06 14	704	0.9+	0.1+
1997 12 05	691	0.5-	0.1+	1999 05 18	704	0.7-	0.3+	1999 06 14	704	0.9+	0.1+
1997 12 05	691	0.3-	0.0	1999 05 18	704	0.6-	0.2-	1999 06 14	704	0.8+	0.4+
1998 03 03	704	0.0	1.2-	1999 05 18	704	0.2+	0.5+	1999 06 14	704	0.6+	0.2+

1998 03 03 704 0.7+ 1.3- 1999 05 18 113 1.6- 0.2- 1999 06 14 704 0.3+ 0.5+
 1998 03 03 704 0.1- 0.8- 1999 05 18 113 1.2- 1.5+

(10782)* 1991 RH₄ = 1998 XA₅₁ = 1999 BA₁₇

Discovered 1991 Sept. 12 by F. Börngen and L. D. Schmadel at Tautenburg.

Id. A. Doppler (*MPC* 33931)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	77.48770			(2000.0)			P		Q		
<i>n</i>	0.29845296		ω	129.08961			+0.06503848		-0.99673089		
<i>a</i>	2.2176115		Ω	317.10601			+0.89242290		+0.07959007		
<i>e</i>	0.1501397		<i>i</i>	4.03825			+0.44648781		-0.01389095		
<i>P</i>	3.30		<i>H</i>	15.3		<i>G</i>	0.15		<i>U</i>		2
Residuals in seconds of arc											
1981 10 01	413	1.1-	0.2+	1993 04 01	413	0.5-	0.1+	1998 12 17	704	0.1-	0.4+
1981 10 01	413	1.0+	0.3+	1993 04 01	413	0.3+	0.2-	1998 12 17	704	0.0	0.4+
1984 08 02	413	1.2-	0.6+	1993 04 17	413	0.8-	0.4+	1998 12 17	704	0.4+	0.2+
1984 08 02	413	0.0	0.1+	1993 04 17	413	1.5+	0.6-	1998 12 17	704	0.0	0.8+
1991 09 12	033	0.6-	0.7-	1998 12 13	411	0.2-	0.4+	1999 01 16	704	0.5+	0.6-
1991 09 12	033	0.1+	0.4-	1998 12 13	411	0.2-	0.4+	1999 01 16	704	(0.5-	2.3-)
1991 09 14	033	(3.9-	1.2-)	1998 12 14	704	0.3+	0.5-	1999 01 16	704	0.8+	0.0
1991 09 15	033	(4.0-	0.5-)	1998 12 14	704	0.2+	0.4-	1999 01 16	704	0.5-	0.2+
1991 09 15	033	(3.4-	1.9-)	1998 12 14	704	0.4+	0.2-	1999 01 16	704	0.6-	1.2-
1991 10 04	033	0.4+	0.5+	1998 12 14	704	0.1+	0.3-	1999 01 19	704	0.3-	0.3-
1991 10 05	033	0.1-	0.6-	1998 12 14	704	1.1+	0.5-	1999 01 19	704	(2.0+	0.0)
1991 10 05	033	1.0+	0.2+	1998 12 16	411	0.1-	0.1+	1999 01 19	704	1.4-	0.2+
1991 10 12	675	0.1+	0.1+	1998 12 16	411	0.1+	0.5+	1999 01 19	704	0.9-	1.3+

(10783)* 1991 RB₉ = 1998 BN₁₅

Discovered 1991 Sept. 11 by H. E. Holt at Palomar.

Id. G. V. Williams (*MPC* 31381)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	185.49434		(2000.0)		P		Q				
n	0.20320642	ω	232.97302		+0.62682706		-0.77915769				
a	2.8653506	Ω	178.20950		+0.72525148		+0.58295925				
e	0.0626233	i	1.95320		+0.28477732		+0.23037320				
P	4.85	H	13.9		G	0.15	U	1			
Residuals in seconds of arc											
1991 09 11	675	0.5+	0.4-	1998 02 20	910	0.3+	0.2+	1999 05 10	704	0.2-	0.5+
1991 09 11	675	0.5+	1.0-	1998 02 20	910	0.3+	0.2+	1999 05 10	704	0.5+	0.8-
1991 09 14	675	0.1+	0.8+	1998 02 20	910	0.5+	0.3+	1999 05 13	704	2.2+	0.7-
1991 09 14	675	0.3-	0.3+	1998 02 22	566	0.1-	0.4+	1999 05 13	704	1.2-	0.6+
1991 10 06	691	0.2-	0.1+	1998 02 22	566	0.7+	0.1+	1999 05 13	704	0.4-	0.0
1991 10 06	691	0.4-	0.2+	1998 02 22	566	0.1-	0.4+	1999 05 13	704	0.4+	0.1-
1991 10 06	691	0.3-	0.3+	1998 02 23	566	0.1+	0.5+	1999 05 13	704	1.2-	0.5-
1996 10 11	566	0.2-	0.1+	1998 02 23	566	0.3+	0.2+	1999 05 15	703	0.7+	0.2-
1996 10 11	566	0.6-	0.3+	1998 02 23	566	0.4+	0.4+	1999 05 15	703	0.8-	1.2+
1996 10 11	566	0.1+	0.1+	1998 03 31	910	0.5-	0.2-	1999 05 15	703	0.4+	1.2+
1996 12 12	327	0.1+	0.1+	1998 03 31	910	0.7-	0.2-	1999 05 15	703	0.6-	0.7+
1996 12 12	327	0.3-	0.4+	1998 03 31	910	0.7-	0.2-	1999 05 18	704	0.1+	1.5+
1996 12 12	327	0.3+	0.8+	1999 04 14	691	0.3-	0.3-	1999 05 18	704	1.6+	0.3+
1998 01 08	688	0.4+	0.2+	1999 04 14	691	0.1-	0.5-	1999 05 18	704	0.9+	0.2+
1998 01 08	688	0.2+	0.2+	1999 04 14	691	0.0	0.2-	1999 05 18	704	0.4+	0.7-
1998 01 24	566	1.0-	1.3-	1999 04 19	704	0.2+	0.6-	1999 05 19	704	1.4+	1.9+
1998 01 24	566	(2.0-	2.2-)	1999 04 19	704	0.6+	0.9-	1999 05 19	704	0.7-	0.9-
1998 01 24	566	0.2-	1.0-	1999 04 19	704	0.9+	0.6-	1999 05 19	704	0.2+	0.8+
1998 01 28	566	0.0	0.1+	1999 05 10	704	0.9-	0.8+	1999 05 19	704	0.2-	1.0-
1998 01 28	566	0.0	0.1+	1999 05 10	704	1.4-	0.5+	1999 05 19	704	0.6-	0.3-
1998 01 28	566	0.2+	0.3+	1999 05 10	704	1.4-	0.1-				

(10784)* 1991 RQ₁₁ = 1990 HG₃

Discovered 1991 Sept. 4 by E. W. Elst at the European Southern Observatory.

Id. S. Nakano (*MPC* 20930)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	74.06411		(2000.0)		P		Q		
n	0.23194595	ω	58.63577		-0.94984194		+0.24457259		
a	2.6234826	Ω	134.68473		-0.28338949		-0.93668810		
e	0.0422655	i	15.90962		+0.13225238		-0.25059857		
P	4.25	H	13.4		G	0.15	U	1	
Residuals in seconds of arc									
1990 04 29	413	(3.6- 0.6+)	1991 09 07	809	0.3+ 0.8+	1998 02 05	403	0.5+ 0.0	
1990 04 29	413	1.3- 0.3+	1991 09 07	809	0.3- 1.5+	1998 02 05	403	0.6+ 0.1-	
1990 04 30	413	1.6- 0.2+	1991 09 07	809	(0.3- 2.6+)	1998 02 15	403	0.2- 0.1-	
1990 04 30	413	0.3+ 0.8+	1992 10 24	589	1.1- 1.1+	1998 02 15	403	0.1- 0.1-	
1991 08 05	809	0.0 1.8-	1992 10 24	589	0.9- 0.3+	1999 05 15	704	0.3+ 0.7-	
1991 08 05	809	0.3- 1.4-	1992 10 24	589	1.1- 0.8+	1999 05 15	704	0.2- 1.4-	
1991 08 05	809	0.2- 1.3-	1992 10 25	589	0.2- 0.3-	1999 05 15	704	0.2- 1.5-	
1991 09 04	809	1.2+ 1.0+	1994 02 08	809	(1.7+ 2.8+)	1999 05 21	704	0.2- 0.9+	
1991 09 04	809	0.6+ 1.6+	1994 02 08	809	(1.3+ 2.6+)	1999 05 21	704	0.4- 0.5-	
1991 09 04	809	0.3- 1.2+	1994 02 08	809	1.7+ 2.0+	1999 05 21	704	0.1- 1.1+	
1991 09 05	809	1.7+ 0.4-	1994 02 10	809	1.6+ 1.4+	1999 05 21	704	0.1+ 1.0+	
1991 09 05	809	0.4+ 0.4+	1994 02 10	809	1.1+ 0.8+	1999 06 14	704	1.4+ 0.1-	
1991 09 05	809	0.8- 1.3+	1994 02 10	809	1.4+ 0.9+	1999 06 14	704	1.0- 0.1+	
1991 09 06	809	0.9+ 1.4+	1994 03 12	675	0.6- 0.6+	1999 06 14	704	0.6- 0.6+	
1991 09 06	809	0.2+ 1.4+	1994 03 12	675	1.0- 0.5+	1999 06 14	704	1.2- 1.1+	
1991 09 06	809	0.4+ 1.3+	1998 02 05	403	0.5+ 0.1-				

(10785)* 1991 RD₁₂ = 1979 BT₂ = 1989 EY₉

Discovered 1991 Sept. 4 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (*MPC* 20641, *MPC* 34494), A. Milani (*MPC* 34494)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	162.57733		(2000.0)		P		Q				
<i>n</i>	0.20644230	ω	284.51297		+0.61906205		-0.78396173				
<i>a</i>	2.8353298	Ω	127.14325		+0.74115268		+0.56360282				
<i>e</i>	0.1168131	<i>i</i>	3.34726		+0.25972079		+0.26029958				
<i>P</i>	4.77	<i>H</i>	13.5		<i>G</i>	0.15	<i>U</i>	1			
Residuals in seconds of arc											
1953 10 01	675	0.1+	1.0+	1994 03 12	691	0.0	0.1-	1999 03 20	704	0.9+	0.4+
1953 10 01	675	0.4+	0.4+	1998 01 01	104	0.5-	0.7+	1999 03 23	703	0.7-	1.4+
1979 01 27	675	1.7-	0.9+	1998 01 01	596	0.3+	1.0-	1999 03 23	703	0.5+	0.6-
1979 01 29	675	0.0	0.4+	1998 01 01	104	0.4+	0.4+	1999 03 23	703	0.2-	1.8-
1989 03 05	033	0.3+	0.4+	1998 01 01	596	(0.8-	3.2-)	1999 03 23	703	0.4+	2.0-
1989 03 05	033	0.2+	0.0	1998 01 01	108	1.4+	0.7-	1999 04 07	704	0.0	0.7-
1991 08 03	809	(4.1-	1.4+)	1998 01 01	108	0.0	0.8-	1999 04 07	704	1.3-	0.2+
1991 08 03	809	(3.2-	1.4+)	1998 01 01	104	0.1-	1.3-	1999 04 07	704	0.7-	0.5-
1991 08 03	809	(3.2-	2.0+)	1998 01 01	596	1.5-	0.9-	1999 04 07	704	0.9-	0.8-
1991 08 05	809	0.8-	1.5-	1998 01 01	108	0.7+	0.3-	1999 04 07	704	1.0-	1.2-
1991 08 05	809	1.1-	0.1-	1998 01 01	596	0.3+	1.1-	1999 04 12	704	0.8-	0.8-
1991 08 05	809	1.9-	0.0	1998 01 03	426	0.2+	0.8-	1999 04 12	704	(1.5+	2.6-)
1991 09 04	809	1.5+	0.3-	1998 01 03	426	0.1+	0.8-	1999 04 12	704	1.1+	1.0-
1991 09 04	809	0.8+	0.2-	1998 01 03	426	0.2+	1.0-	1999 04 12	704	0.4-	1.1+
1991 09 04	809	1.1+	0.5-	1998 01 06	426	0.1+	0.3-	1999 04 12	704	0.4+	0.3+
1991 09 05	809	0.5+	0.5-	1998 01 06	426	0.5-	0.3-	1999 04 16	704	(1.2-	2.2-)
1991 09 05	809	0.4+	1.9-	1998 01 06	426	0.4-	0.1+	1999 04 16	704	0.1+	1.2-
1991 09 05	809	(0.5+	2.5-)	1999 03 19	704	0.6+	0.6-	1999 04 16	704	0.5-	0.1+
1991 09 06	809	1.1+	1.7-	1999 03 19	704	0.2-	0.7+	1999 04 16	704	1.1-	0.8+
1991 09 06	809	0.2-	1.3-	1999 03 19	704	0.5+	1.9+	1999 04 16	704	(2.2-	2.0-)
1991 09 06	809	0.1+	1.6-	1999 03 19	704	0.5+	1.2-	1999 04 19	704	0.6-	0.8-
1991 09 07	809	(0.1-	2.4-)	1999 03 20	704	1.4+	1.0+	1999 04 19	704	0.5+	0.3+
1991 09 07	809	(2.2-	3.4-)	1999 03 20	704	0.6-	0.1-	1999 04 19	704	1.1+	1.0+
1994 03 12	691	0.2+	0.4-	1999 03 20	704	1.0+	0.6-	1999 04 19	704	0.4+	0.3-
1994 03 12	691	0.0	0.3-	1999 03 20	704	0.9-	0.7+	1999 04 19	704	1.2-	0.6-

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	49.33946		(2000.0)	P	Q
<i>n</i>	0.29943315	ω	124.60582	-0.34136395	-0.93980795
<i>a</i>	2.2127693	Ω	345.33121	+0.84149620	-0.29835998
<i>e</i>	0.0653197	<i>i</i>	3.44584	+0.41875387	-0.16656030
<i>P</i>	3.29	<i>H</i>	15.4	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1950 04 17	675	1.1-	0.3+	1993 03 21	809	0.1-	0.7+	1998 12 14	704	0.1-	0.2-
1950 04 17	675	1.5+	1.7-	1993 03 22	809	1.2+	1.1+	1998 12 14	704	0.8+	0.4-
1974 07 23	413	2.2-	1.1-	1994 08 12	809	0.2-	1.4+	1998 12 14	704	(3.8-	0.0)
1974 07 23	413	0.5+	0.9-	1994 08 12	809	0.6+	2.0+	1998 12 16	704	0.8+	0.1+
1981 10 01	413	2.1-	0.2-	1994 08 12	809	0.3+	1.5+	1998 12 16	704	1.4+	1.8-
1981 10 01	413	1.4+	0.7+	1994 08 13	809	0.1+	1.4+	1998 12 16	704	(2.9+	2.6+)
1991 10 07	033	1.2+	0.5-	1994 08 13	809	0.5-	0.7+	1998 12 16	704	1.5+	1.2-
1991 10 07	033	0.2+	0.6-	1994 08 13	809	1.2-	0.4-	1998 12 17	113	1.2-	0.6+
1991 10 08	033	0.5+	0.5-	1998 11 22	113	0.3-	0.9+	1998 12 17	113	1.6-	0.3+
1991 10 09	033	1.0+	0.5-	1998 11 22	113	0.4-	1.1+	1998 12 23	113	0.2-	0.7+
1991 10 10	691	0.2-	0.8-	1998 12 10	113	1.4-	0.1+	1998 12 23	113	0.6-	1.6+
1991 10 10	691	0.2+	0.5-	1998 12 10	113	1.5-	0.1+	1999 01 18	113	0.9+	0.2+
1991 10 10	691	0.3-	0.4-	1998 12 14	704	0.5+	0.7+	1999 01 18	113	0.0	0.8+

(10787)* 1991 TL₃ = 1997 XS₉

Discovered 1991 Oct. 4 by F. Börngen and L. D. Schmadel at Tautenburg.

Id. G. V. Williams (*MPC* 31101)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	137.47580		(2000.0)	P	Q
<i>n</i>	0.17966028	ω	101.87433	+0.86223869	-0.49963254
<i>a</i>	3.1105319	Ω	288.15096	+0.42396220	+0.80174669
<i>e</i>	0.1196975	<i>i</i>	5.01926	+0.27712900	+0.32797801
<i>P</i>	5.49	<i>H</i>	14.0	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1953 10 12	675	1.2-	0.4-	1997 12 04	704	1.8-	0.3-	1999 02 12	704	2.0+	1.5-
1953 10 12	675	0.9+	0.3-	1997 12 04	704	0.4+	0.3-	1999 02 12	704	0.2-	0.3-
1983 05 08	413	0.0	0.1+	1997 12 04	704	0.5+	0.1-	1999 02 12	704	0.7+	1.0+
1991 10 03	033	0.4-	0.2-	1997 12 04	704	0.6+	0.6+	1999 02 12	704	0.1-	1.8-
1991 10 03	033	1.5+	0.5-	1997 12 04	327	0.5-	0.5+	1999 02 16	704	0.1+	1.2-
1991 10 04	033	0.3+	0.1+	1997 12 04	327	0.5-	0.2+	1999 02 16	704	0.1+	0.8+
1991 10 04	033	0.3+	0.4+	1997 12 04	327	0.6-	0.6+	1999 02 16	704	(3.1+	0.5+)
1991 10 04	033	1.0+	0.1-	1997 12 07	327	0.1-	0.6-	1999 03 06	113	0.1+	0.2+
1991 10 05	033	0.1+	0.3-	1997 12 07	327	0.0	0.2+	1999 03 06	113	0.1+	0.7+
1991 10 07	033	0.2+	0.2+	1997 12 07	327	0.4-	0.2-	1999 03 06	113	0.4-	0.7+
1991 10 07	033	1.1+	0.6+	1997 12 08	327	0.8-	0.9-	1999 03 12	113	0.1+	0.5+
1996 08 12	566	0.6-	0.5-	1997 12 08	327	0.1+	1.3+	1999 03 13	113	1.2-	0.5+
1996 08 12	566	0.6-	0.1-	1997 12 08	327	0.0	0.5+	1999 03 17	113	0.3-	0.8+
1996 08 12	566	0.7-	0.1-	1999 01 21	113	0.9-	1.1-	1999 03 17	113	0.1-	0.0
1997 12 04	704	0.7+	0.1-	1999 01 21	113	0.5-	0.7-	1999 03 17	113	0.2+	0.4-

(10788)* 1991 UC = 1990 RL₁₈

Discovered 1991 Oct. 18 by S. Ueda and H. Kaneda at Kushiro.

Id. K. Ichikawa (*MPC* 22815)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	234.81759		(2000.0)	P	Q
<i>n</i>	0.20258042	ω	56.18529	+0.98685427	-0.16103876
<i>a</i>	2.8712504	Ω	313.07781	+0.14143823	+0.90133325
<i>e</i>	0.0327919	<i>i</i>	1.06745	+0.07819125	+0.40207573
<i>P</i>	4.87	<i>H</i>	13.0	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1990 09 09	413	0.4+	0.4-	1998 02 06	563	1.0+	0.5-	1999 05 13	704	0.6-	0.4+
1990 09 11	413	0.3-	0.2-	1998 02 06	563	0.3-	0.8+	1999 05 13	704	1.0-	0.3+
1991 10 18	399	0.8+	0.4+	1998 02 06	563	0.6-	0.7+	1999 05 13	704	0.1-	0.4+
1991 10 18	399	0.8+	1.5-	1998 02 06	563	2.1+	0.5+	1999 05 13	704	0.8-	0.9-

1991 10 19	399	1.9+	1.0+	1998 02 06	563	0.9-	0.1-	1999 05 15	703	1.1+	0.7+
1991 10 19	399	1.3-	1.1+	1998 02 06	563	2.0-	0.1-	1999 05 15	703	0.5+	0.7+
1991 10 28	399	0.3-	0.1+	1998 02 06	563	1.2+	1.2-	1999 05 15	703	0.4+	0.1-
1991 10 28	399	1.4-	1.0+	1998 02 20	910	0.6+	0.1-	1999 05 15	703	0.5+	0.2-
1991 10 29	399	0.4-	1.5-	1998 02 20	910	0.7+	0.0	1999 05 18	704	0.8+	0.6-
1991 10 29	399	1.7+	1.6+	1998 02 21	910	1.3+	0.6+	1999 05 18	704	(1.1+	4.0-)
1991 10 31	399	0.2+	1.3-	1999 04 15	704	1.2+	0.1+	1999 05 18	704	0.2+	1.2-
1991 10 31	399	1.9-	1.2-	1999 04 15	704	0.4-	0.4-	1999 05 19	704	0.5-	1.8-
1998 01 26	566	0.3-	0.3-	1999 04 15	704	1.7-	2.0+	1999 05 19	704	1.2-	0.2-
1998 01 26	566	0.2-	0.2-	1999 04 15	704	1.6+	0.9+	1999 05 19	704	(0.6-	3.1-)
1998 01 26	566	0.0	0.1-	1999 05 10	704	0.1+	0.1-	1999 05 19	704	1.2-	1.7-
1998 02 05	563	0.8-	1.1-	1999 05 10	704	0.5+	1.6+	1999 05 19	704	(2.4-	0.1-)
1998 02 05	563	0.7-	0.0	1999 05 10	704	0.4+	0.6-				
1998 02 05	563	1.1-	0.1+	1999 05 10	704	0.1-	0.5+				

(10789)* 1991 VL₁₀ = 1976 UP₁₁

Discovered 1991 Nov. 5 by Spacewatch at Kitt Peak.

Id. K. Ichikawa (*MPC* 20511)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	246.45367		(2000.0)	P	Q
<i>n</i>	0.19867440	ω	186.84392	+0.99149617	+0.12979725
<i>a</i>	2.9087615	Ω	165.68799	-0.11752631	+0.92405164
<i>e</i>	0.0840158	<i>i</i>	2.17489	-0.05588293	+0.35955701
<i>P</i>	4.96	<i>H</i>	13.8	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1976 10 22	381	0.2+	1.0+	1998 01 08	688	0.3+	0.2-	1999 04 18	704	(0.0	3.4+)
1976 10 22	381	0.2-	0.6+	1998 02 06	688	0.1-	0.1-	1999 04 19	704	0.1+	0.2+
1976 10 24	381	1.0-	1.3+	1998 02 06	688	0.0	0.0	1999 04 19	704	0.0	1.0+
1991 10 17	675	0.1-	0.7-	1998 02 06	688	0.1-	0.1-	1999 04 19	704	1.0-	1.6-
1991 11 05	691	0.0	0.1+	1999 04 12	704	1.2+	1.1+	1999 05 12	704	1.3+	1.1+
1991 11 05	691	0.2+	0.5+	1999 04 12	704	0.5+	0.9+	1999 05 12	704	1.2-	1.4+
1991 11 05	691	0.4+	0.5+	1999 04 12	704	0.9+	0.7+	1999 05 12	704	0.6+	1.0-
1991 11 06	691	0.3-	0.7+	1999 04 16	704	0.2-	0.4-	1999 05 13	704	1.1+	1.1+
1991 11 06	691	0.0	0.7+	1999 04 16	704	1.2-	1.0-	1999 05 13	704	(0.6+	2.6+)
1991 11 06	691	0.0	0.6+	1999 04 16	704	0.7+	0.9+	1999 05 13	704	0.1+	1.2+
1991 11 08	691	0.5-	0.8+	1999 04 16	704	0.8+	1.6+	1999 05 13	704	0.8-	0.0
1991 11 08	691	0.2-	0.5+	1999 04 18	704	0.4-	0.4+	1999 05 13	704	(1.4-	2.2+)
1991 11 08	691	0.7-	0.4+	1999 04 18	704	0.1-	0.1-				
1998 01 08	688	0.2-	0.4-	1999 04 18	704	(0.1-	2.5+)				

(10790)* 1991 XS = 1993 GP₁ = 1994 NY₁₂

Discovered 1991 Dec. 5 by S. Ueda and H. Kaneda at Kushiro.

Id. E. Bowell (*MPC* 28585), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	119.05697		(2000.0)	P	Q
<i>n</i>	0.18724589	ω	244.04936	-0.49776641	-0.85523356
<i>a</i>	3.0259461	Ω	236.55196	+0.84468794	-0.44029596
<i>e</i>	0.1382790	<i>i</i>	9.95446	+0.19680163	-0.27334050
<i>P</i>	5.26	<i>H</i>	13.1	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1991 11 11	399	1.9-	1.0-	1994 07 12	817	1.1+	1.5+	1999 05 18	704	0.1+	0.3-
1991 11 11	399	0.6-	1.0-	1994 07 12	817	0.7+	0.1-	1999 05 18	704	0.7-	0.2-
1991 11 13	399	0.4+	0.3+	1997 12 29	688	0.2-	0.4-	1999 05 18	704	0.1+	0.1+
1991 11 13	399	0.1-	1.2-	1997 12 29	688	0.2-	0.3-	1999 05 18	704	0.8-	1.3-
1991 12 01	675	0.5+	1.4-	1998 01 08	688	0.1-	0.4-	1999 05 18	704	0.9-	0.4-
1991 12 01	675	0.5+	1.1-	1998 01 08	688	0.0	0.4-	1999 05 19	704	0.2+	0.5-
1991 12 03	675	0.6+	0.8-	1998 03 19	689	0.8+	0.8+	1999 05 19	704	0.9+	0.1-
1991 12 03	675	0.6+	1.4-	1998 03 26	470	0.7-	0.3+	1999 05 19	704	0.2-	1.1-
1991 12 05	399	(2.2+ 0.5+)		1998 03 26	470	1.0+	1.3-	1999 05 19	704	0.0	0.3-
1991 12 05	399	2.0-	2.0-	1999 05 10	704	0.5+	0.5-	1999 05 19	704	0.1-	0.9-
1991 12 07	399	0.1+	0.3-	1999 05 10	704	(3.2+ 0.5+)		1999 06 09	704	0.6-	0.1-
1991 12 107	399	0.7+	1.2+	1999 05 10	704	0.1-	0.3+	1999 06 09	704	0.6-	0.1+
1991 12 08	691	0.9+	0.1+	1999 05 10	704	0.7-	1.1-	1999 06 09	704	0.3+	1.0-

1991 12 08	691	1.1+	0.4+	1999 05 10	704	0.6+	1.2-	1999 06 09	704	0.9-	0.0
1991 12 08	691	0.9+	0.5+	1999 05 13	704	0.1+	0.1+	1999 06 09	704	0.3-	1.0-
1991 12 14	399	(0.1-	2.8-)	1999 05 13	704	0.3+	0.1-	1999 06 15	704	0.6+	1.1-
1991 12 14	399	1.8-	1.4-	1999 05 13	704	0.2+	1.4-	1999 06 15	704	1.4+	0.1+
1993 04 14	675	0.7-	1.4+	1999 05 13	704	0.4+	1.3+	1999 06 15	704	0.1-	0.2+
1993 04 14	675	0.7+	1.0+	1999 05 13	704	1.5-	0.7-	1999 06 15	704	0.6-	1.2-

(10791)* 1992 CS = 1990 YE₁ = 1998 FU₁₃

Discovered 1992 Feb. 8 by T. Seki at Geisei.

Id. G. V. Williams (*MPC* 31533), A. Doppler (*MPC* 34495), A. Milani (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	257.13934		(2000.0)	P	Q
<i>n</i>	0.16926968	ω	211.82553	+0.96193711	+0.09466645
<i>a</i>	3.2365570	Ω	140.12066	-0.07564255	+0.99366598
<i>e</i>	0.0747406	<i>i</i>	23.56655	-0.26259324	+0.06054894
<i>P</i>	5.82	<i>H</i>	12.7	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1990 12 22	413	1.2-	1.1+	1998 01 24	566	0.7-	0.1-	1999 05 21	704	1.3-	1.1+
1990 12 22	413	0.5+	0.5+	1998 03 24	704	0.1+	0.3+	1999 05 21	704	1.1+	0.9+
1992 02 05	372	1.6+	1.1+	1998 03 24	704	0.2-	0.5-	1999 05 21	704	1.5-	0.7+
1992 02 05	372	0.2-	1.0+	1998 03 24	704	0.1-	0.8-	1999 06 07	704	0.6+	0.5+
1992 02 08	372	0.7-	0.0	1998 03 24	704	0.6-	1.4-	1999 06 07	704	0.2+	0.1-
1992 02 08	372	(0.2+	2.8+)	1998 03 24	704	0.2-	0.9-	1999 06 07	704	0.3+	0.3+
1992 02 13	372	(2.3+	0.4-)	1998 03 25	704	0.6+	0.2-	1999 06 07	704	0.6+	0.0
1992 02 13	372	(0.8+	2.6+)	1998 03 25	704	0.3+	1.5+	1999 06 11	704	0.3+	0.2-
1992 02 25	691	0.4+	0.1-	1998 03 25	704	1.0+	0.3+	1999 06 11	704	0.1-	0.2-
1992 02 25	691	0.5+	0.2-	1998 03 25	704	0.6+	0.6-	1999 06 11	704	0.2-	0.2+
1992 02 25	691	0.9+	0.1-	1998 03 25	704	0.7+	1.2-	1999 06 11	704	0.1+	0.3+
1992 02 25	372	0.5-	1.9+	1998 03 26	566	0.1+	0.1+	1999 06 11	704	0.3+	0.2+
1992 02 25	372	1.1-	0.6-	1998 03 26	566	0.2+	0.1+	1999 06 12	704	0.5+	0.3+
1992 02 26	372	0.6-	0.5+	1998 03 26	566	0.2-	0.1+	1999 06 12	704	0.3+	0.2+
1992 02 27	372	0.4+	0.9-	1998 03 27	566	0.2+	0.1+	1999 06 12	704	0.8+	0.3-
1992 02 27	372	0.6-	0.7+	1998 03 27	566	0.0	0.6-	1999 06 12	704	0.4-	0.2+
1998 01 24	566	0.8-	0.5-	1998 03 27	566	0.2-	0.2-	1999 06 12	704	0.2+	0.1-
1998 01 24	566	0.8-	0.1-	1999 05 21	704	0.5-	1.3-				

(10792)* 1992 CQ₂ = 1990 VU

Discovered 1992 Feb. 2 by E. W. Elst at the European Southern Observatory.

Id. S. Nakano (*MPC* 20341)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	288.95948		(2000.0)	P	Q
<i>n</i>	0.18320660	ω	173.11901	+0.87409858	+0.48106616
<i>a</i>	3.0702611	Ω	157.73448	-0.45370060	+0.85803755
<i>e</i>	0.0848613	<i>i</i>	10.22856	-0.17351497	+0.17985248
<i>P</i>	5.38	<i>H</i>	12.7	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1989 07 29	675	0.0	0.6-	1998 03 03	704	0.1+	0.2+	1999 06 08	703	0.3-	0.3+
1989 07 29	675	0.6+	0.8-	1998 03 03	704	0.1-	0.2-	1999 06 08	703	0.1-	0.5-
1990 11 08	413	(3.4+	1.1+)	1998 03 04	704	1.9-	0.3-	1999 06 08	704	0.1+	0.2+
1990 11 09	413	0.2+	1.1-	1998 03 04	704	(2.4-	0.8-)	1999 06 08	704	0.5+	0.4-
1990 11 09	413	(2.4+	1.2+)	1998 03 04	704	(2.8-	0.9-)	1999 06 08	704	0.1+	1.0+
1992 01 30	809	(0.7-	4.1-)	1998 03 04	704	(2.6-	0.1-)	1999 06 08	704	0.3+	0.1-
1992 01 30	809	(1.1-	3.7-)	1998 03 04	704	(2.3-	0.2-)	1999 06 08	704	0.0	0.6+
1992 01 30	809	(3.1-	3.4-)	1998 03 20	704	1.0+	0.2+	1999 06 14	704	0.2+	0.4-
1992 02 02	809	0.1+	1.7-	1998 03 20	704	0.3+	0.0	1999 06 14	704	0.2-	0.3+
1992 02 02	809	1.3-	1.0-	1998 03 20	704	0.4+	0.1-	1999 06 14	704	0.5+	0.1+
1992 02 02	809	(0.9-	2.3-)	1998 03 20	704	1.4+	0.4-	1999 06 14	704	0.9-	0.9+
1992 02 06	809	(0.9-	3.0-)	1998 03 20	704	0.1+	1.1-	1999 06 14	704	0.7-	0.4+
1992 02 06	809	(0.3-	3.1-)	1998 03 22	704	0.5+	0.4+	1999 06 15	704	0.5+	0.1+
1992 02 06	809	(1.1-	3.2-)	1998 03 22	704	0.7-	0.0	1999 06 15	704	0.2-	0.2-
1992 02 12	809	(1.5+	2.8-)	1998 03 22	704	0.4-	0.7+	1999 06 15	704	0.3+	0.3-
1992 02 12	809	(0.8+	3.0-)	1998 03 22	704	0.8-	1.7+	1999 06 15	704	0.0	0.1-
1992 02 12	809	(0.3+	2.4-)	1998 03 22	704	1.0+	0.4-	1999 06 15	704	0.3-	0.0

1993 03 17	809	0.3-	0.4-	1998 04 03	691	0.2+	0.5-	1999 06 15	704	0.1+	0.1+
1993 03 18	809	0.1+	0.3+	1998 04 03	691	0.3+	0.1-	1999 06 15	704	0.2-	0.3+
1993 03 19	691	0.1-	0.1+	1998 04 03	691	0.3+	0.2-	1999 06 15	704	0.8-	0.1+
1993 03 19	691	0.4+	0.7+	1999 05 12	704	0.3+	0.2+	1999 06 15	704	0.3-	0.2-
1993 03 19	691	0.3-	0.1+	1999 05 12	704	0.5-	0.2-	1999 06 15	704	0.5-	0.0
1993 03 23	809	0.1+	0.2-	1999 05 12	704	0.6-	0.1+	1999 06 15	704	0.1-	0.1+
1993 04 16	413	0.0	0.1+	1999 05 12	704	0.4-	0.7+	1999 06 15	704	0.0	0.1-
1998 02 26	566	0.5-	0.7-	1999 05 15	704	1.1+	1.0-	1999 06 15	704	0.2-	0.3-
1998 02 26	566	0.6-	0.7-	1999 05 15	704	0.6+	1.3-	1999 06 15	704	0.0	0.2-
1998 02 26	566	0.9-	0.7-	1999 05 15	704	0.7+	0.8-	1999 06 15	704	1.4-	0.0
1998 02 26	610	0.7+	0.9+	1999 05 17	704	0.5+	0.9-	1999 06 15	704	0.3+	0.0
1998 02 26	610	0.9+	0.6+	1999 05 17	704	1.0+	0.7-	1999 06 15	704	0.3+	0.3+
1998 02 26	610	1.0+	0.2+	1999 05 17	704	0.1+	0.5-	1999 06 15	704	0.1+	0.4+
1998 03 03	704	0.5+	0.3+	1999 05 17	704	0.5+	0.7-	1999 06 15	704	0.1-	0.4-
1998 03 03	704	0.6-	0.2+	1999 06 08	703	0.8-	0.9+	1999 06 15	704	0.8-	0.3+
1998 03 03	704	0.2-	0.4+	1999 06 08	703	0.3-	0.2+				

(10793)* 1992 CU₂ = 1956 UE = 1995 PO

Discovered 1992 Feb. 2 by E. W. Elst at the European Southern Observatory.

Id. S. Nakano (*MPC* 25639; unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	216.19076		(2000.0)	P	Q
<i>n</i>	0.17435401	ω	99.09656	+0.95051447	-0.27734738
<i>a</i>	3.1733265	Ω	277.09900	+0.19936697	+0.89012388
<i>e</i>	0.0806866	<i>i</i>	8.11057	+0.23827515	+0.36160463
<i>P</i>	5.65	<i>H</i>	12.6	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1956 10 28	760	(19.2-	63.1+)	X	1995 08 08	358	1.3+	0.9+	1999 04 15	704	0.4-	0.9+
1988 05 15	675	1.3-	1.6-		1998 01 26	566	0.1+	0.2+	1999 04 15	704	0.8-	0.5-
1988 05 15	675	1.0+	0.3-		1998 01 26	566	0.1+	0.2+	1999 04 15	704	1.1+	0.7-
1992 01 30	809	0.1-	1.2-		1998 01 26	566	0.1-	0.3+	1999 04 15	704	1.2-	0.9-
1992 01 30	809	1.1-	0.7-		1998 02 26	699	0.5+	0.1-	1999 04 17	704	0.1-	0.3+
1992 01 30	809	1.3-	0.4-		1998 02 26	699	0.5+	0.2+	1999 04 17	704	0.1+	0.1+
1992 02 02	809	0.1+	0.4-		1998 02 26	699	0.3-	0.4-	1999 04 17	704	0.5+	0.2+
1992 02 02	809	0.2+	0.3+		1998 03 03	704	0.1+	0.2+	1999 04 17	704	0.5-	0.2+
1992 02 02	809	0.9+	0.8-		1998 03 03	704	0.2-	0.8+	1999 04 17	704	0.6-	1.5+
1992 02 06	809	0.4-	0.0		1998 03 03	704	0.1-	0.3+	1999 04 20	704	0.2-	0.4+
1992 02 06	809	0.6+	0.7+		1998 03 03	704	(3.3-	0.1-)	1999 04 20	704	0.3+	0.2+
1992 02 06	809	0.8-	0.3+		1998 03 03	704	0.7+	0.3-	1999 04 20	704	2.0+	0.8-
1992 02 12	809	1.4+	0.0		1998 03 04	704	0.4+	0.2-	1999 04 20	704	0.7-	0.1+
1992 02 12	809	0.9+	0.3+		1998 03 04	704	0.4+	0.3-	1999 05 10	704	0.1-	0.4-
1992 02 12	809	1.1-	0.2-		1998 03 04	704	0.1-	0.1-	1999 05 10	704	1.3+	0.5+
1995 08 05	358	0.6+	0.3-		1998 03 04	704	0.8-	0.2+	1999 05 10	704	0.7-	0.7+
1995 08 05	358	0.8-	0.2+		1998 03 04	704	0.2-	0.4+	1999 05 10	704	0.5+	0.4-
1995 08 08	358	1.0-	0.8-		1999 04 15	704	0.0	0.1-				

(10794)* 1992 DW₅ = 1977 RF₁₈ = 1983 TM₁ = 1998 FL₈₀

Discovered 1992 Feb. 29 at the European Southern Observatory in the course

of the Uppsala-ESO Survey of Asteroids and Comets.

Id. G. V. Williams (*MPC* 31720)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	289.59168		(2000.0)	P	Q
<i>n</i>	0.17054241	ω	296.88141	+0.93443452	+0.35541125
<i>a</i>	3.2204344	Ω	42.31054	-0.31362006	+0.85140253
<i>e</i>	0.2010010	<i>i</i>	1.93189	-0.16874413	+0.38574159
<i>P</i>	5.78	<i>H</i>	13.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1992 03 07	809	0.3−	0.4+	1999 04 20	704	0.3+	0.7−	1999 05 17	703	0.9+	1.7+
1995 12 19	566	0.4−	0.1−	1999 04 20	704	0.1+	1.0−	1999 05 18	704	0.3−	0.9−
1995 12 19	566	0.2−	0.1−	1999 04 20	704	0.1+	1.4+	1999 05 18	704	0.3−	0.3+
1995 12 19	566	0.9−	0.2−	1999 04 20	704	0.0	0.3−	1999 05 18	704	0.1+	0.8−
1998 03 20	704	(2.2+)	1.2−)	1999 04 21	426	1.0−	0.3−	1999 05 18	704	0.0	0.2+
1998 03 20	704	1.4+	1.3+	1999 04 21	426	0.5+	0.5−	1999 05 18	704	0.8+	0.4+
1998 03 20	704	1.0+	0.7−	1999 04 21	426	0.1−	0.2+	1999 05 19	704	1.1−	1.0+
1998 03 20	704	0.6+	0.2+	1999 04 22	426	0.0	0.7+	1999 05 19	704	0.3−	0.7−
1998 03 24	704	0.4+	0.2+	1999 04 22	426	0.3+	0.2+	1999 05 19	704	0.4+	0.1−
1998 03 24	704	0.6−	0.9−	1999 04 22	426	0.1+	0.0	1999 05 19	704	0.7+	0.6−
1998 03 24	704	0.4+	0.6+	1999 05 10	704	1.1+	0.8−	1999 06 15	704	0.3+	0.2+
1998 03 24	704	0.6+	0.5−	1999 05 10	704	0.1+	1.6−	1999 06 15	704	0.5−	0.2+
1998 03 24	704	0.1+	1.2+	1999 05 10	704	1.1−	0.4−	1999 06 15	704	0.1−	0.5+
1998 03 24	704	0.2+	0.5+	1999 05 10	704	0.4+	0.8−	1999 06 15	704	0.2+	0.2−
1998 03 24	704	0.0	0.7−	1999 05 10	704	0.1−	1.6−	1999 06 15	704	0.2−	0.0
1998 03 24	704	1.1−	0.7−	1999 05 13	704	0.3+	0.2+				
1998 03 24	704	0.4+	0.5+	1999 05 13	704	0.6−	0.4−				

(10795)* 1992 EB₅ = 1987 HL

Discovered 1992 Mar. 1 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. G. V. Williams (*MPC* 31382)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	83.24884		(2000.0)	P	Q
<i>n</i>	0.17102441	<i>ω</i>	27.56143	−0.98306717	+0.01575207
<i>a</i>	3.2143808	<i>Ω</i>	151.49704	−0.02695643	−0.99789083
<i>e</i>	0.0409753	<i>i</i>	22.49340	+0.18125203	−0.06297438
<i>P</i>	5.76	<i>H</i>	12.0	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1987 04 25	675	0.0	1.3+	1998 02 27	566	0.6+	0.2−	1999 05 15	704	0.4+	1.4−
1987 04 25	675	0.5+	1.2+	1998 02 28	732	1.1−	1.1−	1999 05 15	704	0.3+	0.1−
1992 02 04	675	0.2−	1.4+	1998 02 28	732	0.7+	0.7−	1999 05 15	704	0.3+	0.2+
1992 02 04	675	0.1+	0.4−	1998 03 01	732	1.6−	1.6+	1999 05 15	704	1.5−	0.5−
1992 02 27	675	0.4+	0.2−	1998 03 01	732	1.5−	0.7+	1999 05 17	704	0.1+	0.2+
1992 02 27	675	0.3+	0.5−	1998 03 24	704	0.9−	0.4−	1999 05 17	704	0.0	0.1−
1992 02 28	675	0.2−	0.6−	1998 03 24	704	0.2+	0.1+	1999 05 17	704	0.2−	0.2+
1992 02 28	675	0.1+	1.1−	1998 03 24	704	(0.1−	2.3−)	1999 05 17	704	0.2−	1.6+
1992 03 01	809	0.6−	0.7+	1998 03 24	704	(2.5−	1.1+)	1999 05 17	704	0.6+	0.4+
1992 03 04	809	0.4+	0.7+	1998 03 25	704	0.1+	0.6−	1999 06 12	704	0.4+	0.1−
1992 03 06	809	0.0	0.7+	1998 03 25	704	0.4+	0.8+	1999 06 12	704	0.2+	0.1+
1992 04 04	809	0.4−	0.6−	1998 03 25	704	0.5+	0.3−	1999 06 12	704	0.2+	0.0
1998 02 01	604	0.3+	0.1+	1998 03 25	704	0.3+	0.3−	1999 06 12	704	0.3−	0.8−
1998 02 01	604	(0.6−	2.2−)	1998 03 25	704	1.0+	1.3−	1999 06 12	704	1.4−	1.3−
1998 02 26	699	0.2−	0.8+	1999 04 22	704	1.4−	0.3−	1999 06 14	704	0.3+	0.4−
1998 02 26	699	0.1+	0.1+	1999 04 22	704	0.6−	0.2−	1999 06 14	704	0.3+	0.1−
1998 02 26	699	0.0	0.3−	1999 04 22	704	1.0+	0.1+	1999 06 14	704	0.5+	0.0
1998 02 27	566	0.6+	0.3−	1999 04 22	704	(2.3−	0.2−)	1999 06 14	704	0.0	0.1+
1998 02 27	566	0.7+	0.3−	1999 05 15	704	0.3+	1.0+	1999 06 14	704	0.3+	0.2+

(10796)* 1992 EB₈ = 1987 SV₂₇ = 1987 WB₃ = 1994 YL₂

Discovered 1992 Mar. 2 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. T. Kobayashi (*MPC* 24742)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	208.67905		(2000.0)	P	Q
<i>n</i>	0.30554481	<i>ω</i>	241.10438	+0.68972377	−0.72405259
<i>a</i>	2.1831627	<i>Ω</i>	165.28342	+0.67148324	+0.63683068
<i>e</i>	0.1210355	<i>i</i>	1.21387	+0.27090842	+0.26494252
<i>P</i>	3.23	<i>H</i>	15.0	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1987 09 24	095	(5.8+	3.7+)	1997 12 04	704	1.2−	1.3−	1999 05 13	704	0.4−	1.1+
1987 11 17	010	0.5−	1.0−	1997 12 04	704	0.7−	0.7+	1999 05 13	704	0.1−	1.4+
1987 11 17	010	0.8+	1.2+	1997 12 04	704	0.2+	0.7−	1999 05 18	704	1.0+	0.9−

1992 02 25	675	0.6−	0.2−	1997 12 28	566	1.7+	0.1−	1999 05 18	704	1.2+	0.3−
1992 02 25	675	0.1+	1.1−	1997 12 28	566	1.8+	0.1−	1999 05 18	704	1.1+	0.8+
1992 03 02	809	(2.4−	1.1+)	1997 12 28	566	1.9+	0.1−	1999 05 18	704	0.7−	0.0
1992 03 04	809	1.2−	0.8+	1999 04 19	704	0.3+	1.2−	1999 05 18	704	0.5+	0.2−
1992 03 07	809	0.8−	0.3+	1999 04 19	704	0.4+	0.5−	1999 05 18	691	(1.0−	4.8−)
1994 12 31	411	(2.5+)	0.3−)	1999 04 19	704	(0.2−	3.6−)	1999 05 18	691	0.1+	0.4−
1994 12 31	411	1.1+	0.7+	1999 04 20	704	0.8−	0.2−	1999 05 18	691	0.2+	0.3−
1995 01 05	411	0.1−	0.1+	1999 04 20	704	1.3−	1.1−	1999 05 19	704	1.3+	0.8+
1995 01 05	411	0.6+	0.3+	1999 04 20	704	0.3−	0.4−	1999 05 19	704	0.6+	1.1+
1995 01 20	411	0.6+	0.0	1999 04 20	704	1.4−	0.1+	1999 05 19	704	0.1+	0.7−
1995 01 20	411	0.8+	0.1−	1999 05 10	704	0.2+	0.0	1999 05 19	704	0.4+	0.2+
1997 11 29	704	1.2−	0.0	1999 05 10	704	0.7+	1.0−	1999 05 21	691	0.1+	0.5−
1997 11 29	704	1.2−	0.7−	1999 05 10	704	1.2−	0.1+	1999 05 21	691	0.2+	0.5−
1997 11 29	704	0.0	0.3+	1999 05 10	704	1.1−	1.1+	1999 05 21	691	0.1−	0.5−
1997 11 29	704	1.3−	0.0	1999 05 10	704	0.6−	1.3+	1999 06 07	703	0.1−	0.1−
1997 11 29	704	0.6−	0.6+	1999 05 13	704	0.1−	0.1+	1999 06 07	703	0.3+	0.1−
1997 12 04	704	0.2−	1.5+	1999 05 13	704	0.4+	0.4+	1999 06 07	703	0.2+	0.8+
1997 12 04	704	(3.3−	1.1−)	1999 05 13	704	1.1−	0.8+	1999 06 07	703	0.9+	0.5−

(10797)* 1992 GO₄ = 1993 RC₁₇

Discovered 1992 Apr. 4 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (*MPC* 25330)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	67.83188		(2000.0)	P	Q
<i>n</i>	0.28791956	<i>ω</i>	348.90044	−0.98902847	+0.14687391
<i>a</i>	2.2713738	<i>Ω</i>	199.56666	−0.13165679	−0.92498911
<i>e</i>	0.1198028	<i>i</i>	2.71007	−0.06700133	−0.35046141
<i>P</i>	3.42	<i>H</i>	15.0	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1992 04 04	809	1.1+	0.4+	1997 11 26	704	(3.0+	0.6+)	1999 05 18	704	0.1−	0.4+
1992 04 04	809	0.4+	0.6+	1997 11 26	704	(3.1+	0.2+)	1999 05 18	704	1.0+	1.0−
1992 04 04	809	0.5+	0.2−	1997 11 29	704	0.9+	0.5+	1999 05 18	704	0.4+	0.1+
1992 04 05	372	(1.7−	4.4+)	1997 11 29	704	0.7−	0.3−	1999 05 18	704	0.7+	0.1−
1992 04 05	372	0.9−	1.3−	1997 11 29	704	0.8+	0.4+	1999 05 18	704	0.9+	1.0+
1992 04 06	809	1.0+	1.7+	1997 11 29	704	0.4−	0.3+	1999 05 19	704	0.8+	0.4+
1992 04 06	809	0.5+	0.9+	1997 11 29	704	0.4−	0.6+	1999 05 19	704	0.1−	0.2+
1992 04 06	809	0.9+	1.0+	1999 02 20	704	1.5−	0.0	1999 05 19	704	0.4+	0.9−
1992 04 25	809	0.6−	0.7−	1999 02 20	704	1.2−	0.5−	1999 05 19	704	1.0+	0.6−
1992 04 25	809	0.3−	0.2−	1999 02 20	704	0.8−	1.1−	1999 06 09	704	0.4+	0.2−
1992 04 25	809	0.2−	0.3−	1999 05 10	704	0.1+	0.5−	1999 06 09	704	0.3+	0.3−
1992 05 07	691	0.1+	0.2+	1999 05 10	704	0.8−	0.4−	1999 06 09	704	0.3+	0.6−
1992 05 07	691	0.3−	0.2+	1999 05 10	704	1.1−	0.4+	1999 06 09	704	0.2+	0.7+
1992 05 07	691	0.3−	0.3+	1999 05 10	704	0.0	0.9−	1999 06 09	704	0.6+	0.4+
1993 09 15	809	0.3+	0.3−	1999 05 10	704	0.5−	0.9−	1999 06 14	703	0.2−	0.5−
1993 09 15	809	1.1−	0.3−	1999 05 13	704	0.1−	0.7+	1999 06 14	703	0.7+	0.9+
1993 09 15	809	0.8−	0.5+	1999 05 13	704	0.1−	0.0	1999 06 14	703	0.8−	0.8+
1993 09 19	675	0.8+	0.7+	1999 05 13	704	1.2−	0.2+	1999 06 14	703	(1.0−	2.6+)
1993 09 19	675	0.8−	1.6−	1999 05 13	704	0.2−	0.8−	1999 06 15	704	0.0	0.4+
1993 09 22	809	(1.3+	3.4+)	1999 05 14	704	0.6−	0.5+	1999 06 15	704	0.4+	0.0
1993 09 22	809	0.1+	1.6+	1999 05 14	704	0.9−	0.5−	1999 06 15	704	0.3+	0.2−
1993 09 22	809	0.1+	1.2+	1999 05 14	704	0.2−	0.2+	1999 06 15	704	0.2+	0.4−
1993 09 23	675	0.5+	1.3−	1999 05 14	704	0.6+	0.9+	1999 06 15	704	0.1−	0.3+
1997 11 26	704	(3.3+	0.5+)	1999 05 14	704	0.8−	0.3+				

Residuals in seconds of arc

1982 09 22	688	(3.6+ 1.1-)	1992 08 21	413	1.8+	0.8-	1999 05 13	704	(2.2- 1.8+)
1982 09 22	688	1.2+ 1.0-	1992 08 21	413	1.6+	0.9-	1999 05 13	704	0.2- 1.0-
1982 10 21	095	1.4- 0.1-	1997 10 28	691	0.3+	0.1+	1999 05 13	704	0.2+ 0.8-
1992 04 28	675	1.6- 0.1+	1997 10 28	691	0.5+	0.3-	1999 05 18	704	(2.1- 1.5-)
1992 04 28	675	0.2- 0.7-	1997 10 28	691	0.1+	0.2-	1999 05 18	704	0.8- 0.4-
1992 05 02	809	(3.3- 2.2+)	1998 01 26	566	0.1+	0.1+	1999 05 18	704	0.1- 1.0+
1992 05 02	809	(3.2- 2.3+)	1998 01 26	566	0.3+	0.1-	1999 05 18	704	0.3- 0.9+
1992 05 02	809	(3.3- 2.4+)	1998 01 26	566	0.0	0.0	1999 05 18	704	0.2+ 0.2+
1992 05 03	809	1.3- 0.0	1999 02 26	704	(2.7- 0.8+)		1999 05 19	704	0.6+ 1.7-
1992 05 03	809	1.1- 0.1+	1999 02 26	704	0.8+	1.7+	1999 05 19	704	1.8- 0.3+
1992 05 03	809	0.6- 0.4+	1999 02 26	704	1.0-	1.6+	1999 05 19	704	0.5+ 0.6+
1992 06 03	675	0.3+ 0.9-	1999 03 24	704	0.7-	1.0+	1999 05 19	704	0.5+ 0.4-
1992 06 03	675	0.1- 0.2-	1999 03 24	704	0.3-	0.4+	1999 05 19	704	0.0 1.4+
1992 06 05	675	0.2- 0.7-	1999 03 24	704	0.1-	0.4-	1999 06 09	704	0.2+ 1.3+
1992 06 06	675	0.4- 0.5-	1999 03 24	704	(0.3+ 2.2-)		1999 06 09	704	0.0 0.6+
1992 06 06	675	0.1- 0.3-	1999 03 24	704	0.3+	1.8-	1999 06 09	704	0.1- 1.1+
1992 06 08	675	1.0- 1.1+	1999 05 10	704	1.3+	1.1-	1999 06 09	704	0.6+ 0.5+
1992 06 25	675	0.8+ 1.2-	1999 05 10	704	0.9+	1.5-	1999 06 09	704	0.0 0.7+
1992 06 25	675	0.3- 0.8-	1999 05 10	704	0.7-	0.4-	1999 06 15	704	0.0 0.9+
1992 06 27	675	0.4- 0.2+	1999 05 10	704	0.7+	0.8-	1999 06 15	704	0.1+ 0.6+
1992 06 27	675	1.3+ 1.8-	1999 05 10	704	1.1-	0.3-	1999 06 15	704	0.1- 0.6+
1992 06 29	675	0.4+ 0.8-	1999 05 13	704	0.2+	0.3+	1999 06 15	704	0.8+ 1.0+
1992 06 29	675	1.0+ 1.1-	1999 05 13	704	0.6+	0.6-	1999 06 15	704	0.4- 1.2+

(10799)* 1992 OY₂ = 1989 WN₃

Discovered 1992 July 26 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (*MPC* 21583)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	262.34124		(2000.0)	P	Q
n	0.25526681	ω	227.70729	+0.99772645	-0.03590599
a	2.4611598	Ω	134.26266	+0.05346712	+0.93688797
e	0.1941873	i	4.56774	-0.04102682	+0.34778110
P	3.86	H	13.9	G 0.15	U 2

Residuals in seconds of arc

1989 11 29	033	0.2-	1.1-	1992 08 04	809	0.9-	0.0	1999 04 19	704	0.9-	0.6+
1989 11 29	033	0.6-	1.6-	1992 08 05	809	1.5-	1.0+	1999 05 12	704	1.3+	0.8-
1989 12 02	033	0.0	1.0-	1992 08 05	809	1.4-	1.4+	1999 05 12	704	1.2+	0.7-
1992 06 28	675	0.9+	0.7+	1992 08 05	809	0.9-	1.4+	1999 05 12	704	0.5-	0.4+
1992 06 28	675	0.9+	0.3-	1998 01 29	566	0.0	0.7+	1999 05 12	704	0.0	0.4+
1992 07 24	809	(3.3+ 0.3-)		1998 01 29	566	1.2+	0.0	1999 05 17	704	0.8+	0.4+
1992 07 24	809	1.4+	1.7-	1998 01 29	566	0.9+	0.2+	1999 05 17	704	1.7+	0.9-
1992 07 24	809	1.2+	1.9-	1998 03 02	691	0.2-	0.2-	1999 05 17	704	0.3-	0.2+
1992 07 26	809	1.5+	1.9-	1998 03 02	691	0.1-	0.2-	1999 05 17	704	0.2+	0.3-
1992 07 26	809	1.9+	0.9-	1998 03 02	691	0.2-	0.2-	1999 05 17	704	0.2-	0.3-
1992 07 26	809	1.3+	1.5-	1998 03 03	704	(4.6+ 0.7-)		1999 05 18	704	1.0-	1.4-
1992 07 30	809	1.3+	0.4+	1998 03 03	704	0.7-	1.4-	1999 05 18	704	1.3+	0.3+
1992 07 30	809	0.8+	0.2-	1998 03 03	704	1.0-	1.4-	1999 05 18	704	0.4-	0.8+
1992 07 30	809	0.3+	0.4+	1998 03 03	704	(0.2+ 2.8-)		1999 05 18	704	0.6+	0.6-
1992 08 04	809	1.0-	0.2-	1999 04 12	704	(2.5- 1.2+)		1999 05 19	704	0.2+	0.1-
1992 08 04	809	0.8-	0.5-	1999 04 12	704	1.9-	0.5+	1999 05 19	704	0.6-	1.0+
1992 08 04	809	0.4-	0.7-	1999 04 12	704	(3.6- 0.0)		1999 05 19	704	1.1-	0.7-
1992 08 04	809	1.4-	0.3+	1999 04 19	704	0.7-	0.5+	1999 05 19	704	0.6-	1.2+
1992 08 04	809	1.2-	0.2+	1999 04 19	704	0.5-	0.5+	1999 05 19	704	0.5+	1.4-

(10800)* 1992 OM₈ = 1991 EE₈ = 1999 CF₄₆

Discovered 1992 July 22 by H. Debehogne and À. López G. at the European Southern Observatory.

Id. A. Doppler (*MPC* 34185, *MPC* 34498), M. E. Sansaturio (*MPC* 34498)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

$\dot{M}$	284.40897		(2000.0)		P		Q	
n	0.24202611	ω	106.12476		+0.11325430		+0.99356270	
a	2.5501236	Ω	170.37709		-0.91736148		+0.10556248	
e	0.0705233	i	0.88220		-0.38160370		+0.04110625	
P	4.07	H	14.6		G	0.15	U	1

Residuals in seconds of arc

1991 03 09	675	0.0	1.4-	1996 06 21	566	0.3+	0.4-	1999 02 12	699	0.6+	0.5+
1991 03 09	675	0.1+	0.5-	1997 08 31	910	0.3-	0.3+	1999 02 12	699	0.6+	0.7+
1992 07 22	809	0.1-	0.3-	1997 08 31	910	0.1-	0.1-	1999 02 13	704	1.1+	1.2-
1992 07 22	809	0.4+	0.2-	1997 08 31	910	0.6-	0.1-	1999 02 13	704	0.0	0.8+
1992 07 22	809	0.6+	0.1+	1997 10 30	566	0.4+	0.6+	1999 02 13	704	1.9+	0.5+
1992 07 24	809	0.7-	0.4-	1997 10 30	566	0.7+	0.1-	1999 02 13	704	0.1-	0.0
1992 07 24	809	0.3-	0.3-	1997 10 30	566	0.9+	0.0	1999 02 13	704	1.3+	1.8+
1992 07 24	809	0.1-	0.3-	1998 01 27	910	1.0-	0.7+	1999 03 19	704	0.7-	0.6+
1992 07 27	809	0.6-	0.5+	1998 01 27	910	1.0-	0.7+	1999 03 19	704	0.9-	0.9+
1992 07 27	809	0.4-	0.9+	1998 01 27	910	0.3-	1.0+	1999 03 19	704	0.6+	0.9-
1992 07 27	809	0.1+	0.8+	1999 02 10	704	1.1-	0.0	1999 03 19	704	(3.0-	1.7+)
1992 07 31	809	0.6-	1.3+	1999 02 10	704	0.0	0.2+	1999 03 20	704	1.7-	1.8+
1992 07 31	809	0.4-	1.1+	1999 02 10	704	1.1+	1.4-	1999 03 20	704	0.6-	1.3+
1992 07 31	809	0.1-	1.1+	1999 02 10	704	0.6-	0.1-	1999 03 20	704	(0.4+	2.1+)
1996 06 21	566	0.9+	0.5+	1999 02 10	704	1.1-	0.3-	1999 03 20	704	(2.5-	2.1+)
1996 06 21	566	0.2-	0.3+	1999 02 12	699	0.6+	0.9+	1999 03 20	704	(1.3-	2.3+)

(10801)* 1992 SK₂₆ = 1980 WC₃

Discovered 1992 Sept. 23 by F. Börngen at Tautenburg.

Id. G. V. Williams (*MPC* 25641)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	251.30823		(2000.0)		P		Q	
<i>n</i>	0.24321548	ω	211.97862		+0.94244443		-0.33392256	
<i>a</i>	2.5418031	Ω	167.49334		+0.32103463		+0.88934570	
<i>e</i>	0.1605628	<i>i</i>	4.54317		+0.09346268		+0.31234588	
<i>P</i>	4.05	<i>H</i>	14.4		<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1980 11 29	675	0.0	0.4-	1998 02 23	566	0.1-	0.1+	1998 03 04	704	(6.4-	1.1+)
1980 12 01	675	0.1-	0.6-	1998 02 25	426	0.9-	0.0	1999 05 10	704	(2.5+	1.6-)
1992 09 23	033	1.4+	0.8-	1998 02 25	426	0.8-	0.1-	1999 05 10	704	1.3-	0.3+
1992 09 25	033	0.9-	0.7+	1998 02 25	426	0.9-	0.2+	1999 05 10	704	0.7-	0.4-
1992 09 25	033	0.1-	0.1+	1998 02 27	426	0.1-	0.1+	1999 05 10	704	0.2-	0.6-
1992 09 27	033	0.7-	0.7+	1998 02 27	426	0.1-	0.0	1999 05 13	704	0.4+	0.9+
1992 09 28	033	0.1+	0.5+	1998 02 27	426	0.6+	0.5+	1999 05 13	704	0.9+	1.9+
1992 10 25	675	0.5+	0.0	1998 03 03	809	(2.4-	2.1+)	1999 05 13	704	0.2-	0.7-
1992 10 25	675	0.5+	0.3+	1998 03 03	809	(2.7-	2.9+)	1999 05 13	704	1.0+	0.1-
1992 10 31	033	0.2-	0.4-	1998 03 03	809	(2.9-	2.3+)	1999 05 14	704	0.3+	0.8+
1992 10 31	033	0.1+	0.7-	1998 03 03	704	1.6+	1.4+	1999 05 14	704	1.0+	0.5+
1992 11 01	033	0.1+	0.4+	1998 03 03	809	(2.9+	1.7+)	1999 05 14	704	1.6-	1.6+
1996 10 05	816	0.1+	0.0	1998 03 03	704	(1.1+	2.3+)	1999 05 19	704	1.0-	0.5-
1996 10 05	816	0.2+	0.0	1998 03 03	809	(2.7+	1.3+)	1999 05 19	704	0.6+	0.6+
1996 10 05	816	0.1+	0.1-	1998 03 03	809	(2.9+	1.6+)	1999 05 19	704	1.6-	0.2-
1996 10 14	113	1.6-	1.1+	1998 03 03	704	1.7+	0.4+	1999 06 06	703	0.2+	0.5+
1996 10 15	113	(1.1-	5.8+)	1998 03 03	704	1.0+	1.1+	1999 06 06	703	0.5+	0.1+
1998 02 20	113	0.1+	0.3-	1998 03 03	704	0.2-	0.4+	1999 06 06	703	0.2+	0.7-
1998 02 20	113	0.6+	0.2-	1998 03 04	809	(2.8-	0.7-)	1999 06 06	703	1.1+	0.6-
1998 02 22	566	0.0	0.5-	1998 03 04	809	1.5-	1.0-	1999 06 14	704	0.2+	0.3-
1998 02 22	566	0.3-	0.3-	1998 03 04	809	(3.1-	0.9-)	1999 06 14	704	0.3+	1.4-
1998 02 22	566	0.1-	0.4-	1998 03 04	704	(2.4-	0.0)	1999 06 14	704	0.3+	0.9-
1998 02 23	566	0.0	0.0	1998 03 04	704	(4.1-	1.3+)	1999 06 14	704	0.2+	0.2+
1998 02 23	566	0.2-	0.1-	1998 03 04	704	(2.2-	0.1+)	1999 06 14	704	0.6-	1.0-

(10802)* 1992 UL₆ = 1980 DA₂ = 1998 BS

Discovered 1992 Oct. 28 by K. Endate and K. Watanabe at Kitami.

Id. G. V. Williams (*MPC* 31232)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams						
<i>M</i>	153.06472	(2000.0)			P		Q				
<i>n</i>	0.21777087	ω	5.85457	+0.16072036	-0.98127166						
<i>a</i>	2.7361266	Ω	74.93139	+0.90103452	+0.10195785						
<i>e</i>	0.1820943	<i>i</i>	6.31327	+0.40287190	+0.16343358						
<i>P</i>	4.53	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	1				
Residuals in seconds of arc											
1980 02 20	095	0.2−	0.7−	1998 01 25	566	0.3−	0.1+	1999 05 10	704	0.8+	0.5+
1992 10 21	675	1.3+	0.6−	1998 01 25	566	0.3−	0.2+	1999 05 10	704	1.0+	1.1−
1992 10 21	675	1.6+	0.7+	1998 01 25	566	0.2−	0.2+	1999 05 10	704	(2.1−	0.4+)
1992 10 22	675	0.2−	0.5−	1998 01 25	098	1.1+	0.3+	1999 05 13	704	0.4+	0.5+
1992 10 22	675	0.2−	1.3−	1998 01 25	098	0.4+	0.8−	1999 05 13	704	1.1−	1.4−
1992 10 28	400	0.7+	0.9+	1998 01 26	098	0.4−	0.8+	1999 05 13	704	0.6+	0.0
1992 10 28	400	(2.6+	0.7−)	1998 01 26	098	0.6−	0.6−	1999 05 13	704	1.1−	0.1+
1992 11 02	400	(0.2+	2.3+)	1998 01 27	098	0.4−	0.1+	1999 05 18	704	0.2−	0.8−
1992 11 02	400	0.4+	1.4−	1998 01 27	098	1.7−	1.8−	1999 05 18	704	0.5−	0.5+
1992 11 21	400	(0.5+	2.9−)	1998 02 26	098	1.2+	0.4−	1999 05 18	704	0.5−	0.4+
1992 11 21	400	0.5−	0.4−	1998 02 26	098	0.4−	0.8+	1999 05 18	704	1.4−	1.3+
1992 11 27	675	1.1−	0.6+	1998 02 27	098	0.3−	0.1−	1999 05 18	704	0.1+	1.0−
1992 11 27	675	0.9−	0.1+	1998 02 27	098	(1.4−	2.7−)	1999 06 09	704	0.8+	0.6+
1992 11 28	675	0.4−	0.4+	1999 04 19	704	1.6−	0.3+	1999 06 14	704	1.4+	0.4+
1998 01 17	587	0.6+	0.1+	1999 04 19	704	1.5+	1.0−	1999 06 14	704	0.4+	0.4−
1998 01 17	587	0.2+	0.0	1999 04 19	704	1.7−	0.1+	1999 06 14	704	1.0+	0.1+
1998 01 18	587	0.0	0.3+	1999 04 19	704	(4.1−	0.0)	1999 06 14	704	0.6+	0.7−
1998 01 19	587	0.7+	0.8+	1999 05 10	704	0.8−	0.6−	1999 06 14	704	0.1+	0.8−
1998 01 19	587	0.5+	0.4+	1999 05 10	704	0.1+	1.3+				

(10803)* 1992 UK₉ = 1977 DO₂ = 1998 BN₁₁

Discovered 1992 Oct. 21 by T. Seki at Geisei.

Id. G. V. Williams (*MPC* 31232)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams					
<i>M</i>	276.64248	(2000.0)		P		Q					
<i>n</i>	0.23115989	ω	233.72364	+0.86288185		+0.50068867					
<i>a</i>	2.6294267	Ω	96.13717	−0.43864141		+0.80961358					
<i>e</i>	0.0324774	<i>i</i>	3.97301	−0.25105503		+0.30632778					
<i>P</i>	4.26 <th><i>H</i></th> <td>14.0<th><i>G</i></th><td>0.15<th colspan="2"><i>U</i></th><td colspan="3">1</td></td></td>	<i>H</i>	14.0 <th><i>G</i></th> <td>0.15<th colspan="2"><i>U</i></th><td colspan="3">1</td></td>	<i>G</i>	0.15 <th colspan="2"><i>U</i></th> <td colspan="3">1</td>	<i>U</i>		1			
Residuals in seconds of arc											
1977 02 18	381	0.6−	2.0+	1998 01 24	704	0.4+	0.1−	1999 05 13	704	1.6+	0.3−
1977 02 18	381	1.0+	0.4−	1998 01 24	704	1.1+	0.1−	1999 05 13	704	0.1+	0.7−
1977 02 19	381	0.0	0.4−	1998 01 24	704	0.4+	0.2−	1999 05 13	704	0.2−	0.5+
1977 02 19	381	(3.9+	1.0−)	1998 01 24	704	0.5−	0.1−	1999 05 13	704	1.0+	0.8−
1992 10 21	372	0.6+	0.3−	1998 01 25	704	0.1−	0.1+	1999 05 13	704	0.1+	1.0−
1992 10 21	372	1.9+	1.4+	1998 01 25	704	0.3+	0.0	1999 05 15	703	0.2+	0.3−
1992 10 24	372	(1.6+	2.6−)	1998 01 25	704	0.2−	1.0−	1999 05 15	703	0.5−	0.5−
1992 10 24	372	1.4−	0.0	1998 01 25	704	0.4−	0.7−	1999 05 15	703	0.2+	0.6+
1992 10 25	372	(3.4+	0.1−)	1998 01 25	704	0.7−	0.4+	1999 05 15	703	0.5+	1.3+
1992 10 25	372	(5.8+	2.5+)	1999 04 12	704	0.8−	0.3−	1999 05 18	704	0.2−	0.4+
1992 10 30	372	(5.3−	0.9−)	1999 04 12	704	0.9+	0.2+	1999 05 18	704	0.4+	1.3−
1992 10 30	372	1.2−	0.7−	1999 04 12	704	1.2−	1.0+	1999 05 18	704	(1.2+	2.9−)
1998 01 06	691	0.5−	0.0	1999 04 19	704	0.2−	0.7−	1999 05 18	704	0.7−	0.0
1998 01 06	691	0.4−	0.0	1999 04 19	704	1.2−	1.2−	1999 05 18	704	0.4+	1.0−
1998 01 06	691	0.2−	0.4+	1999 04 19	704	0.0	0.0	1999 05 19	704	0.6−	0.3+
1998 01 23	704	0.5+	0.2−	1999 04 19	704	0.6+	0.3+	1999 05 19	704	0.1+	0.1+
1998 01 23	704	0.0	0.3+	1999 05 12	704	0.6+	0.4−	1999 05 19	704	0.6+	1.7+
1998 01 23	704	0.2−	0.4−	1999 05 12	704	0.3−	1.6+	1999 05 19	704	0.3+	0.0
1998 01 23	704	0.4+	0.5+	1999 05 12	704	1.5−	0.4−				
1998 01 23	704	(2.6−	0.1+)	1999 05 12	704	0.0	0.7+				

(10804)* 1992 WN₃ = 1978 TV₇

Discovered 1992 Nov. 23 by T. Urata at the Nihondaira Observatory.

Id. T. Urata (*MPC* 34500), S. Nakano (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Nakano				
M	179.66852	(2000.0)		P		Q			
n	0.21456748	ω	339.64704	+0.62319270		−0.76587893			
a	2.7632920	Ω	71.46337	+0.73865230		+0.50990729			
e	0.2197629	i	9.61150	+0.25695064		+0.39169379			
P	4.59 <th>H</th> <td>13.3<th>G</th><td>0.15<th>U</th><td>2<td colspan="2"></td></td></td></td>	H	13.3 <th>G</th> <td>0.15<th>U</th><td>2<td colspan="2"></td></td></td>	G	0.15 <th>U</th> <td>2<td colspan="2"></td></td>	U	2 <td colspan="2"></td>		
Residuals in seconds of arc									
1978 10 02	095	0.5+	0.9−	1998 02 22	566	0.4+	1.0−	1999 04 19	704 0.2− 0.1−
1992 11 23	385	0.4−	0.2+	1998 02 22	566	0.0	0.3−	1999 05 12	704 0.9+ 0.0
1992 11 23	385	0.8+	0.6+	1998 02 22	566	0.3+	1.1−	1999 05 12	704 1.7+ 0.5+
1992 11 24	885	0.7+	0.2−	1998 02 23	566	0.2+	0.5−	1999 05 12	704 0.2+ 0.4+
1992 11 24	885	0.6−	0.0	1998 02 23	566	0.3+	0.6−	1999 05 12	704 1.1+ 0.6+
1992 11 26	885	0.7+	0.6+	1998 02 23	566	0.5+	0.7−	1999 05 13	704 0.1− 1.0−
1992 11 26	885	0.0	0.1−	1998 02 28	699	0.2−	0.7+	1999 05 13	704 1.0− 1.3+
1992 12 03	885	0.4−	1.2−	1998 02 28	699	0.7+	0.4+	1999 05 13	704 0.9+ 0.1+
1992 12 03	885	0.9+	0.3+	1998 02 28	699	0.1+	1.0+	1999 05 17	704 1.2+ 0.8+
1992 12 14	385	0.4+	0.1+	1999 03 23	888	1.7+	0.2−	1999 05 17	704 0.5+ 0.1+
1992 12 14	385	0.0	0.9−	1999 03 23	888	1.2+	0.6−	1999 05 17	704 0.2− 0.6−
1992 12 26	885	1.2−	0.8−	1999 04 07	888	1.4+	0.6−	1999 05 17	704 1.8− 1.2−
1992 12 26	885	0.0	0.9−	1999 04 07	888	0.3−	1.1−	1999 05 17	704 (2.6− 1.8−)
1993 01 17	385	0.5+	0.4+	1999 04 10	699	0.3+	0.8−	1999 05 18	704 2.0− 0.2−
1993 01 17	385	0.1+	0.3−	1999 04 10	699	0.4+	0.2+	1999 05 18	704 1.9− 0.8−
1993 02 08	385	1.0+	1.2−	1999 04 10	699	1.1+	0.6−	1999 05 18	704 1.2− 1.3−
1993 02 11	385	0.9−	0.2+	1999 04 12	704	0.0	0.3−	1999 05 18	704 (1.1− 2.2−)
1993 02 11	385	1.6−	0.3+	1999 04 12	704	0.9−	0.3+	1999 05 19	704 1.0− 1.8−
1998 01 23	385	0.0	0.6+	1999 04 12	704	0.1+	0.4−	1999 05 19	704 1.0− 0.3−
1998 01 23	385	0.1−	0.5+	1999 04 12	704	(1.1−	2.3+)	1999 05 19	704 0.9− 1.5+
1998 01 25	886	0.6−	0.4+	1999 04 19	704	1.4+	0.6+	1999 05 19	704 1.0− 1.1+
1998 01 25	886	0.4−	0.8+	1999 04 19	704	(1.7−	3.6+)	1999 05 19	704 1.0− 0.4+
1998 01 26	385	0.1−	0.8+	1999 04 19	704	0.2−	0.8+		
1998 01 26	385	0.1+	1.0+	1999 04 19	704	1.0−	0.3+		

(10805)* 1992 WG₅

Discovered 1992 Nov. 18 by K. Endate and K. Watanabe at Kitami.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Nakano					
<i>M</i>	146.16662		(2000.0)		P			Q			
<i>n</i>	0.22114057	ω	22.37818	−0.33735618	−0.90907925						
<i>a</i>	2.7082605	Ω	88.04280	+0.82241535	−0.41097760						
<i>e</i>	0.1143824	<i>i</i>	14.15896	+0.45806529	+0.06835440						
<i>P</i>	4.46	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	1				
Residuals in seconds of arc											
1989 02 01	675	0.7−	0.3−	1998 02 24	758	1.0+	0.3+	1999 05 19	704	0.4−	0.7+
1989 02 01	675	0.2+	1.3−	1998 03 08	689	0.4−	0.5−	1999 05 19	704	0.2+	0.2−
1990 05 25	675	0.0	0.5−	1998 04 18	699	1.0−	0.3+	1999 05 19	704	0.1+	0.7−
1990 05 25	675	0.3−	1.4−	1998 04 18	699	0.1−	0.0	1999 05 19	704	0.0	0.1+
1992 11 18	400	(1.1+	3.2+)	1998 04 18	699	0.6−	0.7+	1999 06 09	704	0.6+	0.4−
1992 11 18	400	0.6−	0.7−	1998 04 19	699	0.2+	0.9+	1999 06 09	704	0.8+	0.5−
1992 11 27	400	(0.5−	3.1+)	1998 04 19	699	0.1−	0.1−	1999 06 09	704	0.3+	0.2+
1992 11 27	400	0.3+	0.4−	1998 04 19	699	0.2+	1.1+	1999 06 09	704	0.2+	1.0−
1992 12 19	400	(2.5+	0.5+)	1999 05 10	704	0.3+	1.5+	1999 06 09	704	0.9+	0.8−
1992 12 19	400	0.3+	1.0+	1999 05 10	704	0.7−	1.3−	1999 06 11	703	0.4+	1.0+
1997 11 29	688	0.1+	0.1−	1999 05 10	704	1.0−	0.9−	1999 06 11	703	0.1−	0.9+
1997 11 29	688	0.2+	0.1+	1999 05 10	704	1.3−	0.4+	1999 06 11	703	0.1+	1.1+
1997 12 27	688	0.3−	0.0	1999 05 10	704	0.0	0.1+	1999 06 11	703	0.1+	1.2+
1997 12 27	688	0.0	0.3−	1999 05 13	704	0.5−	0.7−	1999 06 11	703	0.1+	1.4+
1998 01 25	566	0.2−	0.1+	1999 05 13	704	0.6+	0.0	1999 06 11	703	0.3+	0.0
1998 01 25	566	0.6−	0.0	1999 05 13	704	1.0+	0.9+	1999 06 11	703	0.4+	2.0+
1998 01 25	566	0.4−	0.1−	1999 05 13	704	0.7−	0.8+	1999 06 11	703	0.3−	0.2+
1998 02 18	589	0.3−	0.4−	1999 05 13	704	0.8+	0.4−	1999 06 15	704	0.5+	0.3−
1998 02 18	589	0.1−	0.4−	1999 05 14	704	0.0	0.3−	1999 06 15	704	0.1+	0.4−
1998 02 19	758	0.3−	0.4+	1999 05 14	704	0.0	1.7−	1999 06 15	704	0.4+	0.5−
1998 02 19	758	0.3+	0.0	1999 05 14	704	2.1−	0.6−	1999 06 15	704	0.3+	0.4−
1998 02 21	758	1.0+	0.1+	1999 05 14	704	(2.2−	0.4+)	1999 06 15	704	0.4+	0.4−

1998 02 21 758 0.7+ 0.1- 1999 05 14 704 1.8- 0.4+
 1998 02 24 758 0.9+ 0.6+ 1999 05 19 704 0.1- 0.5-

(10806)* 1993 FA₂ = 1987 DB₅ = 1998 BZ₁₀

Discovered 1993 Mar. 23 by E. W. Elst at Caussols.

Id. G. V. Williams (*MPC* 31233, *MPC* 34500), A. Gnädig (*MPC* 34500), A. Milani (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	44.48186	(2000.0)	P	Q	
<i>n</i>	0.17287130	ω	84.38405	-0.99318986	+0.04780111
<i>a</i>	3.1914457	Ω	98.32369	-0.08508728	-0.92056250
<i>e</i>	0.1097694	<i>i</i>	6.16435	+0.07958684	-0.38765930
<i>P</i>	5.70	<i>H</i>	13.1	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1987 02 23	010	1.2+	1.6-	1998 01 24	704	0.2+	0.4-	1999 05 12	704	0.6-	0.3-
1987 02 23	010	1.1-	0.7-	1998 01 24	704	0.4+	0.2+	1999 05 12	704	0.1-	0.9+
1987 02 23	010	1.1-	0.4-	1998 01 24	704	0.0	0.4+	1999 05 12	704	0.8-	0.0
1993 02 26	691	0.1-	0.2+	1998 01 24	704	0.2+	0.2-	1999 05 12	704	0.2-	0.5-
1993 02 26	691	0.1+	0.0	1998 01 24	704	0.3+	0.2-	1999 05 13	682	0.7-	0.6+
1993 02 26	691	0.2+	0.0	1998 01 25	704	0.5-	1.5+	1999 05 13	704	0.2+	0.4-
1993 03 23	010	0.7+	0.3+	1998 01 25	704	0.2+	0.0	1999 05 13	704	0.3+	0.3+
1993 03 23	010	0.0	0.5-	1998 01 25	704	0.4+	0.2-	1999 05 13	704	0.0	0.8+
1993 03 23	010	0.2-	0.5-	1998 01 25	704	0.6+	0.3+	1999 05 13	704	1.2-	0.3-
1993 03 24	675	0.5-	0.4+	1998 01 25	704	0.0	0.5-	1999 05 13	682	1.7-	0.2+
1993 03 24	675	0.1+	0.2-	1999 04 11	699	0.4+	0.0	1999 05 13	704	0.3+	0.5+
1993 03 25	010	0.3-	0.1-	1999 04 11	699	1.0+	0.0	1999 05 17	704	0.9+	0.1+
1997 11 24	910	0.4-	0.1+	1999 04 11	699	0.8+	0.1+	1999 05 17	704	0.3+	0.5-
1997 11 24	910	0.4-	0.0	1999 04 12	704	0.2-	1.3+	1999 05 17	704	1.5+	0.4+
1997 11 24	910	0.4-	0.0	1999 04 12	704	0.5+	0.6+	1999 05 17	704	0.3-	1.0+
1997 11 28	910	0.3-	0.6+	1999 04 12	704	0.9+	1.0+	1999 05 17	704	0.2-	0.3+
1997 11 28	910	0.2-	0.3+	1999 04 16	704	0.2+	0.7-	1999 05 18	704	0.0	0.1+
1997 11 28	910	0.1+	0.6+	1999 04 16	704	1.1-	1.8-	1999 05 18	704	0.3-	1.1-
1997 12 31	691	0.0	0.0	1999 04 16	704	0.4+	0.7-	1999 05 18	704	0.1+	1.0-
1997 12 31	691	0.2+	0.2-	1999 04 16	704	0.1-	0.4+	1999 05 18	704	0.6+	0.4-
1997 12 31	691	0.3+	0.3-	1999 04 19	704	0.2+	0.3+	1999 05 18	704	0.6-	0.1-
1998 01 23	704	0.1-	0.0	1999 04 19	704	0.3-	0.3+	1999 05 19	704	0.7+	0.7+
1998 01 23	704	0.0	0.2+	1999 04 19	704	0.1-	0.1-	1999 05 19	704	0.7-	0.4+
1998 01 23	704	0.1-	0.3+	1999 04 19	704	0.2-	0.4+	1999 05 19	704	0.6+	0.0
1998 01 23	704	0.0	0.4+	1999 04 19	704	0.4-	0.0	1999 05 19	704	0.9+	0.3-
1998 01 23	704	0.5-	0.2+	1999 05 12	704	0.9+	0.2+	1999 05 19	704	0.9-	0.7-

(10807)* 1993 FT₄ = 1993 FS₃ = 1981 AA₁ = 1982 HE

Discovered 1993 Mar. 17 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. G. V. Williams (*MPC* 23521)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	9.56587	(2000.0)	P	Q	
<i>n</i>	0.17550775	ω	111.61520	-0.57266725	+0.81888040
<i>a</i>	3.1594042	Ω	123.39046	-0.76818835	-0.51960271
<i>e</i>	0.1441282	<i>i</i>	2.64725	-0.28624968	-0.24381943
<i>P</i>	5.62	<i>H</i>	13.2	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1981 01 11	801	2.1-	1.7+	1998 01 25	691	0.5+	0.0	1999 05 13	704	0.3+	0.6-
1982 04 18	688	1.1+	0.9-	1998 01 25	691	0.3+	0.0	1999 05 13	704	0.1-	0.0
1982 04 18	688	0.2-	2.5-	1999 04 12	704	0.3+	0.4-	1999 05 13	704	0.3+	0.2-
1982 04 26	688	1.2+	0.8-	1999 04 12	704	0.1+	0.6-	1999 05 13	704	0.3-	0.3+
1982 04 26	688	1.3-	0.7-	1999 04 12	704	0.0	0.5-	1999 05 13	704	0.4-	0.2-
1993 03 17	809	0.3+	0.1-	1999 04 12	704	0.1+	0.1-	1999 05 14	704	0.9+	2.1-
1993 03 18	809	0.2-	0.0	1999 04 12	704	1.6-	0.4-	1999 05 14	704	0.1+	0.6-
1993 03 18	372	0.4+	0.9+	1999 04 14	699	0.0	1.0+	1999 05 14	704	0.5+	0.5-
1993 03 18	372	1.3-	0.7+	1999 04 14	699	0.3+	0.8+	1999 05 14	704	0.1+	0.3+
1993 03 23	809	0.4-	0.1-	1999 04 14	699	0.3+	0.7+	1999 05 14	704	0.9-	1.0-
1993 04 15	399	1.5-	0.6-	1999 04 18	426	0.2+	0.5+	1999 05 18	704	0.9+	0.2-

1993 04 15	399	(2.7-	0.2-)	1999 04 18	426	0.0	0.3+	1999 05 18	704	0.1-	0.9+
1993 04 16	413	0.7-	0.2+	1999 04 18	426	0.1-	0.5+	1999 05 18	704	0.1-	0.3-
1995 09 26	691	0.0	0.3-	1999 04 19	426	0.1-	0.5+	1999 05 18	704	0.4-	0.8+
1995 09 26	691	0.0	0.2-	1999 04 19	426	0.3-	0.5+	1999 05 18	704	1.4-	0.6+
1995 09 26	691	0.0	0.4-	1999 04 19	426	0.3-	0.8+	1999 06 07	703	0.6+	0.2+
1995 09 30	691	0.2+	0.2-	1999 05 09	739	1.2-	0.2-	1999 06 07	703	0.0	0.6+
1995 09 30	691	0.0	0.1-	1999 05 09	739	0.3-	0.0	1999 06 07	703	0.3-	0.5+
1995 09 30	691	0.4+	0.3-	1999 05 10	704	0.4+	0.3-	1999 06 07	703	0.8-	0.9+
1998 01 24	566	0.9+	0.5-	1999 05 10	704	0.6+	1.1+	1999 06 09	704	2.0+	0.9-
1998 01 24	566	0.6+	0.2-	1999 05 10	704	0.7+	0.0	1999 06 09	704	1.4+	0.1-
1998 01 24	566	0.8+	0.5-	1999 05 10	704	0.1+	0.6+	1999 06 09	704	0.7+	0.9+
1998 01 25	691	0.4+	0.1-	1999 05 10	704	0.6-	0.1-	1999 06 09	704	0.4-	0.3-

(10808)* 1993 FT₅ = 1977 EQ₄ = 1987 DR₄ = 1998 FK₁₂₅

Discovered 1993 Mar. 17 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. S. Nakano (*MPC* 31722), T. B. Spahr (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Nakano			
<i>M</i>	107.27682	(2000.0)	P	Q	
<i>n</i>	0.18438325	ω	336.33776	-0.80823301	-0.58769016
<i>a</i>	3.0571851	Ω	167.46107	+0.56389905	-0.79059947
<i>e</i>	0.0467902	<i>i</i>	9.85117	+0.16963863	-0.17196729
<i>P</i>	5.35	<i>H</i>	13.0	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1977 03 15	381	0.3+	1.2-	1998 03 03	704	0.1+	0.3-	1999 05 17	704	0.2-	0.3-
1977 03 15	381	0.6-	1.1-	1998 03 03	704	0.7+	0.7-	1999 05 17	704	0.7-	0.5+
1987 02 28	010	0.2-	1.2+	1998 03 03	704	0.2-	0.0	1999 05 17	704	1.4-	0.0
1987 02 28	010	0.4+	1.0-	1998 03 03	704	0.0	0.4+	1999 05 17	704	0.8+	0.4+
1987 02 28	010	0.3-	0.4+	1998 03 03	704	0.1-	0.3+	1999 05 17	704	0.2-	0.3+
1990 09 28	675	0.0	0.0	1998 03 04	704	0.6+	0.4-	1999 05 21	704	0.8+	0.4+
1993 03 17	809	0.7-	1.2+	1998 03 04	704	1.9-	0.1-	1999 05 21	704	0.3+	0.7+
1993 03 18	809	0.2+	0.1+	1998 03 04	704	0.4+	0.7-	1999 05 21	704	1.6-	0.4+
1993 03 18	372	(6.6+	0.8+)	1998 03 04	704	0.6+	0.6-	1999 05 21	704	1.1+	0.2+
1993 03 18	372	(5.5+	0.1+)	1998 03 04	704	1.2+	0.8-	1999 05 21	704	0.4+	1.3+
1993 03 23	809	0.1+	0.1+	1998 03 18	372	1.6-	0.7+	1999 06 08	704	0.8+	0.1+
1993 04 16	413	(3.7+	2.0+)	1998 03 22	372	0.6-	0.9+	1999 06 08	704	1.0+	0.6-
1998 01 26	566	0.1+	0.1-	1998 03 25	372	0.3-	1.2+	1999 06 08	704	0.8+	0.4-
1998 01 26	566	0.1+	0.0	1999 05 12	704	0.5+	0.8+	1999 06 08	704	0.3+	0.3-
1998 01 26	566	0.0	0.1-	1999 05 12	704	0.2-	0.1-	1999 06 08	704	0.3-	0.1-
1998 02 27	566	0.3-	0.1-	1999 05 12	704	0.5-	1.4-	1999 06 14	704	0.9+	0.2-
1998 02 27	566	0.1+	0.1-	1999 05 12	704	0.3-	0.2-	1999 06 14	704	0.1-	0.4+
1998 02 27	566	0.4-	0.3-	1999 05 15	704	0.3+	1.1+	1999 06 14	704	0.1+	0.8-
1998 03 03	809	0.7+	0.8+	1999 05 15	704	0.6-	0.5+	1999 06 14	704	0.4+	0.7-
1998 03 03	809	0.7+	0.2+	1999 05 15	704	1.1-	0.1+	1999 06 14	704	0.7+	1.1-
1998 03 03	809	0.5+	0.1-	1999 05 15	704	1.8-	0.4-				

(10809)* 1993 FS₁₄ = 1996 VA₉

Discovered 1993 Mar. 17 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. G. V. Williams (*MPC* 28588)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	183.92672	(2000.0)	P	Q	
<i>n</i>	0.17526770	ω	295.31310	+0.75676603	-0.64463989
<i>a</i>	3.1622883	Ω	105.02132	+0.63282845	+0.68093645
<i>e</i>	0.1598979	<i>i</i>	6.44253	+0.16380882	+0.34751253
<i>P</i>	5.62	<i>H</i>	12.6	<i>G</i>	0.15
				<i>U</i>	1

1993 03 24	675	1.4+	0.5+	1998 03 03	704	0.7+	0.9-	1999 04 19	704	1.5-	1.2+
1993 04 16	413	0.3-	0.5+	1998 03 03	704	0.7-	0.6-	1999 05 12	704	1.2+	1.6-
1996 11 07	400	0.2-	0.6-	1998 03 03	704	0.5+	1.5-	1999 05 12	704	0.5-	0.9+
1996 11 07	400	0.4+	0.3+	1998 03 03	704	1.5+	0.8-	1999 05 12	704	1.3+	0.2-
1996 11 08	400	0.2+	0.1+	1998 03 04	704	0.3+	0.4-	1999 05 12	704	0.4+	0.7-
1996 11 16	400	0.2-	0.4-	1998 03 04	704	0.8+	0.0	1999 05 12	704	1.5-	0.5-
1996 11 16	400	0.1+	0.2-	1998 03 04	704	0.5+	0.2-	1999 05 17	703	0.3-	0.1+
1998 01 24	411	0.1+	0.5+	1998 03 04	704	0.1-	0.5+	1999 05 17	704	0.3+	1.4-
1998 01 24	411	0.1+	0.3+	1998 03 04	704	0.4+	0.1+	1999 05 17	703	1.1+	0.9+
1998 02 18	563	0.7-	0.1+	1998 03 26	563	(1.5+	2.7+)	1999 05 17	704	0.6-	0.5+
1998 02 18	563	0.5-	0.4-	1998 03 26	563	0.1-	0.9-	1999 05 17	703	0.0	1.0-
1998 02 18	563	0.9-	1.0+	1998 03 26	563	(0.2+	2.3+)	1999 05 17	704	0.9+	1.4+
1998 02 18	563	1.0-	0.9+	1999 04 12	704	0.1+	0.1+	1999 05 17	703	0.7+	0.3-
1998 02 24	566	0.2-	0.1+	1999 04 12	704	(2.1-	0.5+)	1999 05 17	704	(2.3+	0.4+)
1998 02 24	566	0.1+	0.3+	1999 04 12	704	0.0	0.8+	1999 05 17	704	0.6-	0.4-
1998 02 24	566	0.1-	0.3+	1999 04 12	704	0.6-	0.1+	1999 05 18	704	1.0+	0.7-
1998 02 26	758	1.9+	0.9+	1999 04 12	704	1.2-	1.9-	1999 05 18	704	0.8-	0.3+
1998 02 26	758	1.1-	1.2+	1999 04 16	704	0.1-	0.1+	1999 05 18	704	1.1+	0.2+
1998 03 01	699	0.2-	0.4+	1999 04 16	704	(2.7+	0.1-)	1999 05 18	704	1.2-	0.6+

(10810)* 1993 FL₁₅ = 1980 XN₂ = 1990 SK₅

Discovered 1993 Mar. 17 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. G. V. Williams (*MPC* 23523)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	207.98416		(2000.0)	P	Q
<i>n</i>	0.18572001	ω	317.61542	+0.70807606	-0.70248209
<i>a</i>	3.0424976	Ω	87.16469	+0.66560350	+0.63005105
<i>e</i>	0.1207101	<i>i</i>	4.11922	+0.23579712	+0.33099033
<i>P</i>	5.31	<i>H</i>	13.0	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1980 12 10	095	0.2-	1.8+	1998 03 24	704	1.1-	0.5-	1999 05 13	704	0.6+	0.9+
1990 09 22	809	(3.8+	1.6+)	1998 03 24	704	(5.0-	1.3-)	1999 05 13	704	0.4-	0.9+
1990 09 22	809	(3.1+	1.0+)	1998 03 25	704	0.5-	1.0-	1999 05 13	704	1.1+	0.3+
1990 09 22	809	(3.8+	0.5+)	1998 03 25	704	0.0	0.8-	1999 05 18	704	0.4+	1.6-
1990 09 25	809	0.5+	0.7-	1998 03 25	704	0.5+	0.9-	1999 05 18	704	0.7+	1.2+
1990 09 25	809	0.5+	1.1-	1998 03 25	704	0.4+	1.5-	1999 05 18	704	0.2-	0.6-
1990 09 25	809	0.1+	1.1-	1998 03 25	704	0.0	1.4-	1999 05 18	704	0.6-	0.3-
1993 03 17	809	(0.7+	2.3+)	1998 03 26	704	0.4-	0.7-	1999 06 05	703	0.7+	0.5+
1993 03 18	809	(2.4-	1.8+)	1998 03 26	704	0.2-	0.5-	1999 06 05	703	1.1+	0.1+
1993 03 18	809	1.2+	1.4+	1998 03 26	704	0.4-	0.1-	1999 06 05	703	0.3+	0.0
1993 03 23	809	0.1+	0.0	1998 04 04	725	1.5-	0.3+	1999 06 05	703	1.1+	1.5-
1993 04 16	413	1.1-	0.2+	1998 04 04	725	0.9-	0.8+	1999 06 12	691	0.2-	0.0
1998 03 01	809	1.3+	1.2+	1998 04 05	725	0.8+	1.0+	1999 06 12	691	2.7-	1.3+
1998 03 01	809	0.2-	0.9+	1998 04 05	725	(0.8+	2.2+)	1999 06 15	704	2.3+	1.3+
1998 03 01	809	0.0	0.4+	1999 05 10	704	0.1-	0.7-	1999 06 15	704	1.1-	0.2-
1998 03 02	809	(0.4+	2.6+)	1999 05 10	704	0.5-	1.1-	1999 06 15	704	0.1+	0.2-
1998 03 02	809	(0.1-	2.7+)	1999 05 10	704	0.8-	0.3-	1999 06 15	704	0.7+	0.2+
1998 03 02	809	(1.0-	2.2+)	1999 05 10	704	1.2-	0.2+	1999 06 18	691	0.2-	0.3-
1998 03 24	704	0.6-	0.3-	1999 05 13	704	0.6-	0.6+	1999 06 18	691	0.0	0.3+
1998 03 24	704	0.7+	1.3-	1999 05 13	704	0.3+	0.1+				

(10811)* 1993 FM₁₉ = 1982 BK₉ = 1990 RE₁₂ = 1991 YQ

Discovered 1993 Mar. 17 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. G. V. Williams (*MPC* 23523)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	219.03578		(2000.0)	P	Q
<i>n</i>	0.19673483	ω	290.77347	+0.61854590	-0.77834596
<i>a</i>	2.9278482	Ω	120.55488	+0.75936957	+0.55696229
<i>e</i>	0.2239490	<i>i</i>	7.17812	+0.20188812	+0.28977676
<i>P</i>	5.01	<i>H</i>	12.6	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1982 01 19	095	0.2+	0.9-	1998 04 19	704	0.1+	0.6-	1999 05 14	704	0.5-	0.1-
1990 09 15	675	0.3+	1.2-	1998 04 19	704	0.7+	0.0	1999 05 14	704	(1.1+	2.3-)
1990 09 15	675	1.2+	0.4-	1998 04 19	704	0.6-	0.0	1999 05 18	704	1.3-	0.2-
1991 12 30	511	1.5-	1.0-	1998 04 19	704	0.3+	0.1+	1999 05 18	704	0.3-	1.3+
1991 12 30	511	0.3+	0.1-	1998 04 20	704	0.4+	0.4-	1999 05 18	704	0.2+	0.8+
1991 12 31	511	(2.8-	0.5-)	1998 04 20	704	0.6+	0.5-	1999 05 18	704	0.0	0.1+
1991 12 31	511	1.5-	1.1-	1998 04 20	704	0.1+	0.1+	1999 05 19	704	0.3+	0.0
1992 01 05	511	0.3-	0.7-	1998 04 20	704	0.4+	0.4+	1999 05 19	704	0.0	0.4-
1992 01 05	511	0.6+	0.9+	1998 04 20	704	0.0	1.2+	1999 05 19	704	0.6-	0.6-
1993 03 17	809	0.7+	0.8+	1998 04 24	704	0.9+	0.3-	1999 05 19	704	0.4+	1.4-
1993 03 18	809	1.2+	0.3+	1998 04 24	704	1.0+	0.6-	1999 05 19	704	1.2-	0.2+
1993 03 19	691	0.4-	0.5-	1998 04 24	704	0.9+	0.3-	1999 06 09	704	0.4-	0.1-
1993 03 19	691	0.7-	0.0	1998 04 24	704	1.5+	1.3-	1999 06 09	704	1.3-	1.0-
1993 03 19	691	0.7-	0.3-	1998 04 24	704	0.8+	0.7-	1999 06 09	704	0.8-	0.1+
1993 03 23	809	0.5+	1.2+	1999 05 13	704	0.2+	0.4-	1999 06 09	704	1.0-	0.8+
1993 04 16	413	1.3-	0.1-	1999 05 13	704	0.5-	1.0+	1999 06 14	704	0.0	0.4+
1995 08 24	801	0.6+	0.3-	1999 05 13	704	0.6+	0.2-	1999 06 14	704	1.0-	0.7+
1995 08 24	801	0.2+	0.1-	1999 05 13	704	0.9+	0.7-	1999 06 14	704	0.3-	0.1+
1995 08 26	801	0.5+	0.1-	1999 05 13	704	0.1+	0.7+	1999 06 14	704	0.1-	0.6-
1995 08 26	801	0.1+	0.4+	1999 05 14	704	1.0+	0.2-	1999 06 14	704	1.5-	0.5-
1995 10 27	801	0.2+	0.4+	1999 05 14	704	0.2+	0.6-				
1995 10 27	801	0.4+	0.9+	1999 05 14	704	1.0-	0.1-				

(10812)* 1993 FZ₂₅

Discovered 1993 Mar. 21 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	166.79592		(2000.0)	P	Q
<i>n</i>	0.18649224	ω	190.22574	+0.11585228	-0.99278295
<i>a</i>	3.0340929	Ω	253.12662	+0.91357561	+0.11874955
<i>e</i>	0.1101077	<i>i</i>	1.85569	+0.38981773	+0.01675008
<i>P</i>	5.28	<i>H</i>	13.3	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1993 03 21	809	0.1-	0.6+	1998 03 03	704	0.3+	0.1+	1998 03 24	566	0.2-	0.2-
1993 03 22	809	0.4+	0.0	1998 03 04	704	(2.9-	0.1+)	1998 03 24	566	0.0	0.1+
1993 03 26	809	(4.3-	1.0-)	1998 03 04	704	(2.2-	0.2+)	1998 03 24	566	0.1-	0.1-
1993 04 21	413	(5.0+	1.9+)	1998 03 04	704	(3.3-	0.3+)	1998 03 26	704	0.0	0.5-
1996 11 06	411	1.2+	1.0-	1998 03 04	704	(3.1-	0.4+)	1998 03 26	704	0.2-	0.7-
1996 11 06	411	0.3+	0.6+	1998 03 04	704	(3.4-	0.3+)	1998 03 26	704	0.6-	0.6-
1996 11 13	411	0.2+	1.1+	1998 03 20	704	0.1-	0.2+	1999 05 10	704	1.1-	0.6-
1996 11 13	411	0.7+	0.7-	1998 03 20	704	0.1-	0.3+	1999 05 10	704	(1.8+	2.3-)
1996 11 13	411	1.3-	0.7-	1998 03 20	704	0.1-	0.1-	1999 05 10	704	0.6+	1.4-
1996 12 15	691	0.2-	0.3-	1998 03 20	704	0.4+	0.4+	1999 05 13	704	0.5-	1.1+
1996 12 15	691	0.1-	0.1-	1998 03 20	704	0.7+	0.1-	1999 05 13	704	0.8+	1.2-
1996 12 15	691	0.1+	0.3-	1998 03 22	704	0.6+	0.0	1999 05 13	704	0.8+	0.8+
1998 03 03	704	0.1-	0.0	1998 03 22	704	0.0	0.6+	1999 06 15	704	0.9+	0.3+
1998 03 03	704	0.2-	0.5+	1998 03 22	704	0.0	0.2+	1999 06 15	704	0.6-	0.0
1998 03 03	704	0.6-	0.7+	1998 03 22	704	0.3+	0.6-	1999 06 15	704	1.0-	0.1-
1998 03 03	704	0.5+	0.0	1998 03 22	704	0.7-	0.9-	1999 06 15	704	0.4-	0.4-

(10813)* 1993 FE₃₁ = 1995 SD₃

Discovered 1993 Mar. 19 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. S. Nakano (*MPC* 25731)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	322.27584		(2000.0)	P	Q
<i>n</i>	0.17130732	ω	93.04221	+0.07988291	+0.99674726
<i>a</i>	3.2108407	Ω	181.65655	-0.99633333	+0.07951194
<i>e</i>	0.0555762	<i>i</i>	21.63729	-0.03063677	+0.01314349

Residuals in seconds of arc

1993 03 19	809	0.0	1.1+	1999 03 20	699	1.5+	0.4+	1999 04 19	704	0.3+	1.1+
1993 03 20	809	1.1+	0.3-	1999 03 20	699	0.2+	0.2+	1999 04 19	704	0.9-	0.5+
1993 03 24	809	0.0	1.0-	1999 03 24	699	0.4+	0.1-	1999 04 19	704	1.5-	0.3+
1993 03 25	691	0.4-	1.1-	1999 03 24	699	0.4-	0.3+	1999 04 19	704	1.4-	0.3+
1993 03 25	691	0.3-	1.1-	1999 03 24	699	1.1+	0.2+	1999 04 19	704	1.1-	0.6+
1993 03 25	691	0.3-	0.9-	1999 04 12	704	0.4-	0.1-	1999 05 12	704	0.0	0.3-
1993 04 16	413	0.3-	1.2-	1999 04 12	704	0.1-	0.4+	1999 05 12	704	0.4+	0.1+
1995 09 20	399	0.2+	0.4-	1999 04 12	704	0.1-	0.2+	1999 05 12	704	0.2+	1.3-
1995 09 20	399	0.3-	0.8-	1999 04 12	704	0.1+	0.6+	1999 05 12	704	1.1+	1.2-
1995 09 21	399	0.3-	0.3-	1999 04 12	704	0.6-	0.5+	1999 05 12	704	0.0	0.6-
1995 09 21	399	0.6+	0.2-	1999 04 16	704	0.2+	1.2+	1999 05 17	704	1.3+	1.2-
1998 02 06	688	0.0	0.1-	1999 04 16	704	0.5-	1.2+	1999 05 17	704	0.5+	0.6-
1998 02 06	688	0.1-	0.0	1999 04 16	704	0.0	1.1+	1999 05 17	704	1.0+	0.3-
1998 02 06	688	0.1-	0.0	1999 04 16	704	0.5+	0.4+	1999 05 17	704	0.6-	0.6-
1999 03 20	699	0.1-	0.5+	1999 04 16	704	0.4-	0.3-	1999 05 17	704	0.1+	0.6-

(10814)* 1993 FW₃₁ = 1995 SU₄

Discovered 1993 Mar. 19 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. S. Nakano (*MPC* 25731)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	264.52388		(2000.0)	P	Q
n	0.17405465	ω	306.78415	+0.92670963	+0.36177803
a	3.1769641	Ω	32.36420	-0.25481543	+0.80373789
e	0.0889834	i	10.94294	-0.27618537	+0.47235798
P	5.66	H	12.1	G 0.15	U 1

Residuals in seconds of arc

1989 09 04	675	0.1-	0.8+	1998 03 25	704	0.6-	0.4-	1999 05 10	704	0.7+	0.1-
1989 09 04	675	0.4-	0.8+	1998 03 25	704	0.2+	0.1-	1999 05 10	704	0.6+	1.3+
1993 03 19	809	0.3+	0.7+	1998 03 25	704	0.2-	0.4-	1999 05 10	704	0.1+	0.9-
1993 03 20	809	0.0	0.4+	1999 04 15	704	0.3-	0.5-	1999 05 10	704	0.4-	0.1-
1993 03 24	809	0.5-	1.1+	1999 04 15	704	0.0	1.5-	1999 05 13	704	0.6+	0.6+
1993 04 18	413	0.9+	0.2-	1999 04 15	704	0.0	1.1-	1999 05 13	704	0.6+	0.2+
1995 09 20	400	0.9+	0.3-	1999 04 15	704	0.7-	1.5-	1999 05 13	704	0.1-	0.4+
1995 09 20	400	1.4+	0.1+	1999 04 15	691	1.2-	0.1+	1999 05 13	704	0.5+	1.9-
1995 09 21	400	0.9-	0.3-	1999 04 15	691	1.0-	0.2+	1999 05 13	704	0.6-	0.3+
1995 09 21	400	0.4-	1.6-	1999 04 17	704	1.1-	0.8-	1999 05 18	704	0.3+	0.3+
1995 10 25	801	0.5+	0.4+	1999 04 17	704	0.2-	0.2+	1999 05 18	704	1.3+	0.6-
1995 10 25	801	0.0	0.2-	1999 04 17	704	0.9-	0.7+	1999 05 18	704	0.2+	1.1-
1995 10 27	801	0.0	0.4-	1999 04 17	704	1.0-	0.5+	1999 05 18	704	0.6+	0.9+
1995 10 27	801	0.1+	0.4-	1999 04 20	704	(2.5-	1.2-)	1999 05 18	704	0.1-	0.2+
1998 03 03	699	1.7+	1.0-	1999 04 20	704	0.6-	0.3+	1999 05 19	704	0.6+	0.4-
1998 03 03	699	0.4-	0.4+	1999 04 20	704	0.3+	0.0	1999 05 19	704	0.1+	0.2-
1998 03 03	699	0.9-	0.6+	1999 04 20	704	0.4-	1.3+	1999 05 19	704	0.9+	0.5+
1998 03 25	704	0.2+	0.3-	1999 04 20	704	2.0-	0.5+	1999 05 19	704	0.3+	0.8-
1998 03 25	704	0.2-	0.1+	1999 05 10	704	0.9+	0.0	1999 05 19	704	0.8+	0.2-

(10815)* 1993 FU₃₂ = 1995 VT₁₂

Discovered 1993 Mar. 19 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. G. V. Williams (*MPC* 26401)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	312.57323		(2000.0)	P	Q
n	0.17808376	ω	183.36540	+0.63930727	+0.76758348
a	3.1288627	Ω	126.38050	-0.70416272	+0.60835382
e	0.1588784	i	3.26442	-0.30893538	+0.20179502
P	5.53	H	14.5	G 0.15	U 1

Residuals in seconds of arc

1992 02 05	691	0.3-	0.7+	1994 07 09	809	0.5+	1.5-	1999 05 10	704	0.6+	0.1-
1992 02 05	691	0.3-	0.2+	1995 11 15	691	0.0	0.3+	1999 05 10	704	0.7-	0.5-
1992 02 05	691	0.1+	0.1+	1995 11 15	691	0.0	0.1+	1999 05 10	704	0.8-	0.1-

1993 03 19	809	0.3-	0.7+	1995 11 15	691	0.0	0.2+	1999 05 17	703	0.1+	0.2+
1993 03 20	809	0.2+	1.4-	1995 11 20	691	0.0	0.1-	1999 05 17	703	0.2+	0.9+
1993 03 24	809	0.8-	0.2+	1995 11 20	691	0.4-	0.0	1999 05 17	703	1.3+	1.3+
1993 04 20	691	0.1+	0.3-	1995 11 20	691	0.0	0.1+	1999 05 17	703	0.4+	1.9+
1993 04 20	691	0.2-	0.5-	1995 11 26	691	0.2-	0.9+	1999 06 05	703	0.9-	0.6+
1993 04 20	691	0.3-	0.4-	1995 11 26	691	0.1+	0.2+	1999 06 05	703	0.4-	0.2+
1993 04 29	691	0.3-	0.5-	1995 11 26	691	0.1+	0.1-	1999 06 05	703	0.2-	1.7+
1993 04 29	691	0.2+	0.8-	1995 11 27	691	0.1-	0.0	1999 06 05	703	1.1+	0.3+
1993 04 29	691	0.6-	1.7-	1995 11 27	691	0.4-	0.2+	1999 06 14	704	0.6-	0.0
1994 07 08	809	0.1-	1.6+	1995 11 27	691	0.2-	0.2+	1999 06 14	704	0.4+	0.2-
1994 07 08	809	0.0	1.1+	1998 03 21	691	1.1+	0.3+	1999 06 14	704	0.1+	0.9+
1994 07 08	809	0.5+	0.5+	1998 03 21	691	0.6+	0.1+	1999 06 14	704	0.3+	0.8+
1994 07 09	809	0.2-	1.7-	1998 03 21	691	0.4+	0.2+	1999 06 14	704	0.7-	0.8-
1994 07 09	809	0.0	1.7-	1999 05 10	704	0.7+	0.2-				

(10816)* 1993 FZ₃₅

Discovered 1993 Mar. 19 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	288.16646		(2000.0)	P	Q
n	0.17708414	ω	212.43789	+0.85690828	+0.51381517
a	3.1406263	Ω	116.59013	-0.46254419	+0.80178644
e	0.1365373	i	2.64441	-0.22751061	+0.30517614
P	5.57	H	13.4	G 0.15	U 1

Residuals in seconds of arc

1989 07 29	675	0.9-	0.2+	1998 03 04	704	(2.5-	0.1+)	1999 05 10	704	0.1-	1.0+
1989 07 31	675	0.7+	0.2+	1998 03 04	704	(3.7-	0.0)	1999 05 10	704	1.6-	0.4+
1989 07 31	675	0.1-	0.5+	1998 03 04	704	1.7-	1.2-	1999 05 10	704	0.4+	1.0+
1989 09 02	675	0.1+	0.8-	1998 03 20	691	0.7+	0.6+	1999 05 18	704	1.2+	0.6-
1989 09 02	675	0.2+	0.5-	1998 03 20	691	0.3+	0.3+	1999 05 18	704	0.7+	1.3+
1993 03 19	809	0.5+	0.7+	1998 03 20	691	0.1+	0.1-	1999 05 18	704	0.8+	0.9-
1993 03 20	809	0.0	0.5-	1998 03 25	691	0.7+	0.1+	1999 05 18	704	1.0+	1.2+
1993 03 24	809	0.0	0.2+	1998 03 25	691	0.7+	0.3-	1999 05 18	704	0.7+	1.2-
1993 04 18	413	0.3-	0.7-	1998 03 25	691	0.7+	0.4-	1999 05 19	704	1.4+	0.0
1995 09 23	589	0.8+	0.0	1999 04 12	704	1.7+	0.4+	1999 05 19	704	1.7+	0.7-
1995 09 23	589	0.1-	0.5-	1999 04 12	704	1.4-	0.5-	1999 05 19	704	(2.0+	1.5-)
1995 09 23	589	0.1-	0.9-	1999 04 12	704	1.0-	0.4+	1999 05 19	704	1.2+	0.7+
1995 10 24	587	0.2-	0.2+	1999 04 12	704	(4.9-	0.2+)	1999 05 19	704	1.9-	0.7+
1995 10 24	587	0.0	0.4+	1999 04 19	704	1.0-	1.2-	1999 06 07	703	1.2+	1.2-
1995 10 26	587	0.5-	0.6+	1999 04 19	704	0.1-	1.5-	1999 06 07	703	1.8-	0.5-
1995 10 26	587	0.2+	0.4+	1999 04 19	704	1.3-	1.0-	1999 06 07	703	0.6-	1.1+
1998 03 03	704	0.5+	0.1-	1999 04 19	704	(2.1-	1.3-)	1999 06 07	703	0.5-	0.2-
1998 03 03	704	(2.0+	2.1+)	1999 04 19	426	0.2+	0.0	1999 06 07	703	0.0	0.4+
1998 03 03	704	0.9+	1.9+	1999 04 19	426	0.8-	0.3+	1999 06 07	703	0.5+	0.0
1998 03 03	704	0.1+	0.6+	1999 04 19	426	0.2+	0.4-	1999 06 07	703	(0.5-	2.7+)
1998 03 03	704	1.7-	0.5-	1999 05 10	704	0.7-	1.1+	1999 06 07	703	0.8+	0.4+
1998 03 04	704	1.5-	0.9-	1999 05 10	704	1.1-	0.5-				

(10817)* 1993 FR₄₄ = 1979 SC₆ = 1990 SO₁₄

Discovered 1993 Mar. 21 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. G. V. Williams (*MPC* 23528)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	122.38547		(2000.0)	P	Q		
n	0.17868983	ω	131.37293	-0.26640619	-0.96332707		
a	3.1217838	Ω	334.02514	+0.86102711	-0.22289617		
e	0.1297152	i	4.19957	+0.43319748	-0.14939296		
P	5.52	H	12.3	G	0.15	U	1

Residuals in seconds of arc

1979 09 23	095	0.3-	2.0+	1998 02 21	758	0.3-	0.3+	1999 05 10	704	0.5-	0.4+
1990 09 25	809	0.5-	0.6+	1998 02 21	758	0.6+	0.5-	1999 05 10	704	0.5+	0.1-
1990 09 25	809	0.3-	0.8+	1998 02 24	758	0.1+	0.0	1999 05 10	704	0.6+	0.

1999 JUNE 22

M.P.C. 34775

1990 09 26	809	0.5−	0.1+	1998 02 26	610	0.7+	0.2+	1999 05 13	704	0.4−	1.1−
1990 09 26	809	0.4−	0.1+	1998 02 26	610	0.5+	0.3+	1999 05 13	704	0.1−	0.0
1990 09 26	809	0.6−	0.4+	1998 02 26	610	0.3+	0.4+	1999 05 13	704	0.2+	0.7+
1993 03 21	809	2.0−	0.8+	1998 03 04	727	0.1+	0.7+	1999 05 13	704	0.7−	0.7−
1993 03 22	809	0.1+	0.2−	1998 03 04	727	0.5+	0.9+	1999 05 18	704	0.2+	0.3−
1993 03 24	809	(0.5+	2.5+)	1998 03 04	727	0.6+	0.7+	1999 05 18	704	1.4+	1.1+
1993 04 17	413	0.1−	0.6−	1999 04 15	704	0.4−	0.3+	1999 05 18	704	1.5+	0.4+
1996 11 14	823	0.1+	0.0	1999 04 15	704	0.7−	0.9+	1999 05 18	704	0.3−	0.9+
1996 11 14	823	0.0	0.1+	1999 04 15	704	0.6+	0.5−	1999 05 18	704	0.3+	1.0+
1996 11 14	823	0.5−	0.2+	1999 04 15	704	(0.2−	2.1−)	1999 05 19	704	1.6+	0.2+
1996 11 14	823	0.4−	0.1+	1999 04 17	704	0.8+	0.4+	1999 05 19	704	(1.6+	2.3−)
1996 11 14	823	0.3−	0.2+	1999 04 17	704	1.0−	1.3−	1999 05 19	704	1.6+	2.0−
1998 02 13	713	1.4−	0.0	1999 04 17	704	0.5−	1.1+	1999 05 19	704	(0.7+	2.7−)
1998 02 13	713	0.1+	0.1−	1999 04 17	704	1.4−	0.1+	1999 05 19	704	(1.2+	2.5−)
1998 02 13	713	0.3−	0.4−	1999 04 20	704	0.1+	0.2−	1999 06 09	704	0.2+	0.3−
1998 02 19	758	0.3+	0.5+	1999 04 20	704	0.7−	0.6+	1999 06 09	704	0.4+	1.2−
1998 02 19	758	0.5+	0.2−	1999 04 20	704	0.9−	1.0+	1999 06 09	704	0.1+	0.5−
1998 02 19	713	0.1+	1.0+	1999 04 20	704	0.1+	1.9+	1999 06 09	704	0.7+	0.8+
1998 02 19	713	0.3+	0.4+	1999 04 20	704	0.6−	1.5+				
1998 02 19	713	0.7+	0.2+	1999 05 10	704	0.9+	0.3−				

(10818)* 1993 FK₈₁ = 1979 QQ₈ = 1995 SG₁₄
 Discovered 1993 Mar. 18 at the European Southern Observatory in the course
 of the Uppsala-ESO Survey of Asteroids and Comets.
 Id. K. Ichikawa (*MPC* 27916), G. V. Williams (*MPC* 34501), A. Doppler (*ibid.*)
 Epoch 1999 Aug. 10.0 TT = JDT 2451400.5 Williams

<i>M</i>	71.02917		(2000.0)		P		Q				
<i>n</i>	0.18494563	ω	13.40973		−0.99450974		+0.10206233				
<i>a</i>	3.0509845	Ω	172.33529		−0.10463211		−0.96652368				
<i>e</i>	0.0419337	<i>i</i>	9.97415		−0.00158265		−0.23540447				
<i>P</i>	5.33	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1				
Residuals in seconds of arc											
1979 08 20	095	0.3−	1.0−	1995 09 24	809	0.6−	1.5−	1998 04 22	540	0.3+	0.7+
1993 03 18	809	(2.0+	3.0+)	1995 09 27	691	0.0	0.3+	1998 04 23	540	0.1−	0.2+
1993 03 23	809	0.2−	0.3+	1995 09 27	691	0.2−	0.1+	1998 04 23	540	0.2+	0.3+
1993 03 23	691	0.3+	0.2−	1995 09 27	691	0.2+	0.2+	1999 05 12	704	0.1+	0.1−
1993 03 23	691	0.4+	0.7−	1998 02 24	566	0.4−	0.8−	1999 05 12	704	1.8−	0.5−
1993 03 23	691	0.2+	0.8−	1998 02 24	566	0.1−	0.7−	1999 05 12	704	0.4+	0.3−
1993 04 16	413	(0.7−	2.4−)	1998 02 24	566	0.2−	1.1−	1999 05 17	704	0.8+	1.4−
1995 08 25	809	0.3−	0.5−	1998 03 03	704	0.5−	0.6+	1999 05 17	704	0.3−	0.9+
1995 08 26	809	0.2+	0.1+	1998 03 03	704	0.1−	0.6+	1999 05 17	704	0.0	1.7+
1995 09 01	809	0.3−	0.6−	1998 03 03	704	0.4−	0.3+	1999 05 17	704	0.6−	0.1+
1995 09 18	691	0.2−	1.0+	1998 03 03	704	0.1+	0.2+	1999 05 17	704	0.2+	0.5+
1995 09 18	691	1.6−	1.7+	1998 03 03	704	0.4−	1.1+	1999 06 08	704	0.1+	0.3−
1995 09 18	691	0.2−	0.5+	1998 03 03	699	0.4−	0.1−	1999 06 08	704	0.2+	0.7+
1995 09 19	809	1.7+	0.0	1998 03 03	699	0.9+	0.3−	1999 06 08	704	0.1+	1.0+
1995 09 20	809	1.5+	0.2+	1998 03 03	699	0.6+	0.5+	1999 06 08	704	0.1+	0.6−
1995 09 22	809	(1.8−	4.3−)	1998 03 04	704	(3.1−	0.2−)	1999 06 08	704	1.0+	0.7−
1995 09 22	691	0.2−	0.1+	1998 03 04	704	(2.6−	0.9−)	1999 06 14	704	0.0	0.1−
1995 09 22	691	0.1+	0.0	1998 03 04	704	(3.1−	1.3−)	1999 06 14	704	0.1−	0.3−
1995 09 22	691	0.3+	0.0	1998 03 04	704	(2.7−	1.5−)	1999 06 14	704	0.2−	0.2−
1995 09 23	809	(0.2−	2.4−)	1998 03 04	704	(3.7−	1.4−)	1999 06 14	704	0.1−	0.4+
1995 09 23	809	(6.0+	1.5−)	1998 04 22	540	0.1+	0.3+	1999 06 14	704	0.4−	0.2−

(10819)* 1993 HG = 1993 FO₄₂
 Discovered 1993 Apr. 19 by J. DeYoung at the U.S. Naval Observatory,
 Washington.
 Id. G. V. Williams (d, *MPC* 23676)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5				Williams						
<i>M</i>	25.45878	(2000.0)		P		Q				
<i>n</i>	0.17713957	ω	183.47111	−0.70144410		+0.71254330				
<i>a</i>	3.1399712	Ω	41.98685	−0.65333205		−0.63381780				
<i>e</i>	0.1451552	<i>i</i>	1.37643	−0.28483927		−0.30092696				
<i>P</i>	5.56	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	1			
Residuals in seconds of arc										
1993 03 19	809	0.5+	0.4+	1993 04 24	786	(3.6+ 0.9+)	1998 01 06	688	0.2+	0.8+
1993 03 20	809	0.9+	0.1+	1993 04 24	786	(3.7+ 0.9+)	1998 01 06	688	0.1−	0.7+
1993 03 24	809	1.4+	0.0	1993 04 24	786	(3.4+ 0.8+)	1998 01 07	688	0.3+	0.2+
1993 04 19	786	0.6−	0.3+	1993 04 24	786	(4.2+ 0.7+)	1998 01 07	688	0.5+	0.4+
1993 04 19	786	0.9−	0.1+	1993 04 24	786	(4.1+ 0.6+)	1998 01 08	688	0.7+	0.4+
1993 04 19	786	0.9−	0.4+	1993 04 24	786	(4.1+ 0.7+)	1998 01 08	688	0.2+	0.2+
1993 04 19	786	0.8−	0.3+	1993 04 28	786	(2.8+ 0.0)	1998 03 23	631	0.5−	1.5+
1993 04 19	786	0.9−	0.4+	1993 04 29	786	(2.1+ 0.4−)	1999 05 10	704	0.6+	1.2−
1993 04 19	786	0.8−	0.4+	1993 04 29	786	1.5+ 0.9−	1999 05 10	704	1.5+	1.3−
1993 04 19	786	0.8−	0.1+	1993 04 29	786	1.6+ 0.5−	1999 05 10	704	0.9+	0.5−
1993 04 19	786	0.6−	0.1+	1993 04 29	786	1.7+ 0.3−	1999 05 10	704	0.0	0.4−
1993 04 19	786	0.5−	0.3+	1993 04 29	786	1.5+ 0.8−	1999 05 13	704	0.5−	0.0
1993 04 19	786	0.8−	0.4+	1993 04 29	786	1.8+ 0.9−	1999 05 13	704	0.2+	1.0+
1993 04 19	786	1.0−	0.6+	1993 04 29	786	1.5+ 0.8−	1999 05 13	704	1.9−	0.3−
1993 04 19	786	1.0−	0.4+	1993 04 29	786	1.7+ 0.6−	1999 05 13	704	0.4−	0.8−
1993 04 19	786	0.9−	0.4+	1993 04 29	786	1.7+ 0.6−	1999 05 18	704	1.0+	0.3−
1993 04 19	786	0.8−	0.2+	1993 04 29	786	1.8+ 0.3−	1999 05 18	704	0.5+	0.4−
1993 04 19	786	1.0−	0.4+	1993 04 29	786	1.5+ 0.4−	1999 05 18	704	0.4+	0.1−
1993 04 19	786	0.9−	0.3+	1993 04 29	786	1.7+ 0.7−	1999 05 18	704	0.9+	1.3−
1993 04 19	786	0.8−	0.2+	1993 04 29	786	1.7+ 0.6−	1999 05 19	704	0.5+	0.5+
1993 04 19	786	1.0−	0.3+	1993 05 15	786	0.8− 0.0	1999 05 19	704	0.9+	0.5+
1993 04 19	786	0.9−	0.2+	1993 05 15	786	0.8− 0.3−	1999 05 19	704	0.4+	0.2−
1993 04 19	786	1.0−	0.4+	1993 05 15	786	0.9− 0.5+	1999 05 19	704	0.3+	0.0
1993 04 21	413	0.2−	1.1+	1993 05 15	786	0.7− 0.1+	1999 06 09	704	0.3−	1.1+
1993 04 24	786	(2.9+ 1.2+)		1993 05 16	786	0.5− 1.1−	1999 06 09	704	0.0	0.0
1993 04 24	786	(2.9+ 1.3+)		1993 05 16	786	0.9− 1.0−	1999 06 09	704	0.4−	1.5+
1993 04 24	786	(2.8+ 0.9+)		1993 05 16	786	1.0− 0.3−	1999 06 09	704	0.4+	1.4+
1993 04 24	786	(2.9+ 0.9+)		1993 05 16	786	0.9− 1.5−	1999 06 09	704	1.3−	0.7+
1993 04 24	786	(2.6+ 1.3+)		1993 05 16	786	1.5− 0.6−	1999 06 15	704	0.4−	0.9+
1993 04 24	786	(2.7+ 1.3+)		1993 05 16	786	1.5− 1.1−	1999 06 15	704	0.8−	0.7+
1993 04 24	786	(2.7+ 1.3+)		1993 06 02	786	1.9+ 0.9−	1999 06 15	704	0.3−	1.7+
1993 04 24	786	(3.2+ 1.1+)		1993 06 17	786	(1.2+ 4.3−)	1999 06 15	704	0.2−	1.4+
1993 04 24	786	(3.1+ 0.6+)		1994 08 06	675	0.1+ 0.5+	1999 06 15	704	0.8−	0.8+
1993 04 24	786	(3.6+ 0.7+)		1994 08 06	675	0.1− 0.6−				

(10820)* 1993 QN₄ = 1975 VZ₄ = 1980 DP
 Discovered 1993 Aug. 18 by E. W. Elst at Caussols.
 Id. G. V. Williams (*MPC* 29618)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams				
M	163.12511		(2000.0)		P		Q		
n	0.26867420	ω	283.46530		+0.39487860		−0.91636762		
a	2.3785853	Ω	143.05641		+0.87963474		+0.35640122		
e	0.1992769	i	6.29376		+0.26516714		+0.18234186		
P	3.67	H	14.4		G	0.15	U	1	
Residuals in seconds of arc									
1975 11 02	095	(1.4−	4.2−)	1993 09 21	675	0.9−	0.0	1999 05 12	704 0.7+ 1.8+
1980 02 19	046	1.1−	0.2+	1997 11 01	367	0.1−	0.2−	1999 05 12	704 0.1− 0.5−
1980 02 19	046	2.4−	0.9−	1997 11 01	367	0.1+	0.1−	1999 05 12	704 0.7+ 0.5−
1980 02 20	046	1.3+	2.4−	1997 11 26	566	0.2+	0.2−	1999 05 12	704 1.3+ 0.9−
1980 02 20	046	(3.7+	0.1−)	1997 11 26	566	0.3+	0.4−	1999 05 13	704 0.9− 0.3+
1980 02 21	046	1.7+	0.3−	1997 11 26	566	0.2−	0.4−	1999 05 13	704 0.8+ 0.1+
1980 02 22	046	(2.8−	3.2+)	1999 04 11	699	0.5+	0.3+	1999 05 13	704 0.3+ 0.3−
1993 08 15	809	0.0	0.9−	1999 04 11	699	0.6+	0.0	1999 05 13	704 0.3+ 1.5−
1993 08 15	809	0.6−	1.1−	1999 04 11	699	(2.9+ 1.0+)		1999 05 13	704 2.4− 1.2−
1993 08 15	809	(1.2−	2.5−)	1999 04 12	704	0.2+	0.1+	1999 05 17	704 0.2− 0.4+
1993 08 18	010	1.0−	1.1−	1999 04 12	704	0.4+	0.0	1999 05 17	704 1.7− 1.4−
1993 08 19	010	0.4−	0.1−	1999 04 12	704	0.3+	0.9+	1999 05 17	704 2.2+ 1.2+

1993 08 19	010	0.5−	0.7−	1999 04 12	704	0.3+	0.5−	1999 05 17	704	1.8−	0.5−
1993 08 19	010	0.9−	0.8−	1999 04 16	704	0.4+	1.9+	1999 05 17	704	1.0+	1.7+
1993 08 20	809	1.9+	0.0	1999 04 16	704	(1.5−	2.0−)	1999 05 18	704	0.4+	0.7−
1993 08 20	809	1.8+	0.3−	1999 04 19	704	0.3+	0.2−	1999 05 18	704	0.3−	1.0+
1993 08 20	809	1.3+	0.5−	1999 04 19	704	1.2+	0.0	1999 05 18	704	0.3−	1.7−
1993 08 24	809	(2.3+ 1.6+)		1999 04 19	704	0.9−	1.3−	1999 05 18	704	1.9−	0.9+
1993 08 24	809	(2.8+ 1.8+)		1999 04 19	704	1.4+	1.4−	1999 05 22	691	1.1−	0.1−
1993 08 24	809	1.5+	1.1+	1999 04 19	704	(2.1−	0.8+)	1999 05 22	691	0.7−	0.4−
1993 09 21	675	0.8−	0.3+	1999 05 12	704	1.7−	0.1+	1999 05 22	691	0.7−	0.4−

(10821)* 1993 SZ = 1995 FP

Discovered 1993 Sept. 16 by K. Endate and K. Watanabe at Kitami.
Id. G. V. Williams (*MPC* 25067)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	244.25903		(2000.0)		P		Q
<i>n</i>	0.28812929	ω	170.56025		+0.89329345		−0.44834927
<i>a</i>	2.2702714	Ω	216.13176		+0.40878870		+0.83979375
<i>e</i>	0.1556576	<i>i</i>	3.08923		+0.18686523		+0.30615257
<i>P</i>	3.42	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1993 09 16	400	1.2+	1.2−	1995 04 03	589	0.7+	0.0	1999 05 18	704	0.6−	0.4−
1993 09 16	400	1.8−	0.8+	1995 04 03	589	0.8−	0.3−	1999 05 18	704	0.6−	0.8−
1993 09 18	400	1.6+	1.4−	1995 04 03	589	0.4+	0.8−	1999 05 18	704	0.5−	0.4−
1993 09 18	400	0.4−	0.2−	1995 04 05	589	0.5−	1.1+	1999 05 18	704	0.3+	0.3+
1993 10 11	400	0.5−	0.7−	1995 04 05	589	0.5−	0.0	1999 05 18	691	0.1−	0.0
1993 10 11	400	0.2−	0.1−	1995 04 05	589	0.2+	0.0	1999 05 18	691	0.2−	0.1−
1993 10 14	675	0.1−	1.7+	1997 12 29	688	0.3+	0.1+	1999 05 18	691	0.3−	0.2−
1993 10 14	675	0.1−	1.7+	1997 12 29	688	0.2+	0.1−	1999 05 19	704	0.6+	0.7+
1995 03 28	589	0.2−	0.2−	1998 01 19	428	0.6−	0.6+	1999 05 19	704	1.4+	1.2+
1995 03 28	589	0.5−	0.5−	1998 01 19	428	0.4+	0.5+	1999 05 19	704	0.3+	0.2−
1995 03 28	589	0.2+	0.3−	1998 02 25	566	0.1−	0.3+	1999 06 15	704	0.4+	0.2−
1995 03 28	589	0.0	0.0	1998 02 25	566	0.2+	0.3+	1999 06 15	704	0.4+	0.5−
1995 03 30	589	0.7−	0.4−	1998 02 25	566	0.2+	0.6+	1999 06 15	704	0.2+	0.7−
1995 03 30	589	0.2−	0.6−	1999 05 13	704	0.5−	0.7+	1999 06 15	704	0.0	0.7−
1995 04 02	589	0.2+	0.2−	1999 05 13	704	0.3−	1.3+	1999 06 15	704	0.4+	0.2−
1995 04 02	589	0.5+	0.0	1999 05 13	704	0.2−	1.7+				
1995 04 02	589	0.1+	0.6−	1999 05 13	704	0.3−	1.6+				

(10822)* 1993 SK₁ = 1973 UP₂ = 1983 VJ₇ = 1990 VC₁₄

Discovered 1993 Sept. 16 by K. Endate and K. Watanabe at Kitami.
Id. S. Nakano (*MPC* 22692)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	289.15249		(2000.0)		P		Q
<i>n</i>	0.29035746	ω	273.97723		+0.87955656		+0.47437295
<i>a</i>	2.2586420	Ω	57.70784		−0.41746428		+0.80647729
<i>e</i>	0.0838572	<i>i</i>	2.49165		−0.22826263		+0.35293724
<i>P</i>	3.39	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1973 10 27	095	0.2−	0.8+	1995 03 29	801	0.1+	0.0	1999 05 10	704	0.0	0.6−
1983 11 04	688	(2.2+ 2.8−)		1995 03 29	801	0.1+	0.4−	1999 05 10	704	0.2+	0.1−
1983 11 04	688	(1.5+ 2.4−)		1999 04 12	704	1.1−	0.2+	1999 05 13	704	0.2+	0.2−
1983 11 07	688	(1.2+ 2.3−)		1999 04 12	704	1.6−	0.1+	1999 05 13	704	0.8+	0.7−
1983 11 07	688	(1.3− 3.1−)		1999 04 12	704	0.9−	0.2−	1999 05 13	704	1.2+	0.2+
1990 11 14	095	0.3−	0.5+	1999 04 12	704	1.2−	0.9−	1999 05 13	704	0.7+	0.3+
1990 11 14	095	(3.1+ 1.5−)		1999 04 14	699	0.5+	1.0+	1999 05 13	704	1.0+	0.4−
1993 09 16	400	1.9+	0.7+	1999 04 14	699	0.5+	0.4+	1999 05 18	704	0.2−	0.5−
1993 09 16	400	0.6−	1.5+	1999 04 14	699	0.0	1.5+	1999 05 18	704	0.4−	0.2−
1993 09 18	675	0.9+	0.3+	1999 04 15	704	0.3−	0.5−	1999 05 18	704	0.2−	0.5−
1993 09 18	675	0.4+	0.3+	1999 04 15	704	(2.6−	0.6+)	1999 05 18	704	0.2+	0.5−
1993 09 19	400	1.2−	1.3+	1999 04 15	704	0.8+	0.2+	1999 05 18	704	0.0	0.1−
1993 09 19	400	(2.5−	0.7+)	1999 04 15	704	0.3+	1.6−	1999 05 19	704	0.1+	0.2−
1993 09 21	675	0.0	0.1−	1999 04 17	691	0.1−	0.1−	1999 05 19	704	0.1−	0.3+
1993 09 21	675	0.0	0.5+	1999 04 17	691	0.2−	0.1−	1999 05 19	704	0.4−	0.0

1993 10 08	400	1.9−	0.4+	1999 04 17	691	0.1−	0.1+	1999 05 19	704	0.3−	0.3+
1993 10 08	400	0.4−	1.2−	1999 04 19	704	0.6−	0.4+	1999 05 19	704	1.0−	0.6−
1993 10 15	675	0.1−	0.7−	1999 04 19	704	0.6−	0.4+	1999 05 21	691	0.3+	0.3−
1993 10 15	675	0.2−	0.7−	1999 04 19	704	0.2−	0.9+	1999 05 21	691	0.3+	0.0
1995 01 27	596	0.2−	0.7+	1999 04 19	704	0.8+	1.7+	1999 05 21	691	0.3+	0.0
1995 01 27	596	0.3+	0.4+	1999 04 19	704	0.6−	1.6+	1999 06 07	703	0.4+	0.9−
1995 01 27	596	0.4+	0.4+	1999 04 20	704	0.5+	0.2+	1999 06 07	703	0.2+	0.6+
1995 02 10	372	0.8−	1.3+	1999 04 20	704	1.6−	0.0	1999 06 07	703	0.5+	1.2+
1995 02 10	372	0.1+	0.5−	1999 04 20	704	0.6−	0.4−	1999 06 07	703	0.2−	1.4+
1995 02 22	563	0.2+	0.1+	1999 04 20	704	1.0−	0.4−	1999 06 09	704	1.0+	0.2+
1995 02 22	563	0.8+	0.4+	1999 05 10	704	0.5+	0.1−	1999 06 09	704	1.0+	0.7−
1995 02 22	563	0.1+	0.1−	1999 05 10	704	1.4+	0.1+	1999 06 09	704	0.4+	0.3+
1995 03 27	801	0.2+	0.5−	1999 05 10	704	1.2+	0.4−	1999 06 09	704	1.0−	0.3+

(10823)* 1993 SM₁ = 1995 FM₁₄ = 1998 BZ₄

Discovered 1993 Sept. 16 by K. Endate and K. Watanabe at Kitami.
Id. A. Doppler (*MPC* 33236)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	205.08660		(2000.0)		P		Q
<i>n</i>	0.28297234	ω	272.99359		+0.47285289		−0.88021465
<i>a</i>	2.2977709	Ω	148.68459		+0.83616645		+0.43378403
<i>e</i>	0.1597635	<i>i</i>	4.45830		+0.27791333		+0.19249309
<i>P</i>	3.48	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1993 09 16	400	0.9+	0.6+	1998 01 18	910	0.4+	0.2+	1999 05 10	704	0.8+	0.2−
1993 09 16	400	0.2−	1.2−	1998 01 23	910	0.9+	0.1−	1999 05 10	704	(2.2−	0.6−)
1993 09 18	400	0.4−	0.2−	1998 01 23	910	0.9+	0.2−	1999 05 13	704	0.4−	0.1−
1993 09 18	400	0.5+	1.5−	1998 01 23	910	0.7+	0.1−	1999 05 13	704	0.9−	0.3−
1995 03 27	691	0.5−	0.8−	1998 01 24	566	0.5+	0.7+	1999 05 13	704	0.3+	1.7+
1995 03 27	691	0.4−	0.6−	1998 01 24	566	1.0−	0.3−	1999 05 13	704	(0.6−	2.6+)
1995 03 27	691	0.1+	0.3+	1998 01 24	566	1.0−	0.5−	1999 05 18	704	0.4−	0.8−
1995 04 01	691	0.3+	0.6−	1999 05 07	711	0.4+	0.0	1999 05 18	704	0.9−	0.2+
1995 04 01	691	0.5−	0.6−	1999 05 07	711	0.1+	0.1−	1999 05 18	704	0.1−	0.9−
1995 04 01	691	0.3−	1.0−	1999 05 07	711	0.0	0.3−	1999 05 18	704	0.9−	1.3+
1997 12 28	566	0.7−	0.4+	1999 05 09	120	0.7+	1.0−	1999 06 14	704	0.3−	0.7+
1997 12 28	566	0.8−	0.4+	1999 05 10	120	0.8+	0.5−	1999 06 14	704	0.0	1.3+
1997 12 28	566	0.7−	0.1+	1999 05 10	120	0.4+	0.7−	1999 06 14	704	0.5−	0.7+
1998 01 18	910	0.5+	0.2+	1999 05 10	704	1.8+	0.4−	1999 06 14	704	0.4−	1.1+
1998 01 18	910	0.3+	0.1+	1999 05 10	704	0.1−	0.3−				

(10824)* 1993 SW₃ = 1973 SL₅

Discovered 1993 Sept. 24 by G. J. Garradd at Siding Spring.
Id. G. V. Williams (*MPC* 29618)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	294.06621		(2000.0)		P		Q
<i>n</i>	0.29488413	ω	279.65109		+0.90149753		+0.42351251
<i>a</i>	2.2354680	Ω	55.34367		−0.34231606		+0.82374744
<i>e</i>	0.2006242	<i>i</i>	6.21858		−0.26480544		+0.37693145
<i>P</i>	3.34	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1973 09 27	095	0.3+	0.6−	1998 01 26	566	0.1+	0.6−	1999 05 14	704	0.2+	0.1+
1989 05 07	675	0.4+	1.4−	1998 01 26	566	0.0	0.8−	1999 05 14	704	0.3+	0.2−
1989 05 07	675	0.9−	0.0	1998 01 26	426	0.8+	0.3+	1999 05 14	704	1.1−	0.5+
1993 09 18	675	0.5−	0.7−	1998 01 26	426	0.2−	0.1−	1999 05 14	704	1.1−	0.8−
1993 09 18	675	0.1+	0.5−	1998 01 26	426	0.2+	0.4+	1999 05 17	704	0.1−	0.2+
1993 09 23	675	0.3+	0.5−	1999 04 12	704	(2.1-	0.9−)	1999 05 17	704	0.9−	1.5+
1993 09 23	675	0.4+	0.2+	1999 04 12	704	1.7+	0.6−	1999 05 17	704	0.1+	0.2+
1993 09 24	413	0.4−	0.5−	1999 04 12	704	1.7+	1.4+	1999 05 17	704	1.6−	0.7+
1993 09 24	413	0.2+	0.4−	1999 04 12	704	0.8+	1.9−	1999 05 17	704	1.0−	0.6+
1993 09 25	413	0.4+	1.6+	1999 04 19	704	0.6+	0.4−	1999 05 18	704	0.5+	0.1−
1993 09 25	413	0.3−	0.1+	1999 04 19	704	0.5+	0.3−	1999 05 18	704	0.3+	0.1−
1993 10 09	413	0.8−	1.4+	1999 04 19	704	1.1+	1.0−	1999 05 18	704	0.5−	0.1−
1993 10 10	675	0.4−	0.3+	1999 04 19	704	0.2+	0.6−	1999 05 18	704	0.1−	1.0+

1999 JUNE 22

M.P.C. 34777

1993 10 10	675	0.9−	0.1−	1999 04 19	704	0.1−	0.7−	1999 05 18	704	0.0	1.0+
1993 10 12	675	0.1+	0.7+	1999 05 10	704	0.5+	0.3−	1999 05 19	704	0.4+	0.5−
1993 10 23	413	0.4+	0.6+	1999 05 10	704	0.3+	0.2+	1999 05 19	704	0.5−	0.8+
1993 10 23	413	0.3−	1.1+	1999 05 10	704	1.0+	0.9+	1999 05 19	704	0.0	0.8+
1993 11 07	413	0.6−	0.9+	1999 05 10	704	0.8+	0.2−	1999 05 19	704	0.2−	1.5+
1993 11 07	413	0.2+	0.3+	1999 05 10	704	1.0+	0.1+	1999 05 19	704	0.3−	2.0+
1997 12 26	566	0.6−	1.2+	1999 05 13	704	0.4+	0.4+	1999 05 21	704	0.1+	0.1+
1997 12 26	566	0.5−	1.1+	1999 05 13	704	0.6−	1.1+	1999 05 21	704	(2.4−	1.4+)
1997 12 26	566	0.7−	1.3+	1999 05 13	704	0.1−	0.6−	1999 05 21	704	0.5+	0.5+
1998 01 24	426	0.6+	0.1+	1999 05 13	704	0.6−	0.2−	1999 05 21	704	0.2+	0.7−
1998 01 24	426	0.6+	0.0	1999 05 13	704	0.6−	0.4+				
1998 01 26	566	0.2+	0.4−	1999 05 14	704	0.5−	0.2+				

(10825)* 1993 SF₄ = 1998 BU₁₀

Discovered 1993 Sept. 18 by F. Börngen at Tautenburg.

Id. G. V. Williams (*MPC* 31235)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	256.48840		(2000.0)	P	Q
<i>n</i>	0.28775325	ω	256.18986	+0.99290817	−0.03577055
<i>a</i>	2.2722489	Ω	105.76837	+0.07517182	+0.92771788
<i>e</i>	0.1320694	<i>i</i>	6.76562	−0.09210082	+0.37156428
<i>P</i>	3.43	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1982 07 17	413	1.2+	0.3+	1998 01 24	704	0.5+	0.5+	1999 05 13	704	0.2+	0.1−
1982 07 17	413	0.3−	0.4−	1998 01 24	704	0.5−	0.5−	1999 05 13	704	0.2−	1.1+
1990 10 23	675	1.1−	0.2−	1998 01 25	704	0.2+	0.4−	1999 05 13	704	0.7+	1.3−
1990 10 23	675	0.8−	0.5−	1998 01 25	704	0.0	0.1−	1999 05 13	704	0.5−	0.4+
1993 09 18	033	0.8+	1.0−	1998 01 25	704	0.3−	0.5−	1999 05 13	704	0.3−	0.6−
1993 09 18	033	0.3−	0.9−	1998 01 25	704	1.3−	1.4−	1999 05 13	704	0.3−	0.4+
1993 09 19	675	0.1−	0.5−	1999 03 13	113	0.6+	0.2+	1999 05 13	704	0.2−	0.5+
1993 09 19	675	0.1−	1.2−	1999 03 13	113	0.1+	0.9+	1999 05 13	704	(0.1−	2.1+)
1993 09 21	033	0.8+	0.0	1999 04 10	113	0.5+	0.5+	1999 05 13	704	0.5−	0.2+
1993 09 23	675	0.4−	0.4−	1999 04 10	113	0.7+	0.4+	1999 05 15	704	1.1+	0.3−
1993 09 23	675	0.3−	0.1−	1999 04 19	704	0.5+	0.7−	1999 05 15	704	0.2−	1.3+
1993 10 10	675	0.0	0.3+	1999 04 19	704	0.1−	0.0	1999 05 15	704	0.6+	0.0
1993 10 10	675	0.2−	0.2+	1999 04 19	704	1.0+	0.0	1999 05 15	704	0.1+	1.0+
1993 10 17	033	1.4+	0.9−	1999 04 19	704	1.2+	0.1+	1999 05 15	704	0.6−	1.0−
1993 10 17	033	0.7+	0.1−	1999 04 22	113	0.3−	0.5+	1999 05 17	704	0.4−	0.0
1997 12 25	566	1.4+	0.2+	1999 04 22	113	0.1−	0.5+	1999 05 17	704	1.5−	0.3+
1997 12 25	566	0.5+	0.0	1999 05 09	113	1.5−	0.1−	1999 05 17	704	0.7+	0.8−
1997 12 25	566	1.1+	0.0	1999 05 09	113	0.7−	0.6+	1999 05 17	704	1.0−	1.5+
1998 01 02	704	0.4−	0.7−	1999 05 12	704	0.3+	0.4−	1999 05 17	704	0.1+	0.4+
1998 01 02	704	0.4−	0.3−	1999 05 12	704	0.3+	0.5−	1999 05 18	704	1.4−	0.6+
1998 01 02	704	0.1+	0.4−	1999 05 12	704	1.0+	0.8−	1999 05 18	704	0.6+	1.8−
1998 01 02	704	0.1+	0.7−	1999 05 12	704	1.1+	0.1−	1999 05 18	704	0.8−	0.8−
1998 01 02	704	0.1+	0.4−	1999 05 12	704	0.3+	1.8−	1999 05 18	704	0.9−	0.9−
1998 01 23	704	0.2+	0.4+	1999 05 13	704	0.1−	0.2−	1999 05 19	704	0.1−	0.6−
1998 01 23	704	0.1+	0.6−	1999 05 13	704	0.4−	0.0	1999 05 19	704	0.4−	0.0
1998 01 23	704	0.1+	0.6−	1999 05 13	704	0.4−	0.0	1999 05 19	704	0.8−	0.3−
1998 01 23	704	0.0	0.2+	1999 05 13	704	0.3−	0.6−	1999 05 19	704	0.0	0.7−
1998 01 24	704	0.4+	0.7−	1999 05 13	704	0.8−	0.6−	1999 05 19	704	1.1−	1.3−
1998 01 24	704	0.7−	1.1+	1999 05 13	704	1.3+	1.3−				

(10826)* 1993 SK₁₆ = 1981 BT = 1983 VG₂ = 1990 VF₁₄

Discovered 1993 Sept. 19 by H. E. Holt at Palomar.

Id. G. V. Williams (*MPC* 33486)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	316.06701		(2000.0)	P	Q
<i>n</i>	0.28725661	ω	32.43631	+0.38981450	+0.91146298
<i>a</i>	2.2748671	Ω	260.80036	−0.87076928	+0.31837046
<i>e</i>	0.1483043	<i>i</i>	7.65257	−0.29967569	+0.26052923
<i>P</i>	3.43	<i>H</i>	13.2	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1981 01 30	095	0.5+	1.6+	1999 04 07	423	0.0	1.2−	1999 04 20	704	0.5−	0.0
1983 11 08	381	0.9−	0.7−	1999 04 07	423	0.5−	1.0−	1999 04 20	423	0.3+	0.8+
1983 11 08	381	0.6+	0.6−	1999 04 07	423	0.1+	0.6−	1999 04 20	423	0.6+	0.3−
1990 11 14	095	0.3−	1.3+	1999 04 08	423	1.1−	1.6−	1999 05 06	704	0.1+	0.3+
1990 11 14	095	0.8+	1.3−	1999 04 08	423	0.1−	0.7−	1999 05 06	704	0.1+	0.6+
1990 11 20	095	(4.7+	3.8+)	1999 04 14	704	0.3−	1.1−	1999 05 06	704	0.4+	0.3+
1993 09 19	675	0.7−	1.0−	1999 04 14	704	0.3−	0.3−	1999 05 06	704	0.8+	0.3+
1993 09 19	675	1.2−	0.8−	1999 04 14	704	0.3+	1.6+	1999 05 06	704	0.9−	0.1+
1993 10 12	675	(0.4−	2.4+)	1999 04 14	704	0.3−	0.3+	1999 05 14	704	0.1+	0.1−
1993 10 12	675	0.5+	1.5+	1999 04 16	704	0.2−	1.0+	1999 05 14	704	0.7+	0.6+
1993 10 13	675	0.3+	0.9+	1999 04 16	704	0.9+	0.2−	1999 05 14	704	0.1−	0.1+
1993 10 13	675	0.1+	1.6+	1999 04 16	704	0.5+	0.3+	1999 05 14	704	0.4+	0.5+
1999 03 14	423	0.1+	1.5−	1999 04 16	704	(1.9+	2.6+)	1999 05 14	704	(0.7+	2.4+)
1999 03 14	423	(0.2−	2.4−)	1999 04 17	704	0.6−	1.1−	1999 05 14	423	0.9−	0.1+
1999 03 22	704	0.3+	0.3−	1999 04 17	704	0.7−	0.1+	1999 05 14	423	0.9+	0.6+
1999 03 22	704	0.0	0.5+	1999 04 17	704	0.1−	1.6+	1999 06 08	704	0.7+	1.5−
1999 03 22	704	0.1+	1.7+	1999 04 17	704	0.1−	0.1+	1999 06 08	704	1.0+	0.2+
1999 03 22	704	0.0	0.5+	1999 04 17	704	0.3−	0.8+	1999 06 08	704	1.1+	0.3−
1999 03 22	704	0.0	1.6+	1999 04 20	704	0.2+	0.2−	1999 06 08	704	1.2+	0.1−
1999 03 25	423	0.1−	0.0	1999 04 20	704	0.5−	0.3−	1999 06 08	704	1.8+	0.7+
1999 03 25	423	0.5−	0.3+	1999 04 20	704	1.3−	0.6−				
1999 03 25	423	0.7−	0.4−	1999 04 20	704	0.2−	0.4−				

(10827)* 1993 TC₃ = 1980 WW₄ = 1983 RY₇

Discovered 1993 Oct. 11 by K. Endate and K. Watanabe at Kitami.

Id. K. Ichikawa (*MPC* 22819)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	292.53989		(2000.0)	P	Q
<i>n</i>	0.29970966	ω	193.49086	+0.99994254	+0.00406525
<i>a</i>	2.2114080	Ω	166.26467	−0.00021951	+0.93287622
<i>e</i>	0.2069115	<i>i</i>	2.39430	−0.01071771	+0.36017416
<i>P</i>	3.29	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1980 11 29	675	0.3+	0.7+	1993 10 21	809	(2.2−	3.4−)	1999 05 19	704	0.0	1.1−
1980 12 01	675	0.3−	0.5+	1998 02 22	566	0.7+	0.9−	1999 05 19	704	0.4+	0.6−
1983 09 11	095	0.3−	0.5+	1998 02 22	566	0.1+	0.4−	1999 05 19	704	0.3−	1.5−
1993 09 24	095	0.4+	0.2−	1998 02 22	566	0.5+	0.6−	1999 05 19	704	1.0−	0.8−
1993 10 09	809	(0.7−	5.1−)	1998 02 27	566	0.0	0.9+	1999 05 19	704	1.0−	0.8−
1993 10 09	809	(1.8−	5.7−)	1998 02 27	566	0.1−	0.4+	1999 06 09	704	0.8+	0.2+
1993 10 09	809	(1.5−	5.3−)	1998 02 27	566	0.1−	0.7+	1999 06 09	704	0.1+	0.1+
1993 10 11	809	1.7+	0.2−	1998 03 04	704	0.7−	1.2−	1999 06 09	704	0.7+	0.6−
1993 10 11	809	1.7+	0.3−	1998 03 04	704	0.1+	1.6+	1999 06 09	704	0.1+	0.3+
1993 10 11	809	0.9+	0.5−	1998 03 04	704	2.0−	1.4−	1999 06 09	704	1.8+	0.8−
1993 10 11	400	1.5+	0.9+	1998 03 04	704	0.1+	0.6−	1999 06 11	703	1.8+	0.3+
1993 10 11	400	(2.5+	1.2+)	1998 03 04	704	0.2+	1.7−	1999 06 11	703	0.8+	0.7−
1993 10 12	095	1.0−	1.9+	1999 05 10	704	1.3−	0.3+	1999 06 11	703	0.7+	0.8+
1993 10 13	675	1.5+	1.8−	1999 05 10	704	1.3−	1.1−	1999 06 11	703	0.3+	0.0
1993 10 13	675	0.3−	1.0−	1999 05 10	704	0.2+	0.2−	1999 06 11	703	0.1+	0.3+
1993 10 14	675	0.8−	1.6−	1999 05 10	704	1.2−	0.7−	1999 06 11	703	0.4−	0.2+
1993 10 14	675	1.0−	1.4−	1999 05 10	704	1.3−	0.1−	1999 06 11	703	0.3−	0.5+
1993 10 15	675	1.0−	0.7−	1999 05 13	704	1.3−	0.4+	1999 06 11	703	0.1−	0.3+
1993 10 15	675	0.4+	0.8−	1999 05 13	704	0.1+	1.0−	1999 06 15	704	0.2+	0.3+
1993 10 15	400	(1.6−	2.5−)	1999 05 13	704	0.7−	0.8+	1999 06 15	704	0.2+	0.5−
1993 10 15	400	1.5−	0.1−	1999 05 13	704	1.5+	1.0+	1999 06 15	704	0.2+	0.3−
1993 10 19	400	1.3−	1.3+	1999 05 13	704	1.4−	0.0	1999 06 15	704	0.1+	0.7−
1993 10 19	400	0.2+	0.1+	1999 05 18	704	0.4+	0.6−	1999 06 15	704	0.3+	0.2+
1993 10 21	809	(2.3−	2.8−)	1999 05 18	704	0.2−	0.6+				
1993 10 21	809	(2.5−	3.2−)	1999 05 18	704	0.3+	2.1+				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Nakano				
M	328.06875	(2000.0)		$\mathbf{P}$	$\mathbf{Q}$				
n	0.30233811	ω	46.27962	+0.83916819	+0.54149648				
a	2.1985725	Ω	280.87291	−0.51267795	+0.75641798				
e	0.2264974	i	2.96382	−0.18154360	+0.36689700				
P	3.26	H	14.4	G	0.15	U	1		
Residuals in seconds of arc									
1980 10 12	095	(4.6+	0.0)	1993 11 05	894	0.9−	0.5−	1999 05 13	704 1.1+ 0.2+
1983 09 03	071	1.5−	0.1−	1993 11 05	894	0.2−	0.3+	1999 05 13	704 1.2+ 1.2−
1983 09 03	071	1.1+	1.1+	1993 11 21	691	0.3−	0.2+	1999 05 13	704 0.7+ 0.8+
1993 10 08	691	0.2−	0.3+	1993 11 21	691	1.3−	0.3+	1999 05 13	704 0.6+ 0.1−
1993 10 08	691	0.3−	0.3+	1993 11 21	691	0.0	0.2+	1999 05 19	704 0.8− 0.1−
1993 10 08	691	0.1−	0.3+	1996 08 19	072	0.3+	0.4−	1999 05 19	704 0.2− 0.1+
1993 10 09	691	0.3+	0.4+	1996 08 19	072	0.3+	0.4−	1999 05 19	704 0.4− 2.0+
1993 10 09	691	0.5+	0.4+	1996 08 22	072	0.6−	0.2−	1999 05 19	704 0.4− 1.2+
1993 10 09	691	0.5+	0.3−	1996 08 22	072	0.5−	0.3−	1999 05 19	704 1.2− 0.2+
1993 10 12	691	0.2+	0.2+	1996 10 12	801	0.1−	0.0	1999 06 09	704 0.4+ 0.4+
1993 10 12	691	0.5+	0.3+	1996 10 15	801	0.0	0.6−	1999 06 09	704 0.8+ 0.2+
1993 10 12	691	0.2−	1.3+	1996 10 15	801	0.1−	0.5−	1999 06 09	704 0.0 0.2−
1993 10 13	691	0.1+	0.3+	1996 11 13	801	1.4+	0.3+	1999 06 09	704 0.3+ 0.5+
1993 10 13	691	0.0	0.3+	1996 11 13	801	1.1+	0.4−	1999 06 09	704 0.7− 0.3−
1993 10 13	691	(2.4−	1.2−)	1996 11 14	801	1.6+	0.6−	1999 06 15	704 0.0 0.2+
1993 10 16	691	0.1+	0.5+	1996 11 15	801	0.1−	1.1−	1999 06 15	704 0.3− 0.2−
1993 10 16	691	0.1−	0.3+	1996 12 01	689	0.8−	0.0	1999 06 15	704 0.2− 0.4−
1993 10 16	691	0.2+	0.3+	1998 01 26	566	0.2−	0.4+	1999 06 15	704 0.4+ 0.5+
1993 11 04	894	0.1−	1.0+	1998 01 26	566	0.5+	0.1+	1999 06 15	704 0.2− 0.2+
1993 11 04	894	0.3+	0.5−	1998 01 26	566	0.5−	0.2+		

(10829)* 1993 UU = 1969 TC₁

Discovered 1993 Oct. 22 by T. Seki at Geisei.

Id. B. G. Marsden (<i>MPC</i> 25216)							
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5				Marsden			
<i>M</i>	265.03152	(2000.0)		P	Q		
<i>n</i>	0.28970454	ω	322.48748	+0.92477775	−0.36204341		
<i>a</i>	2.2620343	Ω	59.13002	+0.37373135	+0.80641575		
<i>e</i>	0.1974082	<i>i</i>	7.84065	+0.07149113	+0.46756627		
<i>P</i>	3.40	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc									
1969 10 08	095	(2.0−	5.3−)	1998 02 28	372	(1.3−	2.5+)	1999 05 18	704 0.5− 0.9+
1993 10 22	372	0.1−	0.0	1998 03 19	422	0.2−	0.8+	1999 05 18	704 1.0− 1.2+
1993 10 25	372	(2.6−	0.5−)	1998 03 19	422	0.1−	0.2−	1999 05 18	704 1.0− 1.4+
1993 11 09	372	0.4−	1.5−	1998 03 26	566	0.4+	0.0	1999 05 18	704 0.7− 0.7+
1993 11 09	372	0.8−	0.1−	1998 03 26	566	0.5+	0.3−	1999 05 19	704 0.3− 0.2+
1993 11 13	372	0.4+	1.7+	1998 03 26	566	0.1+	0.2−	1999 05 19	704 0.1+ 1.1+
1993 11 24	372	0.1−	0.6−	1998 03 27	566	0.4+	0.4−	1999 05 19	704 0.1− 0.1+
1993 11 24	372	0.3+	0.1−	1998 03 27	566	0.1+	0.2−	1999 05 19	704 0.5− 0.2−
1993 12 06	372	0.4−	1.2+	1998 03 27	566	0.2+	0.3−	1999 06 09	704 0.1− 0.6−
1993 12 06	372	0.4+	1.3+	1999 05 10	704	1.7+	0.8−	1999 06 09	704 0.0 0.3+
1995 03 06	372	0.4−	0.0	1999 05 10	704	1.6+	0.6−	1999 06 09	704 0.1− 0.2+
1995 03 08	372	0.7+	0.5+	1999 05 10	704	1.2+	0.3−	1999 06 09	704 0.2+ 0.1+
1998 02 25	732	0.6+	0.1+	1999 05 10	704	0.7+	0.4−	1999 06 09	704 0.6+ 1.0+
1998 02 25	732	0.7−	0.0	1999 05 13	704	0.6+	0.6−	1999 06 15	704 0.1+ 0.8−
1998 02 26	732	0.3−	0.1+	1999 05 13	704	0.4−	1.3+	1999 06 15	704 0.3− 0.7−
1998 02 26	732	0.5−	0.0	1999 05 13	704	0.7+	1.2−	1999 06 15	704 0.3− 0.5−
1998 02 26	732	0.5−	0.2+	1999 05 14	428	1.0−	0.8+	1999 06 15	704 0.0 0.3−
1998 02 28	372	(0.6+	3.3+)	1999 05 14	428	0.2−	0.1+	1999 06 15	704 0.3− 0.2−

(10830)* 1993 UT₆ = 1982 FS₂ = 1984 SS₇

Discovered 1993 Oct. 20 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (*MPC* 23784, *MPC* 34504)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams				
M	47.97523		(2000.0)		P		Q		
n	0.22709690	ω	307.19183		−0.58955257		−0.80772171		
a	2.6606959	Ω	178.91327		+0.78869845		−0.57663405		
e	0.1773802	i	11.13208		+0.17430582		−0.12279585		
P	4.34	H	13.7	G	0.15	U	2		
Residuals in seconds of arc									
1982 03 27	046	0.9+	1.6−	1997 09 13	012	0.2−	0.7−	1999 02 16	704 0.5− 0.4+
1982 03 27	046	0.6−	2.2−	1997 09 13	012	0.4+	0.6−	1999 02 16	704 0.9− 0.0
1982 03 27	046	0.7+	0.7−	1997 09 13	012	0.1−	0.6−	1999 02 16	704 0.0 0.7−
1982 03 27	046	0.9−	1.0+	1997 09 13	012	0.3−	0.9−	1999 02 16	704 0.2− 1.0−
1982 03 28	046	0.9−	0.3−	1998 11 23	704	0.3−	0.1−	1999 03 10	704 1.2+ 0.6+
1984 09 21	010	1.1−	0.4+	1998 11 23	704	1.6−	0.4+	1999 03 10	704 (2.3+ 0.9+)
1993 10 10	809	1.0−	1.5+	1998 11 23	704	0.2−	0.3+	1999 03 10	704 (2.7− 0.1+)
1993 10 10	809	0.9−	1.3+	1998 11 23	704	0.7−	0.4−	1999 03 10	704 1.8− 0.9−
1993 10 10	809	1.8−	1.2+	1998 11 23	704	1.3−	1.1−	1999 03 10	704 (0.8+ 2.5+)
1993 10 20	809	1.7+	0.4+	1999 01 17	699	0.3−	0.4−	1999 04 07	704 0.1− 0.3+
1993 10 20	809	1.7+	0.3−	1999 01 17	699	0.3−	0.6−	1999 04 07	704 0.4+ 1.4+
1993 10 20	809	0.8+	0.4−	1999 01 17	699	0.1−	0.5−	1999 04 07	704 0.7+ 1.4+
1993 10 21	809	1.1+	0.6−	1999 02 12	704	0.5+	0.0	1999 04 07	704 (0.1− 3.1+)
1993 10 21	809	0.5+	1.2−	1999 02 12	704	0.7+	0.4−	1999 06 05	703 1.1+ 1.5+
1993 10 21	809	0.0	0.3−	1999 02 12	704	1.1+	0.9+	1999 06 05	703 (2.3+ 0.8+)
1997 09 10	012	0.3+	0.7−	1999 02 12	704	0.7+	0.3+	1999 06 05	703 0.3+ 0.1−
1997 09 11	012	0.3+	0.4−	1999 02 12	704	0.6+	0.1+	1999 06 05	703 (2.7+ 1.3+)
1997 09 11	012	0.3−	0.5−	1999 02 16	704	0.1−	0.1+		

(10831)* 1993 VM₂ = 1976 US₈ = 1997 SR₂

Discovered 1993 Nov. 15 by T. Urata at the Nihondaira Observatory.

Id. S. Nakano (*MPC* 30760), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Nakano					
<i>M</i>	87.75317		(2000.0)		P			Q			
<i>n</i>	0.23564810		ω	113.99164	−0.58579777			−0.81044181			
<i>a</i>	2.5959327		Ω	11.87166	+0.73446004			−0.53346751			
<i>e</i>	0.2296560		<i>i</i>	1.39391	+0.34265060			−0.24206710			
<i>P</i>	4.18		<i>H</i>	15.0	<i>G</i>	0.15		<i>U</i>	1		
Residuals in seconds of arc											
1976 10 22	381	0.1+	0.1+	1997 09 25	557	0.1+	0.1−	1997 10 31	910	1.4+	1.0+
1976 10 22	381	0.4−	0.6+	1997 09 25	557	0.4+	0.2−	1997 10 31	910	1.4+	0.9+
1993 11 12	033	0.8−	0.2+	1997 09 26	557	0.1−	0.0	1997 11 01	691	0.8−	0.6−
1993 11 12	033	0.4−	0.3+	1997 09 26	557	0.2+	0.3−	1997 11 01	691	0.4+	0.3+
1993 11 15	385	0.1+	0.0	1997 09 28	557	0.0	0.2−	1997 11 01	691	0.6−	0.1−
1993 11 15	385	0.2−	0.1−	1997 09 28	557	0.5+	0.4−	1997 11 03	704	1.3+	0.9+
1993 11 15	385	0.1−	0.5+	1997 09 30	691	0.1+	0.5−	1997 11 03	704	2.0−	1.2+
1993 11 18	385	0.8+	0.5−	1997 09 30	691	0.1−	0.2−	1997 11 03	704	1.4−	1.0−
1993 11 18	385	0.1−	0.1+	1997 09 30	691	0.0	0.2−	1997 11 03	704	0.8−	0.8+
1993 11 18	385	0.1+	0.4−	1997 10 05	557	0.2−	0.5−	1997 11 04	557	0.4−	0.2+
1993 11 21	385	1.3+	1.2+	1997 10 05	557	0.1+	1.3−	1999 04 15	704	(0.0 2.3+)	
1993 11 21	385	0.2+	0.2+	1997 10 11	557	0.2+	0.4+	1999 04 15	704	0.5−	1.2−
1993 12 05	385	0.5−	0.4+	1997 10 11	557	0.2+	0.4+	1999 04 15	704	0.9−	0.6−
1993 12 05	385	0.5−	0.6+	1997 10 11	691	0.0	0.4−	1999 04 15	704	1.9−	0.3−
1993 12 12	385	0.1−	0.6−	1997 10 11	691	0.1−	0.4−	1999 05 13	704	0.0	0.2−
1993 12 12	385	0.1−	0.8−	1997 10 11	691	0.1−	0.3−	1999 05 13	704	0.4+	1.4+
1993 12 12	385	1.0−	1.4−	1997 10 23	691	0.2−	0.0	1999 05 13	704	1.7+	1.1+
1993 12 18	385	0.5+	0.4+	1997 10 23	691	0.3−	0.4−	1999 05 13	704	1.8+	0.1−
1993 12 18	385	0.1−	0.2−	1997 10 23	691	0.2−	0.2−	1999 05 13	704	(2.6− 1.9+)	
1993 12 18	385	1.1+	0.2−	1997 10 26	385	0.6−	0.4+	1999 05 18	704	0.0	0.1+
1997 09 01	910	0.5+	0.1−	1997 10 26	385	0.5+	0.1−	1999 05 18	704	(1.2+ 2.3−)	
1997 09 01	910	0.0	0.3−	1997 10 31	385	0.1−	0.2−	1999 05 18	704	0.4−	0.2−
1997 09 01	910	0.3+	0.4−	1997 10 31	385	1.1−	0.1+				
1997 09 25	557	0.5+	0.3−	1997 10 31	910	1.3+	0.9+				

Id. S. Nakano (*MPC 27716*), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	279.39238	(2000.0)	P		Q	
<i>n</i>	0.28041949	ω 203.48818	+0.99910279	+0.03669914		
<i>a</i>	2.3116953	Ω 154.38146	-0.02674972	+0.93377533		
<i>e</i>	0.1663730	<i>i</i> 2.80209	-0.03283390	+0.35597304		
<i>P</i>	3.51	<i>H</i> 15.0	<i>G</i> 0.15	<i>U</i> 1		
Residuals in seconds of arc						
1982 08 18	809	0.3-	1.3-	1996 07 16	809	0.2+ 1.8+
1982 08 18	809	0.6+	0.6-	1996 07 16	809	0.5- 1.2+
1982 08 18	809	0.7+	0.8-	1996 07 16	809	0.1- 1.5+
1993 11 15	411	0.8+	0.9-	1996 08 09	566	0.1- 0.8-
1993 11 15	411	0.1-	1.6-	1996 08 09	566	0.3- 0.8-
1993 11 18	411	1.6-	1.0+	1996 08 09	566	0.6- 0.8-
1993 11 18	411	0.2+	0.7+	1996 08 12	566	0.4+ 0.8-
1993 11 21	411	1.3+	1.0+	1996 08 12	566	0.1- 0.4-
1993 11 21	411	0.0	0.9-	1996 08 12	566	0.3+ 0.8-
1993 11 24	411	0.4-	0.7+	1996 08 17	566	0.8- 0.5-
1993 11 24	411	0.8+	0.2-	1996 08 17	566	0.7- 0.4-
1993 11 24	411	0.2+	0.2-	1996 08 17	566	0.8- 0.2-
1993 12 04	411	1.0-	0.7+	1996 10 17	566	0.2+ 0.3+
1993 12 04	411	0.1-	0.5+	1996 10 17	566	1.3+ 0.3+
1993 12 04	411	0.6+	1.6+	1996 10 17	566	1.8+ 0.3-
1993 12 15	411	0.1+	1.6+	1996 11 11	689	0.8- 0.1+
1993 12 15	411	0.3+	0.1-	1998 03 01	691	0.2- 0.0
1993 12 15	411	1.6-	0.8-	1998 03 01	691	0.2+ 0.6-
1996 07 14	809	0.4+	1.9+	1998 03 01	691	0.3- 0.5-
1996 07 14	809	0.4-	1.0+	1999 05 10	704	1.3+ 0.9+
1996 07 14	809	0.1+	1.7+	1999 05 10	704	1.4- 1.8-

(10833)* 1993 VJ₄ = 1976 SX₄ = 1986 RU₁₂ = 1986 SJ₂ = 1995 DQ₆

Discovered 1993 Nov. 11 by S. Ueda and H. Kaneda at Kushiro.

Id. K. Kinoshita (*MPC 25217*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	305.24379	(2000.0)	P		Q	
<i>n</i>	0.29224434	ω 322.04184	+0.93475396	+0.35504409		
<i>a</i>	2.2489095	Ω 17.17664	-0.31389862	+0.84288406		
<i>e</i>	0.1968615	<i>i</i> 2.59469	-0.16644127	+0.40433915		
<i>P</i>	3.37	<i>H</i> 14.9	<i>G</i> 0.15	<i>U</i> 2		
Residuals in seconds of arc						
1976 09 24	095	0.7-	0.3+	1995 03 01	691	1.1+ 0.0
1986 09 09	095	1.0+	0.3+	1995 03 01	691	0.8+ 0.1-
1986 09 29	095	1.1-	0.8+	1995 03 31	691	0.2+ 0.1+
1993 11 11	399	1.0-	2.1+	1995 03 31	691	0.5+ 0.0
1993 11 11	399	0.6+	1.1+	1995 03 31	691	0.4+ 0.0
1993 11 16	399	(2.5- 0.8+)		1996 09 29	689	1.8+ 0.1+
1993 11 16	399	0.8-	0.3+	1996 09 30	689	2.0+ 2.0+
1993 11 22	399	2.1-	1.6-	1996 10 12	689	0.5+ 0.9-
1993 11 22	399	0.2-	0.1-	1999 05 10	704	0.2- 0.5-
1995 02 24	691	0.6+	0.3+	1999 05 10	704	1.6- 0.7-
1995 02 24	691	1.1+	0.3-	1999 05 10	704	0.2- 0.3-
1995 02 24	691	0.8+	0.2-	1999 05 10	704	1.0+ 1.5+
1995 03 01	691	0.6+	0.2-	1999 05 10	704	1.7- 0.6+
				1999 05 10	704	1.1- 0.3+

(10834)* 1993 VU₅ = 1986 VR₇ = 1995 CN₁₀

Discovered 1993 Nov. 8 by Spacewatch at Kitt Peak.

Id. T. Kobayashi (*MPC 25069*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	12.42761	(2000.0)	P		Q	
<i>n</i>	0.27814223	ω 236.23440	-0.40696667	+0.91328443		
<i>a</i>	2.3242960	Ω 9.79567	-0.80150697	-0.34809658		
<i>e</i>	0.0666117	<i>i</i> 5.74129	-0.43813776	-0.21151906		
<i>P</i>	3.54	<i>H</i> 14.1	<i>G</i> 0.15	<i>U</i> 1		
Residuals in seconds of arc						
1986 11 07	046	0.1+	0.1-	1995 03 05	411	1.3+ 0.1-
1986 11 07	046	1.6-	0.6+	1995 03 05	411	0.7+ 0.2+
1989 07 31	675	0.8-	0.2-	1999 04 15	704	0.2+ 1.4+
1989 09 02	675	0.6+	0.2-	1999 04 15	704	(0.9- 2.1+)
1989 09 02	675	1.3+	0.1-	1999 04 15	704	1.0- 1.5+
1993 11 08	691	0.2-	0.5+	1999 04 15	704	1.2- 1.8+
1993 11 08	691	0.3-	0.7+	1999 04 17	704	0.3+ 0.0
1993 11 08	691	0.0	0.1+	1999 04 17	704	0.9- 0.7-
1993 11 09	691	0.3-	0.8+	1999 04 17	704	0.8- 0.3-
1993 11 09	691	0.4-	0.5+	1999 04 17	704	1.8- 0.4-
1993 11 09	691	0.4-	0.8+	1999 04 20	704	0.3+ 0.2+
1993 11 09	691	0.3-	0.9+	1999 04 20	704	1.0- 1.5+
1993 11 09	691	0.2-	0.9+	1999 04 20	704	1.2- 0.8+
1993 11 09	691	0.4-	1.0+	1999 04 20	704	0.4- 0.9+
1993 11 10	691	0.5-	0.9+	1999 04 21	426	0.3- 0.1+
1993 11 10	691	0.5-	0.7+	1999 04 21	426	0.0 0.1+
1993 11 10	691	0.4-	0.8+	1999 04 21	426	0.2- 0.3+
1995 02 10	411	0.6-	0.5+	1999 04 22	426	0.1- 0.1+
1995 02 10	411	0.4-	0.0	1999 04 22	426	0.1+ 0.0
1995 02 20	411	0.2+	0.1+	1999 04 22	426	0.0 0.2+
1995 02 20	411	0.7-	0.1-	1999 05 10	704	0.1- 0.2-
1995 03 02	411	0.7+	0.5+	1999 05 10	704	0.4+ 0.5-

(10835)* 1993 VB₈ = 1995 KT₂

Discovered 1993 Nov. 12 by F. Börngen at Tautenburg.

Id. G. V. Williams (*MPC 31236*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	237.12484	(2000.0)	P		Q	
<i>n</i>	0.28086629	ω 333.87714	+0.20292492	-0.97193928		
<i>a</i>	2.3092430	Ω 104.22591	+0.91852076	+0.14683517		
<i>e</i>	0.0712839	<i>i</i> 7.05031	+0.33932446	+0.18377558		
<i>P</i>	3.51	<i>H</i> 15.0	<i>G</i> 0.15	<i>U</i> 2		
Residuals in seconds of arc						
1954 11 24	675	0.3+	0.5-	1993 11 12	033	1.5- 0.1+
1954 11 24	675	0.4+	0.3-	1993 11 13	033	0.4- 0.3-
1982 08 29	413	1.1-	0.7+	1994 01 07	675	0.2+ 0.7-
1982 08 29	413	0.4-	1.0-	1994 01 07	675	0.7+ 0.4-
1982 11 13	413	0.4+	0.2-	1994 01 11	675	0.2- 0.1+
1982 11 13	413	1.1-	1.1+	1994 01 11	675	2.0+ 1.0-
1989 11 06	675	0.6+	0.3+	1994 01 14	033	0.4+ 0.2+
1989 11 06	675	0.4+	0.5+	1994 01 15	033	0.6- 0.8+
1991 03 18	675	1.6-	0.7+	1994 01 18	033	0.9- 0.9+
1991 03 18	675	1.7+	1.0-	1995 05 22	010	(3.7+ 3.7+)
1991 04 09	675	1.0-	0.0	1995 05 22	010	(0.9+ 2.9+)
1991 04 09	675	0.5+	1.0+	1995 05 22	010	(1.0+ 2.5+)
1993 11 12	033	0.6-	0.4+	1995 05 23	010	(6.0+ 2.2+)

(10836)* 1994 CS₂

Discovered 1994 Feb. 14 by T. Kobayashi at Oizumi.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	161.04097	(2000.0)	P		Q	
<i>n</i>	0.23773634	ω 337.70827	-0.35959179	-0.91393050		
<i>a</i>	2.5807088	Ω 132.79615	+0.89014714	-0.39648482		
<i>e</i>	0.0888976	<i>i</i> 14.86259	+0.27987823	+0.08678034		
<i>P</i>	4.15	<i>H</i> 13.0	<i>G</i> 0.15	<i>U</i> 2		

Residuals in seconds of arc

1954 08 04	675	0.0	0.4+	1998 01 07	691	1.5-	0.8+	1998 03 04	704	0.2-	0.1-
1994 02 14	411	0.5-	0.2-	1998 01 24	566	0.8+	0.6-	1998 03 04	704	0.1-	0.1-
1994 02 14	411	0.1-	0.9-	1998 01 24	566	0.5+	0.9-	1998 03 04	704	0.0	0.1-
1994 02 16	411	0.2+	0.7-	1998 01 24	566	0.7+	0.7-	1998 03 04	704	0.2-	0.4+
1994 02 16	411	0.2+	0.3+	1998 01 25	411	0.1-	0.2+	1999 05 20	704	0.9+	0.4+
1994 02 16	411	0.1+	0.7-	1998 01 25	411	0.1+	0.0	1999 05 20	704	0.3-	0.3-
1994 03 04	411	1.3+	1.6+	1998 01 26	411	0.4+	0.7+	1999 05 20	704	0.8-	0.7+
1994 03 04	411	0.2-	0.5+	1998 01 26	411	0.8+	0.7+	1999 05 20	704	0.7+	0.2+
1994 03 04	411	0.1-	0.5+	1998 03 01	699	0.4+	0.2+	1999 05 21	704	1.5-	1.2+
1994 03 06	411	0.1-	0.3+	1998 03 01	699	0.3-	0.4+	1999 05 21	704	0.5-	0.9+
1994 03 06	411	0.4-	0.2+	1998 03 01	699	0.2-	0.5+	1999 05 21	704	1.6-	0.3-
1994 03 06	411	0.1-	0.2-	1998 03 01	411	0.2-	0.4-	1999 05 21	704	0.3-	0.4-
1994 03 15	411	0.1+	0.7-	1998 03 01	411	0.2-	0.4-	1999 06 14	704	0.8+	0.5-
1994 03 15	411	0.5-	0.5-	1998 03 03	699	0.0	0.1-	1999 06 14	704	0.9+	0.6-
1994 03 15	411	0.1+	0.1+	1998 03 03	699	0.2-	0.4+	1999 06 14	704	0.6+	0.5-
1998 01 07	691	0.3-	0.2+	1998 03 03	699	0.2+	0.1-	1999 06 14	704	0.6+	0.5-
1998 01 07	691	0.2-	0.1-	1998 03 04	704	0.2-	0.3-	1999 06 14	704	0.3+	0.3-

(10837)* 1994 EJ₁ = 1987 SO₁₇

Discovered 1994 Mar. 6 by M. Hirasawa and S. Suzuki at Nyukasa.

Id. K. Ichikawa (*MPC* 23676)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	181.05642		(2000.0)	P	Q
<i>n</i>	0.22678820	ω	263.40431	+0.11769143	-0.99304956
<i>a</i>	2.6631098	Ω	179.82420	+0.99265885	+0.11761272
<i>e</i>	0.0694376	<i>i</i>	21.82300	+0.02787729	+0.00445202
<i>P</i>	4.35	<i>H</i>	12.4	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1987 09 16	095	(2.5+	7.9-)	1998 02 19	423	0.4-	0.6+	1999 02 20	704	0.9-	0.6+
1987 09 17	095	(2.4+	3.7+)	1998 02 19	423	0.1+	0.4-	1999 02 20	704	0.1+	0.0
1987 09 23	095	(0.7+	6.0+)	1998 02 19	423	0.1-	0.1-	1999 04 22	704	0.9+	0.1+
1990 04 22	675	0.4-	0.8+	1998 02 19	423	0.1+	0.1+	1999 04 22	704	1.7+	1.7+
1994 03 04	400	(0.5+	2.5-)	1998 02 20	732	0.4+	0.1+	1999 04 22	704	1.4+	1.0+
1994 03 04	400	0.6+	2.0-	1998 02 20	732	0.8+	0.2-	1999 04 22	704	0.1-	1.3+
1994 03 06	408	0.7+	0.6+	1998 02 20	732	1.0-	0.3-	1999 04 22	704	0.4-	0.6+
1994 03 06	408	0.3-	0.6-	1998 02 21	423	1.1+	0.9+	1999 05 09	611	0.2-	0.2+
1994 03 14	675	0.2-	1.0-	1998 02 21	423	0.8+	1.4+	1999 05 12	704	0.0	0.6-
1994 03 14	675	0.5-	0.7-	1998 02 21	423	1.2+	1.3+	1999 05 12	704	0.2-	1.7-
1994 03 14	408	0.0	1.3-	1998 02 22	423	0.2+	0.5+	1999 05 12	704	0.1-	0.1-
1994 03 14	408	0.6+	0.1+	1998 02 24	423	0.8-	0.5-	1999 05 12	704	0.1+	0.1-
1996 10 17	693	0.5+	0.1+	1998 02 24	423	0.5-	0.5-	1999 05 17	704	0.5+	0.3-
1996 10 17	693	1.5-	0.9+	1998 02 25	423	0.2-	0.1+	1999 05 17	704	0.2-	0.5-
1996 10 18	693	0.5+	1.2+	1998 02 25	423	0.3+	1.0-	1999 05 17	704	0.0	0.6+
1996 10 18	693	1.0-	1.2+	1998 02 25	423	0.4+	0.4-	1999 05 17	704	0.4-	0.6+
1996 11 13	801	0.7+	0.8-	1998 03 26	470	1.8-	0.9+	1999 06 12	704	0.6-	0.2+
1996 11 13	801	0.8+	0.9-	1998 03 26	470	1.1-	0.4+	1999 06 12	704	0.8-	0.2+
1998 02 19	732	0.1+	1.4+	1998 03 26	470	1.2-	0.0	1999 06 12	704	0.8-	0.4+
1998 02 19	732	0.1+	1.0+	1999 02 20	704	1.4+	0.9-	1999 06 12	704	0.8-	0.2+
1998 02 19	423	0.6+	0.1+	1999 02 20	704	1.2+	0.3-	1999 06 12	704	0.8-	0.4+

(10838)* 1994 EH₇ = 1991 RJ₂₃

Discovered 1994 Mar. 9 by E. W. Elst at Caussols.

Id. K. Ichikawa (*MPC* 24112)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	352.30114		(2000.0)	P	Q
<i>n</i>	0.22973318	ω	275.20308	+0.26858663	+0.96238057
<i>a</i>	2.6403017	Ω	10.65070	-0.77217849	+0.24058723
<i>e</i>	0.1649416	<i>i</i>	12.83187	-0.57584859	+0.12625934
<i>P</i>	4.29	<i>H</i>	13.8	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1990 04 01	675	0.1+	0.1+	1994 02 13	809	0.8+	1.8+	1998 04 29	566	0.4-	0.2+
1990 04 01	675	0.5+	0.7-	1994 02 13	809	(1.7+	2.4+)	1999 05 15	423	0.6+	1.5-

1991 09 15	675	0.3+	0.1+	1994 03 09	010	(0.7-	2.2+)	1999 05 15	423	1.2+	0.3-
1991 09 15	675	0.0	0.0	1994 03 09	010	1.1-	1.4+	1999 06 10	423	1.0-	0.8+
1991 09 17	675	0.2+	0.9-	1994 03 09	010	1.2-	1.3+	1999 06 10	423	0.6-	0.4-
1991 09 17	675	0.0	0.1-	1994 03 10	010	0.0	1.1-	1999 06 10	423	0.1-	0.7-
1994 02 08	809	(3.1+	2.2+)	1994 03 10	010	0.0	1.1-	1999 06 11	423	1.1-	0.1+
1994 02 08	809	(3.1+	2.6+)	1994 03 10	010	0.6+	0.6-	1999 06 11	423	0.2-	0.3-
1994 02 08	809	(3.1+	1.9+)	1998 01 25	566	0.4+	1.0-	1999 06 11	423	0.4+	0.4+
1994 02 10	809	(3.1+	1.1+)	1998 01 25	566	0.1+	0.6-	1999 06 12	423	(1.1+	2.3-)
1994 02 10	809	(2.3+	1.6+)	1998 01 25	566	0.3+	1.1-	1999 06 12	423	0.8+	1.3+
1994 02 10	809	(2.1+	1.2+)	1998 04 29	566	0.4-	0.4+				
1994 02 13	809	(2.2+	2.8+)	1998 04 29	566	0.3-	0.3+				

(10839)* 1994 GY₉ = 1985 DL₂

Discovered 1994 Apr. 3 by F. Börngen at Tautenburg.

Id. K. Ichikawa (*MPC* 24112)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	152.27427		(2000.0)	P	Q
<i>n</i>	0.22225473	ω	262.85846	+0.23170622	-0.97257920
<i>a</i>	2.6992019	Ω	173.63711	+0.94858819	+0.22132651
<i>e</i>	0.2126055	<i>i</i>	10.42225	+0.21562162	+0.07144427
<i>P</i>	4.43	<i>H</i>	14.3	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1952 09 15	675	1.2+	0.0	1998 01 17	113	0.5-	0.1-	1999 04 19	704	(2.2+	0.3+)
1952 09 15	675	0.3+	0.4-	1998 01 17	113	0.3+	0.2+	1999 04 19	704	0.5+	2.0+
1983 10 26	413	1.1-	0.2+	1998 01 17	113	0.2+	0.0	1999 05 08	703	0.4-	0.1+
1983 10 26	413	1.2-	1.6+	1998 01 17	113	0.1-	0.1+	1999 05 08	703	0.7+	0.0
1985 02 24	675	0.0	0.7+	1998 01 26	113	0.5-	0.8+	1999 05 08	703	0.5+	0.3-
1985 02 24	675	(2.9+	0.4-)	1998 01 26	113	0.2+	0.2-	1999 05 08	703	0.1+	0.9-
1985 02 26	675	(9.4-	0.7+)	1998 01 27	113	0.0	0.2+	1999 05 12	704	0.6-	1.1+
1985 02 26	675	2.2-	0.4+	1998 01 27	113	0.0	0.7+	1999 05 12	704	1.2-	1.1+
1985 02 27	675	0.4-	0.0	1998 01 27	113	0.2-	0.2+	1999 05 12	704	(0.6-	2.3-)
1986 06 13	413	1.2-	0.6+	1998 01 27	113	0.1+	0.3+	1999 05 12	704	1.4+	0.2+
1994 04 03	033	0.1-	0.3+	1998 01 31	113	0.3-	0.6-	1999 05 12	704	0.2+	0.3-
1994 04 03	033	0.0	0.4+	1998 01 31	113	0.0	0.4+	1999 05 14	703	0.0	1.9-
1994 04 03	033	0.8+	0.1-	1998 01 31	113	0.2-	0.7+	1999 05 14	703	0.2-	0.3-
1994 04 04	033	0.3-	0.5-	1998 02 04	113	0.2-	0.3+	1999 05 14	703	1.6+	0.3+
1997 12 25	566	0.6+	0.3-	1998 02 04	113	0.4-	0.2+	1999 05 14	703	0.7+	0.7-
1997 12 25	566	0.8+	0.0	1998 02 04	113	0.1-	0.6+	1999 05 17	704	0.7-	0.0
1997 12 25	566	0.6+	0.1-	1998 02 18	113	0.7+	0.7+	1999 05 17	704	1.1-	0.5-
1997 12 27	566	(1.1+	3.6-)	1998 02 18	113	0.0	0.1+	1999 05 17	704	0.9-	1.2+
1997 12 27	566	(0.8+	3.3-)	1999 04 12	704	0.7-	0.6-	1999 05 17	704	(2.2-	0.6+)
1997 12 27	566	(0.7+	3.5-)	1999 04 12	704	1.4+	1.0-	1999 05 18	703	0.3-	0.8+
1997 12 30	566	0.6+	1.0-	1999 04 12	704	0.2+	0.4+	1999 05 18	703	0.4+	0.0
1997 12 30	566	0.6+	1.1-	1999 04 12	704	0.5-	0.7-	1999 05 18	703	0.2+	0.1-
1997 12 30	566	0.4+	1.0-	1999 04 19	704	0.8+	0.6-	1999 05 18	703	0.1+	0.8-
1998 01 17	113	1.1-	0.9-	1999 04 19	704	0.3+	0.7+				

(10840)* 1994 LR = 1972 JQ = 1992 AM₅

Discovered 1994 June 1 by A. Sugie at Kiyosato.

Id. T. B. Spahr (*MPC* 30662)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	6.21320		(2000.0)	P	Q
<i>n</i>	0.18245537	ω	129.09371	-0.69939589	+0.68053637
<i>a</i>	3.0786828	Ω	94.99924	-0.70459053	-0.60517228
<i>e</i>	0.0530088	<i>i</i>	12.66635	-0.11998993	-0.41308202
<i>P</i>	5.40	<i>H</i>	12.2	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1972 05 12	095

1994 06 01	894	1.0−	0.4+	1999 04 15	704	0.3+	0.8−	1999 05 12	704	0.8−	0.5+
1994 06 01	894	0.5−	0.3−	1999 04 15	704	0.7−	0.5+	1999 05 15	704	1.6+	0.1−
1994 06 02	894	0.9−	0.8−	1999 04 15	704	0.1+	0.5+	1999 05 15	704	0.3−	0.2−
1994 06 02	894	0.3+	0.4+	1999 04 15	704	(0.0	2.3+)	1999 05 15	704	1.2+	0.9−
1994 06 16	894	0.0	0.2−	1999 04 15	704	0.4−	0.4+	1999 05 15	704	0.1−	0.5−
1994 06 16	894	0.1+	0.4+	1999 04 16	704	1.4+	0.2−	1999 05 15	704	1.2−	0.7−
1994 06 16	894	0.0	0.3−	1999 04 16	704	0.4−	0.7−	1999 05 17	704	0.9+	0.5−
1997 12 27	403	0.2+	1.0+	1999 04 16	704	0.5+	0.3+	1999 05 17	704	0.2+	1.2−
1997 12 27	403	0.5+	0.1+	1999 04 16	704	0.2+	1.7+	1999 05 17	704	1.5−	1.5+
1998 01 18	758	0.3−	0.3−	1999 04 16	704	(2.6−	0.2−)	1999 05 17	704	0.1+	0.5−
1998 01 18	758	1.8−	0.6+	1999 04 19	704	0.8+	0.3−	1999 05 17	704	(2.9−	0.1−)
1998 01 21	758	0.4−	0.1−	1999 04 19	704	0.7+	0.5+	1999 05 31	716	0.3−	0.3+
1998 01 21	758	0.5+	0.4+	1999 04 19	704	0.5−	1.4+	1999 05 31	716	0.1−	0.6+
1998 01 28	566	0.2−	0.2−	1999 04 19	704	0.0	0.4+	1999 06 05	716	0.1−	0.0
1998 01 28	566	0.1−	0.1−	1999 04 19	704	1.1−	0.8−	1999 06 05	716	0.4+	0.1−
1998 01 28	566	0.6−	0.1−	1999 05 02	611	0.3+	0.3+	1999 06 08	704	0.6+	1.2+
1998 03 24	725	0.0	0.5−	1999 05 02	611	0.6+	0.6+	1999 06 08	704	0.0	0.3+
1998 03 24	725	0.0	0.5−	1999 05 02	611	0.8+	0.5+	1999 06 08	704	0.4+	0.2+
1998 03 28	725	0.0	0.6−	1999 05 02	127	(1.8+	2.3−)	1999 06 08	704	0.3+	1.1−
1998 03 28	725	0.1+	0.6−	1999 05 02	127	(1.7+	2.4−)				

(10841)* 1994 PP₁ = 1989 VG₄

Discovered 1994 Aug. 12 by R. H. McNaught at Siding Spring.

Id. G. V. Williams (*MPC* 27313)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	9.27611		(2000.0)	P	Q		
<i>n</i>	0.36515084	ω	189.86730	−0.35443324	+0.86939141		
<i>a</i>	1.9385984	Ω	60.12066	−0.82857926	−0.12134915		
<i>e</i>	0.0540671	<i>i</i>	23.39514	−0.43339762	−0.47899160		
<i>P</i>	2.70	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1989 11 02	675	0.0	0.2+	1996 03 10	292	(2.7+	1.4−)	1999 05 15	704	0.0	0.1+
1989 11 02	675	0.4+	1.1+	1996 03 10	292	0.8+	0.5−	1999 05 15	704	0.4−	0.5−
1989 11 06	809	2.3−	0.1+	1997 10 30	568	0.0	0.1+	1999 05 15	704	0.1−	1.1−
1989 11 06	809	1.4+	0.4−	1997 10 30	568	0.3+	0.2+	1999 05 15	704	0.0	0.1+
1989 11 06	809	1.6−	0.4+	1997 10 30	568	0.1+	0.3−	1999 05 17	704	0.8−	0.9−
1994 08 12	413	1.2−	0.5−	1997 10 30	568	0.2+	0.2−	1999 05 17	704	0.4+	0.3−
1994 08 12	413	(6.5−	4.3−)	1999 03 28	699	0.7−	1.8+	1999 05 17	704	0.9−	0.2−
1994 08 15	413	0.1−	0.3+	1999 03 28	699	0.2+	0.7−	1999 05 17	704	0.8−	0.3+
1994 08 15	413	0.1−	0.3+	1999 03 28	699	0.1+	1.0+	1999 05 17	704	1.1−	0.0
1994 08 16	413	0.3+	0.1+	1999 05 08	703	(0.2+	2.3−)	1999 05 18	703	0.6+	0.4−
1994 08 16	413	0.2+	0.2+	1999 05 08	703	0.2−	0.1+	1999 05 18	703	0.5+	0.2+
1994 08 17	413	0.6+	0.5+	1999 05 08	703	1.0+	0.2−	1999 05 18	703	0.2−	0.2+
1994 08 17	413	0.8+	0.4+	1999 05 08	703	1.2+	0.5+	1999 05 18	703	0.4−	0.9+
1994 08 26	413	0.0	0.1+	1999 05 12	704	0.1−	0.5−	1999 05 21	704	0.3+	0.3−
1994 08 26	413	0.0	0.1+	1999 05 12	704	0.4+	0.6−	1999 05 21	704	0.2+	0.6−
1994 09 17	413	0.1+	0.3−	1999 05 12	704	0.7−	0.9−	1999 05 21	704	1.0+	0.4+
1994 09 17	413	0.2+	0.2−	1999 05 12	704	0.4−	0.3−	1999 05 21	704	0.7−	0.7−
1994 09 18	413	0.1−	0.3−	1999 05 12	704	0.2−	0.1+	1999 05 21	704	0.9−	0.3+
1994 09 18	413	0.3+	0.4−	1999 05 14	703	0.4+	0.7+	1999 06 08	704	1.0+	0.1+
1994 11 11	413	0.7−	0.0	1999 05 14	703	0.4+	0.5+	1999 06 08	704	0.4+	0.1+
1994 11 11	413	0.5−	0.1+	1999 05 14	703	0.5+	0.7+	1999 06 08	704	0.1+	1.1+
1996 02 25	292	0.2−	0.4+	1999 05 14	703	0.1+	0.1+	1999 06 08	704	0.1−	0.4+
1996 02 25	292	0.5+	0.2−	1999 05 15	704	0.9−	0.7−	1999 06 08	704	1.2+	1.5+

(10842)* 1994 UY₁ = 1981 WM₃ = 1996 HH₂₅

Discovered 1994 Oct. 31 by S. Ueda and H. Kaneda at Kushiro.

Id. T. Kobayashi (*MPC* 27559), G. V. Williams (*MPC* 34507), A. Milani (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	137.37109		(2000.0)	P	Q
<i>n</i>	0.30262848	ω	234.21079	+0.16145370	−0.98650815
<i>a</i>	2.1971659	Ω	206.53667	+0.92389054	+0.16074468
<i>e</i>	0.1460110	<i>i</i>	3.47746	+0.34692790	+0.03102920
<i>P</i>	3.26	<i>H</i>	15.4	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1981 11 24	033	0.2+	0.0	1996 05 22	809	1.6+	2.0+	1999 04 07	699	1.4+	0.7+
1981 11 24	033	0.9−	0.1+	1996 05 22	809	1.0+	1.4+	1999 04 07	699	1.2−	2.0+
1994 10 26	399	0.6−	1.0+	1997 11 29	688	1.0+	0.5+	1999 04 07	699	1.5+	0.1−
1994 10 26	399	(2.5+	2.6+)	1997 11 29	688	0.8+	0.1+	1999 04 10	699	0.9+	1.0+
1994 10 31	399	0.7+	0.8+	1997 12 05	910	0.8−	0.4−	1999 04 10	699	0.5+	1.0−
1994 10 31	399	0.4+	1.2−	1997 12 05	910	0.9−	0.2−	1999 04 10	699	1.1+	0.1−
1994 11 04	675	1.0+	0.3−	1997 12 05	910	0.8−	0.3−	1999 04 15	704	0.1+	0.6+
1994 11 04	675	1.3+	1.1−	1997 12 06	910	1.0−	0.1−	1999 04 15	704	(2.7−	3.2−)
1994 11 06	675	0.5+	1.1−	1997 12 06	910	0.9−	0.1−	1999 04 15	704	1.9−	0.4+
1994 11 07	399	0.1+	1.5+	1997 12 06	910	1.0−	0.0	1999 04 15	704	(2.5−	1.2−)
1994 11 07	399	0.9−	0.4+	1999 03 20	704	1.9−	1.1+	1999 04 17	704	0.7+	1.0−
1996 04 20	809	(1.9+	2.8−)	1999 03 20	704	0.9−	0.5−	1999 04 17	704	0.6+	1.5−
1996 04 20	809	(0.8+	2.8−)	1999 03 20	704	(0.0	2.4+)	1999 04 17	704	1.0−	0.2−
1996 04 20	809	(1.0+	3.2−)	1999 03 20	704	0.4+	0.2−	1999 04 17	704	0.1+	0.9+
1996 04 21	809	0.1+	1.5−	1999 03 23	704	0.8−	0.6−	1999 04 17	704	0.4+	1.6−
1996 04 21	809	0.0	1.5−	1999 03 23	704	1.4−	0.3+	1999 06 06	691	0.3−	0.1+
1996 04 21	809	0.0	1.5−	1999 03 23	704	1.0+	0.8+	1999 06 06	691	1.0−	0.2−
1996 05 22	809	(3.3+	1.6+)	1999 03 23	704	0.5−	0.9+	1999 06 06	691	0.6−	0.1−

(10843)* 1994 YF₂ = 1978 ET₅ = 1997 UJ₁₀

Discovered 1994 Dec. 30 by S. Ueda and H. Kaneda at Kushiro.

Id. G. V. Williams (*MPC* 30874)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	81.80566		(2000.0)	P	Q
<i>n</i>	0.28575757	ω	96.78340	−0.92463590	−0.37579445
<i>a</i>	2.2828159	Ω	61.15915	+0.31555496	−0.84688085
<i>e</i>	0.1270526	<i>i</i>	4.04974	+0.21324523	−0.37625970
<i>P</i>	3.45	<i>H</i>	14.1	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1978 03 06	095	0.5−	1.2−	1999 02 23	704	0.1+	0.6+	1999 05 10	704	0.4−	0.6+
1994 12 30	399	(1.0+	2.9−)	1999 04 12	704	0.0	0.2−	1999 05 10	704	0.7−	0.0
1994 12 30	399	0.2−	0.4−	1999 04 12	704	1.1−	0.5−	1999 05 10	704	0.5−	0.9+
1995 01 02	399	0.2−	1.2+	1999 04 12	704	0.4−	0.6−	1999 05 13	704	0.0	0.0
1995 01 02	399	0.1−	1.0−	1999 04 12	704	0.0	0.9−	1999 05 13	704	0.2+	0.5+
1995 01 27	399	0.1+	0.3−	1999 04 12	704	1.3−	0.3−	1999 05 13	704	0.0	0.5+
1995 01 27	399	0.7+	1.5+	1999 04 13	426	0.0	0.0	1999 05 13	704	0.2−	1.3+
1995 01 28	399	0.2−	0.4+	1999 04 13	426	0.2+	0.2+	1999 05 13	704	0.7−	1.5+
1995 01 28	399	1.2+	0.3−	1999 04 13	426	0.1−	0.2+	1999 05 14	704	0.8+	0.7−
1995 02 03	399	0.2−	0.6+	1999 04 14	699	1.0+	0.0	1999 05 14	704	0.5+	0.4+
1995 02 03	399	1.1−	0.2−	1999 04 14	699	0.3+	0.5+	1999 05 14	704	0.3+	0.2+
1997 10 29	566	0.2+	0.0	1999 04 14	699	0.7+	0.7+	1999 05 14	704	0.6+	0.8+
1997 10 29	566	0.1+	0.3+	1999 04 14	426	0.0	0.2−	1999 05 14	704	0.1+	0.2+
1997 10 29	566	0.4+	0.0	1999 04 14	426	0.1+	0.1−	1999 05 18	704	0.4+	0.0
1997 10 30	566	0.3+	0.7+	1999 04 15	704	0.1+	1.3−	1999 05 18	704	0.2+	0.4+
1997 10 30	566	0.7+	0.7+	1999 04 15	704	1.4+	1.3−	1999 05 18	704	1.0+	0.3−
1997 10 30	566	0.4+	0.7+	1999 04 15	704	1.2−	0.8−	1999 05 18	704	0.6+	0.2−
1997 11 01	399	(5.3−	1.5−)	1999 04 15	704	0.7+	1.3+	1999 05 18	704	0.0	1.1+
1997 11 01	399	(4.8−	0.1−)	1999 04 15	704	0.2−	0.6−	1999 05 18	691	0.2−	0.0
1997 11 02	399	1.5−	0.0	1999 04 19	704	1.3−	0.7+	1999 05 18	691	0.2−	0.0
1997 11 02	399	1.8−	0.0	1999 04 19	704	0.1−	0.8−	1999 05 18	691	0.2−	0.1−
1999 02 14	699	0.6+	0.0	1999 04 19	704	1.0+	1.1−	1999 05 19	704	1.0+	0.1+
1999 02 14	699	1.2−	1.2+	1999 04 19	704	(2.2−	0.9−)	1999 05 19	704	0.2+	0.7−
1999 02 14	699	0.6+	0.2+	1999 04 20	704	0.1+	0.1+	1999 05 19	704	0.9+	0.5+
1999 02 20	704	0.3−	0.7+	1999 04 20	704	0.4−	0.4−	1999 05 19	704	0.1+	0.2+
1999 02 20	704	(2.2−	0.2−)	1999 04 20	704	0.1−	0.9−	1999 06 09	704	0.5+	0.9−
1999 02 20	704	1.4+	1.1+	1999 04 20	704	0.3−	0.2−	1999 06 09	704	0.1+	0.1+
1999 02 23	704	0.0	1.2−	1999 04 20	704	0.7−	0.1−	1999 06 09	704	0.7−	0.7+

M.P.C. 34782

1999 JUNE 22

1999 02 23 704 0.7- 0.5- 1999 05 10 704 0.4- 0.3- 1999 06 09 704 0.9- 0.3+
 1999 02 23 704 0.5- 1.2+ 1999 05 10 704 0.2+ 0.6+

(10844)* 1995 AG = 1984 YL₄

Discovered 1995 Jan. 2 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 30874)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	166.25187	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.29820536	ω	165.16037	+0.11036114 -0.99217820
<i>a</i>	2.2188388	Ω	278.47808	+0.90576385 +0.12456428
<i>e</i>	0.0590877	<i>i</i>	3.38117	+0.40916044 -0.00813348
<i>P</i>	3.31	<i>H</i>	14.3	<i>G</i> 0.15 <i>U</i> 2

Residuals in seconds of arc

1984 12 28	095	0.0	0.3-	1997 12 04	704	0.1+	1.6+	1999 05 10	704	0.2-	1.8+
1995 01 02	411	0.4+	0.5-	1997 12 04	704	0.8-	1.2+	1999 05 10	704	0.8-	1.5+
1995 01 02	411	0.3-	0.7-	1997 12 04	704	0.9-	1.2+	1999 05 10	704	1.2-	1.6+
1995 01 05	411	0.1+	0.4-	1997 12 04	704	1.0-	1.1-	1999 05 10	704	1.8-	1.7+
1995 01 05	411	0.4+	0.3+	1997 12 05	704	0.1-	0.8+	1999 05 13	704	0.8+	0.6-
1995 01 10	411	0.2-	0.4+	1997 12 05	704	0.4+	0.6+	1999 05 13	704	1.4-	0.3-
1995 01 10	411	0.2+	0.2+	1997 12 05	704	0.2-	0.5+	1999 05 13	704	0.1+	0.8+
1995 01 20	411	0.0	0.1-	1997 12 05	704	0.1+	1.0+	1999 05 13	704	0.4+	0.5+
1995 01 20	411	0.1+	0.1-	1997 12 05	704	0.6-	0.6+	1999 05 13	704	0.3-	0.1+
1995 01 23	411	0.2+	0.2+	1999 04 15	704	0.4+	1.3-	1999 05 18	704	0.1+	0.5+
1995 01 23	411	0.7-	0.6+	1999 04 15	704	0.3+	0.1+	1999 05 18	704	0.0	0.7+
1995 01 24	411	0.1+	0.3-	1999 04 15	704	0.7+	0.1+	1999 05 18	704	0.3-	0.7+
1995 01 24	411	0.1+	0.6-	1999 04 17	704	1.7+	0.6-	1999 05 18	704	0.5+	1.8+
1995 01 25	411	1.2-	0.1-	1999 04 17	704	1.5+	1.7-	1999 05 18	704	0.9-	1.4+
1995 01 25	411	0.6-	0.4-	1999 04 17	704	0.5+	1.4-	1999 06 09	704	1.4+	0.5-
1995 01 29	411	0.6+	0.3+	1999 04 17	704	0.3-	0.7-	1999 06 09	704	0.2+	1.8-
1995 01 29	411	0.1+	0.3-	1999 04 20	704	0.1-	0.5-	1999 06 09	704	0.7+	0.4-
1997 11 01	411	1.4+	0.0	1999 04 20	704	0.3+	0.6+	1999 06 09	704	1.0+	1.3+
1997 11 01	411	0.9+	0.9+	1999 04 20	704	0.3+	0.6+	1999 06 09	704	0.4+	0.3-
1997 12 02	411	0.0	0.3+	1999 04 20	704	0.2+	0.1+				
1997 12 02	411	0.2-	0.2-	1999 05 10	704	1.4-	0.7+				

(10845)* 1995 AA₁

Discovered 1995 Jan. 6 by T. Kobayashi at Oizumi.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	178.52138	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.28824494	ω	301.48972	+0.52362041 -0.84696506
<i>a</i>	2.2696641	Ω	116.66191	+0.81242126 +0.46387441
<i>e</i>	0.0905928	<i>i</i>	5.91161	+0.25650215 +0.25975126
<i>P</i>	3.42	<i>H</i>	14.6	<i>G</i> 0.15 <i>U</i> 1

Residuals in seconds of arc

1993 07 25	675	0.5+	0.1-	1997 10 30	566	0.1-	0.2-	1999 05 13	704	0.7+	0.9+
1993 07 25	675	0.7-	0.5-	1997 10 30	566	0.2+	0.2-	1999 05 13	704	1.3+	0.4-
1993 08 13	675	0.7+	0.7-	1999 04 12	704	0.3-	1.4-	1999 05 13	704	0.8-	0.8-
1993 08 13	675	0.2-	0.4+	1999 04 12	704	0.0	0.8+	1999 05 17	704	(2.6+	0.6-)
1995 01 06	411	0.2-	0.1-	1999 04 12	704	0.9-	0.0	1999 05 17	704	1.0+	1.0-
1995 01 06	411	0.6-	1.0+	1999 04 12	704	0.1+	1.2+	1999 05 17	704	0.5-	0.9+
1995 01 07	411	0.5-	0.4+	1999 04 19	704	0.3-	0.4-	1999 05 17	704	1.4+	0.5+
1995 01 07	411	0.5+	0.2+	1999 04 19	704	0.5+	0.2-	1999 05 17	704	0.7+	0.0
1995 01 10	411	0.4-	0.3+	1999 04 19	704	0.1-	0.1+	1999 05 18	704	1.0+	0.0
1995 01 10	411	0.3+	0.0	1999 05 12	704	0.5+	1.2-	1999 05 18	704	0.2+	0.4-
1995 01 20	411	0.0	0.6-	1999 05 12	704	1.3-	1.4+	1999 05 18	704	0.1+	0.4-
1995 01 20	411	0.6-	0.9-	1999 05 12	704	1.0+	0.3+	1999 05 18	704	1.5-	0.3-
1995 02 01	411	0.3+	0.3+	1999 05 12	704	1.1-	0.1+	1999 05 18	704	(2.3-	1.4-)
1995 02 01	411	1.1+	1.0-	1999 05 12	704	1.0-	1.1-				
1997 10 30	566	0.1+	0.4-	1999 05 13	704	0.8-	0.3+				

(10846)* 1995 AW₂ = 1978 EQ₄ = 1986 SD₁ = 1990 VY₇

Discovered 1995 Jan. 2 by S. Ueda and H. Kaneda at Kushiro.

Id. S. Nakano (*MPC* 24756)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	56.03922	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.28782109	ω	305.35049	-0.96900929 +0.23112508
<i>a</i>	2.2718918	Ω	248.15272	-0.18498638 -0.91286562
<i>e</i>	0.1154166	<i>i</i>	5.39015	-0.16371022 -0.33653761
<i>P</i>	3.42	<i>H</i>	14.0	<i>G</i> 0.15 <i>U</i> 1

Residuals in seconds of arc

1978 03 06	095	(5.5+ 1.8+)	1998 02 22	327	0.1+	0.1-	1999 05 08	423	0.0	1.1-
1986 09 29	010	(3.8- 1.8-)	1998 02 22	327	0.2+	0.3-	1999 05 08	423	0.0	1.4-
1986 09 29	010	0.3+	1998 02 22	327	0.1-	0.3-	1999 05 10	704	0.4+	1.0-
1990 10 22	675	0.1-	1998 02 23	327	0.1+	0.3+	1999 05 10	704	0.7+	1.0-
1990 10 22	675	0.6-	1998 02 23	327	0.0	0.0	1999 05 10	704	0.2-	0.9-
1990 11 11	675	0.5+	1998 02 23	327	0.3+	0.2-	1999 05 10	704	0.2-	0.4+
1990 11 11	675	0.1+	1998 02 26	327	0.2-	0.1-	1999 05 10	704	1.4-	0.1+
1990 11 13	675	0.5+	1998 02 26	327	0.0	0.1-	1999 05 13	704	0.3-	0.1+
1990 11 13	675	0.0	1998 02 26	327	0.1+	0.1+	1999 05 13	704	1.0-	0.3-
1995 01 02	399	0.5+	1998 03 08	327	0.2+	0.2-	1999 05 13	704	0.5-	0.5+
1995 01 02	399	0.3-	1998 03 08	327	0.0	0.4+	1999 05 13	704	1.1-	1.1+
1995 01 06	399	0.3+	1998 03 08	327	0.4-	0.4+	1999 05 13	704	0.3+	1.9-
1995 01 27	399	0.3-	1998 03 08	327	0.0	1.0+	1999 05 13	423	0.0	0.5-
1995 01 27	399	1.0-	1998 03 08	327	0.7+	0.5+	1999 05 13	423	0.1+	0.5+
1995 01 28	399	0.1-	1998 03 08	327	0.1+	0.1+	1999 05 13	423	0.3+	0.1-
1995 01 28	399	1.3+	1998 03 11	327	0.2+	0.0	1999 05 14	423	0.3+	0.0
1997 11 19	411	0.0	1998 03 11	327	0.7+	0.0	1999 05 14	423	0.2-	0.3+
1997 11 19	411	0.2-	1998 03 11	327	1.0+	0.9+	1999 05 18	704	0.7-	0.4-
1997 11 24	399	1.4+	1999 04 15	704	0.8+	0.6-	1999 05 18	704	0.8-	0.8+
1997 11 24	399	0.1+	1999 04 15	704	0.1+	0.9-	1999 05 18	704	1.0-	0.6-
1997 11 29	704	1.7+	1999 04 15	704	1.3+	1.9+	1999 05 18	704	0.9-	0.1+
1997 11 29	704	0.2-	1999 04 15	704	0.6+	0.7+	1999 05 18	704	1.1-	0.4-
1997 11 29	704	0.1+	1999 04 15	704	0.1+	0.7+	1999 05 19	704	0.4-	0.7-
1997 11 29	704	0.7+	1999 04 17	704	0.6+	0.5-	1999 05 19	704	0.3-	0.8-
1997 11 29	704	1.6+	1999 04 17	704	0.4-	0.6-	1999 05 19	704	0.3-	0.1-
1997 12 03	399	0.3-	1999 04 17	704	0.0	0.3-	1999 05 19	704	0.8+	0.4+
1997 12 03	399	0.5-	1999 04 17	704	0.5-	1.8+	1999 06 09	704	0.6+	0.3-
1997 12 04	704	1.1-	1999 04 20	704	0.7+	0.1-	1999 06 09	704	0.5+	0.0
1997 12 04	704	0.2-	1999 04 20	704	0.1+	0.1-	1999 06 09	704	0.9+	0.5+
1997 12 04	704	1.1-	1999 04 20	704	0.5-	0.3-	1999 06 09	704	0.1-	0.7+
1997 12 04	704	0.6+	1999 04 20	704	0.6+	0.1+	1999 06 15	704	0.4+	0.5-
1997 12 04	704	1.0-	1999 04 20	704	0.9-	0.4-	1999 06 15	704	0.8+	0.5+
1997 12 05	399	1.2-	1999 04 25	423	0.4+	0.8-	1999 06 15	704	0.7+	0.9+
1997 12 05	399	0.4+	1999 04 25	423	0.6+	0.9-	1999 06 15	704	0.1-	0.3+
1997 12 25	566	0.4-	1999 04 25	423	0.2+	1.4-	1999 06 15	704	0.4-	0.9+
1997 12 25	566	0.7-	1999 04 26	423	0.4-	1.2-				
1997 12 25	566	0.4-	1999 04 26	423	0.0	1.0-				

(10847)* 1995 AV₄ = 1998 QS₈₉

Discovered 1995 Jan. 5 by F. Börngen at Tautenburg.

Id. G. V. Williams (*MPC* 32462)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	5.99235	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.19162101	ω	120.08158	+0.44557776 -0.88566568
<i>a</i>	2.9797098	Ω	302.89080	+0.75850071 +0.45097105
<i>e</i>	0.0899115	<i>i</i>	8.94767	+0.47553879 +0.11055054
<i>P</i>	5.14	<i>H</i>	12.8	<i>G</i> 0.15 <i>U</i> 1

Residuals in seconds of arc

1976 06 24	413	0.9-	0.6+	1998 08 24	704	0.6+	0.5-	1998 10 13	725	0.1+	0.2-
1976 06 24	413	0.9+	0.0	1998 08 24	704	1.1-	0.9+	1998 10 13	725	0.2-	0.4-
1982 09 16	413	0.4+	0.7-	1998 08 24	704	0.2-	0.0	1998 10 13	725	0.3+	0.3-
1991 04 11	413	0.4-	0.2-	1998 08 24	704	0.4+	0.5+	1998 10 15	699	0.4-	0.1-
1991 04 11	413	0.6+	0.5+	1998 08 24	704	0.6-	1.3+	1998 10 15	699	0.2-	

1999 JUNE 22

1995 01 30	033	0.6+	0.3+	1998 08 27	704	0.8-	0.2-	1998 12 09	704	0.7+	0.3-
1995 02 02	033	0.9-	0.4+	1998 09 19	704	0.2+	1.5-	1998 12 09	704	1.3-	0.1-
1995 02 06	691	0.1+	0.1+	1998 09 19	704	0.0	0.3-	1998 12 09	704	1.2+	0.8+
1995 02 06	691	0.0	0.1+	1998 09 19	704	0.8+	1.4-	1998 12 09	704	0.6-	1.8+
1995 02 06	691	0.7-	0.2+	1998 10 13	725	0.4+	0.2-				

(10848)* 1995 BD₁ = 1980 TN₁₄

Discovered 1995 Jan. 25 by T. Kobayashi at Oizumi.

Id. G. V. Williams (*MPC* 31105)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			199.73523			(2000.0)			P			Q		
<i>n</i>	0.29113417	ω	298.16860	+0.80274789	-0.59198808									
<i>a</i>	2.2546230	Ω	98.21702	+0.56937783	+0.72516501									
<i>e</i>	0.1538752	<i>i</i>	4.15640	+0.17721377	+0.35168995									
<i>P</i>	3.39	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	2							

Residuals in seconds of arc

1980 10 13	095	0.1+	0.2-	1997 11 29	704	0.4-	0.2-	1999 04 12	704	0.6-	0.4-
1995 01 25	411	0.8+	0.3-	1997 11 29	704	1.0-	0.5-	1999 04 19	704	0.2-	0.5+
1995 01 25	411	0.7-	0.6+	1997 11 29	704	0.3-	0.5-	1999 04 19	704	0.6+	0.2+
1995 01 26	411	0.3+	0.8+	1997 12 04	704	0.0	0.4+	1999 04 19	704	0.2+	0.2-
1995 01 26	411	1.1+	0.2-	1997 12 04	704	0.6+	0.0	1999 04 19	704	0.7+	1.0+
1995 01 30	411	0.2-	0.2-	1997 12 04	704	0.8+	1.0-	1999 05 08	703	0.3-	0.9-
1995 01 30	411	0.3-	0.2-	1997 12 04	704	0.3-	1.0-	1999 05 08	703	0.3-	0.4+
1995 02 07	411	0.1-	0.2+	1998 01 01	732	(1.4+ 2.3-)		1999 05 08	703	0.5+	1.2+
1995 02 07	411	0.6+	0.5+	1998 01 01	732	(2.5+ 0.9-)		1999 05 08	703	1.1-	1.0+
1995 02 10	411	0.1+	0.3-	1998 01 01	732	0.2+	0.6+	1999 05 13	704	0.5+	1.6-
1995 02 10	411	0.0	0.3-	1998 01 02	732	1.3+	1.2+	1999 05 13	704	1.3-	1.3-
1995 02 17	411	1.0-	0.3+	1998 01 02	732	1.0-	0.5+	1999 05 13	704	(2.6- 1.3-)	
1995 02 22	033	0.3-	0.3+	1998 01 02	732	1.0+	0.2+	1999 05 13	704	(2.1- 0.1-)	
1995 02 22	033	0.6-	0.4+	1999 04 12	704	0.3+	0.0	1999 05 13	704	0.2-	1.8-
1995 11 29	704	0.3+	1.6-	1999 04 12	704	1.0-	1.6-				
1997 11 29	704	0.1+	0.6-	1999 04 12	704	0.7+	0.7-				

(10849)* 1995 BO₁ = 1980 TA₁₅ = 1992 HV₄

Discovered 1995 Jan. 25 by S. Otomo at Kiyosato.

Id. S. Nakano (*MPC* 25533), G. V. Williams (*ibid.*).

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			84.82922			(2000.0)			P			Q		
<i>n</i>	0.29265047	ω	277.28244	-0.99204929	-0.10992913									
<i>a</i>	2.2468284	Ω	256.42045	+0.12507805	-0.91507027									
<i>e</i>	0.0782906	<i>i</i>	3.61376	-0.01391692	-0.38802318									
<i>P</i>	3.37	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	1							

Residuals in seconds of arc

1980 10 15	095	(4.4+ 0.6+)	1997 12 04	704	0.5+	0.1+	1999 05 13	704	0.1-	0.7+
1992 04 23	809	0.1+ 1.4+	1997 12 04	704	0.3+	0.2-	1999 05 13	704	0.7-	0.4+
1992 04 23	809	0.4+ 1.3+	1997 12 04	704	0.1-	0.3+	1999 05 13	704	0.6-	1.4+
1992 04 23	809	0.9+ 1.4+	1997 12 04	704	0.2+	0.5-	1999 05 18	704	0.7+	0.6+
1992 04 24	809	0.5+ 0.9+	1997 12 30	566	0.7-	0.4+	1999 05 18	704	1.2+	0.8-
1992 04 24	809	1.2+ 1.3+	1997 12 30	566	0.7-	0.1+	1999 05 18	704	0.2+	1.5+
1992 05 05	033	0.6+ 0.2-	1997 12 30	566	0.8-	0.3+	1999 05 19	704	0.8-	0.2-
1992 05 05	033	0.1- 0.1+	1997 12 31	704	0.3+	0.3-	1999 05 19	704	0.1+	0.0
1993 09 20	675	0.4+ 0.3-	1997 12 31	704	0.2+	0.2-	1999 05 19	704	0.1-	0.2-
1993 09 20	675	0.4- 1.1-	1997 12 31	704	0.0	0.6-	1999 05 19	704	0.1-	0.0
1995 01 25	894	0.3- 0.7+	1997 12 31	704	0.1+	0.9-	1999 05 19	704	0.7-	0.3+
1995 01 25	894	0.2- 0.8+	1998 01 02	704	0.4+	0.1-	1999 05 26	704	0.1-	1.2-
1995 01 27	894	0.2- 0.0	1998 01 02	704	0.4+	0.5-	1999 05 26	704	0.2-	0.3+
1995 01 27	894	1.3- 1.0-	1998 01 02	704	0.7+	0.3-	1999 05 26	704	0.1+	0.1-
1995 01 31	905	0.3- 0.3-	1998 01 02	704	0.1+	0.8-	1999 05 26	704	0.4-	1.6-
1995 01 31	905	0.1+ 0.5-	1999 02 26	704	0.1-	0.7-	1999 05 26	704	0.6-	0.1+
1995 02 01	894	0.0 0.2+	1999 02 26	704	(2.2+ 1.4+)		1999 06 09	704	0.1+	1.3-
1995 02 01	894	0.1- 0.6-	1999 02 26	704	0.1+	1.0-	1999 06 09	704	0.9+	0.9-
1995 02 02	905	0.1- 1.4-	1999 02 26	704	(1.5+ 2.8-)		1999 06 09	704	0.4+	1.9-
1995 02 02	905	0.4+ 0.9-	1999 05 09	739	0.5+	0.6+	1999 06 09	704	0.2+	1.4-

M.P.C. 34783

1995 02 05	894	0.7+	1.1-	1999 05 09	739	0.3+	0.2+	1999 06 09	704	0.1-	1.0-
1995 02 05	894	1.8-	1.0-	1999 05 10	704	0.4+	0.9-	1999 06 15	704	0.1-	0.8-
1997 11 29	704	(2.7- 0.8+)		1999 05 10	704	0.7+	1.0-	1999 06 15	704	0.3-	0.2+
1997 11 29	704	(2.4- 0.3+)		1999 05 10	704	0.0	1.5-	1999 06 15	704	0.6-	0.0
1997 11 29	704	(2.6- 0.3-)		1999 05 10	704	0.0	1.0-	1999 06 15	704	0.1-	0.2+
1997 11 29	704	(2.7- 0.3-)		1999 05 10	704	0.2+	0.9-	1999 06 15	704	0.7-	0.2-
1997 11 29	704	(2.5- 0.2+)		1999 05 13	704	1.2-	0.2-				
1997 12 04	704	0.8+	0.1-	1999 05 13	704	0.2-	0.6+				

(10850)* 1995 BU₄

Discovered 1995 Jan. 26 by A. Nakamura at Kuma Kogen.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			220.32147			(2000.0)			P			Q		
<i>n</i>	0.29958553	ω	11.60918	+0.87466429	-0.48274811									
<i>a</i>	2.2120188	Ω	17.46183	+0.43223522	+0.73587535									
<i>e</i>	0.1901235	<i>i</i>	8.38924	+0.21939710	+0.47480705									
<i>P</i>	3.29	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	2							

Residuals in seconds of arc

1995 01 26	360	0.1+	0.3-	1995 04 03	360	0.8+	0.1-	1997 12 27	360	0.1-	0.1+
1995 01 26	360	0.3+	0.4-	1995 04 03	360	0.2+	0.8+	1997 12 27	360	0.1-	0.1-
1995 01 26	360	0.0	0.4-	1996 05 24	360	0.1-	0.3+	1998 01 27	360	0.8-	0.1+
1995 02 10	360	0.2+	0.2+	1996 05 24	360	0.1-	0.5+	1998 01 27	360	0.3-	0.0
1995 02 10	360	0.1+	0.0	1996 05 24	360	0.1-	0.0	1999 04 07	360	0.4+	0.4+
1995 02 10	360	0.2-	0.1-	1996 06 15	360	0.0	0.3+	1999 04 07	360	0.8+	0.4-
1995 02 19	360	0.1+	0.3+	1996 06 15	360	0.0	0.3-	1999 04 07	360	0.5+	0.3-
1995 02 19	360	0.1-	0.3+	1996 06 15	360	0.4+	0.1-	1999 04 14	360	1.3-	1.4-
1995 02 19	360	0.0	0.0	1997 11 23	360	0.0	0.0	1999 04 14	360	0.0	1.3-
1995 02 24	360	0.4-	0.7+	1997 11 23	360	0.2+	0.0	1999 05 06	360	0.2+	0.5+
1995 02 24	360	0.4-	0.4+	1997 11 30	360	0.8+	0.4-	1999 05 06	360	0.6+	0.0
1995 03 06	360	0.2+	0.3+	1997 11 30	360	0.4+	0.8-	1999 05 13	360	0.5-	0.2+
1995 03 06	360	0.1+	0.3+	1997 12 21	360	0.2-	0.1-	1999 05 13	360	1.0-	0.3-
1995 04 03	360	0.3-	0.4-	1997 12 21	360	0.0	0.2-	1999 05 13	360	0.6-	0.4+

(10851)* 1995 CE = 1988 BU₁ = 1997 WA₅₇

Discovered 1995 Feb. 1 by T. Kobayashi at Oizumi.

Id. A. Gnädig (*MPC* 31727), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			143.63717			(2000.0)			P			Q		
<i>n</i>	0.28268447	ω	4.54117	-0.15580114	-0.98333753									
<i>a</i>	2.2993306	Ω	94.44234	+0.90329366	-0.18020487									
<i>e</i>	0.1136999	<i>i</i>	5.39078	+0.39973312	+0.02394799									
<i>P</i>	3.49	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	2							

Residuals in seconds of arc

1988 01 22	511	1.2+	0.3-	1997 12 04	704	(3.5+ 0.1-)	1999 05 18	704	0.7-	0.2+	
1988 01 22	511	1.4-	0.7+	1997 12 04	704	0.6-	0.6+	1999 05 18	704	0.7-	1.0+
1995 02 01	411	0.9-	0.4-	1998 01 27	910	1.2-	0.2+	1999 05 18	704	0.1+	0.2+
1995 02 01	411	0.0	0.7-	1998 01 27	910	1.2-	0.2+	1999 05 18	704	1.4-	0.7-
1995 02 03	411	0.4+	0.1-	1998 01 27	910	1.1-	0.2+	1999 05 19	704	0.6+	0.5+
1995 02 03	411	0.1-	0.3-	1999 04 14	699	0.5-	1.5+	1999 05 19	704	0.6-	0.4-
1995 02 07	411	0.2+	0.2+	1999 04 14	699	0.7+	0.0	1999 05 19	704	0.7+	0.7+
1995 02 07	411	0.5-	0.1+	1999 04 14	699	0.7+	1.2+	1999 05 19	704	1.1-	0.6+
1995 02 10	411	0.5-	0.2+	1999 04 19	704	0.6-	0.5-	1999 06 07	703	0.6+	0.7+
1995 02 10	411	0.0	0.2+	1999 04 19	704	0.1+	0.3+	1999 06 07	703	0.4+	0.2+
1995 02 19	411	0.7+	0.3+	1999 04 19	704	0.1-	0.3+	1999 06 07	703	0.6-	0.8-
1995 02 19	411	1.1+	0.1-	1999 04 19	704	0.2+	0.2-	1999 06 07	703	0.1+	0.6-
1995 03 01	411	0.3-	0.4-	1999 05 10	704	0.8-	1.0-	1999 06 10	704	1.1+	0.8+
1995 03 01	411	0.1+	0.7-	1999 05 10	704	0.3-	0.8+	1999 06 10	704	0.4+	0.3-
1997 11 29	704	(0.4+	2.6+)	1999 05 10	704	0.7+	0.1-	1999 06 10	704	0.9+	1.0-
1997 11 29	704	0.9-	0.9-	1999 05 10	704	1.4-	0.2-	1999 06 10	704	0.0	0.7-
1997 11 29	704	0.5+	0.4+	1999 05 10	704	0.4+	0.5+	1999 06 10	704	0.9+	0.7-
1997 11 29	704	0.1+	0.2+	1999 05 13	704	0.1+	0.1+	1999 06 14	704	0.6+	0.5-
1997 11 29	704	0.0	0.2-	1999 05 13	704	0.6+	0.1-	1999 06 14	704	0.7+	0.5-
1997 12 04	704	1.3+	0.4+	1999 05 13	704	0.9-	0.5-	1999 06 14	704	0.5+	0.3-

M.P.C. 34784

1999 JUNE 22

1997 12 04 704 0.9+ 0.4+ 1999 05 13 704 0.1- 1.1+ 1999 06 14 704 0.7+ 0.3-
 1997 12 04 704 0.3+ 0.1- 1999 05 13 704 1.0- 0.1+ 1999 06 14 704 0.1- 0.1-

(10852)* 1995 CK

Discovered 1995 Feb. 1 by T. Kobayashi at Oizumi.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	164.75898		(2000.0)		P		Q
<i>n</i>	0.27594061	ω	313.25855	+0.37417175		-0.91981584	
<i>a</i>	2.3366427	Ω	114.42214	+0.88397080		+0.31528413	
<i>e</i>	0.0886509	<i>i</i>	7.44900	+0.28034110		+0.23352673	
<i>P</i>	3.57	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1993 08 17	675	0.9-	0.3-	1997 11 30	566	0.1-	0.4+	1999 04 16	704	0.4-	0.9+
1993 08 17	675	0.7+	0.0	1997 11 30	566	0.3-	0.4+	1999 04 19	704	0.5+	0.5+
1995 02 01	411	0.0	0.2+	1997 12 27	688	0.0	0.6+	1999 04 19	704	0.2-	0.4+
1995 02 01	411	0.5-	0.0	1997 12 27	688	0.5+	0.4+	1999 04 19	704	1.0+	0.2+
1995 02 03	411	0.6+	0.5-	1998 03 22	327	0.5-	0.5+	1999 04 19	704	0.6+	0.2+
1995 02 03	411	0.6+	0.5-	1998 03 22	327	0.2-	0.1+	1999 04 19	704	0.2+	0.5+
1995 02 07	411	0.9-	0.3-	1998 03 22	327	0.8-	0.4-	1999 05 12	704	0.3+	1.1-
1995 02 07	411	1.0-	0.4-	1998 03 22	327	0.6-	0.1-	1999 05 12	704	0.1+	1.5-
1995 02 10	411	0.1+	0.2+	1999 04 12	704	0.5+	1.6-	1999 05 12	704	0.1-	1.0-
1995 02 10	411	0.2-	0.6-	1999 04 12	704	0.7+	0.1-	1999 05 12	704	0.5-	1.7-
1995 02 19	411	(0.7- 2.5+)		1999 04 12	704	0.3+	0.5-	1999 05 12	704	0.2-	1.3-
1995 02 19	411	0.4-	1.4+	1999 04 12	704	1.1+	1.2-	1999 05 17	704	1.2-	0.8+
1995 03 05	411	0.8+	0.6-	1999 04 12	704	0.1-	0.6-	1999 05 17	704	1.2+	1.0+
1995 03 05	411	0.6+	0.7-	1999 04 16	704	0.3+	0.9+	1999 05 17	704	0.8-	1.3+
1997 11 29	688	0.3+	0.0	1999 04 16	704	0.8-	1.7+	1999 05 17	704	0.6+	1.5+
1997 11 29	688	0.1+	0.1+	1999 04 16	704	0.8-	2.0+	1999 05 17	704	1.0-	1.2+
1997 11 30	566	0.0	0.2+	1999 04 16	704	0.4-	0.1+				

(10853)* 1995 CW

Discovered 1995 Feb. 6 by T. Kojima at Chiyoda.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	10.44957		(2000.0)		P		Q
<i>n</i>	0.28044572	ω	96.94412	-0.57639325		+0.81318705	
<i>a</i>	2.3115511	Ω	137.52188	-0.78894988		-0.52807215	
<i>e</i>	0.0694167	<i>i</i>	6.85543	-0.21290584		-0.24467657	
<i>P</i>	3.51	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1993 09 23	675	0.3-	1.0-	1996 06 21	566	0.4+	0.5+	1999 04 19	704	0.8+	0.3-
1993 09 23	675	0.5-	0.2+	1996 06 21	566	0.3+	0.5+	1999 04 19	704	0.3-	1.1+
1993 10 10	675	0.4-	0.9-	1996 06 21	566	0.2+	0.5+	1999 04 19	704	0.0	0.1-
1993 10 12	675	0.8+	1.6+	1996 08 09	566	0.1-	0.3+	1999 05 12	704	0.0	0.2-
1993 10 12	675	0.3+	1.0+	1996 08 09	566	0.5-	0.1+	1999 05 12	704	0.4-	0.3+
1995 02 06	897	0.2-	0.0	1996 08 09	566	0.5-	0.2+	1999 05 12	704	0.1-	0.8-
1995 02 06	897	0.1+	0.5+	1999 04 12	704	0.4-	0.6+	1999 05 12	704	0.5-	0.2-
1995 02 06	897	0.7-	0.1-	1999 04 12	704	0.4-	0.2+	1999 05 12	704	1.1-	0.6-
1995 02 07	897	0.4-	0.5-	1999 04 12	704	0.3-	0.1+	1999 05 15	704	0.6+	0.4+
1995 02 07	897	1.0-	0.1-	1999 04 12	704	0.6-	0.8-	1999 05 15	704	1.0+	1.9+
1995 02 07	897	1.3+	1.3+	1999 04 14	367	0.0	0.2-	1999 05 15	704	0.8-	1.1+
1995 02 10	897	0.0	0.6-	1999 04 14	367	0.0	0.5-	1999 05 15	704	(2.7- 0.3+)	
1995 02 10	897	0.6-	0.1+	1999 04 16	704	0.1+	0.9-	1999 05 15	704	(1.2+ 2.4+)	
1995 02 19	897	0.3-	0.7+	1999 04 16	704	0.6+	0.2-	1999 05 17	704	0.6-	0.1-
1995 02 19	897	0.2+	0.3+	1999 04 16	704	0.2+	0.2-	1999 05 17	704	0.6+	0.4-
1995 03 01	897	0.8+	0.1-	1999 04 16	704	0.5+	0.4+	1999 05 17	704	0.8+	0.8-
1995 03 01	897	1.0+	0.7+	1999 04 19	704	0.0	0.4+	1999 05 17	704	0.1-	0.5+
1995 03 01	897	0.3+	0.4+	1999 04 19	704	0.4+	0.5-	1999 05 17	704	(2.3- 1.2+)	

(10854)* 1995 DO₁ = 1980 GS₁

Discovered 1995 Feb. 22 by T. Kobayashi at Oizumi.

Id. T. Kobayashi (*MPC* 25072)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	33.90636		(2000.0)		P		Q
<i>n</i>	0.26069551	ω	174.68294	-0.88279264		+0.46745153	
<i>a</i>	2.4268728	Ω	33.31362	-0.43406247		-0.77380450	
<i>e</i>	0.1872455	<i>i</i>	4.86124	-0.17962995		-0.42745253	
<i>P</i>	3.78	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1980 04 08	675	0.3+	0.2+	1999 04 13	750	0.2-	0.3+	1999 05 10	704	0.3+	0.3+
1980 04 09	675	0.1-	0.1-	1999 04 13	750	0.0	0.0	1999 05 10	704	0.1-	0.1-
1991 02 10	675	0.8-	0.1-	1999 04 13	750	0.3+	0.1+	1999 05 10	704	0.1-	0.9+
1991 02 10	675	0.7-	0.6+	1999 04 14	367	0.2-	0.3-	1999 05 10	704	1.1-	0.4+
1995 02 22	411	0.4+	1.6-	1999 04 14	367	0.0	0.6-	1999 05 13	704	0.2+	0.4-
1995 02 22	411	0.7+	0.0	1999 04 15	704	0.5+	0.4-	1999 05 13	704	0.1+	0.6+
1995 02 26	411	0.5+	0.1-	1999 04 15	704	0.2+	0.5-	1999 05 13	704	0.8-	0.9-
1995 02 26	411	0.2+	0.7+	1999 04 15	704	0.1-	0.3-	1999 05 13	704	1.2+	0.2-
1995 02 27	411	0.1-	0.7+	1999 04 15	704	0.3+	0.8+	1999 05 13	704	0.7-	0.9-
1995 02 27	411	0.6+	0.2-	1999 04 16	727	0.6-	0.3+	1999 05 14	704	0.2-	0.3-
1995 03 05	411	0.3-	0.1-	1999 04 16	727	0.4-	0.1+	1999 05 14	704	0.6+	0.2+
1995 03 05	411	0.5-	0.4+	1999 04 16	727	0.8-	0.2-	1999 05 14	704	0.6-	0.5-
1995 03 06	411	0.3+	0.0	1999 04 17	727	0.8-	0.5-	1999 05 14	704	0.3-	0.3-
1995 03 06	411	0.2-	0.3-	1999 04 17	727	0.3-	0.4+	1999 05 14	704	0.2-	0.1-
1995 03 27	675	0.2-	0.3-	1999 04 17	727	0.3+	0.3+	1999 05 15	703	0.5+	0.4-
1997 11 26	704	(2.6- 1.8-)		1999 04 17	704	0.7-	0.4-	1999 05 15	703	0.0	0.4+
1997 11 26	704	(2.8- 0.3-)		1999 04 17	704	0.3+	0.3-	1999 05 15	703	0.4+	0.5+
1997 11 29	704	0.6+	1.9+	1999 04 17	704	0.6-	0.3-	1999 05 15	703	1.3+	0.3+
1997 11 29	704	0.3+	0.3-	1999 04 17	704	0.5-	0.0	1999 05 18	704	1.2+	0.7-
1997 11 29	704	0.8+	0.4+	1999 04 17	704	1.3-	0.1-	1999 05 18	704	0.1-	0.5+
1997 11 29	704	0.3+	1.1-	1999 04 18	426	0.3+	0.1-	1999 05 18	704	0.2-	0.2+
1997 11 29	704	1.6-	0.5-	1999 04 18	426	0.2+	0.1-	1999 05 18	704	0.2-	0.6+
1997 12 05	704	1.9+	1.5+	1999 04 19	426	0.1+	0.3-	1999 05 18	704	0.2+	1.0+
1997 12 05	704	1.3-	2.0-	1999 04 19	426	0.1+	0.1-	1999 05 19	704	1.2+	0.6-
1997 12 05	704	(0.8+ 2.2-)		1999 04 19	426	0.2+	0.2-	1999 05 19	704	0.8+	0.4+
1997 12 05	704	0.4-	0.2-	1999 04 20	704	0.3+	1.0-	1999 05 19	704	0.2+	0.2-
1998 01 29	327	1.0-	0.2+	1999 04 20	704	0.1+	0.4-	1999 05 19	704	0.1-	0.2-
1998 01 29	327	0.7+	0.3+	1999 04 20	704	1.1+	1.6+	1999 05 19	704	0.4-	0.7+
1998 01 29	327	0.1+	0.8+	1999 04 20	704	1.0-	1.0+				
1999 04 13	750	0.1-	0.4+	1999 05 10	704	0.2-	0.1+				

(10855)* 1995 DR₁

Discovered 1995 Feb. 26 by T. Kobayashi at Oizumi.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	130.61231		(2000.0)		P		Q
<i>n</i>	0.27362020	ω	337.78085	-0.40868049		-0.90707313	
<i>a</i>	2.3498345	Ω	136.16551	+0.85776904		-0.41953530	
<i>e</i>	0.0655177	<i>i</i>	8.38446	+0.31178924		-0.03476292	
<i>P</i>	3.60	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1993 09 18	675	0.6-	0.8-	1999 04 19	704	0.2+	0.1-	1999 05 17	704	1.4+	0.8-
1993 09 18	675	0.2+	0.1-	1999 04 19	704	0.3+	0.1+	1999 05 17	704	1.0-	1.4-
1993 09 23	675	0.8+	0.5-	1999 05 07	703	1.0-	0.8+	1999 05 17	704	1.0-	1.3-
1993 09 23	675	0.4+	0.5+	1999 05 07	703	0.2-	1.5+	1999 05 18	703	0.4+	1.1+
1993 10 09	675	0.3-	0.4-	1999 05 07	703	0.6-	0.8+	1999 05 18	703	0.3-	0.5+
1993 10 09	675	1.1-	0.8-	1999 05 07	703	0.7-	1.3+	1999 05 18	703	0.2-	1.2+
1993 10 10	675	1.1+	1.3+	1999 05 12	704	0.4+	0.4-	1999 05 18	703	0.3+	1.5+
1993 10 10	675	0.2-	0.1-	1999 05 12	704	0.8+	0.5-	1999 05 21	704	1.3+	1.2-
1995 02 22	411	0.1+	0.5+	1999 05 12	704	0.3+	1.2-	1999 05 21	704	1.7+	1.4-
1995 02 22	411	0.1-	0.3-	1999 05 12	704	0.3-	0.3-	1999 05 21	704	0.6+	1.7-
1995 02 26	411	0.6+	0.5-	1999 05 12	704	0.3					

1999 JUNE 22

M.P.C. 34785

1995 03 20	411	0.5−	0.5−	1999 05 16	703	0.4−	0.9+	1999 06 14	704	0.5−	0.4+
1997 12 29	688	0.1−	0.0	1999 05 16	703	0.9−	1.2+	1999 06 14	704	0.6−	0.0
1997 12 29	688	0.0	0.1+	1999 05 16	703	1.0−	0.5+	1999 06 14	704	0.0	0.1−
1999 04 19	704	0.6+	0.5+	1999 05 17	704	1.7+	0.6−	1999 06 14	704	1.2−	0.2+
1999 04 19	704	0.5+	0.3+	1999 05 17	704	0.8+	0.3+	1999 06 14	704	0.3−	0.2−

(10856)* 1995 EG₈ = 1991 SJ₄

Discovered 1995 Mar. 4 by F. Börngen at Tautenburg.

Id. E. Bowell (*MPC* 30983)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17523524	<i>ω</i>	310.77465	+0.58270490	+0.81153589		
<i>a</i>	3.1626788	<i>Ω</i>	354.33694	−0.54900904	+0.35391532		
<i>e</i>	0.2428789	<i>i</i>	25.94977	−0.59920287	+0.46492305		
<i>P</i>	5.62	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1954 01 05	675	0.1−	1.1−	1995 03 07	033	0.1−	0.0	1998 12 12	704	1.1+	1.0−
1954 01 05	675	0.9−	0.8−	1995 03 23	033	0.2+	0.4+	1998 12 12	704	0.6+	1.2−
1974 08 20	413	0.3+	0.1+	1995 03 23	033	0.3+	0.2+	1998 12 12	704	(2.3−	2.3−)
1974 08 20	413	0.4+	0.2−	1997 10 28	688	0.6−	0.2+	1998 12 17	113	0.6+	0.3+
1984 03 11	413	0.5−	0.1−	1997 10 28	688	0.0	0.1−	1998 12 17	113	0.0	0.2+
1984 03 11	413	0.6−	0.4−	1997 10 29	688	0.0	0.1+	1998 12 17	113	0.2−	0.1−
1991 09 16	675	0.5+	0.7+	1997 10 29	688	0.2−	0.1+	1999 01 17	113	0.0	0.3+
1991 09 16	675	0.9+	0.2−	1997 10 29	566	0.3−	0.2−	1999 01 17	113	0.0	0.1−
1991 10 01	413	0.3+	0.8−	1997 10 29	566	0.2−	0.2−	1999 01 18	113	0.3−	0.4+
1991 10 01	413	0.7−	0.5−	1997 10 29	566	0.3−	0.3−	1999 01 18	113	0.5−	0.5+
1995 03 04	033	0.0	0.1−	1998 12 12	704	0.5+	1.1+				
1995 03 05	033	0.4−	0.1−	1998 12 12	704	0.1+	0.1+				

(10857)* 1995 EZ₈ = 1988 LY = 1996 TY₅₂

Discovered 1995 Mar. 5 by F. Börngen at Tautenburg.

Id. G. V. Williams (*MPC* 28302)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26793213	<i>ω</i>	64.69258	−0.62430745	+0.78111147		
<i>a</i>	2.3829751	<i>Ω</i>	166.66094	−0.73174703	−0.58015812		
<i>e</i>	0.1650114	<i>i</i>	2.54658	−0.27347121	−0.23082770		
<i>P</i>	3.68	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1984 03 11	413	0.6−	0.1−	1999 03 24	704	(2.2+	0.3+)	1999 05 18	704	0.3−	1.0+
1984 03 11	413	0.2−	0.1−	1999 04 22	113	0.7+	0.5−	1999 05 18	113	0.9−	0.6+
1988 06 08	675	0.4+	1.6−	1999 04 22	113	(2.6+	0.3−)	1999 05 19	113	0.7+	0.1+
1988 06 08	675	(0.4−	2.6−)	1999 05 10	113	0.0	0.3+	1999 05 19	704	0.5+	1.0−
1991 01 22	675	0.6+	0.6+	1999 05 10	113	0.7−	0.1−	1999 05 19	704	0.5−	0.6−
1991 01 22	675	1.3−	1.2+	1999 05 10	704	1.4+	1.3−	1999 05 19	704	(0.7+	2.7−)
1992 07 27	010	(4.4−	2.7−)	1999 05 10	704	(0.2+	3.2−)	1999 05 19	704	0.5−	0.8+
1992 07 27	010	(2.4−	1.7−)	1999 05 10	704	0.2−	1.1−	1999 05 19	704	0.4+	0.8−
1992 07 27	010	(3.2−	2.9−)	1999 05 10	704	0.7+	0.3−	1999 05 22	106	0.5+	0.1−
1995 02 24	033	0.3+	0.2−	1999 05 10	704	0.0	0.3−	1999 05 22	106	0.2+	0.1+
1995 03 05	033	0.5−	0.3+	1999 05 13	727	0.6+	0.5+	1999 05 22	106	(2.3−	2.7+)
1995 03 05	033	0.1+	0.6+	1999 05 13	727	0.3+	0.6+	1999 06 09	704	0.4+	0.3+
1995 03 07	033	1.1−	0.5+	1999 05 13	727	0.6+	1.1+	1999 06 09	704	0.4−	0.2+
1995 03 29	033	1.9+	1.2−	1999 05 13	704	0.1+	0.0	1999 06 09	704	0.3−	0.1+
1995 03 30	033	1.4+	0.9−	1999 05 13	704	0.5+	1.1+	1999 06 09	704	0.5−	1.3+
1996 10 05	809	0.6+	0.7+	1999 05 13	704	0.2+	0.5+	1999 06 09	704	2.0−	0.8+
1996 10 05	809	1.3−	0.4+	1999 05 13	704	0.2−	2.0−	1999 06 12	703	(4.8−	1.8+)
1996 10 05	809	0.9−	1.5+	1999 05 13	704	1.4−	1.7−	1999 06 12	703	1.5−	1.7+
1996 10 06	809	0.7+	1.1−	1999 05 14	704	0.9+	0.2+	1999 06 12	703	1.9+	0.8+
1996 10 06	809	0.9+	0.6−	1999 05 14	704	0.0	0.3+	1999 06 12	703	(4.7+	0.4+)
1996 10 06	809	0.1+	0.6−	1999 05 14	704	0.6+	0.6−	1999 06 15	704	0.2−	0.0
1999 02 26	704	0.3+	0.7−	1999 05 14	704	0.3+	0.1+	1999 06 15	704	0.6−	0.2−
1999 02 26	704	0.5+	1.3+	1999 05 14	704	0.4+	0.5−	1999 06 15	704	0.4−	0.1−
1999 02 26	704	1.1−	0.2+	1999 05 18	704	0.3+	0.5+	1999 06 15	704	0.4−	0.1−

1999 02 26	704	1.5−	0.9−	1999 05 18	704	0.7+	0.1+	1999 06 15	704	0.7−	0.2+
1999 03 24	704	0.6+	0.0	1999 05 18	704	0.7+	0.3+				
1999 03 24	704	1.8−	0.1+	1999 05 18	704	0.8−	0.6+				

(10858)* 1995 FT = 1996 RD₂

Discovered 1995 Mar. 28 by T. Kobayashi at Oizumi.

Id. G. V. Williams (*MPC* 27918)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.25952740	<i>ω</i>	68.69515	−0.85286028	+0.52076184		
<i>a</i>	2.4341494	<i>Ω</i>	142.65932	−0.49922310	−0.79200988		
<i>e</i>	0.1451261	<i>i</i>	3.58246	−0.15298901	−0.31863374		
<i>P</i>	3.80	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1995 03 28	411	0.8+	0.5+	1997 12 05	704	0.7−	0.2−	1999 05 18	704	0.8−	0.5+
1995 03 28	411	0.0	0.9+	1997 12 05	704	0.3−	1.8−	1999 05 18	704	0.8−	1.0+
1995 04 01	411	0.2−	0.5−	1998 01 16	411	0.1−	1.4+	1999 05 19	704	0.1+	0.8−
1995 04 01	411	0.4−	0.2−	1998 01 16	411	0.1+	1.2+	1999 05 19	704	0.2+	1.0−
1995 04 04	411	1.6−	1.0−	1999 03 24	704	1.2−	0.1−	1999 05 19	704	0.6−	0.3+
1995 04 04	411	0.9−	0.4−	1999 03 24	704	1.9+	1.2−	1999 05 19	704	0.9−	0.1−
1995 04 07	411	0.3−	0.2+	1999 03 24	704	(2.8+	0.7−)	1999 05 22	952	1.2+	0.4+
1995 04 07	411	0.9−	0.0	1999 05 08	367	0.4−	0.0	1999 05 22	952	0.8+	0.5+
1995 04 19	411	0.5+	0.2−	1999 05 08	367	0.7−	0.2+	1999 05 23	952	1.1+	0.7+
1995 04 19	411	0.6+	0.2−	1999 05 10	704	0.6−	0.7+	1999 06 06	703	0.2−	0.5+
1995 04 26	411	0.5+	1.2−	1999 05 10	704	0.4−	0.1+	1999 06 06	703	0.4+	0.0
1995 04 26	411	0.8+	1.7−	1999 05 10	704	0.3−	0.3+	1999 06 06	703	0.2−	0.3−
1996 09 08	566	0.3+	0.4+	1999 05 10	704	0.3+	0.6−	1999 06 06	703	0.0	0.8−
1996 09 08	566	0.1+	0.3+	1999 05 13	704	0.1−	0.6+	1999 06 09	704	0.7+	0.9−
1996 09 08	566	0.4+	0.3+	1999 05 13	704	0.1+	0.8+	1999 06 09	704	0.5+	0.1+
1996 09 14	566	0.0	0.3−	1999 05 13	704	0.3−	1.3+	1999 06 09	704	0.1−	0.4−
1996 09 14	566	0.2+	0.4−	1999 05 13	704	0.3−	1.6+	1999 06 09	704	0.4+	0.8−
1996 09 14	566	0.1+	0.3−	1999 05 14	704	1.1+	1.1−	1999 06 09	704	1.1−	0.7−
1996 10 11	566	0.4+	0.7−	1999 05 14	704	0.5+	1.0+	1999 06 14	704	0.4+	0.2−
1996 10 11	566	0.9−	0.9−	1999 05 14	704	1.2+	0.3−	1999 06 14	704	0.2−	0.8−
1996 10 11	566	0.2+	0.7−	1999 05 14	704	0.7+	0.0	1999 06 14	704	0.2−	0.5−
1997 12 05	704	0.3−	0.5−	1999 05 18	704	0.3−	0.7+	1999 06 14	704	0.5+	0.2−
1997 12 05	704	0.4+	0.8−	1999 05 18	704	0.7−	0.4+	1999 06 14	704	0.8−	0.4−
1997 12 05	704	0.8+	0.1−	1999 05 18	704	0.5−	0.5+				

(10859)* 1995 GJ₇ = 1982 FM

Discovered 1995 Apr. 1 by S. Otomo at Kiyosato.

Id. S. Nakano (*MPC* 25434)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22721725	<i>ω</i>	200.72422	−0.80485248	+0.59187330		
<i>a</i>	2.6597563	<i>Ω</i>	15.79948	−0.51949198	−0.66711961		
<i>e</i>	0.1564363	<i>i</i>	9.20864	−0.28695047	−0.45236868		
<i>P</i>	4.34	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1982 03 21	688	1.9−	1.8−	1998 11 25	704	1.8−	1.2−	1999 02 13	704	1.0+	0.7+
1982 03 21	688	1.6+	1.4−	1998 11 25	704	1.1−	0.2+	1999 02 13	704	0.7+	0.2+
1982 04 01	704	(0.1−	3.1+)	1999 01 25	595	0.3−	0.6+	1999 02 13	704	0.5+	0.7+
1982 04 02	704	(0.7−	7.7+)	1999 01 25	595	0.2+	0.6+	1999 02 13	704	0.0	0.1−
1993 11 17	801	0.9−	0.9−	1999 02 10	704	0.1−	0.7−	1999 02 18	566	0.1−	0.2−
1993 11 17	801	1.2−	0.8−	1999 02 10	704	1.2+	0.1+	1999 02 18	566	0.1+	0.2−
1995 04 01	894	0.1+	1.1−	1999 02 10	704	0.1+	0.3−	1999 02 18	566	0.2−	0.2−
1995 04 01	894	0.3+	0.2−	1999 02 10	704	0.4+	0.1+	1999 02 20	699	0.0	0.7+
1995 04 03	894	1.5−	1.4+	1999 02 10	704	0.5+	0.3−	1999 02 20	699	0.1+	1.2+
1995 04 03	894	0.5−	1.4+	1999 02 11	704	1.4+	0.2−	1999 02 20	699	0.1−	1.1+
1995 04 04	894	0.5−	0.9+	1999 02 11	704	1.4+	0.3−	1999 04 06	704	0.2+	1.0+
1995 04 04	894	0.5−	0.3+	1999 02 11	704	1.3+	0.2−	1999 04 06	704	(2.1+	(0.7+)
1995 04 20	894	(2.6−	0.4−)	1999 02 11	704	0.3+	0.2−	1999 04 06	704	(3.0+	2.8+)
1995 04 20	894	(2.2−	0.4+)	1999 02 11	704	1.2+	0.1−	1999 04 06	704	1.1+	0.8−

1995 04 23	894	0.3-	0.3-	1999 02 11	704	0.7+	0.2+	1999 05 08	704	0.0	0.8-
1995 04 23	894	0.2+	1.0+	1999 02 11	704	0.5+	0.1+	1999 05 08	704	1.5-	0.5-
1995 04 28	894	1.6-	1.3+	1999 02 11	704	0.1-	1.1-	1999 05 08	704	0.1-	0.5+
1995 04 28	894	0.4+	0.2-	1999 02 11	704	0.2+	0.0	1999 05 08	704	0.8+	0.8-
1996 09 12	566	0.6+	0.7+	1999 02 11	704	0.2+	0.5-	1999 05 08	704	0.1+	1.6-
1996 09 12	566	0.4+	1.1+	1999 02 11	704	0.7+	0.0	1999 06 04	703	0.8+	0.3+
1996 09 12	566	0.2+	1.1+	1999 02 11	704	0.6-	1.2-	1999 06 04	703	0.5+	0.9+
1997 11 26	566	0.8-	0.0	1999 02 11	704	1.0-	0.6-	1999 06 04	703	0.6-	1.5+
1997 11 26	566	0.4-	0.1-	1999 02 11	704	0.7-	0.8+	1999 06 04	703	0.1-	0.2-
1997 11 26	566	0.8-	0.2-	1999 02 11	704	1.1-	0.7+	1999 06 07	704	0.3+	1.4+
1998 11 25	704	0.6-	0.2-	1999 02 13	716	0.4+	0.6+	1999 06 07	704	0.4-	0.7-
1998 11 25	704	1.2-	0.2-	1999 02 13	716	1.3+	0.2+	1999 06 07	704	0.6-	0.4-
1998 11 25	704	1.6-	0.8+	1999 02 13	704	0.3+	0.3-	1999 06 07	704	0.1+	1.3-

(10860)* 1995 LE

Discovered 1995 June 3 by Spacewatch at Kitt Peak.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	347.88812		<i>P</i>	<i>Q</i>
<i>n</i>	0.23749491	ω	75.34495	+0.88801043
<i>a</i>	2.5824575	Ω	257.58942	-0.44480316
<i>e</i>	0.5719250	<i>i</i>	4.14833	-0.11656594
<i>P</i>	4.15	<i>H</i>	17.3	<i>G</i> 0.15
				<i>U</i> 1

Residuals in seconds of arc

1995 06 03	691	0.9-	0.4-	1995 08 27	897	0.3-	0.9-	1995 11 16	360	0.1-	0.1+
1995 06 03	691	0.6-	0.3-	1995 08 27	897	0.8-	0.1+	1995 11 16	360	0.1-	0.1-
1995 06 03	691	0.6-	0.1+	1995 08 30	816	0.0	0.3-	1995 11 17	608	0.1+	0.4+
1995 06 04	691	0.3-	0.3-	1995 08 30	816	0.0	0.4-	1995 11 17	608	0.0	0.7+
1995 06 04	691	0.6-	0.3+	1995 08 30	816	0.1-	0.3-	1995 11 17	360	0.3-	0.2-
1995 06 05	691	0.4+	0.8-	1995 08 30	816	0.0	0.2-	1995 11 17	360	0.0	0.2+
1995 06 05	691	0.6+	0.6-	1995 09 03	816	0.1+	0.2-	1995 11 17	360	0.1-	0.2+
1995 06 07	691	0.7+	0.3+	1995 09 03	816	0.0	0.0	1995 11 19	658	0.8-	0.1-
1995 06 07	691	0.0	0.3-	1995 09 03	816	0.1-	0.1+	1995 11 19	658	0.7-	0.0
1995 06 08	691	0.3-	0.6+	1995 09 03	816	0.0	0.1-	1995 11 19	658	0.9-	0.1+
1995 06 08	691	0.4-	0.7+	1995 09 07	608	0.1+	0.5-	1995 11 19	587	0.8+	0.1-
1995 06 08	691	0.2-	0.8+	1995 09 07	608	0.6+	0.3+	1995 11 19	587	0.1-	0.8-
1995 06 08	413	0.3-	0.1+	1995 09 07	608	0.1+	0.4-	1995 11 20	658	1.3-	0.3-
1995 06 08	413	0.1-	0.3+	1995 09 07	608	0.1+	0.2+	1995 11 20	658	1.2-	0.1-
1995 06 13	568	0.2-	0.2+	1995 09 17	118	0.1+	0.0	1995 11 20	658	1.0-	0.4-
1995 06 19	413	0.8+	0.2-	1995 09 17	118	0.2+	0.1+	1995 11 20	608	0.0	0.0
1995 06 19	413	0.9+	0.2-	1995 09 20	360	0.2+	0.1+	1995 11 20	608	0.1+	0.2+
1995 06 20	413	0.3-	0.3+	1995 09 20	360	0.0	0.2+	1995 11 21	587	0.1-	0.1-
1995 06 20	413	0.1+	0.3+	1995 09 20	360	0.4+	0.3+	1995 11 21	587	0.2+	1.2-
1995 06 21	557	0.6-	0.5+	1995 09 26	108	0.3-	0.8+	1995 11 23	118	0.3-	0.1-
1995 06 21	557	0.1-	1.1+	1995 09 26	108	0.0	0.2-	1995 11 27	711	0.4+	0.3+
1995 06 21	104	0.0	1.9+	1995 09 26	108	0.1-	0.4+	1995 11 27	711	0.2-	0.0
1995 06 21	104	(0.0	2.2+)	1995 09 27	108	1.8+	0.1-	1995 11 28	711	0.4-	0.0
1995 06 21	104	1.2+	0.3+	1995 09 28	108	0.4+	0.2-	1995 11 28	711	0.3-	0.0
1995 06 21	104	0.9+	0.5+	1995 09 28	108	0.1+	1.7-	1995 12 07	568	0.4-	0.6+
1995 06 23	658	1.5-	0.1-	1995 09 28	108	(1.2+	2.0-)	1995 12 10	587	0.5+	0.6+
1995 06 23	658	1.6-	0.0	1995 10 06	118	0.4+	0.0	1995 12 10	587	0.5+	0.2-
1995 06 23	658	1.2-	0.2+	1995 10 16	118	0.4+	0.2+	1996 01 13	691	0.3-	0.4+
1995 06 30	658	0.7+	0.3+	1995 10 18	587	0.3+	0.1+	1996 01 13	691	0.3+	0.0
1995 06 30	658	0.6-	0.2-	1995 10 18	587	0.4+	0.1+	1996 01 20	711	0.5-	0.0
1995 06 30	658	0.4+	0.5+	1995 10 19	413	0.7+	0.0	1996 01 20	711	0.7-	0.4+
1995 07 01	658	(0.7-	2.9+)	1995 10 19	413	0.6+	0.1+	1996 01 21	711	0.1+	0.3+
1995 07 01	658	(0.8-	3.0+)	1995 10 20	413	0.7+	0.1-	1996 01 21	711	0.9-	0.7+
1995 07 01	658	(0.6-	3.0+)	1995 10 20	413	0.7+	0.1-	1996 02 09	711	0.4+	0.2-
1995 07 06	413	0.0	0.2-	1995 10 22	360	1.0+	0.5+	1996 02 09	711	0.0	0.5-
1995 07 06	413	0.0	0.4-	1995 10 22	360	1.0+	0.6+	1996 02 10	711	0.6-	0.1-
1995 07 20	413	0.1-	0.3+	1995 10 22	360	0.8+	0.6+	1996 02 11	711	1.1+	1.4+
1995 07 20	413	0.3-	0.3+	1995 10 28	118	0.2+	0.4+	1996 02 11	711	0.7+	1.1+
1995 07 20	413	0.0	0.2+	1995 10 28	658	0.0	1.3+	1999 04 14	693	0.7+	0.3-
1995 07 24	104	0.0	1.0+	1995 10 28	658	0.1-	1.2+	1999 04 14	693	1.3+	0.8-
1995 07 24	104	0.6+	0.6+	1995 10 28	658	0.0	1.2+	1999 04 14	693	1.1+	0.0
1995 07 24	104	0.7+	0.2-	1995 10 29	658	0.7-	0.4-	1999 04 15	693	0.2+	0.2-
1995 07 25	711	0.6+	0.8-	1995 10 29	658	0.8-	0.4-	1999 04 15	693	1.2+	0.1+

1995 07 25	711	0.5+	0.9-	1995 10 29	658	0.9-	0.4-	1999 04 15	693	1.3+	0.1-
1995 07 26	711	0.6+	1.1-	1995 10 29	413	0.1-	0.3-	1999 05 06	711	0.3-	0.0
1995 08 06	118	0.4+	0.2+	1995 10 29	413	0.1-	0.4-	1999 05 07	711	0.2-	0.1-
1995 08 06	118	0.7+	0.1+	1995 10 30	658	0.6-	0.3-	1999 05 07	711	0.4-	0.1+
1995 08 07	118	0.1+	0.0	1995 10 30	658	0.5-	0.3-	1999 05 10	704	1.3+	0.7-
1995 08 07	118	0.4+	0.1+	1995 10 30	658	0.5-	0.3-	1999 05 10	704	0.1-	0.2+
1995 08 07	360	0.3+	0.4-	1995 10 30	413	0.0	0.1-	1999 05 10	704	1.1-	1.0+
1995 08 07	360	0.0	0.5-	1995 10 30	413	0.7+	0.4+	1999 05 10	704	0.2+	0.3+
1995 08 07	360	0.1-	0.2-	1995 10 31	658	0.3-	0.0	1999 05 13	360	0.2-	1.1+
1995 08 20	658	1.3-	0.3-	1995 10 31	658	0.2-	0.0	1999 05 13	360	0.7-	0.7+
1995 08 20	658	0.9-	0.3-	1995 10 31	658	0.3-	0.1+	1999 05 13	360	0.1-	0.4+
1995 08 20	658	1.2-	0.2-	1995 10 31	413	0.1+	0.2+	1999 05 18	704	1.2-	0.6-
1995 08 21	658	0.6+	0.0	1995 10 31	413	0.2-	0.3-	1999 05 18	704	0.6+	0.7+
1995 08 21	658	1.6-	0.1+	1995 10 31	118	0.1-	0.3+	1999 05 18	704	0.7-	1.5+
1995 08 21	658	1.5-	0.0	1995 11 01	897	1.4+	0.2+	1999 05 18	704	0.8-	0.3+
1995 08 25	587	0.0	0.1+	1995 11 01	897	0.1-	0.5+	1999 06 15	704	1.6+	1.9-
1995 08 26	587	0.1+	0.2+	1995 11 01	897	0.5+	0.4+	1999 06 15	704	0.8+	0.2+
1995 08 27	658	0.5-	0.2-	1995 11 03	897	0.6+	0.3+	1999 06 15	704	0.6-	0.7+
1995 08 27	658	0.4-	0.3-	1995 11 03	897	0.9+	0.4+	1999 06 15	704	0.4-	0.0
1995 08 27	658	0.4-	0.3-	1995 11 16	360	0.3-	0.0	1999 06 15	704	1.7-	0.8-

(10861)* 1995 MG₁ = 1971 CB = 1974 UD = 1992 WU₈

Discovered 1995 June 22 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPC* 25535)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	184.95143		<i>P</i>	<i>Q</i>
<i>n</i>	0.22004866	ω	244.18419	+0.72167230
<i>a</i>	2.7172123	Ω	159.29768	+0.67785529
<i>e</i>	0.2926168	<i>i</i>	9.00221	+0.14036129
<i>P</i>	4.48	<i>H</i>	13.5	<i>G</i> 0.15
				<i>U</i> 1

Residuals in seconds of arc

1971 02 01	029	0.1+	0.2+	1995 06 29	691	0.3+	0.6-	1998 03 03	704	0.0	0.2+
1971 02 02	029	0.7-	1.0+	1995 06 29	691	0.1+	0.2-	1998 03 03	704	0.0	0.7+
1974 10 24	095	0.0	2.0+	1995 06 29	691	0.3+	0.3-	1999 04 19	704	0.6+	1.8-
1992 10 22	675	0.5+	0.4+	1995 07 04	691	0.5+	0.5-	1999 04 19	704	0.4-	1.8-
1992 10 22	675	0.4+	0.2-	1995 07 04	691	0.3+	0.1-	1999 04 19	704	0.2+	1.0+
1992 11 26	675	0.2-	1.1-	1995 07 04	691	0.3+	0.2+	1999 04 19	704	0.6+	0.2+
1992 11 26	675	0.6-	0.6-	1998 01 25	566	0.2+	0.4-	1999 04 19	704	1.2-	0.5-
1992 11 28	675	0.4+	1.8-	1998 01 25	566	0.1+	0.2-	1999 05 13	704	1.3-	0.5-
1992 11 28	675	0.2-	1.9-	1998 01 25	566	0.5+	0.4-	1999 05 13	704	1.1-	0.7+
1995 06 22	691	0.1+	0.3-	1998 03 03	704	0.7+	0.3+	1999 05 13	704	0.7-	0.5+
1995 06 22	691	0.0	0.0	1998 03 03	704	0.2+	0.7+	1999 05 13	704	0.4-	0.0
1995 06 22	691	0.1+	0.4-	1998 03 03	704	0.0	0.1-				

(10862)* 1995 QE₂ = 1990 VC₉

Discovered 1995 Aug. 26 by T. B. Spahr at the University of Arizona's Catalina Station.

1995 08 30	657	0.8−	0.8−	1995 12 12	608	0.9−	1.3+	1999 05 18	704	0.6+	0.2−
1995 08 31	657	0.5−	0.4+	1995 12 13	608	0.3+	0.7+	1999 05 18	704	0.0	1.5−
1995 08 31	657	0.1−	0.1−	1995 12 13	608	0.1+	0.9+	1999 06 07	703	1.1+	0.3−
1995 08 31	657	0.4+	0.0	1996 12 16	696	0.3+	0.2+	1999 06 07	703	0.8+	0.5−
1995 09 03	816	0.3−	0.2+	1996 12 16	696	0.0	0.3−	1999 06 07	703	0.4+	0.2−
1995 09 03	816	0.2−	0.1+	1996 12 16	696	0.1+	0.2−	1999 06 07	703	(3.1+	0.8+)

(10863)* 1995 QJ₃

Discovered 1995 Aug. 31 by AMOS at Haleakala.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	259.42452		(2000.0)	P	Q
<i>n</i>	0.19578560	ω	184.47533	+0.97525988	−0.21848389
<i>a</i>	2.9373039	Ω	188.37554	+0.20931648	+0.96164726
<i>e</i>	0.0720288	<i>i</i>	13.36069	+0.07109692	+0.16582926
<i>P</i>	5.03	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1995 08 31	608	0.7+	0.3+	1997 01 31	608	0.4+	0.4−	1998 03 26	704	0.5+	0.4+
1995 08 31	608	0.6+	0.0	1997 01 31	608	0.3+	0.4−	1998 03 26	704	(2.2+	0.7+)
1995 09 01	608	0.7−	0.6−	1997 02 01	608	0.5+	0.6−	1998 03 29	704	0.9+	1.2+
1995 09 01	608	0.2+	0.8−	1997 02 01	608	0.6+	0.8−	1998 03 29	704	1.3+	0.3−
1995 09 01	608	0.2+	0.4−	1998 03 03	704	1.4+	0.4+	1998 03 29	704	0.2+	0.3+
1995 09 01	608	0.9−	0.8−	1998 03 03	704	1.0+	0.2+	1998 03 29	704	0.0	0.4−
1995 09 14	608	1.1−	1.1−	1998 03 03	704	0.3+	0.8−	1998 03 29	704	0.4+	1.0−
1995 09 14	608	0.4−	0.4−	1998 03 03	704	1.2−	1.2+	1999 05 17	704	(0.4+	2.7+)
1995 09 15	608	0.0	0.7−	1998 03 04	704	1.4−	1.0−	1999 05 17	704	0.2+	0.9+
1995 09 15	608	0.0	0.3−	1998 03 04	704	(2.1−	1.0+)	1999 05 17	704	0.1−	1.0+
1995 12 15	608	1.2+	0.7+	1998 03 04	704	0.9−	0.9+	1999 05 17	704	(1.2−	2.7+)
1995 12 15	608	1.9+	1.0+	1998 03 04	704	(2.4−	0.8+)	1999 06 06	703	0.3+	0.5+
1995 12 16	608	0.2+	0.2−	1998 03 04	704	(4.8−	0.7−)	1999 06 06	703	0.6−	1.0−
1995 12 16	608	0.3+	0.1−	1998 03 20	704	0.9−	1.3−	1999 06 06	703	0.0	0.2−
1997 01 09	608	0.1−	0.5+	1998 03 20	704	0.5+	0.7−	1999 06 06	703	0.2−	0.2−
1997 01 09	608	0.8+	0.3+	1998 03 20	704	0.7−	0.3+	1999 06 08	704	0.2−	0.9−
1997 01 10	608	0.3+	0.8+	1998 03 20	704	0.3+	0.4−	1999 06 08	704	0.1+	0.2+
1997 01 10	608	0.2+	0.8+	1998 03 20	704	0.2+	1.2−	1999 06 08	704	0.4+	0.1−
1997 01 11	608	0.4−	0.6+	1998 03 22	704	(1.9−	2.7−)	1999 06 08	704	0.3+	0.7+
1997 01 11	608	0.4−	0.7+	1998 03 22	704	0.4−	0.4+	1999 06 14	704	0.1−	0.4+
1997 01 15	608	1.1−	0.6+	1998 03 22	704	1.3−	1.0−	1999 06 14	704	0.8−	1.2+
1997 01 15	608	1.4−	0.9+	1998 03 22	704	(3.0−	2.1+)	1999 06 14	704	0.2+	0.3+
1997 01 18	608	0.2+	0.3+	1998 03 24	566	0.0	0.2−	1999 06 14	704	0.1+	1.4+
1997 01 18	608	0.4−	0.2+	1998 03 24	566	0.1−	0.4−	1999 06 14	704	0.1+	0.5+
1997 01 25	608	0.1+	0.1−	1998 03 24	566	0.2+	0.7−				
1997 01 25	608	0.0	0.3+	1998 03 26	704	0.4−	1.6−				

(10864)* 1995 QS₃ = 1984 SD₅ = 1992 AZ₂

Discovered 1995 Aug. 31 by T. Okuni at Nanyou.

Id. S. Nakano (*MPC* 25964)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	223.54897		(2000.0)	P	Q
<i>n</i>	0.17426228	ω	67.90601	+0.95478643	−0.24059675
<i>a</i>	3.1744399	Ω	305.59488	+0.12349764	+0.85531103
<i>e</i>	0.1183378	<i>i</i>	12.40134	+0.27042782	+0.45886409
<i>P</i>	5.66	<i>H</i>	11.8	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1984 09 27	675	0.1−	0.5+	1998 03 03	704	0.0	0.3−	1999 04 16	426	0.1−	0.1−
1984 09 28	675	(0.3+	3.5−)	1998 03 03	704	0.2−	0.3−	1999 04 16	426	0.1+	0.6−
1989 07 29	675	1.3+	0.7−	1998 03 03	704	0.7−	0.1−	1999 04 16	426	0.1+	0.4−
1989 07 29	675	0.0	1.4−	1998 03 04	704	0.1+	0.4+	1999 04 17	704	0.5−	0.3+
1992 01 11	303	0.2−	1.0+	1998 03 04	704	0.2+	1.1+	1999 04 17	704	0.1+	0.6+
1992 01 12	303	(3.0−	1.0−)	1998 03 04	704	0.3+	0.1+	1999 04 17	704	1.1−	1.2+
1995 08 31	358	0.1+	0.8+	1998 03 04	704	0.4−	0.5+	1999 04 17	704	0.3+	1.5+
1995 08 31	358	0.5−	1.2−	1998 03 04	704	0.1−	0.2+	1999 04 17	704	0.4−	1.3+
1995 09 01	358	0.2−	0.3−	1998 03 25	563	(2.9−	3.2−)	1999 04 20	704	0.5+	1.0−
1995 09 01	358	1.1−	0.4+	1998 03 25	563	(2.4−	0.8−)	1999 04 20	704	1.2−	0.1+

1995 09 28	358	0.9+	0.3+	1998 03 25	563	0.4+	1.5−	1999 04 20	704	0.6−	0.5−
1995 09 28	358	0.8+	0.2+	1999 04 15	704	0.7+	0.1−	1999 04 20	704	0.6−	0.5+
1998 01 25	566	0.5−	0.6−	1999 04 15	704	1.7+	0.5+	1999 05 10	704	1.5−	1.4−
1998 01 25	566	0.4−	0.4−	1999 04 15	704	0.4+	1.1+	1999 05 10	704	0.0	0.4+
1998 01 25	566	0.5−	0.8−	1999 04 15	704	0.2+	0.1+	1999 05 10	704	0.0	0.9−
1998 02 18	563	0.9+	0.6−	1999 04 15	704	1.6+	0.3+	1999 05 10	704	0.5−	0.2−
1998 02 18	563	0.0	0.4−	1999 04 15	426	0.0	0.4−	1999 05 10	704	1.3+	0.4+
1998 02 19	563	0.4+	0.4−	1999 04 15	426	0.1+	0.3−				
1998 03 03	704	0.8−	0.6−	1999 04 15	426	0.2−	0.3−				

(10865)* 1995 SO₃₃ = 1977 FL₂ = 1998 BN₂

Discovered 1995 Sept. 21 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPC* 31241)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	28.13623		(2000.0)	P	Q
n	0.18189235	ω	195.04656	−0.89533574	+0.44537899
a	3.0850326	Ω	11.40282	−0.40684977	−0.81473987
e	0.1148386	i	0.98152	−0.18123791	−0.37126338
P	5.42	H	12.9	G 0.15	U 1

Residuals in seconds of arc

1977 03 26	095	0.6+	1.5+	1998 01 23	691	0.2−	0.3−	1999 05 10	704	0.6+	0.6−
1995 09 21	691	0.5−	0.5+	1998 01 23	704	0.1+	0.4+	1999 05 10	704	1.0+	0.4+
1995 09 21	691	0.1+	0.6+	1998 01 23	704	0.1+	0.2+	1999 05 10	704	0.1+	0.0
1995 09 21	691	0.1+	0.5+	1998 01 24	704	0.2+	0.5−	1999 05 10	704	0.1−	1.9+
1995 09 26	691	0.1−	0.0	1998 01 24	704	0.9+	0.4+	1999 05 10	704	1.0−	0.3−
1995 09 26	691	0.2−	0.2+	1998 01 24	704	1.6+	1.4+	1999 05 13	704	0.2+	0.3+
1995 09 26	691	0.2−	0.1+	1998 01 24	704	1.4−	0.5+	1999 05 13	704	0.1+	0.4−
1995 10 02	691	0.2−	0.4+	1998 01 24	704	0.1+	0.2−	1999 05 13	704	0.3+	0.3−
1995 10 02	691	0.0	0.1+	1998 01 25	704	0.1+	0.3−	1999 05 13	704	0.6−	0.4−
1995 10 02	691	0.1−	0.3+	1998 01 25	704	0.0	0.1−	1999 05 13	704	0.4+	0.4−
1997 11 24	910	0.5+	0.2+	1998 01 25	704	0.0	0.8−	1999 05 14	704	0.6+	0.3−
1997 11 24	910	0.5+	0.2+	1998 01 25	704	0.7−	0.7−	1999 05 14	704	0.8+	0.2+
1997 11 24	910	0.4+	0.2+	1998 01 25	704	0.7+	1.0−	1999 05 14	704	0.7+	0.8−
1997 12 26	566	0.7−	0.5+	1998 04 16	704	0.3−	0.7−	1999 05 14	704	1.1+	0.4+
1997 12 26	566	0.5−	0.4+	1998 04 16	704	1.6+	0.8+	1999 05 15	703	0.6+	0.2+
1997 12 26	566	0.5−	0.4+	1998 04 16	704	1.7+	0.1+	1999 05 15	703	0.6+	0.0
1998 01 20	704	0.1−	0.0	1998 04 16	704	0.8+	0.7−	1999 05 15	703	0.0	0.0
1998 01 20	704	0.0	0.0	1998 04 16	704	(3.8−	0.7−)	1999 05 15	703	0.1−	0.2−
1998 01 20	704	0.2−	0.1−	1999 04 15	704	0.9−	0.0	1999 05 18	704	1.0+	0.3+
1998 01 20	704	0.1−	0.1+	1999 04 15	704	0.5−	0.2+	1999 05 18	691	0.4+	0.5+
1998 01 20	704	0.1−	0.3+	1999 04 15	704	0.6−	1.0+	1999 05 18	704	0.5+	0.1+
1998 01 20	704	0.1−	0.2+	1999 04 15	704	1.3−	0.6+	1999 05 18	691	0.3+	0.4+
1998 01 22	704	0.2+	0.1−	1999 04 17	704	0.4−	0.4−	1999 05 18	704	0.2−	0.1−
1998 01 22	704	0.3−	0.1−	1999 04 17	704	0.2+	0.4+	1999 05 18	704	0.3+	0.1+
1998 01 22	704	0.2−	0.7+	1999 04 17	704	1.3−	0.2−	1999 05 18	691	0.1+	0.3+
1998 01 22	704	1.9−	0.1+	1999 04 17	704	0.3+	0.1+	1999 05 18	704	1.0−	0.1+
1998 01 23	704	0.1+	0.1−	1999 04 20	704	0.1−	0.4−	1999 05 19	704	0.8+	0.1+
1998 01 23	691	0.2−	0.3−	1999 04 20	704	1.0−	0.5−	1999 05 19	704	0.2−	0.2−
1998 01 23	704	0.0	0.1+	1999 04 20	704	0.6−	0.5−	1999 05 19	704	1.0+	0.0
1998 01 23	691	0.1−	0.3−	1999 04 20	704	(0.7−	2.3−)	1999 05 19	704	0.3+	0.4−
1998 01 23	704	0.1−	0.5+	1999 04 20	704	2.0−	1.0−	1999 05 19	704	0.0	0.2+

Residuals in seconds of arc

1976 04 01	095	(6.0– 5.0–)	1997 11 29	704	1.1– 2.4–	1999 04 25	423	0.5– 1.4–
1978 11 01	010	0.5– 0.1–	1997 11 29	704	1.5+ 1.1–	1999 05 10	704	0.4+ 0.5–
1978 11 01	010	2.4+ 0.4+	1997 11 29	704	0.6– 1.3–	1999 05 10	704	0.6+ 1.9+
1991 02 07	675	1.1– 0.4+	1997 12 29	688	0.7+ 1.0+	1999 05 10	704	0.2+ 0.9+
1991 02 07	675	0.4– 1.6+	1997 12 29	688	0.5+ 0.5+	1999 05 10	704	0.0 0.2+
1991 02 14	511	0.5– 2.0–	1999 04 14	699	0.8+ 0.2–	1999 05 10	704	0.7– 1.2+
1991 02 16	511	1.1– 1.3–	1999 04 14	699	1.0+ 0.4–	1999 05 13	704	0.1+ 0.1–
1996 07 14	809	1.8+ 1.1–	1999 04 14	699	0.7+ 0.3–	1999 05 13	704	0.7– 0.4+
1996 07 14	809	0.3+ 1.8–	1999 04 15	704	0.7+ 0.8–	1999 05 13	704	0.3– 0.5+
1996 07 14	809	0.0 1.7–	1999 04 15	704	0.3+ 0.0	1999 05 13	704	0.1+ 0.5+
1996 07 16	809	0.8+ 1.2+	1999 04 15	704	0.6+ 0.1–	1999 05 13	704	0.2– 0.8–
1996 07 16	809	2.0+ 0.8+	1999 04 15	704	0.3+ 0.7–	1999 05 18	704	1.0+ 1.4–
1996 07 16	809	2.0+ 0.1–	1999 04 15	704	0.9+ 1.0–	1999 05 18	704	0.1– 0.8+
1996 08 08	809	1.0– 0.4+	1999 04 17	704	0.5+ 0.2–	1999 05 18	704	1.0– 0.3+
1996 08 08	809	1.1– 0.2–	1999 04 17	704	0.5+ 0.2+	1999 05 18	704	0.9– 0.5+
1996 08 08	809	1.3+ 1.5+	1999 04 17	704	0.1– 0.2+	1999 05 18	704	1.6– 0.3–
1996 08 09	809	0.8– 1.5–	1999 04 17	704	0.0 0.1–	1999 05 19	704	1.7– 0.9+
1996 08 09	809	0.6– 2.3–	1999 04 17	704	0.2+ 0.0	1999 05 19	704	2.1– 1.8–
1996 08 09	809	1.1– 1.4–	1999 04 20	704	0.4– 0.5–	1999 05 19	704	0.5– 0.4–
1996 09 08	809	(4.3– 0.4–)	1999 04 20	704	0.5– 0.0	1999 05 19	704	0.1– 0.2+
1996 09 08	809	(4.7– 0.9+)	1999 04 20	704	1.2+ 0.1+	1999 05 19	704	1.1– 1.0+
1996 09 08	809	3.8– 2.1+	1999 04 25	423	1.5+ 0.4–			
1997 11 29	704	0.8+ 0.1–	1999 04 25	423	1.6+ 1.3–			

(10867)* 1996 NX₄ = 1990 DJ₂ = 1991 LS₆

Discovered 1996 July 14 by E. W. Elst at the European Southern Observatory. ID. G. V. Williams (*MPC* 27922, *MPC* 34515), A. Milani (*MPC* 34515)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	127.37227		(2000.0)	P	Q
<i>n</i>	0.22849551	ω	308.79672	+0.03585573	–0.99731271
<i>a</i>	2.6498275	Ω	139.00910	+0.94443872	+0.01291514
<i>e</i>	0.0240885	<i>i</i>	5.58946	+0.32672598	+0.07211491
<i>P</i>	4.31	<i>H</i>	14.1	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1990 02 24	809	0.4+ 0.9–	1996 08 09	809	1.0+ 0.7–	1999 04 06	704	0.4+ 1.1+
1990 02 24	809	0.8+ 1.3–	1996 08 15	566	0.8– 0.6–	1999 04 07	699	1.1+ 0.3+
1990 02 24	809	1.3+ 1.5–	1996 08 15	566	1.3– 0.4–	1999 04 07	699	0.7+ 0.2–
1990 02 25	809	0.1+ 0.8–	1996 08 15	566	1.1– 0.4–	1999 04 07	699	0.3– 0.6+
1990 02 25	809	0.4+ 0.7–	1996 09 08	809	1.6+ 0.9–	1999 04 12	704	0.0 0.1–
1990 02 25	809	0.8+ 0.6–	1996 09 08	809	0.8+ 0.8–	1999 04 12	704	0.2– 0.3–
1990 02 28	809	1.5– 0.7–	1996 09 08	809	0.8+ 0.2–	1999 04 12	704	0.0 0.1+
1990 02 28	809	1.5– 0.4–	1998 01 06	688	0.7– 0.7+	1999 04 12	704	0.8– 0.1–
1990 02 28	809	1.5– 0.4–	1998 01 06	688	0.7– 0.9+	1999 04 12	704	(2.3– 0.1–)
1991 06 06	809	(0.9– 2.8+)	1998 01 07	688	0.3– 0.8+	1999 04 16	704	0.2– 1.8–
1991 06 06	809	(1.9– 2.8+)	1998 01 07	688	0.3– 1.0+	1999 04 16	704	1.8+ 0.1+
1991 06 06	809	1.3– 1.9+	1999 03 20	704	0.1– 0.3+	1999 04 16	704	(0.5– 2.5–)
1996 07 14	809	0.2– 0.3+	1999 03 20	704	0.5– 0.2+	1999 04 16	704	1.7– 0.8–
1996 07 14	809	0.2+ 0.1+	1999 03 20	704	0.2+ 0.0	1999 04 16	704	0.3– 0.7+
1996 07 14	809	0.7– 1.1+	1999 03 20	704	0.2– 0.6+	1999 04 17	703	1.9+ 1.5–
1996 07 16	809	(5.5– 3.5+)	1999 03 23	704	0.2– 0.2–	1999 04 17	703	0.1– 0.2–
1996 07 16	809	(5.6– 3.3+)	1999 03 23	704	0.5– 0.1+	1999 04 17	703	0.2– 1.0+
1996 07 16	809	(5.8– 1.9+)	1999 03 23	704	0.0 0.3–	1999 04 17	703	0.1+ 0.0
1996 08 08	809	(0.1– 2.6–)	1999 03 23	704	1.3– 0.1+	1999 04 19	704	0.3– 0.0
1996 08 08	809	(1.4– 3.1–)	1999 04 06	704	0.1+ 0.8+	1999 04 19	704	0.3+ 1.1+
1996 08 08	809	0.6– 1.8–	1999 04 06	704	0.7+ 0.4+	1999 04 19	704	0.4+ 0.3+
1996 08 09	809	1.3+ 0.2+	1999 04 06	704	0.1+ 0.1–	1999 04 19	704	1.4+ 0.3–
1996 08 09	809	1.5+ 0.2+	1999 04 06	704	0.4– 0.3–	1999 04 19	704	0.7– 0.6+

(10868)* 1996 RF₅ = 1984 BE₃

Discovered 1996 Sept. 3 by Y. Shimizu and T. Urata at the Nachi-Katsuura Observatory.
Id. T. Urata (*MPC* 27925)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	328.29956		(2000.0)	P	Q
<i>n</i>	0.28010520	ω	189.32298	+0.59415044	+0.79667233
<i>a</i>	2.3134242	Ω	117.20925	–0.72971209	+0.59186944
<i>e</i>	0.1270091	<i>i</i>	7.16326	–0.33838664	+0.12248984
<i>P</i>	3.52	<i>H</i>	14.3	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1984 01 25	675	0.2– 0.1+	1998 01 29	691	0.2– 0.0	1999 05 17	704	0.0 0.3–
1984 01 26	675	0.2+ 0.0	1998 01 29	691	0.4– 0.1+	1999 05 17	704	0.0 0.5–
1996 09 03	905	0.2– 0.2+	1998 01 31	886	0.3– 0.5+	1999 05 17	704	0.1+ 0.1–
1996 09 03	905	0.1– 0.1–	1998 01 31	886	0.1+ 1.4+	1999 05 17	704	0.6– 0.6+
1996 09 14	905	1.0+ 1.3+	1999 04 13	426	0.4+ 0.3+	1999 05 17	704	0.3+ 0.1–
1996 09 14	905	0.4– 1.3+	1999 04 13	426	0.2+ 0.6+	1999 05 20	888	0.3+ 0.5–
1996 09 18	385	0.6– 0.7+	1999 04 13	426	0.1+ 0.4+	1999 05 20	888	0.2– 0.5–
1996 09 18	385	0.7– 0.5+	1999 04 14	426	0.3+ 0.2+	1999 05 21	704	0.3+ 1.5–
1996 09 18	385	0.5– 0.9+	1999 04 14	426	0.1– 0.1+	1999 05 21	704	1.3+ 1.1–
1998 01 02	886	1.0+ 0.7+	1999 04 14	426	0.5+ 0.1+	1999 05 21	704	0.5– 0.1–
1998 01 02	886	0.4– 0.3+	1999 05 07	888	0.8– 1.1+	1999 05 21	704	0.1+ 1.2+
1998 01 07	688	0.5+ 0.1+	1999 05 07	888	0.9– 0.7+	1999 05 21	704	0.7+ 0.3+
1998 01 07	688	0.5+ 0.3+	1999 05 12	704	1.5+ 0.8–	1999 06 06	703	0.3+ 0.5–
1998 01 08	688	0.2+ 0.5+	1999 05 12	704	1.3– 0.5–	1999 06 06	703	0.0 0.6+
1998 01 08	688	0.4+ 0.6+	1999 05 12	704	0.5– 0.3+	1999 06 06	703	0.1+ 1.1+
1998 01 19	886	0.7+ 1.2–	1999 05 12	704	0.2– 0.5–	1999 06 06	703	0.2+ 1.4+
1998 01 19	886	0.4– 2.0+	1999 05 14	704	0.5– 0.1–	1999 06 14	704	0.0 0.3–
1998 01 22	691	0.1– 0.6+	1999 05 14	704	0.2+ 0.5+	1999 06 14	704	0.5+ 0.3+
1998 01 22	691	0.1– 0.4+	1999 05 14	704	0.7– 0.1–	1999 06 14	704	0.3+ 0.4+
1998 01 22	691	0.3– 0.3+	1999 05 14	704	0.4– 0.5+	1999 06 14	704	0.1+ 0.2+
1998 01 29	691	0.3– 0.0	1999 05 14	704	0.1+ 0.4+	1999 06 14	704	0.2+ 1.1+

(10869)* 1996 SJ₄ = 1976 QU = 1986 QT₅

Discovered 1996 Sept. 21 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. K. Ichikawa (*MPC* 29115), S. Nakano (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	325.75221		(2000.0)	P	Q
<i>n</i>	0.29555449	ω	337.57622	+0.78211323	+0.62265088
<i>a</i>	2.2320864	Ω	343.84008	–0.55747227	+0.68151762
<i>e</i>	0.2005401	<i>i</i>	5.06927	–0.27843055	+0.38449917
<i>P</i>	3.33	<i>H</i>	14.6	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1976 08 26	095	(1.5+ 2.4–)	1997 11 25	327	0.2+ 0.7+	1998 03 01	327	0.2+ 0.2+
1976 08 28	675	1.3+ 1.3–	1997 11 25	327	0.2+ 0.9+	1998 03 01	327	0.2– 0.3–
1976 08 30	675	0.1+ 1.6–	1997 12 22	327	0.3+ 0.8+	1999 05 18	704	0.6– 0.1+
1986 08 31	095	(0.2– 2.5–)	1997 12 22	327	0.0 0.2+	1999 05 18	704	0.7– 0.3+
1995 03 04	033	0.6– 1.1–	1997 12 22	327	0.4+ 0.3+	1999 05 18	704	0.4+ 0.8+
1995 03 04	033	0.4– 1.2–	1997 12 23	327	0.4+ 0.3–	1999 05 18	704	0.7– 0.3+
1996 09 21	327	0.4– 0.2+	1997 12 23	327	0.2+ 0.2+	1999 05 18	704	0.4– 0.9+
1996 09 21	327	0.4– 0.5+	1997 12 23	327	0.0 0.0	1999 06 09	704	0.3+ 0.1–
1996 09 21	327	0.4– 0.0	1997 12 24	327	0.4+ 0.0	1999 06 09	704	0.5– 0.5+
1996 09 22	327	0.2– 0.2+	1997 12 24	327	0.1– 0.1+	1999 06 09	704	1.1– 1.0+
1996 09 22	327	0.3– 0.3+	1997 12 24	327	0.0 0.0	1999 06 09	704	0.0 0.8+
1996 09 22	327	0.3+ 0.3–	1997 12 29	327	0.2– 0.4–	1999 06 09	704	1.1+ 0.4+
1996 09 22	327	0.1– 0.0	1997 12 29	327	0.3– 0.2–	1999 06 15	704	0.5+ 0.5–
1996 10 07	327	0.1+ 0.5+	1998 02 06	327	0.8– 0.2–	1999 06 15	704	0.6+ 0.7–
1996 10 07	327	0.0 0.7+	1998 02 06	327	0.3– 0.9–	1999 06 15	704	0.1+ 0.8–
1996 10 07	327	0.3+ 0.7+	1998 02 06	327	0.0 0.9+	1999 06 15	704	0.9+ 0.7–
1997 11 25	327	0.8+ 0.7+	1998 03 01	327	0.0 0.5–	1999 06 15	704	0.6+ 0.7–

(10870)* 1996 SY₄ = 1981 RL₆

Discovered 1996 Sept. 25 by G. C. L. Aikman at the Dominion Astrophysical Observatory, Victoria.
Id. G. V. Williams (*MPC* 28080)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams					
M	289.94066		(2000.0)		P		Q				
n	0.26506361	ω	276.94965	+0.97112236	+0.23356200						
a	2.4001367	Ω	69.55251	−0.19320283	+0.88958689						
e	0.2054144	i	2.97831	−0.13997867	+0.39253531						
P	3.72	H	15.2	G	0.15	U	1				
Residuals in seconds of arc											
1981 09 01	675	0.1−	0.3+	1996 11 23	658	0.2+	0.7+	1999 05 16	691	0.5−	0.1−
1981 09 02	675	0.1+	0.0	1996 12 09	658	0.9+	0.8−	1999 05 16	691	0.2+	1.0−
1996 09 25	658	0.3+	0.2+	1996 12 09	658	0.0	0.3+	1999 05 17	703	0.9+	0.1−
1996 09 25	658	0.1+	0.3+	1996 12 14	658	1.8+	1.6+	1999 05 17	703	0.8+	0.3−
1996 09 25	658	0.3+	0.2+	1996 12 14	658	0.9+	0.5+	1999 05 17	703	1.0+	0.8+
1996 09 25	658	0.1−	0.5−	1996 12 14	658	0.7+	0.3+	1999 05 17	703	0.3−	1.2+
1996 09 25	658	0.3−	0.5−	1997 12 09	658	0.3−	1.1−	1999 05 18	704	(2.2−	0.4+)
1996 09 25	658	0.4−	0.3−	1997 12 09	658	0.8−	0.7−	1999 05 18	704	1.1−	0.9+
1996 09 25	658	0.4−	0.6−	1998 03 19	658	0.1+	0.5−	1999 05 18	704	0.2+	0.1−
1996 09 26	658	0.4−	0.0	1998 03 19	658	0.3−	1.0+	1999 05 18	704	1.1−	0.5−
1996 09 26	658	1.1−	0.3−	1998 03 19	658	0.3−	0.7+	1999 05 19	691	0.1+	0.5−
1996 09 26	658	0.1+	0.1−	1999 05 10	704	0.4−	1.2−	1999 05 19	691	0.1−	0.1−
1996 10 08	693	1.4−	0.2−	1999 05 10	704	(0.7+	2.1−)	1999 05 19	691	0.1+	0.4−
1996 10 08	693	0.9+	0.8−	1999 05 10	704	1.9+	0.8−	1999 06 15	704	0.2−	0.0
1996 10 17	658	0.1−	0.4−	1999 05 10	704	(1.9−	2.7−)	1999 06 15	704	0.1−	0.7+
1996 10 17	658	0.2−	0.3−	1999 05 13	704	0.9−	0.9+	1999 06 15	704	0.3+	0.5+
1996 10 17	658	0.3−	0.4−	1999 05 13	704	0.2−	0.9−	1999 06 15	704	0.6−	0.9+
1996 11 23	658	0.7+	1.1+	1999 05 13	704	0.8+	0.9−				
1996 11 23	658	0.1+	1.0+	1999 05 13	704	0.4−	0.5+				

(10871)* 1996 TG₇

Discovered 1996 Oct. 5 by Y. Shimizu and T. Urata at the Nachi-Katsuura Observatory.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Nakano						
M	299.87514		(2000.0)		P		Q				
n	0.26012999	ω	298.39914		+0.82280887		+0.56794605				
a	2.4303889	Ω	27.00916		−0.50429580		+0.74632317				
e	0.1966701	i	2.59524		−0.26205210		+0.34704323				
P	3.79	H	14.3		G	0.15	U	1			
Residuals in seconds of arc											
1991 03 09	675	0.6+	0.6−	1997 12 27	688	0.7+	0.0	1999 04 17	704	0.6−	0.9+
1991 03 09	675	0.6−	0.6+	1997 12 27	688	1.7+	0.9−	1999 04 17	704	0.1−	0.6+
1996 09 17	566	0.5+	0.3−	1997 12 29	688	0.6+	0.4−	1999 04 17	704	(2.7−	0.3+)
1996 09 17	566	0.1−	0.2−	1997 12 29	688	0.0	0.7−	1999 04 17	704	1.5−	0.1+
1996 09 17	566	0.1+	0.1−	1998 01 06	688	0.2+	0.9+	1999 05 10	704	1.2+	0.5−
1996 10 05	905	1.0−	0.0	1998 01 06	688	1.0+	0.7+	1999 05 10	704	1.1+	0.3+
1996 10 05	905	1.1−	0.1+	1998 01 07	688	0.8−	1.3+	1999 05 10	704	0.9−	0.6−
1996 10 11	385	0.6+	0.7+	1998 01 07	688	0.2+	0.8+	1999 05 10	704	0.4+	0.1+
1996 10 11	385	0.1+	0.4+	1998 01 26	385	1.2−	0.4−	1999 05 10	704	1.6+	0.1−
1996 10 11	385	0.2−	0.7+	1998 01 26	385	0.5−	0.1−	1999 05 13	704	0.6−	0.1+
1996 10 15	385	1.3−	0.6+	1998 03 01	327	0.5−	0.0	1999 05 13	704	0.2+	0.0
1996 10 15	385	0.1+	0.3+	1998 03 01	327	0.8−	0.1−	1999 05 13	704	0.1+	0.6+
1996 10 15	385	0.3−	0.3+	1998 03 01	327	(3.7−	0.9+)	1999 05 13	704	1.3+	1.0−
1996 10 21	385	0.2+	0.7+	1999 04 15	704	1.4−	0.4−	1999 05 18	704	1.1+	0.7−
1996 10 21	385	0.6+	0.9−	1999 04 15	704	0.4−	1.8−	1999 05 18	704	1.0−	0.1−
1996 10 21	385	0.5+	0.5−	1999 04 15	704	0.1−	0.5−	1999 05 18	704	0.3+	0.3−
1996 12 01	385	0.1−	0.1−	1999 04 15	704	0.5+	0.9+	1999 05 18	704	0.4+	0.4+
1996 12 01	385	1.6+	0.6−	1999 04 15	691	1.0−	0.7+	1999 05 18	704	1.2+	1.6+
1996 12 01	385	0.2−	0.1+	1999 04 15	691	1.2−	0.9+				

(10872)* 1996 TJ₉

Discovered 1996 Oct. 12 at Kleť.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams					
<i>M</i>	354.02165		(2000.0)		P		Q				
<i>n</i>	0.24330422	ω	64.20361		+0.05391460		+0.99825096				
<i>a</i>	2.5411850	Ω	208.91841		−0.93317290		+0.04172621				
<i>e</i>	0.0838155	<i>i</i>	2.87491		−0.35536116		+0.04188001				
<i>P</i>	4.05	<i>H</i>	15.2		<i>G</i>	0.15	<i>U</i>	1			
Residuals in seconds of arc											
1992 10 20	675	0.3+	0.7−	1996 10 19	046	0.1+	0.2−	1998 01 27	046	0.5+	0.8+
1992 10 20	675	(0.8−	2.2−)	1996 11 03	046	0.9−	0.3−	1998 01 29	046	0.2−	0.5+
1992 10 25	691	0.1−	0.3−	1996 11 03	046	0.3−	0.0	1998 01 29	046	0.5−	0.7+
1992 10 25	691	0.2+	0.3+	1996 11 03	046	0.4−	0.3−	1998 01 29	046	0.0	0.5+
1992 10 25	691	0.1−	0.3−	1996 11 03	046	0.3+	0.4−	1999 05 10	046	0.2+	0.6+
1996 10 05	327	0.4+	0.9−	1996 11 04	046	0.4−	1.1−	1999 05 10	046	0.4−	0.1−
1996 10 05	327	1.0+	0.1−	1996 11 04	046	0.3−	0.6−	1999 05 10	046	0.5+	0.5−
1996 10 05	327	0.3+	0.6−	1996 11 04	046	0.3−	0.0	1999 05 13	704	1.2+	0.3−
1996 10 12	046	0.2−	0.4+	1996 11 07	327	0.2−	0.4+	1999 05 13	704	0.1−	0.1+
1996 10 12	046	0.4+	0.7+	1996 11 07	327	0.6+	0.1+	1999 05 13	704	0.2−	0.6+
1996 10 12	046	0.3−	0.0	1996 11 07	327	0.5−	0.2+	1999 05 19	704	0.3+	0.4−
1996 10 12	046	0.3−	0.0	1996 11 08	691	1.7−	0.1+	1999 05 19	704	(1.8+	3.2+)
1996 10 12	046	0.1−	0.5+	1996 11 08	691	0.1+	0.2+	1999 05 19	704	(2.1+	2.4+)
1996 10 14	046	0.3−	0.2+	1996 11 08	691	0.1−	0.1−	1999 05 19	704	0.1−	0.6−
1996 10 14	046	0.0	0.5+	1996 11 16	046	0.2−	1.1+	1999 06 09	046	0.4+	0.2−
1996 10 14	046	0.2−	0.3+	1996 11 16	046	0.1+	0.2+	1999 06 09	046	0.2−	0.9+
1996 10 14	046	0.3−	0.4+	1996 11 16	046	0.4−	1.4+	1999 06 09	046	0.9+	0.1+
1996 10 14	046	0.3−	0.4+	1996 12 29	046	0.3+	0.0	1999 06 12	703	0.4−	1.4+
1996 10 14	046	0.2−	0.2+	1996 12 29	046	0.3+	0.1−	1999 06 12	703	0.5+	0.1−
1996 10 14	046	0.1−	0.3+	1996 12 29	046	0.1+	1.3+	1999 06 12	703	0.4−	0.8+
1996 10 16	046	0.4−	0.2+	1998 01 10	046	0.6+	0.8−	1999 06 12	703	0.0	0.9−
1996 10 16	046	0.5−	0.2−	1998 01 10	046	0.4−	0.5−	1999 06 15	704	0.1+	0.0
1996 10 16	046	0.6−	0.2−	1998 01 10	046	0.1−	0.8−	1999 06 15	704	0.0	0.7+
1996 10 18	566	1.5+	0.3−	1998 01 11	046	0.2−	0.6−	1999 06 15	704	0.9−	0.5+
1996 10 18	566	0.6+	0.3−	1998 01 11	046	0.1+	0.3−	1999 06 15	704	0.6−	0.2+
1996 10 18	566	0.9+	0.0	1998 01 11	046	0.7−	0.1−	1999 06 15	704	0.4−	0.2−
1996 10 19	046	1.0+	0.2+	1998 01 27	046	0.6+	0.9+				
1996 10 19	046	0.6+	0.0	1998 01 27	046	0.6+	1.2+				

(10873)* 1996 TF₁₁ = 1992 PF₅

Discovered 1996 Oct. 11 by K. Endate at Kitami.

Id. S. Nakano (*MPC* 28308)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Nakano					
M	322.56691		(2000.0)		$\mathbf{P}$			$\mathbf{Q}$			
n	0.26303335		ω	36.37864	+0.65505536		+0.75450417				
a	2.4124714		Ω	274.58191	−0.70242614		+0.58844220				
e	0.2090965		i	2.31837	−0.27838820		+0.29061871				
P	3.75 <th>H</th> <td>14.3<th>G</th><td colspan="2">0.15<th>U</th><td colspan="2">1</td></td></td>		H	14.3 <th>G</th> <td colspan="2">0.15<th>U</th><td colspan="2">1</td></td>	G	0.15 <th>U</th> <td colspan="2">1</td>		U	1		
Residuals in seconds of arc											
1992 08 03	675	0.4−	0.5−	1998 03 31	910	0.6+	0.3−	1999 05 14	704	0.3−	0.4−
1992 08 03	675	0.9−	0.0	1999 04 17	704	0.7+	0.1−	1999 05 14	704	1.0−	0.7+
1992 08 06	675	0.6+	0.8−	1999 04 17	704	0.4+	0.8+	1999 05 14	704	0.0	0.3+
1992 08 06	675	0.3+	0.2−	1999 04 17	704	0.4+	1.3+	1999 05 14	704	0.9−	0.8+
1992 08 30	095	0.1+	2.0+	1999 04 20	704	0.2−	0.2+	1999 05 18	704	1.2+	0.3+
1992 08 30	095	(3.8−	3.3+)	1999 04 20	704	0.5−	0.0	1999 05 18	704	0.5−	0.1−
1996 10 11	400	0.4−	0.7−	1999 04 20	704	0.4−	0.3−	1999 05 18	704	1.0+	1.0−
1996 10 11	400	0.4+	0.3+	1999 04 20	704	1.5−	0.5+	1999 05 18	704	0.9+	0.6−
1996 10 14	400	0.2−	0.4+	1999 05 10	704	0.4−	0.8+	1999 05 18	704	1.3+	0.2−
1996 10 14	400	0.3−	0.6−	1999 05 10	704	0.5+	0.2+	1999 05 19	704	0.1−	1.1−
1996 10 21	400	0.2+	0.8+	1999 05 10	704	0.5−	0.0	1999 05 19	704	0.2−	1.1+
1996 10 21	400	0.7+	1.1+	1999 05 10	704	0.5+	0.8+	1999 05 19	704	1.5+	0.4+
1997 12 24	910	0.1−	0.0	1999 05 10	704	0.5+	0.4+	1999 05 19	704	0.0	0.6+
1997 12 24	910	0.1−	0.1+	1999 05 13	704	0.1+	0.3−	1999 05 19	704	0.0	0.9−
1997 12 24	910	0.3+	0.1+	1999 05 13	704	1.0+	0.3+	1999 06 09	704	0.1+	0.6−
1997 12 29	688	1.0−	0.9+	1999 05 13	704	0.5−	0.9+	1999 06 09	704	0.3−	1.1−
1997 12 29	688	0.3−	0.5+	1999 05 13	704	0.0	0.5−	1999 06 09	704	0.2−	0.7−

M.P.C. 34790

1999 JUNE 22

1998 03 31 910 0.7+ 0.1- 1999 05 13 704 0.2+ 0.2- 1999 06 09 704 0.1+ 0.7-
 1998 03 31 910 0.3+ 0.7- 1999 05 14 704 1.8- 0.7+ 1999 06 09 704 0.6- 0.6-

(10874)* 1996 TN₁₉ = 1978 WQ₁₂

Discovered 1996 Oct. 4 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPC* 28598)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	330.82075	(2000.0)	P	Q
<i>n</i>	0.27018381	ω	282.25363	+0.75582411 +0.65473777
<i>a</i>	2.3697171	Ω	36.84725	-0.59614589 +0.69250162
<i>e</i>	0.2020565	<i>i</i>	0.66451	-0.27081358 +0.30291905
<i>P</i>	3.65	<i>H</i>	15.2	<i>G</i> 0.15 <i>U</i> 1

Residuals in seconds of arc

1978 11 29	675	0.4+	0.1-	1996 11 29	327	0.4+	0.0	1999 05 18	704	0.1-	1.1-
1978 11 30	675	1.1-	0.4+	1996 11 29	327	0.2+	0.1+	1999 05 18	704	0.4+	0.7-
1992 07 30	809	0.6+	0.9+	1998 03 02	691	0.7+	0.6+	1999 05 19	704	1.0-	0.5-
1992 07 30	809	0.1-	1.3+	1998 03 02	691	0.8+	0.5+	1999 05 19	704	0.3+	0.8+
1992 07 30	809	0.6-	0.7+	1998 03 02	691	0.5+	0.5+	1999 05 19	704	(1.8+ 2.5+)	
1996 10 04	691	0.3+	0.1-	1998 03 22	691	0.1-	0.4+	1999 05 19	704	(1.2- 2.5-)	
1996 10 04	691	0.4+	0.2-	1998 03 22	691	0.1+	0.7+	1999 06 09	704	0.9-	0.0
1996 10 04	691	0.3+	0.1-	1998 03 22	691	0.2+	0.4+	1999 06 09	704	0.9-	0.2+
1996 10 06	691	0.1+	0.1-	1999 05 10	704	(0.4- 2.3-)		1999 06 09	704	1.5-	0.0
1996 10 06	691	0.2-	0.0	1999 05 10	704	1.9+	1.2-	1999 06 09	704	0.5-	0.7-
1996 10 06	691	0.2-	0.2+	1999 05 10	704	1.2+	1.5+	1999 06 09	704	0.9-	0.6+
1996 11 27	327	0.8-	0.1+	1999 05 13	704	0.7+	0.3-	1999 06 15	704	0.2-	0.1+
1996 11 27	327	0.4+	0.4+	1999 05 13	704	(1.9+ 2.2+)		1999 06 15	704	0.7-	0.1-
1996 11 27	327	0.4-	0.7+	1999 05 13	704	1.9+	0.6+	1999 06 15	704	1.1-	0.1+
1996 11 27	327	0.6-	0.7-	1999 05 18	704	1.8+	1.3+	1999 06 15	704	1.1-	0.1+
1996 11 29	327	0.5-	0.0	1999 05 18	704	1.1+	0.1-	1999 06 15	704	1.0-	0.2+

(10875)* 1996 TG₂₈ = 3369 T-2

Discovered 1996 Oct. 7 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPC* 28309)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	45.40001	(2000.0)	P	Q
<i>n</i>	0.21789000	ω	35.35436	-0.91941465 +0.39155629
<i>a</i>	2.7351292	Ω	167.53588	-0.38857830 -0.88992499
<i>e</i>	0.2133163	<i>i</i>	9.83965	-0.06069265 -0.23391706
<i>P</i>	4.52	<i>H</i>	14.5	<i>G</i> 0.15 <i>U</i> 1

Residuals in seconds of arc

1973 09 19	675	0.3+	0.4-	1996 10 17	691	0.3-	0.6+	1999 05 17	704	0.6+	0.9+
1973 09 19	675	0.7+	1.2-	1998 01 06	688	0.3+	0.1+	1999 05 21	704	0.6+	0.0
1973 09 20	675	0.6+	0.9-	1998 01 06	688	0.2-	0.6+	1999 05 21	704	0.2+	0.2+
1973 09 24	675	(3.1- 0.4-)		1998 01 07	688	0.1+	0.6+	1999 05 21	704	0.7-	0.5+
1973 09 24	675	1.3-	0.0	1998 01 07	688	0.7+	0.6+	1999 05 21	704	0.1-	0.1-
1973 09 25	675	1.4+	2.0-	1999 02 26	704	0.4-	0.1-	1999 05 21	704	0.7-	0.6+
1973 09 25	675	0.1-	1.7-	1999 02 26	704	1.1-	0.5-	1999 06 08	704	0.2+	0.1+
1996 10 07	691	0.5-	1.0+	1999 05 12	704	1.0+	0.3+	1999 06 08	704	0.5+	0.4+
1996 10 07	691	0.2-	0.9+	1999 05 12	704	0.5-	1.0+	1999 06 08	704	0.1+	0.2-
1996 10 07	691	0.4-	0.8+	1999 05 12	704	0.2+	1.3+	1999 06 08	704	0.3+	0.7+
1996 10 09	691	0.2-	1.0+	1999 05 15	704	1.1-	1.0-	1999 06 08	704	0.2+	0.2+
1996 10 09	691	0.0	0.8+	1999 05 15	704	0.9-	0.1-	1999 06 14	704	0.5+	0.4+
1996 10 12	691	0.9-	0.9+	1999 05 15	704	1.1-	0.0	1999 06 14	704	0.3+	0.0
1996 10 12	691	0.3-	0.7+	1999 05 17	704	0.0	0.4-	1999 06 14	704	0.5+	0.1+
1996 10 12	691	0.7-	0.9+	1999 05 17	704	0.7+	0.2-	1999 06 14	704	0.8+	0.2+
1996 10 17	691	0.5-	0.6+	1999 05 17	704	0.3+	1.2+	1999 06 14	704	0.3+	0.2-
1996 10 17	691	0.6+	1.0+	1999 05 17	704	0.5-	0.2-				

(10876)* 1996 UB = 1991 UX₃

Discovered 1996 Oct. 16 by T. Kobayashi at Oizumi.

Id. G. V. Williams (*MPC* 30986)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	266.35363	(2000.0)	P	Q
<i>n</i>	0.20286296	ω	92.31859	+0.94005545 +0.34063355
<i>a</i>	2.8685838	Ω	247.76628	-0.31945004 +0.86289561
<i>e</i>	0.0122936	<i>i</i>	1.00681	-0.11936259 +0.37333623
<i>P</i>	4.86	<i>H</i>	13.3	<i>G</i> 0.15 <i>U</i> 1

Residuals in seconds of arc

1991 10 07	675	1.4+	0.1+	1998 01 26	566	0.9-	0.2+	1999 05 13	704	0.0	0.1-
1991 10 07	675	0.4+	1.7+	1998 03 31	910	0.3-	0.2-	1999 05 13	704	0.2-	0.1+
1991 10 19	399	(3.1- 0.7-)		1998 03 31	910	0.3-	0.2-	1999 05 13	704	0.3-	0.5+
1991 10 19	399	0.7-	1.7-	1998 03 31	910	0.1-	0.3-	1999 05 13	704	0.7+	0.1+
1992 12 24	691	0.5-	0.1+	1998 04 04	725	0.8+	0.8+	1999 05 13	704	0.5+	0.6+
1992 12 24	691	0.3-	0.1+	1998 04 04	725	0.3+	0.1-	1999 05 14	704	0.1-	1.2+
1992 12 24	691	0.3-	0.0	1999 04 15	704	0.2+	0.6+	1999 05 14	704	0.6-	1.3+
1996 10 10	691	0.2+	0.1-	1999 04 15	704	0.0	1.9+	1999 05 14	704	0.4-	1.5-
1996 10 10	691	0.2+	0.2-	1999 04 15	704	0.8+	0.4-	1999 05 14	704	0.7+	1.0+
1996 10 16	411	0.5-	0.6-	1999 04 15	704	0.9+	1.5+	1999 05 18	704	1.1+	0.3+
1996 10 16	411	1.0-	0.2-	1999 04 15	426	0.1-	0.3+	1999 05 18	704	1.2+	0.1+
1996 10 17	411	1.0-	0.0	1999 04 15	426	0.1-	0.1+	1999 05 18	704	0.6+	0.0
1996 10 17	411	0.8-	1.1+	1999 04 15	426	0.1-	0.2+	1999 05 18	704	0.7+	0.8-
1996 10 17	411	0.8-	0.6+	1999 04 16	426	0.0	0.0	1999 05 18	704	0.2+	0.3+
1996 10 20	411	0.1-	0.5-	1999 04 16	426	0.1-	0.1+	1999 05 19	704	0.2-	0.1+
1996 10 20	411	0.1+	0.3+	1999 04 16	426	0.1+	0.0	1999 05 19	704	0.5-	0.4-
1996 10 20	411	0.0	0.6-	1999 04 17	704	0.5-	0.4-	1999 05 19	704	1.3-	0.4+
1996 10 29	411	0.5+	0.3-	1999 04 17	704	1.0-	1.4-	1999 05 19	704	0.3-	1.3-
1996 10 29	411	0.7+	1.1+	1999 04 17	704	1.5-	0.9-	1999 06 07	703	0.6+	0.1+
1996 11 13	411	0.8+	0.4+	1999 04 17	704	1.3-	0.7-	1999 06 07	703	0.3+	0.5+
1996 11 13	411	0.1-	0.2-	1999 04 20	704	0.3-	1.3-	1999 06 07	703	0.7+	0.9+
1996 11 30	411	0.3+	0.9-	1999 04 20	704	1.3-	0.3+	1999 06 07	703	1.4+	0.5+
1996 11 30	411	0.8+	1.2-	1999 04 20	704	0.7-	0.6-	1999 06 09	704	0.1+	0.3-
1997 11 29	688	0.3+	0.2-	1999 04 20	704	0.4-	0.2-	1999 06 09	704	0.2-	1.3-
1997 11 29	688	0.6+	0.6-	1999 05 10	704	0.2+	0.6-	1999 06 09	704	0.2-	0.3-
1997 12 27	688	1.0+	0.2-	1999 05 10	704	0.3+	0.7-	1999 06 09	704	1.3-	0.4-
1997 12 27	688	0.6+	0.3-	1999 05 10	704	1.3+	0.3-	1999 06 09	704	0.6-	0.7+
1998 01 26	566	0.3-	0.5+	1999 05 10	704	0.8+	0.2-				
1998 01 26	566	0.0	0.4+	1999 05 10	704	0.8-	1.2-				

(10877)* 1996 UR = 1987 SD₆

Discovered 1996 Oct. 16 by Y. Shimizu and T. Urata at the Nachi-Katsuura

Observatory.

Id. S. Nakano (*MPC* 31390)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	231.27731	(2000.0)	P	Q
<i>n</i>	0.22312617	ω	190.47801	+0.90709540 -0.42014988
<i>a</i>	2.6921694	Ω	194.44741	+0.39321714 +0.86746969
<i>e</i>	0.1612958	<i>i</i>	5.87431	+0.15019394 +0.26640274
<i>P</i>	4.42	<i>H</i>	13.4	<i>G</i> 0.15 <i>U</i> 1

Residuals in seconds of arc

1987 09 21	046	0.5+	1.7-	1997 01 23	327	0.3-	0.5-	1999 05 13	704	0.3-	1.7+
1987 09 21	046	(0.2- 2.7-)		1997 01 23	327	0.3-	0.1-	1999 05 13	704	0.3-	1.1+
1996 10 16	905	(2.7- 1.1-)		1997 01 23	327	0.4-	0.6-	1999 05 18	704	0.5+	0.7+
1996 10 16	905	0.5+	0.3-	1998 02 06	385	0.9+	0.6-	1999 05 18	704	0.9-	0.3+
1996 10 19	385	0.6+	0.3-	1998 02 06	385	1.1+	0.1-	1999 05 18	704	0.6+	0.5+
1996 10 19	385	0.5+	0.3-	1998 03 03	704	0.2+	0.2-	1999 05 18	704	1.1+	0.0
1996 10 19	385	0.9+	0.4-	1998 03 03	704	0.5+	1.3+	1999 05 19	704	0.4-	0.5-
1996 10 21	385	0.4+	0.5+	1998 03 03	704	0.8+	1.6-	1999 05 19	704	0.3-	0.4+
1996 10 21	385	0.0	0.7+	1998 03 03	704	1.0-	0.5-	1999 05 19	704	0.0	0.4+
1996 10 21	385	0.6+	0.3+	1998 03 03	385	0.2+	0.6-	1999 06 04	703	0.3+	0.1-
1996 10 30	385	0.3-	0.5+	1998 03 03	385	(3.3+ 2.9-)		1999 06 04	703	0.1-	0.4-
1996 10 30	385	0.2-	0.0	1998 03 04	704	0.9-	0.4-	1999 06 04	703	0.4+	0.4+
1996 10 30	385	0.2-</									

1999 JUNE 22

M.P.C. 34791

1996 11 09	385	0.3−	0.4+	1998 03 04	704	0.2−	1.3+	1999 06 10	704	1.1+	0.2−
1996 12 14	385	0.4−	0.6+	1999 05 06	888	1.5−	0.3+	1999 06 10	704	0.5+	0.5−
1996 12 14	385	0.4−	0.3+	1999 05 07	888	1.2−	0.1+	1999 06 10	704	0.6+	0.7−
1996 12 14	385	0.6−	0.4+	1999 05 10	704	0.2−	0.3+	1999 06 14	704	0.2+	0.2−
1997 01 06	385	0.3+	0.0	1999 05 10	704	0.8−	0.8−	1999 06 14	704	0.6+	0.2−
1997 01 06	385	0.6−	0.5−	1999 05 10	704	0.2−	0.3+	1999 06 14	704	0.1−	0.4−
1997 01 07	385	0.5+	0.3−	1999 05 10	704	0.7−	0.4−	1999 06 14	704	0.3+	0.1+
1997 01 07	385	0.4−	0.4−	1999 05 13	704	0.7+	0.2+	1999 06 14	704	0.2+	0.0
1997 01 07	385	1.0−	0.9−	1999 05 13	704	0.9−	0.6−				

(10878)* 1996 VV

Discovered 1996 Nov. 3 by Y. Ikari at Moriyama.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	339.52756		(2000.0)	P	Q
<i>n</i>	0.24607372	ω	234.03234	+0.35826296	+0.93165242
<i>a</i>	2.5220821	Ω	57.07003	−0.83166011	+0.34795596
<i>e</i>	0.1359289	<i>i</i>	4.13983	−0.42425124	+0.10464426
<i>P</i>	4.01	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1992 10 20	675	0.4−	0.1−	1996 12 03	402	0.3+	0.1−	1999 05 10	704	0.3−	0.8−
1992 10 22	675	0.4+	0.4+	1996 12 03	402	0.2+	0.1−	1999 05 10	704	0.5+	0.2−
1992 10 22	675	0.7−	0.0	1996 12 08	900	0.4−	0.5+	1999 05 10	704	0.1−	0.1−
1992 10 25	691	0.1−	0.0	1996 12 15	402	0.0	0.2−	1999 05 13	704	0.2−	0.4+
1992 10 25	691	0.4+	0.0	1996 12 15	402	1.1−	1.3+	1999 05 13	704	0.6+	0.2−
1992 10 25	691	0.1+	0.2+	1996 12 15	402	0.4−	0.1−	1999 05 13	704	1.1+	0.8+
1996 11 03	900	0.0	0.1+	1996 12 27	402	0.1+	0.2−	1999 05 13	704	0.8+	0.2−
1996 11 03	900	0.1−	0.3+	1996 12 27	402	0.6−	0.7−	1999 05 13	704	1.7−	2.0−
1996 11 03	900	0.5+	0.3+	1997 01 12	402	0.3+	0.7+	1999 05 18	704	0.2+	0.8+
1996 11 03	900	1.3−	0.4−	1997 01 12	402	0.7−	0.8−	1999 05 18	704	0.8+	0.0
1996 11 04	900	0.7−	0.1+	1997 01 12	402	0.5−	0.3+	1999 05 18	704	0.8+	0.2−
1996 11 04	900	0.6−	1.1−	1997 10 28	691	0.2−	0.5−	1999 05 18	704	0.0	0.1−
1996 11 06	900	0.6+	0.6−	1997 10 28	691	0.0	0.1−	1999 05 18	704	1.0−	0.2+
1996 11 06	900	0.8+	0.8−	1997 10 28	691	0.8−	0.6−	1999 05 19	704	0.6−	0.6+
1996 11 06	900	0.8−	0.3−	1997 12 25	900	0.7+	0.8−	1999 05 19	704	0.7−	0.7+
1996 11 06	900	0.2−	0.6+	1997 12 25	900	0.4+	0.1−	1999 05 19	704	0.4−	0.6+
1996 11 13	402	(3.3+	0.3+)	1997 12 29	688	0.5+	0.4+	1999 05 19	704	0.0	0.0
1996 11 13	402	(3.4+	0.2+)	1997 12 29	688	0.5+	0.2+	1999 05 19	704	1.2−	0.8+
1996 11 13	402	(3.3+	0.2+)	1998 01 02	900	0.0	0.3−	1999 06 09	704	0.9+	0.7−
1996 11 13	900	1.3+	0.7+	1998 01 02	900	0.2−	0.9+	1999 06 09	704	0.1+	0.2−
1996 11 13	900	1.5+	0.1−	1998 01 05	900	0.9−	0.9+	1999 06 09	704	0.5−	0.2+
1996 11 15	900	0.4−	0.4+	1998 01 05	900	0.1+	0.1−	1999 06 09	704	1.0−	0.1+
1996 11 15	900	0.7−	0.1+	1999 03 27	402	0.2−	0.3−	1999 06 09	704	0.8−	0.0
1996 11 16	402	(2.7+	0.3−)	1999 03 27	402	0.0	0.1−	1999 06 15	704	0.1−	0.0
1996 11 16	402	(2.6+	0.3−)	1999 04 27	900	1.3+	0.9+	1999 06 15	704	0.0	0.1−
1996 11 16	402	(2.6+	0.2−)	1999 04 27	900	0.6+	0.0	1999 06 15	704	0.1+	0.6+
1996 11 19	900	0.2+	0.6+	1999 05 08	402	0.4+	0.1−	1999 06 15	704	0.2+	0.5+
1996 11 19	900	1.1+	0.0	1999 05 08	402	0.5+	0.0	1999 06 15	704	0.0	0.5+
1996 12 02	900	1.0+	0.2−	1999 05 10	704	1.0+	0.4−				
1996 12 03	402	0.2+	0.0	1999 05 10	704	0.9−	0.9−				

(10879)* 1996 VM₃ = 1981 UK₇

Discovered 1996 Nov. 6 by T. Kobayashi at Oizumi.

Id. G. V. Williams (*MPC* 32245)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	250.88503		(2000.0)	P	Q
<i>n</i>	0.19797588	ω	93.68459	+0.99978552	+0.00065270
<i>a</i>	2.9155994	Ω	266.27881	−0.00880768	+0.91801131
<i>e</i>	0.0654049	<i>i</i>	1.18861	+0.01874396	+0.39655365
<i>P</i>	4.98	<i>H</i>	13.3	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1981 10 30	381	0.1+	0.9−	1998 02 24	566	0.1−	0.3+	1999 05 13	704	0.5−	0.1−
1981 10 30	381	0.4+	1.1−	1998 04 20	688	0.5+	0.4−	1999 05 13	704	0.2+	0.6−
1996 11 06	411	0.7+	0.4+	1998 04 20	688	0.4+	0.3−	1999 05 13	704	0.7−	0.6−

1996 11 06	411	0.8+	0.1+	1998 04 20	688	0.6+	0.2−	1999 05 13	704	1.2−	0.2−
1996 11 13	411	0.1−	0.4−	1999 04 14	699	1.7+	0.9−	1999 05 13	704	0.2−	0.0
1996 11 13	411	0.6+	0.3−	1999 04 14	699	1.4+	1.6−	1999 05 18	704	0.4−	0.3+
1996 11 15	411	0.2+	0.6−	1999 04 14	699	0.4+	0.8+	1999 05 18	704	0.2−	0.6+
1996 11 15	411	0.7+	0.9−	1999 04 15	704	0.6+	0.2−	1999 05 18	704	0.8−	0.4+
1996 11 30	411	0.3−	0.0	1999 04 15	704	0.8−	0.7−	1999 05 18	704	0.8+	0.8+
1996 11 30	411	0.2−	0.1−	1999 04 15	704	1.2+	0.5+	1999 05 19	704	0.7−	0.4−
1996 12 08	411	0.0	0.2−	1999 04 17	704	0.2+	0.9−	1999 05 19	704	0.2−	0.6+
1996 12 08	411	0.4−	0.6−	1999 04 17	704	0.6−	0.4−	1999 05 19	704	0.5−	0.6+
1996 12 15	691	0.1−	0.1−	1999 04 17	704	0.4+	0.7+	1999 05 19	704	0.3+	1.2−
1996 12 15	691	0.5−	0.2+	1999 04 20	704	0.1+	0.7−	1999 06 07	703	0.7+	0.1+
1996 12 15	691	0.2−	0.3−	1999 04 20	704	0.4+	1.9−	1999 06 07	703	0.3+	0.2+
1997 02 04	691	0.4−	0.1−	1999 04 20	704	0.5−	1.3−	1999 06 07	703	0.9+	0.4+
1997 02 04	691	0.4−	0.2+	1999 04 20	704	0.8+	0.4+	1999 06 07	703	0.5+	0.2+
1997 02 04	691	0.3−	0.2+	1999 04 20	704	0.7−	1.1−	1999 06 09	704	0.1+	0.1−
1998 01 28	566	0.3−	0.4+	1999 05 10	704	0.4−	0.0	1999 06 09	704	0.5+	0.4+
1998 01 28	566	0.5−	0.7+	1999 05 10	704	0.5−	0.9−	1999 06 09	704	0.1+	0.1+
1998 01 28	566	0.2−	0.3+	1999 05 10	704	0.6−	0.6+	1999 06 09	704	0.6−	0.2+
1998 02 24	566	0.3+	0.1+	1999 05 10	704	0.7−	0.3+	1999 06 09	704	0.9−	0.7+
1998 02 24	566	0.1+	0.1+	1999 05 10	704	0.6−	0.3+				

(10880)* 1996 VN₄ = 1994 LQ₆ = 1998 CO₄

Discovered 1996 Nov. 6 by N. Sato at Chichibu.

Id. S. Nakano (*MPC* 31391), T. Urata (*ibid.*), B. G. Marsden (*ibid.*), A. Gnädig (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	98.98893		(2000.0)	P	Q
<i>n</i>	0.19608636	ω	300.53771	−0.93294791	−0.35978231
<i>a</i>	2.9342997	Ω	218.37961	+0.33698518	−0.86016987
<i>e</i>	0.0404297	<i>i</i>	1.18508	+0.12668539	−0.36147542
<i>P</i>	5.03	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1994 06 03	809	0.1+	0.9+	1996 12 29	369	1.3−	0.2−	1999 05 18	704	1.9+	0.8+
1994 06 03	809	0.5+	1.4+	1998 02 06	809	(0.9+	2.4+)	1999 05 18	704	0.1−	0.4+
1994 06 03	809	1.4+	0.2+	1998 02 06	809	0.5−	1.4+	1999 05 18	704	0.6+	0.4−
1994 06 04	809	(2.7−	1.7+)	1998 02 06	809	0.4+	1.3+	1999 05 19	704	0.5+	0.1+
1994 06 04	809	1.5−	1.0+	1998 02 07	809	1.1−	0.9−	1999 05 19	704	(1.2−	2.2+)
1994 06 04	809	(0.2−	3.0+)	1998 02 07	809	0.4−	0.8−	1999 05 19	704	1.3−	1.5+
1996 11 06	369	0.0	0.7+	1998 02 07	809	0.8−	0.4−	1999 05 19	704	0.3−	0.2−
1996 11 06	369	0.4+	0.0	1998 03 03	809	0.8+	1.4+	1999 06 09	704	0.4−	1.1+
1996 11 06	369	0.8+	1.2+	1998 03 03	809	1.6+	0.6+	1999 06 09	704	0.3+	0.9+
1996 11 13	369	0.4−	0.8+	1998 03 03	809	1.0+	0.7+	1999 06 09	704	0.2+	1.5+
1996 11 13	369	0.4−	0.4+	1998 03 03	704	1.1+	0.1−	1999 06 09	704	0.1+	0.9−
1996 11 13	369	0.4−	0.6+	1998 03 03	704	0.3−	0.2+	1999 06 14	704	0.5−	0.4+
1996 11 15	369	0.4+	0.0	1998 03 03	704	0.6+	0.8+	1999 06 14	704	0.1+	0.6+
1996 11 15	369	0.1+	0.8+	1998 03 03	704	1.3−	0.9−	1999 06 14	704	(2.2−	0.6+)
1996 11 15	369	0.2−	0.6+	1998 03 03	704	0.4−	0.4−	1999 06 14	704	0.5−	0.5+
1996 11 28	369	0.2−	0.2−	1998 03 04	809	0.7+	0.6−	1999 06 14	704	0.4−	0.1−
1996 11 28	369	0.1−	0.6−	1998 03 04	809	0.1+	0.7−	1999 06 14	704	0.4−	0.3−
1996 11 28	369	0.1−	0.5+	1998 03 04	809	0.7−	1.2−	1999 06 14	704	0.8−	0.8−
1996 12 14	369	0.3+	0.3+	1998 03 04	704	0.1−	0.5+	1999 06 14	704	0.6−	0.3−
1996 12 14	369	0.2+	0.7+	1998 03 04	704	0.1−	0.2−	1999 06 14	704	1.4−	0.8−
1996 12 28	369	0.3+	0.8+	1998 03 04	704	0.1−	0.2−	1999 06 15	704	0.7−	0.6+
1996 12 28	369	0.4−	0.8+	1998 03 04	704	(3.2−	1.8+)	1999 06 15	704	0.6+	0.1+
1996 12 29	369	0.1−	0.0	1998 03 04	704	0.2−	0.4+	1999 06 15	704	0.3+	0.3−
1996 12 29	369	0.4−	0.7+	1999 05 13	704	0.2+	0.0	1999 06 15	704	0.1−	0.3−
1996 12 29	369	0.4−	0.2+	1999 05 13	704	0.9+	0.6−	1999 06 15	704	0.1−	1.7−
1996 12 29	369	0.1+	0.1−	1999 05 13	704	0.2+	1.3+				
1996 12 29	369	0.0	0.3−	1999 05 13	704	1.9+	1.3+				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Nakano						
M	14.42099	(2000.0)		P		Q					
n	0.23892237	ω	47.98947	-0.26289985	+0.96026300						
a	2.5721611	Ω	207.19621	-0.93469668	-0.27756472						
e	0.1531386	i	11.82968	-0.23921912	+0.02920264						
P	4.13 <th>H</th> <td>13.8<th>G</th><td>0.15<th>U</th><td colspan="3">2</td></td></td>	H	13.8 <th>G</th> <td>0.15<th>U</th><td colspan="3">2</td></td>	G	0.15 <th>U</th> <td colspan="3">2</td>	U	2				
Residuals in seconds of arc											
1992 10 21	675	0.6+	1.8-	1997 11 29	688	0.5+	0.7+	1999 05 17	704	1.2-	0.8-
1992 10 21	675	(2.8+	1.2+)	1997 11 29	688	0.5+	0.5+	1999 05 17	704	0.0	1.0-
1992 11 28	675	0.3+	0.7+	1997 12 27	688	0.6-	0.1-	1999 05 17	704	2.0-	1.6-
1992 11 28	675	1.0-	1.0+	1997 12 27	688	0.7-	0.6-	1999 05 17	704	0.6-	0.6-
1996 11 04	385	0.5+	0.1-	1998 01 20	886	0.9+	0.2-	1999 05 21	704	1.3+	1.4-
1996 11 04	385	0.5+	0.0	1998 01 20	886	1.8-	0.3-	1999 05 21	704	1.4+	0.7+
1996 11 04	385	0.4+	0.1-	1998 01 30	385	0.1-	0.7-	1999 05 21	704	2.1+	1.0+
1996 11 09	385	1.9-	1.8-	1998 01 30	385	1.0+	0.2-	1999 05 21	704	1.1-	1.7+
1996 11 09	385	0.0	1.9+	1999 04 15	732	0.1+	0.0	1999 06 04	888	0.1-	0.2+
1996 11 14	385	0.3-	0.5-	1999 04 15	732	0.2-	0.4+	1999 06 04	888	0.1-	0.3-
1996 11 14	385	0.4+	0.0	1999 04 16	732	0.4-	0.1+	1999 06 08	704	0.6+	0.1+
1996 11 14	385	0.3-	0.1+	1999 04 16	732	0.5+	1.1+	1999 06 08	704	0.1+	0.4+
1996 11 16	385	0.7-	0.6+	1999 04 29	888	0.2-	0.3+	1999 06 08	704	0.0	0.4-
1996 11 16	385	0.2-	0.1+	1999 05 12	888	0.4+	0.3+	1999 06 08	704	0.4-	0.0
1996 11 16	385	0.9-	0.2-	1999 05 12	888	1.1+	0.7-	1999 06 08	704	0.2-	0.1+
1996 12 01	385	1.4+	1.0-	1999 05 14	704	0.0	0.4-	1999 06 14	704	0.5+	0.4+
1996 12 01	385	0.7+	0.4-	1999 05 14	704	0.4+	0.3-	1999 06 14	704	0.1+	0.1+
1996 12 01	385	1.0+	1.0-	1999 05 14	704	0.7-	1.2-	1999 06 14	704	0.3+	0.4+
1997 01 09	385	0.6+	0.1-	1999 05 14	704	2.0-	0.6-	1999 06 14	704	0.0	0.0
1997 01 09	385	0.4-	0.2+	1999 05 17	704	0.5+	0.4-	1999 06 14	704	0.1+	0.3+

(10882)* 1996 VG₅ = 1991 RD₂₁

Discovered 1996 Nov. 3 by K. Endate and K. Watanabe at Kitami.

Id. D. J. Asher (*MPC* 31976)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Nakano					
M	283.58071		(2000.0)		P		Q				
n	0.21486695		ω	283.98572		+0.79332443		+0.60593142			
a	2.7607238		Ω	38.76690		−0.51583970		+0.72051155			
e	0.1461844		i	5.40869		−0.32333535		+0.33720947			
P	4.59 <th>H</th> <td colspan="2">13.2<th>G</th><td colspan="2">0.15<th>U</th><td colspan="2">1</td></td></td>		H	13.2 <th>G</th> <td colspan="2">0.15<th>U</th><td colspan="2">1</td></td>		G	0.15 <th>U</th> <td colspan="2">1</td>		U	1	
Residuals in seconds of arc											
1991 09 14	675	0.3+	0.1−	1999 04 07	704	0.2−	0.3+	1999 04 16	704	0.1−	1.5+
1991 09 14	675	0.0	0.3+	1999 04 07	704	0.7−	1.4+	1999 05 08	703	0.0	0.0
1991 09 16	675	0.4−	0.2+	1999 04 09	699	0.5+	0.1−	1999 05 08	703	0.2+	0.5−
1991 09 16	675	0.1−	0.0	1999 04 09	699	1.5+	1.3−	1999 05 08	703	0.3−	0.5−
1996 11 03	400	1.1−	1.1+	1999 04 09	699	0.7+	0.6−	1999 05 08	703	0.7−	0.2−
1996 11 03	400	1.9−	0.0	1999 04 12	704	0.4+	1.2+	1999 05 12	704	0.5+	0.1−
1996 11 07	400	0.3−	1.6+	1999 04 12	704	0.1−	1.5+	1999 05 12	704	0.3+	0.7−
1996 11 07	400	0.3−	1.7+	1999 04 12	704	0.1+	1.2+	1999 05 12	704	0.9−	0.1+
1996 11 13	400	0.9+	0.7+	1999 04 12	704	0.5+	1.1+	1999 05 13	704	0.5−	0.1−
1996 11 13	400	0.2+	0.8+	1999 04 12	704	0.1+	1.2+	1999 05 13	704	0.2+	0.2−
1998 01 24	566	0.5−	0.6−	1999 04 15	704	0.3−	1.8+	1999 05 13	704	0.2−	1.3+
1998 01 24	566	0.4−	0.7−	1999 04 15	704	0.1+	0.2−	1999 05 13	704	1.5−	0.8−
1998 01 24	566	0.4−	0.6−	1999 04 15	704	1.1+	0.5+	1999 05 13	704	0.0	0.3+
1998 02 23	566	0.2+	0.1+	1999 04 15	704	1.1+	1.5−	1999 05 17	703	0.3−	1.4−
1998 02 23	566	0.2+	0.3−	1999 04 15	704	(2.5+	0.1−)	1999 05 17	703	0.2−	1.0−
1998 02 23	566	0.2+	0.7−	1999 04 16	704	1.0+	0.1+	1999 05 17	703	0.2−	0.6+
1999 04 07	704	0.7+	0.4+	1999 04 16	704	0.4+	0.5+	1999 05 17	703	0.3−	0.6+
1999 04 07	704	0.1−	0.2+	1999 04 16	704	0.3+	0.1+				

(10883)* 1996 VU₅ = 1990 SA₂₇ = 1992 CM₈

Discovered 1996 Nov. 14 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 30670), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Nakano					
M	183.60399	(2000.0)		P		Q					
n	0.17748056	ω	279.99229	+0.54359201		-0.83893798					
a	3.1359480	Ω	137.04511	+0.78440895		+0.49661861					
e	0.1702084	i	2.21048	+0.29868098		+0.22260505					
P	5.55 <th>H</th> <td>13.2<th>G</th><td>0.15<th>U</th><td>1<td colspan="4"></td></td></td></td>	H	13.2 <th>G</th> <td>0.15<th>U</th><td>1<td colspan="4"></td></td></td>	G	0.15 <th>U</th> <td>1<td colspan="4"></td></td>	U	1 <td colspan="4"></td>				
Residuals in seconds of arc											
1990 09 22	095	0.6+	0.2+	1998 03 03	699	0.2+	1.1+	1998 03 29	704	1.0+	1.5-
1990 09 22	095	(2.9+	0.8-)	1998 03 03	699	0.2+	1.3+	1998 03 29	704	0.4-	1.2-
1992 02 05	691	0.1+	0.4+	1998 03 03	699	0.2+	0.4+	1998 03 29	704	(1.3+	2.8-)
1992 02 05	691	0.2-	0.1-	1998 03 20	704	0.1-	0.8-	1999 04 21	691	0.1+	0.0
1992 02 05	691	0.7-	0.4+	1998 03 20	704	0.3+	0.1+	1999 04 21	691	0.2-	0.1-
1996 11 14	411	0.7-	0.3+	1998 03 20	704	0.5-	1.2-	1999 04 21	691	0.0	0.0
1996 11 14	411	0.5+	0.6+	1998 03 20	704	0.7+	0.3+	1999 05 10	704	1.5-	0.1-
1996 11 15	411	0.6-	0.4+	1998 03 20	704	0.5+	0.8-	1999 05 10	704	(2.4-	0.2+)
1996 11 15	411	0.5+	0.7-	1998 03 22	704	1.2-	1.1-	1999 05 10	704	1.4+	0.2+
1996 11 19	411	0.2-	0.1-	1998 03 22	704	1.0-	0.1+	1999 05 10	704	1.5-	0.3+
1996 11 19	411	0.1+	0.3+	1998 03 22	704	0.6-	1.0-	1999 05 13	704	0.6-	1.6+
1996 11 30	411	0.2+	0.0	1998 03 22	704	0.7-	0.7+	1999 05 13	704	0.6+	1.1-
1996 11 30	411	0.4-	0.0	1998 03 25	566	0.3+	0.2-	1999 05 13	704	1.7+	0.8+
1996 12 08	411	0.0	0.2-	1998 03 25	566	0.5+	0.0	1999 05 13	704	(1.4-	2.6+)
1996 12 08	411	0.1-	0.1+	1998 03 25	566	0.1+	0.1-	1999 05 13	704	0.7-	0.0
1998 03 03	704	1.3-	1.9+	1998 03 26	704	0.2-	0.2+	1999 05 18	704	0.3+	0.3-
1998 03 03	704	1.0+	0.5+	1998 03 26	704	0.2+	1.0+	1999 05 18	704	0.5+	1.4+
1998 03 03	704	(0.5-	2.4+)	1998 03 26	704	0.7+	0.0	1999 05 18	704	0.6-	0.9-
1998 03 03	704	0.2-	0.1-	1998 03 29	704	0.6+	0.1+				
1998 03 03	704	0.2+	0.1-	1998 03 29	704	1.1+	1.1-				

(10884)* 1996 VD₉ = 1987 RF₂ = 1992 YZ₂

Discovered 1996 Nov. 7 by K. Endate and K. Watanabe at Kitami.

Id. S. Nakano (*MPC* 28603)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Nakano						
M	255.79739		(2000.0)		P		Q				
n	0.23229923		ω	270.80662	+0.89454903		-0.44236903				
a	2.6208221		Ω	115.45055	+0.43308055		+0.82243110				
e	0.1204521		i	4.06228	+0.11055886		+0.35765449				
P	4.24 <th>H</th> <td>13.3<th>G</th><td>0.15<th>U</th><td colspan="2">1</td></td></td>		H	13.3 <th>G</th> <td>0.15<th>U</th><td colspan="2">1</td></td>	G	0.15 <th>U</th> <td colspan="2">1</td>	U	1			
Residuals in seconds of arc											
1987 09 01	095	0.8+	2.1-	1998 02 28	809	(2.3+	1.7+)	1998 04 18	704	1.4+	0.1-
1992 12 28	372	0.9-	0.5-	1998 02 28	809	(3.2+	2.1+)	1998 04 18	704	0.8-	0.8-
1992 12 28	372	1.1+	0.5+	1998 02 28	809	(2.8+	2.2+)	1998 04 18	704	0.8+	0.9-
1992 12 29	372	0.1+	0.9+	1998 03 03	699	0.2-	0.4+	1998 04 18	704	0.9-	0.2-
1992 12 31	372	0.4-	0.6-	1998 03 03	699	0.2-	0.7+	1998 04 18	704	1.4-	0.4-
1996 11 07	400	1.3+	1.6-	1998 03 03	699	0.2+	0.7-	1999 05 19	704	(2.5+ 0.0)	
1996 11 07	400	2.0+	1.2-	1998 03 20	704	0.0	0.7-	1999 05 19	704	0.6+	1.9+
1996 11 08	400	1.6-	1.1-	1998 03 20	704	0.3+	0.8-	1999 05 19	704	0.9+	0.7-
1996 11 08	400	0.8+	0.8-	1998 03 20	704	0.1+	0.7-	1999 05 19	704	0.9-	1.0-
1996 11 13	400	0.5+	0.2+	1998 03 20	704	0.8-	1.1-	1999 06 09	704	0.4-	0.0
1996 11 13	400	0.4+	0.3-	1998 03 20	704	0.1-	0.1-	1999 06 09	704	0.6+	0.6-
1996 11 16	400	1.0-	0.3-	1998 03 22	704	0.3-	0.3-	1999 06 09	704	0.7-	0.6-
1996 11 16	400	1.0-	0.2-	1998 03 22	704	1.6-	1.2-	1999 06 09	704	0.2-	0.6-
1998 02 26	566	0.3+	0.2+	1998 03 22	704	0.3-	0.4-	1999 06 09	704	0.3+	0.4-
1998 02 26	566	0.6+	0.0	1998 03 22	704	1.0-	0.4+	1999 06 15	704	0.2-	0.2-
1998 02 26	566	0.6+	0.2+	1998 03 22	704	0.9-	0.1+	1999 06 15	704	0.2+	0.5-
1998 02 27	809	1.7+	2.1+	1998 03 26	704	0.6+	1.1-	1999 06 15	704	0.1-	0.2-
1998 02 27	809	(1.6+	2.5+)	1998 03 26	704	0.5-	0.6-	1999 06 15	704	0.3-	0.1-
1998 02 27	809	1.4+	1.7+	1998 03 26	704	0.9-	0.7-	1999 06 15	704	0.3-	0.5-

(10885)* 1996 VE₉ = 1951 EA₁ = 1977 CK₃ = 1986 YX = 1991 TS₁

1999 JUNE 22

M.P.C. 34793

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	78.56625		(2000.0)	P	Q
<i>n</i>	0.18894825	ω	94.45547	-0.97471701	-0.12203647
<i>a</i>	3.0077435	Ω	78.61575	+0.03164142	-0.90462284
<i>e</i>	0.0446124	<i>i</i>	11.00705	+0.22119123	-0.40836824
<i>P</i>	5.22	<i>H</i>	12.0	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1951 03 09	760	0.9-	0.4+	1998 02 24	732	0.9-	0.7+	1999 05 14	704	0.4+	1.0+
1951 03 09	760	0.7+	0.0	1998 02 24	732	0.8-	1.2+	1999 05 18	704	0.5-	0.9-
1977 02 12	675	0.5+	0.5+	1998 02 25	732	0.1-	0.1-	1999 05 18	704	0.8+	0.7-
1977 02 13	675	0.7+	0.3+	1998 02 25	732	0.1-	0.7-	1999 05 18	704	0.7-	0.0
1986 12 30	675	(8.9+	0.8+)	1998 02 25	732	0.3+	0.6-	1999 05 18	704	0.2-	0.7+
1986 12 30	675	(4.8+	1.0+)	1998 02 26	732	0.1-	0.2+	1999 05 18	704	1.7-	0.6+
1987 01 01	675	(5.9-	1.0+)	1998 02 26	732	0.2+	0.2+	1999 05 19	704	0.3+	0.0
1987 01 01	675	(6.3-	0.4+)	1998 02 26	732	1.0+	0.1-	1999 05 19	704	0.4-	0.2+
1991 10 06	033	0.2+	0.0	1998 03 02	732	0.3+	0.3-	1999 05 19	704	0.5+	0.6+
1991 10 06	033	0.1+	0.3-	1998 03 02	732	0.2+	0.7+	1999 05 19	704	0.2-	1.0-
1991 10 08	033	0.8-	0.2-	1998 03 02	732	0.8+	0.7-	1999 05 19	704	0.6-	0.5-
1991 10 09	033	1.4-	0.1+	1998 03 03	732	0.0	0.6-	1999 06 09	704	0.2+	0.6-
1991 10 10	033	1.0-	0.1+	1998 03 03	732	0.5-	0.7-	1999 06 09	704	1.2-	0.9+
1996 11 07	400	2.0+	1.3-	1998 03 03	732	0.7-	0.9-	1999 06 09	704	0.5-	1.2-
1996 11 07	400	(3.0+	0.3+)	1998 03 19	689	0.3+	0.4-	1999 06 09	704	0.4-	1.1-
1996 11 08	400	0.7+	0.0	1999 02 26	704	1.9-	0.7-	1999 06 09	704	0.7-	0.7-
1996 11 08	400	(4.0+	1.0-)	1999 02 26	704	0.3-	0.2-	1999 06 11	703	0.3+	0.8-
1996 11 13	400	0.9-	0.5+	1999 02 26	704	1.1-	0.5-	1999 06 11	703	0.6+	0.6-
1996 11 13	400	0.3-	0.5+	1999 02 26	704	0.2-	1.3+	1999 06 11	703	0.8+	0.0
1996 11 16	400	0.0	0.6-	1999 02 26	704	0.4+	0.9-	1999 06 11	703	0.5+	0.1+
1996 11 16	400	0.3+	0.6-	1999 05 10	704	1.2+	0.1-	1999 06 11	703	0.4+	0.4+
1996 12 01	691	0.5-	0.0	1999 05 10	704	1.0+	0.1+	1999 06 11	703	0.7+	0.5+
1996 12 01	691	0.6-	0.1+	1999 05 10	704	0.8-	1.4+	1999 06 11	703	0.2+	0.0
1996 12 01	691	0.6-	0.1+	1999 05 10	704	0.3-	0.5+	1999 06 11	703	0.6+	1.0+
1996 12 18	691	0.5+	0.0	1999 05 10	704	0.3-	0.6+	1999 06 12	703	0.5+	0.6-
1996 12 18	691	1.0+	1.1+	1999 05 11	367	0.1+	0.3-	1999 06 12	703	0.5+	0.2+
1996 12 18	691	0.1+	0.3+	1999 05 11	367	0.2+	0.3-	1999 06 12	703	0.0	0.4+
1998 02 16	552	0.4-	0.1-	1999 05 13	727	0.0	0.3-	1999 06 12	703	0.3+	0.7+
1998 02 16	552	0.1-	0.2+	1999 05 13	727	0.1+	0.2+	1999 06 15	704	0.4-	0.5-
1998 02 16	552	0.7-	0.3+	1999 05 13	704	0.7+	0.3+	1999 06 15	704	0.1+	0.1-
1998 02 16	552	0.2+	0.0	1999 05 13	704	1.1-	0.3-	1999 06 15	704	1.4-	0.2-
1998 02 23	732	(2.9+	0.6+)	1999 05 13	704	0.4+	1.6+	1999 06 15	704	0.8-	0.4-
1998 02 23	732	0.6+	0.1+	1999 05 13	704	0.7+	0.5+	1999 06 15	704	0.4-	0.1-
1998 02 23	732	0.6+	0.2+	1999 05 14	704	1.4+	0.6-				
1998 02 24	732	0.5-	0.0	1999 05 14	704	1.0+	0.1+				

(10886)* 1996 VR₃₀ = 1990 VJ₇

Discovered 1996 Nov. 10 by T. Okuni at Nanyou.

Id. S. Nakano (*MPC* 28604)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	52.62276		(2000.0)	P	Q
<i>n</i>	0.17403205	ω	276.86130	-0.98861522	+0.09603874
<i>a</i>	3.1772390	Ω	268.69611	-0.04323511	-0.91865855
<i>e</i>	0.0241978	<i>i</i>	6.65321	-0.14412031	-0.38320102
<i>P</i>	5.66	<i>H</i>	12.4	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1989 09 03	675	0.0	0.2-	1998 01 24	566	1.0-	0.5-	1999 05 10	704	0.5-	0.1-
1989 09 03	675	0.8-	0.3+	1998 01 24	566	0.7-	0.7-	1999 05 10	704	0.5-	0.2-
1990 10 22	675	0.8+	0.0	1998 01 29	566	0.6+	0.1+	1999 05 10	704	0.4-	0.5+
1990 10 22	675	0.3+	0.2-	1998 01 29	566	0.5+	0.2+	1999 05 10	704	1.4+	0.6+
1990 11 11	675	0.2-	1.5-	1998 01 29	566	0.4+	0.1+	1999 05 10	704	0.5-	0.4+
1990 11 11	675	0.8+	0.2+	1999 04 15	704	0.5+	0.1+	1999 05 13	704	0.7+	0.9-
1990 11 13	675	0.9+	1.2-	1999 04 15	704	0.2-	0.5+	1999 05 13	704	0.5+	1.3-
1990 11 13	675	0.4-	1.5-	1999 04 15	704	1.5+	0.6+	1999 05 13	704	0.1+	1.1-
1996 11 10	358	0.1+	0.4-	1999 04 15	704	0.7+	0.2-	1999 05 13	704	0.5+	0.1-
1996 11 10	358	0.4-	0.5-	1999 04 15	704	(3.4-	0.5+)	1999 05 13	704	0.4+	0.5-
1996 11 16	358	0.5+	0.1-	1999 04 17	704	(0.7-	3.0+)	1999 05 18	704	0.6-	0.6-

1996 11 16	358	0.3+	0.7+	1999 04 17	704	0.6-	0.1+	1999 05 18	704	0.4-	0.5-
1996 11 19	358	(1.4-	2.3+)	1999 04 17	704	0.3-	1.2+	1999 05 18	704	1.0-	0.5-
1996 11 19	358	0.5+	0.9+	1999 04 17	704	0.2+	1.0+	1999 05 18	704	0.2+	0.9+
1996 12 02	358	0.9-	1.7+	1999 04 17	704	0.3-	1.5+	1999 05 18	704	1.1-	0.9+
1996 12 02	358	2.0-	0.9+	1999 04 20	704	0.5+	0.3+	1999 05 19	704	1.1+	0.4-
1996 12 16	358	1.1+	0.3-	1999 04 20	704	0.7+	0.5-	1999 05 19	704	0.3+	0.1+
1996 12 16	358	0.0	1.2-	1999 04 20	704	0.9-	0.5-	1999 05 19	704	0.8-	0.3+
1996 12 16	358	0.1+	1.3+	1999 04 20	704	0.6+	0.2-	1999 05 19	704	0.4-	2.0-
1998 01 24	566	0.5-	0.4-	1999 04 20	704	1.2-	0.2-	1999 05 19	704	0.3-	0.9-

(10887)* 1996 XU₂₅ = 1981 UH₄ = 1998 FW₂₅

Discovered 1996 Dec. 12 by T. Urata at the Nihondaira Observatory.

Id. S. Nakano (*MPC* 31550), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	235.23473		(2000.0)	P	Q
<i>n</i>	0.20047941	ω	172.06384	+0.85566471	-0.51714483
<i>a</i>	2.8912759	Ω	219.09808	+0.47306823	+0.79722364
<i>e</i>	0.0615940	<i>i</i>	1.81537	+0.20986747	+0.31144132
<i>P</i>	4.92	<i>H</i>	13.5	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1981 10 30	381	0.9-	1.5+	1998 03 04	704	1.3-	0.3+	1999 05 10	704	1.4+	1.3+
1981 10 30	381	0.4+	0.9+	1998 03 20	704	1.6-	0.3+	1999 05 10	704	0.2-	1.2-
1996 12 12	385	1.1+	0.0	1998 03 20	704	0.2-	1.4+	1999 05 13	704	1.0+	0.5+
1996 12 12	385	0.1-	0.3-	1998 03 20	704	0.5-	0.1+	1999 05 13	704	1.8+	1.4+
1996 12 12	385	0.1+	0.2-	1998 03 20	704	0.1-	0.4+	1999 05 13	704	0.7-	0.3+
1996 12 14	385	0.2+	0.2-	1998 03 20	704	0.1-	0.2+	1999 05 13	704	0.1+	0.3+
1996 12 14	385	0.1+	0.3-	1998 03 22	704	1.1-	0.6-	1999 05 18	704	1.7-	1.6+
1996 12 14	385	0.0	0.0	1998 03 22	704	0.2+	0.2-	1999 05 18	704	0.6+	0.7+
1997 01 06	385	0.5+	0.1-	1998 03 22	704	0.1-	0.1-	1999 05 18	704	1.3-	0.7+
1997 01 06	385	0.2-	0.2+	1998 03 22	704	0.5+	0.4-	1999 05 18	704	0.6+	1.7+
1997 01 07	385	0.0	0.1+	1998 03 22	704	2.0+	0.3+	1999 05 19	704	0.2-	0.2+
1997 01 07	385	0.6-	0.9+	1998 03 26	704	0.6+	0.4-	1999 05 19	704	0.1+	0.4-
1997 02 04	385	0.0	0.1-	1998 03 26	704	1.0+	0.4-	1999 05 19	704	0.3-	0.9+
1997 02 04	385	1.4-	0.4-	1998 03 26	704	1.0+	0.3+	1999 05 19	704	0.8-	1.0-
1998 02 28	809	0.3-	1.8+	1998 03 29	704	1.0+	0.4-	1999 06 09	704	1.3-	0.0
1998 03 02	809	0.1+	1.7+	1998 03 29	704	0.3-	0.1+	1999 06 09	704	0.5+	0.9-
1998 03 03	704	0.6+	0.3-	1998 03 29	704	0.5-	0.1-	1999 06 09	704	1.3-	0.2-
1998 03 03	704	0.9+	1.1-	1998 03 29	704	0.3-	0.3-	1999 06 09	704	0.6+	0.3+
1998 03 03	704	1.4+	0.2+	1998 03 29	704	1.0-	0.1-	1999 06 09	704	1.8-	0.7+
1998 03 03	704	0.8+	0.9-	1998 04 18	704	1.2+	0.2+	1999 06 15	704	0.8+	0.0
1998 03 03	704	1.0+	0.0	1998 04 18	704	0.1+	1.2+	1999 06 15	704	0.9+	0.2-
1998 03 04	704	2.1-	0.2-	1998 04 18	704	1.6+	1.5-	1999 06 15	704	0.1-	0.3-
1998 03 04	704	2.0-	0.7-	1998 04 18	704	(5.4-	0.7+)	1999 06 15	704	0.1+	1.6-
1998 03 04	704	(2.9-	0.6+)	1999 05 10	704	1.1+	0.4+	1999 06 15	704	0.7+	1.4-
1998 03 04	704	1.9-	0.4-	1999 05 10	704	0.3-	1.6-				

(10888)* 1996 XT₃₀ = 1982 JR₄ = 1987 FD₁

Discovered 1996 Dec. 6 by Y. Shimizu and T. Urata at the Nachi-Katsuura

Observatory.

Id. S. Nakano (*MPC* 28874)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	23.68258		(2000.0)	P	Q
<i>n</i>	0.17399373	ω	148.70154	-0.62488632	+0.717377

1996 12 06	905	0.2+	0.6-	1999 02 20	704	1.0+	1.8-	1999 05 18	704	0.3+	0.8+
1996 12 14	385	0.4+	0.1+	1999 04 13	426	0.3+	0.2+	1999 05 18	704	0.3+	0.7-
1996 12 14	385	0.3-	0.5+	1999 04 13	426	0.4+	0.3-	1999 05 18	704	0.5+	1.0-
1996 12 14	385	0.1-	0.6+	1999 04 13	426	0.1-	0.1-	1999 05 18	704	0.7-	0.1-
1996 12 15	905	0.3+	0.5-	1999 04 14	426	0.4+	0.0	1999 05 18	704	1.2-	0.3-
1996 12 15	905	1.0-	0.4+	1999 04 14	426	0.0	0.0	1999 05 19	704	0.1+	0.2-
1996 12 15	905	0.1+	1.8-	1999 04 14	426	0.0	0.0	1999 05 19	704	0.3-	0.6+
1997 01 06	385	0.2-	1.0+	1999 04 29	888	0.2+	0.4+	1999 05 19	704	0.5+	0.6+
1997 01 06	385	0.0	0.6+	1999 04 29	888	0.9+	0.1-	1999 05 19	704	0.8-	0.1+
1997 01 06	385	0.2+	0.6+	1999 05 10	704	0.2+	0.5+	1999 06 09	704	0.5+	0.1+
1998 02 06	385	0.5+	0.6+	1999 05 10	704	0.6+	0.3+	1999 06 09	704	0.2+	0.7+
1998 02 06	385	0.1+	0.2+	1999 05 10	704	0.3-	0.0	1999 06 09	704	0.4+	0.1-
1998 03 06	886	0.1-	0.5-	1999 05 10	704	0.1+	0.1+	1999 06 09	704	1.2+	0.8+
1998 03 06	886	1.0-	0.2+	1999 05 10	704	0.4-	0.6-	1999 06 09	704	0.3-	0.1+
1998 03 17	886	1.2-	0.8-	1999 05 11	367	0.3-	0.1+	1999 06 14	704	0.9-	0.6+
1998 03 17	886	0.1+	1.4-	1999 05 11	367	0.1-	0.0	1999 06 14	704	0.2+	0.5+
1998 04 19	699	0.7-	1.8+	1999 05 13	704	0.2+	0.4-	1999 06 14	704	0.3+	0.2+
1998 04 19	699	0.8+	0.4+	1999 05 13	704	0.5-	0.0	1999 06 14	704	0.3-	0.8+
1998 04 19	699	1.1+	0.2+	1999 05 13	704	1.4+	1.1-				

(10889)* 1997 AO₁ = 1986 VK₄ = 1989 BK₂

Discovered 1997 Jan. 2 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 30460), T. B. Spahr (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.12559098	ω	187.89983	+0.51040684	+0.85590138		
<i>a</i>	3.9490904	Ω	112.82555	-0.78395761	+0.50287945		
<i>e</i>	0.0708684	<i>i</i>	5.17737	-0.35340533	+0.12060301		
<i>P</i>	7.85	<i>H</i>	11.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1986 11 07	010	0.7-	0.5+	1998 03 22	704	0.8+	0.1-	1999 05 12	704	1.8-	0.0
1986 11 07	010	0.1+	0.7-	1998 03 25	704	0.4+	0.3+	1999 05 13	704	0.5+	0.1-
1989 01 31	675	0.5+	1.2-	1998 03 25	704	0.4-	0.9+	1999 05 13	704	0.7+	0.4-
1989 01 31	675	0.4+	0.0	1998 03 25	704	0.0	0.7+	1999 05 13	704	0.7+	0.3+
1997 01 02	411	0.8+	0.1+	1998 03 25	704	0.8-	0.1-	1999 05 13	704	0.8+	0.3+
1997 01 02	411	0.4-	0.4-	1998 03 25	704	0.6-	0.9+	1999 05 13	704	0.2-	0.0
1997 01 03	411	1.0+	1.0+	1998 04 19	704	0.5+	0.4-	1999 05 14	704	0.1+	0.1-
1997 01 03	411	0.2+	1.1+	1998 04 19	704	0.7+	0.9+	1999 05 14	704	0.3-	0.7+
1997 01 09	411	0.4-	0.1-	1998 04 19	704	(1.8-	2.6-)	1999 05 14	703	0.0	0.0
1997 01 09	411	0.4-	0.6+	1998 04 19	704	0.9-	0.5-	1999 05 14	704	0.1+	0.6-
1997 01 16	411	0.1+	0.2-	1998 04 19	704	0.4+	0.1+	1999 05 14	703	0.3+	0.6+
1997 01 16	411	0.3-	0.2+	1999 04 05	120	1.6-	0.5+	1999 05 14	704	0.8-	1.4+
1997 01 27	411	0.0	0.8+	1999 04 05	120	0.2-	0.7-	1999 05 14	703	0.4+	0.3-
1997 01 27	411	0.5+	0.7+	1999 04 05	120	(2.3+	0.9-)	1999 05 14	704	1.1-	1.0+
1997 02 12	411	0.5+	0.3+	1999 04 06	120	0.8-	0.2+	1999 05 14	703	1.6+	0.4+
1997 02 12	411	0.1-	0.0	1999 04 06	120	(2.9+	0.4+)	1999 05 17	704	1.2+	0.0
1998 02 24	627	(2.3+	3.1+)	1999 04 06	120	0.3-	0.5-	1999 05 17	704	0.7-	1.3-
1998 02 24	627	(2.2+	2.8+)	1999 04 12	704	0.1+	0.9-	1999 05 17	704	1.4+	0.1+
1998 02 24	627	(0.9+	3.3+)	1999 04 12	704	0.5+	0.1+	1999 05 17	704	0.5-	0.6+
1998 02 26	566	1.1-	1.0-	1999 04 12	704	0.6+	0.4-	1999 05 17	704	1.9-	0.2-
1998 02 26	566	0.4-	0.3+	1999 04 12	704	0.5+	0.7-	1999 05 18	704	0.4+	0.4+
1998 02 26	566	1.2-	0.8-	1999 04 12	704	0.7+	0.0	1999 05 18	704	0.1-	0.5-
1998 02 26	566	0.1+	0.4+	1999 04 19	120	0.3-	0.3+	1999 05 18	704	0.1-	1.4+
1998 02 26	566	1.6-	0.8-	1999 04 19	120	0.1-	0.0	1999 05 18	704	0.6+	0.6+
1998 02 26	566	0.6-	1.2-	1999 04 19	120	0.3+	0.2-	1999 05 18	704	0.3+	1.9+
1998 03 01	809	0.1+	2.0-	1999 04 19	704	0.4+	0.7-	1999 05 19	704	0.8+	0.3-
1998 03 01	809	(0.0	2.3-)	1999 04 19	704	0.0	0.5+	1999 05 19	704	0.6+	0.9-
1998 03 01	809	(0.6-	2.7-)	1999 04 19	704	0.5-	0.3+	1999 05 19	704	(2.3+	1.3+)
1998 03 02	809	(0.0	2.9-)	1999 04 19	704	0.4+	1.0+	1999 05 19	704	1.1+	0.1-
1998 03 02	809	(0.6-	2.5-)	1999 04 19	704	0.2-	0.5+	1999 05 19	704	0.7+	1.3-
1998 03 02	809	(0.9-	3.2-)	1999 05 09	120	0.4+	0.2-	1999 06 07	703	0.3+	0.7+
1998 03 22	704	0.4+	0.2-	1999 05 09	120	0.5-	0.3-	1999 06 07	703	0.3+	0.2+
1998 03 22	704	0.2-	0.2-	1999 05 12	704	1.7-	0.9-	1999 06 07	703	0.2-	0.4+
1998 03 22	704	0.6+	0.4+	1999 05 12	704	0.3-	0.6-	1999 06 07	703	0.2-	1.0+
1998 03 22	704	0.2+	0.2+	1999 05 12	704	0.3-	1.0-				

(10890)* 1997 AY₂ = 1984 WD₁ = 1990 XL = 1992 DX₁

Discovered 1997 Jan. 4 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 29120)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.17488187	ω	280.10355	+0.97198321	-0.14924667		
<i>a</i>	3.1669378	Ω	88.64880	+0.21109311	+0.89406016		
<i>e</i>	0.2296174	<i>i</i>	10.46519	-0.10338438	+0.42235276		
<i>P</i>	5.64	<i>H</i>	12.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1984 11 27	046	0.4+	0.8+	1998 03 24	704	1.4-	0.1-	1999 05 18	704	0.2+	0.2+
1984 11 27	046	0.8+	0.3-	1999 04 19	704	0.0	0.9+	1999 05 18	704	0.3-	0.8-
1984 11 28	046	(3.2-	1.3-)	1999 04 19	704	0.5+	1.4-	1999 05 19	704	(2.3+	1.4+)
1984 11 28	046	1.7-	1.7+	1999 04 19	704	(2.4-	1.5-)	1999 05 19	704	1.5-	0.5+
1984 11 30	046	(4.7-	2.9+)	1999 05 08	703	(2.7+	0.5+)	1999 05 19	704	1.1-	0.4-
1984 12 01	046	(2.1-	2.8+)	1999 05 08	703	0.3+	0.0	1999 05 19	703	0.3-	0.4+
1990 12 13	889	0.7-	2.0-	1999 05 08	703	0.4+	0.5+	1999 05 19	703	0.0	0.2+
1992 02 28	033	0.4-	0.4+	1999 05 08	703	0.5+	0.9+	1999 05 19	704	0.3-	2.0-
1992 02 28	033	0.1+	0.1-	1999 05 12	704	1.7+	0.1+	1999 05 19	703	0.3+	0.0
1992 02 29	033	0.7+	0.3-	1999 05 12	704	(0.3+	2.9+)	1999 05 19	703	0.2+	0.7-
1997 01 04	411	0.3+	1.0-	1999 05 12	704	1.9-	0.8+	1999 06 04	703	0.1-	0.5-
1997 01 04	411	0.2+	0.4+	1999 05 12	704	(2.3-	0.0)	1999 06 04	703	1.7+	0.3+
1997 01 06	411	0.2-	0.9+	1999 05 13	704	0.6-	0.0	1999 06 04	703	0.2+	0.5+
1997 01 06	411	0.2+	0.0	1999 05 13	704	1.1-	0.7+	1999 06 04	703	0.3-	0.2+
1997 01 10	411	0.1-	0.2-	1999 05 13	704	0.5+	0.3-	1999 06 07	703	0.9-	0.4+
1997 01 10	411	0.1-	0.5+	1999 05 13	704	0.3-	0.1+	1999 06 07	703	0.3+	0.8+
1997 01 15	411	0.2+	0.6+	1999 05 13	704	1.5-	1.5+	1999 06 07	703	1.4+	0.1-
1997 01 15	411	0.6+	0.5+	1999 05 17	704	0.5-	0.7-	1999 06 07	703	0.4+	0.5-
1997 01 27	411	0.2+	0.2+	1999 05 17	704	0.9-	0.7-	1999 06 14	704	0.1-	0.1-
1997 01 27	411	0.2-	0.1+	1999 05 17	704	1.3+	0.7+	1999 06 14	704	0.3+	0.6+
1998 03 16	411	1.2-	1.2-	1999 05 17	704	0.2-	0.4+	1999 06 14	704	0.1+	0.2+
1998 03 16	411	0.2-	0.9-	1999 05 17	704	1.2+	0.9-	1999 06 14	704	0.2+	0.0
1998 03 24	704	0.4+	0.7+	1999 05 18	704	0.7+	0.2-	1999 06 14	704	0.4-	0.2-
1998 03 24	704	0.8+	0.2+	1999 05 18	704	1.0+	0.4+				
1998 03 24	704	0.3+	0.0	1999 05 18	704	0.4+	0.5+				

(10891)* 1997 QR₃ = 1976 SO

Discovered 1997 Aug. 30 by the OCA-DLR Asteroid Survey at Caussols.

Id. G. V. Williams (*MPC* 30878)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	155.43601		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.28435147	<i>ω</i>	245.52638		+0.24833098		−0.96854968	
<i>a</i>	2.2903353	<i>Ω</i>	190.13214		+0.91775047		+0.24039707	
<i>e</i>	0.1247322	<i>i</i>	5.08635		+0.30994482		+0.06419325	
<i>P</i>	3.47	<i>H</i>	15.9		<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1976 09 29	049	0.5−	1.5−	1997 09 09	910	0.8−	0.8+	1997 10 29	704	0.8+	1.1+
1976 09 29	049	0.0	0.8−	1997 09 28	046	0.2+	0.1+	1997 10 30	704	1.5+	2.0−
1976 09 30	049	0.5+	0.1−	1997 09 28	046	0.6−	0.4+	1997 10 30	704	1.6+	1.9−
1976 09 30	049	0.4+	0.3−	1997 09 28	046	0.4−	0.1+	1997 10 30	704	1.3+	1.5−
1992 04 05	691	0.4+	0.1−	1997 09 28	046	0.4−	0.3−	1997 10 30	704	1.0+	1.8−
1992 04 05	691	0.4+	0.6−	1997 09 29	046	0.4−	0.1+	1997 10 30	704	1.0+	1.7−
1992 04 05	691	0.1+	0.9−	1997 09 29	046	0.4−	0.5+	1997 11 26	566	0.3−	0.3+
1993 07 15	691	0.3+	0.3+	1997 09 29	046	0.3−	0.4+	1997 11 26	566	0.2−	0.5+
1993 07 15	691	0.3+	0.0	1997 09 29	046	0.5−	0.1+	1997 11 26	566	0.0	0.0
1993 07 15	691	0.7+	0.1−	1997 09 29	046	0.7−	0.2+	1999 04 12	704	1.3−	0.8−
1997 08 30	910	0.1−	0.3−	1997 10 22	704	1.5−	0.1−	1999 04 12	704	1.1+	0.8+
1997 08 30	910	0.0	0.5+	1997 10 22	704	1.7−	0.4+	1999 04 19	704	1.2+	0.6−
1997 08 30	910	0.1−	0.2+	1997 10 22	704	0.9−	1.3+	1999 04 19	704	0.2+	0.2+
1997 09 01	910	0.8−	0.2+	1997 10 22	704	1.4−	0.5+	1999 04 19	704	0.0	0.5−
1997 09 01	910	0.8−	0.2+	1997 10 29	704	2.1+	0.9+	1999 04 19	704	3.6−	3.7+
1997 09 01	910	0.8−	0.0	1997 10 29	704	0.5+	0.9+	1999 05 13	704	0.6+	0.3−

1997 09 09 910 0.9- 0.9+ 1997 10 29 704 0.9+ 0.9+ 1999 05 13 704 0.9+ 0.5-
 1997 09 09 910 0.8- 1.0+ 1997 10 29 704 1.5+ 0.4+ 1999 05 13 704 0.6- 0.5-

(10892)* 1997 SX₂ = 1975 ER = 1990 QE₁₃ = 1991 XN₃

Discovered 1997 Sept. 23 at Farra d'Isonzo.

Id. A. Gnädig (*MPC* 31251)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams	
<i>M</i>	76.73518	(2000.0)	P	Q	
<i>n</i>	0.29034357	ω	161.31521	-0.79623824	-0.60467380
<i>a</i>	2.2587140	Ω	341.43931	+0.54702867	-0.70593650
<i>e</i>	0.1496587	<i>i</i>	3.48444	+0.25838790	-0.36881330
<i>P</i>	3.39	<i>H</i>	14.7	<i>G</i>	0.15 <i>U</i> 2

Residuals in seconds of arc

1975 03 06	095	0.1+	1.5+	1999 03 19	704	0.2+	0.4-	1999 04 14	704	0.1+	0.5-
1990 08 16	809	(1.0- 2.5-)		1999 03 19	704	0.0	0.7+	1999 04 14	704	0.9+	1.8+
1990 08 16	809	0.3+	0.7-	1999 03 19	595	0.5-	0.6-	1999 04 14	704	0.1-	1.0+
1990 08 16	809	1.3+	0.1+	1999 03 20	595	0.3+	0.2-	1999 04 15	704	0.1+	0.4-
1991 12 13	372	0.1-	1.5-	1999 03 20	704	0.5+	1.5-	1999 04 15	704	0.3+	0.1+
1991 12 13	372	0.5+	1.1-	1999 03 20	704	1.3-	1.2-	1999 04 15	704	0.2+	0.2+
1997 09 23	595	0.3-	0.8-	1999 03 20	704	0.1-	0.4+	1999 04 15	704	0.5-	0.8+
1997 09 23	595	0.5+	0.7-	1999 03 20	704	0.1+	0.6-	1999 04 15	704	0.9-	1.0+
1997 09 24	595	0.2-	0.4-	1999 03 21	595	0.4-	0.5-	1999 04 17	704	0.1-	0.3+
1997 09 25	595	0.1-	0.3-	1999 03 21	595	0.3-	0.3-	1999 04 17	704	0.1-	0.9-
1997 10 18	595	0.3+	0.5+	1999 03 23	704	0.5-	0.3-	1999 04 17	704	0.4-	0.1+
1997 10 18	595	0.1+	1.1-	1999 03 23	704	0.4+	0.6-	1999 04 17	704	0.1-	0.4-
1997 10 19	595	0.2+	0.2+	1999 03 23	704	0.3+	0.0	1999 04 17	704	0.0	0.5-
1997 10 19	595	0.2-	0.0	1999 03 23	704	0.5-	0.1+	1999 06 08	704	0.3-	0.2-
1997 10 19	595	0.4-	0.2+	1999 03 23	704	1.2-	0.3-	1999 06 08	704	0.1-	0.9-
1999 03 18	595	0.2-	0.0	1999 04 11	699	0.4+	0.6+	1999 06 08	704	0.4-	0.4-
1999 03 19	595	0.6-	0.0	1999 04 11	699	0.3+	0.8+	1999 06 08	704	0.4+	1.6-
1999 03 19	704	0.9-	0.3-	1999 04 11	699	0.3+	0.5+	1999 06 08	704	1.1+	0.5+
1999 03 19	704	0.8+	0.2-	1999 04 14	704	1.4+	0.0				

(10893)* 1997 SB₁₀ = 1978 EV₇ = 1990 AA₁

Discovered 1997 Sept. 19 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. S. Nakano (*MPC* 30880)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Nakano	
<i>M</i>	104.11987	(2000.0)	P	Q	
<i>n</i>	0.24008123	ω	250.14080	-0.54559893	-0.83583138
<i>a</i>	2.5638773	Ω	233.07426	+0.79457467	-0.49283256
<i>e</i>	0.1638325	<i>i</i>	4.36842	+0.26640740	-0.24187180
<i>P</i>	4.11	<i>H</i>	13.6	<i>G</i>	0.15 <i>U</i> 2

Residuals in seconds of arc

1978 03 05	095	0.2+	0.5+	1997 12 04	704	1.9-	1.2-	1999 05 13	704	0.7+	0.5-
1990 01 04	511	0.3-	0.8-	1997 12 05	704	0.2+	0.2-	1999 05 13	704	0.3+	0.1+
1990 01 04	511	0.2+	0.2-	1997 12 05	704	0.2+	0.0	1999 05 13	704	0.7-	0.2-
1997 09 19	327	0.2+	0.2+	1997 12 05	704	0.1+	0.4-	1999 05 13	704	0.6-	1.0-
1997 09 19	327	0.3+	0.1-	1997 12 05	704	0.2+	0.5+	1999 05 14	704	1.2+	0.8-
1997 09 19	327	0.7+	0.3+	1997 12 05	704	0.4-	0.6+	1999 05 14	704	1.1-	1.6+
1997 09 26	327	0.4+	0.1+	1998 02 28	327	0.5+	0.8+	1999 05 14	704	0.3-	0.1+
1997 09 26	327	0.2+	0.1-	1998 02 28	327	0.2+	0.3+	1999 05 14	704	1.3-	0.0
1997 09 26	327	0.3+	0.3+	1998 02 28	327	0.4+	0.6+	1999 05 14	704	0.7-	0.9-
1997 09 27	327	0.6+	0.0	1998 02 28	327	0.4+	0.1+	1999 05 15	703	0.5+	0.2+
1997 09 27	327	0.5+	0.0	1999 04 15	704	1.3+	0.1+	1999 05 15	703	0.1+	0.5+
1997 09 27	327	0.3+	0.2+	1999 04 15	704	0.2+	0.4+	1999 05 15	703	0.3+	0.4-
1997 11 06	411	0.4-	0.8-	1999 04 15	704	0.1-	0.5-	1999 05 15	703	0.7+	1.1-
1997 11 06	411	0.4+	0.2+	1999 04 15	704	0.4-	1.0-	1999 05 18	704	1.2-	1.2+
1997 11 26	704	1.7+	0.2-	1999 04 17	704	0.4-	0.1+	1999 05 18	704	0.3+	0.7-
1997 11 26	704	(2.2- 0.2+)		1999 04 17	704	0.2+	0.5-	1999 05 18	704	1.4-	0.7-
1997 11 26	704	1.2-	0.5+	1999 04 17	704	1.1-	0.5-	1999 05 18	704	0.5+	0.1-
1997 11 28	566	0.3+	1.1+	1999 04 20	704	0.1-	0.3+	1999 05 18	704	0.6-	0.4+
1997 11 28	566	0.0	0.7+	1999 04 20	704	0.1-	0.7-	1999 05 19	704	0.2-	0.7-

1997 11 28	566	0.2-	0.4+	1999 04 20	704	0.2+	0.6+	1999 05 19	704	0.6-	0.6-
1997 11 29	704	0.4-	0.3+	1999 04 20	704	0.6+	0.0	1999 05 19	704	0.7-	0.2-
1997 11 29	704	1.2-	0.1+	1999 04 20	704	0.3-	1.5+	1999 05 19	704	0.4+	0.5-
1997 11 29	704	0.5+	0.3-	1999 05 10	704	0.8+	0.8+	1999 05 19	704	0.2-	0.5+
1997 11 29	704	0.1-	0.4+	1999 05 10	704	0.5+	0.4+	1999 06 07	703	0.7+	1.6-
1997 11 29	704	0.4+	0.2+	1999 05 10	704	0.7+	0.7+	1999 06 07	703	0.3+	0.5+
1997 12 04	704	0.2-	1.1-	1999 05 10	704	0.5+	1.2+	1999 06 07	703	0.8+	1.2+
1997 12 04	704	1.0-	1.0-	1999 05 10	704	0.3-	0.3+	1999 06 07	703	0.5+	1.1+
1997 12 04	704	0.1-	1.5-	1999 05 13	704	0.2+	0.9-				

(10894)* 1997 SE₃₀ = 1972 EJ = 1981 UW₇

Discovered 1997 Sept. 30 by Spacewatch at Kitt Peak.

Id. A. Gnädig (*MPC* 31251)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams	
<i>M</i>	48.76278	(2000.0)	P	Q	
<i>n</i>	0.18300947	ω	246.83301	-0.60982979	-0.79197030
<i>a</i>	3.0724654	Ω	240.77812	+0.73906748	-0.55469014
<i>e</i>	0.2160482	<i>i</i>	1.95967	+0.28615883	-0.25515073
<i>P</i>	5.39	<i>H</i>	13.4	<i>G</i>	0.15 <i>U</i> 2

Residuals in seconds of arc

1972 03 14	095	0.1-	1.3-	1998 11 25	704	1.8+	1.6-	1999 03 19	704	0.8-	1.0-
1981 10 30	381	0.4-	0.6-	1998 11 25	704	(2.3+ 2.0-)		1999 03 19	699	0.1-	0.8+
1981 10 30	381	0.3-	0.4-	1998 11 25	704	(2.4- 1.4-)		1999 03 19	704	1.6-	1.1-
1997 09 30	691	0.1+	0.3-	1999 01 22	426	1.1+	0.0	1999 03 19	699	0.1-	0.6+
1997 09 30	691	0.0	0.3-	1999 01 22	426	0.4+	0.3+	1999 03 20	704	0.2-	1.4+
1997 09 30	691	0.2+	0.1-	1999 01 22	426	0.4+	0.3+	1999 03 20	704	0.1+	0.3+
1997 10 06	691	0.7-	0.2-	1999 01 23	426	0.5+	0.3-	1999 03 20	704	0.6-	0.3+
1997 10 06	691	0.5-	0.1-	1999 01 23	426	0.8+	0.0	1999 03 20	704	0.2-	0.7-
1997 10 06	691	0.7-	0.1-	1999 01 23	426	0.1+	0.1+	1999 03 20	704	1.0-	0.1+
1997 10 11	691	0.1-	0.5-	1999 02 12	699	1.3+	0.5+	1999 03 23	704	1.1+	0.8+
1997 10 11	691	0.2-	0.2-	1999 02 12	699	0.9+	1.5+	1999 03 23	704	(1.0- 2.1-)	
1997 10 11	691	0.1-	0.2-	1999 02 12	699	1.2+	0.4+	1999 03 23	704	0.2-	0.5-
1997 10 31	910	0.7+	0.3+	1999 02 16	704	0.1+	0.6-	1999 03 23	704	0.6+	1.0+
1997 10 31	910	0.6+	0.2+	1999 02 16	704	0.8-	0.1-	1999 03 23	704	0.9-	0.7+
1997 10 31	910	0.7+	0.3+	1999 02 16	704	0.5-	0.1-	1999 05 07	704	0.9+	1.6-
1997 11 03	704	1.1-	0.8+	1999 02 16	704	0.7-	0.6-	1999 05 07	704	0.3+	1.7+
1997 11 03	704	0.9+	0.6+	1999 02 16	704	0.9-	0.0	1999 05 07	704	0.8-	0.5+
1997 11 03	704	0.1-	0.4+	1999 03 19	704	0.1+	1.2-	1999 05 07	704	1.3-	0.5+
1997 11 03	704	0.6+	0.2+	1999 03 19	704	0.2-	1.6-				
1998 11 25	704	(1.6- 3.1-)		1999 03 19	699	0.4+	0.3+				

(10895)* 1997 TC₁₈ = 1973 SV₆ = 1980 UW = 1980 VQ₁

Discovered 1997 Oct. 11 by G. R. Viscome at the Rand Observatory.

Id. S. Nakano (*MPC* 30988), B. G. Marsden (d, *ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Nakano	
<i>M</i>	121.49134	(2000.0)	P	Q	
<i>n</i>	0.28929368	ω	61.78610	-0.45408162	-0.88789388
<i>a</i>	2.2641755	Ω	55.40803	+0.78276965	-0.43715954
<i>e</i>	0.0736837	<i>i</i>	5.14712	+0.42553678	-0.14330388
<i>P</i>	3.41	<i>H</i>	13.6	<i>G</i>	0.15 <i>U</i> 2

Residuals in seconds of arc

1973 09 27	095	0.2-	2.1+	1997 10 31	704	0.7+	0.0	1999 05 10	704	0.0	0.6+
1980 10 18	095	1.0+	1.5-	1997 10 31	704	0.8-	0.3+	1999 05 10	704	0.1+	1.1+
1980 11 13	330	0.4-	1.9-	1997 10 31	704	1.1-	0.9-	1999 05 10	704	0.9+	0.8+
1980 11 13	561	(4.7- 0.2-)		1997 11 05	905	0.5-	0.1+	1999 05 10	704	0.6-	1.3+
1980 11 13	561	0.6-	0.8+								

1997 10 12	816	0.1+	0.4+	1999 04 12	704	1.1+	0.2-	1999 05 14	704	(0.3-	2.5+)
1997 10 20	658	1.2-	0.3-	1999 04 12	704	0.5+	0.4-	1999 05 14	704	0.2-	0.9+
1997 10 20	658	0.8-	0.1-	1999 04 12	704	1.7+	0.1+	1999 05 18	704	0.6-	0.5+
1997 10 20	658	1.1-	0.1-	1999 04 15	704	0.1-	0.0	1999 05 18	704	0.1+	0.6-
1997 10 26	816	0.0	0.4+	1999 04 15	704	0.2+	0.5+	1999 05 18	704	0.0	0.4-
1997 10 26	816	0.2+	0.1+	1999 04 15	704	0.6+	0.2-	1999 05 18	704	0.9+	0.2-
1997 10 26	816	0.2+	0.3+	1999 04 15	704	0.1+	0.7+	1999 05 18	704	1.6-	1.3+
1997 10 26	816	0.2+	0.3+	1999 04 19	704	0.1+	0.1-	1999 05 19	704	0.2+	0.1-
1997 10 26	905	0.3+	0.1-	1999 04 19	704	0.1-	0.4-	1999 05 19	704	0.3-	0.1+
1997 10 26	905	0.8+	0.5-	1999 04 19	704	0.6+	0.3-	1999 05 19	704	0.4-	0.4-
1997 10 28	905	1.9+	0.6+	1999 04 19	704	0.2-	0.5-	1999 05 19	704	0.8-	0.2-
1997 10 28	905	1.2+	0.7+	1999 04 19	704	0.1-	0.8-	1999 05 19	704	0.5+	0.6-
1997 10 31	704	0.9-	0.6-	1999 05 10	704	0.2-	0.1-				

(10896)* 1997 UZ₁₄ = 1981 JP₄

Discovered 1997 Oct. 26 by Y. Shimizu and T. Urata at Nachi-Katsuura

Observatory.

Id. A. Gnädig (*MPC* 32969), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	98.39224		(2000.0)	P	Q
<i>n</i>	0.27341578	ω	87.44699	-0.71469985	-0.69712918
<i>a</i>	2.3510056	Ω	48.34821	+0.60777966	-0.65912193
<i>e</i>	0.1314590	<i>i</i>	4.35209	+0.34613294	-0.28208011
<i>P</i>	3.60	<i>H</i>	14.6	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1981 05 08	675	1.6-	0.1-	1997 11 06	704	1.3-	0.2-	1999 05 10	704	0.7+	0.7+
1981 05 09	675	1.5+	0.6-	1997 11 06	704	0.5-	0.1+	1999 05 10	704	0.5-	0.1-
1982 08 21	413	1.2-	0.1-	1997 11 06	704	0.8-	0.4-	1999 05 10	704	0.0	0.8-
1982 08 21	413	1.0+	0.0	1997 11 06	704	0.4+	0.6+	1999 05 10	704	1.3+	0.2-
1997 10 26	905	0.2+	0.1+	1997 11 07	886	0.3+	1.3-	1999 05 13	704	0.4+	0.6+
1997 10 26	905	0.7-	1.0-	1997 11 07	886	0.0	0.3+	1999 05 13	704	0.7-	0.1-
1997 10 28	905	0.1-	0.6-	1997 11 08	385	0.1+	0.5-	1999 05 13	704	0.9-	0.3+
1997 10 28	905	2.0+	1.1-	1997 11 08	385	0.4+	0.7-	1999 05 13	704	0.6+	1.2-
1997 10 29	704	0.5-	0.5-	1997 11 28	691	1.0+	0.1-	1999 05 13	704	0.2+	0.1-
1997 10 29	704	1.3-	1.3+	1997 11 28	691	0.5-	0.0	1999 05 14	704	0.7-	0.5-
1997 10 29	704	1.4-	0.1+	1997 11 28	691	0.2+	1.2-	1999 05 14	704	0.7+	0.9+
1997 10 29	704	1.0-	0.3-	1997 12 31	385	0.2-	1.5-	1999 05 14	704	0.3-	0.5-
1997 10 29	704	0.7-	0.1+	1997 12 31	385	0.8-	1.0-	1999 05 14	704	0.0	0.7-
1997 10 31	704	1.3+	0.2+	1999 04 12	704	0.4-	1.0-	1999 05 14	704	0.0	1.1+
1997 10 31	704	1.7+	1.7+	1999 04 12	704	0.9+	0.9+	1999 05 18	704	0.6+	1.5-
1997 10 31	704	0.7+	0.7+	1999 04 12	704	1.3+	0.4-	1999 05 18	704	1.4-	0.3-
1997 10 31	704	1.0+	0.1-	1999 04 12	704	0.9-	0.5-	1999 05 18	704	0.2-	0.2-
1997 10 31	704	0.2+	0.5+	1999 04 19	704	0.1+	0.4-	1999 05 18	704	0.1+	1.5-
1997 11 01	557	0.1+	0.0	1999 04 19	704	0.2+	1.6+	1999 05 18	704	1.0-	0.3-
1997 11 01	557	0.1+	0.1+	1999 04 19	704	0.0	0.3+	1999 05 18	691	0.1-	0.1+
1997 11 01	557	0.1-	0.1+	1999 04 19	704	(0.4+	2.1+)	1999 05 18	691	0.3-	0.1+
1997 11 01	557	0.1+	0.2+	1999 04 20	704	0.4-	0.7+	1999 05 18	691	0.1-	0.0
1997 11 04	557	0.5+	0.3+	1999 04 20	704	1.0-	0.0	1999 05 19	704	0.1-	0.6-
1997 11 04	557	0.5+	0.1+	1999 04 20	704	0.7+	1.0+	1999 05 19	704	1.2+	0.2-
1997 11 04	557	0.5+	0.1+	1999 04 20	704	0.1+	1.0+	1999 05 19	704	0.4-	1.3+
1997 11 04	905	0.0	1.0+	1999 04 20	704	0.6-	0.9+	1999 05 19	704	0.7-	0.1-
1997 11 04	905	0.9-	0.6+	1999 05 10	704	0.9+	1.4-				

(10897)* 1997 VW₃ = 1978 YU₁ = 1999 CM₁₄

Discovered 1997 Nov. 7 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 33961), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	169.39639		(2000.0)	P	Q
<i>n</i>	0.20547308	ω	219.99919	+0.96691285	-0.25441664
<i>a</i>	2.8442391	Ω	154.72113	+0.24384773	+0.90013772
<i>e</i>	0.0856822	<i>i</i>	2.51715	+0.07495221	+0.35358768
<i>P</i>	4.80	<i>H</i>	13.2	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1978 12 22	095	0.2-	2.4+	1997 12 04	704	1.3+	0.6+	1999 02 15	120	1.1-	0.7+
1996 08 12	566	0.5-	0.6+	1997 12 04	704	0.3+	1.7+	1999 02 15	120	0.8-	0.4+
1996 08 12	566	0.0	0.4+	1997 12 04	704	0.2-	0.1-	1999 02 17	120	0.1-	0.4+
1996 08 12	566	0.2+	0.5+	1997 12 04	704	0.8+	0.4+	1999 02 17	120	0.2+	0.1+
1997 11 06	411	1.4+	0.9-	1998 02 13	327	0.8-	0.3-	1999 03 19	704	0.6+	0.2+
1997 11 06	411	0.2-	0.4-	1998 02 13	327	0.3+	0.5-	1999 03 19	704	0.3-	0.1-
1997 11 07	411	0.1-	0.1+	1998 02 13	327	0.5-	0.0	1999 03 19	704	0.5-	0.8-
1997 11 07	411	0.6-	0.3-	1999 02 05	120	1.3-	1.0-	1999 03 19	704	0.2-	0.8-
1997 11 09	411	0.1+	0.2-	1999 02 05	120	0.7-	0.7+	1999 03 20	704	0.0	0.9-
1997 11 09	411	0.1-	0.1-	1999 02 06	120	0.4+	0.2+	1999 03 20	704	1.1+	1.0-
1997 11 19	411	0.3-	0.0	1999 02 10	704	0.1-	0.3-	1999 03 20	704	0.9-	0.9-
1997 11 19	411	0.3-	0.1+	1999 02 10	704	0.2-	0.1-	1999 03 20	704	0.2-	1.0-
1997 11 26	704	(3.8-	1.3-)	1999 02 10	704	0.5+	0.1-	1999 03 20	704	0.1+	0.9-
1997 11 26	704	(3.7-	0.2-)	1999 02 10	704	0.0	0.2+	1999 03 23	704	(2.2-	1.2-)
1997 11 26	704	(4.6-	0.4-)	1999 02 10	704	0.5+	0.7+	1999 03 23	704	0.6+	0.0
1997 11 29	704	0.7-	0.1-	1999 02 12	699	0.8+	0.7+	1999 03 23	704	0.1+	0.9+
1997 11 29	704	1.5-	0.9-	1999 02 12	699	1.3+	0.4-	1999 03 23	704	1.7+	1.2-
1997 11 29	704	0.1+	0.4-	1999 02 12	699	0.5-	1.7+	1999 03 23	704	0.0	0.4-
1997 11 29	704	0.3+	0.6-	1999 02 13	704	0.4+	0.2+	1999 06 06	703	0.4+	0.7+
1997 11 29	704	0.7+	0.8-	1999 02 13	704	1.4-	0.9-	1999 06 06	703	0.3+	0.2+
1997 11 30	411	0.3-	0.5+	1999 02 13	704	1.2+	0.6+	1999 06 06	703	1.0-	0.5+
1997 11 30	411	0.2-	0.4+	1999 02 13	704	0.8-	0.8+	1999 06 06	703	0.3+	2.0+
1997 12 04	704	0.2+	0.0	1999 02 13	704	0.2+	0.5+				

(10898)* 1997 WJ₂ = 4678 T-1

Discovered 1997 Nov. 23 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 30997)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	74.81769		(2000.0)	P	Q
<i>n</i>	0.28496259	ω	109.10596	-0.99700473	+0.04144861
<i>a</i>	2.2870596	Ω	73.31137	-0.06489831	-0.90758970
<i>e</i>	0.0502064	<i>i</i>	3.90873	+0.04206861	-0.41780730
<i>P</i>	3.46	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1971 05 13	675	0.5-	1.0-	1999 04 13	426	0.5+	0.2-	1999 05 18	704	0.3-	0.3-
1971 05 14	675	0.7-	1.9-	1999 04 13	426	0.7+	0.0	1999 05 18	704	0.2-	0.1-
1971 05 16	675	0.8-	1.5-	1999 04 14	426	0.7+	0.4+	1999 05 18	704	0.0	0.2-
1993 10 15	010	1.7+	0.6-	1999 04 14	426	0.8+	0.4+	1999 05 18	704	0.2-	0.2-
1993 10 15	010	1.1-	1.2-	1999 04 14	426	0.9+	0.1-	1999 05 19	704	1.3+	0.9+
1993 10 15	010	0.1+	0.4+	1999 04 15	732	0.6+	0.0	1999 05 19	704	0.7-	0.5+
1997 11 23	411	1.3-	0.4-	1999 04 15	732	0.7-	0.5+	1999 05 19	704	1.0-	1.4+
1997 11 23	411	1.0-	0.3-	1999 04 15	732	0.7-	0.0	1999 05 19	704	0.2-	0.2+
1997 11 24	411	0.3-	0.2+	1999 04 16	732	0.6+	0.1+	1999 05 19	704	0.5-	0.5+
1997 11 24	411	0.6-	0.2+	1999 04 16	732	0.5-	1.2+	1999 06 08	691	0.2-	0.1-
1997 11 30	411	0.3+	0.3+	1999 04 16	732	0.6-	0.7+	1999 06 08	691	0.2-	0.3-
1997 11 30	411	0.1+	0.1-	1999 05 08	367	0.1+	0.8+	1999 06 08	691	0.2-	0.3-
1997 12 04	704	0.9+	1.2-	1999 05 08	367	0.2+	0.4+	1999 06 09	704	0.0	0.2-
1997 12 04	704	1.0+	1.2-	1999 05 10	704	0.4+	0.9-	1999 06 09	704	0.2+	1.0-
1997 12 04	704	0.3-	0.4-	1999 05 10	704	0.2-	1.5-	1999 06 09	704	0.1-	0.6-
1997 12 05	704	0.5-	0.9-	1999 05 10	704	(0.3+	2.3-)	1999 06 09	704	0.2+	0.0
1997 12 05	704	0.4-	0.9-	1999 05 10	704	(0.3+	2.9-)	1999 06 09	704	0.4-	0.1-
1997 12 05	704	0.0	1.2-	1999 05 13	704	1.8-	1.0+	1999 06 14	691	0.3-	0.5-
1997 12 05	704	0.5+	0.2-	1999 05 13	704	0.9+	0.2+	1999 06 14	691	0.1+	0.5-
1997 12 05	704	0.8+	0.6-	1999 05 13	704	0.1+	0.3+	1999 06 14	691	0.3-	0.2-
1997 12 05	411	0.3+	0.5+	1999 05 13	704	1.1+	0.3+	1999 06 15	704	0.0	0.8-
1997 12 05	411	0.6+	0.3+	1999 05 13	704	0.4-	0.5-	1999 06 15	704	0.3-	0.6-
1997 12 21	411	0.3-	0.6+	1999 05 14	704	2.1+	1.0+	1999 06 15	704	0.4+	0.2-
1997 12 21	411	0.6+	0.9+	1999 05 14	704	1.2-	0.3-	1999 06 15	704	0.4+	0.5-
1998 01 07	699	0.6-	1.1+	1999 05 14	704	0.9+	0.9+	1999 06 15	704	0.2-	0.4+
1998 01 07	699	0.6-	1.3+	1999 05 14	704	1.5-	1.6-				
1998 01 07	699	0.4+	0.9+	1999 05 18	704	0.1-	0.2+				

(10899)* 1997 WN₁₃ = 1986 TF₁₃ = 1993 RR₁₁

Discovered 1997 Nov. 24 by T. Kagawa and T. Urata at the Gekko Observatory.

Id. T. Urata (*MPC* 31119)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	156.49678		(2000.0)	P		Q	
<i>n</i>	0.27292368	ω	271.87852	+0.07396156		-0.99725431	
<i>a</i>	2.3538308	Ω	173.87628	+0.92813229		+0.06748472	
<i>e</i>	0.1779194	<i>i</i>	1.97620	+0.36482893		+0.03049029	
<i>P</i>	3.61	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1986 10 05	095	0.9-	1.7-	1997 12 04	704	(2.3+	1.3+)	1999 05 17	691	0.1-	0.7+
1993 09 14	809	2.0+	0.2+	1997 12 04	704	(2.6+	0.9-)	1999 05 18	704	0.5+	0.8+
1993 09 14	809	1.2+	0.5+	1997 12 04	704	2.0+	0.5+	1999 05 18	704	(2.2-	1.0-)
1993 09 14	809	0.1+	0.1-	1997 12 24	888	1.1+	1.5-	1999 05 18	704	0.7-	1.3-
1993 09 19	809	0.2-	0.4-	1997 12 24	888	0.2+	0.6-	1999 05 18	704	0.2-	0.9+
1993 09 19	809	0.4-	0.8-	1997 12 25	566	0.1+	0.3+	1999 05 19	704	1.9-	0.2-
1993 09 19	809	0.5+	0.8-	1997 12 25	566	0.4-	0.4+	1999 05 19	704	1.9-	1.2-
1995 03 27	691	0.6+	0.8-	1997 12 25	566	0.0	0.1-	1999 05 19	704	1.2+	0.0
1995 03 27	691	0.6+	0.9-	1999 05 10	704	0.6+	0.4-	1999 05 19	704	2.0+	1.1-
1995 03 27	691	0.5+	0.8-	1999 05 10	704	0.9-	2.0-	1999 05 23	691	0.3-	0.2-
1997 11 24	888	0.3+	0.2+	1999 05 10	704	0.6+	0.6-	1999 05 23	691	0.4-	0.5-
1997 11 24	888	0.2-	0.3+	1999 05 13	704	0.8-	1.0-	1999 05 23	691	0.2-	0.6-
1997 11 27	888	0.4+	0.6-	1999 05 13	704	0.7-	0.9-	1999 06 04	703	0.2+	0.4-
1997 11 27	888	0.1-	0.0	1999 05 13	704	0.6-	0.1-	1999 06 04	703	1.1+	0.3-
1997 11 29	704	1.5-	0.0	1999 05 13	704	0.6-	0.3+	1999 06 04	703	0.5-	1.0+
1997 11 29	704	1.6-	0.0	1999 05 13	704	0.3+	0.8-	1999 06 04	703	0.5+	1.0+
1997 11 29	704	1.8-	0.3-	1999 05 13	704	0.1+	0.1+	1999 06 14	704	0.4+	1.2-
1997 11 29	704	0.2+	1.8-	1999 05 13	704	0.1+	0.9+	1999 06 14	704	0.1+	0.1-
1997 11 29	704	1.5-	0.2+	1999 05 13	704	0.0	1.3+	1999 06 14	704	0.2-	0.4-
1997 11 30	888	1.2+	0.4+	1999 05 13	704	0.7-	1.7+	1999 06 14	704	0.4-	0.2-
1997 11 30	888	0.6+	0.4+	1999 05 17	691	0.6-	0.2-	1999 06 14	704	0.0	0.7-
1997 12 04	704	1.1+	1.8-	1999 05 17	691	0.3-	0.1+				

(10900)* 1997 WF₂₁ = 1978 UT = 1991 FL₃ = 1993 TU₁₁

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

Id. S. Nakano (*MPC* 30999)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	163.40967		(2000.0)	P		Q	
<i>n</i>	0.26196006	ω	242.57903	+0.32496112		-0.94568839	
<i>a</i>	2.4190564	Ω	188.47122	+0.88697150		+0.30791023	
<i>e</i>	0.1726540	<i>i</i>	3.34200	+0.32814909		+0.10423419	
<i>P</i>	3.76	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1978 10 28	688	1.1+	1.6-	Y	1997 12 05	411	0.3-	0.2+	1999 04 19	704	0.0	0.9-
1991 03 21	809	0.1-	0.5+		1997 12 29	566	0.2-	0.2+	1999 04 19	704	1.0+	1.5+
1991 03 21	809	0.1+	0.6+		1997 12 29	566	0.0	0.2+	1999 05 10	704	(1.3-	2.2-)
1991 03 21	809	0.6+	0.5+		1997 12 29	566	0.2-	0.2+	1999 05 10	704	0.5-	1.4-
1991 03 22	809	1.2-	1.5-		1997 12 31	385	0.5+	0.0	1999 05 10	704	0.3+	0.5-
1991 03 22	809	1.1-	1.5-		1997 12 31	385	0.5+	0.3-	1999 05 10	704	0.9+	0.5+
1991 03 22	809	0.8-	1.6-		1998 01 02	385	0.2+	0.0	1999 05 10	704	1.6+	1.2+
1993 10 13	675	0.2+	0.7-		1998 01 03	385	0.3-	0.4+	1999 05 15	703	0.9-	0.5+
1993 10 13	675	0.5-	0.3-		1998 01 03	385	0.3+	0.1+	1999 05 15	703	0.6-	0.4+
1993 10 15	675	0.5-	1.0-		1999 04 12	704	0.8+	0.0	1999 05 15	703	0.3-	0.6-
1997 11 30	411	0.0	0.5+		1999 04 12	704	1.1-	1.0+	1999 05 15	703	1.6-	0.4-
1997 11 30	411	0.3+	0.7+		1999 04 12	704	0.4+	1.5+	1999 05 18	704	1.3-	1.2+
1997 12 02	411	0.1+	0.4+		1999 04 19	704	1.2+	0.0	1999 05 18	704	0.4+	1.0-
1997 12 02	411	0.2-	0.1+		1999 04 19	704	0.8-	0.7-	1999 05 18	704	(2.6-	1.0+)
1997 12 05	411	0.0	0.4+		1999 04 19	704	1.7+	1.5-				

(10901)* 1997 WS₂₁ = 1990 SJ₁₃

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

Id. S. Nakano (*MPC* 31120)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	199.40863		(2000.0)	P		Q	
<i>n</i>	0.29817305	ω	247.86649	+0.56872899		-0.82245270	
<i>a</i>	2.2189991	Ω	167.45419	+0.77194128		+0.52912913	
<i>e</i>	0.1198087	<i>i</i>	2.87735	+0.28399647		+0.20879158	
<i>P</i>	3.31	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1990 09 23	809	(3.6-	0.1+)	1997 11 30	411	0.7+	0.0	1997 12 30	566	0.2+	0.3-
1990 09 23	809	(3.0-	0.1+)	1997 11 30	411	1.5+	0.9-	1997 12 30	566	0.6-	0.1+
1990 09 23	809	(2.5-	0.4+)	1997 12 02	411	0.8+	0.3-	1999 05 13	704	1.0-	1.7-
1990 09 23	809	0.0	0.1+	1997 12 02	411	0.0	0.1+	1999 05 13	704	0.5-	1.4-
1990 09 23	809	0.7+	0.0	1997 12 04	704	0.1+	0.2+	1999 05 13	704	0.2+	1.0-
1990 09 23	809	1.3+	0.2+	1997 12 04	704	1.1-	0.7+	1999 05 13	704	0.9+	0.7-
1990 09 24	809	1.0-	0.6-	1997 12 04	704	2.0-	0.1+	1999 05 17	703	0.3-	0.0
1990 09 24	809	0.4-	0.7-	1997 12 04	704	1.3-	0.7-	1999 05 17	703	0.4-	0.8+
1990 09 24	809	0.1+	0.9-	1997 12 04	704	0.8+	0.9-	1999 05 17	703	0.1+	0.3+
1995 02 01	691	0.5-	0.2+	1997 12 05	411	0.4+	0.8-	1999 05 17	703	0.1-	1.7+
1995 02 01	691	0.5-	0.3+	1997 12 05	411	0.7+	0.0	1999 06 04	703	0.5+	0.8+
1995 02 01	691	0.1-	0.9-	1997 12 21	411	0.1+	0.4-	1999 06 04	703	0.0	1.5-
1995 02 08	691	1.0+	0.2-	1997 12 21	411	0.3+	0.4+	1999 06 04	703	0.4-	1.3-
1995 02 08	691	0.1-	0.0	1997 12 30	566	0.6-	0.3+	1999 06 04	703	(2.0-	2.5-)

(10902)* 1997 WB₂₂ = 1942 EJ₁

Discovered 1997 Nov. 25 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. G. V. Williams (*MPC* 31121)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	56.30351		(2000.0)	P		Q	
<i>n</i>	0.27986250	ω	137.12612	-0.55943716		+0.81328359	
<i>a</i>	2.3147615	Ω	98.24244	-0.79750427		-0.47554009	
<i>e</i>	0.0917618	<i>i</i>	9.30382	-0.22586943		-0.33530795	
<i>P</i>	3.52	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1942 03 14	062	1.1-	0.2+	1997 12 22	327	0.2+	0.3+	1998 02 06	689	0.3-	1.2-
1942 03 14	062	(0.2-	4.0-)	1997 12 22	327	0.1+	0.3+	1998 02 18	127	0.2+	0.4+
1942 03 17	062	1.3+	0.3+	1997 12 22	327	0.2+	0.3+	1998 02 18	127	0.1+	0.2+
1994 01 11	691	0.4-	0.3+	1997 12 24	327	0.0	0.3+	1998 02 27	566	0.3+	0.2-
1994 01 11	691	0.4-	0.5+	1997 12 24	327	0.2+	0.2+	1998 02 27	566	0.1+	0.3-
1994 01 11	691	0.1+	0.5+	1997 12 24	327	0.0	0.3+	1998 02 27	566	0.1+	0.1-
1997 10 03	691	0.0	0.3-	1997 12 29	566	0.4-	0.8+	1998 02 28	689	0.0	0.3-
1997 10 03	691	0.0	0.3-	1997 12 29	566	0.4-	0.9+	1999 05 14	704	0.8-	1.5+
1997 10 03	691	0.0	0.3+	1997 12 29	566	0.5-	1.1+	1999 05 14	704	(2.5+	1.6+)
1997 10 09	691	0.0	0.3+	1998 01 04	327	0.0	0.2+	1999 05 14	704	0.9+	1.1+
1997 10 09	691	0.3-	0.1+	1998 01 04	327	0.2+	0.3+	1999 05 14	704	0.9-	0.1-
1997 10 09	691	0.2-	0.0	1998 01 04	327	0.0	0.4+	1999 06 11	703	1.5+	0.4-
1997 11 25	327	0.2+	0.4-	1998 01 04	327	0.0	0.2+	1999 06 11	703	0.1-	0.4-
1997 11 25	327	0.3+	0.2-	1998 01 07	327	0.0	0.4+	1999 06 11	703	0.3-	0.3+
1997 11 25	327	0.0	0.3-	1998 01 07	327	0.2-	0.4+	1999 06 11	703	0.5-	1.0+
1997 12 01	327	0.3+	0.3-	1998 01 07	327	0.0	0.3+	1999 06 15	704	0.3+	0.2+
1997 12 01	327	0.3+	0.3-	1998 01 25	566	0.1-	0.8-	1999 06 15	704	0.1+	0.2+
1997 12 01	327	0.0	0.3-	1998 01 25	566	0.0	0.7-	1999 06 15	704	0.0	0.1-
1997 12 13	327	0.2+	0.3-	1998 01 25	566	0.1-	0.8-	1999 06 15	704	0.0	0.4-
1997 12 13	327	0.6+	0.4+	1998 02 03	127	0.0	0.2-	1999 06 15	704	0.4-	0.5-
1997 12 13	327	0.5-	0.1-	1998 02 03	127	0.1+	0.6-				

(10903)* 1997 WA₃₀ = 1976 UJ

Discovered 1997 Nov. 24 by S. Ueda and H. Kaneda at Kushiro.

Id. A. Milani (*MPC* 34212)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	102.09162		(2000.0)	P	Q
<i>n</i>	0.23038580	ω	244.44818	-0.48189350	-0.85999243
<i>a</i>	2.6353133	Ω	235.38721	+0.85920310	-0.42618120
<i>e</i>	0.1606263	<i>i</i>	11.77167	+0.17189731	-0.28068240
<i>P</i>	4.28	<i>H</i>	13.6	<i>G</i>	0.15

Residuals in seconds of arc

1976 10 24	809	0.9+	1.3-	1997 12 04	704	0.3+	0.9+	1999 04 20	704	0.5+	0.2-
1976 10 24	809	0.5+	0.7-	1997 12 04	704	0.7-	0.2+	1999 04 20	704	0.5-	1.1-
1976 10 25	809	2.2-	1.0+	1997 12 04	704	0.3+	0.4+	1999 05 10	704	0.8+	0.5+
1976 10 31	809	0.3-	0.3-	1997 12 04	704	0.2-	1.0+	1999 05 10	704	1.9+	0.9+
1976 10 31	809	0.3+	0.8-	1997 12 05	399	0.7+	0.8+	1999 05 10	704	0.6+	0.5+
1976 11 01	809	0.3+	0.4-	1997 12 28	566	1.9+	1.2-	1999 05 10	704	1.7+	1.2+
1976 11 02	809	0.0	0.1+	1997 12 28	566	(2.2+	1.3-)	1999 05 10	704	0.4-	1.1+
1976 11 02	809	0.2-	0.2-	1997 12 28	566	(2.1+	1.1-)	1999 05 13	704	1.0+	1.0+
1996 07 15	566	0.5+	0.1+	1999 04 15	704	0.3-	0.3-	1999 05 13	704	1.0-	1.0+
1996 07 15	566	0.4-	0.1+	1999 04 15	704	0.1+	0.3+	1999 05 13	704	0.8-	1.3+
1996 07 15	566	0.3-	0.2+	1999 04 15	704	0.1-	0.3-	1999 05 13	704	1.2-	0.6+
1997 11 24	399	1.4-	0.6+	1999 04 15	699	0.2-	0.4-	1999 05 13	704	0.3-	0.6+
1997 11 24	399	(3.8+	0.6+)	1999 04 15	704	0.3+	0.8+	1999 05 18	704	0.3+	0.8-
1997 11 26	704	0.4+	1.5+	1999 04 15	699	0.2+	0.3-	1999 05 18	704	1.0-	0.3-
1997 11 26	704	0.1+	1.3+	1999 04 15	699	0.5-	0.0	1999 05 18	704	0.5-	1.0-
1997 11 26	704	0.2-	1.5+	1999 04 17	704	0.0	0.1+	1999 05 18	704	0.2-	0.5+
1997 11 29	704	1.1-	0.7-	1999 04 17	704	0.4+	0.1+	1999 05 18	704	0.7-	0.3+
1997 11 29	704	1.1-	0.4-	1999 04 17	704	0.2+	0.1-	1999 05 19	704	0.1+	0.3+
1997 11 29	704	1.3-	0.7-	1999 04 17	704	0.1-	0.1+	1999 05 19	704	1.2-	0.2+
1997 11 29	704	(2.2-	0.8-)	1999 04 17	699	0.3-	0.3-	1999 05 19	704	0.1+	0.5-
1997 11 29	704	1.2-	0.9-	1999 04 17	704	0.2+	0.2-	1999 05 19	704	0.8-	0.0
1997 12 03	399	1.3+	0.8+	1999 04 17	699	0.5+	1.1-	1999 05 19	704	0.6+	0.8+
1997 12 03	399	0.2-	0.2-	1999 04 17	699	1.1+	0.0				
1997 12 04	704	0.2-	0.0	1999 04 20	704	0.2+	1.1-				

(10904)* 1997 WR₃₁ = 1998 DP₃₂ = 1980 FN₄ = 1991 EF₅

Discovered 1997 Nov. 29 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPC* 31554)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	135.88619		(2000.0)	P	Q
<i>n</i>	0.26429471	ω	288.16755	-0.10807584	-0.99413116
<i>a</i>	2.4047895	Ω	168.03384	+0.92060142	-0.10189503
<i>e</i>	0.1490384	<i>i</i>	1.32127	+0.37525010	-0.03634072
<i>P</i>	3.73	<i>H</i>	14.5	<i>G</i>	0.15

Residuals in seconds of arc

1980 03 16	809	0.2-	0.6+	1997 12 04	704	0.9-	0.9-	1999 04 21	691	0.1-	0.2+
1980 03 16	809	0.1+	0.3-	1998 01 27	910	1.9-	0.5-	1999 04 21	691	0.3+	0.0
1980 03 16	809	0.5+	1.3+	1998 01 27	910	1.9-	0.6-	1999 04 21	691	0.5+	0.1-
1980 03 16	809	0.1-	0.3-	1998 01 27	910	1.9-	0.6-	1999 05 10	704	0.8-	0.9+
1980 03 17	809	0.1+	0.2+	1998 02 23	327	0.1+	0.5+	1999 05 10	704	0.4+	1.1-
1980 03 17	809	0.2-	0.0	1998 02 23	327	0.2+	0.1+	1999 05 10	704	0.1+	1.1-
1980 03 17	809	0.1+	0.3+	1998 02 23	327	0.3+	0.5+	1999 05 10	704	0.4-	0.2+
1980 03 17	809	0.2+	0.1-	1998 02 23	327	0.2+	0.2+	1999 05 10	704	0.3-	1.3+
1980 03 23	809	0.4-	0.4-	1998 02 27	327	0.4+	0.2+	1999 05 13	704	0.6-	0.5-
1991 03 14	809	1.1-	0.6-	1998 02 27	327	0.3+	0.2-	1999 05 13	704	0.7-	0.6-
1991 03 14	809	0.1-	1.0-	1998 02 27	327	0.1+	0.2-	1999 05 13	704	1.7-	0.0
1991 03 14	809	1.0+	1.4-	1998 03 16	327	0.1+	0.6+	1999 05 13	704	0.1-	0.2-
1991 03 16	809	(7.8+	20.2-)	1998 03 16	327	0.7+	0.2+	1999 05 13	704	(2.1-	1.1-)
1991 03 16	809	(8.1+	19.9-)	1998 03 16	327	0.1+	0.5+	1999 05 15	703	0.8-	0.7+
1991 03 16	809	(8.4+	20.0-)	1998 03 23	327	0.3+	0.5+	1999 05 15	703	0.1+	1.0+
1997 11 29	704	0.4+	0.0	1998 03 23	327	0.2-	0.1+	1999 05 15	703	0.1+	0.3-
1997 11 29	704	0.5+	0.1+	1998 03 23	327	0.8-	0.1-	1999 05 15	703	0.8+	0.8+
1997 11 29	704	1.1+	0.0	1998 03 23	327	0.7-	0.0	1999 05 18	704	1.4+	0.2+
1997 11 29	704	0.7-	0.7-	1999 04 12	704	0.7+	1.2+	1999 05 18	704	0.4+	1.7+
1997 11 29	704	0.6+	0.5-	1999 04 12	704	0.2-	1.5+	1999 05 18	704	0.5-	1.1-

1997 11 30	691	1.0+	0.4+	1999 04 12	704	(0.5+	2.0+)	1999 05 18	704	(2.2-	0.0)
1997 11 30	691	1.0+	0.5+	1999 04 19	704	1.7+	0.6-	1999 05 18	704	1.7-	0.6-
1997 11 30	691	1.0+	0.6+	1999 04 19	704	1.7+	0.3+	1999 05 19	704	(2.2+	0.6-)
1997 12 04	704	0.1-	0.4+	1999 04 19	704	(1.8+	2.2-)	1999 05 19	704	0.3+	0.8-
1997 12 04	704	0.5-	0.9+	1999 04 19	704	(1.1+	2.3-)	1999 05 19	704	0.3+	0.2-
1997 12 04	704	0.5+	0.4+	1999 04 19	691	0.2-	0.2-				
1997 12 04	704	1.5-	0.6+	1999 04 19	691	0.1-	0.0				

(10905)* 1997 WB₃₈ = 1980 KG₂ = 1990 QF₁₂ = 1990 QJ₁₈

Discovered 1997 Nov. 29 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Gnädig (*MPC* 31395)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	337.94392		(2000.0)	P	Q
<i>n</i>	0.30763986	ω	170.15104	+0.01568833	+0.99900453
<i>a</i>	2.1732398	Ω	100.73917	-0.92023686	+0.03075999
<i>e</i>	0.1275657	<i>i</i>	2.43601	-0.39104732	-0.03230752
<i>P</i>	3.20	<i>H</i>	14.5	<i>G</i>	0.15

Residuals in seconds of arc

1980 05 18	808	0.5-	0.1+	1997 12 31	704	0.0	1.0-	1999 04 12	704	0.2+	1.1-
1980 05 18	808	0.3+	0.9-	1998 01 03	910	0.2+	0.8-	1999 04 15	704	0.4+	0.3+
1990 08 27	675	1.0+	1.2-	1998 01 03	910	0.2+	0.8-	1999 04 15	704	1.1+	0.2+
1990 08 27	675	0.8+	0.8-	1998 01 03	910	0.4+	0.7-	1999 04 15	704	0.4-	1.5+
1990 08 28	095	(4.7-	13.4-)	1999 03 19	704	0.9+	0.1-	1999 04 15	704	0.1-	0.3+
1990 08 28	095	0.5-	1.3-	1999 03 19	704	0.5+	0.4+	1999 04 15	704	0.5+	0.7-
1997 11 29	704	1.8-	0.4-	1999 03 19	704	0.8-	0.1+	1999 04 16	704	0.1-	0.6-
1997 11 29	704	(2.1-	1.1-)	1999 03 19	704	0.5-	0.2+	1999 04 16	704	0.6+	0.1+
1997 11 29	704	(2.3-	1.2-)	1999 03 19	704	0.4-	0.2+	1999 04 16	704	0.2-	0.1+
1997 11 29	704	(3.2-	0.6-)	1999 03 20	704	0.1-	0.2+	1999 04 16	704	0.2-	0.3+
1997 11 29	704	(3.4-	0.3-)	1999 03 20	704	0.0	0.3+	1999 04 16	704	0.3-	1.0+
1997 12 04	704	0.2-	0.2+	1999 03 20	704	0.8-	0.7+	1999 04 19	704	0.3+	0.7-
1997 12 04	704	1.1-	1.0-	1999 03 20	704	0.0	0.0	1999 04 19	704	0.8-	0.6-
1997 12 04	704	0.7-	0.1-	1999 03 20	704	0.2-	0.4+	1999 04 19	704	1.6+	0.1+
1997 12 04	704	0.8-	0.6-	1999 04 07	704	0.8-	0.2+	1999 04 19	704	1.2-	0.1-
1997 12 05	704	1.5+	0.1-	1999 04 07	704	0.5-	0.3-	1999 04 19	704	0.2+	0.8-
1997 12 05	704	0.6+	0.1-	1999 04 07	704	0.4-	0.7-	1999 06 08	704	0.2-	0.5+
1997 12 05	704	1.3+	0.4+	1999 04 07	704	0.4-	0.5-	1999 06 08	704	1.0+	0.5+
1997 12 05	704	0.5+	0.6+	1999 04 07	704	0.6-	0.9-	1999 06 08	704	0.6-	1.3-
1997 12 05	704	0.8+	0.8+	1999 04 12	704	0.5+	0.9-	1999 06 08	704	0.6-	0.3-
1997 12 31	704	0.6-	1.7-	1999 04 12	704	0.4-	0.3-	1999 06 08	704	0.0	1.6-
1997 12 31	704	0.9+	1.3-	1999 04 12	704	0.6+	0.0				
1997 12 31	704	0.4+	0.7+	1999 04 12	704	0.3+	1.0-				

(10906)* 1997 WO₄₄ = 1991 LW₂ = 1996 TW₅₇

Discovered 1997 Nov. 29 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPC* 31122)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	45.04117		(2000.0)	P	Q
<i>n</i>	0.24367924	ω	306.09078	-0.94079361	+0.32684327
<i>a</i>	2.5385771	Ω	253.13769	-0.27291718	-0.88761515
<i>e</i>	0.1955427	<i>i</i>	5.38987	-0.20105620	-0.32451937
<i>P</i>	4.04	<i>H</i>	14.1	<i>G</i>	0.15

Residuals in seconds of arc

1991 06 06	809	0.1-	1.9+	1997 12 04	704	0.1-	0.9-	1999 05 10	704	0.0	0.5+
1991 06 06	809	0.1+	0.1-	1997 12 04	704	0.6-	0.6-	1999 05 13	704	0.5+	0.6-
1991 06 06	809	0.2-	0.5+	1997 12 04	704	0.3-	0.5-	1999 05 13	704	0.4-	0.4+
1991 06 08	809	(0.9-	5.5+)	1997 12 04	704	1.0-	1.9-	1999 05 13	704	0.7-	0.1-
1991 06 08	809	(1.5-	5.3+)	1997 12 31	704	1.3+	0.1+	1999 05 13	704	0.3+	1.1-
1991 06 08	809	(3.3-	6.4+)	1997 12 31	704	0.9+	0.4-	1999 05 13	704	0.5-	0.3-
1993 08 16	691	1.0+	0.4-	1997 12 31	704	0.7+	0.2+	1999 05 18	704	0.2-	0.2-
1993 08 16	691	1.4+	1.7+	1997 12 31	704	0.4+	0.0	1999 05 18	704	1.0-	0.8-
1993 08 18	691	0.5-	0.0	1998 01 02	704	1.0+	0.1-	1999 05 18	704	0.2-	1.2-

1993 08 18	691	0.0	0.3-	1998 01 02	704	1.1+	0.1+	1999 05 18	704	0.7-	0.5+
1996 10 02	809	0.9+	0.6-	1998 01 02	704	0.1+	0.2+	1999 05 18	704	1.1-	0.0
1996 10 02	809	0.9+	0.2+	1998 01 02	704	0.2+	0.4+	1999 05 19	704	0.3-	0.4-
1996 10 02	809	0.1+	0.7-	1999 04 20	704	0.8+	0.0	1999 05 19	704	0.7-	0.0
1996 10 03	809	0.5+	0.0	1999 04 20	704	0.3+	0.3+	1999 05 19	704	0.4-	1.1-
1996 10 03	809	0.9-	0.2-	1999 04 20	704	1.0-	1.2-	1999 05 19	704	0.6+	1.4-
1996 10 03	809	0.5-	1.0-	1999 04 20	704	1.4-	1.0-	1999 06 09	704	0.3+	0.8-
1996 10 05	691	(2.6-	0.7-)	1999 04 21	426	0.7+	0.3+	1999 06 09	704	0.3-	1.2-
1996 10 05	691	(2.5-	0.8-)	1999 04 21	426	0.4+	0.2+	1999 06 09	704	0.2+	0.2-
1996 10 05	691	(2.3-	0.7-)	1999 04 21	426	0.5+	0.3+	1999 06 09	704	0.5-	0.4-
1997 11 29	704	1.5-	1.6+	1999 04 22	426	0.4+	0.2+	1999 06 09	704	0.4-	0.5+
1997 11 29	704	1.7-	1.2-	1999 04 22	426	0.5+	0.2+	1999 06 15	704	0.1+	0.8-
1997 11 29	704	1.9-	1.0-	1999 04 22	426	0.5+	0.2+	1999 06 15	704	0.1-	0.1+
1997 11 29	704	(2.6-	0.4+)	1999 05 10	704	0.8+	0.4-	1999 06 15	704	0.1-	0.3+
1997 11 29	704	(3.4-	1.3-)	1999 05 10	704	(3.1+	0.0)	1999 06 15	704	0.2-	0.5+
1997 12 04	704	0.6+	0.1+	1999 05 10	704	0.0	1.6+	1999 06 15	704	0.7-	1.0+

(10907)* 1997 XG₅ = 1991 TY₈ = 1996 VO₂₀

Discovered 1997 Dec. 6 by the OCA-DLR Asteroid Survey at Caussols.

Id. G. V. Williams (*MPC* 31395)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	208.66931	(2000.0)	P	Q	
<i>n</i>	0.20695734	ω	17.56647	+0.64997513	-0.75969795
<i>a</i>	2.8306239	Ω	31.90223	+0.69267439	+0.58152153
<i>e</i>	0.0869468	<i>i</i>	2.14530	+0.31262522	+0.29101842
<i>P</i>	4.76	<i>H</i>	14.1	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1991 10 01	691	0.3-	0.1+	1997 12 07	910	0.1-	0.4-	1998 03 21	691	1.3+	0.6-
1991 10 01	691	0.3-	0.1-	1997 12 07	910	0.3-	0.0	1999 05 13	704	0.2-	0.8+
1991 10 01	691	0.4-	0.7-	1997 12 07	910	0.5-	0.3+	1999 05 13	704	2.0+	0.8-
1991 10 13	691	0.5+	0.4-	1998 03 01	691	1.2+	0.3+	1999 05 13	704	0.1-	0.3-
1991 10 13	691	0.8+	0.1-	1998 03 01	691	1.1+	0.2+	1999 05 13	704	0.2-	1.3-
1991 10 13	691	0.6+	0.6-	1998 03 01	691	1.0+	0.1+	1999 05 19	704	1.1+	1.4+
1996 11 08	691	0.5+	0.3-	1998 03 04	704	1.9-	0.2-	1999 05 19	704	0.4+	1.0-
1996 11 08	691	0.5-	0.3-	1998 03 04	704	(2.7-	0.6+)	1999 05 19	704	0.3-	0.1-
1996 11 08	691	0.5-	0.3-	1998 03 04	704	(2.9-	0.9+)	1999 06 15	704	0.9-	0.3-
1996 11 09	691	0.4+	0.2-	1998 03 04	704	1.9-	0.2+	1999 06 15	704	0.8-	0.9-
1996 11 09	691	0.3+	0.2-	1998 03 05	691	0.1+	0.0	1999 06 15	704	0.6-	0.4-
1996 11 09	691	0.3+	0.3-	1998 03 05	691	0.4+	0.0	1999 06 15	704	1.0-	1.2-
1997 12 06	910	0.6-	0.2-	1998 03 05	691	0.3+	0.2-	1999 06 15	704	0.6-	0.5+
1997 12 06	910	1.0-	0.2-	1998 03 21	691	0.2+	0.2-				
1997 12 06	910	0.4-	0.3-	1998 03 21	691	0.4-	0.5-				

(10908)* 1997 XH₉ = 1958 TG = 1990 TZ₁₄

Discovered 1997 Dec. 7 by the OCA-DLR Asteroid Survey at Caussols.

Id. A. Gnädig (*MPC* 32482)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	233.34272	(2000.0)	P	Q	
<i>n</i>	0.18512952	ω	337.41715	+0.84790881	-0.52771941
<i>a</i>	3.0489638	Ω	54.53248	+0.49539756	+0.75471602
<i>e</i>	0.1808931	<i>i</i>	3.56373	+0.18876415	+0.38976398
<i>P</i>	5.32	<i>H</i>	13.2	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1958 10 09	024	0.1-	0.2+	1998 03 22	704	0.0	0.0	1999 05 13	704	0.6-	1.5-
1990 10 14	808	0.6+	0.7-	1998 03 22	704	0.2-	1.0+	1999 05 13	704	0.8+	0.3+
1990 10 14	808	0.2-	0.3+	1998 03 22	704	0.4+	0.6+	1999 05 13	704	(2.2+	1.2-)
1995 08 29	809	0.4-	0.9-	1998 03 28	704	0.6+	0.1-	1999 05 18	704	0.4+	0.2+
1995 08 30	809	0.6+	0.1-	1998 03 28	704	0.0	0.6-	1999 05 18	704	0.7+	1.1-
1997 12 07	910	1.2-	0.7-	1998 03 28	704	0.5+	0.3+	1999 05 18	704	0.5-	1.4+
1997 12 07	910	1.3-	0.6-	1998 03 28	704	0.7+	0.4-	1999 05 18	704	0.3+	0.2-
1997 12 07	910	1.2-	1.1-	1998 03 29	704	0.1+	0.3-	1999 05 18	704	0.2+	0.2+
1997 12 08	910	0.5-	1.0-	1998 03 29	704	0.2-	0.3+	1999 05 19	704	0.6+	0.5-
1997 12 08	910	0.8-	0.8-	1998 03 29	704	0.5-	1.3+	1999 05 19	704	0.8-	1.3+

1997 12 08	910	1.0-	0.6-	1998 03 29	704	0.0	1.4+	1999 05 19	704	0.4+	0.1-
1998 03 20	704	0.2-	0.6-	1998 03 29	704	0.3-	1.2+	1999 06 09	704	1.3-	0.9+
1998 03 20	704	0.7+	0.3-	1998 04 19	704	1.9+	0.3-	1999 06 09	704	0.2+	0.0
1998 03 20	704	0.7+	0.6+	1998 04 19	704	0.4+	0.5-	1999 06 09	704	1.0-	0.0
1998 03 20	704	0.6-	0.8-	1998 04 19	704	(2.6+	0.9+)	1999 06 09	704	0.9-	0.7-
1998 03 20	704	(4.7-	0.9-)	1998 04 19	704	(0.1-	2.1-)				
1998 03 22	704	0.1+	0.1+	1999 05 13	704	1.1+	1.3-				

(10909)* 1997 XB₁₀ = 1959 GH = 1974 OA₂ = 1986 WL₉

Discovered 1997 Dec. 5 by A. Sugie at the Dynic Astronomical Observatory.

Id. G. V. Williams (*MPC* 31125)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	86.04878	(2000.0)	P	Q	
<i>n</i>	0.27380914	ω	106.51161	-0.97163693	-0.11649902
<i>a</i>	2.3487534	Ω	67.17962	+0.00705896	-0.88413233
<i>e</i>	0.1388474	<i>i</i>	12.90096	+0.23637228	-0.45247983
<i>P</i>	3.60	<i>H</i>	13.5	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1959 04 06	760	0.5-	0.6-	1997 12 05	402	0.8-	0.4-	1999 03 24	704	1.5-	0.6-
1959 04 06	760	0.3+	1.7+	1997 12 05	402	0.8-	0.4-	1999 05 18	704	0.7+	1.4+
1959 04 15	760	0.2-	0.9+	1997 12 05	402	0.8-	0.6-	1999 05 18	704	1.5-	0.2-
1959 04 15	760	1.4+	0.7-	1997 12 09	402	0.0	0.5-	1999 05 18	704	0.7+	0.1-
1974 07 24	413	0.5-	1.7+	1997 12 09	402	0.1+	0.5-	1999 05 18	704	0.1-	0.4+
1986 11 30	381	0.7-	2.0+	1997 12 09	402	0.1-	0.3-	1999 05 18	704	0.9-	1.5+
1986 11 30	381	2.0-	0.7+	1997 12 10	402	0.5+	0.0	1999 05 19	704	0.9+	0.0
1986 12 01	381	0.8+	0.5+	1997 12 10	402	0.4+	0.1-	1999 05 19	704	0.3-	1.1+
1986 12 01	381	0.2+	1.0+	1997 12 10	402	0.6+	0.0	1999 05 19	704	0.2-	0.2-
1997 11 28	566	0.8+	0.4+	1997 12 14	402	0.1+	0.4+	1999 05 19	704	1.3+	0.4+
1997 11 28	566	0.2+	0.4-	1997 12 14	402	0.5+	0.2+	1999 05 19	704	0.4-	0.5-
1997 11 28	566	0.5+	0.3+	1997 12 14	402	0.6+	0.4+	1999 06 09	704	0.1+	0.8-
1997 11 29	704	1.4+	0.7-	1997 12 24	900	0.1+	0.7+	1999 06 09	704	0.3+	0.5-
1997 11 29	704	(2.8-	1.4-)	1997 12 24	900	0.2-	0.7+	1999 06 09	704	0.1-	0.8-
1997 11 29	704	1.1-	0.5-	1997 12 25	402	0.3-	1.1+	1999 06 09	704	0.6+	0.2-
1997 11 29	704	(2.5-	0.2+)	1997 12 25	402	0.4-	1.1+	1999 06 09	704	0.3-	0.7-
1997 11 29	704	1.9-	0.5+	1997 12 25	402	0.7-	1.1+	1999 06 14	888	0.7+	0.2+
1997 12 04	704	1.4+	0.7-	1998 01 30	402	0.7+	0.0	1999 06 15	704	0.3+	0.1-
1997 12 04	704	0.7+	0.2+	1998 01 30	402	0.7+	0.1+	1999 06 15	704	0.8+	0.6+
1997 12 04	704	0.2+	0.8+	1998 01 30	402	0.7+	0.1+	1999 06 15	704	0.1-	0.3+
1997 12 04	704	(3.0-	0.6-)	1999 03 24	704	0.3+	0.1+	1999 06 15	704	(0.2+	2.9+)
1997 12 05	402	0.5-	0.5-	1999 03 24	704	0.0	1.3+	1999 06 15	704	0.5+	0.5+
1997 12 05	402	0.9-	0.4-	1999 03 24	704	1.8-	1.1+				

(10910)* 1997 YX = 1982 BP₁₂ = 1990 BN₄ = 1990 DM₅ = 1992 OY₆

Discovered 1997 Dec. 20 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 31126)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Nakano			
<i>M</i>	153.74719	(2000.0)	P	Q	
<i>n</i>	0.24445817	ω	247.63994	+0.00055110	-0.99991533
<i>a</i>	2.5331817	Ω	202.34027	+0.92960500	+0.00530378
<i>e</i>	0.1585050	<i>i</i>	1.96006	+0.36855697	-0.01188246
<i>P</i>	4.03	<i>H</i>	14.2	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1982 01 30	675	0.2-	0.1-	1997 12 21	411	0.2-	0.1-	1999 05 13	704	0.3-	0.1+
1982 01 31	675	0.6+	1.4+	1997 12 24	358	(3.4-	1.1+)	1999 05 13	704	1.1-	0.9+
1990 01 24	033	0.6+	0.3-	1997 12 24	358	0.0	0.3+	1999 05 13	704	0.2-	0.1-
1990 01 25	033	0.2-	0.2+	1997 12 25	358	0.2-	0.7+	1999 05 17	703	0.4+	0.5-
1990 02 23	033	0.0	0.2-	1997 12 25	358	1.2+	0.8-	1999 05 17	703	0.1-	0.6-
1990 02 23	033	0.6-	0.3+	1997 12 25	358	1.6+	0.6-	1999 05 17	703	0.6+	0.0
1992 07 30	809	0.1-	0.7-	1997 12 26	358	0.2-	1.0-	1999 05 17	703	0.3+	0.3-
1992 07 30	809	0.1-	0.0	1997 12 26	358	0.1+	0.8-	1999 05 18	704	(0.2+	2.6-)
1992 07 30	809	0.3+	0.5-	1997 12 28	411	0.2-	0.2-	1999 05 18	704	1.3-	1.2-
1992 07 31	809	0.7+	0.0	1997 12 28	411	0.4-	0.1+	1999 05 18	704	0.9-	1.5+
1992 07 31	809	0.0	0.5+	1998 01 04	411	0.1+	0.0	1999 06 05	703	1.6+	0.6-

M.P.C. 34800

1999 JUNE 22

1992 07 31	809	0.5−	0.2−	1998 01 04	411	0.1−	0.1−	1999 06 05	703	0.5−	0.2+
1997 12 20	411	0.5−	0.2−	1998 01 16	411	0.3−	0.1+	1999 06 05	703	0.5+	0.1+
1997 12 20	411	0.6−	0.0	1998 01 16	411	0.1−	0.6−	1999 06 05	703	(1.9−	2.6−)
1997 12 21	411	0.5−	0.4+	1999 05 13	704	0.6+	1.0−				

(10911)* 1997 YC₁ = 1971 SH₃

Discovered 1997 Dec. 19 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. G. V. Williams (*MPC* 31127)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	249.07263		(2000.0)		P		Q	
n	0.27062327	ω	282.57888		+0.99400459		+0.09102870	
a	2.3671510	Ω	72.22249		−0.05788431		+0.90807433	
e	0.2144847	i	3.64685		−0.09275927		+0.40879677	
P	3.64	H	14.1		G	0.15	U	2

Residuals in seconds of arc

1971 09 26	805	0.3+	0.8+	1997 12 21	691	1.1−	0.3−	1999 04 07	699	1.3+	0.2+
1971 09 27	805	0.7−	0.0	1997 12 28	566	0.2+	0.7−	1999 04 07	699	1.4+	0.4−
1995 02 03	691	0.2+	0.1+	1997 12 28	566	0.3+	0.7−	1999 04 12	704	0.0	0.8+
1995 02 03	691	0.2+	0.3+	1997 12 28	566	0.4+	0.6−	1999 04 12	704	0.2−	0.7+
1995 02 03	691	0.1+	0.1+	1997 12 29	327	0.1+	0.1+	1999 04 12	704	0.4+	0.3−
1997 12 05	691	0.1+	0.0	1997 12 29	327	0.0	0.2−	1999 04 16	704	0.3−	0.9−
1997 12 05	691	0.1+	0.2−	1997 12 29	327	0.2+	0.1−	1999 04 16	704	0.8+	0.7+
1997 12 05	691	0.1+	0.3−	1998 01 05	327	0.2+	0.9+	1999 04 16	704	1.4−	0.9−
1997 12 19	327	0.4+	0.7+	1998 01 05	327	0.4+	0.4+	1999 04 16	704	0.6−	1.2+
1997 12 19	327	0.3+	0.6+	1998 01 05	327	0.1+	0.8+	1999 04 19	704	0.4−	0.1+
1997 12 19	327	0.6+	0.0	1999 03 19	704	(2.3+	1.1−)	1999 04 19	704	0.2−	0.6+
1997 12 19	327	0.0	0.3−	1999 03 19	704	0.6+	1.0−	1999 04 19	704	0.5−	1.3+
1997 12 19	327	0.2−	0.1+	1999 03 19	704	1.8+	1.0−	1999 04 19	704	0.9−	1.0+
1997 12 19	327	0.4−	0.1−	1999 04 07	704	0.0	0.6+	1999 04 19	704	0.3−	1.1+
1997 12 20	327	0.2−	0.0	1999 04 07	704	0.2−	0.1−	1999 05 18	704	0.5+	0.9−
1997 12 20	327	0.1−	0.1−	1999 04 07	704	1.1−	0.3−	1999 05 18	704	(0.8−	2.1+)
1997 12 20	327	0.3−	0.1+	1999 04 07	704	0.1−	0.1+	1999 05 18	704	0.0	0.4−
1997 12 21	691	0.7−	0.2−	1999 04 07	704	0.1+	0.6+	1999 05 18	704	1.3−	0.9−
1997 12 21	691	0.6−	0.3−	1999 04 07	699	0.8+	1.8−	1999 05 18	704	(2.6−	0.8+)

(10912)* 1997 YW₅ = 1985 ME = 1989 FM

Discovered 1997 Dec. 25 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 31128)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	108.38094		(2000.0)		P		Q
n	0.21044536	ω	63.27229		−0.60217351		−0.79262234
a	2.7992594	Ω	64.08065		+0.68953223		−0.57669214
e	0.0973797	i	6.10077		+0.40240820		−0.19792927
P	4.68	H	13.2	G	0.15	U	2

Residuals in seconds of arc

1985 06 21	474	1.4−	1.2−	1998 01 28	411	0.1−	0.2−	1999 05 18	704	0.1−	0.3+
1985 06 21	474	0.6+	0.6−	1999 04 19	704	0.1−	0.6−	1999 05 18	704	0.3−	0.6+
1989 03 30	402	0.8+	1.3+	1999 04 19	704	0.6−	0.0	1999 05 18	704	0.4+	1.1+
1989 03 30	402	1.1−	0.2+	1999 04 19	704	0.3+	0.3−	1999 05 18	704	0.3−	0.8+
1989 04 01	402	(4.8+	0.5+)	1999 04 20	704	0.5+	0.7−	1999 05 18	704	0.1−	0.7+
1989 04 01	402	1.3+	0.7+	1999 04 20	704	1.2−	0.7−	1999 05 19	704	0.5−	0.3+
1997 12 25	411	0.8−	0.7−	1999 04 20	704	0.7−	0.9−	1999 05 19	704	0.0	0.4+
1997 12 25	411	0.6−	0.1+	1999 04 20	704	0.4−	0.6−	1999 05 19	704	0.3−	0.8+
1997 12 27	411	0.1−	0.2+	1999 05 10	704	0.1+	0.5−	1999 05 19	704	1.7−	0.3+
1997 12 27	411	0.0	0.6−	1999 05 10	704	0.0	1.0−	1999 06 04	703	0.2−	0.4−
1997 12 28	566	0.5+	0.5−	1999 05 10	704	1.1+	0.5−	1999 06 04	703	0.4+	0.5+
1997 12 28	566	0.5+	0.3−	1999 05 10	704	0.1+	1.2+	1999 06 04	703	0.6+	0.7+
1997 12 28	566	0.9+	0.5−	1999 05 10	704	0.2−	1.0+	1999 06 04	703	1.2+	1.9+
1998 01 03	411	0.3+	1.3+	1999 05 13	704	(0.4+	2.7−)	1999 06 09	704	1.7+	0.4−
1998 01 03	411	0.1−	0.4+	1999 05 13	704	0.8−	0.4−	1999 06 09	704	1.5+	1.1−
1998 01 16	411	0.5−	0.2−	1999 05 13	704	1.0−	0.6−	1999 06 09	704	0.3+	1.2−

1998 01 16	411	0.2−	0.4−	1999 05 13	704	0.0	0.0	1999 06 09	704	0.6+	0.4−
1998 01 28	411	0.1−	0.7−	1999 05 13	704	0.2−	0.8−	1999 06 09	704	0.6+	0.1−

(10913)* 1997 YE₁₄ = 1986 RX₉ = 1989 AW₇ = 1990 MS₁

Discovered 1997 Dec. 31 by T. Kobayashi at Oizumi.

Id. G. V. Williams (*MPC* 31258)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	341.10249		(2000.0)		P		Q
n	0.21126237	ω	338.17075		+0.11869824		+0.98500955
a	2.7920378	Ω	298.45412		−0.88864288		+0.04914581
e	0.1316142	i	8.18475		−0.44297242		+0.16535076
P	4.67	H	13.1	G	0.15	U	2

Residuals in seconds of arc

1986 09 08	095	1.4+	0.7−	1998 01 25	566	0.3+	0.4+	1999 04 15	704	0.9+	0.4−
1986 09 11	095	0.5−	0.2−	1998 01 25	566	0.2+	0.3+	1999 04 15	704	0.1−	0.6−
1989 01 11	033	0.2−	1.0−	1998 01 25	566	0.2+	0.3+	1999 04 15	704	1.1−	0.5+
1989 01 11	033	0.9−	1.8−	1998 01 28	566	0.3+	1.0−	1999 04 15	704	0.5+	1.2−
1990 06 25	808	0.7−	0.3−	1998 01 28	566	0.5+	0.6−	1999 04 15	704	(2.6−	1.0−)
1990 06 25	808	0.3+	0.2−	1998 01 28	566	0.3+	0.5−	1999 04 20	704	0.3+	0.1+
1997 12 31	411	0.5−	0.4+	1998 01 29	566	0.4−	0.4−	1999 04 20	704	0.6+	0.0
1997 12 31	411	0.7−	0.6+	1998 01 29	566	0.3−	0.2−	1999 04 20	704	0.7+	0.9−
1998 01 01	411	0.6−	0.2+	1998 01 29	566	0.2−	0.0	1999 04 20	704	0.8+	0.9+
1998 01 01	411	0.6−	0.4+	1998 01 30	411	0.2+	0.3+	1999 04 20	704	0.6+	0.7+
1998 01 06	411	0.1+	0.4+	1998 01 30	411	0.4−	0.8+	1999 05 10	704	0.5−	0.0
1998 01 06	411	0.6−	0.8+	1998 02 22	566	0.5+	0.1+	1999 05 10	704	0.2−	0.6−
1998 01 08	699	0.4+	0.0	1998 02 22	566	0.5+	0.2−	1999 05 10	704	1.5+	0.0
1998 01 08	699	1.0+	0.7+	1998 02 22	566	0.5+	0.2−	1999 05 10	704	0.0	1.2+
1998 01 08	699	0.7−	1.0+	1998 02 23	566	0.2+	0.3+	1999 05 10	704	1.4−	0.8+
1998 01 24	566	0.6−	1.4−	1998 02 23	566	0.1+	0.1−	1999 06 09	704	0.5−	1.0−
1998 01 24	566	0.3−	1.7−	1998 02 23	566	0.0	0.1+	1999 06 09	704	0.4+	0.5+
1998 01 24	566	0.6−	0.9−	1998 02 26	566	0.5+	0.1+	1999 06 09	704	0.4+	0.2+
1998 01 24	411	0.2+	0.6+	1998 02 26	566	0.4+	0.6+	1999 06 09	704	0.9−	0.8−
1998 01 24	411	0.2−	0.1+	1998 02 26	566	0.1+	0.5+	1999 06 09	704	1.5−	0.5+

(10914)* 1997 YQ₁₄ = 1993 FC₃₈ = 1997 CN₁₄

Discovered 1997 Dec. 31 by P. G. Comba at Prescott.

Id. G. V. Williams (*MPC* 31396)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	27.14071		(2000.0)		P		Q
n	0.17448040	ω	209.27415		−0.80609265		+0.59178818
a	3.1717938	Ω	7.01021		−0.54105552		−0.73617632
e	0.1445533	i	0.55475		−0.23973646		−0.32837658
P	5.65	H	14.0	G	0.15	U	1

Residuals in seconds of arc

1993 03 21	809	(2.4−	2.0−)	1999 04 16	684	0.1+	0.2−	1999 05 13	684	0.4+	0.1−
1993 03 22	809	1.2−	2.0−	1999 04 16	684	0.1+	0.0	1999 05 13	704	0.2+	1.0+
1993 03 24	809	1.0+	1.4+	1999 04 16	684	0.0	0.2−	1999 05 13	704	0.8+	0.9+
1997 02 04	691	0.4+	0.7−	1999 04 17	684	0.3+	0.0	1999 05 14	704	1.0−	0.3+
1997 02 04	691	0.6+	0.2−	1999 04 17	684	0.2+	0.1+	1999 05 14	704	1.3−	0.8−
1997 02 04	691	0.8+	0.3−	1999 04 17	704	1.6+	0.1−	1999 05 14	704	0.2−	0.5−
1997 02 10	691	0.4−	0.1−	1999 04 17	704	0.6+	0.6−	1999 05 14	704	0.3+	0.7+
1997 02 10	691	0.6−	0.2−	1999 04 17	704	0.2−	1.0+	1999 05 14	704	0.1+	1.1−
1997 02 10	691	0.5−	0.1−	1999 04 20	704	0.3+	1.1+	1999 05 18	704	0.3−	0.3−
1997 12 31	684	0.2+	0.2−	1999 04 20	704	0.2−	0.5+	1999 05 18	704	0.5−	0.7−
1997 12 31	684	0.1−	0.2+	1999 04 20	704	0.3+	1.8+	1999 05 18	704	0.2−	0.2+
1998 01 02	684	0.2−	0.2+	1999 04 20	704	0.9−	0.3+	1999 05 18	704	0.4−	0.6+
1998 01 02	684	0.2+	0.0	1999 05 10	704	0.4+	0.3+	1999 05 18	704	0.3−	0.4+
1998 01 25	691	0.2−	0.0	1999 05 10	704	0.4+	0.3+	1999 05 19	704	0.6+	0.5+
1998 01 25	691	0.1−	0.2+	1999 05 10	704	0.2−	0.6−	1999 05 19	704	0.1+	0.0
1998 01 25	691	0.3−	0.1+	1999 05 10	704	0.4−	1.1−	1999 05 19	704	1.0−	0.8−
1998 01 28	566	0.6−	0.7−	1999 05 10	704	0.5+	0.5+	1999 05 19	704	0.4−	0.2−
1998 01 28	566	0.3−	0.5−	1999 05 12	684	0.0	0.4−	1999 05 19	704	0.6−	0.7−
1998 01 28	566	0.8−	0.1−	1999 05 12	684	0.2+	0.3−	1999 06 09	704	0.2−	0.6−

1999 JUNE 22

M.P.C. 34801

1998 02 19	684	0.8+	0.3+	1999 05 13	704	0.1-	0.0	1999 06 09	704	0.3+	0.1-
1998 02 19	684	0.6+	0.2+	1999 05 13	704	0.0	0.4-	1999 06 09	704	0.0	0.4-
1998 02 26	684	0.4+	0.4+	1999 05 13	704	0.2+	0.5-	1999 06 09	704	0.1+	0.2+
1998 02 26	684	0.4+	0.3+	1999 05 13	684	0.2+	0.2-				

(10915)* 1997 YU₁₆ = 1988 XV₄

Discovered 1997 Dec. 29 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. K. Ichikawa (*MPC* 31396)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	28.02338		(2000.0)	P	Q	Williams	
<i>n</i>	0.23136196	ω	145.46708	-0.77918482	+0.62476361		
<i>a</i>	2.6278954	Ω	73.27806	-0.58629003	-0.69802801		
<i>e</i>	0.0216733	<i>i</i>	3.01737	-0.22166420	-0.34989617		
<i>P</i>	4.26	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1988 12 05	381	(0.2- 3.2+)	1998 01 17	327	0.3- 0.1+	1999 05 13	704	0.3+ 0.1-
1988 12 06	381	(23.5- 1.9-)	1998 01 17	327	0.4+ 0.1+	1999 05 13	704	0.0 0.6+
1988 12 07	381	0.5+ 0.7+	1998 01 17	327	0.2- 0.2-	1999 05 13	704	0.1- 0.4-
1988 12 08	381	1.0- 1.2+	1999 04 18	426	0.5+ 0.1+	1999 05 13	704	1.7- 0.5+
1996 09 17	566	0.2- 0.7+	1999 04 18	426	0.1+ 0.7-	1999 05 14	704	0.4- 1.1-
1996 09 17	566	0.6- 0.8+	1999 04 19	704	0.3+ 0.0	1999 05 14	704	1.9- 1.4+
1996 09 17	566	0.2- 0.8+	1999 04 19	704	0.4+ 1.7-	1999 05 14	704	0.1+ 0.6-
1997 12 29	327	0.0 0.2+	1999 04 19	704	0.7+ 0.3+	1999 05 14	704	0.8- 2.0+
1997 12 29	327	0.1+ 0.6-	1999 04 19	704	0.0 0.6+	1999 05 18	704	1.1+ 1.0-
1997 12 29	327	0.2+ 0.4-	1999 04 19	426	0.5- 0.4-	1999 05 18	704	0.3- 0.5+
1998 01 03	327	0.4+ 0.2+	1999 04 19	426	0.2+ 0.1+	1999 05 18	704	1.5+ 0.0
1998 01 03	327	0.1+ 0.4+	1999 04 19	426	0.7+ 0.5-	1999 05 18	704	0.2+ 1.1+
1998 01 03	327	0.2+ 0.7+	1999 04 20	704	0.6- 0.5+	1999 05 18	704	0.7+ 0.2-
1998 01 05	327	0.1- 0.1-	1999 04 20	704	0.5- 1.1+	1999 05 19	704	1.3+ 0.7-
1998 01 05	327	0.1+ 0.0	1999 04 20	704	(1.0- 2.0+)	1999 05 19	704	1.2+ 0.1-
1998 01 05	327	0.3+ 0.1+	1999 04 20	704	1.1- 1.0+	1999 05 19	704	0.0 0.0
1998 01 07	691	0.3- 0.1-	1999 05 10	704	0.3- 0.6-	1999 05 22	691	0.5+ 1.4-
1998 01 07	691	0.4- 0.1-	1999 05 10	704	0.5- 0.1+	1999 05 22	691	0.1+ 0.5-
1998 01 07	691	0.2- 0.0	1999 05 10	704	0.1- 0.8+	1999 06 07	703	0.1+ 0.1-
1998 01 07	327	0.0 0.3+	1999 05 10	704	0.6- 0.3+	1999 06 07	703	0.2+ 0.1+
1998 01 07	327	0.2+ 0.3+	1999 05 10	704	0.9- 1.0+	1999 06 07	703	1.6+ 0.8+
1998 01 07	327	0.3- 0.3+	1999 05 13	704	0.3+ 0.2+	1999 06 07	703	0.1+ 0.9+

(10916)* 1997 YB₁₇ = 1976 SE₂ = 1996 UG₅

Discovered 1997 Dec. 31 by N. Sato at Chichibu.

Id. G. V. Williams (*MPC* 31258)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	345.56364		(2000.0)	P	Q	Williams	
<i>n</i>	0.20115582	ω	309.43513	-0.23863640	+0.97101865		
<i>a</i>	2.8847907	Ω	306.75381	-0.88581901	-0.22324707		
<i>e</i>	0.0212711	<i>i</i>	0.94727	-0.39796653	-0.08534361		
<i>P</i>	4.90	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1976 09 24	095	0.4- 1.0+	1998 03 24	910	0.7+	0.0	1999 05 10	704	0.9-	0.2+
1996 10 04	691	0.0 0.3+	1998 03 25	910	0.7+	0.2-	1999 05 10	704	1.2-	0.5+
1996 10 04	691	0.0 0.3+	1998 03 25	910	0.8+	0.0	1999 05 13	704	0.1+	0.2-
1996 10 04	691	0.1+ 0.3+	1998 03 25	910	0.7+	0.3+	1999 05 13	704	0.0	0.2+
1996 10 17	691	0.3- 1.1+	1999 04 14	426	0.4+	0.1+	1999 05 13	704	0.5-	1.1-
1996 10 17	691	0.2- 0.6+	1999 04 14	426	0.8+	0.0	1999 05 13	704	0.7-	0.6-
1996 10 17	691	0.1- 0.5+	1999 04 14	426	0.6+	0.2+	1999 05 13	704	0.7+	1.0-
1996 11 28	327	0.1- 0.0	1999 04 15	704	0.3+	0.1+	1999 05 14	704	0.7-	0.6-
1996 11 28	327	0.2+ 0.3+	1999 04 15	704	0.6-	0.0	1999 05 14	704	0.4+	1.3+
1996 11 28	327	0.5- 0.1-	1999 04 15	704	0.0	0.5-	1999 05 14	704	0.1-	1.0-
1997 12 31	369	0.7- 0.8+	1999 04 15	704	1.0-	1.2-	1999 05 14	704	0.2-	1.4+
1997 12 31	369	0.2- 0.3+	1999 04 15	426	0.8+	0.2+	1999 05 14	704	0.3-	0.5+
1997 12 31	369	0.7- 0.4+	1999 04 15	426	0.5+	0.3+	1999 05 15	703	1.6+	0.5-
1998 01 05	369	0.2- 0.1-	1999 04 15	426	0.6+	0.1+	1999 05 15	703	0.9+	0.6+

1998 01 05	369	0.4-	0.7+	1999 04 20	704	0.3+	0.9+	1999 05 15	703	0.9+	0.4+
1998 01 24	627	0.1-	0.4-	1999 04 20	704	0.0	0.2-	1999 05 15	703	1.2+	1.1+
1998 01 24	627	0.3-	0.1+	1999 04 20	704	0.2-	1.1+	1999 05 18	704	0.6+	0.2-
1998 01 24	627	0.6-	0.1+	1999 04 20	704	0.0	0.5+	1999 05 18	704	0.6+	0.2-
1998 01 26	627	0.2-	0.2-	1999 05 05	426	0.3-	0.7+	1999 05 18	704	0.7+	0.0
1998 01 26	627	0.4-	0.3-	1999 05 05	426	0.1-	0.3+	1999 05 18	704	0.0	0.5+
1998 01 26	627	0.1+	0.7+	1999 05 05	426	0.3-	0.2+	1999 05 18	704	0.8-	0.9+
1998 02 25	566	0.0	0.4-	1999 05 06	426	0.1-	0.1+	1999 05 19	704	0.2-	0.8-
1998 02 25	566	0.1+	0.3-	1999 05 06	426	0.0	0.0	1999 05 19	704	0.4+	0.7+
1998 02 25	566	0.1-	0.2-	1999 05 10	704	0.2+	0.6-	1999 05 19	704	0.8-	0.0
1998 03 24	910	1.0+	0.3-	1999 05 10	704	1.7-	0.3-	1999 05 19	704	0.1+	0.4-
1998 03 24	910	0.8+	0.0	1999 05 10	704	0.1-	0.2-	1999 05 19	704	0.5-	0.5+

(10917)* 1998 AN = 1986 PF₃ = 1991 RJ₁₈ = 1992 YV₅ = 1997 BB₇

Discovered 1998 Jan. 5 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 31131)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	112.73012		(2000.0)	P	Q	Nakano	
<i>n</i>	0.21381216	ω	171.72988	-0.79393090	-0.60677538		
<i>a</i>	2.7697960	Ω	330.80368	+0.55319942	-0.69449064		
<i>e</i>	0.0872868	<i>i</i>	4.54986	+0.25227788	-0.38666056		
<i>P</i>	4.61	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1986 08 01	675	(8.8+ 1.7-)	1997 01 29	327	1.1-	0.7+	1998 02 04	411	0.3-	0.4-
1986 08 01	675	(16.3+ 2.2+)	1997 01 29	327	0.3+	0.2+	1998 02 04	411	0.3-	0.6-
1986 08 02	675	(6.4+ 0.7+)	1997 01 29	327	0.1-	0.3+	1999 05 18	704	1.5-	0.1-
1986 08 02	675	(11.3+ 3.0+)	1998 01 05	411	0.8-	0.2+	1999 05 18	704	0.2+	0.2+
1991 09 13	675	0.4+ 1.5-	1998 01 05	411	0.1+	0.6-	1999 05 18	704	0.8-	1.2-
1991 09 13	675	0.3- 1.2-	1998 01 06	411	0.2+	0.0	1999 06 09	704	0.8+	0.0
1991 09 13	691	0.2+ 0.0	1998 01 06	411	0.1+	0.6-	1999 06 09	704	0.5+	0.1+
1991 09 13	691	0.4+ 0.0	1998 01 09	658	0.6-	0.2-	1999 06 09	704	0.4+	1.0+
1991 09 13	691	0.6+ 0.0	1998 01 09	658	0.7-	0.3-	1999 06 09	704	0.5+	0.6-
1991 09 16	675	0.5+ 1.5-	1998 01 09	658	0.5-	0.3-	1999 06 09	704	0.8+	0.5-
1991 09 16	675	0.4+ 1.8-	1998 01 09	411	0.1-	0.7-	1999 06 15	704	0.2+	0.6-
1992 12 22	885	0.5+ 0.9-	1998 01 09	411	0.2-	0.1-	1999 06 15	704	0.1-	0.6-
1992 12 22	885	0.3+ 0.2+	1998 01 24	411	0.4+	0.1-	1999 06 15	704	0.4-	0.7-
1997 01 28	327	0.1+ 0.4+	1998 01 24	411	0.0	0.4-	1999 06 15	704	0.7-	0.8-
1997 01 28	327	0.6+ 0.2-	1998 01 31	411	0.2-	0.8-	1999 06 15	704	0.0	0.4-
1997 01 28	327	0.1- 0.2+	1998 01 31	411	0.2-	0.2-				

(10918)* 1998 AS₁ = 1993 FE = 1994 LN₉

Discovered 1998 Jan. 1 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPC* 31260)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	88.47868		(2000.0)	P	Q	Williams	
<i>n</i>	0.17967618	ω	18.62257	-0.68642879	-0.72573011		
<i>a</i>	3.1103484	Ω	114.75506	+0.66056635	-0.64882277		
<i>e</i>	0.1441160	<i>i</i>	2.91406	+0.30408489	-0.22878991		
<i>P</i>	5.49	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1993 03 16	372	(0.6+ 2.5-)	1998 01 22	704	0.6+ 0.8+	1999 05 10	704	0.5- 1.1-
1993 03 16	372	0.8- 0.4+	1998 01 22	704	0.3- 0.8+	1999 05 10	704	(2.7+ 0.9+)
1993 03 17	372	1.6+ 1.9+	1998 01 23	691	0.3- 1.0-	1999 05 10	704	(2.1+ 2.8+)
1994 06 08	809	1.0- 1.1+	1998 01 23	691	0.6- 0.2+	1999 05 13	704	2.0- 1.2+
1994 06 08	809	0.4+ 1.1+	1998 01 23	691	0.5- 0.1+	1999 05 13	704	0.4- 0.3+
1994 06 08	809	0.7+ 1.1+	1998 01 25	566	0.1+ 0.2+	1999 05 13	704	0.1+ 0.2-
1994 06 09	809	0.4+ 1.3+	1998 01 25	566	0.2+ 0.2+	1999 05 13	704	0.9+ 1.9-
1994 06 09	809	0.1- 1.7+	1998 01 25	566	0.2- 0.5-	1999 05 14	704	0.3- 1.7-
1994 06 09	809	0.8+ 1.4+	1998 02 10	118	0.6+ 0.0	1999 05 14	704	1.4+ 0.8+
1998 01 01	691	0.8- 0.5+	1998 02 10	118	0.1- 0.2-	1999 05 14	704	0.8+ 1.3+
1998 01 01	691	0.6- 0.2+	1998 02 10	118	0.5+ 0.6+	1999 05 14	704	0.4- 0.7-
1998 01 01	691	0.7- 0.1+	1998 02 11	118	1.0+ 0.3-	1999 05 15	703	0.3- 0.2-
1998 01 02	704	0.4+ 0.1+	1998 02 11	118	0.7+ 0.3-	1999 05 15	703	0.1- 0.0

1998 01 02	704	0.1−	0.3+	1998 02 11	118	0.1+	0.4−	1999 05 15	703	0.7+	0.1+
1998 01 02	704	0.1+	0.2−	1998 02 11	118	0.1+	0.3−	1999 05 15	703	0.1−	0.5+
1998 01 02	704	0.1−	0.2−	1998 02 23	118	0.2+	0.2−	1999 05 18	704	1.3+	1.9−
1998 01 02	704	0.5−	0.5−	1998 02 23	118	0.8+	0.0	1999 05 18	704	(2.4+ 1.0−)	
1998 01 06	691	0.4−	0.9−	1999 04 12	704	1.3−	0.3+	1999 05 18	704	0.5−	1.3−
1998 01 06	691	0.4−	0.0	1999 04 12	704	0.2+	0.9+	1999 05 18	704	0.2−	1.2+
1998 01 06	691	0.1+	0.1+	1999 04 12	704	(2.8− 2.2−)		1999 05 18	704	0.7−	0.8−
1998 01 08	704	1.4+	1.1+	1999 04 12	704	1.7−	1.2−	1999 05 19	704	1.6−	0.1−
1998 01 08	704	0.4+	0.9+	1999 04 19	704	0.8+	0.2−	1999 05 19	704	(2.1− 0.5+)	
1998 01 08	704	(1.0+ 2.0+)		1999 04 19	704	0.1−	0.2+	1999 05 19	704	1.8−	0.6+
1998 01 08	704	0.5−	0.2+	1999 04 19	704	1.7+	0.3−	1999 05 19	704	1.2+	1.4−
1998 01 22	704	0.5−	1.1+	1999 04 19	704	0.3−	0.8+	1999 05 19	704	0.3+	1.5−
1998 01 22	704	0.2+	0.2−	1999 05 10	704	0.1+	0.3−				

(10919)* 1998 AQ₈

Discovered 1998 Jan. 10 by L. Šarounová at Ondřejov.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	283.94888		(2000.0)	P	Q
<i>n</i>	0.20843428	ω	95.49459	+0.89276780	+0.44609933
<i>a</i>	2.8172364	Ω	238.02605	−0.43712647	+0.82393124
<i>e</i>	0.0196897	<i>i</i>	4.25484	−0.10902345	+0.34947489
<i>P</i>	4.73	<i>H</i>	13.8	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1995 07 02	691	0.0	0.1−	1998 03 03	704	(0.2+ 2.5−)	1999 05 15	732	0.1+	1.0−
1995 07 02	691	0.0	0.1−	1998 03 04	704	0.1− 0.6+	1999 05 15	732	0.2− 0.7+	
1995 07 02	691	0.2−	0.3+	1998 03 04	704	0.6+	1.4+	1999 05 15	732	0.4+ 0.3+
1996 11 08	691	0.0	0.0	1998 03 04	704	0.1+	0.5−	1999 05 18	704	0.5+ 0.3−
1996 11 08	691	0.1−	0.1+	1998 03 04	704	0.5+	0.3−	1999 05 18	704	0.4+ 0.9−
1996 11 08	691	0.1+	0.1+	1998 03 04	557	1.5+ 0.4+	1999 05 18	704	0.1+ 0.7+	
1997 12 31	557	0.6−	0.4+	1998 03 04	557	0.3+ 0.8+	1999 05 18	704	0.7+ 0.2−	
1997 12 31	557	0.3−	0.2−	1998 03 19	557	0.3− 0.1−	1999 05 19	704	0.2− 0.7+	
1998 01 10	557	0.1+	0.5−	1998 03 19	557	0.0 0.3+	1999 05 19	704	0.7− 1.0+	
1998 01 10	557	0.6−	0.1+	1999 04 10	557	0.0 1.1−	1999 05 19	704	1.1− 1.7+	
1998 01 10	557	0.1+	0.3−	1999 04 10	557	0.7+ 0.6−	1999 05 19	704	0.1+ 0.3+	
1998 01 12	557	0.6−	0.2−	1999 04 10	557	0.5+ 0.2+	1999 05 19	704	1.1− 0.4+	
1998 01 12	557	1.3−	0.4−	1999 04 14	557	0.8+ 0.7−	1999 06 09	704	0.3+ 0.2−	
1998 01 17	557	0.2+ 0.0		1999 04 14	557	0.3+ 0.6−	1999 06 09	704	0.5+ 0.2−	
1998 01 17	557	0.7− 0.3−		1999 05 10	704	0.9− 0.6−	1999 06 09	704	(0.5+ 2.1−)	
1998 01 26	566	0.2− 0.2+		1999 05 10	704	0.9+ 0.2−	1999 06 09	704	0.2− 0.8−	
1998 01 26	566	0.1− 0.4+		1999 05 10	704	0.2+ 0.2+	1999 06 09	704	0.4+ 1.1−	
1998 01 26	566	0.4− 0.3+		1999 05 10	704	0.9− 1.1−	1999 06 15	704	0.5+ 1.3−	
1998 02 19	557	0.4− 0.7−		1999 05 10	704	1.5− 0.7+	1999 06 15	704	0.2+ 0.7−	
1998 02 19	557	0.8+ 1.0−		1999 05 13	704	0.5− 0.5−	1999 06 15	704	0.2+ 0.1+	
1998 03 03	704	0.3+ 0.5−		1999 05 13	704	0.1+ 0.4+	1999 06 15	704	0.2− 0.4+	
1998 03 03	704	(3.8+ 0.2−)		1999 05 13	704	0.2+ 0.9+	1999 06 15	704	0.1− 0.4+	
1998 03 03	704	1.1+ 1.8+		1999 05 13	704	0.6+ 0.7+				
1998 03 03	704	0.0 1.3−		1999 05 13	704	0.7− 0.3−				

(10920)* 1998 BC₁ = 1979 WN₇ = 1985 YH₁ = 1992 BD₅ = 1993 HN₆

Discovered 1998 Jan. 19 by T. Kobayashi at Oizumi.

Id. D. J. Asher (*MPC* 31261)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	121.71873		(2000.0)	P	Q
<i>n</i>	0.17337622	ω	282.49642	−0.25288259	−0.96749696
<i>a</i>	3.1852463	Ω	182.15177	+0.88963083	−0.23245225
<i>e</i>	0.1431022	<i>i</i>	0.29234	+0.38027278	−0.09957707
<i>P</i>	5.68	<i>H</i>	12.5	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1979 11 17	095	1.8−	1.8+	1998 02 02	411	0.7+	0.5−	1999 05 10	704	0.2+	1.0+
1985 12 17	010	(4.5+ 3.7−)		1998 02 02	411	0.0	0.7−	1999 05 10	704	0.7+	0.8+
1985 12 17	010	(6.1+ 3.2−)		1998 02 17	411	0.0	0.0	1999 05 10	704	0.1−	0.7+
1985 12 19	010	0.9+	1.8+	1998 02 17	411	1.5−	0.1−	1999 05 13	704	0.4+	0.3−
1992 01 23	372	0.2−	1.1−	1998 03 03	704	0.7+	1.0+	1999 05 13	704	0.1−	0.2−

1992 01 23	372	1.1+	1.5+	1998 03 03	704	0.5+	0.0	1999 05 13	704	0.3+	0.6+
1993 04 24	809	0.1−	0.2−	1998 03 03	704	0.3+	0.2−	1999 05 13	704	0.7+	1.9+
1993 04 24	809	0.0	0.1−	1998 03 03	704	0.1+	0.2−	1999 05 14	704	0.8−	0.8−
1993 04 24	809	0.5+	0.1−	1998 03 03	704	0.4−	0.5+	1999 05 14	704	0.6−	0.0
1993 04 24	809	0.8+	1.0−	1998 03 20	691	0.2+	0.1−	1999 05 14	704	0.4−	1.3+
1993 04 25	809	0.4−	0.3+	1998 03 20	691	0.2+	0.2−	1999 05 14	704	1.6−	1.1−
1993 04 25	809	0.3−	0.5+	1998 03 20	691	0.2+	0.2−	1999 05 18	704	0.1+	0.2−
1993 04 25	809	0.4−	0.6+	1999 04 17	704	0.4+	0.7−	1999 05 18	704	0.5−	0.4+
1998 01 19	411	0.0	0.2−	1999 04 17	704	0.9+	0.0	1999 05 18	704	0.8+	1.4+
1998 01 19	411	0.1+	0.4−	1999 04 17	704	0.3+	0.8−	1999 05 18	704	0.2+	0.4+
1998 01 20	411	0.1−	0.1−	1999 04 20	120	0.3+	0.1−	1999 05 18	704	0.5+	0.0
1998 01 20	411	0.1−	0.3−	1999 04 20	120	0.9−	0.9+	1999 05 19	704	0.1+	0.0
1998 01 24	566	0.0	0.1−	1999 04 20	120	0.2−	0.3−	1999 05 19	704	0.0	0.7+
1998 01 24	566	0.2−	0.1+	1999 04 20	704	0.0	0.5−	1999 05 19	704	0.3−	0.6−
1998 01 24	566	0.0	0.1+	1999 04 20	704	0.2+	0.3−	1999 05 19	704	0.7−	1.6+
1998 01 25	411	0.2−	0.3+	1999 04 20	704	0.2+	0.1−	1999 06 07	703	0.1−	0.4−
1998 01 25	411	0.5−	0.2+	1999 04 20	704	1.9+	0.2+	1999 06 07	703	1.2−	0.1+
1998 01 25	098	(2.6− 0.2+)		1999 05 09	120	0.2+	0.9−	1999 06 07	703	0.2+	0.2−
1998 01 25	098	0.9−	0.4−	1999 05 09	120	0.5+	0.3−	1999 06 07	703	(2.3− 1.8−)	
1998 01 27	098	0.1−	0.5+	1999 05 10	704	0.5+	0.5+				
1998 01 27	098	0.5−	0.1+	1999 05 10	704	0.3−	1.1−				

(10921)* 1998 BC₂ = 1953 XV₁ = 1973 UY₃

Discovered 1998 Jan. 17 by L. Lai at Madonna di Dossobuono.

Id. G. V. Williams (*MPC* 31555)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	210.42316		(2000.0)	P	Q
<i>n</i>	0.29181765	ω	70.32971	+0.56027322	−0.82803859
<i>a</i>	2.2511012	Ω	345.53730	+0.72476444	+0.50242013
<i>e</i>	0.1616323	<i>i</i>	4.85077	+0.40101175	+0.24884958
<i>P</i>	3.38	<i>H</i>	14.6	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1953 12 07	675	0.1+	0.5+	1998 02 01	560	0.0	0.7+	1998 03 30	560	0.3+	0.9+
1953 12 07	675	0.1−	0.2+	1998 02 01	560	0.1+	0.6+	1998 03 30	560	0.5−	0.2+
1973 10 29	095	0.2+	0.0	1998 02 01	560	0.0	0.0	1998 03 30	560	1.1−	0.1−
1997 12 29	566	1.2−	1.0+	1998 02 15	560	(2.1+ 0.4+)		1999 05 10	704	1.8+	0.5+
1997 12 29	566	0.8−	1.0+	1998 02 15	560	1.7+	0.6−	1999 05 10	704	0.6+	0.9−
1997 12 29	566	1.1−	1.0+	1998 02 15	560	1.9+	0.5−	1999 05 10	704	0.1+	1.3−
1998 01 17	560	0.2+	0.0	1998 02 26	560	0.5+	0.5−	1999 05 18	704	0.3+	0.2+
1998 01 17	560	0.4+	0.4−	1998 02 26	560	1.4+	0.3−	1999 05 18	704	1.7−	0.2+
1998 01 17	560	0.3+	0.5−	1998 03 05	560	0.2−	1.3−	1999 05 18	704	0.1+	1.0+
1998 01 20	560	0.1−	0.9−	1998 03 05	560	0.2+	1.4−	1999 05 19	704	0.9−	1.7+
1998 01 20	560	0.0	0.3−	1998 03 05	560	0.2+	1.5−	1999 05 19	704	(1.4− 2.2−)	
1998 01 20	560	0.1−	0.6+	1998 03 16	560	(0.6+ 2.0+)		1999 05 19	704	1.8−	0.3+
1998 01 24	560	0.2−	0.5+	1998 03 16	560	(0.9+ 2.9+)		1999 06 15	704	0.1−	0.1−
1998 01 24	560	0.7−	0.5−	1998 03 16	560	(1.0+ 2.3+)		1999 06 15	704	0.5+	0.0
1998 01 27	560	0.1+	0.4−	1998 03 20	560	0.4−	1.3+	1999 06 15	704	0.7+	0.5−
1998 01 27	560	0.4−	0.3+	1998 03 20	560	0.7+	0.5+	1999 06 15	704	0.7+	0.2−
1998 01 27	560	0.1−	0.4+	1998 03 20	560	0.5−	0.3+				

(10922)* 1998 BG₂ = 1982 DO₆ = 1983 RS

1983 09 10	688	1.7+	1.8-	1998 01 20	704	0.7-	1.2-	1998 01 25	566	0.3+	0.4-
1986 08 08	095	1.4-	0.7-	1998 01 22	704	0.1+	1.5-	1998 01 25	566	0.2-	0.1-
1996 08 24	399	1.7+	0.0	1998 01 22	704	0.4+	1.0-	1998 01 25	704	0.3-	0.6+
1996 08 24	399	0.6+	0.7+	1998 01 22	704	0.0	0.1-	1998 01 25	566	0.1+	0.2-
1996 08 25	399	0.2-	0.4-	1998 01 22	704	0.3-	0.0	1998 01 25	704	0.2-	0.0
1996 08 25	399	0.0	0.6-	1998 01 22	704	0.7+	0.4-	1998 01 25	704	0.3-	0.1-
1996 09 07	399	1.0-	0.1+	1998 01 23	704	0.1-	0.1+	1999 04 26	704	0.6-	1.2-
1996 09 07	399	0.1+	0.9-	1998 01 23	691	0.6-	0.2+	1999 04 26	704	0.2+	1.0-
1996 09 20	691	0.2-	0.2-	1998 01 23	704	0.6-	0.2+	1999 04 26	704	0.2+	0.8-
1996 09 20	691	0.1-	0.1-	1998 01 23	691	0.5-	0.5+	1999 04 26	704	0.0	0.4-
1996 09 20	691	0.1-	0.2-	1998 01 23	704	(4.1-	3.3+)	1999 06 09	704	(1.4+	2.7-)
1998 01 08	704	0.5+	0.2-	1998 01 23	691	0.3-	0.1+	1999 06 09	704	0.3-	0.3+
1998 01 08	704	0.0	0.7+	1998 01 23	704	0.6+	0.2-	1999 06 09	704	0.2-	0.3-
1998 01 08	704	0.1+	0.3-	1998 01 24	704	0.5-	0.3+	1999 06 09	704	0.7-	0.2-
1998 01 08	704	0.3+	0.5-	1998 01 24	704	0.1+	0.0	1999 06 15	704	0.9+	0.7+
1998 01 20	704	0.7+	0.3-	1998 01 24	704	0.5-	0.2+	1999 06 15	704	1.4+	1.0-
1998 01 20	704	0.2+	0.3-	1998 01 24	704	0.9-	0.0	1999 06 15	704	0.1-	0.4-
1998 01 20	704	0.2+	0.7-	1998 01 24	704	0.1-	0.0	1999 06 15	704	0.2-	0.3-

(10923)* 1998 BM₁₂ = 1971 DM = 1993 DE₂ = 1994 LJ₇

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

Id. G. V. Williams (*MPC* 31266)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	87.46565		(2000.0)		P		Q
n	0.18139593	ω	261.94083		-0.65167865		-0.75847259
a	3.0906586	Ω	228.72916		+0.69893717		-0.59749243
e	0.1716505	i	0.44624		+0.29462139		-0.26023476
P	5.43	H	13.5	G	0.15	U	1

Residuals in seconds of arc

1971 02 18	095	0.3-	0.0	1998 01 23	704	0.2+	0.2-	1999 05 13	704	1.2-	0.6+
1993 02 25	399	(2.6-	1.7+)	1998 01 23	704	0.1-	0.2-	1999 05 13	704	1.0-	1.2+
1993 02 25	399	(3.1-	1.2+)	1998 01 23	704	0.1-	0.3-	1999 05 13	704	1.4+	0.0
1993 03 02	399	(4.0-	0.6+)	1998 01 24	704	0.1-	0.2-	1999 05 13	704	0.1+	1.2+
1993 03 02	399	(5.7-	0.8+)	1998 01 24	704	0.4-	0.3+	1999 05 13	704	0.3+	1.9-
1994 06 03	809	(2.2+	0.4-)	1998 01 24	704	0.1-	0.3+	1999 05 14	704	1.6+	0.7-
1994 06 03	809	1.6+	0.6-	1998 01 24	704	0.5-	0.6-	1999 05 14	704	1.2+	1.1+
1994 06 03	809	(2.5+	0.9-)	1998 01 24	704	0.3-	0.6+	1999 05 14	704	0.3+	0.0
1994 06 04	809	0.8+	1.3+	1998 01 25	704	1.8-	0.2+	1999 05 14	704	0.9-	0.3+
1994 06 04	809	0.7+	0.5+	1998 01 25	704	0.1+	0.2+	1999 05 14	704	0.3+	0.9+
1994 06 04	809	0.6+	1.1+	1998 01 25	704	0.2-	0.0	1999 05 15	703	1.1+	0.3-
1996 09 10	566	1.0-	0.3+	1998 01 25	704	0.1+	0.4+	1999 05 15	703	0.6+	0.5-
1996 09 10	566	0.4-	0.0	1998 01 25	704	0.3+	0.6+	1999 05 15	703	0.4-	0.8+
1996 09 10	566	0.6-	0.2+	1999 04 17	704	0.5+	0.3-	1999 05 15	703	0.3-	1.9+
1998 01 02	704	0.0	0.3+	1999 04 17	704	0.8+	0.9-	1999 05 18	704	0.9+	0.4+
1998 01 02	704	0.3-	0.5+	1999 04 17	704	0.3+	0.8-	1999 05 18	704	0.4-	0.2+
1998 01 02	704	0.4-	0.5+	1999 04 20	704	0.7+	0.8-	1999 05 18	704	0.6+	0.0
1998 01 02	704	0.2-	0.3+	1999 04 20	704	0.5+	0.3-	1999 05 18	704	0.8+	0.8-
1998 01 02	704	1.6+	0.5-	1999 04 20	704	1.1-	0.2+	1999 05 18	704	0.1-	0.9-
1998 01 08	704	0.6+	0.7+	1999 04 20	704	1.6-	0.2-	1999 05 19	704	0.4-	1.3+
1998 01 08	704	0.6+	0.0	1999 05 10	704	1.0-	0.7+	1999 05 19	704	1.3-	1.2-
1998 01 08	704	0.7+	0.8-	1999 05 10	704	1.4-	0.6-	1999 05 19	704	0.4-	0.5+
1998 01 08	704	0.4+	0.2+	1999 05 10	704	0.8-	1.2+	1999 05 19	704	(0.8+	2.1-)
1998 01 23	704	1.6+	0.2-	1999 05 10	704	0.5-	1.6-	1999 05 19	704	0.2-	0.3-
1998 01 23	704	0.1-	0.0	1999 05 10	704	1.7-	0.2+				

(10924)* 1998 BU₂₅ = 1977 DU₂ = 1993 DF

Discovered 1998 Jan. 29 by I. P. Griffin at the BCC Observatory, Cocoa.

Id. G. V. Williams (*MPC* 31266)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	84.38207		(2000.0)		P		Q
n	0.18561760	ω	13.74300		-0.84829580		-0.51304159
a	3.0436166	Ω	134.59799		+0.46677129		-0.84138502
e	0.0510454	i	10.60815		+0.25003760		-0.16988107
P	5.31	H	12.7	G	0.15	U	2

Residuals in seconds of arc

1977 02 18	381	0.3-	0.7-	1998 02 18	758	0.3-	0.1-	1999 03 22	758	0.6+	0.4-
1977 02 18	381	0.4+	0.3-	1998 02 18	758	0.4-	0.1-	1999 03 22	758	0.7-	0.7+
1977 02 18	381	0.8-	0.1+	1998 02 19	758	0.4+	0.0	1999 04 12	758	0.6+	0.7+
1977 02 18	381	0.5+	0.8+	1998 02 19	758	(2.7+	0.1-)	1999 04 12	758	0.5+	0.9+
1977 02 19	381	0.5+	0.5+	1998 02 21	758	0.1+	0.9-	1999 04 12	758	0.3+	0.3+
1977 02 19	381	0.3-	0.5-	1998 02 21	758	0.4-	0.8-	1999 04 12	704	0.3+	0.5-
1977 02 19	381	0.2+	0.2-	1998 02 24	758	1.2-	1.1-	1999 04 12	704	0.2-	0.5-
1977 02 19	381	0.1-	0.6-	1998 02 24	758	0.8-	0.6+	1999 04 12	704	0.8-	1.1-
1993 02 17	372	0.6-	0.6-	1998 02 24	758	0.5+	0.5+	1999 04 12	704	0.1-	1.1-
1993 02 17	372	(0.7-	2.2-)	1998 02 24	758	0.5-	0.1-	1999 04 12	704	0.7-	0.7+
1993 02 19	372	0.2-	1.0-	1998 02 25	758	(2.1-	2.3-)	1999 04 13	758	0.1-	0.4+
1993 02 19	372	0.2-	0.1+	1998 02 25	758	0.7-	0.0	1999 04 13	758	0.2+	0.0
1998 01 29	758	0.3-	1.0+	1998 02 25	758	1.7+	0.9-	1999 04 13	758	0.2+	0.1-
1998 01 29	758	0.4-	0.3+	1998 02 25	566	0.5-	1.9-	1999 04 16	703	0.1+	0.3+
1998 01 29	758	1.2-	0.1+	1998 02 25	566	0.1+	1.7-	1999 04 16	703	0.3+	0.1-
1998 01 29	758	0.7-	0.6+	1998 02 25	566	0.2-	1.5-	1999 04 16	703	0.3+	0.2-
1998 01 30	758	1.1+	0.2-	1998 02 27	758	0.2-	0.5+	1999 04 16	703	0.1+	0.3-
1998 01 30	758	0.0	0.2-	1998 02 27	758	1.6-	0.6-	1999 04 19	704	0.3+	1.1-
1998 01 30	758	0.5+	0.5+	1998 02 27	758	0.7-	1.3-	1999 04 19	704	0.3+	1.2-
1998 01 30	758	0.1+	0.0	1998 03 03	758	1.0-	0.1+	1999 04 19	704	0.0	1.4-
1998 01 31	758	1.6+	0.4+	1998 03 03	758	0.3-	1.7+	1999 04 19	704	0.2+	1.6-
1998 01 31	758	0.8+	0.7+	1998 04 02	561	0.1+	0.1+	1999 04 19	704	0.3-	1.4-
1998 01 31	758	0.4+	0.4+	1998 04 02	561	0.2+	0.3+	1999 05 11	758	0.3+	1.2+
1998 01 31	758	0.6-	0.8+	1998 04 02	561	1.0+	0.7+	1999 05 11	758	0.0	0.8+
1998 02 01	758	0.8+	1.4+	1999 02 24	758	0.4-	0.2+	1999 05 11	758	0.5+	1.1+
1998 02 01	758	0.5+	0.6+	1999 02 24	758	0.6+	0.5+	1999 05 12	704	0.5-	0.3-
1998 02 01	758	0.5-	0.2-	1999 02 24	758	0.1-	0.8-	1999 05 12	704	0.8-	0.1+
1998 02 04	758	1.7+	0.4-	1999 02 24	758	0.9-	0.8+	1999 05 12	704	0.1-	1.5-
1998 02 04	758	0.2+	1.1+	1999 02 25	758	1.3+	1.4+	1999 05 12	704	0.5-	0.6-
1998 02 04	758	1.5-	0.7+	1999 02 25	758	0.3-	0.5-	1999 05 12	704	1.0+	0.2-
1998 02 04	758	0.6+	0.2+	1999 02 25	758	1.8+	0.1-	1999 05 13	758	0.1-	0.6+
1998 02 05	758	0.8+	0.6+	1999 02 25	758	0.4-	1.1+	1999 05 13	758	0.7-	0.5+
1998 02 05	758	1.5-	1.4-	1999 02 25	758	1.2+	0.3+	1999 05 13	758	0.0	1.3+
1998 02 05	758	0.0	0.3-	1999 02 26	758	1.1+	1.4-	1999 05 17	704	0.0	0.7-
1998 02 06	758	0.8+	0.0	1999 02 26	758	0.2+	0.5+	1999 05 17	704	0.4-	0.7-
1998 02 06	758	0.7+	1.0+	1999 02 26	758	0.6-	0.1+	1999 05 17	704	0.5-	0.3+
1998 02 06	758	0.1+	0.9+	1999 02 26	758	0.6+	0.5+	1999 05 17	704	1.7-	0.8+
1998 02 09	758	0.4+	0.1-	1999 03 05	758	0.2-	0.1-	1999 05 18	703	0.2-	0.1-
1998 02 09	758	1.0+	0.4-	1999 03 05	758	1.6+	1.2+	1999 05 18	703	0.4-	0.2-
1998 02 13	758	0.9-	0.4-	1999 03 05	758	0.7+	0.1-	1999 05 18	703	0.2-	0.2+
1998 02 13	758	0.6+	0.8-	1999 03 20	758	0.4+	1.0+	1999 05 18	703	0.4-	0.8+
1998 02 18	758	0.1-	0.2-	1999 03 20	758	1.6-	1.4+				

(10925)* 1998 BK₃₀ = 1979 SL₈ = 1983 QP

Discovered 1998 Jan. 28 by P. Antonini at Bedoin.

Id. A. Gnädig (*MPC* 31401), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	175.67347		(2000.0)		P	Q
n	0.23242876	ω	137.62580		+0.16031731	-0.98640531
a	2.6198482	Ω	303.11844		+0.89366873	+0.16057822
e	0.0599998	i	2.47007		+0.41911164	+0.03491697
P	4.24	H	13.9	G	0.15	U 1

1983 09 02	675	0.1−	1.0−	1998 02 15	141	0.0	0.7+	1999 05 13	704	0.4+	0.7−
1996 10 11	566	0.1+	0.3−	1998 02 15	141	0.3−	0.6+	1999 05 13	704	0.8+	1.5−
1996 10 11	566	0.0	0.2−	1998 02 15	132	0.5+	0.3+	1999 05 13	704	0.7+	0.9−
1996 10 11	566	0.2+	0.3−	1998 02 15	132	0.3−	1.1+	1999 05 13	704	0.2+	0.6+
1997 11 08	910	1.5−	0.2+	1998 02 20	910	1.1+	0.0	1999 05 18	704	0.4−	0.2−
1997 11 08	910	1.5−	0.1+	1998 02 20	910	1.0+	0.1−	1999 05 18	704	1.5+	1.1−
1997 11 08	910	1.2−	0.1+	1998 02 20	910	1.1+	0.2−	1999 05 18	704	0.3−	0.8+
1998 01 25	566	0.2−	1.3−	1998 02 24	133	1.5+	0.0	1999 05 18	704	2.3−	0.8+
1998 01 25	566	0.3−	1.4−	1998 02 24	133	1.0+	1.4−	1999 05 18	704	0.4−	0.3−
1998 01 25	566	0.0	1.3−	1998 02 24	133	0.7+	0.5−	1999 05 23	627	0.5−	0.0
1998 01 28	132	0.7−	0.6+	1998 02 25	132	1.5+	1.1+	1999 05 23	627	0.5+	0.7+
1998 01 28	132	0.3−	0.7+	1998 02 25	132	1.7+	1.3−	1999 05 23	627	0.8+	1.1+
1998 01 29	132	0.0	0.6+	1998 02 25	132	0.2−	0.6−	1999 06 15	704	0.2−	0.7+
1998 01 29	132	0.2−	0.8−	1998 02 24	428	0.2+	0.2+	1999 06 15	704	0.9−	0.2−
1998 01 29	132	0.1+	0.7−	1999 04 24	428	0.4+	0.3+	1999 06 15	704	1.2−	0.1−
1998 01 29	132	1.5−	0.2+	1999 04 27	428	0.4−	0.8+	1999 06 15	704	0.2−	0.0
1998 02 07	958	0.7−	0.7−	1999 04 28	428	0.5−	0.6+	1999 06 15	704	0.1−	0.2+
1998 02 07	958	1.6−	1.1+	1999 05 10	704	0.9+	0.1−				

(10926)* 1998 BF₄₁ = 1964 WF₁ = 1969 UD₂ = 1977 EW₃

Discovered 1998 Jan. 25 at Haleakala by the JPL Near-Earth Asteroid

Tracking program.

Id. G. V. Williams (*MPC* 31402)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	147.55614		(2000.0)		P		Q
<i>n</i>	0.18235674	<i>ω</i>	282.24073		+0.34215506		−0.93930285
<i>a</i>	3.0797928	<i>Ω</i>	147.71532		+0.87947232		+0.31064853
<i>e</i>	0.1621338	<i>i</i>	2.71492		+0.33084491		+0.14562849
<i>P</i>	5.40	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1964 11 30	330	0.4−	0.2−	1998 02 23	557	0.0	0.1−	1999 04 12	704	0.3+	0.3+
1969 10 17	095	0.8+	1.2−	1998 02 23	557	0.1+	0.1+	1999 04 12	704	0.6+	0.1−
1977 03 15	381	1.5−	0.7+	1998 02 24	426	0.1−	0.3−	1999 04 12	704	1.5−	0.7−
1977 03 15	381	1.6+	1.6−	1998 02 24	426	0.6+	0.1+	1999 04 19	704	(2.0+	2.7+)
1998 01 25	566	0.4−	0.5+	1998 02 24	426	0.6+	0.3+	1999 04 19	704	0.2+	0.3+
1998 01 25	566	0.5−	0.2+	1998 02 25	426	0.1+	1.0−	1999 04 19	704	0.2+	0.6+
1998 01 25	566	0.4−	0.3+	1998 02 25	426	0.6−	0.5+	1999 05 17	704	0.6+	0.1−
1998 01 29	566	0.3−	0.5+	1998 02 27	426	0.2+	0.3−	1999 05 17	704	0.5+	0.3−
1998 01 29	566	0.3−	0.3+	1998 02 27	426	0.4−	0.0	1999 05 17	704	0.3−	2.3−
1998 01 29	566	0.5−	0.3−	1998 02 27	426	0.0	0.1−	1999 05 17	704	1.0−	0.3+
1998 01 31	691	0.5+	0.1−	1998 02 28	910	0.2+	0.4−	1999 05 18	704	1.1+	1.1+
1998 01 31	691	0.2+	0.1+	1998 02 28	910	0.4+	0.1−	1999 05 18	704	0.3−	1.5+
1998 01 31	691	0.0	0.0	1998 02 28	910	0.5+	0.3−	1999 05 18	704	1.6−	0.5−
1998 02 23	557	0.2+	0.2+	1999 04 12	704	0.4−	0.2+	1999 05 18	704	0.4+	0.9−
1998 02 23	557	0.0	0.1+	1999 04 12	704	0.4+	0.0				

(10927)* 1998 BB₄₂ = 1981 AV₃ = 1988 XU₃ = 1992 WE₈ = 1994 CJ₁₈
= 1996 TC₆₁

Discovered 1998 Jan. 29 by R. Roy at Blauvac.

Id. G. V. Williams (*MPC* 31402)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	205.73857		(2000.0)		P		Q
<i>n</i>	0.23482286	<i>ω</i>	34.17988		+0.65958221		−0.75105428
<i>a</i>	2.6020110	<i>Ω</i>	14.62598		+0.66089443		+0.56083232
<i>e</i>	0.1310781	<i>i</i>	6.70335		+0.35800819		+0.34840288
<i>P</i>	4.20	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1981 01 08	381	0.2+	1.1+	1998 02 04	627	1.0+	0.1−	1998 03 04	704	0.7−	0.6−
1981 01 08	381	(7.1+	9.8+)	1998 02 04	627	0.1−	0.6−	1998 03 04	704	0.5−	0.4−
1988 12 01	054	1.3−	0.5−	1998 02 04	627	0.4−	0.1−	1998 03 04	704	0.8−	0.1+
1992 11 19	675	(0.1−	3.1−)	1998 02 06	627	1.4+	0.5−	1998 04 19	627	0.1+	0.8+
1992 11 19	675	(0.8+	3.5−)	1998 02 06	627	0.9+	0.8+	1998 04 19	627	1.9−	1.5−
1992 11 21	675	(3.1+	2.8−)	1998 02 07	627	0.6−	0.8−	1998 04 19	627	(2.0−	1.5−)

1994 02 08	809	(2.4+	1.1−)	1998 02 14	627	0.5+	1.1+	1999 04 20	704	0.5+	0.7−
1994 02 08	809	(2.2+	0.8−)	1998 02 14	627	1.1+	0.3+	1999 04 20	704	0.1−	0.8−
1994 02 08	809	1.7+	1.5−	1998 02 15	958	(1.0+	2.8−)	1999 04 20	704	(0.8−	4.0+)
1994 02 10	809	1.2+	0.5−	1998 02 15	958	0.5+	1.5−	1999 05 10	704	(2.4−	0.7+)
1994 02 10	809	0.5+	0.2−	1998 02 15	958	0.8−	1.6−	1999 05 10	704	(0.2+	2.6+)
1994 02 10	809	0.1+	1.1−	1998 02 17	627	0.5−	0.5+	1999 05 10	704	1.2+	1.4+
1994 02 13	809	(0.5+	2.7−)	1998 02 17	627	0.2−	0.7+	1999 05 13	704	0.8−	0.4−
1994 02 13	809	(0.1+	3.6−)	1998 02 18	958	1.9−	0.9−	1999 05 13	704	0.0	1.3+
1994 02 13	809	(0.1+	3.6−)	1998 02 18	627	0.3+	0.6+	1999 05 13	704	0.0	1.7−
1994 03 09	010	1.1+	1.4+	1998 02 18	958	0.6−	0.5−	1999 05 13	704	(0.7−	2.1+)
1994 03 09	010	0.8+	1.7+	1998 02 24	122	0.0	0.2+	1999 05 18	704	0.6+	0.3+
1994 03 09	010	0.5+	1.1+	1998 02 24	122	0.1−	0.3+	1999 05 18	704	2.0−	1.2−
1996 10 06	809	0.1−	1.2+	1998 02 24	122	0.2−	0.4+	1999 05 18	704	1.3−	1.0+
1996 10 06	809	(0.3−	2.2+)	1998 03 02	627	0.0	0.2−	1999 05 18	704	0.7−	0.4+
1996 10 06	809	1.2−	1.4+	1998 03 03	704	1.0+	0.4+	1999 05 23	627	1.4+	0.6+
1996 10 07	809	0.4+	1.2+	1998 03 03	704	0.9+	0.5+	1999 05 23	627	(1.4+	3.1+)
1996 10 07	809	0.3−	0.8+	1998 03 03	704	0.3−	0.4+	1999 05 23	627	0.2−	0.0
1996 10 07	809	0.1−	1.3+	1998 03 03	704	0.0	0.1−	1999 06 15	704	0.2−	1.7+
1998 01 29	627	0.2−	1.2+	1998 03 03	704	0.8+	0.1+	1999 06 15	704	0.6+	0.2−
1998 01 29	627	0.0	0.7+	1998 03 04	704	(1.1−	2.6+)	1999 06 15	704	0.1+	1.6+
1998 01 29	627	0.2+	0.9+	1998 03 04	704	1.1−	1.1+	1999 06 15	704	0.2+	1.1+

(10928)* 1998 BW₄₃ = 1980 FC₁₁ = 1987 SY₂₁

Discovered 1998 Jan. 25 by M. Tombelli and G. Forti at Cima Ekar.

Id. G. V. Williams (*MPC* 31402)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	183.33166		(2000.0)		P		Q
<i>n</i>	0.21220376	<i>ω</i>	5.16188		+0.75686700		−0.64760663
<i>a</i>	2.7837742	<i>Ω</i>	35.70205		+0.59410677		+0.62556556
<i>e</i>	0.2208598	<i>i</i>	8.68095		+0.27237748		+0.43505561
<i>P</i>	4.64	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1980 03 16	095	0.1+	0.2+	1999 04 07	704	1.1+	1.8−	1999 05 08	703	0.1+	1.6−
1987 09 18	095	0.4+	1.6−	1999 04 07	704	1.0+	0.6+	1999 05 12	704	0.6+	1.2−
1987 09 21	095	0.0	0.8+	1999 04 12	704	1.1−	0.2+	1999 05 12	704	1.5−	0.7+
1998 01 25	098	0.8−	0.8+	1999 04 12	704	1.3−	1.8+	1999 05 12	704	1.8+	0.1−
1998 01 25	098	1.5−	0.2−	1999 04 12	704	1.8−	0.7+	1999 05 12	704	0.0	0.8−
1998 01 27	098	0.5−	0.4+	1999 04 12	704	0.7+	1.1+	1999 05 13	704	0.8+	0.3+
1998 01 27	098	1.0−	0.5+	1999 04 16	704	0.5+	1.0−	1999 05 13	704	0.4+	1.1−
1998 02 02	098	0.0	0.1−	1999 04 16	704	0.2+	0.2−	1999 05 13	704	0.3+	1.0−
1998 02 02	098	0.3−	0.2+	1999 04 16	704	0.7−	0.3+	1999 05 17	703	1.3−	1.3−
1998 02 26	098	1.0+	0.1+	1999 04 19	704	1.0+	0.3−	1999 05 17	703	1.2−	0.2+
1998 02 26	098	0.4+	0.1+	1999 04 19	704	0.5+	1.1+	1999 05 17	703	0.1+	0.2−
1998 02 27	108	0.3−	1.2−	1999 04 19	704	0.1+	1.3+	1999 05 17	703	1.1−	0.2−
1998 02 27	098	0.3+	1.3−	1999 04 19	704	0.4−	1.4+	1999 05 18	752	0.2−	0.7−
1998 02 27	108	1.3+	0.5−	1999 04 19	704	1.2−	1.7+	1999 05 18	752	0.3+	0.4−
1998 02 27	098	(0.3−	3.5−)	1999 05 08	703	0.2+	0.4+	1999 05 18	752	0.0	0.9−
1998 02 27	108	1.7+	0.4+	1999 05 08	703	1.8+	0.8+				
1999 04 07	704	0.5+	0.4+	1999 05 08	703	0.5−	1.3−				

(10929)* 1998 CF₁ = 1978 RN₁₀ = 1982 FH₁

Discovered 1998 Feb. 1 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. G. V. Williams (*MPC* 31403)

1999 JUNE 22

M.P.C. 34805

1978 09 02	809	0.6+	0.6−	1998 02 17	327	0.8−	0.4+	1999 05 14	704	0.8+	0.4−
1978 09 02	809	0.2+	0.6−	1998 03 01	327	0.0	0.1+	1999 05 14	704	0.1+	0.7−
1978 09 02	809	0.7+	0.1+	1998 03 01	327	0.3−	0.0	1999 05 14	704	0.8+	0.1−
1978 09 06	809	0.4−	2.1−	1998 03 01	327	0.2+	0.2+	1999 05 14	704	(0.8−	2.5+)
1982 03 24	046	1.5+	0.1+	1999 04 14	699	0.5+	0.0	1999 05 15	703	0.3+	0.2−
1982 03 24	046	(2.3−	3.3+)	1999 04 14	699	0.0	0.7+	1999 05 15	703	0.1+	0.4+
1982 03 27	046	1.5−	0.9+	1999 04 14	699	0.8+	0.9+	1999 05 15	703	1.0−	1.3+
1982 03 27	046	1.8−	1.2−	1999 04 17	704	0.7−	0.6−	1999 05 15	703	0.2−	1.0+
1982 03 27	046	(3.8+	0.0)	1999 04 17	704	1.4−	1.1−	1999 05 18	704	1.2+	0.2−
1982 03 27	046	1.4+	0.4−	1999 04 17	704	1.2−	1.0−	1999 05 18	704	0.0	0.8−
1997 12 30	566	0.8+	1.8−	1999 04 17	704	1.0−	1.3−	1999 05 18	704	0.9+	0.7−
1997 12 30	566	0.8+	1.4−	1999 04 19	691	0.9−	0.3+	1999 05 18	704	2.0+	0.1−
1997 12 30	566	1.2+	1.4−	1999 04 19	691	0.7−	0.0	1999 05 18	704	0.0	0.5−
1998 01 25	566	0.1+	1.4−	1999 04 19	691	0.6−	0.4+	1999 05 19	704	0.5+	0.2−
1998 01 25	566	0.2−	1.2−	1999 05 10	704	0.4+	0.2−	1999 05 19	704	0.7−	0.7−
1998 01 25	566	0.0	1.6−	1999 05 10	704	0.6+	0.4+	1999 05 19	704	0.4+	0.8−
1998 02 01	327	0.3+	1.1+	1999 05 10	704	0.2−	0.4+	1999 05 19	704	0.4+	0.2−
1998 02 01	327	0.0	0.1+	1999 05 10	704	0.3+	0.2−	1999 05 19	704	0.2−	1.1+
1998 02 01	327	0.1−	0.1+	1999 05 10	704	0.4−	0.2+	1999 05 19	703	0.1+	0.9+
1998 02 06	327	0.3+	0.5+	1999 05 13	704	0.1+	0.8−	1999 05 19	703	0.6−	0.7+
1998 02 13	327	1.8−	1.0+	1999 05 13	704	0.2−	0.1+	1999 05 19	703	0.0	0.9+
1998 02 13	327	0.2−	0.7+	1999 05 13	704	0.9−	0.7−	1999 05 19	703	0.3+	0.1+
1998 02 13	327	(2.5+	0.6+)	1999 05 13	704	0.2−	0.7−				

(10930)* 1998 CR₂ = 1995 QO₁₀

Discovered 1998 Feb. 6 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. G. V. Williams (*MPC* 31405)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	261.08289		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.18451804	ω	186.51921	+0.99038392	+0.13126116
a	3.0556961	Ω	165.71423	−0.11758301	+0.96509788
e	0.0966763	i	10.20202	−0.07289662	+0.22661991
P	5.34	H	12.9	G 0.15	U 1

Residuals in seconds of arc

1993 04 14	691	0.2+	1.0−	1998 02 23	327	0.3+	0.0	1998 03 20	704	1.5−	0.5−
1993 04 14	691	0.2+	0.8−	1998 02 23	327	0.3+	0.0	1999 05 07	703	0.3+	0.0
1993 04 14	691	1.2+	0.3−	1998 02 25	566	0.4+	0.5−	1999 05 07	703	0.2+	0.3+
1993 04 16	413	1.7−	1.7+	1998 02 25	566	0.0	0.6−	1999 05 07	703	0.1−	0.2+
1995 08 19	809	0.7+	0.7+	1998 02 25	566	0.0	0.5−	1999 05 07	703	0.3−	0.5+
1995 08 20	809	0.2+	0.4+	1998 03 02	327	0.3+	0.4−	1999 05 16	703	0.5−	0.2+
1995 08 22	809	0.5+	0.5+	1998 03 02	327	0.3+	0.4−	1999 05 16	703	0.2+	0.3+
1995 08 24	809	0.1−	0.1−	1998 03 02	327	0.2+	0.2−	1999 05 16	703	0.2−	0.4−
1995 08 26	809	0.7+	0.4−	1998 03 03	704	1.2−	0.3−	1999 05 16	703	0.1+	0.6−
1995 08 27	809	0.5−	0.1−	1998 03 03	704	0.2+	0.3+	1999 05 17	704	0.5−	0.4−
1995 09 17	809	0.5−	0.2−	1998 03 03	704	0.2−	0.1−	1999 05 17	704	0.4+	0.5−
1995 09 18	809	0.7+	0.1+	1998 03 03	704	0.8+	0.1+	1999 05 17	704	0.2−	0.5+
1995 09 18	809	(1.3+	2.5+)	1998 03 03	704	0.4−	0.1+	1999 05 17	704	0.4−	0.3+
1995 09 19	809	(3.0+	3.0+)	1998 03 04	704	1.9−	0.4−	1999 05 19	703	0.7−	0.0
1995 09 20	809	0.6−	0.1+	1998 03 04	704	(2.6−	0.5−)	1999 05 19	703	0.0	0.4+
1995 09 22	809	0.4−	0.1+	1998 03 04	704	(2.3−	1.1+)	1999 05 19	703	0.0	0.0
1995 09 29	809	0.7−	0.2+	1998 03 04	704	1.5−	0.7+	1999 05 19	703	0.3−	0.9−
1998 02 06	327	0.4+	0.4+	1998 03 08	327	0.5+	0.4+	1999 06 14	704	1.3+	0.2−
1998 02 06	327	0.6+	0.2+	1998 03 08	327	0.7+	0.5+	1999 06 14	704	0.2+	0.1−
1998 02 06	327	0.9+	0.2−	1998 03 08	327	0.4+	0.3+	1999 06 14	704	0.1−	0.6+
1998 02 17	327	0.2−	0.2+	1998 03 20	704	0.3+	1.2+	1999 06 14	704	0.5+	0.5+
1998 02 17	327	0.2−	0.2+	1998 03 20	704	0.2−	0.7−	1999 06 14	704	0.1+	0.3−
1998 02 17	327	0.0	0.0	1998 03 20	704	0.2+	1.1+				
1998 02 23	327	0.4+	0.2−	1998 03 20	704	0.7+	0.7+				

(10931)* 1998 DA = 1987 UO

Discovered 1998 Feb. 16 by G. Masi at Ceccano.

Id. G. V. Williams (*MPC* 31405)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	351.76466		(2000.0)	P	Q
n	0.22310534	ω	179.38944	+0.11782734	+0.98700172
a	2.6923369	Ω	97.37357	−0.91155745	+0.15116139
e	0.0525918	i	6.32693	−0.39392859	−0.05456956
P	4.42	H	13.4	G 0.15	U 2

Residuals in seconds of arc

1987 10 27	054	0.6+	0.4−	1998 02 26	566	0.2+	0.5−	1999 05 13	704	0.1+	0.6−
1987 10 27	054	0.3−	0.5−	1998 02 27	470	0.3−	0.6+	1999 05 13	704	0.4−	0.2−
1987 10 30	054	0.1−	0.4+	1998 02 27	470	0.7−	0.3+	1999 05 14	704	0.9−	0.5+
1997 01 23	327	0.3−	0.2+	1998 03 01	470	0.2−	0.6+	1999 05 14	704	0.8−	1.0−
1997 01 23	327	0.0	0.8+	1998 03 01	470	0.1−	0.7+	1999 05 14	704	0.7−	0.5−
1997 01 23	327	0.6−	0.7+	1998 03 01	470	0.0	0.8+	1999 05 14	704	0.5−	0.1−
1998 01 25	566	0.3+	0.2+	1998 03 03	704	0.2+	0.2+	1999 05 18	704	0.4+	0.1−
1998 01 25	566	0.2+	0.3+	1998 03 03	704	0.2−	0.8−	1999 05 18	704	0.6−	0.5−
1998 01 25	566	0.3+	0.5+	1998 03 03	704	0.2−	0.4−	1999 05 18	704	0.2−	0.5+
1998 02 16	470	1.8+	0.8−	1998 03 03	704	0.2−	0.6−	1999 05 18	704	0.3+	0.3+
1998 02 16	470	(2.6+	0.9−)	1998 03 03	704	0.6−	0.1−	1999 05 19	704	0.2−	0.4−
1998 02 17	470	0.2−	0.8+	1998 03 04	704	0.2−	0.0	1999 05 19	704	0.0	0.9+
1998 02 17	470	1.1+	0.8+	1998 03 04	704	0.2−	0.0	1999 05 19	704	0.4+	0.4+
1998 02 18	470	0.3+	0.6−	1998 03 04	704	0.9−	1.1−	1999 05 19	704	0.2−	0.1+
1998 02 18	470	0.0	0.0	1998 03 04	704	0.1+	1.1−	1999 05 19	704	0.9−	0.9+
1998 02 18	470	0.3−	0.0	1998 03 04	704	0.8−	0.9−	1999 06 09	704	0.2+	0.1−
1998 02 19	470	0.0	1.2+	1998 03 18	470	1.1−	1.3+	1999 06 09	704	0.4+	0.0
1998 02 19	470	0.1+	0.2+	1998 03 18	470	1.1−	0.6+	1999 06 09	704	0.4+	0.2−
1998 02 19	470	0.4+	0.9−	1998 04 20	721	0.0	0.2+	1999 06 09	704	0.7+	0.7+
1998 02 21	721	0.3+	0.2+	1998 04 20	721	0.8−	0.3+	1999 06 09	704	0.1+	0.1−
1998 02 21	721	0.1+	0.1+	1999 05 10	704	0.7+	0.3−	1999 06 15	704	0.2+	0.2+
1998 02 24	470	0.5+	0.0	1999 05 10	704	0.5+	0.5−	1999 06 15	704	0.6+	0.3+
1998 02 24	470	0.4+	0.2−	1999 05 10	704	0.2−	0.1−	1999 06 15	704	0.1−	0.4+
1998 02 24	470	0.8+	0.5−	1999 05 10	704	0.7−	0.4−	1999 06 15	704	0.3+	0.1+
1998 02 26	566	0.0	0.2−	1999 05 13	704	0.5+	0.3+	1999 06 15	704	0.4+	0.1+
1998 02 26	566	0.4+	0.8−	1999 05 13	704	0.3+	0.2+				

(10932)* 1998 DL₁ = 1981 TU = 1983 FS

Discovered 1998 Feb. 18 by G. Lehmann at Volkssternwarte Drebach, Schoenbrunn.

Id. G. V. Williams (*MPC* 31739)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	198.04886		(2000.0)	P	Q
n	0.26003045	ω	251.87196	+0.29671817	−0.95495900
a	2.4310091	Ω	180.88907	+0.93803124	+0.29212426
e	0.1608712	i	12.69546	+0.17904110	+0.05212213
P	3.79	H	13.7	G 0.15	U 2

Residuals in seconds of arc

1981 10 05	688	(6.0−	8.2−)	1998 03 01	113	0.6+	1.4+	1999 05 10	113	0.1−	0.0
1981 10 05	688	0.5+	2.4−	1998 03 03	704	1.2+	0.5+	1999 05 12	704	0.1+	0.2−
1983 03 20	095	0.6+	1.9+	1998 03 03	704	1.2+	0.8+	1999 05 12	704	0.5−	0.2+
1995 07 24	691	1.4−	0.7−	1998 03 03	704	(3.8+	0.1−)	1999 05 12	704	0.4+	0.1−
1995 07 24	691	0.8−	0.6−	1998 03 03	704	(2.9−	0.5+)	1999 05 12	704	0.5+	0.5+
1995 07 24	691	0.9−	0.2−	1998 03 04	704	0.9+	0.5+	1999 05 12	704	0.1+	0.6−
1998 01 24	566	0.6−	1.0−	1998 03 04	704	0.7+	1.7+	1999 05 15	704	1.1−	1.4+
1998 01 24	566	0.8−	0.9−	1998 03 04	704	0.0	0.9+	1999 05 15	704	0.4−	0.8+
1998 01 24	566	0.4−	1.1−	1998 03 04	704	0.1+	0.3+	1999 05 15	704	0.8−	0.8+
1998 02 18	113	0.2−	0.3−	1998 03 04	704	0.2−	0.2−	1999 05 15	704	1.4−	1.2−
1998 02 18	113	0.6−	0.3+	1998 03 25	566	0.4−	0.0	1999 05 15	704	0.1−	0.7−
1998 02 18	113	1.0−	0.3−	1998 03 25	566	0.2−	0.3−	1999 05 17	704	0.2+	0.2−
1998 02 18	113	0.9−	0.5−	1998 03 25	566	0.1−	0.3+	1999 05 17	704	0.1−	1.2+
1998 02 18	113	0.9−	0.4−	1998 03 31	113	0.7+	0.4−	1999 05 17	704	0.2−	0.5+
1998 02 18	113	0.6−	0.2−	1998 03 31	113	0.2+	0.7−	1999 05 17	704	0.8−	0.7+
1998 02 20	113	1.6−	1.3−	1998 03 31	113	0.5+	0.7−	1999 05 17	704	0.1−	0.0
1998 02 20	113	(2.6−	0.7−)	1998 04 16	113	0.2+	0.1+	1999 05 18	113	1.2+	1.1−
1998 02 20	113	(2.2−	1.1−)	1998 04 16	113	0.3+	0.1+	1999 05 19	113	(0.4−	2.1−)

1998 02 20	113	(2.9− 1.2−)	1998 04 27	699	0.3− 0.4−	1999 05 21	704	1.7+ 0.8−
1998 02 21	113	0.1+ 0.3−	1998 04 27	699	0.4− 0.6+	1999 05 21	704	0.7+ 0.7+
1998 02 21	113	0.1+ 0.6−	1998 04 27	699	0.3− 0.0	1999 05 21	704	0.3− 0.6+
1998 02 23	113	0.1+ 0.0	1999 04 10	113	0.2+ 0.2−	1999 05 21	704	1.8− 1.7−
1998 02 23	113	0.1− 0.3−	1999 04 10	113	0.4+ 0.1−	1999 06 14	704	1.1+ 0.2−
1998 02 23	113	0.0 0.2−	1999 04 10	113	0.6+ 0.4−	1999 06 14	704	1.3+ 0.2−
1998 02 24	566	0.9+ 0.6−	1999 05 09	113	0.7− 0.1−	1999 06 14	704	1.0+ 0.3−
1998 02 24	566	0.5+ 0.6−	1999 05 09	113	1.0− 0.5−	1999 06 14	704	1.0+ 0.1−
1998 02 24	566	0.9+ 0.6−	1999 05 10	113	0.1− 0.1−	1999 06 14	704	0.8+ 0.5−

(10933)* 1998 DC₂₄ = 1983 RR₉ = 1994 GV₈ = 1996 RT₂₃

Discovered 1998 Feb. 17 by Y. Shimizu and T. Urata at the Nachi-Katsuura Observatory.

Id. S. Nakano (*MPC* 31408)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Nakano			
<i>M</i>	161.50052	(2000.0)	P	Q	
<i>n</i>	0.22520519	ω	267.99324	−0.01335272	−0.99984156
<i>a</i>	2.6755749	Ω	182.85270	+0.98542168	−0.01116156
<i>e</i>	0.2441762	<i>i</i>	13.68088	+0.16960488	−0.01386612
<i>P</i>	4.38	<i>H</i>	13.3	<i>G</i>	0.15 <i>U</i> 1

Residuals in seconds of arc

1983 09 13	095	(0.5− 2.8−)	1998 03 03	704	0.4+ 0.3+	1999 05 12	704	1.3− 0.6+
1994 04 11	675	1.2− 1.7−	1998 03 03	704	0.9− 0.3−	1999 05 12	704	0.4− 0.6−
1994 04 11	675	0.3+ 1.5+	1998 03 03	385	0.3+ 0.0	1999 05 12	704	0.3+ 0.1−
1994 04 13	675	0.8+ 0.1−	1998 03 03	385	0.8+ 0.1+	1999 05 17	704	0.5+ 0.4−
1994 04 13	675	0.0 0.5−	1998 03 04	704	1.9− 0.0	1999 05 17	704	0.0 0.6+
1996 09 05	693	0.6− 0.1+	1998 03 04	704	1.4− 0.0	1999 05 17	704	0.6+ 0.5−
1996 09 05	693	0.0 0.2−	1998 03 04	704	(2.6− 1.7−)	1999 05 17	704	1.4+ 0.8+
1996 09 06	693	0.6+ 0.2−	1998 03 04	704	(6.1− 0.9+)	1999 05 17	704	0.8+ 0.7+
1998 01 28	566	0.5+ 0.4+	1998 03 04	704	(2.7− 0.0)	1999 06 08	704	0.1+ 0.1−
1998 01 28	566	0.3+ 0.4+	1998 03 06	886	0.0 0.0	1999 06 08	704	0.2+ 0.1−
1998 01 28	566	0.5+ 0.4+	1998 03 06	886	0.8+ 0.1−	1999 06 08	704	1.9− 0.6+
1998 02 17	905	0.4+ 0.8−	1998 03 15	886	1.2− 0.9−	1999 06 08	704	1.2− 0.8−
1998 02 17	905	0.4+ 0.2−	1998 03 15	886	0.0 0.7−	1999 06 14	704	0.0 0.3−
1998 03 01	905	0.1− 0.2−	1998 04 27	699	0.2− 0.2+	1999 06 14	704	0.2− 0.2−
1998 03 01	905	0.7− 1.1+	1998 04 27	699	0.5+ 0.0	1999 06 14	704	0.6+ 0.4+
1998 03 03	704	0.6+ 0.2+	1998 04 27	699	0.5+ 0.1+	1999 06 14	704	0.3− 0.0
1998 03 03	704	0.4+ 0.1+	1999 05 12	704	1.4+ 0.4−	1999 06 14	704	0.2− 0.7+
1998 03 03	704	0.3+ 0.2+	1999 05 12	704	0.4− 0.0			

(10934)* 1998 DN₃₄ = 1989 TF₁₅ = 1992 CQ₈

Discovered 1998 Feb. 27 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (*MPC* 31564, unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	89.56681	(2000.0)	P	Q	
<i>n</i>	0.17125582	ω	66.83295	−0.98036086	−0.18784436
<i>a</i>	3.2114845	Ω	102.29764	+0.15087104	−0.91049601
<i>e</i>	0.0691960	<i>i</i>	3.52416	+0.12700595	−0.36839045
<i>P</i>	5.76	<i>H</i>	12.9	<i>G</i>	0.15 <i>U</i> 1

Residuals in seconds of arc

1989 10 03	809	0.3+ 0.3−	1998 02 27	809	1.4+ 0.6+	1998 03 29	704	0.3− 0.4−
1989 10 03	809	0.5+ 0.3−	1998 02 27	809	1.3+ 1.0+	1998 03 29	704	0.3− 0.5−
1989 10 03	809	0.9+ 0.3−	1998 02 28	809	0.8+ 2.5+	1998 04 19	704	2.0+ 0.2−
1989 10 04	809	0.3+ 0.3+	1998 02 28	809	0.9+ 1.6+	1998 04 19	704	(2.6+ 3.4+)
1989 10 04	809	0.6+ 0.2+	1998 02 28	809	0.4+ 2.1+	1998 04 19	704	1.5+ 1.1−
1989 10 04	809	1.0+ 0.2+	1998 03 20	704	0.4+ 0.5−	1998 04 19	704	0.0 0.9+
1992 02 08	372	0.7− 0.7−	1998 03 20	704	0.1− 0.8−	1998 04 19	704	(5.1− 2.2−)
1992 02 08	372	2.3− 0.6+	1998 03 20	704	0.2+ 0.7−	1999 05 18	704	0.5− 0.4+
1995 10 24	691	1.0− 0.1−	1998 03 20	704	0.9− 0.6−	1999 05 18	704	1.9− 0.3+
1995 10 24	691	0.9− 0.5+	1998 03 20	704	0.1− 0.5+	1999 05 18	704	0.5− 1.5+
1995 10 24	691	0.9− 0.2+	1998 03 22	704	0.8− 0.2−	1999 05 18	704	0.0 0.2−
1998 02 25	809	1.9− 0.1−	1998 03 22	704	0.3+ 1.2−	1999 06 09	704	0.2+ 0.7−

1998 02 25	809	(3.2− 0.5−)	1998 03 22	704	0.1− 0.9−	1999 06 09	704	0.5+ 0.8−
1998 02 25	809	(4.8− 1.3+)	1998 03 22	704	0.3− 0.8−	1999 06 09	704	0.0 0.7−
1998 02 26	809	(2.9− 1.2+)	1998 03 22	704	0.8+ 1.5−	1999 06 09	704	0.7− 0.6−
1998 02 26	809	1.7− 0.2+	1998 03 26	704	0.1+ 0.8−	1999 06 15	704	0.3+ 0.0
1998 02 26	809	0.7+ 1.2+	1998 03 26	704	0.6− 0.3+	1999 06 15	704	0.2+ 0.3+
1998 02 26	566	0.1+ 0.1+	1998 03 26	704	0.5− 0.4−	1999 06 15	704	0.4+ 0.4+
1998 02 26	566	0.1+ 0.0	1998 03 29	704	0.2− 0.3−	1999 06 15	704	0.5+ 0.6+
1998 02 26	566	0.1− 0.1+	1998 03 29	704	0.2− 1.1−	1999 06 15	704	0.1+ 0.5+
1998 02 27	809	1.4+ 1.6+	1998 03 29	704	0.6− 1.3−			

(10935)* 1998 EC = 1977 AQ₁ = 1991 PK₉ = 1992 WY₈

Discovered 1998 Mar. 1 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 31564)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Nakano			
<i>M</i>	309.53045	(2000.0)	P	Q	
<i>n</i>	0.24329589	ω	248.88323	+0.93327237	+0.21850133
<i>a</i>	2.5412431	Ω	97.60838	−0.11238407	+0.93146580
<i>e</i>	0.2004376	<i>i</i>	16.71391	−0.34113415	+0.29091000
<i>P</i>	4.05	<i>H</i>	12.9	<i>G</i>	0.15 <i>U</i> 2

Residuals in seconds of arc

1977 01 13	095	(3.4− 7.1−)	1998 03 08	411	0.1− 0.1+	1998 04 08	689	0.3+ 1.1+
1991 08 15	675	0.6− 1.2−	1998 03 16	411	0.5+ 0.1+	1999 05 14	704	1.6− 1.8+
1991 08 15	675	0.6− 1.9−	1998 03 16	411	0.2+ 0.2+	1999 05 14	704	0.9− 0.7+
1991 08 16	675	0.3− 1.1−	1998 03 28	411	0.7− 0.1−	1999 05 14	704	1.1− 0.5+
1992 11 28	675	0.4+ 1.5−	1998 03 28	411	0.3+ 0.8+	1999 05 14	704	0.7− 1.2+
1992 11 30	675	0.2+ 1.1−	1998 04 02	704	0.1− 0.2+	1999 06 09	704	0.5+ 0.1+
1992 11 30	675	0.2− 0.2−	1998 04 02	704	0.1+ 0.2−	1999 06 09	704	0.2+ 1.0−
1998 01 28	566	0.4− 0.9−	1998 04 02	704	0.1+ 0.3+	1999 06 09	704	0.6+ 0.3−
1998 01 28	566	0.5− 0.8−	1998 04 02	704	0.2+ 0.2+	1999 06 09	704	0.2+ 0.5−
1998 01 28	566	0.1− 1.2−	1998 04 02	704	0.9− 0.2−	1999 06 09	704	0.8+ 0.3−
1998 03 01	411	0.5+ 1.5−	1998 04 03	704	0.0 0.3+	1999 06 14	704	0.1+ 0.4−
1998 03 01	411	0.5+ 0.3+	1998 04 03	704	0.3+ 0.2+	1999 06 14	704	0.3+ 0.4−
1998 03 02	411	0.2+ 0.0	1998 04 03	704	0.7− 0.6−	1999 06 14	704	0.2+ 0.1−
1998 03 02	411	0.2− 0.8−	1998 04 03	704	0.2− 0.6+	1999 06 14	704	0.3+ 0.4−
1998 03 08	411	0.7+ 0.1+	1998 04 03	704	0.4− 0.8−	1999 06 14	704	0.4+ 0.0

(10936)* 1998 FN₁₁ = 1951 YO₁ = 1966 TR = 1981 TD₁ = 1985 VB

Discovered 1998 Mar. 22 by Y. Shimizu and T. Urata at the Nachi-Katsuura Observatory.

Id. T. Urata (*MPC* 31568)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Nakano			
<i>M</i>	243.25808	(2000.0)	P	Q	
<i>n</i>	0.26008192	ω	156.23544	+0.90679273	−0.38308057
<i>a</i>	2.4306883	Ω	227.50457	+0.33832357	+0.91034788
<i>e</i>	0.2767951	<i>i</i>	13.80980	+0.25152357	+0.15657588
<i>P</i>	3.79	<i>H</i>	12.6	<i>G</i>	0.15 <i>U</i> 1

Residuals in seconds of arc

1951 12 27	711	0.5− 1.0+ Y	1999 04 15	704	0.2+ 0.0	1999 05 13	704	0.3− 0.5+
1966 10 13	095	1.0+ 0.9−	1999 04 15	704	0.0 1.2+	1999 05 14	704	0.2+ 0.1−
1966 10 17	095	(0.2+ 3.6+)	1999 04 15	704	0.1+ 0.1−	1999 05 14	704	0.1+ 0.3−
1981 10 03	095	0.9− 0.6−	1999 04 17	704	0.7− 0.1−	1999 05 14	704	(2.6+ 0.9−)
1985 11 07	675	0.0 0.5+	1999 04 17	704	1.3+ 0.6−	1999 05 14	704	1.1− 0.0
1985 11 07	675	0.1− 0.3−	1999 04 17	704	0.3+ 0.2+	1999 05 15	426	0.4+ 0.2+
1985 11 16	675	0.7+ 0.1−	1999 04 17	704	0.7+ 0.7−	1999 05 15	426	0.5+ 0.0
1985 11 16	675	0.2− 0.0	1999 04 20	704	0.5− 0.4−	1999 05 15	426	0.7+ 0.4+
1998 03 22	905	0.1+ 0.3−	1999 04 20	704	0.3− 0.3−	1999 05 18	704	0.2+ 0.3−
1998 03 22	905	1.4+ 0.4+	1999 04 20	704	0.3− 0.3+	1999 05 18	704	0.2+ 0.2+
1998 03 25	699	0.1− 0.0	1999 04 20	704	(2.5− 0.1−)	1999 05 18	704	0.6+ 0.3+
1998 03 25	699	0.5− 0.1−	1999 04 20	704	0.5− 0.2+	1999 05 18	704	0.4+ 0.1+
1998 03 25	699	0.2+ 0.1+	1999 05 06	886	(0.3− 3.2+)	1999 05 18	704	0.1+ 0.4+
1998 03 25	888	0.1− 0.2+	1999 05 06	886	0.3+ 1.3+	1999 05 19	704	0.7− 0.8−
1998 03 25	888	0.3+ 0.1+	1999 05 06	888	0.6− 0.2−	1999 05 19	704	1.1− 0.3+
1998 04 03	385	0.3− 0.1+	1999 05 06	888	0.8− 0.7−	1999 05 19	704	1.3− 0.5+

1998 04 03	385	0.4−	0.2−	1999 05 09	739	0.6−	0.2+	1999 05 19	704	0.2+	0.7+
1998 04 03	385	0.3−	0.4−	1999 05 09	739	0.6−	0.5+	1999 06 09	704	0.5+	0.1−
1998 04 03	888	0.6−	0.3−	1999 05 10	704	0.7−	0.4+	1999 06 09	704	0.6+	0.4−
1998 04 03	888	0.5−	0.3−	1999 05 10	704	0.9−	0.4−	1999 06 09	704	0.8+	0.0
1998 04 03	888	0.5−	0.5−	1999 05 10	704	0.5+	0.0	1999 06 09	704	0.7+	0.1+
1999 04 07	888	1.1+	0.9−	1999 05 10	704	0.4−	0.5−	1999 06 09	704	1.2+	0.1+
1999 04 07	888	0.6+	0.3+	1999 05 10	704	0.6−	0.6−	1999 06 14	704	0.6+	0.5−
1999 04 14	699	0.2+	0.0	1999 05 13	704	0.3−	0.0	1999 06 14	704	0.4+	0.0
1999 04 14	699	0.2+	1.2+	1999 05 13	704	0.0	0.1−	1999 06 14	704	0.7+	0.2−
1999 04 14	699	0.1−	0.2−	1999 05 13	704	0.7−	0.1−	1999 06 14	704	0.7+	0.1+
1999 04 15	704	0.3+	0.7−	1999 05 13	704	0.8−	0.7−	1999 06 14	704	0.1−	0.2+

(10937)* 1998 QW₅₄ = 1964 WS = 1980 PW₃ = 1981 UA₁₇ = 1983 CQ₇
= 1986 RP₄ = 1996 HA₈ = 1996 JW₁₆

Discovered 1998 Aug. 27 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPC* 32977, *MPC* 34533), A. Milani (*MPC* 34220)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams		Williams	
		(2000.0)		(2000.0)	
<i>M</i>	37.56474	<i>P</i>	<i>Q</i>	<i>P</i>	<i>Q</i>
<i>n</i>	0.17055644	ω	174.95726	+0.90639797	−0.42042689
<i>a</i>	3.2202578	Ω	210.01040	+0.38464203	+0.86158139
<i>e</i>	0.0356793	<i>i</i>	4.70618	+0.17462310	+0.28446218
<i>P</i>	5.78	<i>H</i>	12.7	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1964 11 27	330	0.8−	1.1+	1998 08 27	699	0.8−	0.9+	1998 09 26	704	0.4−	1.2−
1964 12 03	330	(9.2−	10.8+)	1998 08 28	699	1.7+	0.8−	1998 09 27	704	0.8−	0.1+
1980 08 03	675	0.6+	0.9+	1998 08 28	699	1.2+	0.0	1998 09 27	704	0.3+	0.8+
1980 08 05	675	1.3+	1.2+	1998 08 28	699	1.4+	0.3+	1998 09 27	704	0.1+	1.3+
1981 10 24	095	(2.8−	2.6+)	1998 09 14	704	0.2−	0.1+	1998 09 27	704	0.4+	0.1+
1983 02 10	095	1.1+	0.6+	1998 09 14	704	0.6−	0.1−	1998 09 27	704	0.2−	0.2+
1986 09 06	071	(3.7−	0.2−)	1998 09 14	704	0.8−	0.6−	1998 10 19	699	0.1+	0.0
1986 09 06	071	2.1−	1.4−	1998 09 15	699	0.3−	0.4+	1998 10 19	699	0.2+	0.4+
1996 04 17	809	(1.1+	2.8+)	1998 09 15	699	0.1−	0.2+	1998 10 19	699	0.3−	0.7+
1996 04 17	809	0.2+	1.7+	1998 09 15	699	0.3−	0.2+	1998 11 11	699	0.1−	0.2−
1996 04 17	809	0.4−	1.4+	1998 09 18	704	0.2−	0.1−	1998 11 11	699	0.1−	0.1+
1996 04 18	809	0.2+	0.8−	1998 09 18	704	0.6+	0.7−	1998 11 11	699	0.4−	1.3+
1996 04 18	809	0.2+	0.8−	1998 09 18	704	0.8−	0.6+	1998 12 08	699	0.7−	1.2+
1996 04 18	809	0.6−	1.4−	1998 09 18	704	0.6+	0.7−	1998 12 08	699	0.3+	1.2−
1996 05 13	566	0.1+	0.7+	1998 09 18	704	0.2+	0.9−	1998 12 08	699	0.5+	1.0−
1996 05 13	566	0.3+	0.8+	1998 09 26	704	0.9−	0.5+	1998 12 15	699	0.1−	0.0
1996 05 13	566	0.2−	0.4+	1998 09 26	704	0.0	0.4−	1998 12 15	699	0.2−	0.0
1998 08 27	699	0.7+	0.5+	1998 09 26	704	0.1+	0.1+	1998 12 15	699	0.3−	0.1−
1998 08 27	699	1.4+	0.7−	1998 09 26	704	0.9−	0.1−				

(10938)* 1998 SW₆₀ = 1958 TY = 1969 RS₂ = 1978 EO₅ = 1980 OM
= 1981 TS₁ = 1984 DD₃ = 1984 GY = 1988 AM₄
= 1990 FW

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

Id. A. Milani (*MPC* 34222), M. E. Sansaturio (*MPC* 34535) G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams		Williams	
		(2000.0)		(2000.0)	
<i>M</i>	100.95893	<i>P</i>	<i>Q</i>	<i>P</i>	<i>Q</i>
<i>n</i>	0.17007639	ω	302.17788	+0.64822417	+0.75928280
<i>a</i>	3.2263144	Ω	8.93412	−0.51248101	+0.49079143
<i>e</i>	0.0648450	<i>i</i>	21.69261	−0.56317727	+0.42733289
<i>P</i>	5.80	<i>H</i>	11.8	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1958 10 15	760	1.3+	0.8−	1990 03 27	675	0.3−	1.1−	1998 09 25	699	0.0	0.2+
1958 10 15	760	0.1+	0.3+	1990 03 27	675	0.6−	1.7−	1998 09 25	699	0.2+	0.1+
1969 09 13	805	0.7+	0.9−	1990 03 30	095	(2.1−	2.0−)	1998 09 25	699	0.0	0.1−
1978 03 06	095	2.1−	1.2−	1990 03 30	095	(3.4−	5.0−)	1998 09 26	704	0.2−	0.6−
1980 07 19	413	0.1−	0.9−	1990 04 02	896	0.1+	0.3+	Y 1998 09 26	704	1.0−	1.2−

1980 07 19	413	1.0+	1.6−	1998 09 14	704	0.3−	0.2+	1998 09 26	704	0.8−	1.1−
1981 10 03	095	1.4+	1.2−	1998 09 14	704	0.2−	1.1+	1998 09 26	704	0.8−	1.5−
1984 02 26	095	(3.5+	1.0−)	1998 09 14	704	0.3−	0.5+	1998 09 26	704	0.6−	0.3−
1984 04 03	095	(3.1+	1.8−)	1998 09 17	699	0.0	0.1+	1998 09 27	704	1.2+	0.1−
1988 01 13	033	1.4−	0.5−	1998 09 17	699	0.2−	0.2+	1998 09 27	704	0.3+	0.4−
1988 01 13	033	1.1−	0.3−	1998 09 17	699	0.1−	0.3+	1998 09 27	704	0.4+	0.1+
1990 03 19	896	(5.0−	3.5+)	Y 1998 09 18	704	0.2+	1.2+	1998 09 27	704	1.9+	0.4+
1990 03 20	896	(2.3+	3.4+)	Y 1998 09 18	704	0.2+	0.9+	1998 11 10	699	0.3−	0.0
1990 03 22	896	(10.0+	3.6+)	Y 1998 09 18	704	0.4−	0.8+	1998 11 10	699	0.0	0.3−
1990 03 26	896	(2.4−	1.2+)	Y 1998 09 18	704	0.7+	1.1+	1998 11 10	699	0.4−	0.4−
1990 03 26	896	1.5+	1.3+	1998 09 18	704	0.3−	0.7+				

(10939)* 1999 CJ₁₉ = 1977 FW₂ = 1978 SJ₆ = 1991 XC₄ = 1994 TY₁₄

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

Research Team at Socorro.

Id. A. Gnädig (*MPC* 34540)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams		Williams	
		(2000.0)		(2000.0)	
<i>M</i>	272.40405	<i>P</i>	<i>Q</i>	<i>P</i>	<i>Q</i>
<i>n</i>	0.30766543	ω	296.93981	+0.21202337	+0.97720797
<i>a</i>	2.1731193	Ω	345.28975	−0.88129151	+0.18653831
<i>e</i>	0.1385932	<i>i</i>	2.37431	−0.42234033	+0.10133130
<i>P</i>	3.20	<i>H</i>	13.9	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1977 03 26	095	0.5−	0.1−	1997 11 26	566	0.6−	0.2+	1999 02 10	704	1.4−	0.5+
1978 09 28	095	0.1+	1.0+	1997 11 26	566	0.5−	0.2+	1999 02 10	704	1.2−	0.1+
1978 10 04	095	0.1−	0.2−	1997 11 26	566	0.2−	0.2+	1999 02 10	704	1.1−	0.2+
1991 12 01	675	0.3−	0.5−	1998 11 18	699	0.8+	1.2+	1999 02 10	704	1.0−	1.0+
1991 12 01	675	(0.9+	3.1−)	1998 11 18	699	0.4+	0.2+	1999 02 11	699	0.6+	0.7+
1994 10 05	400	0.3−	1.2−	1998 11 18	699	0.2−	0.3+	1999 02 11	699	0.4+	0.9+
1994 10 05	400	(2.2−	0.9−)	1999 01 10	699	0.2+	0.2+	1999 02 11	699	0.9+	0.6+
1994 10 06	400	0.8+	1.0+	1999 01 10	699	0.3+	0.6−	1999 02 13	704	0.1+	0.0
1994 10 06	400	0.2+	0.1−	1999 01 10	699	0.6+	0.4−	1999 02 13	704	0.2+	0.2+
1994 10 28	691	0.1+	0.2−	1999 01 19	704	0.3+	0.8−	1999 02 13	704	0.7−	0.5−
1994 10 28	691	0.2−	0.3−	1999 01 19	704	0.0	0.1−	1999 02 13	704	0.1−	1.2−
1994 10 28	691	0.9+	0.3−	1999 01 19	704	0.4+	1.0−	1999 02 13	704	0.0	0.8−
1996 02 16	566	0.3+	0.2−	1999 01 19	704	0.5+	0.1−	1999 02 23	699	0.6−	0.9+
1996 02 16	566	0.5+	0.1−	1999 01 19	704	0.9−	1.0−	1999 02 23	699	0.3−	0.5+
1996 02 16	566	0.8+	0.2−	1999 02 10	704	0.8−	0.2−	1999 02 23	699	0.0	0.5+

(10940)* 1999 CE₅₂ = 1980 TM₈ = 1983 LV = 1987 WF₅ = 1994 WR₁₁
= 1996 GP₁₁

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

Research Team at Socorro.

Id. G. V. Williams (*MPC* 34246)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams		Williams	
		(2000.0)		(2000.0)	
<i>M</i>	182.21149	<i>P</i>	<i>Q</i>	<i>P</i>	<i>Q</i>
<i>n</i>	0.28841422	ω	301.28344	+0.99061740	−0.08323576
<i>a</i>	2.2687759	Ω	63.68755	+0.12315786	+0.88750465
<i>e</i>	0.2072560	<i>i</i>	6.94528	−0.05923934	+0.45321882
<i>P</i>	3.42	<i>H</i>	13.6	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1980 10 12	095	1.8−	0.2−	1996 04 22	691	0.2+	0.6−	1999 02 13	704	0.1+	0.1+
1983 06 10	323	1.4+	1.4−	1997 09 01	566	0.0	0.1−	1999 02 13	704	1.0+	0.2+
1983 06 14	323	0.2+	0.8−	1997 09 01	566	0.1+	0.3−	1999 02 13	704	0.0	0.4+
1987 11 21	095	1.0+	0.9−	1997 09 01	566	0.1+	0.2−	1999 02 13	704	0.0	0

1996 04 14	691	0.4−	0.8−	1999 02 10	704	0.2+	0.8+	1999 05 08	704	1.7−	1.7−
1996 04 14	691	1.0−	0.6−	1999 02 12	327	0.5−	0.5+	1999 05 08	704	0.9−	1.8+
1996 04 22	691	0.2+	0.6−	1999 02 12	327	0.4−	0.0	1999 05 08	704	0.7−	1.2−
1996 04 22	691	0.1+	0.7−	1999 02 12	327	0.4+	0.3+	1999 05 08	704	0.2−	0.9−

(10941)* 1999 CD₇₉ = 1980 FE₅ = 1996 NM₄ = 1997 XC₁₁

Discovered 1999 Feb. 12 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Gnädig (*MPC* 34547)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20462792	ω	176.49678	+0.91025424	+0.41165842		
<i>a</i>	2.8520652	Ω	159.02033	−0.38283614	+0.87765179		
<i>e</i>	0.0499161	<i>i</i>	7.12938	−0.15771400	+0.24548867		
<i>P</i>	4.82	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1980 03 16	809	1.2+	1.1−	1996 08 15	566	0.9−	0.1−	1999 02 16	704	0.3−	0.5−
1980 03 16	809	0.6+	1.1−	1996 08 15	566	1.0−	0.2−	1999 02 16	704	0.5−	0.1+
1980 03 16	809	1.2−	1.0+	1996 08 15	566	1.0−	0.1−	1999 02 16	704	0.3+	0.1+
1980 03 16	809	1.6−	1.0+	1997 12 04	372	0.7−	1.0−	1999 02 16	704	0.6+	0.1−
1980 03 17	809	(2.6+	1.5−)	1997 12 04	372	1.0−	0.1+	1999 02 16	704	0.2−	0.5+
1980 03 17	809	(0.7+	3.5−)	1997 12 05	372	1.6+	0.6+	1999 03 19	704	0.7+	1.4−
1980 03 17	809	0.1−	0.1+	1997 12 25	566	0.2−	0.7−	1999 03 19	704	0.6+	0.2−
1980 03 17	809	0.5+	2.1−	1997 12 25	566	0.8+	0.1+	1999 03 19	704	1.5−	1.3−
1996 07 14	809	1.9+	0.0	1997 12 25	566	0.1−	0.5−	1999 03 20	704	1.5−	0.1−
1996 07 14	809	(2.2+	0.0)	1999 02 12	699	1.3+	0.2+	1999 03 20	704	1.3−	0.7−
1996 07 14	809	1.4+	0.3−	1999 02 12	699	0.0	1.1+	1999 03 20	704	1.1−	1.8+
1996 07 16	809	(3.8−	2.4−)	1999 02 12	704	0.4−	0.1−	1999 03 20	704	0.8−	1.4+
1996 07 16	809	(3.7−	3.1−)	1999 02 12	704	1.1+	0.5+	1999 04 07	691	0.2+	0.2−
1996 07 16	809	(3.9−	2.1−)	1999 02 12	699	1.5+	0.2−	1999 04 07	691	0.2+	0.2−
1996 08 09	809	0.5+	0.4−	1999 02 12	704	1.1+	1.1−	1999 04 07	691	0.1−	0.1−
1996 08 09	809	0.0	0.5+	1999 02 12	704	0.4+	0.8+				
1996 08 09	809	0.2−	0.4−	1999 02 12	704	0.3−	1.0+				

(10942)* 1999 CN₈₃ = 4160 P-L = 1985 SZ₂ = 1985 UP₅ = 1989 SZ₈

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

Research Team at Socorro.

Id. A. Doppler (*MPC* 34252), G. V. Williams (*ibid.*, *MPC* 34548)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23701006	ω	78.98333	+0.38335434	−0.92288561		
<i>a</i>	2.5859782	Ω	348.27529	+0.76208041	+0.33830499		
<i>e</i>	0.1956453	<i>i</i>	10.30562	+0.52179775	+0.18393447		
<i>P</i>	4.16	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1960 09 24	675	0.9+	0.3−	1989 09 25	809	0.6+	0.5−	1999 02 10	704	0.9+	0.2+
1960 09 25	675	0.5+	0.9−	1989 09 26	809	0.3−	0.1+	1999 02 10	704	0.5−	0.7−
1960 09 26	675	0.3−	0.3−	1989 09 26	809	0.1−	0.1+	1999 02 12	699	0.3−	0.4+
1985 09 19	095	1.0−	0.3+	1989 09 26	809	0.3+	0.1+	1999 02 12	699	0.4−	1.4+
1985 10 18	095	0.3+	0.3+	1998 12 17	699	0.5+	0.3−	1999 02 12	699	0.5−	0.1−
1989 09 24	809	0.9−	0.7+	1998 12 17	699	0.2+	1.4−	1999 02 13	704	1.3−	0.4−
1989 09 24	809	0.3−	0.7+	1998 12 17	699	0.2−	0.3+	1999 02 13	704	0.4+	0.1+
1989 09 24	809	0.2+	0.8+	1999 02 10	704	0.3+	0.1+	1999 02 13	704	0.2+	0.7+
1989 09 25	809	0.2−	0.4−	1999 02 10	704	0.2+	0.1+	1999 02 13	704	(2.6−	2.3−)
1989 09 25	809	0.1+	0.4−	1999 02 10	704	0.4+	0.3−				

(10943)* 1999 FY₆ = 1978 WK₁₅ = 1984 SH₂ = 1994 WW₉ = 1996 HS₁₀

Discovered 1999 Mar. 20 by the OCA-DLR Asteroid Survey at Caussols.

Id. G. V. Williams (*MPC* 34555)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.31334352	ω	73.58233	+0.95078908	+0.30956383		
<i>a</i>	2.1467867	Ω	268.38327	−0.28902137	+0.87093956		
<i>e</i>	0.1737075	<i>i</i>	0.74815	−0.11165467	+0.38162092		
<i>P</i>	3.15	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1978 11 30	675	0.5−	1.0−	1996 05 13	566	0.2+	0.5−	1999 04 15	704	0.6−	1.8+
1978 12 01	675	0.3−	0.0	1996 05 13	566	0.2+	0.4−	1999 04 15	704	0.6−	0.4−
1984 09 01	046	1.5+	1.4−	1997 12 04	704	0.4+	0.8−	1999 04 15	704	0.6+	0.2−
1984 09 01	046	(3.6+	1.8−)	1997 12 04	704	0.2−	1.3−	1999 04 16	703	0.1+	0.4+
1984 09 25	688	(2.3+	3.3−)	1997 12 04	704	1.0−	0.0	1999 04 16	703	0.3+	0.6+
1984 09 25	688	(0.4−	3.6−)	1997 12 04	704	0.2−	0.4−	1999 04 16	703	0.3−	0.4+
1992 02 09	691	0.7+	0.5−	1999 03 20	910	1.4+	0.0	1999 04 16	703	0.4−	0.7−
1992 02 09	691	0.2+	0.2−	1999 03 20	910	0.0	0.4+	1999 04 17	704	0.8−	0.8+
1992 02 09	691	0.4+	0.4−	1999 03 20	910	0.2−	0.2−	1999 04 17	703	0.6−	0.8+
1994 11 29	691	0.5+	0.2+	1999 03 21	910	0.6+	0.4−	1999 04 17	704	0.3−	0.5−
1994 11 29	691	0.0	0.4+	1999 03 21	910	0.8+	0.6−	1999 04 17	703	0.6+	0.5+
1994 11 29	691	0.0	0.3+	1999 03 21	910	0.7+	0.3−	1999 04 17	704	(0.3+	2.1+)
1994 12 04	691	0.2−	0.4+	1999 04 07	704	0.9+	1.2−	1999 04 17	703	0.2+	0.3−
1994 12 04	691	0.0	0.0	1999 04 07	704	0.8+	2.0−	1999 04 17	704	1.3−	0.7+
1994 12 04	691	0.1+	0.0	1999 04 07	704	0.9+	0.7−	1999 04 17	703	0.4+	0.6−
1996 04 17	809	1.4−	1.4−	1999 04 07	704	1.9+	1.9−	1999 04 17	704	(3.2−	2.6+)
1996 04 17	809	(2.0−	1.3−)	1999 04 07	704	(0.9+	2.3−)	1999 04 18	703	0.5+	0.0
1996 04 17	809	(2.8−	0.2+)	1999 04 09	699	(1.2+	2.1+)	1999 04 18	703	0.1+	0.4+
1996 04 18	809	1.5−	0.5+	1999 04 09	699	0.6+	0.5+	1999 04 18	703	0.5−	0.6+
1996 04 18	809	0.9−	0.3+	1999 04 09	699	0.1+	0.1+	1999 04 18	703	0.8−	0.4+
1996 04 18	809	1.2−	0.4−	1999 04 15	704	1.6−	1.2+				
1996 05 13	566	0.9+	0.6−	1999 04 15	704	1.3−	0.7−				

(10944)* 1999 FJ₂₆ = 1926 GA₁ = 1932 WF = 1979 KA₁ = 1982 BY₈
= 1988 SH₄ = 1991 GV₁₁ = 1992 TB₂ = 1996 TO₅₀

Discovered 1999 Mar. 19 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPC* 34559)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.24321138	ω	343.18809	−0.41827012	+0.90531168		
<i>a</i>	2.5418317	Ω	262.03611	−0.82454983	−0.41256121		
<i>e</i>	0.1730765	<i>i</i>	4.27923	−0.38100877	−0.10101486		
<i>P</i>	4.05	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1926 04 02	024	2.5+	1.0+	1998 01 06	704	0.2−	1.0−	1999 04 15	704	0.4−	0.1+
1926 04 03	024	1.2−	1.5+	1998 01 06	704	0.2−	0.0	1999 04 15	704	0.0	0.1+
1932 11 30	024	(16.5−	7.7−)	1998 01 06	704	0.5−	0.9−	1999 04 15	704	0.5−	0.2−
1979 05 28	330	(1.5+	5.4+)	1999 03 19	704	0.5+	1.0−	1999 04 16	704	0.9+	1.0−
1982 01 19	095	(3.3+	1.0−)	1999 03 19	704	0.8−	0.8+	1999 04 16	704	0.5+	0.5−
1988 09 16	095	(0.3+	2.9−)	1999 03 19	704	0.2+	1.9−	1999 04 16	704	0.2+	0.5−
1988 09 16	095	0.2−	0.9−	1999 03 19	704	(3.4−	0.1+)	1999 04 16	704	0.4−	0.4+
1991 04 12	033	0.2−	0.7+	1999 03 20	704	0.8+	0.2+	1999 04 17	704	0.7+	0.7−
1991 04 13	033	0.9−	0.3+	1999 03 20	704	0.1−	1.2+	1999 04 17	704	0.3+	0.6+
1992 09 04	095	0.8+	0.7+	1999 03 20	704	0.2−	0.2+	1999 04 17	704	0.0	0.5+
1992 10 04	675	1.3+	0.5−	1999 03 20	704	0.1+	0.3+	1999 04 17	704	0.3+	0.2+
1992 10 04	675	0.6−	1.2−	1999 03 20	704	1.2−	0.8−	1999 04 17	704	0.3+	0.4+
1996 10 04	809	(3.6+	4.3+)	1999 04 14	704	1.4+	1.2−	1999 06 08	704	0.5−	0.9+
1996 10 04	809	(2.9+	3.6+)	1999 04 14	704	1.1−	0.6−	1999 06 08	704	0.8−	0.7−
1996 10 04	809	(2.6+	3.4+)	1999 04 14	704	0.6+	0.6−	1999 06 08	704	0.4−	1.0−
1996 10 05	809	(2.6+	3.2+)	1999 04 14	704	0.2+	0.3−	1999 06 08	704	0.2+	0.2−
1996 10 05	809	(2.1+	3.1+)	1999 04 14	704	1.1−	0.5+	1999 06 08	704	0.3−	0.8−
1996 10 05	809	(1.4+	2.9+)	1999 04 15	704	0.6−	0.6−				

(10945)* 1999 GS₉ = 1988 FD₁ = 1998 BJ₄₀

Discovered 1999 Apr. 14 by Y. Shimizu and T. Urata at the Nachi-Katsuura Observatory.

Id. T. Urata (*MPC* 34563)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		56.54598		(2000.0)		P		Q	
<i>n</i>	0.18388957	ω	71.21252	−0.97785938	−0.10626410				
<i>a</i>	3.0626544	Ω	102.37599	+0.03614827	−0.93429974				
<i>e</i>	0.0441334	<i>i</i>	10.63569	+0.20611727	−0.34028214				
<i>P</i>	5.36	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	1		

Residuals in seconds of arc

1988 03 17	033	0.0	0.2+	1999 04 12	704	0.2−	0.3−	1999 05 12	704	0.6+	0.3−
1988 03 18	033	0.6−	0.0	1999 04 12	704	0.2+	0.4+	1999 05 12	704	0.2+	0.4−
1988 03 19	033	0.3+	0.6+	1999 04 12	704	0.6−	0.3−	1999 05 12	704	0.4−	0.4+
1988 03 19	033	0.8+	0.3+	1999 04 12	704	0.2−	0.1−	1999 05 12	704	0.7−	0.0
1995 08 25	905	0.3−	1.7−	1999 04 14	905	0.2−	0.6−	1999 05 12	704	0.3−	1.1−
1995 08 25	905	0.1+	1.2+	1999 04 14	905	0.2−	0.6−	1999 05 15	704	0.1+	0.1+
1995 08 28	905	0.3+	0.2−	1999 04 15	704	(2.4+	1.3+)	1999 05 15	704	1.0+	0.2+
1995 08 28	905	0.2+	0.9−	1999 04 15	704	1.4+	0.2−	1999 05 15	704	0.6−	1.0−
1997 12 28	566	0.8+	0.5−	1999 04 15	704	1.3+	1.0+	1999 05 15	704	0.8+	0.5+
1997 12 28	566	0.3+	0.6−	1999 04 16	704	0.2−	0.6−	1999 05 15	704	1.3−	0.6+
1997 12 28	566	0.5+	0.4−	1999 04 16	704	1.0−	1.6−	1999 05 17	704	0.1+	0.8−
1998 01 24	566	0.2+	0.8+	1999 04 16	704	0.4+	0.6+	1999 05 17	704	0.8−	0.6−
1998 01 24	566	0.1+	0.5+	1999 04 16	704	0.3−	0.2−	1999 05 17	704	0.4+	0.3+
1998 01 24	566	0.1−	0.6+	1999 04 16	704	(2.2−	1.0−)	1999 05 17	704	1.1−	0.2−
1998 01 29	566	0.4−	0.8−	1999 04 20	385	0.0	0.3+	1999 05 17	704	0.1+	0.8−
1998 01 29	566	0.9−	0.6−	1999 04 25	888	0.2−	0.1+	1999 06 08	704	(1.8+	2.4+)
1998 01 29	566	0.6−	1.8−	1999 04 25	888	0.0	0.1+	1999 06 08	704	0.4−	1.1+
1999 03 24	699	1.0+	1.0+	1999 04 26	888	0.0	0.2−	1999 06 08	704	0.1−	0.8−
1999 03 24	699	0.3+	1.5+	1999 04 26	888	0.1+	0.0	1999 06 08	704	1.3−	0.2+
1999 03 24	699	0.7+	1.2+	1999 05 07	905	0.7+	1.4−				
1999 04 12	704	0.2−	0.1+	1999 05 07	905	0.5+	1.0+				

(10946)* 1999 HR₂ = 1968 UF₃ = 1991 RO₉ = 1992 UA₁₀

Discovered 1999 Apr. 16 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. G. V. Williams (*MPC* 34564)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		88.29600		(2000.0)		P		Q	
<i>n</i>	0.20420517	ω	64.65211	−0.35372132	−0.91314968				
<i>a</i>	2.8560002	Ω	47.63870	+0.72895665	−0.40483684				
<i>e</i>	0.2159188	<i>i</i>	15.91203	+0.58609165	−0.04758983				
<i>P</i>	4.83	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	1		

Residuals in seconds of arc

1968 10 26	095	(5.6−	6.8−)	1999 04 12	704	0.4+	0.4−	1999 05 08	327	0.0	0.3−
1991 09 04	413	0.9−	0.1+	1999 04 12	704	0.1−	0.2−	1999 05 08	327	0.2−	0.3−
1991 09 04	413	0.3−	0.0	1999 04 15	704	0.2−	0.4−	1999 05 08	327	0.1−	0.0
1991 09 05	413	0.7−	0.8+	1999 04 15	704	0.6+	0.7−	1999 05 09	703	0.2+	0.8+
1991 09 07	413	1.5+	0.7−	1999 04 15	704	0.5+	0.3+	1999 05 09	703	0.1−	1.0+
1991 09 07	413	(4.9−	1.6+)	1999 04 15	704	0.0	0.4−	1999 05 09	703	0.0	0.3+
1992 10 31	033	0.4−	0.2−	1999 04 16	704	0.1−	0.2−	1999 05 09	703	0.5+	0.7+
1992 10 31	033	0.1+	0.1+	1999 04 16	704	0.5+	0.0	1999 05 09	327	0.3+	0.1−
1992 11 01	033	0.3+	0.5+	1999 04 16	704	0.6+	0.4+	1999 05 09	327	0.1+	0.1−
1992 11 23	033	0.1−	0.4−	1999 04 16	704	0.3+	0.1+	1999 05 09	327	0.1+	0.0
1992 11 23	033	0.5+	0.1+	1999 04 16	704	0.1−	0.7+	1999 05 09	327	0.1+	0.2−
1997 11 06	704	1.6−	1.7+	1999 04 16	327	0.3+	0.5−	1999 05 09	327	0.2+	0.2+
1997 11 06	704	0.8−	1.4+	1999 04 16	327	0.6−	0.1+	1999 05 09	327	0.2+	0.2−
1997 11 06	704	0.8−	0.7+	1999 04 16	327	0.0	0.2+	1999 05 14	327	0.2−	0.3−
1997 11 06	704	1.2−	0.4+	1999 04 23	327	0.2+	0.4−	1999 05 14	327	0.4−	0.3−
1997 11 06	704	1.0−	0.2+	1999 04 23	327	0.0	0.2−	1999 05 14	327	0.1−	0.2−
1997 11 29	704	1.2+	0.0	1999 04 23	327	0.1+	0.5−	1999 05 16	703	0.5+	1.0+
1997 11 29	704	0.9+	0.1−	1999 05 04	327	0.4−	0.5−	1999 05 16	703	0.7−	0.3+

1997 11 29	704	0.2+	1.0−	1999 05 04	327	0.2−	0.7−	1999 05 16	703	0.2−	0.1−
1997 11 29	704	1.2+	1.4−	1999 05 04	327	0.5−	0.4−	1999 05 16	703	0.4−	0.4−
1997 11 29	704	1.0+	0.5−	1999 05 08	703	1.5+	0.4+	1999 06 08	704	0.9−	0.1−
1999 04 12	704	0.5−	0.6+	1999 05 08	703	0.1−	0.4+	1999 06 08	704	0.2−	0.8−
1999 04 12	704	0.6−	0.9+	1999 05 08	703	0.3+	0.5+	1999 06 08	704	0.2+	0.3−
1999 04 12	704	0.6−	0.6+	1999 05 08	703	1.1+	1.6+	1999 06 08	704	0.1+	0.3−

(10947)* 2061 P-L = 1984 BT₃ = 1988 GG₂

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPC* 25075, *MPC* 34564)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		16.00594		(2000.0)		P		Q	
<i>n</i>	0.27107565	ω	267.95723	−0.65785108	+0.75116010				
<i>a</i>	2.3645167	Ω	320.72642	−0.65210406	−0.60441685				
<i>e</i>	0.1798946	<i>i</i>	4.95579	−0.37681859	−0.26540304				
<i>P</i>	3.64	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	2		

Residuals in seconds of arc

1960 09 24	675	0.0	0.8+	1999 03 23	704	0.3+	0.5+	1999 04 17	704	0.5−	0.9+
1960 09 26	675	0.3−	1.2+	1999 03 23	704	1.2+	0.1+	1999 04 17	704	0.6−	0.4+
1960 09 28	675	0.5−	1.0−	1999 03 23	704	0.1+	0.3−	1999 04 17	704	0.1+	0.2−
1960 09 29	675	0.5+	0.1+	1999 03 25	704	1.9+	0.4−	1999 04 20	704	0.2+	0.5+
1960 10 17	675	1.1−	2.2+	1999 03 25	704	1.8+	0.7−	1999 04 20	704	0.1+	0.1−
1960 10 22	675	0.9−	0.2+	1999 03 25	704	0.0	1.1+	1999 04 20	704	0.9−	0.1+
1960 10 25	675	0.9−	0.5+	1999 03 25	704	0.5−	1.2+	1999 04 20	704	0.4−	0.7+
1960 10 26	675	0.1+	0.1+	1999 03 25	704	0.9−	0.9+	1999 04 20	704	1.1−	0.6+
1984 01 25	675	0.8−	0.4+	1999 04 15	704	0.1−	0.2−	1999 06 09	704	1.4−	0.3+
1984 01 26	675	0.4+	0.1+	1999 04 15	704	0.4−	0.4+	1999 06 09	704	0.1+	0.2−
1988 04 13	054	2.2+	0.1−	1999 04 15	704	(1.1+	4.0−)	1999 06 09	704	0.5+	0.1+
1996 09 20	327	0.5+	0.0	1999 04 15	704	1.5−	0.9−	1999 06 09	704	0.4+	0.3+
1996 09 20	327	0.1+	0.3+	1999 04 15	704	0.2+	1.0−	1999 06 09	704	0.3+	0.1−
1996 09 20	327	0.6+	0.5+	1999 04 17	704	0.6−	0.7−				
1999 03 23	704	1.7+	0.3+	1999 04 17	704	0.2+	0.2+				

(10948)* 2207 P-L = 1995 DM

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. S. Nakano (*MPC* 25075)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		87.55670		(2000.0)		P		Q	
<i>n</i>	0.26961103	ω	177.14218	−0.88217497	−0.46869759				
<i>a</i>	2.3730722	Ω	334.74878	+0.42990915	−0.76191983				
<i>e</i>	0.0495437	<i>i</i>	6.15192	+0.19221197	−0.44699077				
<i>P</i>	3.66	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	1		

Residuals in seconds of arc

1960 09 24	675	(3.5+	1.7−)	1995 03 06	399	(2.4−	0.2+)	1999 04 15	699	1.6+	0.7−
1960 09 24	675	0.0	0.7+	1995 03 07	411	0.3+	0.1+	1999 04 15	699	0.5+	0.1−
1960 09 25	675	0.9+	1.4−	1995 03 07	411	0.5+	1.0+	1999 04 17	704	0.3−	0.0
1960 09 26	675	0.9−	0.7−	1995 03 11	411	0.4+	0.6−	1999 04 17	704	1.1−	0.4−
1960 09 28	675	1.4+	1.0−	1995 03 11	411	0.5−	0.1+	1999 04 17	704	0.3−	0.1−
1991 01 19	675	1.3−	0.2−	1995 03 20	411	0.8+	0.8−	1999 04 17	704	0.3−	0.7−
1991 01 19	675	0.1+	0.5−	1995 03 20	411	0.6−	0.9+	1999 04 17	704	0.1−	0.7+
1995 02 21	411	1.1−	0.2+	1997 12 29	566	0.2−	0.6+	1999 04 20	704	0.0	0.3−
1995 02 21	411	0.1+	0.3−	1997 12 29	566	0.1+	0.4+	1999 04 20	704	0.7−	0.2−
1995 02 22	411	0.2+	0.9−	1997 12 29	566	0.0	0.6+	1999 04 20	704	1.5−	0.0
1995 02 22	411	0.1+	0.6−	1999 04 15	704	1.1+	0.1+	1999 04 20	704	0.1−	0.7−
1995 02 26	411	0.1+	0.2−	1999 04 15	704	1.3+	0.4+	1999 04 20	704	0.7−	0.8−
1995 02 26	411	0.1+	0.6−	1999 04 15	704	1.1+	0.1−	1999 05 10	704	0.3−	0.4−
1995 03 05	399	(3.9−	0.5+)	1999 04 15	704	1.8+	0.2−	1999 05 10	704	2.1−	0.9+
1995 03 05	399	(3.6−	1.7+)	1999 04 15	699	1.4−	0.7+	1999 05 10	704	0.4+	0.3+
1995 03 06	399	(2.8−	1.1+)	1999 04 15	704	0.6+	0.2+	1999 05 10	704	0.2−	0.8+

(10949)* 3066 P-L = 1978 TK₆ = 1978 TF₈ = 1987 TZ

Discovered 1960 Sept. 25 by C. J. van Houten and I. van Houten-Groeneveld
on Palomar Schmidt plates taken by T. Gehrels.

Id. H. Kaneda (*MPC* 16438)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		226.99805		(2000.0)		P		Q	
<i>n</i>	0.21999174	ω	172.65748	+0.91560609	-0.38614062				
<i>a</i>	2.7176809	Ω	210.82360	+0.35688604	+0.90887695				
<i>e</i>	0.0306415	<i>i</i>	12.63433	+0.18519676	+0.15760109				
<i>P</i>	4.48	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	2		

Residuals in seconds of arc

1954 04 08	675	(3.9- 1.1+)	1999 04 17	426	0.4+ 0.1-	1999 05 18	704	0.3- 0.8+
1954 04 08	675	0.2- 0.3-	1999 04 19	704	0.2- 1.2-	1999 05 18	704	0.9- 0.3+
1954 05 31	675	0.4+ 1.4+	1999 04 19	704	0.4- 0.4+	1999 05 18	704	0.5+ 1.1+
1954 05 31	675	0.8+ 0.2-	1999 04 19	704	0.4- 0.7+	1999 05 19	704	0.3+ 0.5-
1960 09 25	675	0.8- 0.1-	1999 04 19	704	0.2- 0.5-	1999 05 19	704	0.3+ 0.8+
1960 09 27	675	0.8+ 0.1-	1999 05 10	704	0.6- 0.3+	1999 05 19	704	0.8+ 0.1+
1960 09 28	675	0.3- 0.1+	1999 05 10	704	0.1- 0.1-	1999 05 19	704	0.9- 1.1-
1960 09 29	675	0.9- 0.1+	1999 05 10	704	0.2- 1.0-	1999 05 19	704	0.1+ 0.4-
1978 10 02	095	(3.9- 15.4+)	1999 05 10	704	0.7+ 0.8-	1999 06 04	703	0.2- 0.9+
1978 10 08	095	(3.7- 6.4+)	1999 05 10	704	0.9- 0.2-	1999 06 04	703	0.1- 0.5+
1987 10 02	095	1.3+ 1.0-	1999 05 13	704	0.1- 0.1-	1999 06 04	703	0.1+ 0.3-
1994 04 05	675	0.3+ 0.3-	1999 05 13	704	0.4+ 1.2-	1999 06 04	703	0.2- 0.8-
1994 04 05	675	0.8- 0.2+	1999 05 13	704	0.9+ 0.4+	1999 06 09	704	0.8+ 0.2-
1999 04 16	426	0.1+ 0.4-	1999 05 13	704	0.2- 0.0	1999 06 09	704	0.3+ 0.5+
1999 04 16	426	0.2+ 0.0	1999 05 13	704	0.4+ 0.1+	1999 06 09	704	0.1- 0.3+
1999 04 17	426	0.5+ 0.2-	1999 05 18	704	0.1+ 0.7-	1999 06 09	704	0.5- 0.8+
1999 04 17	426	0.2+ 0.3-	1999 05 18	704	0.7- 0.0	1999 06 09	704	0.4- 0.8+

(10950)* 4049 P-L = 1992 DC₉

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld
on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPC* 23866)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		191.86177		(2000.0)		P		Q	
<i>n</i>	0.16899853	ω	216.62536	+0.62821905	-0.77725791				
<i>a</i>	3.2400181	Ω	194.56202	+0.74264762	+0.61238025				
<i>e</i>	0.1147345	<i>i</i>	7.95555	+0.23198134	+0.14443185				
<i>P</i>	5.83	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	1		

Residuals in seconds of arc

1960 09 24	675	0.2+ 0.5+	1998 03 03	704	0.2+ 1.6-	1999 05 10	704	1.3- 1.8-
1960 09 25	675	0.7- 0.5+	1998 03 03	704	1.6+ 0.8+	1999 05 10	704	(2.4- 1.0-)
1960 09 26	675	0.0 0.2+	1998 03 03	704	(4.6- 0.4+)	1999 05 10	704	1.1+ 0.5+
1960 09 28	675	1.2+ 0.5+	1998 03 20	704	1.2- 0.1-	1999 05 10	704	0.4- 1.9+
1960 10 17	675	0.1- 0.1+	1998 03 20	704	0.1- 1.4+	1999 05 13	704	0.7- 0.9+
1960 10 17	675	0.0 0.9+	1998 03 20	704	0.2- 0.9+	1999 05 13	704	0.1+ 0.8-
1960 10 22	675	0.2- 0.5-	1998 03 20	704	0.2- 1.4-	1999 05 13	704	1.0+ 0.5-
1960 10 24	675	0.1- 0.6+	1998 03 25	566	0.8+ 0.3-	1999 05 13	704	0.2- 0.3+
1960 10 26	675	0.2- 1.4-	1998 03 25	566	0.7+ 0.1+	1999 06 04	703	0.6+ 0.2-
1992 02 29	809	0.9- 0.0	1998 03 25	566	0.0 0.3+	1999 06 04	703	0.1- 0.3+
1992 03 03	809	1.5- 0.0	1998 03 26	704	1.4+ 0.9-	1999 06 04	703	0.3+ 0.1+
1992 03 05	809	1.7- 0.2-	1998 03 26	704	0.1- 0.3-	1999 06 04	703	(3.1+ 0.9+)
1995 08 27	327	0.0 0.6-	1998 03 26	704	0.4+ 0.2-	1999 06 14	704	0.1+ 0.4+
1995 08 27	327	0.4+ 0.4-	1999 04 19	704	0.3- 1.0-	1999 06 14	704	0.3+ 0.1-
1995 08 27	327	0.3+ 0.6-	1999 04 19	704	0.7- 0.5-	1999 06 14	704	0.1+ 0.1+
1995 08 27	327	0.0 1.3-	1999 04 19	704	1.1- 0.3-	1999 06 14	704	0.5+ 0.9+
1998 03 03	704	0.9+ 0.4-	1999 04 19	704	(2.1- 0.4+)	1999 06 14	704	0.3+ 0.5-
1998 03 03	704	0.4- 0.4+	1999 05 10	704	0.1- 0.6+			

(10951)* 4050 P-L = 1981 UL₂₁ = 1986 UL₂

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld
on Palomar Schmidt plates taken by T. Gehrels.

Id. E. Bowell (*MPC* 20514), G. V. Williams (*MPC* 34565)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		121.04793		(2000.0)		P		Q	
<i>n</i>	0.19092834	ω	241.36371	+0.09607269	-0.99317035				
<i>a</i>	2.9869121	Ω	203.40384	+0.96150961	+0.10979962				
<i>e</i>	0.0636763	<i>i</i>	9.59412	+0.25742826	-0.03945505				
<i>P</i>	5.16	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	2		

Residuals in seconds of arc

1960 09 24	675	0.8- 0.1-	1986 10 27	010	(1.9- 5.9-)	1999 04 06	704	0.2+ 0.0
1960 09 25	675	0.0 1.3+	1991 10 09	691	0.1- 0.2+	1999 04 15	704	1.1- 1.5-
1960 09 26	675	1.1+ 0.3+	1991 10 09	691	0.0 0.3+	1999 04 15	704	0.8- 0.3+
1960 09 28	675	0.1+ 0.5+	1991 10 09	691	0.1- 0.2+	1999 04 15	704	0.6+ 1.0+
1960 10 17	675	0.8- 0.7+	1999 03 20	704	0.1- 0.4-	1999 04 15	704	0.1- 0.6-
1960 10 22	675	0.0 1.3-	1999 03 20	704	0.2+ 0.5+	1999 04 15	704	0.2+ 1.2+
1960 10 24	675	0.0 2.0+	1999 03 20	704	0.1- 0.1+	1999 04 17	704	0.0 1.0+
1960 10 26	675	0.5- 0.2-	1999 03 20	704	0.3- 1.1+	1999 04 17	704	0.1- 0.6+
1981 10 24	675	0.1+ 0.6-	1999 04 06	704	0.3- 0.2-	1999 04 17	704	0.1+ 1.9+
1981 10 25	675	0.2- 0.3+	1999 04 06	704	0.9+ 0.3+	1999 04 17	704	(2.5- 0.8+)
1981 10 26	675	0.0 0.3+	1999 04 06	704	1.6+ 0.3-	1999 04 17	704	0.6- 0.1+
1986 10 27	010	(5.0- 8.7-)	1999 04 06	704	0.8+ 0.9-			

(10952)* 4152 P-L = 1979 HT₆ = 1995 UJ₃₂

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld
on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPC* 26185)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		350.56682		(2000.0)		P		Q	
<i>n</i>	0.19864889	ω	99.08281	+0.32517184	+0.94485206				
<i>a</i>	2.9090105	Ω	190.15415	-0.93100741	+0.31264021				
<i>e</i>	0.2264382	<i>i</i>	12.76713	-0.16579649	+0.09752275				
<i>P</i>	4.96	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	1		

Residuals in seconds of arc

1960 09 24	675	0.4- 0.5-	1998 02 27	566	1.0- 0.0	1999 05 15	704	1.0- 0.6+
1960 09 24	675	0.3+ 0.4+	1998 02 27	566	0.4- 0.1+	1999 05 15	704	1.0- 1.0+
1960 09 25	675	0.8+ 0.2-	1998 03 03	704	0.4- 0.2+	1999 05 15	704	0.9+ 0.6+
1960 09 26	675	0.5- 0.3-	1998 03 03	704	0.4- 1.2-	1999 05 15	704	0.2+ 1.0+
1960 09 28	675	0.5- 0.5-	1998 03 03	704	0.1- 0.3+	1999 05 17	704	0.4+ 0.1-
1960 10 17	675	0.3- 0.3+	1998 03 03	704	0.2- 0.6+	1999 05 17	704	0.8- 1.2+
1960 10 22	675	0.1+ 0.2+	1998 03 03	704	0.8- 0.9-	1999 05 17	704	0.9- 0.6+
1960 10 25	675	0.2+ 1.2-	1998 03 04	704	0.4+ 1.7-	1999 05 17	704	1.1- 1.8+
1960 10 26	675	0.3+ 0.4-	1998 03 04	704	0.5+ 0.8+	1999 05 21	704	0.1- 0.6-
1979 04 30	095	(0.6+ 2.7+)	1998 03 04	704	0.6+ 0.3+	1999 05 21	704	0.2- 0.2-
1994 05 09	675	(2.3+ 2.9-)	1998 03 04	704	1.1- 0.6+	1999 05 21	704	0.6- 0.2-
1994 05 09	675	1.3+ 1.2+	1998 03 04	704	0.2+ 0.5-	1999 05 21	704	1.4- 0.4+
1995 10 21	691	0.2+ 0.2+	1999 03 24	704	1.3+ 0.2-	1999 05 21	704	0.2- 0.7-
1995 10 21	691	0.0 0.3+	1999 03 24	704	1.0+ 0.5+	1999 06 09	716	0.0 0.6-
1995 10 21	691	0.1- 0.2+	1999 03 24	704	0.8- 1.2+	1999 06 09	716	0.7+ 0.5-
1995 10 25	691	0.1+ 0.9+	1999 03 24	704	0.5+ 0.7+	1999 06 14	704	1.2+ 1.3-
1995 10 25	691	0.0 0.5+	1999 05 12	704	0.6- 0.6-	1999 06 14	704	0.9+ 1.6-
1995 10 25	691	0.0 0.5+	1999 05 12	704	0.5- 0.3-	1999 06 14	704	1.0+ 1.3-
1998 02 22	566	0.5+ 0.7-	1999 05 12	704	0.1+ 0.2+	1999 06 14	704	0.7+ 1.3-
1998 02 22	566	0.7+ 0.6+	1999 05 12	704	0.6- 0.2+	1999 06 14	704	0.7+ 1.1-
1998 02 22	566	0.9+ 0.7-	1999 05 12	704	0.5- 0.6+			
1998 02 27	566	0.5- 0.1-	1999 05 15	704	(2.1+ 1.4-)			

(10953)* 4276 P-L = 1989 GX₁

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld
on Palomar Schmidt plates taken by T. Gehrels.

Id. S. Nakano (*MPC* 14629)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Nakano				
M	14.15644		(2000.0)		P		Q		
n	0.29851468	ω	254.47035		-0.33257482		+0.94305406		
a	2.2173058	Ω	356.08603		-0.82424744		-0.29404248		
e	0.1830745	i	5.51433		-0.45826864		-0.15552510		
P	3.30	H	15.5		G	0.15	U	2	
Residuals in seconds of arc									
1960 09 24	675	0.4+	0.9-	1992 02 26	691	0.6-	0.0	1993 09 23	809 (5.1- 0.5-)
1960 09 25	675	0.5-	0.3-	1992 02 26	691	0.5-	0.1+	1993 09 23	809 (3.0- 1.6-)
1960 09 26	675	0.8+	0.9-	1992 02 26	691	0.4-	0.3-	1993 09 23	809 (3.4- 2.2-)
1960 09 28	675	0.0	0.7-	1992 03 06	691	0.3-	0.1-	1999 04 20	704 0.3+ 0.9+
1960 10 17	675	0.3-	0.9-	1992 03 06	691	0.1-	0.1+	1999 04 20	704 0.4+ 0.6+
1960 10 22	675	0.3+	1.6-	1992 03 06	691	0.1-	0.1+	1999 04 20	704 1.1- 1.9+
1989 04 03	809	0.2+	1.5-	1993 09 15	809 (3.2+ 1.0-)			1999 04 20	704 0.5+ 1.5+
1989 04 03	809	0.2-	1.7-	1993 09 15	809 (2.4+ 0.1+)			1999 05 10	704 1.1+ 0.5+
1989 04 03	809	0.5-	1.9-	1993 09 15	809 1.2+ 0.3-			1999 05 10	704 0.6+ 0.7+
1989 04 05	809	0.4+	2.1-	1993 09 17	809 0.8+ 1.1-			1999 05 10	704 0.6+ 0.4+
1989 04 05	809	0.3-	1.9-	1993 09 17	809 1.4+ 1.1-			1999 05 10	704 0.1- 1.7+
1989 04 05	809	0.9-	1.7-	1993 09 17	809 0.2+ 0.0			1999 05 10	704 0.5+ 1.0+
1989 04 08	809	0.6-	1.0-	1993 09 18	809 (3.1+ 1.0-)			1999 06 09	704 0.3+ 1.0+
1989 04 08	809	0.2-	1.2-	1993 09 18	809 1.5+ 1.8-			1999 06 09	704 0.7- 0.4+
1989 04 08	809	0.7-	1.3-	1993 09 18	809 1.5+ 1.5-			1999 06 09	704 1.6- 1.0-
1989 04 10	809	0.4-	1.2-	1993 09 18	675 1.3- 0.6-			1999 06 09	704 2.1- 1.2-
1989 04 10	809	0.6-	1.8-	1993 09 22	675 0.0 0.4-				
1989 04 10	809	(1.1- 2.2-)		1993 09 22	675 0.9+ 1.0+				

(10954)* 4545 P-L = 1990 RK₆

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.
Id. G. V. Williams (*MPC* 17836)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams				
M	327.36095		(2000.0)		P		Q		
n	0.19493246	ω	82.32445		+0.20216558		+0.97931877		
a	2.9458679	Ω	199.34476		-0.90777717		+0.18432320		
e	0.0276576	i	1.38198		-0.36751828		+0.08342484		
P	5.06	H	13.6		G	0.15	U	1	
Residuals in seconds of arc									
1960 09 24	675	0.2-	0.6+	1998 01 17	046	0.3-	0.4-	1999 05 13	704 0.2- 0.4-
1960 09 26	675	0.2-	0.3-	1998 01 17	046	0.6-	0.6-	1999 05 18	704 0.9- 1.4+
1960 09 27	675	0.5+	0.2+	1998 01 27	046	0.4+	0.1-	1999 05 18	704 0.0 1.2+
1960 09 28	675	0.2+	0.1+	1998 01 27	046	0.2+	0.1-	1999 05 18	704 0.7+ 0.0
1960 10 17	675	0.6-	0.3+	1998 01 27	046	0.2+	0.2-	1999 05 18	704 (2.2- 1.6+)
1960 10 22	675	0.2+	0.5+	1998 02 08	046	0.1-	0.8-	1999 05 19	704 0.4+ 0.7-
1960 10 24	675	0.1+	0.7-	1998 02 08	046	0.6-	0.3-	1999 05 19	704 0.1+ 0.6+
1960 10 26	675	0.3-	0.2+	1998 02 08	046	0.1+	0.6-	1999 05 19	704 (2.4+ 1.0+)
1990 09 10	809	0.6+	0.9-	1999 05 10	704	1.0+	0.9+	1999 05 19	704 0.4+ 1.0-
1990 09 10	809	0.9+	0.6-	1999 05 10	704	0.4+	0.9-	1999 06 14	704 0.5- 0.1-
1990 09 10	809	1.2+	0.8-	1999 05 10	704	0.1+	0.1+	1999 06 14	704 0.5+ 0.9+
1990 09 10	809	0.2-	0.8-	1999 05 10	704	0.1-	0.2-	1999 06 14	704 0.2+ 0.1-
1990 09 11	809	0.3-	0.8-	1999 05 13	704	0.3-	1.2-	1999 06 14	704 1.0+ 0.1-
1990 09 11	809	0.5-	0.8-	1999 05 13	704	1.4-	1.7-	1999 06 14	704 0.9- 0.5+
1998 01 17	046	0.5-	0.8-	1999 05 13	704	0.7-	0.0		

(10955)* 5011 P-L = 1978 UH₅

Discovered 1960 Oct. 22 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.
Id. E. Bowell (*MPC* 20830)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams				
<i>M</i>	243.67509		(2000.0)		P		Q		
<i>n</i>	0.21961992	ω	122.43172		+0.99215401		-0.09564550		
<i>a</i>	2.7207474	Ω	243.16911		+0.06067711		+0.93144381		
<i>e</i>	0.0235748	<i>i</i>	5.17665		+0.10931019		+0.35109024		
<i>P</i>	4.49	<i>H</i>	14.2		<i>G</i>	0.15	<i>U</i>	1	
Residuals in seconds of arc									
1960 09 29	675	0.6+	0.5-	1998 01 08	688	0.2-	0.5+	1999 05 18	704 0.1+ 0.4-
1960 10 22	675	0.1-	0.3+	1999 04 20	704	1.5-	1.8-	1999 05 18	704 0.6- 1.2-
1960 10 25	675	0.1+	0.0	1999 04 20	704	1.8-	1.1+	1999 05 18	704 1.2+ 1.3-
1960 10 26	675	0.7-	0.3+	1999 04 20	704	(0.8-	2.8+)	1999 05 18	704 0.0 1.2+
1978 10 27	675	0.0	0.2+	1999 05 10	704	1.4-	0.8-	1999 06 07	703 0.5+ 0.3+
1978 10 28	675	0.2-	0.3+	1999 05 10	704	0.7+	0.2-	1999 06 07	703 0.4+ 0.0
1978 10 29	675	0.2-	0.4+	1999 05 10	704	1.4-	0.3+	1999 06 07	703 0.8+ 0.1+
1991 08 08	675	(0.8+ 2.4+)		1999 05 10	704	0.3+	0.9+	1999 06 07	703 1.2+ 0.0
1991 08 08	675	(1.6- 3.3+)		1999 05 10	704	1.2-	1.5+	1999 06 09	704 0.3+ 0.2+
1997 12 29	688	0.1-	0.2+	1999 05 13	704	0.1-	0.9-	1999 06 09	704 0.9+ 0.2+
1997 12 29	688	0.1+	0.1+	1999 05 13	704	1.0-	1.2-	1999 06 09	704 1.4+ 1.9+
1998 01 07	688	0.0	0.0	1999 05 13	704	0.1+	0.3+	1999 06 09	704 0.5- 0.3-
1998 01 07	688	0.8+	0.4-	1999 05 13	704	(0.7-	2.3+)	1999 06 09	704 1.6+ 0.8+
1998 01 08	688	0.3-	0.5+	1999 05 13	704	0.5+	0.4+		

(10956)* 5023 P-L = 1985 QK₂

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.
Id. T. Kobayashi (*MPC* 15905)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams				
<i>M</i>	337.02380		(2000.0)			P		Q	
<i>n</i>	0.27319673	ω	77.23937			+0.46263842		+0.88344838	
<i>a</i>	2.3522622	Ω	220.58500			−0.85115031		+0.41924545	
<i>e</i>	0.1177275	<i>i</i>	6.53645			−0.24800977		+0.20917029	
<i>P</i>	3.61	<i>H</i>	15.9		<i>G</i>	0.15		<i>U</i>	2
Residuals in seconds of arc									
1960 09 24	675	1.1+	0.4+	1996 10 05	691	0.0	0.3−	1999 05 18	704 0.1+ 1.1+
1960 09 26	675	0.4+	1.1−	1996 10 05	691	0.0	0.1−	1999 05 18	704 0.4+ 0.1+
1960 10 17	675	0.9+	2.4−	1999 05 13	704	1.4+	0.2−	1999 06 11	703 1.7+ 0.7−
1960 10 25	675	1.2−	1.6+	1999 05 13	704	0.4−	1.0+	1999 06 11	703 0.5+ 0.4−
1960 10 26	675	0.9−	0.3−	1999 05 13	704	1.1−	1.8−	1999 06 11	703 0.2+ 0.1+
1985 08 16	675	1.0−	2.3+	1999 05 13	704	(0.1−	2.8+)	1999 06 11	703 0.0 1.2+
1985 08 16	675	(3.8+ 4.8+)		1999 05 14	704	0.2−	0.9+	1999 06 14	704 1.7− 0.1−
1985 08 17	675	0.8+	0.7−	1999 05 14	704	0.6+	0.3+	1999 06 14	704 1.1− 0.1+
1985 08 17	675	(7.2+ 2.9+)		1999 05 14	704	0.7+	0.3+	1999 06 14	704 0.3− 0.3−
1985 08 23	675	(3.5+ 2.5+)		1999 05 14	704	1.2+	0.0	1999 06 14	704 0.3− 1.0−
1985 08 23	675	0.3−	0.5+	1999 05 18	704	0.9−	0.4−	1999 06 14	704 0.1+ 0.6−
1996 10 05	691	0.1+	0.1−	1999 05 18	704	1.0−	1.3−		

(10957)* 6068 P-L = 1999 FM₁₇

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.
Id. A. Gnädig (*MPC* 34566)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams				
<i>M</i>	168.58285		(2000.0)			P		Q		
<i>n</i>	0.19200727	ω	215.88367			+0.66168593		-0.74953337		
<i>a</i>	2.9757122	Ω	192.72558			+0.70669929		+0.63204782		
<i>e</i>	0.1054109	<i>i</i>	5.01947			+0.25049519		+0.19676200		
<i>P</i>	5.13	<i>H</i>	14.0			<i>G</i>	0.15	<i>U</i>	2	
Residuals in seconds of arc										
1960 09 24	675	0.3+	0.0	1998 01 31	691	0.1+	0.0	1999 03 24	691	0.7+ 0.5+
1960 09 25	675	0.9+	0.5+	1998 01 31	691	0.1-	0.1+	1999 03 24	691	0.5+ 0.8+
1960 09 26	675	0.0	0.3+	1999 03 10	691	0.4+	0.4+	1999 04 07	704	1.1- 1.3-
1960 09 28	675	0.2+	0.1+	1999 03 10	691	0.6+	0.4+	1999 04 07	704	0.9- 1.2-

1960 10 17	675	2.1-	0.4-	1999 03 10	691	0.5+	0.5+	1999 04 07	704	0.3-	0.2+
1960 10 22	675	0.7-	0.6+	1999 03 12	691	0.4-	0.5+	1999 04 07	704	0.4+	0.2-
1960 10 24	675	0.2+	1.3+	1999 03 12	691	0.5-	0.4+	1999 04 12	704	0.4-	1.9-
1960 10 26	675	0.0	0.7+	1999 03 12	691	0.5-	0.8+	1999 04 12	704	0.4+	1.2+
1991 10 01	691	0.2-	0.2+	1999 03 23	691	0.2+	0.2+	1999 04 12	704	0.6+	0.0
1991 10 01	691	0.2-	0.3+	1999 03 23	691	0.5+	0.7+	1999 04 12	704	1.1-	0.5+
1991 10 01	691	0.1+	0.4+	1999 03 23	691	0.2+	1.7+	1999 04 12	704	(3.0-	1.8+)
1998 01 31	691	0.0	0.2+	1999 03 24	691	1.3+	0.2+				

(10958)* 6188 P-L = 1992 ET₁₃ = 1993 OV₁₃

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld
on Palomar Schmidt plates taken by T. Gehrels.
Id. G. V. Williams (*MPC* 23867)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	93.14898		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.29536910	ω	281.89208	-0.85017101	-0.52577467
a	2.2330203	Ω	226.39490	+0.49675193	-0.78354022
e	0.1129735	i	2.19655	+0.17449006	-0.33109776
P	3.34	H	15.3	G 0.15	U 1

Residuals in seconds of arc

1960 09 24	675	0.1+	0.4+	1997 11 02	691	0.6-	0.3+	1999 05 13	704	0.9-	0.2+
1960 09 25	675	0.3-	0.2-	1997 11 03	704	0.7-	1.2-	1999 05 13	704	0.5+	0.2+
1960 09 26	675	0.2+	0.6-	1997 11 03	704	0.8-	1.1+	1999 05 14	704	0.6+	0.9+
1960 09 28	675	1.0-	0.9-	1997 11 03	704	0.9+	0.8+	1999 05 14	704	0.8-	1.1+
1960 10 22	675	0.5+	0.2+	1999 04 20	704	1.4+	1.3-	1999 05 14	704	2.1+	1.4+
1960 10 26	675	0.1+	0.2+	1999 04 20	704	1.7-	0.9-	1999 05 14	704	1.4+	1.8+
1992 02 28	675	1.5+	0.5+	1999 04 20	704	0.1+	1.1-	1999 05 18	704	1.0-	0.4-
1992 02 28	675	0.1+	0.6+	1999 04 20	704	0.8-	0.4+	1999 05 18	704	0.8-	1.6+
1992 03 02	809	0.4+	0.4+	1999 04 20	704	1.6-	0.8-	1999 05 18	704	1.0-	0.9-
1992 03 05	809	0.1+	0.2-	1999 05 10	704	0.5-	0.6-	1999 05 18	704	0.3-	0.4+
1992 03 09	809	0.6-	1.6-	1999 05 10	704	1.6+	0.3-	1999 05 18	704	1.2-	0.8-
1993 07 24	691	0.6+	0.4+	1999 05 10	704	2.0+	0.1+	1999 05 19	704	0.4-	0.6+
1993 07 24	691	1.5+	0.1+	1999 05 10	704	0.9+	0.6+	1999 05 19	704	0.2-	0.8+
1993 07 24	691	0.4+	0.3+	1999 05 10	704	1.7-	0.4+	1999 05 19	704	0.3+	0.8-
1997 11 02	691	0.2-	0.0	1999 05 13	704	0.4-	1.4-	1999 05 19	704	1.0+	1.2+
1997 11 02	691	0.1-	0.3+	1999 05 13	704	0.5-	1.1-				

(10959)* 6579 P-L = 1975 XO₂ = 1997 VT₃

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld
on Palomar Schmidt plates taken by T. Gehrels.
Id. S. Nakano (*MPC* 30888)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	150.90153		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.26920267	ω	16.17057	+0.12629573	-0.99070755
a	2.3754714	Ω	66.59618	+0.90393378	+0.09397621
e	0.0897122	i	3.15299	+0.40859896	+0.09832102
P	3.66	H	14.2	G 0.15	U 2

Residuals in seconds of arc

1960 09 24	675	0.6-	0.2+	1997 12 04	704	1.0-	0.3+	1999 04 19	704	1.8+	0.9-
1960 09 26	675	0.2+	1.1-	1997 12 04	704	1.1-	1.4+	1999 04 19	704	0.7-	0.9+
1960 09 27	675	0.9+	0.6-	1997 12 04	704	1.7-	0.7+	1999 04 19	704	0.7+	0.1-
1960 09 28	675	0.6+	0.9-	1997 12 05	704	0.4+	0.5-	1999 04 19	704	0.4-	0.5+
1960 10 17	675	0.5+	1.3+	1997 12 05	704	0.3+	0.3+	1999 04 19	704	1.0+	0.1+
1960 10 22	675	2.0-	0.2+	1997 12 05	704	0.3+	0.5+	1999 05 12	704	1.5-	1.2-
1960 10 24	675	0.3+	0.1-	1997 12 05	704	0.5+	1.3+	1999 05 12	704	1.0-	1.2+
1960 10 26	675	0.2+	0.6+	1997 12 05	704	0.4+	0.9+	1999 05 12	704	0.6-	1.4+
1975 12 02	095	(6.7+	1.1+)	1998 01 26	327	0.6+	0.0	1999 05 12	704	0.7-	0.7+
1993 10 15	010	1.3+	1.2+	1998 01 26	327	0.9+	0.3-	1999 05 12	704	0.2-	0.1-
1993 10 15	010	1.2-	0.9+	1998 01 26	327	2.1+	1.4-	1999 05 13	704	1.0+	0.2-
1993 10 15	010	0.8-	0.4+	1999 04 10	557	0.4+	0.5-	1999 05 13	704	0.8+	2.0+
1997 10 01	910	0.6-	0.8+	1999 04 10	557	0.6+	0.3-	1999 05 13	704	0.7+	0.1-
1997 10 01	910	0.7-	0.7+	1999 04 10	557	0.0	0.1-	1999 05 13	704	(2.3+	2.0+)
1997 10 01	910	0.7-	0.9+	1999 04 11	699	1.2+	0.2-	1999 05 13	704	1.0-	0.1+

1997 11 06	411	0.4+	0.2-	1999 04 11	699	0.8+	0.4-	1999 05 17	704	0.0	1.1+
1997 11 06	411	1.7+	0.2+	1999 04 11	699	0.6+	0.4-	1999 05 17	704	1.4-	0.2+
1997 11 07	411	0.0	0.0	1999 04 12	704	0.8+	0.2-	1999 05 17	704	0.6-	1.1-
1997 11 07	411	0.4+	0.4+	1999 04 12	704	1.0+	0.1+	1999 05 17	704	0.4+	2.0+
1997 11 26	704	1.4-	0.8-	1999 04 12	704	0.6+	1.3-	1999 05 17	704	1.1-	0.6+
1997 11 26	704	1.1-	0.1+	1999 04 12	704	0.2+	1.5-	1999 05 18	704	1.2+	0.2+
1997 11 26	704	1.4-	0.3-	1999 04 16	704	2.1-	0.8-	1999 05 18	704	1.1+	0.4+
1997 11 29	704	1.2+	0.2+	1999 04 16	704	0.4-	0.8+	1999 05 18	704	0.6+	1.8+
1997 11 29	704	0.7+	0.5+	1999 04 16	704	0.1+	0.4-	1999 05 18	704	0.0	0.4+
1997 11 29	704	0.6-	0.4-	1999 04 16	704	1.7-	0.1+	1999 05 18	704	0.6-	1.2+
1997 11 29	704	0.1-	0.5+	1999 04 17	557	0.4+	0.2-	1999 05 19	704	0.6+	0.9+
1997 11 29	704	0.3+	0.2-	1999 04 17	557	0.8+	0.1+	1999 05 19	704	1.1-	0.0
1997 12 04	704	0.5-	1.3-	1999 04 17	557	0.7+	0.1+	1999 05 19	704	0.2-	0.0
1997 12 04	704	(2.7-	0.2+)	1999 04 17	557	0.4+	0.1-	1999 05 19	704	0.6-	0.2+

(10960)* 6580 P-L = 1969 FD = 1992 BE₁

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld
on Palomar Schmidt plates taken by T. Gehrels.

Id. T. Kobayashi (*MPC* 23985), G. V. Williams (unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	23.55207		(2000.0)	P	Q		
n	0.29692808	ω	155.04027	-0.71519078	+0.69598896		
a	2.2251974	Ω	69.22488	-0.65220397	-0.63163023		
e	0.0991486	i	3.92765	-0.25126107	-0.34152981		
P	3.32	H	14.6	G	0.15	U	2

Residuals in seconds of arc

1960 09 24	675	0.6+	0.3+	1999 04 11	699	0.5+	0.2+	1999 05 13	704	0.4+	0.0
1960 09 26	675	0.6+	1.4-	1999 04 12	704	0.7+	0.7-	1999 05 13	704	0.2-	0.8+
1960 09 27	675	1.2+	0.9-	1999 04 12	704	0.3+	0.2-	1999 05 13	704	0.5-	0.5+
1960 09 28	675	1.8+	1.5-	1999 04 12	704	0.9+	0.2-	1999 05 13	704	0.2+	1.2+
1960 10 17	675	0.5+	1.5+	1999 04 12	704	0.7+	0.2+	1999 05 13	704	1.6-	0.5+
1960 10 22	675	2.2-	0.4+	1999 04 15	704	1.0+	0.5+	1999 05 14	704	1.9+	0.8-
1960 10 24	675	0.1+	0.1+	1999 04 15	704	0.6+	0.5-	1999 05 14	704	0.7+	0.7+
1960 10 26	675	1.3-	0.3-	1999 04 15	704	1.6+	1.1-	1999 05 14	704	0.9-	0.8-
1969 03 23	095	0.8-	0.4-	1999 04 15	704	0.5+	0.9-	1999 05 14	704	0.1+	1.2+
1992 01 29	400	0.8+	1.0-	1999 04 15	704	1.0+	1.2-	1999 05 14	704	0.3-	0.2+
1992 01 29	400	0.6+	2.9-	1999 04 16	704	0.2+	0.2-	1999 05 17	704	1.0+	0.0
1992 02 02	400	1.2+	1.0+	1999 04 16	704	0.1+	0.9-	1999 05 17	704	0.2-	0.5+
1992 02 02	400	1.6-	2.8+	1999 04 16	704	0.5-	0.7-	1999 05 17	704	1.3-	0.3-
1992 02 05	400	0.9-	0.1+	1999 04 16	704	0.2+	0.1+	1999 05 17	704	0.9-	0.9-
1992 02 05	400	0.5+	2.3-	1999 04 19	704	0.2+	0.5-	1999 05 17	704	1.7-	0.1+
1992 02 23	691	0.1-	0.5-	1999 04 19	704	0.8+	0.2-	1999 05 18	704	1.1-	0.3+
1992 02 23	691	0.1+	0.4+	1999 04 19	704	1.5+	0.7-	1999 05 18	704	0.5-	0.2+
1992 02 23	691	0.7+	0.6+	1999 04 19	704	0.1+	1.6+	1999 05 18	704	0.4-	1.0-
1997 11 29	704	0.5-	0.4+	1999 04 19	704	1.1+	1.3+	1999 05 18	704	0.6-	0.5+
1997 11 29	704	1.6+	0.2-	1999 05 10	682	0.9-	0.0	1999 05 18	704	1.0-	0.4+
1997 11 29	704	0.4-	0.0	1999 05 10	682	0.5-	0.4+	1999 05 19	704	0.3+	0.0
1997 11 29	704	0.4-	0.3+	1999 05 12	704	0.3-	0.4+	1999 05 19	704	0.9-	0.7-
1997 12 25	566	0.4-	0.2+	1999 05 12	682	1.0-	0.0	1999 05 19	704	0.7-	0.4-
1997 12 25	566	0.5-	0.0	1999 05 12	704	0.3+	0.3+	1999 05 19	704	0.0	0.2+
1997 12 25	566	0.6-	0.1-	1999 05 12	704	1.4+	1.8-	1999 05 19	704	0.0	1.2+
1999 04 11	699	0.1+	0.3+	1999 05 12	704	0.9-	1.0+				
1999 04 11	699	0.0	0.2+	1999 05 12	682	1.7-	0.2+				

(10961)* 6809 P-L = 1996 PL₁

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld
on Palomar Schmidt plates taken by T. Gehrels.
Id. G. V. Williams (*MPC* 28082)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams						
M	354.64677		(2000.0)		P		Q				
n	0.29858635		ω 193.02745		+0.03969516		+0.99906070				
a	2.2169509		Ω 79.24950		−0.91516552		+0.04333271				
e	0.1256048		i 1.01357		−0.40111889		+0.00000317				
P	3.30 <td colspan="2">H 16.5</td> <td colspan="2">G 0.15<td colspan="2">U 1</td><td></td></td>		H 16.5		G 0.15 <td colspan="2">U 1</td> <td></td>		U 1				
Residuals in seconds of arc											
1960 09 24	675	0.7+	0.5−	1996 08 21	735	0.4+	0.2+	1999 05 13	704	0.4−	0.2−
1960 09 26	675	0.5+	0.9−	1996 08 21	735	0.1−	0.2+	1999 05 13	704	1.2+	0.5+
1960 09 27	675	0.0	0.7+	1996 09 07	735	0.7−	1.0−	1999 05 14	735	0.4−	0.1+
1960 09 28	675	0.3+	0.1−	1996 09 07	735	0.4+	0.8−	1999 05 14	735	0.0	0.3+
1960 10 26	675	0.7−	1.4−	1996 09 07	735	1.8+	1.4−	1999 05 14	735	0.1+	0.1−
1992 03 05	691	0.0	0.4+	1996 09 08	735	1.0−	0.4+	1999 05 18	704	1.4−	0.9−
1992 03 05	691	0.2+	0.3−	1996 09 08	735	0.2−	0.1−	1999 05 18	704	0.9−	1.1+
1992 03 05	691	0.2−	0.1+	1996 09 08	735	0.2+	1.5+	1999 05 18	704	0.9+	1.4−
1996 08 11	735	0.7−	0.1−	1996 09 15	735	0.2−	0.5+	1999 05 18	704	0.2−	0.6+
1996 08 11	735	0.3+	0.3−	1996 09 15	735	0.5+	1.1+	1999 05 18	704	0.2+	0.3−
1996 08 11	735	0.9+	0.7−	1996 09 15	735	1.2−	1.7+	1999 06 05	703	0.3−	0.9+
1996 08 13	735	0.1+	0.0	1999 05 08	735	0.3+	0.5+	1999 06 05	703	0.3−	0.1−
1996 08 13	735	0.1+	0.0	1999 05 08	735	0.7+	0.2−	1999 06 05	703	0.5−	0.8+
1996 08 13	735	0.5+	0.2−	1999 05 10	704	0.1+	0.1−	1999 06 05	703	0.5−	0.6+
1996 08 16	735	1.5−	0.0	1999 05 10	704	0.2−	0.8+	1999 06 15	704	0.0	0.1−
1996 08 16	735	0.1+	0.3+	1999 05 10	704	0.7+	0.6−	1999 06 15	704	0.2−	0.3−
1996 08 16	735	0.0	0.6+	1999 05 10	704	(0.8−	2.2−)	1999 06 15	704	0.3−	0.1−
1996 08 18	735	0.2−	0.3+	1999 05 10	704	1.1−	0.1−	1999 06 15	704	0.2+	0.2−
1996 08 18	735	0.3+	0.1+	1999 05 13	704	0.3+	0.5−	1999 06 15	704	0.1+	0.2+
1996 08 18	735	0.5+	0.5−	1999 05 13	704	0.7+	1.1−				
1996 08 21	735	0.4−	0.3+	1999 05 13	704	0.8+	1.2−				

(10962)* 9530 P-L = 1993 SK₄

Discovered 1960 Oct. 17 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.
Id. T. Kobayashi (*MPC* 23986)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams						
M	116.51886		(2000.0)		P		Q				
n	0.26801753		ω	290.15636		−0.29387362		−0.95580049			
a	2.3824690		Ω	176.88992		+0.92783184		−0.28754859			
e	0.1653418		i	9.70903		+0.22970931		−0.06132885			
P	3.68		H	13.8		G	0.15	U	1		
Residuals in seconds of arc											
1960 10 17	675	0.4+	1.0+	1999 03 24	704	0.1−	0.9+	1999 05 12	704	0.5+	0.5−
1960 10 22	675	2.0−	1.1−	1999 03 24	704	(0.5−	2.4+)	1999 05 12	704	0.8+	1.2−
1960 10 24	675	0.4+	0.9+	1999 04 12	704	0.4−	0.4+	1999 05 12	704	0.6+	1.3−
1960 10 26	675	0.8+	0.5+	1999 04 12	704	0.5−	0.3−	1999 05 12	704	0.6+	1.3−
1993 09 19	010	0.0	0.3+	1999 04 12	704	0.4−	0.1+	1999 05 12	704	0.5−	0.9−
1993 09 19	010	0.8−	0.1+	1999 04 12	704	0.0	0.6+	1999 05 14	860	0.1−	0.6+
1993 09 20	010	(1.5+	2.6−)	1999 04 16	704	0.1−	0.1+	1999 05 14	860	1.8−	0.6+
1993 09 20	010	0.3+	1.2−	1999 04 16	704	0.0	0.3+	1999 05 14	860	1.9−	0.2+
1993 09 20	010	0.3+	1.1−	1999 04 16	704	0.9−	0.8−	1999 05 17	704	0.3+	0.2+
1993 09 20	675	0.3+	1.5+	1999 04 16	704	1.3−	1.0+	1999 05 17	704	0.3−	0.8+
1993 09 20	675	0.0	0.5−	1999 04 19	704	0.8+	0.4+	1999 05 17	704	0.9+	0.7+
1998 01 06	688	0.2−	0.8+	1999 04 19	704	0.3+	0.6+	1999 05 17	704	0.0	0.1−
1998 01 06	688	0.3+	0.2−	1999 04 19	704	0.1−	0.2+	1999 05 17	704	0.0	1.3+
1999 03 24	704	0.8+	0.9−	1999 04 19	704	1.5+	0.0				
1999 03 24	704	0.4+	1.3−	1999 04 19	704	1.3+	0.3+				

(10963)* 2088 T-1 = 1998 FR₁₁₉ = 4114 T-2

Discovered 1971 Mar. 25 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.
Id. A. Gnädig (*MPC* 32290)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams						
M	9.13435		(2000.0)		P		Q				
n	0.18081526	ω	79.49608		−0.22561637		+0.97418285				
a	3.0972719	Ω	177.42264		−0.94920379		−0.21795254				
e	0.0768097	i	10.33118		−0.21933861		−0.05885977				
P	5.45	H	13.7	G	0.15	U	1				
Residuals in seconds of arc											
1971 03 25	675	0.1−	0.3−	1973 09 29	675	(2.9+	3.5−)	1998 03 22	704	1.9−	0.4−
1971 03 25	675	0.9−	0.1+	1973 09 29	675	(2.4+	3.2−)	1998 03 22	704	0.1−	0.2+
1971 03 26	675	0.1+	0.3−	1973 09 30	675	1.7+	2.2−	1999 05 17	704	0.1−	0.2−
1971 03 27	675	0.2+	0.6+	1973 09 30	675	1.9+	2.3−	1999 05 17	704	0.6+	0.1−
1971 04 02	675	0.5+	0.6−	1973 10 04	675	0.7−	0.9−	1999 06 08	704	0.5−	0.2−
1973 09 19	675	0.8−	1.1−	1973 10 04	675	1.5+	1.0−	1999 06 08	704	0.1+	0.6+
1973 09 19	675	0.1+	0.3+	1973 10 05	675	1.2−	2.1−	1999 06 08	704	0.4−	0.2−
1973 09 19	675	2.0−	1.2−	1973 10 05	675	0.1+	0.3−	1999 06 08	704	0.8−	0.5−
1973 09 19	675	0.6+	1.1+	1998 03 20	704	0.6+	0.4+	1999 06 08	704	0.2+	0.8−
1973 09 20	675	0.6−	1.6+	1998 03 20	704	1.6−	1.7−	1999 06 14	704	0.4−	0.5−
1973 09 20	675	0.4−	0.6+	1998 03 20	704	1.0+	1.9−	1999 06 14	704	0.0	0.2−
1973 09 24	675	0.9+	0.7−	1998 03 20	704	0.7+	1.0−	1999 06 14	704	0.4+	0.9−
1973 09 24	675	0.1−	0.4−	1998 03 20	704	0.6−	1.7−	1999 06 14	704	0.3+	0.2−
1973 09 25	675	1.0+	0.9−	1998 03 22	704	0.9−	0.6−	1999 06 14	704	0.4+	0.2+
1973 09 25	675	0.3+	0.4+	1998 03 22	704	0.8+	1.5−				

(10964)* 3216 T-1 = 1996 TZ₆₅

Discovered 1971 Mar. 26 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.
Id. A. Gnädig (*MPC* 31268)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5				Williams							
M	341.97203	(2000.0)		P		Q					
n	0.21506459	ω	70.55900	+0.13547780	+0.99063408						
a	2.7590322	Ω	207.24453	−0.92240420	+0.11983628						
e	0.0290870	i	2.13144	−0.36168530	+0.06544760						
P	4.58 <th>H</th> <td>14.4<th>G</th><td>0.15<th>U</th><td>1</td></td></td>	H	14.4 <th>G</th> <td>0.15<th>U</th><td>1</td></td>	G	0.15 <th>U</th> <td>1</td>	U	1				
Residuals in seconds of arc											
1971 03 24	675	1.1−	0.7−	1996 11 07	691	0.3−	0.4+	1999 05 13	704	0.4+	0.7+
1971 03 25	675	(1.8+	3.2−)	1996 11 07	691	0.1+	0.1+	1999 05 18	704	0.1+	0.4−
1971 03 26	675	1.0+	0.3−	1996 11 07	691	0.2+	0.1+	1999 05 18	704	0.9+	0.7−
1971 03 26	675	0.2+	0.7−	1998 01 29	566	0.5+	0.0	1999 05 18	704	0.3−	0.5−
1971 03 27	675	0.5−	1.6−	1998 01 29	566	0.1−	0.0	1999 05 18	704	0.3+	0.6−
1971 04 02	675	0.9−	1.1−	1998 01 29	566	0.4+	0.2−	1999 05 19	704	0.1−	0.7−
1971 04 16	675	0.1−	0.5−	1998 03 23	012	0.9+	0.7+	1999 05 19	704	0.6+	0.6−
1971 04 16	675	1.0+	2.1−	1998 03 23	012	0.4−	0.8+	1999 05 19	704	0.5−	0.9+
1971 05 13	675	0.5+	0.5+	1998 03 23	012	0.7−	1.4+	1999 05 19	704	0.0	0.4+
1971 05 13	675	0.6+	1.4+	1999 05 09	120	0.6−	0.0	1999 06 13	691	0.4−	0.0
1971 05 14	675	0.8−	0.5−	1999 05 09	120	0.3−	0.9+	1999 06 13	691	0.5−	0.8−
1971 05 14	675	0.1−	2.2+	1999 05 09	120	1.0+	0.5−	1999 06 13	691	0.1−	0.3+
1971 05 16	675	1.2−	1.2+	1999 05 10	704	0.5+	0.0	1999 06 15	704	0.3−	0.2−
1996 10 07	691	0.5+	0.0	1999 05 10	704	0.1+	0.1+	1999 06 15	704	0.1+	1.1−
1996 10 07	691	0.7+	0.0	1999 05 10	704	0.2−	0.2+	1999 06 15	704	0.1−	0.1−
1996 10 07	691	0.6+	0.1−	1999 05 10	704	0.5−	0.2+	1999 06 15	704	0.4−	1.3+
1996 10 12	566	0.1−	0.0	1999 05 13	704	0.1−	0.1−	1999 06 15	704	0.0	0.2+
1996 10 12	566	0.9−	0.4−	1999 05 13	704	0.3+	1.8+				
1996 10 12	566	0.6−	0.1−	1999 05 13	704	0.1+	1.0+				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	53.54640		(2000.0)	P	Q
<i>n</i>	0.17982849	ω	23.98157	-0.91922805	+0.39372520
<i>a</i>	3.1085919	Ω	179.20441	-0.36681822	-0.85594480
<i>e</i>	0.1299191	<i>i</i>	2.06751	-0.14305308	-0.33517004
<i>P</i>	5.48	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1971 03 24	675	1.6+	1.6-	1973 09 29	675	0.8+	1.9-	1998 03 04	704	(2.5+	2.3-)
1971 03 25	675	0.6-	1.5-	1973 09 30	675	0.6-	1.0-	1998 03 04	704	(1.5-	3.2-)
1971 03 26	675	0.6+	2.1-	1973 09 30	675	0.3-	0.2-	1998 03 04	704	0.5-	0.4-
1971 03 26	675	0.6+	2.5-	1973 10 04	675	1.4+	0.0	1998 03 04	704	0.2+	0.2-
1971 03 27	675	1.1-	1.7-	1973 10 04	675	0.4+	1.2+	1999 05 18	704	0.0	1.1+
1971 04 02	675	2.1-	0.5+	1973 10 05	675	1.4+	1.3-	1999 05 18	704	0.4-	0.4+
1971 04 16	675	0.7-	0.4-	1973 10 05	675	1.9+	0.3+	1999 05 18	704	0.6+	1.3+
1971 04 16	675	0.2-	0.9+	1998 01 28	566	0.6-	0.0	1999 06 09	704	0.6+	0.6+
1971 05 13	675	1.2-	0.6+	1998 01 28	566	0.3-	0.1+	1999 06 09	704	1.0+	0.5-
1971 05 14	675	0.5-	0.3+	1998 01 28	566	0.0	0.1+	1999 06 09	704	0.1-	0.1+
1971 05 16	675	0.2+	0.3-	1998 02 24	566	0.3+	0.3-	1999 06 09	704	0.7-	0.4-
1973 09 19	675	1.8-	0.1-	1998 02 24	566	0.1-	0.1-	1999 06 09	704	0.6-	0.2-
1973 09 19	675	0.9-	0.0	1998 02 24	566	0.1+	0.0	1999 06 15	704	0.1+	0.1+
1973 09 20	675	0.5+	0.1-	1998 03 03	704	0.4+	0.0	1999 06 15	704	0.1-	0.3-
1973 09 24	675	1.9+	2.2-	1998 03 03	704	0.5-	0.3-	1999 06 15	704	0.1-	0.8-
1973 09 24	675	1.1+	1.1-	1998 03 03	704	1.0+	0.4-	1999 06 15	704	0.3-	0.6-
1973 09 25	675	1.6-	2.2-	1998 03 03	704	0.7+	0.0	1999 06 15	704	0.0	0.8-
1973 09 25	675	0.8-	0.0	1998 03 03	704	1.4-	0.3+				
1973 09 29	675	0.6+	0.8-	1998 03 04	704	0.3+	0.2-				

(10966)* 3308 T-1 = 1978 RW₉ = 1992 AR₆ = 1993 FK₄₇

Discovered 1971 Mar. 26 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPC* 23533)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	358.09721		(2000.0)	P	Q
<i>n</i>	0.17839385	ω	85.52447	-0.26750443	+0.96354521
<i>a</i>	3.1252359	Ω	168.95630	-0.89347494	-0.24622225
<i>e</i>	0.1134309	<i>i</i>	1.40347	-0.36075464	-0.10466727
<i>P</i>	5.52	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1971 03 24	675	(6.7+	5.2-)	1994 07 12	809	(4.7+	2.6+)	1999 05 14	704	0.9+	0.3-
1971 03 25	675	(4.8+	3.3-)	1994 07 12	809	(4.2+	2.7+)	1999 05 14	704	0.1-	0.6-
1971 03 26	675	0.7-	1.6-	1998 03 04	704	0.5+	0.3-	1999 05 14	704	0.1+	0.5-
1971 03 26	675	0.6-	1.2-	1998 03 04	704	0.5+	0.1-	1999 05 17	703	0.8+	0.5+
1971 03 27	675	1.1+	1.8-	1998 03 04	704	(2.4+	0.1+)	1999 05 17	703	0.4+	1.0+
1971 04 02	675	1.3-	0.6-	1998 03 04	704	2.0-	1.8+	1999 05 17	703	(1.0+	2.6+)
1971 04 16	675	0.5-	0.4-	1999 04 20	704	1.1+	1.0+	1999 05 17	703	0.2+	1.9+
1971 04 16	675	0.7-	0.9-	1999 04 20	704	0.0	1.1-	1999 05 18	704	1.3-	0.6-
1978 09 02	809	0.4+	1.0-	1999 04 20	704	0.9+	1.0+	1999 05 18	704	0.2-	0.1+
1978 09 02	809	0.4-	0.4-	1999 04 20	704	0.2-	1.4-	1999 05 18	704	0.4+	0.2+
1978 09 02	809	0.0	1.1-	1999 05 10	704	0.8+	0.0	1999 05 18	704	0.2-	0.4+
1992 01 09	691	0.2+	0.3-	1999 05 10	704	0.6+	1.1-	1999 05 18	704	1.5-	0.8+
1992 01 09	691	0.4+	1.0-	1999 05 10	704	0.5+	1.1+	1999 06 05	703	0.6+	0.3-
1993 03 19	809	0.9+	0.9+	1999 05 10	704	0.1+	1.1-	1999 06 05	703	0.1-	0.5+
1993 03 20	809	0.6+	0.4+	1999 05 10	704	0.7-	0.4-	1999 06 05	703	0.4+	0.8+
1993 03 24	809	0.8+	0.7+	1999 05 13	704	0.7-	0.6+	1999 06 05	703	1.4+	0.0
1993 04 17	413	0.6+	0.5+	1999 05 13	704	0.8-	1.3-	1999 06 15	704	0.2-	1.1+
1994 07 11	809	(3.1+	0.8+)	1999 05 13	704	0.6-	0.6-	1999 06 15	704	0.4+	0.2+
1994 07 11	809	(2.5+	0.4+)	1999 05 13	704	1.2-	1.1+	1999 06 15	704	0.6-	0.2+
1994 07 11	809	1.5+	0.4-	1999 05 13	704	0.5-	0.5-	1999 06 15	704	0.9-	0.1+
1994 07 12	809	(4.5+	3.4+)	1999 05 14	704	0.5-	0.1-	1999 06 15	704	0.3-	0.2-

(10967)* 4349 T-1 = 1977 RJ₈

Discovered 1971 Mar. 26 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. S. Nakano (*MPC* 19881)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	266.22862		(2000.0)	P	Q
<i>n</i>	0.21342986	ω	191.18105	+0.98311170	+0.17389752
<i>a</i>	2.7731025	Ω	158.54907	-0.15357215	+0.95337969
<i>e</i>	0.3078579	<i>i</i>	8.96972	-0.09953382	+0.24663092
<i>P</i>	4.62	<i>H</i>	13.3	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1971 03 24	675	(8.8+	5.5-)	1993 01 23	809	0.2-	0.0	1998 03 04	809	(2.6+	0.2-)
1971 03 26	675	0.5-	0.0	1993 01 23	809	0.8-	0.4-	1998 03 04	809	(2.4+	0.6-)
1971 03 26	675	0.1+	0.2+	1993 01 23	809	0.1-	1.1-	1999 04 19	704	0.3+	1.5-
1971 03 27	675	(1.5+	3.1-)	1993 01 28	809	1.4-	0.3+	1999 04 19	704	1.8-	0.2-
1971 04 02	675	0.0	0.1+	1993 01 28	809	0.6-	0.2-	1999 04 19	704	1.2-	0.5-
1971 04 16	675	0.7-	0.3-	1993 01 28	809	0.2-	0.8-	1999 04 19	704	0.6-	1.7-
1971 04 16	675	1.1+	0.0	1998 03 03	809	(4.6+	0.7-)	1999 05 08	703	0.3+	0.5+
1977 09 08	675	0.6+	0.6-	1998 03 03	809	(3.4+	1.0-)	1999 05 08	703	0.8+	0.9+
1977 09 09	675	0.3-	0.3-	1998 03 03	809	(3.7+	1.0-)	1999 05 08	703	0.6-	0.7-
1991 09 13	675	0.2+	1.5-	1998 03 03	704	(3.5+	0.5-)	1999 05 08	703	0.4+	0.5-
1991 09 13	675	0.2+	1.4-	1998 03 03	704	0.2-	1.0-	1999 05 13	704	0.4-	1.0-
1991 09 13	675	0.9+	0.8-	1998 03 03	704	1.3+	0.3+	1999 05 13	704	(0.5+	3.6-)
1991 09 15	675	0.1+	1.0-	1998 03 03	704	(4.9-	0.0)	1999 05 13	704	0.2+	2.0-
1991 09 15	675	0.2+	0.8-	1998 03 04	809	2.1+	1.1-				

(10968)* 4393 T-1 = 3216 T-2

Discovered 1971 Mar. 26 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. T. Kobayashi (*MPC* 21124)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	43.24446		(2000.0)	P	Q
<i>n</i>	0.17899313	ω	105.16805	-0.90208625	+0.42951979
<i>a</i>	3.1182563	Ω	100.28384	-0.41048485	-0.82404704
<i>e</i>	0.1245872	<i>i</i>	2.43891	-0.13320129	-0.36940388
<i>P</i>	5.51	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1971 03 24	675	(0.8+	3.8-)	1973 09 30	675	2.5+	1.8-	1997 11 28	910	0.7-	0.3-
1971 03 26	675	0.2-	1.8-	1973 09 30	675	(1.6+	3.0-)	1997 12 04	910	0.2-	0.1-
1971 03 26	675	0.9-	1.2-	1973 10 04	675	0.6-	2.3-	1997 12 04	910	0.3+	0.7-
1971 03 27	675	(3.3+	3.7-)	1973 10 04	675	0.1+	2.3-	1997 12 04	910	0.5+	0.4-
1971 04 02	675	0.1-	0.9-	1973 10 05	675	0.7+	0.8-	1999 05 13	704	0.9+	1.7+
1971 04 16	675	0.8-	0.4+	1973 10 05	675	0.2+	0.9-	1999 05 13	704	0.7-	1.0-
1971 04 16	675	1.0-	0.4+	1993 03 19	809	0.1-	0.1+	1999 05 13	704	0.3-	0.4+
1971 05 13	675	1.1+	0.9-	1993 03 20	809	0.2-	0.1-	1999 05 18	704	1.0-	0.7-
1971 05 14	675	0.0	0.5-	1993 03 24	809	0.8+	1.1-	1999 05 18	704	0.2+	0.4+
1971 05 16	675	0.2-	0.1+	1993 03 24	691	0.2+	1.3-	1999 05 18	704	0.2-	0.2-
1973 09 19	675	(1.5-	2.8+)	1993 03 24	691	0.1-	1.0-	1999 05 18	704	1.1-	1.2-
1973 09 19	675	(0.7-	2.7+)	1993 03 24	691	0.2-	1.3-	1999 05 19	704	0.3+	0.4+
1973 09 20	675	0.4+	0.2-	1993 04 16	413	(6.1-	6.5+)	1999 05 19	704	0.9+	0.8+
1973 09 24	675	1.0-	1.4-	1994 07 11	809	(3.5+	0.5+)	1999 05 19	704	1.1+	0.2+
1973 09 24	675	0.6+	1.4+	1994 07 11	809	1.9+	0.3+	1999 06 15	704	0.3+	0.1+
1973 09 24	675	0.2+	1.0+	1994 07 11	809	(2.6+	1.4+)	1999 06 15	704	0.2-	0.1+
1973 09 24	675	0.7-	0.5+	1994 07 12	809	(4.8+	0.0)	1999 06 15	704	0.0	0.6+
1973 09 25	675	0.0	2.0-	1994 07 12	809	(5.0+	0.1+)	1999 06 15	704	0.9-	1.1-
1973 09 25	675	1.2+	1.8-	1994 07 12	809	(3.3+	0.7-)	1999 06 15	704	0.2-	1.1-
1973 09 29	675	0.6+	0.6-	1997 11 28	910	0.8-	0.4-				
1973 09 29	675	(0.4+	3.1-)	1997 11 28	910	0.7-	0.5-				

(10969)* 4827 T-1 = 1999 GC₂Discovered 1971 May 13 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.
Id. G. V. Williams (*MPC* 34567)

1999 JUNE 22

M.P.C. 34815

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	113.29067		(2000.0)	P	Q
<i>n</i>	0.21037603	ω	257.64328	+0.17841555	-0.98393986
<i>a</i>	2.7998743	Ω	182.10282	+0.95094936	+0.17386356
<i>e</i>	0.1518976	<i>i</i>	8.61995	+0.25271170	+0.04042050
<i>P</i>	4.68	<i>H</i>	13.3	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1971 04 16	675	1.3-	0.7+	1999 04 06	704	0.1-	0.8-	1999 04 15	704	1.8+	1.2+
1971 04 16	675	0.1-	1.0+	1999 04 06	704	0.0	0.5-	1999 04 15	704	1.6-	1.1+
1971 05 13	675	0.0	0.6-	1999 04 06	704	0.2-	0.4-	1999 04 15	704	0.7+	0.6+
1971 05 14	675	0.9+	1.2-	1999 04 06	704	0.3-	0.1-	1999 04 16	704	0.6-	0.4-
1971 05 16	675	0.7+	0.7-	1999 04 08	118	0.0	0.4-	1999 04 16	704	1.4+	1.4+
1992 09 29	691	0.5-	1.1-	1999 04 08	118	0.2+	0.3-	1999 04 16	704	0.2-	2.0-
1992 09 29	691	0.2-	0.8+	1999 04 08	118	0.6+	0.3-	1999 04 16	704	0.3-	1.7-
1992 09 29	691	0.5-	0.1+	1999 04 08	118	0.3+	0.0	1999 04 17	703	0.3+	0.4+
1995 05 29	691	1.9+	0.6+	1999 04 09	118	0.6-	0.5-	1999 04 17	703	0.5+	0.7+
1996 06 20	691	0.3-	0.3+	1999 04 09	118	0.7-	0.5-	1999 04 17	703	0.2+	0.3+
1996 06 20	691	0.0	0.0	1999 04 09	118	0.7-	0.5-	1999 04 17	703	0.3+	0.0
1996 06 20	691	0.2-	0.0	1999 04 12	704	0.8+	0.7-	1999 04 17	118	1.2-	0.4+
1997 10 29	566	0.5+	0.6+	1999 04 12	704	0.5+	0.2-	1999 04 17	118	0.7-	0.1+
1997 10 29	566	0.5+	0.7+	1999 04 12	704	0.9+	0.1-	1999 04 17	118	0.6-	0.4+
1997 10 29	566	0.3+	0.4+	1999 04 12	704	0.8+	1.1-	1999 04 18	118	0.4-	0.8+
1999 03 19	691	0.8-	0.3-	1999 04 12	704	0.0	0.3-	1999 04 18	118	1.4-	1.0+
1999 03 19	691	0.8-	0.2-	1999 04 12	118	0.4+	0.3+	1999 04 18	118	0.8-	0.5+
1999 03 19	691	1.1-	0.3-	1999 04 12	118	0.4-	0.9+	1999 04 19	118	0.3-	0.1-
1999 03 22	699	0.8+	0.2+	1999 04 12	118	0.7-	0.6+	1999 04 19	118	0.1+	0.2-
1999 03 22	699	1.2+	0.3+	1999 04 14	118	0.1-	0.2+	1999 04 29	118	0.2+	0.2+
1999 03 22	699	(2.2+	0.1-)	1999 04 14	118	0.1-	0.3-	1999 04 29	118	0.3+	1.2+
1999 04 06	704	0.0	0.1-	1999 04 14	118	0.1+	0.0	1999 04 29	118	0.8+	1.5+

(10970)* 1079 T-2 = 1991 RQ₈ = 1991 RX₈

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. E. Bowell (*MPC* 19328), G. V. Williams (d, *ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	309.49739		(2000.0)	P	Q
<i>n</i>	0.21967174	ω	311.19576	+0.74621191	+0.66569632
<i>a</i>	2.7203196	Ω	7.07180	-0.60057229	+0.67579508
<i>e</i>	0.1304403	<i>i</i>	1.87363	-0.28719456	+0.31646393
<i>P</i>	4.49	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1951 11 28	675	0.1+	0.2+	1991 11 07	675	0.4+	1.3-	1999 05 10	704	1.5-	0.3-
1951 11 28	675	0.0	0.1-	1991 11 07	675	0.3+	0.7-	1999 05 10	704	0.4+	0.3-
1973 09 19	675	0.9+	1.3-	1991 11 09	675	(2.3-	1.7-)	1999 05 10	704	0.5-	0.3+
1973 09 19	675	0.5-	0.4+	1991 11 09	675	0.2-	1.0-	1999 05 10	704	0.1+	1.6-
1973 09 20	675	1.0+	1.1-	1994 03 14	675	0.1-	1.4-	1999 05 10	704	1.1-	0.0
1973 09 24	675	0.8-	1.4-	1994 04 03	675	0.3-	0.9+	1999 05 13	704	0.0	0.2-
1973 09 24	675	0.4-	1.4-	1994 04 03	675	1.1-	0.4+	1999 05 13	704	0.7+	0.8+
1973 09 25	675	0.0	1.3-	1998 02 26	566	0.2-	0.6-	1999 05 13	704	0.5-	0.3+
1973 09 25	675	0.6-	0.1-	1998 02 26	566	0.3-	0.3-	1999 05 13	704	1.3-	0.1-
1973 09 29	675	1.4+	0.5-	1998 02 26	566	0.6-	0.5-	1999 05 13	704	0.5-	0.9-
1973 09 29	675	0.1+	0.8-	1998 03 03	704	0.8-	1.1-	1999 05 18	704	0.2-	1.7-
1973 09 30	675	0.4-	0.6-	1998 03 03	704	0.0	1.2-	1999 05 18	704	1.3+	0.5-
1973 09 30	675	0.1+	0.2+	1998 03 03	704	0.4-	0.8-	1999 05 18	704	0.4-	0.6-
1973 10 04	675	1.1+	0.4-	1998 03 03	704	0.2+	1.7-	1999 05 18	704	1.5-	1.2-
1973 10 04	675	0.7+	0.2+	1998 03 03	704	(5.2-	1.7-)	1999 05 18	704	0.3-	0.5-
1973 10 05	675	0.7-	0.3+	1998 03 04	704	1.0-	0.2-	1999 06 09	704	0.0	0.5-
1973 10 05	675	0.8+	0.6+	1998 03 04	704	0.5+	0.5-	1999 06 09	704	0.3-	0.1+
1981 05 08	675	0.4+	2.2-	1998 03 04	704	0.5-	0.0	1999 06 09	704	0.7+	0.8+
1981 05 09	675	(4.0+	0.6+)	1998 03 04	704	0.3+	0.7-	1999 06 09	704	0.4-	0.0
1991 09 11	675	0.2+	0.6-	1998 03 04	704	0.7+	0.4+	1999 06 09	704	1.4-	0.9+
1991 09 11	675	0.7-	0.5-	1999 04 20	704	1.7+	0.4-	1999 06 15	704	0.1-	0.8+
1991 09 13	400	1.1+	0.5+	1999 04 20	704	(2.3+	1.1-)	1999 06 15	704	1.2+	0.2-

1991 09 13	400	0.7+	1.5+	1999 04 20	704	1.2+	1.8+	1999 06 15	704	0.5+	0.2-
1991 09 14	675	0.1-	0.1-	1999 04 20	704	0.6+	1.1-	1999 06 15	704	0.5+	0.5+
1991 09 14	675	0.1-	0.2+	1999 04 20	704	0.3+	0.7+	1999 06 15	704	0.1+	0.3+

(10971)* 1179 T-2 = 3217 T-3

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. C. J. van Houten (*MPC* 14963)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	10.77238		(2000.0)	P	Q
<i>n</i>	0.25734313	ω	33.62416	-0.38157194	+0.92417933
<i>a</i>	2.4479037	Ω	213.95383	-0.85469891	-0.35984395
<i>e</i>	0.1636243	<i>i</i>	1.76350	-0.35198384	-0.12808165
<i>P</i>	3.83	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1973 09 19	675	0.6+	0.8-	1991 03 09	675	1.2-	0.1-	1999 04 17	704	1.3-	0.9-
1973 09 19	675	1.5-	1.9-	1991 03 09	675	0.0	0.7-	1999 04 17	704	0.5-	0.3-
1973 09 20	675	0.7-	0.3+	1996 09 16	910	1.0-	0.8+	1999 04 20	704	0.6-	0.1+
1973 09 24	675	1.1-	0.9-	1996 09 16	910	0.7-	0.7+	1999 04 20	704	0.4+	0.1-
1973 09 24	675	0.6+	0.1+	1996 09 16	910	0.7-	0.5+	1999 04 20	704	0.5-	0.3+
1973 09 25	675	2.3-	0.1+	1996 12 06	046	0.3-	0.2-	1999 04 20	704	1.6-	1.8+
1973 09 29	675	0.5+	0.9+	1996 12 06	046	0.5-	0.8+	1999 04 20	704	(1.9-	2.0+)
1973 09 29	675	1.1+	0.5-	1996 12 06	046	0.6-	0.6+	1999 05 10	704	0.5+	0.6-
1973 09 30	675	0.2-	0.2-	1996 12 06	046	0.5-	0.8+	1999 05 10	704	0.1-	0.6-
1973 09 30	675	0.2-	0.3-	1996 12 08	709	0.6-	0.7+	1999 05 10	704	0.1-	0.3-
1973 10 04	675	1.3+	2.1-	1996 12 08	709	0.3-	0.6+	1999 05 10	704	0.6+	0.3-
1973 10 04	675	0.7+	0.5-	1996 12 08	709	0.2+	0.4+	1999 05 10	704	0.3-	0.4-
1973 10 05	675	(2.9+	0.5-)	1996 12 08	709	0.4-	0.4+	1999 05 13	704	0.0	0.1-
1973 10 05	675	1.2+	0.4-	1996 12 08	709	0.2-	0.2+	1999 05 13	704	1.1-	0.1+
1977 10 07	675	1.8+	0.3-	1996 12 08	709	0.3-	0.2+	1999 05 13	704	0.6-	1.0-
1977 10 11	675	0.5-	0.0	1996 12 08	709	0.6-	0.7+	1999 05 13	704	0.3+	0.3-
1977 10 11	675	1.1-	0.0	1996 12 08	684	0.2-	0.9+	1999 05 13	704	0.6-	0.2-
1977 10 12	675	0.8+	0.2+	1996 12 08	684	1.0-	0.7+	1999 05 17	703	1.1+	0.3+
1977 10 12	675	1.6+	1.0-	1996 12 08	684	1.0-	0.7+	1999 05 17	703	0.5+	0.8+
1977 10 16	675	(3.2+	3.5-)	1996 12 09	684	0.6-	0.5+	1999 05 17	703	1.0+	1.0+
1977 10 16	675	0.5+	0.1+	1996 12 09	684	0.2-	0.6+	1999 05 17	703	0.3+	1.6+
1977 10 16	675	(1.5+	3.9-)	1996 12 09	684	0.6-	0.5+	1999 05 18	704	0.0	0.1-
1977 10 16	675	0.4+	0.4-	1996 12 12	046	1.5+	0.1+	1999 05 18	704	0.1+	0.1+
1977 10 17	675	0.4+	2.3-	1996 12 12	046	1.2+	0.8+	1999 05 18	704	0.4-	0.5+
1977 10 17	675	0.5-	0.7+	1996 12 12	046	0.6+	1.2+	1999 05 18	704	0.2+	0.6+
1977 10 17	675	1.8+	2.2-	1996 12 12	046	0.3+	0.3+	1999 05 18	704	1.1-	1.0+
1977 10 17	675	0.2+	0.5-	1999 04 15	704	0.8-	0.2+	1999 05 19	704	0.0	0.2+
1977 10 21	675	0.3-	0.2+	1999 04 15	704	1.0+	0.5-	1999 05 19	704	0.5+	0.5-
1977 10 21	675	0.7-	0.5-	1999 04 15	704	0.6-	0.4-	1999 05 19	704	1.6+	0.5-
1977 10 22	675	0.8+	0.7+	1999 04 15	704	1.4+	1.9-	1999 05 19	704	1.3+	0.4+
1977 10 22	675	1.6+	2.1-	1999 04 17	704	0.2-	1.4-				

(10972)* 1188 T-2 = 1991 GM₅ = 2424 T-3

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. T. Kobayashi (*MPC* 15077), S. Nakano (*MPC* 18446)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	47.69240		(2000.0)	P	Q
n	0.25726599	ω	338.93067	-0.76220023	+0.64636377
a	2.4483930	Ω	241.38784	-0.58798090	-0.71424268
e	0.0956921	i	2.32166	-0.27079379	-0.26846095
P	3.83	H	14.1	G 0.15	U 2

1973 09 29	675	0.2+	0.6+	1991 04 10	809	1.9-	0.8-	1999 05 18	704	1.9+	1.6+
1973 09 29	675	1.2+	0.6-	1991 04 10	809	(2.3-	0.9-)	1999 05 19	704	0.9-	1.0+
1973 09 30	675	0.5+	0.2+	1991 04 19	809	(2.5+	1.0+)	1999 05 19	704	1.5-	0.5-
1973 09 30	675	1.3+	1.8-	1991 04 19	809	1.7+	0.9+	1999 05 19	704	0.4+	0.2+
1973 10 04	675	(2.2+	1.7-)	1991 04 19	809	1.6+	1.2+	1999 06 09	704	0.4-	0.4+
1973 10 04	675	2.0+	1.1-	1991 04 19	675	0.0	0.6-	1999 06 09	704	1.0+	1.0+
1973 10 05	675	0.2+	1.6-	1991 04 19	675	0.4+	0.8-	1999 06 09	704	0.2-	1.0-
1973 10 05	675	1.4+	1.4-	1991 05 15	675	0.8+	0.4-	1999 06 09	704	0.2-	0.0
1977 10 16	675	(0.3+	3.5-)	1991 05 15	675	0.7+	0.1-	1999 06 09	704	0.3-	1.4-
1977 10 16	675	1.1+	1.8-	1991 05 17	675	0.2+	0.0	1999 06 15	704	0.3-	0.5-
1977 10 17	675	0.2-	0.7-	1991 05 17	675	0.0	0.6+	1999 06 15	704	0.5+	0.4-
1977 10 17	675	0.2-	0.5-	1996 10 04	809	(3.1-	1.2+)	1999 06 15	704	0.7-	0.1+
1977 10 21	675	1.9+	1.4-	1996 10 04	809	(2.8-	0.3-)	1999 06 15	704	0.1-	0.3+
1977 10 21	675	(2.5+	3.0-)	1996 10 04	809	(5.0-	0.8+)	1999 06 15	704	0.2+	0.1-
1977 10 22	675	0.5-	0.1-	1996 10 05	809	0.3-	1.5+				

(10973)* 1210 T-2 = 1992 ED

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. S. Nakano (*MPC* 19881)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>	<i>Q</i>
<i>n</i>	0.29351147	ω	233.25966	-0.74796468	+0.66361948
<i>a</i>	2.2424322	Ω	348.29898	-0.58750319	-0.67074912
<i>e</i>	0.0783003	<i>i</i>	3.55360	-0.30885083	-0.33121715
<i>P</i>	3.36	<i>H</i>	14.1	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1973 09 19	675	0.5+	2.0-	1993 08 13	675	1.2-	1.0-	1999 04 20	704	0.8-	0.1-
1973 09 19	675	0.2-	1.5-	1993 08 18	010	(0.3-	2.3+)	1999 04 20	704	0.1-	0.4+
1973 09 20	675	0.2-	0.8-	1993 08 19	010	1.8+	0.7+	1999 04 20	704	0.3-	0.2-
1973 09 24	675	0.7-	1.3-	1993 08 19	010	1.3+	1.1+	1999 04 21	426	0.2+	0.4-
1973 09 24	675	0.4-	0.6-	1993 08 19	010	0.7+	1.0+	1999 04 21	426	0.1+	0.4-
1973 09 25	675	(1.4-	2.4-)	1993 09 10	691	1.0-	0.1+	1999 04 21	426	0.2+	0.5-
1973 09 25	675	0.2-	0.1+	1993 09 10	691	0.7-	0.2-	1999 04 22	426	0.1+	0.6-
1973 09 29	675	0.8+	0.5-	1993 09 10	691	0.8-	0.0	1999 04 22	426	0.1+	0.3-
1973 09 29	675	1.5+	0.7-	1996 06 05	689	(25.2+	11.8+)	1999 04 22	426	0.0	0.2-
1973 09 30	675	0.6+	0.3+	1997 12 04	704	(2.7-	1.9-)	1999 05 10	704	0.4+	0.5-
1973 09 30	675	1.1+	0.1-	1997 12 04	704	0.8-	0.9+	1999 05 10	704	0.0	0.5-
1973 10 04	675	(3.2+	2.3-)	1997 12 04	704	0.1+	0.0	1999 05 10	704	0.1+	0.4-
1973 10 04	675	(2.4+	0.8-)	1997 12 04	704	0.7-	0.2-	1999 05 10	704	1.0+	1.9-
1973 10 05	675	(2.5+	2.0-)	1997 12 06	704	(2.5-	1.3+)	1999 05 13	704	0.1+	0.4-
1973 10 05	675	1.9+	2.1-	1997 12 06	704	0.4-	0.5-	1999 05 13	704	0.1-	0.0
1992 03 02	399	0.9-	0.2-	1997 12 06	704	1.8+	0.4+	1999 05 13	704	0.7-	0.4+
1992 03 02	399	1.6-	0.3-	1997 12 06	704	0.2-	0.1-	1999 05 13	704	1.1+	0.4-
1992 03 03	399	0.5-	0.0	1999 04 15	704	0.9-	0.1+	1999 05 13	704	(3.0-	1.8-)
1992 03 03	399	2.0-	1.2-	1999 04 15	704	0.5-	1.0+	1999 05 18	704	0.0	0.5-
1992 03 07	894	1.2+	0.0	1999 04 15	704	0.4-	0.8+	1999 05 18	704	1.3+	0.2-
1992 03 07	894	0.4+	0.2-	1999 04 15	704	0.5-	1.1+	1999 05 18	704	0.4-	1.3+
1992 03 08	894	0.2+	1.0-	1999 04 17	699	0.0	0.0	1999 05 18	704	0.4-	0.6+
1992 03 08	894	0.9+	0.5-	1999 04 17	699	0.1+	0.3-	1999 05 19	704	0.3-	0.7-
1992 04 01	801	0.8+	1.1-	1999 04 17	704	0.5-	0.1-	1999 05 19	704	0.1-	0.3-
1992 04 01	801	0.4+	0.8-	1999 04 17	699	0.0	0.5+	1999 05 19	704	0.4+	0.4+
1992 04 01	801	0.5+	0.8-	1999 04 17	704	0.5-	0.5+	1999 05 19	704	0.5+	0.8-
1992 04 03	033	0.6-	0.1-	1999 04 17	704	(2.2+	0.6+)	1999 05 19	704	0.6+	0.2-
1992 04 03	033	1.6-	0.0	1999 04 20	704	0.1-	0.5+				
1993 08 13	675	0.7-	0.4-	1999 04 20	704	0.7-	0.3+				

(10974)* 2225 T-2 = 1991 FJ₅ = 3087 T-3

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. D. W. E. Green (*MPC* 14966), G. V. Williams (*MPC* 34568)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>	<i>Q</i>
<i>n</i>	0.25586549	ω	200.80151	-0.79479882	+0.60677681
<i>a</i>	2.4573192	Ω	16.56910	-0.55130594	-0.71446783
<i>e</i>	0.1351000	<i>i</i>	2.17138	-0.25368602	-0.34836421
<i>P</i>	3.85	<i>H</i>	14.6	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1973 09 19	675	1.5+	2.0-	1991 03 21	808	(3.4-	0.4-)	1999 05 13	704	0.3+	0.8-
1973 09 19	675	2.4+	2.0-	1991 03 21	808	(7.8-	1.5+)	1999 05 13	704	0.4+	0.7-
1973 09 20	675	(3.0+	3.0-)	1996 09 15	691	0.6+	0.0	1999 05 13	704	0.7-	0.6+
1973 09 24	675	1.2-	0.4+	1996 09 15	691	0.2+	0.5+	1999 05 18	704	0.1-	0.2+
1973 09 24	675	1.0-	1.8+	1996 09 15	691	0.3+	0.4+	1999 05 18	704	0.1-	0.2+
1973 09 25	675	1.5+	1.0-	1996 09 19	691	0.4+	0.4+	1999 05 18	704	0.3-	0.9+
1973 09 25	675	0.2-	2.4-	1996 09 19	691	0.4+	0.3+	1999 05 18	704	0.9+	0.2+
1973 09 29	675	0.3+	0.7+	1996 09 19	691	0.5+	0.5+	1999 05 18	704	0.8-	0.7+
1973 09 29	675	1.1-	0.5+	1996 10 06	809	1.5-	0.6+	1999 05 19	704	0.1+	0.2+
1973 09 30	675	0.4+	0.6+	1996 10 06	809	0.8-	0.0	1999 05 19	704	0.7+	0.0
1973 09 30	675	0.3-	0.0	1996 10 06	809	1.2-	0.6+	1999 05 19	704	0.2-	1.5+
1973 10 04	675	1.1+	0.4-	1998 01 06	688	0.1-	0.0	1999 05 19	704	0.2-	0.9+
1973 10 04	675	0.6+	0.3+	1998 01 06	688	0.1+	0.2+	1999 05 19	704	0.4+	0.7+
1973 10 05	675	1.0+	0.4-	1998 01 07	688	0.3+	0.1-	1999 06 09	704	0.8+	0.4-
1973 10 05	675	1.2+	0.7-	1998 01 07	688	0.8+	0.1-	1999 06 09	704	0.1+	0.2-
1977 10 12	675	1.9-	0.9+	1998 01 07	688	0.2-	0.4+	1999 06 09	704	0.0	0.0
1977 10 12	675	1.3-	1.0+	1999 02 26	704	0.1-	0.2-	1999 06 09	704	0.1+	0.7+
1977 10 16	675	0.2-	1.4-	1999 02 26	704	(2.1+	0.0)	1999 06 09	704	1.0-	0.0
1977 10 16	675	0.1+	1.7-	1999 05 10	704	(2.1+	0.8-)	1999 06 15	704	0.3+	0.9-
1977 10 17	675	0.2+	0.5+	1999 05 10	704	1.2-	1.2-	1999 06 15	704	0.2-	0.2-
1977 10 17	675	1.2-	0.2+	1999 05 10	704	(1.1-	2.4-)	1999 06 15	704	0.5+	0.2-
1977 10 21	675	0.3-	0.9+	1999 05 13	704	0.2+	0.1+	1999 06 15	704	0.4+	0.2-
1977 10 21	675	1.5-	1.9+	1999 05 13	704	0.7-	0.2-	1999 06 15	704	0.0	0.5-

(10975)* 2246 T-2 = 1995 OW

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. S. Nakano (*MPC* 25536)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>	<i>Q</i>
<i>n</i>	0.22079214	ω	126.91644	+0.68958173	+0.72416833
<i>a</i>	2.7111090	Ω	186.69612	-0.68337971	+0.64721125
<i>e</i>	0.1997314	<i>i</i>	3.72104	-0.23972734	+0.23811308
<i>P</i>	4.46	<i>H</i>	14.4	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1973 09 19	675	0.6-	0.1+	1991 10 13	691	0.4-	0.7+	1999 05 13	704	0.7-	0.4+
1973 09 19	675	0.4+	0.3-	1991 10 13	691	0.3-	0.5+	1999 05 14	704	0.5+	0.3-
1973 09 20	675	(3.1+	2.2-)	1995 07 26	358	0.2+	0.2+	1999 05 14	704	(2.4+	0.2-)
1973 09 24	675	0.5-	1.3+	1995 07 26	358	1.0+	0.3-	1999 05 14	704	1.3-	0.9+
1973 09 24	675	1.3-	0.4+	1995 07 27	358	0.0	0.1-	1999 05 14	704	0.4-	0.5+
1973 09 25	675	0.5+	1.7-	1995 07 27	358	0.3+	0.5+	1999 05 14	704	0.8+	0.5-
1973 09 25	675	0.8+	1.7-	1998 03 04	704	0.0	0.3-	1999 05 19	704	0.5-	0.0
1973 09 29	675	0.1+	0.7+	1998 03 04	704	0.7+	0.3+	1999 05 19	704	0.3+	1.0-
1973 09 29	675	0.1-	0.6+	1998 03 04	704	0.5+	0.9-	1999 05 19	704	0.4+	1.1-
1973 09 30	675	0.3+	1.1-	1998 03 04	704	(1.8-	3.1-)	1999 05 19	704	0.4+	1.6-
1973 09 30	675	0.0	0.8-	1998 03 04	704	(4.0-	1.0-)	1999 05 19	704	1.1-	1.2-
1973 10 04	675	0.3-	0.2-	1999 05 10	704	0.9-	1.0-	1999 06 09	704	(2.2+	2.3-)
1973 10 04	675	0.5+	0.3+	1999 05 10	704	0.1-	0.5+	1999 06 09	704	0.9+	0.2+
1973 10 05	675	0.5+	0.1-	1999 05 10	704	0.0	1.8+	1999 06 09	704	0.9-	2.1-
1973 10 05	675	0.6+	0.1-	1999 05 10	704	0.5-	0.6+	1999 06 09	704	0.3+	0.2+
1991 09 29	691	0.3-	0.7+	1999 05 10	704	0.0	0.5+	1999 06 14	704	0.4+	0.5-
1991 09 29	691	0.3-	0.6+	1999 05 13	704	1.0-	0.7+	1999 06 14	704	0.3+	0.5+
1991 09 29	691	0.6-	1.1+	1999 05 13	704	0.4+	1.7+	1999 06 14	704	0.5+	0.3-
1991 10 07	675	0.1-	0.7-	1999 05 13	704	0.2-	0.5+	1999 06 14	704	0.5+	0.5+
1991 10 13	691	0.3-	0.8+	1999 05 13	704	0.3+	0.9+	1999 06 14	704	0.1+	0.8+

(10976)* 2287 T-2 = 1991 RD₁₅

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. E. Bowell (*MPC* 19690)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 254.25707		(2000.0)		P		Q	
<i>n</i>	0.21758618	ω	194.74412	+0.98633665	−0.16444570		
<i>a</i>	2.7376747	Ω	174.69119	+0.15988786	+0.94109729		
<i>e</i>	0.0221354	<i>i</i>	6.13024	+0.03969742	+0.29545475		
<i>P</i>	4.53	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1973 09 20	675	(2.4+ 3.3−)	1991 09 15	675	0.3+ 1.0−	1999 05 10	704	0.5+ 0.1+
1973 09 24	675	0.7+ 0.1−	1991 09 15	675	1.7+ 1.9−	1999 05 10	704	0.7+ 0.4−
1973 09 24	675	0.1+ 0.1−	1998 01 28	566	0.4− 0.1−	1999 05 13	704	0.6− 0.1+
1973 09 25	675	(2.9+ 4.1−)	1998 01 28	566	0.3− 0.2−	1999 05 13	704	0.4− 0.5+
1973 09 25	675	(3.2+ 3.2−)	1998 01 28	566	0.4− 0.0	1999 05 13	704	0.8+ 0.1−
1973 09 29	675	1.1+ 0.8−	1998 02 24	566	0.4+ 0.6−	1999 05 13	704	0.2+ 0.6+
1973 09 29	675	(1.5+ 2.8−)	1998 02 24	566	1.2− 1.5−	1999 05 18	704	0.1+ 0.3−
1973 09 29	675	0.1+ 1.5−	1998 02 24	566	1.3− 1.0−	1999 05 18	704	0.4− 0.4−
1973 09 29	675	1.6+ 2.1−	1998 03 03	704	0.3+ 0.4−	1999 05 18	704	0.1+ 0.2+
1973 09 30	675	(1.1− 3.8−)	1998 03 03	704	0.3+ 0.4−	1999 05 19	704	0.1+ 0.5+
1973 09 30	675	0.4+ 0.2+	1998 03 03	704	0.4− 0.7−	1999 05 19	704	0.3− 0.3−
1973 09 30	675	0.6− 1.6−	1998 03 03	704	0.4− 1.0−	1999 05 19	704	1.6− 0.5−
1973 09 30	675	0.5+ 0.9+	1998 03 03	704	0.7− 0.4+	1999 05 19	704	0.1− 1.1−
1973 10 04	675	0.7+ 0.9+	1998 03 04	704	0.9− 0.8−	1999 06 09	704	0.3− 0.4−
1973 10 04	675	1.2− 1.1+	1998 03 04	704	0.7+ 0.8−	1999 06 09	704	0.0 0.1−
1973 10 04	675	0.4− 0.2−	1998 03 04	704	0.6+ 0.3+	1999 06 09	704	0.6− 0.4−
1973 10 04	675	0.9− 1.4+	1998 03 04	704	0.1− 0.3−	1999 06 09	704	0.7− 0.2−
1973 10 05	675	0.6+ 0.5−	1998 03 04	704	0.5+ 0.3−	1999 06 09	704	0.6+ 0.5−
1973 10 05	675	1.8− 0.9+	1998 04 20	688	0.5+ 0.3−	1999 06 14	704	0.4+ 0.0
1973 10 05	675	1.5+ 1.3−	1998 04 20	688	0.7+ 0.5−	1999 06 14	704	0.3+ 0.0
1973 10 05	675	1.6− 0.1−	1998 04 20	688	0.5+ 0.3−	1999 06 14	704	0.2+ 0.0
1991 09 11	675	1.6+ 0.6−	1999 05 09	120	0.1+ 0.2−	1999 06 14	704	0.4+ 0.4−
1991 09 11	675	0.6− 1.8−	1999 05 10	120	0.4+ 0.1+	1999 06 14	704	0.1+ 0.4−
1991 09 14	033	1.2− 0.1−	1999 05 10	120	0.6− 0.5+			
1991 09 14	033	(3.0− 0.6−)	1999 05 10	704	0.1− 1.1−			

(10977)* 3177 T-2 = 1988 AM₅ = 1996 NJ

Discovered 1973 Sept. 30 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPC* 27565)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 71.29166		(2000.0)		P		Q	
<i>n</i>	0.29446702	ω	114.29086	−0.97294097	+0.22983275		
<i>a</i>	2.2375785	Ω	79.00331	−0.21978415	−0.88892013		
<i>e</i>	0.0243407	<i>i</i>	1.38479	−0.07127974	−0.39622962		
<i>P</i>	3.35	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1973 09 19	675	1.1− 0.2+	1988 01 11	033	0.4+ 0.2+	1999 05 13	704	1.8− 0.1−
1973 09 19	675	1.7+ 2.3+	1988 01 11	033	0.4− 0.3−	1999 05 13	704	0.4− 0.1+
1973 09 19	675	1.9− 1.1+	1996 07 14	566	0.1+ 0.3−	1999 05 13	704	0.7− 0.4−
1973 09 19	675	0.3− 1.5+	1996 07 14	566	0.9+ 0.2−	1999 05 18	704	0.2− 0.4+
1973 09 20	675	(3.6− 0.3+)	1996 07 14	566	0.1+ 0.1−	1999 05 18	704	0.1+ 0.1−
1973 09 20	675	0.5− 1.4+	1996 07 14	566	0.2− 0.0	1999 05 18	704	0.6− 0.2−
1973 09 24	675	1.1− 1.4−	1996 07 14	566	0.3− 0.2−	1999 05 19	704	0.9+ 1.1−
1973 09 24	675	1.3+ 0.8+	1996 07 14	566	0.2+ 0.4+	1999 05 19	704	1.1− 0.4+
1973 09 24	675	0.8− 1.4−	1996 07 15	566	0.2− 0.1+	1999 05 19	704	0.1+ 0.2+
1973 09 24	675	1.6− 1.4+	1996 07 15	566	0.8+ 0.6+	1999 05 19	704	(2.8− 0.8−)
1973 09 25	675	0.3+ 0.9+	1996 07 15	566	0.4+ 0.9+	1999 06 09	704	0.3+ 1.2−
1973 09 25	675	0.5− 1.3−	1996 07 23	566	0.0 0.6−	1999 06 09	704	0.6+ 0.3−
1973 09 25	675	1.0− 1.6+	1996 07 23	566	0.3− 0.5−	1999 06 09	704	0.1+ 0.4−
1973 09 29	675	1.1+ 1.2−	1996 07 23	566	0.4− 0.6−	1999 06 09	704	0.4− 1.6−

1973 09 29	675	0.0 0.6−	1996 08 09	566	0.2− 1.5+	1999 06 09	704	(1.3+ 2.2−)
1973 09 30	675	0.1+ 2.2−	1996 08 09	566	0.9− 1.6+	1999 06 15	704	0.4+ 0.6−
1973 09 30	675	0.3+ 0.8−	1996 08 09	566	0.5− 1.3+	1999 06 15	704	0.5+ 0.6−
1973 10 04	675	(0.7+ 2.8−)	1999 05 10	704	0.6+ 1.6+	1999 06 15	704	0.2+ 0.3−
1973 10 04	675	1.5+ 1.8−	1999 05 10	704	0.0 0.1+	1999 06 15	704	0.2+ 0.2+
1973 10 05	675	2.1− 2.1−	1999 05 10	704	0.4− 0.3−	1999 06 15	704	0.3+ 0.1+
1973 10 05	675	1.9+ 1.9−	1999 05 10	704	(0.1− 2.1+)			

(10978)* 4095 T-2 = 1993 FX₃₂

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPC* 30467)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 347.02743		(2000.0)		P		Q	
<i>n</i>	0.18177276	ω	103.68133	+0.21914286	+0.97568022		
<i>a</i>	3.0863856	Ω	178.93891	−0.96619901	+0.21771387		
<i>e</i>	0.1332674	<i>i</i>	15.50621	−0.13577879	+0.02547108		
<i>P</i>	5.42	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1973 09 19	675	0.4− 0.5−	1993 03 20	809	(0.5+ 3.1−)	1999 06 06	703	0.2− 0.7+
1973 09 19	675	0.3+ 0.5−	1993 03 24	809	0.6− 0.9−	1999 06 08	704	1.0− 0.3−
1973 09 19	675	0.1+ 1.4−	1993 04 16	413	0.7+ 1.2−	1999 06 08	704	0.1− 0.6−
1973 09 19	675	0.2− 0.5+	1998 03 20	704	1.2− 0.4−	1999 06 08	704	0.4− 0.4+
1973 09 20	675	0.3− 0.4+	1998 03 20	704	0.7+ 1.2−	1999 06 08	704	0.9− 0.3+
1973 09 24	675	1.1− 0.7+	1998 03 20	704	0.4+ 0.4+	1999 06 08	704	0.2+ 0.5−
1973 09 24	675	0.5− 1.4+	1998 03 20	704	0.2− 0.1−	1999 06 12	704	0.6+ 0.6−
1973 09 25	675	0.5− 0.2+	1999 05 12	704	0.9+ 0.7−	1999 06 12	704	0.2− 0.1+
1973 09 25	675	0.1− 0.5−	1999 05 12	704	0.3− 1.5−	1999 06 12	704	0.3+ 0.1+
1973 09 29	675	1.8+ 1.8−	1999 05 12	704	0.8+ 0.8+	1999 06 12	704	0.4− 0.3+
1973 09 29	675	(1.8+ 3.4−)	1999 05 12	704	0.3− 0.6+	1999 06 12	704	0.4− 0.8+
1973 09 30	675	0.8+ 1.7−	1999 05 17	704	0.2− 0.8−	1999 06 14	704	0.5− 0.1−
1973 09 30	675	1.0+ 1.8−	1999 05 17	704	1.6+ 0.8−	1999 06 14	704	0.6− 0.4+
1973 10 04	675	0.1− 0.8−	1999 05 17	704	1.2− 0.8−	1999 06 14	704	0.0 0.0
1973 10 04	675	0.2− 1.5+	1999 05 17	704	(2.8− 0.4+)	1999 06 14	704	0.3− 0.2+
1973 10 05	675	0.2+ 0.1+	1999 06 06	703	1.4+ 1.2+	1999 06 14	704	0.3− 0.1+
1973 10 05	675	0.1− 0.2+	1999 06 06	703	0.3− 0.3+			
1993 03 19	809	0.4− 0.3−	1999 06 06	703	1.8+ 0.2+			

(10979)* 4171 T-2 = 4386 T-3

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. D. W. E. Green (*MPC* 14970), C. J. van Houten (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 355.88523		(2000.0)		P		Q	
<i>n</i>	0.25588584	ω	119.62533	−0.20147651	+0.97740350		
<i>a</i>	2.4571889	Ω	138.59374	−0.92878614	−0.16990417		
<i>e</i>	0.0826468	<i>i</i>	5.54859	−0.31106836	−0.12575761		
<i>P</i>	3.85	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1973 09 19	675	1.1+ 1.1−	1977 10 22	675	0.6− 1.2+	1999 05 13	704	0.5− 0.5−
1973 09 19	675	0.8+ 1.3−	1995 03 28	691	0.7− 1.1−	1999 05 13	704	0.4− 0.4+
1973 09 20	675	(3.0− 1.1+)	1995 03 28	691	0.5− 0.9−	1999 05 13	704	0.1+ 0.8+
1973 09 24	675	0.2+ 0.3+	1995 03 28	691	0.3− 1.0−	1999 05 17	704	0.6+ 0.7+
1973 09 24	675	(0.1+ 3.5+)	1995 03 29	691	0.2− 0.6−	1999 05 17	704	0.8+ 0.8−
1973 09 25	675	0.2− 0.4−	1995 03 29	691	0.1+ 1.0−	1999 05 17	704	1.3+ 1.3+
1973 09 25	675	1.4− 0.2−	1995 03 29	691	0.4− 1.0−	1999 05 17	704	1.0− 0.3+
1973 09 29	675	0.9+ 1.1−	1999 04 19	704	0.9− 0.5−	1999 05 17	704	1.5+ 1.9−
1973 09 29	675	1.0+ 1.6−	1999 04 19	704	0.3− 0.2+	1999 05 18	704	0.5− 0.1+
1973 09 30	675	0.2+ 0.6+	1999 04 19	704	0.8− 0.2+	1999 05 18	704	0.0 0.0
1973 09 30	675	1.0− 1.4+	1999 04 19	704	0.1+ 0.5−	1999 05 18	704	0.8+ 0.5+
1977 10 16	675	0.6− 0.1−	1999 05 12	704	0.1+ 0.0	1999 05 18	704	0.6+ 0.2+
1977 10 16	675	0.2+ 0.3−	1999 05 12	704	1.6− 0.8−	1999 06 10	704	0.2+ 0.4+
1977 10 17	675	0.5+ 0.8−	1999 05 12	704	0.5+ 0.3+	1999 06 10	704	0.4−

1977 10 17	675	1.1−	1.8−	1999 05 12	704	0.2−	0.4+	1999 06 10	704	0.8+	0.9−
1977 10 21	675	1.1+	0.3−	1999 05 13	704	0.3−	0.7+	1999 06 10	704	0.3+	0.2−
1977 10 21	675	0.8+	0.6+	1999 05 13	704	0.1+	0.6+				

(10980)* 4294 T-2 = 1995 BU₁

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. T. Kobayashi (*MPC* 24910)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	174.19141	(2000.0)	P	Q	
<i>n</i>	0.29081729	ω	325.99531	+0.30104324	−0.95241611
<i>a</i>	2.2562605	Ω	106.44450	+0.88561502	+0.26067318
<i>e</i>	0.1196679	<i>i</i>	2.85152	+0.35363682	+0.15796532
<i>P</i>	3.39	<i>H</i>	14.7	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1951 02 04	675	1.7−	1.3+	1997 11 29	704	(2.2−	0.1−)	1999 05 09	714	0.1−	0.6−
1951 02 04	675	1.0+	1.0−	1997 11 29	704	1.8−	0.1−	1999 05 10	704	0.0	0.2−
1973 09 29	675	0.5+	1.1−	1997 11 29	704	1.4−	0.6+	1999 05 10	704	0.3−	0.6+
1973 09 29	675	1.1−	0.5−	1997 11 29	704	(2.9−	0.9+)	1999 05 10	704	1.2+	0.1−
1973 09 30	675	1.5+	0.4−	1997 11 29	704	(2.6−	0.7+)	1999 05 10	704	0.7−	0.0
1973 09 30	675	0.5+	0.3+	1997 11 30	372	0.7−	0.7+	1999 05 10	704	0.5−	0.2+
1973 10 04	675	1.3+	0.4−	1997 12 04	704	0.6−	1.5+	1999 05 13	704	1.1+	0.9−
1973 10 04	675	0.8+	0.9−	1997 12 04	704	1.2+	1.1+	1999 05 13	704	0.4−	0.1−
1973 10 05	675	1.5−	0.1−	1997 12 04	704	(0.0	2.6+)	1999 05 13	704	0.7+	0.3−
1973 10 05	675	0.1+	0.5+	1997 12 04	704	0.1+	1.3+	1999 05 13	704	0.3+	0.5−
1995 01 27	411	0.4+	0.3−	1997 12 04	372	2.0−	0.4+	1999 05 18	704	0.7+	0.6+
1995 01 27	411	0.2+	0.8−	1997 12 05	372	0.1−	1.7+	1999 05 18	704	0.6+	0.1−
1995 01 29	411	0.1−	0.4−	1999 04 19	704	0.1−	1.0+	1999 05 18	704	0.2+	1.2+
1995 01 29	411	0.3+	1.5−	1999 04 19	704	0.8+	1.5+	1999 05 18	704	0.4+	1.2+
1995 02 02	691	0.3−	0.6−	1999 04 19	704	0.2+	0.8+	1999 05 18	704	0.4+	1.0+
1995 02 02	691	0.3−	0.5−	1999 04 19	704	1.3−	0.4+	1999 06 07	703	0.3−	1.8+
1995 02 02	691	0.0	1.4−	1999 05 08	714	0.1+	0.1+	1999 06 07	703	0.4+	1.0+
1997 11 26	372	0.9+	0.2−	1999 05 08	714	0.5+	0.6+	1999 06 07	703	0.3−	0.3−
1997 11 26	372	0.7+	0.7+	1999 05 09	714	1.3−	0.4−	1999 06 07	703	1.0+	1.4−
1997 11 27	372	0.3+	0.1−	1999 05 09	714	1.7−	0.8−				

(10981)* 1148 T-3 = 1991 RX₂₇

Discovered 1977 Oct. 17 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. T. Kobayashi (*MPC* 21127)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	257.92955	(2000.0)	P	Q	
<i>n</i>	0.21080329	ω	81.05816	+0.98862293	+0.10509160
<i>a</i>	2.7960899	Ω	272.85732	−0.13985003	+0.90561050
<i>e</i>	0.2401014	<i>i</i>	6.18542	+0.05537746	+0.41088366
<i>P</i>	4.68	<i>H</i>	13.6	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1977 10 07	675	0.6+	0.2−	1991 09 17	095	(1.1−	2.1+)	1998 03 04	704	(4.4−	0.2−)
1977 10 11	675	0.6+	0.9+	1991 09 17	675	1.0+	0.1+	1999 04 15	704	0.1−	1.1+
1977 10 11	675	0.3+	1.2+	1991 09 17	675	0.3−	0.2+	1999 04 15	704	0.5+	0.9+
1977 10 12	675	0.5−	0.8+	1998 01 31	691	1.0−	0.3−	1999 04 15	704	1.8+	1.5−
1977 10 12	675	0.9−	1.2+	1998 01 31	691	1.0−	0.5−	1999 04 17	704	0.8+	0.4+
1977 10 16	675	1.3−	0.1−	1998 01 31	691	1.0−	0.2+	1999 04 17	704	0.5+	0.1−
1977 10 16	675	1.1−	1.2+	1998 02 02	691	0.4+	0.2+	1999 04 17	704	1.1+	0.4−
1977 10 17	675	0.6−	1.1+	1998 02 02	691	0.5+	0.1−	1999 04 17	704	0.4+	1.2−
1977 10 17	675	1.1−	0.7+	1998 02 02	691	0.5+	0.3−	1999 04 20	704	1.2−	1.7+
1977 10 22	675	0.4+	0.8−	1998 03 03	704	0.4+	0.6+	1999 04 20	704	0.0	1.0+
1977 10 22	675	1.4+	0.3−	1998 03 03	704	1.4−	0.3−	1999 04 20	704	0.4+	1.0+
1991 09 12	675	0.2+	0.1−	1998 03 03	704	0.0	0.7−	1999 04 20	704	1.1−	0.5+
1991 09 12	675	1.0−	0.7−	1998 03 03	704	(5.5−	1.1−)	1999 05 13	704	0.6−	0.9+
1991 09 14	675	0.4+	0.3+	1998 03 04	704	(3.7+	1.6+)	1999 05 13	704	(0.1+	2.4+)
1991 09 14	675	1.0+	0.1−	1998 03 04	704	0.0	1.2+	1999 05 13	704	0.7−	0.2−

1991 09 16	675	0.1−	1.1−	1998 03 04	704	0.7+	0.5+
1991 09 16	675	0.4−	0.9−	1998 03 04	704	1.7+	0.2+

(10982)* 2672 T-3 = 1981 ES₄₅

Discovered 1977 Oct. 11 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. C. M. Bardwell (*MPC* 12574)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Bardwell			
<i>M</i>	319.10857	(2000.0)	P	Q	
<i>n</i>	0.17172468	ω	121.82311	+0.79008018	+0.60756659
<i>a</i>	3.2056362	Ω	201.11721	−0.61050541	+0.76789644
<i>e</i>	0.2719850	<i>i</i>	13.06821	−0.05528523	+0.20297263
<i>P</i>	5.74	<i>H</i>	13.6	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1977 10 07	675	0.1−	0.5+	1981 03 08	413	0.4+	0.9−	1999 05 20	732	0.8−	0.2+
1977 10 07	675	0.7−	0.8+	1981 03 12	413	0.5−	0.5−	1999 05 20	732	1.6−	0.3+
1977 10 11	675	1.0+	0.3−	1981 05 01	413	1.2+	0.6−	1999 05 20	732	0.5−	0.5+
1977 10 11	675	1.8−	2.0+	1988 07 11	675	0.1+	1.1−	1999 05 20	732	0.1+	0.1−
1977 10 11	675	0.5+	0.2+	1988 07 11	675	1.2+	1.2−	1999 05 20	732	0.2+	0.3−
1977 10 11	675	(2.7−	1.7+)	1988 08 09	675	0.2+	0.0	1999 05 21	732	0.8−	0.2+
1977 10 12	675	0.8+	1.5+	1988 08 09	675	0.8−	0.9−	1999 05 21	732	0.7−	0.1−
1977 10 12	675	0.3+	0.5+	1993 04 17	675	0.3−	0.2−	1999 05 21	732	1.4−	1.2+
1977 10 12	675	0.1−	0.3+	1993 04 17	675	0.8−	0.6+	1999 06 06	703	0.6+	0.2−
1977 10 12	675	0.2−	0.7+	1999 05 12	704	0.3+	0.4−	1999 06 06	703	0.8+	0.1−
1977 10 16	675	0.1+	1.0−	1999 05 12	704	0.1−	0.8−	1999 06 06	703	1.3+	1.0+
1977 10 16	675	0.8+	0.7−	1999 05 12	704	0.7−	0.9−	1999 06 06	703	0.9+	0.7+
1977 10 17	675	0.0	2.2−	1999 05 12	704	0.3−	0.6−	1999 06 08	704	1.0+	1.3+
1977 10 17	675	0.8−	0.1+	1999 05 12	704	0.4−	0.1+	1999 06 08	704	0.3+	0.2+
1977 10 21	675	1.0−	0.3+	1999 05 17	704	0.5+	0.1+	1999 06 08	704	0.1−	0.8−
1977 10 21	675	0.6−	0.3+	1999 05 17	704	0.2+	1.1+	1999 06 08	704	1.4+	0.4−
1977 10 22	675	1.5+	0.8−	1999 05 17	704	0.0	0.4+	1999 06 14	704	0.0	0.1+
1977 10 22	675	(3.9+	0.1+)	1999 05 17	704	0.6−	0.2+	1999 06 14	704	1.0+	0.0
1981 02 09	413	2.0−	0.1+	1999 05 20	732	1.1−	0.1−	1999 06 14	704	0.3+	0.5−
1981 03 01	413	(4.0−	2.2+)	1999 05 20	732	0.3−	0.6−	1999 06 14	704	0.2+	0.9+
1981 03 01	413	0.8+	0.1−	1999 05 20	732	0.1+	0.2+	1999 06 14	704	1.0+	1.0+

(10983)* 3196 T-3 = 1992 SL₂

Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. B. G. Marsden (*MPC* 21127)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Marsden			
<i>M</i>	336.36973	(2000.0)	P	Q	
<i>n</i>	0.26123833	ω	225.24880	+0.58601972	+0.80929223
<i>a</i>	2.4235098	Ω	80.66769	−0.73140821	+0.54973496
<i>e</i>	0.1869250	<i>i</i>	2.34273	−0.34874477	+0.20697238
<i>P</i>	3.77	<i>H</i>	15.0	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1977 10 07	675	2.1+	1.8−	1992 09 27	033	0.4−	0.1+	1999 05 18	704	0.2−	0.8−
1977 10 11	675	(2.9−	1.3+)	1992 09 28	033	0.7−	0.3−	1999 05 18	704	0.1−	0.1−
1977 10 11	675	1.0−	1.2+	1996 09 21	327	0.1−	0.4+	1999 05 18	704	0.1+	1.2−
1977 10 12	675	1.4−	0.6−	1996 09 21	327	0.2−	0.0	1999 05 18	704	0.9−	1.9−
1977 10 12	675	0.8−	0.1+	1996 09 21	327	0.4−	0.2+	1999 05 18	704	0.3+	0.9−
1977 10 16	675	0.8+	0.2+	1996 09 23	327	0.2−	0.1+	1999 05 19	704	1.0−	0.3+
1977 10 16	675	1.1+	0.1−	1996 09 23	327	0.4+	1.1+	1999 05 19	704	0.5−	0.9+
1977 10 17	675	0.4+	0.4−	1996 09 23	327	0.5+	0.6+	1999 05 19	704	0.7−	0.7+
1977 10 17	675	0.9−	1.0−	1996 09 23	327	0.5−	0.1+	1999 05 19	704	0.1+	0.2+
1977 10 21	675	0.4−	0.2+	1999 05 09	120	0.3−	0.8+	1999 05 19	704	0.2−	0.5+
1977 10 21	675	0.2+	1.6+	1999 05 10	120	0.9−	0.6+	1999 06 09	704	0.7+	0.1−
1977 10 22	675	0.8+	0.0	1999 05 10	120	0.2+	0.8+	1999 06 09	704	0.2+	0.4−
1977 10 22	675	0.0	0.9−	1999 05 10	704	0.1−	0.6+	1999 06 09	704	0.6+	0.8−
1992 09 21	033	1.3+	1.6−	1999 05 10	704	1.1−	0.1+	1999 06 09	704	0.4−	1.0−
1992 09 22	033	0.1−	0.8+	1999 05 10	704	0.6+	1.4+	1999 06 09	704	0.1−	0.5−
1992 09 23	033	1.2+	0.5−	1999 05 10	704	0.1−	0.8+	1999 06 15	704	0.4+	0.4−

1992 09 24	691	0.2+	0.9+	1999 05 13	704	0.2-	0.1+	1999 06 15	704	1.1+	0.0
1992 09 24	691	1.3-	0.9+	1999 05 13	704	0.4-	1.0+	1999 06 15	704	0.4+	0.4-
1992 09 24	691	1.7-	1.0+	1999 05 13	704	0.5+	1.0+	1999 06 15	704	1.1+	0.7-
1992 09 24	033	1.0+	0.4-	1999 05 13	704	0.7+	1.1+	1999 06 15	704	0.5+	1.3-
1992 09 26	033	0.3-	0.1+	1999 05 13	704	0.3-	0.6+				

(10984)* 3507 T-3 = 1993 TH₃

Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPC* 26417)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.30840647	ω	81.77527	+0.25223011	+0.96684137		
<i>a</i>	2.1696369	Ω	202.95463	-0.92327523	+0.22808578		
<i>e</i>	0.3263138	<i>i</i>	5.88263	-0.28972888	+0.11486792		
<i>P</i>	3.20	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 10 07	675	0.3-	2.0-	1996 09 23	658	0.5-	0.6+	1999 05 15	703	0.4+	0.3+
1977 10 07	675	0.2+	2.0-	1996 09 23	658	0.4-	0.5+	1999 05 15	704	0.3-	0.1+
1977 10 11	675	0.5+	0.6+	1999 04 12	704	0.8+	0.5-	1999 05 15	703	0.1+	0.3+
1977 10 11	675	0.4+	0.2+	1999 04 12	704	0.3+	1.1-	1999 05 15	704	0.2+	0.9+
1977 10 12	675	2.1+	0.9+	1999 04 12	704	0.0	0.3+	1999 05 15	703	0.2+	1.0+
1977 10 12	675	1.1+	1.2+	1999 04 12	704	0.3-	0.9+	1999 05 15	704	0.2-	0.6+
1977 10 16	675	1.2-	0.0	1999 04 12	704	0.9+	1.0+	1999 05 15	704	0.5+	0.4+
1977 10 16	675	0.6-	0.3-	1999 04 15	704	0.6+	0.8-	1999 05 15	704	1.2-	0.8+
1977 10 17	675	1.2-	1.4-	1999 04 15	704	0.2+	0.4+	1999 05 17	704	(2.4-	0.3-)
1977 10 17	675	1.5-	1.8-	1999 04 15	704	1.0+	0.3+	1999 05 17	704	0.8-	0.3+
1977 10 21	675	0.6-	0.9-	1999 04 15	704	1.2+	0.7-	1999 05 17	704	0.2-	0.1-
1977 10 21	675	0.3-	1.0+	1999 04 15	704	0.7+	0.1-	1999 05 17	704	0.7-	0.6-
1977 10 22	675	1.4+	0.5-	1999 04 16	727	0.8+	1.5-	1999 05 17	704	0.8-	0.2+
1977 10 22	675	1.7+	0.4-	1999 04 16	727	0.5+	1.2-	1999 05 18	704	0.7+	0.2-
1993 10 10	675	0.5-	1.3-	1999 04 16	727	0.9+	1.3-	1999 05 18	704	0.1+	0.8-
1993 10 10	675	0.2-	1.6-	1999 04 17	727	1.2+	1.2-	1999 05 18	704	1.0-	0.1-
1993 10 12	809	(3.1+	2.3+)	1999 04 17	727	1.0+	1.4-	1999 05 18	704	1.4-	0.5-
1993 10 12	809	(2.7+	1.9+)	1999 04 17	727	0.6+	1.1-	1999 05 18	704	1.5-	0.1-
1993 10 12	809	1.7+	1.4+	1999 04 19	704	0.2+	0.7-	1999 05 19	704	0.8-	0.3+
1993 10 13	675	0.4+	0.8-	1999 04 19	704	0.3-	0.7-	1999 05 19	704	1.0-	0.5+
1993 10 13	675	0.3-	0.6-	1999 04 19	704	0.0	0.7-	1999 05 19	704	1.3-	0.6-
1993 10 15	400	0.9+	0.0	1999 04 19	704	0.6-	0.2+	1999 05 19	704	1.1-	0.2-
1993 10 15	400	1.7+	0.6-	1999 04 19	704	0.9-	0.5-	1999 05 19	704	0.6-	0.7+
1993 10 19	400	0.8-	1.3-	1999 05 12	704	0.1-	0.1+	1999 05 21	704	0.4+	0.8-
1993 10 19	400	1.9-	1.6-	1999 05 12	704	0.7-	0.3+	1999 05 21	704	0.3-	0.0
1993 10 22	809	(6.2+	3.9-)	1999 05 12	704	0.5+	0.2+	1999 05 21	704	0.2+	0.2-
1993 10 22	809	(1.8+	3.0-)	1999 05 12	704	1.3-	0.2-	1999 05 21	704	0.2+	0.7+
1993 10 22	809	(3.2-	0.8+)	1999 05 12	704	0.1+	0.8-	1999 05 21	704	1.0-	1.0+
1996 05 15	801	0.2-	0.1-	1999 05 13	704	0.0	0.1+	1999 05 22	321	0.2+	0.3-
1996 05 15	801	0.1+	0.2+	1999 05 13	704	0.3+	0.2-	1999 05 22	321	0.3+	0.1-
1996 07 14	801	0.1+	0.5+	1999 05 13	704	0.1-	0.2-	1999 05 22	321	0.7+	0.4-
1996 07 14	801	0.0	0.6+	1999 05 13	704	1.0-	0.2-	1999 05 22	321	0.1+	0.5-
1996 07 18	801	0.1-	0.5+	1999 05 13	704	0.5-	0.2-	1999 05 31	716	1.1+	0.8+
1996 07 18	801	0.6+	0.2-	1999 05 15	703	0.3+	0.1+	1999 05 31	716	1.1+	0.8-

(10985)* 4017 T-3 = 1982 BN₄

Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. K. Hurukawa (*MPC* 12702), S. Nakano (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.30373504	ω	213.05985	-0.18433029	+0.98054642		
<i>a</i>	2.1918262	Ω	46.41816	-0.88034667	-0.13419329		
<i>e</i>	0.0510819	<i>i</i>	5.34363	-0.43704929	-0.14325109		
<i>P</i>	3.24	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1977 10 07	675	0.2-	0.9+	1982 01 26	381	1.7-	0.3-	1999 06 09	704	0.2-	0.1-
1977 10 07	675	1.5+	0.7-	1982 01 28	381	0.4-	1.8+	1999 06 09	704	0.9-	0.6-
1977 10 11	675	(2.6+	1.4+)	1992 03 09	809	0.2+	0.2-	1999 06 09	704	0.1-	0.5+
1977 10 11	675	1.4+	1.6+	1992 04 04	809	0.1+	0.6-	1999 06 09	704	0.3+	1.5+
1977 10 12	675	0.1+	1.5-	1993 08 14	675	0.1+	1.9-	1999 06 09	704	0.1+	1.7+
1977 10 12	675	0.2+	1.2-	1993 08 14	675	0.2-	0.4-	1999 06 15	704	0.0	0.3-
1977 10 16	675	1.7-	0.1-	1993 09 21	675	0.4+	1.7+	1999 06 15	704	0.1-	0.1-
1977 10 16	675	1.3-	0.1+	1999 05 18	704	0.5+	0.8-	1999 06 15	704	0.8-	0.0
1977 10 17	675	0.1+	0.5-	1999 05 18	704	0.0	1.3-	1999 06 15	704	0.7-	0.5+
1977 10 17	675	0.7+	0.7+	1999 05 18	704	0.6+	0.6-	1999 06 15	704	0.0	0.8+
1982 01 26	381	0.4+	0.3+	1999 05 18	704	1.3+	1.7-				
1982 01 26	381	1.0+	2.1-	1999 05 18	704	(0.1-	2.8-)				

(10986)* 4313 T-3 = 1982 DE₄ = 1987 UY₇ = 1992 EY₂₅

Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPC* 23989)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29644452	ω	303.71726	+0.49096196	-0.86996731		
<i>a</i>	2.2276166	Ω	116.81408	+0.81536811	+0.44028462		
<i>e</i>	0.1260660	<i>i</i>	2.95251	+0.30680807	+0.22205028		
<i>P</i>	3.32	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1977 10 07	675	2.4+	1.7-	1992 04 06	809	1.4-	0.1+	1999 04 12	704	0.7-	0.5-
1977 10 11	675	2.2+	0.4-	1994 12 28	411	0.7+	0.1+	1999 04 16	704	0.0	0.1-
1977 10 11	675	1.2+	0.9-	1994 12 28	411	0.5+	0.4-	1999 04 16	704	0.0	0.2+
1977 10 12	675	1.3+	2.4-	1995 01 05	801	0.8+	0.2+	1999 04 16	704	0.7-	1.2-
1977 10 12	675	0.9+	1.3-	1995 01 05	801	0.7+	1.0+	1999 04 16	704	1.0+	0.7-
1977 10 16	675	0.5+	0.6-	1996 05 24	120	0.2+	0.1-	1999 04 16	704	1.4-	0.5-
1977 10 16	675	0.2-	0.9-	1996 05 25	120	0.9+	1.5+	1999 04 19	704	1.4+	0.9-
1977 10 17	675	2.0-	0.5-	1997 10 29	566	0.3-	0.1-	1999 04 19	704	0.2-	0.1+
1977 10 17	675	0.9-	0.8-	1997 10 29	566	0.1-	0.2+	1999 04 19	704	0.5+	0.4-
1977 10 21	675	0.5-	1.1-	1997 10 29	566	0.3-	0.1+	1999 04 19	704	1.5+	0.2+
1977 10 21	675	0.6-	0.6-	1997 11 03	704	0.5+	0.3-	1999 04 19	704	0.1-	0.6+
1977 10 22	675	1.1-	0.6+	1997 11 03	704	0.9-	0.2+	1999 05 12	704	0.0	1.7-
1977 10 22	675	0.8+	2.1+	1997 11 03	704	0.3+	0.8+	1999 05 12	704	0.5-	0.6-
1982 02 21	033	0.6-	0.2+	1997 11 03	704	0.6-	1.7-	1999 05 12	704	0.8-	0.4-
1982 02 21	033	0.3+	0.2-	1997 11 03	704	0.1+	0.6-	1999 05 12	704	1.2-	0.1-
1987 10 23	095	0.0	0.5+	1999 04 10	699	0.3+	0.4-	1999 05 12	704	1.6-	1.5-
1992 02 29	809	0.1-	0.5-	1999 04 10	699	0.2+	0.2-	1999 05 13	704	0.5-	0.2+
1992 03 03	809	1.3-	0.2-	1999 04 10	699	0.3+	0.3-	1999 05 13	704	0.1-	1.0-
1992 03 08	809	1.7-	1.1-	1999 04 12	704	0.8-	0.0	1999 05 13	704	0.4+	0.0
1992 03 09	809	(2.7-	0.0)	1999 04 12	704	0.2-	0.1+	1999 05 13	704	0.9+	1.1-

1973 SL₁ = 1996 RK₂₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.08409574	ω	206.19704	+0.83438766	-0.55067628		
<i>a</i>	5.1596478	Ω	187.35070	+0.53245957	+0.81634042		
<i>e</i>	0.0874673	<i>i</i>	10.58990	+0.14242202	+0.17419514		
<i>P</i>	11.72	<i>H</i>	11.4	<i>G</i>	0.15	<i>U</i>	0

Residuals in seconds of arc

1973 09 19	675	0.4-	2.2-	1992 04 07	691	0.1-	0.2-	1998 10 19	699	0.5-	0.6-
1973 09 19	675	0.4-	1.1+	1996 09 10	809	0.7+	0.6-	1998 10 19	699	1.1+	1.6-
1973 09 20	675	0.0	0.6+	1996 09 11	809	0.6-	0.3+	1998 10 19	699	0.6-	0.8-

M.P.C. 34820

1973 09 29	675	0.0	1.1+	1997 10 30	704	0.4−	1.2+	1998 11 16	699	0.7+	0.2−
1973 09 30	675	1.2+	0.4+	1997 10 30	704	0.7−	0.5+	1998 11 16	699	0.3+	0.7−
1973 09 30	675	0.0	1.0+	1997 10 30	704	0.6−	0.4+	1998 11 16	699	0.0	0.3+
1973 10 04	675	0.1+	0.7−	1997 10 30	704	0.9−	0.0	1998 12 16	699	0.1−	0.5−
1973 10 04	675	0.9−	0.4+	1997 10 30	704	0.1−	0.5+	1998 12 16	699	0.4−	0.2+
1973 10 05	675	0.1−	0.5−	1997 11 03	704	1.2+	0.1−	1998 12 16	699	0.3−	0.2+
1973 10 05	675	0.2+	1.0+	1997 11 03	704	(2.1+	0.2−)	1999 01 10	699	0.3−	0.3+
1992 04 07	691	0.1+	0.3+	1997 11 03	704	1.3+	1.2+	1999 01 10	699	0.1+	1.1+
1992 04 07	691	0.0	0.3+	1997 11 03	704	0.8−	1.4−	1999 01 10	699	0.4+	0.9+

1975 ST₁ = 1999 JA₇₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
265.31071		(2000.0)			
<i>n</i>	0.19272928	ω	158.66497	+0.97196095	+0.23383036
<i>a</i>	2.9682757	Ω	187.93562	−0.23323679	+0.94530284
<i>e</i>	0.1078804	<i>i</i>	10.35034	−0.02987505	+0.22743330
<i>P</i>	5.11	<i>H</i>	13.7	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1975 09 30	675	1.0+	0.2+	1999 04 12	704	1.0−	1.3+	1999 05 12	704	0.4+	1.0−
1975 10 01	675	0.7+	0.2−	1999 04 12	704	1.0−	1.7−	1999 05 12	704	0.1+	0.7−
1975 10 02	675	0.7+	1.1+	1999 04 12	704	0.8+	0.8+	1999 05 13	704	0.4−	0.2−
1975 10 15	675	1.5−	0.4−	1999 04 12	704	1.0−	0.6+	1999 05 13	704	0.2−	0.4−
1975 10 16	675	1.0−	1.1−	1999 05 12	704	0.6+	0.9+	1999 05 13	704	1.0+	0.6−
1999 04 12	704	1.3−	1.5−	1999 05 12	704	0.7+	1.1+	1999 05 13	704	1.1+	0.9+

1975 SX₁ = 1986 XK₄ = 1999 JV₁₀₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
119.53686		(2000.0)			
<i>n</i>	0.18957822	ω	272.90982	−0.38453973	−0.92156231
<i>a</i>	3.0010766	Ω	199.96608	+0.89685501	−0.35927817
<i>e</i>	0.0206709	<i>i</i>	8.99802	+0.21858702	−0.14711254
<i>P</i>	5.20	<i>H</i>	13.6	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1975 09 30	675	0.1+	0.0	1994 06 10	691	0.4+	0.2−	1999 05 17	704	1.3+	0.9−
1975 10 01	675	0.7−	0.1−	1994 06 10	691	0.7+	0.3−	1999 05 17	704	1.9+	0.0
1975 10 02	675	0.1−	0.1−	1994 06 10	691	0.4+	0.3−	1999 05 17	704	0.3+	1.0+
1975 10 15	675	0.8−	1.9+	1997 12 30	566	0.6−	0.4−	1999 05 17	704	2.0−	0.8+
1975 10 16	675	1.4−	0.2+	1997 12 30	566	0.6−	0.1−	1999 05 18	704	0.4−	0.5+
1986 12 05	010	(8.8+	3.7+)	1997 12 30	566	0.8−	0.1−	1999 05 18	704	0.1−	1.0−
1986 12 05	010	1.9+	1.6+	1999 05 13	704	0.4−	0.2−	1999 05 18	704	0.7−	0.7+
1986 12 05	010	1.4+	1.4+	1999 05 13	704	1.0−	0.4−	1999 05 18	704	0.8+	1.8+
1994 05 14	691	0.8+	0.1+	1999 05 13	704	0.6−	0.6−	1999 05 19	704	0.4+	0.2+
1994 05 14	691	0.5+	0.1+	1999 05 13	704	0.3+	1.5+	1999 05 19	704	0.3−	0.8+
1994 05 14	691	0.5+	0.1−	1999 05 13	704	(2.8−	0.7−)	1999 05 19	704	1.3−	1.5+

1975 UA₁ = 1999 LP₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
241.54379		(2000.0)			
<i>n</i>	0.23602244	ω	204.66881	+0.81583071	−0.57637342
<i>a</i>	2.5931871	Ω	190.90666	+0.56324179	+0.81040669
<i>e</i>	0.1690406	<i>i</i>	14.39936	+0.13106846	+0.10504602
<i>P</i>	4.18	<i>H</i>	14.6	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1975 10 01	675	0.4−	0.9−	1999 06 08	704	0.0	0.0	1999 06 10	704	0.1+	0.6−
1975 10 02	675	(4.2+	1.7−)	1999 06 08	704	0.3−	0.0	1999 06 10	704	0.3+	0.8+
1975 10 15	675	0.5+	0.7−	1999 06 08	704	0.2+	1.1−	1999 06 14	704	1.0+	0.3−
1975 10 16	675	0.7−	2.2+	1999 06 08	704	1.2−	0.6−	1999 06 14	704	0.0	0.0
1975 10 29	033	0.0	0.2−	1999 06 10	704	0.1+	0.2+	1999 06 14	704	0.7+	0.6+
1975 10 30	033	0.7+	0.9+	1999 06 10	704	0.3−	0.0	1999 06 14	704	0.0	1.2+
1975 10 31	033	0.1−	1.2−	1999 06 10	704	0.4−	0.5+	1999 06 14	704	0.2−	0.7−

1999 JUNE 22

1976 QH₁ = 1976 SU₁ = 1992 GL₆ = 1996 TW₅₁ = 1999 LZ₁Id. B. G. Marsden (d, *MPC* 9064), T. Urata

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
344.39593		(2000.0)			
<i>n</i>	0.29557746	ω	132.40335	+0.60975811	+0.79252434
<i>a</i>	2.2319708	Ω	175.13700	−0.75745602	+0.58640272
<i>e</i>	0.1823720	<i>i</i>	6.78176	−0.23335685	+0.16744257
<i>P</i>	3.33	<i>H</i>	14.6	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1976 08 26	095	(3.8−	5.5−)	1996 10 06	809	0.1+	0.2−	1999 06 12	888	0.0	0.8−
1976 09 24	095	0.8−	0.6+	1996 10 06	809	0.4−	0.5−	1999 06 12	888	0.1−	0.0
1976 09 28	095	0.3+	0.9+	1996 10 06	809	0.8−	0.5−	1999 06 14	704	0.4−	0.4−
1992 04 10	372	(1.0−	2.6+)	1999 06 05	905	0.1+	0.3−	1999 06 14	704	0.2+	0.1+
1992 04 10	372	0.3−	1.1−	1999 06 05	905	0.5+	1.0+	1999 06 14	704	0.1+	0.4−
1996 10 05	809	1.0+	0.5−	1999 06 09	385	0.5−	0.0	1999 06 14	704	0.4+	0.1+
1996 10 05	809	0.7+	0.7−	1999 06 09	385	0.3−	0.1+	1999 06 14	704	0.5+	0.5+
1996 10 05	809	0.0	0.0	1999 06 12	888	0.6−	0.3+				

1978 QH₃ = 1998 FZ₁₂₃ = 1999 HZ₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
296.66266		(2000.0)			
<i>n</i>	0.22752200	ω	222.59915	+0.94481855	+0.24179718
<i>a</i>	2.6573807	Ω	122.12875	−0.18284420	+0.94905403
<i>e</i>	0.2280412	<i>i</i>	15.12911	−0.27181964	+0.20206576
<i>P</i>	4.33	<i>H</i>	14.0	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1978 08 23	414	0.5+	0.4+	1998 03 25	704	0.2+	0.3+	1999 06 05	703	0.6+	0.4+
1978 08 23	414	0.9+	0.6+	1998 03 25	704	0.8+	1.4−	1999 06 05	703	0.0	0.7+
1978 08 24	414	0.5+	0.0	1998 03 25	704	0.3−	0.1+	1999 06 05	703	0.7+	0.4+
1978 08 24	414	0.8−	0.3−	1999 04 19	691	0.3−	0.3−	1999 06 08	704	1.0−	0.2+
1978 08 26	414	1.0−	0.7+	1999 04 19	691	0.4−	0.2−	1999 06 08	704	0.8+	0.1+
1978 08 26	414	0.6−	0.8+	1999 04 19	691	0.3−	0.0	1999 06 08	704	0.2+	0.6+
1992 12 24	691	0.4+	0.1+	1999 04 21	691	0.3+	0.1−	1999 06 08	704	0.5−	1.1+
1992 12 24	691	0.1−	0.1+	1999 04 21	691	0.5+	0.1+	1999 06 08	704	0.6−	0.0
1992 12 24	691	0.2+	0.1+	1999 04 21	691	0.4+	0.1+	1999 06 12	704	0.1+	0.1−
1998 03 01	327	0.4+	0.7+	1999 05 12	704	0.4+	0.1+	1999 06 12	704	0.0	0.3−
1998 03 01	327	0.1+	0.9+	1999 05 12	704	1.2−	0.0	1999 06 12	704	0.3+	0.2+
1998 03 01	327	0.1+	1.1+	1999 05 12	704	1.6−	1.8−	1999 06 12	704	0.3−	1.0−
1998 03 24	704	0.7−	0.6−	1999 05 12	704	0.5+	0.1+	1999 06 14	704	0.9−	0.4+
1998 03 24	704	0.6−	1.1−	1999 05 17	704	0.9+	0.5+	1999 06 14	704	0.3+	0.5+
1998 03 24	704	0.5−	0.1+	1999 05 17	704	0.1+	0.2−	1999 06 14	704	0.2+	0.3−
1998 03 24	704	0.8+	1.5+	1999 05 17	704	1.7+	1.0−	1999 06 14	704	0.8−	1.5−
1998 03 25	704	0.0	0.4+	1999 05 17	704	0.0	0.2+				
1998 03 25	704	0.3−	1.1+	1999 06 05	703	0.2−	0.9+				

1978 UF₇ = 1999 JA₆₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
331.94885		(2000.0)			
<i>n</i>	0.17906523	ω	90.34696	+0.59930047	+0.78717830
<i>a</i>	3.1174191	Ω	217.74032	−0.79590603	+0.56640588
<i>e</i>	0.2299477	<i>i</i>	13.75787	−0.08586351	+0.24399736
<i>P</i>	5.50	<i>H</i>	14.1	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1978 10 27	675	0.5−	0.6+	1999 05 13	704	(1.0−	2.1+)	1999 06 08	704	0.3+	0.3−
1978 10 28	675	0.1+	0.3+	1999 05 13	704	0.9−	0.5+	1999 06 08	704	0.5+	0.0
1978 10 29	675	0.9−	0.2+	1999 05 13	704	0.6−	0.7+	1999 06 08	704	0.5+	0.4−
1978 11 28	675	0.5+	0.8+	1999 05 13	704	0.2+	0.6−	1999 06 08	704	1.1+	0.3+
1978 11 29	675	0.9+	0.5−	1999 05 14	704	0.6+	0.1+	1999 06 08	704	0.7+	0.2+
1994 05 17	691	1.2+	1.4−	1999 05 14	704	0.6−	0.8+	1999 06 11	691	0.3−	0.3+
1994 05 17	691	0.6−	0.2+	1999 05 14	704	0.5−	0.6−	1999 06 11	691	0.3−	0.1+
1994 05 17	691	0.4−	0.1−	1999 05 14	704	0.2−	0.3+	1999 06 11	691	0.2−	0.2+
1999 05 10	704	0.3−	0.7−	1999 05 18	704	0.4+	0.1+	1999 06 14	704	0.7+	0.2+

1999 JUNE 22

M.P.C. 34821

1999 05 10	704	0.6−	0.1+	1999 05 18	704	0.9−	0.8−	1999 06 14	704	0.4+	0.3−
1999 05 10	704	1.1+	0.7+	1999 05 18	704	0.6+	0.9+	1999 06 14	704	0.3+	0.3+
1999 05 10	704	(0.8−	2.5+)	1999 05 18	704	0.3−	0.4−	1999 06 14	704	0.3+	0.3−
1999 05 13	704	1.3−	0.3+	1999 05 18	704	0.6+	0.0	1999 06 14	704	0.1+	0.1−

1978 UT₇ = 1994 PY₃₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	330.70323		(2000.0)		P		Q
n	0.17986470	ω	101.54624		+0.68750229		+0.72273177
a	3.1081747	Ω	212.25130		−0.70716534		+0.64418054
e	0.2753264	i	7.61408		−0.16509930		+0.25038016
P	5.48	H	13.8	G	0.15	U	3

Residuals in seconds of arc

1978 10 27	675	0.5−	0.2+	1999 05 13	704	1.0+	1.8+	1999 05 19	704	0.5−	0.2+
1978 10 28	675	1.2+	0.4−	1999 05 13	704	0.3−	0.1−	1999 05 19	704	0.1−	0.3−
1978 10 29	675	0.5−	0.4−	1999 05 14	704	0.2−	0.2−	1999 05 19	704	1.7−	1.8+
1978 11 28	675	0.1−	0.4+	1999 05 14	704	0.1+	0.3+	1999 06 09	704	0.3+	0.8−
1978 11 29	675	0.3−	0.5+	1999 05 14	704	1.0−	0.9+	1999 06 09	704	0.6−	0.1−
1993 03 27	809	0.6+	0.2+	1999 05 14	704	0.6−	1.8−	1999 06 09	704	1.0+	0.2+
1993 04 16	413	0.3−	0.2+	1999 05 18	704	0.6−	0.3−	1999 06 09	704	0.3+	0.1+
1994 08 09	675	0.2+	1.8+	1999 05 18	704	0.4+	0.8−	1999 06 14	704	0.5+	0.2−
1994 08 09	675	1.3−	0.0	1999 05 18	704	0.2−	0.3−	1999 06 14	704	0.3+	0.2−
1994 08 11	675	1.0+	0.4−	1999 05 18	704	0.1−	0.3+	1999 06 14	704	0.2+	0.0
1994 08 11	675	0.1+	1.1−	1999 05 18	704	0.1−	0.1+	1999 06 14	704	0.0	0.1+
1999 05 13	704	1.0+	0.6−	1999 05 19	704	1.0+	0.2+				
1999 05 13	704	(0.6−	2.3+)	1999 05 19	704	0.4−	0.5−				

1978 VE₆ = 1996 RD₂₄ = 1999 HB₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	317.47836		(2000.0)		$\mathbf{P}$		$\mathbf{Q}$
n	0.26598093	ω	260.21686		+0.55579267		+0.83105763
a	2.3946151	Ω	43.57005		−0.75032923		+0.51232071
e	0.1860932	i	1.73947		−0.35791138		+0.21649643
P	3.71	H	15.4	G	0.15	U	2

Residuals in seconds of arc

1978 11 05	675	(5.7+	1.1+)	1997 12 04	691	0.0	0.4−	1999 04 18	704	0.2+	0.7+
1978 11 06	675	0.5−	1.7−	1997 12 04	691	0.1+	0.2−	1999 04 18	704	1.0+	0.1−
1978 11 29	675	0.1+	0.1+	1999 04 12	704	0.7+	0.0	1999 04 18	704	0.2+	1.0−
1978 11 30	675	0.6+	0.4−	1999 04 12	704	0.3−	1.6−	1999 04 18	704	(2.2+	0.8+)
1996 09 07	358	0.8+	0.6−	1999 04 12	704	1.4−	1.5−	1999 04 18	704	0.1+	0.4+
1996 09 07	358	1.6+	1.1−	1999 04 12	704	0.5−	0.3+	1999 04 18	704	1.5+	1.5−
1996 09 10	358	0.1+	1.1−	1999 04 12	704	0.5+	0.7+	1999 04 18	704	1.6−	0.2+
1996 09 10	358	0.8+	1.4−	1999 04 17	704	1.1−	0.2−	1999 04 18	704	0.7+	0.7+
1996 10 06	809	1.4−	1.3+	1999 04 17	704	1.1−	1.3−	1999 04 18	704	0.4−	0.6+
1996 10 06	809	0.9−	0.6+	1999 04 17	704	0.0	1.4−	1999 05 19	691	0.3−	0.8+
1996 10 06	809	(3.4−	1.2+)	1999 04 17	704	(4.5−	0.6−)	1999 05 19	691	0.2−	0.4+
1997 12 04	691	0.4−	0.5−	1999 04 18	704	0.7+	0.0	1999 05 19	691	0.1−	0.5+

1979 MD₁ = 1979 OT₇ = 1990 RK₁₁ = 1999 JL₁₀Id. H. Oishi (d, *JAM* 2071), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	98.71743		(2000.0)		$\mathbf{P}$		$\mathbf{Q}$
n	0.18810265	ω	14.33967		-0.68802832		-0.70447742
a	3.0167508	Ω	119.47967		+0.64453967		-0.70350643
e	0.0627863	i	11.53998		+0.33344512		-0.09375640
P	5.24	H	13.0	G	0.15	U	1

Residuals in seconds of arc

1979 06 23	413	0.5−	0.4+	1999 04 15	704	(0.9−	2.1−)	1999 05 16	703	0.6+	0.3−
1979 06 24	413	0.6−	0.8+	1999 04 15	704	0.5+	1.1−	1999 05 16	703	0.1+	0.1+
1979 06 25	413	0.7+	0.9−	1999 05 08	703	0.1+	0.7+	1999 05 16	703	0.2−	0.8+
1979 07 24	413	1.1−	0.3−	1999 05 08	703	0.5−	1.2+	1999 05 16	703	0.0	0.9+

1979 07 27	675	1.5+	0.1−	1999 05 08	703	0.8+	0.3+	1999 05 17	704	1.0+	0.2+
1990 09 14	675	0.3+	0.9−	1999 05 08	703	0.1−	0.1−	1999 05 17	704	0.7+	0.0
1990 09 14	675	0.0	0.5−	1999 05 12	704	0.2+	0.3+	1999 05 17	704	1.1+	0.1+
1998 01 26	566	0.1−	0.2−	1999 05 12	704	0.2+	0.1−	1999 05 17	704	0.8+	0.2+
1998 01 26	566	0.0	0.3−	1999 05 12	704	1.2+	0.7+	1999 05 17	704	1.1−	0.9−
1998 01 26	566	0.1−	0.5−	1999 05 12	704	0.5−	0.2+	1999 06 08	704	0.7+	0.2−
1999 04 12	704	0.1−	1.0−	1999 05 12	704	0.7−	0.4−	1999 06 08	704	1.5−	0.9+
1999 04 12	704	0.2+	1.0−	1999 05 15	704	0.4+	1.7+	1999 06 08	704	1.5−	0.5+
1999 04 12	704	0.7+	0.9−	1999 05 15	704	1.2−	0.1−	1999 06 08	704	0.4−	0.4−
1999 04 12	704	1.4−	0.6−	1999 05 15	704	0.9+	0.1−	1999 06 08	704	1.7−	1.7−
1999 04 15	704	(2.4+	1.0−)	1999 05 15	704	0.4+	0.5−				
1999 04 15	704	0.4−	0.3+	1999 05 15	704	0.3−	0.8−				

1979 MS₁ = 1999 KF₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	287.31842		(2000.0)		P		Q
n	0.19162367	ω	173.85256		+0.95458641		+0.29783640
a	2.9796822	Ω	168.81078		−0.27499751		+0.89066524
e	0.1124457	i	2.25432		−0.11463486		+0.34352425
P	5.14	H	13.8	G	0.15	U	4

Residuals in seconds of arc

1979 06 24	413	0.1+	0.3−	1998 03 22	704	2.0+	0.5+	1999 05 19	704	1.1−	0.8−
1979 06 25	413	0.2−	0.5+	1998 03 22	704	1.7−	0.5−	1999 05 19	704	0.1+	0.7+
1979 07 24	675	1.6−	0.2−	1999 05 18	704	0.7+	0.6+	1999 06 15	704	0.0	0.0
1979 07 24	413	0.8+	0.9−	1999 05 18	704	0.2−	1.1−	1999 06 15	704	0.3+	0.9+
1979 07 25	675	0.0	0.1−	1999 05 18	704	0.0	0.9+	1999 06 15	704	0.4−	0.0
1979 07 27	675	1.1+	0.3−	1999 05 18	704	0.5+	1.1−	1999 06 15	704	0.3−	0.0
1998 03 22	704	1.0+	1.3−	1999 05 18	704	0.5+	1.1+	1999 06 15	704	0.2+	0.2−
1998 03 22	704	1.8−	0.1+	1999 05 19	704	0.0	0.2+				

1979 MZ₄ = 1999 JN₈₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	302.61379		(2000.0)		P		Q
n	0.23991399	ω	197.64637		+0.77564563		+0.61867131
a	2.5650687	Ω	123.47708		−0.55951694		+0.76561205
e	0.1973828	i	8.61738		−0.29208671		+0.17630652
P	4.11	H	14.5	G	0.15	U	3

Residuals in seconds of arc

1979 06 23	413	0.7+	0.2−	1995 05 09	691	0.2+	0.6+	1999 05 12	704	0.6−	0.1+
1979 06 24	413	0.2−	0.0	1995 05 09	691	0.3+	0.5+	1999 05 12	704	0.7+	0.2+
1979 06 25	413	0.1−	0.1−	1998 01 25	691	0.0	0.3+	1999 05 12	704	0.4+	1.6−
1979 06 29	413	0.4+	0.1+	1998 01 25	691	0.1+	0.1+	1999 05 12	704	1.2−	0.0
1979 07 24	675	0.6−	1.4+	1998 01 25	691	0.1−	0.0	1999 05 17	704	0.1+	0.7+
1979 07 24	413	1.3−	1.8−	1999 04 12	704	1.5−	0.2−	1999 05 17	704	1.0+	0.2+
1979 07 25	675	0.2+	1.0+	1999 04 12	704	0.3+	1.8−	1999 05 17	704	0.3+	0.8−
1979 07 27	675	1.0+	0.5−	1999 04 12	704	0.7−	1.1+	1999 05 17	704	0.3+	0.1+
1979 08 23	675	(1.6−	2.8−)	1999 04 12	704	1.9+	0.5−	1999 05 17	704	0.4−	1.6+
1995 05 09	691	0.1−	0.6+	1999 05 12	704	1.0−	0.8−				

1979 MS₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	216.08470		(2000.0)		P		Q
n	0.26723073	ω	109.69635		−0.65509620		+0.74907621
a	2.3871431	Ω	118.97701		−0.72855593		−0.59169615
e	0.0980392	i	6.47550		−0.20013804		−0.29796057
P	3.69	H	16.2	G	0.15	U	3

Residuals in seconds of arc

1979 06 23	413	0.7+	0.2+	1979 07 27	675	0.4−	0.5−	1994 08 12	809	0.4+	1.2−
1979 06 24	413	1.2+	1.2+	1979 08 23	675	0.7−	1.2−	1998 09 21	910	0.4−	0.2+
1979 06 25	413	0.3+	0.2+	1991 11 10	675	1.7−	0.9+	1998 09 21	910	0.4−	0.4+
1979 06 29	413	0.3−	0.5+	1991 11 10	675	1.7+	0.1−	1998 09 21	910	0.1−	0.1+

M.P.C. 34822

1979 07 24 675 0.7+ 1.6+ 1994 08 12 809 0.9+ 0.3−
 1979 07 24 413 1.8− 0.2− 1994 08 12 809 0.3− 0.5−

1979 MU₇ = 1999 JB₇₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29161749	<i>ω</i>	66.57995	+0.67577199	+0.73358853		
<i>a</i>	2.2521311	<i>Ω</i>	246.13683	−0.70175855	+0.61041146		
<i>e</i>	0.2349374	<i>i</i>	4.51388	−0.22553747	+0.29874023		
<i>P</i>	3.38	<i>H</i>	16.2	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1979 06 23	413	0.1−	0.3−	1979 08 22	675	(0.3−	3.7+)	1999 05 18	704	0.8−	0.3+
1979 06 24	413	0.6−	0.4+	1999 05 13	704	(2.6+	1.7−)	1999 06 07	703	0.3+	0.6+
1979 06 25	413	0.4+	0.3−	1999 05 13	704	0.9+	0.7−	1999 06 07	703	0.5−	0.3+
1979 06 29	413	0.4+	0.3+	1999 05 13	704	0.1−	1.1+	1999 06 07	703	0.5+	0.2−
1979 07 24	413	0.4−	0.8−	1999 05 13	704	0.3+	0.8−	1999 06 07	703	0.3−	0.3−
1979 07 26	675	1.2+	0.5+	1999 05 18	704	0.2−	0.7−				
1979 07 28	413	0.9−	0.1+	1999 05 18	704	0.0	0.6+				

1979 ON₁ = 1999 BF₃₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17730021	<i>ω</i>	187.36670	+0.82299596	+0.56347169		
<i>a</i>	3.1380743	<i>Ω</i>	138.06941	−0.51552733	+0.79408353		
<i>e</i>	0.1239187	<i>i</i>	6.18147	−0.23855655	+0.22788375		
<i>P</i>	5.56	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1979 06 25	413	1.3−	1.4+	1979 07 27	675	(3.8+	0.2−)	1999 01 22	691	1.0+	0.0
1979 06 25	413	1.0+	1.3−	1996 08 12	566	0.2+	0.0	1999 01 22	691	0.8+	0.0
1979 07 24	675	0.0	0.3−	1996 08 12	566	0.4−	0.3−	1999 01 23	691	0.6−	0.0
1979 07 24	413	0.4+	0.5−	1996 08 12	566	0.2+	0.2+	1999 01 23	691	1.2−	0.1−
1979 07 25	675	0.1−	0.4+	1999 01 22	691	1.0+	0.1−	1999 01 23	691	1.0−	0.3−

1980 PP₁ = 1993 TN₃₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22743524	<i>ω</i>	99.18695	+0.72142211	−0.68165329		
<i>a</i>	2.6580565	<i>Ω</i>	303.89894	+0.56348872	+0.68029258		
<i>e</i>	0.1942401	<i>i</i>	8.45645	+0.40253025	+0.26935256		
<i>P</i>	4.33	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1980 08 06	809	0.5+	0.1+	1993 10 14	675	0.8+	0.3−	1998 12 14	699	1.1+	0.5+
1980 08 07	809	0.6+	0.0	1993 10 14	675	0.8+	0.4−	1998 12 14	699	1.6+	0.6+
1980 08 09	809	0.2+	1.6−	1997 08 01	691	0.1−	0.6+	1998 12 14	699	1.8+	0.4−
1980 08 10	809	0.2−	0.4−	1997 08 01	691	0.2−	0.3+	1998 12 17	704	0.9−	1.2+
1993 08 22	675	1.2−	0.8+	1997 08 01	691	0.1+	0.5+	1998 12 17	704	1.0−	0.5+
1993 08 22	675	0.4−	0.5+	1997 09 01	566	0.6−	1.2+	1998 12 17	704	0.9−	0.4+
1993 10 12	675	0.7+	0.1+	1997 09 01	566	0.6−	1.4+	1998 12 17	704	0.5−	0.5+
1993 10 12	675	0.2−	1.2−	1997 09 01	566	0.6−	0.9+				

1981 DP₁ = 1999 LA₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28124196	<i>ω</i>	47.81118	+0.43137598	+0.89571945		
<i>a</i>	2.3071861	<i>Ω</i>	248.03941	−0.85818178	+0.37058072		
<i>e</i>	0.1305611	<i>i</i>	6.66919	−0.27827828	+0.24567578		
<i>P</i>	3.50	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	5

1999 JUNE 22

Residuals in seconds of arc

1981 02 09	413	0.1−	0.0	1981 03 12	413	1.6+	0.0	1999 06 09	704	2.1+	0.6−
1981 02 12	413	1.0−	0.2+	1981 04 08	413	0.9+	0.0	1999 06 09	704	0.1−	0.5−
1981 02 28	413	2.0−	0.3−	1981 04 08	413	2.0+	0.8−	1999 06 09	704	0.4−	0.6−
1981 03 06	413	0.7+	0.9+	1981 04 09	413	1.0−	1.8+	1999 06 15	704	0.2−	0.5+
1981 03 06	413	1.2+	0.4−	1981 04 09	413	0.4+	0.7+	1999 06 15	704	0.4−	0.9+
1981 03 08	413	0.8−	0.2+	1981 05 01	413	1.4−	2.1−	1999 06 15	704	0.2−	0.1+
1981 03 08	413	0.1+	0.6−	1981 05 03	413	0.1+	0.8−	1999 06 15	704	0.1−	0.1+
1981 03 12	413	1.3−	1.1+	1999 06 09	704	0.1−	0.8+	1999 06 15	704	0.7−	0.5−

1981 DW₂ = 1999 LO₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28122050	<i>ω</i>	55.05418	+0.67555746	+0.73037519		
<i>a</i>	2.3073035	<i>Ω</i>	257.77660	−0.70564984	+0.60081560		
<i>e</i>	0.1151619	<i>i</i>	5.92387	−0.21372977	+0.32491953		
<i>P</i>	3.50	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1981 02 09	413	0.8+	1.1+	1981 03 12	413	1.8+	0.4−	1999 06 09	704	0.2+	0.4+
1981 02 12	413	1.5+	0.7+	1981 04 09	413	2.1−	1.8+	1999 06 15	704	0.2+	0.8+
1981 02 28	413	3.2−	0.1+	1981 04 09	413	1.2+	0.8−	1999 06 15	704	0.9−	0.4−
1981 02 28	413	2.3−	1.7+	1981 05 03	413	0.1+	1.3−	1999 06 15	704	0.1+	0.3−
1981 03 08	413	1.5+	1.1−	1999 06 09	704	1.2+	0.7+	1999 06 15	704	0.3−	0.3−
1981 03 08	413	2.2+	1.7−	1999 06 09	704	0.4−	1.2−	1999 06 15	704	0.5−	0.3−
1981 03 12	413	1.5−	0.0	1999 06 09	704	0.5+	1.0+				

1981 EF₄ = 1999 GO₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27417964	<i>ω</i>	348.49211	−0.57925397	+0.80806234		
<i>a</i>	2.3466370	<i>Ω</i>	246.02120	−0.73826021	−0.57583351		
<i>e</i>	0.1749259	<i>i</i>	6.74022	−0.34559616	−0.12430215		
<i>P</i>	3.59	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1981 02 02	413	0.8−	0.3+	1981 04 07	413	0.2+	1.6−	1999 04 12	704	0.2−	0.0
1981 02 14	413	0.4+	2.0−	1981 04 08	413	0.6−	0.0	1999 04 12	704	2.0+	0.9+
1981 03 02	413	1.7−	0.7+	1981 04 08	413	1.2+	1.6−	1999 04 14	704	0.3−	1.4−
1981 03 02	413	1.6+	0.5+	1981 04 09	413	1.0−	0.1+	1999 04 14	704	1.1+	1.7+
1981 03 07	413	0.3−	1.5+	1981 04 09	413	0.2+	1.3−	1999 04 14	704	0.9+	0.1−
1981 03 07	413	1.5+	0.4+	1981 04 29	413	0.3+	1.4−	1999 04 14	704	0.2+	0.1+
1981 03 10	413	0.6−	1.5+	1997 11 29	704	0.8−	0.0	1999 04 15	704	1.0−	0.8−
1981 03 10	413	0.7+	0.2+	1997 11 29	704	0.8+	0.6−	1999 04 15	704	0.7−	0.6−
1981 03 12	413	1.4−	1.7+	1997 11 29	704	0.8+	1.0+	1999 04 15	704	0.9−	1.0+
1981 03 12	413	1.9+	0.3+	1997 11 29	704	0.8−	1.6−	1999 04 15	704	0.6−	0.5+
1981 04 07	413	2.1−	0.3−	1999 04 12	704	0.2+	1.7−	1999 04 15	704	0.7−	0.6+

1981 EU₆ = 1999 JN₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27945946	<i>ω</i>	71.34668	+0.72963714	+0.67199724		
<i>a</i>	2.3169865	<i>Ω</i>	246.21348	−0.66793291	+0.66061505		
<i>e</i>	0.2907132	<i>i</i>	7.95796	−0.14661264	+0.33467515		
<i>P</i>	3.53	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1981 02 09	413	0.4+	0.1−	1999 05 10	704	0.5+	1.1−	1999 05 19	704	0.3−	0.6−
1981 02 12	413	(3.2+	0.8−)	1999 05 10	704	0.6+	0.0	1999 05 19	704	1.7−	0.3+
1981 03 06	413	1.2−	0.9+	1999 05 10	704	0.2−	0.3−	1999 05 19	704	0.6−	1.4+
1981 03 06	413	0.1+	1.0−	1999 05 13	704	0.5−	0.2−	1999 06 09	704	0.2+	0.1+
1981 03 08	413	0.9−	1.3+	1999 05 13	704	0.7−	0.7−	1999 06 09	704	0.5−	0.3−
1981 03 12	413	0.3+	0.5−	1999 05 13	704	0.4+	0.1−	1999 06 09	704	0.6−	1.7−
1981 04 09	413	0.0	1.0+	1999 05 13	704	0.2−	1.2+	1999 06 09	704	0.1−	0.4+
1981 05 01	413	1.5+	1.5−	1999 05 13	704	0.3+	0.6+	1999 06 09	704	0.2−	0.1+

1991 05 03	413	0.7−	3.1−	1999 05 18	704	0.1−	0.2+	1999 06 15	704	0.2+	0.1−
1996 12 10	327	0.2−	1.3+	1999 05 18	704	0.4+	0.2−	1999 06 15	704	0.2+	0.5−
1996 12 10	327	0.1+	0.0	1999 05 18	704	0.4+	0.1+	1999 06 15	704	0.5+	0.2+
1996 12 10	327	0.2−	0.1+	1999 05 18	704	0.2−	0.6+	1999 06 15	704	0.7+	0.4+
1999 05 10	704	0.3+	0.3+	1999 05 18	704	0.0	0.9+	1999 06 15	704	0.3+	1.1+
1999 05 10	704	1.5+	1.3−	1999 05 19	704	0.3−	0.4+				

1981 EH₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	128.16371		(2000.0)	P	Q
<i>n</i>	0.28649891	ω	208.59913	−0.98690661	−0.14202224
<i>a</i>	2.2788762	Ω	322.98819	+0.16125141	−0.85804649
<i>e</i>	0.1373083	<i>i</i>	7.29639	+0.00365011	−0.49354423
<i>P</i>	3.44	<i>H</i>	15.3	<i>G</i>	0.15

Residuals in seconds of arc

1981 02 09	413	1.0+	0.4+	1981 03 15	413	1.0−	0.3−	1997 12 01	327	0.4−	0.1+
1981 02 13	413	0.4+	0.3+	1981 04 12	413	1.7−	1.1+	1997 12 01	327	0.3+	0.2+
1981 03 01	413	1.1−	0.3+	1981 04 12	413	1.5+	0.3+	1997 12 01	327	0.2+	0.0
1981 03 01	413	0.9+	0.8−	1981 04 29	413	0.4+	1.0−	1998 03 31	910	0.0	0.5+
1981 03 07	413	0.0	0.2−	1992 06 04	413	0.2−	1.2+	1998 03 31	910	0.3+	0.7+
1981 03 07	413	1.0+	0.2−	1992 06 04	413	0.2−	0.1−	1998 03 31	910	0.6+	0.7+
1981 03 11	413	1.8−	0.1−	1993 09 21	675	0.4−	0.9+				
1981 03 11	413	0.0	1.0−	1993 09 21	675	0.5+	1.0−				

1981 ES₁₁ = 1989 GD₇

Id. A. Gnädig, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	182.45598		(2000.0)	P	Q
<i>n</i>	0.25291250	ω	11.71353	+0.01821603	+0.99675277
<i>a</i>	2.4764098	Ω	259.36670	−0.92365417	−0.01325826
<i>e</i>	0.1512947	<i>i</i>	4.57740	−0.38279387	+0.07942376
<i>P</i>	3.90	<i>H</i>	16.1	<i>G</i>	0.15

Residuals in seconds of arc

1981 02 02	413	0.2+	0.3+	1981 04 06	413	(3.0−	0.6+)	1989 04 05	809	1.1+	1.5+
1981 02 14	413	1.0+	0.5−	1981 04 06	413	0.7+	2.2−	1989 04 05	809	1.0+	1.3+
1981 03 07	413	0.6+	0.3−	1981 04 12	413	0.9−	0.2−	1990 10 14	675	0.4−	0.5+
1981 03 07	413	1.0+	0.7+	1981 04 12	413	0.9−	0.3−	1993 05 24	413	0.5−	1.0−
1981 03 11	413	1.0+	0.3−	1981 04 29	413	0.4+	0.8−	1993 05 24	413	1.0−	0.5−
1981 03 11	413	1.0−	0.2+	1982 11 04	413	1.4+	0.4−	1997 06 03	566	0.4+	0.1+
1981 03 15	413	1.1−	0.7+	1982 11 04	413	1.0−	0.6−	1997 06 03	566	0.1+	0.0
1981 03 15	413	1.4−	0.3+	1986 10 09	675	1.0−	0.3−	1997 06 03	566	0.5−	0.3+
1981 04 05	413	1.6−	0.3−	1986 10 09	675	1.5+	0.1+				
1981 04 05	413	(1.5+	2.6−)	1989 04 05	809	0.9+	0.6+				

1981 EY₁₆ = 1999 KW

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	259.57492		(2000.0)	P	Q
<i>n</i>	0.28127030	ω	131.32499	+0.98526914	−0.16414746
<i>a</i>	2.3070312	Ω	238.17468	+0.13514019	+0.91921769
<i>e</i>	0.1528129	<i>i</i>	3.23596	+0.10479430	+0.35790284
<i>P</i>	3.50	<i>H</i>	15.2	<i>G</i>	0.15

Residuals in seconds of arc

1981 02 12	413	0.1−	0.3−	1999 05 13	704	0.3−	0.1+	1999 05 18	704	0.7+	0.8+
1981 03 06	413	0.9+	1.8+	1999 05 13	704	0.2−	0.8−	1999 05 18	704	1.6+	0.7+
1981 03 08	413	0.4−	0.9+	1999 05 13	704	0.2−	0.2−	1999 05 19	703	0.5−	0.5+
1981 03 08	413	(4.1+	0.6−)	1999 05 13	704	0.0	0.4−	1999 05 19	703	0.8−	0.4−
1981 03 12	413	1.8−	1.6+	1999 05 13	704	0.2−	0.8−	1999 05 19	703	0.3−	0.1+
1981 03 12	413	(3.6+	0.8−)	1999 05 17	703	0.0	0.5−	1999 05 19	703	0.0	0.6−
1981 04 08	413	1.2−	1.4−	1999 05 17	703	0.4−	0.3+	1999 06 15	704	0.6−	0.8−
1981 04 08	413	(2.7−	0.0)	1999 05 17	703	(0.9+	2.3+)	1999 06 15	704	0.7+	0.7+
1981 04 09	413	0.3−	1.0+	1999 05 17	703	1.1+	1.7+	1999 06 15	704	0.4+	0.4+
1981 04 09	413	1.7+	0.6−	1999 05 18	704	(3.0+	0.9+)	1999 06 15	704	0.9−	0.9+

1981 05 01	413	1.5+	2.4−	1999 05 18	704	(2.5+	0.7+)
1981 05 03	413	0.2−	1.2−	1999 05 18	704	0.1−	1.0−

1981 ES₁₈ = 1992 LD₃ = 1999 JA₂₁

Id. G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	27.10735		(2000.0)	P	Q
<i>n</i>	0.27637062	ω	11.36220	−0.77747300	+0.62871449
<i>a</i>	2.3342183	Ω	207.61293	−0.57967965	−0.72620173
<i>e</i>	0.1888058	<i>i</i>	1.96980	−0.24394106	−0.27811712
<i>P</i>	3.57	<i>H</i>	16.0	<i>G</i>	0.15

Residuals in seconds of arc

1981 02 09	413	0.4+	0.7+	1981 04 30	413	0.3−	0.5−	1999 05 13	704	0.3+	0.5+
1981 02 13	413	0.2+	0.1−	1981 05 02	413	0.5+	0.5−	1999 05 13	704	0.2+	0.0
1981 03 02	413	1.0−	0.8+	1992 06 03	809	0.3−	1.4−	1999 05 13	704	0.1−	0.4−
1981 03 07	413	0.3−	1.1+	1992 06 03	809	(0.2+	2.2−)	1999 05 13	704	0.5−	0.4−
1981 03 07	413	2.1+	1.0−	1992 06 03	809	(0.4+	3.1−)	1999 05 18	704	0.2+	0.4+
1981 03 11	413	0.6−	0.3−	1999 04 06	691	0.3−	0.3+	1999 05 18	704	0.7−	1.5−
1981 03 11	413	0.4−	0.3−	1999 04 06	691	0.6−	0.3+	1999 05 18	704	0.0	0.6+
1981 03 16	413	0.8−	0.6+	1999 04 06	691	0.6−	0.1+	1999 05 18	704	(2.2−	0.2+)
1981 03 16	413	2.0+	1.4−	1999 04 15	704	0.6−	0.0	1999 05 18	704	0.9−	1.0+
1981 03 29	413	0.3−	0.1+	1999 04 15	704	0.2−	1.0−	1999 05 19	704	0.9+	0.9+
1981 03 29	413	(2.7+	2.0−)	1999 04 15	704	0.2−	0.1−	1999 05 19	704	0.6−	0.1+
1981 04 08	413	1.3−	1.4+	1999 05 10	704	0.2+	0.7−	1999 05 19	704	1.2+	0.8−
1981 04 08	413	0.4−	0.7−	1999 05 10	704	1.3+	1.3+	1999 05 19	704	0.2−	0.6+
1981 04 11	413	0.3−	0.1−	1999 05 10	704	1.2+	0.4−	1999 05 19	704	0.2+	1.9+
1981 04 11	413	0.2+	1.0−	1999 05 13	704	0.5+	0.3−				

1981 EY₂₃ = 1999 JS₉₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	1.40803		(2000.0)	P	Q
<i>n</i>	0.22477681	ω	92.44681	−0.10709713	+0.99378950
<i>a</i>	2.6789733	Ω	171.23110	−0.97268985	−0.09843341
<i>e</i>	0.1788636	<i>i</i>	11.42955	−0.20592392	−0.05189694
<i>P</i>	4.38	<i>H</i>	15.5	<i>G</i>	0.15

Residuals in seconds of arc

1981 03 07	413	0.1−	0.5−	1981 05 03	413	1.0−	1.1+	1999 05 17	704	0.8−	1.4+
1981 03 11	413	(3.1−	0.6+)	1999 05 12	704	0.3+	0.2+	1999 05 17	704	0.9−	1.4−
1981 03 11	413	0.0	0.0	1999 05 12	704	0.8+	0.7−	1999 05 17	704	0.2−	1.3−
1981 03 16	413	0.6+	1.8−	1999 05 12	704	1.9+	0.2−	1999 06 05	703	1.1−	0.4−
1981 03 29	413	(1.8−	3.0+)	1999 05 12	704	0.5+	0.9+	1999 06 05	703	0.5−	0.1+
1981 03 29	413	0.0	1.7+	1999 05 17	704	0.7−	0.4−	1999 06 05	703	0.1−	1.2+
1981 05 02	413	0.3+	0.1−	1999 05 17	704	(0.8−	3.7−)	1999 06 05	703	0.7+	0.4+

1981 EO₂₅ = 1999 JB₉₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	120.30223		(2000.0)	P	Q
<i>n</i>	0.16886318	ω	284.31213	−0.30430200	−0.95229010
<i>a</i>	3.2417491	Ω	183.66129	+0.95218903	−0.30338993
<i>e</i>	0.0688435	<i>i</i>	21.41970	+0.02713582	−0.03313788
<i>P</i>	5.84	<i>H</i>	13.2	<i>G</i>	0.15

Residuals in seconds of arc

1981 02 12	413	0.7+	0.8+	1981 04 26	413	2.2+	2.2−	1999 05 17	704	1.1−	1.2−
1981 02 14	413	1.8−	0.4−	1981 05 01	413	0.8+	0.4−	1999 05 17	704	0.7+	0.1−
1981 03 02	413	0.0	0.2−	1999 04 12	704	0.2+	0.2−	1999 05 17	704	1.4+	1.1+
1981 03 06	413	1.3−	1.5+	1999 04 12	704	0.8+	0.4+	1999 05 17	704	0.7+	1.0+
1981 03 06	413	0.6+	0.7−	1999 04 12	704	0.4+	0.2+	1999 05 18	703	0.9−	0.0
1981 03 15	413	1.4−	0.2+	1999 04 12	704	0.2−	0.2−	1999 05 18	703	0.5−	0.0
1981 03 15	413	0.5+	1.2−	1999 05 12	704	(2.3+	3.0−)	1999 05 18	703	0.1+	1.0−
1981 04 10	413	0.7−	2.0+	1999 05 12	704	(0.7+	2.5−)	1999 05 18	703	1.6−	0.4+
1981 04 10	413	0.4+	0.3+	1999 05 12	704	(2.0−	2.1−)				

1981 EW₂₆ = 1989 VU₄

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

<i>M</i>	343.81935		(2000.0)		P		Q
<i>n</i>	0.18285802	ω	170.75513		+0.97297414		+0.23035611
<i>a</i>	3.0741617	Ω	175.82286		-0.22343252		+0.95671704
<i>e</i>	0.0549530	<i>i</i>	12.72385		-0.05830295		+0.17784420
<i>P</i>	5.39	<i>H</i>	14.5		<i>G</i> 0.15		<i>U</i> 4

Residuals in seconds of arc

1981 02 09	413	1.0+	0.5+	1981 03 06	413	0.9+	0.1-	1982 08 13	413	0.2-	1.7-
1981 02 12	413	0.2+	0.2-	1981 03 11	413	0.8-	0.6+	1982 08 13	413	0.3+	0.5-
1981 02 13	413	(2.2-	3.9+)	1981 03 15	413	0.9-	0.5-	1989 11 06	809	0.7+	0.7-
1981 03 02	413	0.4-	0.2+	1981 04 05	413	1.9+	1.9-	1989 11 06	809	0.6+	1.2-
1981 03 06	413	1.6-	0.7+	1981 05 01	413	0.8-	1.7-	1989 11 06	809	0.9-	1.1-

1981 EA₂₇ = 1999 LJ₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	196.19827		(2000.0)		P		Q
<i>n</i>	0.18288094	ω	23.09839		-0.34149553		-0.93942861
<i>a</i>	3.0739049	Ω	86.87986		+0.85769280		-0.32420241
<i>e</i>	0.2118734	<i>i</i>	1.67777		+0.38437464		-0.11120557
<i>P</i>	5.39	<i>H</i>	15.6		<i>G</i> 0.15		<i>U</i> 5

Residuals in seconds of arc

1981 02 09	413	0.4-	2.3-	1981 03 15	413	1.4+	0.4-	1999 06 09	691	0.2-	0.0
1981 02 12	413	0.5-	2.5-	1981 04 05	413	2.6-	2.1+	1999 06 09	691	0.2-	0.2+
1981 02 13	413	0.3+	0.0	1981 04 05	413	2.9+	0.2-	1999 06 09	691	0.3+	0.4-
1981 03 02	413	1.4-	0.2+	1981 04 06	413	2.6-	1.9+	1999 06 18	691	0.4+	0.8-
1981 03 06	413	(5.9-	4.6+)	1981 04 10	413	2.5+	0.7-	1999 06 18	691	0.1+	0.4-
1981 03 11	413	0.9-	1.2-	1981 04 10	413	0.3+	0.2+	1999 06 18	691	0.1+	0.1-
1981 03 11	413	1.0+	0.3-	1981 04 26	413	2.4+	0.1+				
1981 03 15	413	2.4-	1.2+	1981 05 01	413	0.2-	0.9+				

1981 EL₂₇ = 1999 GE₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	150.01105		(2000.0)		P		Q
<i>n</i>	0.22164974	ω	241.37932		+0.32844905		-0.94448143
<i>a</i>	2.7041113	Ω	189.45834		+0.88405578		+0.31065964
<i>e</i>	0.0926621	<i>i</i>	3.04177		+0.33251557		+0.10698322
<i>P</i>	4.45	<i>H</i>	14.4		<i>G</i> 0.15		<i>U</i> 3

Residuals in seconds of arc

1981 02 12	413	0.2+	0.1-	1981 05 01	413	0.9+	0.0	1999 04 09	699	0.1-	1.3+
1981 02 12	413	0.5-	0.1+	1981 05 01	413	2.0-	1.2-	1999 04 09	699	0.1-	0.5+
1981 02 13	413	1.1+	0.8-	1981 05 03	413	(1.5-	2.7-)	1999 04 12	704	0.7-	0.6-
1981 03 02	413	0.8+	1.3-	1996 08 09	566	0.3+	0.3-	1999 04 12	704	0.0	0.2-
1981 03 02	413	(2.9-	2.1+)	1996 08 09	566	0.1-	0.3-	1999 04 12	704	0.1+	1.2-
1981 03 06	413	(3.6-	2.3+)	1996 08 09	566	0.3+	0.6-	1999 04 12	704	0.2+	1.5+
1981 03 06	413	1.0+	0.1-	1999 04 07	704	0.7+	0.3-	1999 04 12	704	(2.8-	0.1+)
1981 03 11	413	2.0-	0.4+	1999 04 07	704	0.0	1.4+	1999 04 15	704	0.2+	1.3-
1981 03 11	413	0.3+	0.1-	1999 04 07	704	0.5+	0.4+	1999 04 15	704	(2.2-	0.5+)
1981 03 15	413	1.9-	0.1+	1999 04 07	704	0.3+	1.0+	1999 04 15	704	0.3+	0.7-
1981 03 15	413	0.7+	0.6-	1999 04 07	704	0.0	0.6+	1999 04 15	704	(0.5-	2.1-)
1981 04 05	413	(5.2+	3.0-)	1999 04 09	699	0.3-	1.2+	1999 04 15	704	0.4-	1.0-

1981 EE₃₁ = 1999 JK₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	354.14379		(2000.0)		P		Q
<i>n</i>	0.27787796	ω	106.33776		+0.25337971		+0.96730035
<i>a</i>	2.3257694	Ω	178.21801		-0.96664218		+0.25362642
<i>e</i>	0.2691431	<i>i</i>	21.40104		-0.03743819		-0.00191555
<i>P</i>	3.55	<i>H</i>	15.0		<i>G</i> 0.15		<i>U</i> 3

Residuals in seconds of arc

1981 02 12	413	2.1+	1.1+	1999 04 16	703	1.6+	0.4+	1999 06 07	704	0.2-	0.3+
1981 02 12	413	0.1+	1.5-	1999 04 16	703	0.1-	0.4+	1999 06 07	704	0.4+	0.3+
1981 03 02	413	1.7-	1.9+	1999 05 13	704	0.4+	0.2+	1999 06 07	704	0.0	1.4+
1981 03 02	413	1.3+	1.6-	1999 05 13	704	0.3-	0.7+	1999 06 11	704	0.7-	0.2-
1981 03 06	413	(3.2-	2.9+)	1999 05 13	704	0.2-	1.2-	1999 06 11	704	0.1+	0.2-
1981 03 11	413	1.2-	0.2+	1999 05 13	704	0.3+	0.3-	1999 06 11	704	0.4+	0.3+
1981 03 15	413	(2.8-	4.3+)	1999 05 13	704	0.0	1.4+	1999 06 11	704	0.4-	0.4-
1981 03 15	413	0.3-	0.1+	1999 05 14	704	0.2-	0.3+	1999 06 11	704	0.4-	0.2-
1999 03 24	704	0.5-	0.7-	1999 05 14	704	0.8-	0.0	1999 06 12	704	0.1+	0.3-
1999 03 24	704	0.3+	0.6+	1999 05 14	704	0.1-	1.0+	1999 06 12	704	0.5+	0.0
1999 03 24	704	0.5-	0.8-	1999 05 14	704	0.0	1.6-	1999 06 12	704	0.3+	0.9-
1999 03 24	704	(2.4-	1.4-)	1999 05 14	704	0.8-	0.1+	1999 06 12	704	0.3+	0.3-
1999 03 24	704	0.7+	0.8-	1999 06 07	704	0.4+	0.3-	1999 06 12	704	0.2-	0.6-
1999 04 16	703	0.3-	0.4+	1999 06 07	704	0.2+	0.5+				

1981 EN₃₁ = 1999 LQ₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	304.70431		(2000.0)		P		Q
<i>n</i>	0.28118343	ω	171.40449		+0.87978418		+0.47472216
<i>a</i>	2.3075063	Ω	160.19538		-0.44039472		+0.83363144
<i>e</i>	0.1114978	<i>i</i>	4.20999		-0.17897565		+0.28230744
<i>P</i>	3.51	<i>H</i>	15.3		<i>G</i> 0.15		<i>U</i> 4

Residuals in seconds of arc

1981 02 09	413	1.3+	0.4-	1998 01 02	046	0.4-	0.8-	1999 05 19	704	0.5+	1.4-
1981 02 12	413	1.0+	0.1-	1998 01 02	046	0.1-	0.7+	1999 05 19	704	1.4-	0.2-
1981 02 13	413	0.3+	0.2-	1998 01 27	910	0.3+	0.4+	1999 06 09	704	0.8+	0.5-
1981 03 02	413	1.2-	0.5-	1998 01 27	910	0.2+	0.6+	1999 06 09	704	1.5+	0.9+
1981 03 02	413	(3.1-	2.3+)	1998 01 28	910	0.3+	0.4+	1999 06 09	704	0.3-	1.6-
1981 03 06	413	1.5-	0.2+	1999 05 10	704	1.2-	0.5+	1999 06 09	704	1.8+	1.3+
1981 03 11	413	1.1-	0.7-	1999 05 10	704	0.7-	0.2+	1999 06 09	704	0.1-	0.1-
1981 03 11	413	0.9-	0.8+	1999 05 10	704	0.3-	0.6-	1999 06 14	704	0.6+	0.4-
1981 04 26	413	(3.7+	2.8-)	1999 05 10	704	0.4+	1.0+	1999 06 14	704	0.7-	0.1+
1981 05 01	413	2.4+	0.0	1999 05 10	704	(4.1-	2.0+)	1999 06 14	704	0.4+	0.2+
1998 01 02	046	0.5-	0.1+	1999 05 19	704	(2.2+	0.8-)	1999 06 14	704	0.2-	0.5+
1998 01 02	046	0.3+	0.3-	1999 05 19	704	0.7-	0.5+	1999 06 14	704	0.2-	0.0

1981 ES₃₁ = 1999 JX₉₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	296.87417		(2000.0)		P		Q
<i>n</i>	0.17038045	ω	141.43807		+0.67715806		+0.73488720
<i>a</i>	3.2224749	Ω	170.96511		-0.72027761		+0.67237615
<i>e</i>	0.0162070	<i>i</i>	13.77309		-0.15052285		+0.08860650
<i>P</i>	5.78	<i>H</i>	13.6		<i>G</i> 0.15		<i>U</i> 1

Residuals in seconds of arc

1981 02 09	413	0.1-	1.5-	1998 03 20	704	0.5-	1.1+	1999 05 17	704	1.0+	1.2-
1981 02 12	413	(0.8-	2.9+)	1998 03 20	704	0.4+	1.2-	1999 05 17	704	0.2+	0.2-
1981 02 13	413	0.4-	0.8+	1998 03 20	704	0.4-	0.7-	1999 06 11	703	0.4-	1.1-
1981 03 02	413	0.0	1.1-	1998 03 20	704	0.1+	1.1+	1999 06 11	703	0.8-	0.8+
1981 03 06	413	0.2+	1.2-	1998 03 20	704	0.4+	0.5+	1999 06 11	703	1.2+	0.7+
1981 03 06	413	1.9+	1.7-	1999 05 12	704	1.5+	0.2+	1999 06 11	703	0.5-	1.7+
1981 03 11	413	2.3-	0.2+	1999 05 12	704	0.7-	1.1+	1999 06 14	704	0.5-	0.1+
1981 05 01	413	0.0	0.1+	1999 05 12	704	0.7+	0.1-	1999 06 14	704	1.0-	0.6-
1995 10 23	327	0.4-	1.6-	1999 05 12	704	0.3+	0.7-	1999 06 14	704	0.3-	0.4-
1995 10 23	327	0.3+	1.5-	1999 05 12	704	0.3-	0.5-	1999 06 14	704	0.4-	0.4-
1995 10 23	327	0.9+	1.3-	1999 05 17	704	0.9+	0.2-	1999 06 14	704	1.2-	0.3-

1999 JUNE 22

1981 EN₄₁ = 1999 GY₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.22058943	ω	55.59777	-0.96661684	+0.25503176		
<i>a</i>	2.7127697	Ω	139.16206	-0.24573883	-0.89542031		
<i>e</i>	0.1044396	<i>i</i>	2.16577	-0.07255560	-0.36494010		
<i>P</i>	4.47	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1981 02 09	413	0.9+	0.5-	1981 04 26	413	0.2-	0.8-	1999 04 12	704	1.5+	0.7+
1981 02 12	413	0.5-	0.0	1999 04 07	704	1.1-	0.0	1999 04 12	704	0.1+	0.3-
1981 03 02	413	1.8-	1.2+	1999 04 07	704	1.3-	1.5-	1999 04 12	704	0.9+	0.2+
1981 03 11	413	0.9+	0.3-	1999 04 07	704	0.2-	0.8-	1999 04 12	704	0.4+	2.0+
1981 03 11	413	0.3-	0.6-	1999 04 07	704	2.0-	1.9-				
1981 03 15	413	1.1+	0.9+	1999 04 12	704	1.6+	1.6+				

1981 EA₄₄ = 1999 JL₉₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.22737361	ω	161.79083	+0.95675731	+0.29084029		
<i>a</i>	2.6585368	Ω	181.33476	-0.28691769	+0.94058666		
<i>e</i>	0.1814234	<i>i</i>	12.98015	-0.04789248	+0.17523888		
<i>P</i>	4.33	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1981 03 06	413	(3.8+	3.4-)	1999 05 12	704	1.0+	0.4+	1999 06 11	703	1.0+	0.1-
1981 03 06	413	1.5+	0.5-	1999 05 12	704	0.6+	0.0	1999 06 11	703	0.3-	0.1+
1981 03 11	413	0.9-	0.2+	1999 05 12	704	1.4-	0.6-	1999 06 14	704	0.1-	0.4-
1981 03 15	413	0.4-	0.5-	1999 05 17	704	0.0	0.1+	1999 06 14	704	0.0	0.1-
1981 03 15	413	0.2-	0.7+	1999 05 17	704	0.7-	0.6-	1999 06 14	704	0.3+	0.2+
1981 04 26	413	(3.4+	3.8-)	1999 05 17	704	0.3-	0.9-	1999 06 14	704	0.4+	0.4-
1981 05 01	413	(3.6+	0.7+)	1999 05 17	704	(0.7+	2.6-)	1999 06 14	704	0.3+	0.3-
1999 05 12	704	0.2-	0.2+	1999 06 11	703	0.0	1.6+				
1999 05 12	704	1.1+	1.1+	1999 06 11	703	1.7-	0.2-				

1981 UX₂₂ = 1981 WZ₂ = 1999 JM₂Id. G. V. Williams (d, *MPC* 20484; unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.19409865	ω	325.81340	+0.84367084	-0.51372382		
<i>a</i>	2.9542985	Ω	65.84300	+0.52281040	+0.72017809		
<i>e</i>	0.1129738	<i>i</i>	9.83851	+0.12201968	+0.46629535		
<i>P</i>	5.08	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1981 10 24	675	0.2-	0.3-	1998 01 26	566	0.0	0.5-	1999 05 09	703	0.8+	1.1+
1981 10 25	675	0.0	0.2-	1998 01 26	566	0.0	0.1+	1999 05 09	703	0.9-	0.1+
1981 10 26	675	0.2-	0.2-	1999 05 08	703	0.7+	0.2-	1999 05 09	703	0.3-	0.9-
1981 11 24	033	0.5+	0.8+	1999 05 08	703	0.9+	0.4-	1999 05 09	703	0.3-	0.3+
1981 11 24	033	0.3-	0.4+	1999 05 08	703	1.6-	0.2+				
1998 01 26	566	0.1-	0.1+	1999 05 08	703	1.1+	0.4+				

1982 FL₁ = 1987 BR₂ = 1996 TM₅₃ = 1999 GG₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.17576780	ω	91.23205	-0.44790772	-0.89401780		
<i>a</i>	3.1562872	Ω	25.38576	+0.81022657	-0.41085048		
<i>e</i>	0.1424833	<i>i</i>	1.40720	+0.37803647	-0.17870101		
<i>P</i>	5.61	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1982 03 24	046	0.4-	2.0-	1999 04 06	691	0.1+	0.3+	1999 04 15	704	1.1-	0.5-
1982 03 24	046	(1.7-	3.0-)	1999 04 06	704	0.1+	1.0-	1999 04 15	704	0.4+	0.2-
1982 03 25	046	1.5+	0.6-	1999 04 06	704	0.7+	0.7-	1999 04 15	704	0.1-	0.1+

M.P.C. 34825

1982 03 25	046	0.5-	0.6-	1999 04 06	704	0.7+	0.6-	1999 04 15	704	0.2+	0.3-
1982 03 26	046	1.5-	1.0+	1999 04 06	704	0.5+	0.6-	1999 04 15	704	0.2-	0.0
1982 03 26	046	0.4-	0.8-	1999 04 06	704	0.5+	1.3-	1999 04 15	704	0.3+	0.6+
1987 01 21	046	0.0	0.1-	1999 04 07	699	1.4+	1.0+	1999 04 15	704	0.8+	0.4-
1987 01 21	046	0.0	0.0	1999 04 07	699	1.1+	0.8+	1999 04 15	704	0.6-	0.5+
1996 10 05	809	0.8+	0.0	1999 04 07	699	1.0+	0.7+	1999 04 15	704	0.4-	0.4+
1996 10 05	809	0.4-	0.8-	1999 04 12	704	0.4-	0.1-	1999 04 15	704	0.1-	0.3-
1996 10 05	809	0.8+	0.3-	1999 04 12	704	0.9-	0.0	1999 04 15	704	0.6+	0.6+
1996 10 06	809	0.3+	1.5-	1999 04 12	704	0.6-	1.1-	1999 04 15	704	0.2+	0.4+
1996 10 06	809	0.6+	0.2-	1999 04 12	704	0.1-	0.4-	1999 04 15	704	0.4+	0.1+
1996 10 06	809	0.1-	1.8-	1999 04 12	704	0.2-	0.3+	1999 04 15	704	0.5-	0.9+
1999 02 26	704	0.6-	0.6-	1999 04 12	691	0.1-	0.2+	1999 04 15	704	0.9-	0.3+
1999 02 26	704	0.2-	0.5+	1999 04 12	691	0.2-	0.1+	1999 04 15	704	0.8-	0.6+
1999 02 26	704	(1.7-	3.3+)	1999 04 12	691	0.1+	0.4+	1999 04 20	691	0.4-	0.1+
1999 02 26	704	(4.4-	1.7+)	1999 04 15	704	0.2-	0.1-	1999 04 20	691	0.2-	0.0
1999 04 06	691	0.2+	0.6+	1999 04 15	704	0.3-	1.6-	1999 04 20	691	0.5-	0.1+
1999 04 06	691	0.1+	0.5+	1999 04 15	704	0.4-	1.5-				

1982 QP₁ = 1982 RF₂ = 1989 PP₁ = 1999 JK₆₈Id. B. G. Marsden (d, *MPC* 8463), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.28062710	ω	174.29639	+0.78108811	+0.62345018		
<i>a</i>	2.3105550	Ω	147.05375	-0.57539497	+0.74029142		
<i>e</i>	0.1850532	<i>i</i>	3.66905	-0.24253245	+0.25155216		
<i>P</i>	3.51	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1982 08 15	095	(1.1-	2.7-)	1996 06 23	691	0.1-	0.3+	1999 04 12	704	1.2+	0.1+
1982 08 16	809	0.4-	0.4+	1996 06 23	691	0.1-	0.2+	1999 04 12	704	0.5+	1.6+
1982 08 16	809	0.2+	0.3+	1996 07 16	809	1.4+	1.3+	1999 04 12	704	0.3+	0.9+
1982 08 16	809	0.1+	0.1+	1996 07 16	809	0.5+	0.7+	1999 05 12	704	0.4+	0.5+
1982 08 16	095	(0.3-	3.2+)	1996 07 16	809	1.0+	0.8+	1999 05 12	704	0.5-	0.4-
1982 08 18	809	0.6-	1.1+	1996 09 08	809	(1.2+	2.7+)	1999 05 12	704	0.7+	0.5+
1982 08 18	809	0.3+	1.0+	1996 09 08	809	(0.6+	2.7+)	1999 05 12	704	0.7+	0.2-
1982 08 18	809	0.3-	1.1+	1996 09 08	809	(0.4+	2.6+)	1999 05 12	704	0.7-	1.0-
1982 08 22	809	0.6-	0.6-	1996 10 16	566	1.2-	0.5+	1999 05 13	704	0.7-	0.3-
1982 08 22	809	0.8-	1.0-	1996 10 16	566	0.7-	0.0	1999 05 13	704	1.0-	0.1+
1982 08 22	809	0.5-	0.0	1996 10 16	566	0.9-	0.1+	1999 05 13	704	0.2-	0.9-
1982 09 13	675	1.8+	0.7+	1997 12 26	566	0.1-	0.8+	1999 05 13	704	1.3-	1.4-
1982 09 13	675	0.1-	0.2-	1997 12 26	566	0.1-	0.7+	1999 05 15	703	0.5+	0.5+
1989 08 05	033	0.2-	1.0-	1997 12 26	566	0.4-	0.8+	1999 05 15	703	0.5+	0.3+
1989 08 06	033	0.1-	1.1-	1998 01 07	699	0.0	0.1+	1999 05 15	704	0.6-	1.7+
1992 04 27	691	0.1+	0.2-	1998 01 07	699	1.3+	0.5-	1999 05 15	703	0.2+	0.2-
1992 04 27	691	0.5+	0.4-	1998 01 07	699	1.5-	0.1-	1999 05 15	704	0.0	1.2-
1992 04 27	691	0.6+	0.1-	1998 01 20	704	0.6+	0.2-	1999 05 15	703	0.8+	0.2+
1994 01 08	691	0.5-	0.0	1998 01 20	704	0.8+	0.7+	1999 05 15	704	0.3-	0.4+
1994 01 08	691	0.1-	0.1+	1998 01 20	704	0.1+	1.1+	1999 05 15	704	0.2-	0.8+
1994 01 08	691	0.6-	0.1+	1998 01 20	704	0.4+	1.1+	1999 05 15	704	0.9-	0.8+
1995 03 10	691	0.1+	0.2-	1998 01 20	704	0.5+	0.1+	1999 05 17	704	0.0	1.1-
1995 03 10	691	0.4+	0.1-	1998 01 20	704	0.2-	0.7+	1999 05 17	704	1.2-	0.7+
1995 03 10	691	0.1+	0.0	1999 04 11	699	0.6+	0.5+	1999 05 17	704	1.6-	0.5+
1995 03 10	691	0.2+	0.0	1999 04 11	699	0.7+	0.0	1999 05 17	704	1.5-	1.0+
1995 03 10	691	0.1+	0.2-	1999 04 11	699	0.6+	0.0	1999 05 17	704	0.3+	0.1-
1995 03 10	691	0.1+	0.1-	1999 04 12	704	0.9+	0.0				
1996 06 23	691	0.1-	0.3+	1999 04 12	704	0.1-	0.3-				

1982 QP₃ = 1999 JC₆₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.28324786	ω	97.50850	+0.84702008	+0.52653509		
<i>a</i>	2.2962806	Ω	230.75016	-0.51725322	+0.78481353		
<i>e</i>	0.2338553	<i>i</i>	5.40343	-0.12249936	+0.32684634		
<i>P</i>	3.48	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1982 08 28	095	0.2+	2.3+	1999 05 18	704	0.3+	0.4-	1999 06 09	704	0.1-	1.4-
1982 08 29	095	0.1-	1.9+	1999 05 18	704	0.2-	0.1+	1999 06 11	703	0.7+	0.1-
1982 09 12	095	1.2-	2.0-	1999 05 18	704	0.2+	0.1+	1999 06 11	703	0.7+	0.7+
1982 09 20	095	1.2+	1.9-	1999 05 18	704	0.0	0.0	1999 06 11	703	0.7+	0.4+
1999 05 10	704	0.1+	0.0	1999 05 18	704	0.8-	0.3+	1999 06 11	703	0.5+	0.2+
1999 05 10	704	0.4-	0.4+	1999 05 19	704	0.6+	0.5+	1999 06 11	703	0.2+	0.1+
1999 05 10	704	0.5-	1.1+	1999 05 19	704	0.1+	0.0	1999 06 11	703	0.1-	0.2+
1999 05 10	704	0.5-	0.4+	1999 05 19	704	0.8+	1.1+	1999 06 11	703	0.2-	0.2+
1999 05 10	704	1.4-	0.1+	1999 05 19	704	0.2-	0.3+	1999 06 11	703	0.2+	0.8+
1999 05 13	704	0.2+	0.3-	1999 05 19	704	1.0+	0.8+	1999 06 15	704	0.6-	0.5-
1999 05 13	704	0.2+	0.2-	1999 06 09	704	0.1+	0.7-	1999 06 15	704	0.5-	0.3-
1999 05 13	704	0.0	0.5-	1999 06 09	704	0.4+	0.2+	1999 06 15	704	0.1-	0.3-
1999 05 13	704	0.6+	0.1-	1999 06 09	704	0.3-	1.0-	1999 06 15	704	0.4-	0.5-
1999 05 13	704	0.5-	1.2-	1999 06 09	704	0.5-	0.9-	1999 06 15	704	0.4-	0.3-

1982 UO₆ = 1998 XC₇₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	134.92186		(2000.0)	P	Q	Williams
<i>n</i>	0.18897386	ω	98.17076	+0.90625601	+0.40055145	
<i>a</i>	3.0074718	Ω	238.31250	-0.42256229	+0.84938752	
<i>e</i>	0.1205120	<i>i</i>	9.13707	-0.01188112	+0.34365590	
<i>P</i>	5.22	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1982 10 20	095	1.7-	1.8-	1998 12 15	704	0.5-	0.6-	1998 12 16	704	0.2+	1.3+
1982 10 25	095	0.6+	1.3+	1998 12 15	704	0.1-	0.3+	1998 12 16	704	0.6+	0.5-
1982 11 09	095	1.5+	0.5+	1998 12 15	704	0.6+	0.9+	1998 12 22	704	1.6+	0.7-
1982 11 14	095	0.3-	1.0-	1998 12 15	704	0.9-	1.5+	1998 12 22	704	0.4+	1.6-
1992 09 29	675	0.0	0.1+	1998 12 16	704	0.1-	0.1-	1998 12 22	704	0.9-	1.1-
1992 09 29	675	0.1-	0.3+	1998 12 16	704	0.4-	0.6+	1998 12 22	704	0.4+	0.9-
1998 12 15	704	0.7-	0.9+	1998 12 16	704	0.1-	0.8+				

1983 PM₁ = 1971 VE₁ = 1987 QS₉ = 1999 LL₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	308.45011		(2000.0)	P	Q	Williams
<i>n</i>	0.23936824	ω	77.84968	+0.96286095	+0.23163070	
<i>a</i>	2.5689660	Ω	268.63729	-0.26814119	+0.88050946	
<i>e</i>	0.2130479	<i>i</i>	7.97663	+0.03160845	+0.41358228	
<i>P</i>	4.12	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1971 11 11	095	0.4+	1.5-	1996 12 20	327	0.3-	0.2-	1999 06 09	704	0.3+	0.7+
1983 08 06	095	2.2-	0.1-	1996 12 20	327	0.1-	0.0	1999 06 15	704	0.2-	0.0
1983 09 11	095	(2.4-	6.5+)	1999 06 09	704	0.2-	0.8-	1999 06 15	704	0.1+	0.0
1983 09 14	095	0.2+	2.2+	1999 06 09	704	0.2+	1.0-	1999 06 15	704	0.3+	0.4+
1987 08 26	095	1.8+	1.9-	1999 06 09	704	0.5-	0.3-	1999 06 15	704	0.3+	0.1+
1996 12 20	327	0.4+	0.1+	1999 06 09	704	0.4-	0.6-	1999 06 15	704	0.2-	0.9+

1983 RZ₂ = 1987 OK = 1999 GX₃

Id. M. E. Sansaturio, S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	311.54517		(2000.0)	P	Q	Williams
<i>n</i>	0.23876994	ω	215.19584	+0.84315488	+0.51850993	
<i>a</i>	2.5732558	Ω	112.96445	-0.45106775	+0.82613585	
<i>e</i>	0.1987179	<i>i</i>	8.88795	-0.29262218	+0.22056065	
<i>P</i>	4.13	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1983 09 02	809	0.8-	0.2+	1987 07 21	046	(1.4+	4.6-)	1999 05 17	704	0.6-	0.1-
1983 09 02	809	0.6-	0.4+	1999 04 11	428	0.4+	0.3+	1999 05 21	704	0.5-	0.7+
1983 09 02	809	0.2+	0.6-	1999 04 11	428	0.5+	0.3+	1999 05 21	704	0.6+	0.0
1983 09 04	809	0.1+	0.1+	1999 04 12	428	0.1-	0.1+	1999 05 21	704	0.1+	0.6-
1983 09 04	809	0.4-	0.6-	1999 04 12	428	0.1-	0.2+	1999 05 21	704	0.1-	0.2-

1983 09 04	809	0.0	0.8-	1999 04 15	428	0.3-	0.3-	1999 05 21	704	1.0-	0.7+
1983 09 06	809	0.3-	0.0	1999 04 15	428	0.1+	0.2+	1999 06 06	703	0.6+	0.0
1983 09 06	809	0.1+	0.8-	1999 04 18	428	0.6-	0.0	1999 06 06	703	0.2+	0.2+
1983 09 06	809	0.1-	0.5-	1999 04 18	428	0.1-	0.8+	1999 06 06	703	1.0+	0.3+
1983 09 07	809	0.1-	0.0	1999 04 23	428	0.6-	0.1-	1999 06 06	703	0.3-	1.1+
1983 09 07	809	0.1-	0.0	1999 04 23	428	0.4-	0.3-	1999 06 08	704	0.3+	0.2+
1983 09 07	809	0.1-	0.1-	1999 05 08	428	0.8-	0.4-	1999 06 08	704	0.1+	0.3-
1983 09 08	809	0.5-	0.3+	1999 05 08	428	0.6-	0.1+	1999 06 08	704	0.2+	0.2+
1983 09 08	809	0.4-	0.8+	1999 05 12	704	1.2+	0.2-	1999 06 08	704	0.4+	0.5+
1983 09 08	809	0.5-	0.8+	1999 05 12	704	(1.0-	2.5+)	1999 06 08	704	0.3+	0.0
1983 09 09	809	0.4-	0.3+	1999 05 12	704	0.1+	0.2-	1999 06 14	704	0.5+	0.3-
1983 09 09	809	0.1+	0.4+	1999 05 12	704	0.3-	0.7-	1999 06 14	704	0.0	0.5+
1983 09 09	809	0.0	0.1-	1999 05 12	704	0.1+	0.3-	1999 06 14	704	0.5+	0.2-
1983 09 11	809	1.1+	0.1-	1999 05 17	704	0.2-	1.2-	1999 06 14	704	0.2+	0.5-
1983 09 12	809	1.9+	0.0	1999 05 17	704	0.5-	0.9-	1999 06 14	704	0.2+	0.0
1983 09 12	809	1.1+	0.1+	1999 05 17	704	0.2+	0.2+				
1987 07 21	046	(1.4+	3.0-)	1999 05 17	704	1.0-	0.1-				

1985 RX₂ = 1999 JE₄₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	312.82970		(2000.0)	P	Q	Williams
<i>n</i>	0.27257053	ω	259.44184	+0.83967634	+0.54231380	
<i>a</i>	2.3558635	Ω	67.71120	-0.48522753	+0.77311064	
<i>e</i>	0.1996546	<i>i</i>	1.79432	-0.24392188	+0.32893113	
<i>P</i>	3.62	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1985 09 05	809	0.2-	0.2+	1999 05 10	704	(2.9-	0.1+)	1999 05 17	703	0.2+	0.7+
1985 09 05	809	0.1+	0.2+	1999 05 13	704	0.6+	0.6-	1999 05 17	703	(0.1-	2.2+)
1985 09 05	809	0.4+	0.2+	1999 05 13	704	1.1+	0.5-	1999 05 18	704	0.4+	0.2+
1985 09 07	809	0.4-	0.1-	1999 05 13	704	1.7+	1.1-	1999 05 18	704	0.1+	0.2-
1985 09 07	809	0.3-	0.0	1999 05 13	704	1.0-	0.8+	1999 05 18	704	0.5-	0.7-
1985 09 07	809	0.2-	0.0	1999 05 13	704	0.3-	0.5+	1999 05 18	704	1.1-	1.1-
1985 09 10	809	0.1-	0.1-	1999 05 14	704	0.6-	0.1+	1999 05 18	704	0.7-	0.2-
1985 09 10	809	0.2+	0.1-	1999 05 14	704	1.8+	0.8+	1999 06 15	704	0.4-	0.2+
1985 09 10	809	0.4+	0.4-	1999 05 14	704	0.4-	0.5+	1999 06 15	704	0.2-	0.4+
1999 05 10	704	0.0	0.8+	1999 05 14	704	0.8-	0.9+	1999 06 15	704	0.7+	0.9-
1999 05 10	704	0.2-	0.6-	1999 05 14	704	0.6-	0.7+	1999 06 15	704	0.9+	0.1-
1999 05 10	704	0.1-	0.6-	1999 05 17	703	0.7+	0.3-	1999 06 15	704	1.1-	0.1+
1999 05 10	704	0.7-	0.9-	1999 05 17	703	0.4+	1.1+				

1986 QE₁ = 1999 JQ₅₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	303.51054		(2000.0)	P	Q	Williams
<i>n</i>	0.29286041	ω	262.86809	+0.93064307	+0.36278939	
<i>a</i>	2.2457545	Ω	75.85130	-0.31324889	+0.85739242	
<i>e</i>	0.1600600	<i>i</i>	2.82710	-0.18915233	+0.36505080	
<i>P</i>	3.37	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1986 08 26	809	0.6-	1.3-	1986 09 05	809	0.5+	0.1+	1999 05 13	704	0.4-	0.5-
1986 08 26	809	0.9-	1.3-	1986 09 05	809	0.5+	0.1+	1999 05 13	704	1.1-	0.7-
1986 08 26	809	0.5-	1.2-	1986 09 06	809	0.4+	0.8+	1999 05 13	704	0.7+	1.2+
1986 08 27	809	0.6-	0.7-	1986 09 06	809	0.3+	0.8+	1999 05 13	704	0.3-	0.0
1986 08 27	809	0.6-	0.6-	1986 09 06	809	0.4+	0.9+	1999 05 13	704	0.8+	1.2+
1986 08 27	809	0.5-	0.6-	1986 09 07	809	0.6+	0.9+	1999 05 18	704	0.3+	0.1+
1986 08 29	809	0.2-	0.2-	1986 09 07	809	0.4+	0.8+	1999 05 18	704	0.1+	0.6-
1986 08 29	809	0.1-	0.3-	1986 09 07	809	0.5+	0.8+	1999 05 18	704	0.4-	0.1-
1986 08 29	809	0.2+	0.7-	1986 09 09	809	0.2+	0.0	1999 05 18	704	0.0	0.4+
1986 09 01	809	0.5-	0.4-	1986 09 09	809	0.6+	0.1+	1999 05 18	704	0.1-	0.4-
1986 09 01	809	0.2-	0.4-	1986 09 09	809	0.6+	0.0	1999 05 19	704	0.3+	0.4-
1986 09 01	809	0.0	0.5-	1986 09 11	809	0.0	0.3-	1999 05 19	704	0.2+	0.5+
1986 09 02	809	0.2-	0.3+	1986 09 11	809	0.0	0.1-	1999 05 19	704	0.3+	1.2+
1986 09 02	809	0.2+	0.3+	1986 09 11	809	0.0	0.1+	1999 05 19	704	0.7-	0.3+
1986 09 02	809	0.4+	0.4+	1986 09 14	809	1.7-	0.5-	1999 05 19	704	0.4-	0.4+
1986 09 03	809	0.3+	0.6+	1986 09 14	809	1.6-	0.4-	1999 06 15	704	0.0	0.2+

1986 09 03	809	0.3+	0.5+	1986 09 14	809	1.6-	0.5-	1999 06 15	704	0.8+	0.5-
1986 09 03	809	0.3+	0.4+	1999 05 10	704	0.3+	0.1-	1999 06 15	704	0.1-	0.4-
1986 09 04	809	0.5+	0.7+	1999 05 10	704	0.5-	0.2+	1999 06 15	704	0.5+	1.1+
1986 09 04	809	0.7+	0.6+	1999 05 10	704	0.3-	0.3-	1999 06 15	704	0.4+	0.2+
1986 09 04	809	1.2+	0.7+	1999 05 10	704	0.3+	0.9-				
1986 09 05	809	0.6+	0.1+	1999 05 10	704	0.5-	1.8-				

1986 QR₅ = 1991 NH₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	38.80552		(2000.0)	P		Q	
<i>n</i>	0.17821897	ω	113.28137	+0.16530771		-0.97752177	
<i>a</i>	3.1272799	Ω	326.36569	+0.79635473		+0.21057369	
<i>e</i>	0.0987244	<i>i</i>	13.66577	+0.58180108		-0.01048377	
<i>P</i>	5.53	<i>H</i>	12.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1986 08 29	095	0.5+	2.2+	1992 09 30	675	1.6-	0.6-	1998 11 16	704	0.1-	0.0
1986 09 06	095	0.3+	1.3-	1997 10 31	910	0.1-	0.6+	1998 11 16	704	0.8+	0.7-
1986 10 02	095	1.0+	0.4-	1997 10 31	910	0.2-	0.6+	1998 12 12	704	0.7+	0.4-
1991 07 14	675	0.9+	1.0-	1997 10 31	910	0.2-	0.7+	1998 12 12	704	0.5+	0.9-
1991 07 14	675	1.1-	0.5-	1998 11 16	704	0.2+	0.5+				
1992 09 30	675	0.3-	0.6-	1998 11 16	704	1.0-	0.8+				

1986 RX₅ = 1954 QB₁ = 1989 PS₁ = 1989 SJ₁₄ = 1998 KL₁₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	29.44002		(2000.0)	P		Q	
<i>n</i>	0.30938855	ω	31.29818	+0.98097040		+0.19366756	
<i>a</i>	2.1650432	Ω	317.52790	-0.18208776		+0.89303188	
<i>e</i>	0.0931832	<i>i</i>	1.16954	-0.06738779		+0.40618585	
<i>P</i>	3.19	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1953 04 15	675	0.0	1.3-	1989 09 23	808	0.4+	0.8+	1998 05 01	704	0.0	1.0-
1953 04 15	675	0.6-	0.0	1991 03 09	675	1.9-	0.8+	1998 05 01	704	0.5-	1.5-
1954 08 27	675	0.0	0.4+	1991 03 09	675	1.1+	0.8-	1998 05 22	704	0.0	0.4+
1954 08 27	675	0.7-	0.6+	1993 12 09	675	1.0-	0.1-	1998 05 22	704	0.3+	0.4-
1982 07 09	413	1.4+	0.6-	1993 12 09	675	0.7+	0.2+	1998 05 22	704	0.9-	0.6+
1982 07 09	413	(2.7-	0.2+)	1998 04 22	704	0.8-	1.0+	1998 05 22	704	0.5-	0.5-
1986 09 07	095	0.8+	0.4-	1998 04 22	704	0.8+	1.4+	1998 05 22	704	0.4-	0.8+
1986 09 11	095	(0.1+	4.7-)	1998 04 22	704	0.9-	0.5-	1998 05 24	704	0.6+	0.8-
1986 10 05	095	1.5+	0.7-	1998 04 22	704	1.5+	0.1+	1998 05 24	704	0.6+	0.8-
1989 08 05	033	0.2-	0.7-	1998 05 01	704	0.2-	0.2+	1998 05 24	704	0.5+	1.0+
1989 08 06	033	0.6-	1.5-	1998 05 01	704	0.4-	0.0	1998 05 24	704	0.9+	0.1-
1989 09 23	808	0.6-	0.1+	1998 05 01	704	0.2-	1.0-	1998 05 24	704	0.4-	1.0+

1986 TQ₅ = 1986 UB₂ = 1991 NX₅ = 1997 OS = 1998 XV₅₈

Id. S. Nakano (d, MPC 14752), A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	102.95662		(2000.0)	P		Q	
<i>n</i>	0.17245557	ω	217.84556	+0.99838242		-0.05356110	
<i>a</i>	3.1965725	Ω	145.21028	+0.05680986		+0.92634474	
<i>e</i>	0.2039846	<i>i</i>	1.91558	+0.00227691		+0.37284933	
<i>P</i>	5.72	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1986 10 01	010	(4.2+	6.6-)	1991 07 12	809	1.2+	0.1+	1998 12 15	704	0.8+	0.3+
1986 10 01	010	(2.4+	5.3-)	1991 07 12	809	1.3+	0.3+	1998 12 15	704	1.0+	0.5-
1986 10 03	095	1.5+	0.0	1991 07 12	809	1.7+	0.0	1998 12 15	704	1.1-	0.1-
1986 10 27	010	(15.8-	5.8-)	1991 08 02	413	0.1+	0.9-	1998 12 15	704	0.9+	0.7-
1986 10 27	010	(15.6-	4.5-)	1991 08 02	413	0.4+	0.3-	1998 12 16	704	0.1-	1.2+
1986 10 27	010	(11.2-	5.1-)	1997 07 27	910	0.2+	0.3-	1998 12 16	704	1.1+	0.8-
1986 11 02	675	1.3-	0.6+	1997 07 27	910	0.2+	0.3-	1998 12 16	704	0.0	1.1+

1986 11 02	675	0.4-	0.7+	1997 07 27	910	0.3+	0.2-	1998 12 16	704	0.1+	0.1-
1986 11 02	675	0.6-	0.8+	1997 07 29	910	0.6+	0.2+	1998 12 16	704	0.6-	1.6+
1991 07 10	809	0.6-	0.4-	1997 07 29	910	0.6+	0.1-	1998 12 22	704	1.1-	1.6-
1991 07 10	809	0.5-	0.3-	1997 07 29	910	0.6+	0.1+	1998 12 22	704	0.5-	1.7-
1991 07 10	809	0.7-	0.4-	1997 08 10	691	0.8-	0.6-	1998 12 22	704	0.4-	0.7-
1991 07 11	809	1.4-	0.1-	1997 08 10	691	0.6-	0.0	1998 12 22	704	0.0	1.2-
1991 07 11	809	0.8-	0.1+	1997 08 10	691	0.4-	0.1-				
1991 07 11	809	0.4-	0.1+	1998 12 15	704	0.0	0.7-				

1987 TG = 1999 JT₁₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	253.87157		(2000.0)	P		Q	
<i>n</i>	0.22711811	ω	357.52112	+0.86230014		-0.49897211	
<i>a</i>	2.6605303	Ω	32.86915	+0.46730664		+0.71833335	
<i>e</i>	0.2722950	<i>i</i>	9.16053	+0.19509732		+0.48479278	
<i>P</i>	4.34	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1987 09 18	095	1.1+	0.3-	1998 04 20	704	0.1-	0.2+	1999 05 18	704	0.3+	0.2+
1987 09 21	095	0.9+	0.1-	1998 04 20	704	0.8-	1.0-	1999 05 18	704	0.6-	1.1-
1987 10 14	046	0.3+	1.3-	1998 04 20	704	0.1-	1.0+	1999 05 18	704	0.6-	0.9-
1987 10 14	046	0.6-	0.8-	1998 04 20	704	1.9-	0.6-	1999 06 15	704	0.0	0.9+
1998 03 20	704	0.1+	0.5-	1999 05 13	704	1.5-	1.2+	1999 06 15	704	0.7+	0.5+
1998 03 20	704	1.3+	1.8-	1999 05 13	704	(1.5-	2.4-)	1999 06 15	704	0.8+	0.9+
1998 03 20	704	1.0+	0.3-	1999 05 13	704	1.3-	0.6-	1999 06 15	704	1.2+	1.4+
1998 03 20	704	0.5-	0.4-	1999 05 18	704	1.5+	1.9-				
1998 03 20	704	1.0-	0.5+	1999 05 18	704	0.4-	1.6-				

1988 BM₂ = 1999 JB₃₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	108.14868		(2000.0)	P		Q	
<i>n</i>	0.19551742	ω	65.69911	-0.31794195		-0.92658779	
<i>a</i>	2.9399892	Ω	44.46757	+0.73221970		-0.37455899	
<i>e</i>	0.2429567	<i>i</i>	16.66332	+0.60230161		-0.03377321	
<i>P</i>	5.04	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1988 01 24	675	0.4-	0.1+	1999 05 10	704	0.6+	0.6-	1999 05 13	704	1.0-	0.5+
1988 01 24	675	0.2-	0.3+	1999 05 10	704	0.6-	0.7+	1999 05 13	704	0.8+	0.2+
1988 02 16	675	0.4+	0.0	1999 05 10	704	1.0-	0.3-	1999 06 09	704	(2.6+	0.9-)
1988 02 17	675	0.5+	0.8+	1999 05 10	704	0.5+	0.4-	1999 06 09	704	0.5+	0.4-
1988 02 20	675	1.1+	0.6+	1999 05 13	704	0.5-	0.4+	1999 06 09	704	0.3+	1.2-
1988 03 17	675	1.6-	2.0-	1999 05 13	704	0.3+	0.7-	1999 06 09	704	0.3+	0.4+
1999 05 10	704	0.5-	0.3+	1999 05 13	704	0.5+	1.1+				

1988 CP = 1973 DD = 1999 BT₁₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	11.02392		(2000.0)	P		Q	
<i>n</i>	0.26281967	ω	178.06734	-0.93471097		-0.34839631	
<i>a</i>	2.4137788	Ω	341.07235	+0.32310690		-0.75065419	
<i>e</i>	0.1959511	<i>i</i>	12.50816	+0.14804502		-0.56137180	
<i>P</i>	3.75	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1973 02 27	029	1.6-	0.8-	1988 03 09	399	1.2+	0.1+	1998 12 12	704	0.2-	0.8-
1973 02 27	029	1.2+	0.1+	1988 03 09	399	1.0+	0.2-	1999 01 16	704	1.2-	0.6-
1988 02 15	399	0.2-	0.6+	1988 03 09	399	0.0	0.5-	1999 01 16	704	0.6-	0.2-
1988 02 15	399	(2.9+	1.2+)	1988 03 13	399	0.6-	0.3-	1999 01 16	704	0.7-	0.1-
1988 02 15	399	(7.0+	3.4+)	1988 03 13	399	1.9+	0.3+	1999 01 16	704	0.3+	0.2-
1988 02 18	399	1.9-	1.9-	1988 03 13	399	0.1+	0.2-	1999 01 16	704	1.3+	0.3-
1988 02 19	399	0.9+	0.8+	1998 12 12	704	0.1-	0.7+	1999 01 19	704	0.3+	0.1-
1988 02 19	399	1.1-	1.5+	1998 12 12	704	0.4+	0.4-	1999 01 19	704	1.2+	1.7+
1988 02 19	399	0.3-	0.2+	1998 12 12	704	0.7-	0.3+	1999 01 19	704	0.6-	0.2+
1988 02 21	399	0.5-	0.3+	1998 12 12	704	0.1-	0.0	1999 01 19	704	0.7+	0.1+

1988 CC₄ = 1999 JJ₁₀₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.19043257	ω	303.00648	-0.98425116	+0.12833893		
<i>a</i>	2.9920940	Ω	244.62577	-0.07997034	-0.93656082		
<i>e</i>	0.0488789	<i>i</i>	7.73249	-0.15765276	-0.32616399		
<i>P</i>	5.18	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1988 02 13	809	0.4+	0.5-	1988 02 21	809	3.1-	1.6+	1999 05 13	704	0.3+	2.0-
1988 02 15	809	0.3+	0.9-	1988 02 23	809	0.9+	0.7-	1999 05 13	704	0.8-	0.6+
1988 02 16	809	1.0+	0.1+	1988 02 23	809	0.7+	0.3-	1999 05 18	704	0.9+	1.0+
1988 02 16	809	0.6+	0.2-	1988 02 23	809	0.7+	0.4-	1999 05 18	704	1.3-	0.4+
1988 02 16	809	0.1+	0.6+	1999 05 13	704	1.7+	1.0+	1999 05 18	704	1.2+	0.2-
1988 02 21	809	0.6-	0.6+	1999 05 13	704	0.7-	0.1-	1999 05 18	704	0.8-	0.8-
1988 02 21	809	0.9-	0.2+	1999 05 13	704	0.5-	0.1+				

1988 EB₂ = 1979 SC₁₀ = 1999 JY₄₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27869701	ω	245.76848	+0.37182597	-0.92829216		
<i>a</i>	2.3212104	Ω	182.41604	+0.88488355	+0.35585411		
<i>e</i>	0.1413885	<i>i</i>	5.95187	+0.28058254	+0.10789583		
<i>P</i>	3.54	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1979 09 28	095	0.2-	0.7+	1999 05 10	704	0.4-	1.3-	1999 05 19	704	0.7-	0.1+
1988 03 13	054	0.7+	0.5-	1999 05 10	704	0.1+	1.9+	1999 05 20	385	0.3-	0.8-
1988 03 14	054	0.4-	0.1+	1999 05 13	704	0.2-	0.1-	1999 05 20	385	0.6-	0.1+
1988 03 18	054	0.4-	1.2+	1999 05 13	704	0.8+	0.8-	1999 05 20	385	0.1+	0.0
1988 03 25	809	0.2-	0.3-	1999 05 13	704	0.3-	0.1-	1999 06 08	704	0.3+	1.0+
1988 03 25	809	0.8-	0.4+	1999 05 13	704	0.3+	0.0	1999 06 08	704	0.8+	1.6+
1988 03 26	809	0.3-	0.1+	1999 05 13	704	0.7-	0.6-	1999 06 08	704	(0.9+ 2.3+)	
1988 03 26	809	1.1+	0.6-	1999 05 18	704	0.2-	0.4-	1999 06 08	704	0.4-	1.3+
1988 04 20	413	0.3-	0.4+	1999 05 18	704	0.4+	1.0-	1999 06 14	704	1.0+	1.1-
1988 04 20	413	1.0+	0.2+	1999 05 18	704	0.2+	0.7-	1999 06 14	704	0.2-	0.2-
1999 04 14	699	1.4+	0.3-	1999 05 18	704	0.7+	0.3+	1999 06 14	704	1.2-	0.1+
1999 04 14	699	0.6+	1.1+	1999 05 18	704	0.1+	0.4-	1999 06 14	704	0.2+	0.9+
1999 04 14	699	1.1+	0.4-	1999 05 19	704	0.7-	0.0	1999 06 14	704	1.1-	0.1-
1999 05 10	704	0.6-	0.2+	1999 05 19	704	0.1+	0.5-				
1999 05 10	704	(0.6-	2.1-)	1999 05 19	704	0.3-	0.2+				

1988 LG = 1999 GZ₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.25955515	ω	252.92451	+0.78837772	+0.56221350		
<i>a</i>	2.4339760	Ω	72.18540	-0.41565674	+0.78609221		
<i>e</i>	0.1466720	<i>i</i>	15.20844	-0.45353065	+0.25685602		
<i>P</i>	3.80	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1988 05 19	675	0.4+	0.2-	1999 05 12	704	1.4+	0.3+	1999 05 15	704	1.1-	1.0-
1988 05 19	675	1.2+	1.6+	1999 05 12	704	0.3+	0.5-	1999 05 15	704	1.5+	0.7-
1988 06 15	675	1.0-	0.2-	1999 05 12	704	0.8-	0.2-	1999 05 15	704	0.1+	0.0
1988 06 17	675	0.7-	1.2-	1999 05 15	704	0.2+	0.3+	1999 05 15	704	0.5-	1.2+
1999 04 12	704	0.4+	0.2-	1999 05 15	704	0.1+	0.2+	1999 05 15	704	0.1+	0.4+
1999 04 12	704	0.1+	1.4+	1999 05 15	704	0.1+	0.5+	1999 05 15	704	0.3-	0.2-
1999 04 12	704	(2.5-	0.3+)	1999 05 15	704	0.3+	0.1+	1999 05 15	704	0.1+	0.2-
1999 04 12	704	0.8-	0.4-	1999 05 15	704	0.9+	0.4+	1999 05 15	704	1.3-	0.7-
1999 04 12	704	0.9-	0.2-	1999 05 15	704	0.3+	0.2-	1999 05 17	704	0.6-	0.4-
1999 04 15	704	0.9-	0.1-	1999 05 15	704	0.5+	0.3+	1999 05 17	704	0.3+	0.1+
1999 04 15	704	0.0	0.3-	1999 05 15	704	0.4+	0.0	1999 05 17	704	1.2-	0.4+
1999 04 15	704	0.5-	0.7-	1999 05 15	704	0.6+	0.4+	1999 05 17	704	1.1-	0.3+
1999 04 15	704	0.5+	0.7-	1999 05 15	704	1.3+	0.1-	1999 05 17	704	0.8-	0.9-
1999 04 15	704	0.1+	1.6+	1999 05 15	704	0.8+	0.3+	1999 06 08	704	0.0	0.3+

1999 04 16	704	1.0-	0.0	1999 05 15	704	1.7+	0.4-	1999 06 08	704	0.1+	0.3+
1999 04 16	704	0.5-	0.6+	1999 05 15	704	0.2+	0.3-	1999 06 08	704	0.2+	0.2-
1999 04 16	704	0.5-	0.0	1999 05 15	704	0.6+	0.3-	1999 06 08	704	0.7+	0.3-
1999 04 16	704	0.5-	0.1+	1999 05 15	704	1.2-	1.1+	1999 06 08	704	0.6-	0.3-
1999 04 16	704	0.7-	0.8-	1999 05 15	704	0.3+	0.4+				
1999 05 12	704	1.1+	0.1-	1999 05 15	704	0.6+	0.7-				

1988 MA = 1999 KE₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27073487	ω	336.96993	-0.85041968	+0.42228062		
<i>a</i>	2.3665004	Ω	231.87066	-0.39888939	-0.90643696		
<i>e</i>	0.1707900	<i>i</i>	23.51020	-0.34303589	+0.00714892		
<i>P</i>	3.64	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1988 05 19	675	0.3+	0.7-	1999 05 21	704	0.4+	2.0+	1999 06 12	704	0.3+	0.2-
1988 05 19	675	0.5+	1.2+	1999 05 21	704	1.0+	2.8+	1999 06 12	704	0.5-	0.0
1988 06 16	675	0.3-	0.1+	1999 05 21	704	0.5+	1.5+	1999 06 12	704	0.2-	0.2-
1988 06 19	675	0.5-	0.4-	1999 05 21	704	1.1+	0.6+	1999 06 12	704	0.4-	0.5+
1999 05 20	704	1.6-	2.6-	1999 05 21	704	0.2+	1.4+	1999 06 14	704	0.1+	0.0
1999 05 20	704	1.5-	3.1-	1999 05 21	704	0.2-	1.8+	1999 06 14	704	0.1-	0.1-
1999 05 20	704	0.4-	2.9-	1999 05 21	704	0.7+	0.5+	1999 06 14	704	0.4+	0.1-
1999 05 20	704	0.0	2.8-	1999 05 21	704	0.7+	0.9+	1999 06 14	704	0.0	0.2-
1999 05 20	704	0.2-	2.9-	1999 05 21	704	0.8-	0.7+	1999 06 14	704	0.3+	0.5+
1999 05 21	704	0.0	1.9+	1999 06 12	704	0.0	0.4-				

1988 SH₃ = 1992 RK = 1999 JB₈₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.24598977	ω	251.10618	+0.95807038	+0.18158158		
<i>a</i>	2.5226560	Ω	97.95758	-0.09288143	+0.92860395		
<i>e</i>	0.1456912	<i>i</i>	12.93270	-0.27106123	+0.32360907		
<i>P</i>	4.01	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1988 09 16	807	0.4+	0.3-	1997 12 29	566	0.1-	1.6+	1999 05 12	704	1.4+	1.3+
1988 09 18	807	0.0	0.5+	1997 12 29	566	0.3-	1.5+	1999 05 12	704	0.8-	1.1+
1988 09 19	807	0.8+	0.4+	1997 12 29	566	0.0	1.5+	1999 05 12	704	0.9-	1.2-
1988 10 04	807	0.7+	0.5-	1998 01 25	566	0.2+	1.0-	1999 05 12	704	1.2+	0.7-
1988 10 05	807	0.3+	0.3+	1998 01 25	566	0.2+	1.3-	1999 05 12	704	1.2+	0.7-
1988 10 07	807	0.1+	0.3+	1998 01 25	566	0.4+	1.4-	1999 05 17	704	0.7+	1.2+
1988 11 05	807	1.9-	2.2-	1999 04 12	704	0.4-	0.1-	1999 05 17	704	0.2+	0.5-
1988 11 07	807	0.8-	0.3+	1999 04 12	704	0.6-	0.4-	1999 05 17	704	0.3-	1.2-
1992 09 04	372	0.3+	0.3-	1999 04 12	704	(3.2+	1.0-)	1999 05 17	704	0.8-	0.2-
1992 09 04	372	0.8-	1.5+	1999 04 12	704	0.6+	1.0+	1999 05 17	704	1.3-	0.9+

1988 VE₃ = 1997 UL₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21833557	ω	320.77254	+0.97768179	-0.04374504		
<i>a</i>	2.7314068	Ω	43.13971	+0.15776446	+0.79877328		
<i>e</i>	0.3027327	<i>i</i>	17.48858	-0.13873968	+0.60003968		
<i>P</i>	4.51	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1988 11 02	399	(4.3+	0.4+)	1988 11 11	399	(2.9+	0.5+)	1997 10 29	566	0.4+	0.1+
1988 11 02	399	0.8+	0.8+	1988 11 11	399	2.0+	1.1+	1997 10 29	566	0.0	0.1+
1988 11 02	399	1.5-	1.4-	1988 11 11	399	(0.5-	2.7+)	1997 10 30	566	0.1-	0.4-
1988 11 04	046	(1.9-	3.2-)	1988 11 11	399	1.8+	0.8+	1997 10 30	566	0.2-	0.2-
1988 11 04	046	(3.4+	2.6-)	1988 11 14	399	(3.0+	1.1-)	1997 10 30	566	0.0	0.4-
1988 11 08	399	(3.4-	1.6+)	1988 11 14	399	1.2-	2.4-	1997 11 01	670	0.1+	0.5+
1988 11 08	399	2.2-	1.4+	1988 11 14	399	(0.6-	3.5-)	1997 11 01	670	0.4-	0.0
1988 11 08	399	(3.7-	1.8+)	1997 10 29	566	0.2+	0.2-	1997 11 01	670	0.2+	0.2+

1999 JUNE 22

M.P.C. 34829

1989 AR₅ = 1999 JM₄₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	212.16246		(2000.0)	P		Q	
<i>n</i>	0.22279767	ω	274.86186	+0.76029191	−0.64643287		
<i>a</i>	2.6948150	Ω	125.42730	+0.62272641	+0.69734259		
<i>e</i>	0.1104921	<i>i</i>	4.49635	+0.18484595	+0.30957691		
<i>P</i>	4.42	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1989 01 04	413	1.9+	0.4−	1999 05 10	704	0.1−	0.1−
1989 01 04	413	1.0−	0.6+	1999 05 10	704	0.9−	0.6+
1989 01 10	413	0.4−	1.4+	1999 05 10	704	0.2+	0.2−
1989 01 10	413	1.0+	0.5−	1999 05 10	704	0.7−	0.5+
1989 02 02	033	0.6−	0.1+	1999 05 10	704	0.7+	0.2−
1989 02 03	033	0.8−	0.9−	1999 05 13	704	1.4−	0.0
1994 03 13	691	0.1−	0.4−	1999 05 13	704	0.2−	0.3+
1994 03 13	691	0.1+	0.0	1999 05 13	704	(0.2+ 2.4−)	1999 06 14 704 0.3− 0.4−
1994 03 13	691	0.0	0.1+	1999 05 13	704	1.2−	0.5−

1989 GW₁ = 1990 QM₁₈ = 1990 ST₁₈ = 1997 WZ₄₉ = 1999 GC₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	207.32032		(2000.0)	P		Q	
<i>n</i>	0.29492718	ω	21.51711	+0.87942663	−0.47589694		
<i>a</i>	2.2352504	Ω	6.93360	+0.42175897	+0.76778733		
<i>e</i>	0.1872006	<i>i</i>	5.43863	+0.22074460	+0.42898102		
<i>P</i>	3.34	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	2
Residuals in seconds of arc							
1989 04 03	809	1.0−	0.4−	1990 09 16	675	0.9+	0.7+
1989 04 03	809	1.3−	0.2+	1997 11 26	704	1.3+	0.3+
1989 04 03	809	1.4−	0.6−	1997 11 26	704	0.6+	0.1+
1989 04 05	809	0.5+	0.5−	1997 11 26	704	1.4+	0.7−
1989 04 05	809	1.2+	1.0−	1997 12 01	327	0.3−	0.2+
1989 04 05	809	1.3+	1.0−	1997 12 01	327	0.2−	0.3+
1989 04 08	809	0.7+	0.8+	1997 12 01	327	0.1−	0.3+
1989 04 08	809	0.3+	1.7+	1997 12 01	327	0.1+	0.2+
1989 04 08	809	0.2−	1.6+	1997 12 01	327	0.3+	0.1+
1989 04 10	809	0.8+	1.5+	1997 12 01	327	0.2+	0.2+
1989 04 10	809	0.8+	0.5+	1997 12 06	704	0.6−	0.1−
1989 04 10	809	0.8+	2.0+	1997 12 06	704	0.1+	0.2−
1990 08 28	095	0.7−	0.4+	1997 12 06	704	1.1−	0.2−
1990 08 28	095	1.1−	1.5−	1997 12 06	704	1.0−	0.1−
1990 09 16	675	0.7+	0.9+	1997 12 06	704	0.9−	0.0

1989 GH₂ = 1998 EF₁₅ = 1999 JS₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	260.92160		(2000.0)	P		Q	
<i>n</i>	0.20106133	ω	8.37720	+0.97863780	+0.20530963		
<i>a</i>	2.8856944	Ω	339.76546	−0.19038581	+0.88523617		
<i>e</i>	0.0630805	<i>i</i>	1.78465	−0.07759709	+0.41737857		
<i>P</i>	4.90	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	5
Residuals in seconds of arc							
1989 04 03	809	0.5−	1.7−	1998 03 04	704	0.3−	0.3−
1989 04 03	809	0.0	0.7−	1998 03 04	704	1.1−	1.2+
1989 04 03	809	0.7+	1.0−	1998 03 04	704	0.1−	0.8−
1989 04 08	809	2.3+	1.6+	1998 03 04	704	0.9+	1.0−
1989 04 08	809	(1.6+ 2.7+)	1998 03 04	704	0.4+	1.3−	1999 05 13 704 1.1− 0.5+
1989 04 08	809	1.2+	2.4+	1999 04 14	699	0.5−	0.5−
1989 04 10	809	0.5+	1.9+	1999 04 14	699	1.1−	0.2−
1989 04 10	809	0.4+	2.4+	1999 04 14	699	1.0+	0.4−
1989 04 10	809	1.1−	1.9+	1999 04 15	704	1.4−	1.2−
1994 05 02	691	0.7−	0.2−	1999 04 15	704	0.3−	0.3+
1994 05 02	691	0.1+	0.2−	1999 04 15	704	0.8−	0.1+
1994 05 02	691	1.4−	1.8−	1999 04 15	704	1.3−	0.0

1998 03 03	704	(4.8+ 0.0)	1999 05 10	704	0.8+ 1.2+	1999 05 19	704	0.8− 0.4+
1998 03 03	704	0.4− 0.1+	1999 05 10	704	0.7+ 1.5−	1999 05 19	704	0.9− 1.3−
1998 03 03	704	0.4+ 0.2−	1999 05 10	704	0.9+ 0.3+	1999 05 19	704	0.9− 0.3+
1998 03 03	704	1.6+ 0.4−	1999 05 10	704	0.3− 0.1+			
1998 03 03	704	2.0− 0.9+	1999 05 10	704	(2.4− 0.6−)			

1989 RJ₂ = 1999 JK₁₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	272.07553		(2000.0)	P		Q	
<i>n</i>	0.27828740	ω	131.46522	+0.88020847	−0.32454790		
<i>a</i>	2.3234876	Ω	250.14500	+0.24456224	+0.93547013		
<i>e</i>	0.2546953	<i>i</i>	21.60176	+0.40672148	+0.13987247		
<i>P</i>	3.54	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1989 09 02	675	0.3+	0.1+	1999 05 13	704	(0.4− 2.3−)	1999 06 09 704 1.7+ 0.2−
1989 09 04	675	1.1−	0.2+	1999 05 13	704	(3.6− 2.0−)	1999 06 09 704 0.1− 0.0
1989 09 27	675	0.6+	0.2+	1999 05 18	704	0.2+	0.9−
1989 09 29	675	0.2+	1.3−	1999 05 18	704	0.8−	0.7+
1989 11 01	675	1.2−	1.1+	1999 05 18	704	0.4−	0.4+
1989 11 02	675	1.1+	0.2−	1999 05 18	704	0.3+	0.4−
1999 05 13	704	(0.0 2.6−)	1999 05 18	704	0.1+	1.1+	1999 06 15 704 0.2− 0.5+
1999 05 13	704	1.5−	1.2−	1999 06 09	704	0.8+	0.8+
1999 05 13	704	1.2+	0.5+	1999 06 09	704	0.4−	0.1−

1989 ST₁ = 1999 JJ₄₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	166.67426		(2000.0)	P		Q	
<i>n</i>	0.26071195	ω	6.76168	+0.15060634	−0.98712162		
<i>a</i>	2.4267708	Ω	74.58656	+0.90437687	+0.11553789		
<i>e</i>	0.1472594	<i>i</i>	3.20702	+0.39927459	+0.11064310		
<i>P</i>	3.78	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	6
Residuals in seconds of arc							
1989 09 26	809	0.4+	1.5+	1989 10 07	809	1.2−	1.0+
1989 09 26	809	0.2−	1.2+	1989 10 07	809	1.8−	0.3+
1989 09 26	809	0.2+	0.7−	1989 10 07	809	2.1−	1.0+
1989 09 28	809	0.4+	0.0	1989 10 08	809	0.6+	1.4−
1989 09 28	809	2.2−	1.3+	1989 10 08	809	1.0+	0.4−
1989 09 28	809	0.7−	0.4+	1989 10 08	809	1.6+	0.2−
1989 10 03	809	2.3+	1.2−	1989 11 02	675	0.5−	1.4+
1989 10 03	809	1.8+	2.1−	1989 11 02	675	0.7−	0.3+
1989 10 03	809	0.9+	2.2−	1999 05 10	704	1.3+	1.7−

1989 SH₂ = 1999 JR₉₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	232.51429		(2000.0)	P		Q	
<i>n</i>	0.26827837	ω	225.94217	+0.85070990	−0.52481502		
<i>a</i>	2.3809244	Ω	165.63209	+0.50972982	+0.81004424		
<i>e</i>	0.1022410	<i>i</i>	6.79440	+0.12832840	+0.26152920		
<i>P</i>	3.67	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	2
Residuals in seconds of arc							
1989 09 26	809	0.6+	0.9+	1989 10 08	809	0.2+	0.4+
1989 09 26	809	0.1−	0.3+	1989 11 02	675	0.1−	1.9−
1989 09 26	809	0.2−	1.3−	1989 11 02	675	0.7+	1.4−
1989 09 28	809	0.2−	1.2+	1995 04 27	691	0.1−	0.0
1989 09 28	809	0.1−	0.4+	1995 04 27	691	0.0	0.0
1989 09 28	809	1.0−	0.1+	1995 04 27	691	0.1+	0.2+
1989 10 03	809	2.1−	0.8−	1997 12 30	566	0.2+	0.4+
1989 10 03	809	(3.5− 1.8−)	1997 12 30	566	0.4−	0.9+	1999 05 12 704 (0.7− 2.7+)
1989 10 03	809	2.4−	1.3−	1997 12 30	566	0.6+	0.6+
1989 10 07	809	0.9+	0.5+	1998 01 26	566	0.4−	0.3−
1989 10 07	809	1.2+	0.7+	1998 01 26	566	0.1+	0.5−
1989 10 07	809	1.4+	0.4+	1998 01 26	566	0.0	0.4−

M.P.C. 34830

1999 JUNE 22

1989 10 08	809	0.3+	0.9+	1999 05 12	704	1.5+	0.6+	1999 06 14	704	0.7+	0.2+
1989 10 08	809	0.7+	1.1+	1999 05 12	704	0.7−	1.8+				

1989 SU₄ = 1999 JX₁₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	293.81639		(2000.0)	P		Q	
<i>n</i>	0.27701048	<i>ω</i>	223.12172	+0.99091403	+0.12550574		
<i>a</i>	2.3306224	<i>Ω</i>	129.60430	−0.09989133	+0.92747671		
<i>e</i>	0.1803913	<i>i</i>	3.59790	−0.09006172	+0.35218641		
<i>P</i>	3.56	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1989 09 26	809	1.7+	1.2−	1989 10 07	809	1.1+	0.4+	1999 05 18	704	0.4+	0.3+
1989 09 26	809	0.1−	1.8−	1989 10 07	809	0.1−	1.4+	1999 05 18	704	1.1+	1.5−
1989 09 26	809	0.1+	1.7−	1989 10 08	809	1.7+	1.2+	1999 05 18	704	0.2−	1.5−
1989 09 28	809	0.4+	0.8−	1989 10 08	809	0.6+	1.2+	1999 05 18	704	(2.7− 0.6−)	
1989 09 28	809	0.7+	0.4−	1989 10 08	809	0.2−	1.1+	1999 06 11	703	1.2+	1.0+
1989 09 28	809	0.4−	1.3−	1998 01 22	691	0.6−	0.5−	1999 06 11	703	0.6+	0.8+
1989 09 29	675	0.9−	1.1+	1998 01 22	691	0.1−	0.6−	1999 06 11	703	0.8−	0.3−
1989 09 29	675	0.3−	0.2+	1998 01 22	691	0.0	0.7−	1999 06 11	703	0.7+	1.2−
1989 10 03	809	0.5−	0.4−	1999 05 13	704	0.4+	1.5−	1999 06 15	704	0.9−	0.4+
1989 10 03	809	1.7−	1.3−	1999 05 13	704	1.0−	0.9+	1999 06 15	704	1.1−	0.1+
1989 10 03	809	1.5−	0.4−	1999 05 13	704	0.6+	0.3+	1999 06 15	704	0.5−	0.5+
1989 10 07	809	0.2+	0.9+	1999 05 18	704	0.7−	0.3−	1999 06 15	704	0.0	0.7+

1989 TO₅ = 1999 LW₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	297.27681		(2000.0)	P		Q	
<i>n</i>	0.27836785	<i>ω</i>	272.14012	+0.99108234	+0.11315188		
<i>a</i>	2.3230399	<i>Ω</i>	81.36824	−0.07508592	+0.91052913		
<i>e</i>	0.1920660	<i>i</i>	4.08175	−0.11008131	+0.39765985		
<i>P</i>	3.54	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1989 09 28	809	0.6+	0.9+	1989 10 08	809	0.6+	0.2+	1999 06 14	704	1.3−	0.1−
1989 09 28	809	0.2−	1.0+	1989 10 08	809	0.0	0.0	1999 06 14	704	0.4−	0.1+
1989 09 28	809	1.0−	0.2+	1999 05 18	704	0.6+	0.7+	1999 06 14	704	0.1+	0.6−
1989 09 29	675	0.9+	0.6−	1999 05 18	704	0.8−	0.1−	1999 06 14	704	0.5−	0.3+
1989 09 29	675	0.1+	0.7−	1999 05 18	704	0.5−	0.4−	1999 06 14	704	0.2−	1.0−
1989 10 03	809	1.3−	0.8+	1999 05 18	704	(3.9− 0.8−)		1999 06 14	704	0.2+	0.6−
1989 10 03	809	1.3−	0.6+	1999 06 09	704	1.4+	0.8+	1999 06 14	704	0.2+	0.2+
1989 10 03	809	1.7−	1.3+	1999 06 09	704	1.3+	0.4+	1999 06 15	704	0.3−	0.0
1989 10 07	809	1.2+	1.5−	1999 06 09	704	1.0+	0.4+	1999 06 15	704	0.1+	0.1+
1989 10 07	809	0.7+	1.3−	1999 06 09	704	0.2−	1.3+	1999 06 15	704	0.0	0.5−
1989 10 07	809	0.4−	0.5−	1999 06 14	704	0.9−	0.3+	1999 06 15	704	0.0	0.6−
1989 10 08	809	1.8+	0.3−	1999 06 14	704	0.0	0.9−	1999 06 15	704	0.0	0.1−

1989 TN₁₁ = 1999 JC₄₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	279.16784		(2000.0)	P		Q	
<i>n</i>	0.27534952	<i>ω</i>	347.40661	+0.99901622	+0.03921388		
<i>a</i>	2.3399855	<i>Ω</i>	10.41264	−0.02367892	+0.86653571		
<i>e</i>	0.1755745	<i>i</i>	6.57952	−0.03749539	+0.49757223		
<i>P</i>	3.58	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1989 09 06	657	1.2−	0.2−	1989 10 08	809	0.3−	0.9−	1999 05 13	704	(3.0+ 1.8+)	
1989 09 06	657	1.2−	0.9+	1989 10 08	809	0.1+	0.8−	1999 05 13	704	0.3+	0.9+
1989 10 02	807	0.1+	0.4+	1989 10 08	809	0.4+	0.8−	1999 05 13	704	0.1+	1.9+
1989 10 04	807	0.1+	0.3+	1999 05 10	704	0.3+	0.4+	1999 06 15	704	0.3−	0.3+
1989 10 04	809	0.2+	0.8+	1999 05 10	704	0.9−	0.3−	1999 06 15	704	0.2−	0.6−
1989 10 04	809	0.4+	0.9+	1999 05 10	704	0.8+	1.2−	1999 06 15	704	0.3−	0.5−
1989 10 04	809	0.8+	1.0+	1999 05 10	704	0.5+	1.9−	1999 06 15	704	0.3−	0.4+
1989 10 06	809	0.1−	0.6−	1999 05 10	704	(1.1+ 2.6−)		1999 06 15	704	0.4−	0.2+

1989 10 06	809	0.1+	0.6−	1999 05 13	704	0.1+	0.2−
1989 10 06	809	0.4+	0.5−	1999 05 13	704	(2.6+ 0.9−)	

1989 VJ = 1999 JT₃₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	166.53562		(2000.0)	P		Q	
<i>n</i>	0.25554480	<i>ω</i>	178.96671	+0.23089983	−0.96899328		
<i>a</i>	2.4593746	<i>Ω</i>	257.67902	+0.89204234	+0.24692537		
<i>e</i>	0.1022942	<i>i</i>	5.16566	+0.38851735	+0.00893781		
<i>P</i>	3.86	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1989 11 02	875	(3.2+ 0.8+)	1989 12 06	399	0.6+	1.1−	1999 05 13	704	0.4+	0.6−
1989 11 02	875	(4.2+ 0.8+)	1989 12 06	399	1.3−	0.8−	1999 05 13	704	0.3−	0.4+
1989 11 04	875	(3.4+ 1.4+)	1999 04 15	704	0.2+	0.7−	1999 05 13	704	0.7+	0.3+
1989 11 19	399	1.3− 1.4−	1999 04 15	704	0.0	0.4−	1999 05 13	704	1.3−	1.3−
1989 11 19	399	0.9− 1.7−	1999 04 15	704	1.5+	0.4+	1999 05 13	704	0.4−	0.1−
1989 11 20	399	0.4− 0.5+	1999 04 15	704	0.4+	0.2+	1999 06 09	704	0.5+	0.6−
1989 11 20	399	1.1− 0.2+	1999 04 15	704	0.7+	0.0	1999 06 09	704	0.3+	0.8−
1989 11 20	399	1.6+ 0.1−	1999 05 10	704	0.3−	0.1+	1999 06 09	704	(3.2− 0.7+)	
1989 11 20	875	0.8+ 0.2−	1999 05 10	704	0.6+	0.4+	1999 06 09	704	0.0	0.8−
1989 11 20	875	0.7+ 1.2+	1999 05 10	704	0.3−	0.3+	1999 06 09	704	1.6−	0.8+
1989 11 30	875	0.5+ 1.0+	1999 05 10	704	0.2−	0.2+				
1989 11 30	875	1.0+ 1.1+	1999 05 10	704	1.2−	0.8+				

1989 WG = 1999 LU₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	269.49477		(2000.0)	P		Q	
<i>n</i>	0.27129683	<i>ω</i>	295.36122	+0.92647362	−0.36316392		
<i>a</i>	2.3632314	<i>Ω</i>	86.06261	+0.37099457	+0.83708445		
<i>e</i>	0.1988074	<i>i</i>	5.68270	+0.06332195	+0.40914740		
<i>P</i>	3.63	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1989 11 20	888	(4.4+ 0.6−)	1989 12 30	888	0.8−	0.8+	1999 06 09	704	0.5−	0.5−	
1989 11 20	888	(5.5+ 0.2−)	1995 03 31	691	0.2−	0.5+	1999 06 09	704	0.8+	0.8−	
1989 11 21	888	0.1−	0.8−	1995 03 31	691	0.1+	1.8+	1999 06 09	704	0.2+	0.8−
1989 11 21	888	0.2−	0.5−	1995 03 31	691	0.4−	0.2+	1999 06 10	704	0.0	0.9+
1989 11 21	888	(4.1+ 0.7+)	1995 04 25	691	0.3+	0.1+	1999 06 10	704	0.0	1.0+	
1989 11 21	888	(4.9+ 1.3+)	1995 04 25	691	0.3+	0.6+	1999 06 10	704	0.1+	0.8+	
1989 11 25	888	0.7+ 0.1+	1995 04 25	691	1.2+ 0.4+	1999 06 10	704	0.2+ 0.6+			
1989 11 25	888	0.3+ 0.1−	1998 02 28	327	0.8+ 0.4+	1999 06 10	704	0.2+ 0.2+			
1989 11 29	888	0.9− 0.6+	1998 02 28	327	0.8+ 0.4+	1999 06 10	704	0.2− 0.1+			
1989 11 29	888	0.9+ 0.5+	1998 02 28	327	(2.4+ 0.1+)	1999 06 10	704	0.2+ 0.1−			
1989 12 01	403	0.7+ 0.0	1998 03 24	704	(2.5+ 0.6−)	1999 06 10	704	0.2− 0.3+			
1989 12 01	403	0.9− 0.4−	1998 03 24	704	0.4− 0.0	1999 06 10	704	0.1− 0.4+			
1989 12 02	888	1.3− 0.5+	1998 03 24	704	1.1+ 0.4−	1999 06 10	704	0.1+ 0.1+			
1989 12 02	888	0.5− 0.8+	1998 03 24	704	1.6− 1.3−	1999 06 15	704	0.2+ 0.1−			
1989 12 05	403	1.4− 1.1−	1998 03 25	704	(3.7− 2.9−)	1999 06 15	704	0.3+ 0.7+			
1989 12 20	888	0.9+ 0.6+	1998 03 25	704	0.9− 1.2−	1999 06 15	704	0.3− 0.1+			
1989 12 20	888	0.0 0.2+	1998 03 25	704	0.3− 1.0−	1999 06 15	704	0.8+ 0.7+			
1989 12 28	888	1.6+ 1.5+	1998 03 25	704	0.6− 0.8+	1999 06 15	704	0.1− 1.0−			
1989 12 28	888	0.7+ 1.4+	1999 06 09	704	0.6+ 0.6+						
1989 12 30	888	0.8− 1.1+	1999 06 09	704	1.6− 0.3−						

1989 YC = 1999 LG₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	261.69631		(2000.0)	P		Q	
<i>n</i>	0.26497850	<i>ω</i>	279.67155	+0.91969553	−0.35048361		
<i>a</i>	2.4006506	<i>Ω</i>	101.01077	+0.39190991	+0.84678698		
<i>e</i>	0.2725533	<i>i</i>	10.38709	−0.02380659	+0.40014130		
<i>P</i>	3.72	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	3

1999 JUNE 22

M.P.C. 34831

Residuals in seconds of arc

1989 12 25	567	2.4−	0.5+	1990 01 21	567	0.1−	0.4+	1999 06 06	703	0.8−	0.6−
1989 12 25	567	0.2−	0.1−	1990 01 21	567	0.4+	0.0	1999 06 06	703	0.2−	0.4+
1989 12 27	567	0.4−	0.1+	1998 03 25	704	0.7+	1.1−	1999 06 06	703	0.0	0.2+
1989 12 27	567	0.6−	0.1+	1998 03 25	704	0.5−	1.4+	1999 06 06	703	0.7+	0.9+
1989 12 29	567	0.0	0.4−	1998 03 25	704	0.5+	0.5−	1999 06 08	704	0.1−	0.1+
1989 12 29	567	0.7+	0.3+	1998 03 25	704	0.7−	0.0	1999 06 08	704	1.0−	0.3+
1989 12 30	567	0.1−	0.3+	1998 03 25	704	(2.9−	0.5+)	1999 06 08	704	0.6+	0.1+
1989 12 30	567	0.5+	0.7+	1999 05 12	704	0.5−	1.5+	1999 06 08	704	1.5+	0.7+
1990 01 01	567	1.5+	0.0	1999 05 12	704	0.0	0.6+	1999 06 08	704	0.6+	1.3+
1990 01 01	567	0.1+	0.2+	1999 05 12	704	0.1+	0.7−	1999 06 14	704	0.4−	0.2−
1990 01 03	567	1.4−	0.4−	1999 05 12	704	0.1+	0.7+	1999 06 14	704	0.3−	0.1+
1990 01 03	567	1.3−	0.5+	1999 05 17	704	0.3+	0.7−	1999 06 14	704	0.2+	0.1−
1990 01 04	888	1.9+	1.5−	1999 05 17	704	0.1−	1.3−	1999 06 14	704	0.3−	0.3+
1990 01 04	888	1.0+	1.5−	1999 05 17	704	0.3−	1.6−	1999 06 14	704	1.2−	0.5+
1990 01 05	888	0.3+	0.8+	1999 05 17	704	0.6+	1.6−				
1990 01 05	888	0.2+	0.6+	1999 05 17	704	0.7+	0.1−				

1990 BM₁ = 1999 LN₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	248.11436		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.27265989	ω	316.95883	+0.16123167	−0.91556872
<i>a</i>	2.3553487	Ω	120.46813	+0.98106025	+0.10807990
<i>e</i>	0.2421189	<i>i</i>	25.30604	+0.10735517	+0.38736631
<i>P</i>	3.61	<i>H</i>	13.5	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1990 01 22	675	0.2−	0.2−	1998 04 28	704	0.3−	0.3−	1998 06 26	699	0.3−	0.3+
1990 01 22	675	0.2+	0.2−	1998 04 28	704	0.3−	0.6−	1998 06 26	699	0.1−	0.6+
1990 01 24	675	1.6+	0.2−	1998 04 28	704	0.0	0.3−	1999 06 09	703	0.1+	0.3−
1990 01 24	675	0.7+	1.4−	1998 04 28	704	1.5+	0.4−	1999 06 09	703	0.4−	0.1−
1990 02 27	675	0.2−	0.1+	1998 04 28	704	0.1+	0.4+	1999 06 09	703	0.4+	0.2−
1990 02 27	675	0.8−	0.3+	1998 05 27	704	0.6−	0.6−	1999 06 09	703	0.5+	0.1−
1990 03 01	675	0.5−	0.3+	1998 05 27	704	0.8−	1.1−	1999 06 12	703	0.1−	0.2−
1990 03 01	675	1.0−	0.1−	1998 05 27	704	0.7+	1.1+	1999 06 12	703	0.3−	0.1−
1998 04 25	566	0.2+	0.4−	1998 05 27	704	0.2−	1.2+	1999 06 12	703	0.2−	0.3−
1998 04 25	566	0.0	0.5−	1998 05 27	704	0.1+	0.7+	1999 06 12	703	0.4−	1.0−
1998 04 25	566	0.2+	0.3−	1998 06 26	699	0.8−	0.0				

1990 CF = 1999 JR₇₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	119.91759		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.23304697	ω	350.02399	−0.24918215	−0.94184025
<i>a</i>	2.6152130	Ω	114.11535	+0.90469758	−0.30946452
<i>e</i>	0.1035891	<i>i</i>	14.30303	+0.34558724	+0.13102923
<i>P</i>	4.23	<i>H</i>	13.4	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1990 02 01	402	1.6+	1.2+	1999 04 10	704	0.4+	0.2+	1999 05 14	704	0.4−	0.8−
1990 02 01	402	1.2−	1.1+	1999 04 10	704	0.6+	0.0	1999 05 17	704	1.6−	1.4+
1990 02 02	402	0.6−	0.1−	1999 04 10	704	0.6+	0.2+	1999 05 17	704	1.1+	1.4−
1990 02 02	402	0.6+	1.0+	1999 04 10	704	0.4−	1.2−	1999 05 17	704	0.7−	0.2+
1990 02 16	402	0.8−	0.8−	1999 04 10	704	(3.2−	0.6−)	1999 05 17	704	0.1−	0.1−
1990 02 16	402	0.6+	1.3−	1999 05 13	704	1.9−	0.6−	1999 05 17	704	1.4−	0.9−
1995 05 06	691	0.1+	0.1−	1999 05 13	704	0.6−	0.0	1999 06 07	704	0.4+	1.5+
1995 05 06	691	0.0	0.1−	1999 05 13	704	0.5+	0.6+	1999 06 07	704	0.5+	0.1+
1995 05 06	691	0.0	0.1−	1999 05 14	704	1.2+	0.7+	1999 06 07	704	0.0	0.6+
1997 12 30	566	0.3+	0.5−	1999 05 14	704	0.4−	0.1−	1999 06 07	704	0.2+	0.0
1997 12 30	566	0.2+	0.5−	1999 05 14	704	1.4+	0.8−				
1997 12 30	566	0.0	0.4−	1999 05 14	704	0.1+	0.2−				

1990 FJ₂ = 1979 WE₆ = 1981 EQ₄₉ = 1999 JU₄₀

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	91.90817		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.22497874	ω	293.62298	−0.80617746	−0.58190864
<i>a</i>	2.6773700	Ω	211.10804	+0.58966324	−0.77527459
<i>e</i>	0.1175677	<i>i</i>	11.95853	+0.04873566	−0.24562502
<i>P</i>	4.38	<i>H</i>	13.2	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1979 11 17	095	0.2−	0.6+	1999 05 13	704	0.1−	0.3+	1999 06 04	703	0.6−	0.7−
1981 03 08	095	0.4+	0.3+	1999 05 13	704	0.3+	0.9−	1999 06 08	704	1.5+	0.3−
1990 03 29	400	(5.5+	3.6+)	1999 05 14	704	0.3+	0.4−	1999 06 08	704	1.0−	0.9−
1990 03 29	400	(7.2+	4.2+)	1999 05 14	704	0.8+	0.5+	1999 06 08	704	1.0−	0.2+
1990 03 30	400	(4.7−	1.8+)	1999 05 14	704	0.3+	0.1−	1999 06 08	704	0.4+	1.0+
1990 03 30	400	(4.3−	6.5+)	1999 05 14	704	0.1+	0.4−	1999 06 08	704	1.0−	1.1+
1990 04 19	400	(1.9−	3.2+)	1999 05 14	704	0.8−	0.2+	1999 06 09	704	0.8+	0.3−
1990 04 19	400	(1.5−	2.7+)	1999 05 18	704	0.2+	0.5−	1999 06 09	704	0.8+	0.3−
1990 04 25	400	1.1+	1.1−	1999 05 18	704	1.6−	0.5−	1999 06 09	704	0.7+	0.2+
1990 04 25	400	1.0−	0.9+	1999 05 18	704	0.2−	0.3−	1999 06 09	704	0.8+	0.4+
1990 04 30	808	(5.5−	3.0+)	1999 05 18	704	0.2+	0.5−	1999 06 09	704	0.4+	0.4−
1990 04 30	808	0.7−	0.1−	1999 05 18	704	0.1−	0.8+	1999 06 09	704	0.6+	0.9+
1999 04 19	699	0.2+	0.8+	1999 05 19	704	0.2−	0.1−	1999 06 09	704	0.7+	0.1+
1999 04 19	699	0.5+	0.6+	1999 05 19	704	0.2−	0.9−	1999 06 09	704	0.3+	0.7+
1999 04 19	699	0.4+	0.8+	1999 05 19	704	0.4−	0.1−	1999 06 09	704	0.0	0.1+
1999 05 10	704	0.2+	0.4+	1999 05 19	704	0.1+	0.4−	1999 06 09	704	0.9−	0.4+
1999 05 10	704	0.3−	0.2+	1999 05 19	704	0.2−	0.7−	1999 06 14	704	0.7+	0.2−
1999 05 10	704	0.9+	0.0	1999 05 22	106	0.2+	0.4−	1999 06 14	704	0.1+	0.0
1999 05 10	704	0.3+	1.5−	1999 05 22	106	0.7−	0.7−	1999 06 14	704	0.1+	0.3+
1999 05 10	704	0.4−	1.1+	1999 05 22	106	0.8−	0.1+	1999 06 14	704	0.1+	0.1+
1999 05 13	704	0.3−	0.2+	1999 06 04	703	0.4−	1.1+	1999 06 14	704	0.6−	0.9+
1999 05 13	704	0.3−	0.6−	1999 06 04	703	0.5−	0.5+				
1999 05 13	704	0.3+	0.1+	1999 06 04	703	0.2−	0.4−				

1990 OG₄ = 1999 KS₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	346.83366		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.22258415	ω	84.40218	+0.96991148	+0.15051873
<i>a</i>	2.6965381	Ω	266.83619	−0.21468882	+0.89943111
<i>e</i>	0.2852360	<i>i</i>	11.04878	+0.11480605	+0.41032644
<i>P</i>	4.43	<i>H</i>	13.4	<i>G</i>	0.15
				<i>U</i>	6

Residuals in seconds of arc

1990 07 24	675	0.7−	0.1+	1990 07 29	675	0.4−	0.9−	1999 05 21	704	1.9+	0.4−
1990 07 24	675	0.7+	0.5+	1990 07 30	675	0.7−	1.2+	1999 05 21	704	0.0	0.7+
1990 07 27	675	0.3+	0.1−	1990 07 30	675	1.3+	0.3+	1999 05 21	704	2.5−	0.7+
1990 07 27	675	0.6+	0.3−	1999 05 20	704	0.3+	1.1−	1999 05 21	704	0.3+	0.9−
1990 07 28	675	0.3+	0.9+	1999 05 20	704	0.3+	0.0	1999 05 21	704	0.4−	0.7−
1990 07 28	675	0.5+	0.7+	1999 05 20	704	0.1+	0.5−				
1990 07 29	675	1.8−	2.4−	1999 05 20	704	0.0	2.2+				

1990 OD₅ = 1970 CN = 1986 RG₁₄ = 1999 JJ₆₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	15.13610		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.21180563	ω	13.74629	−0.33674565	+0.93544133
<i>a</i>	2.7872615	Ω	236.67533	−0.87560009	−0.35307802
<i>e</i>	0.1738523	<i>i</i>	7.39045	−0.34630456	−0.01689451
<i>P</i>	4.65	<i>H</i>	13.8	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1970 02 01	805	(7.8−	1.5−)	1999 05 10	704	0.1+	0.4−	1999 05 19	704	1.0−	0.3+
1986 09 11	095	0.1+	1.7−	1999 05 10	704	1.0+	0.1+	1999 05 19	704	1.0−	0.1+
1990 07 25	675	0.3+	0.6+	1999 05 10	704	0.3+	0.0	1999 05 19	704	0.4−	0.3−
1990 07 25	675	0.9−	0.8−	1999 05 10	704	(0.1−	2.6−)	1999 05 19	704	0.2+	1.5−

1990 07 29	675	0.3−	0.1+	1999 05 13	704	0.1−	0.0	1999 06 09	704	0.1−	0.4+
1991 11 06	691	0.3−	0.2+	1999 05 13	704	1.0−	0.1+	1999 06 09	704	0.8−	0.9+
1991 11 06	691	0.3−	0.5−	1999 05 18	704	0.0	0.5−	1999 06 15	704	0.2+	0.1+
1991 11 06	691	0.2−	0.2−	1999 05 18	704	0.2−	1.0−	1999 06 15	704	0.1+	0.1−
1996 12 05	691	0.2+	0.0	1999 05 18	704	0.2+	0.1+	1999 06 15	704	0.8+	0.3+
1996 12 05	691	0.6+	0.1+	1999 05 18	704	0.8+	0.6+	1999 06 15	704	0.1+	0.1−
1996 12 05	691	0.3+	0.1+	1999 05 18	704	0.1+	1.1+	1999 06 15	704	0.0	0.3−
1999 05 10	704	1.0+	1.1−	1999 05 19	704	0.4−	0.0				

1990 QF₂ = 1991 XP₄ = 1998 EF₁₃Id. A. Gnädig (*MPC* 31715); 1990 QF₂ = 1988 FS₃ (*ibid.*) is invalid

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
(2000.0)				(2000.0)			
P				Q			
<i>M</i>	327.95313						
<i>n</i>	0.20180147	ω	182.80492	+0.69930519	+0.71367714		
<i>a</i>	2.8786343	Ω	131.57066	−0.65478023	+0.66224672		
<i>e</i>	0.0460241	<i>i</i>	3.10029	−0.28676664	+0.22824157		
<i>P</i>	4.88	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1990 08 22	675	0.3+	0.9+	1998 03 22	704	0.6+	0.4−	1998 03 28	704	0.0	1.1+
1990 08 22	675	0.1−	0.8+	1998 03 22	704	0.3+	0.8−	1998 03 28	704	0.6+	0.5−
1990 08 28	675	0.1−	0.7+	1998 03 22	704	0.9+	0.3−	1998 03 28	704	0.5+	0.9+
1990 08 28	675	1.0−	0.6+	1998 03 22	704	0.6+	0.7−	1998 03 28	704	1.1+	0.0
1990 09 14	675	0.1−	0.3−	1998 03 22	704	0.7−	0.9+	1998 03 29	704	0.0	0.1−
1990 09 14	675	0.1+	0.5−	1998 03 22	704	0.2−	0.2+	1998 03 29	704	0.0	0.1−
1990 09 19	675	0.3+	0.8−	1998 03 22	704	0.2−	0.4+	1998 03 29	704	0.1−	1.0+
1990 09 19	675	0.0	0.1+	1998 03 22	704	1.6−	0.4+	1998 03 29	704	0.0	0.4+
1991 12 01	675	(0.9− 31.0−)		1998 03 24	704	0.7−	0.2+	1998 03 29	704	0.0	0.7+
1991 12 01	675	0.2+	1.1−	1998 03 24	704	0.2−	0.2+	1998 04 19	704	0.7+	0.8−
1998 02 23	691	0.2−	0.1+	1998 03 24	704	1.0−	0.5+	1998 04 19	704	0.2+	0.8−
1998 02 23	691	0.0	0.2+	1998 03 24	704	0.1+	0.1+	1998 04 19	704	0.8+	1.6−
1998 03 01	809	1.1+	0.7−	1998 03 24	704	0.4−	0.3+	1998 04 19	704	0.6−	1.1−
1998 03 01	809	0.3+	0.4+	1998 03 24	704	0.1+	0.1+	1998 04 19	704	0.7+	1.3−
1998 03 01	809	0.3+	0.3−	1998 03 24	704	0.6−	0.1−	1999 06 09	704	0.4−	0.2+
1998 03 02	809	0.2+	1.4+	1998 03 24	704	0.9−	0.0	1999 06 09	704	0.3−	0.1+
1998 03 02	809	0.8−	1.2+	1998 03 24	704	0.4−	0.2−	1999 06 09	704	0.3+	0.5+
1998 03 02	809	0.0	0.9+	1998 03 24	704	1.2−	0.6+	1999 06 09	704	0.7+	0.5+
1998 03 20	704	0.2−	0.4−	1998 03 24	566	0.3+	0.3+	1999 06 09	704	0.7−	0.1+
1998 03 20	704	0.4+	0.1+	1998 03 24	566	0.3+	0.4+	1999 06 15	704	0.2−	0.1+
1998 03 20	704	0.1−	0.0	1998 03 24	566	0.2+	0.5+	1999 06 15	704	0.0	0.5−
1998 03 20	704	0.5+	0.4−	1998 03 24	566	0.2−	0.7−	1999 06 15	704	0.2+	0.3−
1998 03 20	704	0.2−	0.5+	1998 03 24	566	0.3−	0.6−	1999 06 15	704	0.2−	0.7−
1998 03 22	704	0.5+	0.4−	1998 03 24	566	0.2−	0.7−	1999 06 15	704	0.6+	0.9−
1998 03 22	704	0.4+	0.2−	1998 03 28	704	0.0	0.4+				

1990 QX₄ = 1999 JK₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
(2000.0)				(2000.0)			
P				Q			
<i>M</i>	281.07287						
<i>n</i>	0.30553766	ω	288.95070	+0.91083683	+0.40739337		
<i>a</i>	2.1831968	Ω	47.06954	−0.33633284	+0.82574510		
<i>e</i>	0.1819864	<i>i</i>	5.20197	−0.23928327	+0.39009701		
<i>P</i>	3.23	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1990 08 24	675	0.2−	0.1−	1999 04 07	704	0.4+	0.1−	1999 05 09	703	0.1+	0.1+
1990 08 24	675	0.4−	0.4−	1999 04 07	704	0.4−	0.9+	1999 05 09	703	0.7+	0.5+
1990 08 26	675	0.0	0.2−	1999 04 12	704	0.0	1.2−	1999 05 09	703	0.4+	0.8+
1990 08 26	675	0.0	0.4+	1999 04 12	704	(2.5+ 0.9−)		1999 05 09	703	0.7+	1.4+
1990 08 29	675	0.0	0.5+	1999 04 12	704	0.6+	0.7−	1999 05 16	703	0.3+	0.9+
1996 05 14	566	0.4−	1.0−	1999 04 12	704	0.6+	0.2−	1999 05 16	703	0.3−	0.0
1996 05 14	566	0.5−	0.9−	1999 05 08	703	0.3+	0.4−	1999 05 16	703	0.4−	0.6−
1996 05 14	566	0.2−	0.7−	1999 05 08	703	0.1−	0.5−	1999 05 16	703	0.3−	0.0
1999 04 07	704	0.6+	0.3+	1999 05 08	703	0.6+	0.9+				
1999 04 07	704	0.8−	0.2+	1999 05 08	703	1.2−	1.2+				

1990 QH₅ = 1999 JH₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
(2000.0)				(2000.0)			
P				Q			
<i>M</i>	267.06884						
<i>n</i>	0.30381905	ω	322.22774	+0.97720409	+0.21043433		
<i>a</i>	2.1914222	Ω	25.66672	−0.17553467	+0.87530522		
<i>e</i>	0.0801045	<i>i</i>	3.71960	−0.11941418	+0.43538278		
<i>P</i>	3.24	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1990 08 25	675	0.1−	0.3−	1999 04 14	699	0.5+	0.0	1999 05 13	704	0.4+	0.4+
1990 08 25	675	0.0	0.4−	1999 04 14	699	0.5+	0.1+	1999 05 13	704	0.5−	0.7+
1990 08 26	675	0.8+	1.0−	1999 04 14	699	0.2+	0.8+	1999 05 13	704	0.1−	0.4+
1990 08 26	675	0.6+	0.5+	1999 04 15	704	0.4−	1.1−	1999 05 13	704	0.1−	0.7−
1990 09 14	809	1.5−	0.3+	1999 04 15	704	0.4−	1.9−	1999 05 14	704	1.2+	2.0−
1990 09 14	809	1.0−	0.2+	1999 04 15	704	0.6−	0.1−	1999 05 14	704	0.4+	0.2+
1990 09 14	809	0.4−	0.2−	1999 04 15	704	1.3−	1.6+	1999 05 14	704	1.1−	0.2+
1990 09 15	809	0.1+	0.3+	1999 04 15	704	1.3−	1.2−	1999 05 14	704	1.7+	0.2−
1990 09 15	809	0.7+	0.1+	1999 05 10	704	0.9+	0.1−	1999 05 14	704	1.0−	1.8+
1990 09 15	809	1.2+	0.3−	1999 05 10	704	0.4+	0.3−	1999 05 18	704	0.0	1.2+
1997 12 04	704	0.9−	0.8−	1999 05 10	704	0.2−	1.8+	1999 05 18	704	1.0+	0.8−
1997 12 04	704	0.6+	0.3+	1999 05 10	704	1.2+	0.6−	1999 05 18	704	0.1+	0.8−
1997 12 04	704	0.7+	0.0	1999 05 10	704	1.0−	0.6−	1999 05 18	704	0.2−	0.6+
1997 12 04	704	0.3−	0.3−	1999 05 13	704	0.5−	0.2−				

1990 QF₈ = 1999 GK₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
(2000.0)				(2000.0)			
P				Q			
<i>M</i>	189.37424						
<i>n</i>	0.29206788	ω	290.91149	+0.79645446	−0.60345247		
<i>a</i>	2.2498152	Ω	106.22619	+0.56873318	+0.72574238		
<i>e</i>	0.1590269	<i>i</i>	2.31591	+0.20543335	+0.33036814		
<i>P</i>	3.37	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	7

Residuals in seconds of arc

1990 08 16	809	0.4+	0.0	1990 08 24	809	0.7+	0.4−	1999 04 07	704	0.0	1.2−
1990 08 16	809	0.4+	0.8−	1990 08 26	809	0.0	0.8+	1999 04 12	704	1.4−	0.3−
1990 08 16	809	0.8+	0.8−	1990 08 26	809	0.4−	1.2+	1999 04 12	704	2.2+	1.3+
1990 08 18	809	0.6+	0.5+	1990 08 26	809	0.2+	0.7+	1999 04 12	704	0.1−	0.2+
1990 08 18	809	0.6−	1.1+	1999 04 07	704	1.2−	0.4+	1999 04 12	704	2.0+	0.1−
1990 08 18	809	2.3−	0.1−	1999 04 07	704	1.1−	0.8+	1999 04 12	704	0.5−	0.3+
1990 08 24	809	0.2+	0.9−	1999 04 07	704	0.6−	0.6−				
1990 08 24	809	0.0	1.3−	1999 04 07	704	0.7+	0.7−				

1990 RR₁₇ = 1990 UF₁₂ = 1976 WVId. S. Nakano (d, *MPC* 20913), A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
(2000.0)				(2000.0)			
P				Q			
M	220.20530						
n	0.27995464	ω	53.28236	+0.80282170	+0.59154309		
a	2.3142536	Ω	270.33281	−0.56803080	+0.72088690		
e	0.2027113	i	4.27404	−0.18115827	+0.36110781		
P	3.52	H	14.1	G	0.15	U	4

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	85.95443	(2000.0)	P	Q
<i>n</i>	0.27911393	ω	349.53659	-0.46344482
<i>a</i>	2.3188983	Ω	128.04401	+0.81861596
<i>e</i>	0.1364882	<i>i</i>	4.54027	+0.33924447
<i>P</i>	3.53	<i>H</i>	14.4	<i>G</i> 0.15 <i>U</i> 2

Residuals in seconds of arc

1990 09 15	809	1.3+	0.3-	1999 03 23	699	0.2+	0.1+	1999 04 13	552	0.2-	0.5-
1990 09 15	809	0.7+	0.2+	1999 03 23	699	0.1+	0.5-	1999 04 13	552	0.4-	1.2-
1990 09 15	809	0.2+	0.7-	1999 03 23	699	0.0	0.3+	1999 04 15	610	0.9+	0.5+
1990 09 22	809	0.4-	1.0-	1999 04 07	699	0.1-	0.8+	1999 04 15	610	0.5+	0.3+
1990 09 22	809	0.3-	0.7-	1999 04 07	699	0.8+	0.4+	1999 04 15	610	0.0	0.1+
1990 09 22	809	0.0	0.9-	1999 04 07	699	0.3+	0.3+	1999 04 15	610	0.5-	0.2-
1990 09 25	809	(0.7+	2.6-)	1999 04 10	552	0.0	0.3-	1999 04 15	610	1.0-	0.4-
1990 09 25	809	(0.0	2.5-)	1999 04 10	552	0.4-	0.7-	1999 04 16	552	0.1-	0.6-
1990 09 25	809	(0.5-	3.1-)	1999 04 10	552	0.2-	0.4-	1999 04 16	552	0.5-	0.0
1992 04 30	033	0.3+	0.7+	1999 04 12	704	0.2-	1.2-	1999 06 08	704	1.1+	0.4-
1992 04 30	033	0.4+	0.3+	1999 04 12	704	0.9-	0.5-	1999 06 08	704	0.1-	0.7-
1992 05 04	033	0.1-	0.7+	1999 04 12	704	1.5-	0.0	1999 06 08	704	0.5+	0.1+
1999 02 20	699	0.5+	0.2+	1999 04 12	704	0.2+	0.6-	1999 06 08	704	(0.1+	2.2-)
1999 02 20	699	0.4+	0.3+	1999 04 12	704	0.7-	0.3+	1999 06 08	704	0.3+	0.3-
1999 02 20	699	0.3+	0.6-	1999 04 13	552	0.4-	0.0				

1990 TY = 1955 WH = 1999 JU

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	132.32824	(2000.0)	P	Q
<i>n</i>	0.28017116	ω	272.78567	-0.11623803
<i>a</i>	2.3130610	Ω	184.20365	+0.99304888
<i>e</i>	0.2451729	<i>i</i>	22.23933	+0.01851056
<i>P</i>	3.52	<i>H</i>	13.7	<i>G</i> 0.15 <i>U</i> 2

Residuals in seconds of arc

1955 11 18	675	(2.6-	1.0+)	Y	1990 11 10	372	0.2+	1.3+	1999 05 12	704	0.1-	0.8-
1955 11 18	675	0.0	0.4+	Y	1999 03 24	704	1.7+	0.5-	1999 05 12	704	0.2-	0.8-
1955 11 18	675	(2.9+	4.7+)	Y	1999 03 24	704	1.7-	0.7+	1999 05 12	704	0.4-	0.0
1990 10 15	372	(2.6-	1.0-		1999 03 24	704	0.5-	1.7+	1999 05 12	704	0.3-	0.8-
1990 10 15	372	0.9-	1.0+		1999 03 24	704	0.7+	1.7-	1999 05 17	704	0.3-	0.0
1990 10 16	372	0.1-	1.0-		1999 03 24	704	0.3+	0.6-	1999 05 17	704	0.1-	0.1-
1990 10 16	372	0.4+	1.5-		1999 03 28	699	0.0	0.4-	1999 05 17	704	0.6+	0.0
1990 10 17	372	0.8-	0.4+		1999 03 28	699	0.6+	1.2-	1999 05 17	704	1.4-	0.0
1990 10 17	372	0.8-	0.3+		1999 03 28	699	0.2-	1.0-	1999 05 17	704	0.3+	0.2+
1990 10 17	372	0.6-	1.6-		1999 05 05	327	0.1+	0.4-	1999 06 07	704	0.3+	0.1+
1990 10 17	372	0.1+	0.2-		1999 05 05	327	0.2-	0.2-	1999 06 07	704	(0.8+	2.2+)
1990 10 20	372	1.2+	0.2+		1999 05 05	327	0.2-	0.5-	1999 06 07	704	0.2-	1.1+
1990 10 20	372	0.2-	0.5+		1999 05 06	327	0.3-	0.2-	1999 06 07	704	0.3+	1.1+
1990 10 26	372	(2.3-	2.9+)		1999 05 06	327	0.1-	0.1-	1999 06 12	704	0.6+	1.5+
1990 10 27	372	(4.9-	2.8-)		1999 05 06	327	0.0	0.1+	1999 06 12	704	0.7+	0.8+
1990 10 27	372	(3.6-	0.6+)		1999 05 09	327	0.1-	0.5-	1999 06 12	704	0.0	1.0+
1990 11 08	413	1.7+	0.4-		1999 05 09	327	0.0	0.4-	1999 06 12	704	0.1-	0.6+
1990 11 08	413	0.8+	0.1-		1999 05 09	327	0.3-	0.6-	1999 06 12	704	0.5+	0.9+
1990 11 10	372	1.0-	0.9-		1999 05 12	704	0.2+	0.1-				

1990 TT₁ = 1998 LP

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	325.61452	(2000.0)	P	Q
<i>n</i>	0.21607215	ω	143.01067	+0.81857970
<i>a</i>	2.7504485	Ω	251.89545	+0.50808072
<i>e</i>	0.2125335	<i>i</i>	4.16602	+0.26792024
<i>P</i>	4.56	<i>H</i>	15.1	<i>G</i> 0.15 <i>U</i> 6

Residuals in seconds of arc

1990 10 10	033	0.7-	0.5-	1990 10 12	033	0.8+	0.6+	1998 06 01	809	0.4+	0.1-
1990 10 11	033	1.8+	1.0-	1990 10 13	033	0.3+	0.2+	1998 06 02	809	0.5+	0.3-
1990 10 11	033	0.6+	0.5-	1990 10 14	033	0.5-	1.0-	1998 06 02	809	0.1+	0.5-
1990 10 12	675	1.1-	0.7+	1998 06 01	809	0.2+	0.9+	1998 06 02	809	0.8-	0.6+
1990 10 12	675	1.2-	1.5+	1998 06 01	809	0.5-	0.5-				

1990 UB = 1981 AF₂ = 1999 JL₁₀₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	170.45145	(2000.0)	P	Q
<i>n</i>	0.28521669	ω	141.16420	+0.39943459
<i>a</i>	2.2857010	Ω	285.23393	+0.82656804
<i>e</i>	0.1686876	<i>i</i>	3.20143	+0.39653157
<i>P</i>	3.46	<i>H</i>	14.7	<i>G</i> 0.15 <i>U</i> 2

Residuals in seconds of arc

1981 01 08	381	1.1-	1.2-	1990 11 15	400	1.2-	0.7-	1999 04 20	704	1.1+	0.8+
1981 01 08	381	0.9+	0.3+	1997 10 29	566	0.2+	0.4+	1999 04 20	704	(3.9-	3.2+)
1990 10 16	400	(2.2+	3.6-)	1997 10 29	566	0.2+	0.6+	1999 05 13	704	0.4+	1.8-
1990 10 16	400	(2.2+	4.0-)	1997 10 29	566	0.4+	0.5+	1999 05 13	704	1.7-	1.0+
1990 10 17	400	0.8-	1.2-	1997 11 29	704	0.3-	0.8+	1999 05 13	704	0.2+	0.2-
1990 10 17	400	0.3+	1.2-	1997 11 29	704	1.3-	0.8-	1999 05 13	704	1.3-	0.1-
1990 10 17	400	1.8+	0.6-	1997 11 29	704	0.2+	0.1-	1999 05 13	704	0.6+	0.4-
1990 10 24	400	0.9-	0.0	1997 11 29	704	0.5+	0.3-	1999 05 18	704	0.1+	0.1-
1990 10 24	400	(2.9-	0.9+)	1999 04 20	704	(2.3+	1.4-)	1999 05 18	704	0.7+	1.3-
1990 11 15	400	1.6+	1.4+	1999 04 20	704	0.2-	0.4+	1999 05 18	704	0.7-	0.2-

1990 UP₁ = 1990 UP₁₄ = 1999 JB₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	196.14196	(2000.0)	P	Q
<i>n</i>	0.28770429	ω	354.44278	+0.63642636
<i>a</i>	2.2725066	Ω	55.96021	+0.71348860
<i>e</i>	0.1776307	<i>i</i>	8.85946	+0.29307936
<i>P</i>	3.43	<i>H</i>	14.1	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1990 10 16	809	0.0	0.3-	1990 11 20	809	0.9+	0.3-	1999 05 13	704	1.0+	0.4-
1990 10 16	809	0.5-	1.3+	1990 11 20	809	0.6+	0.4+	1999 05 13	704	1.5+	1.6-
1990 10 16	809	0.3+	0.3-	1992 04 28	691	0.2+	0.4-	1999 05 13	704	1.8+	1.1-
1990 10 20	809	0.7-	1.3-	1992 04 28	691	0.2-	0.5+	1999 05 13	704	0.2-	0.8-
1990 10 20	809	1.7-	0.2+	1992 04 28	691	0.2+	0.3+	1999 05 18	704	1.8-	0.4-
1990 10 20	809	1.0-	0.6-	1999 04 12	704	(0.5+	2.5-)	1999 05 18	704	0.4-	0.6+
1990 10 22	400	(2.6+	0.6+)	1999 04 12	704	1.7-	0.5+	1999 05 18	704	0.2-	0.0
1990 10 22	400	1.0+	0.7+	1999 04 12	704	(2.4+	1.1-)	1999 05 18	704	1.5-	1.6+
1990 10 23	095	(0.2-	2.2-)	1999 04 12	704	1.5-	1.8+	1999 05 19	704	1.0+	0.2-
1990 10 24	400	0.7+	0.6+	1999 05 10	704	1.9+	0.5+	1999 05 19	704	0.6-	0.4+
1990 10 24	400	(4.6+	1.8-)	1999 05 10	704	(2.2+	0.5+)	1999 05 19	704	0.5-	0.6+
1990 11 13	400	(0.4+	6.3+)	1999 05 10	704	0.8+	0.4+	1999 05 19	704	0.8+	0.2-
1990 11 13	400	(0.0	3.5+)	1999 05 10	704	(2.8+	1.0+)	1999 05 19	704	1.0-	1.0-
1990 11 20	809	0.0	0.2+	1999 05 13	704	0.6+	0.2-				

1990 UL₄ = 1999 GD₂₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	89.67854	(2000.0)	P	Q
<i>n</i>	0.28465132	ω	62.79007	-0.81812470
<i>a</i>	2.2887266	Ω	82.79469	+0.47379625
<i>e</i>	0.0472283	<i>i</i>	7.13818	+0.32586667
<i>P</i>	3.46	<i>H</i>	14.4	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1990 10 16	809	(4.9+	1.0+)	1999 04 12	704	0.6-	0.5-	1999 05 13	704	0.3-	0.5+
1990 10 16	809	(3.4+	0.9+)	1999 04 12	704	1.1-	0.5-	1999 05 13	704	0.5+	0.4+
1990 10 16	809	(3.0+	1.8+)	1999 04 15	704	0.4+	0.4+	1999 05 13	704	1.3-	0.4+
1990 10 19	809	1.3+	0.2-	1999 04 15	704	0.2-	0.8-	1999 05 17	703	0.1-	0.0

M.P.C. 34834

1990 10 19	809	1.0+	1.5-	1999 04 15	704	0.5-	0.7-	1999 05 17	704	0.2-	0.5+
1990 10 19	809	0.0	0.2-	1999 04 15	704	1.8+	0.2+	1999 05 17	703	0.1+	0.5+
1990 10 21	385	1.5+	0.9+	1999 04 15	704	0.8+	1.0+	1999 05 17	704	1.1+	0.1-
1990 10 21	385	0.4+	0.1-	1999 04 16	704	0.2-	0.4+	1999 05 17	703	0.6+	1.2+
1990 10 24	809	1.3-	0.1-	1999 04 16	704	0.2-	0.2+	1999 05 17	704	0.9-	0.7-
1990 10 24	809	0.9-	0.1-	1999 04 16	704	0.1-	0.3-	1999 05 17	703	(0.4+	2.3+)
1990 10 24	809	1.7-	0.8+	1999 04 16	704	1.3+	0.0	1999 05 17	704	1.1+	1.1-
1990 10 26	385	(1.6+	2.1+)	1999 04 16	704	0.5-	0.0	1999 05 17	704	1.0-	0.9-
1990 10 26	385	(0.6+	4.4+)	1999 05 12	704	0.0	0.2-	1999 06 08	704	0.0	0.4-
1999 03 20	699	0.6+	0.3-	1999 05 12	704	0.9-	0.3-	1999 06 08	704	0.5-	0.2+
1999 03 20	699	1.0-	0.6+	1999 05 12	704	0.8+	0.5-	1999 06 08	704	0.4+	0.3+
1999 03 20	699	0.3+	0.4-	1999 05 12	704	0.1-	0.2+	1999 06 08	704	0.3+	1.0-
1999 04 12	704	0.3-	0.1+	1999 05 12	704	0.3-	0.2+	1999 06 08	704	(0.0	2.3-)
1999 04 12	704	0.2-	0.2-	1999 05 13	704	0.1+	0.4+				
1999 04 12	704	0.9-	0.2+	1999 05 13	704	1.1+	0.3+				

1990 UC₅ = 1999 GX₁₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	82.43866		(2000.0)		P		Q
<i>n</i>	0.27661097	ω	14.42506	-0.74060527			-0.66643126
<i>a</i>	2.3328659	Ω	123.45213	+0.60584622			-0.71755074
<i>e</i>	0.1260203	<i>i</i>	5.90710	+0.29061004			-0.20246065
<i>P</i>	3.56	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1990 10 16	809	0.1+	1.2+	1999 04 12	704	0.5+	0.1+	1999 04 16	704	0.5-	0.5-
1990 10 16	809	1.8-	0.7+	1999 04 12	704	0.5-	0.4+	1999 04 16	704	0.0	0.4+
1990 10 16	809	1.8-	0.5+	1999 04 12	704	1.0+	0.1-	1999 04 16	704	0.3+	1.0+
1990 10 19	809	0.9+	1.4-	1999 04 12	704	0.1-	0.3-	1999 04 16	704	1.2-	0.9+
1990 10 19	809	0.0	1.0-	1999 04 15	704	0.6-	0.1-	1999 06 08	704	1.0-	0.2+
1990 10 19	809	0.0	0.2-	1999 04 15	704	0.8+	0.3+	1999 06 08	704	1.1+	0.6+
1990 10 24	809	0.6+	0.9+	1999 04 15	704	0.7-	1.1-	1999 06 08	704	0.7-	0.5+
1990 10 24	809	0.8+	0.1+	1999 04 15	704	1.4+	0.4-	1999 06 08	704	0.2-	0.7-
1990 10 24	809	1.0+	0.4-	1999 04 15	704	0.3-	0.7+	1999 06 08	704	0.6+	0.3-
1999 04 12	704	0.0	0.5-	1999 04 16	704	0.2+	0.7-				

1990 VZ₅ = 1985 XZ₂ = 1999 JO₈₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	314.20746		(2000.0)		P		Q
<i>n</i>	0.17486841	ω	176.59827	+0.49153906			+0.85749237
<i>a</i>	3.1671002	Ω	122.78946	-0.80320058			+0.51383504
<i>e</i>	0.0570971	<i>i</i>	10.41511	-0.33653854			+0.02608435
<i>P</i>	5.64	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1985 12 14	675	1.8-	0.1+	1999 05 12	704	0.1-	0.5+	1999 05 17	704	0.0	0.2-
1985 12 14	675	1.9+	0.9-	1999 05 12	704	0.6+	0.3-	1999 06 08	704	0.5-	0.1+
1990 11 15	809	0.8-	0.7-	1999 05 12	704	0.6+	1.0+	1999 06 08	704	0.2+	0.1-
1990 11 15	809	0.2-	0.2-	1999 05 12	704	0.1+	0.5+	1999 06 08	704	1.4-	0.8-
1990 11 15	809	1.1-	1.3-	1999 05 15	704	2.0+	1.1+	1999 06 08	704	1.2-	0.0
1990 11 17	809	0.8+	0.1+	1999 05 15	704	(1.5+	2.4+)	1999 06 08	704	1.5-	0.3-
1990 11 17	809	1.2+	0.2-	1999 05 15	704	0.9+	1.0+	1999 06 14	704	0.0	0.3-
1990 11 17	809	0.1+	0.7-	1999 05 15	704	1.0-	0.3-	1999 06 14	704	0.3-	0.9-
1990 11 23	809	0.5+	0.6+	1999 05 17	704	0.9+	0.6+	1999 06 14	704	0.5-	0.1-
1990 11 23	809	0.1+	1.4+	1999 05 17	704	0.3-	0.3-	1999 06 14	704	0.3-	0.8-
1990 11 23	809	0.6-	0.8+	1999 05 17	704	0.8+	0.0	1999 06 14	704	0.9-	1.2-
1999 05 12	704	0.4+	0.2+	1999 05 17	704	0.9+	0.1-				

1999 JUNE 22

1990 WH₁ = 1999 JX₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	295.47762		(2000.0)		P		Q
<i>n</i>	0.29259344	ω	186.27949	+0.72718520			+0.68227576
<i>a</i>	2.2471203	Ω	130.40572	-0.62540468			+0.70384965
<i>e</i>	0.1390665	<i>i</i>	5.69083	-0.28296762			+0.19772570
<i>P</i>	3.37	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1990 11 11	809	0.1-	0.9-	1999 04 12	704	0.4+	0.6-	1999 05 09	327	0.2-	1.4-
1990 11 11	809	1.0+	0.6-	1999 04 12	704	0.2+	0.7+	1999 05 14	327	0.2-	0.2-
1990 11 11	809	0.0	0.2+	1999 04 12	704	0.2+	0.6+	1999 05 14	327	0.1-	0.4-
1990 11 18	809	0.8+	0.4+	1999 04 12	704	1.2-	1.9-	1999 05 14	327	0.1+	1.0-
1990 11 18	809	0.1+	0.9+	1999 05 09	703	0.0	0.9+	1999 05 16	703	0.1+	1.3+
1990 11 18	809	0.7-	0.2+	1999 05 09	703	0.5-	0.1+	1999 05 16	703	0.2+	0.6+
1990 11 20	809	(2.4-	0.4+)	1999 05 09	703	0.2+	0.8+	1999 05 16	703	0.2+	0.3+
1990 11 20	809	0.7-	0.1-	1999 05 09	703	0.1-	1.4+	1999 05 16	703	1.1+	0.4-
1990 11 20	809	0.3-	0.0	1999 05 09	327	0.5+	0.8-				
1999 04 12	704	0.4+	1.1+	1999 05 09	327	1.1-	1.2-				

1991 BT = 1977 KL = 1988 PJ₃ = 1999 JR₆₃Id. S. Nakano; 1991 BT = 1998 HH₅₇ (*MPC* 34181) is invalid

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	74.56434		(2000.0)		P		Q
<i>n</i>	0.27004180	ω	334.71110	-0.99348941			+0.09944328
<i>a</i>	2.3705478	Ω	211.15197	-0.07740531			-0.94721819
<i>e</i>	0.0853343	<i>i</i>	6.16848	-0.08358953			-0.30477652
<i>P</i>	3.65	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1977 05 23	095	0.3-	0.2-	1999 03 24	704	1.2+	0.6-	1999 05 18	704	0.1+	1.3-
1988 08 04	413	0.9+	0.3+	1999 05 10	704	0.8+	0.0	1999 05 18	704	0.8-	1.0-
1988 08 04	413	0.0	0.5-	1999 05 10	704	1.5+	1.6+	1999 05 19	704	0.6+	0.3-
1991 01 19	402	0.1+	0.5-	1999 05 10	704	0.2+	1.5-	1999 05 19	704	0.2-	1.8-
1991 01 19	402	0.0	1.0+	1999 05 13	704	0.3+	0.0	1999 05 19	704	0.0	0.8-
1991 01 20	402	1.1-	0.4+	1999 05 13	704	0.9+	0.3+	1999 05 19	704	0.7-	0.2-
1991 01 20	402	0.5-	0.5+	1999 05 13	704	0.9+	0.8+	1999 05 19	704	0.2-	0.1-
1991 01 20	402	1.0+	2.5-	1999 05 13	704	0.5+	0.1+	1999 06 09	704	0.3+	0.4+
1991 01 23	402	1.3+	1.2-	1999 05 13	704	0.1+	0.1-	1999 06 09	704	0.4-	0.2+
1991 01 23	402	1.1-	1.2+	1999 05 14	704	0.8-	0.0	1999 06 09	704	0.3-	0.3+
1999 02 23	704	0.3-	0.2-	1999 05 14	704	0.9-	0.6-	1999 06 09	704	0.5-	0.2-
1999 02 23	704	0.9-	2.5+	1999 05 14	704	0.3+	0.7+	1999 06 09	704	0.3-	0.1-
1999 02 23	704	1.0+	0.1-	1999 05 14	704	0.4+	0.2-	1999 06 14	704	0.3-	0.5+
1999 02 23	704	0.5-	0.3+	1999 05 14	704	0.7-	0.5+	1999 06 14	704	0.3-	0.4+
1999 03 24	704	1.0+	1.5+	1999 05 18	704	0.0	0.2-	1999 06 14	704	0.4-	0.0
1999 03 24	704	1.5-	0.6+	1999 05 18	704	0.4+	0.2-	1999 06 14	704	0.4-	0.1+
1999 03 24	704	0.7-	0.8+	1999 05 18	704	0.2+	0.6-	1999 06 14	704	0.2-	0.1-

1991 CA₁ = 1999 LZ

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	197.59307		(2000.0)		P		Q
<i>n</i>	0.39157813	ω	305.12406	+0.28893353			-0.88818249
<i>a</i>	1.8503637	Ω	124.07061	+0.95686806			+0.25609400
<i>e</i>	0.1069432	<i>i</i>	25.55116	+0.03034683			+0.38150717
<i>P</i>	2.52	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1991 02 08	675	1.2-	0.7-	1999 02 24	704	0.2-	1.3+	1999 06 08	704	0.0	0.5+
1991 02 09	675	0.4+	1.1-	1999 02 24	704	1.2+	0.2+	1999 06 11	704	0.0	0.3-
1991 02 14	675	0.3-	0.6+	1999 02 24	704	(4.8-	0.7+)	1999 06 11	704	0.5+	0.1-
1991 02 14	675	0.3+	1.0+	1999 05 14	704	0.4+	0.3+	1999 06 11	704	0.6+	0.7-
1991 02 16	675	1.2+	1.1+	1999 05 14	704	0.1+	0.6-	1999 06 11	704	0.3+	0.5-
1991 02 16	675	0.4+	0.5+	1999 05 14	704	0.7+	0.4+	1999 06 11	704	0.0	1.1+
1991 02 16	675	0.5-	0.1-	1999 05 14	704	0.7-	0.7-	1999 06 12	704	0.1-	0.2-
1991 02 17	801	0.3+	0.4+	1999 05 14	704	1.9-	0.8+	1999 06 12	704	0.1-	0.2-

1999 JUNE 22

M.P.C. 34835

1991 02 17	801	0.4+	0.5+	1999 06 07	704	0.6−	0.0	1999 06 12	704	0.0	0.2−
1991 02 17	801	0.4+	0.8+	1999 06 07	704	0.6−	0.6+	1999 06 12	704	0.1−	0.1+
1991 02 19	675	1.2−	1.1−	1999 06 07	704	0.6+	0.2+	1999 06 12	704	0.4−	0.1−
1991 02 20	675	0.7−	0.8−	1999 06 07	704	0.6+	0.1−	1999 06 12	704	0.1−	0.1−
1991 02 20	675	0.7−	0.5−	1999 06 08	704	0.0	0.1−	1999 06 12	704	0.3+	0.4−
1991 03 17	675	1.7+	1.4−	1999 06 08	704	1.1+	0.5−	1999 06 12	704	0.1−	0.1+
1991 03 17	675	0.1+	0.1−	1999 06 08	704	0.5−	0.3−	1999 06 12	704	0.4+	0.1−
1999 02 24	704	0.1−	0.7+	1999 06 08	704	0.3−	0.3+	1999 06 12	704	0.0	0.1−

**1991 CQ₆ = 1969 TW₄ = 1971 DC₂ = 1979 UU₄ = 1979 WF₆
= 1989 RQ₂ = 1992 JL₃ = 1995 AQ = 1998 QS₁₇**

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	27.17290		(2000.0)		<i>P</i>		<i>Q</i>
<i>n</i>	0.20087214	ω	193.56006	+0.94650563	−0.32267378		
<i>a</i>	2.8875061	Ω	185.26743	+0.29897924	+0.88037183		
<i>e</i>	0.0859751	<i>i</i>	1.84353	+0.12140223	+0.34760188		
<i>P</i>	4.91	<i>H</i>	12.4	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1969 10 14	095	1.1+	0.1−	1991 02 20	511	0.5+	1.0+	1998 08 17	704	0.3+	0.4+
1971 02 20	095	1.8−	0.4−	1992 05 11	809	(4.9−	2.6−)	1998 08 17	704	0.4−	1.3−
1979 10 17	095	(1.3−	4.4−)	1992 05 11	809	(5.4−	2.6−)	1998 08 17	704	0.1−	0.3+
1979 11 17	095	0.1−	2.1−	1992 05 11	809	(5.0−	2.6−)	1998 08 17	704	0.3+	0.0
1989 09 07	033	0.4+	0.2+	1992 05 11	809	1.1−	1.3−	1998 08 17	704	0.9+	0.0
1989 09 08	033	1.0+	0.9+	1992 05 11	809	0.8−	1.4−	1998 08 23	699	0.1+	0.2+
1989 09 08	033	0.3+	1.1+	1992 05 11	809	0.5−	1.6−	1998 08 23	704	0.1−	0.4−
1991 02 03	399	0.8+	1.2−	1992 05 13	809	1.3+	0.6−	1998 08 23	704	0.0	1.1−
1991 02 03	399	0.0	0.2−	1992 05 13	809	0.7+	0.6−	1998 08 23	699	0.1−	0.1+
1991 02 04	399	1.8−	1.0+	1992 05 13	809	0.9+	0.5−	1998 08 23	704	2.0−	0.4+
1991 02 04	399	1.5−	0.7−	1995 01 02	905	1.1+	1.1−	1998 08 23	704	1.3+	0.4−
1991 02 14	399	0.7+	0.3−	1995 01 02	905	0.5+	1.7−	1998 08 23	699	0.5−	0.0
1991 02 14	399	0.2+	0.4+	1995 01 05	905	0.3+	1.2−	1998 08 23	704	0.8−	1.5−
1991 02 20	511	(1.2+	2.8+)	1995 01 05	905	0.0	0.5−				

1991 ER = 1999 FU₉

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	71.96608		(2000.0)		<i>P</i>		<i>Q</i>
<i>n</i>	0.24707095	ω	329.95467	−0.71291194	−0.70037168		
<i>a</i>	2.5152911	Ω	165.41684	+0.66799189	−0.69350083		
<i>e</i>	0.0800569	<i>i</i>	8.02671	+0.21340902	−0.16892635		
<i>P</i>	3.99	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1991 03 09	675	0.7−	1.0−	1999 03 22	699	0.0	0.2+	1999 04 06	704	0.8−	0.0
1991 03 09	675	(1.8−	2.7+)	1999 03 22	699	0.4+	0.3+	1999 04 07	699	0.0	0.6+
1991 03 09	372	0.5−	0.9−	1999 03 22	699	0.4+	0.0	1999 04 07	699	1.0+	1.0+
1991 03 09	372	1.0−	1.4+	1999 03 23	699	0.3−	0.5−	1999 04 07	699	0.1+	0.6+
1991 03 14	372	0.9+	0.9+	1999 03 23	699	1.5+	1.3−	1999 04 12	704	0.5−	0.1−
1991 03 14	372	(3.5+	0.6+)	1999 03 23	699	0.0	1.7+	1999 04 12	704	0.1−	0.4−
1991 03 16	372	0.6+	0.4−	1999 04 06	704	1.0−	0.7−	1999 04 12	704	0.3+	0.4−
1991 03 16	372	0.3−	0.0	1999 04 06	704	0.1−	0.1+	1999 04 12	704	0.1+	0.9+
1991 04 03	372	0.9−	1.0−	1999 04 06	704	1.0−	0.0	1999 04 12	704	0.5+	1.0−
1991 04 03	372	1.8+	0.1+	1999 04 06	704	0.6−	0.3−				

1991 FM₃ = 1982 VC₉ = 1999 JE₁₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	151.55039		(2000.0)		<i>P</i>		<i>Q</i>
<i>n</i>	0.26674621	ω	100.34337	−0.20071595	−0.97964942		
<i>a</i>	2.3900329	Ω	1.23562	+0.89243976	−0.18299306		
<i>e</i>	0.1545860	<i>i</i>	0.91593	+0.40405988	−0.08246545		
<i>P</i>	3.69	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1982 11 09	095	0.0	0.1+	1991 03 23	809	0.2−	0.2+	1999 05 19	704	0.6−	0.8−
1991 03 09	675	1.2+	0.3−	1991 03 23	809	0.2+	0.3+	1999 05 19	704	0.9−	0.8−
1991 03 09	675	0.1+	0.1+	1991 03 23	809	0.1+	0.4+	1999 05 19	704	1.2+	0.1+
1991 03 12	675	0.3+	0.0	1997 11 06	327	0.0	0.3+	1999 05 19	704	0.8+	1.1+
1991 03 12	675	0.2−	0.3+	1997 11 06	327	0.0	0.1+	1999 05 19	704	0.4−	0.9+
1991 03 21	809	0.1+	0.1−	1997 11 06	327	0.1+	0.3+	1999 06 15	704	1.1+	0.9−
1991 03 21	809	0.6+	0.2−	1999 05 13	704	0.8−	0.9−	1999 06 15	704	0.3−	1.5−
1991 03 21	809	1.1+	0.1−	1999 05 13	704	1.8−	1.6+	1999 06 15	704	1.2+	0.4−
1991 03 22	809	1.4−	0.3−	1999 05 13	704	1.1+	0.3+	1999 06 15	704	0.3+	0.3−
1991 03 22	809	1.1−	0.3−	1999 05 13	704	0.1+	0.9+				
1991 03 22	809	0.9−	0.3−	1999 05 13	704	1.0−	1.3+				

1991 GA₃ = 1991 FH₄ = 1999 JS₁₄

Id. S. Nakano (d, *MPC* 19821), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	74.34308		(2000.0)		<i>P</i>		<i>Q</i>
<i>n</i>	0.25176829	ω	331.51831	−0.96000679	−0.27903230		
<i>a</i>	2.4839071	Ω	192.34417	+0.27292016	−0.91434515		
<i>e</i>	0.1041522	<i>i</i>	6.16989	+0.06246232	−0.29345175		
<i>P</i>	3.91	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1991 03 23	809	1.5−	0.4+	1991 04 19	809	0.8+	1.6−	1999 05 14	704	(2.9−	0.4+)
1991 03 23	809	1.6−	0.1+	1991 04 19	809	1.2−	0.5+	1999 05 14	704	0.4−	0.7+
1991 03 23	809	1.8−	0.3+	1991 04 19	809	0.2+	0.7−	1999 05 14	703	0.6−	0.6+
1991 03 25	809	0.2+	1.3+	1999 04 12	704	0.5+	0.1−	1999 05 14	704	0.5+	0.1−
1991 03 25	809	0.5+	1.1+	1999 04 12	704	1.2+	0.3+	1999 05 14	703	0.4−	0.4+
1991 03 25	809	0.7+	1.3+	1999 04 12	704	0.9+	0.3+	1999 05 14	704	0.3−	1.3+
1991 04 08	809	1.4+	1.0−	1999 04 12	704	0.3+	0.6−	1999 05 14	703	0.1+	0.1−
1991 04 08	809	0.1+	0.8−	1999 04 12	704	1.0−	0.2−	1999 05 14	704	0.7−	0.5−
1991 04 08	809	1.5−	0.6−	1999 05 10	704	0.5+	0.2−	1999 05 14	703	0.6+	0.2−
1991 04 08	809	0.7+	0.2−	1999 05 10	704	0.6−	0.8+	1999 05 17	704	0.3+	0.4+
1991 04 08	809	0.8+	0.7−	1999 05 10	704	0.3+	0.8+	1999 05 17	704	0.3+	0.5+
1991 04 08	809	1.2+	1.4−	1999 05 10	704	0.9+	0.5−	1999 05 17	704	0.0	0.1−
1991 04 10	809	0.2−	0.3+	1999 05 10	704	0.1+	0.2−	1999 05 17	704	0.6−	0.0
1991 04 10	809	0.4−	0.9+	1999 05 12	704	0.8+	1.5−	1999 05 17	704	0.1−	0.2+
1991 04 10	809	0.5+	0.6−	1999 05 12	704	1.1+	1.2−	1999 05 18	704	0.2+	0.0
1991 04 10	809	0.6+	0.7−	1999 05 12	704	0.5−	0.9−	1999 05 18	704	0.8+	1.7+
1991 04 10	809	0.1+	1.0−	1999 05 12	704	1.1−	1.0−	1999 05 18	704	0.6−	0.7+
1991 04 10	809	0.5−	1.0−	1999 05 12	704	(2.5−	2.4−)	1999 05 18	704	0.1+	1.8+
1991 04 15	675	0.5+	0.2+	1999 05 13	704	0.9−	0.4−	1999 06 07	703	0.1−	0.3−
1991 04 15	675	0.0	0.4+	1999 05 13	704	0.4−	0.2−	1999 06 07	703	0.7+	0.0
1991 04 19	809	0.7+	0.9+	1999 05 13	704	0.9−	1.0−	1999 06 07	703	0.2−	0.3+
1991 04 19	809	0.0	1.7+	1999 05 13	704	0.1+	0.5−	1999 06 07	703	1.0−	0.1−
1991 04 19	809	0.2−	1.1+	1999 05 13	704	0.1−	0.5−				

1991 GV₄ = 1991 KN = 1999 LG₂₂

Id. S. Nakano (d, *MPC* 22572), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	351.03378		(2000.0)		<i>P</i>		<i>Q</i>
<i>n</i>	0.25695419	ω	103.58856	+0.36120628	+0.93246530		
<i>a</i>	2.4503733	Ω	187.59444	−0.87266360	+0.33568160		
<i>e</i>	0.1655540	<i>i</i>	2.69049	−0.32861568	+0.13351527		
<i>P</i>	3.84	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1991 04 08	809	0.2−	0.6−	1991 04 19	809	0.7−	0.6+	1999 06 09	704	0.3−	0.5−
1991 04 08	809	1.0−	0.4−	1991 04 19	809	0.3+	0.2+	1999 06 09	704	0.4−	0.1+
1991 04 08	809	0.2−	0.5+	1991 04 19	809	0.1−	0.9−	1999 06 09	704	0.4+	0.5−
1991 04 10	809	1.1−	1.3+	1991 04 19	675	0.6−	0.5−	1999 06 15	704	0.0	0.1+
1991 04 10	809	0.2−	1.1+	1991 04 19	675	0.2+	0.1−	1999 06 15	704	0.0	0.0
1991 04 10	809	0.8+	0.1+	1991 05 17	675	0.5+	0.2+	1999 06 15	704	0.1+	0.2+
1991 04 19	809	2.7+	0.3−	1991 05 17	675	0.9−	0.2−	1999 06 15	704	0.1+	0.4+
1991 04 19	809	1.6−	0.7+	1999 06 09	704	0.2−	0.1+	1999 06 15	704	0.4+	0.3−
1991 04 19	809	2.1+	1.7−	1999 06 09	704	0.1−	0.5+				

1991 GU₆ = 1999 EW₁₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams		
<i>M</i>	332.61389	(2000.0)	P	Q	
<i>n</i>	0.23725075	ω 214.82114	−0.57163886	+0.81773278	
<i>a</i>	2.5842289	Ω 20.57396	−0.70250302	−0.44533509	
<i>e</i>	0.0377880	<i>i</i> 11.05678	−0.42393222	−0.36467761	
<i>P</i>	4.15	<i>H</i> 14.9	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1991 04 08	809	1.4+	1.1+	1991 04 19	675	0.7−	0.4−	1999 03 20	704	0.9−	0.1−
1991 04 08	809	1.0+	2.0+	1995 03 01	691	0.0	0.4−	1999 03 20	704	0.9−	0.9+
1991 04 08	809	0.3−	1.6+	1995 03 01	691	0.0	0.3−	1999 03 20	704	0.8+	0.1+
1991 04 10	809	(3.8+	1.0+)	1995 03 01	691	0.1−	0.5−	1999 03 20	704	0.4−	0.2−
1991 04 10	809	(3.0+	0.8+)	1999 03 15	704	0.4+	1.6−	1999 04 18	703	1.0+	1.0−
1991 04 10	809	0.9+	1.2+	1999 03 15	704	0.0	0.4+	1999 04 18	703	0.1+	1.1+
1991 04 19	809	1.3−	1.7−	1999 03 15	704	0.9−	0.3−	1999 04 18	703	0.0	0.9+
1991 04 19	809	0.6−	1.3−	1999 03 15	704	0.6+	0.3+	1999 04 18	703	(0.2−	2.6+)
1991 04 19	809	0.3−	1.9−	1999 03 20	704	0.2+	0.1+				

1991 PV₁ = 1991 OB₁ = 1999 JG₇₂Id. S. Nakano (d, *MPC* 18999), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams		
<i>M</i>	324.80439	(2000.0)	P	Q	
<i>n</i>	0.22886820	ω 133.45535	+0.45570120	+0.88955151	
<i>a</i>	2.6469501	Ω 163.56902	−0.84599580	+0.44405962	
<i>e</i>	0.1626547	<i>i</i> 6.52923	−0.27681676	+0.10728078	
<i>P</i>	4.31	<i>H</i> 14.4	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1991 07 16	675	0.0	0.6−	1999 04 12	704	0.2+	0.3−	1999 05 15	704	0.2−	1.0−
1991 07 16	675	1.4+	0.6−	1999 04 12	704	0.6+	0.8−	1999 05 17	704	0.2+	0.1−
1991 08 05	675	0.7+	0.0	1999 04 12	704	(3.0−	0.2−)	1999 05 17	704	0.6+	0.7−
1991 08 05	675	0.2+	1.2−	1999 05 12	704	0.6−	0.1−	1999 05 17	704	0.1+	0.8+
1991 08 08	675	0.1+	0.5−	1999 05 12	704	0.4+	0.3+	1999 05 17	704	0.5+	0.4+
1991 08 08	675	0.9+	0.0	1999 05 12	704	0.9+	1.1−	1999 05 17	704	0.2−	0.8+
1991 08 10	809	1.3−	0.8+	1999 05 12	704	1.5+	1.6−	1999 05 18	704	0.7+	0.0
1991 08 10	809	1.9−	0.8+	1999 05 12	704	0.7+	1.1+	1999 05 18	704	1.1+	1.0−
1991 08 10	809	0.6−	0.0	1999 05 13	704	0.2−	0.3−	1999 05 18	704	1.5−	0.3+
1991 08 14	809	0.6+	0.4+	1999 05 13	704	0.1+	0.2+	1999 05 18	704	1.3+	0.6−
1991 08 14	809	0.1−	0.3+	1999 05 13	704	1.2−	0.4+	1999 05 18	704	0.0	1.6−
1991 08 14	809	0.1+	1.3+	1999 05 13	704	0.9−	0.3+	1999 05 19	704	0.7−	0.2+
1998 01 07	691	0.2+	0.2−	1999 05 13	704	1.0−	0.4+	1999 05 19	704	0.2+	1.5+
1998 01 07	691	0.1−	0.7+	1999 05 15	704	1.0−	0.8−	1999 05 19	704	0.4−	1.7+
1998 01 07	691	0.2+	0.6+	1999 05 15	704	0.4−	0.6+	1999 05 19	704	1.0+	0.0
1999 04 12	704	0.6−	0.5−	1999 05 15	704	0.5−	0.3−				
1999 04 12	704	0.0	1.4+	1999 05 15	704	0.5−	0.8+				

1991 PE₁₁ = 1999 JS₁₀₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams		
<i>M</i>	265.04736	(2000.0)	P	Q	
<i>n</i>	0.21850147	ω 9.47968	+0.98573651	+0.16607510	
<i>a</i>	2.7300241	Ω 340.89549	−0.15934983	+0.86893099	
<i>e</i>	0.1702361	<i>i</i> 4.77605	−0.05414032	+0.46623813	
<i>P</i>	4.51	<i>H</i> 13.6	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1991 08 05	675	0.7−	1.0−	1991 09 05	691	0.3−	0.3+	1999 05 13	704	0.0	0.1+
1991 08 07	675	0.2+	0.4+	1991 09 10	675	(2.1+	2.2−)	1999 05 13	704	1.4+	1.0+
1991 08 07	675	0.6+	0.2+	1991 09 10	675	0.8+	1.8−	1999 05 13	704	1.3−	0.8+
1991 08 08	675	0.0	0.1−	1991 09 16	675	0.7−	0.3+	1999 05 13	704	0.2−	1.7−
1991 08 08	675	0.1+	0.4−	1991 09 16	675	0.2+	0.4+	1999 05 13	704	0.1−	0.5−
1991 08 10	675	1.1+	0.3+	1996 12 15	691	0.0	0.1−	1999 05 18	704	0.4+	1.2+
1991 09 05	691	0.9−	0.7+	1996 12 15	691	0.1−	0.0	1999 05 18	704	0.1−	0.9−
1991 09 05	691	0.3−	0.8+	1996 12 15	691	0.1+	0.1+	1999 05 18	704	0.1+	0.3+

1991 PD₁₂ = 1999 GS₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams		
<i>M</i>	256.32112	(2000.0)	P	Q	
<i>n</i>	0.21275165	ω 162.14987	+0.95986425	+0.28038435	
<i>a</i>	2.7789928	Ω 181.61328	−0.27752333	+0.94605984	
<i>e</i>	0.2022631	<i>i</i> 13.82002	−0.04051437	+0.16234345	
<i>P</i>	4.63	<i>H</i> 14.0	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1991 08 07	675	0.9+	0.6−	1991 09 16	675	0.2−	1.1−	1999 04 07	704	0.5+	1.3+
1991 08 07	675	0.3+	0.1−	1991 09 16	675	0.5+	0.6−	1999 04 07	704	1.9−	1.0+
1991 08 10	675	0.6+	0.5+	1991 09 17	675	1.0+	0.1−	1999 04 12	704	1.3+	0.1+
1991 08 10	675	0.5−	0.7+	1991 09 17	675	0.4−	0.6−	1999 04 12	704	0.1−	0.8+
1991 09 10	675	0.2−	0.9+	1999 04 07	704	0.4−	1.0−	1999 04 12	704	2.3+	2.1−
1991 09 10	675	1.9−	0.7+	1999 04 07	704	1.1−	1.0+	1999 04 12	704	0.7−	1.6−

1991 PM₁₅ = 1999 JW₆₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams		
<i>M</i>	352.48060	(2000.0)	P	Q	
<i>n</i>	0.23459204	ω 343.21792	+0.32399345	+0.94460547	
<i>a</i>	2.6037176	Ω 305.65707	−0.86041327	+0.27116877	
<i>e</i>	0.2358428	<i>i</i> 3.69963	−0.39334114	+0.18490000	
<i>P</i>	4.20	<i>H</i> 13.7	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1991 08 08	675	0.3−	0.6−	1999 05 13	704	1.0+	1.1−	1999 05 19	704	0.0	0.5+
1991 08 08	675	0.2+	0.4−	1999 05 13	704	0.3+	1.6−	1999 06 09	704	0.7+	0.0
1991 08 10	675	(1.7+	2.6−)	1999 05 13	704	0.4−	0.2−	1999 06 09	704	0.3+	0.2−
1991 09 09	691	0.4+	0.7+	1999 05 13	704	0.9−	0.8−	1999 06 09	704	1.0+	0.5+
1991 09 09	691	0.1+	0.7+	1999 05 13	704	0.4−	0.4−	1999 06 09	704	0.6+	0.5+
1991 09 09	691	0.1+	0.8+	1999 05 18	704	1.7−	1.3+	1999 06 09	704	0.3+	0.9+
1991 09 14	675	0.5−	0.9−	1999 05 18	704	0.6+	0.4+	1999 06 15	704	0.3−	0.5−
1991 09 14	675	0.3+	0.8−	1999 05 18	704	0.5+	0.7+	1999 06 15	704	0.1−	0.1+
1999 05 10	704	0.9+	0.2−	1999 05 18	704	0.8+	0.8+	1999 06 15	704	0.3−	0.3+
1999 05 10	704	(1.5+	2.8−)	1999 05 19	704	0.2+	0.3+	1999 06 15	704	0.4−	0.1+
1999 05 10	704	0.9+	0.9−	1999 05 19	704	0.1−	1.4−	1999 06 15	704	0.4−	0.3+
1999 05 10	704	(0.6+	2.4−)	1999 05 19	704	1.7−	0.1−				
1999 05 10	704	0.6−	0.3−	1999 05 19	704	0.9−	1.0+				

1991 PO₁₆ = 1999 JT₇₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams		
<i>M</i>	350.89238	(2000.0)	P	Q	
<i>n</i>	0.22561481	ω 110.23017	+0.05678192	+0.99602025	
<i>a</i>	2.6723355	Ω 162.59449	−0.98012812	+0.06871077	
<i>e</i>	0.1627291	<i>i</i> 13.27698	−0.19006496	−0.05676697	
<i>P</i>	4.37	<i>H</i> 13.5	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1991 08 07	675	0.5−	0.5−	1999 03 24	704	0.7−	1.7+	1999 05 15	704	0.4+	0.0
1991 08 08	675	0.0	0.8−	1999 03 24	704	0.0	0.1+	1999 05 15	703	0.7−	1.3+
1991 08 08	675	0.7−	0.8−	1999 03 24	704	0.6+	0.4−	1999 05 15	704	1.1−	0.7−
1991 08 08	675	(2.1−	2.3−)	1999 05 12	704	0.1+	0.5−	1999 05 15	704	1.0−	0.3−
1991 09 07	372	(1.7+	5.0+)	1999 05 12	704	0.8+	1.8+	1999 05 17	704	0.3−	0.8+
1991 09 07	372	1.1+	1.7+	1999 05 12	704	0.4+	1.0+	1999 05 17	704	0.2+	0.3−
1991 09 09	372	(3.7−	2.1+)	1999 05 12	704	0.4+	0.8+	1999 05 17	704	0.3−	0.2−
1991 09 09	372	(0.1+	2.6+)	1999 05 12	704	1.3+	0.1−	1999 05 17	704	0.6+	0.1−
1991 09 11	675	0.2+	0.1+	1999 05 13	704	0.3+	0.2−	1999 05 17	704	0.2+	1.3+
1991 09 11	675	0.6−	0.3−	1999 05 13	704	0.6+	0.7−	1999 06 08	703	0.0	0.1−
1991 09 13	675	0.3+	1.2+	1999 05 13	704	1.6−	0.3−	1999 06 08	703	0.1+	0.1+
1991 09 13	675	0.4−	1.8+	1999 05 13	704	0.2+	0.6−	1999 06 08	703	0.3−	0.3−
1991 09 15	675	0.3+	0.3−	1999 05 13	704	0.2+	0.8+	1999 06 08	703	0.3−	0.4−
1991 09 15	675	0.4+	0.8−	1999 05 13	704	0.2−	0.4−	1999 06 08	704	1.2+	0.4+
1991 09 17	675	1.1−	0.7−	1999 05 13	704	0.3−	0.5−	1999 06 08	704	0.2+	0.5+
1991 09 17	675	0.5+	0.9−	1999 05 13	704	0.4−	0.3−	1999 06 08	704	0.4+	0.2+
1991 09 17	675	0.5+	0.5−	1999 05 13	704	0.1+	0.0	1999 06 08	704	0.8−	0.1+

1999 JUNE 22

M.P.C. 34837

1999 02 23	704	0.2−	0.8−	1999 05 13	704	0.2−	0.3−	1999 06 08	704	0.6−	0.2+
1999 02 23	704	1.3+	0.0	1999 05 15	703	0.6+	0.2−	1999 06 12	704	0.5+	0.3+
1999 02 23	704	0.8−	1.1−	1999 05 15	703	0.5+	0.3−	1999 06 12	704	0.2−	0.5+
1999 02 23	704	0.6−	0.7+	1999 05 15	704	0.1+	1.4−	1999 06 12	704	1.0−	0.3+
1999 03 24	704	0.9+	1.9−	1999 05 15	704	0.4−	1.6−	1999 06 12	704	0.1−	0.0
1999 03 24	704	(2.1+	2.4−)	1999 05 15	703	0.1+	0.5+	1999 06 12	704	0.4−	0.4−

1991 RF₄ = 1987 QC₉

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	75.94402		(2000.0)		P		Q
<i>n</i>	0.26144515	<i>ω</i>	48.91976		+0.61079534		+0.79087009
<i>a</i>	2.4222316	<i>Ω</i>	258.76771		−0.73760904		+0.55083507
<i>e</i>	0.1805191	<i>i</i>	2.22766		−0.28785752		+0.26665564
<i>P</i>	3.77	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1979 03 08	413	0.6+	0.5−	1991 09 14	033	0.7−	0.6−	1991 10 09	691	0.2−	0.4−
1979 03 08	413	1.1−	1.2−	1991 09 15	033	0.7−	0.4−	1991 10 09	033	0.5+	0.3−
1987 08 29	809	0.2+	0.5−	1991 09 15	033	(1.0+	2.2−)	1991 10 09	033	0.5+	0.3−
1987 08 29	809	0.2−	0.1−	1991 10 02	033	0.3+	1.2+	1991 10 12	675	0.6−	0.8−
1987 08 29	809	0.2+	0.4−	1991 10 02	033	0.9+	0.7+	1991 10 12	675	0.9+	1.5+
1987 09 18	413	0.1−	0.2−	1991 10 03	033	0.0	0.7−	1992 12 25	691	0.2+	0.6−
1987 09 18	413	0.1+	0.7+	1991 10 04	033	0.4−	0.6−	1992 12 25	691	0.0	0.6−
1991 09 12	033	0.8+	0.2+	1991 10 09	691	1.2−	0.2−	1992 12 25	691	0.3−	0.2−
1991 09 12	033	1.0+	0.3+	1991 10 09	691	0.3−	0.3−	1995 09 05	675	0.6−	0.1−

1991 RU₄ = 1975 TO = 1999 FR₃₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	170.97378		(2000.0)		P		Q
<i>n</i>	0.18514730	<i>ω</i>	168.40606		+0.97149722		−0.22912716
<i>a</i>	3.0487686	<i>Ω</i>	205.09219		+0.20442133		+0.93958115
<i>e</i>	0.0691028	<i>i</i>	8.23984		+0.12002110		+0.25433836
<i>P</i>	5.32	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1975 10 03	095	0.6+	1.9−	1991 10 09	691	0.8−	0.4−	1999 02 18	566	0.2−	0.8−
1991 09 13	033	0.4−	0.1−	1991 10 09	691	0.5−	0.1−	1999 02 18	566	0.1+	0.5−
1991 09 13	033	0.1−	0.1+	1994 03 17	691	0.4−	0.4+	1999 03 20	704	0.4−	0.5−
1991 09 13	033	0.4−	0.4+	1994 03 17	691	0.3−	0.3+	1999 03 20	704	0.3−	1.7−
1991 09 14	033	0.4−	0.6+	1994 03 17	691	0.4+	0.6+	1999 03 20	704	0.3−	0.3−
1991 09 15	033	0.3+	0.0	1997 12 30	566	0.1+	0.6+	1999 03 20	704	0.1+	1.6−
1991 09 15	033	0.0	0.2+	1997 12 30	566	0.7−	1.0+	1999 03 20	704	0.7+	1.1−
1991 09 18	033	0.5−	0.1−	1997 12 30	566	0.4+	0.1+	1999 03 23	704	0.4+	0.1+
1991 10 03	033	1.3+	0.1−	1999 02 14	699	0.8−	0.7+	1999 03 23	704	0.2−	1.4+
1991 10 04	033	1.4+	0.6−	1999 02 14	699	0.0	0.3+	1999 03 23	704	0.5+	0.6+
1991 10 04	033	0.8+	0.0	1999 02 14	699	0.5+	0.8+	1999 03 23	704	(0.4−	2.8+)
1991 10 09	691	0.8−	0.1+	1999 02 18	566	0.3−	1.0−				

1991 RA₁₃ = 1999 JP

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	342.79079		(2000.0)		P		Q
<i>n</i>	0.22005147	<i>ω</i>	60.66840		+0.07450038		+0.99707916
<i>a</i>	2.7171891	<i>Ω</i>	213.61692		−0.92514388		+0.06281069
<i>e</i>	0.1614451	<i>i</i>	1.74074		−0.37223446		+0.04345071
<i>P</i>	4.48	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1991 09 10	675	0.7+	0.1+	1999 04 14	699	0.1−	0.8−	1999 05 13	704	0.7−	0.1+
1991 09 10	675	1.1−	0.8−	1999 04 14	699	1.4+	0.3+	1999 05 14	704	0.7−	1.1+
1991 09 13	675	0.9−	0.7+	1999 04 15	704	0.3+	0.2−	1999 05 14	704	1.6−	0.1−
1991 09 13	675	1.4−	0.4+	1999 04 15	704	1.4+	0.1+	1999 05 14	704	(0.9+	2.5−)
1991 09 17	675	0.3−	1.1+	1999 04 15	704	0.1+	0.3−	1999 05 15	703	0.4+	1.5+
1991 09 17	675	0.5−	0.4−	1999 05 07	678	(3.5+	0.8+)	1999 05 15	703	0.8+	0.8+

1991 10 07	033	0.9+	0.5−	1999 05 07	678	0.9+	0.0	1999 05 15	703	0.1−	0.1+
1991 10 07	033	0.5+	0.1+	1999 05 08	678	0.2+	0.2−	1999 05 15	703	0.2−	0.0
1991 10 08	033	0.8+	0.1+	1999 05 08	678	0.8−	0.1+	1999 05 18	704	0.9−	0.9−
1991 10 14	675	0.6−	0.6+	1999 05 10	704	0.5+	0.5−	1999 05 18	704	(0.9−	3.0−)
1991 10 14	675	1.3+	0.2+	1999 05 10	704	1.3+	0.1−	1999 05 18	704	1.2−	0.4+
1998 01 18	910	1.1+	0.2+	1999 05 10	704	0.2−	0.2−	1999 05 18	704	1.1−	0.5+
1998 01 18	910	0.9+	0.2+	1999 05 10	704	0.4−	0.7−	1999 05 19	704	0.6+	0.3+
1998 01 18	910	1.0+	0.4+	1999 05 10	704	0.7+	0.1+	1999 05 19	704	1.1−	1.0+
1998 01 29	566	1.1−	0.1+	1999 05 13	704	0.2−	0.6−	1999 05 19	704	0.5+	0.9+
1998 01 29	566	1.0−	0.2+	1999 05 13	704	0.2−	0.2−	1999 05 19	704	0.5+	0.9−
1998 01 29	566	0.7−	0.1+	1999 05 13	704	0.1−	0.1+	1999 05 19	704	0.7−	0.1−
1999 04 14	699	1.4+	0.4+	1999 05 13	704	0.1−	0.7−				

1991 RW₁₈ = 1997 WL₃₃ = 1999 CN₆₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	164.49836		(2000.0)		P		Q
<i>n</i>	0.18394783	<i>ω</i>	92.36392		+0.99608314		−0.02543377
<i>a</i>	3.0620077	<i>Ω</i>	269.10198		−0.01013852		+0.91856925
<i>e</i>	0.1133570	<i>i</i>	4.85849		+0.08783844		+0.39444094
<i>P</i>	5.36	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1991 09 14	675	1.7−	0.0	1997 11 29	704	0.1+	0.0	1999 02 12	704	0.3−	0.1−
1991 09 14	675	0.1−	0.8−	1997 11 29	704	0.8+	1.0−	1999 02 12	704	0.8+	0.7+
1991 09 17	675	1.2+	0.4+	1997 12 04	704	1.0+	0.5+	1999 02 12	704	0.1−	0.8+
1991 09 17	675	0.9+	0.3−	1997 12 04	704	1.3−	0.4−	1999 02 12	704	0.6−	1.4−
1997 10 23	327	0.2−	0.6+	1997 12 04	704	1.2+	0.5−	1999 02 12	704	0.7+	0.2−
1997 10 23	327	0.1+	0.9+	1997 12 04	704	(2.1−	1.0+)	1999 02 16	704	0.7−	1.1−
1997 10 23	327	0.0	1.0+	1997 12 04	704	1.6−	0.0	1999 02 16	704	0.2+	0.5+
1997 11 29	704	1.2+	0.5−	1997 12 08	327	0.6−	0.1−	1999 02 16	704	0.4−	0.2−
1997 11 29	704	0.0	0.4+	1997 12 08	327	0.7−	0.0	1999 02 16	704	0.2−	0.0
1997 11 29	704	0.7+	0.4+	1997 12 08	327	0.5−	0.9−	1999 02 16	704	0.3+	0.7+

1991 RN₂₂ = 1998 UL₃₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	149.95985		(2000.0)		P		Q
<i>n</i>	0.29029786	<i>ω</i>	290.75659		+0.52820359		+0.84895242
<i>a</i>	2.2589511	<i>Ω</i>	11.17338		−0.74334787		+0.47185577
<i>e</i>	0.2083720	<i>i</i>	4.96042		−0.41040823		+0.23797461
<i>P</i>	3.40	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1991 09 15	675	0.1−	0.3+	1998 10 20	327	0.0	0.4−	1998 10 29	327	0.1−	0.1+
1991 09 15	675	0.1+	0.0	1998 10 20	327	0.3+	0.2+	1998 11 10	704	(2.2+	0.1+)
1991 09 17	675	0.3+	0.5−	1998 10 20	327	0.0	0.1−	1998 11 10	704	(1.7+	2.2−)
1991 09 17	675	0.3−	0.2+	1998 10 29	704	0.1−	0.7+	1998 11 10	704	0.1−	0.3+
1998 10 13	120	0.5−	0.5+	1998 10 29	704	0.5+	0.6+	1998 11 10	704	0.1+	0.4−
1998 10 13	120	0.1−	0.3+	1998 10 29	704	0.2−	0.3−	1998 11 14	327	0.1+	0.0
1998 10 13	120	0.4+	0.3−	1998 10 29	704	0.3−	0.2+	1998 11 14	327	0.1−	0.3+
1998 10 19	699	0.4+	0.4−	1998 10 29	704	(6.5−	0.4−)	1998 11 14	327	0.1−	0.0
1998 10 19	699	0.2−	0.1+	1998 10 29	327	0.2−	0.5−				
1998 10 19	699	0.4+	0.5−	1998 10 29	327	0.3−	0.4−				

1991 RW₂₃ = 1991 PB₂₁ = 1999 JP₂₃

Id. S. Nakano (d, MPC 22572), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	216.41278		(2000.0)		P		Q
<i>n</i>	0.21115163	<i>ω</i>	186.59202		+0.90132567		−0.43254208
<i>a</i>	2.7930139	<i>Ω</i>	199.08718		+0.40051475		+0.85231109
<i>e</i>	0.0798921	<i>i</i>	3.99635		+0.16492415		+0.29406316
<i>P</i>	4.67	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1991 08 08	675	1.2+	0.7-	1996 12 12	327	0.3+	0.2+	1999 05 13	704	0.2-	0.9+
1991 08 08	675	1.6-	1.1-	1996 12 12	327	0.1-	0.2+	1999 05 13	704	0.6+	0.2-
1991 08 08	675	0.0	1.2-	1996 12 12	327	0.4+	0.3+	1999 05 13	704	1.0+	0.7-
1991 08 08	675	0.6-	0.2-	1997 02 01	691	0.1-	0.6-	1999 05 13	704	1.0+	0.1-
1991 09 11	675	1.2+	0.2+	1997 02 01	691	0.2-	0.3-	1999 05 14	704	0.6-	0.7-
1991 09 11	675	1.0+	0.4-	1997 02 01	691	0.1-	0.5-	1999 05 14	704	1.7-	0.5+
1991 09 16	675	0.2-	0.0	1999 04 11	691	0.6-	0.4-	1999 05 14	704	0.1-	1.6+
1991 09 16	675	0.7-	0.5+	1999 04 11	691	0.3-	0.2-	1999 05 14	704	0.9+	1.6-
1991 09 17	675	(1.1-	4.1+)	1999 04 11	691	0.2-	0.0	1999 05 14	704	0.2-	0.5-
1991 09 17	675	0.0	1.5+	1999 04 12	704	(2.7+	2.1-)	1999 05 15	703	0.7+	0.9+
1996 09 18	327	1.1-	0.6+	1999 04 12	704	0.4+	1.6+	1999 05 15	703	0.0	0.7+
1996 09 18	327	0.7-	0.8+	1999 04 12	704	0.8-	0.0	1999 05 15	703	0.0	0.5+
1996 09 18	327	1.6-	0.4+	1999 04 12	704	(0.2-	2.6-)	1999 05 15	703	1.0-	0.4+
1996 11 09	327	0.4+	0.5+	1999 05 10	704	0.4+	0.7+	1999 05 18	704	1.9+	0.5-
1996 11 09	327	0.4+	0.4+	1999 05 10	704	0.8-	0.9+	1999 05 18	704	0.4+	0.6+
1996 11 09	327	0.6+	0.4+	1999 05 10	704	0.5-	0.2+	1999 05 18	704	0.9+	0.6-
1996 11 29	327	0.1+	0.8+	1999 05 10	704	0.0	0.6-	1999 05 18	704	0.6+	0.6-
1996 11 29	327	0.4+	0.4+	1999 05 10	704	0.3+	1.1-	1999 05 18	704	0.1+	0.2-
1996 11 29	327	0.2+	0.3-	1999 05 13	704	1.4-	1.7+				

1991 RV₄₀ = 1999 GO₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	358.77668	(2000.0)	P	Q	
<i>n</i>	0.19817040	ω	188.04666	-0.85702278	+0.51508679
<i>a</i>	2.9136912	Ω	22.97335	-0.47073107	-0.77154478
<i>e</i>	0.0650739	<i>i</i>	2.06371	-0.20958104	-0.37336878
<i>P</i>	4.97	<i>H</i>	13.7	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1991 09 10	033	0.2-	0.3+	1999 01 19	910	0.2-	0.7-	1999 04 06	704	0.1+	1.1+
1991 09 10	033	0.2-	0.1+	1999 02 20	699	0.8+	1.3+	1999 04 06	704	(2.1-	0.8+)
1991 09 13	033	1.0-	0.4+	1999 02 20	699	0.2+	1.3+	1999 04 07	699	0.0	0.4-
1991 09 17	675	1.0-	1.8+	1999 02 20	699	0.2+	0.2+	1999 04 07	699	0.3+	0.3+
1991 09 17	675	1.2+	0.5+	1999 03 22	699	0.0	0.3-	1999 04 07	699	0.6+	0.6-
1991 10 04	033	0.4-	0.3+	1999 03 22	699	0.0	0.2-	1999 04 12	704	0.4-	0.2-
1991 10 04	033	0.7-	0.6+	1999 03 22	699	0.2-	0.3-	1999 04 12	704	1.7+	0.6+
1991 10 05	033	0.2+	0.3+	1999 04 06	704	0.1+	0.3+	1999 04 12	704	1.4-	0.1+
1999 01 19	910	0.2-	0.7-	1999 04 06	704	0.2+	0.9+	1999 04 12	704	0.2+	0.1-
1999 01 19	910	0.1-	0.9-	1999 04 06	704	0.2+	1.0+	1999 04 12	704	0.2-	0.9+

1991 SQ = 1988 AK₂

Id. A. Gnädig, G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	261.72086	(2000.0)	P	Q	
<i>n</i>	0.21892005	ω	322.95787	+0.99303766	-0.02698457
<i>a</i>	2.7265430	Ω	39.06969	+0.08321652	+0.84965537
<i>e</i>	0.2314784	<i>i</i>	10.48227	-0.08337393	+0.52664750
<i>P</i>	4.50	<i>H</i>	14.1	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1988 01 11	033	0.0	0.2-	1991 09 30	413	0.4+	0.3-	1996 10 17	675	0.7+	1.5-
1988 01 11	033	0.1+	0.1-	1991 10 01	413	0.4-	0.0	1999 05 10	704	1.5-	0.4-
1991 08 18	413	1.2-	0.9-	1991 10 09	413	0.4+	0.1+	1999 05 10	704	0.2-	0.7+
1991 08 18	413	0.7+	0.4+	1991 10 09	413	0.5-	0.2+	1999 05 10	704	0.3+	1.8+
1991 09 15	675	0.6+	0.2-	1991 10 12	413	0.1-	0.1-	1999 05 10	704	2.0+	0.6+
1991 09 15	675	0.4-	1.2+	1991 10 26	413	0.1-	0.1-	1999 05 13	704	0.2+	1.8-
1991 09 30	413	0.1-	0.6-	1991 10 26	413	0.4-	0.7-	1999 05 13	704	0.7-	0.6+
1991 09 30	413	1.2+	0.8+	1996 10 17	675	0.7-	1.7+	1999 05 13	704	0.2-	1.8-

1991 SH₁ = 1999 LY₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	8.78370	(2000.0)	P	Q	
<i>n</i>	0.23888318	ω	197.83438	+0.02910547	+0.97180793
<i>a</i>	2.5724425	Ω	74.34016	-0.88494564	+0.13388979
<i>e</i>	0.1974253	<i>i</i>	14.06308	-0.46478391	-0.19406923
<i>P</i>	4.13	<i>H</i>	13.3	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1991 09 05	413	0.1+	0.1-	1998 04 18	699	0.8+	1.4+	1999 06 13	703	0.4-	0.1-
1991 09 07	413	1.1-	0.1-	1998 04 18	699	0.5-	0.5-	1999 06 13	703	0.2-	0.4-
1991 09 07	413	1.1+	0.1-	1999 06 09	704	0.2+	0.5-	1999 06 15	704	0.2+	0.0
1991 09 28	413	0.6+	0.9+	1999 06 09	704	0.3+	0.2+	1999 06 15	704	0.3+	0.3+
1991 09 30	413	0.9-	0.3+	1999 06 09	704	0.0	0.1+	1999 06 15	704	0.3+	0.1+
1996 12 02	691	0.1-	0.4+	1999 06 09	704	0.1+	0.6-	1999 06 15	704	0.4+	0.5+
1996 12 02	691	0.0	0.2-	1999 06 09	704	0.4-	0.4-	1999 06 15	704	0.3+	0.2+
1996 12 02	691	0.2+	0.1-	1999 06 13	703	0.4-	0.6+				
1998 04 18	699	0.3-	0.5+	1999 06 13	703	0.6-	0.1+				

1991 UE = 1998 VH₂₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	42.62649	(2000.0)	P	Q	
<i>n</i>	0.28679749	ω	112.13296	-0.07997826	-0.99669161
<i>a</i>	2.2772942	Ω	342.43588	+0.89597003	-0.06551995
<i>e</i>	0.1107577	<i>i</i>	2.74791	+0.43685372	-0.04809331
<i>P</i>	3.44	<i>H</i>	15.0	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1991 10 18	399	(0.8-	3.2+)	1996 03 15	566	0.4+	0.2-	1998 11 11	704	0.6-	0.2+
1991 10 18	399	0.6-	1.4+	1996 03 15	566	0.4-	0.0	1998 11 11	704	(2.2-	0.5+)
1991 10 19	399	0.5+	0.0	1998 10 19	699	1.6-	0.5+	1998 11 11	704	(2.4-	0.7+)
1991 10 19	399	1.9+	0.7-	1998 10 19	699	0.5+	0.8-	1998 11 18	704	0.6-	0.5+
1991 10 29	399	0.9-	0.7-	1998 10 19	699	0.5-	0.6-	1998 11 18	704	0.4-	0.1+
1991 10 29	399	(2.3-	3.5-)	1998 11 10	704	0.4-	0.5-	1998 11 18	704	0.1+	0.3-
1991 10 31	399	(3.8-	0.3-)	1998 11 10	704	1.4+	1.4+	1998 11 18	704	0.6+	1.8-
1991 10 31	399	0.6-	0.5-	1998 11 10	704	1.7+	0.7+	1998 11 18	704	0.5-	0.3+
1996 03 15	566	0.2-	0.1+	1998 11 11	704	0.1-	0.8+				

1991 UZ₁ = 1999 GS₂

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	169.64101	(2000.0)	P	Q	
<i>n</i>	0.19144090	ω	26.62826	+0.57277181	-0.81448184
<i>a</i>	2.9815784	Ω	28.70901	+0.71357364	+0.43990213
<i>e</i>	0.1132023	<i>i</i>	11.09948	+0.40341680	+0.37829281
<i>P</i>	5.15	<i>H</i>	13.2	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1991 10 29	399	1.0+	1.1+	1999 04 15	704	0.7+	0.0	1999 04 17	704	0.2+	0.5+
1991 10 29	399	1.7-	0.3+	1999 04 15	678	0.2+	1.2+	1999 04 17	704	1.0-	0.8-
1991 10 31	399	0.6+	0.7-	1999 04 15	704	0.6+	0.0	1999 04 18	704	(2.2+	0.2-)
1991 10 31	399	(3.1+	1.2-)	1999 04 15	678	(1.1+	2.3+)	1999 04 18	704	1.0-	1.2-
1991 11 09	399	0.8+	0.3+	1999 04 15	704	0.4+	0.5-	1999 04 18	704	0.1-	0.6-
1991 11 09	399	0.9-	0.8-	1999 04 15	678	(2.3+	0.9-)	1999 04 19	678	0.9-	0.2-
1999 04 09	678	1.9+	0.5-	1999 04 15	704	1.0+	1.4+	1999 04 19	678	0.0	1.9+
1999 04 09	678	1.4-	0.7-	1999 04 15	704	0.6+	0.9+	1999 05 13	704	0.1+	0.1+
1999 04 09	678	0.2-	1.2-	1999 04 17	704	0.6+	0.3+	1999 05 13	704	0.1+	1.0-
1999 04 10	678	1.2-	0.3-	1999 04 17	704	0.5+	0.1-	1999 05 13	704	0.1-	0.3+
1999 04 10	678	1.1-	0.5+	1999 04 17	704	0.5+	0.1-	1999 05 13	704	0.0	0.5+

1991 UM₃ = 1999 JG₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	285.81885	(2000.0)	P		Q	
<i>n</i>	0.21294303	ω	290.35018	+0.97320739	+0.18155417	
<i>a</i>	2.7773275	Ω	59.42525	-0.09582896	+0.87805003	
<i>e</i>	0.2020043	<i>i</i>	9.43161	-0.20900760	+0.44279365	
<i>P</i>	4.63	<i>H</i>	13.6	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1991 10 31	399	0.9-	1.4+	1998 03 25	704	1.0-	0.7-	1999 05 17	703	0.8-	1.4-
1991 10 31	399	0.8+	1.3+	1999 05 10	704	1.3-	0.5+	1999 05 17	703	(2.5+	2.4-)
1991 11 02	400	(2.8+	1.2+)	1999 05 10	704	0.7+	0.3+	1999 05 18	691	0.2-	0.1+
1991 11 02	400	1.9+	1.3+	1999 05 10	704	0.2+	1.3+	1999 05 18	691	0.1-	0.0
1991 11 04	399	1.3-	1.7-	1999 05 10	704	0.4-	0.0	1999 05 18	691	0.2+	0.4+
1991 11 04	399	0.8-	0.4+	1999 05 10	704	0.2-	0.1-	1999 06 09	704	0.2-	0.4-
1991 12 05	399	0.1+	0.8-	1999 05 13	704	0.1+	0.2+	1999 06 09	704	0.3+	0.6+
1991 12 05	399	0.9+	0.3-	1999 05 13	704	0.8+	0.8-	1999 06 09	704	0.5-	0.2+
1991 12 07	399	0.7-	0.5-	1999 05 13	704	0.4-	0.1+	1999 06 09	704	0.2+	0.8+
1991 12 07	399	1.0-	0.2-	1999 05 13	704	0.5+	1.0+	1999 06 15	704	0.2+	0.6-
1991 12 09	399	0.2+	0.5+	1999 05 13	704	1.4+	0.1-	1999 06 15	704	0.1+	0.5-
1991 12 09	399	0.1-	0.8+	1999 05 15	691	0.2+	0.3+	1999 06 15	704	0.2+	0.8-
1998 03 25	704	1.0+	0.1+	1999 05 15	691	0.1+	0.3+	1999 06 15	704	0.2+	0.8-
1998 03 25	704	1.9+	1.0+	1999 05 15	691	0.0	0.4+	1999 06 15	704	0.2+	0.2-
1998 03 25	704	1.9-	0.7-	1999 05 17	703	0.3-	1.2+				
1998 03 25	704	0.2+	0.4+	1999 05 17	703	0.4-	0.2+				

1991 VD₁₀ = 1997 EG₄₇ = 1998 RU₄₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	197.72597	(2000.0)	P		Q	
<i>n</i>	0.26309217	ω	40.10078	-0.61579373	+0.78776829	
<i>a</i>	2.4121118	Ω	191.91450	-0.74002206	-0.58471747	
<i>e</i>	0.1003216	<i>i</i>	4.11241	-0.27049110	-0.19371784	
<i>P</i>	3.75	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1991 10 06	675	0.9-	0.8-	1991 11 07	691	0.1+	0.1-	1998 08 23	704	0.4+	1.1-
1991 10 06	675	0.3+	0.1+	1997 03 12	809	0.5+	0.8-	1998 08 23	704	1.0-	0.6+
1991 11 04	691	0.4+	0.1+	1997 03 12	809	0.4+	0.1-	1998 09 14	704	0.0	1.0+
1991 11 04	691	0.4+	0.6-	1997 03 12	809	0.2-	0.0	1998 09 14	704	(2.6-	1.1+)
1991 11 04	691	0.3+	0.1-	1997 03 13	809	0.4-	0.4+	1998 09 14	704	1.3+	1.6-
1991 11 06	691	0.9+	0.8+	1997 03 13	809	0.8+	0.2+	1998 09 14	704	1.1+	0.7-
1991 11 06	691	0.5+	0.7-	1997 03 13	809	0.5-	0.3+	1998 09 18	704	0.9-	0.7+
1991 11 06	691	0.2-	0.2+	1997 04 01	809	0.7-	0.8-	1998 09 18	704	1.1-	0.9-
1991 11 07	691	0.4-	0.0	1997 04 01	809	0.4-	0.3+	1998 09 18	704	(2.6-	0.5+)
1991 11 07	691	0.8-	0.1-	1997 04 01	809	0.2+	0.4-	1998 09 18	704	0.8-	1.6+
1991 11 07	691	0.3-	0.5+	1998 08 23	704	0.5-	0.4-	1998 09 18	704	0.4+	0.6+
1991 11 07	691	0.2-	0.1-	1998 08 23	704	1.3+	0.4-				

1991 XE₂ = 1949 WM₁ = 1951 EF₁ = 1986 VG₄ = 1999 KF₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	286.24319	(2000.0)	P		Q	
<i>n</i>	0.21206012	ω	294.43196	+0.98743415	-0.00671158	
<i>a</i>	2.7850311	Ω	66.27769	+0.07885636	+0.88675008	
<i>e</i>	0.1687980	<i>i</i>	9.93090	-0.13695062	+0.46220044	
<i>P</i>	4.65	<i>H</i>	12.5	<i>G</i> 0.15	<i>U</i> 1	

Residuals in seconds of arc

1949 11 21	675	2.2-	0.1-	1994 05 14	691	0.2-	0.3-	1999 05 19	704	0.4+	0.8+
1949 11 21	675	0.1+	0.1-	1994 05 14	691	0.2-	0.1-	1999 06 09	704	0.2+	0.1+
1949 11 21	675	2.4+	1.0-	1998 02 26	566	0.4-	0.2-	1999 06 09	704	0.4+	0.8-
1951 03 09	760	0.3+	0.5+	1998 02 26	566	0.0	0.3-	1999 06 09	704	0.1+	0.3-
1951 03 09	760	0.1+	0.8-	1998 02 26	566	0.1-	0.2-	1999 06 09	704	0.6-	0.1-
1986 11 07	010	(9.1-	1.4+)	1999 05 18	704	0.3-	0.4-	1999 06 09	704	0.7-	0.7-
1986 11 07	010	0.9+	0.2-	1999 05 18	704	0.2-	0.2+	1999 06 15	704	0.1-	0.6+

1991 12 01	675	0.2-	0.2+	1999 05 18	704	1.4+	0.1-	1999 06 15	704	0.3-	0.1-
1991 12 01	675	0.4+	1.1-	1999 05 18	704	(3.9-	0.2+)	1999 06 15	704	0.2-	0.1+
1991 12 02	675	0.6-	0.4-	1999 05 19	704	0.5-	0.2-	1999 06 15	704	0.1-	0.2-
1991 12 02	675	0.1-	0.6-	1999 05 19	704	0.7-	0.7-	1999 06 15	704	0.7-	0.5-
1991 12 28	033	0.3+	0.8+	1999 05 19	704	0.2+	0.3+				
1994 05 14	691	0.2+	0.3-	1999 05 19	704	0.8+	0.3+				

1992 AS₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	330.78484	(2000.0)	P		Q	
<i>n</i>	0.26716008	ω	62.76841	-0.99805595	-0.05057581	
<i>a</i>	2.3875639	Ω	114.31346	+0.03284142	-0.92342851	
<i>e</i>	0.1284262	<i>i</i>	2.29040	+0.05296936	-0.38042329	
<i>P</i>	3.69	<i>H</i>	15.8	<i>G</i> 0.15	<i>U</i> 2	

Residuals in seconds of arc

1992 01 02	691	0.0	0.0	1992 01 31	691	0.2-	0.7+	1998 11 11	910	0.7+	0.4+
1992 01 02	691	0.2-	0.3-	1996 03 21	566	0.5+	0.5-	1998 11 11	910	0.9+	0.5+
1992 01 02	691	0.3-	0.0	1996 03 21	566	0.1-	0.0	1998 11 11	910	1.2+	0.1+
1992 01 13	691	0.0	0.4-	1996 03 21	566	0.3+	0.6-	1998 11 24	704	0.2-	1.3+
1992 01 13	691	0.2+	0.4-	1996 04 10	675	2.5-	0.1-	1998 11 24	704	1.4-	1.2-
1992 01 13	691	0.2-	0.2-	1996 04 10	675	1.1+	0.0	1998 11 24	704	0.7-	2.3-
1992 01 31	691	0.5+	1.1+	1997 07 31	691	0.1-	0.2+				
1992 01 31	691	0.3+	1.2+	1997 07 31	691	0.0	0.1+				

1992 DC₄ = 1999 KH₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	337.45388	(2000.0)	P		Q	
<i>n</i>	0.15687614	ω	121.40785	-0.14592662	+0.98916856	
<i>a</i>	3.4048510	Ω	140.19152	-0.91585469	-0.12902162	
<i>e</i>	0.0975741	<i>i</i>	1.41792	-0.37405295	-0.06999270	
<i>P</i>	6.28	<i>H</i>	13.9	<i>G</i> 0.15	<i>U</i> 7	

Residuals in seconds of arc

1992 02 29	691	0.4+	1.3+	1992 03 11	691	0.3-	1.2-	1999 05 18	704	1.9-	3.9+
1992 02 29	691	0.4+	1.6+	1992 03 11	691	0.6-	1.2-	1999 05 19	704	3.1+	1.7-
1992 02 29	691	0.2+	1.6+	1999 05 18	704	1.6-	0.8+	1999 05 19	704	1.2+	3.9-
1992 03 08	809	0.9+	0.9-	1999 05 18	704	0.8+	2.0+	1999 05 19	704	0.4+	1.6-
1992 03 09	809	1.2-	0.1-	1999 05 18	704	0.9-	2.3+	1999 05 19	704	1.3+	3.8-
1992 03 11	691	0.1+	1.2-	1999 05 18	704	2.3-	2.1+				

1992 DV₈ = 1999 JD₇₀

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	327.34078	(2000.0)	P		Q	
<i>n</i>	0.29958980	ω	106.34616	+0.47013655	+0.88233977	
<i>a</i>	2.2119979	Ω	191.76567	-0.84421639	+0.44256848	
<i>e</i>	0.1418157	<i>i</i>	5.95912	-0.25743021	+0.16003023	
<i>P</i>	3.29	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1992 02 28	675	1.0-	0.8-	1999 04 15	704	0.0	0.7+	1999 05 15	703	0.0	0.0
1992 02 28	675	1.8+	0.6-	1999 04 15	704	0.2-	0.8-	1999 05 15	703	0.4-	0.3+
1992 02 29	809	1.5-	1.0-	1999 05 12	704	0.7+	0.0	1999 05 15	703	0.9-	0.1-
1992 03 03	809	0.1+	0.6+	1999 05 12	704	0.6+	0.4-	1999 05 17	704	0.0	0.3-
1992 03 05	809	0.9+	0.5+	1999 05 12	704	0.3-	0.7-	1999 05 17	704	0.2-	0.3+
1992 03 08	809	0.0	0.8+	1999 05 12	704	0.2-	0.0	1999 05 17	704	0.9-	0.3+
1992 04 07	809	0.5-	0.3+	1999 05 12	704	0.1-	0.8+	1999 05 17	704	0.2+	0.6+
1999 04 12	704	0.2+	0.6+	1999 05 13	704	0.9+	0.4-	1999 05 17	704	0.7-	0.5+
1999 04 12	704	0.8-	0.1-	1999 05 13	704	0.1+	0.2-	1999 05 18	704	0.5+	0.3-
1999 04 12	704	0.2+	0.5+	1999 05 13	704	0.2-	0.3-	1999 05 18	704	0.1+	0.7-
1999 04 12	704	1.3-	0.3-	1999 05 13	704	0.2-	0.2-	1999 05 18	704	0.7+	0.6-
1999 04 12	704	0.8+	0.2-	1999 05 13	704	0.8+	0.7-	1999 05 18	704	1.1+	0.7-
1999 04 14	699	0.5-	0.6-	1999 05 14	704	0.9+	0.8+	1999 05 18	704	1.2+	0.4-
1999 04 14	699	0.4-	0.5+	1999 05 14	704	0.5+	1.1-	1999 05 21	704	0.3-	1.0-

M.P.C. 34840

1999 JUNE 22

1999 04 14	699	0.7+	1.0+	1999 05 14	704	0.3+	0.7+	1999 05 21	704	0.0	0.0
1999 04 15	704	0.9-	0.8+	1999 05 14	704	0.6+	0.0	1999 05 21	704	1.5-	0.3-
1999 04 15	704	0.2-	0.5-	1999 05 14	704	0.3+	0.3+	1999 05 21	704	1.4-	0.6+
1999 04 15	704	1.0+	0.5-	1999 05 15	703	0.2+	0.3+	1999 05 21	704	1.3-	1.6+

1992 EB₄ = 1996 AP₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	319.63188		(2000.0)	P	Q
<i>n</i>	0.23157889	ω	318.79605	-0.14063393	-0.98285990
<i>a</i>	2.6262541	Ω	138.87349	+0.94922398	-0.16807402
<i>e</i>	0.0812147	<i>i</i>	10.44143	+0.28141771	+0.07574663
<i>P</i>	4.26	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1992 02 27	691	0.6-	1.0-	1992 02 28	675	0.9+	0.4+	1996 01 18	399	1.1-	0.2-
1992 02 27	691	0.1-	1.2-	1992 03 01	809	0.4-	1.0+	1996 01 18	399	1.2-	0.4+
1992 02 27	691	1.3+	0.7-	1992 03 04	809	0.4-	0.5+	1996 01 21	399	0.2-	0.5-
1992 02 27	675	0.0	0.6-	1992 03 06	809	1.0-	0.9+	1996 01 21	399	1.2+	0.9+
1992 02 27	675	0.9-	0.5+	1996 01 13	399	0.0	0.4+	1996 02 12	399	1.2+	0.6-
1992 02 28	675	1.0+	0.4+	1996 01 13	399	1.3-	0.3+	1996 02 12	399	1.7+	0.8-

1992 EJ₅ = 1999 FZ₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	348.29215		(2000.0)	P	Q
<i>n</i>	0.28697079	ω	133.35754	-0.51837955	+0.85387505
<i>a</i>	2.2763774	Ω	105.36372	-0.79792447	-0.46333068
<i>e</i>	0.0879717	<i>i</i>	2.77542	-0.30756981	-0.23711194
<i>P</i>	3.43	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1992 03 01	809	0.2-	0.2+	1999 03 19	699	0.2-	0.5+	1999 04 06	704	1.5+	0.6-
1992 03 04	809	0.3+	0.4+	1999 03 19	699	0.5+	0.2-	1999 04 07	699	1.5+	0.1+
1992 03 06	809	0.1+	0.1-	1999 03 19	699	0.8-	0.0	1999 04 07	699	0.2-	0.6+
1999 02 20	557	0.3+	0.3-	1999 03 23	699	0.2+	1.4-	1999 04 07	699	0.3+	0.0
1999 02 20	557	0.3+	0.0	1999 03 23	699	0.5+	0.2-	1999 04 12	704	0.4-	0.3-
1999 02 20	557	0.2+	0.0	1999 03 23	699	0.9-	0.2-	1999 04 12	704	0.5+	1.4+
1999 02 20	557	0.7-	0.0	1999 04 06	704	1.2-	0.2-	1999 04 12	704	1.5+	0.4+
1999 02 20	557	0.2-	0.2+	1999 04 06	704	0.1-	0.7-	1999 04 12	704	0.1-	0.4+
1999 02 20	557	0.2+	0.2-	1999 04 06	704	0.0	1.0-	1999 04 12	704	1.2-	0.3+
1999 02 20	557	0.2-	0.1+	1999 04 06	704	1.5-	0.8+				

1992 EW₅ = 1999 KH₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	311.19440		(2000.0)	P	Q
<i>n</i>	0.31342573	ω	230.34631	+0.93545517	+0.34536152
<i>a</i>	2.1464113	Ω	109.33298	-0.29496766	+0.87998403
<i>e</i>	0.1752223	<i>i</i>	4.56854	-0.19472467	+0.32611888
<i>P</i>	3.14	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1992 03 02	809	0.3+	0.3+	1999 05 13	704	(3.1-	2.5-)	1999 06 09	747	0.3+	0.2+
1992 03 05	809	0.3-	0.3+	1999 05 14	704	0.5+	0.5+	1999 06 09	704	0.0	0.2+
1992 03 07	809	0.2+	0.4+	1999 05 14	704	0.0	0.3-	1999 06 09	704	0.3-	0.6+
1992 04 04	809	0.2+	0.2+	1999 05 14	704	0.5+	0.7+	1999 06 09	704	0.2-	0.6+
1997 11 08	910	0.0	0.7+	1999 05 14	704	0.1-	0.7-	1999 06 09	704	0.3+	0.2-
1997 11 08	910	0.3+	0.6+	1999 05 14	704	0.3-	0.3+	1999 06 09	704	0.4+	0.5+
1997 11 08	910	0.2+	0.7+	1999 05 18	704	0.5+	0.3-	1999 06 11	703	0.7+	1.1+
1998 02 25	566	0.5+	1.2-	1999 05 18	704	0.3+	0.2-	1999 06 11	703	0.3+	0.2+
1998 02 25	566	0.6-	0.2+	1999 05 18	704	0.1-	0.0	1999 06 11	703	0.3-	0.1+
1998 02 25	566	0.1-	0.4-	1999 05 18	704	0.2-	0.1+	1999 06 11	703	0.4-	0.1-
1999 05 10	704	0.2-	1.0-	1999 05 18	704	0.3-	0.6+	1999 06 11	703	0.0	0.2+
1999 05 10	704	0.1+	1.0-	1999 05 18	120	0.1-	1.7-	1999 06 11	703	1.2-	1.1+
1999 05 10	704	0.4-	1.0+	1999 05 18	120	0.9-	0.5-	1999 06 11	703	0.4+	0.8+
1999 05 10	704	1.0-	0.0	1999 05 18	120	0.4+	0.8-	1999 06 11	703	1.7+	0.3+
1999 05 10	704	0.9-	0.2+	1999 05 19	120	0.3-	0.5-	1999 06 15	704	0.3-	0.1+

1999 05 13	704	0.6+	0.1-	1999 05 19	120	0.3-	0.1-	1999 06 15	704	0.5-	0.3+
1999 05 13	704	1.0+	0.4-	1999 05 19	120	0.2+	0.1-	1999 06 15	704	0.4-	0.1+
1999 05 13	704	0.8+	0.1+	1999 06 09	747	0.5+	0.4+	1999 06 15	704	0.1-	0.2-
1999 05 13	704	0.8-	1.8-	1999 06 09	747	0.4+	0.1+	1999 06 15	704	0.0	0.0

1992 EC₆ = 1999 GV₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	68.64434		(2000.0)	P	Q
<i>n</i>	0.28653488	ω	129.21097	-0.82665128	-0.56209075
<i>a</i>	2.2786855	Ω	16.64227	+0.48357073	-0.73367042
<i>e</i>	0.1575748	<i>i</i>	5.30685	+0.28776207	-0.38181370
<i>P</i>	3.44	<i>H</i>	15.6	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1992 03 02	809	0.1-	0.1+	1999 04 07	699	0.5+	1.5+	1999 04 15	704	0.8+	1.3-
1992 03 05	809	0.2-	0.0	1999 04 12	704	0.7+	0.7+	1999 04 15	704	0.9-	0.5+
1992 03 07	809	0.1-	0.4-	1999 04 12	704	0.6-	0.3-	1999 04 15	704	0.1-	0.7+
1992 04 06	809	0.5+	0.5+	1999 04 12	704	0.6-	1.2-	1999 04 15	704	1.2-	1.1-
1999 04 06	704	0.3-	0.2+	1999 04 12	704	0.2-	0.5-	1999 04 15	704	0.0	1.1+
1999 04 06	704	0.0	1.2-	1999 04 12	704	1.3+	1.1-	1999 04 15	704	0.0	0.8+
1999 04 06	704	0.4+	0.1-	1999 04 15	704	0.7-	0.6-	1999 04 15	704	1.7+	0.4-
1999 04 06	704	0.4+	0.2-	1999 04 15	704	0.4+	0.1-	1999 04 15	704	1.4-	0.2+
1999 04 06	704	0.2-	0.6-	1999 04 15	704	1.0-	0.9-	1999 04 15	704	0.7+	0.8+
1999 04 07	699	0.6+	1.0+	1999 04 15	704	0.4-	0.1+	1999 04 15	704	0.5-	0.3-
1999 04 07	699	0.0	1.6+	1999 04 15	704	0.5+	0.8+				

1992 EE₈ = 1982 SS₃

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	221.43408		(2000.0)	P	Q
<i>n</i>	0.26089051	ω	133.96752	+0.43598179	+0.89926705
<i>a</i>	2.4256634	Ω	161.78920	-0.85457891	+0.42594359
<i>e</i>	0.1246854	<i>i</i>	6.46621	-0.28216088	+0.09945266
<i>P</i>	3.78	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1982 09 24	033	0.3-	0.3+	1990 10 25	675	1.9+	0.2+	1992 03 07	809	0.1-	0.4-
1982 09 24	033	0.8+	0.1+	1992 02 25	675	0.6+	1.0+	1992 04 06	809	0.0	0.0
1982 10 15	413	0.5-	0.3+	1992 02 25	675	2.0+	0.5+	1997 08 11	691	0.5-	0.4+
1982 10 15	413	0.4-	0.2+	1992 03 02	809	1.2-	0.9+	1997 08 11	691	0.2+	0.4+
1990 10 25	675	1.8-	0.8-	1992 03 04	809	0.7-	0.7+	1997 08 11	691	0.1-	0.8+

1992 EP₈ = 1999 LO₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	53.48398		(2000.0)	P	Q
<i>n</i>	0.30117354	ω	138.13816	-0.82883927	+0.55534431
<i>a</i>	2.2042364	Ω	75.71877	-0.53013490	-0.74071682
<i>e</i>	0.1138029	<i>i</i>	4.02112	-0.17883637	-0.37806254
<i>P</i>	3.27	<i>H</i>	15.3	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1992 03 02	809	0.3+	1.4+	1997 11 29	704	0.0	0.2-	1999 06 09	704	0.1+	0.0
1992 03 05	809	0.1-	0.1+	1997 11 29	704	0.6+	0.1-	1999 06 09	704	0.0	0.5+
1992 03 07	809	0.0	0.8-	1997 11 29	704	(4.7-	0.3+)	1999 06 15	704	0.7-	0.3+
1992 04 04	809	0.2-	1.0-	1999 06 09	704	0.0	0.5+	1999 06 15	704	0.3+	0.3-
1997 11 29	704	0.7+	0.0	1999 06 09	704	0.8-	0.4+	1999 06 15	704	0.2+	1.1-
1997 11 29	704	1.1-	0.5-	1999 06 09	704	0.2+	0.3-	1999 06 15	704	0.7+	0.4-

1992 EV₉ = 1998 FK₃₇ = 1999 KM₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	318.68572		(2000.0)	P		Q	
<i>n</i>	0.16939817	ω	175.70055	+0.62809177	+0.77773082		
<i>a</i>	3.2349202	Ω	133.20652	−0.71495623	+0.58957675		
<i>e</i>	0.1853845	<i>i</i>	1.98199	−0.30714543	+0.21802298		
<i>P</i>	5.82	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 03 02	809	0.5−	1.4+	1999 05 10	704	(0.3−	2.8−)	1999 05 18	704	0.1−	0.1+
1992 03 04	809	0.4+	0.8+	1999 05 13	704	0.1+	0.4−	1999 05 19	704	0.4−	0.3−
1992 03 07	809	0.6+	0.6+	1999 05 13	704	0.4+	0.8+	1999 05 19	704	0.1−	1.1−
1992 04 06	809	0.5+	0.1+	1999 05 13	704	0.7−	0.8−	1999 05 19	704	0.8−	0.4−
1998 03 20	704	(2.5−	1.3−)	1999 05 13	704	0.6+	0.8+	1999 05 19	704	1.7−	0.4−
1998 03 20	704	0.6+	1.4+	1999 05 13	704	0.7+	1.1+	1999 05 20	691	0.0	0.4+
1998 03 20	704	0.6−	1.4+	1999 05 17	703	1.0+	0.4+	1999 05 20	691	0.1+	0.5+
1998 03 20	704	1.5−	0.8+	1999 05 17	703	0.8−	0.4+	1999 05 20	691	0.0	0.5+
1998 03 22	704	0.3−	1.3−	1999 05 17	703	1.3+	0.5−	1999 06 12	691	0.2+	0.3+
1998 03 22	704	0.9−	0.2−	1999 05 17	703	1.2+	1.2+	1999 06 12	691	0.3+	0.6+
1998 03 22	704	0.7+	1.8−	1999 05 17	691	0.2−	0.5+	1999 06 12	691	0.3+	0.3+
1998 03 22	704	0.2−	1.2−	1999 05 17	691	1.5−	0.9−	1999 06 14	704	0.4+	0.1−
1998 03 22	704	1.0+	1.7−	1999 05 17	691	0.2+	0.1+	1999 06 14	704	0.5−	0.1−
1999 05 10	704	0.4+	0.5+	1999 05 18	704	0.5+	1.6−	1999 06 14	704	0.3+	0.5+
1999 05 10	704	0.1+	1.2−	1999 05 18	704	0.7−	0.0	1999 06 14	704	0.3+	1.0+
1999 05 10	704	1.3−	0.6−	1999 05 18	704	0.1−	0.6−	1999 06 14	704	0.2−	0.3+
1999 05 10	704	0.2+	0.8−	1999 05 18	704	0.9+	0.1−				

1992 EX₁₀ = 1997 EA₅₅

Id. A. Doppler, G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	168.74287		(2000.0)	P		Q	
<i>n</i>	0.20821404	ω	205.96548	−0.92675142	+0.37560668		
<i>a</i>	2.8192227	Ω	356.07540	−0.32384712	−0.80842699		
<i>e</i>	0.0560497	<i>i</i>	6.01453	−0.19040708	−0.45317261		
<i>P</i>	4.73	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1983 05 10	413	0.3+	0.1−	1992 04 06	809	1.3−	0.5−	1997 03 08	809	(2.2−	2.7−)
1983 05 10	413	0.1+	1.0+	1994 08 11	675	1.1−	0.9+	1997 03 08	809	(1.8−	3.6−)
1992 02 25	675	0.4+	0.9−	1994 08 11	675	0.9+	0.4+	1997 03 09	809	0.2−	0.2−
1992 02 25	675	0.6−	1.9−	1994 09 30	691	0.1−	0.3−	1997 03 09	809	0.3−	0.9−
1992 03 06	809	1.6+	1.4+	1994 09 30	691	0.1−	0.4−	1997 03 09	809	0.4−	0.5−
1992 03 08	809	0.2+	1.6+	1994 09 30	691	0.0	0.2+				
1992 03 09	809	0.3+	1.7+	1997 03 08	809	(1.6−	3.5−)				

1992 EY₁₀ = 1985 TH₃

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	67.30541		(2000.0)	P		Q	
<i>n</i>	0.22166987	ω	351.26972	+0.91330756	+0.40195022		
<i>a</i>	2.7039476	Ω	344.52245	−0.35724626	+0.71330141		
<i>e</i>	0.1570464	<i>i</i>	14.23368	−0.19556180	+0.57414033		
<i>P</i>	4.45	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1985 09 21	095	1.4−	0.1−	1992 02 24	691	(3.3−	1.9+)	1992 03 08	809	0.6−	0.9+
1985 10 11	675	(3.8−	1.1+)	1992 02 24	691	0.4+	0.2−	1992 03 09	809	0.8+	0.9+
1985 10 13	675	0.0	0.1+	1992 03 06	809	0.3−	0.6+	1998 09 24	699	0.1+	0.2−
1985 10 13	675	1.3+	0.2+	1992 03 06	691	0.1−	0.8−	1998 09 24	699	0.3+	0.1−
1992 02 24	691	0.0	0.3−	1992 03 06	691	0.1−	0.9−	1998 09 24	699	0.4−	0.3+

1992 HG₁ = 1999 JA₆₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	39.66284		(2000.0)	P		Q	
<i>n</i>	0.28734112	ω	8.98958	−0.72237177	+0.69026764		
<i>a</i>	2.2744210	Ω	214.77919	−0.63886361	−0.68906935		
<i>e</i>	0.1274960	<i>i</i>	4.15682	−0.26463619	−0.22071253		
<i>P</i>	3.43	<i>H</i>	16.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 04 04	809	1.3+	0.4+	1999 05 10	704	0.2+	0.2−	1999 06 09	704	0.3+	0.1+
1992 04 04	809	1.2+	0.1−	1999 05 10	704	1.2−	0.8+	1999 06 09	704	0.3−	0.2−
1992 04 04	809	1.0+	0.1−	1999 05 13	704	0.7+	0.2+	1999 06 09	704	0.4−	0.0
1992 04 06	809	1.5−	0.0	1999 05 13	704	0.9−	0.3+	1999 06 09	704	0.2+	0.2−
1992 04 06	809	1.3−	0.5−	1999 05 13	704	0.8+	0.1+	1999 06 11	703	0.6+	0.8−
1992 04 06	809	0.4+	1.7−	1999 05 18	704	0.5−	0.3−	1999 06 11	703	0.6+	0.3+
1992 04 24	691	0.2−	0.6+	1999 05 18	704	0.2−	0.0	1999 06 11	703	0.5+	0.5+
1992 04 24	691	0.1−	0.6+	1999 05 18	704	0.1−	0.3+	1999 06 11	703	1.5+	0.5+
1992 04 24	691	0.1−	0.2+	1999 05 18	704	1.2+	0.5+	1999 06 15	704	0.0	0.5−
1992 05 08	691	0.2−	0.2+	1999 05 19	704	0.3+	0.7+	1999 06 15	704	0.4−	0.2+
1992 05 08	691	0.1−	0.1−	1999 05 19	704	1.9−	0.8−	1999 06 15	704	0.5−	1.0−
1992 05 08	691	0.1−	0.2−	1999 05 19	704	0.3+	1.3+	1999 06 15	704	0.4−	0.7−
1999 05 10	704	1.3−	0.0	1999 05 19	704	0.1+	0.3−				
1999 05 10	704	0.8+	1.0+	1999 06 09	704	0.3−	1.1−				

1992 JH = 1999 JQ

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	323.22989		(2000.0)	P		Q	
<i>n</i>	0.27153739	ω	128.55769	+0.23841560	+0.97086421		
<i>a</i>	2.3618354	Ω	155.20339	−0.90794312	+0.23163303		
<i>e</i>	0.2206663	<i>i</i>	3.29389	−0.34466982	+0.06139079		
<i>P</i>	3.63	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 04 08	675	0.8+	0.2+	1999 03 22	699	0.2+	0.9−	1999 04 12	704	1.3+	0.4−
1992 04 08	675	0.4+	1.0+	1999 03 22	699	0.3+	0.3+	1999 04 12	704	0.8+	0.0
1992 05 02	399	0.7−	0.3−	1999 03 22	699	0.2−	1.5−	1999 04 17	703	0.4−	0.9+
1992 05 02	399	1.6−	0.3−	1999 04 06	704	0.4+	0.2+	1999 04 17	703	0.4−	0.9+
1992 05 03	372	(2.9−	2.0+)	1999 04 06	704	0.2−	0.9+	1999 04 17	703	0.5−	0.4−
1992 05 03	372	(2.3−	2.3+)	1999 04 06	704	1.4−	0.5+	1999 04 17	703	0.3−	0.7−
1992 05 04	372	(5.7+)	1.7−)	1999 04 06	704	0.8+	0.2+	1999 05 04	327	0.1+	0.1−
1992 05 04	372	(6.3+)	1.6+)	1999 04 07	699	1.0−	0.4−	1999 05 04	327	0.1−	0.3+
1992 05 10	372	(0.4+)	4.1−)	1999 04 07	699	0.1+	0.0	1999 05 04	327	0.1−	0.3+
1992 05 10	372	0.6−	1.0−	1999 04 07	699	0.1−	0.4+	1999 05 05	327	0.3+	0.1+
1992 05 22	372	0.3+	1.0−	1999 04 12	704	0.1+	1.0−	1999 05 05	327	0.1−	0.1+
1992 05 22	372	1.6+	1.4+	1999 04 12	704	0.8+	0.4+	1999 05 05	327	0.6−	0.2−

1992 LE = 1987 HV

Id. A. Gnädig, G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	149.82760		(2000.0)	P		Q	
<i>n</i>	0.20114177	ω	136.51340	+0.34333461	+0.93208240		
<i>a</i>	2.8849250	Ω	152.94199	−0.91617756	+0.35944355		
<i>e</i>	0.2992090	<i>i</i>	14.71076	−0.20673663	−0.04497494		
<i>P</i>	4.90	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1987 04 23	675	0.1−	1.1+	1992 06 08	675	(0.6+	2.5−)	1992 06 29	675	1.0+	0.6−
1987 04 23	675	0.1+	0.8+	1992 06 08	675	0.5+	0.4−	1992 06 29	675	0.4−	0.8−
1989 11 06	675	0.5+	1.9−	1992 06 19	413	0.2−	0.3+	1992 08 21	413	0.2−	1.3+
1989 11 06	675	2.1+	0.5+	1992 06 19	413	0.1−	0.3+	1992 08 21	413	0.2−	1.3+
1991 01 24	675	0.7−	0.4−	1992 06 24	675	0.4−	0.0	1998 10 12	699	(2.5+	0.5−)
1991 01 24	675	1.7−	0.1+	1992 06 24	675	0.3−	0.7−	1998 10 12	699	1.0+	0.3+
1992 06 03	675	1.0+	0.2+	1992 06 25	675	0.3−	0.4−	1998 10 12	699	1.0−	0.0
1992 06 03	675	(2.8+	1.6+)	1992 06 25	675	0.6−	0.2−	1998 11 16	566	0.0	0.7−

M.P.C. 34842

1999 JUNE 22

1992 06 04 675 0.2+ 1.4- 1992 06 26 675 0.8- 0.7- 1998 11 16 566 0.3+ 1.0-
 1992 06 04 675 1.6+ 1.6- 1992 06 26 675 0.8- 0.2- 1998 11 16 566 0.2- 0.7-

1992 PO₁ = 1999 JB₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	318.36247		(2000.0)	P	Q
<i>n</i>	0.26550111	ω	20.39904	+0.76540418	+0.64180521
<i>a</i>	2.3974993	Ω	299.58398	-0.59773856	+0.68172506
<i>e</i>	0.2472556	<i>i</i>	3.12154	-0.23846394	+0.35119370
<i>P</i>	3.71	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1992 06 28	675	1.1+	1.3-	1994 01 05	691	0.5-	0.7-	1999 05 18	704	0.7-	0.3-
1992 06 28	675	0.9+	1.5-	1994 01 05	691	0.0	0.6-	1999 05 18	704	0.9-	0.3-
1992 07 24	809	1.3-	0.6+	1994 01 05	691	0.0	0.8-	1999 05 18	704	0.8-	0.5-
1992 07 24	809	(3.0-	0.3-)	1999 05 10	704	0.8+	1.3-	1999 05 18	704	(2.7-	1.1+)
1992 07 24	809	(3.2-	0.3+)	1999 05 10	704	1.3-	0.9-	1999 05 19	704	0.1-	0.4+
1992 07 30	809	0.3-	0.2-	1999 05 10	704	0.8+	0.1-	1999 05 19	704	2.0-	0.4+
1992 07 30	809	0.7-	0.2-	1999 05 10	704	0.5-	0.8+	1999 05 19	704	0.6+	0.6+
1992 07 30	809	0.8-	0.2+	1999 05 10	704	(3.3-	0.7-)	1999 05 19	704	1.1-	0.5+
1992 08 08	010	1.2+	0.8+	1999 05 13	704	1.2+	0.4+	1999 05 19	704	0.1+	0.5+
1992 08 08	010	0.1+	0.0	1999 05 13	704	0.5-	1.0+	1999 06 09	704	1.2+	0.7-
1992 08 08	010	0.1+	0.2+	1999 05 13	704	1.0+	0.7+	1999 06 09	704	1.2+	0.3+
1992 08 09	010	0.6+	0.1+	1999 05 13	704	0.8-	1.0-	1999 06 09	704	1.3+	1.7-
1992 08 09	010	0.2+	0.3-	1999 05 13	704	0.9+	0.1+	1999 06 09	704	0.1+	0.1+
1992 08 09	010	0.2-	0.2-	1999 05 18	704	0.3-	0.7+				

1992 PR₁ = 1999 JA₉₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	295.53898		(2000.0)	P	Q
<i>n</i>	0.26263471	ω	199.80340	+0.94732959	+0.29747347
<i>a</i>	2.4149119	Ω	142.23441	-0.26148946	+0.93233879
<i>e</i>	0.1738959	<i>i</i>	11.17022	-0.18490516	+0.20555757
<i>P</i>	3.75	<i>H</i>	14.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1992 07 24	809	0.3+	1.1+	1992 08 08	010	0.3+	1.6-	1999 05 17	704	0.1-	0.5-
1992 07 24	809	0.3+	1.2+	1992 08 09	010	0.6-	1.4-	1999 05 17	704	1.2-	0.5+
1992 07 24	809	0.1-	0.5+	1992 08 09	010	(0.7-	2.2-)	1999 05 17	704	0.2+	0.0
1992 07 26	809	0.1-	1.1+	1992 08 09	010	0.3-	1.2-	1999 05 17	704	0.1-	0.8+
1992 07 26	809	0.6-	1.3+	1994 02 13	691	0.0	1.5-	1999 05 17	704	1.8-	0.3-
1992 07 26	809	0.5-	1.0+	1994 02 13	691	0.1-	1.2-	1999 06 14	704	0.6+	0.5-
1992 07 30	809	0.1-	0.5-	1994 02 13	691	0.1+	1.4-	1999 06 14	704	0.5+	0.2+
1992 07 30	809	0.3-	0.9-	1999 05 12	704	0.9+	0.5-	1999 06 14	704	0.6+	0.3+
1992 07 30	809	0.1+	0.6-	1999 05 12	704	0.5+	1.2-	1999 06 14	704	0.2+	0.4-
1992 08 08	010	1.3+	0.8-	1999 05 12	704	0.8-	0.0	1999 06 14	704	0.5+	0.2+
1992 08 08	010	0.4+	2.0-	1999 05 12	704	0.0	0.1-				

1992 PT₄ = 1999 JH₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	338.40868		(2000.0)	P	Q
<i>n</i>	0.26289165	ω	152.68146	+0.31189113	+0.94283802
<i>a</i>	2.4133382	Ω	135.21937	-0.89931051	+0.33281278
<i>e</i>	0.1721410	<i>i</i>	9.59331	-0.30653635	-0.01709165
<i>P</i>	3.75	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1992 08 02	675	0.2+	0.3+	1999 05 07	703	0.4+	0.9+	1999 05 17	704	0.8-	0.2+
1992 08 02	675	0.1+	1.0-	1999 05 12	704	0.3-	0.3-	1999 05 17	704	0.1+	0.1+
1992 08 03	675	0.3+	0.0	1999 05 12	704	0.8-	1.0-	1999 06 08	704	0.1-	0.7+
1992 08 03	675	(0.5+	2.6-)	1999 05 12	704	0.7-	0.6-	1999 06 08	704	0.0	0.8+
1992 08 06	675	1.4-	0.2+	1999 05 12	704	0.3-	0.2-	1999 06 08	704	0.1+	0.2+
1992 08 06	675	0.1-	0.5+	1999 05 12	704	0.1+	0.4-	1999 06 08	704	0.1+	0.8-
1992 08 06	675	0.2-	1.3-	1999 05 16	703	0.1+	0.2+	1999 06 08	704	0.4+	0.0
1992 08 06	675	0.6-	0.5+	1999 05 16	703	0.4+	0.6+	1999 06 12	704	0.7+	0.2-

1992 08 24 675 0.9+ 0.9+ 1999 05 16 703 0.2+ 0.8+ 1999 06 12 704 0.1- 0.1+
 1992 08 24 675 0.6+ 0.1- 1999 05 16 703 0.1+ 0.4+ 1999 06 12 704 0.3+ 0.4-
 1999 05 07 703 0.6+ 0.9- 1999 05 17 704 1.0- 0.6- 1999 06 12 704 0.0 0.0
 1999 05 07 703 0.9+ 0.6+ 1999 05 17 704 0.2- 0.6- 1999 06 12 704 0.4- 0.1-
 1999 05 07 703 0.9+ 1.2+ 1999 05 17 704 0.7- 0.6-

1992 QP = 1999 JJ₈₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	315.46661		(2000.0)	P	Q
<i>n</i>	0.26483086	ω	171.17110	+0.84813807	+0.52447193
<i>a</i>	2.4015428	Ω	156.72035	-0.49687934	+0.83647101
<i>e</i>	0.2607381	<i>i</i>	10.90574	-0.18377359	+0.15888816
<i>P</i>	3.72	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1992 08 29	675	0.8+	0.2-	1999 05 07	703	1.1+	0.5-	1999 05 17	704	0.9-	0.8-
1992 08 29	675	0.1-	0.0	1999 05 12	704	0.3-	0.0	1999 06 08	704	0.0	0.2-
1992 08 29	095	(1.8+	6.6+)	1999 05 12	704	0.4-	0.1-	1999 06 08	704	0.1+	1.0+
1992 08 29	095	(5.4-	17.8+)	1999 05 12	704	0.2+	0.4-	1999 06 08	704	0.0	0.1-
1992 08 31	675	0.6-	0.9-	1999 05 12	704	0.5-	0.3-	1999 06 08	704	0.8-	0.4+
1992 08 31	675	0.0	1.1+	1999 05 15	704	1.5-	0.2-	1999 06 08	704	0.7-	1.0-
1992 09 23	675	0.7+	0.2+	1999 05 15	704	0.1+	0.8+	1999 06 12	704	0.3+	0.1+
1992 09 23	675	0.1-	0.4-	1999 05 15	704	0.8-	1.0-	1999 06 12	704	0.0	0.3+
1992 09 26	675	1.0-	0.2+	1999 05 15	704	1.1+	1.7+	1999 06 12	704	0.8+	0.5+
1992 09 26	675	0.1+	0.3-	1999 05 17	704	0.8-	0.4-	1999 06 12	704	0.9+	0.2+
1999 05 07	703	1.2+	0.5+	1999 05 17	704	0.4-	0.4-	1999 06 12	704	0.0	0.5+
1999 05 07	703	0.8+	0.6+	1999 05 17	704	0.7-	0.7-				
1999 05 07	703	0.9+	0.4-	1999 05 17	704	0.5+	0.0				

1992 RO₁ = 1999 JK₈₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	316.48986		(2000.0)	P	Q
<i>n</i>	0.26401716	ω	181.79379	+0.74064258	+0.65412669
<i>a</i>	2.4064746	Ω	136.03829	-0.61366919	+0.75160055
<i>e</i>	0.2565132	<i>i</i>	12.77639	-0.27360319	+0.08494045
<i>P</i>	3.73	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1992 07 24	809	1.1+	0.9+	1992 09 25	675	0.9+	0.8-	1999 05 15	704	0.6+	0.8-
1992 07 24	809	0.8+	0.2+	1992 09 25	675	0.2-	0.7-	1999 05 15	704	0.7-	2.0+
1992 07 24	809	0.3-	1.0-	1999 04 10	704	1.8-	0.6+	1999 05 15	704	0.3+	0.4+
1992 07 26	809	0.7+	0.5+	1999 04 10	704	0.1+	0.5-	1999 05 15	704	0.1-	0.5+
1992 07 26	809	0.1+	1.0+	1999 04 10	704	0.3-	0.3+	1999 05 17	704	1.0+	0.2+
1992 07 30	809	0.4-	0.1-	1999 04 10	704	0.9-	1.5-	1999 05 17	704	1.6+	0.3-
1992 07 30	809	0.4-	1.0-	1999 05 12	704	0.2-	0.9-	1999 05 17	704	1.4+	1.4+
1992 07 30	809	1.1-	0.4-	1999 05 12	704	0.0	0.5+	1999 05 17	704	0.4+	0.4+
1992 09 01	675	0.9-	0.6+	1999 05 12	704	0.4-	0.7-	1999 05 17	704	1.1-	0.6-
1992 09 01	675	(0.6-	2.2+)	1999 05 12	704	0.5+	1.0-				
1992 09 22	675	0.2-	0.4+	1999 05 12	704	0.6-	0.3-				

1992 RV₅ = 1999 JK₄₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	327.31917		(2000.0)	P	Q
<i>n</i>	0.25801602	ω	221.80078	+0.54137142	+0.83861482
<i>a</i>	2.4436459	Ω	81.06012	-0.75430078	+0.51614127
<i>e</i>	0.1695186	<i>i</i>	3.50253	-0.37141261	+0.17413608
<i>P</i>	3.82	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1992 09 02	809	1.2+	1.7-	1999 05 10	704	0.5+	0.3+	1999 05 18	704	1.5+	0.2+
1992 09 02	809	(0.6+	2.5-)	1999 05 10	704	0.5+	1.1+	1999 05 18	704	1.0+	0.5-
1992 09 02	809	(0.1+	2.9-)	1999 05 13	704	0.3+	0.8-	1999 05 18	704	1.4-	0.1+
1992 09 03	809	(0.2-	3.3-)	1999 05 13	704	1.0+	1.1-	1999 06 04	703	0.1-	0.2+
1992 09 22	809	0.6+	0.3+	1999 05 13	704	0.6+	0.5-	1999 06 04	703	0.3-	0.2+
1992 09 22	809	0.6-	0.3+	1999 05 13	704	1.4+	0.0	1999 06 04	703	0.5-	0.6+

1999 JUNE 22

M.P.C. 34843

1992 09 22	809	1.0−	0.8+	1999 05 14	704	1.3−	0.5+	1999 06 04	703	0.8+	0.4+
1992 09 23	809	0.1+	0.1−	1999 05 14	704	0.6+	1.2−	1999 06 14	704	1.0+	0.3+
1992 09 23	809	0.2−	0.3+	1999 05 14	704	1.6−	1.4+	1999 06 14	704	0.2+	0.1+
1992 09 23	809	0.1−	0.0	1999 05 14	704	1.8−	0.3−	1999 06 14	704	0.8+	0.7+
1999 05 10	704	0.5+	0.5−	1999 05 14	704	0.2−	0.1+	1999 06 14	704	0.6+	0.3+
1999 05 10	704	0.3+	0.6−	1999 05 18	704	1.2−	0.3−	1999 06 14	704	1.8−	1.2−
1999 05 10	704	0.4−	0.1+	1999 05 18	704	0.4−	0.7+				

1992 SO₁₇ = 1985 DR₂ = 1999 GY

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
P				Q			
<i>M</i>	70.00154	(2000.0)		<i>P</i>	0.15	<i>U</i>	4
<i>n</i>	0.21337674	ω	301.71623	ω	−0.58098399	ω	−0.81386705
<i>a</i>	2.7735628	Ω	183.83861	Ω	+0.78426522	Ω	−0.55688396
<i>e</i>	0.1749652	<i>i</i>	7.58216	<i>i</i>	+0.21768249	<i>i</i>	−0.16583331
<i>P</i>	4.62	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1985 02 24	675	1.8−	0.7+	1999 03 22	699	0.4−	0.2+	1999 04 12	704	0.8+	0.1−
1985 02 24	675	1.9+	0.5−	1999 03 22	699	0.1+	0.9+	1999 04 12	704	0.0	0.7+
1985 02 27	675	1.1−	0.6+	1999 03 22	699	0.8+	0.0	1999 04 12	704	0.6−	0.3−
1985 02 27	675	1.0+	0.6−	1999 04 06	727	0.6−	0.1+	1999 04 12	704	0.0	0.2−
1992 09 21	033	0.0	1.4−	1999 04 06	727	0.3−	0.4−	1999 04 12	118	0.2−	0.1−
1992 09 21	033	(1.9−	3.0+)	1999 04 06	727	0.2−	0.1−	1999 04 12	118	0.5−	0.1−
1992 09 22	033	1.8−	0.5+	1999 04 07	727	0.2−	0.5−	1999 04 12	118	0.6−	0.3+
1992 09 24	033	0.5+	0.8+	1999 04 07	727	0.2−	1.1−	1999 04 17	703	0.1+	0.8+
1992 09 24	033	0.7−	1.2+	1999 04 09	118	0.7+	0.6−	1999 04 17	703	0.3−	1.2+
1992 09 26	033	0.7+	0.1+	1999 04 09	118	0.4+	0.4−	1999 04 17	703	0.4+	0.6+
1992 09 27	033	1.0+	0.2−	1999 04 09	118	0.2+	0.6−	1999 04 17	703	1.0+	0.2−
1992 09 28	033	0.2+	0.8−	1999 04 12	704	0.2−	0.3+				

1992 SL₂₃ = 1992 US₉ = 1992 XS = 1975 TT₆ = 1999 LS₁₆Id. S. Nakano (d, *MPC* 24230; unpublished), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
P				Q			
<i>M</i>	192.43860	(2000.0)		<i>P</i>	0.15	<i>U</i>	2
<i>n</i>	0.23345196	ω	33.53094	ω	+0.43032875	ω	−0.89376759
<i>a</i>	2.6121876	Ω	31.52386	Ω	+0.76590959	Ω	+0.28737812
<i>e</i>	0.1479545	<i>i</i>	13.99867	<i>i</i>	+0.47770250	<i>i</i>	+0.34437381
<i>P</i>	4.22	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1975 10 10	033	0.8+	1.0−	1992 10 23	010	(2.4−	0.2+)	1999 06 09	704	0.1−	0.5+
1992 09 30	675	0.1+	0.2−	1992 10 23	010	1.9−	0.1+	1999 06 09	704	1.5+	0.8−
1992 09 30	675	0.4+	0.2−	1992 10 24	372	(3.4+	2.4−)	1999 06 09	704	0.7−	1.5+
1992 10 03	675	0.2−	0.2−	1992 10 24	372	0.5+	1.8+	1999 06 09	704	0.1−	0.7−
1992 10 03	675	0.2−	0.3−	1992 12 13	010	1.0+	0.1−	1999 06 15	704	0.4+	0.1−
1992 10 19	399	1.4+	0.8−	1992 12 14	010	1.3+	0.5+	1999 06 15	704	0.5+	0.3−
1992 10 19	399	0.6−	0.3+	1996 10 17	566	0.0	0.4+	1999 06 15	704	1.2−	0.4−
1992 10 22	399	(2.9−	0.7−)	1996 10 17	566	0.4−	0.4+	1999 06 15	704	0.7−	0.2−
1992 10 22	399	1.2−	1.2−	1996 10 17	566	0.2−	0.4+				

1992 UM = 1999 JV₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
P				Q			
<i>M</i>	247.96822	(2000.0)		<i>P</i>	0.15	<i>U</i>	3
<i>n</i>	0.24027306	ω	355.92009	ω	+0.97856936	ω	−0.20321342
<i>a</i>	2.5625125	Ω	15.92299	Ω	+0.19219095	Ω	+0.84335619
<i>e</i>	0.1605669	<i>i</i>	6.96362	<i>i</i>	+0.07392328	<i>i</i>	+0.49744813
<i>P</i>	4.10	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1992 10 19	399	(2.7+	1.1−)	1998 02 27	566	0.1+	0.3+	1999 05 13	704	0.3−	1.4+
1992 10 19	399	1.8−	0.1+	1998 02 27	566	0.1−	1.3+	1999 05 13	704	0.4+	1.1−
1992 10 22	399	0.7+	0.2+	1998 02 27	566	0.2−	0.4+	1999 05 18	704	0.0	0.9−
1992 10 22	399	0.1+	0.6−	1999 04 15	704	(0.2+	2.1−)	1999 05 18	704	(2.3+	0.5−)
1992 10 25	691	0.3+	0.6+	1999 04 15	704	(2.7+	1.6+)	1999 05 18	704	0.0	0.3+

1992 10 25	691	0.7+	0.0	1999 04 15	704	1.0+	1.3+	1999 05 18	704	0.5+	0.6−
1992 10 25	691	0.5+	0.1+	1999 05 10	704	0.9+	0.8+	1999 05 18	704	0.2−	0.5−
1992 10 28	399	0.9−	0.3−	1999 05 10	704	0.1+	1.1−	1999 05 19	704	0.2+	1.8+
1992 10 28	399	0.5−	1.1+	1999 05 10	704	0.2+	1.7+	1999 05 19	704	0.3+	0.4−
1998 01 26	566	0.2−	0.3−	1999 05 10	704	1.4−	0.1−	1999 05 19	704	1.3+	0.5−
1998 01 26	566	0.3+	0.8−	1999 05 10	704	1.3−	0.6+	1999 05 19	704	1.0−	0.5−
1998 01 26	566	0.2+	0.6−	1999 05 13	704	0.2−	0.8−				

1992 UN₃ = 1978 QF = 1979 YO₄ = 1999 JU₁₈

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
P				Q			
<i>M</i>	174.05291	(2000.0)		<i>P</i>	0.15	<i>U</i>	2
<i>n</i>	0.22309083	ω	187.83616	ω	+0.47367277	ω	−0.85783597
<i>a</i>	2.6924536	Ω	234.11165	Ω	+0.82078730	Ω	+0.51206052
<i>e</i>	0.0156714	<i>i</i>	14.24666	<i>i</i>	+0.31928407	<i>i</i>	−0.04372041
<i>P</i>	4.42	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1978 08 31	095	0.0	0.0	1992 11 16	400	0.7−	0.0	1999 05 10	704	0.2−	0.6+
1979 12 18	095	0.0	0.2+	1992 11 16	400	0.0	1.2−	1999 05 10	704	0.2−	0.1+
1992 10 21	675	0.2+	0.1−	1992 11 27	675	0.3−	0.6+	1999 05 10	704	0.2−	0.3+
1992 10 21	675	0.9+	0.8+	1992 11 27	675	0.6+	0.7−	1999 05 13	704	0.2+	0.2−
1992 10 26	400	0.5−	0.4+	1999 04 15	704	2.0−	0.6+	1999 05 13	704	0.3+	0.8+
1992 10 26	400	0.8−	0.0	1999 04 15	699	0.8+	0.5−	1999 05 13	704	0.0	0.6+
1992 10 27	372	(1.5−	2.3−)	1999 04 15	704	0.2+	0.3+	1999 05 13	704	1.2−	2.0+
1992 10 27	372	0.3−	1.7+	1999 04 15	699	1.3+	0.4−	1999 05 13	704	0.1−	0.2+
1992 10 28	400	0.3+	1.3+	1999 04 15	704	0.0	0.6−	1999 06 09	704	0.7+	0.0
1992 10 28	400	0.2−	0.1−	1999 04 15	699	1.3+	0.2−	1999 06 09	704	0.1−	0.0
1992 10 28	399	(0.9+	2.3+)	1999 04 15	704	0.9+	0.7−	1999 06 09	704	0.4−	1.3+
1992 10 28	399	0.6−	0.2−	1999 04 15	704	0.1−	1.0−	1999 06 09	704	0.3−	0.7+
1992 11 01	400	(3.4+	0.9−)	1999 05 10	704	0.0	0.2−	1999 06 09	704	0.1−	1.4+
1992 11 01	400	1.2+	1.9+	1999 05 10	704	0.2−	0.0				

1992 UU₄ = 1999 JE₄₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
P				Q			
<i>M</i>	197.20700	(2000.0)		<i>P</i>	0.15	<i>U</i>	4
<i>n</i>	0.22743440	ω	179.47728	ω	+0.54878353	ω	−0.81185595
<i>a</i>	2.6580631	Ω	237.22413	Ω	+0.76611961	Ω	+0.58383426
<i>e</i>	0.1840236	<i>i</i>	13.71283	<i>i</i>	+0.33451067	<i>i</i>	−0.00524259
<i>P</i>	4.33	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 10 30	885	0.4−	0.3−	1999 05 10	704	0.2+	1.3−	1999 05 18	704	0.4+	0.4−
1992 10 30	885	0.1−	0.4−	1999 05 10	704	0.7+	1.0−	1999 05 18	704	0.4+	0.2+
1992 10 30	885	0.6+	0.1−	1999 05 10	704	(1.1+	2.3−)	1999 05 19	704	0.7+	0.9+
1992 10 31	885	0.8−	0.2−	1999 05 10	704	0.6−	1.7−	1999 05 19	704	0.3+	1.0+
1992 10 31	885	0.3−	1.0−	1999 05 13	704	1.1−	1.5−	1999 05 19	704	1.3−	0.2+
1992 11 23	372	2.0+	1.8−	1999 05 13	704	0.7+	1.6+	1999 05 19	704	(3.4−	0.6+)
1992 11 23	372	0.2+	0.3−	1999 05 13	704	0.0	0.5+	1999 06 15	704	0.4−	0.7+
1992 11 25	675	0.5−	1.2+	1999 05 13	704	0.7−	0.7−	1999 06 15	704	0.1−	1.2−
1992 11 25	675	1.1−	0.8+	1999 05 13	704	0.2−	0.5+	1999 06 15	704	0.2−	0.4−
1992 12 15	400	0.7+	0.1−	1999 05 18	704	1.2+	0.9−	1999 06 15	704	0.6−	0.1+
1992 12 15	400	0.4−	1.3−	1999 05 18	704	0.1−	0.3+	1999 06 15	704	0.8−	0.3−
1999 05 10	704	1.7+	0.5−	1999 05 18	704	0.2−	0.2−				

Residuals in seconds of arc

1992 11 18	399	(0.1– 2.8+)	1999 04 12	704	0.1– 0.4+	1999 05 17	704	1.8+ 0.8+
1992 11 18	399	0.6– 1.3+	1999 04 12	704	0.4– 0.7–	1999 05 17	704	0.7+ 1.4+
1992 11 21	399	0.8– 0.2+	1999 04 12	704	0.7+ 0.1+	1999 05 17	704	0.0 0.3+
1992 11 21	399	1.7– 0.6+	1999 04 12	704	0.9– 1.3–	1999 05 17	704	1.1+ 0.7+
1992 11 25	691	0.1+ 0.4+	1999 05 12	704	0.2– 1.3–	1999 05 17	704	1.9+ 1.5+
1992 11 25	691	0.0 0.5+	1999 05 12	704	1.8+ 1.0–	1999 05 18	704	1.6+ 1.5+
1992 11 25	691	0.1+ 0.2+	1999 05 12	704	0.4+ 1.5–	1999 05 18	704	0.6+ 0.5+
1992 11 25	675	1.6+ 0.9–	1999 05 12	704	2.1– 0.4+	1999 05 18	704	0.4+ 0.8–
1992 11 25	675	0.3+ 0.9–	1999 05 13	704	0.0 1.0–	1999 05 18	704	0.3+ 0.0
1992 11 27	399	(2.4– 2.7+)	1999 05 13	704	0.6– 0.4–	1999 05 18	704	2.2– 0.1+
1992 11 27	399	(4.8– 2.5+)	1999 05 13	704	1.0– 0.3+	1999 05 19	704	0.2+ 0.4+
1992 11 28	675	0.3– 0.4–	1999 05 13	704	1.7– 0.8+	1999 05 19	704	1.0– 1.4+
1992 11 28	675	1.0+ 0.5–	1999 05 13	704	(3.0– 1.4+)	1999 05 19	704	0.1– 0.3–
1999 04 12	704	(2.6+ 1.2–)	1999 05 15	703	0.3– 0.1+	1999 05 19	704	0.0 1.3–
1999 04 12	704	1.2+ 0.7+	1999 05 15	703	0.2– 0.3+	1999 05 19	704	1.1– 0.4–
1999 04 12	704	(2.5– 0.4+)	1999 05 15	703	0.0 1.3–			
1999 04 12	704	0.5+ 0.0	1999 05 15	703	0.9– 0.1+			

1992 WE₄ = 1999 JT₁₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	273.15543		(2000.0)	P	Q
<i>n</i>	0.24506463	ω	305.23027	+0.94126742	–0.21071386
<i>a</i>	2.5290008	Ω	68.23111	+0.31734606	+0.81899547
<i>e</i>	0.1883822	<i>i</i>	16.50551	–0.11535651	+0.53370974
<i>P</i>	4.02	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1992 11 17	400	0.7+ 0.5–	1992 12 15	399	0.2+ 1.9+	1999 05 13	704	0.4+ 0.2–
1992 11 17	400	0.7+ 1.1–	1992 12 17	399	1.5– 0.2+	1999 05 13	704	0.8+ 1.2–
1992 11 18	400	(1.2+ 2.4+)	1992 12 17	399	0.5+ 0.8+	1999 05 19	704	0.7+ 0.3–
1992 11 18	400	(0.5– 2.2–)	1998 04 02	704	1.0+ 0.5+	1999 05 19	704	0.7+ 0.3–
1992 11 21	399	(2.3– 2.4+)	1998 04 02	704	0.1+ 1.8–	1999 05 19	704	0.3– 1.6+
1992 11 21	399	1.8+ 1.7+	1998 04 02	704	0.7– 0.9+	1999 05 19	704	1.0– 0.3+
1992 11 25	675	0.9– 0.2+	1998 04 02	704	0.3+ 1.0+	1999 06 15	704	0.1– 0.3+
1992 11 25	675	1.0– 0.4–	1998 04 02	704	(5.2– 0.4+)	1999 06 15	704	0.0 0.5+
1992 11 27	399	(3.5– 1.5+)	1998 04 03	704	0.7– 0.5–	1999 06 15	704	0.5+ 1.0+
1992 11 27	399	(4.5– 0.2+)	1998 04 03	704	0.5– 0.2–	1999 06 15	704	0.6+ 1.1+
1992 11 28	675	0.8– 1.1–	1998 04 03	704	0.1+ 0.3+	1999 06 15	704	0.1– 0.4–
1992 11 28	675	0.4– 0.1–	1998 04 03	704	(3.5+ 0.8+)			
1992 12 15	399	1.1– 1.5+	1999 05 13	704	0.1– 1.0+			

1993 FO₇ = 1982 HJ₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

<i>M</i>	333.17809		(2000.0)	P	Q
<i>n</i>	0.26561365	ω	11.53497	+0.01553397	–0.99816129
<i>a</i>	2.3968220	Ω	77.59511	+0.91253360	–0.00979912
<i>e</i>	0.1716455	<i>i</i>	3.43925	+0.40870664	+0.05981659
<i>P</i>	3.71	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1956 04 09	675	0.7– 1.5+	1993 03 18	809	0.3– 0.3+	1993 04 14	691	0.2– 0.2+
1956 04 09	675	1.2+ 0.4–	1993 03 20	691	0.6– 0.4–	1993 04 14	691	0.3– 0.3+
1982 04 27	033	0.1– 0.6–	1993 03 20	691	0.6– 0.3–	1993 04 14	691	0.3– 0.5+
1982 04 27	033	0.5– 0.8–	1993 03 20	691	0.6– 0.3–	1993 04 16	413	0.7+ 1.1+
1993 03 17	809	1.7+ 0.8–	1993 03 23	809	0.5+ 0.2–			

1993 FB₉ = 1999 JP₆₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	307.50162		(2000.0)	P	Q
<i>n</i>	0.17575571	ω	223.45897	+0.54983209	+0.83301649
<i>a</i>	3.1564318	Ω	79.98693	–0.74828449	+0.52389308
<i>e</i>	0.1527058	<i>i</i>	3.57386	–0.37115361	+0.17781891
<i>P</i>	5.61	<i>H</i>	13.1	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1993 03 17	809	0.8– 0.7+	1999 04 12	704	1.8– 0.5+	1999 05 13	704	1.4– 0.2+
1993 03 18	809	0.3+ 0.5–	1999 04 12	704	0.6+ 0.4+	1999 05 13	704	1.1– 0.1+
1993 03 23	809	0.4+ 0.7–	1999 05 12	704	(2.0– 2.5–)	1999 05 13	704	0.8– 0.2+
1993 04 16	413	0.1+ 0.4+	1999 05 12	704	0.8+ 0.0	1999 05 17	704	0.5– 0.5+
1999 04 11	699	0.3+ 0.3–	1999 05 12	704	1.3+ 0.6+	1999 05 17	704	1.6+ 0.2–
1999 04 11	699	0.4– 0.5+	1999 05 12	704	0.7+ 1.0–	1999 05 17	704	0.8+ 0.1–
1999 04 11	699	0.7+ 0.4+	1999 05 12	704	1.5– 1.1–	1999 05 17	704	0.9– 0.7+
1999 04 12	704	0.6+ 1.2–	1999 05 13	704	0.2+ 0.1–	1999 05 17	704	(2.7– 0.7–)
1999 04 12	704	0.1+ 0.1+	1999 05 13	704	0.7+ 0.2–			

1993 FF₁₂ = 1999 GH₃₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	107.49467		(2000.0)	P	Q
<i>n</i>	0.17087428	ω	84.60777	–0.41410510	–0.90580741
<i>a</i>	3.2162633	Ω	30.35802	+0.74904935	–0.39505466
<i>e</i>	0.0298107	<i>i</i>	10.21276	+0.51714798	–0.15311678
<i>P</i>	5.77	<i>H</i>	13.3	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1993 03 17	809	0.1+ 0.2–	1999 04 07	704	0.1+ 1.3+	1999 04 12	704	(4.2– 0.2–)
1993 03 18	809	0.0 0.1+	1999 04 07	704	1.6– 1.4+	1999 05 13	704	1.4+ 1.0–
1993 03 23	809	0.1+ 0.4–	1999 04 12	704	1.4+ 0.0	1999 05 13	704	(0.3+ 2.9+)
1993 04 16	413	0.1– 0.5+	1999 04 12	704	0.5+ 1.7–	1999 05 13	704	0.1+ 0.2–
1999 04 07	704	0.1+ 0.9–	1999 04 12	704	0.2– 1.1+			
1999 04 07	704	1.3– 0.5–	1999 04 12	704	0.5– 0.4+			

1993 FN₁₂ = 1999 JW₆₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	317.00165		(2000.0)	P	Q
<i>n</i>	0.17164527	ω	232.81307	+0.26025993	+0.96236969
<i>a</i>	3.2066249	Ω	52.45508	–0.85168915	+0.26695385
<i>e</i>	0.1243671	<i>i</i>	5.65745	–0.45485202	+0.05079580
<i>P</i>	5.74	<i>H</i>	13.2	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1993 03 17	809	1.1– 0.8+	1999 04 09	699	1.1+ 0.4–	1999 04 15	704	0.2– 0.1–
1993 03 18	809	0.2+ 0.5+	1999 04 09	699	0.4+ 0.1–	1999 04 15	704	(2.8– 0.6+)
1993 03 23	809	0.2+ 0.5+	1999 04 09	699	1.0+ 0.1+	1999 05 12	704	(2.4+ 1.4–)
1993 04 16	413	1.3+ 0.7–	1999 04 12	704	0.4+ 0.5–	1999 05 12	704	0.2– 0.8+
1995 10 26	691	0.1– 0.5+	1999 04 12	704	1.3+ 0.8+	1999 05 12	704	0.8+ 1.6–
1995 10 26	691	0.1– 0.1+	1999 04 12	704	(0.2+ 2.5+)	1999 05 13	704	0.3– 1.0+
1995 10 26	691	0.2– 0.2+	1999 04 12	704	1.0+ 1.7+	1999 05 13	704	0.8– 0.2–
1998 02 06	327	0.8+ 0.1+	1999 04 12	704	0.0 0.3+	1999 05 13	704	1.4– 0.6–
1998 02 06	327	0.1– 0.5–	1999 04 15	704	1.1– 0.3–	1999 05 13	704	(3.6– 1.4+)
1998 02 06	327	0.9– 0.2–	1999 04 15	704	1.9– 0.8–			

1993 FX₁₅ = 1999 JO₁₀₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	136.32564		(2000.0)	P	Q
<i>n</i>	0.17586406	ω	39.07807	+0.02914748	–0.99517637
<i>a</i>	3.1551353	Ω	49.46105	+0.88341032	–0.01820014
<i>e</i>	0.1203946	<i>i</i>	7.08018	+0.46769288	+0.09639890
<i>P</i>	5.60	<i>H</i>	12.9	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1993 03 17	809	0.2+ 0.1–	1999 05 13	704	0.7– 0.3+	1999 05 18	704	1.4– 0.4–
1993 03 18	809	0.2– 0.1–	1999 05 13	704	0.7+ 0.1–	1999 05 18	704	0.5– 0.1+
1993 03 23	809	0.1+ 0.2–	1999 05 13	704	0.6+ 0.7+	1999 05 18	704	0.6+ 0.1+
1993 04 16	413	0.2– 0.4+	1999 05 18	704	0.7+ 0.7–			

1993 FU₁₈ = 1999 JS₁₀₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q		Williams	
<i>n</i>	0.17542269	ω	75.64453	-0.97962696	-0.17259002				
<i>a</i>	3.1604253	Ω	94.34057	+0.12022850	-0.91356651				
<i>e</i>	0.0957005	<i>i</i>	5.91068	+0.16086059	-0.36825117				
<i>P</i>	5.62	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	6		

Residuals in seconds of arc

1993 03 17	809	0.0	0.8+	1999 05 13	704	0.5-	1.7-	1999 05 18	704	0.7-	0.8-
1993 03 18	809	0.4-	0.3+	1999 05 13	704	1.6+	1.2+	1999 05 18	704	0.2-	1.2+
1993 03 23	809	0.4+	0.8-	1999 05 13	704	0.1-	0.2-				
1993 04 16	413	0.0	0.4-	1999 05 18	704	0.0	0.3+				

1993 FO₁₉ = 1999 JZ₇₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q		Williams	
<i>n</i>	0.17821144	ω	67.63563	-0.56291283	+0.82447253				
<i>a</i>	3.1273681	Ω	167.59240	-0.82223802	-0.55147277				
<i>e</i>	0.1593507	<i>i</i>	15.68484	-0.08398679	-0.12697571				
<i>P</i>	5.53	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4		

Residuals in seconds of arc

1993 03 17	809	0.8-	0.7+	1999 05 13	704	(0.7+	3.0-)	1999 06 08	704	0.4+	0.5+
1993 03 18	809	0.3+	0.0	1999 05 13	704	1.2-	0.6+	1999 06 08	704	0.3+	0.6-
1993 03 23	809	0.2+	0.5-	1999 05 13	704	0.3-	0.3-	1999 06 08	704	0.2-	0.3-
1993 04 16	413	0.2+	0.7-	1999 05 13	704	(2.7+	0.1-)	1999 06 08	704	0.1-	0.5+
1999 04 19	703	0.3-	0.4+	1999 05 17	704	0.3+	0.4+	1999 06 12	704	0.1-	0.1-
1999 04 19	703	1.2+	0.1+	1999 05 17	704	0.1-	0.1-	1999 06 12	704	0.4+	0.3-
1999 04 19	703	(4.3+	2.1-)	1999 05 17	704	1.7-	1.8+	1999 06 12	704	0.5-	0.4+
1999 04 19	703	0.4-	0.6+	1999 05 17	704	(1.0+	2.4+)	1999 06 12	704	0.4+	0.5-
1999 05 12	704	1.3-	0.1-	1999 05 17	704	0.9-	0.1+	1999 06 12	704	0.1-	0.1-
1999 05 12	704	1.1-	0.4+	1999 06 06	703	0.5-	0.3-	1999 06 15	704	0.7+	0.6-
1999 05 12	704	1.7+	0.7+	1999 06 06	703	0.2+	0.4-	1999 06 15	704	1.4+	1.2-
1999 05 12	704	0.3-	0.4-	1999 06 06	703	0.6+	0.5-	1999 06 15	704	1.0+	0.9-
1999 05 12	704	0.3-	0.2-	1999 06 06	703	1.6+	0.4-	1999 06 15	704	0.6-	1.2+
1999 05 13	704	(1.1-	2.2-)	1999 06 08	704	0.1-	0.0				

1993 FO₂₂ = 1999 JE₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q		Williams	
<i>n</i>	0.17164399	ω	22.68599	-0.61452307	+0.78608147				
<i>a</i>	3.2066408	Ω	209.52333	-0.74295671	-0.60506340				
<i>e</i>	0.1369464	<i>i</i>	7.76898	-0.26528613	-0.12638910				
<i>P</i>	5.74	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4		

Residuals in seconds of arc

1993 03 21	809	0.4-	0.2-	1999 05 10	704	1.8+	0.8-	1999 05 14	704	(2.6-	1.0-)
1993 03 22	809	1.4+	0.0	1999 05 10	704	0.6+	0.5-	1999 05 18	704	0.4-	0.2+
1993 03 26	809	0.0	0.4+	1999 05 10	704	1.1+	0.5-	1999 05 18	704	1.8-	0.9-
1993 04 16	413	1.1-	0.6-	1999 05 10	704	0.0	0.0	1999 05 18	704	0.4+	1.4+
1999 04 12	704	0.7-	1.1-	1999 05 13	704	1.5+	0.3-	1999 05 18	704	0.7-	0.5+
1999 04 12	704	0.5+	1.9+	1999 05 13	704	0.1+	0.4-	1999 05 18	704	1.8-	0.5+
1999 04 12	704	(2.9-	1.8+)	1999 05 13	704	1.0+	1.9+	1999 06 07	703	0.4+	1.8-
1999 04 12	704	0.5-	0.0	1999 05 13	704	0.2-	1.1-	1999 06 07	703	0.7-	0.2+
1999 04 21	691	0.1-	0.4+	1999 05 13	704	0.7-	0.3-	1999 06 07	703	0.6+	0.1+
1999 04 21	691	0.3-	0.5+	1999 05 14	704	1.1+	0.6-	1999 06 07	703	1.3+	0.8+
1999 04 21	691	0.4-	0.2+	1999 05 14	704	1.9-	0.4+				
1999 05 10	704	0.2+	0.8-	1999 05 14	704	0.2-	0.4+				

1993 FT₂₂ = 1999 KT₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q		Williams	
<i>n</i>	0.18203585	ω	229.29298	-0.72560086	-0.68663136				
<i>a</i>	3.0834111	Ω	267.29042	+0.64418703	-0.65473285				
<i>e</i>	0.0638369	<i>i</i>	2.59211	+0.24192245	-0.31600992				
<i>P</i>	5.41	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	6		

Residuals in seconds of arc

1993 03 21	809	1.6-	0.6-	1999 05 18	704	0.9+	1.1-	1999 06 15	704	0.3-	0.6-
1993 03 22	809	0.5-	0.1+	1999 05 18	704	1.7+	0.9-	1999 06 15	704	0.2-	0.6+
1993 03 26	809	0.2-	0.3-	1999 05 19	704	1.5-	0.3+	1999 06 15	704	0.4-	0.4-
1993 03 27	809	0.5+	0.4-	1999 05 19	704	1.1+	1.2+	1999 06 15	704	0.2+	0.3+
1993 04 16	413	1.8+	1.2+	1999 05 19	704	0.3-	1.4+	1999 06 15	704	0.3-	1.0-
1999 05 18	704	0.1+	0.9+	1999 05 19	704	1.1-	0.7-				

1993 FF₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q		Williams	
<i>n</i>	0.28548796	ω	338.55618	-0.99818574	+0.04839919				
<i>a</i>	2.2842529	Ω	204.30134	-0.03424272	-0.94560994				
<i>e</i>	0.0977534	<i>i</i>	4.99271	-0.04952443	-0.32168207				
<i>P</i>	3.45	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	3		

Residuals in seconds of arc

1986 03 15	413	1.3-	0.8+	1998 09 29	910	1.2-	0.4+	1998 11 10	704	0.5+	0.1-
1986 03 15	413	1.2+	0.7-	1998 09 29	910	1.3-	0.3+	1998 11 10	704	0.1-	0.2-
1991 11 02	691	0.3-	0.2+	1998 09 29	910	1.1-	0.7+	1998 11 10	704	0.4-	0.9-
1991 11 02	691	0.3+	0.3-	1998 10 12	691	0.1-	0.0	1998 11 11	699	0.7-	1.3+
1991 11 02	691	0.2+	0.3+	1998 10 12	691	0.1+	0.1+	1998 11 11	699	0.4-	0.8+
1993 03 21	809	0.1-	0.6+	1998 10 18	699	0.4+	0.2-	1998 11 11	699	0.4+	0.0
1993 03 22	809	0.4+	0.3-	1998 10 18	699	0.8+	0.8-	1998 11 24	699	0.7-	0.1+
1993 03 26	809	0.0	0.3+	1998 10 18	699	0.6+	0.6-	1998 11 24	699	0.2-	0.9-
1993 04 21	413	0.2-	0.5-	1998 11 10	704	0.9+	0.7+	1998 11 24	699	1.7+	0.3-

1993 FC₃₀ = 1999 JO₉₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q		Williams	
<i>n</i>	0.17758287	ω	318.72968	-0.92505111	-0.37011314				
<i>a</i>	3.1347435	Ω	200.04811	+0.37956259	-0.90932584				
<i>e</i>	0.1261421	<i>i</i>	14.42892	-0.01458345	-0.19011256				
<i>P</i>	5.55	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4		

Residuals in seconds of arc

1993 03 21	809	0.6-	1.4+	1999 05 09	703	0.2+	0.4-	1999 05 17	704	0.5+	0.1+
1993 03 22	809	0.7+	1.1-	1999 05 12	704	1.2+	0.6-	1999 05 17	704	0.4-	0.3+
1993 03 26	809	0.1-	0.5-	1999 05 12	704	1.1+	0.9-	1999 06 14	704	0.5-	0.0
1993 04 17	413	0.0	0.1+	1999 05 12	704	0.8+	1.7+	1999 06 14	704	0.5+	0.2-
1999 05 09	703	0.2+	0.3+	1999 05 17	704	1.8-	0.2-	1999 06 14	704	0.3-	0.5-
1999 05 09	703	1.1-	0.4+	1999 05 17	704	0.8-	0.2-	1999 06 14	704	0.2+	0.7+
1999 05 09	703	0.3-	0.5-	1999 05 17	704	0.3+	0.1-				

1993 FP₃₀ = 1999 JO₆₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q		Williams	
<i>n</i>	0.18430454	ω	66.01048	+0.35379901	+0.93097041				
<i>a</i>	3.0580555	Ω	225.03221	-0.89776099	+0.31098290				
<i>e</i>	0.0698039	<i>i</i>	7.31750	-0.26239562	+0.19126877				
<i>P</i>	5.35	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	4		

Residuals in seconds of arc

1993 03 21	809	(2.8-	4.0+)	1999 05 13	704	1.0-	0.1-	1999 05 19	704	1.0+	0.6+
1993 03 22	809	0.1+	1.4+	1999 05 13	704	0.4-	0.4-	1999 05 19	704	0.2-	1.3-
1993 03 26	809	0.5+	0.4+	1999 05 13	704	0.0	0.3-	1999 05 19	704	1.3-	1.0+

M.P.C. 34846

1993 04 17	413	(2.5+	0.4+)	1999 05 14	704	0.7+	0.1+	1999 05 19	704	0.6+	0.4+
1998 02 27	566	0.4+	0.5-	1999 05 14	704	0.1-	1.0+	1999 06 09	704	0.2+	0.3-
1998 02 27	566	0.5-	0.2-	1999 05 14	704	(1.2-	2.8+)	1999 06 09	704	0.1-	0.2+
1998 02 27	566	0.3-	0.7-	1999 05 14	704	1.2-	1.0-	1999 06 09	704	0.8-	0.6-
1999 05 10	704	0.6+	0.2-	1999 05 14	704	0.7+	0.9+	1999 06 09	704	1.1+	0.0
1999 05 10	704	(0.6+	3.0-)	1999 05 18	704	0.1-	1.2-	1999 06 09	704	0.6+	0.0
1999 05 10	704	1.2-	1.0-	1999 05 18	704	0.1-	0.1-	1999 06 15	704	0.1+	0.0
1999 05 10	704	0.0	0.0	1999 05 18	704	0.2+	0.7+	1999 06 15	704	0.2+	0.2+
1999 05 10	704	0.2-	0.4-	1999 05 18	704	0.9-	0.2+	1999 06 15	704	0.3+	0.4+
1999 05 13	704	0.8+	0.5-	1999 05 18	704	0.3+	0.7+	1999 06 15	704	0.4+	0.4+
1999 05 13	704	0.8-	0.5-	1999 05 19	704	0.4+	0.1-	1999 06 15	704	0.1+	0.4+

1993 FY₃₀ = 1999 JF₇₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	152.92550		(2000.0)	P	Q		
<i>n</i>	0.17822957	ω	251.67957	+0.35762307	-0.93376727		
<i>a</i>	3.1271560	Ω	177.25174	+0.92747691	+0.35344067		
<i>e</i>	0.2308881	<i>i</i>	16.45320	+0.10905192	+0.05619949		
<i>P</i>	5.53	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1993 03 19	809	0.1-	0.2-	1999 04 16	703	0.2+	1.0+	1999 05 14	704	1.3-	0.1-
1993 03 20	809	0.9+	0.1-	1999 04 16	703	0.2+	0.6+	1999 05 14	704	0.2+	0.4-
1993 03 24	809	0.7-	0.2+	1999 04 16	703	0.1-	0.1+	1999 05 14	704	0.4-	0.6+
1993 03 24	691	0.1-	0.3+	1999 04 16	703	0.5+	0.5+	1999 05 14	704	0.4+	1.7-
1993 03 24	691	0.2-	0.3+	1999 05 12	704	0.5+	0.7+	1999 05 14	704	1.7-	0.6-
1993 03 24	691	0.2-	0.2+	1999 05 12	704	0.6+	1.1+	1999 05 17	704	0.1+	1.4+
1993 04 16	413	0.5+	0.7-	1999 05 12	704	0.4-	0.2+	1999 05 17	704	(1.4-	3.4+)
1999 04 12	704	0.9-	0.8-	1999 05 12	704	0.5+	1.3-	1999 05 17	704	0.7-	1.6+
1999 04 12	704	0.4+	0.3-	1999 05 14	704	1.7+	0.3+	1999 05 17	704	(3.7-	0.8+)
1999 04 12	704	0.1+	0.4+	1999 05 14	704	1.9-	0.8-				
1999 04 12	704	1.4+	1.3-	1999 05 14	704	0.6+	1.1-				

1993 FD₃₄ = 1998 FN₅₀

Id. A. Doppler, S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	311.95189		(2000.0)	P	Q		
<i>n</i>	0.19099742	ω	160.21683	+0.88170220	+0.47114958		
<i>a</i>	2.9861919	Ω	171.54449	-0.45245726	+0.85931637		
<i>e</i>	0.0761564	<i>i</i>	9.74384	-0.13372981	+0.19898103		
<i>P</i>	5.16	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1979 09 21	413	0.5-	1.7-	1993 03 24	809	0.5-	1.7+	1998 03 22	704	1.5-	0.8-
1979 09 21	413	0.7+	0.8+	1998 03 20	704	0.5-	0.3-	1998 03 22	704	0.5-	0.0
1983 05 07	413	0.5+	1.1-	1998 03 20	704	0.5+	0.5+	1998 03 22	704	(5.5-	0.7-)
1983 07 01	413	0.2+	0.2+	1998 03 20	704	0.7+	1.2-	1999 06 14	704	0.3+	0.2-
1988 02 23	413	1.0-	0.1+	1998 03 20	704	0.4+	1.2-	1999 06 14	704	0.7+	0.1-
1993 03 19	809	0.5+	2.0+	1998 03 20	704	(2.9-	0.5-)	1999 06 14	704	0.8-	0.3+
1993 03 20	809	0.3+	0.9+	1998 03 22	704	0.6+	1.4-	1999 06 14	704	0.2-	0.1+

1993 FM₃₄ = 1999 JZ₁₀₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	301.69088		(2000.0)	P	Q		
<i>n</i>	0.17524762	ω	239.55690	+0.61299415	+0.78302687		
<i>a</i>	3.1625299	Ω	68.62443	-0.68053013	+0.59104239		
<i>e</i>	0.1577425	<i>i</i>	6.49839	-0.40139371	+0.19374679		
<i>P</i>	5.62	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1993 03 17	809	1.6-	0.9+	1999 04 12	704	(0.9-	3.8+)	1999 05 12	704	0.5+	1.5-
1993 03 18	809	0.4+	0.1-	1999 04 12	704	0.8-	0.6-	1999 05 18	704	(0.5+	2.0+)
1993 03 23	809	1.2+	0.9-	1999 04 12	704	0.7-	1.0+	1999 05 18	704	0.5-	1.2+
1993 04 16	413	(5.9-	0.2-)	1999 05 12	704	0.4+	1.1-	1999 05 18	704	1.3-	0.3+
1999 04 12	704	1.2+	0.6+	1999 05 12	704	1.2+	0.2+				

1999 JUNE 22

1993 FU₅₁ = 1990 RD₁₆

Id. A. Doppler, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	46.39135		(2000.0)	P	Q		
<i>n</i>	0.21757859	ω	266.43506	+0.39493510	+0.91697002		
<i>a</i>	2.7377384	Ω	27.04639	-0.78585438	+0.36903971		
<i>e</i>	0.1067063	<i>i</i>	7.13770	-0.47587726	+0.15157729		
<i>P</i>	4.53	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1984 03 29	413	1.6-	0.1-	1993 03 18	809	0.8+	1.1-	1995 11 24	691	0.0	0.1-
1984 03 29	413	0.6+	0.6+	1993 03 20	691	0.3-	0.4+	1995 11 24	691	0.1-	0.0
1990 08 29	675	(2.8-	0.6-)	1993 03 20	691	0.0	0.2+	1998 05 24	704	1.0+	0.2+
1990 08 29	675	0.4+	0.4-	1993 03 20	691	0.0	0.3+	1998 05 24	704	1.8-	1.2-
1990 09 15	809	0.5-	0.8+	1993 04 14	691	1.0+	0.3+	1998 05 24	704	0.9-	1.5+
1990 09 15	809	0.4-	1.3+	1993 04 14	691	0.4+	0.9+	1998 05 24	704	1.0+	0.0
1990 09 15	809	0.2-	1.3+	1993 04 14	691	0.4+	1.0+				
1993 03 17	809	1.0+	0.2-	1995 11 24	691	1.0-	0.1-				

1993 HE = 1984 AH₁

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	176.53713		(2000.0)	P	Q		
<i>n</i>	0.23137289	ω	110.31264	-0.88101499	+0.39889985		
<i>a</i>	2.6278127	Ω	93.91379	-0.46964528	-0.80219513		
<i>e</i>	0.1465801	<i>i</i>	14.77002	+0.05697278	-0.44425430		
<i>P</i>	4.26	<i>H</i>	12.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1949 11 25	675	0.3+	1.0-	1993 04 18	675	0.2-	0.2+	1993 05 26	675	0.5-	1.1-
1949 11 25	675	0.3-	0.9+	1993 04 20	675	0.8+	0.5+	1998 07 04	699	0.1+	1.1-
1984 01 08	688	0.4-	0.0	1993 05 23	675	0.4+	0.7-	1998 07 04	699	0.0	0.3-
1984 01 08	688	0.2+	1.8-	1993 05 24	675	0.4+	0.3-	1998 07 04	699	0.1+	0.3-
1993 04 18	675	0.3-	0.6+	1993 05 24	675	0.4-	0.6+				

1993 HU₂ = 1986 ET₅

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	312.24036		(2000.0)	P	Q		
<i>n</i>	0.28747623	ω	29.45792	-0.98802611	+0.15116222		
<i>a</i>	2.2737083	Ω	159.16852	-0.15301412	-0.93436803		
<i>e</i>	0.1475102	<i>i</i>	4.98361	-0.01977568	-0.32265519		
<i>P</i>	3.43	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1986 03 09	809	0.2+	0.6-	1993 04 19	691	0.2-	0.0	1993 04 22	691	0.0	0.4+
1986 03 09	809	0.1+	0.2+	1993 04 19	691	0.4-	0.1-	1993 04 22	691	0.4-	0.7+
1986 03 14	809	0.4+	0.7-	1993 04 19	691	0.1+	0.3-	1993 04 22	691	0.4-	0.3+
1986 03 14	809	1.4-	2.1+	1993 04 22	691	0.1+	0.1+	1993 04 24	691	0.4-	0.1-
1986 03 15	809	0.1-	0.9-	1993 04 22	691	0.9+	0.3-	1993 04 24	691	0.2+	0.2-
1986 03 15	809	0.8+	0.1-	1993 04 22	691	0.5+	0.1+	1993 04 24	691	0.1-	0.6-

1993 LX = 1999 LW₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	99.53176		(2000.0)	P	Q		
<i>n</i>	0.18654362	ω	241.38141	-0.98323072	+0.05651716		
<i>a</i>	3.0335358	Ω	301.36961	+0.03560824	-0.87296800		
<i>e</i>	0.0925511	<i>i</i>	11.71659	-0.17885584	-0.48449220		
<i>P</i>	5.28	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1993 06 13	413	0.1-	0.3+	1998 02 26	566	0.0	0.8+	1999 06 15	704	0.2-	0.4+
1993 06 13	413	0.0	0.6-	1998 02 26	566	0.0	0.0	1999 06 15	704	1.6+	0.3+

1999 JUNE 22

1993 06 14	413	0.2−	0.3+	1999 06 13	428	1.0+	0.7+	1999 06 16	428	0.3−	0.1−
1993 06 15	413	0.1+	0.5−	1999 06 14	428	1.5−	1.3−	1999 06 16	428	1.1+	0.2−
1993 06 15	413	0.3−	0.0	1999 06 14	428	0.1−	0.5−	1999 06 17	428	0.0	0.3−
1993 06 18	413	0.5+	0.1−	1999 06 15	704	0.2−	0.0	1999 06 17	428	0.6−	0.3+
1993 06 18	413	0.2−	0.2+	1999 06 15	704	0.1+	0.0	1999 06 19	428	0.0	0.1−
1998 02 26	566	0.1+	0.4−	1999 06 15	704	0.8−	1.1+				

1993 OX₅ = 1999 FC₄₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
<i>M</i>	140.64783			(2000.0)		P		Q			
<i>n</i>	0.27533826	ω	133.37879			+0.52676411		−0.84546162			
<i>a</i>	2.3400493	Ω	284.63821			+0.75127222		+0.51141841			
<i>e</i>	0.0999679	<i>i</i>	5.20832			+0.39762999		+0.15377210			
<i>P</i>	3.58	<i>H</i>	14.8		<i>G</i>	0.15		<i>U</i>	6		
Residuals in seconds of arc											
1993 07 13	809	0.3+	0.2−	1993 07 24	809	0.4−	0.3+	1993 03 23	704	0.4+	1.3+
1993 07 13	809	0.7+	0.1+	1999 03 20	704	0.2−	0.3−	1993 03 23	704	0.6+	1.3+
1993 07 13	809	1.1−	0.5+	1999 03 20	704	0.6−	1.6−	1999 03 23	704	1.4−	1.2+
1993 07 20	809	0.6+	0.2−	1999 03 20	704	0.4−	0.7−	1999 03 23	704	0.5−	0.2−
1993 07 20	809	0.1−	0.2+	1999 03 20	704	0.8+	0.2+				
1993 07 20	809	0.1+	0.7−	1999 03 20	704	1.2+	1.2−				

1993 QW = 1986 PD

Id. A. Gnädig											
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
<i>M</i>	283.84939			(2000.0)		P		Q			
<i>n</i>	0.28894766	ω	160.78396			+0.75586366		+0.63306305			
<i>a</i>	2.2659827	Ω	157.23665			−0.64290507		+0.76591889			
<i>e</i>	0.2278382	<i>i</i>	25.57565			−0.12386762		−0.11224717			
<i>P</i>	3.41	<i>H</i>	14.6		<i>G</i>	0.15		<i>U</i>	2		
Residuals in seconds of arc											
1976 11 18	413	1.6−	0.3−	1993 08 22	675	0.7−	0.7+	1999 03 15	704	(2.8−	0.2+)
1976 11 18	413	1.8−	1.9−	1993 08 24	675	0.7−	0.8+	1999 03 15	704	1.1−	0.5+
1983 10 06	413	1.2+	0.8−	1993 08 24	675	0.5−	0.2+	1999 03 15	704	(2.4−	2.2−)
1983 10 06	413	1.7+	0.1+	1993 09 13	675	0.3+	0.9−	1999 04 10	704	0.8+	1.6−
1986 08 01	675	0.0	2.2−	1993 09 13	675	(0.1−	2.1−)	1999 04 10	704	0.4−	1.6−
1986 08 01	675	1.8+	0.1+	1993 09 15	675	1.9+	1.6−	1999 04 10	704	2.0−	0.5+
1992 02 29	809	(1.0+	4.5−)	1993 09 15	675	(1.2+	2.6−)				
1993 08 22	675	1.2−	1.4+	1999 03 15	704	1.2+	1.1−				

1993 QP₇ = 1999 JE₈₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
<i>M</i>	171.16101			(2000.0)		P		Q			
<i>n</i>	0.27964157	ω	284.93517			+0.37554407		−0.92438133			
<i>a</i>	2.3159805	Ω	142.78451			+0.88720205		+0.33765809			
<i>e</i>	0.0729198	<i>i</i>	6.35789			+0.26802830		+0.17749979			
<i>P</i>	3.52	<i>H</i>	14.8		<i>G</i>	0.15		<i>U</i>	5		
Residuals in seconds of arc											
1993 08 15	809	1.0+	0.7+	1993 08 24	809	0.0	0.7−	1999 05 12	704	0.4−	0.9+
1993 08 15	809	0.6+	0.6+	1993 08 24	809	0.2−	1.6−	1999 05 12	704	0.2+	0.5+
1993 08 15	809	0.4+	0.5+	1999 04 12	704	1.1+	0.1−	1999 05 12	704	1.0+	0.8−
1993 08 20	809	0.4−	0.3+	1999 04 12	704	0.3−	0.6+	1999 05 12	704	1.0+	0.9−
1993 08 20	809	0.1+	1.3+	1999 04 12	704	0.5+	1.3+	1999 05 17	704	0.9−	0.5+
1993 08 20	809	0.3−	0.6+	1999 04 12	704	(2.9−	0.5−)	1999 05 17	704	1.7−	1.0−
1993 08 24	809	1.2−	1.4−	1999 05 12	704	1.0−	0.5−	1999 05 17	704	0.7+	0.4−

M.P.C. 34847

1993 RP₆ = 1999 LE₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
<i>M</i>	318.97971			(2000.0)		P		Q			
<i>n</i>	0.29799152	ω	339.64554			+0.77138551		+0.63610084			
<i>a</i>	2.2199002	Ω	340.81671			−0.57581622		+0.68535523			
<i>e</i>	0.0573934	<i>i</i>	3.21742			−0.27092448		+0.35449110			
<i>P</i>	3.31	<i>H</i>	15.0		<i>G</i>	0.15		<i>U</i>	7		
Residuals in seconds of arc											
1993 09 15	809	0.2−	0.5−	1993 09 18	809	0.9+	2.4+	1999 06 09	704	0.3−	2.6−
1993 09 15	809	1.0−	0.1−	1993 09 18	809	0.5+	1.4+	1999 06 15	704	0.0	0.4−
1993 09 15	809	1.0−	0.6−	1993 09 22	675	1.5−	1.5−	1999 06 15	704	0.5−	0.4+
1993 09 17	809	1.3+	0.3+	1993 09 22	675	1.0−	2.8−	1999 06 15	704	1.3−	0.1+
1993 09 17	809	0.3+	0.2+	1999 06 09	704	0.8+	2.8+	1999 06 15	704	0.9−	0.0
1993 09 17	809	0.5−	0.4−	1999 06 09	704	1.6+	0.4−	1999 06 15	704	0.7−	0.6+
1993 09 18	809	2.2+	1.6+	1999 06 09	704	1.1+	0.5−				

1993 SN₁ = 1999 JD₇₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
<i>M</i>	282.50036			(2000.0)		P		Q			
<i>n</i>	0.29484726	ω	190.04964			+0.98736809		+0.15500935			
<i>a</i>	2.2356543	Ω	160.93866			−0.13750320		+0.94118470			
<i>e</i>	0.1908202	<i>i</i>	5.76562			−0.07872187		+0.30023901			
<i>P</i>	3.34	<i>H</i>	15.0		<i>G</i>	0.15		<i>U</i>	2		
Residuals in seconds of arc											
1992 03 30	691	0.1−	0.1−	1995 03 28	691	0.1−	0.8+	1999 05 19	703	0.3−	1.0+
1992 03 30	691	0.4−	0.6−	1995 03 28	691	0.4+	0.9+	1999 05 19	703	0.5+	0.5+
1992 03 30	691	0.1−	0.8−	1999 05 12	704	(2.3+	0.0)	1999 05 19	703	0.1+	0.0
1993 09 16	400	(0.4+	2.5+)	1999 05 12	704	0.4+	0.4−	1999 06 07	703	0.3+	0.7−
1993 09 16	400	(1.0−	3.0−)	1999 05 12	704	0.2−	0.3+	1999 06 07	703	0.4+	0.4+
1993 09 18	400	1.1+	0.8+	1999 05 12	704	1.6−	0.5−	1999 06 07	703	0.7+	1.2+
1993 09 18	400	1.0+	1.1+	1999 05 12	704	0.2+	0.1−	1999 06 07	703	1.7+	1.9+
1993 10 11	400	0.1+	0.3−	1999 05 13	704	0.6+	0.3−	1999 06 10	704	0.1−	1.1+
1993 10 11	400	(3.4+	0.1+)	1999 05 13	704	0.4+	0.4−	1999 06 10	704	0.7−	1.4−
1993 10 13	675	0.4−	1.1−	1999 05 13	704	0.3+	0.2−	1999 06 10	704	0.5+	1.5−
1993 10 13	675	0.4+	1.3−	1999 05 13	704	0.7+	0.7+	1999 06 10	704	0.6−	0.2−
1993 10 15	400	0.0	1.7−	1999 05 17	704	0.6−	0.9+	1999 06 10	704	0.3−	0.3−
1993 10 15	400	0.3+	1.6+	1999 05 17	704	0.2−	0.3−	1999 06 14	704	0.9−	0.2−
1993 10 15	010	1.0−	0.9+	1999 05 17	704	0.5+	1.1−	1999 06 14	704	0.4−	0.2−
1993 10 15	010	0.9−	0.5+	1999 05 17	704	0.4−	0.2−	1999 06 14	704	0.9−	0.2+
1993 10 15	010	1.0−	0.5+	1999 05 17	704	0.9+	1.0+	1999 06 14	704	0.8−	0.7−
1995 03 28	691	0.5+	0.4+	1999 05 19	703	0.3−	0.6+	1999 06 14	704	0.2−	0.1+

1993 SB₂ = 1999 JX₃₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
<i>M</i>	317.04625			(2000.0)		P		Q			
<i>n</i>	0.30004477	ω	348.24376			+0.72538551		+0.68706037			
<i>a</i>	2.2097612	Ω	328.22872			−0.62490146		+0.63171813			
<i>e</i>	0.1280624	<i>i</i>	4.57507			−0.28864168		+0.35899895			
<i>P</i>	3.28	<i>H</i>	14.5		<i>G</i>	0.15		<i>U</i>	2		
Residuals in seconds of arc											
1993 09 19	400	0.4−	0.7−	1999 04 15	704	0.9−	0.1+	1999 05 18	704	0.8+	0.7−
1993 09 19	400	0.7−	0.7−	1999 04 15	704	0.3−	0.4−	1999 05 18	704	0.2+	0.2−
1993 09 21	400	(3.6−	0.6−)	1999 05 10	704	0.3−	0.1−	1999 05 18	704	(1.4−	3.8−)
1993 09 21	400	0.8+	0.4+	1999 05 10	704	0.6−	0.5−	1999 06 09	704	0.2−	0.3−
1993 10 06	400	0.6+	0.4+	1999 05 10	704	0.1+	0.4−	1999 06 09	704	0.7−	0.4−
1993 10 06	400	(2.4+	0.3−)	1999 05 10	704	0.5+	0.3−	1999 06 09	704	0.6+	0.5+
1995 01 27	691	1.7+	1.1−	1999 05 10	704	1.3−	0.5−	1999 06 09	704	0.4−	1.0+

M.P.C. 34848

1999 JUNE 22

1999 04 15 704 0.9- 1.4+ 1999 05 18 704 1.1+ 0.2- 1999 06 15 704 0.3+ 0.4+
 1999 04 15 704 1.8- 0.0 1999 05 18 704 0.0 0.2-

1993 SK₂ = 1996 FR₁₃

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	173.52802		(2000.0)	P	Q
<i>n</i>	0.23367199	ω	313.46226	+0.67873563	+0.73437594
<i>a</i>	2.6105476	Ω	359.26056	-0.58341091	+0.53659342
<i>e</i>	0.2474928	<i>i</i>	14.12780	-0.44603773	+0.41564344
<i>P</i>	4.22	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1989 10 29	675	(2.9- 0.6-)	1993 09 18	809	(2.9+ 1.6+)	1996 03 18	691	0.1- 0.3+
1989 10 29	675	0.5- 0.3-	1993 09 18	809	(2.9+ 0.4+)	1996 03 27	691	0.4+ 0.1-
1993 09 15	809	(3.1+ 0.0)	1993 09 18	675	0.3+ 0.6-	1996 03 27	691	0.6+ 0.1+
1993 09 15	809	(3.6+ 0.4+)	1993 09 18	675	0.0 0.1-	1996 03 27	691	0.7+ 0.3+
1993 09 15	809	(3.3+ 0.2+)	1993 09 19	400	(2.2+ 0.6-)	1996 04 10	675	0.9+ 0.3+
1993 09 16	400	(1.1- 4.7-)	1993 09 19	400	0.6+ 0.9+	1996 04 10	675	1.5- 0.4+
1993 09 16	400	0.3- 1.0+	1993 09 22	675	0.7+ 0.2-	1997 10 29	566	0.2- 0.0
1993 09 17	809	(3.7+ 0.2-)	1993 09 22	675	0.1+ 0.1+	1997 10 29	566	0.7- 0.3+
1993 09 17	809	(4.3+ 0.7+)	1993 10 11	400	0.3+ 0.6+	1997 10 29	566	0.4- 0.6+
1993 09 17	809	(3.4+ 0.3-)	1993 10 11	400	1.6- 0.7-			
1993 09 18	809	(3.3+ 1.5+)	1996 03 18	691	0.3+ 0.4+			

1993 SP₃ = 1986 TP₁₃ = 1999 JO₃₅

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	229.36782		(2000.0)	P	Q
<i>n</i>	0.27980584	ω	211.86041	+0.86018079	-0.50998741
<i>a</i>	2.3150739	Ω	178.80008	+0.48049176	+0.80953117
<i>e</i>	0.1929001	<i>i</i>	3.72621	+0.17092887	+0.29081286
<i>P</i>	3.52	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1986 10 05	095	0.6+ 2.0-	1993 10 11	809	0.5+ 1.0+	1999 05 10	704	0.1+ 1.6-
1993 09 19	691	0.5- 0.4-	1993 10 11	809	0.2+ 1.3+	1999 05 10	704	0.3- 0.7-
1993 09 19	691	0.3- 0.3-	1993 10 12	095	(2.5- 1.3+)	1999 05 10	704	0.8- 0.2+
1993 09 19	691	0.2- 0.6-	1993 10 13	675	0.6- 0.0	1999 05 13	704	1.5+ 0.3+
1993 09 22	303	(1.0- 2.7-)	1993 10 13	675	1.0- 0.2+	1999 05 13	704	0.9+ 0.5+
1993 09 22	303	0.6+ 1.0-	1993 10 14	675	0.1- 1.5-	1999 05 13	704	1.3+ 0.6+
1993 09 22	303	1.1- 0.3-	1993 10 14	675	0.2- 1.1-	1999 05 13	704	1.1+ 0.8+
1993 09 23	303	1.3+ 0.2-	1993 10 15	675	0.4- 0.3-	1999 05 13	704	0.8+ 0.4+
1993 10 09	809	1.1+ 1.8+	1993 10 19	403	0.2+ 0.2+	1999 06 07	703	1.1- 0.2+
1993 10 09	809	0.8+ 1.8+	1993 10 19	403	0.8- 1.2-	1999 06 07	703	0.2- 0.0
1993 10 09	809	0.5+ 1.8+	1993 10 20	809	(4.0+ 1.7+)	1999 06 07	703	0.6- 0.4-
1993 10 10	675	0.7- 0.1-	1993 10 20	809	(3.4+ 2.1+)	1999 06 07	703	1.1- 0.0
1993 10 10	675	0.7- 0.5-	1993 10 20	809	(3.7+ 2.1+)			
1993 10 11	809	0.8+ 1.4+	1999 05 10	704	1.7- 0.1-			

1993 SD₅ = 1999 LU₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	283.63230		(2000.0)	P	Q
<i>n</i>	0.30006969	ω	0.23968	+0.99460154	+0.10308520
<i>a</i>	2.2096389	Ω	353.80566	-0.09538752	+0.86317442
<i>e</i>	0.1138421	<i>i</i>	6.32305	-0.04085341	+0.49427053
<i>P</i>	3.28	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1992 03 25	691	0.1+ 0.2+	1993 08 24	809	(3.3- 0.5+)	1999 06 09	704	0.0 0.7+
1992 03 25	691	0.1- 0.2-	1993 08 24	809	(3.5- 0.4-)	1999 06 09	704	0.6- 0.7+
1993 07 26	675	0.2- 1.5+	1993 08 24	809	(3.7- 1.6+)	1999 06 09	704	0.1- 0.2+
1993 07 26	675	0.4- 0.8+	1993 09 19	010	0.5+ 0.3+	1999 06 15	704	0.6+ 0.2-
1993 08 15	809	0.1+ 0.1+	1993 09 19	010	0.6+ 0.1-	1999 06 15	704	0.1+ 0.8-
1993 08 15	809	0.7- 0.3+	1993 09 20	010	0.4+ 0.0	1999 06 15	704	0.1+ 0.2-

1993 08 15 809 0.7- 0.2- 1993 09 20 010 0.8+ 0.1+ 1999 06 15 704 0.0 0.6-
 1993 08 20 809 0.2- 0.9- 1993 09 20 010 0.8+ 0.1+ 1999 06 15 704 0.2- 0.9-
 1993 08 20 809 0.6- 0.8- 1999 06 09 704 0.1+ 0.2+
 1993 08 20 809 0.9- 1.0- 1999 06 09 704 0.3- 0.2+

1993 TC₁ = 1966 VE = 1998 BN₄₁ = 1999 JV₆₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	251.09355		(2000.0)	P	Q
<i>n</i>	0.29031880	ω	350.42879	+0.85913236	-0.50802189
<i>a</i>	2.2588425	Ω	40.29697	+0.47560754	+0.74813029
<i>e</i>	0.1604560	<i>i</i>	5.47323	+0.18891546	+0.42686629
<i>P</i>	3.39	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1966 11 12	095	0.4- 1.4+	1993 10 19	403	1.5- 0.7+	1999 05 10	704	0.2- 0.4-
1993 09 24	095	(2.5- 0.7+)	1993 10 19	403	0.1- 0.4+	1999 05 10	704	0.1- 0.2+
1993 10 09	809	(2.7+ 0.2-)	1993 10 20	809	(3.1+ 3.4+)	1999 05 10	704	0.1+ 0.2+
1993 10 09	809	1.7+ 0.1-	1993 10 20	809	(2.8+ 3.1+)	1999 05 10	704	0.0 1.4-
1993 10 09	809	1.2+ 0.3-	1993 10 20	809	(2.3+ 3.6+)	1999 05 13	704	0.0 0.8-
1993 10 11	809	1.4+ 0.1-	1998 01 25	566	0.3- 0.2+	1999 05 13	704	1.0- 0.6-
1993 10 11	809	1.4+ 0.4-	1998 01 25	566	0.1- 0.0	1999 05 13	704	0.6- 0.3+
1993 10 11	809	0.7+ 0.6-	1998 01 25	566	0.4- 0.2+	1999 05 13	704	0.7+ 1.2+
1993 10 11	400	0.0 0.2+	1998 01 29	566	0.8+ 0.7-	1999 05 13	704	0.0 1.8+
1993 10 11	400	0.3- 0.5+	1998 01 29	566	0.6+ 0.3-	1999 06 09	704	0.4+ 0.3+
1993 10 13	675	1.0- 0.2+	1998 01 29	566	0.2+ 0.0	1999 06 09	704	1.0+ 0.8-
1993 10 13	675	1.8- 0.5+	1998 02 25	566	0.7- 0.4-	1999 06 09	704	0.8+ 1.3+
1993 10 14	675	0.4- 1.0-	1998 02 25	566	0.8- 0.2-	1999 06 09	704	0.2+ 0.6+
1993 10 14	675	0.3- 0.8-	1998 02 25	566	0.6- 0.5-	1999 06 09	704	0.5- 0.8-
1993 10 14	403	1.1- 0.6+	1998 03 20	327	0.4+ 0.3+	1999 06 15	704	0.2- 0.3-
1993 10 14	403	(2.9- 0.6-)	1998 03 20	327	0.2+ 0.4+	1999 06 15	704	0.1- 0.1-
1993 10 15	675	1.1- 0.7-	1998 03 20	327	0.2+ 0.7+	1999 06 15	704	0.0 0.2+
1993 10 15	400	0.5+ 0.1+	1998 03 20	327	0.4+ 0.0	1999 06 15	704	0.2+ 0.1+
1993 10 15	400	1.0+ 0.2+	1999 05 10	704	0.3- 0.6-	1999 06 15	704	0.2- 0.4+

1993 TK₁ = 1950 TY₁ = 1970 WK₁ = 1999 KN₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	296.13316		(2000.0)	P	Q
<i>n</i>	0.29858783	ω	327.43052	+0.99741379	+0.06572183
<i>a</i>	2.2169436	Ω	28.84367	-0.04591911	+0.89409469
<i>e</i>	0.1923759	<i>i</i>	3.45732	-0.05529161	+0.44302971
<i>P</i>	3.30	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1950 10 15	024	1.5+ 1.1-	1996 12 13	566	0.6- 0.2+	1999 05 19	704	0.2+ 0.2-
1970 11 23	033	2.2- 0.3+	1996 12 13	566	0.4- 0.5+	1999 05 19	704	0.2+ 0.3+
1993 10 14	675	0.2+ 0.7-	1998 01 26	566	0.1- 0.3+	1999 05 19	704	0.8- 0.2+
1993 10 14	675	0.4+ 0.2+	1998 01 26	566	0.1- 0.2+	1999 06 09	704	0.4+ 0.1-
1993 10 15	400	0.7+ 0.5+	1998 01 26	566	0.1- 0.4+	1999 06 09	704	0.3+ 0.5+
1993 10 15	400	1.2+ 1.3+	1998 02 26	566	0.6+ 0.5-	1999 06 09	704	0.3+ 0.2-
1993 10 16	400	1.3- 1.4-	1998 02 26	566	0.5+ 0.7-	1999 06 09	704	0.3- 0.6-
1993 10 16	400	1.9- 0.1-	1998 02 26	566	0.5+ 0.3-	1999 06 09	704	0.9- 0.1-
1993 10 20	399	1.1+ 0.3-	1999 05 18	704	0.1- 1.0-	1999 06 15	704	0.1+ 0.0
1993 10 20	399	0.3+ 0.7+	1999 05 18	704	0.9- 0.6-	1999 06 15	704	0.7+ 0.4+
1993 11 07	399	(3.3- 1.1-)	1999 05 18	704	0.9+ 0.3-	1999 06 15	704	0.1+ 0.1+
1993 11 07	399	0.8- 0.2+	1999 05 18	704	0.1+ 0.0	1999 06 15	704	0.8+ 0.1-
1993 11 10	400	0.3- 1.4+	1999 05 18	704	0.2- 0.2+	1999 06 15	704	0.2+ 1.2+
1993 11 10	400	0.3+ 0.1-	1999 05 19	704	1.1- 0.6+			
1996 12 13	566	0.7+ 0.1+	1999 05 19	704	0.1- 1.4+			

1993 TM₁ = 1999 JZ₁₀₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	189.37060	(2000.0)	P		Q	
<i>n</i>	0.26827268	ω	340.18578	+0.53754043	-0.84130701	
<i>a</i>	2.3809581	Ω	77.25941	+0.78132618	+0.47149482	
<i>e</i>	0.2010563	<i>i</i>	3.35217	+0.31714302	+0.26437691	
<i>P</i>	3.67	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1993 10 09	809	1.0+	0.5-	1993 10 21	809	(1.2+ 2.6-)	1999 05 13	704	2.0-	0.1+
1993 10 09	809	0.3+	0.4-	1993 10 21	809	(1.1+ 2.8-)	1999 05 18	704	0.2-	0.8+
1993 10 09	809	0.8-	0.0	1993 10 21	809	(0.6+ 2.8-)	1999 05 18	704	0.8+	0.8-
1993 10 11	809	(2.1+ 1.1+)		1993 11 11	400	1.0+ 1.1+	1999 05 18	704	1.1+	0.9+
1993 10 11	809	1.6+	1.0+	1993 11 11	400	0.5- 0.6-	1999 05 18	704	1.4-	1.3-
1993 10 11	809	1.5+	1.6+	1998 04 14	704	0.6+ 0.3-	1999 06 07	703	0.1+	0.4+
1993 10 12	095	1.6-	0.7-	1998 04 14	704	0.8+ 1.6+	1999 06 07	703	0.7+	1.1+
1993 10 15	400	0.3-	1.7-	1998 04 14	704	1.3- 0.9-	1999 06 07	703	1.8+	1.2+
1993 10 15	400	0.9-	0.2-	1998 04 14	704	(2.8+ 0.7+)	1999 06 07	703	0.5+	0.5+
1993 10 16	400	1.5-	1.1+	1999 05 13	704	1.7- 0.6-	1999 06 14	704	0.3+	1.4-
1993 10 16	400	(1.4- 2.2-)		1999 05 13	704	0.7+ 0.7-	1999 06 14	704	0.6+	0.8-
1993 10 20	400	(3.5- 1.8-)		1999 05 13	704	1.9- 1.1+	1999 06 14	704	0.1-	0.9-
1993 10 20	400	(3.3- 4.0-)		1999 05 13	704	1.4+ 1.4+	1999 06 14	704	0.0	0.4-

1993 TV₁ = 1983 VN = 1983 VP₃ = 1999 JQ₄₇Id. G. V. Williams, F. N. Bowman (d. *MPC* 8482)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	279.49805	(2000.0)	P		Q	
<i>n</i>	0.29244626	ω	317.32915	+0.99419129	+0.01192555	
<i>a</i>	2.2478742	Ω	42.34761	+0.04346596	+0.86470082	
<i>e</i>	0.2018846	<i>i</i>	9.13664	-0.09846013	+0.50214568	
<i>P</i>	3.37	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1983 11 08	801	0.3+	0.2+	1993 10 19	364	0.9+	0.3+	1999 05 18	704	0.1+	0.1-
1983 11 08	801	0.3-	0.6-	1993 10 20	399	1.6-	0.1+	1999 05 18	704	0.4+	0.3-
1983 11 08	381	0.9+	2.0-	1993 10 20	399	1.8-	0.4-	1999 05 19	704	0.6-	0.7+
1993 10 09	809	1.3+	1.3-	1993 11 10	400	0.7-	0.4-	1999 05 19	704	0.4-	0.6-
1993 10 09	809	0.9+	1.9-	1993 11 10	400	1.3+	0.6-	1999 05 19	704	0.2-	1.0+
1993 10 09	809	0.9+	1.6-	1999 05 10	704	0.5+	0.1-	1999 05 19	704	0.5-	0.5+
1993 10 10	364	0.2+	1.0+	1999 05 10	704	0.1+	0.0	1999 05 19	704	0.3+	0.2-
1993 10 10	364	0.5+	0.4+	1999 05 10	704	1.5+	0.2-	1999 06 09	704	0.1-	0.8+
1993 10 15	400	1.4+	0.6+	1999 05 10	704	0.5+	1.3-	1999 06 09	704	0.3-	0.4+
1993 10 15	400	0.1-	0.8+	1999 05 10	704	0.1-	0.3-	1999 06 09	704	0.3+	0.5+
1993 10 16	400	0.0	0.3+	1999 05 13	704	0.3-	0.3-	1999 06 09	704	1.4-	0.8-
1993 10 16	400	1.4+	0.9+	1999 05 13	704	0.6+	0.8-	1999 06 15	704	0.3-	0.3+
1993 10 16	367	(2.2-	0.2-)	1999 05 13	704	0.5+	0.5-	1999 06 15	704	0.1-	0.1+
1993 10 16	367	1.0-	0.0	1999 05 13	704	0.9+	0.9-	1999 06 15	704	0.5-	0.1-
1993 10 17	367	0.4-	0.2+	1999 05 13	704	0.0	0.3+	1999 06 15	704	0.5-	0.2+
1993 10 19	364	1.7-	0.6+	1999 05 18	704	0.1-	0.3-	1999 06 15	704	0.7-	0.2+
1993 10 19	403	0.5-	0.3-	1999 05 18	704	0.3-	0.3-				
1993 10 19	403	0.8-	1.5+	1999 05 18	704	0.4-	0.2+				

1993 TY₁ = 1979 UQ₃ = 1999 GU₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	272.70831	(2000.0)	P		Q	
<i>n</i>	0.28299114	ω	336.61163	+0.98287133	+0.18229709	
<i>a</i>	2.2976691	Ω	12.97226	-0.14426304	+0.85238822	
<i>e</i>	0.1527006	<i>i</i>	6.92109	-0.11468269	+0.49010417	
<i>P</i>	3.48	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1979 10 16	095	0.3-	0.5+	1999 04 15	428	0.9-	0.4+	1999 05 13	704	0.2+	0.5+
1993 10 15	400	0.8+	0.1+	1999 04 15	428	0.7-	0.0	1999 05 13	704	0.0	0.6+
1993 10 15	400	(3.5- 0.2-)		1999 04 16	428	0.7-	0.5+	1999 05 13	704	1.0+	0.6+
1993 10 16	400	0.6+	0.5-	1999 04 16	428	0.1+	0.6+	1999 05 13	704	0.5+	0.5-

1993 10 16	400	0.5-	0.2+	1999 04 18	428	0.1+	0.0	1999 05 13	704	0.4-	0.8-
1993 11 11	400	0.9-	0.5+	1999 04 23	428	0.7+	0.5+	1999 05 18	704	0.2-	0.3+
1993 11 11	400	0.1-	0.2-	1999 04 23	428	1.1-	0.5-	1999 05 18	704	0.0	1.1+
1999 04 14	699	0.4-	0.4-	1999 05 05	428	0.2+	0.5-	1999 05 18	704	0.5+	0.7-
1999 04 14	699	0.3-	0.7-	1999 05 05	428	0.2-	0.3-	1999 05 18	704	0.2-	0.4-
1999 04 14	699	0.3-	0.3+	1999 05 10	704	1.0+	0.9-	1999 05 18	704	0.7+	0.0
1999 04 15	704	0.4+	1.8+	1999 05 10	704	0.0	0.1-	1999 05 19	704	1.2+	0.6-
1999 04 15	704	0.6+	0.7+	1999 05 10	704	1.1+	0.1+	1999 05 19	704	1.4-	0.4-
1999 04 15	704	0.7-	0.2+	1999 05 10	704	0.1+	0.3-	1999 05 19	704	(2.7+ 0.9-)	
1999 04 15	704	0.5-	0.4-	1999 05 10	704	(2.4- 1.1-)					

1993 TW₁₂ = 1999 KV₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	198.74601	(2000.0)	P		Q	
<i>n</i>	0.27982708	ω	17.89320	+0.40763700	-0.90886551	
<i>a</i>	2.3149568	Ω	48.15151	+0.82264101	+0.32354618	
<i>e</i>	0.1156110	<i>i</i>	6.80713	+0.39635067	+0.26321351	
<i>P</i>	3.52	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1993 10 09	809	1.8+	0.5+	1993 10 15	675	0.2+	0.1+	1999 05 19	704	0.8-	1.6-
1993 10 09	809	0.8+	0.0	1993 10 15	675	0.4+	1.2+	1999 05 19	704	1.0+	0.7+
1993 10 09	809	0.4+	0.2+	1993 10 20	809	0.9-	0.7-	1999 05 19	704	0.6-	1.2-
1993 10 11	809	(2.0+ 0.1-)		1993 10 20	809	1.5-	0.0	1999 05 19	704	1.7+	1.4-
1993 10 11	809	1.1+	0.6+	1993 10 20	809	(2.0- 0.0)		1999 05 19	704	0.3-	1.3-
1993 10 11	809	1.4+	0.2+	1999 05 18	704	1.1-	0.8+	1999 06 15	704	0.2-	0.2+
1993 10 13	675	1.0-	0.9-	1999 05 18	704	0.2-	0.9+	1999 06 15	704	0.3-	0.4-
1993 10 13	675	0.6-	0.4-	1999 05 18	704	(2.4+ 1.0+)		1999 06 15	704	0.2-	0.1+
1993 10 14	675	1.6-	0.7-	1999 05 18	704	0.4-	1.0+	1999 06 15	704	0.2+	0.1+
1993 10 14	675	0.5-	0.1-	1999 05 18	704	1.1+	1.2+	1999 06 15	704	0.2+	1.0+

1993 TF₁₈ = 1999 FS₄₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	113.90247	(2000.0)	P		Q	
<i>n</i>	0.23753560	ω	32.93612	+0.40280215	-0.91473175	
<i>a</i>	2.5821626	Ω	33.34190	+0.82671711	+0.34865630	
<i>e</i>	0.2024972	<i>i</i>	3.32501	+0.39279670	+0.20421707	
<i>P</i>	4.15	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1993 10 09	809	1.3+	0.4-	1993 10 20	809	0.6-	0.2+	1999 03 20	704	0.6+	0.6+
1993 10 09	809	1.0+	0.3+	1993 10 20	809	0.5-	0.8+	1999 03 20	704	1.4+	1.2+
1993 10 09	809	0.6+	0.4+	1997 12 05	910	0.0	0.1+	1999 03 20	704	0.8-	0.6-
1993 10 11	809	0.0	1.1-	1997 12 05	910	0.0	0.0	1999 03 23	704	0.2+	0.7-
1993 10 11	809	0.0	0.0	1997 12 05	910	0.1-	0.2+	1999 03 23	704	0.3-	1.1+
1993 10 11	809	0.6-	0.3-	1999 03 20	704	0.8-	0.6-	1999 03 23	704	1.0-	1.4-
1993 10 20	809	1.1-	0.2-	1999 03 20	704	0.0	0.0	1999 03 23	704	0.5+	0.1+

1993 TP₁₉ = 1999 FA₃₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	313.01080	(2000.0)	P		Q	
<i>n</i>	0.26678058	ω	89.77488	-0.10283188	+0.99464366	
<i>a</i>	2.3898276	Ω	174.29103	-0.94935645	-0.09499773	
<i>e</i>	0.0947549	<i>i</i>	6.04072	-0.29689718	-0.04073590	
<i>P</i>	3.69	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1993 10 09	809	0.2-	2.0-	1997 10 30	566	0.3-	1.2+	1999 03 23	699	0.2+	0.7+
1993 10 09	809	0.8-	1.5-	1999 03 12	691	0.6+	0.5-	1999 03 23	704	0.8-	0.1+
1993 10 09	809	(0.8-	2.3-)	1999 03 12	691	0.1+	0.2-	1999 03 23	704	0.1+	0.2-
1993 10 11	809	0.8+	0.4-	1999 03 12	691	0.3+	0.1-	1999 03 23	704	0.1+	0.3-
1993 10 11	809	0.7+	0.9-	1999 03 20	704	0.1+	0.9-	1999 03 23	704	1.0-	0.2-
1993 10 11	809	0.3+	0.9-	1999 03 20	704	0.9-	0.7-	1999 03 23	704	0.3-	0.3-

M.P.C. 34850

1999 JUNE 22

1993 10 20	809	0.5+	0.2-	1999 03 20	704	0.9-	0.3-	1999 04 14	699	1.0+	0.3-
1993 10 20	809	0.2+	0.4+	1999 03 20	704	0.2+	0.1-	1999 04 14	699	0.2+	0.2+
1993 10 20	809	0.0	0.4+	1999 03 20	704	0.9+	0.7-	1999 04 14	699	0.4-	0.3+
1997 10 30	566	0.1-	1.3+	1999 03 23	699	0.2-	0.5+				
1997 10 30	566	0.2-	0.7+	1999 03 23	699	0.1-	0.1+				

1993 TT₂₇ = 1999 JF₈₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	316.77277		(2000.0)	P	Q		
<i>n</i>	0.29387882	ω	132.33507	+0.67173839	+0.74078841		
<i>a</i>	2.2405632	Ω	179.86562	-0.70586518	+0.64016723		
<i>e</i>	0.1801433	<i>i</i>	5.78841	-0.22477072	+0.20351523		
<i>P</i>	3.35	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1993 10 09	809	0.6-	0.9-	1993 10 20	809	0.1-	0.7+	1999 05 12	704	(2.5-	1.4-)
1993 10 09	809	0.4-	0.6-	1999 04 12	704	0.5+	0.6+	1999 05 17	704	0.6-	0.7-
1993 10 09	809	0.9-	0.0	1999 04 12	704	0.1+	1.1-	1999 05 17	704	0.3-	0.2-
1993 10 11	809	0.4+	0.4-	1999 04 12	704	0.2+	0.1-	1999 05 17	704	0.5-	0.4+
1993 10 11	809	0.1+	0.8-	1999 04 12	704	0.4-	0.0	1999 05 17	704	0.1-	0.7+
1993 10 11	809	0.6-	0.2+	1999 04 12	704	(3.0-	3.1-)	1999 05 17	704	0.2+	0.5-
1993 10 20	809	1.2+	1.0+	1999 05 12	704	0.6+	0.1-				
1993 10 20	809	0.8+	0.9+	1999 05 12	704	0.1+	1.3+				

1993 TY₂₉ = 1999 JF₆₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	143.48719		(2000.0)	P	Q		
<i>n</i>	0.26045714	ω	260.07928	+0.03740393	-0.99906781		
<i>a</i>	2.4283533	Ω	187.87348	+0.96739203	+0.04160745		
<i>e</i>	0.1411630	<i>i</i>	9.05158	+0.25050670	-0.01150328		
<i>P</i>	3.78	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1993 10 09	809	0.1-	1.8+	1998 01 24	566	0.6+	0.9+	1999 05 17	704	1.5+	1.7+
1993 10 09	809	0.7-	1.5+	1998 01 24	566	0.2+	1.3+	1999 05 17	704	(0.6+	2.5+)
1993 10 09	809	0.1-	1.5+	1999 04 12	704	1.2+	0.0	1999 05 17	704	0.2-	0.2-
1993 10 11	809	0.3+	1.1+	1999 04 12	704	0.2+	1.5-	1999 05 17	704	0.0	0.1-
1993 10 11	809	0.3+	1.8+	1999 04 12	704	1.4+	0.5-	1999 05 17	704	0.1-	0.6+
1993 10 11	809	(0.5+	2.2+)	1999 04 12	704	1.7+	0.6+	1999 05 18	704	1.7-	1.3-
1993 10 21	809	(1.5-	2.2+)	1999 05 12	704	1.8+	1.6+	1999 05 18	704	1.5-	0.1-
1993 10 21	809	2.0-	1.7+	1999 05 12	704	1.2+	1.6+	1999 05 18	704	1.4-	0.3-
1993 10 21	809	(2.4-	2.0+)	1999 05 12	704	0.4-	1.7+	1999 05 18	704	1.4-	0.1+
1995 04 25	691	0.2+	1.0+	1999 05 12	704	0.6-	0.9+	1999 05 18	704	1.3-	0.7+
1995 04 25	691	0.4+	0.8+	1999 05 12	704	0.2-	1.9+	1999 05 19	704	0.2+	0.6+
1995 04 25	691	0.7+	1.2+	1999 05 13	704	1.2+	0.4-	1999 05 19	704	0.1+	1.2+
1997 11 28	566	0.3+	0.3+	1999 05 13	704	1.1-	1.6-	1999 05 19	704	0.1+	1.8+
1997 11 28	566	0.3-	0.1-	1999 05 13	704	0.9+	0.5+	1999 05 19	704	(0.1-	2.2+)
1997 11 28	566	0.7-	0.0	1999 05 13	704	0.7-	1.2+				
1998 01 24	566	0.3+	1.4+	1999 05 13	704	0.2+	0.4-				

1993 TQ₃₂ = 1999 JZ₅₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	273.49592		(2000.0)	P	Q		
<i>n</i>	0.28914759	ω	321.16543	+0.99371521	-0.02564572		
<i>a</i>	2.2649381	Ω	40.71335	+0.07787455	+0.85761736		
<i>e</i>	0.0900817	<i>i</i>	9.61615	-0.08040912	+0.51364849		
<i>P</i>	3.41	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1993 10 09	809	0.0	0.2-	1993 10 21	809	0.4-	0.6-	1999 05 13	704	(0.7-	2.6-)
1993 10 09	809	0.5-	0.1-	1999 05 10	704	0.5-	0.6+	1999 05 13	704	(2.8-	0.1-)
1993 10 09	809	0.4-	0.2+	1999 05 10	704	0.8-	0.7+	1999 06 15	704	0.2+	0.3+
1993 10 11	809	0.5+	0.1+	1999 05 10	704	0.3-	0.6+	1999 06 15	704	0.4+	0.3+
1993 10 11	809	0.8+	0.4+	1999 05 10	704	0.2-	0.6+	1999 06 15	704	0.3-	0.0
1993 10 11	809	0.4+	0.1+	1999 05 13	704	0.3+	0.9-	1999 06 15	704	0.3-	0.7-

1993 10 21	809	0.6-	0.1-	1999 05 13	704	0.7+	1.7-	1999 06 15	704	0.3-	0.6+
1993 10 21	809	0.3+	0.1+	1999 05 13	704	1.1+	0.4-				

1993 TF₃₇ = 1995 FD₁₈ = 1999 CX₁₃₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	123.77015		(2000.0)	P	Q		
<i>n</i>	0.23320564	ω	273.08993	+0.71889131	-0.69375699		
<i>a</i>	2.6140267	Ω	130.84370	+0.65844348	+0.65953853		
<i>e</i>	0.1695520	<i>i</i>	3.30016	+0.22281712	+0.28932708		
<i>P</i>	4.23	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1993 10 09	809	0.8-	1.1+	1993 10 21	809	0.8+	0.9-	1995 03 29	691	0.0	0.1+
1993 10 09	809	1.4-	1.6+	1993 10 21	809	0.1-	1.2-	1999 02 07	691	0.2-	0.1-
1993 10 09	809	(2.4-	0.9+)	1995 02 06	691	0.3-	0.2+	1999 02 07	691	0.2-	0.0
1993 10 11	809	(2.1+	4.1+)	1995 02 06	691	0.8+	0.3+	1999 02 07	691	0.0	0.1-
1993 10 11	809	(0.8+	3.6+)	1995 02 06	691	0.2-	0.2+	1999 02 13	691	0.1-	0.1-
1993 10 11	809	(1.5+	3.7+)	1995 03 29	691	0.1+	0.3+	1999 02 13	691	0.2+	0.1-
1993 10 21	809	1.3+	0.1-	1995 03 29	691	0.1-	0.1-	1999 02 13	691	0.2+	0.1+

1993 TT₃₇ = 1999 GY₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	284.95880		(2000.0)	P	Q		
<i>n</i>	0.27905968	ω	265.08941	+0.77280648	+0.62487183		
<i>a</i>	2.3191989	Ω	56.19107	-0.51642906	+0.72077248		
<i>e</i>	0.1321723	<i>i</i>	7.67221	-0.36887827	+0.30003704		
<i>P</i>	3.53	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1993 10 09	809	0.2-	0.7-	1993 10 21	809	0.3+	0.2+	1999 04 12	704	0.2+	0.8-
1993 10 09	809	0.3+	1.2+	1993 10 21	809	0.8-	0.4+	1999 04 12	704	2.3-	0.7+
1993 10 09	809	0.6-	0.2-	1999 04 07	704	1.1+	0.5+	1999 04 12	704	0.9+	0.1-
1993 10 11	809	1.1+	0.3-	1999 04 07	704	1.3+	0.6-	1999 04 12	704	0.6-	1.2-
1993 10 11	809	0.9-	0.2-	1999 04 07	704	0.3-	0.3+	1999 04 12	704	0.3-	0.1+
1993 10 11	809	0.1-	0.4+	1999 04 07	704	0.1-	1.4+				
1993 10 21	809	1.0+	0.8-	1999 04 07	704	0.2+	0.5-				

1993 UG₁ = 1999 FO₄₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	144.28217		(2000.0)	P	Q		
<i>n</i>	0.24319990	ω	209.62652	+0.74495369	-0.66498730		
<i>a</i>	2.5419117	Ω	192.50007	+0.65018947	+0.74160287		
<i>e</i>	0.1814133	<i>i</i>	14.24330	+0.14932401	+0.08841426		
<i>P</i>	4.05	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1993 10 09	809	0.2-	0.7+	1993 10 19	675	0.2-	1.8-	1997 12 26	566	(2.8-	3.3-)
1993 10 09	809	0.6+	0.9+	1993 10 20	809	(1.2+	2.4-)	1997 12 26	566	(2.8-	3.7-)
1993 10 09	809	0.6-	1.2+	1993 10 20	809	1.0+	1.9-	1999 03 20	704	0.5-	0.3+
1993 10 11	809	(2.9+	1.5+)	1993 10 20	809	(0.2-	2.3-)	1999 03 20	704	0.7-	1.1-
1993 10 11	809	(3.1+	1.6+)	1993 10 21	675	0.9-	1.2+	1999 03 20	704	0.7+	0.9+
1993 10 11	809	(2.8+	1.7+)	1993 10 21	675	0.2-	0.7+	1999 03 20	704	0.1+	0.6-
1993 10 14	675	0.2+	1.8-	1997 10 23	327	0.1-	0.4+	1999 03 23	704	0.1-	0.0
1993 10 14	675	0.0	1.0-	1997 10 23	327	0.1-	0.6+	1999 03 23	704	0.3+	0.3+
1993 10 15	675	0.2-	0.2-	1997 10 23	327	0.1-	0.7+	1999 03 23	704	0.1+	0.0
1993 10 19	675	0.7+	1.0+	1997 12 26	566	(2.5-	4.2-)	1999 03 23	704	0.4+	0.7+

1999 JUNE 22

1993 US₁ = 1999 JH₁₀₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28963782	<i>ω</i>	262.70715	−0.04907623	+0.99877627		
<i>a</i>	2.2623816	<i>Ω</i>	4.49350	−0.88277983	−0.04050758		
<i>e</i>	0.1656148	<i>i</i>	4.48197	−0.46721653	−0.02837421		
<i>P</i>	3.40	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	5
Residuals in seconds of arc							
1993 10 20	691	0.1+	0.2−	1993 10 24	691	0.5+	0.2−
1993 10 20	691	0.1+	0.1+	1993 11 10	691	0.6−	0.2−
1993 10 20	691	0.2−	0.2+	1993 11 10	691	0.6−	0.2−
1993 10 21	691	0.1−	0.3+	1993 11 10	691	0.3−	0.3−
1993 10 21	691	0.3+	0.2+	1999 04 15	704	0.4−	0.7+
1993 10 21	691	0.1+	0.4+	1999 04 15	704	0.2−	1.6−
1993 10 24	691	0.1+	0.2−	1999 04 15	704	0.8+	0.4+
1993 10 24	691	0.2−	0.2−	1999 04 15	704	(4.3− 0.2−)	
1993 10 24	691	0.5+	0.2+	1999 05 13	704	0.0	0.6+
1993 10 24	691	0.3+	0.3−	1999 05 13	704	0.4−	1.0−

1993 UQ₄ = 1993 VK₅ = 1999 GT₈

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29007586	<i>ω</i>	182.51709	+0.70316629	+0.70926578		
<i>a</i>	2.2601035	<i>Ω</i>	132.17048	−0.65116908	+0.67061406		
<i>e</i>	0.1894602	<i>i</i>	3.86766	−0.28554510	+0.21729894		
<i>P</i>	3.40	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1993 10 10	809	1.7+	0.3−	1999 04 15	704	0.6−	1.1−
1993 10 10	809	1.2+	0.3−	1999 04 15	704	1.5−	1.5−
1993 10 10	809	0.3−	0.3+	1999 04 16	704	0.1−	0.1+
1993 10 17	033	0.9−	0.7−	1999 04 16	704	0.4−	0.7−
1993 10 18	033	1.2−	0.6−	1999 04 16	704	0.2+	1.3−
1993 10 20	809	1.1+	0.6+	1999 04 16	704	0.8−	1.4+
1993 10 20	809	0.2−	1.0+	1999 04 16	704	0.1−	0.5−
1993 10 20	809	0.2+	1.0+	1999 05 12	704	1.1−	0.8+
1993 10 21	809	(0.7+ 3.8+)		1999 05 12	704	1.5+	1.4+
1993 10 21	809	(0.7+ 3.2+)		1999 05 12	704	0.4−	0.3−
1993 10 21	809	(1.5− 3.5+)		1999 05 12	704	1.0−	0.8−
1993 11 11	033	0.9−	0.3−	1999 05 12	704	0.3−	0.0
1993 11 11	033	0.4−	0.7−	1999 05 13	704	0.8+	0.0
1993 11 12	033	0.0	0.8−	1999 05 13	704	(3.0+ 0.1−)	
1999 04 10	699	0.2−	0.2+	1999 05 13	704	0.1+	1.1−
1999 04 10	699	0.0	1.2+	1999 05 13	704	0.6+	0.5+
1999 04 10	699	0.2+	0.3−	1999 05 13	704	0.8−	0.2+
1999 04 11	699	0.4+	0.2+	1999 05 17	704	0.5+	0.4+
1999 04 11	699	0.3+	0.1−	1999 05 17	704	0.1+	0.3−
1999 04 11	699	0.8−	0.9+	1999 05 17	704	0.3−	0.8+
1999 04 12	704	0.1+	0.3+	1999 05 17	704	0.7−	0.3+
1999 04 12	704	0.4−	0.7+	1999 05 17	704	1.3−	1.5+
1999 04 12	704	0.6+	0.9+	1999 05 18	704	1.1+	0.4−
1999 04 12	704	1.0+	0.4−	1999 05 18	704	0.2+	1.3+
1999 04 12	704	(4.1− 2.0+)		1999 05 18	704	0.1+	0.7−
1999 04 15	704	1.3+	0.1+	1999 05 18	704	0.3+	1.1−
1999 04 15	704	0.2−	0.7−	1999 05 18	704	0.5+	0.3+
1999 04 15	704	0.0	0.1−	1999 05 19	704	0.0	0.6+

1993 UO₅ = 1999 GR₁₉

Id. A. Doppler

M.P.C. 34851

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23738578	<i>ω</i>	47.74183	−0.83634039	−0.53400292		
<i>a</i>	2.5832489	<i>Ω</i>	99.62438	+0.45864292	−0.80546666		
<i>e</i>	0.2875187	<i>i</i>	7.22515	+0.30030221	−0.25702984		
<i>P</i>	4.15	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1993 10 10	809	1.0+	0.3+	1999 04 12	704	0.4−	0.3+
1993 10 10	809	0.0	0.4+	1999 04 15	704	0.7−	0.4−
1993 10 10	809	0.3+	0.1−	1999 04 15	704	0.1−	1.6−
1993 10 20	809	0.2−	0.2+	1999 04 15	704	0.2+	0.1−
1993 10 20	809	0.4−	0.7+	1999 04 15	704	1.3−	0.2−
1993 10 20	809	0.4+	1.2+	1999 04 15	704	0.7+	1.2−
1993 10 21	809	0.8−	1.4−	1999 04 16	704	0.6+	0.4+
1993 10 21	809	(0.0 2.4−)		1999 04 16	704	0.1+	0.2+
1993 10 21	809	0.2−	1.6−	1999 04 16	704	0.0	0.3+
1999 04 12	704	0.6+	0.5−	1999 04 16	704	0.6+	0.3+
1999 04 12	704	0.7+	0.7+	1999 04 16	704	0.8−	0.1−
1999 04 12	704	0.8+	0.0	1999 05 12	704	0.8−	0.2−
1999 04 12	704	0.2+	0.4+	1999 05 12	704	1.1−	1.2+

1993 UW₅ = 1999 FC₄₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23978522	<i>ω</i>	23.65534	−0.43764288	−0.89476871		
<i>a</i>	2.5659869	<i>Ω</i>	92.39902	+0.81014613	−0.43516714		
<i>e</i>	0.1213771	<i>i</i>	5.09004	+0.39004097	−0.10009251		
<i>P</i>	4.11	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	5
Residuals in seconds of arc							
1993 10 10	809	0.5−	0.0	1993 10 21	809	0.6+	0.1−
1993 10 10	809	0.0	0.3+	1993 10 21	809	0.0	0.2+
1993 10 10	809	0.0	0.2−	1999 03 20	704	0.5+	0.4−
1993 10 20	809	0.4−	0.4−	1999 03 20	704	0.5−	0.3−
1993 10 20	809	0.4−	0.1+	1999 03 20	704	0.5−	0.3−
1993 10 20	809	0.2−	0.4−	1999 03 20	704	0.2−	0.3−
1993 10 21	809	0.9+	0.6+	1999 03 20	704	1.0+	0.2−

1993 UE₆ = 1999 GA₃₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28600729	<i>ω</i>	178.20452	+0.81890692	+0.57099714		
<i>a</i>	2.2814869	<i>Ω</i>	146.76141	−0.52787515	+0.78895718		
<i>e</i>	0.1897298	<i>i</i>	6.06481	−0.22525383	+0.22695557		
<i>P</i>	3.45	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	2
Residuals in seconds of arc							
1992 03 26	691	0.5−	1.3−	1995 02 04	691	0.0	0.1−
1992 03 26	691	0.0	0.9−	1995 02 04	691	0.0	0.4+
1992 03 26	691	0.2−	0.3−	1999 04 07	704	0.2+	0.2+
1993 10 10	809	1.1+	0.2−	1999 04 07	704	0.2−	0.2+
1993 10 10	809	1.1+	0.8+	1999 04 07	704	0.7+	0.0
1993 10 10	809	0.5+	0.9+	1999 04 07	704	0.6−	0.7+
1993 10 20	809	(1.2+ 2.7−)		1999 04 12	704	1.3−	0.2+
1993 10 20	809	(0.6+ 2.7−)		1999 04 12	704	0.4−	0.6−
1993 10 20	809	(0.7+ 2.4−)		1999 04 12	704	0.9+	0.8+
1993 10 21	809	1.0−	0.9−	1999 04 12	704	1.0−	1.4+
1993 10 21	809	0.2−	0.7−	1999 05 09	703	0.7+	0.1+
1993 10 21	809	0.8−	1.5−	1999 05 09	703	0.2−	1.0+
1995 02 04	691	0.0	0.3+	1999 05 09	703	0.3+	0.3+

1993 US₇ = 1997 WY₃₉ = 1999 GH₇

Id. M. E. Sansaturio, S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	325.17517		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.26567262	ω	166.06848	-0.11479389	+0.98653937
a	2.3964674	Ω	97.24452	-0.92229078	-0.06228963
e	0.0823846	i	6.74178	-0.36905566	-0.15119546
P	3.71	H	14.0	G 0.15	U 3

Residuals in seconds of arc

1993 10 10	809	0.4-	0.2+	1997 12 04	704	(3.3+	2.2+)	1999 04 15	704	0.0	0.5-
1993 10 10	809	0.3+	0.8+	1997 12 04	704	(1.0+	2.7+)	1999 04 15	704	0.3+	0.5+
1993 10 10	809	0.3+	0.5+	1997 12 29	566	0.7+	0.3+	1999 04 16	704	1.0-	1.2+
1993 10 20	809	1.3+	0.3+	1997 12 29	566	0.8+	0.0	1999 04 16	704	1.1-	1.3-
1993 10 20	809	1.1+	0.5+	1997 12 29	566	0.8+	0.5+	1999 04 16	704	1.0-	1.1-
1993 10 20	809	0.0	0.4+	1999 02 23	699	1.0+	0.6+	1999 04 16	704	0.8+	0.3-
1993 10 21	809	0.4-	0.8-	1999 02 23	699	0.1+	0.6+	1999 04 16	704	1.0-	0.8-
1993 10 21	809	1.4-	1.5-	1999 02 23	699	0.5-	0.1-	1999 04 18	703	0.0	0.5+
1993 10 21	809	0.7-	0.4-	1999 04 06	699	1.7+	0.8-	1999 04 18	703	0.6-	0.8+
1997 11 29	704	0.5+	0.9+	1999 04 06	699	1.0+	0.2+	1999 04 18	703	0.6-	0.2+
1997 11 29	704	0.5-	0.6-	1999 04 06	699	0.7+	0.3-	1999 04 18	703	1.6-	1.2-
1997 11 29	704	0.1-	0.9-	1999 04 10	699	1.4+	0.3-	1999 06 07	704	0.1+	1.0-
1997 11 29	704	1.1-	0.9-	1999 04 10	699	0.3+	0.1+	1999 06 07	704	0.5-	0.8-
1997 11 29	704	0.6-	0.5-	1999 04 10	699	1.2+	0.0	1999 06 07	704	1.0+	0.7-
1997 12 04	704	(4.1+	1.3+)	1999 04 15	704	0.3+	1.7+	1999 06 07	704	1.1-	0.7-
1997 12 04	704	(3.6+	0.6+)	1999 04 15	704	0.5+	0.6+	1999 06 07	704	0.9-	0.7-
1997 12 04	704	(3.2+	2.4+)	1999 04 15	704	1.1-	1.8+				

1993 VC₁ = 1999 JL₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	271.87765		(2000.0)	P	Q
n	0.28948562	ω	138.30073	+0.92219451	-0.17685076
a	2.2631746	Ω	235.18639	+0.13518201	+0.98062479
e	0.2104356	i	24.76497	+0.36233011	+0.08425457
P	3.40	H	14.5	G 0.15	U 4

Residuals in seconds of arc

1993 11 09	675	1.5-	0.1+	1999 05 13	704	1.8-	0.2+	1999 06 04	552	0.1+	1.3+
1993 11 09	675	0.9+	0.9-	1999 05 14	704	1.6-	0.8+	1999 06 04	552	0.3-	1.1+
1993 11 10	675	0.8-	0.9+	1999 05 14	704	0.8+	0.2+	1999 06 06	703	0.3+	1.5+
1993 11 16	399	0.1-	1.1-	1999 05 14	704	2.0-	1.7-	1999 06 06	703	0.2-	0.2+
1993 11 16	399	0.8+	0.8+	1999 05 14	704	0.1-	0.2+	1999 06 06	703	0.2+	0.3-
1993 12 16	675	0.0	1.0-	1999 05 14	704	0.2-	0.1+	1999 06 06	703	0.1-	0.6-
1993 12 16	675	0.8+	0.9+	1999 05 18	704	0.0	0.7-	1999 06 14	704	0.8+	0.1-
1999 05 13	704	1.0+	0.4-	1999 05 18	704	(0.0	2.4-)	1999 06 14	704	0.6+	0.5-
1999 05 13	704	1.1+	0.8+	1999 05 18	704	0.2-	0.3+	1999 06 14	704	0.1+	0.1-
1999 05 13	704	(1.2+	3.0+)	1999 05 18	704	0.4-	1.3-	1999 06 14	704	1.6+	0.1-
1999 05 13	704	(3.3-	0.8+)	1999 05 18	704	0.4+	1.5-	1999 06 14	704	0.2+	0.0

1993 VF₁ = 1980 RG₂ = 1999 JC₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	99.12062		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.23704978	ω	48.45254	-0.29325690	-0.87193315
a	2.5856894	Ω	62.73796	+0.69188571	-0.47658927
e	0.2615982	i	26.17301	+0.65976856	+0.11222858
P	4.16	H	13.2	G 0.15	U 2

Residuals in seconds of arc

1980 09 09	809	0.2+	0.2-	1999 04 10	704	0.7-	0.4+	1999 05 15	704	1.1-	0.2-
1993 11 15	402	0.5-	1.4-	1999 04 10	704	0.2+	1.1+	1999 05 21	704	1.8+	0.3-
1993 11 15	402	0.8-	0.3-	1999 04 10	704	0.2+	0.1+	1999 05 21	704	1.8+	0.6-
1993 11 16	402	1.6+	0.3+	1999 05 12	704	0.2-	0.0	1999 05 21	704	1.7+	0.1+
1993 11 16	402	0.9+	1.6-	1999 05 12	704	0.4+	0.7-	1999 05 21	704	0.7-	1.8+
1993 11 18	675	1.0+	0.1+	1999 05 12	704	0.9-	0.4-	1999 05 21	704	0.9+	0.4+
1993 11 18	675	0.1+	0.9-	1999 05 12	704	0.1+	0.6-	1999 06 08	704	0.4-	0.3+
1993 11 19	675	0.2+	0.7+	1999 05 12	704	0.0	0.2+	1999 06 08	704	0.8-	1.0-
1998 01 27	566	0.4-	0.3+	1999 05 15	704	0.9-	0.4-	1999 06 08	704	0.5-	0.9-

1998 01 27	566	0.3-	0.5+	1999 05 15	704	0.7-	0.7+	1999 06 08	704	0.6-	1.8-
1998 01 27	566	0.3-	0.4+	1999 05 15	704	0.8-	0.4-	1999 06 08	704	1.1-	1.1-
1999 04 10	704	0.0	0.2-	1999 05 15	704	0.4-	0.4+				

1993 YT = 1999 JF₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	58.53246		(2000.0)	P	Q
n	0.22306030	ω	76.61005	-0.86356166	-0.21960167
a	2.6926993	Ω	89.21784	+0.04764025	-0.93169078
e	0.2893819	i	26.99769	+0.50198771	-0.28935688
P	4.42	H	14.3	G 0.15	U 3

Residuals in seconds of arc

1993 12 21	411	0.3-	0.4-	1999 05 15	704	(1.1-	2.6+)	1999 06 10	704	0.2+	0.4-
1993 12 21	411	0.6-	0.5-	1999 05 15	704	1.1-	0.0	1999 06 10	704	0.1+	0.2+
1993 12 21	411	0.4-	0.5+	1999 05 15	704	0.8+	0.9+	1999 06 11	703	1.0+	0.9+
1993 12 23	411	0.2+	0.2+	1999 05 17	704	0.7+	0.1-	1999 06 11	703	0.0	0.1+
1993 12 23	411	0.4+	0.2+	1999 05 17	704	0.8+	1.1-	1999 06 11	703	0.2-	0.2+
1993 12 23	411	0.4+	0.1+	1999 05 17	704	0.2+	0.9-	1999 06 11	703	0.3+	0.4-
1994 01 02	411	0.0	0.6-	1999 05 17	704	0.8+	0.3+	1999 06 11	703	0.4+	0.9+
1994 01 02	411	0.0	0.6+	1999 05 17	704	1.2-	0.2-	1999 06 11	703	0.2+	0.1+
1994 01 02	411	0.0	0.1+	1999 06 05	716	0.1+	0.1+	1999 06 11	703	0.0	0.5-
1994 01 19	411	0.1-	0.5+	1999 06 05	716	0.3+	0.1-	1999 06 11	703	0.1-	0.4+
1994 01 19	411	0.1+	0.4+	1999 06 05	703	0.5+	0.1+	1999 06 12	704	0.1-	0.0
1994 01 19	411	0.2-	0.1+	1999 06 05	703	0.1+	0.2-	1999 06 12	704	0.0	0.5-
1999 02 24	704	0.8-	0.8-	1999 06 05	703	0.6-	0.5+	1999 06 12	704	0.6-	0.1-
1999 02 24	704	(2.2+	1.4+)	1999 06 05	703	1.5-	0.6+	1999 06 12	704	0.3-	0.1-
1999 02 24	704	0.6-	0.7-	1999 06 08	704	0.6-	0.9-	1999 06 12	704	0.3+	0.4-
1999 02 24	704	0.7-	0.1-	1999 06 08	704	0.2-	0.1-	1999 06 14	704	0.0	0.6-
1999 05 12	704	0.3+	0.3+	1999 06 08	704	0.1+	0.7-	1999 06 14	704	0.2+	0.6+
1999 05 12	704	0.4+	0.8-	1999 06 08	704	1.0+	0.4+	1999 06 14	704	0.0	0.1-
1999 05 12	704	0.1-	0.4+	1999 06 08	704	0.4-	0.9+	1999 06 14	704	0.9+	0.3-
1999 05 12	704	0.5+	0.4+	1999 06 10	704	0.0	0.0	1999 06 14	704	0.2-	0.0
1999 05 15	704	0.8-	1.2+	1999 06 10	704	0.0	0.1-				
1999 05 15	704	0.9-	0.6+	1999 06 10	704	0.1+	0.1-				

1994 AZ₁₀ = 1999 JW₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	343.98652		(2000.0)	P	Q
n	0.23872190	ω	226.16350	+0.16783761	+0.98439767
a	2.5736010	Ω	53.57143	-0.88458052	+0.17404379
e	0.1639399	i	3.76527	-0.43514117	+0.02588402
P	4.13	H	15.6	G 0.15	U 5

Residuals in seconds of arc

1994 01 08	691	0.3-	0.1-	1994 01 16	691	0.0	0.2-	1999 05 13	704	0.7+	0.7+
1994 01 08	691	0.3+	0.1-	1999 05 10	704	0.7+	1.0-	1999 05 13	704	0.3+	0.9+
1994 01 08	691	0.3+	0.7+	1999 05 10	704	0.6-	0.1+	1999 06 07	703	0.2+	0.6+
1994 01 11	691	0.3+	0.1-	1999 05 10	704	0.6-	1.1-	1999 06 07	703	0.7-	0.1-
1994 01 11	691	0.3-	0.4-	1999 05 10	704	1.1+	1.2-	1999 06 07	703	0.2+	0.2-
1994 01 11	691	0.3+	0.2+	1999 05 10	704	2.0-	1.0+	1999 06 07	703	0.2+	0.6-
1994 01 16	691	0.4-	0.2+	1999 05 13	704	0.3+	0.6+				
1994 01 16	691	0.2-	0.2-	1999 05 13	704	0.1+	0.2+				

1994 BA₄ = 1999 KZ₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	136.83344		(2000.0)	P	Q		
n	0.23790597	ω	244.43276	-0.21753746	-0.97549659		
a	2.5794819	Ω	218.17814	+0.91353658	-0.19161116		
e	0.1177787	i	3.05317	+0.34369808	-0.10812758		
P	4.14	H	14.4	G	0.15	U	4

Residuals in seconds of arc

1993 12 16	691	0.7-	0.1+	1994 02 12	691	1.4-	0.9+	1999 05 18	7

1999 JUNE 22

M.P.C. 34853

1993 12 16	691	0.7−	0.1−	1994 02 12	691	1.5−	0.9+	1999 05 18	704	0.8+	0.9−
1994 01 16	010	(3.1+	0.3+)	1999 05 10	704	0.2−	0.0	1999 05 19	704	0.4+	0.5−
1994 01 16	010	(2.6+	0.8+)	1999 05 10	704	0.9+	0.3−	1999 05 19	704	0.7−	0.3+
1994 01 17	010	1.7+	0.8−	1999 05 10	704	(2.3−	0.9+)	1999 05 19	704	0.5−	0.9+
1994 01 17	010	0.8+	1.2−	1999 05 10	704	(2.7+	0.3−)	1999 05 19	704	0.9−	0.6−
1994 01 17	010	1.8+	1.1−	1999 05 10	704	0.2+	1.2−	1999 06 14	704	0.4−	0.4−
1994 01 30	010	(0.9−	2.5−)	1999 05 13	704	0.8−	0.4−	1999 06 14	704	0.7−	0.3+
1994 01 30	010	(2.0−	2.8−)	1999 05 13	704	0.3−	0.0	1999 06 14	704	1.0−	0.2+
1994 01 31	010	0.8+	0.2+	1999 05 13	704	1.2+	0.2+	1999 06 14	704	0.9+	0.5+
1994 01 31	010	0.6+	0.1−	1999 05 13	704	0.1+	0.6+	1999 06 14	704	0.1−	0.7−
1994 01 31	010	(1.0+	2.3−)	1999 05 13	704	1.0−	0.9+				

1994 BF₄ = 1999 FX₄₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	42.36044		(2000.0)	P		Q
<i>n</i>	0.21403007	ω	6.80390	−0.91336622	−0.40416504	
<i>a</i>	2.7679157	Ω	149.21027	+0.36887500	−0.87254361	
<i>e</i>	0.0473010	<i>i</i>	5.50648	+0.17231769	−0.27444174	
<i>P</i>	4.60	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1994 01 16	010	1.8+	1.3+	1994 01 31	010	0.7−	0.7−	1999 03 23	699	0.2+	1.0+
1994 01 16	010	0.7+	0.4+	1999 03 20	704	0.3+	1.1+	1999 03 23	704	0.1−	0.7−
1994 01 17	010	1.4+	0.3−	1999 03 20	704	0.4−	0.8+	1999 03 23	704	0.2+	0.4+
1994 01 17	010	0.6+	0.1+	1999 03 20	704	0.4+	0.6+	1999 03 23	699	1.0−	1.5+
1994 01 17	010	0.5−	0.2+	1999 03 20	704	0.2+	0.4+	1999 03 23	704	0.0	0.2−
1994 01 30	010	(0.2−	3.2−)	1999 03 20	704	0.4−	0.8+	1999 04 06	699	0.4+	1.3−
1994 01 30	010	1.9−	1.8−	1999 03 23	699	1.5+	1.7−	1999 04 06	699	0.3−	0.6−
1994 01 31	010	1.3−	1.5+	1999 03 23	704	1.0−	0.3−	1999 04 06	699	1.1+	0.8−
1994 01 31	010	0.1−	1.1−	1999 03 23	704	0.9−	0.6−				

1994 CC₁ = 1984 YS₄ = 1999 LZ₁₇

Id. G. V. Williams, S. Nakano, A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	85.40247		(2000.0)	P		Q
<i>n</i>	0.22503235	ω	235.40248	−0.89086014	−0.41820284	
<i>a</i>	2.6769447	Ω	279.29916	−0.45292168	−0.78751548	
<i>e</i>	0.2178937	<i>i</i>	10.35656	+0.03507367	−0.45268726	
<i>P</i>	4.38	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i> 1

Residuals in seconds of arc

1984 12 23	010	(8.2−	3.4−)	1994 02 14	896	(1.9+	3.0+)	1999 06 09	704	0.1+	0.1−
1984 12 23	010	(0.7−	12.7−)	1994 02 18	896	0.2+	0.1−	1999 06 09	704	0.1+	0.3+
1984 12 28	095	0.0	0.1+	1994 02 19	896	0.2+	1.3+	1999 06 09	704	0.1−	0.8+
1994 02 05	896	0.6−	0.8−	1994 03 15	675	0.6+	0.0	1999 06 09	704	0.6−	0.6−
1994 02 05	896	0.1+	0.6−	1994 03 15	675	0.2−	0.2+	1999 06 09	704	0.8+	1.3+
1994 02 07	896	0.9−	1.2−	1998 01 26	704	0.2+	0.5+	1999 06 15	704	0.5−	0.9−
1994 02 07	896	(2.6−	0.3−)	1998 01 26	704	0.1+	0.2+	1999 06 15	704	0.2−	0.4−
1994 02 11	675	(0.6+	3.3+)	1998 01 26	704	0.1−	0.5+	1999 06 15	704	0.4+	0.3+
1994 02 11	675	0.3+	0.6+	1998 01 26	704	0.0	0.4+	1999 06 15	704	0.5−	0.0
1994 02 14	896	(4.1+	0.2−)	1998 01 26	704	0.1−	0.2+	1999 06 15	704	0.4+	0.6+

1994 CG₆ = 1999 JC₉₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	312.88739		(2000.0)	P		Q
<i>n</i>	0.23765849	ω	170.63785	+0.74285282	+0.65359651	
<i>a</i>	2.5812724	Ω	147.06429	−0.63016353	+0.75572432	
<i>e</i>	0.1875255	<i>i</i>	15.45105	−0.22597260	+0.04113819	
<i>P</i>	4.15	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1994 02 12	691	0.4−	0.2+	1999 05 12	704	0.1+	0.3−	1999 06 07	704	1.0−	0.9+
1994 02 12	691	0.0	0.3+	1999 05 12	704	0.6−	0.4+	1999 06 07	704	0.2−	0.8−
1994 02 12	691	0.2+	0.5+	1999 05 12	704	0.4+	0.2+	1999 06 07	704	0.0	0.4+

1994 02 14	675	0.0	1.7−	1999 05 12	704	0.3−	0.4+	1999 06 07	704	0.8−	0.0
1994 02 15	691	0.0	0.2+	1999 05 17	704	0.2−	0.4+	1999 06 12	704	0.1+	0.6+
1994 02 15	691	0.1−	0.5+	1999 05 17	704	1.3−	1.5−	1999 06 12	704	0.9+	0.0
1994 02 15	691	0.0	0.1+	1999 05 17	704	0.4−	0.3+	1999 06 12	704	0.6+	0.3−
1994 03 04	691	0.3+	0.3−	1999 05 17	704	0.4+	2.1−	1999 06 12	704	0.2+	0.5+
1994 03 04	691	0.0	0.1+	1999 05 17	704	1.1+	0.1+	1999 06 12	704	0.4+	0.1−
1994 03 04	691	0.0	0.2+	1999 06 07	704	0.5+	0.9+				

1994 CK₁₄ = 1999 CQ₅₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	194.98818		(2000.0)	P		Q
<i>n</i>	0.19163572	ω	325.73252	+0.97820557	+0.19344974	
<i>a</i>	2.9795573	Ω	23.46119	−0.12099370	+0.82632210	
<i>e</i>	0.1079413	<i>i</i>	10.92271	−0.16874354	+0.52893193	
<i>P</i>	5.14	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1989 04 04	675	1.1−	0.5+	1994 02 10	809	0.1−	0.2+	1999 02 10	704	(3.4+	2.2+)
1989 04 04	675	0.2−	0.4+	1994 02 10	809	0.5−	0.3−	1999 02 10	704	1.5−	0.7−
1989 04 07	675	0.5+	0.9−	1994 02 13	809	2.2−	1.4−	1999 02 13	704	0.9+	1.2−
1989 04 07	675	0.9+	0.2+	1994 02 13	809	(3.9−	2.1−)	1999 02 13	704	0.4+	0.2+
1994 02 08	809	1.1+	0.2+	1994 02 13	809	(4.7−	0.9−)	1999 02 13	704	0.9+	1.3+
1994 02 08	809	0.7+	1.0+	1999 02 10	704	1.4−	0.8+	1999 02 13	704	1.4−	0.3−
1994 02 08	809	0.2+	0.7+	1999 02 10	704	0.7+	0.3+	1999 02 13	704	(3.3−	0.2−)
1994 02 10	809	0.6+	0.5−	1999 02 10	704	1.5+	0.4−				

1994 EL = 1998 KA₃₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	145.94065		(2000.0)	P		Q
<i>n</i>	0.27840636	ω	1.08138	−0.85395251	+0.51992925	
<i>a</i>	2.3228256	Ω	210.27532	−0.47772399	−0.79931699	
<i>e</i>	0.1562488	<i>i</i>	2.38099	−0.20626414	−0.30127382	
<i>P</i>	3.54	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1994 03 05	595	0.0	0.5−	1994 03 17	595	0.3+	0.1+	1998 05 24	704	0.3+	0.2−
1994 03 05	595	0.5+	1.2+	1994 03 17	595	0.5−	0.0	1998 05 24	704	0.2+	0.1−
1994 03 06	595	0.1+	0.2−	1998 05 22	704	0.4−	0.1+	1998 05 24	704	0.5+	0.7−
1994 03 06	595	0.8−	1.5−	1998 05 22	704	(2.8−	2.4+)	1998 05 24	704	0.0	1.0−
1994 03 07	595	0.0	0.4+	1998 05 22	704	0.4+	0.1−	1998 06 03	704	0.2−	0.4−
1994 03 07	595	0.3−	0.4+	1998 05 22	704	0.1+	0.2−	1998 06 03	704	0.2−	1.4+
1994 03 07	595	0.1+	0.3+	1998 05 22	704	1.0−	0.2−	1998 06 03	704	0.4+	1.8+
1994 03 17	595	0.7+	0.1−	1998 05 24	704	0.0	0.4−	1998 06 03	704	(5.3−	1.6+)

1994 EV₅ = 1999 GB₁₁

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	112.09266		(2000.0)	P		Q
<i>n</i>	0.20633778	ω	86.39080	−0.08846001	−0.99562491	
<i>a</i>	2.8362873	Ω	8.85481	+0.81855492	−0.08987856	
<i>e</i>	0.0448991	<i>i</i>	11.27547	+0.56757614	−0.02555156	
<i>P</i>	4.78	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1994 02 08	809	(1.0−	2.7−)	1997 12 06	704	0.1−	0.5−	1999 04 11	691	0.0	0.1−
1994 02 08	809	(0.8−	3.1−)	1997 12 06	704	1.0+	0.2+	1999 04 11	691	0.3+	0.1−
1994 02 08	809	(1.3−	3.5−)	1997 12 06	704	0.2−	0.4+	1999 04 11	691	0.5+	0.1+
1994 02 10	809	(1.5+	7.1−)	1997 12 06	704	1.2−	0.5−	1999 04 12	704	0.1−	0.1+
1994 02 10	809	(2.2+	7.5−)	1999 03 22	699	0.5+	0.3−	1999 04 12	704	0.1+	0.8−
1994 02 10	809	(2.4+	7.2−)	1999 03 22	699	0.9−	0.5+	1999 04 12	704	0.7−	1.7−
1994 03 09	010	0.1+	0.9−	1999 03 22	699	0.2+	0.5+	1999 04 12	704	(1.9−	2.4−)
1994 03 09	010	0.5−	0.2+	1999 04 06	704	0.9+	0.5+	1999 04 12	704	(3.9−	0.3−)

M.P.C. 34854

1994 03 09	010	0.9+	0.7−	1999 04 06	704	1.2+	1.2+	1999 04 14	691	0.2−	0.0
1994 03 10	010	0.7−	0.4+	1999 04 06	704	0.5−	0.2+	1999 04 14	691	0.0	0.1+
1994 03 10	010	0.0	0.3+	1999 04 06	704	1.5−	0.0	1999 04 14	691	0.3−	0.0
1994 03 10	010	0.1−	0.1+	1999 04 07	699	0.9+	0.9−	1999 04 20	691	0.1+	0.1−
1997 11 29	688	0.3+	0.3+	1999 04 07	699	(2.2+	0.3+)				
1997 11 29	688	0.3+	0.3+	1999 04 07	699	0.0	1.5+				

1994 EC₆ = 1999 JM₆₉

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	149.20407	(2000.0)		P	Q		
<i>n</i>	0.21641587	ω	1.74531	+0.18804621	−0.97834046		
<i>a</i>	2.7475355	Ω	77.42274	+0.90003678	+0.13638294		
<i>e</i>	0.0393217	<i>i</i>	5.08676	+0.39315698	+0.15572293		
<i>P</i>	4.55	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1994 02 08	809	1.7+	0.5+	1994 03 09	010	0.3−	0.0	1999 04 12	704	0.3+	0.3+
1994 02 08	809	1.6+	0.5−	1994 03 09	010	0.5−	0.5−	1999 04 12	704	0.5+	0.9−
1994 02 08	809	(2.5+	0.0)	1994 03 10	010	0.1+	0.5+	1999 05 12	704	0.2+	1.7+
1994 02 10	809	0.3−	1.1−	1994 03 10	010	0.7+	0.9+	1999 05 12	704	1.2−	0.9+
1994 02 10	809	1.0−	1.5−	1994 03 10	010	0.5+	0.2+	1999 05 12	704	2.0+	0.2−
1994 02 10	809	1.0−	1.8−	1999 04 10	699	0.2−	0.6+	1999 05 12	704	0.6−	0.3+
1994 02 13	809	0.8−	1.3+	1999 04 10	699	1.0−	0.7−	1999 05 13	704	1.0−	1.8−
1994 02 13	809	0.3−	0.9+	1999 04 10	699	0.0	1.2+	1999 05 13	704	0.2−	0.5−
1994 02 13	809	0.4−	0.5+	1999 04 12	704	0.4−	0.7+	1999 05 13	704	0.8+	0.1−
1994 03 09	010	0.0	0.6+	1999 04 12	704	1.5+	0.8−	1999 05 13	704	1.0−	0.9−

1994 ED₇ = 1999 JB₁₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	113.03127	(2000.0)		P	Q		
<i>n</i>	0.21670375	ω	96.87296	−0.45526918	−0.88844410		
<i>a</i>	2.7451016	Ω	20.52145	+0.73706271	−0.41280026		
<i>e</i>	0.0534927	<i>i</i>	9.57051	+0.49946825	−0.20065648		
<i>P</i>	4.55	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1994 02 08	809	0.2+	0.9−	1994 03 09	010	0.7−	0.1+	1999 05 10	704	1.4+	0.4+
1994 02 08	809	0.4+	1.1−	1994 03 09	010	0.8−	0.2+	1999 05 10	704	1.0−	0.7−
1994 02 08	809	0.6−	0.7−	1994 03 09	010	0.4+	0.3+	1999 05 10	704	0.6−	0.3−
1994 02 10	809	0.3+	0.2−	1994 03 10	010	0.1+	0.3−	1999 05 10	704	0.8+	0.7−
1994 02 10	809	0.6+	0.9−	1994 03 10	010	0.4−	0.1+	1999 05 10	704	0.3+	0.4+
1994 02 10	809	0.5+	1.5−	1994 03 10	010	0.8−	0.6−	1999 05 13	704	1.2−	1.4+
1994 02 13	809	0.9+	1.7+	1999 04 15	704	0.4+	0.9−	1999 05 13	704	0.2−	0.1+
1994 02 13	809	0.0	1.9+	1999 04 15	704	0.1+	0.5+	1999 05 13	704	0.1−	0.3−
1994 02 13	809	0.1+	1.7+	1999 04 15	704	1.0−	1.9+	1999 05 13	704	1.1+	1.7−

1994 GO₅ = 1999 HB₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	313.16344	(2000.0)		P	Q		
<i>n</i>	0.20461347	ω	120.01349	+0.67626591	+0.73661968		
<i>a</i>	2.8521996	Ω	192.54771	−0.68716679	+0.62714387		
<i>e</i>	0.2276050	<i>i</i>	1.97150	−0.26545475	+0.25314425		
<i>P</i>	4.82	<i>H</i>	16.2	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1994 04 06	691	0.2−	0.2+	1994 04 16	691	0.1−	0.4+	1999 04 17	691	0.3+	0.0
1994 04 06	691	0.1−	0.5−	1994 04 16	691	0.2−	0.2−	1999 04 17	691	0.1+	0.4−
1994 04 06	691	0.0	0.5−	1994 04 16	691	0.3+	0.1−	1999 04 17	691	0.3+	0.2+
1994 04 11	691	0.0	0.5+	1999 04 06	691	0.5+	0.7+	1999 04 18	691	0.3−	0.1−
1994 04 11	691	0.0	0.3+	1999 04 06	691	0.2−	0.1−	1999 04 18	691	0.1−	0.3−
1994 04 11	691	0.3+	0.1−	1999 04 06	691	0.2−	0.0	1999 04 18	691	0.4−	0.0

1999 JUNE 22

1994 JY = 1994 JO₉ = 1999 GK₂₂Id. S. Nakano (d. *MPC* 27543), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	339.45239	(2000.0)		P	Q		
<i>n</i>	0.18626672	ω	140.83129	−0.57233525	+0.81720889		
<i>a</i>	3.0365414	Ω	94.15349	−0.76840865	−0.50558926		
<i>e</i>	0.1224434	<i>i</i>	3.90008	−0.28632240	−0.27667513		
<i>P</i>	5.29	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1994 05 03	104	0.5+	0.3−	1994 05 05	104	0.4+	0.1−	1999 04 06	704	0.6−	1.2−
1994 05 03	104	0.3+	0.0	1994 05 06	104	0.7−	0.7−	1999 04 06	704	0.3−	0.0
1994 05 03	104	0.3+	0.1−	1994 05 06	104	0.5−	0.6−	1999 04 06	704	0.6−	0.3+
1994 05 03	104	0.3+	0.0	1994 05 06	104	0.2−	0.5−	1999 04 06	704	0.4−	0.8+
1994 05 03	104	0.9+	0.4−	1994 05 06	104	0.3−	0.2−	1999 04 12	704	0.1−	0.1−
1994 05 03	104	0.1−	0.3−	1994 05 07	104	0.4−	0.2−	1999 04 12	704	0.3−	0.1+
1994 05 03	104	0.2−	0.1−	1994 05 07	104	0.2−	0.3−	1999 04 12	704	0.0	0.7−
1994 05 03	104	0.4+	0.2+	1994 05 07	104	0.6−	0.3−	1999 04 12	704	0.1+	0.5+
1994 05 05	104	0.5−	0.4+	1994 05 07	104	1.0−	0.4+	1999 04 12	704	0.2+	0.2−
1994 05 05	104	0.3+	0.3+	1994 05 10	104	0.8+	0.0	1999 04 15	704	(0.8+	2.4−)
1994 05 05	104	0.8−	1.1+	1994 05 10	104	0.2+	0.1+	1999 04 15	704	1.5+	0.3+
1994 05 05	104	0.4+	1.0+	1994 05 10	104	0.4+	0.1−	1999 04 15	704	0.1−	0.4+
1994 05 05	104	0.0	0.9+	1994 05 10	104	0.4+	0.2−	1999 04 15	704	(2.4−	0.5+)
1994 05 05	104	0.2−	0.2−	1999 04 06	704	1.3+	0.9−	1999 04 15	704	0.6−	0.8+

1994 JD₂ = 1999 EQ₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Doppler			
<i>M</i>	340.83678	(2000.0)		P	Q		
<i>n</i>	0.18264631	ω	30.39549	−0.74585554	+0.66599173		
<i>a</i>	3.0765368	Ω	191.38892	−0.62311261	−0.70418757		
<i>e</i>	0.0949537	<i>i</i>	3.60926	−0.23543618	−0.24611966		
<i>P</i>	5.40	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1994 04 19	691	0.2+	0.3−	1994 05 01	691	0.2+	0.2+	1999 03 14	691	0.2+	0.1−
1994 04 19	691	0.1−	0.1−	1994 05 03	691	0.2−	0.2−	1999 03 14	691	0.1−	0.2−
1994 04 19	691	0.0	0.3+	1994 05 03	691	0.3−	0.2−	1999 03 21	691	0.1−	0.0
1994 05 01	691	0.1+	0.0	1994 05 03	691	0.2+	0.1−	1999 03 21	691	0.0	0.1+
1994 05 01	691	0.1−	0.2+	1999 03 14	691	0.2−	0.0	1999 03 21	691	0.2+	0.1+

1994 JD₇ = 1995 SE₄₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	281.78194	(2000.0)		P	Q		
<i>n</i>	0.18662091	ω	147.10170	+0.83820160	+0.54536050		
<i>a</i>	3.0326981	Ω	179.84893	−0.50647389	+0.77848662		
<i>e</i>	0.2117379	<i>i</i>	1.67848	−0.20224312	+0.31070968		
<i>P</i>	5.28	<i>H</i>	16.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1994 05 05	691	0.1+	0.6−	1995 09 17	809	0.8+	0.1−	1995 09 27	691	0.5−	0.1+
1994 05 05	691	0.2−	0.3−	1995 09 18	809	0.7+	0.4+	1995 09 27	691	0.8−	0.7+
1994 05 05	691	0.1+	0.7−	1995 09 20	809	0.3+	0.4−	1995 09 27	691	0.6−	0.2+
1994 05 15	691	0.0	0.0	1995 09 22	809	0.1+	0.3−	1999 03 21	691	0.3+	0.3+
1994 05 15	691	0.1−	0.1+	1995 09 22	809	0.4+	0.9−	1999 04 16	691	0.0	0.0
1994 05 15	691	0.0	0.8+	1995 09 22	691	0.7−	0.4+	1999 04 16	691	0.0	0.3+
1995 08 20	809	0.8−	0.3−	1995 09 22	691	0.7−	0.3+	1999 04 16	691	0.1+	0.6+
1995 08 22	809	0.5+	0.1−	1995 09 22	691	0.5−	0.3+				
1995 08 25	809	(3.0+	0.1−)	1995 09 23	809	1.5+	0.3+				

1999 JUNE 22

M.P.C. 34855

1994 LO₁ = 1999 JK₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	275.40147	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.38546862	ω 247.51285	+0.85957463	+0.22813130
<i>a</i>	1.8698640	Ω 96.77562	-0.09044318	+0.94860898
<i>e</i>	0.0636320	<i>i</i> 27.41789	-0.50294283	+0.21931054
<i>P</i>	2.56	<i>H</i> 14.5	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1994 05 03	693	1.4-	1.0-	1999 04 09	704	0.9-	1.2+	1999 06 07	704	0.2+	0.9-
1994 05 03	693	1.8-	0.9-	1999 04 09	704	1.5+	0.6-	1999 06 08	704	0.4-	0.2+
1994 06 02	691	0.2+	0.2+	1999 04 09	704	1.3+	0.9-	1999 06 08	704	0.4-	0.1-
1994 06 02	691	0.2+	0.1+	1999 05 14	704	0.2-	0.7+	1999 06 08	704	0.2-	0.2+
1994 06 02	691	0.1+	0.1+	1999 05 14	704	0.3+	0.1-	1999 06 08	704	0.3-	0.4+
1994 06 03	691	0.5+	0.2+	1999 05 14	704	0.4-	0.6-	1999 06 08	704	0.4-	0.4+
1994 06 03	691	0.3+	0.3+	1999 05 14	704	0.2+	0.7+	1999 06 11	704	0.4-	0.0
1994 06 03	691	0.3+	0.2+	1999 05 14	704	0.3-	0.3+	1999 06 11	704	0.5-	0.3+
1994 06 04	691	0.7+	0.6+	1999 05 18	704	0.3-	0.4-	1999 06 11	704	0.4-	0.6+
1994 06 04	691	0.3+	0.2+	1999 05 18	704	1.0+	0.6-	1999 06 11	704	0.2-	0.2-
1994 06 04	691	0.4+	0.1+	1999 05 18	704	1.1+	0.1-	1999 06 11	704	0.0	0.1-
1999 02 24	704	(1.2+ 3.6+)		1999 05 18	704	0.4+	0.1-	1999 06 12	704	0.1+	0.5-
1999 02 24	704	0.0	0.6-	1999 05 18	704	0.4+	0.2-	1999 06 12	704	0.1-	0.2-
1999 02 24	704	0.2-	0.8+	1999 06 07	704	0.3-	0.3+	1999 06 12	704	0.1-	0.4-
1999 02 24	704	0.8-	1.7+	1999 06 07	704	0.1-	1.2+	1999 06 12	704	0.2+	0.4-
1999 02 24	704	0.0	0.2-	1999 06 07	704	0.3+	0.1-	1999 06 12	704	0.3-	0.3-
1999 04 09	704	0.2+	0.1-	1999 06 07	704	0.4-	0.9-				

1994 NM₂ = 1999 JJ₁₀₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	318.11525	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.17629513	ω 195.53633	+0.63850803	+0.68081763
<i>a</i>	3.1499900	Ω 115.64672	-0.65688249	+0.72507601
<i>e</i>	0.2076502	<i>i</i> 23.45951	-0.40101482	-0.10369245
<i>P</i>	5.59	<i>H</i> 12.8	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1994 07 09	675	0.1+	0.3+	1994 08 06	675	0.8+	0.1-	1999 06 07	704	0.7-	0.4+
1994 07 09	675	0.0	1.6-	1999 05 14	704	0.3+	0.2-	1999 06 07	704	0.9-	0.9-
1994 07 11	675	0.5-	1.6-	1999 05 14	704	0.8+	0.4+	1999 06 07	704	0.1+	0.1-
1994 07 11	675	0.7-	0.5+	1999 05 14	704	0.8+	0.1-	1999 06 07	704	0.2-	0.5-
1994 07 12	693	0.1-	0.3+	1999 05 14	704	1.0+	0.6-	1999 06 07	704	1.2-	0.8-
1994 07 12	693	1.1+	1.4+	1999 05 14	704	0.9+	0.9-	1999 06 12	704	0.2-	0.3+
1994 08 01	675	(5.6+ 5.0+)		1999 05 17	704	0.6+	0.9+	1999 06 12	704	0.3+	2.7+
1994 08 01	675	(5.3+ 6.5+)		1999 05 17	704	0.1-	0.1-	1999 06 12	704	(2.8- 0.2+)	
1994 08 03	675	0.4-	1.5+	1999 05 17	704	1.0-	1.0+	1999 06 12	704	0.7-	0.5-
1994 08 03	675	0.5-	0.5-	1999 05 17	704	0.9+	0.6-	1999 06 12	704	0.7-	0.5-
1994 08 06	675	0.3+	0.1-	1999 05 17	704	0.0	0.2+				

1994 PO₁ = 1999 JL₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	337.29516	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.17426456	ω 225.51667	+0.25532242	+0.87481115
<i>a</i>	3.1744123	Ω 63.56175	-0.70395691	+0.46010395
<i>e</i>	0.2118861	<i>i</i> 27.37502	-0.66276325	-0.15168985
<i>P</i>	5.66	<i>H</i> 13.7	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1994 08 12	413	1.0-	0.6-	1994 12 20	413	1.0-	0.7+	1999 06 05	703	0.3+	0.7+
1994 08 12	413	(3.8- 3.5-)		1999 05 10	704	0.6+	0.0	1999 06 05	703	0.9-	1.0+
1994 08 15	413	0.3+	0.2-	1999 05 10	704	0.7-	0.2-	1999 06 05	703	0.3-	0.8-
1994 08 15	413	0.2+	0.2-	1999 05 10	704	0.9+	0.6+	1999 06 09	704	0.0	0.3-
1994 08 15	413	0.2+	0.1-	1999 05 10	704	0.2-	0.6+	1999 06 09	704	0.3-	0.2-
1994 08 16	413	0.4+	0.0	1999 05 10	704	0.3-	0.3+	1999 06 09	704	0.6+	0.0
1994 08 16	413	0.4+	0.1-	1999 05 13	704	0.3+	0.4-	1999 06 09	704	0.1+	1.0+
1994 08 17	413	0.5+	0.1-	1999 05 13	704	0.1+	1.3-	1999 06 15	704	0.5-	0.2+

1994 08 17	413	0.5+	0.0	1999 05 13	704	0.6+	1.6-	1999 06 15	704	0.4-	0.2+
1994 08 26	413	0.3+	0.1-	1999 05 13	704	0.8+	0.5-	1999 06 15	704	0.4-	0.6+
1994 08 26	413	0.2+	0.1-	1999 05 13	704	0.1+	0.9-	1999 06 15	704	0.7-	0.0
1994 08 28	413	0.5+	0.0	1999 05 18	704	1.1+	0.4-	1999 06 15	704	1.3-	0.1+
1994 09 17	413	0.1-	0.3-	1999 05 18	704	0.8+	0.3-	1999 06 16	691	0.5-	0.2-
1994 09 17	413	0.1-	0.3-	1999 05 18	704	1.1+	0.6+	1999 06 16	691	0.2-	0.2+
1994 12 19	413	1.4-	1.4+	1999 05 18	704	1.1-	1.6+	1999 06 16	691	0.3-	0.1-
1994 12 19	413	1.0-	1.0+	1999 05 18	704	(0.4- 2.3+)					
1994 12 20	413	1.2-	0.4+	1999 06 05	703	1.4+	1.0+				

1994 QL = 1999 JW₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	305.51199	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.36858433	ω 287.22899	+0.81971975	+0.47426820
<i>a</i>	1.9265405	Ω 45.91051	-0.18032936	+0.74586512
<i>e</i>	0.1426388	<i>i</i> 26.55831	-0.54363669	+0.46771241
<i>P</i>	2.67	<i>H</i> 14.9	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1994 08 16	413	0.6-	1.0-	1999 04 20	704	0.3+	1.5-	1999 05 18	704	(0.6+ 2.6-)	
1994 08 16	413	1.3-	1.4-	1999 04 20	704	(0.5+ 2.6-)		1999 05 18	704	0.3+	1.4-
1994 08 26	413	0.6+	0.2+	1999 04 20	704	(2.3+ 0.7-)		1999 05 19	704	0.6-	0.3-
1994 08 26	413	0.6+	0.3+	1999 04 20	704	(0.6- 3.0-)		1999 05 19	704	(2.7+ 0.6+)	
1994 08 26	413	0.4+	0.1+	1999 04 20	704	(2.0+ 1.2-)		1999 05 19	704	0.4+	0.1-
1994 08 26	413	0.5+	0.2+	1999 05 10	704	0.1+	0.3+	1999 05 19	704	0.1-	0.4+
1994 08 27	413	0.7+	0.0	1999 05 10	704	0.1+	0.4-	1999 05 19	704	0.3-	0.4-
1994 08 27	413	0.7+	0.1-	1999 05 10	704	0.4+	0.2+	1999 06 09	704	0.1-	0.2-
1994 08 28	413	0.6+	0.1+	1999 05 10	704	0.3-	1.8+	1999 06 09	704	0.1+	0.9+
1994 08 28	413	0.7+	0.2+	1999 05 13	704	0.2-	0.0	1999 06 09	704	0.2-	0.4-
1994 09 17	413	0.2-	0.6+	1999 05 13	704	0.5-	0.4+	1999 06 09	704	0.1-	0.3+
1994 09 17	413	0.0	0.5+	1999 05 13	704	0.4+	0.8+	1999 06 09	704	0.2+	0.5+
1994 09 18	413	0.2-	0.6+	1999 05 13	704	0.2-	1.3+	1999 06 11	704	0.3+	0.1+
1994 09 18	413	0.1-	0.3+	1999 05 13	704	1.4-	0.7+	1999 06 11	704	0.3+	0.3-
1994 11 11	413	1.4-	0.1+	1999 05 18	704	0.7+	0.4-	1999 06 11	704	0.4+	1.4-
1994 11 11	413	1.4-	0.2+	1999 05 18	704	0.6+	0.5-				

1994 RD₁₁ = 1999 JT₇₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	301.90260	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.36186014	ω 175.59500	+0.86176276	+0.47014395
<i>a</i>	1.9503335	Ω 153.55047	-0.47754526	+0.87857077
<i>e</i>	0.0340056	<i>i</i> 25.33616	-0.17121760	-0.08413128
<i>P</i>	2.72	<i>H</i> 15.0	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1994 08 10	809	0.4+	1.0+	1994 09 18	413	0.8-	0.1+	1999 05 13	704	0.1-	0.1-
1994 08 10	809	0.1-	1.3+	1994 11 11	413	0.3+	0.7-	1999 05 13	704	(2.6- 0.1+)	
1994 08 10	809	0.9-	0.9-	1994 11 11	413	0.1-	0.0	1999 05 14	704	0.3+	0.2-
1994 08 11	809	1.9+	1.2+	1994 12 19	413	0.9-	0.5+	1999 05 14	704	0.3+	1.1-
1994 08 11	809	(2.4+ 1.6+)		1994 12 19	413	0.8-	0.6+	1999 05 14	704	0.6+	0.4+
1994 08 11	809	(2.5+ 3.0+)		1999 04 23	704	(1.3+ 2.1-)		1999 05 14	704	0.2+	0.0
1994 09 10	413	1.1+	1.8-	1999 04 23	704	0.1-	1.5+	1999 05 14	704	0.1+	0.4-
1994 09 10	413	0.8+	0.3+	1999 04 23	704	0.1+	0.8-	1999 06 11	704	0.9+	0.6+
1994 09 10	413	0.2+	1.4-	1999 04 23	704	0.4-	0.1-	1999 06 11	704	0.6-	0.2+
1994 09 10	413	0.3-	0.1+	1999 04 23	704	0.2+	0.6-	1999 06 11	704	1.0-	0.4+
1994 09 17	413	0.9-	0.2-	1999 05 13	704	0.3-	0.1-	1999 06 11	704	0.2-	0.0
1994 09 17	413	0.7-	0.0	1999 05 13	704	0.5-	0.1-	1999 06 11	704	0.5+	0.3-

1994 TV₃ = 1999 JC₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	345.58155	(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.35753257	ω 104.64471	+0.45908826	+0.88388120
a	1.9660398	Ω 193.77589	−0.88832549	+0.45794326
e	0.0795083	i 22.05056	+0.01076024	+0.09508940
P	2.76	H 14.3	G 0.15	U 2

Residuals in seconds of arc

1994 10 07	675	1.0+	0.5-	1996 04 21	691	0.2+	0.9-	1999 05 17	704	0.3-	0.2-
1994 10 07	675	1.6+	0.6-	1996 04 21	691	0.0	0.7-	1999 05 17	704	0.3-	0.3-
1994 10 11	675	1.7+	0.6-	1999 03 24	704	0.3+	1.2-	1999 05 17	704	0.2+	0.4+
1994 10 11	675	0.3-	0.3-	1999 03 24	704	0.0	0.7-	1999 05 17	704	0.3+	0.3+
1994 10 29	413	0.8-	0.5-	1999 03 24	704	0.0	0.6+	1999 05 17	704	0.8-	0.7+
1994 10 29	413	(0.1+ 2.5+)		1999 03 24	704	0.6-	0.6-	1999 06 11	704	0.2+	0.0
1994 10 30	675	(2.8- 0.3-)		1999 03 24	704	0.6+	1.7-	1999 06 11	704	0.3+	0.0
1994 10 30	675	0.5+	1.3-	1999 04 22	704	0.2-	1.3-	1999 06 11	704	0.0	0.2+
1994 11 02	675	1.3-	1.3-	1999 04 22	704	0.6-	0.8+	1999 06 11	704	0.6+	0.2+
1994 11 02	675	(1.5+ 3.2-)		1999 04 22	704	0.7+	0.5-	1999 06 11	704	0.3+	0.1+
1994 11 11	413	0.9-	0.2+	1999 04 22	704	0.4+	0.3-	1999 06 12	704	0.0	0.1+
1994 11 11	413	0.7-	0.0	1999 04 22	704	(2.2- 0.6+)		1999 06 12	704	0.0	0.2+
1994 11 12	413	0.7-	0.2+	1999 05 13	704	1.3-	1.0+	1999 06 12	704	0.1-	0.1+
1994 11 12	413	0.6-	0.3+	1999 05 13	704	0.8-	1.1+	1999 06 12	704	0.1+	0.1-
1996 04 21	691	0.1+	0.9-	1999 05 13	704	0.7+	1.8-	1999 06 12	704	0.2+	0.1+

1994 TV₁₅ = 1999 JL₆

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams					
<i>M</i>	301.61906	(2000.0)	P		Q			
<i>n</i>	0.36253356	ω	149.91648	+0.93791464	+0.33944437			
<i>a</i>	1.9479176	Ω	190.97090	-0.34223139	+0.93910543			
<i>e</i>	0.0796694	<i>i</i>	22.02543	+0.05651382	+0.05346506			
<i>P</i>	2.72	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	3	

Residuals in seconds of arc

1994 09 03	675	0.5-	1.2-	1999 04 22	704	1.3+	0.4-	1999 05 17	704	0.1-	0.4-
1994 09 03	675	0.3+	1.2-	1999 04 22	704	0.2+	1.0-	1999 05 17	704	0.3-	0.4+
1994 09 06	675	1.4-	0.8+	1999 04 22	704	0.3+	0.3+	1999 05 17	704	0.4+	0.0
1994 09 06	675	0.1-	1.0+	1999 04 26	699	0.6+	0.4-	1999 06 07	704	0.1-	0.6+
1994 10 08	675	1.7+	1.3-	1999 04 26	699	0.0	0.3+	1999 06 07	704	0.2+	0.1-
1994 10 08	675	1.7+	1.0-	1999 04 26	699	0.5+	0.5-	1999 06 07	704	0.4+	0.9+
1994 10 10	675	0.7+	1.4+	1999 05 13	704	0.9+	0.5+	1999 06 07	704	1.1+	0.7+
1994 10 10	675	1.6-	1.0+	1999 05 13	704	0.1+	0.4+	1999 06 11	704	0.1-	0.3+
1994 10 30	675	0.1-	1.2+	1999 05 13	704	1.0-	0.4+	1999 06 11	704	0.1+	0.3+
1994 10 30	675	0.4+	0.6+	1999 05 13	704	0.4-	0.4+	1999 06 11	704	0.1-	0.1+
1994 11 02	675	1.4-	1.6-	1999 05 13	704	1.4-	0.1-	1999 06 11	704	0.3-	0.1+
1999 03 24	704	0.1+	1.5+	1999 05 14	704	0.5-	1.6-	1999 06 11	704	0.5-	0.1+
1999 03 24	704	0.9-	1.0+	1999 05 14	704	0.4-	0.9-	1999 06 12	704	0.1-	0.2+
1999 03 24	704	0.7+	0.2+	1999 05 14	704	0.6-	1.2-	1999 06 12	704	0.0	0.3+
1999 03 24	704	1.1+	0.4-	1999 05 14	704	0.4-	1.3-	1999 06 12	704	0.3-	0.2+
1999 03 24	704	1.5-	0.0	1999 05 17	704	0.2-	0.2-	1999 06 12	704	0.2-	0.0
1999 04 22	704	(0.6- 2.7+)		1999 05 17	704	1.3+	0.2+	1999 06 12	704	0.1-	0.0

1994 UV₂ = 1999 CE₅₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams					
<i>M</i>	116.52974	(2000.0)	P		Q			
<i>n</i>	0.28321160	ω	53.26418	+0.40916415	-0.91239846			
<i>a</i>	2.2964766	Ω	12.59661	+0.82080385	+0.36293251			
<i>e</i>	0.1885115	<i>i</i>	2.80317	+0.39857964	+0.18923279			
<i>P</i>	3.48	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	2	

Residuals in seconds of arc

1992 03 11	691	1.1-	0.5-	1994 11 04	675	1.5+	0.3-	1999 02 10	704	0.6-	0.1+
1992 03 11	691	0.3+	0.4-	1994 11 07	399	2.7-	1.4-	1999 02 10	704	0.7+	1.0-
1992 03 11	691	0.0	0.9-	1994 11 07	399	1.4-	0.3+	1999 02 10	704	0.6+	0.1-
1994 10 25	399	0.9+	1.0+	1994 11 10	399	1.5-	1.0+	1999 02 10	704	0.1-	0.9+
1994 10 25	399	1.3+	1.6+	1994 11 10	399	0.1+	0.2+	1999 02 13	704	1.3-	1.7-
1994 10 26	399	0.7-	0.2+	1996 03 27	809	0.0	1.5+	1999 02 13	704	0.2-	1.4+
1994 10 26	399	0.7-	0.4+	1996 03 27	809	1.4+	2.1+	1999 02 13	704	1.4+	1.4+
1994 11 04	675	2.5+	0.7-	1996 03 27	809	(4.1+ 2.4-)					

1994 WU₂ = 1999 FH₄₉

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams					
<i>M</i>	220.24903	(2000.0)	P		Q			
<i>n</i>	0.30301983	ω	287.53315	+0.98692915	+0.14092478			
<i>a</i>	2.1952737	Ω	64.42465	-0.09406519	+0.89762463			
<i>e</i>	0.2054146	<i>i</i>	4.97176	-0.13085329	+0.41762450			
<i>P</i>	3.25	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	5	

Residuals in seconds of arc

1994 11 30	411	0.6+	0.4-	1994 12 22	411	0.8+	1.2-	1999 03 20	704	0.9-	0.5-
1994 11 30	411	0.5+	0.2+	1994 12 22	411	0.6-	1.2-	1999 03 20	704	0.1-	0.4+
1994 12 03	411	0.2-	0.1+	1997 12 27	566	0.6-	0.5+	1999 03 20	704	0.1+	0.3+
1994 12 03	411	0.3-	0.4+	1997 12 27	566	0.1+	0.7+	1999 03 23	704	0.3+	0.0
1994 12 03	411	0.2-	0.1-	1997 12 27	566	0.5-	0.7+	1999 03 23	704	1.1+	0.3+
1994 12 07	411	0.3+	0.3+	1999 03 20	704	1.0-	0.5+	1999 03 23	704	(3.1+ 0.2-)	
1994 12 07	411	0.5-	0.4+	1999 03 20	704	1.0+	0.0				

1995 AM₁ = 1987 YD₂

Id. A. Gnädig, S. Nakano, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams					
<i>M</i>	147.75302	(2000.0)	P		Q			
<i>n</i>	0.28366125	ω	313.78361	+0.39773707	-0.83693176			
<i>a</i>	2.2940491	Ω	109.20936	+0.91374917	+0.32431592			
<i>e</i>	0.2613278	<i>i</i>	23.46152	+0.08287151	+0.44086780			
<i>P</i>	3.47	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	2	

Residuals in seconds of arc

1987 12 20	010	0.4+	0.0	1995 01 07	408	0.9-	0.1-	1995 02 17	409	0.1+	0.5+
1987 12 20	010	0.0	0.7-	1995 01 07	408	0.4-	0.5+	1999 04 10	704	0.5-	0.1-
1987 12 20	010	0.3-	0.8+	1995 01 07	408	1.7-	1.1+	1999 04 10	704	0.9+	0.0
1987 12 20	010	0.0	0.9-	1995 01 16	409	0.4+	0.0	1999 04 10	704	0.0	0.5-
1990 10 13	413	0.4+	0.5-	1995 01 16	409	0.1+	0.3+	1999 04 10	704	0.5-	0.8+
1990 10 13	413	0.3-	0.1-	1995 01 31	409	0.6+	0.5-	1999 04 10	704	0.3-	0.8-
1995 01 06	408	0.0	0.7-	1995 01 31	409	0.4+	0.9+				
1995 01 06	408	1.4+	0.6-	1995 02 17	409	0.1+	0.6-				

1995 BR = 1999 JW₉₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams					
<i>M</i>	97.49247	(2000.0)	P		Q			
<i>n</i>	0.28485550	ω	22.55908	-0.84446057	-0.51431623			
<i>a</i>	2.2876327	Ω	125.62912	+0.45905617	-0.83882318			
<i>e</i>	0.0718732	<i>i</i>	10.60239	+0.27595975	-0.17847827			
<i>P</i>	3.46	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	5	

Residuals in seconds of arc

1995 01 23	411	0.1-	0.7+	1995 02 10	411	0.1+	1.3+	1999 05 12	704	0.6-	0.7+
1995 01 23	411	0.4-	0.0	1995 02 10	411	1.2-	0.5+	1999 05 12	704	0.6+	0.6-
1995 01 25	411	1.7+	0.6-	1995 02 20	411	1.2+	0.1+	1999 05 12	704	0.6-	1.7-
1995 01 25	411	0.7+	0.2-	1995 02 20	411	0.1-	0.8-	1999 05 12	704	0.5+	0.4-
1995 01 29	411	0.6+	0.9-	1999 05 07	703	0.7+	0.5+	1999 05 17	704	0.4-	0.5-
1995 01 29	411	1.3-	0.8+	1999 05 07	703	1.5+	0.5+	1999 05 17	704	1.1+	1.9-
1995 02 06	411	1.4-	0.5-	1999 05 07	703	0.3+	0.8+	1999 05 17	704	1.4-	0.4+
1995 02 06	411	0.1+	0.6-	1999 05 07	703	1.0-	1.4+	1999 05 17	704	0.5-	1.0+

1995 EZ₄ = 1995 FO₆ = 1999 JR₇₂Id. S. Nakano (d, *MPC* 31295), G. V. Williams

Epoch

1999 JUNE 22

M.P.C. 34857

Residuals in seconds of arc

1995 03 02	691	0.2+	0.4+	1999 04 12	704	(1.2−	2.9+)	1999 05 14	703	0.0	1.0+
1995 03 02	691	0.0	0.3+	1999 05 12	704	0.1+	0.8−	1999 05 14	704	(2.7−	1.4−)
1995 03 02	691	0.5+	0.6+	1999 05 12	704	1.4+	0.1+	1999 05 14	703	(0.1−	2.5+)
1995 03 07	691	0.4−	0.2+	1999 05 12	704	0.9−	0.6+	1999 05 17	704	0.1−	0.9−
1995 03 07	691	0.0	0.5−	1999 05 12	704	0.2+	0.8+	1999 05 17	704	0.8−	0.8+
1995 03 07	691	0.0	0.4−	1999 05 13	704	0.4+	1.7−	1999 05 17	704	0.8+	1.1−
1995 03 23	691	0.6−	0.3+	1999 05 13	704	0.7−	0.2−	1999 05 17	704	1.8−	1.2+
1995 03 23	691	0.1−	0.5−	1999 05 13	704	0.6−	0.4−	1999 05 18	704	0.0	0.7+
1995 03 23	691	0.3−	0.1+	1999 05 13	704	0.0	0.0	1999 05 18	704	0.4+	0.9+
1995 04 04	691	0.3+	0.2−	1999 05 13	704	0.5+	0.2−	1999 05 18	704	0.8−	0.6+
1995 04 04	691	0.3+	0.1−	1999 05 14	704	1.1−	0.5−	1999 05 18	704	(1.1−	2.8+)
1995 04 04	691	0.1+	0.2−	1999 05 14	704	(2.5−	1.5+)	1999 06 07	703	0.8+	0.8−
1999 04 12	704	0.1+	1.4−	1999 05 14	703	0.8+	0.5−	1999 06 07	703	0.6+	0.3+
1999 04 12	704	(1.8−	2.1−)	1999 05 14	703	1.0+	1.1+	1999 06 07	703	1.2−	0.9−
1999 04 12	704	(0.4−	2.8+)	1999 05 14	704	0.7+	1.0+	1999 06 07	703	0.2+	0.2+

1995 EN₅ = 1995 FD₆

Id. S. Nakano (d, MPC 31295)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	286.28951	(2000.0)	
<i>n</i>	0.17121311	ω	344.76625
<i>a</i>	3.2120185	Ω	165.55735
<i>e</i>	0.1638335	<i>i</i>	18.40406
<i>P</i>	5.76	<i>H</i>	14.8

Residuals in seconds of arc

1983 01 15	413	1.1−	1.2+	1995 03 07	691	0.0	0.1−	1997 07 13	691	1.0−	0.8+
1983 01 15	413	1.0+	0.0	1995 03 23	691	0.1+	0.5+	1997 07 13	691	0.5+	1.1+
1995 03 02	691	0.2−	0.2+	1995 03 23	691	0.1−	0.1+	1997 07 13	691	0.6+	0.0
1995 03 02	691	0.1+	0.3+	1995 03 23	691	0.3+	0.1−	1998 09 21	910	0.2−	0.1+
1995 03 02	691	0.1−	0.2+	1995 03 29	691	0.1+	0.0	1998 09 21	910	0.0	0.1+
1995 03 07	691	0.2−	0.1+	1995 03 29	691	0.0	0.0	1998 09 21	910	0.1−	0.1+
1995 03 07	691	0.1+	0.3−	1995 03 29	691	0.0	0.1+				

1995 EK₈ = 1999 JQ₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	19.05847	(2000.0)	
<i>n</i>	0.26188921	ω	136.99169
<i>a</i>	2.4194927	Ω	81.05462
<i>e</i>	0.0755846	<i>i</i>	2.93238
<i>P</i>	3.76	<i>H</i>	15.1

Residuals in seconds of arc

1995 03 04	033	0.3+	0.1+	1999 04 12	704	0.1+	0.5−	1999 05 09	703	0.7−	0.2−
1995 03 05	033	0.2+	0.1−	1999 04 12	704	1.9−	1.7−	1999 05 09	703	0.3+	0.1−
1995 03 07	033	0.1−	0.5+	1999 04 12	704	0.5−	0.6+	1999 05 09	703	0.2+	0.9+
1995 03 23	033	0.1+	0.7−	1999 04 12	704	0.7+	0.1−	1999 05 09	703	0.3+	0.2−
1995 03 23	033	0.5−	0.0	1999 04 12	704	0.3−	0.0	1999 05 12	704	0.2−	1.1−
1999 04 07	704	0.7+	0.0	1999 05 08	703	1.1+	0.3+	1999 05 12	704	0.7+	1.3−
1999 04 07	704	0.2+	0.3+	1999 05 08	703	0.4−	0.2+	1999 05 12	704	0.2−	0.7+
1999 04 07	704	0.6+	0.6+	1999 05 08	703	0.4−	0.3+	1999 05 12	704	(2.6−	3.2−)
1999 04 07	704	0.4+	0.8+	1999 05 08	703	0.1+	0.4−	1999 05 12	704	0.6−	0.8+

1995 FD₄ = 1999 JP₁₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	1.04525	(2000.0)	
<i>n</i>	0.27366708	ω	240.45891
<i>a</i>	2.3495661	Ω	34.17080
<i>e</i>	0.2196811	<i>i</i>	2.78867
<i>P</i>	3.60	<i>H</i>	16.6

Residuals in seconds of arc

1995 03 23	691	0.1+	0.1−	1995 04 04	691	0.4−	0.4+	1999 05 19	704	0.4+	1.3+
1995 03 23	691	0.3+	0.4−	1999 05 13	704	0.4+	0.8−	1999 05 19	704	1.1+	0.5+

1995 03 23	691	0.3+	0.6−	1999 05 13	704	0.1−	0.5+	1999 06 15	704	0.8+	0.5−
1995 03 29	691	0.0	0.1+	1999 05 13	704	(3.5−	0.1+)	1999 06 15	704	0.1+	0.2−
1995 03 29	691	0.1−	0.1+	1999 05 18	704	0.3−	0.0	1999 06 15	704	0.7−	0.4+
1995 03 29	691	0.1−	0.1−	1999 05 18	704	0.8−	1.6−	1999 06 15	704	0.1−	0.4+
1995 04 04	691	0.1−	0.5+	1999 05 18	704	1.4−	1.8−	1999 06 15	704	0.2+	0.6+
1995 04 04	691	0.2+	0.6+	1999 05 19	704	0.3+	1.1+				

1995 FT₄ = 1999 GJ₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	333.81142	(2000.0)	
<i>n</i>	0.26201137	ω	232.06137
<i>a</i>	2.4187405	Ω	48.47584
<i>e</i>	0.1929891	<i>i</i>	2.78189
<i>P</i>	3.76	<i>H</i>	15.5

Residuals in seconds of arc

1995 03 23	691	0.3−	0.2−	1995 04 04	691	0.1+	0.1+	1999 04 12	704	0.3−	0.8+
1995 03 23	691	0.3−	0.2−	1995 04 04	691	0.4−	0.1+	1999 04 12	704	0.2+	0.3+
1995 03 23	691	0.7+	0.0	1999 04 07	704	0.1−	0.6−	1999 04 12	704	0.8−	0.9−
1995 03 27	675	1.0+	0.9+	1999 04 07	704	0.5−	0.2+	1999 05 16	703	0.6+	1.3−
1995 03 29	691	0.3−	0.4−	1999 04 07	704	0.5−	0.2−	1999 05 16	703	0.6+	0.3−
1995 03 29	691	0.3−	0.4−	1999 04 07	704	1.8+	0.9−	1999 05 16	703	0.8−	1.0+
1995 03 29	691	0.2−	0.1−	1999 04 12	704	0.1+	0.2+	1999 05 16	703	0.1−	0.7+
1995 04 04	691	0.0	0.2+	1999 04 12	704	0.2−	0.9+				

1995 FB₇ = 1999 JP₃₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	322.21445	(2000.0)	
<i>n</i>	0.27551514	ω	262.13924
<i>a</i>	2.3390477	Ω	46.41850
<i>e</i>	0.1772597	<i>i</i>	3.16871
<i>P</i>	3.58	<i>H</i>	16.1

Residuals in seconds of arc

1995 03 23	691	0.1−	0.2−	1995 04 04	691	0.0	0.1+	1999 05 13	704	0.7+	0.8−
1995 03 23	691	0.0	0.3−	1995 04 04	691	0.0	0.2+	1999 05 13	704	0.8−	0.8−
1995 03 23	691	0.3+	0.3−	1999 05 10	704	(0.3−	2.7−)	1999 05 13	704	(3.3−	0.3−)
1995 03 29	691	0.1−	0.2+	1999 05 10	704	2.0−	0.3−	1999 06 07	703	0.0	0.9−
1995 03 29	691	0.2−	0.2−	1999 05 10	704	0.4+	0.1−	1999 06 07	703	0.2−	0.7+
1995 03 29	691	0.1+	0.3+	1999 05 10	704	0.7+	0.2+	1999 06 07	703	0.4−	0.6−
1995 04 04	691	0.1+	0.4+	1999 05 13	704	0.9+	1.5+	1999 06 07	703	0.7+	1.1+

1995 FR₇ = 1997 XY₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	183.42004	(2000.0)	
<i>n</i>	0.23882783	ω	256.87605
<i>a</i>	2.5728399	Ω	120.44044
<i>e</i>	0.2402580	<i>i</i>	5.96401
<i>P</i>	4.13	<i>H</i>	15.2

Residuals in seconds of arc

1995 03 25	691	0.1+	0.5+	1995 03 26	691	0.2−	0.3−	1995 04 06	691	0.2−	0.4+
1995 03 25	691	0.1+	0.6−	1995 04 01	691	0.2+	0.0	1995 04 06	691	0.2−	0.6−
1995 03 25	691	0.2+	0.4+	1995 04 01	691	0.2+	0.4+	1997 12 02	905	0.3−	0.2+
1995 03 26	691	0.2−	0.1+	1995 04 01	691	0.2+	0.6+	1997 12 02	905	1.1+	0.2+
1995 03 26	691	0.3−	0.5−	1995 04 06	691	0.0	0.6−	1997 12 03	905	0.8−	0.4−

1995 GS₇ = 1999 JL₉₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	186.00303		(2000.0)	P	Q
<i>n</i>	0.28148789	ω	300.12543	+0.31228008	-0.94544887
<i>a</i>	2.3058421	Ω	131.37727	+0.90859736	+0.26873190
<i>e</i>	0.0626701	<i>i</i>	7.10229	+0.27736616	+0.18414557
<i>P</i>	3.50	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1995 03 27	675	0.2+	0.3+	1995 04 03	327	0.7+	0.4-	1999 05 17	704	1.0+	0.6-
1995 03 30	327	0.3+	0.6-	1995 04 03	327	0.1-	0.0	1999 05 17	704	1.1-	0.1+
1995 03 30	327	0.0	0.6+	1995 04 03	327	0.2-	0.1+	1999 05 17	704	0.9+	0.2-
1995 03 31	327	0.4+	0.3-	1995 04 04	327	0.1+	0.1+	1999 06 08	704	0.7+	0.5-
1995 03 31	327	0.3+	0.1+	1995 04 04	327	0.4-	0.8+	1999 06 08	704	0.6+	0.9-
1995 03 31	327	0.1+	0.3-	1995 04 04	327	0.8+	0.5+	1999 06 08	704	0.5+	1.2-
1995 03 31	327	0.2-	0.1-	1995 04 04	327	3.4-	0.2+	1999 06 08	704	0.2+	0.6-
1995 03 31	327	0.7+	0.4-	1999 05 12	704	0.3-	0.4+	1999 06 14	704	0.1-	0.5+
1995 04 03	327	0.0	0.6+	1999 05 12	704	1.8-	0.3-	1999 06 14	704	0.8-	0.3+
1995 04 03	327	0.3+	0.4-	1999 05 12	704	0.0	0.0	1999 06 14	704	0.2-	0.2+
1995 04 03	327	0.1+	0.2+	1999 05 12	704	0.4+	0.2-	1999 06 14	704	0.8+	1.5+
1995 04 03	327	0.7+	0.3-	1999 05 17	704	0.8+	0.0	1999 06 14	704	0.1-	0.6+
1995 04 03	327	0.4-	0.3-	1999 05 17	704	1.4-	0.8+				

1995 HS₂ = 1999 JF₁₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	0.28101		(2000.0)	P	Q
<i>n</i>	0.25613761	ω	181.55017	+0.03544307	+0.99733211
<i>a</i>	2.4555784	Ω	90.48416	-0.91621751	+0.05792924
<i>e</i>	0.1639534	<i>i</i>	3.65899	-0.39911060	-0.04441695
<i>P</i>	3.85	<i>H</i>	16.1	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1995 04 25	691	0.0	0.6+	1995 05 08	691	0.3+	0.5+	1999 05 19	704	0.1-	1.9+
1995 04 25	691	0.1+	0.3+	1995 05 08	691	0.1+	0.5+	1999 05 19	704	1.1+	0.2-
1995 04 25	691	0.3+	0.4+	1995 05 08	691	0.2-	0.3+	1999 05 19	704	0.1+	0.5-
1995 05 01	691	0.3+	0.3+	1998 01 06	691	0.3-	2.2-	1999 05 19	704	0.9-	0.5-
1995 05 01	691	0.2+	0.1+	1999 05 13	704	0.9-	1.2-	1999 06 15	704	0.5+	0.4+
1995 05 01	691	0.1+	0.3+	1999 05 13	704	1.0+	1.2-	1999 06 15	704	0.4-	0.4+
1995 05 04	691	0.1+	0.8-	1999 05 13	704	0.7-	1.5-	1999 06 15	704	0.4-	0.2+
1995 05 04	691	0.3-	0.3+	1999 05 13	704	0.1+	0.6+	1999 06 15	704	0.0	0.6-
1995 05 04	691	0.2+	0.4+	1999 05 19	704	0.2-	0.3-	1999 06 15	704	0.0	1.5-

1995 JR = 1999 JR₈₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	89.59696		(2000.0)	P	Q
<i>n</i>	0.24402562	ω	62.32616	-0.59766185	-0.79068456
<i>a</i>	2.5361743	Ω	64.99748	+0.67430654	-0.58528378
<i>e</i>	0.2059641	<i>i</i>	8.42174	+0.43371765	-0.17961298
<i>P</i>	4.04	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1995 05 01	691	0.0	0.0	1997 11 03	704	0.3-	0.3-	1999 05 17	704	0.6-	1.2+
1995 05 01	691	0.0	0.3-	1997 11 03	704	0.1+	0.1+	1999 05 17	704	0.6+	0.0
1995 05 01	691	0.0	0.2-	1999 04 10	699	0.0	0.6+	1999 05 17	704	0.1-	0.7-
1995 05 04	691	0.0	0.2+	1999 04 10	699	0.9+	0.4-	1999 05 17	704	1.1+	0.5-
1995 05 04	691	0.5+	0.0	1999 04 10	699	1.0+	0.2-	1999 05 17	704	0.1+	0.1+
1995 05 04	691	0.1-	0.3-	1999 04 12	704	0.5+	0.4-	1999 05 18	704	0.9+	0.4+
1995 05 09	691	0.1-	0.2+	1999 04 12	704	0.0	1.1+	1999 05 18	704	1.0+	1.0+
1995 05 09	691	0.2-	0.2-	1999 04 12	704	0.1-	1.1-	1999 05 18	704	0.3+	0.4+
1995 05 09	691	0.3-	0.1-	1999 04 12	704	0.2-	0.1-	1999 05 18	704	0.0	0.1-
1997 10 22	704	0.2-	0.1+	1999 04 12	704	1.7-	0.3+	1999 05 18	704	1.7-	0.7-
1997 10 22	704	0.6+	0.1-	1999 05 12	704	0.4+	1.1+	1999 05 19	704	0.3+	0.3-
1997 10 22	704	0.4+	0.5+	1999 05 12	704	0.6+	0.9+	1999 05 19	704	0.2+	0.9+
1997 10 22	704	0.8-	0.2+	1999 05 12	704	0.7+	0.4+	1999 05 19	704	0.2-	0.4-

1997 11 03	704	0.5-	0.1+	1999 05 12	704	1.2-	0.7-	1999 05 19	704	0.6-	1.1-
1997 11 03	704	0.6+	0.5-	1999 05 12	704	1.0-	1.0-	1999 05 19	704	0.9-	0.0

1995 KJ = 1999 JN₄₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	1.95334		(2000.0)	P	Q
<i>n</i>	0.24643547	ω	94.75621	-0.13682720	+0.99056608
<i>a</i>	2.5196134	Ω	167.37196	-0.92201193	-0.12455984
<i>e</i>	0.1992876	<i>i</i>	1.98187	-0.36217721	-0.05712872
<i>P</i>	4.00	<i>H</i>	15.9	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1995 05 26	046	0.8+	0.5+	1995 06 03	046	0.1-	0.7+	1999 05 14	704	1.4+	0.3-
1995 05 26	046	0.0	0.4+	1995 06 03	046	0.7+	0.2+	1999 05 14	704	0.7+	1.9-
1995 05 26	046	0.4+	0.7+	1995 06 03	046	0.0	0.7+	1999 05 14	704	0.8-	0.3-
1995 05 26	046	1.5-	1.9+	1995 06 20	046	0.6+	0.8-	1999 05 14	704	0.3-	0.4-
1995 05 26	046	1.9-	0.5-	1995 06 20	046	0.2+	0.2+	1999 05 17	703	0.1-	0.5+
1995 05 26	046	0.1-	0.4+	1995 06 20	046	0.1+	0.7-	1999 05 17	703	(0.5+	2.1+)
1995 05 26	046	(2.8+	0.5+)	1995 07 16	046	(27.8+	13.3-)	1999 05 17	703	0.7+	1.0+
1995 05 27	046	0.8-	0.4-	1995 07 16	046	(27.1+	12.7-)	1999 05 17	703	0.6+	0.9+
1995 05 27	046	0.2-	0.3-	1999 04 19	699	0.2-	0.1-	1999 05 18	704	0.3+	0.1-
1995 05 27	046	0.3-	0.0	1999 04 19	699	0.7+	0.5+	1999 05 18	704	0.1+	1.1-
1995 05 27	046	0.3+	0.2-	1999 04 19	699	0.2-	0.5-	1999 05 18	704	0.9-	0.1+
1995 05 27	046	0.1+	0.5-	1999 05 10	704	0.2-	0.2-	1999 05 18	704	0.0	1.0+
1995 05 28	046	0.2+	0.1-	1999 05 10	704	0.7+	1.4+	1999 05 18	704	0.2+	0.4-
1995 05 28	046	0.2+	0.6-	1999 05 10	704	1.3-	1.4-	1999 06 03	046	0.3-	0.7+
1995 05 28	046	0.1+	0.9-	1999 05 10	704	0.5-	0.3+	1999 06 03	046	0.7+	0.8+
1995 05 28	046	0.6+	0.3+	1999 05 10	704	(3.0+	0.4+)	1999 06 03	046	0.5+	0.9+
1995 06 01	691	(3.4+	1.2-)	1999 05 13	704	0.3-	0.9-	1999 06 14	704	0.4+	0.0
1995 06 01	691	(3.9+	0.1+)	1999 05 13	704	0.2-	0.7-	1999 06 14	704	0.5-	0.3-
1995 06 01	691	1.7+	0.6+	1999 05 13	704	(3.0+	0.3+)	1999 06 14	704	0.2-	0.1+
1995 06 02	046	0.4+	0.3+	1999 05 13	704	1.6+	1.2+	1999 06 14	704	0.5-	0.7-
1995 06 02	046	0.6-	0.6-	1999 05 13	704	0.4-	0.1-	1999 06 14	704	1.2-	0.3-
1995 06 03	046	0.3-	0.5-	1999 05 14	704	0.8-	0.4-				

1995 MA₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	317.43784		(2000.0)	P	Q
<i>n</i>	0.23348837	ω	265.91797	+0.89445079	+0.10137435
<i>a</i>	2.6119160	Ω	87.85400	+0.07681539	+0.92465236
<i>e</i>	0.5866071	<i>i</i>	25.83809	-0.44051922	+0.36707117
<i>P</i>	4.22	<i>H</i>	17.7	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1991 12 30	691	0.0	0.5-	1995 07 04	691	0.1-	0.2-	1995 09 29	413	0.6-	0.5-
1991 12 30	691	0.2-	0.4+	1995 07 04	691	0.2-	0.1-	1995 09 29	413	0.9-	0.4-
1991 12 30	691	0.1+	0.3-	1995 07 04	691	0.2+	0.3-	1995 12 08	413	1.1+	0.2-
1995 06 29	691	0.5+	0.6+	1995 07 06	413	0.2+	0.4+	1996 01 09	413	0.4-	1.5+
1995 06 29	691	0.5+	0.5+	1995 07 06	413	0.1+	0.1+	1996 01 09	413	0.5-	1.0+
1995 06 30	691	0.2-	0.3-	1995 07 19	691	0.4+	0.1+	1996 01 09	413	0.8-	0.7+
1995 06 30	691	0.1-	0.5-	1995 07 19	691	0.7+	0.5+	1996 01 10	413	0.5-	0.8+
1995 06 30	691	0.1+	0.4-	1995 07 19	691	0.2+	0.6-	1996 01 10	413	0.5-	0.6+
1995 07 01	691	0.2-	0.4-	1995 07 20	413	0.0	0.2+	1996 01 10	413	1.2-	0.8+
1995 07 01	691	0.0	0.4-	1995 07 20	413	0.3+	0.1+	1999 05 15	693	0.1-	1.3+
1995 07 01	691	0.2+	0.3-	1995 09 07	413	0.3-	0.7+	1999 05 22	693	0.1+	0.4+
1995 07 01	691	0.5+	0.1+	1995 09 07	413	0.6-	0.1+	1999 05 22	693	0.3+	0.7+
1995 07 01	691	0.1+	0.1+	1995 09 07	413	0.7-	0.5+	1999 05 22	693	0.1+	0.7+
1995 07 01	691	0.6+	0.5+	1995 09 12	413	1.1-	0.4+				

1995 OF₃ = 1999 JW₈₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	358.99335	(2000.0)	P		Q	
<i>n</i>	0.21702329	ω	97.76891	-0.14765119	+0.98787801	
<i>a</i>	2.7424064	Ω	163.50640	-0.96088133	-0.13180059	
<i>e</i>	0.1441171	<i>i</i>	9.71694	-0.23432071	-0.08200998	
<i>P</i>	4.54	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1995 07 22	691	0.0	0.2+	1999 05 12	704	0.5+	0.2-	1999 06 08	704	0.5+	0.0
1995 07 22	691	0.0	0.1+	1999 05 12	704	0.3+	0.3+	1999 06 08	704	0.3-	0.4-
1995 07 30	691	0.9-	0.3-	1999 05 15	704	0.8+	1.9+	1999 06 08	704	0.2-	0.9+
1995 07 30	691	0.1-	0.4-	1999 05 15	704	1.3-	1.7+	1999 06 11	703	1.7-	1.1+
1995 07 30	691	0.5-	0.6-	1999 05 15	704	0.3-	0.5-	1999 06 11	703	0.2-	0.8+
1995 08 16	966	(0.7-	3.3-)	1999 05 15	704	0.3-	0.0	1999 06 11	703	0.8-	0.7+
1995 08 16	966	0.2+	0.0	1999 05 17	704	0.3+	1.1-	1999 06 11	703	1.4-	0.2+
1995 08 17	966	0.3+	0.9+	1999 05 17	704	0.6-	0.5-	1999 06 14	704	1.3+	0.7-
1995 08 17	966	0.3+	0.4+	1999 05 17	704	1.1+	0.3+	1999 06 14	704	0.7+	1.0-
1995 08 17	966	0.7+	0.4-	1999 05 17	704	0.2+	1.8-	1999 06 14	704	0.7+	0.1-
1999 05 12	704	0.1-	0.5-	1999 05 17	704	0.1+	0.8-	1999 06 14	704	0.3+	1.2-
1999 05 12	704	0.2-	0.2-	1999 06 08	704	0.3+	1.8+				
1999 05 12	704	0.4-	0.0	1999 06 08	704	0.5+	0.5-				

1995 QX₃ = 1999 JS₅₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	350.69826	(2000.0)	P		Q	
<i>n</i>	0.19194604	ω	64.77753	-0.11578705	+0.99193808	
<i>a</i>	2.9763451	Ω	198.78965	-0.95913320	-0.12513367	
<i>e</i>	0.0368031	<i>i</i>	9.20050	-0.25817991	+0.02001038	
<i>P</i>	5.13	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1995 08 28	358	(1.6-	2.6-)	1999 05 10	704	1.0-	0.7-	1999 05 18	704	0.1-	0.7+
1995 08 28	358	(2.6+	0.2-)	1999 05 10	704	0.0	0.0	1999 06 05	703	0.4-	0.6+
1995 08 29	358	(3.0+	1.5-)	1999 05 13	704	0.6+	0.7-	1999 06 05	703	0.3+	0.4+
1995 08 29	358	0.5+	0.0	1999 05 13	704	0.1-	1.4-	1999 06 05	703	0.2-	0.5+
1995 09 01	358	0.9-	0.2-	1999 05 13	704	0.1-	0.4-	1999 06 05	703	0.5+	0.9-
1995 09 01	358	(2.9+	0.6-)	1999 05 13	704	0.4+	0.7+	1999 06 08	704	0.2-	0.7+
1995 09 03	358	0.9-	0.4+	1999 05 13	704	0.1+	1.2+	1999 06 08	704	0.1+	0.3-
1995 09 03	358	0.6-	0.5+	1999 05 14	704	1.2-	0.1+	1999 06 08	704	0.3+	1.2+
1995 09 17	358	1.1+	0.2+	1999 05 14	704	0.6+	0.1-	1999 06 08	704	0.0	0.3-
1995 09 17	358	(3.2+	1.5-)	1999 05 14	704	0.4+	0.7+	1999 06 08	704	0.1-	1.3+
1995 09 20	358	0.8+	1.0-	1999 05 14	704	0.5+	1.0-	1999 06 14	704	0.2-	0.5+
1995 09 20	358	(4.7-	0.9-)	1999 05 18	704	0.5+	0.2+	1999 06 14	704	0.6+	0.2-
1999 05 10	704	0.2-	0.6+	1999 05 18	704	0.1+	0.6+	1999 06 14	704	0.3-	0.4-
1999 05 10	704	0.7-	0.4-	1999 05 18	704	0.3-	0.1+	1999 06 14	704	0.4+	1.7-
1999 05 10	704	1.1-	1.2-	1999 05 18	704	1.3+	0.6+	1999 06 14	704	0.5-	1.3-

1995 SC

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	294.77614	(2000.0)	P		Q	
<i>n</i>	0.21518347	ω	75.81970	+0.75672361	-0.56994661	
<i>a</i>	2.7580160	Ω	317.55774	+0.24316872	+0.70006105	
<i>e</i>	0.4007062	<i>i</i>	28.32570	+0.60682646	+0.43020389	
<i>P</i>	4.58	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1995 09 20	693	(3.4-	1.4+)	1995 09 29	816	0.1+	0.1-	1995 12 12	608	0.5+	0.9+
1995 09 20	693	(2.1-	1.0-)	1995 09 29	816	0.2+	0.1+	1995 12 12	608	0.5+	0.7+
1995 09 21	693	0.1-	0.8-	1995 09 30	816	0.1+	0.0	1995 12 13	608	0.1+	0.7+
1995 09 21	693	1.1-	0.3-	1995 09 30	816	0.1+	0.0	1995 12 13	608	0.2+	0.6+
1995 09 24	816	0.1+	0.2+	1995 09 30	816	0.2+	0.0	1997 03 24	693	0.8-	0.5-
1995 09 24	816	0.3+	0.1-	1995 10 04	608	1.2+	0.9-	1997 03 24	693	0.6-	0.5-
1995 09 24	816	0.1-	0.0	1995 10 05	608	0.1-	0.3-	1999 05 16	426	0.0	0.4-
1995 09 24	816	0.1-	0.0	1995 10 05	608	0.3+	0.1+	1999 05 16	426	0.2-	0.5-

1995 09 25	816	0.1+	0.1+	1995 10 24	816	0.6+	0.5-	1999 05 17	426	0.7+	0.1+
1995 09 25	816	0.2+	0.2+	1995 10 24	816	0.5+	0.2-	1999 05 17	426	0.3+	0.5+
1995 09 25	816	0.0	0.2+	1995 10 24	816	0.7+	0.1-	1999 05 17	426	0.5-	0.3+
1995 09 25	816	0.1-	0.4+	1995 10 31	658	1.0-	0.5-	1999 05 17	426	0.3-	0.0
1995 09 29	816	0.1-	0.1+	1995 10 31	658	1.0-	0.4-				
1995 09 29	816	0.1+	0.1+	1995 10 31	658	0.9-	0.5-				

1995 SR = 1999 LA₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	10.82544	(2000.0)	P		Q	
<i>n</i>	0.23664934	ω	70.69844	+0.25019618	+0.92944026	
<i>a</i>	2.5886054	Ω	217.39210	-0.96736973	+0.25154002	
<i>e</i>	0.3098558	<i>i</i>	26.52390	+0.03997089	+0.26994152	
<i>P</i>	4.16	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1995 08 26	693	0.7-	1.6-	1995 09 24	816	0.0	0.8-	1999 06 11	704	0.1-	0.3-
1995 08 26	693	(4.6-	3.2-)	1995 09 30	816	0.5-	0.2+	1999 06 11	704	0.1-	0.4+
1995 09 19	693	1.1-	0.8-	1995 09 30	816	0.4-	0.2+	1999 06 11	704	0.1+	0.2+
1995 09 20	693	0.5+	0.0	1995 09 30	816	0.3-	0.2+	1999 06 11	704	0.0	0.4+
1995 09 20	693	0.6+	0.4-	1995 10 05	608	0.1-	0.3+	1999 06 11	704	0.2-	0.5+
1995 09 21	657	0.1+	0.6+	1995 10 05	608	0.1-	0.3+	1999 06 12	704	0.1+	0.1+
1995 09 21	657	0.2+	0.0	1995 10 06	608	0.4+	0.7+	1999 06 12	704	0.1+	0.2-
1995 09 21	657	0.2+	1.3+	1995 10 06	608	0.5+	0.9+	1999 06 12	704	0.3-	0.3-
1995 09 24	816	0.1+	0.8-	1995 12 13	608	0.7+	0.5+	1999 06 12	704	0.1+	0.0
1995 09 24	816	0.1-	0.8-	1995 12 13	608	0.6+	0.2+	1999 06 12	704	0.2+	0.0

1995 SR₁₃ = 1998 KM₁₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	120.46567	(2000.0)	P		Q	
<i>n</i>	0.25310806	ω	226.78854	-0.73779225	+0.67502118	
<i>a</i>	2.4751341	Ω	355.66408	-0.60724886	-0.66564623	
<i>e</i>	0.1255083	<i>i</i>	2.27494	-0.29480744	-0.31821613	
<i>P</i>	3.89	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1995 09 18	691	0.2-	0.3+	1995 09 28	327	0.5+	0.4+	1998 05 22	704	0.7+	1.1-
1995 09 18	691	0.0	0.3+	1998 05 01	704	0.6+	0.6+	1998 05 22	704	1.1-	0.2-
1995 09 18	691	0.0	0.2+	1998 05 01	704	0.7+	1.8-	1998 05 23	704	1.0-	1.3+
1995 09 23	691	0.2+	0.3-	1998 05 01	704	0.2+	0.2+	1998 05 23	704	0.5-	1.0+
1995 09 23	691	0.1+	0.2+	1998 05 01	704	1.2-	0.7+	1998 05 23	704	0.1+	1.6-
1995 09 23	691	1.1+	0.4+	1998 05 01	704	0.4-	0.8-	1998 05 23	704	0.7+	0.7-
1995 09 28	327	1.1-	1.0-	1998 05 22	704	0.1-	0.9+	1998 05 24	704	0.8+	0.1+
1995 09 28	327	0.5-	0.6-	1998 05 22	704	0.6-	0.2+	1998 05 24	704	0.9+	0.9+

1995 SC₂₈ = 1999 JD₆₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	310.50719	(2000.0)	P		Q	
<i>n</i>	0.21284756	ω	92.17089	+0.82359046	+0.55163823	
<i>a</i>	2.7781579	Ω	234.37765	-0.56316039	+0.76768058	
<i>e</i>	0.0961935	<i>i</i>	9.33735	-0.06744728	+0.32613155	
<i>P</i>	4.63	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1995 09 20	691	0.1-	0.0	1999 05 10	704	0.1-	0.8+	1999 06 09	704	0.8-	0.9-
1995 09 20	691	0.2-	0.0	1999 05 10	704	0.3-	1.1-	1999 06 09	704	0.3+	1.5+
1995 09 20	691	0.1-	0.0	1999 05 10	704	0.6-	1.5-	1999 06 09	704	0.1+	0.2-
1995 09 24	691	0.2+	0.1+	1999 05 10	704	0.0	1.1+	1999 06 15	704	0.2+	0.3-
1995 09 24	691	0.0	0.0	1999 05 13	704	0.1-	1.1+	1999 06 15	704	0.7+	0.1-
1995 09 24	691	0.0	0.1-	1999 05 13	704	0.6+	0.5-	1999 06 15	704	0.5+	0.5-
1995 09 29	691	0.1-	0.0	1999 05 13	704	0.2+	0.1+	1999 06 15	704	0.5-	0.3-
1995 09 29	691	0.1+	0.1+	1999 06 09	704	0.1-	0.8+	1999 06 15	704	0.2-	0.2+
1995 09 29	691	0.2+	0.1-	1999 06 09	704	0.1-	0.2-				

1995 SZ₄₃ = 1999 GM₂₁
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 348.69484 (2000.0)			P			Q		
<i>n</i>	0.17590410	ω	54.87424	−0.24446640	+0.96704574			
<i>a</i>	3.1546565	Ω	201.31478	−0.94110220	−0.25429773			
<i>e</i>	0.1813128	<i>i</i>	11.28390	−0.23358685	+0.01245774			
<i>P</i>	5.60	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	4	

Residuals in seconds of arc

1995 09 25	691	0.2+	0.4+	1999 04 12	704	0.2−	1.7−	1999 05 13	704	0.6−	0.2+
1995 09 25	691	0.3+	0.3+	1999 04 12	704	0.8+	0.2−	1999 05 13	704	0.7+	0.9+
1995 09 25	691	0.3+	0.5+	1999 04 15	704	(2.3+	0.0)	1999 05 13	704	0.4−	0.4−
1995 09 30	691	0.4+	0.5+	1999 04 15	704	0.5+	0.9+	1999 05 13	704	0.7+	0.7−
1995 09 30	691	0.2+	0.4+	1999 04 15	704	1.8−	0.2+	1999 05 17	704	0.7+	0.1−
1995 09 30	691	0.3+	0.4+	1999 04 15	704	0.2−	1.5−	1999 05 17	704	1.9+	1.5+
1995 10 20	010	0.8−	0.5−	1999 04 15	704	0.3−	0.1−	1999 05 17	704	(3.0+	1.8+)
1995 10 20	010	0.1−	1.5−	1999 04 16	704	0.4+	0.7−	1999 05 17	704	0.3−	0.3+
1995 10 20	010	0.6−	0.8−	1999 04 16	704	0.2−	0.5−	1999 05 17	704	0.8+	0.9+
1995 10 23	010	(1.6+	3.2+)	1999 04 16	704	1.5−	0.2−	1999 05 18	704	0.7+	0.2−
1995 10 23	010	(0.2+	3.4+)	1999 04 16	704	0.6+	0.3−	1999 05 18	704	0.5−	1.4−
1995 10 23	010	(1.0+	2.8+)	1999 04 16	704	1.0−	0.1+	1999 05 18	704	0.4+	0.2−
1999 04 11	699	0.3+	0.1+	1999 05 12	704	0.4−	1.9+	1999 05 18	704	0.4−	1.5−
1999 04 11	699	0.3+	0.3+	1999 05 12	704	1.1−	0.5+	1999 05 18	704	0.4+	0.8+
1999 04 11	699	0.8−	0.3+	1999 05 12	704	0.1+	0.7+	1999 05 19	704	0.5+	1.5−
1999 04 12	704	0.3−	0.2+	1999 05 12	704	0.8+	0.8+	1999 05 19	704	0.5−	1.9−
1999 04 12	704	0.2−	1.3+	1999 05 12	704	0.4−	0.5+	1999 05 19	704	0.8+	1.0−
1999 04 12	704	0.0	1.4+	1999 05 13	704	0.0	0.1−	1999 05 19	704	(2.3+	1.3−)

1995 TR = 1991 RB₃₅
Id. A. Gnädig, M. E. Sansaturio
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 88.18644 (2000.0)			P			Q		
<i>n</i>	0.26843287	ω	84.39438	+0.54795245	+0.83433978			
<i>a</i>	2.3800107	Ω	219.02917	−0.80035198	+0.50197475			
<i>e</i>	0.1155913	<i>i</i>	5.48669	−0.24327932	+0.22781238			
<i>P</i>	3.67	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	2	

Residuals in seconds of arc

1983 05 12	413	0.7−	0.4−	1995 10 14	411	0.1−	0.8−	1995 10 27	399	0.3+	0.0
1983 05 12	413	0.6+	0.3+	1995 10 17	411	0.0	0.2+	1995 10 28	399	1.5−	0.2+
1991 09 12	675	0.1−	1.2+	1995 10 17	411	0.8−	0.5−	1995 10 28	399	(2.3−	0.7−)
1991 09 12	675	0.2−	0.4−	1995 10 21	411	0.8+	0.3+	1998 07 21	704	0.2−	0.5+
1995 10 02	411	0.4+	0.8+	1995 10 21	411	0.1+	0.1−	1998 07 21	704	0.8−	0.9+
1995 10 02	411	0.8+	0.4−	1995 10 25	033	0.8+	0.6+	1998 07 21	704	(1.0−	2.7−)
1995 10 14	411	0.2+	0.1+	1995 10 25	033	0.3+	0.8+	1998 07 21	704	1.0+	2.0−
1995 10 14	411	0.3−	0.9−	1995 10 27	399	0.6−	1.1−				

1995 UN₅ = 1999 JM₁₀₆
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 334.54947 (2000.0)			P			Q		
<i>n</i>	0.17589064	ω	37.15475	+0.17740876	+0.97322347			
<i>a</i>	3.1548174	Ω	243.48695	−0.93762115	+0.12202963			
<i>e</i>	0.1894601	<i>i</i>	9.40057	−0.29898613	+0.19479437			
<i>P</i>	5.60	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4	

Residuals in seconds of arc

1995 10 20	552	0.5+	0.8−	1995 11 18	552	0.6+	0.7−	1999 05 18	704	0.8+	0.7−
1995 10 20	552	0.3−	0.2−	1999 05 10	704	0.8+	0.1−	1999 05 18	704	1.0+	0.1+
1995 10 20	552	0.5−	0.1+	1999 05 10	704	0.7+	0.3+	1999 05 18	704	0.5+	0.4−
1995 10 25	552	0.2−	0.4+	1999 05 10	704	0.3−	1.2+	1999 05 18	704	0.8−	0.5−
1995 10 25	552	0.7−	0.6+	1999 05 10	704	0.3−	0.5+	1999 05 18	704	0.2+	1.2+
1995 10 25	552	0.2+	0.3−	1999 05 10	704	(3.5−	2.6+)	1999 06 04	552	0.2+	0.4−
1995 10 26	552	1.0+	0.8+	1999 05 13	704	1.5−	0.8−	1999 06 04	552	1.1−	0.8+
1995 10 26	552	0.3+	0.5+	1999 05 13	704	1.5−	0.0	1999 06 05	552	0.6−	0.2−

1995 10 26 552 0.6− 0.5− 1999 05 13 704 1.8+ 0.6− 1999 06 05 552 1.4+ 0.1+
1995 11 18 552 0.3− 0.1− 1999 05 13 704 1.3− 0.9−

1995 WG₂ = 1992 AA₅
Id. A. Gnädig, M. E. Sansaturio
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 244.57643 (2000.0)			P			Q		
<i>n</i>	0.22614619	ω	257.82927	−0.80849183	−0.56303018			
<i>a</i>	2.6681477	Ω	247.67098	+0.58577179	−0.74186566			
<i>e</i>	0.1092709	<i>i</i>	10.67091	+0.05667778	−0.36418725			
<i>P</i>	4.36	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	3	

Residuals in seconds of arc

1985 09 07	413	0.9−	0.3−	1995 11 17	327	0.9+	0.0	1995 11 25	399	1.2−	0.4−
1985 09 07	413	0.7+	0.8+	1995 11 18	399	0.8+	1.5+	1995 11 26	411	0.7−	0.3+
1990 08 20	675	0.9−	0.1+	1995 11 18	399	0.5+	0.8+	1995 11 26	411	0.5+	0.4−
1990 08 20	675	1.0+	0.4−	1995 11 18	411	0.3+	0.0	1995 12 09	411	0.5+	1.0−
1992 01 03	033	0.3+	0.0	1995 11 18	411	0.2−	0.2−	1995 12 10	411	0.2−	0.8+
1992 01 03	033	0.1−	0.4+	1995 11 20	411	0.0	1.0−	1995 12 10	411	0.7−	0.7−
1995 11 17	327	0.9+	0.3−	1995 11 20	411	0.8−	0.0	1995 12 21	411	0.2−	0.0
1995 11 17	327	1.3+	0.0	1995 11 25	399	1.9−	0.5+	1995 12 21	411	0.3+	0.1+

1995 YJ₄ = 1999 LW₁₅
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 237.00463 (2000.0)			P			Q		
<i>n</i>	0.17637191	ω	282.27268	+0.50916859	−0.79709813			
<i>a</i>	3.1490758	Ω	132.11732	+0.85538081	+0.51040419			
<i>e</i>	0.2976122	<i>i</i>	25.95308	−0.09524191	+0.32267961			
<i>P</i>	5.59	<i>H</i>	12.0	<i>G</i>	0.15	<i>U</i>	3	

Residuals in seconds of arc

1995 12 28	413	0.8+	0.4+	1998 04 28	704	0.3+	0.0	1999 06 12	704	0.3+	0.3−
1995 12 28	413	0.3+	0.8−	1998 04 28	704	0.3+	0.6−	1999 06 12	704	0.7−	0.1−
1996 01 03	413	0.0	0.5−	1998 04 28	704	0.0	0.5−	1999 06 12	704	0.4+	0.5+
1996 01 03	413	0.0	0.4−	1998 04 28	704	(4.3−	1.8−)	1999 06 14	704	0.3−	0.5+
1996 01 03	413	0.3−	0.2−	1998 05 27	704	1.1−	0.2+	1999 06 14	704	0.3−	0.5−
1996 01 09	413	0.5+	0.0	1998 05 27	704	1.0+	0.8−	1999 06 14	704	0.2+	0.3−
1996 01 09	413	0.6+	0.0	1998 05 27	704	(2.4+	1.2+)	1999 06 14	704	0.0	0.4−
1996 01 27	413	1.0−	0.3+	1998 05 27	704	0.4−	1.5+	1999 06 14	704	0.4+	0.1−
1996 01 27	413	1.0−	0.3+	1999 06 12	704	0.3−	0.2+				
1998 04 28	704	0.4−	0.3−	1999 06 12	704	0.1+	0.2+				

1996 AW = 1998 QH₃₂
Id. T. Kobayashi (*MPC* 32672); 1996 AW = 1951 AA₁ (*ibid.*) is invalid
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 345.48058 (2000.0)			P			Q		
<i>n</i>	0.24131271	ω	341.21949	+0.14432454	−0.98855926			
<i>a</i>	2.5551471	Ω	100.46412	+0.91348874	+0.11607533			
<i>e</i>	0.0829205	<i>i</i>	2.55456	+0.38040603	+0.09631774			
<i>P</i>	4.08	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	5	

Residuals in seconds of arc

1995 11 18	327	0.4+	0.9−	1996 01 18	411	1.0+	0.5+	1998 08 23	704	0.2−	0.7−
1995 11 18	327	0.1+	0.3−	1998 08 17	704	0.7+	0.9+	1998 08 23	699	0.5+	0.1−
1995 11 18	327	0.5−	0.7−	1998 08 17	704	1.2+	0.6+	1998 08 23	704	3.0−	0.7−
1996 01 11	411	1.0−	1.1+	1998 08 17	704	0.1−	1.1−	1998 08 23	699	0.9+	1.2+
1996 01 11	411	0.0	0.5+	1998 08 17	704	1.6+	1.4−	1998 09 21	699	0.5−	1.1+
1996 01 13	411	0.8+	0.1+	1998 08 17	704	1.3−	0.1+	1998 09 21	699	0.3−	1.3−
1996 01 13	411	0.7−	0.4+	1998 08 23	699	0.1+	2.2+	1998 09 21	699	1.0+	0.4+
1996 01 18	411	0.0	0.7−	1998 08 23	704	0.9−	0.7−				

1996 BM = 1987 DS₃
Id. A. Gnädig, S. Nakano, M. E. Sansaturio

1999 JUNE 22

M.P.C. 34861

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams					
<i>M</i>	282.43065		(2000.0)		P			Q			
<i>n</i>	0.21697228		ω	174.13646	−0.61395456		−0.78858548				
<i>a</i>	2.7428362		Ω	313.73341	+0.72225040		−0.54358092				
<i>e</i>	0.1279560		<i>i</i>	2.73958	+0.31845590		−0.28749387				
<i>P</i>	4.54		<i>H</i>	14.4	<i>G</i>	0.15		<i>U</i>	2		
Residuals in seconds of arc											
1953 10 01	675	2.3−	2.0−	1993 07 23	809	1.3+	0.8+	1996 02 12	411	0.9−	0.3+
1953 10 01	675	0.5−	1.5−	1993 07 23	809	1.4+	0.4−	1996 02 12	411	0.4+	0.4−
1954 12 22	675	1.6+	0.2−	1993 07 23	809	(2.8+ 0.5+)		1996 02 19	411	0.4+	0.1+
1954 12 22	675	0.9+	0.3+	1996 01 16	411	1.5−	0.3+	1996 02 19	411	1.4−	0.8−
1983 05 10	413	1.8−	0.3−	1996 01 16	411	0.2+	1.1−	1998 08 17	704	1.7+	1.6+
1983 05 10	413	0.7−	0.5+	1996 01 18	411	0.4−	0.3+	1998 08 17	704	0.6−	2.0+
1987 02 23	010	0.3+	0.4−	1996 01 18	411	0.6+	0.0	1998 08 17	704	(0.0 2.6+)	
1987 02 23	010	1.5+	0.8+	1996 01 27	411	0.2−	0.7+	1998 08 17	704	0.4+	0.5−
1987 02 23	010	1.3+	1.0+	1996 01 27	411	0.5−	0.0	1998 08 17	704	1.0−	0.1−

1996 BV ₁											
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
				Williams							
<i>M</i>	275.89204	(2000.0)		P		Q					
<i>n</i>	0.21382569	<i>ω</i>	158.94346	−0.73236228		−0.67818617					
<i>a</i>	2.7696792	<i>Ω</i>	337.99095	+0.59920074		−0.59940765					
<i>e</i>	0.2734580	<i>i</i>	9.35270	+0.32342537		−0.42517525					
<i>P</i>	4.61	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	2				
Residuals in seconds of arc											
1989 09 24	413	2.0−	0.5−	1996 01 30	411	0.1+	0.1−	1996 03 19	566	0.5−	0.4+
1989 09 24	413	1.9+	0.5+	1996 01 30	411	0.3+	0.4−	1996 03 19	566	0.6−	0.3+
1992 03 31	413	0.7+	0.5+	1996 02 12	411	0.5+	0.1−	1996 03 22	566	0.2−	0.0
1992 03 31	413	0.5−	0.3+	1996 02 12	411	0.4+	0.1−	1996 03 22	566	0.3−	0.1−
1994 08 11	675	0.7−	0.0	1996 02 20	411	0.3−	0.3−	1996 03 22	566	0.2−	0.1−
1994 08 11	675	0.1−	1.2+	1996 02 20	411	0.1−	0.1+	1998 10 14	910	0.1+	0.1+
1996 01 23	411	0.1+	0.0	1996 03 15	566	0.5+	0.1+	1998 10 14	910	0.3−	0.1−
1996 01 23	411	0.2+	0.3+	1996 03 15	566	0.4+	0.1+	1998 10 14	910	0.2+	0.1+
1996 01 24	411	0.2+	0.1+	1996 03 15	566	0.2+	0.1+				
1996 01 24	411	0.0	0.1+	1996 03 19	566	0.7−	0.3+				

1996 CE ₅ = 1998 QC ₂₇											
Id. A. Doppler											
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
					Williams						
<i>M</i>	7.73779		(2000.0)		P		Q				
<i>n</i>	0.23918038	ω	109.77714		+0.38508648		−0.88450733				
<i>a</i>	2.5703111	Ω	314.59063		+0.64580040		+0.46211956				
<i>e</i>	0.1181159	<i>i</i>	21.70363		+0.65928010		+0.06397102				
<i>P</i>	4.12	<i>H</i>	14.8	<i>G</i>	0.15		<i>U</i>	4			
Residuals in seconds of arc											
1996 01 18	327	0.1+	0.3+	1996 02 17	691	1.0+	0.1−	1998 08 27	704	0.9−	0.8−
1996 01 18	327	0.3+	0.1+	1996 02 17	691	0.7+	0.0	1998 08 27	704	0.2+	0.5+
1996 01 18	327	0.2+	0.4−	1998 08 24	704	0.6+	0.1−	1998 08 27	704	1.0+	0.3−
1996 02 10	691	1.1−	0.2+	1998 08 24	704	0.3+	0.9−	1998 08 27	704	0.2+	0.2+
1996 02 10	691	1.0−	0.1+	1998 08 24	704	0.1−	0.2+	1998 08 27	704	0.2+	0.8+
1996 02 10	691	0.9−	0.1+	1998 08 24	704	0.4−	1.0+				
1996 02 17	691	0.8+	0.3−	1998 08 24	704	1.0−	0.6−				

1996 DB = 1991 KH
Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams					
<i>M</i>	181.64930		(2000.0)			P		Q			
<i>n</i>	0.17726441		ω	246.13674		−0.55830680		+0.82568770			
<i>a</i>	3.1384968		Ω	348.80395		−0.52486983		−0.42698474			
<i>e</i>	0.3274032		<i>i</i>	24.60040		−0.64249916		−0.36867853			
<i>P</i>	5.56		<i>H</i>	13.8	<i>G</i>	0.15		<i>U</i>	1		
Residuals in seconds of arc											
1953 09 16	675	1.3−	1.3+	1996 02 18	411	0.1+	0.0	1996 03 09	411	0.4+	0.3−
1989 12 07	675	0.2+	0.5+	1996 02 18	411	0.1−	0.1−	1996 03 09	411	0.8+	0.6−
1989 12 07	675	(0.4−	3.2−)	1996 02 19	411	0.5+	0.0	1996 03 22	411	0.1−	1.1+
1991 05 16	413	0.3+	0.2−	1996 02 19	411	0.1+	0.7−	1996 03 22	411	0.0	0.5−
1991 05 16	413	0.7−	1.1+	1996 02 23	411	0.5+	0.5−	1997 09 02	566	0.3−	0.3+
1996 02 16	566	0.3−	0.2+	1996 02 23	411	0.6−	0.3+	1997 09 02	566	0.1+	0.4+
1996 02 16	566	0.0	0.2+	1996 02 27	411	0.0	1.0+	1997 09 02	566	0.1−	0.1−
1996 02 16	566	0.1−	0.4+	1996 02 27	411	0.0	0.6+				

1996 EK = 1990 RU ₁₀											
Id. A. Gnädig, S. Nakano, M. E. Sansaturio, E. Bowell (1999 observations)											
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
Williams											
<i>M</i>	342.23931		(2000.0)			P			Q		
<i>n</i>	0.30283691	ω	76.62981			−0.68152345			+0.72870205		
<i>a</i>	2.1961577	Ω	150.05996			−0.71268322			−0.64005928		
<i>e</i>	0.2272794	<i>i</i>	7.74087			−0.16615782			−0.24355172		
<i>P</i>	3.25	<i>H</i>	14.2		<i>G</i>	0.15		<i>U</i>		2	
Residuals in seconds of arc											
1955 11 16	675	1.0−	0.8+	1996 02 28	372	0.0	0.3+	1999 01 18	704	0.0	0.7−
1955 11 16	675	0.8+	0.2+	1996 02 28	372	0.4+	0.8−	1999 01 18	704	0.9−	0.4−
1987 08 23	675	0.7−	0.2−	1996 03 10	399	0.5+	1.7+	1999 01 18	704	0.4−	1.0−
1987 08 23	675	0.2−	0.1+	1996 03 10	399	0.3−	0.6−	1999 01 20	704	0.4−	0.5−
1990 09 14	675	(0.3+	2.1−)	1996 03 12	399	0.5−	0.0	1999 01 20	704	0.2−	0.5+
1990 09 14	675	1.1+	1.2−	1996 03 12	399	0.6−	0.5+	1999 01 20	704	0.4−	0.7+
1995 12 27	691	0.1−	0.2+	1996 03 20	399	0.1+	0.8+	1999 01 20	704	0.5+	0.1+
1995 12 27	691	0.0	0.0	1996 04 13	399	0.2+	0.1−	1999 04 07	704	0.2+	0.1−
1995 12 27	691	0.1−	0.2+	1996 04 13	399	0.1−	0.4+	1999 04 07	704	0.5−	0.1−
1995 12 30	046	0.8+	0.3+	1996 04 14	399	0.6−	0.8−	1999 04 07	704	0.9+	1.0−
1995 12 30	046	1.2+	0.6+	1996 04 14	399	0.8−	1.7−	1999 04 07	704	0.9+	0.8−
1995 12 30	046	1.0+	0.5+	1999 01 10	699	0.7+	0.2−	1999 04 07	704	0.7+	1.6+
1996 01 18	691	0.5−	0.5−	1999 01 10	699	0.1−	0.3−	1999 05 08	704	(0.7+	2.2−)
1996 01 18	691	0.3−	0.3−	1999 01 10	699	0.0	0.6−	1999 05 08	704	0.2+	0.2+
1996 01 18	691	0.5−	0.5−	1999 01 18	704	0.4−	0.7−	1999 05 08	704	1.1−	1.5+
1996 02 27	372	1.1+	0.3+	1999 01 18	704	0.7+	0.1−	1999 05 08	704	0.9−	0.8+

1996 EA ₂												
Id. K. J. Lawrence (1993 observations)												
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5												
<i>M</i> 288.44289 (2000.0)				P				Q				
<i>n</i>	0.29379574			ω	99.03851			+0.20143430		+0.97948889		
<i>a</i>	2.2409855			Ω	182.59877			−0.93688775		+0.19115724		
<i>e</i>	0.2444153			<i>i</i>	6.42319			−0.28577187		+0.06372138		
<i>P</i>	3.35			<i>H</i>	15.7			<i>G</i>	0.15		<i>U</i>	3
Residuals in seconds of arc												
1993 06 21	675	0.6+	0.9−	1996 03 15	566	0.4−	0.3−	1996 03 23	566	0.0	0.1+	
1993 06 21	675	0.5+	0.7−	1996 03 15	566	0.0	0.3+	1996 03 26	566	0.4−	0.6+	
1993 06 24	675	0.7−	0.9+	1996 03 15	566	0.7+	0.5−	1996 03 26	566	0.1−	0.0	
1993 06 24	675	0.5−	0.0	1996 03 19	566	0.5−	0.2−	1996 03 26	566	0.3−	0.3+	
1993 06 24	675	0.1+	0.7+	1996 03 19	566	0.2−	0.6−	1997 11 06	704	0.9−	0.7−	
1996 03 15	566	0.2+	0.4+	1996 03 19	566	0.1+	0.0	1997 11 06	704	1.7+	1.5+	
1996 03 15	566	0.1−	0.3−	1996 03 23	566	0.4+	0.1+	1997 11 06	704	0.2+	0.0	
1996 03 15	566	0.5+	0.2+	1996 03 23	566	0.1+	0.0	1997 11 06	704	1.0−	0.7−	

1996 PA₄ = 1999 GT₂
Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	20.64318	(2000.0)	P		Q	
<i>n</i>	0.27461636	ω	124.87983	-0.67210868	+0.73853988	
<i>a</i>	2.3441485	Ω	102.79794	-0.69590825	-0.60550655	
<i>e</i>	0.1673771	<i>i</i>	3.12653	-0.25294591	-0.29651420	
<i>P</i>	3.59	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>

Residuals in seconds of arc

1995 02 05	691	0.0	0.1-	1999 04 11	699	0.3+	0.1+	1999 05 13	704	0.2+	0.3+
1995 02 05	691	0.3-	1.3-	1999 04 11	699	0.0	0.0	1999 05 15	703	0.7+	0.0
1995 02 05	691	0.4-	0.5-	1999 04 12	704	0.7+	0.4-	1999 05 15	703	0.9+	0.8+
1996 08 09	566	0.2-	1.4-	1999 04 12	704	0.8+	0.0	1999 05 15	703	0.2+	0.2+
1996 08 09	566	0.1-	0.4-	1999 04 12	704	0.9+	0.3-	1999 05 15	703	0.6+	0.4+
1996 08 09	566	0.3+	1.1-	1999 04 12	704	1.1+	0.0	1999 05 17	704	0.0	0.0
1996 08 17	566	0.2+	0.3-	1999 04 12	704	0.5+	0.4-	1999 05 17	704	0.8-	0.3+
1996 08 17	566	0.3+	0.0	1999 04 15	704	0.5+	1.0-	1999 05 17	704	1.0-	0.0
1996 08 17	566	0.2+	0.0	1999 04 15	704	0.4-	0.6-	1999 05 17	704	0.3+	1.1+
1996 08 18	817	0.2+	0.4-	1999 04 15	704	0.4-	0.6+	1999 05 18	704	0.1+	0.1+
1996 08 18	817	0.1+	0.0	1999 04 15	704	1.3-	1.0+	1999 05 18	704	0.5+	0.4+
1996 08 19	817	0.6+	0.7+	1999 04 15	704	0.3-	0.4-	1999 05 18	704	0.8-	0.2-
1996 08 19	817	0.9-	0.2-	1999 04 16	704	1.5+	0.7-	1999 05 18	704	0.6-	1.4-
1996 08 19	817	0.4+	0.1-	1999 04 16	704	0.8+	0.6-	1999 05 18	704	0.1+	0.5-
1996 08 19	566	0.3+	0.7+	1999 04 16	704	1.3+	0.8+	1999 05 19	704	0.5-	0.0
1996 08 19	566	0.4-	0.3+	1999 04 16	704	0.5+	0.2-	1999 05 19	704	0.6-	0.9+
1996 08 19	566	0.1-	0.6+	1999 04 16	704	0.8-	0.5-	1999 05 19	704	0.1+	0.2+
1997 11 29	704	0.5-	0.1+	1999 05 12	704	0.3-	0.3+	1999 05 19	704	0.2-	0.6-
1997 11 29	704	1.0-	1.3+	1999 05 12	704	1.3-	0.1-	1999 05 19	704	1.3-	0.5+
1997 11 29	704	(3.3+	1.5-)	1999 05 12	704	0.3-	0.3-	1999 06 10	704	0.7-	0.8+
1997 11 29	704	0.8+	0.7+	1999 05 12	704	0.3-	0.0	1999 06 10	704	0.5-	0.2+
1999 02 23	704	0.4+	0.6+	1999 05 12	704	0.2+	0.5-	1999 06 10	704	(2.4-	0.1+)
1999 02 23	704	1.1+	0.8-	1999 05 13	704	0.0	0.0	1999 06 10	704	0.8+	1.3+
1999 02 23	704	(1.9+	2.2-)	1999 05 13	704	0.7-	0.6+	1999 06 10	704	0.2+	0.2-
1999 02 23	704	0.5+	1.0-	1999 05 13	704	0.7-	0.0				
1999 04 11	699	0.1-	0.4+	1999 05 13	704	0.6-	0.2+				

1996 PC₄ = 1999 JK₁₀₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	27.52896	(2000.0)	P		Q	
<i>n</i>	0.29196587	ω	102.08271	-0.46390499	+0.88261911	
<i>a</i>	2.2503392	Ω	139.99245	-0.85181527	-0.42085723	
<i>e</i>	0.1435919	<i>i</i>	6.78898	-0.24331647	-0.20943423	
<i>P</i>	3.38	<i>H</i>	15.8	<i>G</i>	0.15	<i>U</i>

Residuals in seconds of arc

1996 08 09	566	0.0	0.1+	1996 09 16	566	0.3+	0.0	1999 05 17	704	0.3+	1.3+
1996 08 09	566	0.2-	0.0	1996 09 17	566	0.4+	0.2+	1999 06 08	704	0.0	0.8-
1996 08 09	566	0.3-	0.1+	1996 09 17	566	0.3+	0.1+	1999 06 08	704	0.1+	0.0
1996 08 17	566	0.3-	0.1-	1996 09 17	566	0.4+	0.1+	1999 06 08	704	0.1+	0.1+
1996 08 17	566	0.9-	0.4-	1999 05 14	704	0.0	1.5+	1999 06 08	704	0.1+	0.5-
1996 08 17	566	0.5-	0.5-	1999 05 14	704	0.9+	0.7-	1999 06 08	704	0.0	0.3-
1996 09 13	566	0.3-	0.4+	1999 05 14	704	0.4+	0.1+	1999 06 14	704	0.2+	0.0
1996 09 13	566	0.0	0.1-	1999 05 17	704	0.0	0.4+	1999 06 14	704	0.5-	0.4-
1996 09 13	566	0.0	0.5+	1999 05 17	704	0.3+	0.7-	1999 06 14	704	0.6-	0.0
1996 09 16	566	0.5+	0.2+	1999 05 17	704	1.2-	0.1+	1999 06 14	704	0.2-	0.5-
1996 09 16	566	0.6+	0.1-	1999 05 17	704	0.0	0.8+	1999 06 14	704	0.0	0.3-

1996 PF₄ = 1999 FG₃₈

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	100.53596	(2000.0)	P		Q	
<i>n</i>	0.17608645	ω	104.83373	+0.14013388	-0.97878496	
<i>a</i>	3.1524782	Ω	335.54525	+0.71127403	+0.20453397	
<i>e</i>	0.1078242	<i>i</i>	21.16597	+0.68880458	-0.01207710	
<i>P</i>	5.60	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>

Residuals in seconds of arc

1996 08 09	608	1.2-	1.1-	1996 09 08	566	0.5+	0.5+	1999 03 20	704	0.5+	1.1-
1996 08 09	608	1.1-	1.0-	1996 09 08	566	0.3+	1.2+	1999 03 23	704	0.9-	1.2-
1996 08 09	566	0.4-	0.4-	1999 02 14	699	1.0+	0.8+	1999 03 23	704	0.4+	1.2-
1996 08 09	566	0.1-	1.0-	1999 02 14	699	0.2+	0.8+	1999 03 23	704	(2.3-	1.0-)
1996 08 09	566	0.4+	0.2-	1999 02 14	699	0.5+	0.6+	1999 03 23	704	1.2-	0.9-
1996 08 17	566	0.1+	1.1+	1999 03 20	704	0.1+	0.3+	1999 03 23	704	0.5-	0.4+
1996 08 17	566	0.1-	0.3+	1999 03 20	704	0.9-	0.4+	1999 04 09	699	0.1-	1.3+
1996 08 17	566	0.1-	0.7+	1999 03 20	704	1.2+	0.4-	1999 04 09	699	0.7-	1.8+
1996 09 08	566	0.6+	0.7+	1999 03 20	704	0.3-	0.5-	1999 04 09	699	1.6+	0.1+

1996 PG₅ = 1999 JZ₅₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	14.33618	(2000.0)	P		Q	
<i>n</i>	0.29452380	ω	62.41133	-0.29369273	+0.95580714	
<i>a</i>	2.2372909	Ω	190.53529	-0.90069295	-0.28136918	
<i>e</i>	0.1260669	<i>i</i>	4.17611	-0.32015120	-0.08522966	
<i>P</i>	3.35	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>

Residuals in seconds of arc

1993 09 18	809	0.5+	0.3-	1996 09 13	552	0.0	0.4+	1999 05 18	704	0.7-	0.5-
1993 09 18	809	0.2-	0.3-	1999 05 10	704	0.6+	0.2-	1999 05 18	704	1.1-	1.0+
1993 09 18	809	0.1+	0.2-	1999 05 10	704	0.5-	0.3+	1999 06 04	552	0.6+	0.7+
1996 08 09	552	0.1-	0.3-	1999 05 10	704	0.5+	0.8+	1999 06 04	552	0.6+	0.4+
1996 08 09	552	0.1-	0.7-	1999 05 10	704	0.4-	0.5+	1999 06 09	704	0.7+	0.4-
1996 08 20	566	0.0	0.3+	1999 05 10	704	0.4-	0.4+	1999 06 09	704	0.4+	0.2-
1996 08 20	566	0.2+	0.3+	1999 05 13	704	0.6-	0.6-	1999 06 09	704	0.3+	0.4+
1996 08 20	566	0.2+	0.1+	1999 05 13	704	0.7-	0.1-	1999 06 09	704	0.3+	0.2+
1996 08 20	552	0.3-	0.5+	1999 05 13	704	(1.8-	3.0-)	1999 06 09	704	0.6-	0.6-
1996 08 20	552	0.6-	0.7+	1999 05 13	704	1.1-	1.4-	1999 06 11	552	0.3+	0.5-
1996 08 23	552	0.0	0.9+	1999 05 14	704	0.2-	1.1-	1999 06 11	552	0.1+	0.3-
1996 08 23	552	0.7+	0.1-	1999 05 14	704	0.3-	0.0	1999 06 14	704	0.2+	0.0
1996 08 23	552	0.3+	0.4-	1999 05 14	704	0.4+	0.3-	1999 06 14	704	0.2+	0.2+
1996 09 07	552	0.3+	0.2-	1999 05 14	704	0.0	0.3+	1999 06 14	704	0.3+	0.2-
1996 09 07	552	0.4-	0.1-	1999 05 14	704	0.6+	0.1-	1999 06 14	704	0.3+	0.1+
1996 09 10	552	0.1+	0.5-	1999 05 18	704	0.2+	0.1-	1999 06 14	704	0.0	0.2+
1996 09 10	552	0.4-	0.6-	1999 05 18	704	0.8+	0.2+				
1996 09 13	552	0.4-	0.0	1999 05 18	704	0.6-	0.2+				

1996 PW₆Id. 1996 PW₆ = 1981 WC₇ (*MPC* 31243) is invalid

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	263.52430	(2000.0)	P		Q	
<i>n</i>	0.25977119	ω	19.03993	+0.99995103	+0.00118439	
<i>a</i>	2.4326263	Ω	340.88423	-0.00523513	+0.90583094	
<i>e</i>	0.1981297	<i>i</i>	1.71928	+0.00839823	+0.42363771	
<i>P</i>	3.79	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>

Residuals in seconds of arc

1996 08 08	905	3.3+	1.1-	1996 10 30	385	1.3+	0.1+	1999 05 10	704	1.3-	0.2-
1996 08 08	905	0.8+	0.8-	1996 10 30	385	1.0+	0.1-	1999 05 15	703	0.4-	0.0
1996 08 18	905	0.9-	0.5+	1996 11 26	327	0.4+	0.1-	1999 05 15	703	0.7+	0.4+
1996 08 18	905	1.6+	0.8-	1996 11 26	327	0.1+	0.1-	1999 05 15	703	1.1+	0.6+
1996 08 22	905	0.1-	0.3-	1996 11 26	327	0.1+	1.6+	1999 05 15	703	0.2+	0.0
1996 08 22	905	0.1-	0.1+	1996 11 26	327	0.1-	1.8-	1999 05 18	704	0.3+	0.8-
1996 09 03	905	0.9-	0.4+	1996 11 30	327	0.1-	0.2+	1999 05 18	704	0.3-	1.2+
1996 09 03	905	0.2+	1.1+	1996 11 30	327	0.1-	1.2+	1999 05 18	704	0.1-	0.0
1996 09 12	385	0.6-	0.2+	1996 11 30	327	0.4-	0.3+	1999 05 18	704	0.6+	1.0+
1996 09 12	385	1.1-	0.3-	1998 01 24	385	1.3-	0.4-	1999 05 18	704	1.6+	1.1+
1996 09 12	385	0.9-	0.1-	1998 01 24	385	0.6-	0.2-	1999 05 19	704	0.6-	1.5-
1996 10 15	385	0.7-	1.3+	1998 01 26	385	2.2+	1.1+	1999 05 19	704	0.9+	0.4-
1996 10 15	385	0.1-	0.4-	1998 01 26	385	0.4-	0.6-	1999 05 19	704	0.8+	0.1+
1996 10 15	385	0.5-	0.3+	1999 05 10	704	0.9-	0.4-	1999 05 19	704	0.5+	2.3+
1996 10 15	385	2.1-	0.4+	1999 05 10	704	1.8-	1.5-				
1996 10 30	385	0.4-	0.5-	1999 05 10	704	0.5-	0.1-				

1996 PS₉ = 1939 UM = 1957 JR = 1981 TZ₃ = 1999 JW₃₁

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	275.54374		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.25819411	ω	137.78588	+0.95791908	+0.28533205
a	2.4425221	Ω	205.68536	-0.27884529	+0.89921736
e	0.0947738	i	4.13479	-0.06809069	+0.33165308
P	3.82	H	13.9	G 0.15	U 1

Residuals in seconds of arc

1939 10 18	062	0.9-	2.8+	1999 04 12	704	1.1-	0.6-	1999 05 13	704	0.0	0.6+
1939 10 20	062	(50.9+	33.1+)	1999 04 12	704	0.7-	0.5-	1999 05 14	704	0.1-	1.2+
1957 05 01	839	(4.0+	1.7-)	1999 04 12	704	0.6-	0.4-	1999 05 14	704	1.2-	0.5-
1981 10 07	095	0.1-	0.5+	1999 04 12	704	1.7-	0.5-	1999 05 14	704	0.9+	0.2+
1996 08 09	358	0.3+	0.4+	1999 04 12	704	(2.3-	0.7-)	1999 05 14	704	0.4+	0.5-
1996 08 09	358	0.3+	0.3-	1999 04 14	699	0.5+	1.3+	1999 05 14	704	0.3+	0.5+
1996 08 11	358	0.8+	0.7+	1999 04 14	699	0.3-	1.1+	1999 05 18	704	0.7+	0.4-
1996 08 11	358	0.8+	0.7+	1999 04 14	699	0.3+	1.0+	1999 05 18	704	0.7+	0.3+
1996 08 18	358	0.5-	0.9-	1999 04 21	691	(0.6+	2.5-)	1999 05 18	704	0.5+	0.2+
1996 08 18	358	0.2+	0.4-	1999 04 21	691	1.0-	0.2-	1999 05 18	704	1.1+	0.1+
1996 08 18	358	0.1-	0.1-	1999 04 21	691	1.5-	0.0	1999 05 18	704	0.8+	0.7-
1996 09 02	358	1.0-	0.7-	1999 05 10	704	0.1+	0.4-	1999 06 07	703	0.1+	0.4+
1996 09 02	358	0.6-	0.3+	1999 05 10	704	0.1+	0.1+	1999 06 07	703	0.5-	0.2+
1998 01 28	566	0.0	0.0	1999 05 10	704	0.6+	0.0	1999 06 07	703	0.2-	0.9+
1998 01 28	566	0.1+	0.0	1999 05 10	704	0.6-	0.6-	1999 06 07	703	1.3-	1.1+
1998 01 28	566	0.1+	0.0	1999 05 10	704	0.2-	0.2-	1999 06 09	704	0.1-	0.7-
1998 04 14	704	0.5-	2.0+	1999 05 13	704	0.4+	0.6-	1999 06 09	704	1.4+	1.6+
1998 04 14	704	(0.1+	2.1+)	1999 05 13	704	0.3+	0.1-	1999 06 09	704	0.2-	0.5+
1998 04 14	704	1.0+	0.3+	1999 05 13	704	1.4+	0.1+	1999 06 09	704	(0.4-	3.8+)
1998 04 14	704	(3.8-	0.4-)	1999 05 13	704	1.2+	1.5-				

1996 QP = 1979 OK₁₆ = 1999 JA₇₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	322.20660		(2000.0)		P		Q
n	0.29101261	ω	157.19030		+0.75904057		+0.64995104
a	2.2552508	Ω	162.11024		-0.61464746		+0.73449365
e	0.1405981	i	7.04892		-0.21462970		+0.19514798
P	3.39	H	15.7	G	0.15	U	3

Residuals in seconds of arc

1979 07 31	095	0.0	0.2+	1999 05 12	704	1.2-	0.2+	1999 06 10	704	0.0	0.1+
1996 05 18	691	0.3-	0.1+	1999 05 12	704	0.5-	0.9+	1999 06 10	704	0.2+	0.4-
1996 05 18	691	0.0	0.1+	1999 05 14	704	0.2-	0.1+	1999 06 10	704	0.3+	0.0
1996 05 18	691	0.2-	0.0	1999 05 14	704	1.0-	0.4-	1999 06 10	704	0.1-	0.1+
1996 08 17	566	0.5+	0.0	1999 05 14	704	(1.5+	2.1+)	1999 06 10	704	0.1-	0.3+
1996 08 17	566	0.4+	0.1+	1999 05 14	704	0.1-	0.7+	1999 06 14	704	0.1+	0.4-
1996 08 17	566	0.5+	0.1+	1999 05 17	704	1.1+	0.8-	1999 06 14	704	0.2-	0.3-
1996 08 20	566	0.7-	0.3-	1999 05 17	704	0.9+	1.0-	1999 06 14	704	0.6+	0.1+
1996 08 20	566	0.7-	0.4-	1999 05 17	704	0.1+	0.5-	1999 06 14	704	0.4+	0.2+
1996 08 20	566	0.2+	0.5-	1999 05 17	704	0.7+	1.1-	1999 06 14	704	0.3+	0.1+
1996 09 14	566	0.6+	0.1+	1999 05 17	704	0.5-	0.1-	1999 06 14	704	0.0	0.2+
1996 09 14	566	0.0	0.2+	1999 06 08	704	0.2-	0.1-	1999 06 14	704	0.1+	0.7+
1996 09 14	566	0.0	0.3-	1999 06 08	704	0.3-	1.1+	1999 06 14	704	0.2+	0.2+
1999 05 12	704	0.5+	0.4-	1999 06 08	704	0.3+	0.8+	1999 06 14	704	0.1-	0.4-
1999 05 12	704	1.1-	1.7-	1999 06 08	704	0.5+	0.6+	1999 06 14	704	0.1+	0.2+
1999 05 12	704	1.8-	1.2-	1999 06 08	704	1.0+	1.8+				

1996 QM₁ = 1999 KD₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	200.87079		(2000.0)		P		Q
<i>n</i>	0.28091326	ω	231.62002		+0.39505050		-0.91813429
<i>a</i>	2.3089856	Ω	195.20107		+0.87547078		+0.38650667
<i>e</i>	0.0978938	<i>i</i>	6.80228		+0.27836311		+0.08741863
<i>P</i>	3.51	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 06 20	691	0.1+	0.3+	1996 08 20	824	0.0	0.2+	1999 05 18	704	0.2-	0.3+
1996 06 20	691	0.0	0.3+	1996 08 20	824	0.0	0.2+	1999 05 19	704	0.0	0.3+
1996 06 20	691	0.1+	0.3+	1996 09 04	824	0.1+	0.0	1999 05 19	704	1.8+	0.7-
1996 08 18	824	0.5-	0.2-	1996 09 04	824	0.2-	0.2+	1999 05 19	704	(0.1+	2.4-)
1996 08 18	824	0.1-	0.2-	1996 09 04	824	0.2+	0.2-	1999 06 14	704	0.2-	0.3+
1996 08 18	824	0.4-	0.1+	1999 05 13	704	1.2-	1.3-	1999 06 14	704	0.1-	0.3+
1996 08 19	824	0.1+	0.5-	1999 05 13	704	1.4+	0.5+	1999 06 14	704	0.1-	0.1-
1996 08 19	824	0.5+	0.4-	1999 05 13	704	(1.8-	3.2+)	1999 06 14	704	0.5-	0.4-
1996 08 19	824	0.2+	0.6-	1999 05 18	704	1.7-	0.4+	1999 06 14	704	0.1+	0.7-
1996 08 20	824	0.3-	0.6+	1999 05 18	704	1.1+	1.1+				
1996 08 20	824	0.2+	0.0	1999 05 18	704	0.5-	0.2-				

1996 QS₁ = 1999 JB₁₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	252.17018		(2000.0)		P		Q
n	0.26509478	ω	98.48757		+0.94605141		-0.31095312
a	2.3999485	Ω	279.66662		+0.24886577		+0.87733246
e	0.1415077	i	5.30101		+0.20749112		+0.36550774
P	3.72	H	14.9	G	0.15	U	3

Residuals in seconds of arc

1996 08 21	966	1.8-	0.6+	1996 09 13	966	0.6+	0.1-	1999 05 13	704	1.7-	0.9+
1996 08 21	966	0.7-	0.4+	1996 09 13	966	0.4+	0.6+	1999 05 18	704	0.6+	0.1+
1996 08 26	966	0.6-	0.0	1998 03 03	691	0.1+	0.3+	1999 05 18	704	0.2+	0.1-
1996 08 26	966	0.5+	0.5+	1998 03 03	691	0.1+	0.2+	1999 05 18	704	0.1-	0.3+
1996 08 26	966	0.4-	0.3-	1998 03 03	691	0.1+	0.2+	1999 06 15	704	0.9+	0.4-
1996 08 26	966	0.3-	0.2-	1999 05 13	704	(0.5-	2.6+)	1999 06 15	704	0.1-	0.3-
1996 09 05	966	0.2+	1.0-	1999 05 13	704	1.0-	1.0-	1999 06 15	704	1.1+	0.2+
1996 09 05	966	1.8+	0.1-	1999 05 13	704	(1.6-	2.9+)	1999 06 15	704	0.3+	0.0

1996 RP₂ = 1999 FX₁₈

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	51.31803		(2000.0)		P		Q
n	0.17356488	ω	159.84796	-0.86008386		-0.50994870	
a	3.1829378	Ω	349.45601	+0.45658958		-0.75685967	
e	0.1126841	i	4.52126	+0.22755595		-0.40879794	
P	5.68	H	14.1	G	0.15	U	4

Residuals in seconds of arc

1996 09 13	552	1.4-	0.6-	1996 10 09	566	0.5+	0.4-	1999 04 06	704	0.3-	0.3+
1996 09 13	552	0.3-	0.2+	1999 03 22	699	0.2-	1.0-	1999 04 06	704	0.4-	1.6+
1996 09 14	552	0.1-	1.5+	1999 03 22	699	0.8+	1.2+	1999 04 15	704	0.8-	0.4+
1996 09 14	552	0.4-	0.7-	1999 03 22	699	0.6+	0.7-	1999 04 15	704	0.8-	0.8+
1996 09 16	552	0.1+	0.1+	1999 03 24	699	0.6+	0.2-	1999 04 15	704	0.3-	0.9-
1996 09 16	552	0.2+	1.2+	1999 03 24	699	0.4+	0.6-	1999 04 15	704	0.1+	0.1+
1996 09 16	552	(1.0-	2.3+)	1999 03 24	699	0.1-	0.0	1999 04 15	704	0.4+	0.9-
1996 10 09	566	0.1+	0.3-	1999 04 06	704	0.3+	0.5+				
1996 10 09	566	0.9+	0.0	1999 04 06	704	0.3+	0.4+				

1996 RR₃ = 1998 BF₁₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

M	95.40401		(2000.0)		P		Q
n	0.26070291	ω	173.07247	-0.99676055		-0.08039288	
a	2.4268269	Ω	2.32018	+0.07076613		-0.89038361	
e	0.0225619	i	3.28642	+0.03821723		-0.44805581	
P	3.78	H	15.5	G	0.15	U	4

Residuals in seconds of arc

1993 10 20	675	2.0-	0.4+	1996 09 16	566	0.0	0.1+	1998 01 24	566	0.4-	0.2-
1993 10 20	675	2.0+	0.4-	1996 09 16	566	0.6-	0.3+	1998 01 24	566	0.2-	0.2-
1996 09 13	566	0.0	0.1-	1996 09 16	566	0.1-	0.1+	1998 01 24	566	0.1-	0.1-
1996 09 13	566	0.1+	0.0	1996 09 16	566	0.0	0.4-	1998 01 28	566	0.3+	0.1+

1996 09 13	566	0.2+	0.1−	1996 09 17	566	0.3+	0.1−	1998 01 28	566	0.1−	0.2+
1996 09 16	566	0.0	0.1+	1996 09 17	566	0.3+	0.0	1998 01 28	566	0.5+	0.2+
1996 09 16	566	0.4−	0.1+	1996 09 17	566	0.2+	0.1−				

1996 RS₂₄ = 1999 JU₇₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	348.75652		(2000.0)	P	Q
n	0.27803335	ω	120.16996	+0.32871335	+0.94420175
a	2.3249027	Ω	168.96160	−0.89949279	+0.31969402
e	0.1236947	i	6.22178	−0.28785456	+0.07923880
P	3.54	H	15.1	G 0.15	U 4

Residuals in seconds of arc

1996 09 08	691	0.3−	0.5−	1998 01 31	691	0.4−	0.3+	1999 05 14	704	0.3−	1.0+
1996 09 08	691	0.6−	0.5−	1998 01 31	691	0.2+	0.0	1999 06 08	704	0.2+	0.1−
1996 09 08	691	0.4−	0.5−	1998 01 31	691	0.2+	0.0	1999 06 08	704	0.0	0.3+
1996 09 14	566	1.2−	1.1−	1999 05 10	704	0.8+	1.8−	1999 06 08	704	0.1+	0.2+
1996 09 14	566	1.1−	1.1−	1999 05 10	704	1.7−	1.0−	1999 06 08	704	0.2−	0.0
1996 09 14	566	0.8−	1.1−	1999 05 10	704	0.1+	0.2−	1999 06 08	704	0.1+	0.3+
1996 10 06	809	(2.2+	2.2+)	1999 05 10	704	0.1−	0.6+	1999 06 14	704	0.0	0.3+
1996 10 06	809	1.3+	1.7+	1999 05 10	704	(3.9−	0.7−)	1999 06 14	704	0.1+	0.2+
1996 10 06	809	1.1+	1.6+	1999 05 14	704	1.6+	0.5+	1999 06 14	704	0.3+	0.2+
1996 10 07	809	1.0+	0.5+	1999 05 14	704	0.4+	0.1+	1999 06 14	704	0.3+	0.2−
1996 10 07	809	0.5+	0.7+	1999 05 14	704	0.9−	0.2+	1999 06 14	704	0.1+	0.2+
1996 10 07	809	0.7+	0.6+	1999 05 14	704	1.0−	0.1−				

1996 RT₂₄ = 1990 EP₈ = 1997 XC₁₃ = 1999 HM₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	34.71129		(2000.0)	P	Q
n	0.22559123	ω	194.37540	−0.95840852	+0.28539774
a	2.6725217	Ω	2.20816	−0.25891270	−0.86781319
e	0.1179279	i	1.65594	−0.12007217	−0.40675348
P	4.37	H	14.1	G 0.15	U 1

Residuals in seconds of arc

1990 03 07	809	0.2−	1.8−	1997 12 04	704	0.1−	0.6−	1999 04 15	704	1.2−	0.3+
1990 03 07	809	0.2−	1.7−	1997 12 04	704	0.1+	0.1+	1999 04 15	704	0.2+	0.5+
1990 03 07	809	0.0	1.5−	1997 12 04	704	0.1−	1.1+	1999 04 15	704	0.3−	0.2−
1990 03 08	809	(7.6−	19.8+)	1997 12 04	704	1.1+	0.1−	1999 04 17	704	0.0	0.1−
1990 03 08	809	(7.1−	20.0+)	1997 12 05	704	0.7+	0.3+	1999 04 17	704	0.2+	1.2−
1990 03 08	809	(7.3−	20.2+)	1997 12 05	704	0.1−	0.3−	1999 04 17	704	0.3+	1.6−
1992 10 23	691	1.0−	0.8+	1997 12 05	704	0.7−	0.7−	1999 04 17	704	0.4+	0.2+
1992 10 23	691	1.2−	0.5+	1997 12 05	704	1.2+	0.5+	1999 04 17	704	0.0	0.1+
1992 10 23	691	1.9−	0.5+	1997 12 05	704	1.4+	0.2+	1999 04 18	704	0.9+	0.5+
1994 01 19	691	0.6−	0.7+	1999 03 25	704	(1.3−	3.5−)	1999 04 18	704	0.9+	1.7+
1994 01 19	691	1.0−	0.7+	1999 03 25	704	1.2−	0.1+	1999 04 18	704	1.1−	0.7−
1994 01 19	691	0.3−	0.7+	1999 03 25	704	1.9+	0.6+	1999 04 18	704	(2.8−	0.1−)
1996 09 08	566	0.2+	0.5−	1999 03 25	704	(1.2−	3.0−)	1999 05 10	704	1.0−	1.1−
1996 09 08	566	0.7+	0.7−	1999 03 25	704	1.4−	1.7+	1999 05 10	704	1.2−	0.3+
1996 09 08	566	0.6+	0.5−	1999 03 29	699	1.5+	0.7+	1999 05 10	704	1.2−	0.1+
1996 09 13	691	0.5+	0.1+	1999 03 29	699	1.1+	0.5+	1999 05 10	704	0.7−	0.2+
1996 09 13	691	0.4+	0.1−	1999 03 29	699	1.7+	0.0	1999 05 10	704	1.0−	0.3+
1996 09 13	691	0.4+	0.1+	1999 04 09	699	0.2+	0.2−	1999 05 13	704	0.4−	0.3−
1996 10 11	566	0.1−	0.3+	1999 04 09	699	0.4+	0.3−	1999 05 13	704	0.4−	0.1−
1996 10 11	566	0.6−	0.1+	1999 04 09	699	0.7+	0.1+	1999 05 13	704	0.9+	0.1−
1996 10 11	566	0.1+	0.2−	1999 04 15	704	0.6+	0.2+	1999 05 13	704	0.4−	1.9+
1997 12 04	704	0.8−	0.8−	1999 04 15	704	0.0	0.4+	1999 05 13	704	0.1+	0.2+

1996 SB₂ = 1999 KY₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	205.10985		(2000.0)	P	Q
n	0.22125908	ω	203.35871	+0.82660670	−0.56160163
a	2.7072933	Ω	191.03037	+0.54168638	+0.81150055
e	0.0213044	i	10.96733	+0.15263431	+0.16146351
P	4.45	H	14.6	G 0.15	U 4

Residuals in seconds of arc

1996 09 17	691	0.1−	0.3−	1996 10 12	566	0.8−	0.1−	1999 05 17	704	0.4−	1.5+
1996 09 17	691	0.2−	0.0	1999 04 12	704	0.3+	0.5+	1999 05 18	704	0.5+	1.2−
1996 09 17	691	0.3−	0.0	1999 04 12	704	0.1+	1.0−	1999 05 18	704	0.4−	0.6−
1996 09 20	691	0.1+	0.0	1999 04 12	704	0.9−	0.1−	1999 05 18	704	0.7−	0.5−
1996 09 20	691	0.1−	0.2+	1999 05 13	704	0.2−	1.1+	1999 05 18	704	0.8−	0.1−
1996 09 20	691	0.0	0.1+	1999 05 13	704	(3.4+	1.8+)	1999 05 18	704	(3.0−	0.2+)
1996 10 11	566	0.6+	0.2−	1999 05 13	704	1.4+	0.2−	1999 05 19	704	0.3−	0.2−
1996 10 11	566	0.6−	0.1+	1999 05 13	704	(2.3−	2.8+)	1999 05 19	704	1.6−	0.3+
1996 10 11	566	0.3−	0.0	1999 05 17	704	0.6+	0.4−	1999 05 19	704	1.2+	0.5+
1996 10 12	566	1.0+	0.0	1999 05 17	704	0.5−	0.2+	1999 05 19	704	0.4+	1.0−
1996 10 12	566	0.9+	0.1−	1999 05 17	704	1.4+	1.1+				

1996 SK₄ = 1999 JZ₇₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	346.49160		(2000.0)	P	Q
n	0.23122522	ω	244.39447	−0.23369241	+0.97082446
a	2.6289314	Ω	12.45224	−0.77852303	−0.15372048
e	0.0784360	i	14.43118	−0.58248583	−0.18403774
P	4.26	H	13.7	G 0.15	U 4

Residuals in seconds of arc

1996 09 21	327	0.1+	0.5−	1996 10 13	566	0.1−	0.1−	1999 06 07	648	0.4−	0.1−
1996 09 21	327	0.2−	0.4−	1999 04 15	704	0.1+	0.6−	1999 06 07	648	0.4−	0.1+
1996 09 21	327	0.2+	0.2−	1999 04 15	704	0.1+	0.6−	1999 06 07	648	0.2+	0.0
1996 09 22	327	0.4−	0.4−	1999 04 15	704	0.5−	0.3−	1999 06 07	648	0.3+	0.4+
1996 09 22	327	0.3+	0.3−	1999 04 15	704	0.1−	0.0	1999 06 07	648	0.1+	0.6+
1996 09 22	327	0.4−	0.3−	1999 04 15	704	0.2+	0.2+	1999 06 07	648	0.9+	0.1+
1996 09 22	327	0.4+	0.1−	1999 05 10	704	0.1+	0.8−	1999 06 07	648	0.0	0.2+
1996 09 23	327	0.6+	0.1+	1999 05 10	704	0.8+	1.7+	1999 06 07	648	0.1−	0.3−
1996 09 23	327	0.3−	0.5−	1999 05 10	704	0.2+	0.3−	1999 06 07	648	0.1+	0.1+
1996 09 23	327	0.2+	0.4−	1999 05 10	704	0.5−	0.6−	1999 06 07	648	0.2+	0.3−
1996 09 23	327	0.4+	0.6−	1999 05 10	704	0.0	0.6−	1999 06 08	648	0.3−	0.2−
1996 10 03	327	0.1+	0.4+	1999 05 14	704	0.1−	0.4+	1999 06 08	648	0.1−	0.0
1996 10 03	327	0.1+	0.7+	1999 05 14	704	0.5−	0.9+	1999 06 08	648	0.1+	0.1−
1996 10 03	327	0.1−	0.9+	1999 05 14	704	1.0−	0.7+	1999 06 08	648	0.0	0.5−
1996 10 05	327	0.0	0.4+	1999 05 14	704	1.5−	0.5+	1999 06 08	648	0.0	0.1−
1996 10 05	327	0.7−	0.5+	1999 05 14	704	0.0	0.7+	1999 06 09	648	0.2+	0.4−
1996 10 05	327	0.1−	1.0+	1999 06 05	648	1.4+	0.5−	1999 06 09	648	0.2−	0.2−
1996 10 13	566	0.1−	0.2−	1999 06 06	648	0.6+	0.2−	1999 06 09	648	0.3+	0.2−
1996 10 13	566	0.2+	0.2−	1999 06 07	648	0.4−	0.1−	1999 06 09	648	0.5+	0.2−

1996 SH₇ = 1999 JO₄₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	312.91460		(2000.0)	P	Q
n	0.26807636	ω	295.02653	+0.85685997	+0.51479949
a	2.3821204	Ω	34.00895	−0.45328955	+0.77796885
e	0.2181022	i	2.84827	−0.24560043	+0.36020266
P	3.68	H	14.7	G 0.15	U 4

Residuals in seconds of arc

1996 09 23	358	0.2+	1.4−	1996 11 07	327	0.5−	0.3+	1999 05 13	704	0.3+	1.2+
1996 09 23	358	0.1−	0.7+	1996 11 07	327	0.1+	0.2+	1999 05 18	704	0.4−	0.0
1996 09 24	358	0.6−	0.2+	1996 11 07	327	0.1−	0.1+	1999 05 18	704	0.2+	0.6−
1996 09 24	358	0.2−	0.1+	1996 11 08	691	0.2+	0.1−	1999 05 18	704	0.7−	0.4+
1996 10 06	358	0.6+	1.5−	1996 11 08	691	0.2+	0.2−	1999 05 18	704	0.5−	1.0−
1996 10 06	358	1.8+	0.4+	1996 11 08	691	0.2+	0.1−	1999 05 18	704	0.6+	0.2+
1996 10 06	358	0.6−	1.1−	1996 12 10	327	0.3−	0.2+	1999 05 19	704	0.5+	1.0−
1996 10 09	358	0.6−	1.4+	1996 12 10	327	0.2−	0.3−	1999 05 19	704	0.4+	0.0
1996 10 09	358	0.4−	0.2−	1996 12 10	327	0.0	0.2+	1999 05 19	704	0.1−	0.0
1996 10 13	358	0.4−	0.1+	1999 05 10	704	0.5+	0.0	1999 05 19	704	1.6+	1.3+
1996 10 13	358	0.6+	1.4+	1999 05 10	704	0.4−	0.7+	1999 05 19	704	0.7+	0.7−
1996 10 14	327	0.2−	0.2−	1999 05 10	704	0.3−	0.3−	1999 06 15	704	0.4−	0.4+
1996 10 14	327	0.4+	0.4+	1999 05 10	704	0.6+	0.3−	1999 06 15	704	0.5+	0.0
1996 10 14	327	0.4+	0.4+	1999 05 10	704	0.4−	0.2+	1999 06 15	704	0.1+	0.2+
1996 10 18	358	1.4−	0.8−	1999 05 13	704	0.5+	0.4−	1999 06 15	704	0.1+	0.5−

1999 JUNE 22

1996 10 18	358	0.1−	0.4+	1999 05 13	704	0.6−	0.1−	1999 06 15	704	1.3−	0.4−
1996 11 03	358	0.4−	0.3−	1999 05 13	704	0.4−	0.2+				
1996 11 03	358	1.1+	0.2−	1999 05 13	704	1.1−	1.4+				

1996 SO₇ = 1999 JU₄₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		284.22525		(2000.0)		P		Q	
<i>n</i>		0.26764965	ω	68.61040		+0.99640839		+0.08188432	
<i>a</i>		2.3846516	Ω	286.68763		−0.08361135		+0.91110312	
<i>e</i>		0.2224616	<i>i</i>	1.29034		−0.01339644		+0.40396296	
<i>P</i>		3.68	<i>H</i>	14.5		<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 09 12	894	1.0+	0.1+	1998 01 24	566	0.1−	0.0	1999 05 13	704	0.1−	0.9−
1996 09 17	894	0.3+	0.4−	1999 05 10	704	0.9+	1.8−	1999 06 09	704	0.1+	0.8+
1996 09 17	894	0.1−	0.8−	1999 05 10	704	1.3−	0.2−	1999 06 09	704	0.1+	0.2+
1996 10 04	894	0.3−	0.4+	1999 05 10	704	0.2−	0.2+	1999 06 09	704	1.4−	1.7+
1996 10 04	894	1.5−	0.2+	1999 05 10	704	1.4−	1.2−	1999 06 09	704	0.2−	1.7+
1996 10 15	894	0.5−	0.3−	1999 05 10	704	0.4+	0.6−	1999 06 15	704	0.7+	0.2+
1996 10 16	894	1.7+	0.5−	1999 05 13	704	0.8+	0.0	1999 06 15	704	0.4+	0.0
1996 10 16	894	0.3−	0.6+	1999 05 13	704	0.7+	1.3−	1999 06 15	704	0.9+	0.4+
1998 01 24	566	0.1−	0.4−	1999 05 13	704	0.8−	0.8−	1999 06 15	704	0.4+	0.5+
1998 01 24	566	0.1+	0.3+	1999 05 13	704	0.1−	0.2−	1999 06 15	704	0.5+	1.0+

1996 TZ₃ = 1999 JF₄₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		313.02632		(2000.0)		P		Q	
<i>n</i>		0.26517054	ω	260.90934		+0.79913669		+0.59922499	
<i>a</i>		2.3994914	Ω	62.26148		−0.52801636		+0.73788900	
<i>e</i>		0.1917425	<i>i</i>	3.11283		−0.28736609		+0.31056276	
<i>P</i>		3.72	<i>H</i>	16.9		<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1996 10 08	566	0.5−	0.1−	1996 10 13	566	0.0	0.0	1999 05 13	704	1.0−	0.2+
1996 10 08	566	0.5−	0.1+	1996 10 13	566	0.1−	0.5−	1999 05 13	704	0.2−	1.9−
1996 10 08	566	1.2+	0.4+	1996 10 13	566	0.3−	0.1−	1999 05 13	704	0.6+	0.7+
1996 10 09	566	1.4+	0.0	1999 05 10	704	0.1+	0.8+	1999 05 13	704	0.9+	2.5+
1996 10 09	566	0.3−	0.2+	1999 05 10	704	0.3+	0.9−				
1996 10 09	566	0.7−	0.0	1999 05 10	704	0.8−	1.5−				

1996 TO₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		255.27325		(2000.0)		P		Q	
<i>n</i>		0.26845231	ω	249.75191		+0.52371297		−0.84850894	
<i>a</i>		2.3798958	Ω	167.77488		+0.85188978		+0.52132313	
<i>e</i>		0.5170599	<i>i</i>	20.99749		+0.00291981		+0.09085576	
<i>P</i>		3.67	<i>H</i>	17.1		<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1996 10 09	566	0.1−	0.3+	1996 10 14	046	0.0	0.4+	1997 01 12	046	0.7+	0.5+
1996 10 09	566	0.7−	0.0	1996 10 16	360	0.0	0.2+	1997 01 13	046	0.4−	1.7−
1996 10 09	566	1.5+	0.5+	1996 10 16	360	0.2+	0.2+	1997 01 13	046	1.3−	0.8−
1996 10 10	566	(2.7−	0.3+)	1996 10 16	360	0.1+	0.3+	1997 01 13	046	0.1−	0.1−
1996 10 10	566	0.5−	0.1−	1996 11 01	413	0.3+	0.2+	1997 02 09	360	0.1+	0.5+
1996 10 10	566	0.3−	0.1−	1996 11 01	413	0.2+	0.1+	1997 02 09	360	0.3+	0.4+
1996 10 11	046	0.1+	0.3+	1996 11 02	413	0.1+	0.2+	1997 02 09	360	0.0	1.0+
1996 10 11	046	0.1−	0.2+	1996 11 02	413	0.0	0.0	1997 02 28	557	1.2−	1.2−
1996 10 11	046	0.5+	0.1−	1996 12 17	566	0.6+	1.2−	1997 02 28	557	0.3−	0.4−
1996 10 11	046	0.1−	0.0	1996 12 17	566	1.3+	1.2−	1997 03 07	360	0.2−	0.6+
1996 10 11	557	0.4−	0.5−	1996 12 17	566	0.8+	0.8−	1997 03 07	360	0.0	1.5+
1996 10 11	557	1.1+	1.1−	1997 01 10	566	0.3−	0.8−	1997 03 07	360	0.5+	0.1+
1996 10 11	557	0.4−	0.2+	1997 01 10	566	0.1−	0.6−	1997 03 09	046	0.0	1.0+
1996 10 12	711	0.2−	1.2−	1997 01 10	566	1.7−	1.0−	1997 03 09	046	0.3−	0.6+
1996 10 12	711	0.0	1.5+	1997 01 12	118	0.6−	0.3−	1997 03 09	046	0.3+	0.1−
1996 10 13	711	0.6−	0.1−	1997 01 12	118	0.4−	1.1+	1997 03 09	046	0.5+	1.4+

M.P.C. 34865

1996 10 13	711	0.2+	0.0	1997 01 12	118	0.5+	0.1−	1998 06 18	696	0.3−	0.3−
1996 10 14	046	0.3+	1.3+	1997 01 12	046	1.0+	1.5+	1998 06 18	696	0.3−	0.3−
1996 10 14	046	0.8−	0.1+	1997 01 12	046	0.7−	0.2+	1999 05 22	693	0.2+	0.3+

1996 TX₉ = 1999 JK₃₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		138.72526		(2000.0)		P		Q	
<i>n</i>		0.20501261	ω	231.95509		−0.15634560		−0.98628783	
<i>a</i>		2.8484963	Ω	227.12691		+0.92728796		−0.12814808	
<i>e</i>		0.0757838	<i>i</i>	4.13489		+0.34013686		−0.10399223	
<i>P</i>		4.81	<i>H</i>	14.0		<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1991 09 17	691	0.6−	0.3−	1996 10 16	966	0.3+	0.0	1999 05 10	704	1.1+	1.6−
1991 09 17	691	0.8+	0.1−	1996 10 17	966	1.1+	0.9+	1999 05 10	704	0.9+	0.6−
1991 09 17	691	(5.1+	0.1−)	1996 10 18	566	0.3−	0.1−	1999 05 10	704	0.3−	0.6+
1996 10 04	966	0.6+	0.8−	1996 10 18	566	0.3−	0.0	1999 05 10	704	1.3−	1.3+
1996 10 04	966	0.6−	0.4+	1996 10 18	566	0.0	0.1−	1999 05 13	704	0.5+	0.1+
1996 10 05	966	0.6−	0.7+	1998 02 25	566	0.1−	0.2−	1999 05 13	704	0.0	0.4−
1996 10 13	966	0.8−	0.5+	1998 02 25	566	0.2−	0.0	1999 05 13	704	0.1−	0.7+
1996 10 13	966	0.1−	0.4−	1998 02 25	566	0.2+	0.3+	1999 05 13	704	0.8−	0.2−
1996 10 16	966	0.3+	0.2−	1999 05 10	704	1.0+	0.2−	1999 05 13	704	1.0−	0.7+

1996 TZ₁₀ = 1999 JL₇₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		298.75017		(2000.0)		P		Q	
<i>n</i>		0.27026834	ω	162.96231		+0.95972791		+0.28092686	
<i>a</i>		2.3692230	Ω	180.72764		−0.26993469		+0.92060977	
<i>e</i>		0.3140775	<i>i</i>	7.05081		−0.07783057		+0.27121531	
<i>P</i>		3.65	<i>H</i>	15.0		<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 10 09	399	(2.5+	1.4+)	1999 05 12	704	0.1+	0.5+	1999 05 14	703	0.4−	0.0
1996 10 09	399	0.0	0.2−	1999 05 12	704	1.6−	0.6+	1999 05 14	703	0.4+	0.0
1996 10 10	399	0.3−	1.0+	1999 05 13	704	0.0	0.3+	1999 05 14	703	0.1−	0.5−
1996 10 10	399	0.5+	0.7−	1999 05 13	704	0.1+	0.8−	1999 05 17	704	0.1+	0.1−
1996 10 16	399	0.3+	0.7−	1999 05 13	704	0.2+	1.5−	1999 05 17	704	(2.7−	0.3+)
1996 10 16	399	0.5−	0.5+	1999 05 13	704	0.4+	0.8−	1999 05 17	704	1.5−	0.6+
1999 05 12	704	0.4+	0.4−	1999 05 13	704	0.1−	0.5+	1999 05 17	704	0.3+	0.9+
1999 05 12	704	1.2−	0.0	1999 05 14	703	1.3+	0.0	1999 05 17	704	1.5+	0.6+

1996 TG₁₁ = 1999 JU₆₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		337.70414		(2000.0)		P		Q	
<i>n</i>		0.28749851	ω	106.02483		+0.73179045		+0.67625932	
<i>a</i>		2.2735908	Ω	211.57068		−0.67061536		+0.69237804	
<i>e</i>		0.2558492	<i>i</i>	9.29843		−0.12148157		+0.25156705	
<i>P</i>		3.43	<i>H</i>	15.7		<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 10 05	691	0.4−	0.1+	1996 10 21	400	0.6+	0.4+	1999 05 13	704	0.9+	1.7+
1996 10 05	691	0.4−	0.1+	1996 10 21	400	0.4+	0.4−	1999 05 13	704	1.8−	1.0+
1996 10 05	691	0.4−	0.2−	1996 11 07	327	0.2−	0.0	1999 05 13	704	(2.5−	1.0+)
1996 10 08	691	0.6−	0.1+	1996 11 07	327	0.0	0.9+	1999 06 08	704	0.4+	0.1+
1996 10 08	691	0.3−	0.1−	1996 11 07	327	0.2−	0.2−	1999 06 08	704	0.6+	0.3−
1996 10 08	691	0.5−	0.0	1996 11 30	327	0.4+	0.0	1999 06 08	704	0.2+	0.8−
1996 10 11	400	0.2+	1.1−	1996 11 30	327	0.7+	0.3+	1999 06 08	704	0.2−	0.7−
1996 10 11	400	0.3+	0.6+	1996 11 30	327	0.5+	0.9−	1999 06 08	704	0.4+	0.9−
1996 10 11	566	0.1−	0.5−	1999 05 10	704	0.5+	0.6+	1999 06 14	704	0.9+	0.0
1996 10 11	566	0.3−	0.4−	1999 05 10	704	1.6−	0.8−	1999 06 14	704	0.7+	0.3+
1996 10 11	566	0.6−	0.4−	1999 05 10	704	0.5−	1.0+	1999 06 14	704	1.0+	0.3−
1996 10 14	400	0.6+	1.0+	1999 05 10	704	0.8−	0.1−	1999 06 14	704	0.4+	0.2+
1996 10 14	400	0.6+	1.3+	1999 05 10	704	1.7−	0.3+	1999 06 14	704	0.5+	0.3−
1996 10 21	400	(1.5+	2.4+)	1999 05 13	704	0.2−	0.6−				

1996 TN₁₁ = 1999 JP₄₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	290.14933		(2000.0)	P		Q					
<i>n</i>	0.23867378	ω	217.33898	+0.89778049	+0.43876971						
<i>a</i>	2.5739469	Ω	116.59387	−0.39304374	+0.83742119						
<i>e</i>	0.0923369	<i>i</i>	2.45853	−0.19876317	+0.32589401						
<i>P</i>	4.13	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4				
Residuals in seconds of arc											
1996 10 11	400	0.0	0.5+	1999 05 13	704	1.1+	0.5+	1999 05 19	704	1.9−	0.3+
1996 10 11	400	0.7+	0.0	1999 05 13	704	1.6−	0.3+	1999 06 05	703	1.8+	0.2+
1996 10 14	400	0.6+	0.7+	1999 05 13	704	0.0	0.6+	1999 06 05	703	1.1+	0.2−
1996 10 14	400	0.7−	0.1+	1999 05 13	704	0.2−	0.1−	1999 06 05	703	0.5−	0.6+
1996 10 21	400	0.2−	0.7−	1999 05 18	704	0.4+	0.3−	1999 06 05	703	0.1−	0.7+
1996 10 21	400	0.4−	0.7−	1999 05 18	704	0.2+	0.8−	1999 06 14	704	0.7+	0.4−
1999 05 10	704	0.6−	0.7+	1999 05 18	704	0.1−	1.2+	1999 06 14	704	0.4−	0.4−
1999 05 10	704	0.2−	0.3−	1999 05 18	704	0.6−	0.8+	1999 06 14	704	1.2−	0.3−
1999 05 10	704	1.1+	1.8−	1999 05 18	704	0.6+	0.8+	1999 06 14	704	0.3−	0.2+
1999 05 10	704	0.9+	0.3−	1999 05 19	704	0.9+	0.9+	1999 06 14	704	0.2+	0.2−
1999 05 10	704	(0.4+	2.3−)	1999 05 19	704	0.9−	1.4−				
1999 05 13	704	0.7−	0.6−	1999 05 19	704	0.5+	0.8−				

1996 TB₁₅ = 1987 DM₅

Id. A. Gnädig, G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	267.70508		(2000.0)	P		Q					
<i>n</i>	0.36943445	<i>ω</i>	138.25732	−0.58970237		−0.80412221					
<i>a</i>	1.9235838	<i>Ω</i>	347.25863	+0.62102429		−0.39204986					
<i>e</i>	0.0514781	<i>i</i>	19.90543	+0.51631380		−0.44686058					
<i>P</i>	2.67	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	4				
Residuals in seconds of arc											
1977 07 17	413	0.3+	0.1−	1996 09 16	809	0.2+	0.3+	1996 10 03	809	0.5−	0.5−
1977 07 17	413	0.3−	0.1+	1996 10 02	809	0.3+	0.6−	1996 10 03	809	0.3−	0.4−
1987 02 23	010	0.6+	0.4−	1996 10 02	809	1.7+	1.0−	1996 10 07	608	0.9−	0.7+
1987 02 23	010	0.7−	0.3+	1996 10 02	809	1.2+	0.4−	1996 10 07	608	1.2−	1.1+
1996 09 14	809	0.3−	0.5+	1996 10 03	809	1.3−	0.4−	1996 10 10	608	1.2+	0.4+

1996 TN₁₈ = 1999 JQ₁₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	107.83328		(2000.0)	P		Q					
<i>n</i>	0.17218360	ω	243.27383	−0.60444749		−0.79650293					
<i>a</i>	3.1999378	Ω	243.92336	+0.73672904		−0.55170225					
<i>e</i>	0.1673075	<i>i</i>	0.95966	+0.30310650		−0.24740191					
<i>P</i>	5.72	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	1				
Residuals in seconds of arc											
1992 01 02	691	0.1−	0.3−	1996 10 17	691	0.0	0.2+	1999 05 13	704	(2.1+	1.0−)
1992 01 02	691	0.3+	0.4−	1996 11 16	817	0.5+	1.1+	1999 05 18	704	0.3−	1.7−
1992 01 02	691	0.3−	0.2−	1996 11 16	817	0.6+	1.3+	1999 05 18	704	1.0+	0.7+
1996 10 04	691	0.2−	0.1+	1996 11 16	817	0.2+	1.4+	1999 05 18	704	1.3−	1.0+
1996 10 04	691	0.3−	0.0	1998 01 28	566	0.1+	0.7+	1999 05 18	704	(2.4−	0.1−)
1996 10 04	691	0.3−	0.1+	1998 01 28	566	0.4+	0.5+	1999 06 15	704	0.8+	0.2−
1996 10 10	691	1.0−	0.3−	1998 01 28	566	0.1+	0.5+	1999 06 15	704	0.0	1.7+
1996 10 10	691	0.7−	0.2−	1999 05 13	704	0.3+	1.5+	1999 06 15	704	0.2+	0.2+
1996 10 17	691	0.0	0.2−	1999 05 13	704	0.5−	0.8−	1999 06 15	704	0.3−	1.0+
1996 10 17	691	0.0	0.0	1999 05 13	704	0.9+	0.1−				

1996 TP₃₀ = 1981 US₃ = 1999 JM₅₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	328.05983		(2000.0)		P		Q				
<i>n</i>	0.26158242	ω	286.47477		+0.68926663		+0.72417983				
<i>a</i>	2.4213841	Ω	27.13684		-0.64516378		+0.62719301				
<i>e</i>	0.2010105	<i>i</i>	2.73903		-0.32965923		+0.28669236				
<i>P</i>	3.77	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	1				
Residuals in seconds of arc											
1981 10 30	381	0.8-	0.4-	1999 05 10	704	0.6-	0.5+	1999 05 18	704	0.7+	0.1-
1981 10 30	381	1.1+	0.2-	1999 05 10	704	0.5+	0.0	1999 05 19	704	1.2+	0.9+
1993 12 16	691	0.1-	0.1+	1999 05 10	704	1.2+	0.6-	1999 05 19	704	1.7-	0.3-
1993 12 16	691	0.1+	0.1+	1999 05 10	704	0.3+	1.1-	1999 05 19	704	0.0	0.9+
1993 12 16	691	0.1-	0.4-	1999 05 10	704	0.2-	1.7-	1999 05 19	704	0.6-	0.0
1996 10 07	691	0.7+	0.1+	1999 05 13	704	0.4-	0.6+	1999 05 19	704	0.0	0.5+
1996 10 07	691	0.4+	0.2+	1999 05 13	704	1.5+	0.1-	1999 06 15	704	0.3-	0.1-
1996 10 12	691	0.2+	0.1-	1999 05 13	704	(1.3-	2.7+)	1999 06 15	704	0.4-	0.5+
1996 10 12	691	0.0	0.0	1999 05 13	704	1.1+	1.8+	1999 06 15	704	0.7-	0.8-
1996 10 12	691	0.3+	0.1-	1999 05 18	704	0.3+	0.2+	1999 06 15	704	0.0	0.3-
1996 10 18	691	0.4-	0.2+	1999 05 18	704	0.5-	1.0-	1999 06 15	704	0.6-	0.0
1996 10 18	691	0.7-	0.2+	1999 05 18	704	0.1-	0.3+				
1996 10 18	691	0.5-	0.1-	1999 05 18	704	1.0-	0.4-				

1996 TA₃₅ = 1999 JF₄₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	306.88477		(2000.0)	P		Q					
n	0.27548928	ω	46.19974	+0.88703858	+0.45473611						
a	2.3391940	Ω	286.60378	-0.44391249	+0.79247441						
e	0.1825292	i	4.78027	-0.12690253	+0.40644727						
P	3.58	H	15.0	G	0.15	U	4				
Residuals in seconds of arc											
1996 10 02	809	0.3+	1.6+	1996 10 18	691	0.2+	0.3-	1999 05 13	704	1.4-	1.8+
1996 10 02	809	1.0+	0.5+	1996 10 18	691	0.1+	0.4-	1999 06 09	704	0.3-	1.1-
1996 10 02	809	0.9+	1.2+	1996 10 18	691	0.2+	0.4-	1999 06 09	704	0.4+	0.2+
1996 10 03	809	0.4+	1.8+	1999 05 10	704	1.5+	0.2+	1999 06 09	704	0.3-	0.3-
1996 10 03	809	(0.6+	2.6+)	1999 05 10	704	0.5-	0.8-	1999 06 09	704	0.2-	1.2-
1996 10 03	809	(0.3+	2.2+)	1999 05 10	704	0.2+	0.2-	1999 06 15	704	0.3-	0.5-
1996 10 04	691	0.5-	0.8-	1999 05 10	704	0.9+	1.4+	1999 06 15	704	0.0	0.2+
1996 10 04	691	0.7-	0.7-	1999 05 10	704	0.1+	1.6-	1999 06 15	704	0.0	0.7-
1996 10 04	691	0.7-	0.8-	1999 05 13	704	1.0+	0.1-	1999 06 15	704	0.2-	1.3+
1996 10 11	691	0.6-	0.7-	1999 05 13	704	1.0-	0.3+	1999 06 15	704	0.2-	0.8+
1996 10 11	691	0.2-	0.6-	1999 05 13	704	0.1-	0.0				
1996 10 11	691	0.5-	0.6-	1999 05 13	704	0.2+	0.3+				

1996 TH₄₈ = 1985 UW = 1992 OQ₉

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	275.36666		(2000.0)			P		Q			
<i>n</i>	0.26648689	ω	79.89407			+0.96345025		-0.26651121			
<i>a</i>	2.3915831	Ω	295.55844			+0.23250600		+0.88218708			
<i>e</i>	0.1747799	<i>i</i>	1.72255			+0.13305856		+0.38822382			
<i>P</i>	3.70	<i>H</i>	14.9			<i>G</i>	0.15	<i>U</i>	2		
Residuals in seconds of arc											
1985 10 20	046	(3.3-	2.0-)	1992 07 28	809	0.1+	1.5+	1996 10 16	399	1.1-	0.2+
1985 10 20	046	0.0	0.4-	1992 07 28	809	0.6+	1.5+	1996 10 16	399	(2.9-	1.5-)
1985 10 22	046	(6.5-	1.2-)	1992 07 28	809	0.9+	1.5+	1999 06 15	704	0.1+	1.0-
1985 10 22	046	(5.2-	0.5-)	1996 10 09	399	1.1-	0.0	1999 06 15	704	0.2-	0.5-
1985 10 25	046	(1.0+	2.8-)	1996 10 09	399	0.1+	0.8+	1999 06 15	704	0.3+	0.1+
1985 10 25	046	0.8+	1.8-	1996 10 10	566	0.9+	0.1+	1999 06 15	704	0.2+	0.4-
1992 07 27	809	1.1-	0.7-	1996 10 10	566	0.7+	0.2+	1999 06 15	704	0.7-	1.7-
1992 07 27	809	0.7-	0.8-	1996 10 10	566	1.0+	0.2+				
1992 07 27	809	0.4-	1.0-	1996 10 10	399	0.6-	1.4-				

1996 TK₅₄ = 1999 JV₇₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	259.70906		(2000.0)	P		Q		Williams	
<i>n</i>	0.23447363	ω	325.06380	+0.98685504	−0.07715610				
<i>a</i>	2.6045940	Ω	40.10817	+0.14279940	+0.82772163				
<i>e</i>	0.1919670	<i>i</i>	12.73356	−0.07566674	+0.55580918				
<i>P</i>	4.20	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	5		

Residuals in seconds of arc

1996 10 14	372	0.1+	0.8+	1996 12 10	327	0.4−	0.4+	1999 05 13	704	0.6+	0.4−
1996 10 14	372	1.5+	1.0+	1996 12 10	327	0.6−	0.5+	1999 05 13	704	1.6−	1.0−
1996 10 15	372	0.8−	0.9−	1996 12 10	327	0.5−	0.3+	1999 05 14	704	1.1+	0.6+
1996 12 06	327	0.2−	0.0	1999 05 13	704	0.0	1.2+	1999 05 14	704	2.9+	0.0
1996 12 06	327	0.0	0.4−	1999 05 13	704	0.6+	0.7+	1999 05 14	704	0.7−	0.1−
1996 12 06	327	0.3−	0.3−	1999 05 13	704	1.2−	0.2+	1999 05 14	704	0.7−	0.4+

1996 UE = 1983 VL₆

Id. A. Gnädig, G. V. Williams, S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	339.23795		(2000.0)	P		Q		Williams	
<i>n</i>	0.30328255	ω	303.19166	+0.96600981	+0.25388253				
<i>a</i>	2.1940058	Ω	42.15826	−0.20640885	+0.87088266				
<i>e</i>	0.2792484	<i>i</i>	4.15835	−0.15562918	+0.42084088				
<i>P</i>	3.25	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	2		

Residuals in seconds of arc

1976 05 27	413	1.6+	0.5+	1996 10 20	411	0.5+	0.2−	1996 11 17	817	0.0	0.3−
1976 05 27	413	0.1+	0.7−	1996 10 20	411	0.3−	0.0	1996 11 18	817	0.2+	0.3−
1976 05 29	413	1.3−	0.2+	1996 10 29	411	0.4+	0.9−	1996 11 18	817	0.3+	0.5−
1976 05 29	413	0.5−	0.1−	1996 10 29	411	0.6+	0.0	1996 11 30	411	0.4+	0.4+
1983 11 09	033	0.1+	0.8−	1996 11 13	411	0.2+	0.1+	1996 11 30	411	0.3+	0.5+
1983 11 10	033	0.6+	0.8−	1996 11 13	411	0.6−	0.2−	1996 11 30	411	0.5+	0.3+
1996 10 16	411	1.1−	0.8+	1996 11 16	817	0.1−	0.3−	1998 04 20	691	0.4+	0.7+
1996 10 16	411	0.6−	1.4+	1996 11 16	817	0.1+	0.2−	1998 04 20	691	0.0	0.5+
1996 10 17	411	0.9−	1.2+	1996 11 16	817	0.1+	0.3−	1998 04 20	691	0.5+	0.5+
1996 10 17	411	0.5−	1.2+	1996 11 17	817	0.1−	0.3−				

1996 UP = 1999 JA₈₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	132.19217		(2000.0)	P		Q		Williams	
<i>n</i>	0.21363024	ω	315.62738	−0.37195963	−0.92580405				
<i>a</i>	2.7713682	Ω	155.96747	+0.89100777	−0.37643473				
<i>e</i>	0.1207765	<i>i</i>	9.51572	+0.26029058	−0.03440567				
<i>P</i>	4.61	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	3		

Residuals in seconds of arc

1996 10 18	610	0.5−	0.0	1999 02 26	704	0.0	1.1+	1999 05 17	704	1.0−	0.7+
1996 10 18	610	0.1+	0.6−	1999 02 26	704	(3.3−	2.1−)	1999 06 05	703	0.1+	0.2−
1996 10 18	610	0.4+	1.0−	1999 05 12	704	0.4+	0.1+	1999 06 05	703	0.3−	0.1+
1996 10 18	610	0.7+	1.3−	1999 05 12	704	0.0	0.6−	1999 06 05	703	0.4−	0.1+
1996 10 19	610	0.9+	0.9−	1999 05 12	704	1.0−	0.8−	1999 06 05	703	0.9−	0.6+
1996 10 19	610	0.7+	0.5−	1999 05 12	704	0.8+	0.1−	1999 06 08	704	0.3+	0.3−
1996 10 19	610	0.0	0.1+	1999 05 12	704	0.5+	0.7+	1999 06 08	704	1.2+	0.3−
1996 10 21	610	0.9−	0.5+	1999 05 15	704	1.3+	0.2−	1999 06 08	704	0.2−	1.0−
1996 10 21	610	0.5−	0.3+	1999 05 15	704	0.7−	0.1−	1999 06 08	704	0.1+	1.0−
1996 10 21	610	0.1−	0.1+	1999 05 15	704	1.2+	0.6−	1999 06 08	704	0.9−	0.5+
1998 02 24	566	0.4−	0.9−	1999 05 15	704	1.1−	0.8−	1999 06 14	704	0.5+	0.0
1998 02 24	566	0.4−	0.9−	1999 05 17	704	0.9−	0.4+	1999 06 14	704	0.3+	0.6+
1998 02 24	566	0.3−	0.7−	1999 05 17	704	0.2+	0.4−	1999 06 14	704	0.5+	0.3+
1999 02 26	704	(0.6−	2.8−)	1999 05 17	704	0.2−	1.1−	1999 06 14	704	0.4+	0.0
1999 02 26	704	0.5−	0.8−	1999 05 17	704	0.3−	0.1+	1999 06 14	704	0.3+	0.1+

1996 UW = 1999 JE₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	328.26429		(2000.0)	P		Q		Williams	
<i>n</i>	0.27251750	ω	281.69250	+0.77653999	+0.62754759				
<i>a</i>	2.3561691	Ω	39.47533	−0.53807948	+0.70700287				
<i>e</i>	0.3020149	<i>i</i>	5.08060	−0.32780501	+0.32608429				
<i>P</i>	3.62	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4		

Residuals in seconds of arc

1996 10 20	411	0.1+	0.1+	1996 11 08	691	0.6+	0.2−	1999 05 19	704	0.6+	0.0
1996 10 20	411	0.2+	0.9−	1996 11 08	691	0.6+	0.4−	1999 05 19	704	0.6+	0.9+
1996 10 21	411	0.7+	0.6−	1996 11 13	411	0.3+	0.9+	1999 05 19	704	0.6−	0.5−
1996 10 21	411	0.1+	0.4−	1996 11 13	411	0.5+	0.1+	1999 05 19	703	0.7−	0.4−
1996 10 21	411	0.4−	0.9−	1996 11 30	411	0.5−	0.6−	1999 05 19	704	0.8−	0.6+
1996 10 22	411	0.3+	0.4−	1996 11 30	411	0.4+	0.2−	1999 05 19	703	0.1+	0.1−
1996 10 22	411	0.3+	0.0	1999 05 10	704	(0.1+	2.2−)	1999 05 19	703	0.8−	0.5−
1996 10 29	411	0.4+	0.7+	1999 05 10	704	1.2+	0.3−	1999 05 19	703	0.0	0.1+
1996 10 29	411	0.5+	1.3+	1999 05 10	704	0.1+	0.5−	1999 06 15	704	0.6+	0.4+
1996 11 03	411	0.9−	0.7−	1999 05 10	704	0.8+	0.3−	1999 06 15	704	0.1+	0.1+
1996 11 03	411	0.3−	0.4+	1999 05 13	704	0.4−	0.9−	1999 06 15	704	0.3+	0.1−
1996 11 06	691	1.0−	0.2−	1999 05 13	704	0.9−	1.4−	1999 06 15	704	0.4+	0.0
1996 11 06	691	0.6−	0.1−	1999 05 13	704	0.5−	0.3+	1999 06 15	704	0.0	0.5+
1996 11 06	691	1.0−	0.1−	1999 05 13	704	0.7−	0.1+				
1996 11 08	691	0.6+	0.1−	1999 05 13	704	(2.5−	0.8+)				

1996 UA₁ = 1999 JJ₆₂

Id. G. V. Williams, M. W. Buie (1998 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	142.79882		(2000.0)	P		Q		Williams	
<i>n</i>	0.18513656	ω	235.85753	−0.27562363	−0.93497063				
<i>a</i>	3.0488865	Ω	231.74746	+0.94871743	−0.22717336				
<i>e</i>	0.1332043	<i>i</i>	16.51999	+0.15481230	−0.27243749				
<i>P</i>	5.32	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	3		

Residuals in seconds of arc

1996 10 20	411	0.8−	0.3−	1996 11 30	411	0.3+	0.3−	1999 05 19	704	0.4−	0.6+
1996 10 20	411	0.2−	0.1−	1996 11 30	411	0.0	0.1+	1999 05 19	704	0.3+	0.6+
1996 10 21	411	0.8−	0.2+	1998 04 20	688	0.1−	0.2−	1999 05 19	704	(2.5−	0.1−)
1996 10 21	411	1.1−	1.0−	1998 04 20	688	0.2−	0.3−	1999 05 19	704	0.0	0.2−
1996 10 22	411	0.7+	0.1−	1998 04 20	688	0.0	0.5−	1999 06 09	704	0.5−	0.6−
1996 10 22	411	1.0+	0.0	1999 05 10	704	1.9+	0.9−	1999 06 09	704	0.5−	0.6−
1996 11 06	411	1.2+	0.2−	1999 05 10	704	(0.4+	2.1−)	1999 06 09	704	0.7−	1.0−
1996 11 06	411	0.5−	0.6−	1999 05 10	704	0.1−	0.8+	1999 06 09	704	0.7−	0.9+
1996 11 08	691	0.1+	0.7−	1999 05 13	704	0.4+	1.7−	1999 06 09	704	0.7−	0.3+
1996 11 08	691	0.2+	0.1−	1999 05 13	704	(3.8+	0.4−)	1999 06 14	704	0.0	0.4−
1996 11 08	691	0.2+	0.3−	1999 05 13	704	1.2+	0.2+	1999 06 14	704	0.1−	0.5+
1996 11 09	691	0.1+	0.2−	1999 05 18	704	0.7+	0.1+	1999 06 14	704	0.1−	0.4+
1996 11 09	691	0.2−	0.3−	1999 05 18	704	1.1+	0.2−	1999 06 14	704	0.6−	0.1−
1996 11 09	691	0.0	0.3−	1999 05 18	704	0.5−	0.3−	1999 06 14	704	0.6−	0.2−
1996 11 13	411	0.3−	0.1+	1999 05 18	704	0.4−	0.5−				
1996 11 13	411	0.2−	0.5+	1999 05 18	704	0.6+	0.8−				

1996 UG₄ = 1999 LA₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	272.95073		(2000.0)	P		Q		Williams	
<i>n</i>	0.23569306	ω	145.32491	+0.97753903	+0.18542428				
<i>a</i>	2.5956025	Ω	204.57582	−0.20141786	+0.96185831				
<i>e</i>	0.0836607	<i>i</i>	13.93777	+0.06203465	+0.20111295				
<i>P</i>	4.18	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4		

Residuals in seconds of arc

1996 10 05	327	0.1−	0.0	1996 11 01	327	0.0	0.0	1999 05 17	704	0.4−	1.5+
1996 10 05	327	0.2+	0.4+	1996 11 01	327	0.8−	0.1−	1999 06 08	704	0.1+	1.5+
1996 10 05	327	0.0	0.2−	1996 11 01	327	1.1+	0.9+	1999 06 08	704	0.6+	0.4+
1996 10 14	327	0.3−	0.1+	1996 11 02	327	0.1+	0.0	1999 06 08	704	0.2−	0.8−

M.P.C. 34868

1999 JUNE 22

1996 10 14	327	0.2−	0.4−	1996 11 02	327	0.4−	0.2+	1999 06 08	704	1.0+	0.1+
1996 10 14	327	0.8−	0.2−	1996 11 02	327	0.0	0.2+	1999 06 14	704	0.3−	0.1−
1996 10 29	327	0.1+	0.6−	1999 05 17	704	1.5+	0.4−	1999 06 14	704	0.9−	1.1−
1996 10 29	327	0.6+	0.5−	1999 05 17	704	0.0	0.0	1999 06 14	704	(1.2−	2.4+)
1996 10 29	327	0.3+	0.6+	1999 05 17	704	0.2+	1.0−	1999 06 14	704	0.6−	0.4+
1996 10 29	327	0.2+	0.2−	1999 05 17	704	1.0−	0.4−				

1996 VL = 1996 TH₅₄ = 1999 JZ₃₇Id. G. V. Williams (d, *MPC* 28564; unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				Williams				<i>P</i>				<i>Q</i>			
318.43107				(2000.0)				<i>P</i>				<i>Q</i>			
<i>n</i>	0.27581007	<i>ω</i>	325.30135					+0.82917457				+0.55898831			
<i>a</i>	2.3373799	<i>Ω</i>	0.71642					−0.48726907				+0.72389350			
<i>e</i>	0.2551227	<i>i</i>	5.79750					−0.27393133				+0.40436403			
<i>P</i>	3.57	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4								

Residuals in seconds of arc

1996 10 11	566	0.7−	0.2−	1996 11 02	596	0.2+	0.6+	1999 05 10	704	0.8−	1.5−
1996 10 11	566	0.4−	0.3−	1996 11 02	596	0.4+	0.0	1999 05 10	704	0.6+	0.8+
1996 10 11	566	0.7−	0.3−	1996 12 28	360	0.1−	0.1−	1999 05 10	704	0.6+	0.8+
1996 10 14	372	1.8+	0.3−	1996 12 28	360	0.0	0.3−	1999 05 13	704	0.6+	0.2−
1996 10 20	372	1.6−	1.1−	1996 12 28	360	0.1+	0.2−	1999 05 13	704	0.0	0.7−
1996 10 20	372	0.7−	0.7+	1999 04 15	704	0.3−	0.4−	1999 05 13	704	0.5+	0.6+
1996 11 01	596	1.1+	0.1+	1999 04 15	704	1.2−	1.2+	1999 05 13	704	0.5−	0.6−
1996 11 01	596	0.6+	0.7+	1999 04 15	704	0.3−	0.1+	1999 05 13	704	0.1+	0.4+
1996 11 02	596	0.1+	0.6+	1999 05 10	704	0.5+	0.5−				

1996 VY = 1999 JR₁₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				Williams				<i>P</i>				<i>Q</i>			
0.83839				(2000.0)				<i>P</i>				<i>Q</i>			
<i>n</i>	0.24256183	<i>ω</i>	52.26601					+0.04730993				+0.98794971			
<i>a</i>	2.5463675	<i>Ω</i>	221.20330					−0.97234133				+0.01176713			
<i>e</i>	0.1435055	<i>i</i>	12.92724					−0.22872276				+0.15432728			
<i>P</i>	4.06	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	4								

Residuals in seconds of arc

1996 10 16	691	0.2+	0.3+	1996 11 09	709	0.4−	1.1+	1999 05 18	704	0.7−	0.3+
1996 10 16	691	0.1−	0.1+	1996 11 13	709	0.0	1.0−	1999 05 18	704	(0.5−	2.2+)
1996 10 16	691	1.1−	0.1−	1996 11 13	709	0.0	1.0−	1999 05 18	704	0.3−	0.6+
1996 11 03	540	0.6−	0.0	1996 11 13	709	0.1+	0.8−	1999 06 05	540	0.0	1.1+
1996 11 03	540	0.5+	1.2−	1996 11 13	709	0.0	0.9−	1999 06 05	540	0.7+	0.3+
1996 11 03	540	0.4+	0.1−	1996 11 17	816	0.0	0.4−	1999 06 05	540	0.3+	0.3−
1996 11 03	540	0.7+	0.1−	1996 11 17	816	0.4+	0.2+	1999 06 08	704	0.5−	0.2+
1996 11 04	540	1.5+	0.7−	1996 11 17	816	0.1+	0.2−	1999 06 08	704	1.3+	0.5+
1996 11 04	540	0.9+	1.4−	1996 11 17	816	0.2+	0.1+	1999 06 08	704	0.7−	0.7−
1996 11 09	709	0.7−	0.7+	1999 05 13	704	0.3−	0.9−	1999 06 08	704	0.2+	0.8−
1996 11 09	709	0.1−	1.4+	1999 05 13	704	0.3+	1.0−	1999 06 14	704	0.0	0.5+
1996 11 09	709	0.5−	1.2+	1999 05 13	704	1.1+	1.0−	1999 06 14	704	0.4−	0.3+
1996 11 09	709	0.4−	1.1+	1999 05 13	704	1.6+	0.9+	1999 06 14	704	0.5−	0.1−
1996 11 09	709	0.6−	0.9+	1999 05 18	704	1.4−	0.0	1999 06 14	704	0.2−	0.8−
1996 11 09	709	0.3−	0.8+	1999 05 18	704	1.0−	0.7+	1999 06 14	704	0.7+	0.0

1996 VL₄ = 1999 JM₄₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				Williams				<i>P</i>				<i>Q</i>			
302.18197				(2000.0)				<i>P</i>				<i>Q</i>			
<i>n</i>	0.20965957	<i>ω</i>	261.48760					+0.71031191				+0.70217580			
<i>a</i>	2.8062493	<i>Ω</i>	53.89281					−0.61956474				+0.65677341			
<i>e</i>	0.0755070	<i>i</i>	3.48084					−0.33406066				+0.27495061			
<i>P</i>	4.70	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	2								

Residuals in seconds of arc

1991 10 13	691	0.4+	0.3−	1996 12 08	369	0.3−	0.1+	1999 05 10	704	1.0−	1.9−
1991 10 13	691	0.0	0.2−	1996 12 13	691	0.0	0.1+	1999 05 13	704	0.7−	0.4−
1991 10 13	691	0.0	0.3−	1996 12 13	691	0.1+	0.3−	1999 05 13	704	0.2−	0.2+
1996 11 06	369	0.8+	1.2−	1996 12 13	691	0.2+	0.1+	1999 05 13	704	1.0−	0.7−

1996 11 06	369	0.2+	0.2−	1996 12 17	691	0.4−	0.1+	1999 05 18	704	0.2−	0.5+
1996 11 06	369	0.5+	0.2+	1996 12 17	691	0.4−	0.0	1999 05 18	704	0.2+	0.4−
1996 11 13	369	0.8−	0.3−	1996 12 17	691	0.9+	0.1+	1999 05 18	704	(0.0	2.3−)
1996 11 13	369	0.1−	0.8−	1996 12 29	369	0.2+	0.3−	1999 05 18	704	0.1+	0.4+
1996 11 13	369	0.2−	0.6+	1996 12 29	369	0.9+	0.4+	1999 05 18	704	0.9+	1.1+
1996 11 15	369	0.9−	0.2−	1996 12 29	369	0.1+	0.0	1999 05 19	704	1.0+	1.4+
1996 11 15	369	0.3−	0.5+	1997 02 04	691	0.0	0.1−	1999 05 19	704	0.4−	0.4−
1996 11 15	369	1.3−	0.1−	1997 02 04	691	0.2+	0.1−	1999 05 19	704	0.4+	0.3+
1996 11 19	369	0.4+	0.1+	1997 02 04	691	0.4+	0.1−	1999 05 19	704	(1.0−	2.1−)
1996 11 19	369	0.0	0.1+	1997 02 10	691	0.2−	0.1−	1999 06 15	704	0.0	0.7−
1996 11 19	369	0.4+	0.1−	1997 02 10	691	0.3−	0.1+	1999 06 15	704	0.7+	0.4−
1996 11 28	369	0.5+	0.5−	1997 02 10	691	0.1−	0.2−	1999 06 15	704	0.4+	0.1−
1996 11 28	369	0.1+	0.1−	1999 05 10	704	1.2−	0.1−	1999 06 15	704	0.0	0.0
1996 12 04	691	0.8−	0.0	1999 05 10	704	0.9−	1.7−	1999 06 15	704	0.4−	0.2+
1996 12 04	691	0.6−	0.1+	1999 05 10	704	0.7+	0.5+				
1996 12 08	369	1.4+	0.3+	1999 05 10	704	0.7+	0.4−				

1996 VQ₄ = 1988 RZ₇

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				Williams				<i>P</i>				<i>Q</i>			
7.39185				(2000.0)				<i>P</i>				<i>Q</i>			
<i>n</i>	0.26464261	<i>ω</i>	60.84790					+0.36012456				+0.91954604			
<i>a</i>	2.4026815	<i>Ω</i>	231.12382					−0.91066512				+0.30990770			
<i>e</i>	0.1807505	<i>i</i>	11.65760					−0.20248292				+0.24164497			
<i>P</i>	3.72	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	2								

Residuals in seconds of arc

1955 10 25	675	1.9−	1.3−	1996 11 08	691	0.1+	0.3−	1996 11 15	411	0.3−	0.1−
1955 10 25	675	0.9+	0.4−	1996 11 08	691	0.1+	0.2+	1996 11 15	411	0.8−	0.2+
1955 10 25	675	0.7+	0.3+	1996 11 08	691	0.2−	0.2+	1996 11 19	411	0.8−	0.0
1987 04 19	413	0.0	1.2−	1996 11 09	691	0.3−	0.0	1996 11 19	411	0.5−	0.1+
1987 04 19	413	0.1−	0.0	1996 11 09	691	0.4−	0.2−	1996 12 01	411	(0.7+	2.3+)
1988 09 10	033	0.6+	0.2−	1996 11 09	691	0.5−	0.0	1996 12 01	411	0.5+	0.3+
1988 09 10	033	0.3+	0.7−	1996 11 13	411	0.4+	0.1−	1999 05 21	704	1.5−	1.5−
1996 10 18	566	0.1−	0.3+	1996 11 13	411	0.9+	0.5+	1999 05 21	704	0.6−	0.5−
1996 10 18	566	0.3+	0.5+	1996 11 14	411	1.3+	0.8−	1999 05 21	704	0.2+	0.7+
1996 10 18	566	0.5+	0.2+	1996 11 14	411	0.2−	0.8+	1999 05 21	704	1.0+	1.8+

1996 VA₈ = 1999 JG₄₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	243.20803		(2000.0)	P	Q
n	0.23114465	ω	238.32410	+0.92098232	-0.38645589
a	2.6295422	Ω	144.34159	+0.37997464	+0.86292592
e	0.2455729	i	4.86419	+0.08608628	+0.32559284
P	4.26	H	14.1	G 0.15	U 4

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	104.76448		(2000.0)	P	Q
<i>n</i>	0.38350826	ω	271.09988	+0.67873216	+0.67945589
<i>a</i>	1.8762307	Ω	46.18285	-0.41951975	+0.67018824
<i>e</i>	0.1558918	<i>i</i>	22.71962	-0.60276515	+0.29864262
<i>P</i>	2.57	<i>H</i>	15.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1996 11 13	327	0.3-	0.1-	1998 04 22	704	0.6-	0.4+	1998 05 22	704	0.3-	1.1+
1996 11 13	327	0.0	0.6+	1998 04 22	704	1.0-	0.2-	1998 05 23	704	0.1+	0.0
1996 11 13	327	0.1+	0.3-	1998 04 22	704	1.4+	0.0	1998 05 23	704	0.4+	0.2+
1996 11 20	327	0.4+	0.6+	1998 04 22	704	0.4-	0.1+	1998 05 23	704	0.4+	0.3+
1996 11 20	327	0.4+	0.4-	1998 05 01	704	0.1+	0.8-	1998 05 23	704	0.2+	0.1+
1996 11 20	327	0.4+	0.5-	1998 05 01	704	0.3+	0.1-	1998 05 23	704	0.4-	0.8-
1996 11 20	327	0.3+	0.4+	1998 05 01	704	0.0	0.1-	1998 05 24	704	1.7-	0.0
1996 11 28	327	0.0	0.2+	1998 05 01	704	0.0	0.4+	1998 05 24	704	0.4+	0.3-
1996 11 28	327	0.1-	0.1+	1998 05 22	704	0.9-	0.1+	1998 05 24	704	0.5+	0.3-
1996 11 28	327	0.6-	0.2-	1998 05 22	704	0.2-	0.7+	1998 05 24	704	1.4+	1.1-
1996 11 28	327	0.6-	0.2-	1998 05 22	704	0.0	0.8+	1998 05 24	704	0.2+	0.8-
1998 04 22	704	(2.5-	0.9+)	1998 05 22	704	0.2+	0.2+				

1996 VK₁₇ = 1999 LS₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	51.66470		(2000.0)	P	Q
<i>n</i>	0.18632435	ω	125.82670	-0.97681761	+0.21055934
<i>a</i>	3.0359152	Ω	66.35639	-0.20748700	-0.88680916
<i>e</i>	0.1262081	<i>i</i>	2.41674	-0.05269253	-0.41138094
<i>P</i>	5.29	<i>H</i>	15.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1996 10 07	691	0.3-	0.2+	1996 11 11	691	0.2-	0.0	1999 06 10	691	0.4-	0.4-
1996 10 07	691	0.3+	0.0	1996 11 11	691	0.6-	0.2+	1999 06 10	691	0.1-	0.2+
1996 10 07	691	0.1+	0.4-	1996 11 11	691	0.2-	0.3+	1999 06 10	691	0.1-	0.0
1996 11 06	691	0.0	0.2+	1996 11 18	691	0.4+	0.1-	1999 06 15	691	0.4+	0.0
1996 11 06	691	0.4+	0.1-	1996 11 18	691	0.1-	0.1-	1999 06 15	691	0.2+	0.1-
1996 11 06	691	0.1+	0.1-	1996 11 18	691	0.1+	0.0	1999 06 15	691	0.0	0.4+

1996 VL₁₈ = 1999 JW₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	337.79563		(2000.0)	P	Q
<i>n</i>	0.18171492	ω	83.38850	-0.24500681	+0.96926016
<i>a</i>	3.0870405	Ω	172.31725	-0.94270172	-0.23274339
<i>e</i>	0.0935285	<i>i</i>	9.69072	-0.22646220	-0.07978260
<i>P</i>	5.42	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1996 11 06	691	0.1-	0.2-	1999 04 07	704	1.2-	1.5+	1999 05 09	703	0.1+	0.4+
1996 11 06	691	0.4-	0.2-	1999 04 12	704	0.7+	0.7-	1999 05 13	704	0.3+	0.3-
1996 11 06	691	0.0	0.2-	1999 04 12	704	1.4-	0.9-	1999 05 13	704	(2.3-	2.8-)
1996 11 08	691	0.6+	0.3+	1999 04 12	704	0.4+	0.6+	1999 05 13	704	0.8-	1.4-
1996 11 08	691	0.5+	0.0	1999 04 12	704	0.0	0.1-	1999 05 13	704	(1.8+	3.1-)
1996 11 08	691	0.6+	0.1+	1999 05 08	703	0.2+	0.7-	1999 05 13	704	(1.8-	2.7-)
1996 11 13	691	0.5-	0.0	1999 05 08	703	0.5+	0.7+	1999 05 16	703	0.7+	0.3+
1996 11 13	691	0.2-	0.1+	1999 05 08	703	0.3+	0.4+	1999 05 16	703	0.7-	0.3-
1996 11 13	691	0.4-	0.0	1999 05 08	703	0.1-	1.1+	1999 05 16	703	0.6-	0.5-
1999 04 07	704	0.2+	1.0-	1999 05 09	703	1.0+	0.4+	1999 05 16	703	0.8-	0.2+
1999 04 07	704	0.6+	0.0	1999 05 09	703	0.4+	0.6-				
1999 04 07	704	(2.3-	1.5-)	1999 05 09	703	0.0	0.6+				

1996 VU₂₉ = 1999 JV₁₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	309.20614		(2000.0)	P	Q
<i>n</i>	0.26180441	ω	134.99825	+0.91499876	+0.40243366
<i>a</i>	2.4200151	Ω	201.32158	-0.38881364	+0.86055496
<i>e</i>	0.2034819	<i>i</i>	4.52922	-0.10770899	+0.31223759
<i>P</i>	3.76	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1996 11 02	327	0.4+	0.5+	1999 05 13	704	1.0+	0.1+	1999 06 09	704	0.1+	0.1-
1996 11 02	327	0.7+	0.5+	1999 05 13	704	1.0+	1.8+	1999 06 09	704	(2.4+	1.4-)
1996 11 02	327	0.8+	0.4+	1999 05 13	704	0.4-	0.3+	1999 06 09	704	0.8-	1.1-
1996 11 07	399	0.9-	0.4-	1999 05 18	704	0.2+	0.0	1999 06 09	704	0.6+	0.2-
1996 11 07	399	0.7-	0.1+	1999 05 18	704	0.4-	0.0	1999 06 09	704	1.2-	0.5+
1996 11 12	399	0.2-	0.1+	1999 05 18	704	0.4-	0.9+	1999 06 14	704	0.2+	0.6-
1996 11 12	399	0.8+	0.5+	1999 05 19	704	0.3-	1.4-	1999 06 14	704	0.2-	0.6-
1996 11 15	399	0.3-	0.1-	1999 05 19	704	0.5-	0.7+	1999 06 14	704	0.1+	0.4-
1996 11 15	399	0.7-	0.7-	1999 05 19	704	1.2-	0.3-	1999 06 14	704	0.2-	0.2+
1999 05 13	704	0.4+	0.1-	1999 05 19	704	1.1+	0.2+	1999 06 14	704	0.2+	0.4+
1999 05 13	704	0.6+	0.0	1999 05 19	704	0.0	0.6+				

1996 VV₂₉ = 1999 JZ₄₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	162.31032		(2000.0)	P	Q
<i>n</i>	0.18868880	ω	22.69444	+0.23416920	-0.96268368
<i>a</i>	3.0105000	Ω	54.02317	+0.86426832	+0.14223393
<i>e</i>	0.1227012	<i>i</i>	9.65072	+0.44520227	+0.23023823
<i>P</i>	5.22	<i>H</i>	13.2	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1996 11 07	399	0.9-	1.0-	1999 05 10	704	1.1-	0.8-	1999 05 18	704	(0.0	2.2+)
1996 11 07	399	0.1-	0.9-	1999 05 13	704	0.8+	0.9+	1999 05 19	704	0.3-	0.8-
1996 11 12	399	1.8+	1.4+	1999 05 13	704	1.1-	0.1+	1999 05 19	704	1.3+	1.4-
1996 11 12	399	0.5+	0.2-	1999 05 13	704	0.1-	0.9-	1999 05 19	704	1.1+	1.3+
1996 11 15	399	0.7-	1.8+	1999 05 13	704	0.5-	0.5+	1999 06 15	704	0.5-	0.5-
1996 11 15	399	1.1-	0.2-	1999 05 18	704	0.6-	0.8+	1999 06 15	704	0.5+	0.2-
1999 05 10	704	0.5+	1.1+	1999 05 18	704	0.6+	0.3+	1999 06 15	704	0.0	0.3-
1999 05 10	704	0.7+	0.3+	1999 05 18	704	0.4+	0.6-	1999 06 15	704	0.5-	0.1-
1999 05 10	704	1.2-	0.4-	1999 05 18	704	0.4+	1.7+				

1996 VY₃₈ = 1996 TB₆₈ = 1998 CU₄

Id. A. Doppler, G. V. Williams (d)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	59.83058		(2000.0)	P	Q
<i>n</i>	0.28240773	ω	129.37207	-0.33553582	+0.94170065
<i>a</i>	2.3008325	Ω	121.00591	-0.87295067	-0.30092416
<i>e</i>	0.0631092	<i>i</i>	1.65879	-0.35408026	-0.15048101
<i>P</i>	3.49	<i>H</i>	15.5	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1995 05 31	691	0.2-	1.2+	1996 11 07	327	0.1-	0.9+	1998 01 22	696	0.3+	1.0+
1995 05 31	691	1.5+	1.3+	1996 11 07	327	0.3+	0.0	1998 01 22	696	0.4+	0.9+
1995 05 31	691	0.2-	1.1+	1996 11 07	327	0.5+	0.1+	1998 02 06	809	0.9-	0.4+
1996 10 14	327	0.2-	0.5+	1996 11 07	327	0.1+	0.4+	1998 02 06	809	1.4-	0.8+
1996 10 14	327	0.1-	0.3+	1996 11 07	327	0.3-	0.3-	1998 02 06	809	0.7-	0.4-
1996 10 14	327	0.4+	0.0	1996 11 16	327	0.2-	0.6-	1998 02 07	809	(3.0+	4.1+)
1996 10 29	327	0.5+	0.6+	1996 11 16	327	0.1-	0.2-	1998 02 07	809	(2.7+	3.2+)
1996 10 29	327	0.2-	1.1+	1996 11 16	327	0.3-	0.2+	1998 02 07	809	(2.7+	4.3+)
1996 10 29	327	1.1-	0.7+	1998 01 09	910	0.9+	0.0	1998 02 26	566	0.0	0.4-
1996 10 29	327	0.8-	0.6+	1998 01 09	910	1.1+	0.0	1998 02 26	566	0.2+	0.3-
1996 11 07	327	0.1+	0.4-	1998 01 09	910	1.0+	0.1+	1998 02 26	566	0.4+	0.1-

1996 WU = 1999 JR₅₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	66.32927	(2000.0)	P		Q	
<i>n</i>	0.17721219	ω	299.95515	-0.99685591	-0.04965021	
<i>a</i>	3.1391133	Ω	237.26394	+0.06865376	-0.93031385	
<i>e</i>	0.1179354	<i>i</i>	4.20989	-0.03955943	-0.36338823	
<i>P</i>	5.56	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1996 11 09	691	0.1-	0.3-	1999 05 10	704	0.9-	0.1-	1999 05 19	704	0.9-	0.4-
1996 11 09	691	0.1-	0.3-	1999 05 10	704	1.2-	0.3+	1999 06 09	704	0.5+	0.1-
1996 11 09	691	0.2-	0.4-	1999 05 13	704	0.0	0.4-	1999 06 09	704	0.4+	0.2-
1996 11 17	817	0.1+	0.2+	1999 05 13	704	0.5-	0.3+	1999 06 09	704	0.3+	0.7+
1996 11 17	817	0.1+	0.3+	1999 05 13	704	0.5-	1.1+	1999 06 09	704	0.3+	0.1-
1996 11 20	817	0.0	0.3+	1999 05 13	704	0.3+	1.3+	1999 06 09	704	1.4-	1.0-
1996 11 20	817	0.1-	0.4+	1999 05 13	704	0.4+	0.9+	1999 06 15	691	0.1-	0.2+
1996 11 20	817	0.1+	0.2+	1999 05 18	704	0.5+	0.3-	1999 06 15	704	0.2+	0.4-
1996 11 28	817	0.2-	0.1+	1999 05 18	704	0.2+	0.6-	1999 06 15	704	0.1+	0.2+
1996 11 28	817	0.3-	0.3+	1999 05 18	704	0.7+	0.6+	1999 06 15	691	0.2-	0.4+
1996 11 30	817	0.3+	0.3-	1999 05 18	704	0.8+	0.2-	1999 06 15	704	0.3-	0.1-
1996 11 30	817	0.3+	0.3-	1999 05 18	704	0.8+	0.1+	1999 06 15	704	0.1-	0.1+
1999 05 10	704	0.2+	1.4-	1999 05 19	704	0.0	0.3-	1999 06 15	691	0.1-	0.5+
1999 05 10	704	0.4+	0.3+	1999 05 19	704	0.1+	0.1-	1999 06 15	704	0.4-	0.1+
1999 05 10	704	0.1+	0.2-	1999 05 19	704	0.2+	1.2-				

1996 WH₂ = 1987 WR₅ = 1999 JW₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	303.78281	(2000.0)	P		Q	
<i>n</i>	0.22376755	ω	74.93836	+0.76985191	+0.60890845	
<i>a</i>	2.6870225	Ω	247.17372	-0.63564980	+0.70465831	
<i>e</i>	0.1951521	<i>i</i>	11.97291	-0.05724831	+0.36426250	
<i>P</i>	4.40	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1987 11 16	327	0.1-	1.4+	1999 04 15	704	1.9+	0.4+	1999 05 18	704	1.7-	0.0
1996 11 30	817	0.7-	0.2-	1999 04 15	704	(1.0+	3.4+)	1999 05 18	704	1.2-	0.2-
1996 11 30	817	0.9-	0.3-	1999 05 10	704	0.3+	0.6-	1999 05 18	704	0.2+	0.2-
1996 11 30	817	0.5-	0.1-	1999 05 10	704	0.7+	0.4+	1999 05 19	704	0.2+	0.1+
1996 12 03	817	0.4+	0.5-	1999 05 10	704	0.1+	0.4+	1999 05 19	704	0.5-	0.4-
1996 12 03	817	0.4+	0.7-	1999 05 10	704	0.8+	0.6-	1999 05 19	704	0.2-	1.0+
1996 12 21	817	0.7+	0.1-	1999 05 10	704	0.7+	0.1+	1999 05 19	704	0.5-	0.5-
1996 12 21	817	0.3+	0.7+	1999 05 13	704	1.5-	0.7-	1999 05 19	704	0.9-	0.5+
1996 12 21	817	0.4+	0.5+	1999 05 13	704	0.9-	0.3-	1999 06 09	704	1.2+	0.4-
1999 04 15	699	0.9+	0.3+	1999 05 13	704	0.6-	1.9-	1999 06 09	704	1.5+	1.4+
1999 04 15	704	0.5+	0.4+	1999 05 13	704	1.0-	0.2-	1999 06 09	704	1.1+	0.3+
1999 04 15	699	0.2+	0.3+	1999 05 13	704	0.7-	0.1+	1999 06 09	704	0.7-	0.2-
1999 04 15	704	1.3+	0.7+	1999 05 18	704	0.4-	0.2+	1999 06 09	704	1.0+	0.6+
1999 04 15	699	0.2+	0.7+	1999 05 18	704	1.0-	0.6-				

1996 WJ₃ = 1999 JW₄₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	112.69691	(2000.0)	P		Q	
<i>n</i>	0.18869228	ω	275.12231	-0.52455119	-0.84767930	
<i>a</i>	3.0104630	Ω	206.98478	+0.83385692	-0.49272735	
<i>e</i>	0.1286565	<i>i</i>	10.06281	+0.17183916	-0.19662032	
<i>P</i>	5.22	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1995 06 28	691	0.0	0.1-	1997 01 06	327	0.8+	0.5+	1999 05 18	704	0.9-	0.4+
1995 06 28	691	0.1+	0.2+	1999 05 10	704	0.4-	0.2+	1999 05 18	704	1.4+	0.9+
1995 06 28	691	0.0	0.3-	1999 05 10	704	0.4-	1.0+	1999 05 18	704	0.5-	0.7+
1996 11 15	327	0.7+	0.1+	1999 05 10	704	0.4-	0.3-	1999 05 18	704	0.4+	0.7+
1996 11 15	327	0.1-	0.8+	1999 05 10	704	0.0	1.3-	1999 06 05	703	0.1-	0.8-
1996 11 15	327	0.6+	0.3+	1999 05 10	704	0.3-	0.1-	1999 06 05	703	0.5+	0.2+
1996 11 15	327	0.3-	0.2+	1999 05 13	704	0.1+	0.4-	1999 06 05	703	0.8+	1.2+

1996 11 27	327	0.5+	0.0	1999 05 13	704	0.6+	0.4-	1999 06 05	703	0.1-	1.1+
1996 11 27	327	0.1+	0.4+	1999 05 13	704	0.2+	0.4-	1999 06 08	704	0.1-	0.4-
1996 11 27	327	0.3+	0.2-	1999 05 13	704	0.3+	0.7+	1999 06 08	704	1.0-	0.9-
1996 11 29	327	0.3-	0.4-	1999 05 13	704	(1.6+	2.8+)	1999 06 08	704	1.0-	1.5+
1996 11 29	327	1.0-	0.7-	1999 05 14	704	0.8-	1.4-	1999 06 08	704	0.6+	0.2-
1996 11 29	327	0.2-	0.2-	1999 05 14	704	0.8-	0.8+	1999 06 08	704	(0.9+	2.6+)
1996 11 29	327	1.3-	1.0-	1999 05 14	704	1.2-	0.6-	1999 06 14	704	0.7+	0.3-
1996 11 29	327	0.5-	0.8-	1999 05 14	704	0.2-	0.2-	1999 06 14	704	0.2+	0.3+
1997 01 02	327	0.1+	0.4+	1999 05 17	703	0.1+	0.5+	1999 06 14	704	0.2+	0.3-
1997 01 02	327	0.5+	0.4+	1999 05 17	703	0.3+	0.1+	1999 06 14	704	0.6-	0.9-
1997 01 02	327	0.0	0.2+	1999 05 17	703	1.2+	0.4-	1999 06 14	704	0.1+	0.0
1997 01 06	327	0.8-	0.9+	1999 05 17	703	1.1+	0.1+				
1997 01 06	327	0.9+	0.9+	1999 05 18	704	0.1+	0.1+				

1996 XX = 1999 LU₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	314.12728	(2000.0)	P		Q	
<i>n</i>	0.22872149	ω	256.76845	+0.78111983	+0.57234198	
<i>a</i>	2.6480818	Ω	67.76787	-0.41540725	+0.77476142	
<i>e</i>	0.1170919	<i>i</i>	15.64014	-0.46614228	+0.26864365	
<i>P</i>	4.31	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1996 12 01	369	0.1-	0.5+	1996 12 14	369	0.2+	1.2-	1999 06 09	704	0.3-	0.2-
1996 12 01	369	0.2+	0.2+	1997 01 02	369	0.6-	0.7+	1999 06 15	704	0.0	0.0
1996 12 02	369	0.9+	0.1+	1997 01 02	369	0.4-	0.3-	1999 06 15	704	0.4+	0.0
1996 12 02	369	0.2-	0.2-	1999 06 09	704	0.9+	0.2+	1999 06 15	704	0.3+	0.0
1996 12 06	369	0.1-	0.1+	1999 06 09	704	0.6+	0.4+	1999 06 15	704	0.2-	0.2-
1996 12 06	369	0.3-	0.9+	1999 06 09	704	0.1+	0.8+	1999 06 15	704	0.4+	0.1+
1996 12 14	369	0.2+	0.7-	1999 06 09	704	2.1-	1.2-				

1996 XQ₁ = 1999 JV₁₀₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	272.71147	(2000.0)	P		Q	
<i>n</i>	0.18179602	ω	258.52623	+0.92100068	+0.05849771	
<i>a</i>	3.0861223	Ω	97.23135	+0.07459379	+0.94388524	
<i>e</i>	0.0620441	<i>i</i>	22.84452	-0.38235260	+0.32505180	
<i>P</i>	5.42	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1996 12 02	411	0.5+	0.3+	1999 05 12	704	0.2-	0.3-	1999 06 08	704	0.9+	1.2-
1996 12 02	411	0.2+	0.2+	1999 05 12	704	0.1+	0.7+	1999 06 08	704	1.9-	1.9-
1996 12 03	411	0.1-	0.8-	1999 05 12	704	0.0	1.1+	1999 06 08	704	0.0	0.6-
1996 12 03	411	0.6+	0.2-	1999 05 12	704	0.6-	0.4+	1999 06 14	704	0.4+	0.2+
1996 12 08	411	0.2+	0.2-	1999 05 12	704	1.6-	0.9-	1999 06 14	704	0.4+	0.0
1996 12 08	411	0.3+	0.0	1999 05 17	704	0.0	0.5-	1999 06 14	704	0.3+	0.3+
1996 12 19	411	0.5-	0.4+	1999 05 17	704	0.1-	0.8+	1999 06 14	704	0.3+	0.6+
1996 12 19	411	0.3-	0.1+	1999 05 17	704	0.8+	0.5-	1999 06 14	704	0.6+	0.3-
1996 12 28	411	0.2+	0.4-	1999 05 17	704	0.1+	1.4+				
1996 12 28	411	0.9-	0.3+	1999 06 08	704	0.3+	0.5+				

1996 XB₉ = 1999 JP₇₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	287.17540	(2000.0)	P		Q	
<i>n</i>	0.23400656	ω	266.10624	+0.91709318	+0.29992973	
<i>a</i>	2.6080587	Ω	76.29277	-0.16206868	+0.88238275	
<i>e</i>	0.1527652	<i>i</i>	15.68476	-0.36424421	+0.36255045	
<i>P</i>	4.21	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1996 12 04	596	0.4+	1.5+	1999 05 13	704	0.2-	0.4+	1999 05 18	704	0.6+	0.3+
1996 12 04	596	0.8+	1.9+	1999 05 13	704	0.4-	0.4+	1999 05 18	704	0.3-	0.5-
1996 12 04	596	0.1-	0.2+	1999 05 13	704	0.6+	1.9+	1999 06 05	703	0.5-	0.5+
1996 12 05	596	0.7+	0.2+	1999 05 13	704	1.5+	0.6-	1999 06 05	703	0.2-	0.6+
1996 12 05	596	1.0+	0.4+	1999 05 13	704	0.0	1.2-	1999 06 05	703	0.6+	0.4+

1996 12 05	596	0.6+	0.6+	1999 05 14	704	0.8−	0.2−	1999 06 05	703	1.1+	0.8+
1996 12 15	596	1.2−	0.2−	1999 05 14	704	0.5−	0.5+	1999 06 08	704	0.1+	1.0+
1996 12 15	596	1.1−	0.2−	1999 05 14	704	0.3−	0.4+	1999 06 08	704	0.4−	0.9+
1996 12 15	596	1.1−	0.8−	1999 05 14	704	1.9−	1.2+	1999 06 08	704	0.3−	0.8−
1996 12 16	596	1.5−	0.2+	1999 05 17	704	0.8+	0.5+	1999 06 08	704	0.9−	0.2+
1996 12 16	596	1.3−	0.4+	1999 05 17	704	0.4+	1.7−	1999 06 08	704	1.0−	0.5−
1996 12 16	596	(2.2−	0.3+)	1999 05 17	704	0.2−	0.5−	1999 06 14	704	0.3+	0.4+
1999 05 12	704	0.8+	0.8−	1999 05 17	704	1.1+	0.4−	1999 06 14	704	0.4+	0.8+
1999 05 12	704	0.2−	0.5+	1999 05 17	704	0.3−	0.8−	1999 06 14	704	0.5+	1.0+
1999 05 12	704	0.1+	1.4+	1999 05 18	704	0.9+	0.3−	1999 06 14	704	0.9+	0.9+
1999 05 12	704	0.4+	1.1−	1999 05 18	704	0.6−	0.2+	1999 06 14	704	0.2−	0.3+
1999 05 12	704	0.2+	1.1−	1999 05 18	704	0.5+	0.3−				

1996 XC₁₉ = 1999 LD₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	237.37108		(2000.0)		$\mathbf{P}$		$\mathbf{Q}$
n	0.18862215	ω	288.25237		+0.79929742		−0.57810663
a	3.0112091	Ω	107.37818		+0.59555179		+0.72558087
e	0.0422666	i	9.89883		+0.08026021		+0.37326281
P	5.23	H	14.0	G	0.15	U	4

Residuals in seconds of arc

1996 12 08	411	0.8−	0.1+	1997 01 13	411	0.2−	0.4+	1999 06 09	704	0.2+	0.1−
1996 12 08	411	0.3+	0.9−	1997 01 13	411	0.1+	0.6+	1999 06 09	704	0.6−	0.6+
1996 12 11	411	0.5−	0.2−	1998 02 26	566	0.0	0.0	1999 06 09	704	0.2−	0.7−
1996 12 11	411	0.4+	0.9−	1998 02 26	566	0.1−	0.0	1999 06 09	704	0.7−	1.5−
1996 12 11	411	0.2+	0.4−	1998 02 26	566	0.0	0.1+	1999 06 15	704	0.6+	0.2−
1996 12 18	411	0.7+	1.1−	1998 04 28	566	0.1+	0.3+	1999 06 15	704	0.5+	0.3−
1996 12 18	411	0.1+	0.6−	1998 04 28	566	0.0	0.1−	1999 06 15	704	0.3+	0.3−
1996 12 28	411	0.1−	0.2−	1998 04 28	566	0.2+	0.6+	1999 06 15	704	1.0−	0.2−
1996 12 28	411	0.2+	0.3+	1999 06 09	704	0.3−	0.1+	1999 06 15	704	0.4+	0.4−

1996 XJ₂₀ = 1999 JB₄₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	323.93112		(2000.0)		$\mathbf{P}$		$\mathbf{Q}$
n	0.21167144	ω	35.46077		+0.45111362		+0.89206522
a	2.7884393	Ω	261.36788		−0.82494161		+0.40535282
e	0.0788343	i	1.55105		−0.34054050		+0.19977173
P	4.66	H	15.0	G	0.15	U	5

Residuals in seconds of arc

1996 12 04	691	0.2−	0.3−	1996 12 17	691	0.3+	0.3−	1999 05 10	704	0.2+	0.4−
1996 12 04	691	0.2−	0.1+	1996 12 17	691	0.2+	0.1−	1999 05 10	704	0.1−	1.7−
1996 12 04	691	0.1−	0.2+	1996 12 17	691	1.1−	0.1+	1999 05 13	704	0.5+	0.2+
1996 12 13	691	0.3+	0.2+	1999 05 10	704	0.5+	0.1−	1999 05 13	704	1.4−	1.6+
1996 12 13	691	0.3+	0.3−	1999 05 10	704	0.3−	0.8+	1999 05 13	704	1.2+	1.2−
1996 12 13	691	0.4+	0.4+	1999 05 10	704	0.0	0.6+	1999 05 13	704	0.6−	0.1+

1996 YX₂

Id. A. Gnädig (1990-1991 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	177.29262		(2000.0)		P		Q
n	0.17218989	ω	31.19867		+0.05040264		−0.99856717
a	3.1998598	Ω	55.91805		+0.91178547		+0.03866199
e	0.1798620	i	1.24371		+0.40756207		+0.03699798
P	5.72	H	14.5	G	0.15	U	3

Residuals in seconds of arc

1990 10 16	675	0.6+	0.6+	1997 01 02	369	0.4+	0.0	1997 02 13	369	0.5+	0.7−
1990 10 16	675	0.4−	0.3−	1997 01 02	369	0.1+	1.1−	1998 03 02	910	0.9+	0.5+
1991 02 09	675	0.9−	0.2+	1997 01 09	369	0.3−	0.2+	1998 03 02	910	0.7+	0.6+
1991 02 09	675	0.5+	0.5+	1997 01 09	369	0.2−	0.1+	1998 03 02	910	0.9+	0.2+
1996 12 29	369	0.0	0.1−	1997 01 10	675	0.8−	0.9+	1998 03 29	704	0.6−	1.3−
1996 12 29	369	0.1+	0.4+	1997 01 10	675	0.1+	0.3+	1998 03 29	704	0.4−	2.0+
1996 12 29	369	0.5−	0.3−	1997 02 06	369	0.7+	0.6+	1998 03 29	704	1.1−	1.5−

1996 12 30	369	0.0	0.5−	1997 02 06	369	0.0	0.4−
1996 12 30	369	0.0	0.3−	1997 02 13	369	(2.2+	0.5−)

1997 AP₁ = 1982 JE

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	270.63419		(2000.0)		P		Q
n	0.18381941	ω	254.71109		+0.96857725		-0.16096037
a	3.0634336	Ω	114.24658		+0.21470089		+0.92593168
e	0.1417839	i	12.00215		-0.12554538		+0.34167569
P	5.36	H	12.8	G	0.15	U	1

Residuals in seconds of arc

1950 04 20	675	0.3+	0.0	1998 02 25	566	(1.5−	2.3−)	1998 05 16	704	0.7−	0.7+
1950 04 20	675	0.8−	0.8−	1998 02 25	566	(1.3−	2.4−)	1998 05 16	704	1.1−	1.8−
1982 05 13	033	0.6+	0.3−	1998 02 25	566	(1.3−	2.9−)	1999 06 08	704	0.0	0.3+
1982 05 13	033	0.3−	0.4−	1998 03 26	566	0.2−	0.1+	1999 06 08	704	0.0	0.2+
1997 01 02	411	0.3+	0.3−	1998 03 26	566	0.1−	0.3+	1999 06 08	704	0.2+	0.6+
1997 01 02	411	0.8+	0.2−	1998 03 26	566	0.1+	0.1−	1999 06 08	704	0.5−	0.1+
1997 01 03	411	1.2−	0.1−	1998 04 24	704	0.6+	0.0	1999 06 08	704	0.1+	0.3+
1997 01 03	411	0.6−	1.1−	1998 04 24	704	0.6+	0.6+	1999 06 14	704	0.4+	0.2+
1997 01 09	411	0.2+	0.6+	1998 04 24	704	0.3+	0.7−	1999 06 14	704	0.2+	0.5−
1997 01 09	411	0.1+	0.2+	1998 04 24	704	0.6+	0.0	1999 06 14	704	0.1+	0.2−
1997 01 14	411	0.3+	0.4+	1998 04 24	704	0.1+	0.7+	1999 06 14	704	0.0	0.3−
1997 01 14	411	0.7+	0.6+	1998 05 16	704	0.0	1.0+	1999 06 14	704	0.2−	0.2+
1997 01 27	411	0.3−	0.0	1998 05 16	704	0.1−	0.4−				
1997 01 27	411	0.1−	0.4+	1998 05 16	704	0.4−	0.3+				

1997 AF₃ = 1981 UX₃

Id. A. Gnädig, S. Nakano, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	242.34701		(2000.0)		P		Q
n	0.27045673	ω	102.06950		−0.72772311		−0.68394986
a	2.3681226	Ω	34.81534		+0.58913803		−0.66163436
e	0.1294460	i	5.15512		+0.35119149		−0.30733136
P	3.64	H	13.5	G	0.15	U	1

Residuals in seconds of arc

1981 10 30	381	0.1+	0.4−	1996 12 24	327	0.3+	0.5−	1997 01 10	411	0.3−	1.2+
1981 10 30	381	0.2+	0.7−	1997 01 04	411	0.2+	0.6+	1997 01 16	411	0.5+	0.3+
1983 05 12	413	0.3+	0.6+	1997 01 04	411	0.5−	0.7−	1997 01 16	411	0.3−	0.1+
1983 05 12	413	0.2−	0.4−	1997 01 06	411	0.2+	1.2−	1997 01 27	411	0.2−	0.0
1988 11 03	413	1.8−	0.7+	1997 01 06	411	0.2+	0.1−	1997 01 27	411	0.3−	0.0
1988 11 03	413	1.1+	0.6+	1997 01 10	411	0.3+	0.9+				

1997 AY₅ = 1999 LZ₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	207.04911		(2000.0)		P		Q
n	0.24018803	ω	183.62294		−0.18303975		−0.97781028
a	2.5631173	Ω	276.94324		+0.90454227		−0.12690382
e	0.1494024	i	5.89192		+0.38509705		−0.16668078
P	4.10	H	15.1	G	0.15	U	3

Residuals in seconds of arc

1996 11 01	327	0.3+	0.2+	1997 01 05	327	0.2+	0.2+	1998 04 20	688	0.4+	0.9+
1996 11 01	327	0.4+	0.1+	1997 01 05	327	0.5−	0.5+	1998 04 20	688	0.2+	1.0+
1996 11 01	327	0.0	0.1−	1997 01 10	327	0.4−	0.3+	1999 06 08	691	0.1−	0.8+
1996 11 01	327	0.1−	0.0	1997 01 10	327	0.2+	0.1+	1999 06 08	691	0.1−	0.4+
1997 01 02	327	0.8−	0.5+	1997 01 10	327	0.1−	0.1+	1999 06 08	691	0.1+	0.3+
1997 01 02	327	0.2−	0.4+	1997 01 14	327	0.5+	0.1−	1999 06 13	691	0.4−	0.6+
1997 01 02	327	0.6−	0.4+	1997 01 14	327	0.1+	0.1−	1999 06 13	691	0.3−	0.1+
1997 01 05	327	0.2−	0.1−	1997 01 14	327	0.6+	0.8+	1999 06 13	691	0.0	0.2+

1997 AH₈ = 1989 YE₉

Id. A. Gnädig

M.P.C. 34872

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	280.60898	(2000.0)	P	Q
<i>n</i>	0.28324010	ω	336.31639	-0.34068368
<i>a</i>	2.2963225	Ω	133.45605	+0.88175728
<i>e</i>	0.0586479	<i>i</i>	7.35390	+0.32624948
<i>P</i>	3.48	<i>H</i>	14.4	<i>G</i> 0.15 <i>U</i> 3

Residuals in seconds of arc

1989 11 07	675	2.1+	0.6+	1994 03 09	413	0.0	0.4+	1997 03 31	704	0.6+	0.0
1989 11 07	675	1.1-	0.0	1997 01 02	691	0.7-	0.4-	1997 03 31	704	0.4+	0.1-
1989 12 07	675	0.5-	0.4+	1997 01 02	691	0.6-	0.3-	1997 04 01	704	0.8-	0.6+
1989 12 07	675	1.2+	0.2-	1997 01 02	691	0.3-	0.3-	1997 04 01	704	0.1-	0.1+
1989 12 31	413	1.5-	0.9+	1997 01 10	691	(0.3- 7.0-)		1997 04 01	704	0.7+	0.3+
1989 12 31	413	0.5+	0.3+	1997 01 10	691	0.0	0.6-	1997 04 01	704	0.7+	0.1-
1994 03 09	413	0.0	0.3-	1997 01 10	691	0.1+	0.7-				

1997 AT₂₁ = 1998 GC₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	137.96928	(2000.0)	P	Q
<i>n</i>	0.22003607	ω	70.49516	-0.86033794
<i>a</i>	2.7173159	Ω	82.75926	+0.31083217
<i>e</i>	0.0434348	<i>i</i>	15.19130	+0.40398267
<i>P</i>	4.48	<i>H</i>	13.8	<i>G</i> 0.15 <i>U</i> 5

Residuals in seconds of arc

1997 01 11	327	0.4-	0.3+	1997 02 01	327	0.4+	0.1+	1998 04 02	704	0.1+	0.7-
1997 01 11	327	0.2-	0.2+	1997 02 01	327	0.3-	0.1+	1998 04 03	704	1.3+	0.6+
1997 01 11	327	0.2+	0.3-	1997 02 01	327	0.1+	0.3-	1998 04 03	704	0.9-	0.2-
1997 01 11	327	0.3-	0.4+	1998 04 02	704	0.8+	0.1+	1998 04 03	704	0.4+	0.1-
1997 01 15	327	0.2+	0.3-	1998 04 02	704	1.0-	0.6+	1998 04 03	704	0.7-	0.0
1997 01 15	327	0.1-	0.0	1998 04 02	704	0.5+	0.0	1998 04 03	704	(4.5- 0.3+)	
1997 01 15	327	0.5+	0.2-	1998 04 02	704	0.5-	0.4-				

1997 BZ₂ = 1990 QX₆

Id. A. Gnädig, S. Nakano, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	145.07959	(2000.0)	P	Q
<i>n</i>	0.23571351	ω	82.94301	-0.61722332
<i>a</i>	2.5954524	Ω	148.84926	-0.74695324
<i>e</i>	0.1683412	<i>i</i>	4.06441	-0.24717653
<i>P</i>	4.18	<i>H</i>	14.6	<i>G</i> 0.15 <i>U</i> 2

Residuals in seconds of arc

1982 11 07	413	0.7-	0.2+	1997 02 06	411	1.1+	0.2+	1997 02 26	411	0.6+	1.3+
1982 11 07	413	0.4+	0.3-	1997 02 06	411	0.1-	0.1+	1997 03 05	704	0.5+	0.8+
1990 08 20	809	0.1+	0.8+	1997 02 07	098	1.9-	0.5-	1997 03 05	704	0.9+	0.7+
1990 08 20	809	0.9-	0.8+	1997 02 07	098	1.6-	0.4-	1997 03 06	704	0.3+	0.8+
1990 08 20	809	0.6+	0.3+	1997 02 07	098	0.2-	1.2+	1997 03 06	704	0.3+	0.4+
1997 01 30	411	0.2-	0.3-	1997 02 07	098	(0.9- 2.4+)		1998 08 17	704	1.1+	0.7+
1997 01 30	411	0.3+	0.2-	1997 02 14	411	0.5+	0.4-	1998 08 17	704	0.6-	0.5-
1997 01 31	411	1.1+	0.5-	1997 02 14	411	0.9-	0.1+	1998 08 17	704	0.3+	0.7+
1997 01 31	411	0.5-	0.4-	1997 02 26	411	0.5+	0.3-	1998 08 17	704	1.2-	0.0

1997 BC₃ = 1991 PO₃₁

Id. A. Gnädig, S. Nakano, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	211.00794	(2000.0)	P	Q
<i>n</i>	0.27078171	ω	189.62460	-0.99963310
<i>a</i>	2.3662275	Ω	351.55326	-0.01042396
<i>e</i>	0.0440837	<i>i</i>	6.45314	-0.02500019
<i>P</i>	3.64	<i>H</i>	13.3	<i>G</i> 0.15 <i>U</i> 4

1999 JUNE 22

Residuals in seconds of arc

1991 08 14	809	0.7-	0.4-	1997 01 31	411	0.1+	0.2-	1997 02 26	411	0.5-	0.5-
1991 08 14	809	0.7-	0.6+	1997 01 31	411	0.0	0.2+	1997 02 27	411	1.1-	0.6-
1991 08 14	809	1.7-	0.2+	1997 02 06	411	0.2+	0.3+	1997 02 27	411	0.6-	0.4-
1991 09 29	413	1.2+	0.2+	1997 02 06	411	0.2+	0.6+	1997 03 06	704	2.1-	0.6-
1991 09 29	413	1.8+	0.5+	1997 02 14	411	0.2+	0.9+	1997 03 06	704	1.4+	0.1-
1997 01 30	411	0.4+	0.3-	1997 02 14	411	0.1+	0.7+	1997 03 10	675	0.1+	0.3+
1997 01 30	411	0.1+	0.1-	1997 02 26	411	0.0	0.3+	1997 03 10	675	2.0+	0.6+

1997 BS₃ = 1989 GZ₇

Id. A. Gnädig, S. Nakano, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	223.90082	(2000.0)	P	Q
<i>n</i>	0.23851903	ω	15.78589	-0.75584305
<i>a</i>	2.5750600	Ω	123.51083	+0.58448032
<i>e</i>	0.1310388	<i>i</i>	8.08401	+0.29510004
<i>P</i>	4.13	<i>H</i>	13.8	<i>G</i> 0.15 <i>U</i> 1

Residuals in seconds of arc

1954 12 22	675	0.1-	1.1-	1995 10 19	413	0.2+	0.3-	1997 02 11	411	1.2-	0.5+
1954 12 22	675	0.2+	0.2-	1995 10 19	413	0.0	0.3+	1997 02 11	411	0.7+	0.4+
1981 05 01	413	1.0-	0.9+	1997 01 31	411	0.2+	0.7+	1997 03 01	411	1.1-	0.4-
1981 05 01	413	0.5+	0.3-	1997 01 31	411	0.6-	0.8-	1997 03 01	411	0.1-	0.4+
1989 04 03	675	0.1+	1.1-	1997 02 01	411	1.1+	0.4+				
1989 04 03	675	0.1+	1.2-	1997 02 01	411	0.8+	0.2+				

1997 EK₄₁ = 1998 QS₄₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	179.48549	(2000.0)	P	Q
<i>n</i>	0.29120209	ω	8.77370	-0.36375270
<i>a</i>	2.2542724	Ω	239.90944	-0.85815052
<i>e</i>	0.1208020	<i>i</i>	3.36324	-0.36230052
<i>P</i>	3.38	<i>H</i>	15.6	<i>G</i> 0.15 <i>U</i> 2

Residuals in seconds of arc

1994 03 10	413	0.5+	0.0	1997 03 10	704	0.1-	0.4-	1998 08 17	704	0.8+	0.7+
1994 03 10	413	0.6-	0.5-	1997 03 11	704	0.4+	0.3-	1998 08 17	704	1.0+	1.2+
1995 10 15	691	0.2+	0.1+	1997 03 11	704	0.8+	0.3-	1998 08 17	704	0.6-	1.6+
1995 10 15	691	0.0	0.1-	1997 03 12	704	0.1+	0.9-	1998 08 23	704	1.7-	0.7-
1995 10 15	691	0.1-	0.2-	1997 03 12	704	0.1+	0.2-	1998 08 23	704	1.7+	0.7-
1997 03 09	675	1.5-	1.5+	1998 08 17	704	1.5-	0.6-	1998 08 23	704	0.4+	1.9-
1997 03 10	704	0.1+	0.2+	1998 08 17	704	0.1+	0.0				

1997 FL₂ = 1988 XP₅

Id. A. Gnädig, G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	292.77091	(2000.0)	P	Q
<i>n</i>	0.25657934	ω	282.23883	+0.53605490
<i>a</i>	2.4527593	Ω	135.27567	+0.79424654
<i>e</i>	0.1775058	<i>i</i>	3.13810	+0.28603771
<i>P</i>	3.84	<i>H</i>	14.5	<i>G</i> 0.15 <i>U</i> 2

Residuals in seconds of arc

1951 02 04	675	1.2-	0.2-	1996 11 12	691	(2.6- 0.8-)		1997 03 13	688	0.3+	0.2-
1951 02 04	675	1.4+	1.1+	1997 01 02	691	1.4-	1.1-	1997 03 13	688	0.0	0.1+
1979 06 24	413	0.7+	1.9+	1997 01 02	691	1.4-	1.1-	1997 03 31	704	1.2+	0.0
1988 12 10	888	0.3+	2.0+	1997 01 02	691	1.2-	0.9-	1997 03 31	704	1.1+	0.7+
1988 12 10	888	0.4-	1.7+	1997 02 06	910	0.1+	0.2-	1997 04 01	704	0.6-	3.7+
1991 08 02	413	0.5-	0.4+	1997 02 06	910	0.1+	0.2-	1997 04 01	704	0.1+	0.5-
1991 08 02	413	0.1-	0.7+	1997 02 07	910	0.1-	0.4-	1997 04 01	704	0.9+	1.4-
1996 11 12	691	(2.6- 0.8-)		1997 03 13	688	0.1-	0.1+	1997 04 01	704	0.7+	1.0+
1996 11 12	691	(2.6- 0.8-)		1997 03 13	688	0.4+	0.2+				

1997 FA₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	178.87493		(2000.0)	P	Q
<i>n</i>	0.22468705	ω	24.43419	-0.84566814	+0.53360066
<i>a</i>	2.6796867	Ω	187.84107	-0.50172811	-0.80170514
<i>e</i>	0.1659838	<i>i</i>	4.52282	-0.18197336	-0.26933104
<i>P</i>	4.39	<i>H</i>	16.5	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1984 03 29	413	0.6+	1.7+	1997 03 11	809	0.6-	0.0	1997 04 06	566	0.5+	0.2-
1984 03 29	413	0.1-	0.5+	1997 03 11	809	0.4-	0.0	1997 05 08	675	0.7-	1.1-
1997 03 10	809	0.3-	0.5-	1997 03 31	704	1.0+	0.1-	1997 05 08	675	0.3-	0.1-
1997 03 10	809	0.3-	0.1-	1997 03 31	704	1.1+	0.8+	1998 09 10	910	0.0	0.4-
1997 03 10	809	0.7-	0.4-	1997 04 06	566	(2.3+	0.6-)	1998 09 11	910	0.2+	0.3-
1997 03 11	809	0.3+	1.0-	1997 04 06	566	0.6-	0.2-	1998 09 11	910	0.1+	0.3-

1997 GW₃₀ = 1981 NH

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

<i>M</i>	91.87990		(2000.0)	P	Q
<i>n</i>	0.17182856	ω	51.40782	-0.31001017	+0.95072874
<i>a</i>	3.2043441	Ω	200.53291	-0.87485273	-0.28647041
<i>e</i>	0.1060091	<i>i</i>	0.47778	-0.37219135	-0.11853088
<i>P</i>	5.74	<i>H</i>	13.5	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1981 07 02	805	0.3+	0.5-	1997 03 05	691	0.7-	0.3+	1997 04 07	658	0.0	0.1+
1981 07 02	805	0.4-	0.7+	1997 03 05	691	0.5-	0.6+	1997 04 08	691	0.3-	0.6+
1991 04 09	675	0.3-	0.9+	1997 03 06	809	0.9+	1.0-	1997 04 08	691	0.6-	0.4+
1991 04 09	675	0.7+	0.2+	1997 03 06	809	0.4+	1.4-	1997 04 08	691	0.3-	0.5+
1997 03 05	809	(2.2+	3.6+)	1997 03 06	809	0.8+	0.6-	1997 04 16	691	0.0	0.2-
1997 03 05	809	(3.2+	1.8+)	1997 04 02	691	0.2-	0.4+	1997 04 16	691	0.1+	0.3-
1997 03 05	809	(3.2+	1.7+)	1997 04 02	691	0.3+	0.1+	1997 04 16	691	0.5+	0.1-
1997 03 05	691	0.5-	0.7+	1997 04 07	658	0.3-	0.8-				

1997 HO₁₁ = 1996 AP₁₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

<i>M</i>	263.69280		(2000.0)	P	Q
<i>n</i>	0.17306836	ω	67.96364	-0.02816069	-0.99904812
<i>a</i>	3.1890226	Ω	23.72347	+0.88387908	-0.04045227
<i>e</i>	0.1202812	<i>i</i>	4.74978	+0.46686694	+0.01632378
<i>P</i>	5.70	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1989 12 01	675	0.0	0.2-	1997 04 30	704	0.7+	0.4-	1997 05 01	704	0.0	0.1+
1989 12 01	675	0.4+	1.0+	1997 04 30	704	0.6+	0.4+	1997 05 01	704	0.2-	0.1+
1996 01 15	691	0.2+	0.0	1997 04 30	704	0.6+	0.2+	1997 05 05	704	0.6+	0.3+
1996 01 15	691	0.2+	0.0	1997 04 30	704	0.5-	0.5+	1997 05 05	704	0.2-	0.2-
1996 01 15	691	0.4+	0.4-	1997 04 30	704	0.4+	0.8+	1997 05 05	704	0.1+	0.9-
1996 01 21	691	0.3+	0.2+	1997 05 01	704	0.0	0.6-	1997 05 05	704	0.7-	1.0-
1996 01 21	691	0.1-	0.5-	1997 05 01	704	1.0+	0.2-	1997 05 05	704	0.7-	0.1-
1996 01 21	691	0.5-	0.4-	1997 05 01	704	0.1+	0.9+				

1997 JG₁₆ = 1989 YO₈

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

<i>M</i>	276.37369		(2000.0)	P	Q
<i>n</i>	0.18454407	ω	28.14577	-0.02516300	-0.96049533
<i>a</i>	3.0554087	Ω	64.47570	+0.84987894	-0.16653472
<i>e</i>	0.1806373	<i>i</i>	17.88644	+0.52637688	+0.22296840
<i>P</i>	5.34	<i>H</i>	13.0	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1989 12 17	675	0.7-	0.3+	1997 05 04	809	0.2+	0.3-	1997 06 07	809	1.3-	0.2+
1989 12 17	675	1.9+	0.0	1997 05 04	809	0.7+	0.3+	1997 06 07	809	0.2-	0.9+
1989 12 25	033	0.6-	0.3+	1997 05 04	809	0.2+	0.4+	1997 06 08	809	0.8+	0.1+
1989 12 25	033	0.7-	0.6-	1997 05 04	809	0.3-	0.1+	1997 06 08	809	0.7+	0.1+
1997 05 03	809	0.2-	0.7+	1997 05 04	809	1.6-	1.2-	1997 06 08	809	0.0	1.3-
1997 05 03	809	0.8+	0.3+	1997 05 04	809	0.1-	1.3-				
1997 05 03	809	0.7+	0.5+	1997 06 07	809	0.4-	0.7+				

1997 QA₂ = 1990 BA₅

Id. A. Gnädig, S. Nakano, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

<i>M</i>	251.87109		(2000.0)	P	Q
<i>n</i>	0.21389738	ω	350.56898	-0.22221833	+0.97246582
<i>a</i>	2.7690603	Ω	266.56786	-0.88989529	-0.23171821
<i>e</i>	0.0305133	<i>i</i>	4.03322	-0.39837846	-0.02483764
<i>P</i>	4.61	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1989 12 07	675	0.1-	1.0+	1997 08 27	402	0.1-	0.3+	1997 09 28	402	0.3-	0.4-
1989 12 07	675	0.2+	0.3+	1997 09 04	402	0.2+	0.3+	1997 09 30	402	0.2+	0.1+
1990 01 24	033	0.9+	0.7-	1997 09 04	402	0.2+	0.2+	1997 09 30	402	0.6+	0.3-
1990 01 25	033	0.5-	0.8+	1997 09 04	402	0.1+	0.0	1997 10 23	402	0.0	0.4-
1993 12 11	675	1.3-	0.9-	1997 09 19	402	1.2-	0.0	1997 10 23	402	0.1+	0.2-
1993 12 11	675	1.4+	0.2+	1997 09 19	402	1.0-	0.6-	1997 10 23	402	0.0	0.5-
1997 08 25	402	0.2-	0.9+	1997 09 19	402	2.2-	0.2-	1997 10 29	402	0.3+	0.2-
1997 08 25	402	0.3-	0.7+	1997 09 24	900	1.6+	0.5+	1997 10 29	402	0.8-	0.2-
1997 08 25	402	0.6-	0.9+	1997 09 24	900	4.1+	0.2-	1997 10 29	402	0.3-	0.1-
1997 08 27	402	0.2-	0.5+	1997 09 28	402	0.3-	0.2-				
1997 08 27	402	0.1+	0.5+	1997 09 28	402	0.3-	0.4-				

1997 RB₁ = 1989 EQ₄

Id. A. Gnädig, G. Forti, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	241.47426		(2000.0)	P	Q
<i>n</i>	0.28557393	ω	12.75716	+0.25640647	+0.96327731
<i>a</i>	2.2837944	Ω	272.14145	-0.89366828	+0.20484383
<i>e</i>	0.1307866	<i>i</i>	4.57469	-0.36825634	+0.17359673
<i>P</i>	3.45	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1988 12 11	675	0.4+	1.7-	1997 09 02	610	0.8+	0.4-	1997 09 25	610	0.2-	0.0
1988 12 11	675	0.6-	0.4+	1997 09 06	610	1.6+	0.2-	1997 09 26	610	0.3-	1.0+
1989 03 02	809	(4.2-	3.4-)	1997 09 06	610	1.2+	0.0	1997 09 26	610	0.7-	1.1+
1989 03 02	809	(4.0-	3.4-)	1997 09 06	610	0.7+	0.2+	1997 09 26	610	1.1-	1.0+
1989 03 02	809	(5.1-	3.7-)	1997 09 09	610	1.6+	0.2-	1997 09 27	610	0.8-	0.7-
1989 03 03	809	0.7-	2.4-	1997 09 09	610	1.3+	0.0	1997 09 27	610	0.6-	0.3-
1989 03 03	809	1.1-	1.9-	1997 09 09	610	0.9+	0.1+	1997 09 27	610	0.6-	0.2+
1989 03 03	809	1.3-	0.4-	1997 09 10	610	0.4+	0.1+	1997 10 26	104	0.8-	0.5-
1992 01 25	675	0.3-	0.1-	1997 09 10	610	0.3+	0.1-	1997 10 26	104	0.3-	0.5-
1992 01 25	675	1.7+	0.0	1997 09 10	610	0.1+	0.3-	1997 10 26	104	0.8-	0.6-
1997 09 01	610	0.1-	0.5-	1997 09 18	610	1.2-	0.4-	1998 12 15	704	1.5-	0.6-
1997 09 01	610	0.0	0.7-	1997 09 18	610	1.5-	0.4-	1998 12 15	704	1.8+	1.5+
1997 09 01	610	0.1+	0.9-	1997 09 18	610	1.5-	0.2-	1998 12 15	704	1.2-	0.1-
1997 09 02	610	1.7+	0.9-	1997 09 25	610	0.8-	0.2-	1998 12 15	704	1.1+	0.3+
1997 09 02	610	1.2+	0.6-	1997 09 25	610	0.5-	0.1-				

1997 SE₁ = 1990 SM₂₅

Id. A. Gnädig, M. E. Sansaturio

M.P.C. 34874

1999 JUNE 22

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	300.26221		(2000.0)	P	Q
<i>n</i>	0.27327924	ω	69.50431	-0.68799808	+0.72429365
<i>a</i>	2.3517886	Ω	156.82954	-0.70136864	-0.64756679
<i>e</i>	0.0653374	<i>i</i>	6.61963	-0.18638850	-0.23676141
<i>P</i>	3.61	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1982 07 11	413	0.2+	0.1-	1997 09 19	104	0.9+	0.2+	1997 09 30	104	0.7-	0.9-
1982 07 11	413	0.6-	2.1-	1997 09 19	104	0.4-	0.4+	1997 09 30	104	0.8-	1.1-
1990 08 29	675	(2.8-	0.6-)	1997 09 19	104	0.0	0.0	1997 10 03	104	1.3-	1.5-
1990 08 29	675	(3.3-	0.5-)	1997 09 21	104	0.3+	0.1+	1997 10 03	104	0.9-	1.3-
1990 09 25	809	0.1+	0.0	1997 09 21	104	0.3+	0.3+	1997 10 03	104	0.3-	1.1-
1990 09 25	809	0.4-	0.1+	1997 09 21	104	0.3+	0.3+	1997 10 19	104	0.1+	0.1-
1990 09 25	809	0.4+	0.1-	1997 09 27	104	0.3-	0.6+	1997 10 19	104	1.2+	0.9+
1997 09 18	104	(0.2-	2.6+)	1997 09 27	104	0.0	0.7+	1998 12 22	704	0.4-	0.6-
1997 09 18	104	1.0+	0.9+	1997 09 27	104	0.1+	0.7+	1998 12 22	704	0.8+	0.4-
1997 09 18	104	0.4+	0.4+	1997 09 27	104	0.2+	0.8+	1998 12 22	704	0.7+	1.1-
1997 09 19	104	0.5+	0.1-	1997 09 30	104	0.6-	0.6-	1998 12 22	704	1.2-	0.0

1997 SL₄ = 1999 FH₃₇

Id. M. E. Sansaturio, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	117.44031		(2000.0)	P	Q
<i>n</i>	0.21987465	ω	195.62371	+0.52498923	-0.84724607
<i>a</i>	2.7186457	Ω	222.79658	+0.79309294	+0.52151696
<i>e</i>	0.1895312	<i>i</i>	6.84697	+0.30885256	+0.10096610
<i>P</i>	4.48	<i>H</i>	13.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1997 09 27	411	0.1+	0.1+	1997 10 12	411	0.4+	0.6-	1999 03 20	704	0.7-	1.3-
1997 09 27	411	0.2+	0.2-	1997 10 25	411	0.1+	1.3-	1999 03 20	704	0.0	1.5-
1997 09 28	411	0.7-	0.6-	1997 10 25	411	0.3-	0.4+	1999 03 20	704	0.6+	2.2-
1997 09 28	411	0.2+	0.2+	1997 10 30	704	0.4+	0.1+	1999 03 23	704	0.4-	1.3+
1997 09 30	411	0.4+	0.2+	1997 10 30	704	0.1+	0.6+	1999 03 23	704	1.1+	2.3+
1997 09 30	411	0.7-	0.6+	1997 10 30	704	0.2+	0.1+	1999 03 23	704	0.2+	1.3+
1997 10 05	411	0.2+	0.5-	1997 10 30	704	0.0	0.3+	1999 03 23	704	1.4-	0.3+
1997 10 05	411	0.1-	0.7+	1997 10 30	704	0.3-	0.3+				
1997 10 12	411	0.2-	0.5-	1999 03 20	704	0.6+	0.0				

1997 SS₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	190.88486		(2000.0)	P	Q
<i>n</i>	0.21289625	ω	76.21508	+0.74693282	+0.66288357
<i>a</i>	2.7777343	Ω	242.23715	-0.63039195	+0.68127886
<i>e</i>	0.0686592	<i>i</i>	3.35187	-0.21141749	+0.31055512
<i>P</i>	4.63	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1997 09 27	611	0.3-	0.8-	1997 10 21	113	0.2+	0.6+	1997 10 22	611	0.9+	0.4+
1997 09 28	611	0.5+	1.1-	1997 10 21	611	0.4+	0.4+	1997 11 07	611	1.3-	0.8+
1997 09 28	611	1.8-	0.6-	1997 10 21	113	0.7-	0.2+	1998 12 15	704	0.3-	1.3-
1997 09 28	611	0.2-	0.0	1997 10 21	611	0.7+	0.3-	1998 12 15	704	1.1+	2.0-
1997 09 28	611	0.3-	0.5-	1997 10 21	113	0.3-	0.7+	1998 12 15	704	0.8-	1.3-
1997 09 28	611	0.2-	0.4-	1997 10 21	113	0.7-	0.7+	1998 12 15	704	1.5+	1.5-
1997 09 29	611	0.2-	0.1-	1997 10 22	113	0.5-	0.4-	1998 12 15	704	(3.5-	1.2-)
1997 10 03	611	(2.3-	1.6-)	1997 10 22	611	(2.2+	0.9+)	1999 01 12	747	0.1+	1.3+
1997 10 03	611	1.6+	0.3+	1997 10 22	611	(2.3+	1.8+)	1999 01 12	747	0.2-	1.2+
1997 10 03	611	0.1+	0.2-	1997 10 22	113	0.4+	0.7-	1999 01 12	747	0.0	1.1+
1997 10 05	611	0.1-	0.8-	1997 10 22	113	0.4-	0.5+	1999 01 16	747	1.2-	1.5+
1997 10 05	611	0.7+	0.0	1997 10 22	611	1.3+	1.6+	1999 01 16	747	0.3-	0.3+

1997 SU₁₀ = 1990 SZ₁₉

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	206.42363		(2000.0)	P	Q
<i>n</i>	0.29349972	ω	160.20353	+0.86140768	-0.50591216
<i>a</i>	2.2424921	Ω	230.27097	+0.45775472	+0.81171345
<i>e</i>	0.1579130	<i>i</i>	3.35828	+0.22008502	+0.29184612
<i>P</i>	3.36	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1976 06 29	413	0.5-	1.1-	1997 09 26	327	0.4+	0.0	1997 11 29	704	0.1-	0.6-
1976 06 29	413	0.8+	1.4-	1997 09 26	327	0.6+	0.7+	1997 11 29	704	0.3+	0.6-
1990 09 19	675	0.3+	0.1+	1997 09 27	327	0.1-	0.3+	1997 12 04	704	1.0+	1.1-
1990 09 19	675	0.7-	0.3+	1997 09 27	327	0.9+	0.3-	1997 12 04	704	(1.1+	2.2-)
1990 10 12	675	1.3-	0.3+	1997 09 27	327	0.1+	0.8-	1997 12 04	704	0.4-	1.4-
1990 10 12	675	0.3+	0.4+	1997 10 08	327	0.3+	0.4+	1997 12 04	704	1.4-	0.7+
1996 04 18	413	0.6+	0.2-	1997 10 08	327	0.3+	0.2+	1999 04 15	704	1.0-	0.6+
1996 04 18	413	(3.4+	0.9-)	1997 10 08	327	0.1-	0.1-	1999 04 15	704	(1.3+	2.6+)
1997 09 19	327	(2.2+	0.9+)	1997 10 08	327	0.2+	0.0	1999 04 15	704	0.7-	0.6+
1997 09 19	327	1.1+	0.3-	1997 11 29	704	0.7-	1.9+	1999 04 15	704	1.6+	0.8+
1997 09 19	327	1.1+	0.7+	1997 11 29	704	0.9-	0.5-				
1997 09 26	327	0.2+	0.5+	1997 11 29	704	0.4-	0.9-				

1997 TD

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	203.48379		(2000.0)	P	Q
<i>n</i>	0.29187285	ω	170.60873	+0.86554792	+0.49450293
<i>a</i>	2.2508173	Ω	159.16972	-0.47276402	+0.85901298
<i>e</i>	0.4680295	<i>i</i>	12.89084	-0.16529062	+0.13252756
<i>P</i>	3.38	<i>H</i>	16.4	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1987 05 10	413	0.1+	0.6+	1997 10 17	046	0.0	0.5+	1997 10 29	360	0.1+	0.4-
1997 10 01	566	0.6+	0.9+	1997 10 17	861	0.4-	0.2-	1997 10 31	426	0.3+	0.7-
1997 10 01	566	0.8+	1.1+	1997 10 18	861	0.3-	0.6-	1997 10 31	426	0.2+	0.6-
1997 10 01	566	0.6+	1.0+	1997 10 18	861	0.8+	0.0	1997 10 31	426	0.3-	0.8-
1997 10 02	673	0.3+	1.1-	1997 10 21	360	0.0	0.2-	1997 11 02	426	0.1+	0.1+
1997 10 02	673	0.8+	1.1-	1997 10 21	360	0.0	0.0	1997 11 02	426	0.8-	0.1+
1997 10 02	673	0.0	1.1-	1997 10 21	360	0.0	0.4-	1997 11 02	426	0.1-	0.6+
1997 10 02	104	0.4+	0.8+	1997 10 22	046	0.1-	0.2+	1997 11 02	046	0.2-	0.2-
1997 10 02	104	1.2+	0.4+	1997 10 22	046	0.3-	0.3-	1997 11 02	046	0.1+	0.1-
1997 10 02	104	0.5-	1.0+	1997 10 22	046	0.1-	0.1+	1997 11 02	046	0.1-	0.2-
1997 10 02	104	0.4+	0.0	1997 10 23	861	1.0-	0.6-	1997 11 02	587	0.2-	0.1-
1997 10 02	124	(4.8+	0.2+)	1997 10 23	861	0.6-	0.4-	1997 11 02	046	0.3-	0.1-
1997 10 02	124	(0.9-	2.3+)	1997 10 23	861	0.8+	1.2-	1997 11 02	587	0.5-	0.0
1997 10 03	104	0.6-	0.3-	1997 10 23	422	0.2-	0.0	1997 11 04	402	0.1+	0.2-
1997 10 03	104	1.2-	0.2+	1997 10 23	422	0.1+	0.0	1997 11 04	402	0.3-	0.7-
1997 10 03	104	0.6-	0.3+	1997 10 23	422	0.4-	0.0	1997 11 04	402	0.2-	0.1-
1997 10 03	046	0.8+	0.6+	1997 10 24	046	0.6+	0.1+	1997 11 05	426	0.2+	0.8-
1997 10 03	046	0.7-	0.5-	1997 10 24	046	0.4+	0.0	1997 11 05	426	0.4+	0.5-
1997 10 03	046	1.2-	0.6-	1997 10 24	046	0.6+	0.1+	1997 11 05	426	0.1+	0.4-
1997 10 03	046	0.7-	0.3-	1997 10 24	046	1.1+	0.1-	1997 11 06	422	0.3-	0.2-
1997 10 03	046	1.2-	0.2-	1997 10 25	422	0.6+	0.1+	1997 11 06	422	0.3-	0.2-
1997 10 03	046	1.2-	0.2-	1997 10 25	422	1.3+	0.2-	1997 11 06	422	0.4-	0.4-
1997 10 03	046	0.5-	0.2-	1997 10 25	422	0.9+	0.0	1997 11 07	381	0.3-	0.1-
1997 10 03	046	0.2-	0.3+	1997 10 26	700	1.5+	0.4-	1997 11 07	381	0.2-	0.2-
1997 10 03	046	0.4-	0.8+	1997 10 26	700	1.6+	0.1-	1997 11 07	381	0.4-	0.2-
1997 10 03	861	0.7+	0.1+	1997 10 26	700	0.7+	0.3-	1997 11 18	587	1.1+	0.5-
1997 10 03	861	0.8-	0.3-	1997 10 26	897	(2.5+	0.6-)	1997 11 18	587	1.1+	1.2-
1997 10 03	861	0.8-	0.0	1997 10 26	897	(2.1+	0.5+)	1997 11 19	402	0.0	0.0
1997 10 04	670	0.1+	0.1+	1997 10 26	897	1.4+	0.7+	1997 11 19	402	0.5-	0.1+
1997 10 04	670	0.1+	0.7-	1997 10 27	046	1.6+	1.0+	1997 11 19	402	0.8-	0.2+
1997 10 04	670	0.6-	0.1+	1997 10 27	046	0.5-	0.4+	1997 11 20	360	0.2-	0.6+
1997 10 04	861	0.3-	0.9+	1997 10 27	046	0.6+	0.5+	1997 11 20	360	0.2-	0.5+
1997 10 04	861	0.2-	0.4-	1997 10 28	861	0.3-	0.1+	1997 11 20	360	0.3-	0.5+
1997 10 04	861	1.9-	0.3+	1997 10 28	861	0.1+	0.1-	1997 11 26	566	0.7-	0.3+
1997 10 04	861	1.3-	0.1-	1997 10 28	861	(3.5+	0.1-)	1997 11 26	566	1.1-	0.6+
1997 10 05	700	0.1+	0.4+	1997 10 28	402	1.2+	0.2+	1997 11 26	566	1.2-	0.3+

1997 10 05	700	0.2+	1.0+	1997 10 28	402	0.9+	0.7+	1997 11 30	360	0.2-	0.4-
1997 10 05	700	0.2+	0.2+	1997 10 29	566	0.3+	0.1+	1997 11 30	360	0.6-	0.3-
1997 10 05	046	0.0	0.2-	1997 10 29	566	0.2+	0.2+	1997 11 30	360	0.5-	0.5-
1997 10 05	046	0.0	0.1+	1997 10 29	566	0.4+	0.4+	1997 12 24	360	0.7-	0.4+
1997 10 05	046	0.1+	0.2+	1997 10 29	426	0.3-	0.2+	1997 12 24	360	0.4-	0.3+
1997 10 06	360	0.3+	0.2+	1997 10 29	426	0.1-	0.1-	1997 12 24	360	0.5-	0.6+
1997 10 06	360	0.1+	0.4+	1997 10 29	402	0.3+	0.6-	1997 12 25	566	1.6-	1.2+
1997 10 06	360	0.1+	0.2+	1997 10 29	402	0.4+	0.5-	1997 12 25	566	0.9-	0.4+
1997 10 06	046	0.4+	0.3+	1997 10 29	402	0.3+	0.0	1997 12 25	566	0.4-	0.7+
1997 10 06	046	0.3+	0.3+	1997 10 29	426	0.2+	0.1+	1999 05 14	693	0.6+	0.8+
1997 10 06	046	0.2+	0.2+	1997 10 29	426	0.1-	0.1+	1999 05 14	693	1.1+	0.7+
1997 10 17	046	0.3+	0.4+	1997 10 29	360	0.2+	0.4-	1999 05 14	693	0.2+	1.2+
1997 10 17	046	0.2+	0.8+	1997 10 29	360	0.1+	0.4-				

1997 TR₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	156.88865	(2000.0)	
	P	Q	
<i>n</i>	0.22277158	ω	217.07939
<i>a</i>	2.6950254	Ω	140.59379
<i>e</i>	0.4038687	<i>i</i>	3.02568
<i>P</i>	4.42	<i>H</i>	15.4
		<i>G</i>	0.15
		<i>U</i>	3

Residuals in seconds of arc

1997 10 02	910	0.1-	0.1+	1997 11 30	566	0.2+	0.5+	1997 12 03	658	0.0	0.3-
1997 10 02	910	0.0	0.0	1997 11 30	566	0.3+	0.3+	1997 12 03	658	0.2-	0.3+
1997 10 02	910	0.0	0.0	1997 11 30	566	0.3+	0.3+	1997 12 03	658	0.0	0.2-
1997 10 04	910	0.0	0.1-	1997 11 30	566	0.1+	0.3-	1999 02 06	568	0.1+	0.2-
1997 10 04	910	0.0	0.1-	1997 11 30	566	0.2-	0.4-	1999 02 06	568	0.5-	0.2+
1997 10 04	910	0.1+	0.1-	1997 11 30	566	0.2-	0.4-	1999 02 09	568	0.3+	0.1-
1997 11 29	566	0.5-	0.1-	1997 12 02	658	0.1-	0.1+	1999 02 09	568	0.0	0.1+
1997 11 29	566	0.2-	0.8+	1997 12 02	658	0.0	0.7-				
1997 11 29	566	0.7+	0.2+	1997 12 02	658	0.2-	0.1+				

1997 TV₉ = 1999 JP₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	72.71292	(2000.0)	
	P	Q	
<i>n</i>	0.23374247	ω	76.92798
<i>a</i>	2.6100228	Ω	57.93808
<i>e</i>	0.2380508	<i>i</i>	4.88391
<i>P</i>	4.22	<i>H</i>	15.0
		<i>G</i>	0.15
		<i>U</i>	4

Residuals in seconds of arc

1997 10 05	557	0.6+	0.2+	1997 10 28	557	0.5-	0.2-	1999 05 09	703	0.3-	0.9+
1997 10 05	557	0.9+	0.6+	1997 10 29	557	0.2-	0.4-	1999 05 09	703	0.4+	0.8+
1997 10 05	557	0.4+	0.4-	1999 04 07	704	0.0	0.6+	1999 05 09	703	1.8+	1.0+
1997 10 07	557	0.6+	0.2-	1999 04 07	704	0.1-	0.4+	1999 05 09	703	(3.2+ 1.2+)	
1997 10 07	557	0.1+	0.3-	1999 04 07	704	0.5-	0.1+	1999 05 12	704	0.6-	1.4-
1997 10 07	557	0.4+	0.1+	1999 04 07	704	0.3-	0.6+	1999 05 12	704	1.0+	1.0-
1997 10 07	557	0.2+	0.3-	1999 04 12	704	0.1+	1.0-	1999 05 12	704	1.6-	0.5-
1997 10 11	557	0.3-	0.4-	1999 04 12	704	0.4-	0.2+	1999 05 12	704	0.3-	0.1-
1997 10 11	557	0.3-	0.2+	1999 04 12	704	(2.6+ 1.6-)		1999 05 12	704	(3.5- 0.6+)	
1997 10 18	658	0.2-	0.2-	1999 04 12	704	0.6-	0.2-	1999 05 16	703	0.5+	0.8-
1997 10 18	658	0.1-	0.2-	1999 04 12	704	0.2-	1.4-	1999 05 16	703	0.4+	0.3+
1997 10 18	658	0.8+	0.4+	1999 05 08	703	0.1+	0.1+	1999 05 16	703	0.7+	0.1-
1997 10 19	658	0.6-	0.1-	1999 05 08	703	0.2+	0.1+	1999 05 16	703	0.0	0.9+
1997 10 19	658	0.1-	0.3-	1999 05 08	703	0.7-	0.5-				
1997 10 19	658	0.9-	0.1+	1999 05 08	703	0.2+	0.1-				

1997 TX₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	34.18776	(2000.0)	
	P	Q	
<i>n</i>	0.24705235	ω	124.08229
<i>a</i>	2.5154174	Ω	48.33567
<i>e</i>	0.0297528	<i>i</i>	11.22751
<i>P</i>	3.99	<i>H</i>	14.3
		<i>G</i>	0.15
		<i>U</i>	3

Residuals in seconds of arc

1997 10 07	816	0.3+	0.2-	1997 10 20	658	0.7-	0.2+	1999 04 07	699	0.2-	0.5-
1997 10 07	816	0.4+	0.2-	1997 10 20	658	1.0-	0.0	1999 04 07	699	1.3+	0.4-
1997 10 07	816	0.0	0.3-	1997 10 20	658	0.3-	0.1-	1999 04 07	699	0.0	0.4-
1997 10 07	816	0.2+	0.1-	1997 10 26	816	0.7-	0.8+	1999 04 24	816	0.3-	0.3+
1997 10 08	816	0.2+	0.0	1997 10 26	816	0.7-	0.9+	1999 04 24	816	0.0	0.3+
1997 10 08	816	0.2+	0.1+	1997 10 26	816	0.6-	0.8+	1999 04 24	816	0.3-	0.6+
1997 10 08	816	0.5+	0.1-	1997 11 08	816	0.3-	0.1+	1999 05 13	816	0.2-	0.6+
1997 10 11	816	0.1+	0.1-	1997 11 08	816	0.2-	0.2+	1999 05 13	816	0.1-	0.5+
1997 10 11	816	0.3+	0.0	1997 11 08	816	0.5-	0.1+	1999 05 13	816	0.4-	0.6+
1997 10 11	816	0.2+	0.2-	1997 12 19	426	0.4+	0.5-	1999 05 14	816	0.1+	0.4-
1997 10 11	816	0.2+	0.1-	1997 12 19	426	0.3-	0.6-	1999 05 14	816	0.0	0.4-
1997 10 11	816	0.1+	0.0	1997 12 19	426	0.7+	0.2+	1999 05 14	816	0.2-	0.4-
1997 10 12	816	0.6+	0.5-	1997 12 21	426	0.8+	0.2-	1999 05 14	816	0.5+	0.2+
1997 10 12	816	0.2+	0.1+	1997 12 21	426	0.4+	0.4-				
1997 10 12	816	0.0	0.5+	1997 12 21	426	0.1-	0.3-				

1997 TN₁₈ = 1999 FV₄₆

Id. B. G. Marsden

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	63.63271	(2000.0)	
	P	Q	
<i>n</i>	0.26456388	ω	31.67925
<i>a</i>	2.4031582	Ω	109.93618
<i>e</i>	0.1538665	<i>i</i>	2.93663
<i>P</i>	3.73	<i>H</i>	15.3
		<i>G</i>	0.15
		<i>U</i>	4

Residuals in seconds of arc

1997 10 03	327	0.4-	0.3+	1999 03 20	704	0.1-	0.8+	1999 04 06	704	0.5-	1.0+
1997 10 03	327	0.4-	0.1-	1999 03 20	704	1.0-	0.3+	1999 04 06	704	(2.3- 0.9+)	
1997 10 03	327	0.2-	0.5+	1999 03 20	704	0.7-	0.8+	1999 04 12	704	0.6-	1.0-
1997 10 09	327	0.0	0.3+	1999 03 20	704	1.2-	0.1+	1999 04 12	704	1.9+	1.7+
1997 10 09	327	0.5-	0.0	1999 03 20	704	1.1-	0.6+	1999 04 12	704	0.5+	0.1+
1997 10 09	327	0.0	0.3+	1999 03 23	704	0.1+	1.2-	1999 04 12	704	0.1-	1.3+
1997 10 10	327	0.5-	0.3+	1999 03 23	704	0.8+	0.9-	1999 05 02	012	0.1+	0.0
1997 10 10	327	0.1-	0.2+	1999 03 23	704	1.2+	0.1+	1999 05 02	012	0.6-	0.3-
1997 10 10	327	0.4+	0.1-	1999 03 23	704	1.0+	0.6-	1999 05 02	012	0.7-	0.4+
1997 10 10	327	0.0	0.1-	1999 03 23	704	0.6+	1.5-	1999 05 02	012	0.6-	0.5+
1997 10 10	327	0.8+	0.1-	1999 04 06	704	1.1+	0.2-	1999 05 03	012	0.6+	0.2+
1997 10 10	327	0.3+	0.1-	1999 04 06	704	0.2-	0.7-				

1997 TN₂₄ = 1999 JQ₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	76.67905	(2000.0)	
	P	Q	
<i>n</i>	0.26171758	ω	117.70256
<i>a</i>	2.4205503	Ω	40.35272
<i>e</i>	0.0833685	<i>i</i>	7.55586
<i>P</i>	3.77	<i>H</i>	13.6
		<i>G</i>	0.15
		<i>U</i>	3

Residuals in seconds of arc

1997 10 08	327	0.0	0.4+	1997 11 29	704	1.0-	0.8-	1999 05 10	704	0.0	1.0+
1997 10 08	327	0.1-	0.3+	1997 11 29	704	0.4+	0.4-	1999 05 13	704	1.0-	0.3+
1997 10 08	327	0.2-	0.4+	1997 11 29	704	0.1+	0.1+	1999 05 13	704	0.5+	0.6+
1997 10 08	327	0.1+	0.4+	1997 11 29	704	1.7-	1.0+	1999 05 13	704	0.3-	0.7+
1997 10 12	327	0.1+	0.1+	1997 12 04	704	1.4+	0.5+	1999 05 13	704	0.1-	0.8+
1997 10 12	327	0.3-	0.5+	1997 12 04	704	0.8+	0.4-	1999 05 13	704	0.7-	0.1-
1997 10 12	327	0.1+	0.3+	1997 12 04	704	1.8+	0.1+	1999 05 18	704	0.4+	0.0
1997 10 15	327	0.2-	0.4+	1997 12 04	704	1.3+	0.8-	1999 05 18	704	0.2+	0.2+
1997 10 15	327	0.3-	0.1-	1997 12 04	704	1.2+	0.3+	1999 05 18	704	0.4-	0.8-
1997 10 15	327	0.3-	0.6+	1999 03 24	704	1.7+	0.1+	1999 05 18	704	0.1+	0.9-
1997 10 27	327	0.3-	0.1+	1999 03 24	704	1.1+	0.0	1999 05 18	704	(0.5+ 2.3+)	
1997 10 27	327	0.3-	0.2+	1999 03 24	704	1.6+	0.7-	1999 05 19	704	0.6+	0.4-
1997 10 27	327	0.1-	0.1+	1999 03 24	704	(3.0- 0.3-)		1999 05 19	704	0.2+	0.1-
1997 10 27	327	0.1-	0.2+	1999 05 10	704	0.4-	0.3+	1999 05 19	704	0.1-	0.3-
1997 11 26	704	1.9-	1.3-	1999 05 10	704	0.6-	0.1-	1999 05 19	704	0.3-	0.1-
1997 11 26	704	1.3-	0.4-	1999 05 10	704	0.1+	0.3+	1999 05 19	704	1.0-	0.5+
1997 11 26	704	0.6+	0.1-	1999 05 10	704	0.8-	0.1-				

1997 UO₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	207.30482	(2000.0)	P		Q	
<i>n</i>	0.30560394	ω	140.36565	+0.86807790	-0.49257538	
<i>a</i>	2.1828811	Ω	249.24781	+0.43707332	+0.81731501	
<i>e</i>	0.1942900	<i>i</i>	3.78484	+0.23538835	+0.29894093	
<i>P</i>	3.23	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1997 10 23	355	0.1+	1.0+	1997 10 30	704	0.9+	0.3-	1997 12 02	355	1.1+	0.4-
1997 10 23	355	1.3+	0.6+	1997 10 30	704	1.5+	0.1-	1997 12 08	327	0.3+	0.4-
1997 10 23	355	0.3+	0.4-	1997 11 01	355	0.3-	0.5-	1997 12 08	327	0.8+	0.9-
1997 10 23	355	0.6-	0.5+	1997 11 01	355	0.5-	0.6-	1997 12 08	327	0.4+	0.5-
1997 10 23	355	0.1+	0.6+	1997 11 01	355	0.2-	0.7-	1997 12 15	355	0.5-	0.4-
1997 10 25	355	0.6+	1.4+	1997 11 03	355	0.0	0.6-	1997 12 15	355	0.3+	0.2-
1997 10 25	355	1.3+	0.9+	1997 11 03	355	0.3-	0.1-	1997 12 24	355	1.7+	0.6-
1997 10 25	355	0.1+	0.0	1997 11 06	704	(2.1-	0.8+)	1997 12 24	355	1.8+	0.7-
1997 10 25	355	0.4-	0.5+	1997 11 06	704	(2.1-	0.5-)	1997 12 24	355	1.3+	0.3-
1997 10 25	900	0.5-	0.5+	1997 11 06	704	2.0-	0.2+	1997 12 31	355	0.8+	0.1+
1997 10 25	900	0.1-	0.4+	1997 11 06	704	(2.2-	0.1+)	1997 12 31	355	0.7+	0.3-
1997 10 26	355	0.4-	0.5+	1997 11 07	327	0.9-	0.4-	1997 12 31	355	0.6+	0.6+
1997 10 26	355	0.2+	0.3+	1997 11 07	327	0.4-	0.1+	1998 01 02	900	0.8+	0.0
1997 10 26	355	0.3-	0.4+	1997 11 07	327	0.7-	0.2-	1998 01 02	900	0.0	0.5+
1997 10 27	355	0.0	0.1+	1997 11 07	355	0.7-	0.2+	1998 01 04	355	(2.3+	0.6-)
1997 10 27	355	0.1+	0.1+	1997 11 07	355	0.8-	0.0	1998 01 04	355	(3.7+	0.7+)
1997 10 27	355	0.3-	0.3+	1997 11 18	355	0.2-	0.1+	1998 01 04	355	(3.8+	0.1-)
1997 10 28	900	0.4-	0.2+	1997 11 18	355	0.0	0.0	1998 01 17	910	1.2-	0.5+
1997 10 28	900	0.1-	0.4+	1997 11 18	355	0.4-	0.1-	1998 01 17	910	1.3-	0.4+
1997 10 29	704	1.3-	0.6+	1997 11 26	566	0.1+	0.0	1998 01 17	910	1.3-	0.4+
1997 10 29	704	0.3-	0.2+	1997 11 26	566	0.0	0.1+	1998 01 27	910	0.7-	0.5-
1997 10 29	704	0.5-	0.3+	1997 11 26	566	0.0	0.1+	1998 01 27	910	1.0-	0.6-
1997 10 29	704	0.3-	0.4-	1997 11 27	355	0.3-	0.0	1998 01 27	910	1.3-	0.3-
1997 10 29	704	0.6+	0.2+	1997 11 27	355	0.6-	0.1+	1999 04 11	402	0.6-	0.8+
1997 10 29	355	0.4-	0.0	1997 11 27	355	0.2-	0.7+	1999 04 11	402	0.2-	0.5-
1997 10 29	355	0.3-	0.0	1997 11 29	704	0.3+	0.3+	1999 04 11	402	0.1-	0.3+
1997 10 29	355	0.5-	0.2+	1997 11 29	704	0.0	0.1+	1999 05 05	426	0.1+	0.6+
1997 10 29	402	0.1-	0.1+	1997 11 29	704	0.5-	0.6+	1999 05 05	426	0.9+	1.2+
1997 10 29	402	0.1-	0.2+	1997 11 29	704	0.2+	0.4-	1999 05 05	426	1.0+	1.5+
1997 10 29	402	0.1-	0.1+	1997 11 29	704	0.2+	0.6+	1999 05 06	426	0.6+	1.0+
1997 10 30	704	1.3+	0.5-	1997 12 02	355	1.1+	0.3-	1999 05 06	426	0.7+	0.8+
1997 10 30	704	0.9+	0.6-	1997 12 02	355	0.5+	0.2-				

1997 UT₂ = 1980 TM₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	174.86251	(2000.0)	P		Q	
<i>n</i>	0.17544538	ω	265.85383	+0.31031316	+0.94359722	
<i>a</i>	3.1601529	Ω	23.26444	-0.71418940	+0.31156156	
<i>e</i>	0.2228676	<i>i</i>	16.99638	-0.62740676	+0.11204322	
<i>P</i>	5.62	<i>H</i>	13.0	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1974 08 20	413	0.9-	0.4+	1997 10 26	385	1.5+	0.8+	1997 10 30	704	1.4-	1.7+
1974 08 20	413	1.3+	0.9-	1997 10 29	817	0.2-	0.2-	1997 10 30	704	1.4+	2.0-
1980 10 05	809	0.7+	0.6-	1997 10 29	817	0.5-	0.0	1997 10 30	704	1.8-	0.2-
1980 10 05	809	0.0	0.4-	1997 10 29	817	0.0	0.1-	1997 11 04	385	0.2+	0.2+
1992 09 30	675	0.6+	0.3-	1997 10 29	385	0.6-	0.1-	1997 11 04	385	0.2-	0.0
1992 09 30	675	0.1+	1.0-	1997 10 29	385	0.6+	0.1-	1997 11 19	385	0.4+	1.2-
1997 10 25	385	0.2-	2.9+	1997 10 30	704	0.4-	0.2+	1997 11 19	385	0.1+	0.8-
1997 10 26	385	0.0	0.3+	1997 10 30	704	0.5-	0.3+				

1997 UO₃ = 1999 JN₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	150.78392	(2000.0)	P		Q	
<i>n</i>	0.27228466	ω	205.82784	+0.09988212	-0.98942101	
<i>a</i>	2.3575121	Ω	238.60305	+0.93292434	+0.12988984	
<i>e</i>	0.2065175	<i>i</i>	7.08030	+0.34594180	-0.06461182	
<i>P</i>	3.62	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1997 10 26	411	0.2+	0.2+	1997 11 19	411	0.8-	0.3+	1998 01 29	691	0.5-	0.8-
1997 10 26	411	0.5-	0.2+	1997 11 19	411	0.6-	0.4+	1998 01 29	691	0.5-	0.4-
1997 10 27	411	0.5-	1.2+	1997 11 29	704	0.4+	1.2+	1999 05 10	704	0.4+	1.9+
1997 10 27	411	0.9+	0.4+	1997 11 29	704	0.5+	1.0+	1999 05 10	704	0.4-	1.4+
1997 10 27	411	0.5+	1.8+	1997 11 29	704	1.0+	0.4+	1999 05 10	704	1.4+	1.2+
1997 11 01	411	0.1+	0.1-	1997 11 29	704	0.4-	0.1+	1999 05 10	704	0.7+	3.1+
1997 11 01	411	0.2-	0.1+	1997 11 29	704	0.5-	0.7-	1999 05 13	704	0.4+	0.0
1997 11 06	411	0.5-	0.3+	1997 11 30	411	0.1+	0.3+	1999 05 13	704	0.1-	0.1-
1997 11 06	411	0.2-	0.1+	1997 11 30	411	0.2+	0.5+	1999 05 13	704	0.8-	1.4+

1997 US₃ = 1988 VG₁₄

Id. A. Gnädig, S. Nakano, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	148.71807	(2000.0)	P		Q	
<i>n</i>	0.22076015	ω	170.16623	+0.77247597	-0.61231824	
<i>a</i>	2.7113709	Ω	228.96284	+0.56642633	+0.78422485	
<i>e</i>	0.1620400	<i>i</i>	12.89785	+0.28712730	+0.10028833	
<i>P</i>	4.46	<i>H</i>	13.5	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1982 07 17	413	0.4+	0.9+	1997 11 01	411	0.1+	0.3-	1997 11 29	704	0.6-	0.4+
1982 07 17	413	0.4-	0.4-	1997 11 01	411	0.4-	0.4-	1997 11 29	704	0.2-	0.8-
1988 11 04	327	0.0	0.0	1997 11 06	411	0.2+	0.2-	1997 11 29	704	0.8-	0.3+
1988 11 04	327	0.1+	0.9-	1997 11 06	411	0.1+	0.2-	1997 11 30	411	0.6-	0.5-
1997 10 26	411	0.3-	0.0	1997 11 19	411	0.7+	0.5+	1997 11 30	411	0.1-	0.5-
1997 10 26	411	0.2-	0.4-	1997 11 19	411	0.7+	0.6+	1998 01 29	566	0.1-	0.3+
1997 10 27	411	1.2+	1.4+	1997 11 29	704	0.0	0.8-	1998 01 29	566	0.2+	0.2+
1997 10 27	411	0.2+	1.9+	1997 11 29	704	0.2+	0.6-	1998 01 29	566	0.3-	0.5+

1997 UC₄ = 1999 AH₃₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	125.23388	(2000.0)	P		Q	
<i>n</i>	0.28984232	ω	224.81487	+0.49540151	-0.86846907	
<i>a</i>	2.2613173	Ω	195.51837	+0.81502984	+0.47203996	
<i>e</i>	0.0490433	<i>i</i>	3.94508	+0.30050574	+0.15145877	
<i>P</i>	3.40	<i>H</i>	15.9	<i>G</i> 0.15	<i>U</i> 5	

Residuals in seconds of arc

1997 09 28	327	0.1+	0.6-	1997 10 17	327	1.1+	0.1+	1999 01 14	699	0.8-	0.6-
1997 09 28	327	0.3-	0.5-	1997 10 19	327	0.2-	0.6+	1999 01 22	699	0.1+	0.7+
1997 09 28	327	0.0	0.3+	1997 10 19	327	0.0	0.4+	1999 01 22	699	0.6+	0.4-
1997 10 17	327	0.2-	0.1+	1997 10 19	327	0.4-	0.6+	1999 01 22	699	0.6+	0.6+
1997 10 17	327	0.3-	0.4-	1999 01 14	699	0.9-	0.3+				
1997 10 17	327	0.3+	0.4-	1999 01 14	699	0.3+	0.6-				

1997 UM₂₄ = 1992 JY₁ = 1999 JT₂₅

Id. G. V. Williams, E. Bowell, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	81.51108	(2000.0)	P		Q	
<i>n</i>	0.27942749	ω	121.84853	-0.94795047	-0.30966223	
<i>a</i>	2.3171633	Ω	40.24831	+0.23932984	-0.84652220	
<i>e</i>	0.0595955	<i>i</i>	6.59068	+0.21002649	-0.43302363	
<i>P</i>	3.53	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 2	

Residuals in seconds of arc

1992 05 02	809	0.0	0.2+	1997 11 29	704	0.3+	0.1-	1999 05 10	704	0.1-	0.1-
1992 05 02	809	0.2+	0.4+	1997 12 04	704	0.5+	1.0+	1999 05 10	704	0.5-	0.1-
1992 05 02	809	0.3+	0.4+	1997 12 04	704	0.6-	2.0-	1999 05 10	704	0.3+	0.3-
1992 05 03	809	(3.8+	0.4-)	1997 12 04	704	0.6-	0.8-	1999 05 10	704	0.3-	0.1-
1992 05 03	809	(4.0+	0.4-)	1997 12 04	704	0.7-	0.3+	1999 05 10	704	1.3-	0.3+
1992 05 03	809	(4.5+	0.1-)	1997 12 04	704	(4.1-	0.1+)	1999 05 13	704	0.2-	0.3-
1997 10 12	327	0.2+	0.4+	1997 12 15	327	0.4+	0.2-	1999 05 13	704	0.7-	0.3-
1997 10 12	327	0.1-	0.0	1997 12 15	327	0.3+	0.3-	1999 05 13	704	0.3+	0.1-
1997 10 12	327	0.2+	0.2+	1997 12 15	327	0.5+	0.1-	1999 05 13	704	0.5-	0.6-
1997 10 28	327	0.3+	0.6-	1999 02 14	699	0.4+	0.4+	1999 05 13	704	1.4-	1.2-
1997 10 28	327	0.3+	0.3-	1999 02 14	699	1.1+	0.5+	1999 05 14	704	0.5-	0.3+
1997 10 28	327	0.0	0.1-	1999 02 14	699	0.2-	0.2-	1999 05 14	704	0.6+	0.3+
1997 11 06	327	0.0	0.2+	1999 04 12	704	0.7+	0.2-	1999 05 14	704	0.3-	0.6-
1997 11 06	327	0.4+	0.1+	1999 04 12	704	0.4+	0.8-	1999 05 14	704	0.7-	0.9-
1997 11 06	327	0.0	0.0	1999 04 12	704	0.6+	0.5-	1999 05 14	704	0.4-	0.8+
1997 11 26	704	1.5-	0.4-	1999 04 12	704	0.5+	0.1-	1999 05 18	704	0.2+	0.3-
1997 11 26	704	(2.4-	0.3-)	1999 04 12	704	0.6+	0.2-	1999 05 18	704	0.3-	0.9+
1997 11 26	704	(4.7-	0.1+)	1999 04 15	704	0.5+	1.0+	1999 05 18	704	0.9-	0.6-
1997 11 29	704	0.4+	0.3-	1999 04 15	704	0.6-	1.0-	1999 05 18	704	0.3+	0.4-
1997 11 29	704	0.4+	0.1-	1999 04 15	704	1.6+	1.5+	1999 05 18	704	0.8-	0.1-
1997 11 29	704	0.4+	0.5+	1999 04 15	704	0.6-	0.1+				
1997 11 29	704	0.3-	0.5+	1999 04 15	704	1.5+	0.6+				

1997 VE₂ = 1999 KC₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	98.45586		(2000.0)	P	Q
n	0.23904942	ω	297.15649	-0.69504789	-0.71851115
a	2.5712497	Ω	196.95380	+0.68671049	-0.65294697
e	0.2600849	i	5.01647	+0.21292517	-0.23958712
P	4.12	H	14.6	G 0.15	U 4

Residuals in seconds of arc

1997 11 01	400	0.1-	0.4+	1997 11 29	704	1.3-	0.2+	1999 05 19	704	0.6+	0.4-
1997 11 01	400	0.3-	0.1+	1997 11 29	704	0.2+	0.5-	1999 05 19	704	0.4-	1.0+
1997 11 02	400	0.5+	0.2-	1999 05 13	704	1.3+	0.6-	1999 05 19	704	1.1-	0.7+
1997 11 02	400	0.2+	0.9-	1999 05 13	704	0.5+	0.2+	1999 05 19	704	0.8+	0.9-
1997 11 09	400	0.0	0.6+	1999 05 13	704	(2.4-	1.3-)	1999 05 19	704	0.6-	0.5+
1997 11 09	400	0.3-	0.1+	1999 05 13	704	(2.6+	0.4+)	1999 06 14	704	0.6-	0.2+
1997 11 25	400	0.1+	0.1+	1999 05 18	704	(1.9-	2.5-)	1999 06 14	704	0.1-	0.0
1997 11 25	400	1.8+	0.1-	1999 05 18	704	1.6-	0.9-	1999 06 14	704	0.3-	0.4+
1997 11 29	704	(1.1-	2.3+)	1999 05 18	704	0.1-	0.1+	1999 06 14	704	0.4+	0.3+
1997 11 29	704	0.4-	0.5-	1999 05 18	704	(1.2-	2.7-)	1999 06 14	704	1.1+	0.7-
1997 11 29	704	0.3-	0.7+	1999 05 18	704	(3.4-	1.6-)				

1997 VB₃ = 1999 KW₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	166.96577		(2000.0)	P	Q
n	0.27395022	ω	4.74841	+0.38924684	-0.91850507
a	2.3479469	Ω	62.35802	+0.84251770	+0.32449387
e	0.1987410	i	4.50210	+0.37235846	+0.22594725
P	3.60	H	13.7	G 0.15	U 4

Residuals in seconds of arc

1997 11 05	905	1.3+	0.3+	1997 11 29	704	0.4-	1.3+	1997 12 15	327	0.5+	0.1-
1997 11 05	905	0.0	0.7+	1997 11 29	704	0.3-	0.7-	1998 01 30	327	0.2+	0.2+
1997 11 06	411	0.0	0.3+	1997 11 29	704	0.4-	0.8-	1998 01 30	327	0.3+	0.1+
1997 11 06	411	0.0	0.4+	1997 11 29	704	0.6-	0.2-	1998 01 30	327	0.3+	0.3+
1997 11 06	905	1.1+	0.7+	1997 11 30	411	0.1-	0.2+	1999 05 18	704	0.3-	0.2+
1997 11 06	905	0.4-	1.3+	1997 11 30	411	0.0	0.1+	1999 05 18	704	1.1+	0.6+
1997 11 07	411	0.8-	0.1+	1997 12 04	704	0.1+	0.1+	1999 05 18	704	0.6-	1.0+
1997 11 07	411	0.1-	0.6+	1997 12 04	704	0.2+	0.8-	1999 05 18	704	0.6-	0.8-
1997 11 09	411	0.2+	0.2+	1997 12 04	704	1.0-	0.4-	1999 05 19	704	0.3-	0.2-
1997 11 09	411	1.4-	0.5-	1997 12 04	704	0.1+	1.3-	1999 05 19	704	0.4-	1.1+
1997 11 19	411	0.3+	0.5+	1997 12 04	704	0.7-	0.7-	1999 05 19	704	2.3+	0.7+

1997 11 19	411	0.4+	0.6+	1997 12 15	327	0.4+	0.1-
1997 11 29	704	0.1+	0.2+	1997 12 15	327	0.5+	0.1-

1997 VB₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	116.49791		(2000.0)	P	Q		
n	0.27881012	ω	106.56136	-0.96572634	-0.23092064		
a	2.3205826	Ω	60.22380	+0.15358322	-0.87648728		
e	0.0751537	i	7.84852	+0.20924827	-0.42242834		
P	3.54	H	15.0	G	0.15	U	3

Residuals in seconds of arc

1997 11 07	684	0.2+	0.2-	1997 11 29	684	0.3+	0.5-	1998 01 23	684	0.2+	0.4-
1997 11 07	684	0.5+	0.1-	1997 12 26	684	0.0	0.4+	1998 01 23	684	0.4+	0.3-
1997 11 08	684	0.3-	0.1-	1997 12 26	684	0.2-	0.2+	1999 06 09	684	0.2+	0.3+
1997 11 08	684	0.3-	0.1+	1997 12 26	684	0.6-	0.9+	1999 06 09	684	0.1+	0.2+
1997 11 08	684	0.3-	0.0	1997 12 27	684	0.3-	0.1+	1999 06 09	684	0.1+	0.2+
1997 11 08	684	0.1-	0.1-	1997 12 27	684	0.3-	0.6+	1999 06 10	684	0.4-	0.6-
1997 11 28	684	0.2+	0.3-	1998 01 22	684	0.0	0.0	1999 06 10	684	0.1+	0.5-
1997 11 28	684	0.0	0.4-	1998 01 22	684	0.2+	0.2-				
1997 11 29	684	0.4+	0.3-	1998 01 22	684	0.1+	0.0				

1997 VF₄ = 1999 JX₁₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	121.70431		(2000.0)	P	Q		
n	0.26101488	ω	38.07069	-0.47539671	-0.87810257		
a	2.4248928	Ω	80.37431	+0.79310052	-0.45439676		
e	0.1410039	i	3.14933	+0.38077492	-0.14986483		
P	3.78	H	15.1	G	0.15	U	4

Residuals in seconds of arc

1997 11 06	411	0.4+	0.2+	1997 11 29	704	1.3-	0.1-	1997 12 31	704	0.6-	0.3+
1997 11 06	411	0.1+	0.2-	1997 11 29	704	0.9-	0.5-	1997 12 31	704	1.1+	0.7-
1997 11 07	411	0.3-	0.6+	1997 11 29	704	2.3-	1.5-	1997 12 31	704	0.2+	1.1+
1997 11 07	411	0.1-	0.1-	1997 11 29	704	1.2-	0.4-	1997 12 31	704	2.1-	0.6+
1997 11 08	411	0.1+	0.6-	1997 11 30	411	0.9-	0.5+	1999 05 13	704	1.9-	0.3+
1997 11 08	411	1.0-	0.3-	1997 11 30	411	0.3-	0.7+	1999 05 13	704	1.3-	0.7-
1997 11 18	411	1.4+	0.0	1997 12 04	704	1.5+	1.2-	1999 05 13	704	1.0-	0.8-
1997 11 18	411	1.5+	0.6+	1997 12 04	704	1.0+	0.2-	1999 05 13	704	0.9-	1.3+
1997 11 18	411	0.6+	0.1-	1997 12 04	704	1.3+	0.8+	1999 05 18	704	2.7+	1.7-
1997 11 19	411	0.3-	0.6+	1997 12 04	704	1.1+	0.8+	1999 05 18	704	1.6+	1.2+
1997 11 19	411	0.8+	0.3-	1997 12 04	704	0.3+	1.5-	1999 05 18	704	0.5+	0.7-

1997 VA₆ = 1969 VA = 1999 JN₅₂

Id. G. V. Williams, S. Nakano, A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	152.58662		(2000.0)	P	Q		
n	0.28267423	ω	214.17214	-0.17764828	-0.97609390		
a	2.2993861	Ω	246.34205	+0.93068141	-0.12528760		
e	0.0993102	i	7.85792	+0.31980182	-0.17760552		
P	3.49	H	14.4	G	0.15	U	3

Residuals in seconds of arc

1969 11 13	675	(6.7-	2.3+)	1997 12 04	704	1.2+	0.6-	1999 05 13	704	1.0-	0.6-
1969 11 14	675	(2.3+	3.0-)	1997 12 05	704	0.2+	0.0	1999 05 18	704	0.2-	0.3-
1969 11 18	675	0.0	0.2-	1997 12 05	704	0.8-	0.3-	1999 05 18	704	0.1+	1.0-
1997 11 09	411	0.4-	0.0	1997 12 05	704	0.0	0.9+	1999 05 18	704	0.1+	1.0+
1997 11 09	411	0.2-	0.4-	1997 12 05	704	0.0	1.5+	1999 05 18	704	0.8+	0.1+
1997 11 10	411	0.5-	0.2+	1997 12 05	704	1.2+	0.5+	1999 05 18	704	0.4+	0.1-
1997 11 10	411	0.1-	0.5-	1997 12 29	566	0.0	0.4-	1999 05 19	704	0.5+	0.9-
1997 11 23	411	0.1+	0.8-	1997 12 29	566	0.1+	0.4-	1999 05 19	704	0.1+	0.2+
1997 11 27	411	1.1-	0.7+	1997 12 29	566	0.1+	0.2-	1999 05 19	704	0.3-	0.5+
1997 11 27	411	0.7-	0.4-	1997 12 30	566	0.0	0.4+	1999 05 19	704	0.5+	0.9-
1997 11 29	704	(2.3-	0.0)	1997 12 30	566	0.2-	0.6+	1999 05 19	704	0.8-	0.6-
1997 11 29	704	1.2-	0.5-	1997 12 30	566	0.6-	0.4+	1999 06 15	691	0.4+	0.5-

M.P.C. 34878

1999 JUNE 22

1997 11 29	704	(5.7− 2.0+)	1999 05 10	704	1.1− 1.4+	1999 06 15	704	0.2+ 0.1−
1997 11 29	704	(2.3− 0.6−)	1999 05 10	704	1.1+ 1.4+	1999 06 15	691	0.1+ 0.0
1997 11 29	704	(1.6− 2.7+)	1999 05 10	704	(2.6+ 0.8−)	1999 06 15	704	0.1− 0.6−
1997 12 03	411	0.2+ 0.6−	1999 05 10	704	0.9− 1.3−	1999 06 15	704	0.2− 0.0
1997 12 03	411	0.1− 1.0−	1999 05 10	704	0.5− 0.1+	1999 06 15	691	0.2− 0.5+
1997 12 04	704	0.2− 0.6−	1999 05 13	704	0.1− 0.4−	1999 06 15	704	0.4− 0.8−
1997 12 04	704	0.4+ 0.1+	1999 05 13	704	0.6+ 0.9+	1999 06 15	704	0.4+ 0.1−
1997 12 04	704	0.7+ 1.1+	1999 05 13	704	1.1+ 0.3−			
1997 12 04	704	1.4+ 1.3−	1999 05 13	704	0.6− 0.4+			

1997 VZ₇ = 1988 VZ₁₂

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	166.26200		(2000.0)	P	Q
<i>n</i>	0.22384681	ω	339.86138	+0.88089455	−0.43934246
<i>a</i>	2.6863882	Ω	47.48553	+0.46036428	+0.70888375
<i>e</i>	0.1651313	<i>i</i>	13.82018	+0.10995238	+0.55178078
<i>P</i>	4.40	<i>H</i>	12.2	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1955 04 24	675	0.3+ 0.9−	1997 11 19	327	0.2− 0.3+	1997 12 06	704	0.2− 0.4−
1955 04 24	675	1.4− 1.2−	1997 11 19	327	0.1− 0.4+	1997 12 06	704	0.4+ 0.2+
1988 11 04	327	1.5− 0.0	1997 11 20	327	0.1− 0.4+	1997 12 06	704	0.2− 0.5−
1988 11 04	327	1.0+ 0.4+	1997 11 20	327	0.2− 0.5+	1997 12 06	704	0.3+ 0.1−
1997 11 06	327	0.1− 0.2+	1997 11 20	327	0.0 0.5+	1997 12 06	704	0.0 0.5−
1997 11 06	327	0.1− 0.2+	1997 11 26	704	0.6+ 0.5−	1999 04 12	704	0.8+ 0.1+
1997 11 06	327	0.1+ 0.2+	1997 11 26	704	0.1− 0.4+	1999 04 12	704	1.0+ 0.8+
1997 11 07	327	0.1+ 0.2−	1997 11 26	704	0.2+ 0.2+	1999 04 12	704	0.9− 1.8+
1997 11 07	327	0.1+ 0.1−	1997 12 01	327	0.3− 0.6−	1999 04 12	704	0.1− 0.3−
1997 11 07	327	0.2+ 0.1−	1997 12 01	327	0.0 0.6−	1999 04 12	704	0.6+ 0.3+
1997 11 19	327	0.3− 0.4+	1997 12 01	327	0.4+ 0.6−			

1997 WE = 1999 JY₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	67.07438		(2000.0)	P	Q
<i>n</i>	0.31311937	ω	163.96236	−0.96595362	+0.25733058
<i>a</i>	2.1478111	Ω	30.98895	−0.24270707	−0.86555337
<i>e</i>	0.0106316	<i>i</i>	2.97606	−0.08959285	−0.42964908
<i>P</i>	3.15	<i>H</i>	15.2	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1997 11 18	411	0.0 0.9−	1997 12 04	704	(0.2+ 3.1+)	1999 05 13	704	0.0 0.7−
1997 11 18	411	0.5− 1.1−	1997 12 04	704	0.2− 1.2+	1999 05 13	704	(3.4− 2.5+)
1997 11 19	411	0.6− 0.8−	1997 12 04	411	0.7+ 0.9−	1999 05 13	704	0.1+ 1.2−
1997 11 19	411	0.2− 0.9−	1997 12 04	411	0.8− 0.6−	1999 05 13	704	0.4− 0.7+
1997 11 24	411	0.1+ 0.5−	1997 12 05	704	0.2+ 0.9−	1999 05 13	704	1.5− 0.9−
1997 11 24	411	0.7− 0.7−	1997 12 05	704	0.5+ 1.5+	1999 06 09	704	0.0 0.7+
1997 11 24	411	1.6− 0.4−	1997 12 05	704	(2.3+ 0.3+)	1999 06 09	704	0.2− 0.7+
1997 11 29	704	1.8− 1.9−	1997 12 05	704	0.4+ 1.6+	1999 06 09	704	0.5+ 0.5−
1997 11 29	704	(2.9− 2.6−)	1997 12 05	704	1.7+ 1.9+	1999 06 09	704	0.1+ 0.1−
1997 11 29	704	(2.2− 0.7−)	1997 12 21	411	1.0− 0.4−	1999 06 09	704	0.0 0.4−
1997 11 29	704	(3.4− 1.2+)	1997 12 21	411	0.7− 0.3−	1999 06 15	704	0.9− 0.3+
1997 11 29	704	(5.4− 3.1+)	1999 05 10	704	0.9+ 0.6+	1999 06 15	704	0.0 0.2+
1997 12 04	704	1.8+ 1.2+	1999 05 10	704	1.3+ 0.8+	1999 06 15	704	0.3− 0.2−
1997 12 04	704	1.7+ 0.1−	1999 05 10	704	0.1+ 0.0	1999 06 15	704	0.1− 0.9−
1997 12 04	704	1.2+ 0.9+	1999 05 10	704	0.2+ 1.1−	1999 06 15	704	0.6− 0.3−

1997 WJ = 1999 JG₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	171.75684		(2000.0)	P	Q
<i>n</i>	0.27783882	ω	7.70840	+0.37933773	−0.91853862
<i>a</i>	2.3259878	Ω	60.05855	+0.84190716	+0.29275890
<i>e</i>	0.1757120	<i>i</i>	7.38019	+0.38379060	+0.26566713
<i>P</i>	3.55	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1997 11 18	411	0.2+ 0.4+	1997 11 29	704	1.5− 0.4−	1997 12 21	411	0.3+ 0.1−
1997 11 18	411	0.2+ 0.2+	1997 11 29	704	0.6− 0.9+	1999 05 10	704	1.2+ 1.2−
1997 11 19	411	0.0 0.3+	1997 11 29	704	2.4− 0.1−	1999 05 10	704	0.6+ 1.7+
1997 11 19	411	0.1− 0.3+	1997 11 29	704	2.2− 1.1−	1999 05 10	704	1.5+ 0.6+
1997 11 23	360	0.5+ 0.2−	1997 11 29	704	1.9− 1.1−	1999 05 10	704	0.7+ 0.8−
1997 11 23	360	0.5+ 0.3−	1997 12 04	704	2.0+ 0.3+	1999 05 10	704	1.5− 2.3+
1997 11 23	360	0.5+ 0.2−	1997 12 04	704	1.1+ 0.0	1999 05 13	704	1.0− 0.7−
1997 11 24	411	0.2+ 0.1−	1997 12 04	704	0.1+ 0.8+	1999 05 13	704	0.0 0.9−
1997 11 24	411	0.1+ 0.1+	1997 12 04	704	0.1+ 0.2+	1999 05 13	704	0.7− 0.6+
1997 11 24	360	0.5+ 0.1+	1997 12 04	411	0.5+ 0.1+	1999 05 13	704	0.4− 0.6−
1997 11 24	360	0.6+ 0.0	1997 12 04	411	0.6+ 0.2+	1999 05 13	704	0.5− 1.0−
1997 11 24	360	0.5+ 0.0	1997 12 21	411	0.3+ 0.0			

1997 WO = 1999 JA₄₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	122.68844		(2000.0)	P	Q
<i>n</i>	0.26297147	ω	61.82508	−0.47286520	−0.87966340
<i>a</i>	2.4128498	Ω	56.48454	+0.78550914	−0.44701555
<i>e</i>	0.1249502	<i>i</i>	3.50010	+0.39921659	−0.16238657
<i>P</i>	3.75	<i>H</i>	14.7	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1997 11 18	411	0.0 0.7+	1997 11 29	704	1.9− 1.1−	1999 05 10	704	0.5− 0.2−
1997 11 18	411	0.2− 1.1+	1997 12 04	704	0.3+ 0.0	1999 05 10	704	0.5+ 1.9−
1997 11 19	411	0.7+ 0.2+	1997 12 04	704	1.7+ 1.1+	1999 05 10	704	0.8− 0.8+
1997 11 19	411	0.6+ 0.6+	1997 12 04	704	1.6+ 0.2+	1999 05 10	704	1.1+ 0.6−
1997 11 24	411	0.4+ 0.1−	1997 12 04	704	2.0+ 0.4+	1999 05 13	704	0.4− 0.3+
1997 11 24	411	0.1+ 0.2−	1997 12 04	411	0.1− 0.6−	1999 05 13	704	0.1+ 0.2−
1997 11 29	704	1.3− 0.5−	1997 12 04	411	0.1+ 0.4−	1999 05 13	704	0.5− 0.1−
1997 11 29	704	0.7− 0.2−	1997 12 21	411	0.2− 0.7+	1999 05 13	704	0.1− 0.1+
1997 11 29	704	1.3− 1.0−	1997 12 21	411	0.5− 0.4+	1999 05 13	704	0.3− 1.4+
1997 11 29	704	1.3− 1.3−	1999 05 10	704	1.0+ 0.5+			

1997 WO₁ = 1999 JQ₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	96.25328		(2000.0)	P	Q
<i>n</i>	0.26219085	ω	238.58748	−0.66638798	−0.74528560
<i>a</i>	2.4176367	Ω	253.21774	+0.69158595	−0.60690320
<i>e</i>	0.1063450	<i>i</i>	1.30636	+0.27863226	−0.27607587
<i>P</i>	3.76	<i>H</i>	15.2	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1993 10 10	809	0.7+ 1.0−	1997 11 21	327	0.0 0.7+	1999 04 15	704	0.9− 0.9+
1993 10 10	809	1.1+ 1.5−	1997 11 21	327	0.2− 0.6+	1999 04 15	704	0.2− 0.0
1993 10 10	809	0.7− 0.6−	1997 11 21	327	0.0 0.5+	1999 04 15	704	1.3+ 1.7−
1996 07 23	566	0.6+ 0.7+	1997 11 22	327	0.4− 0.7+	1999 05 09	429	0.5+ 0.5+
1996 07 23	566	1.1− 1.0+	1997 11 22	327	0.3− 0.5+	1999 05 09	429	0.1− 0.9+
1996 07 23	566	0.0 0.6+	1997 11 22	327	0.3− 0.2+	1999 05 09	429	0.2+ 0.8+
1997 10 29	704	(2.4− 0.4+)	1997 11 22	327	0.1+ 0.4+	1999 05 10	704	0.3+ 0.5−
1997 10 29	704	1.7− 0.2+	1997 11 28	327	0.0 0.2+	1999 05 10	704	0.9− 0.9+
1997 10 29	704	1.1+ 0.3+	1997 11 28	327	1.3+ 0.3+	1999 05 10	704	0.7− 0.3+
1997 10 29	704	(5.2− 3.1+)	1997 11 28	327	0.2+ 0.6+	1999 05 10	704	(4.6− 0.4−)
1997 11 06	704	1.2− 0.5−	1997 12 01	327	0.6+ 0.3+	1999 05 15	429	0.2− 0.1+
1997 11 06	704	(2.3− 0.3+)	1997 12 01	327	0.8+ 0.5+	1999 05 15	429	0.4+ 0.3+
1997 11 06	704	0.8− 0.1+	1997 12 01	327	0.5+ 0.2+	1999 05 15	429	0.7− 1.0−
1997 11 06	704	0.8− 1.2−	1999 04 15	704	1.3+ 0.3−			

1999 JUNE 22

M.P.C. 34879

1997 WQ₁ = 1999 LJ₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	216.65353		(2000.0)	P		Q					
<i>n</i>	0.37064901	ω	196.64020	+0.31779840		-0.91263591					
<i>a</i>	1.9193794	Ω	235.53987	+0.90157039		+0.37481379					
<i>e</i>	0.0840132	<i>i</i>	18.16873	+0.29355579		-0.16312667					
<i>P</i>	2.66	<i>H</i>	16.1	<i>G</i>	0.15	<i>U</i>	5				
Residuals in seconds of arc											
1997 11 21	327	0.5-	0.3-	1997 11 29	704	1.1+	0.0	1999 06 14	704	2.0+	0.1-
1997 11 21	327	0.6-	0.3-	1997 11 29	704	0.5-	1.6+	1999 06 14	704	1.1-	1.1+
1997 11 21	327	0.6-	0.3-	1997 11 29	704	0.2+	0.3-	1999 06 14	704	0.0	0.6-
1997 11 22	327	0.1-	0.5-	1997 11 29	704	0.6-	0.4+	1999 06 15	704	0.6+	0.8-
1997 11 22	327	0.7-	0.4-	1997 12 01	327	0.3-	1.1-	1999 06 15	704	0.4-	0.2-
1997 11 26	566	1.0+	0.6+	1997 12 01	327	0.3-	0.3-	1999 06 15	704	0.5-	0.2-
1997 11 26	566	1.1+	0.8+	1997 12 01	327	0.0	0.5-	1999 06 15	704	0.0	0.6+
1997 11 26	566	0.7+	0.9+	1999 06 14	704	0.2-	0.5+				
1997 11 29	704	0.1+	0.1-	1999 06 14	704	0.4-	0.2-				

1997 WV₁ = 1999 JU₅₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	88.62837		(2000.0)	P		Q					
<i>n</i>	0.28581554	ω	237.78543	-0.97521406		-0.21390483					
<i>a</i>	2.2825072	Ω	289.81002	+0.21780563		-0.88300905					
<i>e</i>	0.0788593	<i>i</i>	3.44831	+0.03896470		-0.41777953					
<i>P</i>	3.45 <th><i>H</i></th> <td>15.0<th><i>G</i></th><td>0.15<th><i>U</i></th><td>3<td></td><td></td></td></td></td>	<i>H</i>	15.0 <th><i>G</i></th> <td>0.15<th><i>U</i></th><td>3<td></td><td></td></td></td>	<i>G</i>	0.15 <th><i>U</i></th> <td>3<td></td><td></td></td>	<i>U</i>	3 <td></td> <td></td>				
Residuals in seconds of arc											
1996 08 15	566	0.9+	0.2+	1997 12 04	704	0.0	0.8-	1999 05 10	704	0.4+	1.4+
1996 08 15	566	0.9-	0.7+	1997 12 04	704	(2.5+	1.1+)	1999 05 10	704	0.6+	0.6-
1996 08 15	566	0.2-	0.0	1997 12 04	704	0.8+	1.6+	1999 05 10	704	0.1+	0.4+
1997 11 19	411	0.5+	0.4+	1997 12 05	704	0.9+	0.5+	1999 05 13	704	0.2+	0.2-
1997 11 19	411	0.1+	0.4+	1997 12 05	704	(1.9+	3.9+)	1999 05 13	704	0.4-	0.6+
1997 11 23	411	0.3+	0.3-	1997 12 05	704	(1.3+	2.7+)	1999 05 13	704	0.9-	0.2+
1997 11 23	411	0.0	0.3-	1997 12 05	704	(0.9-	3.4+)	1999 05 13	704	0.4+	0.6+
1997 11 27	411	0.8-	0.2+	1997 12 05	704	(0.2-	2.4+)	1999 06 09	704	0.1+	0.2+
1997 11 27	411	0.6+	0.2-	1997 12 21	411	0.2-	0.6+	1999 06 09	704	0.6+	0.0
1997 11 29	704	1.2-	0.7+	1997 12 21	411	1.4-	1.0-	1999 06 09	704	0.3+	0.1+
1997 11 29	704	(2.8-	0.3+)	1998 01 07	699	0.8-	0.8+	1999 06 09	704	0.3-	0.5+
1997 11 29	704	(2.5-	0.3-)	1998 01 07	699	1.3-	1.4+	1999 06 09	704	0.9+	0.1+
1997 11 29	704	(2.6-	0.5+)	1998 01 07	699	0.9+	0.5+				
1997 12 04	704	1.0+	1.5-	1999 05 10	704	1.7-	1.2-				

1997 WR₂ = 1992 GJ₇ = 1999 JY₃₉

Id. G. V. Williams, S. Nakano, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	175.79608		(2000.0)	P			Q			
n	0.28713948	ω	197.40600	+0.22242417		-0.97471083				
a	2.2754857	Ω	239.74729	+0.89744741		+0.21334670				
e	0.0482407	i	1.43245	+0.38094047		+0.06649806				
P	3.43	H	14.9	G	0.15	U	2			
Residuals in seconds of arc										
1992 04 04	809	(3.7- 1.1-)	1997 12 04	704	0.7+	0.8-	1999 05 13	704	0.9+	0.3-
1992 04 04	809	(5.0- 0.4+)	1997 12 04	704	0.7+	1.9-	1999 05 13	704	0.3-	0.9-
1992 04 04	809	(6.8- 0.5+)	1997 12 04	704	0.6-	0.8-	1999 05 13	704	1.0-	0.3-
1992 04 23	691	0.2+ 0.4+	1997 12 04	704	(1.1+ 3.2+)		1999 05 13	704	0.2+	0.0
1992 04 23	691	0.1+ 0.6+	1997 12 05	411	0.7+ 0.4+		1999 05 18	704	0.1-	0.1-
1992 04 23	691	0.1+ 0.1+	1997 12 05	411	0.5+ 0.2-		1999 05 18	704	1.3-	0.5+
1993 09 14	691	0.4- 0.4-	1997 12 21	411	0.9+ 0.6+		1999 05 18	704	1.0+	0.8+
1993 09 14	691	0.3+ 0.1+	1997 12 21	411	0.2- 0.1+		1999 05 18	704	0.1-	1.5+
1993 09 14	691	0.4+ 0.4-	1998 01 07	699	0.1- 0.0		1999 05 18	704	0.6-	0.4+
1997 11 23	411	0.2+ 0.2+	1998 01 07	699	1.0- 0.3+		1999 05 19	704	0.2+	0.2-
1997 11 23	411	0.6- 0.7+	1998 01 07	699	0.4+ 0.3+		1999 05 19	704	1.2-	1.2-
1997 11 24	411	0.5- 0.2+	1999 05 10	704	0.2- 0.3-		1999 05 19	704	0.4-	0.3-

1997 11 24	411	0.4-	0.2-	1999 05 10	704	0.4+	0.2+	1999 05 19	703	0.0	0.3-
1997 11 30	411	0.8-	0.6-	1999 05 10	704	0.5-	1.8-	1999 05 19	703	0.3+	0.1-
1997 11 30	411	0.1-	0.2-	1999 05 10	704	0.3+	1.5-	1999 05 19	703	0.8+	0.0
1997 12 04	704	0.2+	0.4-	1999 05 10	704	0.2+	0.6-	1999 05 19	703	0.5+	1.0+

1997 WT₂ = 1999 JE₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	172.66304		(2000.0)	P		Q					
<i>n</i>	0.28548139	ω	6.16374	+0.18232945		-0.97521551					
<i>a</i>	2.2842879	Ω	73.38229	+0.89642410		+0.11250094					
<i>e</i>	0.0717838	<i>i</i>	7.51614	+0.40395519		+0.19052101					
<i>P</i>	3.45	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	4				
Residuals in seconds of arc											
1992 04 07	691	0.1-	0.5-	1997 12 05	704	0.1+	0.9+	1999 05 13	704	0.2+	0.3+
1992 04 07	691	0.1+	0.0	1997 12 05	704	1.3-	0.7-	1999 05 13	704	0.8+	0.3-
1992 04 07	691	0.2-	0.0	1997 12 05	411	0.4+	0.0	1999 05 13	704	0.5-	0.0
1997 11 23	411	0.6+	1.8+	1997 12 05	411	0.2+	0.0	1999 05 13	704	0.3+	1.7-
1997 11 23	411	0.1+	0.8+	1997 12 21	411	0.0	0.6-	1999 05 17	703	0.4+	0.1-
1997 11 24	411	0.8-	0.2-	1997 12 21	411	0.5+	0.1+	1999 05 17	703	0.3-	0.9+
1997 11 24	411	0.7-	0.1+	1999 05 10	704	1.1+	0.7+	1999 05 17	703	1.0-	1.2+
1997 11 30	411	0.1+	0.1-	1999 05 10	704	0.4-	0.1+	1999 05 17	703	(0.6+	2.6+)
1997 11 30	411	0.0	0.6-	1999 05 10	704	1.7-	0.7-	1999 06 14	704	0.7+	0.3+
1997 12 05	704	0.9+	0.1-	1999 05 10	704	1.4+	1.4-	1999 06 14	704	0.3+	0.6+
1997 12 05	704	1.3-	0.8-	1999 05 10	704	(2.9-	0.7+)	1999 06 14	704	0.9-	0.8+
1997 12 05	704	0.9+	0.6+	1999 05 13	704	0.4+	1.1+	1999 06 14	704	(1.1+	2.5+)

1997 WX₂ = 1999 JG₇₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	160.07512		(2000.0)	P		Q					
n	0.29613844	ω	42.71188	-0.16883714		-0.98259148					
a	2.2291512	Ω	57.14966	+0.87759102		-0.18566203					
e	0.0320760	i	5.29395	+0.44869590		-0.00660269					
P	3.33	H	15.2	G	0.15	U	4				
Residuals in seconds of arc											
1997 11 23	411	0.7-	0.2+	1997 12 04	704	1.9+	1.9+	1999 05 19	704	0.2+	0.1+
1997 11 23	411	0.6-	0.9+	1997 12 05	411	0.5-	0.4-	1999 05 19	704	0.1+	0.1+
1997 11 24	411	0.3-	0.3+	1997 12 05	411	0.4-	0.3+	1999 05 19	704	0.7+	1.0-
1997 11 24	411	0.3-	0.8-	1997 12 25	411	0.3+	0.2-	1999 06 15	704	0.4-	0.2-
1997 11 30	411	0.2-	0.7+	1997 12 25	411	0.1+	0.0	1999 06 15	704	0.1+	0.1-
1997 11 30	411	0.5-	0.8+	1999 05 13	704	1.7-	0.8-	1999 06 15	704	0.7-	0.0
1997 12 04	704	1.2+	0.4-	1999 05 13	704	0.6+	0.2-	1999 06 15	704	0.1-	0.0
1997 12 04	704	0.6+	1.3-	1999 05 13	704	0.5+	0.8+	1999 06 15	704	0.2-	0.1+
1997 12 04	704	0.7-	2.0-	1999 05 13	704	0.8+	1.3+				

1997 WJ₁₂ = 1999 JC₁₀₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	12.37378		(2000.0)	P			Q				
n	0.21594063	ω	145.28221		-0.55611147		+0.81597725				
a	2.7515652	Ω	90.43671		-0.79381602		-0.46522997				
e	0.0715241	i	9.08323		-0.24616287		-0.34313584				
P	4.56	H	15.0	G	0.15		U	4			
Residuals in seconds of arc											
1993 01 22	691	0.2-	0.8+	1997 12 05	691	0.4+	0.0	1999 05 18	704	1.0-	0.1+
1997 11 22	691	0.0	0.5-	1997 12 05	691	0.3+	0.0	1999 06 07	703	0.4-	0.1+
1997 11 22	691	0.3-	0.4+	1999 05 12	704	0.9+	0.8+	1999 06 07	703	(2.2+	0.0)
1997 11 22	691	0.2-	0.3-	1999 05 12	704	0.2-	0.6+	1999 06 07	703	0.4-	0.6-
1997 11 28	691	1.0+	0.4-	1999 05 12	704	1.0+	0.2+	1999 06 07	703	0.4+	1.1-
1997 11 28	691	0.4+	0.5+	1999 05 12	704	0.8-	0.1-	1999 06 14	704	1.5+	1.8+
1997 11 30	691	1.0-	0.1-	1999 05 12	704	0.1+	0.3-	1999 06 14	704	0.1+	0.7-
1997 11 30	691	0.4-	0.0	1999 05 18	704	0.4-	0.3-	1999 06 14	704	0.2-	0.5-
1997 11 30	691	0.3-	0.1-	1999 05 18	704	0.7-	0.1+	1999 06 14	704	0.0	0.1+
1997 12 05	691	0.2+	0.3-	1999 05 18	704	0.4+	0.1-	1999 06 14	704	0.1-	0.0

1997 WJ₂₁ = 1976 UB₈

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28776525	ω	325.61802	−0.99475048	−0.08995484		
<i>a</i>	2.2721857	Ω	209.33654	+0.10080951	−0.94333282		
<i>e</i>	0.2218010	<i>i</i>	5.71418	−0.01757635	−0.31942341		
<i>P</i>	3.43	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	2
Residuals in seconds of arc							
1976 10 22	381	0.1−	0.3−	1997 12 02	411	0.2−	1.6+
1976 10 22	381	0.3+	0.8−	1997 12 02	411	0.9−	0.5+
1982 09 16	413	0.2−	1.9+	1997 12 05	411	1.2−	1.3+
1982 09 16	413	0.0	0.8−	1997 12 05	411	0.0	0.2+
1986 10 09	675	0.1+	0.4−	1997 12 21	411	0.4+	1.1+
1997 11 30	411	0.5+	0.6−	1997 12 21	411	0.8−	0.4+
1997 11 30	411	0.0	0.5−	1997 12 29	566	1.0+	1.3−

1997 WM₂₃ = 1999 JM₁₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20614785	ω	253.61597	+0.99185302	−0.11607660		
<i>a</i>	2.8380291	Ω	113.02539	+0.12731058	+0.91755838		
<i>e</i>	0.0925111	<i>i</i>	3.26875	−0.00442823	+0.38027996		
<i>P</i>	4.78	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1991 09 16	675	0.3−	0.4−	1998 01 25	691	0.3−	0.5−
1991 09 16	675	0.3+	0.3+	1998 01 25	691	0.3−	0.3−
1997 11 28	910	0.3−	0.4+	1998 01 25	691	0.3−	0.5−
1997 11 28	910	0.4−	0.4+	1998 01 30	691	0.6+	0.7−
1997 11 28	910	0.4−	0.5+	1998 01 30	691	0.0	0.6−
1997 12 04	910	0.3+	0.7+	1998 01 30	691	0.2+	0.2−
1997 12 04	910	0.4+	0.6+	1999 05 12	704	0.2+	1.0−
1997 12 04	910	0.6+	0.7+	1999 05 12	704	0.5−	1.4+

1997 WG₃₆ = 1991 EG₂ = 1999 JB₁₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.25991739	ω	190.72821	−0.98613343	−0.16561165		
<i>a</i>	2.4317140	Ω	339.72966	+0.15444780	−0.89236198		
<i>e</i>	0.1470111	<i>i</i>	1.76323	+0.06071846	−0.41983672		
<i>P</i>	3.79	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1991 03 10	809	(2.6−	1.3−)	1997 11 29	704	0.5+	1.2−
1991 03 10	809	1.6−	1.5−	1997 11 29	704	1.9+	0.8−
1991 03 10	809	1.1−	1.5−	1997 11 30	566	0.3−	0.3+
1991 03 12	809	0.3+	1.0+	1997 11 30	566	0.1−	0.3+
1991 03 12	809	0.9+	1.0+	1997 11 30	566	0.4−	0.8+
1991 03 12	809	1.4+	1.0+	1997 12 04	704	0.7−	0.7+
1997 11 26	704	1.4−	0.7+	1997 12 04	704	0.2−	0.3−
1997 11 26	704	(2.5−	0.3+)	1997 12 04	704	1.7+	1.8−
1997 11 26	704	0.9−	0.5−	1997 12 04	704	0.5−	1.1+
1997 11 29	704	0.5+	0.5+	1997 12 04	704	0.4−	0.5+
1997 11 29	704	0.0	0.4−	1999 05 13	704	0.7−	0.4+
1997 11 29	704	0.5+	0.1−	1999 05 13	704	0.3+	0.6+

1997 WW₃₆ = 1999 JU₄₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29511802	ω	23.16302	−0.61803464	−0.78326996		
<i>a</i>	2.2342867	Ω	105.07696	+0.70994540	−0.59281652		
<i>e</i>	0.0513528	<i>i</i>	3.99321	+0.33765472	−0.18723447		
<i>P</i>	3.34	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	5
Residuals in seconds of arc							
1997 11 26	704	0.0	0.4+	1997 11 29	704	1.2−	1.0+
1997 11 26	704	2.5−	0.5−	1997 12 04	704	0.7−	1.0+
1997 11 26	704	(5.3−	0.6−)	1997 12 04	704	0.5−	0.0
1997 11 28	910	0.9+	0.2+	1997 12 04	704	1.5+	0.2−
1997 11 28	910	1.0+	0.2+	1997 12 04	704	0.3−	0.0
1997 11 28	910	1.0+	0.1−	1997 12 04	704	0.2+	1.4+
1997 11 29	704	0.6−	0.7−	1998 01 30	327	0.1+	0.7−
1997 11 29	704	0.3+	1.0+	1998 01 30	327	0.6+	0.0
1997 11 29	704	0.4−	1.0−	1998 01 30	327	0.7+	0.6−
1997 11 29	704	0.1+	0.4−	1999 05 10	704	1.0−	0.6+

1997 WQ₃₈ = 1999 KB₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23701009	ω	204.71487	−0.20803106	−0.96674139		
<i>a</i>	2.5859780	Ω	257.57145	+0.92084163	−0.14228260		
<i>e</i>	0.1630892	<i>i</i>	8.76289	+0.32980869	−0.21252471		
<i>P</i>	4.16	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1997 11 26	704	1.0−	1.1+	1997 12 29	566	0.7+	1.4+
1997 11 26	704	1.1−	0.6+	1997 12 29	566	0.8+	1.1+
1997 11 26	704	0.6−	0.7−	1997 12 31	704	0.4−	0.5−
1997 11 29	704	(3.7−	0.8+)	1997 12 31	704	0.6−	0.1−
1997 11 29	704	(2.7−	0.4+)	1997 12 31	704	0.9−	0.5−
1997 11 29	704	(5.2−	0.9+)	1997 12 31	704	0.9−	0.6−
1997 11 29	704	(5.8−	1.6+)	1998 01 02	704	0.2−	0.7−
1997 12 04	704	1.0+	0.6−	1998 01 02	704	0.9−	0.7−
1997 12 04	704	0.3−	0.8+	1998 01 02	704	0.7+	0.7−
1997 12 04	704	1.3+	0.6+	1998 01 02	704	0.7−	0.5−
1997 12 04	704	1.5+	0.8−	1999 05 10	704	0.4−	0.8−
1997 12 04	704	0.6+	0.0	1999 05 10	704	(0.8−	2.5+)
1997 12 29	566	0.7+	0.9+	1999 05 10	704	(2.7+	1.4+)

1997 WF₃₉ = 1999 LN₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27050102	ω	55.77329	−0.59509628	−0.80044613		
<i>a</i>	2.3678642	Ω	70.90712	+0.71011869	−0.56553080		
<i>e</i>	0.1788719	<i>i</i>	4.35377	+0.37628693	−0.19864768		
<i>P</i>	3.64	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1997 11 29	704	1.8−	0.3−	1997 12 31	704	0.2−	0.1−
1997 11 29	704	(2.5−	0.6−)	1997 12 31	704	0.3−	0.1+
1997 11 29	704	1.1−	0.7−	1997 12 31	704	0.9−	0.1−
1997 11 29	704	1.8−	1.3−	1998 01 02	704	0.1−	0.0
1997 11 29	704	(2.4−	1.0−)	1998 01 02	704	0.0	0.2+
1997 12 04	704	1.8+	0.3+	1998 01 02	704	0.2−	0.4−
1997 12 04	704	0.9+	0.2+	1998 01 02	704	0.1−	0.5+
1997 12 04	704	1.1+	1.1+	1999 05 19	704	0.1−	0.2+
1997 12 04	704	0.5+	1.5+	1999 05 19	704	0.0	0.3+
1997 12 04	704	1.3+	1.5+	1999 05 19	704	1.3+	0.4−
1997 12 31	704	0.0	0.1−	1999 05 19	704	(4.0+	2.7+)

1997 WM₄₃ = 1999 JX₁₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	144.44457	(2000.0)	P	Q
<i>n</i>	0.28621216	ω	206.54033	-0.33470877
<i>a</i>	2.2803981	Ω	263.31277	+0.88876739
<i>e</i>	0.0667336	<i>i</i>	8.52296	-0.31314942
<i>P</i>	3.44	<i>H</i>	14.8	<i>G</i> 0.15
				<i>U</i> 4

Residuals in seconds of arc

1997 11 29	704	0.6+	0.9-	1997 12 31	704	0.2+	0.0	1999 05 18	704	0.2+	0.5-
1997 11 29	704	1.1-	0.5-	1997 12 31	704	0.1+	0.1+	1999 05 18	704	0.7+	0.6+
1997 11 29	704	0.2-	1.0-	1998 01 02	704	0.7+	0.2+	1999 05 18	704	0.2-	0.5+
1997 11 29	704	1.4-	1.4+	1998 01 02	704	0.3+	0.2+	1999 05 18	704	0.2-	0.5+
1997 11 29	704	2.0-	0.4+	1998 01 02	704	0.2+	0.1-	1999 06 15	704	0.5-	0.1-
1997 12 04	704	(3.3+	2.4-)	1998 01 02	704	0.5+	0.5+	1999 06 15	704	0.2-	0.2+
1997 12 04	704	(2.5+	1.2-)	1999 05 13	704	0.3-	0.6+	1999 06 15	704	0.3-	0.4+
1997 12 04	704	(0.3-	4.5-)	1999 05 13	704	0.2+	1.0-	1999 06 15	704	0.4-	0.4-
1997 12 04	704	(1.0+	2.8-)	1999 05 13	704	0.5+	1.0-	1999 06 15	704	0.0	1.2+
1997 12 31	704	0.1-	0.3+	1999 05 13	704	1.2+	0.1+				
1997 12 31	704	0.4+	0.1-	1999 05 18	704	0.8-	1.0-				

1997 WE₄₄ = 1999 JD₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	178.52355	(2000.0)	P	Q
<i>n</i>	0.28954904	ω	344.81783	+0.30203181
<i>a</i>	2.2628441	Ω	87.53685	+0.88386612
<i>e</i>	0.1118631	<i>i</i>	5.23639	+0.35715189
<i>P</i>	3.40	<i>H</i>	15.2	<i>G</i> 0.15
				<i>U</i> 4

Residuals in seconds of arc

1997 11 29	704	1.3-	0.4-	1997 12 05	704	1.8+	0.6+	1999 05 10	704	0.6-	0.3+
1997 11 29	704	1.2-	0.1-	1997 12 28	566	0.4-	0.6+	1999 05 10	704	0.1+	1.4-
1997 11 29	704	0.7-	1.6-	1997 12 28	566	0.1-	0.1+	1999 05 10	704	0.3+	1.4+
1997 11 29	704	1.5-	1.2+	1997 12 28	566	0.4-	0.2+	1999 05 10	704	1.6-	0.2-
1997 12 04	704	0.8+	0.2-	1997 12 31	704	0.3-	0.1+	1999 05 10	704	1.1+	2.0-
1997 12 04	704	1.1+	0.8-	1997 12 31	704	0.4-	0.6-	1999 05 13	704	0.5-	1.5-
1997 12 04	704	0.2+	0.5-	1997 12 31	704	0.2-	0.3-	1999 05 13	704	0.6+	1.0+
1997 12 04	704	1.0+	1.1+	1997 12 31	704	0.2-	0.4-	1999 05 13	704	1.5+	0.7-
1997 12 05	704	1.0+	0.1-	1998 01 02	704	0.2+	0.3-	1999 05 18	704	1.1-	0.1+
1997 12 05	704	1.3+	0.2-	1998 01 02	704	0.5-	0.4+	1999 05 18	704	0.2+	1.4+
1997 12 05	704	0.6+	0.3+	1998 01 02	704	0.9+	0.3+	1999 05 18	704	0.0	1.7+
1997 12 05	704	1.8-	0.6+	1998 01 02	704	(2.8-	0.5-)				

1997 WT₄₄ = 1984 BZ₁ = 1999 JO₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	71.21300	(2000.0)	P	Q
<i>n</i>	0.20591943	ω	295.83681	-0.85045883
<i>a</i>	2.8401275	Ω	212.43752	+0.49016534
<i>e</i>	0.1670141	<i>i</i>	1.26014	+0.19093905
<i>P</i>	4.79	<i>H</i>	13.8	<i>G</i> 0.15
				<i>U</i> 1

Residuals in seconds of arc

1984 01 25	675	0.2+	0.4-	1997 12 29	566	(2.5+	3.0-)	1999 05 10	704	1.8+	0.4-
1984 01 26	675	0.4-	0.1-	1997 12 29	566	(2.4+	3.0-)	1999 05 10	704	0.5+	0.2-
1991 09 07	691	0.6-	0.1-	1997 12 29	566	(2.4+	3.3-)	1999 05 13	704	0.5+	0.6-
1991 09 07	691	1.2+	0.3+	1997 12 31	704	0.1+	0.8-	1999 05 13	704	0.3-	0.3+
1991 09 07	691	0.6-	0.2-	1997 12 31	704	0.7+	0.1-	1999 05 13	704	0.2-	0.8+
1997 11 29	704	(2.1-	1.9+)	1997 12 31	704	0.5-	0.6-	1999 05 13	704	1.0-	1.7-
1997 11 29	704	0.3-	1.0+	1997 12 31	704	0.1+	0.1-	1999 05 13	704	1.2+	0.7-
1997 11 29	704	1.4-	0.8+	1999 04 15	704	1.0-	1.0+	1999 05 18	704	0.3-	0.4-
1997 11 29	704	(3.7-	0.6+)	1999 04 15	704	0.5-	0.8+	1999 05 18	704	0.9+	0.9+
1997 11 29	704	1.2-	1.0+	1999 04 15	704	0.7+	0.5+	1999 05 18	704	0.8-	1.4-
1997 12 04	704	(2.8+	2.4+)	1999 04 15	704	0.1+	0.3+	1999 05 18	704	0.8+	0.3+
1997 12 04	704	(1.4+	2.1-)	1999 04 15	704	0.4-	0.1+	1999 05 18	704	0.6-	0.7+
1997 12 04	704	0.4-	0.2+	1999 05 10	704	1.3+	0.6-	1999 05 19	704	(2.8+	0.5-)

1997 12 04	704	1.0+	0.7-	1999 05 10	704	0.0	0.7+	1999 05 19	704	0.7+	1.3+
1997 12 04	704	1.8+	0.1-	1999 05 10	704	1.4-	0.3+	1999 05 19	704	1.8-	1.3-

1997 WV₄₄ = 1997 YY₉ = 1999 JL₂₁Id. A. Gnädig (d, *MPC* 32093), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	69.45992	(2000.0)	P	Q
<i>n</i>	0.21016545	ω	276.64994	-0.88449969
<i>a</i>	2.8017444	Ω	236.23273	+0.46061741
<i>e</i>	0.1669391	<i>i</i>	6.66196	+0.07410738
<i>P</i>	4.69	<i>H</i>	13.6	<i>G</i> 0.15
				<i>U</i> 4

Residuals in seconds of arc

1997 11 29	704	1.3-	0.5+	1997 12 29	566	0.5+	0.7-	1999 05 13	704	0.4+	0.4+
1997 11 29	704	2.0-	0.6-	1997 12 29	566	0.5+	1.0-	1999 05 13	704	1.0-	0.8+
1997 11 29	704	1.8-	0.4-	1997 12 29	566	0.8+	0.9-	1999 05 13	704	1.0-	0.4+
1997 11 29	704	(2.3-	0.9-)	1997 12 30	566	0.4+	0.4+	1999 05 13	704	(2.6-	0.0)
1997 11 29	704	1.6-	0.2+	1997 12 30	566	0.2+	0.5+	1999 05 13	704	0.3-	0.2+
1997 12 04	704	0.9+	0.2-	1997 12 30	566	0.0	0.6+	1999 05 18	704	0.4+	0.3-
1997 12 04	704	0.9+	0.8-	1999 04 15	704	(2.4-	0.5-)	1999 05 18	704	0.7-	0.1+
1997 12 04	704	0.7+	0.9-	1999 04 15	704	1.1+	0.2+	1999 05 18	704	1.3+	0.3-
1997 12 04	704	1.4+	0.1-	1999 04 15	704	0.3-	0.7-	1999 05 18	704	(2.1+	1.6+)
1997 12 04	704	(3.0+	0.0)	1999 04 15	704	0.4+	1.6-	1999 05 19	704	0.2+	0.8+
1997 12 05	704	1.3+	0.5+	1999 04 15	704	0.2+	1.2-	1999 05 19	704	0.2-	0.2+
1997 12 05	704	1.1-	0.5+	1999 05 10	704	0.3+	0.3+	1999 05 19	704	0.4-	0.3-
1997 12 05	704	0.0	1.6+	1999 05 10	704	0.2+	1.7+	1999 05 19	704	0.9-	0.9-
1997 12 05	704	0.2+	1.3+	1999 05 10	704	0.1-	1.2+	1999 05 19	704	0.5+	0.5+
1997 12 05	704	(2.5+	0.2-)	1999 05 10	704	0.1-	1.0-				

1997 WX₄₅ = 1997 WA₅₄ = 1980 WX₃ = 1990 SK₁Id. A. Doppler (d, *MPC* 31609; unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Doppler

<i>M</i>	234.17834	(2000.0)	P	Q
<i>n</i>	0.29003754	ω	123.45345	+0.95498364
<i>a</i>	2.2603026	Ω	219.80866	-0.29432222
<i>e</i>	0.2603522	<i>i</i>	5.70811	-0.03715754
<i>P</i>	3.40	<i>H</i>	16.0	<i>G</i> 0.15
				<i>U</i> 5

Residuals in seconds of arc

1980 11 29	675	0.3-	0.9-	1997 11 26	704	1.1+	0.4+	1997 11 30	566	0.2+	0.6-
1980 11 29	675	0.5+	0.3-	1997 11 26	704	0.4+	0.4+	1997 11 30	566	0.1+	0.2-
1980 12 01	675	(4.6-	3.6-)	1997 11 26	704	0.5+	0.2+	1997 12 04	704	1.1+	0.0
1990 09 16	675	0.2+	0.5+	1997 11 29	704	1.3-	0.6-	1997 12 04	704	0.6+	0.9+
1990 09 16	675	0.3-	0.1-	1997 11 29	704	1.7-	1.0-	1997 12 04	704	0.3+	0.4+
1990 09 17	675	0.2+	0.2-	1997 11 29	704	1.1-	0.2-	1997 12 04	704	0.2+	0.1-
1990 09 17	675	0.4-	0.4+	1997 11 29	704	(2.3-	0.2+)	1997 12 04	704	1.1+	1.6+
1990 09 18	675	0.1+	0.2+	1997 11 29	704	1.7-	0.3+				
1990 09 18	675	0.2+	0.7-	1997 11 30	566	0.1+	0.3-				

1997 WY₄₉ = 1991 ES₆ = 1999 FN₂₄

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	175.79724	(2000.0)	P	Q
<i>n</i>	0.25673661	ω	87.85130	+0.71840084
<i>a</i>	2.4517575	Ω	316.15509	+0.61676230
<i>e</i>	0.1023908	<i>i</i>	2.85878	+0.32172114
<i>P</i>	3.84	<i>H</i>	13.7	<i>G</i> 0.15
				<i>U</i> 3

Residuals in seconds of arc

1991 03 06	372	0.8+	1.4+	1997 12 07	327	0.1+	0.4-	1999 03 20	704	0.4+	1.2-
1991 03 06	372	0.8-	1.2-	1997 12 07	327	0.1-	0.3-	1999 04 11	699	0.1-	0.1-
1997 11 26	704	0.1+	1.1+	1997 12 30	327	0.2-	0.3-	1999 04 11	699	0.1+	1.0+
1997 11 26	704	0.5+	0.8+	1998 01 30	327	0.1-	0.1-	1999 04 11	699	0.1+	0.6+
1997 11 26	704	1.1-	0.7-	1998 01 30	327	0.1-	0.1-	1999 04 15	704	0.7+	1.8+

M.P.C. 34882

1997 12 04	704	0.3−	0.1+	1999 03 19	704	1.2−	1.0+	1999 04 15	704	0.8+	0.7+
1997 12 04	704	0.1−	0.2−	1999 03 19	704	1.3−	0.4+	1999 04 15	704	1.3+	0.2+
1997 12 04	704	0.4+	0.3+	1999 03 19	704	0.6+	1.8−	1999 04 15	704	(0.1−	2.5+)
1997 12 04	704	0.2−	0.7+	1999 03 19	704	0.1+	0.1−	1999 04 15	704	(3.9−	0.4+)
1997 12 04	704	0.6+	0.2−	1999 03 20	704	0.8−	0.4−				
1997 12 07	327	0.2+	0.3−	1999 03 20	704	0.4−	1.7−				

1997 XC = 1975 XY = 1999 JH₆₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	101.04006		(2000.0)		P		Q
<i>n</i>	0.18443972	ω	246.61013		−0.61122597		−0.76327251
<i>a</i>	3.0565610	Ω	242.74816		+0.78451651		−0.54934445
<i>e</i>	0.2502396	<i>i</i>	13.61892		+0.10457849		−0.34005257
<i>P</i>	5.34	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1975 12 01	095	0.1−	1.7+	1999 05 10	704	2.0−	0.3+	1999 05 19	704	0.9−	0.2+
1997 11 30	566	0.2+	0.2−	1999 05 10	704	0.7+	0.2−	1999 05 19	704	0.5+	0.7−
1997 11 30	566	0.3+	0.0	1999 05 10	704	1.3−	1.0−	1999 05 19	704	0.5−	0.6+
1997 11 30	566	0.2+	0.0	1999 05 10	704	0.4+	0.3−	1999 05 19	704	0.2+	0.6+
1997 12 01	721	0.2+	0.0	1999 05 13	704	1.0−	1.2+	1999 06 09	704	0.0	0.6+
1997 12 01	721	0.6+	0.1+	1999 05 13	704	0.1+	1.3+	1999 06 09	704	1.0+	1.7−
1997 12 01	721	0.4+	0.8+	1999 05 13	704	1.0+	1.6+	1999 06 09	704	0.4+	0.8+
1997 12 04	721	0.2+	0.2+	1999 05 13	704	0.4−	1.3+	1999 06 09	704	0.2−	0.3+
1997 12 04	721	0.2+	0.1+	1999 05 13	704	0.9−	1.7+	1999 06 15	704	0.1−	0.1−
1997 12 06	721	0.2−	0.8+	1999 05 18	704	0.1+	0.6−	1999 06 15	704	0.0	0.0
1997 12 06	721	0.5+	0.3+	1999 05 18	704	0.4+	1.9−	1999 06 15	704	0.2−	0.2−
1997 12 27	721	0.6−	0.3−	1999 05 18	704	0.2+	0.4+	1999 06 15	704	0.1−	0.1−
1997 12 27	721	0.6−	0.5−	1999 05 18	704	1.8+	0.7−	1999 06 15	704	0.2+	0.2+
1998 01 02	721	0.5−	0.4−	1999 05 18	704	0.4+	1.9−				
1998 01 02	721	0.5−	0.2−	1999 05 19	704	0.2−	0.7+				

1997 XX = 1999 KC₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	61.12538		(2000.0)		P		Q
<i>n</i>	0.28005083	ω	137.63524		−0.91753386		+0.34950054
<i>a</i>	2.3137236	Ω	63.74110		−0.39729826		−0.78541429
<i>e</i>	0.1051131	<i>i</i>	12.21109		−0.01690271		−0.51085591
<i>P</i>	3.52	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 12 03	411	0.3+	0.5+	1999 02 20	704	1.1−	0.5−	1999 05 19	704	0.3+	0.2+
1997 12 03	411	0.7+	0.1−	1999 05 10	704	0.2−	0.3−	1999 06 09	704	0.4+	0.1−
1997 12 04	411	0.2+	0.5−	1999 05 10	704	1.0−	0.0	1999 06 09	704	0.7−	0.5−
1997 12 04	411	0.1+	0.3+	1999 05 10	704	0.4−	0.4+	1999 06 09	704	0.5−	1.8−
1997 12 10	411	0.4−	0.2+	1999 05 10	704	0.5−	0.7+	1999 06 09	704	0.3−	0.8−
1997 12 10	411	0.2−	0.4−	1999 05 10	704	0.3+	0.5+	1999 06 09	704	1.5−	0.6−
1997 12 21	411	0.1−	0.4+	1999 05 18	704	0.5−	0.7−	1999 06 15	704	1.0−	1.8+
1997 12 21	411	0.1+	0.0	1999 05 18	704	1.7+	0.3+	1999 06 15	704	0.7+	0.1+
1998 01 05	411	0.3−	0.6−	1999 05 18	704	0.9−	0.1−	1999 06 15	704	0.5+	0.6+
1998 01 05	411	0.2−	0.3−	1999 05 18	704	0.0	0.2−	1999 06 15	704	0.6+	0.7+
1999 02 20	704	(2.7−	1.8+)	1999 05 19	704	1.9+	0.5−	1999 06 15	704	0.2+	1.1+
1999 02 20	704	1.5+	1.1+	1999 05 19	704	0.3−	1.1−				
1999 02 20	704	0.1+	0.2+	1999 05 19	704	1.0+	0.4−				

1997 XE₂ = 1999 LP₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	103.95675		(2000.0)		P		Q
<i>n</i>	0.25335071	ω	72.10562		−0.80032407		−0.55112348
<i>a</i>	2.4735534	Ω	73.82617		+0.41343534		−0.79247174
<i>e</i>	0.1579268	<i>i</i>	14.23101		+0.43422644		−0.26124979
<i>P</i>	3.89	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

1999 JUNE 22

Residuals in seconds of arc

1997 12 03	369	0.2−	0.4+	1997 12 21	369	0.2−	0.1−	1999 06 09	704	0.4+	0.3−
1997 12 03	369	0.3−	0.6+	1997 12 21	369	0.8+	1.1−	1999 06 09	704	0.2+	0.9+
1997 12 05	704	1.1−	0.2−	1997 12 31	369	0.3−	0.1+	1999 06 09	704	0.7−	1.1+
1997 12 05	704	1.0−	0.2−	1997 12 31	369	0.3−	0.7−	1999 06 09	704	0.3+	0.9+
1997 12 05	704	0.4+	0.6−	1997 12 31	369	0.1+	0.9+	1999 06 15	704	0.1+	0.6−
1997 12 05	704	0.4+	0.2−	1999 05 13	704	1.7+	0.7+	1999 06 15	704	1.1−	0.7−
1997 12 05	704	(3.2−	1.9+)	1999 05 13	704	0.7+	0.3−	1999 06 15	704	0.1+	0.3−
1997 12 05	369	0.1+	1.6+	1999 05 13	704	0.4−	1.3−	1999 06 15	704	0.6−	0.1+
1997 12 05	369	0.6+	0.5+	1999 05 13	704	1.5−	0.0				
1997 12 05	369	1.0+	0.4−	1999 06 09	704	1.1+	0.5+				

1997 XP₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	161.34229		(2000.0)		P		Q
<i>n</i>	0.23322965	ω	186.70805		+0.33527592		−0.93938903
<i>a</i>	2.6138473	Ω	243.72302		+0.86805022		+0.33759274
<i>e</i>	0.2595358	<i>i</i>	4.58528		+0.36616782		+0.05982797
<i>P</i>	4.23	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1997 12 04	360	0.1+	0.3+	1998 01 31	691	0.3+	0.0	1999 05 06	360	0.7−	0.1+
1997 12 04	360	0.0	0.2+	1998 01 31	691	0.2+	0.1+	1999 05 06	360	0.1+	0.0
1997 12 04	360	0.1+	0.4+	1998 03 22	360	0.3+	0.1−	1999 05 07	360	0.5+	0.6+
1997 12 05	360	0.1+	0.0	1998 03 22	360	0.3+	0.1+	1999 05 07	360	0.2−	0.1+
1997 12 05	360	0.0	0.0	1998 03 30	360	1.1−	0.1−	1999 05 07	360	0.2+	0.4−
1997 12 05	360	0.2−	0.0	1998 03 30	360	0.9−	0.3+	1999 05 13	360	0.6+	0.2+
1998 01 27	566	0.4−	0.5−	1998 04 15	360	0.9+	0.5−	1999 05 13	360	0.1+	0.1−
1998 01 27	566	0.4−	0.5−	1998 04 15	360	0.5+	0.7+	1999 05 13	360	0.1+	0.8−
1998 01 27	566	0.1+	0.3−	1998 04 15	360	0.4−	0.1+				
1998 01 31	691	0.5+	0.1+	1999 05 06	360	0.5−	0.5+				

1997 XS₃ = 1999 JX₁₁₁

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	19.57796		(2000.0)		P		Q
<i>n</i>	0.17472046	ω	121.29754		−0.71479758		+0.69315910
<i>a</i>	3.1688878	Ω	102.76581		−0.66959117		−0.64011048
<i>e</i>	0.1853730	<i>i</i>	5.45468		−0.20177236		−0.33134430
<i>P</i>	5.64	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1995 10 23	327	0.5+	0.7+	1998 01 17	327	0.3−	0.6+	1999 05 13	704	1.2−	0.9+
1995 10 23	327	0.7−	0.1−	1998 01 25	566	0.2+	0.1+	1999 05 18	704	0.2−	0.4−
1995 10 23	327	0.1−	0.3+	1998 01 25	566	0.1−	0.4+	1999 05 18	704	0.5+	0.3−
1995 10 23	327	0.2−	0.2−	1998 01 25	566	0.1−	0.5+	1999 05 18	704	0.6−	0.1+
1995 10 23	327	0.1+	0.2+	1998 02 21	327	0.0	0.1+	1999 05 18	704	1.0−	0.1+
1995 10 23	327	0.5+	1.0−	1998 02 21	327	0.2+	0.3+	1999 05 18	704	0.7−	0.3−
1997 12 03	910	0.3−	0.7−	1998 02 21	327	0.1+	0.2−	1999 06 04	703	0.2+	0.2+
1997 12 04	910	0.3+	1.1−	1998 03 01	327	0.7−	0.2+	1999 06 04	703	0.1−	0.6+
1997 12 04	910	0.0	0.7−	1998 03 01	327	0.4−	0.6+	1999 06 04	703	0.4+	1.0−
1997 12 06	910	0.0	0.4−	1998 03 01	327	0.5+	0.0	1999 06 04	703	0.5+	0.3−
1997 12 06	910	0.3−	0.6−	1999 04 14	699	0.2+	0.8+	1999 06 14	704	0.9+	0.1−
1997 12 06	910	0.1+	0.5−	1999 04 14	699	0.5+	0.1+	1999 06 14	704	0.3+	0.2−
1998 01 04	327	0.1−	0.2+	1999 04 14	699	0.7+	0.2+	1999 06 14	704	0.2−	0.5+
1998 01 04	327	1.0+	0.5−	1999 05 13	704	0.1+	0.6−	1999 06 14	704	0.1−	0.2−
1998 01 04	327	0.2+	0.2+	1999 05 13	704	0.3+	0.5−	1999 06 14	704	0.7−	0.2−
1998 01 17	327	0.2−	0.5+	1999 05 13	704	0.5−	0.0				
1998 01 17	327	0.2−	0.1+	1999 05 13	704	0.5+	0.1−				

1997 XJ₅

Id. F. B. Zoltowski (1999 observations)

1999 JUNE 22

M.P.C. 34883

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	183.77273	(2000.0)		P	Q	Williams			
<i>n</i>	0.28655136	ω	228.96610	+0.40942478	-0.91196442				
<i>a</i>	2.2785981	Ω	196.92163	+0.86184100	+0.39606185				
<i>e</i>	0.1371080	<i>i</i>	5.18628	+0.29933499	+0.10703223				
<i>P</i>	3.44	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	4		
Residuals in seconds of arc									
1997 12 02	905	0.1+	0.9+	1997 12 30	566	0.2-	0.3-	1999 05 13	704 1.4+ 1.0-
1997 12 02	905	0.3-	0.2-	1997 12 31	385	0.0	0.5-	1999 05 13	704 (3.9- 2.4+)
1997 12 03	905	0.2+	0.8+	1997 12 31	385	0.3+	0.3-	1999 05 17	426 0.1- 0.4+
1997 12 03	905	0.1-	0.2-	1998 01 24	385	0.4+	0.6+	1999 05 17	426 0.3+ 0.4+
1997 12 10	886	0.6-	0.5+	1998 01 24	385	0.4+	0.3-	1999 05 17	426 0.2- 0.3+
1997 12 10	886	1.0+	0.3+	1999 05 13	704	0.2-	0.4+	1999 05 25	426 0.1+ 0.4+
1997 12 30	566	0.5-	0.5-	1999 05 13	704	1.5-	0.0	1999 05 25	426 0.4+ 0.2+
1997 12 30	566	0.4-	0.3-	1999 05 13	704	0.1-	0.4-		

1997 XM₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	110.24331	(2000.0)		P	Q	Williams			
<i>n</i>	0.27266265	ω	235.18785	-0.86056805	-0.47505485				
<i>a</i>	2.3553328	Ω	275.81140	+0.50642981	-0.75959902				
<i>e</i>	0.1202173	<i>i</i>	10.64064	+0.05432756	-0.44422091				
<i>P</i>	3.61	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4		
Residuals in seconds of arc									
1997 12 03	888	0.4+	0.1-	1998 01 06	704	0.1-	0.2-	1999 06 09	888 1.2- 0.3+
1997 12 03	888	0.8+	0.5+	1998 01 06	704	0.3-	0.2+	1999 06 09	888 0.4+ 0.3-
1997 12 05	888	0.2+	0.7+	1998 01 07	886	1.0+	0.4+	1999 06 14	888 0.1+ 0.0
1997 12 05	888	0.9-	0.3+	1998 01 07	886	(3.5+ 1.1-)		1999 06 14	888 0.0 0.1+
1997 12 10	886	0.2-	0.6-	1998 01 26	704	0.5+	0.4-	1999 06 14	888 0.3- 0.1+
1997 12 10	886	0.0	0.2-	1998 01 26	704	0.1-	0.4+	1999 06 15	704 0.6+ 0.4-
1997 12 20	886	0.4-	0.2+	1998 01 26	704	0.0	0.3-	1999 06 15	704 0.4- 0.4+
1997 12 20	886	0.1+	0.1-	1998 01 26	704	0.1+	0.0	1999 06 15	704 0.4+ 0.0
1998 01 02	886	0.0	0.2-	1998 01 26	704	0.5+	0.0	1999 06 15	704 0.4+ 0.1+
1998 01 02	886	0.9-	0.4-	1998 03 03	888	0.1+	0.3-		
1998 01 06	704	0.2-	0.1+	1998 03 03	888	0.5-	0.6+		

1997 XK₉ = 1984 ON = 1999 JF

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	324.39869	(2000.0)		P	Q	Williams			
<i>n</i>	0.38893741	ω	39.52598	+0.10000253	+0.94558100				
<i>a</i>	1.8587297	Ω	238.35473	-0.97991232	+0.03963113				
<i>e</i>	0.0673755	<i>i</i>	21.32877	-0.17254372	+0.32296430				
<i>P</i>	2.53	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	3		
Residuals in seconds of arc									
1984 07 18	413	0.5+	0.6+	1997 12 14	327	0.1-	0.2-	1999 05 07	704 0.9- 0.1+
1984 07 18	413	0.9-	0.9-	1997 12 14	327	0.3-	0.0	1999 05 07	704 0.4- 0.2+
1984 07 18	413	0.4+	0.3+	1997 12 14	327	0.3-	0.0	1999 05 07	704 0.7- 0.6+
1997 12 04	327	0.7-	0.2+	1999 05 06	704	0.4-	0.3+	1999 05 14	704 1.4- 1.1-
1997 12 04	327	0.4-	0.3+	1999 05 06	704	0.4+	0.0	1999 05 14	704 1.1+ 0.9-
1997 12 04	327	0.5-	0.3+	1999 05 06	704	1.9+	0.9+	1999 05 14	704 0.4+ 0.4+
1997 12 08	327	0.7+	0.5+	1999 05 06	704	(0.1- 2.4+)		1999 05 14	704 0.5+ 0.9-
1997 12 08	327	0.5+	0.3+	1999 05 06	704	(2.5+ 2.4+)		1999 05 14	704 0.8+ 1.5+
1997 12 08	327	0.4+	0.1+	1999 05 07	704	0.1-	0.2-		
1997 12 08	327	0.2+	0.1+	1999 05 07	704	0.6-	0.1+		

1997 XL₉ = 1999 JG₃

Id. T. Urata, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	133.60116	(2000.0)		P	Q	Williams			
<i>n</i>	0.25528819	ω	15.52522	-0.26050745	-0.95709953				
<i>a</i>	2.4610224	Ω	89.70335	+0.87174679	-0.28965818				
<i>e</i>	0.1031766	<i>i</i>	7.28894	+0.41496193	+0.00765620				
<i>P</i>	3.86	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4		
Residuals in seconds of arc									
1997 12 02	905	0.4+	0.9+	1999 05 07	905	0.8+	0.8-	1999 05 18	704 0.3+ 0.8+
1997 12 02	905	0.0	0.3+	1999 05 12	704	0.2+	0.3+	1999 05 18	704 0.1+ 0.3-
1997 12 04	704	0.4-	0.6-	1999 05 12	704	0.8+	0.3-	1999 05 19	704 0.7+ 0.2+
1997 12 04	704	0.2+	1.3+	1999 05 12	704	0.4+	1.3-	1999 05 19	704 0.4- 1.1+
1997 12 04	704	1.0-	0.9+	1999 05 12	704	1.2-	0.0	1999 05 19	704 0.2- 1.8+
1997 12 04	704	0.2+	1.5-	1999 05 12	704	0.3+	0.6+	1999 05 19	703 0.5- 0.4-
1997 12 04	704	(2.0- 2.2-)		1999 05 12	385	0.1-	0.7+	1999 05 19	703 0.0 0.4+
1997 12 04	905	0.0	0.1-	1999 05 12	385	0.9-	0.9+	1999 05 19	704 0.6- 0.7+
1997 12 04	905	0.1+	0.2+	1999 05 12	385	1.0-	0.6+	1999 05 19	703 0.5+ 1.1+
1997 12 05	704	0.2-	0.9-	1999 05 13	704	0.3-	0.3-	1999 05 19	703 0.1+ 0.8+
1997 12 05	704	(4.1- 3.9+)		1999 05 13	704	0.1-	0.2-	1999 06 07	703 0.9- 0.1-
1997 12 05	704	0.2-	0.1+	1999 05 13	704	0.8+	0.4+	1999 06 07	703 0.2- 0.1+
1997 12 05	704	1.1-	0.1+	1999 05 13	704	0.8+	0.1-	1999 06 07	703 0.5+ 0.7-
1997 12 05	704	(2.9- 0.4+)		1999 05 13	704	1.6+	0.1+	1999 06 07	703 (0.4- 2.7-)
1998 01 02	385	0.7+	0.1-	1999 05 17	704	0.2-	1.5-	1999 06 10	704 0.1+ 0.4+
1998 01 03	385	0.5+	0.2-	1999 05 17	704	0.6-	0.0	1999 06 10	704 0.1- 0.0
1998 01 03	385	0.7+	0.1+	1999 05 17	704	0.2+	0.0	1999 06 10	704 0.3+ 0.8-
1999 04 14	699	0.3+	0.7-	1999 05 17	704	0.6-	1.1+	1999 06 10	704 0.1+ 0.8-
1999 04 14	699	0.6+	0.6-	1999 05 17	704	0.2+	0.4-	1999 06 10	704 0.0 0.5-
1999 04 14	699	0.2-	0.0	1999 05 18	704	0.8-	0.8-		
1999 05 07	905	0.4-	1.6-	1999 05 18	704	0.1+	0.0		

1997 XH₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	136.55549	(2000.0)		P	Q	Williams			
<i>n</i>	0.22938855	ω	78.24964	-0.81665071	-0.54822312				
<i>a</i>	2.6429456	Ω	68.25814	+0.42433199	-0.78219154				
<i>e</i>	0.0986552	<i>i</i>	11.19699	+0.39118279	-0.29601994				
<i>P</i>	4.30	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	3		
Residuals in seconds of arc									
1997 12 13	327	0.2+	0.5-	1998 01 04	327	0.4+	0.0	1998 04 03	704 0.4- 0.4+
1997 12 13	327	0.6+	0.2-	1998 01 04	327	0.4+	0.3+	1998 04 03	704 0.4- 0.1-
1997 12 13	327	0.8+	1.9-	1998 04 02	704	0.2+	0.0	1998 04 20	688 0.0 0.1-
1997 12 21	327	1.0-	0.0	1998 04 02	704	0.1-	0.2-	1998 04 20	688 0.2+ 0.0
1997 12 21	327	0.5-	0.3+	1998 04 02	704	0.4+	0.6+	1998 04 20	688 0.0 0.2-
1997 12 21	327	0.7-	0.1+	1998 04 02	704	0.0	0.1-	1999 06 07	426 0.3+ 0.4+
1997 12 24	327	0.9-	0.0	1998 04 02	704	0.5-	0.3+	1999 06 07	426 0.2+ 0.2-
1997 12 24	327	0.1+	0.4-	1998 04 03	704	0.0	0.1-	1999 06 07	426 0.2+ 0.6-
1997 12 24	327	0.5-	0.1-	1998 04 03	704	0.4+	0.1+	1999 06 09	426 0.1+ 0.1+
1998 01 04	327	0.3+	0.8+	1998 04 03	704	0.5+	0.1+	1999 06 09	426 0.8- 0.4-

1997 XL₁₁ = 1976 JO₂ = 1977 QV₁ = 1999 JE₆₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	283.84257	(2000.0)		P	Q	Williams			
<i>n</i>	0.21286479	ω	222.89027	+0.74396011	+0.65652176				
<i>a</i>	2.7780080	Ω	95.63796	-0.57421367	+0.72339672				
<i>e</i>	0.0545808	<i>i</i>	7.18736	-0.34176309	+0.21372031				
<i>P</i>	4.63	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	1		
Residuals in seconds of arc									
1976 05 02	095	0.1+	0.2+	1998 01 25	566	0.2-	0.1+	1999 05 15	704 1.6+ 0.9+
1977 08 19	095	0.5-	1.2+	1998 01 25	566	0.2-	0.2+	1999 05 15	704 (2.6- 0.5+)
1997 11 25	327	0.2+	0.3-	1998 01 25	566	0.3-	0.1+	1999 05 17	704 0.0 0.4-
1997 11 25	327	0.0	0.3-	1999 04 12	704	0.1+	0.1+	1999 05 17	704 0.5- 0.3+
1997 11 25	327	0.2+	0.2-	1999 04 12	704	0.4+	0.1-	1999 05 17	704 0.0 0.3+
1997 12 15	327	1.2+	0.8+	1999 04 12	704	0.7-	0.7-	1999 05 17	704 0.7+ 0.8-

M.P.C. 34884

1999 JUNE 22

1997 12 15	327	1.5+	0.6+	1999 04 12	704	0.6−	0.7−	1999 05 17	704	0.6−	0.0
1997 12 15	327	0.9+	0.4+	1999 04 12	704	0.6−	0.4−	1999 05 18	704	0.4+	0.7−
1997 12 22	327	0.1−	0.4+	1999 05 12	704	1.4−	0.8−	1999 05 18	704	0.8+	0.5+
1997 12 22	327	0.2−	0.2+	1999 05 12	704	1.1+	0.8+	1999 05 18	704	0.9+	1.0−
1997 12 22	327	0.3−	0.5+	1999 05 12	704	0.4−	0.2−	1999 05 18	704	0.4+	0.1+
1997 12 24	327	0.1−	0.2+	1999 05 12	704	1.0−	0.5+	1999 05 18	704	0.9−	0.9+
1997 12 24	327	0.3−	0.3+	1999 05 12	704	0.6+	0.7−	1999 05 19	704	1.8−	0.3+
1997 12 24	327	0.4−	0.0	1999 05 13	704	0.1−	0.4−	1999 05 19	704	0.2−	0.6+
1997 12 29	566	0.3−	0.4−	1999 05 13	704	0.4+	0.7+	1999 05 19	704	0.1−	0.4+
1997 12 29	566	0.9−	0.8−	1999 05 13	704	0.1+	0.3−	1999 05 19	704	0.9+	1.1+
1997 12 29	566	0.3−	0.7−	1999 05 13	704	0.9+	1.0+	1999 05 22	691	1.0+	0.2−
1998 01 07	327	0.1−	0.1+	1999 05 13	704	0.9−	0.4−	1999 05 22	691	0.4−	0.1−
1998 01 07	327	0.5+	0.3+	1999 05 15	704	0.7+	0.3+	1999 05 22	691	0.4−	0.1−
1998 01 07	327	0.0	0.1+	1999 05 15	704	(0.5−	2.1+)				

1997 YB = 1991 RQ₃₃

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	147.88058		(2000.0)		P		Q
n	0.18326910	ω	241.97782		+0.91876817		−0.39445098
a	3.0695630	Ω	141.24752		+0.37086388		+0.84795012
e	0.2428343	i	1.51386		+0.13536998		+0.35410312
P	5.38	H	14.3	G	0.15	U	5

Residuals in seconds of arc

1991 09 06	413	0.4+	1.2+	1997 12 04	704	0.6−	0.2−	1997 12 19	411	0.5+	0.7+
1991 09 06	413	0.4−	0.1−	1997 12 04	704	(2.9−	2.3+)	1997 12 27	411	0.1−	0.0
1991 09 11	675	0.2+	0.1−	1997 12 18	411	0.3+	0.5+	1997 12 27	411	1.7−	0.1−
1991 09 11	675	0.3−	0.9−	1997 12 18	411	0.1−	0.6+	1998 01 04	411	0.2+	0.1−
1997 12 04	704	0.5+	0.4−	1997 12 19	411	0.5+	0.8−	1998 01 04	411	0.4+	0.4−

1997 YE₂ = 1999 LR₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	187.29738		(2000.0)		P		Q
n	0.30293777	ω	15.41594		-0.01424853		-0.99541217
a	2.1956701	Ω	75.47107		+0.90674443		-0.05274483
e	0.1061971	i	5.60895		+0.42143981		+0.07982852
P	3.25	H	14.4	G	0.15	U	3

Residuals in seconds of arc

1992 03 07	691	0.2+	0.2−	1998 01 07	688	0.0	0.1+	1998 01 31	411	0.6−	0.1−
1992 03 07	691	0.1−	0.4−	1998 01 07	688	0.2−	0.1+	1999 06 09	704	0.7−	0.9−
1992 03 07	691	0.5−	0.1−	1998 01 07	688	0.2+	0.1+	1999 06 09	704	0.6+	0.1+
1997 12 21	411	0.1+	0.6+	1998 01 08	688	0.3+	0.2+	1999 06 09	704	1.0+	0.3+
1997 12 21	411	0.2−	0.9−	1998 01 08	688	0.1+	0.2+	1999 06 09	704	0.1+	0.5+
1997 12 24	411	0.5+	0.9+	1998 01 08	688	0.2+	0.3+	1999 06 09	704	0.4−	1.2+
1997 12 24	411	0.6+	0.8+	1998 01 08	688	0.2+	0.4+	1999 06 15	704	0.3−	0.3+
1997 12 31	411	0.5−	0.4−	1998 01 08	688	0.1+	0.0	1999 06 15	704	0.0	0.3+
1997 12 31	411	0.3+	0.4+	1998 01 08	688	0.0	0.0	1999 06 15	704	0.2−	0.1−
1998 01 06	688	0.2+	0.1+	1998 01 16	411	0.9−	0.4−	1999 06 15	704	0.3+	0.3+
1998 01 06	688	0.0	0.1−	1998 01 16	411	0.1−	0.3−	1999 06 15	704	0.0	0.5+
1998 01 07	688	0.2+	0.1+	1998 01 31	411	0.8−	0.1+				
1998 01 07	688	0.1+	0.1+	1998 01 31	411	0.2+	0.2−				

1997 YV₂ = 1999 JF₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	70.76418		(2000.0)		P		Q
n	0.18061618	ω	51.20691		-0.91725445		-0.39659076
a	3.0995474	Ω	105.40027		+0.35255006		-0.85149023
e	0.1239268	i	2.19222		+0.18534489		-0.34304541
P	5.46	H	13.1	G	0.15	U	3

Residuals in seconds of arc

1997 02 01	691	0.1+	0.2−	1998 01 20	704	2.0+	0.6−	1998 04 14	704	0.3−	0.3+
1997 02 01	691	0.2−	0.2+	1998 01 22	704	0.9+	0.3−	1998 04 14	704	0.2+	1.0−

1997 02 01	691	0.0	0.1+	1998 01 22	704	0.0	0.6+	1999 04 12	704	0.3+	0.6+
1997 12 21	369	0.3+	0.1−	1998 01 22	704	0.3+	0.2+	1999 04 12	704	0.8−	0.9+
1997 12 21	369	0.1−	0.6+	1998 01 22	704	0.5−	0.0	1999 04 12	704	0.5−	0.8+
1997 12 21	369	0.2+	0.4−	1998 01 23	704	0.2+	0.3−	1999 04 12	704	0.2−	0.7+
1997 12 24	369	0.3+	0.4+	1998 01 23	691	0.1−	0.0	1999 04 12	704	1.8−	0.1+
1997 12 24	369	0.2−	1.0+	1998 01 23	704	0.2+	0.1−	1999 05 10	704	0.8+	0.2+
1997 12 25	566	(2.8+	0.8−)	1998 01 23	691	0.1−	0.2+	1999 05 10	704	1.9+	0.8−
1997 12 25	566	(2.5+	0.7−)	1998 01 23	704	0.0	0.1+	1999 05 10	704	1.2+	0.0
1997 12 25	566	(3.1+	1.1−)	1998 01 23	691	0.1−	0.1+	1999 05 10	704	1.7+	0.3−
1997 12 27	369	0.1−	0.4+	1998 01 23	704	0.5+	0.1+	1999 05 10	704	(2.3+	0.4+)
1997 12 27	369	0.2+	0.3+	1998 01 23	704	0.1+	0.0	1999 05 13	704	0.7+	0.1+
1998 01 01	691	0.3+	0.6+	1998 01 24	704	0.1+	0.3−	1999 05 13	704	0.2−	0.1−
1998 01 01	691	0.3+	0.1+	1998 01 24	704	0.2+	0.4−	1999 05 13	704	0.0	0.3+
1998 01 01	691	0.4+	0.2+	1998 01 24	704	0.1−	0.2+	1999 05 13	704	1.0+	0.1+
1998 01 06	691	0.2−	0.4+	1998 01 24	704	0.6−	0.3−	1999 05 13	704	0.1−	0.5−
1998 01 06	691	0.4−	0.5+	1998 01 24	704	0.6−	0.5−	1999 05 14	704	(0.9−	2.3−)
1998 01 06	691	0.3−	0.6+	1998 01 25	704	1.4−	0.5−	1999 05 14	704	0.1+	0.1+
1998 01 08	704	0.5+	0.2−	1998 01 25	704	0.4−	0.0	1999 05 14	704	0.5+	0.4−
1998 01 08	704	0.4+	0.4+	1998 01 25	704	0.4−	0.3−	1999 05 14	704	1.1−	0.5+
1998 01 08	704	0.1−	0.5−	1998 01 25	704	1.2−	0.1−	1999 05 14	704	1.2−	0.4−
1998 01 08	704	0.2+	0.1−	1998 01 25	704	0.8−	0.1−	1999 05 18	704	0.0	0.2+
1998 01 20	704	0.3+	1.0+	1998 01 30	691	0.9−	0.4−	1999 05 18	704	0.3−	0.3−
1998 01 20	704	0.6+	0.4+	1998 01 30	691	0.9−	0.1−	1999 05 18	704	0.8−	0.3−
1998 01 20	704	0.7+	0.1−	1998 01 30	691	1.1−	0.1−	1999 05 18	704	0.4−	0.9−
1998 01 20	704	1.0+	0.5−	1998 04 14	704	1.4−	1.8−	1999 05 18	704	0.4−	0.6+
1998 01 20	704	0.8+	0.3+	1998 04 14	704	1.4+	0.8−				

1997 YY₂ = 1999 LU₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	219.31738		(2000.0)		P		Q
n	0.30350339	ω	311.18246		+0.51741882		−0.85558040
a	2.1929414	Ω	107.65140		+0.79009730		+0.47041139
e	0.0720166	i	0.96945		+0.32867008		+0.21609096
P	3.25	H	14.3	G	0.15	U	4

Residuals in seconds of arc

1995 02 04	691	0.2−	0.0	1998 01 08	704	0.5+	0.3−	1998 01 25	704	0.3−	0.4+
1995 02 04	691	0.1+	0.0	1998 01 08	704	0.6+	0.2−	1998 01 25	704	0.3−	0.0
1995 02 04	691	0.2+	0.0	1998 01 16	411	0.1+	0.3+	1998 01 31	411	0.2−	0.5+
1997 12 24	411	1.0−	0.1+	1998 01 16	411	0.1+	0.7+	1998 01 31	411	0.1+	0.3−
1997 12 24	411	0.6−	0.5+	1998 01 23	704	0.1+	0.2+	1999 06 09	704	0.2+	0.0
1997 12 25	411	0.7−	0.8+	1998 01 23	704	0.0	0.5+	1999 06 09	704	0.7+	0.1−
1997 12 25	411	0.1−	0.0	1998 01 23	704	0.1−	0.2+	1999 06 09	704	0.1+	0.6+
1997 12 31	411	0.7+	0.0	1998 01 23	704	0.1+	0.0	1999 06 09	704	0.3+	0.3−
1997 12 31	411	0.1+	0.1−	1998 01 24	704	0.1+	0.0	1999 06 09	704	0.1+	0.1+
1998 01 02	704	0.3+	0.3−	1998 01 24	704	0.3+	0.3−	1999 06 15	704	0.5−	0.0
1998 01 02	704	0.1+	0.4−	1998 01 24	704	1.1−	0.9+	1999 06 15	704	0.2−	0.2−
1998 01 02	704	0.1−	0.6−	1998 01 24	704	0.0	0.3−	1999 06 15	704	0.2−	0.2−
1998 01 02	704	0.1−	0.5−	1998 01 24	704	0.2−	0.6−	1999 06 15	704	0.2−	0.1−
1998 01 02	704	0.1−	0.6−	1998 01 25	704	0.4−	0.2−	1999 06 15	704	0.3−	0.1−
1998 01 08	704	0.8+	0.3−	1998 01 25	704	0.5+	0.1+				
1998 01 08	704	0.7+	0.1+	1998 01 25	704	0.2−	0.4−				

1997 YE₄ = 1999 JJ₁₈

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

1999 JUNE 22

M.P.C. 34885

1997 12 23	327	0.7+	0.2−	1998 01 04	327	0.4−	1.1−	1999 05 10	704	0.2+	0.1−
1997 12 23	327	0.1+	0.2+	1998 01 04	327	(2.0−	3.8−)	1999 05 10	704	0.5+	0.5+
1997 12 23	327	0.0	0.4+	1999 04 11	699	0.6+	0.5−	1999 05 10	704	0.2+	0.8−
1997 12 24	327	0.1−	0.1+	1999 04 11	699	0.2+	0.7+	1999 05 13	704	0.1−	1.2−
1997 12 24	327	0.2−	0.5+	1999 04 11	699	0.1+	0.2+	1999 05 13	704	1.2−	0.9+
1997 12 24	327	1.0+	0.4+	1999 04 15	704	0.0	0.4−	1999 05 13	704	0.3−	0.9+
1997 12 29	327	0.7−	0.7+	1999 04 15	704	1.1−	1.1−	1999 05 13	704	1.4+	0.5−

1997 YG₅ = 1999 JV₃₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	145.86316	(2000.0)		<i>P</i>	<i>Q</i>		
<i>n</i>	0.26248681	<i>ω</i>	351.32803	−0.00442510	−0.99623190		
<i>a</i>	2.4158190	<i>Ω</i>	98.89264	+0.92265101	−0.03746841		
<i>e</i>	0.1618576	<i>i</i>	5.02960	+0.38561061	+0.07821838		
<i>P</i>	3.75	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 11 29	704	0.8−	0.2−	1997 12 23	132	0.3+	0.6−	1999 05 13	704	0.1−	0.4−
1997 11 29	704	0.4−	0.5+	1997 12 23	132	1.1+	0.4−	1999 05 13	704	0.5+	0.1−
1997 11 29	704	1.1−	0.1−	1997 12 23	132	0.9−	0.7−	1999 05 13	704	0.3−	0.3−
1997 11 29	704	0.4−	0.3+	1997 12 26	132	0.2−	0.0	1999 05 13	704	0.5−	0.2+
1997 11 29	704	0.5−	0.7+	1997 12 26	132	1.5−	1.6−	1999 05 13	704	1.4−	0.2−
1997 12 04	704	0.6+	0.3−	1997 12 26	132	1.4−	1.0−	1999 05 14	703	0.7+	1.5+
1997 12 04	704	0.8+	0.0	1997 12 28	958	0.5+	0.5−	1999 05 14	703	0.0	0.7+
1997 12 04	704	0.5+	0.1−	1997 12 28	958	0.0	1.0+	1999 05 14	703	0.8+	1.0+
1997 12 04	704	0.3+	0.1−	1998 01 20	958	0.7+	0.9+	1999 05 14	703	0.9+	0.2+
1997 12 04	704	0.5+	0.9+	1998 01 20	958	0.6+	0.1+	1999 05 17	704	0.2−	0.1−
1997 12 06	704	0.3+	0.3+	1999 05 10	704	0.2+	0.5+	1999 05 17	704	1.1−	1.4−
1997 12 06	704	1.4+	0.2+	1999 05 10	704	0.5−	1.5−	1999 05 17	704	0.0	1.1+
1997 12 06	704	0.5−	0.3−	1999 05 10	704	0.0	1.0+	1999 05 17	704	1.3+	0.4+
1997 12 06	704	0.1+	1.1+	1999 05 10	704	1.5+	1.0−				
1997 12 06	704	0.1+	0.5+	1999 05 10	704	1.2−	0.6−				

1997 YK₅ = 1999 JH₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	196.88404	(2000.0)		<i>P</i>	<i>Q</i>		
<i>n</i>	0.22846544	<i>ω</i>	308.19319	+0.71240569	−0.64625806		
<i>a</i>	2.6500600	<i>Ω</i>	93.86598	+0.69846916	+0.61522038		
<i>e</i>	0.0382063	<i>i</i>	15.91269	+0.06796301	+0.45150238		
<i>P</i>	4.31	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1993 12 17	691	0.4−	0.0	1999 04 10	704	0.8+	0.5−	1999 05 15	704	0.6+	0.9+
1993 12 17	691	0.0	0.1+	1999 04 10	704	0.5−	1.3+	1999 05 15	704	0.5−	1.0+
1993 12 17	691	0.2+	0.3−	1999 04 10	704	0.2+	1.0+	1999 05 15	704	1.3−	0.6−
1997 12 25	411	0.7+	1.4−	1999 04 10	704	1.0−	1.0+	1999 05 15	704	0.3+	0.6−
1997 12 25	411	0.8+	0.6+	1999 05 10	327	0.1−	0.8−	1999 05 15	327	0.3+	0.2−
1997 12 27	411	0.2−	0.0	1999 05 10	327	0.4+	0.0	1999 05 15	327	0.4+	0.0
1997 12 27	411	0.3−	0.3+	1999 05 10	327	0.2+	0.1+	1999 05 15	327	0.1+	0.2−
1998 01 03	411	0.6−	0.5+	1999 05 12	704	0.7−	1.2−	1999 06 08	704	0.7+	0.5+
1998 01 03	411	0.2−	0.5−	1999 05 12	704	0.6+	0.1−	1999 06 08	704	0.4+	0.4+
1998 01 16	411	0.5+	0.1+	1999 05 12	704	0.7−	0.7−	1999 06 08	704	0.5+	0.0
1998 01 16	411	0.7−	0.2−	1999 05 12	704	0.0	0.9−	1999 06 08	704	0.4+	0.4−
1998 01 28	411	0.1+	0.4+	1999 05 12	704	0.2+	0.3−	1999 06 08	704	0.1+	0.3−
1998 01 28	411	0.0	0.3+	1999 05 15	704	0.9−	0.7+				

1997 YM₅ = 1999 JP₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	312.59784	(2000.0)		<i>P</i>	<i>Q</i>		
<i>n</i>	0.23123742	<i>ω</i>	105.81256	+0.43650158	+0.89969713		
<i>a</i>	2.6288389	<i>Ω</i>	190.07033	−0.83269178	+0.40256284		
<i>e</i>	0.0693023	<i>i</i>	1.10890	−0.34072095	+0.16878460		
<i>P</i>	4.26	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1997 12 25	411	0.5+	0.1−	1999 05 10	704	0.2+	1.4+	1999 05 15	703	0.3−	0.5+
1997 12 25	411	0.7−	1.3−	1999 05 10	704	0.2+	0.3−	1999 05 15	703	0.3+	0.6+
1997 12 27	411	0.1−	0.6+	1999 05 10	704	0.2+	0.4−	1999 05 18	704	0.1+	0.5+
1997 12 27	411	0.2+	0.4−	1999 05 13	704	0.3−	0.8−	1999 05 18	704	1.5+	0.1+
1998 01 03	411	0.5−	0.4+	1999 05 13	704	0.6+	0.8+	1999 05 18	704	0.2−	1.2−
1998 01 03	411	0.6+	0.9+	1999 05 13	704	0.8−	0.0	1999 05 18	704	0.7+	0.2+
1998 01 16	411	0.4−	0.1+	1999 05 13	704	0.5+	0.7−	1999 05 18	704	0.6−	1.4+
1998 01 16	411	0.6−	0.4+	1999 05 13	704	1.1+	0.0	1999 05 19	704	0.6−	1.4−
1998 01 28	411	0.2+	0.1−	1999 05 15	703	0.3−	1.3−	1999 05 19	704	0.2−	0.3−
1998 01 28	411	0.8+	0.6−	1999 05 15	703	0.0	0.3−	1999 05 19	704	1.8−	1.2+

1997 YP₅ = 1989 TS₁₃

Id. A. Gnädig, D. J. Asher, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	209.84520	(2000.0)		<i>P</i>	<i>Q</i>		
<i>n</i>	0.26036273	<i>ω</i>	264.42785	+0.85836968	−0.51170377		
<i>a</i>	2.4289403	<i>Ω</i>	126.34406	+0.48696686	+0.79002397		
<i>e</i>	0.2138611	<i>i</i>	2.62489	+0.16144588	+0.33767052		
<i>P</i>	3.79	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1987 04 27	675	0.1+	0.3+	1997 12 30	566	0.5−	0.3+	1998 01 22	704	0.5−	0.1+
1987 04 27	675	0.5−	0.4+	1998 01 03	411	0.7+	0.4+	1998 01 22	704	1.1+	0.1−
1989 10 03	809	0.1−	0.3−	1998 01 03	411	0.6+	0.5+	1998 01 22	704	0.2+	0.2+
1989 10 03	809	0.1−	0.1−	1998 01 08	704	0.8+	0.4−	1998 01 22	704	0.4+	0.2+
1989 10 03	809	0.1+	0.7+	1998 01 08	704	0.9+	0.1−	1998 01 28	411	0.5−	0.4+
1995 04 25	691	0.4+	0.7−	1998 01 08	704	0.7+	0.4−	1998 01 28	411	0.4−	0.5+
1995 04 25	691	0.3+	0.2−	1998 01 08	704	0.9+	0.9−	1998 01 29	691	0.5−	0.3+
1995 04 25	691	0.1+	0.5−	1998 01 16	411	0.1+	0.0	1998 01 29	691	0.4−	0.3+
1997 12 25	411	0.2+	0.5−	1998 01 16	411	0.5−	0.5−	1998 01 29	691	0.4−	0.3+
1997 12 25	411	0.6−	0.3−	1998 01 20	704	0.3−	0.0	1999 04 12	704	0.8−	0.6+
1997 12 27	411	0.0	0.4−	1998 01 20	704	0.4−	0.7−	1999 04 12	704	0.2−	0.4−
1997 12 27	411	0.2−	0.5−	1998 01 20	704	0.3−	0.5−	1999 04 12	704	0.1+	0.9−
1997 12 30	566	0.3−	0.1+	1998 01 20	704	0.3−	0.2+	1999 04 12	704	0.4+	1.7+
1997 12 30	566	0.2−	0.4+	1998 01 20	704	0.5−	0.8+				

1997 YZ₅ = 1983 FG

Id. A. Gnädig, D. J. Asher, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Gnädig			
<i>M</i>	123.72577	(2000.0)		<i>P</i>	<i>Q</i>		
<i>n</i>	0.25644322	<i>ω</i>	65.50831	−0.81399308	−0.57272181		
<i>a</i>	2.4536271	<i>Ω</i>	79.41237	+0.49082444	−0.76743818		
<i>e</i>	0.1506522	<i>i</i>	5.66195	+0.31065517	−0.28814643		
<i>P</i>	3.84	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1954 10 31	675(	4.5−	1.7−)	1997 12 27	411	0.2+	0.0	1998 01 28	411	0.6+	0.3−
1954 10 31	675	0.1−	0.3−	1997 12 27	411	0.5+	0.1+	1998 01 28	411	0.4+	0.2−
1983 03 16	688	0.6+	1.0−	1998 01 03	411	0.1+	0.3+	1998 03 26	566	0.2−	0.7+
1983 03 16	688	1.1−	0.1+	1998 01 03	411	0.6+	0.6−	1998 03 26	566	0.0	0.4+
1997 12 03	691	1.0−	0.1−	1998 01 16	411	0.2+	0.1−	1998 03 26	566	0.1−	0.5+
1997 12 03	691	0.8−	0.3−	1998 01 16	411	0.1+	0.1+	1998 03 27	566	0.6−	0.2+
1997 12 03	691	0.8−	0.4−	1998 01 24	566	0.5+	0.2+	1998 03 27	566	0.4−	0.1+
1997 12 25	411	1.1−	0.3+	1998 01 24	566	0.4+	0.3+	1998 03 27	566	0.3−	0.1−
1997 12 25	411	0.3−	0.4−	1998 01 24	566	0.7+	0.3+				

1997 YG₇ = 199

Residuals in seconds of arc

1997 12 25	411	0.2+	0.2+	1998 01 23	691	0.1-	0.2+	1999 05 17	704	0.1+	1.0-
1997 12 25	411	0.1-	0.9-	1998 01 23	704	0.1+	0.4+	1999 05 17	704	0.3-	0.6+
1997 12 27	411	0.6+	0.0	1998 01 23	704	0.4-	0.6+	1999 05 17	704	0.8-	0.1+
1997 12 27	411	0.2+	0.0	1998 01 26	566	0.5-	0.3-	1999 06 08	704	0.0	0.2+
1997 12 30	566	0.2-	0.1+	1998 01 26	566	0.5-	0.4-	1999 06 08	704	0.4+	0.3-
1997 12 30	566	0.5-	0.7-	1998 01 26	566	0.6-	0.2-	1999 06 08	704	0.0	0.1-
1997 12 30	566	0.2+	0.8-	1998 01 31	411	0.8+	0.1-	1999 06 08	704	0.2+	0.5+
1998 01 05	411	1.1+	0.4-	1998 01 31	411	0.3-	0.3-	1999 06 08	704	0.9+	0.9-
1998 01 05	411	0.2-	1.1+	1999 05 12	704	0.6-	0.2+	1999 06 14	704	0.1+	0.1-
1998 01 16	411	0.1-	0.2-	1999 05 12	704	0.6+	0.4+	1999 06 14	704	0.3+	0.3-
1998 01 16	411	0.4-	0.5+	1999 05 12	704	0.2-	0.0	1999 06 14	704	0.2+	0.3-
1998 01 23	704	0.6+	0.2+	1999 05 12	704	0.3-	0.4+	1999 06 14	704	0.0	0.0
1998 01 23	691	0.2-	0.1+	1999 05 12	704	0.8-	0.4+	1999 06 14	704	0.2-	0.2+
1998 01 23	704	0.3+	0.5+	1999 05 17	704	0.2+	0.1-				
1998 01 23	691	0.1-	0.1+	1999 05 17	704	0.1+	0.2-				

1997 YK₇ = 1984 YR₃ = 1999 JC₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	152.39799		(2000.0)	P	Q
n	0.22940043	ω	355.75757	+0.16933422	-0.95939116
a	2.6428544	Ω	84.38188	+0.91077205	+0.06486384
e	0.1557765	i	13.10210	+0.37659022	+0.27452009
P	4.30	H	14.2	G 0.15	U 4

Residuals in seconds of arc

1984 12 27	095	0.3-	1.0+	1998 01 28	411	0.5-	0.1+	1999 05 14	703	0.1+	0.4-
1995 05 22	010	(2.6-	3.2-)	1998 01 28	411	0.1-	0.3+	1999 05 14	703	1.3+	0.8-
1995 05 22	010	(5.0-	1.8-)	1999 05 08	703	0.3-	0.6+	1999 05 16	703	0.8-	0.4-
1995 05 22	010	(4.6-	3.7-)	1999 05 08	703	0.5-	0.5+	1999 05 16	703	0.5-	0.5+
1997 12 25	566	(0.0	2.4-)	1999 05 08	703	0.5+	1.1+	1999 05 16	703	0.1-	0.1-
1997 12 25	566	(0.0	2.8-)	1999 05 08	703	0.5+	0.7+	1999 05 16	703	0.0	0.1-
1997 12 25	566	(0.1-	2.5-)	1999 05 12	704	(2.2+	0.2+)	1999 05 17	704	0.7+	0.6-
1997 12 27	411	0.9-	0.2+	1999 05 12	704	0.4-	0.2+	1999 05 17	704	1.6+	0.5+
1997 12 27	411	1.0+	0.1+	1999 05 12	704	1.2-	0.1+	1999 05 17	704	0.9+	0.9-
1997 12 28	411	0.3+	0.9-	1999 05 12	704	0.6-	0.1-	1999 05 17	704	1.4-	1.1+
1997 12 28	411	0.0	1.2-	1999 05 12	704	0.6+	0.2-	1999 05 17	704	0.7-	0.8-
1998 01 04	411	0.3+	0.4+	1999 05 14	703	0.0	1.3-				
1998 01 04	411	0.2-	0.0	1999 05 14	703	0.3+	0.5+				

1997 YX₇ = 1999 JK₁₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	82.98051		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.18646641	ω	38.92319	-0.79660257	-0.60307677
a	3.0343731	Ω	103.93660	+0.54338533	-0.74445740
e	0.1062665	i	2.45099	+0.26487113	-0.28649884
P	5.29	H	14.5	G 0.15	U 4

Residuals in seconds of arc

1991 11 06	691	0.4-	0.2+	1997 12 28	691	0.1-	0.0	1999 05 13	704	1.3+	0.5+
1991 11 06	691	0.0	0.1-	1998 01 06	691	1.1+	0.3+	1999 05 13	704	1.2-	1.2+
1991 11 06	691	0.4+	0.1-	1998 01 06	691	0.6-	0.3-	1999 05 13	704	(3.3-	0.2+)
1997 12 21	691	0.0	0.3+	1998 01 06	691	0.6-	0.3-	1999 05 18	704	(2.4+	1.2+)
1997 12 21	691	0.1+	0.2-	1999 05 10	704	0.5-	0.6-	1999 05 18	704	(2.5+	0.8+)
1997 12 21	691	0.3+	0.1-	1999 05 10	704	1.2-	0.9-	1999 05 18	704	1.0+	0.4-
1997 12 28	691	0.5-	0.6+	1999 05 10	704	1.9+	1.4+	1999 05 18	704	0.2+	0.0
1997 12 28	691	0.3+	0.2-	1999 05 13	704	1.6-	1.4-				

1997 YP₈ = 1987 AV

Id. G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	4.10826		(2000.0)	P	Q
n	0.17434327	ω	116.83807	-0.69687772	+0.68342411
a	3.1734568	Ω	107.16894	-0.71186075	-0.62223724
e	0.1268986	i	13.15653	-0.08726804	-0.38177519
P	5.65	H	12.1	G 0.15	U 3

Residuals in seconds of arc

1987 01 08	010	0.2-	0.6+	1998 01 20	704	0.1-	0.7+	1999 05 02	145	0.1+	0.5-
1987 01 08	010	0.7+	1.1-	1998 01 20	704	0.3+	0.5+	1999 05 02	145	0.1+	0.5-
1987 01 08	010	0.7-	0.5-	1998 01 20	704	0.2+	1.7+	1999 05 02	145	0.3+	0.5-
1995 08 29	413	(6.1+	1.0-)	1998 01 20	704	0.3+	1.0+	1999 05 02	145	0.5+	0.7-
1995 08 29	413	(5.9+	0.4-)	1998 01 23	704	0.1-	0.1+	1999 05 08	611	0.3-	0.2-
1997 12 28	691	0.6+	0.1+	1998 01 23	704	0.0	0.9-	1999 05 08	611	0.1-	0.4+
1997 12 28	691	1.0+	0.1-	1998 01 23	704	0.3-	0.2-	1999 05 12	145	0.4+	0.3+
1997 12 28	691	1.0+	0.1-	1998 01 23	704	0.2-	0.7-	1999 05 12	145	0.1-	0.7+
1997 12 29	691	0.7-	0.3-	1998 01 23	704	0.4-	0.1+	1999 05 12	145	1.0-	0.1+
1997 12 29	691	0.7-	0.2-	1998 01 25	566	0.8-	0.2-	1999 06 07	704	1.2+	1.1+
1997 12 29	691	0.6-	0.2-	1998 01 25	566	0.4-	0.2-	1999 06 07	704	0.0	0.0
1998 01 02	691	0.4+	0.3-	1998 01 25	566	0.3-	0.1-	1999 06 07	704	1.5-	0.7+
1998 01 02	691	0.4+	0.4-	1998 04 21	688	0.3-	0.0	1999 06 07	704	0.4-	0.1-
1998 01 02	691	0.6+	0.2-	1998 04 21	688	0.2-	0.0	1999 06 07	704	0.5-	0.8-
1998 01 20	704	0.0	0.1+	1998 04 21	688	0.3-	0.1-				
1998 01 20	704	0.3+	0.6+	1999 05 02	145	1.0+	0.3+				

1997 YK₉ = 1999 JH₁₀₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	149.37075		(2000.0)	P	Q
n	0.27721057	ω	52.88905	-0.05934036	-0.99521904
a	2.3295008	Ω	40.72477	+0.87400691	-0.08934280
e	0.0640845	i	6.82870	+0.48227652	+0.03945780
P	3.56	H	15.1	G 0.15	U 5

Residuals in seconds of arc

1997 12 28	595	0.3-	0.4-	1998 01 25	595	0.4-	0.5-	1999 05 15	703	0.5+	0.2+
1997 12 28	595	0.1+	0.2-	1998 02 18	595	1.4+	0.7+	1999 05 15	703	1.2+	0.4+
1997 12 29	595	0.7+	0.3+	1998 02 18	595	0.4-	0.4-	1999 05 15	703	1.4+	0.2+
1997 12 29	595	0.2+	0.5+	1998 02 19	595	0.4+	0.2-	1999 05 18	704	1.7-	1.0+
1997 12 29	595	0.5+	0.3+	1998 02 19	595	0.2-	0.2+	1999 05 18	704	1.4-	0.0
1998 01 17	595	0.4+	0.5-	1999 05 13	704	0.4-	1.0-	1999 05 18	704	0.4-	0.7+
1998 01 17	595	0.4+	0.5-	1999 05 13	704	0.1-	0.1-	1999 05 18	704	0.8-	0.0
1998 01 23	595	1.5-	0.8+	1999 05 13	704	0.1-	0.1-	1999 05 22	595	0.1+	1.8+
1998 01 24	595	0.8-	0.1-	1999 05 13	704	0.1-	1.5-	1999 05 22	595	1.3+	0.7-
1998 01 25	595	0.6-	0.2+	1999 05 15	703	0.7+	0.8-				

1997 YC₁₀ = 1999 JJ₁₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	124.28912		(2000.0)	P	Q
n	0.23701377	ω	265.54855	-0.51865312	-0.85477826
a	2.5859512	Ω	215.71361	+0.79664609	-0.47516780
e	0.0735144	i	1.84465	+0.31040932	-0.20873354
P	4.16	H	15.0	G 0.15	U 6

Residuals in seconds of arc

1997 12 28	411	0.3+	0.6+	1999 05 10	704	0.3-	1.8-	1999 05 17	703	0.5+	0.4-
1997 12 28	411	0.4-	0.3+	1999 05 10	704	0.7+	0.2-	1999 05 17	703	0.9+	0.9+
1997 12 30	411	0.1-	0.1-	1999 05 10	704	1.7+	1.2+	1999 05 17	703	0.9+	0.1+
1997 12 30	411	1.1+	0.5-	1999 05 10	704	1.9-	1.5-	1999 05 17	703	0.1+	0.0
1998 01 04	411	0.6-	0.1+	1999 05 13	704	0.4+	0.2+	1999 05 18	704	0.5+	0.4+
1998 01 04	411	0.8-	0.6+	1999 05 13	704	0.3+	1.1+	1999 05 18	704	0.5+	1.8+
1998 01 19	411	0.3+	0.5-	1999 05 13	704	0.2+	0.3+	1999 05 18	704	1.9-	1.1-
1998 01 19	411	0.4+	0.4-	1999 05 13	704	0.9-	1.4-	1999 05 18	704	0.8-	0.3-
1999 05 10	704	1.1-	1.0+	1999 05 13	704	1.6+	1.0-	1999 05 18	704	1.4-	0.9+

1999 JUNE 22

M.P.C. 34887

1997 YJ₁₀ = 1999 JO₆₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	140.13398		(2000.0)	P		Q	
<i>n</i>	0.23976653	ω	26.96984	−0.38100313	−0.90601290		
<i>a</i>	2.5661203	Ω	85.90967	+0.81144947	−0.42323139		
<i>e</i>	0.1268140	<i>i</i>	10.64947	+0.44315502	−0.00397799		
<i>P</i>	4.11	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1994 02 10	675	0.5+	0.2−	1998 01 29	411	0.1+	0.3−	1999 05 14	704	0.2−	1.0+
1994 02 10	675	0.5−	0.3+	1998 01 29	411	0.4+	0.1+	1999 05 18	704	0.5+	0.2−
1997 12 28	411	0.3−	0.9−	1999 05 10	704	0.8+	0.5−	1999 05 18	704	0.5+	0.2+
1997 12 28	411	1.5−	1.2−	1999 05 10	704	0.4+	0.1+	1999 05 18	704	0.4+	0.3−
1997 12 30	566	0.5+	1.2+	1999 05 10	704	1.2+	0.4−	1999 05 18	704	0.7+	0.6−
1997 12 30	566	0.3+	1.2+	1999 05 10	704	1.1+	0.1+	1999 06 09	704	0.5−	0.2+
1997 12 30	566	0.4+	1.3+	1999 05 10	704	0.6−	0.0	1999 06 09	704	0.4−	1.0+
1997 12 30	411	0.3−	0.2−	1999 05 13	704	0.0	0.5−	1999 06 09	704	0.2−	1.0+
1997 12 30	411	0.1−	0.6+	1999 05 13	704	0.1−	0.1+	1999 06 09	704	0.2−	0.2+
1998 01 04	411	0.2+	0.6+	1999 05 13	704	0.4+	0.0	1999 06 09	704	0.0	0.1+
1998 01 04	411	0.4−	0.1+	1999 05 13	704	1.1+	0.2−	1999 06 15	704	0.4−	0.2+
1998 01 16	411	0.2−	0.4+	1999 05 13	704	0.9−	1.0+	1999 06 15	704	0.1+	0.9+
1998 01 16	411	0.1+	0.5+	1999 05 14	704	0.5−	0.0	1999 06 15	704	0.1−	0.4−
1998 01 26	566	0.3+	1.0−	1999 05 14	704	0.8−	0.7−	1999 06 15	704	0.3−	0.2+
1998 01 26	566	0.3+	1.0−	1999 05 14	704	0.0	0.3+	1999 06 15	704	0.6−	0.2−
1998 01 26	566	0.4+	1.0−	1999 05 14	704	1.0−	1.9−				

1997 YN₁₀ = 1999 JQ₇₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	198.73216		(2000.0)	P		Q	
<i>n</i>	0.23986812	ω	316.39624	+0.61881584	−0.77056048		
<i>a</i>	2.5653957	Ω	94.77995	+0.75619186	+0.53172393		
<i>e</i>	0.1999379	<i>i</i>	8.81170	+0.21269888	+0.35143451		
<i>P</i>	4.11	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 12 28	411	0.2−	0.3−	1999 05 12	704	0.1−	0.5+	1999 05 19	704	0.2+	1.6+
1997 12 28	411	0.6+	0.0	1999 05 12	704	0.0	0.9−	1999 05 19	704	1.4−	0.5+
1997 12 30	411	0.2+	0.0	1999 05 12	704	(1.9+	2.4−)	1999 05 19	704	1.5−	1.0−
1997 12 30	411	0.6+	0.5−	1999 05 12	704	1.6+	1.6−	1999 06 04	703	0.2+	0.1+
1998 01 06	411	0.1−	0.5−	1999 05 13	704	0.8+	0.9+	1999 06 04	703	0.5+	0.2−
1998 01 06	411	0.3−	0.1+	1999 05 13	704	0.2−	0.6−	1999 06 04	703	0.4−	1.0+
1998 01 25	566	0.0	0.3+	1999 05 13	704	0.6−	1.2+	1999 06 04	703	0.3−	0.1+
1998 01 25	566	0.1−	0.2+	1999 05 13	704	1.1+	0.7+	1999 06 04	703	0.2−	0.3+
1998 01 25	566	0.2+	0.4+	1999 05 17	704	0.9−	0.7−	1999 06 04	703	(2.3+	0.1+)
1998 01 30	411	0.0	0.4+	1999 05 17	704	0.7−	1.4+	1999 06 04	703	1.7+	1.3−
1998 01 30	411	0.5−	0.2+	1999 05 17	704	0.4+	0.3+	1999 06 04	703	0.9+	0.4+
1998 02 25	566	0.2+	0.8−	1999 05 17	704	1.6+	0.9−	1999 06 14	704	0.4−	0.1+
1998 02 25	566	0.3−	0.6−	1999 05 18	704	(1.4+	2.1+)	1999 06 14	704	0.8+	0.8−
1998 02 25	566	0.1−	0.7−	1999 05 18	704	0.7−	0.9+	1999 06 14	704	0.6+	0.9−
1998 02 26	699	0.1+	0.7+	1999 05 18	704	0.8−	0.2−	1999 06 14	704	0.0	0.1−
1998 02 26	699	0.4−	0.1+	1999 05 18	704	0.2−	0.8+	1999 06 14	704	0.1−	0.1−
1998 02 26	699	0.1+	0.7+	1999 05 19	704	1.5−	1.6−				

1997 YJ₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	54.34162		(2000.0)	P		Q	
<i>n</i>	0.23890909	ω	221.90881	−0.69539978	+0.71860783		
<i>a</i>	2.5722565	Ω	4.04041	−0.64040765	−0.61674259		
<i>e</i>	0.1547523	<i>i</i>	3.81049	−0.32603250	−0.32129637		
<i>P</i>	4.13	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 12 22	327	0.1+	0.0	1998 01 04	327	0.3−	0.2+	1999 06 09	426	0.3−	0.1+
1997 12 22	327	0.1+	0.6+	1998 01 24	411	0.0	0.8+	1999 06 09	426	0.1+	0.3−
1997 12 22	327	1.1+	0.9+	1998 01 24	411	0.2+	0.6−	1999 06 15	704	0.3+	0.8+

1997 12 29	327	0.8−	0.6−	1998 02 24	566	0.2+	0.2−	1999 06 15	704	0.5−	0.1+
1997 12 29	327	0.3−	0.2+	1998 02 24	566	0.1−	0.5−	1999 06 15	704	0.2+	0.4+
1997 12 29	327	0.2−	0.1−	1998 02 24	566	0.1−	0.1+	1999 06 15	704	0.2+	0.6−
1998 01 04	327	0.3−	0.2−	1999 06 07	426	1.3−	0.4−	1999 06 15	704	1.3+	0.1−
1998 01 04	327	0.6+	0.4−	1999 06 09	426	0.0	0.3+				

1997 YU₁₁ = 1989 RT₃

Id. A. Gnädig, D. J. Asher, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	278.17342		(2000.0)	P		Q	
<i>n</i>	0.27312453	ω	353.09622	+0.97191519	−0.23139946		
<i>a</i>	2.3526767	Ω	20.43752	+0.22135386	+0.83711231		
<i>e</i>	0.1131390	<i>i</i>	7.04689	+0.07989574	+0.49567859		
<i>P</i>	3.61	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1974 06 17	413	0.2+	0.9+	1997 12 30	411	0.5+	0.5−	1998 02 22	566	0.2+	0.1+
1974 06 17	413	0.2−	1.7−	1997 12 30	411	0.1+	1.0−	1998 02 22	566	0.0	0.1+
1974 06 20	413	0.6−	0.3−	1997 12 31	411	0.8+	0.0	1998 02 22	566	0.2−	0.1+
1974 06 20	413	0.8+	0.5+	1997 12 31	411	0.5+	0.3−	1998 03 04	704	(2.5−	0.2+)
1989 09 07	033	0.1−	0.5−	1998 01 09	411	0.4−	0.0	1998 03 04	704	1.9−	0.0
1989 09 07	033	0.3+	0.1+	1998 01 09	411	0.7+	0.3−	1998 03 04	704	(2.6−	0.4−)
1995 05 29	413	0.6−	0.0	1998 01 30	411	0.2−	0.6+	1998 03 04	704	(2.7−	0.1−)
1995 05 29	413	0.8+	0.1+	1998 01 30	411	0.2−	0.0	1998 03 04	704	(3.5−	0.1−)

1997 YB₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	203.20478		(2000.0)	P		Q	
<i>n</i>	0.23555033	ω	126.20162	+0.70548855	−0.66641407		
<i>a</i>	2.5966510	Ω	276.95426	+0.54686230	+0.72835300		
<i>e</i>	0.1136741	<i>i</i>	14.06303	+0.45080765	+0.15935554		
<i>P</i>	4.18	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 10 08	691	0.0	0.1+	1997 12 31	683	1.1+	0.4+	1998 01 26	566	0.2+	0.2−
1997 10 08	691	0.0	0.3−	1997 12 31	683	0.6+	0.2+	1998 01 26	566	0.4+	0.5−
1997 10 08	691	0.3+	0.2−	1997 12 31	683	0.5+	0.5+	1999 05 09	683	0.0	0.5−
1997 12 27	683	0.2−	0.3+	1998 01 19	683	0.3−	0.3+	1999 05 09	683	0.0	0.0
1997 12 27	683	1.4−	0.3+	1998 01 19	683	0.2−	1.5−	1999 05 09	683	0.8−	0.2+
1997 12 27	683	0.2−	0.6+	1998 01 19	683	0.7−	1.3−	1999 05 10	683	0.1−	0.0
1997 12 30	566	0.7+	0.1+	1998 01 23	683	0.2−	0.2+	1999 05 10	683	1.0+	0.5+
1997 12 30	566	0.1−	0.5+	1998 01 23	683	0.5−	0.3+				
1997 12 30	566	0.2+	0.3+	1998 01 26	566	0.0	0.2−				

1997 YJ₁₃ = 1999 JD₁₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	319.61846		(2000.0)	P		Q	
<i>n</i>	0.23665373	ω	31.78014	+0.55504661	+0.81912080		
<i>a</i>	2.5885734	Ω	272.31723	−0.79031792	+0.46500880		
<i>e</i>	0.0817754	<i>i</i>	8.33203	−0.25946262	+0.33586891		
<i>P</i>	4.16	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 12 29	691	0.1+	0.0	1998 01 26	691	0.1−	0.0	1999 05 18	704	1.4−	0.4−
1997 12 29	691	0.0	0.0	1998 01 26	691	0.1+	0.2−	1999 05 18	704	0.2+	0.3−
1997 12 29	691	0.0	0.2+	1999 05 13	704	0.2−	0.4+	1999 06 15	704	0.1+	0.2+
1998 01 01	691	0.0	0.0	1999 05 13	704	(2.7+	0.2−)	1999 06 15	704	0.1+	0.2+
1998 01 01	691	0.1−	0.0	1999 05 13	704	1.6+	1.0−	1999 06 15	704	0.3−	0.4−
1998 01 01	691	0.0	0.0	1999 05 18	704	1.2−	0.9+	1999 06 15	704	0.2+	0.4+
1998 01 26	691	0.0	0.0	1999 05 18	704	0.7+	0.3+	1999 06 15	704	0.3+	0.4−

1997 YH₁₄ = 1999 JQ₄₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	62.46161	(2000.0)	P			Q		
<i>n</i>	0.19638620	ω	218.13011	−0.99922767	+0.03781006			
<i>a</i>	2.9313121	Ω	324.03237	−0.03006952	−0.91103187			
<i>e</i>	0.0542142	<i>i</i>	1.04379	−0.02529615	−0.41059876			
<i>P</i>	5.02	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	3	
Residuals in seconds of arc								
1997 12 31	411	0.7+	0.6−	1998 01 25	691	0.3−	0.4+	
1997 12 31	411	0.8−	1.3−	1998 01 25	691	0.2−	0.2+	
1998 01 01	411	0.3+	0.7+	1998 01 25	691	0.3−	0.3+	
1998 01 01	411	0.0	0.0	1998 01 30	691	1.2−	0.5+	
1998 01 10	046	0.2−	0.1−	1998 01 30	691	0.1−	0.1+	
1998 01 10	046	0.1+	0.3−	1998 01 30	691	0.6−	0.3−	
1998 01 10	046	0.4+	0.5−	1998 01 30	411	1.3−	0.1+	
1998 01 11	046	0.6+	0.0	1998 01 30	411	0.5−	1.2−	
1998 01 11	046	0.5+	0.3−	1998 02 28	910	0.5+	0.3+	
1998 01 11	046	0.9+	0.0	1998 02 28	910	0.4+	0.5+	
1998 01 11	046	0.3−	0.4−	1998 02 28	910	0.2+	0.2+	
1998 01 11	046	0.2+	0.5−	1998 03 01	910	0.6+	0.5+	
1998 01 11	046	0.8−	0.2+	1998 03 01	910	0.2+	0.6+	
1998 01 24	411	0.6+	0.2−	1998 03 01	910	0.5+	0.6+	
1998 01 24	411	0.0	0.5+	1999 05 10	704	0.3−	1.4−	

1997 YL₁₄ = 1991 CU₅

Id. A. Gnädig, D. J. Asher, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	132.74418	(2000.0)	P			Q		
<i>n</i>	0.27679804	ω	269.93829	−0.86651742	−0.49749297			
<i>a</i>	2.3318147	Ω	240.22737	+0.47454855	−0.79586630			
<i>e</i>	0.0770782	<i>i</i>	2.68089	+0.15476187	−0.34510517			
<i>P</i>	3.56	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	4	
Residuals in seconds of arc								
1991 02 10	675	0.1−	0.4−	1998 01 01	411	0.1+	0.0	
1991 02 10	675	0.2−	0.5−	1998 01 06	411	0.5−	0.3−	
1995 05 29	413	0.0	0.2+	1998 01 06	411	1.0−	0.1−	
1995 05 29	413	0.1+	0.0	1998 01 16	411	0.2+	1.1+	
1997 12 31	411	0.7−	0.4−	1998 01 16	411	0.0	0.3+	
1997 12 31	411	0.2−	0.3+	1998 01 27	910	0.9+	0.1−	
1998 01 01	411	0.7+	0.6−	1998 01 27	910	0.8+	0.0	

1997 YD₁₅ = 1999 JC₁₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	152.25722	(2000.0)	P			Q		
<i>n</i>	0.23262952	ω	352.14594	+0.01694854	−0.99792008			
<i>a</i>	2.6183408	Ω	96.86766	+0.92072180	−0.00867701			
<i>e</i>	0.1336730	<i>i</i>	3.59164	+0.38985140	+0.06387663			
<i>P</i>	4.24	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	4	
Residuals in seconds of arc								
1997 11 24	910	0.2+	0.5+	1998 01 22	704	0.4−	0.1−	
1997 11 24	910	0.2+	0.6+	1998 01 22	704	0.1−	0.6+	
1997 11 24	910	0.2+	0.5+	1998 01 22	704	0.2+	0.2+	
1997 11 28	910	0.5−	0.2−	1998 01 23	704	0.1−	0.3−	
1997 11 28	910	0.2−	0.1−	1998 01 23	704	0.0	0.1+	
1997 11 28	910	0.4−	0.1−	1998 01 23	704	0.8−	0.2+	
1997 12 28	691	0.5+	0.2+	1998 01 23	704	0.2−	0.2+	
1997 12 28	691	0.4+	0.3−	1998 01 24	704	1.2−	0.4+	
1997 12 28	691	0.5+	0.3−	1998 01 24	704	0.5−	0.0	
1998 01 02	691	0.2−	0.2−	1998 01 24	704	0.2+	0.1+	
1998 01 02	691	0.4−	0.3−	1998 01 24	704	0.3−	0.2−	
1998 01 02	691	0.2−	0.0	1998 01 25	704	0.1+	0.5+	
1998 01 20	704	0.2+	0.7+	1998 01 25	704	0.1−	0.0	
				1999 06 14	704	0.7+	0.5+	

1998 01 20	704	0.2+	0.1−	1998 01 25	704	0.2+	0.1+	1999 06 14	704	0.2−	0.3+
1998 01 20	704	0.3−	0.1+	1998 01 25	566	0.6+	1.1−	1999 06 14	704	0.5+	0.8+
1998 01 20	704	0.6+	0.5−	1998 01 25	566	0.4+	0.9−	1999 06 14	704	0.2−	0.1−
1998 01 20	704	1.5+	0.4+	1998 01 25	704	0.3−	0.4−	1999 06 14	704	0.5−	0.5−
1998 01 20	704	0.1−	0.3+	1998 01 25	566	0.6+	1.2−				
1998 01 22	704	0.3−	0.7+	1998 01 25	704	0.3−	0.5+				

1997 YX₁₆ = 1999 JW₁₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	247.49804		(2000.0)	P			Q				
n	0.28685886	ω	284.44919	+0.95561860			−0.27126721				
a	2.2769695	Ω	91.38896	+0.29453790			+0.87127813				
e	0.1139168	i	6.60111	+0.00636553			+0.40900919				
P	3.44	H	14.5	G	0.15		U	4			
Residuals in seconds of arc											
1997 12 27	688	0.1+	0.6−	1998 01 05	327	0.3−	0.2+	1999 05 18	704	0.4−	0.3−
1997 12 27	688	0.6+	0.8−	1998 01 05	327	0.3−	0.3+	1999 05 18	704	0.9−	0.3−
1997 12 29	327	0.1+	0.7−	1998 01 07	327	1.0−	0.5+	1999 06 04	703	0.3−	0.6−
1997 12 29	327	0.0	0.4−	1998 01 07	327	0.5−	0.3+	1999 06 04	703	0.9+	0.1+
1997 12 29	327	0.1+	0.1−	1998 01 07	327	(2.6−	0.2−)	1999 06 04	703	0.0	0.0
1998 01 03	327	0.3+	0.1+	1999 05 13	704	0.1+	1.3+	1999 06 04	703	0.2+	1.0+
1998 01 03	327	0.2+	0.4+	1999 05 13	704	0.5+	0.4+	1999 06 14	704	0.5+	0.8−
1998 01 03	327	0.1−	0.7+	1999 05 13	704	0.4−	0.4−	1999 06 14	704	0.4+	0.3−
1998 01 04	327	0.2−	0.2+	1999 05 13	704	0.4+	1.4+	1999 06 14	704	0.4−	1.0+
1998 01 04	327	0.2−	0.4+	1999 05 18	704	0.2+	0.1+	1999 06 14	704	0.3−	1.2−
1998 01 04	327	0.1−	0.3+	1999 05 18	704	0.4−	1.1−				
1998 01 05	327	1.2+	0.9−	1999 05 18	704	0.1−	0.8−				

1997 YO₂₁ = 1991 PU₃₀ = 1999 GU₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	187.50134	(2000.0)		P			Q				
n	0.21088641	ω	295.08863	+0.83007550			−0.55185462				
a	2.7953551	Ω	98.50063	+0.53638999			+0.75079849				
e	0.0990792	i	4.65095	+0.15251375			+0.36298499				
P	4.67	H	14.5	G	0.15		U	1			
Residuals in seconds of arc											
1977 07 20	413	0.4−	0.9−	1998 01 07	327	0.0	0.2+	1998 02 20	046	0.2+	0.2+
1977 07 20	413	0.7+	0.4−	1998 02 18	046	0.0	0.1+	1998 02 20	046	0.4+	0.2−
1991 08 14	809	1.0−	1.2−	1998 02 18	046	0.1+	0.1−	1999 04 07	704	0.1−	1.7+
1991 08 14	809	0.3−	1.2−	1998 02 18	046	0.0	0.4−	1999 04 07	704	0.8−	0.0
1991 08 14	809	1.9+	0.1−	1998 02 18	046	0.0	0.1−	1999 04 07	704	1.3+	0.7−
1997 12 29	691	0.0	0.5−	1998 02 18	046	0.2−	0.2−	1999 04 07	704	0.2−	1.4−
1997 12 29	691	0.4+	0.4−	1998 02 20	046	0.2+	0.2−	1999 04 12	704	0.1−	0.2−
1997 12 29	691	0.3+	0.4−	1998 02 20	046	0.3−	0.1−	1999 04 12	704	0.7+	0.2−
1998 01 07	327	1.5−	0.9−	1998 02 20	046	0.2+	0.4−	1999 04 12	704	0.1+	0.3−
1998 01 07	327	0.1+	0.1−	1998 02 20	046	0.2−	0.3−	1999 04 12	704	1.4−	0.3−

1998 AD = 1999 FX₄₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	132.25767		(2000.0)		P		Q				
n	0.23099461	ω	51.48952		+0.73601402		−0.67613517				
a	2.6306808	Ω	350.87936		+0.53639881		+0.61269006				
e	0.2512990	i	12.21364		+0.41298871		+0.40920913				
P	4.27	H	13.8	G	0.15	U	5				
Residuals in seconds of arc											
1998 01 02	683	0.5−	0.5+	1998 01 10	658	0.4−	0.6+	1998 01 23	683	0.4+	1.6−
1998 01 02	683	0.0	0.1−	1998 01 10	658	0.5+	0.5+	1998 01 23	683	1.1−	0.2+
1998 01 02	683	0.1−	0.6−	1998 01 15	683	0.8+	0.1−	1998 01 23	683	0.4+	0.3−
1998 01 02	683	1.2−	0.0	1998 01 15	683	0.1+	0.3+	1998 01 23	683	0.4+	0.3−
1998 01 03	683	1.1+	1.0+	1998 01 15	683	0.3+	0.2−	1999 03 20	704	0.4−	1.1+
1998 01 03	683	0.1+	0.3+	1998 01 16	683	0.2+	1.5−	1999 03 20	704	1.5−	1.7−
1998 01 03	683	0.4−	0.3+	1998 01 16	683	0.4+	1.5−	1999 03 20	704	0.0	0.9+

1999 JUNE 22

M.P.C. 34889

1998 01 03	683	0.4−	0.2+	1998 01 16	683	0.0	0.6−	1999 03 23	704	1.3+	1.3−
1998 01 09	658	0.3−	0.3+	1998 01 22	683	0.1−	0.0	1999 03 23	704	1.9+	1.4+
1998 01 09	658	0.1+	0.4+	1998 01 22	683	0.1−	0.1−	1999 03 23	704	1.1−	0.2−
1998 01 09	658	0.1+	0.4+	1998 01 22	683	0.2+	0.5+				
1998 01 10	658	0.7−	0.5+	1998 01 22	683	0.1−	0.9+				

1998 AE = 1999 JJ₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	66.45446		(2000.0)		P		Q
<i>n</i>	0.16973596	ω	38.69253		−0.85137934		−0.49033012
<i>a</i>	3.2306269	Ω	110.97658		+0.41782273		−0.84870787
<i>e</i>	0.2070035	<i>i</i>	11.51275		+0.31713937		−0.19816995
<i>P</i>	5.81	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1993 04 13	691	0.5+	0.5+	1999 04 12	704	1.6−	0.6−	1999 05 16	703	0.1+	0.5+
1993 04 13	691	0.1+	0.5+	1999 05 08	703	0.2+	0.7+	1999 05 16	703	0.1−	1.4+
1993 04 13	691	0.1+	0.6+	1999 05 08	703	0.1−	0.2+	1999 05 16	703	0.1−	1.6+
1998 01 03	732	(2.5+	0.3+)	1999 05 08	703	0.0	0.3+	1999 05 17	704	0.2−	0.0
1998 01 03	732	1.7+	0.7+	1999 05 08	703	0.2−	0.5+	1999 05 17	704	0.2−	0.3+
1998 01 04	732	0.9+	0.9+	1999 05 12	704	(2.1+	0.1−)	1999 05 17	704	1.6+	1.0−
1998 01 04	732	1.0+	0.6+	1999 05 12	704	1.0+	0.3+	1999 05 17	704	0.1−	0.6+
1998 01 04	732	0.2−	0.2+	1999 05 12	704	0.7+	1.2−	1999 05 17	704	0.4+	0.5−
1998 01 05	732	0.6−	1.8−	1999 05 12	704	1.1−	0.6+	1999 06 06	732	0.6+	0.9+
1998 01 05	732	(2.5−	3.9−)	1999 05 12	704	1.1−	0.5−	1999 06 06	732	0.2−	0.4−
1998 01 06	732	1.2−	0.6+	1999 05 15	704	0.5+	0.1−	1999 06 06	732	0.1+	1.3−
1998 01 06	732	0.2+	0.8−	1999 05 15	704	0.8+	0.1−	1999 06 07	732	1.6−	0.8+
1998 01 06	732	1.5−	1.0−	1999 05 15	704	1.7−	0.2−	1999 06 08	732	0.3+	1.0−
1999 04 12	704	0.5+	1.0−	1999 05 15	704	1.2−	0.2−	1999 06 08	732	0.1+	1.0−
1999 04 12	704	0.6+	1.5−	1999 05 15	704	0.8+	0.9+	1999 06 08	732	0.1+	0.2−
1999 04 12	704	(3.2+	1.4+)	1999 05 16	703	0.5+	1.0−				

1998 AH

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	148.52549		(2000.0)		P		Q
<i>n</i>	0.23480355	ω	66.99290		+0.16877805		−0.98551934
<i>a</i>	2.6021537	Ω	13.32119		+0.87644790		+0.14249306
<i>e</i>	0.2832600	<i>i</i>	4.05597		+0.45094684		+0.09190948
<i>P</i>	4.20	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 01 01	127	0.1+	0.1−	1998 01 18	127	0.5−	0.1−	1998 02 03	127	0.3+	1.5+
1998 01 01	127	0.0	0.6−	1998 01 18	127	0.5−	0.3+	1998 02 03	127	0.8−	0.1+
1998 01 01	127	1.6−	0.0	1998 01 18	127	0.7−	0.2+	1998 02 18	127	0.5+	0.3−
1998 01 04	127	0.4+	0.2−	1998 01 22	127	(2.2−	0.7+)	1998 02 18	127	1.0+	0.1+
1998 01 04	127	0.9+	0.1−	1998 01 22	127	0.8−	1.1+	1998 02 28	127	0.2−	0.1−
1998 01 04	127	0.3−	0.1−	1998 01 22	127	0.7+	0.0	1998 02 28	127	0.1−	0.0
1998 01 07	127	1.3+	0.5−	1998 01 22	127	0.2+	0.0	1998 04 14	704	1.2−	0.5−
1998 01 07	127	0.2−	0.0	1998 01 25	127	0.0	0.5−	1998 04 14	704	(1.4+	2.2+)
1998 01 07	127	0.1+	0.7+	1998 01 25	127	0.1−	0.2+	1998 04 14	704	0.2−	1.5−
1998 01 07	127	1.1−	0.7+	1998 01 25	127	0.4−	0.3−	1998 04 14	704	0.2+	0.7−
1998 01 07	127	(2.7−	0.8+)	1998 01 26	127	0.4+	0.2+	1998 04 14	704	(4.0−	0.1−)
1998 01 07	127	0.2−	0.0	1998 01 26	127	0.2+	0.3+	1999 05 09	621	0.1+	0.3+
1998 01 07	127	1.4+	0.2−	1998 01 26	127	0.1−	0.5+	1999 05 09	621	0.1+	0.8−
1998 01 07	127	0.4+	0.4+	1998 01 26	127	0.2+	0.3+	1999 05 10	621	0.0	0.7+
1998 01 08	127	0.5−	0.5−	1998 01 26	127	0.4+	0.5+	1999 05 10	621	0.1+	0.2+
1998 01 08	127	0.3−	0.5−	1998 01 27	127	1.0+	1.2−	1999 05 15	621	0.1−	0.6+
1998 01 08	127	0.2−	0.3−	1998 01 27	127	0.8+	0.9−	1999 05 15	621	0.0	0.3−
1998 01 18	127	0.7−	0.1+	1998 02 03	127	0.7−	1.4+				

1998 AL = 1999 JB₁₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	200.32166		(2000.0)		P		Q
<i>n</i>	0.26889468	ω	304.81042		+0.41332922		−0.90667431
<i>a</i>	2.3772850	Ω	120.56173		+0.86414401		+0.36139213
<i>e</i>	0.1813213	<i>i</i>	5.61594		+0.28707852		+0.21757164
<i>P</i>	3.67	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 01 08	691	0.2+	0.2+	1998 01 09	411	0.8+	0.2−	1999 05 13	704	1.6+	0.6+
1994 01 08	691	0.6−	0.0	1998 01 24	411	0.3−	0.3+	1999 05 13	704	0.0	0.3+
1994 01 08	691	0.4+	0.4−	1998 01 24	411	0.1+	0.0	1999 05 13	704	1.4−	0.9+
1997 11 29	688	0.3+	0.1−	1998 02 04	411	0.4−	0.1+	1999 05 18	704	0.9+	0.2+
1997 11 29	688	0.5+	0.1−	1998 02 04	411	0.1−	0.3+	1999 05 18	704	0.5+	1.2−
1998 01 05	411	0.2−	1.0−	1998 02 22	566	0.6+	0.3+	1999 05 18	704	0.2+	1.8+
1998 01 05	411	0.5−	0.7+	1998 02 22	566	0.4+	0.3+	1999 05 18	704	0.0	0.3+
1998 01 06	411	0.2−	0.2−	1998 02 22	566	0.0	0.0	1999 05 18	704	0.1+	1.2−
1998 01 06	411	0.5−	0.5−	1998 02 23	566	0.8+	0.5−	1999 06 14	704	0.5−	0.9−
1998 01 09	658	0.5−	0.4+	1998 02 23	566	0.2+	0.2−	1999 06 14	704	0.3+	0.8−
1998 01 09	658	0.5−	0.4+	1998 02 23	566	0.6+	0.7−	1999 06 14	704	0.1−	0.8−
1998 01 09	658	0.6−	0.1+	1999 05 13	704	0.5−	1.0+	1999 06 14	704	0.2−	0.5+
1998 01 09	411	0.4−	0.3+	1999 05 13	704	1.0−	0.7−	1999 06 14	704	0.1−	0.3−

1998 AB₁ = 1999 JD₉₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	152.32738		(2000.0)		P		Q
<i>n</i>	0.20627758	ω	326.69548		+0.00750890		−0.95330880
<i>a</i>	2.8368391	Ω	121.14297		+0.97712577		−0.05717219
<i>e</i>	0.1333656	<i>i</i>	20.65507		+0.21252966		+0.29653612
<i>P</i>	4.78	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 01 05	411	0.1+	0.4−	1998 02 23	566	0.2+	0.1−	1999 05 12	704	0.1−	0.8+
1998 01 05	411	1.3−	0.2−	1998 02 23	566	0.5−	0.0	1999 05 17	704	0.4−	0.7+
1998 01 06	411	0.3−	0.1+	1998 02 23	566	0.0	0.2−	1999 05 17	704	0.1+	0.3+
1998 01 06	411	0.2+	0.0	1998 02 27	098	1.9−	0.3−	1999 05 17	704	0.5+	0.3−
1998 01 09	411	0.3+	0.1+	1998 02 27	098	0.5+	0.8+	1999 05 17	704	1.2+	0.3−
1998 01 09	411	0.2+	0.2−	1998 02 27	098	1.3+	1.0−	1999 06 12	704	0.4+	1.0−
1998 01 24	411	0.7+	0.7−	1998 02 27	098	0.3+	0.4+	1999 06 12	704	0.3+	1.1−
1998 01 24	411	0.5+	0.3−	1999 05 12	704	1.2−	0.8+	1999 06 12	704	0.1+	0.6−
1998 02 04	411	0.4−	1.0+	1999 05 12	704	0.4−	0.3−	1999 06 12	704	0.5−	0.8−
1998 02 04	411	0.0	0.6+	1999 05 12	704	0.5+	1.7+	1999 06 12	704	0.6−	0.1−

1998 AB₂ = 1999 JK₁₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	137.99009		(2000.0)		P		Q
<i>n</i>	0.24308721	ω	5.31917		−0.39531167		−0.91030570
<i>a</i>	2.5426972	Ω	108.01226		+0.83791844		−0.41213469
<i>e</i>	0.0917469	<i>i</i>	7.41735		+0.37632615		−0.03858148
<i>P</i>	4.05	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 01 06	691	0.2+	0.4+	1998 01 23	704	1.2−	0.7−	1998 03 16	327	0.0	0.0
1994 01 06	691	0.2+	0.1+	1998 01 24	704	0.1−	0.6−	1998 03 16	327	0.1+	0.1+
1994 01 06	691	0.2−	0.2+	1998 01 24	704	0.2+	0.6−	1999 05 13	704	0.8+	0.4+
1998 01 01	691	0.2+	0.1+	1998 01 24	704	0.6−	0.3−	1999 05 13	704	0.1−	0.7−
1998 01 01	691	0.2+	0.2+	1998 01 24	704	1.2−	0.3−	1999 05 13	704	0.4−	0.6−
1998 01 01	691	0.3+	0.2+	1998 01 25	704	0.2+	0.9−	1999 05 13	704	0.5−	1.5+
1998 01 06	691	1.0+	0.1+	1998 01 25	704	0.3+	0.7+	1999 05 13	704	1.2−	0.3+
1998 01 06	691	0.5+	0.3−	1998 01 25	704	0.6−	0.2−	1999 05 18	704	0.6+	1.1+
1998 01 06	691	0.5+	0.6−	1998 01 25	704	0.2−	0.1−	1999 05 18	704	1.4+	0.7+
1998 01 23	704	0.6+	0.2+	1998 01 25	704	0.9−	0.2+	1999 05 18	704	0.0	0.2−
1998 01 23	704	0.3+	0.1−	1998 03 11	327	0.4+	0.7+	1999 05 18	704	1.5−	1.0−
1998 01 23	704	0.5+	0.3+	1998 03 11	327	0.1−	0.9+	1999 05 18	704	0.9+	1.9−
1998 01 23	704	0.1+	0.2+	1998 03 11	327	0.5−	0.2+				

1998 AK₃ = 1999 JJ₇₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	100.84464	(2000.0)	P		Q	
<i>n</i>	0.21021160	ω	19.74090	-0.82521673	-0.56073893	
<i>a</i>	2.8013343	Ω	125.96700	+0.50631347	-0.78755943	
<i>e</i>	0.0400162	<i>i</i>	4.80131	+0.25032781	-0.25558167	
<i>P</i>	4.69	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1998 01 05	369	0.5-	0.2+	1998 01 23	627	1.0-	0.1+	1999 05 14	704	0.8-	1.3-
1998 01 05	369	0.9+	1.2+	1998 01 24	627	0.7+	0.3+	1999 05 14	704	0.8+	0.5+
1998 01 05	369	1.2-	0.3+	1998 01 24	627	0.3-	0.2-	1999 05 14	704	0.8-	0.7+
1998 01 06	369	0.3+	0.3+	1998 01 24	627	0.1-	0.5+	1999 06 05	703	0.0	0.5+
1998 01 06	369	0.6+	0.3-	1999 05 13	704	0.0	0.5+	1999 06 05	703	0.1-	0.5+
1998 01 06	369	0.3+	1.2-	1999 05 13	704	0.8+	1.3-	1999 06 05	703	0.2+	0.5+
1998 01 06	369	0.7+	0.7+	1999 05 13	704	0.4-	0.1-	1999 06 05	703	0.1+	0.4+
1998 01 06	369	0.0	0.3-	1999 05 13	704	0.1+	0.4-	1999 06 14	704	0.9-	2.0+
1998 01 06	369	1.2-	0.0	1999 05 13	704	1.4+	0.3-	1999 06 14	704	0.4+	0.0
1998 01 23	627	0.3+	0.8-	1999 05 14	704	0.9-	0.5-	1999 06 14	704	0.9+	0.2-
1998 01 23	627	0.6+	0.3-	1999 05 14	704	0.4-	0.1+	1999 06 14	704	0.3-	1.5-

1998 AB₅ = 1999 JE₇₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	356.83790	(2000.0)	P		Q	
<i>n</i>	0.28260000	ω	155.21369	+0.11060444	+0.98722361	
<i>a</i>	2.2997887	Ω	120.95029	-0.93270399	+0.14296462	
<i>e</i>	0.1283999	<i>i</i>	7.68598	-0.34326365	-0.07036096	
<i>P</i>	3.49	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1996 08 20	566	0.2-	0.2+	1999 02 26	704	0.1+	0.2-	1999 05 17	704	0.7-	0.6+
1996 08 20	566	0.1-	0.4+	1999 02 26	704	1.1+	0.6-	1999 05 21	704	0.4+	0.5+
1996 08 20	566	0.2+	0.2-	1999 02 26	704	0.8+	0.7+	1999 05 21	704	0.9+	0.1+
1998 01 06	426	1.0+	0.2-	1999 03 24	704	0.6-	0.3-	1999 05 21	704	1.2+	0.2-
1998 01 06	426	0.4+	0.3+	1999 03 24	704	0.3-	0.2+	1999 05 21	704	0.5+	0.5-
1998 01 08	426	1.3-	0.4+	1999 03 24	704	0.9-	0.3+	1999 05 21	704	0.3-	0.9-
1998 01 08	426	0.6-	0.3+	1999 03 24	704	(6.6-	0.3-)	1999 06 08	704	0.2+	0.1-
1998 01 08	426	1.7+	0.5-	1999 05 12	704	(2.9-	1.0+)	1999 06 08	704	0.4+	0.0
1998 01 08	426	0.7-	0.7+	1999 05 12	704	0.6-	0.3+	1999 06 08	704	0.6+	1.0-
1998 01 16	426	0.5-	0.4+	1999 05 12	704	0.4-	0.5+	1999 06 08	704	0.1+	1.0-
1998 01 16	426	0.8+	0.9+	1999 05 12	704	0.2-	0.4-	1999 06 08	704	0.7-	0.2-
1998 01 16	426	0.2+	1.1+	1999 05 14	704	0.5-	0.9+	1999 06 11	691	0.1-	0.2-
1998 01 19	426	1.0-	0.4+	1999 05 14	704	1.0-	0.2-	1999 06 11	691	0.1+	0.2-
1998 01 19	426	0.9+	0.3+	1999 05 14	704	0.5-	0.2-	1999 06 11	691	0.0	0.1+
1998 01 19	426	0.1+	1.1-	1999 05 14	704	0.4-	0.3+	1999 06 14	704	0.3+	0.1-
1998 02 18	426	0.4-	0.3-	1999 05 14	704	0.7-	0.8+	1999 06 14	704	0.7+	0.0
1998 02 18	426	0.7-	0.9-	1999 05 17	704	0.6-	0.5-	1999 06 14	704	0.0	0.1-
1998 02 18	426	0.4-	0.8-	1999 05 17	704	0.5+	0.6+	1999 06 14	704	0.5+	0.4+
1998 02 19	426	0.5+	1.4-	1999 05 17	704	0.0	0.5+	1999 06 14	704	0.2+	0.3-
1998 02 19	426	0.1-	0.1+	1999 05 17	704	0.2+	0.5+				

1998 AC₅ = 1999 JP₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	358.82320	(2000.0)	P		Q	
<i>n</i>	0.22792942	ω	148.44514	-0.33144478	+0.92778307	
<i>a</i>	2.6542131	Ω	101.71744	-0.89796242	-0.25448062	
<i>e</i>	0.0904842	<i>i</i>	10.07883	-0.28949587	-0.27287027	
<i>P</i>	4.32	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1998 01 05	327	0.2+	0.2-	1998 01 08	658	0.0	0.1-	1999 05 12	704	1.2-	1.5-
1998 01 05	327	1.1+	0.2-	1998 01 08	658	0.4-	0.1+	1999 05 12	704	0.8-	1.2+
1998 01 05	327	0.1+	0.1-	1998 01 09	658	0.1-	0.2+	1999 05 12	704	2.3+	1.9-
1998 01 05	327	0.6-	0.1-	1998 01 09	658	0.1-	0.4+	1999 05 12	704	0.9+	2.2+
1998 01 05	327	1.3-	0.5-	1998 01 09	658	0.4+	0.1-	1999 05 14	703	0.4+	0.2+

1998 01 05	327	0.8-	0.8-	1998 01 10	658	1.2-	0.3+	1999 05 14	703	1.5-	0.9+
1998 01 05	327	0.1+	1.0-	1998 01 10	658	0.5+	0.5+	1999 05 14	703	0.3+	0.0
1998 01 06	327	0.8+	0.3+	1998 01 10	658	0.7-	0.4+	1999 05 14	703	0.8-	1.0+
1998 01 06	327	0.0	0.2+	1999 05 08	703	0.3+	1.0+	1999 05 17	704	1.4-	2.1-
1998 01 06	327	1.2+	0.6+	1999 05 08	703	0.0	0.6+	1999 05 17	704	1.7+	0.7+
1998 01 06	327	0.7+	0.3+	1999 05 08	703	0.2+	0.6-	1999 05 17	704	0.1+	0.9-
1998 01 08	658	0.0	0.2-	1999 05 08	703	0.9-	0.3-	1999 05 17	704	0.5+	0.5-

1998 AH₅ = 1985 VG₅ = 1999 JW₇₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	107.29070	(2000.0)	P		Q	
<i>n</i>	0.17892384	ω	355.15952	-0.72081193	-0.69252711	
<i>a</i>	3.1190613	Ω	140.95740	+0.63746609	-0.67872943	
<i>e</i>	0.1241621	<i>i</i>	2.63148	+0.27215280	-0.24440246	
<i>P</i>	5.51	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1985 11 11	095	(2.8-	2.3+)	1998 03 03	809	(1.5-	5.3-)	1999 05 18	704	0.0	0.0
1990 09 28	675	0.1-	0.3+	1998 03 03	809	(1.6-	5.4-)	1999 05 18	704	0.4+	0.5-
1995 09 19	691	0.0	0.1+	1998 04 27	699	0.3-	1.0-	1999 05 18	704	0.7-	1.0-
1995 09 19	691	0.1-	0.3+	1998 04 27	699	0.3-	0.8-	1999 05 18	704	0.4-	0.2-
1995 09 19	691	0.1-	0.1-	1998 04 27	699	0.0	0.5-	1999 05 18	704	0.1-	0.6-
1998 01 08	910	0.0	0.0	1999 05 13	704	0.2+	0.1+	1999 05 19	704	0.5+	0.0
1998 01 08	910	0.0	0.1+	1999 05 13	704	1.0+	0.1+	1999 05 19	704	0.1+	0.8+
1998 01 08	910	0.0	0.1+	1999 05 13	704	1.0+	0.8+	1999 05 19	704	0.6+	1.2+
1998 01 09	910	0.5+	0.6+	1999 05 13	704	0.8-	0.3+	1999 05 19	704	1.1+	0.4-
1998 01 09	910	0.5-	0.1+	1999 05 13	704	0.8+	1.6+	1999 05 19	704	0.5+	0.6-
1998 01 09	910	0.1-	0.0	1999 05 14	704	1.5+	0.7+	1999 06 15	704	0.3-	0.4-
1998 01 24	566	0.3+	0.4+	1999 05 14	704	1.0-	0.8-	1999 06 15	704	0.5-	0.3-
1998 01 24	566	0.2+	0.4+	1999 05 14	704	0.3+	0.6+	1999 06 15	704	1.1-	0.1-
1998 01 24	566	0.2+	0.5+	1999 05 14	704	0.6-	0.8+	1999 06 15	704	0.6-	0.2-
1998 03 03	809	(1.7-	4.7-)	1999 05 14	704	1.3-	0.7-	1999 06 15	704	0.4-	0.0

1998 AG₆ = 1998 FN₃₃ = 1999 LX₈Id. M. E. Sansaturio (d, *MPC* 34618), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	239.69118	(2000.0)	P		Q	
<i>n</i>	0.20169647	ω	226.30938	+0.86620237	-0.49670041	
<i>a</i>	2.8796333	Ω	163.23497	+0.49537335	+0.83923123	
<i>e</i>	0.1468782	<i>i</i>	10.91314	+0.06556442	+0.22131344	
<i>P</i>	4.89	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1998 01 08	910	0.4-	0.2-	1998 03 22	704	0.2-	1.3+	1998 04 19	704	0.1+	0.8+
1998 01 08	910	0.4-	0.2-	1998 03 22	704	1.5-	1.6+	1998 04 19	704	1.5-	0.9-
1998 01 08	910	0.6-	0.0	1998 03 22	704	1.7+	1.7+	1999 05 17	704	0.7-	1.0-
1998 01 09	910	0.2-	0.3-	1998 03 22	704	(3.0-	0.1+)	1999 05 17	704	0.5-	0.9+
1998 01 09	910	0.3-	0.2+	1998 03 22	704	1.5-	1.0-	1999 05 17	704	0.2-	1.6-
1998 01 09	910	0.4-	0.2-	1998 03 22	704	0.3+	0.9-	1999 05 17	704	(2.4-	0.3+)
1998 03 01	809	0.5+	0.8+	1998 03 22	704	0.4+	0.5-	1999 06 08	704	0.0	0.3-
1998 03 01	809	0.4+	1.1+	1998 03 22	704	0.2-	1.1-	1999 06 08	704	0.0	0.1+
1998 03 01	809	0.6+	0.8+	1998 03 22	704	(3.0-	0.8-)	1999 06 08	704	0.6-	0.1+
1998 03 02	809	1.7+	0.4+	1998 03 24	704	0.2-	0.4+	1999 06 08	704	0.5-	0.3-
1998 03 02	809	1.5+	0.2-	1998 03 24	704	0.5-	0.2-	1999 06 14	704	0.4+	0.5+
1998 03 02	809	0.8+	0.9+	1998 03 24	704	1.1+	1.5-	1999 06 14	704	1.0+	0.5+
1998 03 20	704	0.2-	0.0	1998 03 24	704	1.4-	0.8-	1999 06 14	704	0.7+	0.2+
1998 03 20	704	0.0	0.7-	1998 03 24	704	0.4-	0.3+	1999 06 14	704	0.2+	0.3+
1998 03 20	704	0.3+	0.3+	1998 04 19	704	0.2+	0.8-	1999 06 14	704	0.3+	0.8+
1998 03 20	704	(2.2+	0.8-)	1998 04 19	704	1.3-	1.0-				
1998 03 20	704	0.7+	0.3-	1998 04 19	704	(2.2-	1.1-)				

1998 AZ₆ = 1990 SQ₁₈ = 1999 JO

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	314.91755		(2000.0)	P	Q
<i>n</i>	0.31428338	ω	245.44492	+0.80385932	+0.59381466
<i>a</i>	2.1425047	Ω	78.10884	-0.53216199	+0.74392297
<i>e</i>	0.1934877	<i>i</i>	2.02394	-0.26573259	+0.30653346
<i>P</i>	3.14	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1990 09 16	675	0.2-	0.7-	1999 05 10	704	0.3+	0.3+	1999 05 18	704	(0.8+	2.3-)
1990 09 16	675	0.5+	0.0	1999 05 10	704	0.6+	0.5-	1999 05 18	704	0.2-	0.6+
1998 01 05	327	0.1-	0.3-	1999 05 10	704	0.1-	0.7+	1999 05 18	704	0.1-	1.8+
1998 01 05	327	0.4+	0.0	1999 05 10	704	0.2-	0.6+	1999 05 19	704	0.6+	0.1-
1998 01 05	327	0.1+	0.0	1999 05 10	704	0.3-	0.3-	1999 05 19	704	0.5+	0.6-
1998 01 07	327	0.2+	0.3+	1999 05 13	704	0.2+	0.1-	1999 05 19	704	1.1+	0.2-
1998 01 07	327	0.9-	0.4+	1999 05 13	704	0.1-	0.2-	1999 05 19	704	0.3+	0.0
1998 01 07	327	0.2-	0.6-	1999 05 13	704	0.1-	0.2-	1999 06 07	703	1.2+	0.0
1998 01 17	327	0.4+	0.9-	1999 05 13	704	0.3+	0.1+	1999 06 07	703	0.7+	0.1-
1998 01 17	327	0.4-	0.1+	1999 05 13	704	0.5-	0.4-	1999 06 07	703	0.2-	0.3+
1998 01 17	327	0.5+	0.3+	1999 05 14	704	1.8-	0.1+	1999 06 07	703	0.2+	1.0+
1999 05 07	678	1.1+	0.4-	1999 05 14	704	0.1-	1.4-	1999 06 09	704	(0.1-	2.4-)
1999 05 07	678	0.4-	0.3-	1999 05 14	704	1.8-	0.3+	1999 06 09	704	(0.2-	2.3-)
1999 05 07	678	0.6-	0.2+	1999 05 14	704	0.1-	0.7+	1999 06 09	704	0.4+	1.2-
1999 05 08	678	0.6-	0.2-	1999 05 14	704	0.0	0.7+	1999 06 09	704	0.0	0.5-
1999 05 08	678	0.9-	0.4-	1999 05 18	704	0.1+	0.6-				
1999 05 08	678	0.6+	0.0	1999 05 18	704	0.2-	0.2-				

1998 AX₇ = 1999 JQ₈₃

Id. G. V. Williams, S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	128.17035		(2000.0)	P	Q
<i>n</i>	0.23568834	ω	9.45944	-0.36843708	-0.89874130
<i>a</i>	2.5956372	Ω	102.45775	+0.83623265	-0.43211943
<i>e</i>	0.1260695	<i>i</i>	14.09131	+0.40616385	+0.07441025
<i>P</i>	4.18	<i>H</i>	13.6	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1993 12 14	691	0.1+	0.3+	1998 01 07	704	0.1-	0.7-	1999 05 17	704	1.5+	0.1+
1993 12 14	691	0.2+	0.9+	1998 01 07	704	0.8+	0.5-	1999 05 17	704	0.1+	0.4+
1993 12 14	691	0.1-	0.7+	1999 05 12	704	0.3+	0.2-	1999 06 08	704	0.4+	0.1-
1998 01 02	704	0.1-	0.5-	1999 05 12	704	0.4+	0.6-	1999 06 08	704	0.7-	0.6+
1998 01 02	704	0.0	0.1-	1999 05 12	704	0.3+	0.7-	1999 06 08	704	0.5-	0.0
1998 01 02	704	0.0	0.4-	1999 05 12	704	0.9+	0.4-	1999 06 08	704	0.1-	0.4+
1998 01 02	704	(2.8-	0.5-)	1999 05 12	704	0.4+	0.9-	1999 06 08	704	0.4-	0.8+
1998 01 02	704	0.1+	0.9+	1999 05 15	704	0.3+	0.6+	1999 06 14	704	0.5-	0.3+
1998 01 06	704	0.1-	0.1-	1999 05 15	704	1.5-	1.7-	1999 06 14	704	0.1-	0.1+
1998 01 06	704	0.3-	0.5-	1999 05 15	704	0.0	0.8-	1999 06 14	704	0.1+	0.3-
1998 01 06	704	0.2-	0.1-	1999 05 15	704	0.4-	0.6+	1999 06 14	704	0.2-	0.2-
1998 01 07	704	0.4-	0.0	1999 05 17	704	1.3+	0.5+	1999 06 14	704	0.7-	0.1+
1998 01 07	704	0.6+	0.1+	1999 05 17	704	1.2-	1.1+				

1998 AD₁₀ = 1999 FN₄₁

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	294.97218		(2000.0)	P	Q
<i>n</i>	0.30129838	ω	52.60496	+0.40852636	+0.90828281
<i>a</i>	2.2036275	Ω	241.73827	-0.86644621	+0.35484618
<i>e</i>	0.1595209	<i>i</i>	5.87512	-0.28701426	+0.22159994
<i>P</i>	3.27	<i>H</i>	14.7	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1998 01 15	910	0.4+	0.2+	1998 02 22	327	0.4+	0.4-	1999 03 20	704	1.1-	1.1+
1998 01 15	910	0.4+	0.3+	1998 02 22	327	0.6-	0.1-	1999 03 23	704	0.6+	0.6+
1998 01 15	910	0.2+	0.5+	1998 02 22	327	0.4+	0.4-	1999 03 23	704	0.2+	1.3-
1998 01 17	910	0.3-	0.1+	1999 03 20	704	1.9+	1.2-	1999 03 23	704	1.5+	1.2-

1998 01 17	910	0.4-	0.1-	1999 03 20	704	0.2-	0.7-	1999 03 23	704	1.0-	0.9+
1998 01 17	910	0.4-	0.2-	1999 03 20	704	0.1-	0.3+	1999 03 23	704	1.8-	1.5+

1998 BB = 1999 JM₃₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	223.26411		(2000.0)	P	Q
<i>n</i>	0.28283161	ω	0.97853	+0.81359333	-0.58035346
<i>a</i>	2.2985330	Ω	34.57482	+0.53303048	+0.72013019
<i>e</i>	0.1526374	<i>i</i>	3.58017	+0.23225934	+0.38026619
<i>P</i>	3.48	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1995 02 27	691	0.4+	0.0	1998 01 24	566	0.4+	0.6+	1999 05 13	704	0.5-	0.1-
1995 02 27	691	0.2+	0.2-	1998 01 25	411	0.0	0.3-	1999 05 13	704	0.1-	0.3-
1995 02 27	691	0.1+	0.3-	1998 01 25	411	0.2+	0.5-	1999 05 13	704	0.4+	0.2+
1995 03 23	033	0.3-	0.0	1998 02 02	411	0.3-	0.0	1999 05 13	704	1.6-	1.5+
1995 03 24	033	0.6-	0.2-	1998 02 02	411	0.1-	0.2+	1999 05 13	704	1.7-	0.6+
1998 01 16	411	0.2+	0.0	1998 02 17	411	0.1-	0.5-	1999 06 09	704	0.6+	0.3+
1998 01 16	411	0.3+	0.1-	1998 02 17	411	0.6-	0.5-	1999 06 09	704	0.9+	0.9-
1998 01 18	411	0.3-	0.7+	1999 05 10	704	0.0	0.4+	1999 06 09	704	0.1+	0.6-
1998 01 18	411	0.2-	0.1-	1999 05 10	704	0.5-	0.2-	1999 06 09	704	0.2+	0.7-
1998 01 24	566	0.2+	0.5+	1999 05 10	704	1.9+	0.3+				
1998 01 24	566	0.4+	0.4+	1999 05 10	704	0.5+	0.1+				

1998 BD = 1999 JD₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	251.44970		(2000.0)	P	Q
<i>n</i>	0.28939525	ω	319.13946	+0.97805312	-0.19509337
<i>a</i>	2.2636457	Ω	52.26055	+0.20699357	+0.86973297
<i>e</i>	0.1771160	<i>i</i>	5.30738	+0.02378548	+0.45332454
<i>P</i>	3.41	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1992 04 04	691	0.6+	0.1+	1999 04 12	704	0.8-	1.8-	1999 05 14	704	0.1+	0.8+
1992 04 04	691	0.6+	0.4+	1999 04 12	704	0.5-	0.2-	1999 05 14	704	0.5+	1.2-
1992 04 04	691	1.0-	0.0	1999 04 12	704	0.8-	1.2+	1999 05 14	704	0.1+	1.3+
1998 01 16	411	0.0	0.5+	1999 04 12	704	1.2-	0.0	1999 05 14	704	0.1+	0.6-
1998 01 16	411	0.2-	0.3-	1999 05 10	704	1.3+	0.9-	1999 05 18	704	0.5+	1.0+
1998 01 18	411	0.4+	0.9-	1999 05 10	704	1.8+	0.4-	1999 05 18	704	1.3-	1.0+
1998 01 18	411	0.1-	0.1+	1999 05 10	704	1.5+	0.4+	1999 05 18	704	0.3+	0.0
1998 01 26	411	0.1+	0.1+	1999 05 10	704	1.5+	0.2+	1999 05 18	704	0.6-	0.2+
1998 01 26	411	0.3+	0.5+	1999 05 10	704	1.2-	1.0+	1999 05 18	704	1.6-	1.8+
1998 02 02	411	0.1-	0.4-	1999 05 13	704	0.2-	0.5+	1999 05 22	691	0.2+	1.5-
1998 02 02	411	0.8+	0.5-	1999 05 13	704	1.2-	1.0-	1999 05 22	691	0.4+	0.6-
1998 02 02	411	1.0-	0.6+	1999 05 13	704	0.4+	1.0+	1999 05 22	691	0.1-	0.2-
1998 02 21	411	0.3-	0.2-	1999 05 13	704	0.1+	0.8-				
1998 02 21	411	0.3+	0.4+	1999 05 13	704	0.2+	1.5-				

1998 BT = 1999 JH₉₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	35.00718		(2000.0)	P	Q
<i>n</i>	0.19332301	ω	106.96377	-0.84544567	+0.49975146
<i>a</i>	2.9621953	Ω	103.37562	-0.53325288	-0.77053570
<i>e</i>	0.0352476	<i>i</i>	11.16215	-0.02937675	-0.39563013
<i>P</i>	5.10	<i>H</i>	13.6	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 01 19	411	0.0	0.5+	1998 02 17	411	0.5-	0.7+	1999 05 17	704	1.1-	0.0
1998 01 19	411	0.5+	0.2+	1998 02 17	411	0.4+	0.0	1999 05 17	704	0.6-	0.1-
1998 01 20	411	0.2+	0.8-	1999 05 12	704	1.1+	0.8-	1999 05 17	704	0.8-	0.3-
1998 01 20	411	0.1-	0.4-	1999 05 12	704	0.5-	1.3-	1999 06 14	704	0.5+	0.2-
1998 01 25	411	0.3+	0.2+	1999 05 12	704	0.1+	1.6+	1999 06 14	704	0.3+	0.2+
1998 01 25	411	0.3-	0.8-	1999 05 12	704	1.1+	0.9+	1999 06 14	704	0.1+	0.4-
1998 02 02	411	0.5-	0.3-	1999 05 17	704	0.2+	0.3+	1999 06 14	704	0.6-	0.0
1998 02 02	411	0.0	0.6+	1999 05 17	704	0.2-	0.2+	1999 06 14	704	0.5+	0.3-

1998 BZ = 1992 KC₁ = 1999 JO₇₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	215.63336		(2000.0)	P		Q					
<i>n</i>	0.27353287	ω	307.79906	+0.80962454		-0.57072064					
<i>a</i>	2.3503346	Ω	87.40645	+0.57237275		+0.71597494					
<i>e</i>	0.2189492	<i>i</i>	7.88601	+0.12999052		+0.40206697					
<i>P</i>	3.60	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	4				
Residuals in seconds of arc											
1992 05 25	372	0.7-	1.8-	1999 05 12	704	0.1-	0.1+	1999 05 17	704	1.6+	0.4+
1992 05 25	372	0.2+	0.6+	1999 05 12	704	0.3-	0.7+	1999 05 17	704	0.4+	0.6+
1998 01 19	411	0.4-	0.1-	1999 05 12	704	0.3-	1.0-	1999 05 18	704	0.0	1.1+
1998 01 19	411	0.3+	0.5-	1999 05 12	704	0.2+	1.3-	1999 05 18	704	0.7+	0.1-
1998 01 20	411	0.2-	0.1+	1999 05 13	704	0.7-	0.1+	1999 05 18	704	0.9-	0.5-
1998 01 20	411	0.6-	0.1+	1999 05 13	704	0.8-	0.3-	1999 05 18	704	0.6+	0.4-
1998 01 26	411	0.4-	0.2-	1999 05 13	704	0.7-	0.2+	1999 05 18	704	0.2+	1.4+
1998 01 26	411	0.1-	0.4-	1999 05 13	704	1.7-	0.8+	1999 05 19	704	1.7-	1.6-
1998 01 31	411	0.3+	0.4+	1999 05 13	704	1.7-	0.1+	1999 05 19	704	0.6+	1.9+
1998 01 31	411	0.1-	0.4+	1999 05 14	703	1.9+	0.1-	1999 05 19	704	1.6-	0.8+
1998 02 17	411	1.0+	0.2-	1999 05 14	703	0.0	0.5-	1999 05 19	704	0.5+	0.3-
1998 02 17	411	0.3+	0.0	1999 05 14	703	0.9+	0.1-	1999 05 19	704	1.0+	1.4-
1999 04 12	704	0.9-	0.7-	1999 05 14	703	0.2+	0.6-	1999 06 08	704	0.9-	0.5-
1999 04 12	704 (2.3-	0.2+)	1999 05 17	704	0.0	0.5-	1999 06 08	704	0.4+	0.4-	
1999 04 12	704	0.9+	1.1+	1999 05 17	704	1.2+	0.6+	1999 06 08	704	0.0	0.1+
1999 04 12	704	0.6+	1.2+	1999 05 17	704	0.9+	0.6-	1999 06 08	704	0.2-	1.0+

1998 BA₁ = 1999 JG₈₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	300.31955		(2000.0)		P		Q				
<i>n</i>	0.18144244		ω 170.03528		+0.55815965		+0.81163060				
<i>a</i>	3.0901303		Ω 133.64480		-0.77672216		+0.58416587				
<i>e</i>	0.1348650		<i>i</i> 13.78090		-0.29182270		-0.00245056				
<i>P</i>	5.43	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	4				
Residuals in seconds of arc											
1998 01 19	411	0.2+	0.3-	1998 02 18	411	0.1-	0.7-	1999 05 12	704	0.7+	0.9+
1998 01 19	411	1.5-	0.6-	1998 02 18	411	0.8+	0.7+	1999 05 12	704	0.8-	0.2+
1998 01 20	411	0.5-	0.0	1999 03 28	699	0.5+	0.2+	1999 05 12	704	1.6-	0.7-
1998 01 20	411	0.5-	0.1+	1999 03 28	699	0.2+	0.7+	1999 05 12	704	0.7+	1.2+
1998 01 25	411	0.7-	0.2+	1999 03 28	699	0.9-	1.3+	1999 05 12	704	1.0-	1.7-
1998 01 25	411	0.5+	0.5-	1999 04 12	704	0.8+	0.1-	1999 05 17	704	0.5+	0.4+
1998 02 02	411	0.2+	0.2+	1999 04 12	704	0.2+	0.4+	1999 05 17	704	(1.2-	2.7+
1998 02 02	411	0.1+	0.9+	1999 04 12	704	0.3+	0.2-	1999 05 17	704	0.0	0.9-
1998 02 17	411	1.2+	0.1-	1999 04 12	704	0.6+	1.1-	1999 05 17	704	0.7-	0.9+
1998 02 17	411	0.1+	0.0	1999 04 12	704	0.3+	1.5-				

1998 BF₁ = 1999 JL₈₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	132.14013		(2000.0)		P		Q				
n	0.21966024		ω	13.24951	-0.39374926		-0.89345366				
a	2.7204145		Ω	100.28215	+0.82207695		-0.44745736				
e	0.0306929		i	12.68753	+0.41127972		+0.03901887				
P	4.49 <th>H</th> <td>14.0</td> <th>G</th> <td>0.15<th>U</th><td>4</td></td>		H	14.0	G	0.15 <th>U</th> <td>4</td>	U	4			
Residuals in seconds of arc											
1997 12 28	566	0.1+	0.1+	1998 02 17	411	0.2+	0.6-	1999 05 17	704	0.4-	1.6+
1997 12 28	566	0.2+	0.3+	1998 02 17	411	0.4+	0.7+	1999 05 17	704	0.9+	0.1+
1997 12 28	566	0.3+	0.2+	1999 05 12	704	0.0	0.3-	1999 06 08	704	0.3+	1.1+
1998 01 19	411	0.5+	0.2-	1999 05 12	704	1.3+	0.1-	1999 06 08	704	0.3+	0.0
1998 01 19	411	1.3+	0.2-	1999 05 12	704	0.5-	0.3-	1999 06 08	704	0.6-	0.2+
1998 01 20	411	0.9+	0.4+	1999 05 12	704	0.5+	0.7-	1999 06 08	704	0.4+	0.3+
1998 01 20	411	0.1-	0.3-	1999 05 12	704	0.3+	0.8-	1999 06 08	704	0.2-	0.3+
1998 01 24	566	0.7-	0.2-	1999 05 15	704	(2.1-	0.2-)	1999 06 14	704	0.1+	0.1+
1998 01 24	566	0.7-	0.4-	1999 05 15	704	0.5-	1.4+	1999 06 14	704	0.6+	0.5-
1998 01 24	566	0.3-	0.2-	1999 05 15	704	0.8-	0.7+	1999 06 14	704	0.2-	0.1+

1998 01 26	411	0.5-	0.4+	1999 05 15	704	0.7-	0.8-	1999 06 14	704	0.4-	0.2+
1998 01 26	411	0.5-	0.6+	1999 05 17	704	0.4+	0.3+	1999 06 14	704	0.6+	0.6-
1998 01 31	411	0.7-	0.5-	1999 05 17	704	0.2-	1.0-				
1998 01 31	411	0.3-	0.0	1999 05 17	704	1.2-	0.8-				

1998 BJ₁ = 1999 JL₉₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	57.24992		(2000.0)		P		Q				
n	0.18881622	ω	68.63696		-0.96792961		+0.20715592				
a	3.0091455	Ω	123.05994		-0.24207333		-0.92036065				
e	0.0660377	i	9.76319		+0.06717710		-0.33169671				
P	5.22	H	14.0	G	0.15	U	3				
Residuals in seconds of arc											
1998 01 19	411	0.5+	0.7-	1998 02 17	411	0.1+	0.1-	1999 05 17	704	0.0	0.8+
1998 01 19	411	0.6+	0.5+	1998 03 03	704	1.4-	0.5+	1999 05 17	704	0.2+	0.5+
1998 01 20	411	0.2-	0.4-	1998 03 03	704	0.4+	1.1+	1999 05 17	704	0.0	0.3+
1998 01 20	411	1.5-	0.1-	1998 03 03	704	0.2+	0.6-	1999 06 06	703	0.3+	0.1-
1998 01 25	411	0.0	0.1+	1998 03 03	704	1.0+	1.6-	1999 06 06	703	0.1-	0.6-
1998 01 25	411	0.7+	0.1+	1998 03 03	704	1.7-	1.8+	1999 06 06	703	0.2+	0.3-
1998 01 28	566	0.4+	0.1+	1999 05 12	704	0.3+	1.2-	1999 06 06	703	0.5+	0.4+
1998 01 28	566	0.1-	0.3-	1999 05 12	704	0.6+	0.2+	1999 06 14	704	0.8+	0.5-
1998 01 28	566	0.2-	0.5+	1999 05 12	704	0.8-	0.4+	1999 06 14	704	0.2+	1.6+
1998 02 02	411	0.3+	0.1+	1999 05 12	704	0.3-	0.5+	1999 06 14	704	(0.0	2.8-)
1998 02 02	411	0.6+	0.3-	1999 05 17	704	0.8-	0.4-	1999 06 14	704	0.6-	0.6-
1998 02 17	411	0.3+	0.9-	1999 05 17	704	0.8-	0.2-	1999 06 14	704	0.2+	1.0-

1998 BL₁ = 1999 JO₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	237.09190		(2000.0)	P		Q					
n	0.22301913	ω	243.33242	+0.92836220	-0.34394882						
a	2.6930307	Ω	136.38762	+0.36966286	+0.89384956						
e	0.0564670	i	11.78372	-0.03863931	+0.28763200						
P	4.42 <th>H</th> <td>14.0</td> <th>G</th> <td>0.15<th>U</th><td>4<td colspan="2"></td></td></td>	H	14.0	G	0.15 <th>U</th> <td>4<td colspan="2"></td></td>	U	4 <td colspan="2"></td>				
Residuals in seconds of arc											
1998 01 19	411	0.6-	1.2-	1998 03 01	699	0.1+	0.9+	1999 05 19	703	0.8+	0.2+
1998 01 19	411	0.3+	0.3-	1998 03 03	699	1.7-	0.7-	1999 05 19	703	0.3+	0.5+
1998 01 20	411	0.2+	0.8-	1998 03 03	699	0.2+	0.1+	1999 05 19	703	1.0-	0.1+
1998 01 20	411	1.3-	0.2-	1998 03 03	699	1.4+	0.3-	1999 05 19	703	1.5-	0.7+
1998 01 24	566	0.2-	0.9+	1998 03 03	704	1.7-	0.4-	1999 06 08	704	1.0+	1.6-
1998 01 24	566	0.1+	0.7+	1998 03 03	704	0.2-	0.4-	1999 06 08	704	1.4+	0.2-
1998 01 24	566	0.0	0.8+	1998 03 03	704	1.0-	0.2-	1999 06 08	704	0.6+	0.3-
1998 01 25	411	0.8+	0.5-	1998 03 03	704	0.6-	0.3+	1999 06 08	704	0.8+	0.5+
1998 01 25	411	0.3+	0.4+	1998 03 03	704	0.8+	1.2+	1999 06 11	703	0.7-	0.1-
1998 01 29	566	0.6+	0.4-	1999 05 15	703	1.0+	0.9+	1999 06 11	703	0.6+	0.2+
1998 01 29	566	0.4+	0.1+	1999 05 15	703	0.3+	0.1-	1999 06 11	703	0.3+	0.1+
1998 01 29	566	0.5+	0.4-	1999 05 15	703	0.2-	1.0+	1999 06 11	703	0.1+	0.8+
1998 02 02	411	0.3-	0.5+	1999 05 15	703	0.2-	1.0+	1999 06 14	704	0.6-	0.8-
1998 02 02	411	0.2+	0.4+	1999 05 17	704	0.1+	0.3-	1999 06 14	704	0.5-	0.3-
1998 02 17	411	0.5+	0.4-	1999 05 17	704	1.5-	1.0-	1999 06 14	704	0.7-	0.3-
1998 02 17	411	0.2+	0.4+	1999 05 17	704	0.3-	0.3+	1999 06 14	704	0.2-	0.1-
1998 03 01	699	1.0+	0.5-	1999 05 17	704	0.9+	1.0-	1999 06 14	704	0.4-	0.1+
1998 03 01	699	0.1-	0.2-	1999 05 17	704	0.5-	0.5-				

Residuals in seconds of arc

1993 04 19	691	0.0	0.3−	1998 01 25	411	1.3+	1.2+	1998 03 04	704	0.5+	0.0
1993 04 19	691	0.2−	0.6−	1998 01 29	566	0.1+	0.4+	1998 03 04	704	0.7−	0.9−
1993 04 19	691	0.3−	0.7−	1998 01 29	566	0.4−	0.3+	1999 05 13	704	0.2+	0.7−
1998 01 19	411	1.0−	0.9−	1998 01 29	566	0.0	0.3+	1999 05 13	704	0.4−	1.3+
1998 01 19	411	0.4−	0.2−	1998 02 02	411	0.5−	0.3+	1999 05 13	704	1.4+	1.1−
1998 01 20	411	0.3−	0.0	1998 02 02	411	0.1+	0.3+	1999 05 13	704	1.0−	0.8+
1998 01 20	411	0.9−	0.5−	1998 02 17	411	0.1−	0.4−	1999 05 18	704	0.4−	0.2+
1998 01 24	566	0.1+	0.5−	1998 02 17	411	0.1−	0.7+	1999 05 18	704	0.0	0.1+
1998 01 24	566	0.4+	0.3−	1998 03 04	704	(2.8+	0.4−)	1999 05 18	704	(0.6+	2.6+)
1998 01 24	566	0.6+	0.3−	1998 03 04	704	0.3+	0.1−	1999 05 18	704	0.6+	0.7+
1998 01 25	411	0.2−	0.3+	1998 03 04	704	1.3+	1.0+				

1998 BZ₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

M	67.24114		(2000.0)	P	Q
n	0.23507262	ω	286.13336	−0.84135993	+0.53742743
a	2.6001677	Ω	286.40769	−0.47024092	−0.78017614
e	0.1532417	i	3.42547	−0.26643376	−0.32015146
P	4.19	H	15.1	G 0.15	U 4

Residuals in seconds of arc

1998 01 22	684	0.2+	0.0	1998 01 27	684	0.4+	0.6+	1999 06 11	684	0.4+	0.4−
1998 01 22	684	0.0	0.0	1998 02 28	684	0.1−	0.1−	1999 06 11	684	0.3−	0.2−
1998 01 23	684	0.4−	0.4−	1998 02 28	684	0.2+	0.4−	1999 06 11	684	0.2−	0.1−
1998 01 23	684	0.3−	0.4−	1998 03 01	684	0.3−	0.1+	1999 06 12	684	0.3+	0.3+
1998 01 26	684	0.1+	0.1−	1998 03 01	684	0.0	0.1−	1999 06 12	684	0.3−	0.3+
1998 01 26	684	0.1+	0.2−	1998 03 25	684	0.0	0.1+				
1998 01 27	684	0.1−	0.7+	1998 03 25	684	0.1+	0.1+				

1998 BE₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	139.75337		(2000.0)	P	Q
n	0.27965337	ω	282.06467	−0.74659190	−0.66340798
a	2.3159153	Ω	216.40866	+0.63841081	−0.69331422
e	0.0710838	i	4.82302	+0.18716884	−0.28143427
P	3.52	H	15.8	G 0.15	U 3

Residuals in seconds of arc

1997 12 25	566	0.3+	0.7+	1998 01 31	691	0.1+	0.2−	1998 03 16	426	0.7+	0.1+
1997 12 25	566	0.4+	1.7+	1998 01 31	691	0.1−	0.1−	1998 03 16	426	0.3+	0.1−
1997 12 25	566	0.2−	0.5+	1998 01 31	691	0.3+	0.6−	1999 06 05	426	0.0	0.0
1998 01 20	426	0.0	0.1+	1998 02 19	426	0.5−	0.0	1999 06 05	426	0.2−	0.2+
1998 01 20	426	0.3−	0.6−	1998 02 19	426	0.1+	0.0	1999 06 05	426	0.1−	0.2−
1998 01 20	426	0.1+	0.1−	1998 02 19	426	0.3−	0.1−	1999 06 06	426	0.3+	0.4+
1998 01 24	426	0.0	0.4−	1998 02 20	426	0.4−	0.1−	1999 06 06	426	0.4−	0.1+
1998 01 24	426	0.1+	0.0	1998 02 20	426	0.1+	0.0	1999 06 06	426	0.3+	0.5+
1998 01 24	426	0.3+	0.2+	1998 02 20	426	0.7−	0.1−				

1998 BY₆ = 1999 KA₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	253.72595		(2000.0)	P	Q
n	0.21897447	ω	220.86336	+0.99605799	+0.05945730
a	2.7260913	Ω	135.59327	−0.03412339	+0.94182985
e	0.1058037	i	5.39802	−0.08187845	+0.33078900
P	4.50	H	14.2	G 0.15	U 4

Residuals in seconds of arc

1998 01 24	411	0.1−	0.6+	1998 02 17	411	0.5−	0.7−	1999 05 18	703	0.7+	1.2−
1998 01 24	411	0.4+	0.7−	1999 04 12	704	1.3+	0.9−	1999 05 18	703	0.6−	0.3−
1998 01 25	411	0.9−	0.9+	1999 04 12	704	1.4−	1.2+	1999 05 18	703	1.0−	1.6+
1998 01 25	411	0.7+	0.8−	1999 04 12	704	1.1−	1.7+	1999 05 18	703	0.3+	0.9+
1998 01 31	411	0.6+	0.1−	1999 04 12	704	1.8+	0.7−	1999 05 19	704	0.4−	0.2+
1998 01 31	411	0.5−	0.2+	1999 05 18	704	0.8−	1.5−	1999 05 19	704	1.0+	0.1+
1998 02 04	411	0.0	0.0	1999 05 18	704	0.4−	0.4−	1999 05 19	704	0.0	0.7+

1998 02 04	411	0.4−	0.4+	1999 05 18	704	(0.1−	2.5−)	1999 05 19	704	0.2+	1.3−
1998 02 17	411	0.7+	0.0	1999 05 18	704	0.4+	0.1−				

1998 BZ₆ = 1999 JD₇₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	138.08408		(2000.0)	P	Q
n	0.21505340	ω	2.06101	−0.52414561	−0.82734252
a	2.7591280	Ω	119.60727	+0.77799390	−0.56161758
e	0.0783649	i	13.42987	+0.34640564	+0.00948918
P	4.58	H	13.2	G 0.15	U 4

Residuals in seconds of arc

1998 01 24	411	0.0	0.2+	1999 05 12	704	0.4−	0.5+	1999 06 08	704	0.1−	0.1−
1998 01 24	411	0.1−	0.4−	1999 05 12	704	0.7−	0.1+	1999 06 08	704	0.6−	0.5+
1998 01 25	411	0.0	0.1+	1999 05 12	704	0.1−	0.0	1999 06 08	704	0.7−	0.6−
1998 01 25	411	0.2+	0.0	1999 05 12	704	0.7+	0.5+	1999 06 08	704	0.2+	0.2−
1998 01 31	411	0.1+	0.1−	1999 05 14	704	0.8−	0.7+	1999 06 08	704	0.4−	0.2−
1998 01 31	411	0.4+	0.3−	1999 05 14	704	1.1−	0.0	1999 06 14	704	0.7+	0.1−
1998 02 04	411	0.3−	0.2−	1999 05 14	704	0.1−	1.3−	1999 06 14	704	0.0	0.1+
1998 02 04	411	0.2−	0.1+	1999 05 14	704	0.9+	0.2+	1999 06 14	704	0.3+	0.4−
1998 02 21	411	0.1+	0.3+	1999 05 17	704	(2.2+	2.6−)	1999 06 14	704	0.3+	0.5+
1998 02 21	411	0.3−	0.2+	1999 05 17	704	0.1+	0.4−	1999 06 14	704	0.2+	0.3−
1999 05 12	704	1.0+	1.2+	1999 05 17	704	0.5+	0.8−				

1998 BG₇ = 1986 TA₁₈ = 1986 VL₃ = 1999 JH₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	255.02148		(2000.0)	P	Q		
n	0.28283439	ω	88.39883	+0.97385065	−0.21512863		
a	2.2985180	Ω	284.01973	+0.16674241	+0.89516108		
e	0.1935065	i	4.31735	+0.15431097	+0.39039251		
P	3.48	H	14.6	G	0.15	U	3

Residuals in seconds of arc

1986 10 07	095	0.3+	1.7+	1998 01 29	566	0.2−	0.4+	1999 05 13	704	0.0	0.8+
1986 11 04	010	0.5−	0.7−	1998 01 29	566	0.4−	0.2+	1999 05 13	704	(1.6−	2.4+)
1986 11 04	010	(5.4+	1.5+)	1998 01 29	566	0.0	0.6+	1999 05 18	704	0.9−	1.0+
1986 11 04	010	(5.0+	0.3+)	1999 05 10	704	0.5+	1.6−	1999 05 18	704	0.8+	0.4+
1998 01 24	566	0.1+	0.1−	1999 05 10	704	0.1+	1.0−	1999 05 18	704	1.4−	0.2+
1998 01 24	566	0.1+	0.2+	1999 05 10	704	0.3−	0.2−	1999 05 19	704	0.7+	0.2+
1998 01 24	566	0.1−	0.0	1999 05 10	704	0.1−	0.4+	1999 05 19	704	0.6−	0.7+
1998 01 25	566	0.1+	0.2−	1999 05 13	704	0.3−	0.3+	1999 05 19	704	1.6+	0.5+
1998 01 25	566	0.8+	0.4−	1999 05 13	704	0.2−	0.2−	1999 05 19	704	0.3−	0.4+
1998 01 25	566	0.1−	0.0	1999 05 13	704	0.8+	0.7−				

1998 BR₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	220.93724		(2000.0)	P	Q
n	0.27854748	ω	70.69893	+0.67842588	−0.71411433
a	2.3220411	Ω	333.92493	+0.43464733	+0.57951446
e	0.2796421	i	23.11628	+0.59230062	+0.39268780
P	3.54	H	14.1	G 0.15	U 3

Residuals in seconds of arc

1998 01 24	566	0.4−	0.1−	1998 02 24	566	0.3+	0.3+	1998 03 03	704	0.0	1.2+
1998 01 24	566	0.2−	0.2−	1998 02 27	098	(2.3−	1.0−)	1998 03 04	704	0.1−	0.2−
1998 01 24	566	0.1−	0.1−	1998 02 27	098	1.2−	0.0	1998 03 04	704	0.1+	0.2−
1998 01 25	566	0.1+	0.1−	1998 02 27	098	1.2−	0.9+	1998 03 04	704	0.4−	0.7−
1998 01 25	566	0.0	0.1−	1998 02 28	098	1.4−	1.7+	1998 03 04	704	0.7−	0.4−
1998 01 25	566	0.2+	0.1−	1998 03 02	098	0.0	0.8−	1998 03 04	704	0.5+	0.4−
1998 01 25	566	0.2+	0.3−	1998 03 02	098	0.2+	0.8−	1998 05 01	566	0.6+	0.3−
1998 01 25	566	0.1+	0.0	1998 03 03	098	1.2+	0.0	1998 05 01	566	0.5+	0.1−
1998 01 25	566	0.3+	0.3−	1998 03 03	098	0.1+	0.4+	1998 05 01	566	0.2+	0.4−
1998 01 31	411	0.1+	0.2−	1998 03 03	704	0.1+	0.2+	1999 05 05	426	0.6−	0.4−
1998 01 31	411	0.2−	0.2−	1998 03 03	704	0.0	0.2+	1999 05 06	426	0.3+	0.1−

M.P.C. 34894

1999 JUNE 22

1998 02 24	566	0.5+	0.3+	1998 03 03	704	0.2+	0.1+	1999 05 06	426	0.2+	0.2+
1998 02 24	566	0.6+	0.1+	1998 03 03	704	0.2+	0.4+	1999 05 06	426	0.0	0.2+

1998 BF₈ = 1999 LK₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 157.25719			(2000.0)			P			Q		
<i>n</i>	0.19202135	ω	317.87769			-0.06821500			-0.98959109		
<i>a</i>	2.9755668	Ω	135.58833			+0.95684599			-0.10085449		
<i>e</i>	0.0272179	<i>i</i>	10.43198			+0.28247561			+0.10265404		
<i>P</i>	5.13	<i>H</i>	14.1			<i>G</i>	0.15		<i>U</i>	4	

Residuals in seconds of arc

1998 01 25	411	0.1-	0.2-	1998 03 03	704	1.0-	1.4-	1999 06 08	703	0.9-	0.5-
1998 01 25	411	0.3+	0.3-	1998 03 03	704	1.1-	0.2-	1999 06 08	703	0.7-	0.2+
1998 01 26	411	1.1+	0.1-	1998 03 04	704	0.4+	0.2+	1999 06 08	703	1.1-	0.3-
1998 01 26	411	0.1-	0.2-	1998 03 04	704	0.3+	0.5+	1999 06 08	704	1.0+	0.2+
1998 01 29	691	0.4+	0.2-	1998 03 04	704	0.6-	0.4+	1999 06 08	704	0.6+	0.2-
1998 01 29	691	0.5+	0.2-	1998 03 04	704	0.4-	0.5+	1999 06 08	704	0.3+	0.4-
1998 01 29	691	0.4+	0.2-	1998 03 04	704	0.4-	0.7+	1999 06 08	704	0.7+	0.0
1998 01 31	411	0.9+	1.6+	1999 05 15	703	0.8+	0.4+	1999 06 10	704	0.2+	0.1-
1998 01 31	411	0.2-	0.1-	1999 05 15	703	0.1-	0.7+	1999 06 10	704	0.5-	1.3-
1998 02 21	411	0.4-	0.3+	1999 05 15	703	0.6-	0.1+	1999 06 10	704	0.3+	1.0-
1998 02 21	411	0.8-	0.6+	1999 05 15	703	1.2-	0.8-	1999 06 10	704	0.0	0.2-
1998 02 25	566	0.1+	0.5-	1999 05 17	704	0.8-	0.4-	1999 06 10	704	0.5-	0.7+
1998 02 25	566	0.5-	0.4-	1999 05 17	704	0.0	0.4+	1999 06 14	704	1.2+	0.1+
1998 02 25	566	0.1-	0.3-	1999 05 17	704	0.5-	0.8-	1999 06 14	704	0.7+	0.2+
1998 03 03	704	0.2-	0.5+	1999 05 17	704	0.3-	1.0+	1999 06 14	704	0.4+	0.5+
1998 03 03	704	1.5+	0.4+	1999 05 17	704	0.3-	0.6+	1999 06 14	704	0.2+	0.2+
1998 03 03	704	0.1+	1.5-	1999 06 08	703	0.9+	1.1+	1999 06 14	704	0.2+	0.7-

1998 BZ₈ = 1999 JC₅₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 182.06763			(2000.0)			P			Q		
<i>n</i>	0.22952365	ω	355.33468			+0.29056751			-0.95336630		
<i>a</i>	2.6419084	Ω	77.75675			+0.88057712			+0.23305208		
<i>e</i>	0.1038329	<i>i</i>	4.79140			+0.37437208			+0.19177963		
<i>P</i>	4.29	<i>H</i>	13.8			<i>G</i>	0.15		<i>U</i>	4	

Residuals in seconds of arc

1998 01 18	327	0.3-	0.3+	1998 02 25	566	0.1-	1.1-	1998 03 19	143	0.3-	0.9-
1998 01 18	327	0.5-	0.1+	1998 02 25	566	0.5-	1.0-	1999 05 10	704	0.2+	1.1+
1998 01 18	327	0.2-	0.2-	1998 02 25	566	0.2-	1.2-	1999 05 10	704	0.9+	0.1+
1998 01 19	327	0.5-	0.0	1998 03 03	704	1.0-	0.3-	1999 05 10	704	0.6+	0.8-
1998 01 19	327	0.0	0.4+	1998 03 03	704	0.9+	0.4+	1999 05 10	704	0.6+	1.2-
1998 01 19	327	0.5-	0.1+	1998 03 03	704	0.5+	0.7+	1999 05 13	704	0.1+	0.5-
1998 01 24	566	0.0	0.1+	1998 03 03	704	1.6+	0.9+	1999 05 13	704	0.6+	0.5+
1998 01 24	566	0.1-	0.2-	1998 03 03	704	1.8-	0.9+	1999 05 13	704	0.4-	0.5-
1998 01 24	566	0.1-	0.1-	1998 03 04	704	0.5-	0.1-	1999 05 13	704	0.2-	1.6+
1998 02 01	327	0.3+	0.8+	1998 03 04	704	1.5+	0.7+	1999 05 13	704	0.5+	1.2+
1998 02 01	327	0.2+	0.8+	1998 03 04	704	0.8+	1.2-	1999 06 15	704	0.9-	0.2-
1998 02 01	327	0.3+	0.8+	1998 03 04	704	0.2-	0.2+	1999 06 15	704	0.4-	1.0-
1998 02 13	327	0.2+	0.2+	1998 03 04	704	(1.8+	2.3+)	1999 06 15	704	0.9-	0.5-
1998 02 13	327	0.0	0.5+	1998 03 19	143	0.2+	1.0-	1999 06 15	704	0.5-	0.2+
1998 02 13	327	(2.6-	1.4+)	1998 03 19	143	0.3+	1.2-	1999 06 15	704	0.3-	0.5+

1998 BP₉ = 1999 KZ

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 53.39598			(2000.0)			P			Q		
<i>n</i>	0.31244092	ω	39.12900			-0.92321148			+0.38410214		
<i>a</i>	2.1509193	Ω	163.44667			-0.36237426			-0.85965515		
<i>e</i>	0.0428168	<i>i</i>	2.43149			-0.12792754			-0.33683610		
<i>P</i>	3.15	<i>H</i>	15.5			<i>G</i>	0.15		<i>U</i>	3	

Residuals in seconds of arc

1991 12 07	691	0.8+	1.2+	1999 04 19	699	1.1+	0.6+	1999 05 17	703	0.0	0.6+
1991 12 07	691	0.5-	0.0	1999 04 19	699	0.3+	1.6+	1999 05 17	703	0.1-	0.8+
1991 12 07	691	0.2-	0.1-	1999 04 19	699	1.0+	1.3+	1999 05 18	704	0.4-	0.6+
1997 11 28	691	0.4-	0.3-	1999 05 10	704	0.7-	0.6+	1999 05 18	704	1.0-	0.8-
1997 11 28	691	0.0	0.3+	1999 05 10	704	0.6+	0.1+	1999 05 18	704	0.5-	1.4-
1997 11 28	691	1.3-	1.7+	1999 05 10	704	0.3-	1.1-	1999 05 18	704	0.6-	0.5-
1997 12 04	704	0.3+	0.1+	1999 05 10	704	1.3+	0.1-	1999 05 18	704	0.4-	0.6-
1997 12 04	704	(2.7+	2.1+)	1999 05 10	704	0.1+	0.5+	1999 05 19	703	0.1+	0.5-
1997 12 04	704	1.0-	0.7+	1999 05 13	704	0.8-	0.6+	1999 05 19	703	0.3+	0.1-
1997 12 04	704	0.3+	0.7-	1999 05 13	704	0.5+	1.2-	1999 05 19	703	0.0	0.3+
1997 12 04	704	1.8+	0.6-	1999 05 13	704	0.6-	0.4-	1999 05 19	703	0.1-	0.2+
1998 01 22	691	0.7+	1.1-	1999 05 13	704	0.1-	0.7-	1999 06 09	704	1.8+	0.7+
1998 01 22	691	0.1+	0.6-	1999 05 13	704	0.8-	0.2-	1999 06 09	704	0.3+	0.3-
1998 01 22	691	0.3+	0.8-	1999 05 14	704	0.7-	1.2-	1999 06 09	704	0.1+	0.1-
1998 01 26	691	0.1-	0.5-	1999 05 14	704	0.9-	0.0	1999 06 09	704	0.4-	0.7+
1998 01 26	691	0.1+	0.6-	1999 05 14	704	(2.7-	0.9-)	1999 06 14	704	0.3+	0.3-
1998 01 26	691	0.2+	0.7-	1999 05 14	704	0.4-	0.3+	1999 06 14	704	0.3+	0.2+
1998 02 24	327	0.2-	0.2+	1999 05 14	704	0.4-	1.0-	1999 06 14	704	0.7+	0.2+
1998 02 24	327	0.2-	0.6+	1999 05 17	703	0.5+	0.3-	1999 06 14	704	0.0	0.0
1998 02 24	327	0.3+	0.4-	1999 05 17	703	0.2+	0.2+				

1998 BW₁₁ = 1989 UD₉ = 1999 JL₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 277.15532			(2000.0)			P			Q		
<i>n</i>	0.27008540	ω	261.23346			+0.93453889			+0.35099874		
<i>a</i>	2.3702927	Ω	78.20173			-0.29840306			+0.86269816		
<i>e</i>	0.2339066	<i>i</i>	3.43355			-0.19388832			+0.36407659		
<i>P</i>	3.65	<i>H</i>	14.1			<i>G</i>	0.15		<i>U</i>	3	

Residuals in seconds of arc

1989 10 30	095	0.4+	0.2-	1998 01 24	704	0.7-	0.8+	1999 04 12	704	0.5+	1.2-
1989 10 30	095	0.4+	1.5-	1998 01 24	704	0.0	0.1+	1999 04 12	704	0.0	0.5-
1997 12 20	327	0.2-	0.2+	1998 01 25	704	0.5+	0.3-	1999 04 12	704	0.1+	0.2-
1997 12 20	327	0.1+	0.7-	1998 01 25	704	0.4+	0.4-	1999 04 12	704	0.7+	0.1+
1997 12 20	327	0.2+	0.3+	1998 01 25	704	0.2+	0.4-	1999 04 12	704	0.0	0.8-
1998 01 23	704	0.8+	0.4+	1998 01 25	704	0.3-	0.3-	1999 05 08	703	0.2-	0.8-
1998 01 23	704	0.7-	0.2-	1998 01 29	566	0.0	0.2-	1999 05 08	703	0.0	0.0
1998 01 23	704	0.3-	0.3+	1998 01 29	566	0.1+	0.4+	1999 05 08	703	0.4-	0.1-
1998 01 23	704	0.4+	0.3+	1998 01 29	566	0.1-	0.3-	1999 05 08	703	0.0	1.0+
1998 01 23	704	0.1-	0.2+	1999 04 07	704	0.3+	0.8-	1999 05 09	703	0.2-	0.3-
1998 01 24	704	0.5+	0.0	1999 04 07	704	0.3+	0.7-	1999 05 09	703	0.2-	0.3+
1998 01 24	704	0.1+	0.1+	1999 04 07	704	1.0-	0.1-	1999 05 09	703	0.9-	0.6+
1998 01 24	704	0.6-	0.0	1999 04 07	704	0.4+	0.1+	1999 05 09	703	0.4-	1.2+

1998 BA₁₂ = 1984 YZ₁ = 1999 JZ₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 2.95657			(2000.0)			P			Q		
<i>n</i>	0.23365616	ω	316.05035			-0.37871030			+0.92142293		
<i>a</i>	2.6106654	Ω	291.52080			-0.82125645			-0.37787598		
<i>e</i>	0.0971694	<i>i</i>	5.36233			-0.42675094			-0.09049602		
<i>P</i>	4.22	<i>H</i>	13.7			<i>G</i>	0.15		<i>U</i>	2	

Residuals in seconds of arc

1984 12 23	095	0.1+	2.0-	1998 01 25	704	0.4-	0.3+	1999 05 14	704	0.1-	

1999 JUNE 22

1998 01 23	704	0.5−	1.0+	1999 05 10	704	0.3+	0.3+	1999 05 19	704	0.3−	0.2+
1998 01 23	704	0.0	0.1+	1999 05 10	704	0.6+	0.7+	1999 05 19	704	0.0	0.0
1998 01 24	704	0.2−	0.0	1999 05 10	704	0.1−	1.0−	1999 05 19	704	0.1−	0.1+
1998 01 24	704	0.6+	1.1+	1999 05 13	704	0.4−	0.3−	1999 05 19	704	0.4−	0.6−
1998 01 24	704	0.4−	0.4−	1999 05 13	704	0.6−	0.7−	1999 05 19	704	0.1+	0.4−
1998 01 24	704	0.1−	1.1+	1999 05 13	704	0.4−	0.1−	1999 06 09	704	0.0	0.5−
1998 01 24	704	0.0	0.4−	1999 05 13	704	0.4−	0.4−	1999 06 09	704	0.1−	0.1+
1998 01 25	704	0.2−	0.6−	1999 05 13	704	0.1−	0.6−	1999 06 09	704	0.0	0.6+
1998 01 25	704	1.3−	0.9−	1999 05 14	704	0.0	0.0	1999 06 09	704	1.3−	0.6+
1998 01 25	704	0.3−	0.1−	1999 05 14	704	0.1−	0.8+				

1998 BO₁₂ = 1999 LX₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams		
<i>M</i>	22.07744	(2000.0)	P	Q	
<i>n</i>	0.27596998	ω	143.49772	−0.22896403	+0.96579740
<i>a</i>	2.3364769	Ω	112.98314	−0.92146973	−0.17473872
<i>e</i>	0.1651321	<i>i</i>	7.59636	−0.31379771	−0.19157702
<i>P</i>	3.57	<i>H</i>	13.6	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1997 12 26	566	0.3−	0.1+	1998 01 23	704	0.1+	0.3−	1999 06 09	704	0.5+	0.7+
1997 12 26	566	0.5−	0.2−	1998 01 24	704	0.1−	0.2−	1999 06 09	704	0.1+	0.2+
1997 12 26	566	0.5−	0.0	1998 01 24	704	1.9+	0.4−	1999 06 09	704	0.5+	0.3+
1998 01 02	704	0.1−	0.6+	1998 01 24	704	2.0+	0.1+	1999 06 09	704	0.1+	0.3−
1998 01 02	704	0.0	0.1+	1998 01 24	704	0.3+	0.3−	1999 06 09	704	0.5+	0.2−
1998 01 02	704	0.1−	0.7+	1998 01 25	704	0.1−	0.2−	1999 06 09	704	0.0	0.0
1998 01 02	704	0.0	0.2+	1998 01 25	704	0.0	0.2+	1999 06 09	704	0.2+	0.0
1998 01 02	704	0.0	0.1−	1998 01 25	704	0.1−	1.2+	1999 06 09	704	0.3−	0.1−
1998 01 08	704	0.5−	0.5+	1998 01 25	704	0.4−	0.2+	1999 06 09	704	0.2+	0.6+
1998 01 08	704	0.2−	0.1+	1998 01 25	704	0.1+	0.4+	1999 06 15	704	0.4−	0.6+
1998 01 08	704	0.4+	0.3−	1999 02 20	704	0.3−	1.0+	1999 06 15	704	0.1−	0.3+
1998 01 08	704	0.8−	0.9+	1999 02 20	704	0.1+	0.6−	1999 06 15	704	0.4−	0.3+
1998 01 23	704	0.3−	0.3−	1999 02 20	704	0.5+	1.4−	1999 06 15	704	0.3−	0.6+
1998 01 23	704	0.3−	0.4+	1999 02 20	704	0.3−	0.4−	1999 06 15	704	0.5−	0.1+
1998 01 23	704	0.0	0.0	1999 02 20	704	0.2−	1.0−				
1998 01 23	704	0.5−	0.3−	1999 06 09	704	0.1+	0.2−				

1998 BL₁₃ = 1999 HE₂

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams		
<i>M</i>	296.77275	(2000.0)	P	Q	
<i>n</i>	0.29078969	ω	218.05698	+0.83632907	+0.54096594
<i>a</i>	2.2564032	Ω	108.96850	−0.47710917	+0.79810154
<i>e</i>	0.1929130	<i>i</i>	5.39620	−0.27003801	+0.26531071
<i>P</i>	3.39	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 01 01	691	0.0	0.5−	1999 04 19	120	0.1−	0.1+	1999 05 12	704	0.5−	0.6+
1998 01 01	691	0.1−	0.1−	1999 04 19	120	0.6−	0.1−	1999 05 13	704	0.3−	0.2+
1998 01 01	691	0.2−	0.2−	1999 04 19	120	0.9−	0.3−	1999 05 13	704	0.6−	0.3−
1998 01 08	704	1.0−	1.1+	1999 04 23	120	0.7−	0.2−	1999 05 13	704	0.1+	0.5+
1998 01 08	704	0.1+	0.2+	1999 04 23	120	1.0−	0.5−	1999 05 13	704	0.9−	0.1−
1998 01 08	704	0.5+	0.1+	1999 04 23	120	0.4−	0.0	1999 05 13	704	0.7+	0.2+
1998 01 08	704	0.4−	0.5−	1999 04 23	120	1.8+	0.5+	1999 05 15	704	1.0+	0.2−
1998 01 24	704	0.3+	1.0+	1999 04 23	120	0.5−	0.4−	1999 05 15	704	1.0+	1.1+
1998 01 24	704	0.0	0.4−	1999 04 24	120	1.2+	0.4+	1999 05 15	704	0.8−	0.2−
1998 01 24	704	0.2+	0.1−	1999 04 24	120	0.5+	0.4−	1999 05 15	704	0.8−	0.1+
1998 01 24	704	0.7−	0.6−	1999 04 25	120	0.2+	0.4+	1999 05 17	703	(3.1+ 2.8+)	
1998 01 25	704	0.2+	0.3+	1999 04 25	120	0.5−	0.6+	1999 05 17	704	1.3+	0.5−
1998 01 25	704	0.4+	0.7−	1999 04 25	120	1.2−	0.3+	1999 05 17	703	0.1−	0.4+
1998 01 25	704	0.3+	0.2+	1999 05 07	120	1.4−	0.4−	1999 05 17	704	0.8+	0.9+
1998 01 25	704	0.4+	0.3+	1999 05 07	120	0.3−	0.1+	1999 05 17	703	0.4−	0.4−
1999 04 12	704	0.4+	0.1−	1999 05 07	120	0.4−	0.8−	1999 05 17	704	1.3+	0.0
1999 04 12	704	0.8+	0.1−	1999 05 12	704	0.5−	0.8−	1999 05 17	703	0.4−	0.3−
1999 04 12	704	0.7+	0.5+	1999 05 12	704	0.6+	0.2+	1999 05 17	704	1.0+	0.3+

M.P.C. 34895

1999 04 12	704	0.7+	0.8−	1999 05 12	704	0.4+	0.1+	1999 05 17	704	0.4−	0.2−
1999 04 12	704	0.3+	0.1−	1999 05 12	704	0.9−	0.5−				

1998 BO₁₃ = 1999 JC₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams		
<i>M</i>	22.13802	(2000.0)	P	Q	
<i>n</i>	0.16359841	ω	227.62863	−0.88381383	+0.46782784
<i>a</i>	3.3109299	Ω	340.26409	−0.42640331	−0.80832940
<i>e</i>	0.1925149	<i>i</i>	0.54248	−0.19249239	−0.35740831
<i>P</i>	6.02	<i>H</i>	13.4	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1996 11 06	691	0.2+	0.3−	1998 01 25	566	0.9−	0.3−	1999 05 10	704	0.2+	0.4−
1996 11 06	691	0.1+	0.8−	1998 01 25	566	0.2−	0.0	1999 05 13	704	0.3+	0.8−
1996 11 06	691	0.3+	0.8−	1998 01 25	704	0.0	0.4−	1999 05 13	704	0.9+	0.4−
1996 12 05	691	0.5−	1.1−	1998 01 25	566	0.0	0.6−	1999 05 13	704	0.4+	0.2+
1996 12 05	691	0.6+	0.1−	1998 01 25	704	0.3−	0.5−	1999 05 13	704	0.2−	0.0
1998 01 06	691	1.1+	0.3+	1998 01 25	704	0.4+	0.7+	1999 05 13	704	0.8−	0.2−
1998 01 06	691	1.0+	0.0	1999 04 06	691	0.4−	0.2+	1999 05 18	704	1.3−	1.2−
1998 01 06	691	1.2+	0.2−	1999 04 06	691	0.6−	0.5+	1999 05 18	704	0.6+	0.5+
1998 01 20	704	0.5−	0.3+	1999 04 06	691	0.6−	0.5+	1999 05 18	704	1.1−	1.6−
1998 01 20	704	0.3+	0.9+	1999 04 14	699	0.3+	0.6−	1999 05 18	704	0.7+	0.6+
1998 01 20	704	0.1−	0.0	1999 04 14	699	0.1+	0.0	1999 05 18	704	1.7−	0.8+
1998 01 20	704	0.4−	0.9+	1999 04 14	699	0.6−	0.3+	1999 05 19	704	1.0+	0.4−
1998 01 20	704	(2.5− 0.8−)		1999 04 15	704	0.4−	0.0	1999 05 19	704	0.4+	0.3+
1998 01 23	691	0.6+	0.9−	1999 04 15	704	0.2+	0.4−	1999 05 19	704	0.1−	0.8−
1998 01 23	691	0.1−	0.3−	1999 04 15	704	0.2+	0.2−	1999 05 19	704	0.7−	0.2+
1998 01 24	704	0.4+	0.0	1999 04 15	704	0.2+	0.6−	1999 05 19	704	0.3−	0.3−
1998 01 24	704	0.4−	0.8−	1999 04 15	704	0.9−	0.1−	1999 05 19	703	0.5+	0.2+
1998 01 24	704	1.2−	0.4+	1999 05 10	704	0.5+	0.0	1999 05 19	703	0.3−	0.6+
1998 01 24	704	1.1−	0.5+	1999 05 10	704	0.2−	0.4+	1999 05 19	703	0.1+	0.9+
1998 01 25	704	0.1+	0.3+	1999 05 10	704	1.3+	0.9−	1999 05 19	703	1.3+	0.4+
1998 01 25	704	0.4+	0.5+	1999 05 10	704	0.2−	0.0				

1998 BU₁₄ = 1999 LU₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams		
<i>M</i>	181.55927	(2000.0)	P	Q	
<i>n</i>	0.27708080	ω	324.41750	−0.14200158	−0.98562076
<i>a</i>	2.3302281	Ω	133.55056	+0.93492284	−0.16393973
<i>e</i>	0.0587562	<i>i</i>	7.25934	+0.32519967	+0.04093267
<i>P</i>	3.56	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 01 20	704	0.0	0.1+	1998 01 30	385	0.3−	0.1+	1999 06 09	704	0.1+	0.2+
1998 01 20	704	0.1+	0.1+	1998 01 30	385	0.3−	0.1−	1999 06 09	704	0.1−	1.4+
1998 01 20	704	0.1+	0.1−	1998 02 02	886	0.1+	0.3+	1999 06 09	704	2.3−	0.5−
1998 01 20	704	0.1+	0.5+	1998 02 02	886	0.0	0.2+	1999 06 09	704	0.1+	0.0
1998 01 20	704	0.0	0.1+	1998 02 06	886	1.0+	0.9+	1999 06 09	704	0.5−	0.4+
1998 01 25	905	0.4+	0.0	1998 02 06	886	1.0+	0.3−	1999 06 14	704	1.7+	0.8−
1998 01 25	905	1.0−	0.4−	1998 02 25	566	0.2−	0.3−	1999 06 14	704	0.5+	0.4−
1998 01 26	905	0.4−	0.1−	1998 02 25	566	0.9−	0.4−	1999 06 14	704	0.4+	0.3−
1998 01 26	905	0.6+	0.7−	1998 02 25	566	0.4−	0.2−	1999 06 14	704	0.1−	0.2−
1998 01 30	886	0.4−	0.8−	1998 03 03	385	0.2−	0.8+				
1998 01 30	886	0.0	0.2−	1998 03 03	385	0.5+	0.6+				

M.P.C. 34896

1999 JUNE 22

Residuals in seconds of arc

1998 01 24	566	0.3+	1.0-	1999 05 17	704	0.6+	0.5-	1999 05 24	732	0.2+	0.5+
1998 01 24	566	0.5-	0.2-	1999 05 17	704	1.4-	0.5-	1999 06 08	704	0.3+	0.4+
1998 01 24	566	0.7+	0.1-	1999 05 20	732	1.2+	1.2+	1999 06 08	704	0.5-	1.4+
1998 01 28	566	0.1-	0.3-	1999 05 20	732	0.4+	1.1+	1999 06 08	704	0.0	0.6-
1998 01 28	566	0.2-	0.2-	1999 05 20	732	0.8-	1.7+	1999 06 08	704	0.1-	0.7-
1998 01 28	566	0.0	0.0	1999 05 20	732	0.1-	0.9-	1999 06 10	704	0.1+	0.5-
1998 01 29	566	0.3+	0.3+	1999 05 20	732	1.8-	0.8+	1999 06 10	704	0.2-	0.1-
1998 01 29	566	0.1+	0.6+	1999 05 20	732	0.2-	0.5+	1999 06 10	704	0.2+	0.4-
1998 01 29	566	0.6-	0.7+	1999 05 20	732	0.4+	0.4-	1999 06 10	704	0.5+	0.6+
1999 05 12	704	0.2+	1.2-	1999 05 20	732	0.1-	0.3-	1999 06 10	704	0.0	0.1-
1999 05 12	704	0.1-	0.6+	1999 05 20	732	0.8+	0.2+	1999 06 14	704	0.3-	0.2-
1999 05 12	704	0.2-	0.0	1999 05 21	732	0.2-	0.3-	1999 06 14	704	0.1+	0.3-
1999 05 12	704	0.4+	0.4+	1999 05 21	732	1.2-	0.2+	1999 06 14	704	0.5+	0.5-
1999 05 12	704	1.0-	0.1-	1999 05 21	732	0.7+	0.5-	1999 06 14	704	0.8-	0.5+
1999 05 17	704	0.6+	0.0	1999 05 22	732	0.8+	1.8-	1999 06 14	704	0.1+	0.1+
1999 05 17	704	0.9+	0.1+	1999 05 22	732	0.5-	0.1-				
1999 05 17	704	0.3+	0.7-	1999 05 24	732	0.1+	0.2+				

1998 BN₁₆ = 1985 BJ₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	98.21239		(2000.0)	P	Q
<i>n</i>	0.15712626	ω	57.72486	-0.80079936	-0.54313076
<i>a</i>	3.4012368	Ω	88.18925	+0.42844958	-0.81400737
<i>e</i>	0.0451728	<i>i</i>	14.62981	+0.41851086	-0.20591496
<i>P</i>	6.27	<i>H</i>	11.8	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1985 01 21	688	1.5-	0.8-	1998 04 02	704	0.1+	0.5-	1999 05 21	704	0.9+	0.8+
1985 01 21	688	1.4+	0.5-	1998 04 02	704	0.6-	0.4-	1999 05 21	704	1.2+	0.3-
1998 01 25	566	0.1-	0.2+	1998 04 03	704	0.0	0.0	1999 05 21	704	0.4+	1.4+
1998 01 25	566	0.2+	0.2+	1998 04 03	704	0.2-	0.2+	1999 05 21	704	0.4-	1.1-
1998 01 25	566	0.2-	0.2+	1998 04 03	704	0.9+	0.4+	1999 05 21	704	0.9-	0.3-
1998 01 28	566	0.0	0.1-	1998 04 03	704	0.5-	0.6+	1999 06 06	703	0.1+	0.6-
1998 01 28	566	0.2-	0.2-	1998 04 03	704	0.6-	0.5+	1999 06 06	703	0.3+	0.3-
1998 01 28	566	0.1-	0.1-	1999 05 06	367	0.4+	0.1+	1999 06 06	703	0.3+	0.3+
1998 02 17	587	0.0	0.1+	1999 05 06	367	0.5+	0.0	1999 06 06	703	0.1+	1.1+
1998 02 17	587	0.5+	0.1+	1999 05 12	704	0.8+	1.1+	1999 06 08	704	0.7+	0.1+
1998 02 17	587	0.2+	0.2+	1999 05 12	704	0.3-	0.1+	1999 06 08	704	0.3+	0.0
1998 02 17	587	0.2+	0.1+	1999 05 12	704	0.8-	0.1-	1999 06 08	704	0.2+	0.0
1998 02 18	587	0.1+	0.3+	1999 05 12	704	0.1-	0.1-	1999 06 08	704	0.1+	0.8-
1998 02 18	587	0.3-	0.2-	1999 05 12	704	1.3-	0.2-	1999 06 08	704	0.4-	0.6-
1998 02 18	587	0.0	0.0	1999 05 17	704	0.5+	0.3-	1999 06 14	704	0.2+	0.1-
1998 02 18	587	0.0	0.0	1999 05 17	704	0.6+	0.2-	1999 06 14	704	0.2-	0.0
1998 04 02	704	0.6+	0.5+	1999 05 17	704	0.4-	1.1-	1999 06 14	704	0.3-	0.1-
1998 04 02	704	0.2+	1.0-	1999 05 17	704	0.3-	0.1+	1999 06 14	704	0.1-	0.1-
1998 04 02	704	0.1+	0.2+	1999 05 17	704	1.3-	0.3+	1999 06 14	704	1.3-	0.2+

1998 BC₁₉ = 1999 JE₆₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	5.20769		(2000.0)	P	Q
<i>n</i>	0.23062864	ω	194.61033	-0.13661609	+0.98133870
<i>a</i>	2.6334630	Ω	67.68273	-0.89357267	-0.06311161
<i>e</i>	0.1334579	<i>i</i>	8.41097	-0.42762592	-0.18163503
<i>P</i>	4.27	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1992 11 25	691	0.5+	0.4+	1999 05 10	704	0.6-	0.4-	1999 05 19	704	1.2-	1.4+
1992 11 25	691	1.0-	0.9+	1999 05 10	704	0.4+	0.8-	1999 05 19	704	1.7-	0.6+
1998 01 26	566	0.7+	0.8-	1999 05 10	704	0.3-	0.0	1999 05 19	704	0.2-	0.2-
1998 01 26	566	0.7+	0.6-	1999 05 10	704	0.9-	1.8+	1999 05 19	704	0.5-	0.6-
1998 01 26	566	0.3+	0.9-	1999 05 13	704	0.3-	0.8-	1999 06 09	704	0.2+	0.5+
1998 01 27	587	1.1-	0.3+	1999 05 13	704	1.4+	0.3-	1999 06 09	704	1.4+	0.2-
1998 01 27	587	0.7+	1.1+	1999 05 13	704	0.1-	0.5-	1999 06 09	704	0.6+	0.0
1998 01 28	587	0.2-	0.2+	1999 05 13	704	0.3-	0.7+	1999 06 09	704	0.7+	0.3-
1998 01 28	587	0.0	0.2+	1999 05 13	704	0.5+	0.2+	1999 06 09	704	0.1+	0.5-

1998 02 04	587	1.0-	0.2+	1999 05 18	704	0.8-	0.2+	1999 06 15	704	0.9+	0.4+
1998 02 04	587	0.0	0.4+	1999 05 18	704	0.5+	0.3+	1999 06 15	704	0.5+	0.2+
1998 02 14	587	0.2-	0.6+	1999 05 18	704	0.6-	0.5-	1999 06 15	704	0.4+	0.1+
1998 02 14	587	0.1+	0.4-	1999 05 18	704	0.3-	0.2-	1999 06 15	704	0.4+	0.1+
1998 02 26	587	0.2+	0.2-	1999 05 18	704	0.2-	0.3-	1999 06 15	704	0.3+	0.2-
1998 02 26	587	0.2-	0.0	1999 05 19	704	0.1+	0.2+				

1998 BZ₂₂ = 1991 RW₃₉ = 1999 LN₂₂

Id. G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	330.16367		(2000.0)	P	Q
<i>n</i>	0.23345376	ω	217.23944	+0.64814878	+0.75938135
<i>a</i>	2.6121742	Ω	93.23678	-0.68422691	+0.61356323
<i>e</i>	0.0990013	<i>i</i>	3.26989	-0.33427040	+0.21651821
<i>P</i>	4.22	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1991 09 06	809	0.4+	1.0+	1998 01 23	691	0.1-	0.1+	1999 06 09	704	0.4-	0.5-
1991 09 06	809	0.5-	0.4+	1998 01 25	691	0.0	0.2+	1999 06 09	704	0.6-	0.5-
1991 09 06	809	0.2-	0.4-	1998 01 25	691	0.0	0.1+	1999 06 09	704	0.5+	1.0+
1998 01 07	691	0.9+	0.2+	1998 01 25	691	0.0	0.1+	1999 06 15	704	0.5-	0.5+
1998 01 07	691	1.0+	0.3+	1998 01 29	691	0.5-	0.0	1999 06 15	704	0.0	0.0
1998 01 07	691	1.1+	0.3-	1998 01 29	691	0.7-	0.1+	1999 06 15	704	0.5+	0.5-
1998 01 23	691	0.5-	0.4+	1998 01 29	691	0.5-	0.1-	1999 06 15	704	0.2-	0.7+
1998 01 23	691	0.1-	0.1+	1999 06 09	704	0.7+	0.5-				

1998 BP₂₄ = 1991 PQ₂₉

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

<i>M</i>	64.64002		(2000.0)	P	Q
<i>n</i>	0.24501485	ω	279.47587	-0.66014086	+0.73227557
<i>a</i>	2.5293433	Ω	307.85050	-0.57882641	-0.63786735
<i>e</i>	0.1991522	<i>i</i>	12.23168	-0.47872125	-0.23853245
<i>P</i>	4.02	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1951 09 09	675	0.7-	0.8+	1998 01 29	104	0.1-	0.3+	1998 02 17	104	0.9+	0.5+
1951 09 09	675	0.4+	0.4-	1998 01 29	104	0.0	0.1+	1998 02 17	104	0.9+	0.4+
1983 07 16	413	0.1+	0.8+	1998 01 29	104	0.3+	0.4+	1998 02 17	104	1.0+	0.4+
1983 07 16	413	2.2-	1.2+	1998 01 29	104	0.2-	0.4+	1998 02 24	104	0.3+	0.1+
1988 09 19	675	0.0	0.3+	1998 01 29	104	0.3-	0.3+	1998 02 24	104	0.3+	0.1+
1988 09 19	675	0.6+	1.1-	1998 02 05	104	0.5-	1.0+	1998 02 24	104	0.3+	0.2+
1991 08 11	809	0.7+	1.5-	1998 02 05	104	0.2-	0.7+	1998 03 02	104	0.6-	0.5-
1991 08 11	809	0.0	0.5+	1998 02 05	104	0.3-	0.6+	1998 03 02	104	0.4-	0.5-
1991 08 11	809	1.0+	1.1-	1998 02 05	104	0.2+	0.4+	1998 03 02	104	0.3-	0.5-
1998 01 25	566	0.4-	0.0	1998 02 06	104	1.0-	0.9-	1998 03 16	104	0.2+	1.2-
1998 01 25	566	0.4-	0.1-	1998 02 06	104	0.9-	1.0-	1998 03 16	104	0.4+	1.2-
1998 01 25	566	0.5-	0.2+	1998 02 06	104	0.5-	0.8-	1998 03 16	104	0.4+	1.2-
1998 01 27	104	0.8+	0.2-	1998 02 06	104	0.8-	0.8-	1998 03 16	104	0.7+	1.0-
1998 01 27	104	0.3+	0.1+	1998 02 08	104	0.3+	0.0	1998 03 29	104	0.4+	0.7-
1998 01 27	104	0.4-	0.3+	1998 02 08	104	0.2+	0.2-	1998 03 29	104	0.5+	0.6-
1998 01 28	104	0.3-	0.5+	1998 02 08	104	0.1-	0.2-	1998 03 29	104	0.5+	0.5-
1998 01 28	104	0.3-	0.4+	1998 02 13	104	0.3+	0.7+	1998 04 20	104	0.3-	0.6+
1998 01 28	104	0.4-	0.2+	1998 02 13	104	0.5+	0.6+	1998 04 20	104	0.1-	0.4+
1998 01 28	104	0.5-	0.4+	1998 02 13	104	0.3+	0.5+	1998 04 20	104	0.0	0.2+
1998 01 29	104	0.1-	0.3+	1998 02 13	104	0.4+	0.5+				

1998 BK₂₅ = 1999 JY

1999 JUNE 22

M.P.C. 34897

Residuals in seconds of arc

1998 01 28	411	0.2+	0.5-	1998 05 19	867(13.1+	5.9-)	1999 05 19	704	0.2-	0.3+	
1998 01 28	411	0.5-	0.1+	1998 05 19	867(16.2+	6.3-)	1999 05 19	704	0.6-	1.1+	
1998 01 29	411	0.4-	0.4-	1999 05 13	704	0.2+	0.2+	1999 05 19	704	0.1-	0.4-
1998 01 29	411	0.1-	0.5-	1999 05 13	704	0.7+	0.6+	1999 05 19	704	0.9+	1.2-
1998 02 02	411	0.7+	0.5-	1999 05 13	704	(3.2+	1.2+)	1999 05 19	704	1.1+	1.6-
1998 02 02	411	0.5-	0.2+	1999 05 13	704	0.2-	1.6-	1999 06 09	704	0.1-	0.6-
1998 02 18	411	0.0	0.6+	1999 05 14	704	1.1+	0.7+	1999 06 09	704	0.0	0.4+
1998 02 18	411	0.2+	0.1+	1999 05 14	704	0.3+	1.0+	1999 06 09	704	0.1+	1.3+
1998 03 04	704	0.7+	0.9+	1999 05 14	704	1.2-	0.5+	1999 06 09	704	0.3-	0.6+
1998 03 04	704	0.4+	1.1+	1999 05 14	704	0.8-	1.4+	1999 06 09	704	0.6+	0.5+
1998 03 04	704	(0.8+	2.1-)	1999 05 18	704	0.4+	0.5-	1999 06 15	704	0.2-	0.1+
1998 03 04	704	0.3-	0.0	1999 05 18	704	0.1-	0.4-	1999 06 15	704	0.2+	0.3-
1998 03 04	704	1.1+	1.4-	1999 05 18	704	0.1+	0.5-	1999 06 15	704	(0.5+	2.4-)
1998 03 04	411	0.5-	0.2-	1999 05 18	704	0.1-	0.0	1999 06 15	704	0.1-	0.7-
1998 03 04	411	1.1-	0.5+	1999 05 18	704	1.5-	0.0	1999 06 15	704	0.1-	0.9-

1998 BZ₂₅ = 1999 JA₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	170.01663		(2000.0)		P		Q
<i>n</i>	0.18754145	ω	332.89930	+0.33992266			-0.92087713
<i>a</i>	3.0227660	Ω	96.71376	+0.89393066			+0.25333226
<i>e</i>	0.0689708	<i>i</i>	11.08150	+0.29213108			+0.29632427
<i>P</i>	5.26	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1991 12 27	691	0.5+	0.5+	1998 02 27	566	0.4+	0.8-	1999 05 12	704	1.2-	0.9-
1991 12 27	691	0.3+	0.4+	1998 02 27	566	0.6+	0.5-	1999 05 16	703	0.7+	0.8+
1991 12 27	691	0.8-	1.1-	1998 02 27	566	0.6+	0.6-	1999 05 16	703	0.9+	0.1+
1998 01 29	411	1.6-	0.5-	1998 03 06	411	0.1+	0.6+	1999 05 16	703	1.0-	0.6+
1998 01 29	411	0.1-	1.3+	1998 03 06	411	0.6+	0.5+	1999 05 16	703	0.6-	0.2-
1998 01 30	411	0.0	0.2+	1999 05 07	703	0.6-	0.2+	1999 06 10	704	1.8+	0.1+
1998 01 30	411	0.3+	0.4+	1999 05 07	703	1.0+	0.1-	1999 06 10	704	0.1-	0.2+
1998 02 04	411	0.6-	0.4+	1999 05 07	703	0.6+	0.2-	1999 06 10	704	0.6+	0.7-
1998 02 04	411	0.7+	0.1-	1999 05 07	703	0.6+	0.3+	1999 06 10	704	1.7-	0.0
1998 02 18	411	0.4-	0.3-	1999 05 12	704	(1.7-	2.8-)				
1998 02 18	411	0.5-	0.4-	1999 05 12	704	1.0-	0.4-				

1998 BB₂₆ = 1999 LS₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	305.98680		(2000.0)		P		Q
<i>n</i>	0.28356400	ω	281.59564	+0.96433201			+0.22917673
<i>a</i>	2.2945736	Ω	65.27059	-0.14763724			+0.88099936
<i>e</i>	0.1379988	<i>i</i>	8.38465	-0.21969758			+0.41390598
<i>P</i>	3.48	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 01 29	411	0.7+	1.0-	1998 02 22	566	0.1+	0.6-	1999 06 09	704	0.8-	0.4+
1998 01 29	411	0.1-	0.1+	1998 02 22	566	0.3+	0.5-	1999 06 09	704	0.5-	0.4+
1998 01 30	411	0.4-	0.0	1998 02 22	566	0.1-	0.9-	1999 06 09	704	0.2+	0.4+
1998 01 30	411	0.4+	0.4+	1998 02 23	566	0.4+	0.8-	1999 06 09	704	0.2-	0.9-
1998 02 04	411	0.4-	0.2-	1998 02 23	566	0.5+	0.5-	1999 06 09	704	0.1+	0.9-
1998 02 04	411	0.2-	0.2-	1998 02 23	566	0.4+	1.2-	1999 06 15	704	0.1+	0.8+
1998 02 19	699	0.7-	1.5+	1998 02 27	566	0.2+	0.3+	1999 06 15	704	0.4+	0.3+
1998 02 19	699	0.0	0.7+	1998 02 27	566	0.0	1.0+	1999 06 15	704	0.1-	0.2+
1998 02 19	699	0.9-	0.7-	1998 02 27	566	0.0	0.7+	1999 06 15	704	0.2+	0.2-
1998 02 21	411	0.4-	0.6+	1998 03 06	411	0.3-	0.5+	1999 06 15	704	0.5+	0.6-
1998 02 21	411	0.5+	0.8+	1998 03 06	411	0.2-	0.1+				

1998 BM₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	295.88828		(2000.0)		P		Q
<i>n</i>	0.23753287	ω	252.49871	+0.72500061			+0.65350121
<i>a</i>	2.5821823	Ω	66.09488	-0.50637947			+0.71981644
<i>e</i>	0.1756681	<i>i</i>	13.76372	-0.46685539			+0.23409500
<i>P</i>	4.15	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 11 17	691	0.0	0.1+	1998 02 17	595	0.0	0.6-	1999 05 01	595	0.7-	0.4-
1992 11 17	691	0.1+	0.3+	1998 02 17	595	0.9-	0.7+	1999 05 12	704	0.8-	1.2+
1992 11 17	691	0.4-	0.1+	1998 02 17	595	0.4+	0.2+	1999 05 12	704	0.1-	1.4+
1998 01 28	595	0.4+	0.0	1998 03 18	595	0.5-	1.0-	1999 05 12	704	1.0+	1.0+
1998 01 29	595	1.2+	0.3+	1998 03 18	595	0.8-	0.0	1999 05 12	704	0.6-	0.2-
1998 01 29	595	0.8+	0.5+	1998 03 20	595	0.5+	0.5-	1999 05 12	704	0.6+	0.2-
1998 01 29	595	0.5+	0.2+	1999 04 13	292	0.6-	1.4-	1999 05 15	595	0.4+	0.2+
1998 02 02	595	1.1-	0.2-	1999 04 13	292	1.5+	1.4-	1999 05 15	595	0.6+	0.2+
1998 02 02	595	0.1-	0.0	1999 04 13	292	0.5+	1.2-	1999 05 18	595	0.9+	0.2+
1998 02 14	595	0.7+	0.9-	1999 04 23	595	0.5+	1.1+	1999 05 18	595	1.1-	0.4+
1998 02 14	595	0.4-	0.4+	1999 04 24	595	0.4-	0.2-				
1998 02 14	595	0.8-	0.7+	1999 05 01	595	1.1-	0.1+				

1998 BG₃₀

Id. P. G. Comba (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	192.71118		(2000.0)		P		Q
<i>n</i>	0.25597773	ω	278.18337	+0.44650566			-0.89260184
<i>a</i>	2.4566008	Ω	145.08045	+0.85787822			+0.40722497
<i>e</i>	0.2425863	<i>i</i>	6.25896	+0.25431803			+0.19346777
<i>P</i>	3.85	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 01 29	684	0.1-	0.1+	1998 03 04	704	1.3+	0.6-	1998 03 20	684	0.0	0.0
1998 01 29	684	0.0	0.0	1998 03 04	704	0.5-	0.8+	1999 05 09	684	0.6+	0.1+
1998 01 31	684	0.0	0.0	1998 03 04	704	0.3+	2.0-	1999 05 09	684	0.6+	0.2-
1998 01 31	684	0.1-	0.1+	1998 03 04	704	0.8+	0.3-	1999 05 10	684	1.3+	0.4-
1998 02 01	684	0.2-	0.0	1998 03 04	704	1.0-	1.1-	1999 05 10	684	1.6-	0.2+
1998 02 01	684	0.2-	0.0	1998 03 19	684	0.0	0.3+	1999 06 07	684	0.9-	0.6+
1998 02 28	684	0.1-	0.4+	1998 03 19	684	0.2-	0.2+	1999 06 07	684	0.0	0.1+
1998 02 28	684	0.0	0.4+	1998 03 20	684	0.1+	0.1+	1999 06 08	684	0.2+	0.5-
1998 03 01	684	0.1-	0.6+	1998 03 20	684	0.1+	0.3+	1999 06 08	684	0.1-	0.2+
1998 03 01	684	0.1-	0.5+	1998 03 20	684	0.1+	0.0				

1998 BJ₃₀ = 1999 JK₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	243.32498		(2000.0)		P		Q
<i>n</i>	0.23093365	ω	81.10167	+0.99455395			-0.09710341
<i>a</i>	2.6311437	Ω	284.46414	+0.07344685			+0.91072373
<i>e</i>	0.1264226	<i>i</i>	2.24079	+0.07394599			+0.40143894
<i>P</i>	4.27	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 01 28	132	0.7+	0.3+	1998 02 27	958	0.4+	1.2-	1998 03 31	910	0.6+	0.2-
1998 01 28	132	0.1-	0.9-	1998 02 27	958	3.2+	0.0	1999 05 10	704	0.4+	0.3-
1998 01 29	132	2.0-	0.4-	1998 03 05	958	0.5+	0.6-	1999 05 10	704	0.1+	0.7+
1998 01 29	132	0.7-	0.5+	1998 03 05	958	0.4+	0.2+	1999 05 10	704	1.4+	0.2-
1998 01 29	132	0.3+	0.5-	1998 03 05	958	0.5+	0.6+	1999 05 10	704	0.5-	0.5-
1998 02 14	958	0.2+	0.0	1998 03 06	958	3.9-	2.1+	1999 05 13	704	0.1+	0.7-
1998 02 14	958	0.4+	0.5-	1998 03 06	958	2.6-	0.9+	1999 05 13	704	0.8-	0.2-
1998 02 14	958	1.5+	0.8+	1998 03 31	910	0.5+	0.1-	1999 05 13	704	1.6-	0.2+
1998 02 27	958	0.2-	0.9-	1998 03 31	910	0.1+	0.0	1999 05 13	704	0.8+	1.0+

1998 BJ₃₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	74.66843		(2000.0)	P		Q	
<i>n</i>	0.23948688	ω	238.93276	−0.97384523	+0.12173873		
<i>a</i>	2.5681175	Ω	307.36017	−0.00422854	−0.85391394		
<i>e</i>	0.0313625	<i>i</i>	13.96719	−0.22717305	−0.50597496		
<i>P</i>	4.12	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1997 12 24	327	0.2−	0.6−	1998 01 31	376	0.3+	0.2+	1998 03 20	426	0.2−	0.8−
1997 12 24	327	0.3−	0.6−	1998 01 31	376	0.4+	0.7+	1998 03 20	426	0.5−	0.2−
1997 12 24	327	0.1−	0.4−	1998 02 05	376	0.4−	1.2+	1999 05 05	426	0.0	0.2+
1998 01 29	566	0.3+	0.1+	1998 02 05	376	0.2+	0.7+	1999 05 05	426	0.1+	0.1−
1998 01 29	566	0.5+	0.0	1998 03 18	426	0.2−	0.0	1999 05 05	426	0.2−	0.0
1998 01 29	566	0.4+	0.1+	1998 03 18	426	0.5−	0.0	1999 05 06	426	0.7+	0.2+
1998 01 29	376	0.0	0.3+	1998 03 18	426	0.3−	0.2−	1999 05 06	426	0.7−	0.1−
1998 01 29	376	0.1+	0.2+	1998 03 20	426	0.1+	1.1−	1999 05 06	426	0.1+	0.0

1998 BN₃₃ = 1999 JU₄₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	217.75874		(2000.0)	P		Q	
<i>n</i>	0.24623600	ω	356.53749	+0.75984354	−0.64375794		
<i>a</i>	2.5209739	Ω	43.98048	+0.59955213	+0.64001601		
<i>e</i>	0.2124821	<i>i</i>	7.49911	+0.25134647	+0.41947017		
<i>P</i>	4.00	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 01 27	012	0.4+	0.1+	1998 03 03	699	1.1+	0.6+	1999 05 13	704	0.2−	0.3+
1998 01 27	012	0.8−	0.5+	1998 03 03	699	0.5+	0.0	1999 05 13	704	0.7−	0.5−
1998 01 27	012	0.5−	0.2+	1998 03 03	699	0.5+	0.0	1999 05 13	704	0.7+	0.7+
1998 01 31	411	0.2−	0.2−	1998 03 04	704	1.7−	0.3−	1999 05 13	704	0.3−	0.1+
1998 01 31	411	0.6−	0.3−	1998 03 04	704	0.4−	0.2−	1999 05 14	704	0.2+	0.1+
1998 02 01	411	0.2−	0.4+	1998 03 04	704	1.1−	1.0−	1999 05 14	704	0.2−	0.6−
1998 02 01	411	0.0	0.1+	1998 03 04	704	0.4−	1.9−	1999 05 14	704	0.6+	1.0−
1998 02 02	012	0.4+	0.3−	1998 03 06	411	0.8+	0.2+	1999 05 14	704	0.1−	0.4+
1998 02 02	012	0.5+	0.4−	1998 03 06	411	0.6+	0.1+	1999 05 18	704	0.3+	0.5+
1998 02 02	012	0.2+	0.4−	1999 04 15	704	1.0+	0.5−	1999 05 18	704	0.6−	0.4−
1998 02 04	411	0.1+	0.4+	1999 04 15	704	0.7+	0.8+	1999 05 18	704	0.4+	0.0
1998 02 04	411	0.3−	0.7+	1999 04 15	704	0.9−	0.8−	1999 05 18	704	1.0−	0.2+
1998 02 23	411	0.1−	0.0	1999 04 15	704	1.0−	1.8+	1999 05 18	704	0.2−	0.4+
1998 02 23	411	0.2+	0.1+	1999 04 15	704	(3.1−	1.0−)	1999 06 15	704	0.3+	0.9+
1998 02 25	566	0.1+	0.2+	1999 05 10	704	0.3+	0.2−	1999 06 15	704	0.0	0.1−
1998 02 25	566	0.4+	0.1−	1999 05 10	704	0.9+	1.5−	1999 06 15	704	0.2+	0.4+
1998 02 25	566	0.1−	0.2+	1999 05 10	704	0.1−	0.6−	1999 06 15	704	0.6−	0.8+
1998 03 01	699	1.0+	0.4+	1999 05 10	704	0.9+	0.4−	1999 06 15	704	0.6−	1.1+
1998 03 01	699	0.2−	1.3+	1999 05 10	704	0.7+	1.3−				
1998 03 01	699	(2.8+	1.0−)	1999 05 13	704	0.8−	0.2−				

1998 BV₃₃ = 1990 WK₁₃ = 1999 JG₄₅

Id. G. V. Williams, S. Nakano, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	220.87458		(2000.0)	P		Q	
<i>n</i>	0.17118012	ω	332.54745	+0.87498051	−0.47658211		
<i>a</i>	3.2124311	Ω	56.16932	+0.46091109	+0.76598706		
<i>e</i>	0.0490802	<i>i</i>	5.89489	+0.14822304	+0.43143171		
<i>P</i>	5.76	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1990 11 20	095(92.1−	22.2−)	1998 03 06	411	0.3+	0.3+	1999 05 10	704	(3.4−	1.4−)	
1990 11 20	095(95.6−	23.7−)	1998 03 24	704	(0.9+	2.4+)	1999 05 13	704	0.3−	0.3+	
1998 01 31	411	0.1+	0.4−	1998 03 24	704	0.2+	0.8+	1999 05 13	704	0.6+	0.1−
1998 01 31	411	0.1+	0.2−	1998 03 24	704	(0.5−	3.6+)	1999 05 13	704	0.9+	0.5+
1998 02 01	411	0.3+	0.6+	1998 03 24	704	(0.1+	2.1+)	1999 05 13	704	0.5−	0.5+
1998 02 01	411	0.0	0.0	1998 03 25	704	0.5+	0.2+	1999 05 13	704	0.4+	1.0+
1998 02 04	411	0.7+	0.2+	1998 03 25	704	0.1+	0.1−	1999 05 18	704	0.4+	0.3−

1998 02 04	411	0.1+	0.3+	1998 03 25	704	0.0	0.9−	1999 05 18	704	1.1−	0.8−
1998 02 22	566	0.2−	0.0	1998 03 25	704	0.2+	0.5−	1999 05 18	704	0.2+	0.3+
1998 02 22	566	0.1+	0.0	1998 03 25	704	0.1−	1.1−	1999 05 18	704	0.3−	0.5+
1998 02 22	566	0.6−	0.0	1998 04 05	699	0.5−	0.5+	1999 05 18	704	0.2−	0.1+
1998 02 23	411	0.1−	0.2+	1998 04 05	699	0.2+	0.6−	1999 05 19	704	0.6−	0.1+
1998 02 23	411	0.6−	0.0	1998 04 05	699	(1.2+	2.0+)	1999 05 19	704	0.2+	0.6−
1998 02 26	699	1.4−	1.2+	1999 05 10	704	0.1+	0.0	1999 05 19	704	1.9+	0.6−
1998 02 26	699	0.3+	0.6+	1999 05 10	704	1.0−	1.1−	1999 05 19	704	1.2−	1.2−
1998 02 26	699	1.1+	0.2+	1999 05 10	704	0.8+	0.1−	1999 05 19	704	1.1−	0.5+
1998 03 06	411	0.8−	1.4−	1999 05 10	704	0.9+	1.2+				

1998 BB₃₇ = 1999 LY₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	343.92435		(2000.0)	P		Q	
<i>n</i>	0.28691429	ω	0.45404	+0.63183909	+0.77385487		
<i>a</i>	2.2766762	Ω	308.73262	−0.71131727	+0.55641044		
<i>e</i>	0.1954359	<i>i</i>	3.22679	−0.30790761	+0.30258233		
<i>P</i>	3.44	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 12 04	910	0.5+	0.3+	1998 01 29	566	0.1+	0.0	1998 03 31	910	0.1−	0.4+
1997 12 04	910	0.1+	0.8+	1998 01 29	566	0.5+	0.3−	1999 06 09	704	0.2+	0.3+
1997 12 04	910	0.2+	0.4+	1998 02 03	691	0.2−	0.0	1999 06 09	704	0.4+	0.9−
1998 01 25	566	0.0	0.2−	1998 02 03	691	0.2−	0.3−	1999 06 09	704	0.3−	0.3+
1998 01 25	566	0.5−	0.4−	1998 02 03	691	0.1−	0.2−	1999 06 09	704	0.6+	0.4+
1998 01 25	566	0.4−	0.0	1998 02 28	910	0.3+	0.0	1999 06 15	704	0.2+	0.4−
1998 01 26	691	0.3−	0.0	1998 02 28	910	0.5+	0.0	1999 06 15	704	0.2−	0.0
1998 01 26	691	0.2−	0.0	1998 02 28	910	0.0	0.8−	1999 06 15	704	0.1+	0.3−
1998 01 26	691	0.2−	0.4−	1998 03 31	910	0.3−	0.2+	1999 06 15	704	0.3−	0.1−
1998 01 29	566	0.2+	0.3+	1998 03 31	910	0.1+	0.6+	1999 06 15	704	0.8−	0.8+

1998 BC₄₂ = 1999 JS₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	116.70509		(2000.0)	P		Q	
<i>n</i>	0.18128468	ω	4.23863	−0.53653805	−0.82447692		
<i>a</i>	3.0919229	Ω	118.30291	+0.76810996	−0.56542615		
<i>e</i>	0.0168266	<i>i</i>	11.79021	+0.34947677	−0.02304525		
<i>P</i>	5.44	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 01 19	327	0.8−	0.8−	1998 02 13	327	0.5−	0.2+	1999 05 16	703	(2.3+	0.6+)
1998 01 19	327	1.4−	0.7−	1998 03 04	704	0.4+	0.1+	1999 05 16	703	1.3+	0.7+
1998 01 19	327	0.6−	0.6+	1998 03 04	704	0.9−	0.8−	1999 05 16	703	0.4−	0.6+
1998 01 31	910	0.6+	0.6−	1998 03 04	704	0.2−	1.7−	1999 05 16	703	1.0+	1.7+
1998 01 31	910	0.6+	0.3−	1998 03 04	704	(5.0−	0.2−)	1999 05 17	704	1.0+	0.0
1998 01 31	910	0.8+	0.4−	1999 05 08	703	0.4+	1.0+	1999 05 17	704	0.3+	0.6−
1998 02 01	327	0.1+	0.5+	1999 05 08	703	1.2−	0.4+	1999 05 17	704	0.3−	1.2−
1998 02 01	327	0.1−	0.5+	1999 05 08	703	1.1−	0.1+	1999 05 17	704	0.7−	1.7−
1998 02 01	327	0.1−	0.9+	1999 05 08	703	0.7−	0.6−	1999 06 14	704	0.2−	0.1−
1998 02 13	327	0.0	0.3+	1999 05 12	704	1.1+	0.8+	1999 06 14	704	0.0	0.3+
1998 02 13	327	0.2−	0.4+	1999 05 12	704	0.1+	1.2−	1999 06 14	704	0.4−	1.0+
1998 02 13	327	0.2+	0.2+	1999 05 12	704	0.3+	1.4−	1999 06 14	704	0.3−	0.2+
1998 02 13	327	1.7+	1.1+	1999 05 12	704	(0.8+	2.5−)	1999 06 14	704	0.8−	0.6−
1998 02 13	327	0.2+	0.5+	1999 05 12	704	0.7+	0.8+				

1998 BB₄₄ = 1999 JE₅₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	115.53592		(2000.0)	P	Q
n	0.20916803	ω	38.93957	−0.60871533	−0.77404894
a	2.8106441	Ω	89.25366	+0.67743040	−0.62130841
e	0.1289769	i	10.02766	+0.41298146	−0.12175427
P	4.71	H	14.3	G 0.15	U 4

Residuals in seconds of arc

1998 01 24	098	0.1−	0.3+	1998 02 02	098	0.1−	1.1+	1999 05 13	704	0.9+	0.1−
1998 01 24	098	(0.8+	2.9−)	1998 02 02	098	0.9−	1.3+	1999 05 13	704	0.6−	0.3−
1998 01 25	098	0.0	0.2−	1998 02 26	098	0.1+	0.1+	1999 05 13	704	0.4+	0.4−
1998 01 25	098	0.7−	2.0−	1998 02 26	098	(1.7+	2.7−)	1999 05 13	704	0.8+	0.1+
1998 01 26	566	1.3+	0.2−	1998 02 26	098	1.8−	1.7−	1999 06 14	704	0.2+	0.4+
1998 01 26	566	1.1+	0.3−	1998 02 27	098	0.3+	0.0	1999 06 14	704	0.1+	0.7+
1998 01 26	566	1.3+	0.5−	1998 02 27	098	(3.5−	0.6−)	1999 06 14	704	0.4+	0.1−
1998 01 26	098	0.4−	1.3+	1999 05 10	704	0.7−	0.4−	1999 06 14	704	0.4−	0.2+
1998 01 26	098	0.9−	1.1+	1999 05 10	704	0.5−	0.4−	1999 06 14	704	0.9+	0.5+
1998 01 27	098	0.6+	0.2+	1999 05 10	704	1.5−	0.8+				
1998 01 27	098	0.1+	0.2−	1999 05 10	704	0.2+	0.7−				

1998 BE₄₄ = 1999 JU₈₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	198.83494		(2000.0)	P	Q
<i>n</i>	0.22378899	ω	284.31362	+0.83642969	−0.49718744
<i>a</i>	2.6868509	Ω	105.95982	+0.54784606	+0.77059544
<i>e</i>	0.2010884	<i>i</i>	13.87920	−0.01581345	+0.39873214
<i>P</i>	4.40	<i>H</i>	13.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 01 25	098	0.1−	0.3+	1998 02 27	098	0.1+	0.3−	1999 05 15	704	0.3+	0.1+
1998 01 25	098	1.4−	0.0	1998 02 27	108	1.5+	1.9+	1999 05 15	704	0.0	0.3+
1998 01 26	566	1.0+	0.5−	1998 02 27	098	1.8−	1.4−	1999 05 15	704	0.2−	1.7−
1998 01 26	566	0.9+	0.4−	1998 02 27	108	0.9+	0.6+	1999 05 15	704	0.5−	0.8−
1998 01 26	566	0.8+	0.4−	1999 04 12	704	1.0−	0.2−	1999 05 15	704	0.2−	0.3−
1998 01 26	098	0.3−	1.1+	1999 04 12	704	0.1−	1.5+	1999 05 15	704	0.3−	0.6+
1998 01 26	098	1.0−	0.8+	1999 04 12	704	0.8+	0.9+	1999 05 15	704	0.6−	1.9−
1998 01 27	098	0.6+	0.2+	1999 04 12	704	1.0+	0.2−	1999 05 15	704	0.1+	1.2−
1998 01 27	098	0.1−	1.6−	1999 04 12	704	0.0	0.7+	1999 05 17	704	0.5−	0.2+
1998 02 02	098	0.3−	0.4+	1999 05 12	704	1.7+	0.6+	1999 05 17	704	(2.6−	1.1+)
1998 02 02	098	0.2−	1.0−	1999 05 12	704	0.8+	0.9+	1999 05 17	704	0.4−	1.5+
1998 02 26	098	0.0	0.3−	1999 05 12	704	0.0	0.3+	1999 05 17	704	(2.5−	2.4+)
1998 02 26	098	0.9−	1.0+	1999 05 12	704	1.1−	1.7−	1999 05 17	704	0.3−	0.1+
1998 02 27	108	0.3+	0.5−	1999 05 15	704	0.5+	0.1+				

1998 BO₄₄ = 1999 GC₁₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	105.12577		(2000.0)	P	Q
<i>n</i>	0.16825674	ω	352.09017	−0.34999884	−0.91876218
<i>a</i>	3.2495339	Ω	118.23597	+0.87040390	−0.39105599
<i>e</i>	0.0339219	<i>i</i>	11.96821	+0.34626271	+0.05432568
<i>P</i>	5.86	<i>H</i>	12.4	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 01 08	699	0.1+	0.1−	1998 01 28	566	0.9−	0.4−	1999 04 15	704	0.3−	0.5+
1998 01 08	699	0.9+	0.5−	1999 04 12	704	0.5+	0.0	1999 04 16	704	0.5−	0.5−
1998 01 08	699	0.8+	0.3−	1999 04 12	704	0.4+	0.2+	1999 04 16	704	0.7−	0.3+
1998 01 22	704	0.1+	0.5+	1999 04 12	704	0.1+	0.1−	1999 04 16	704	0.4+	0.0
1998 01 22	704	0.4+	0.0	1999 04 12	704	0.4−	0.1+	1999 04 16	704	0.4+	0.0
1998 01 22	704	0.0	0.3+	1999 04 12	704	0.5+	0.3−	1999 04 16	704	1.4−	0.2−
1998 01 22	704	0.1+	0.7+	1999 04 15	704	0.5−	0.5−	1999 06 07	704	1.7+	0.3+
1998 01 22	704	0.1−	0.5+	1999 04 15	704	0.4+	1.7+	1999 06 07	704	0.2−	0.2+
1998 01 28	566	0.7−	0.4−	1999 04 15	704	1.1+	0.4−	1999 06 07	704	0.0	0.1−
1998 01 28	566	0.7−	0.4−	1999 04 15	704	1.3−	1.0−	1999 06 07	704	(0.2−	2.7−)

1998 BQ₄₅ = 1971 BT₂ = 1999 JB₁₀₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	106.46109		(2000.0)	P	Q
<i>n</i>	0.21980966	ω	353.00770	−0.86925137	−0.48983409
<i>a</i>	2.7191815	Ω	157.28199	+0.46154217	−0.85251369
<i>e</i>	0.1080800	<i>i</i>	9.96318	+0.17714652	−0.18243621
<i>P</i>	4.48	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1971 01 27	805	0.1+	0.9+	1998 02 22	566	0.7−	1.3−	1999 05 17	704	0.1+	0.3−
1991 09 05	691	0.0	0.7−	1998 02 23	566	0.4−	1.4−	1999 05 17	704	0.4+	0.3+
1991 09 05	691	0.1+	0.8−	1998 02 23	566	0.5+	0.5−	1999 05 17	704	0.2−	0.8+
1991 09 05	691	0.2+	0.7−	1998 02 23	566	0.6−	1.2−	1999 05 17	704	0.8+	0.5+
1998 01 24	566	0.5+	1.1+	1998 02 23	566	0.2+	0.5−	1999 05 17	704	0.1+	1.2+
1998 01 24	566	0.4+	0.9+	1998 02 23	566	0.2−	1.4−	1999 06 14	704	0.8−	0.2+
1998 01 24	566	0.3+	1.1+	1998 02 23	566	0.4+	0.7−	1999 06 14	704	0.0	1.0−
1998 01 26	691	0.1−	0.7+	1999 05 12	704	0.5+	0.5+	1999 06 14	704	0.6−	0.8−
1998 01 26	691	0.0	0.6+	1999 05 12	704	0.1−	0.2−	1999 06 14	704	0.4−	1.2−
1998 01 26	691	0.4+	0.6+	1999 05 12	704	0.9+	0.0	1999 06 14	704	0.9−	0.6−
1998 02 22	566	0.5−	0.7−	1999 05 12	704	1.1+	1.2+				
1998 02 22	566	0.6−	0.6−	1999 05 12	704	0.8−	0.4−				

1998 BB₄₇ = 1978 NM₆ = 1999 JX₉₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	173.92310		(2000.0)	P	Q
<i>n</i>	0.22392527	ω	316.58949	+0.37160047	−0.89935110
<i>a</i>	2.6857607	Ω	110.37140	+0.90475226	+0.29516413
<i>e</i>	0.1485864	<i>i</i>	14.22696	+0.20817406	+0.32256123
<i>P</i>	4.40	<i>H</i>	13.4	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1978 07 10	675(10.5+	5.5−)Y	1998 03 01	327	0.3+	0.1−	1999 05 17	704	1.1−	0.2+	
1978 07 11	675	0.1+	2.2−	Y 1998 03 01	327	0.5+	0.1+	1999 05 17	704	1.2−	0.1−
1978 07 13	675(10.8+	4.8+)Y	1999 05 07	703	0.0	0.7+	1999 06 08	704	1.2+	0.9−	
1998 01 18	327	0.6−	0.8−	1999 05 07	703	0.4+	0.6+	1999 06 08	704	0.2+	1.2+
1998 01 18	327	0.5−	0.6−	1999 05 07	703	0.7−	0.5+	1999 06 08	704	1.5+	1.1−
1998 01 18	327	1.0−	0.6−	1999 05 07	703	0.6−	1.1+	1999 06 08	704	0.0	0.9−
1998 01 28	566	0.2+	0.1−	1999 05 12	704	0.1+	1.0−	1999 06 08	704	(0.4+	2.4−)
1998 01 28	566	0.1+	0.3−	1999 05 12	704	0.3−	0.8+	1999 06 12	704	0.2−	0.2−
1998 01 28	566	0.1−	0.2−	1999 05 12	704	0.0	0.1−	1999 06 12	704	0.4+	0.1−
1998 02 24	327	0.2+	0.1+	1999 05 12	704	0.5−	0.4−	1999 06 12	704	0.8+	0.5−
1998 02 24	327	0.3+	0.3+	1999 05 17	704	0.6+	0.6+	1999 06 12	704	0.8+	0.8−
1998 02 24	327	0.3+	0.2+	1999 05 17	704	(0.4−	2.2+)	1999 06 12	704	0.9+	0.5+
1998 03 01	327	0.4+	0.1+	1999 05 17	704	1.9−	0.0				

1998 CF = 1997 XP₃Id. B. G. Marsden (d, *MPC* 31437)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	58.34309		(2000.0)	P	Q
<i>n</i>	0.20405351	ω	71.86756	−0.97950153	+0.01390136
<i>a</i>	2.8574151	Ω	108.54481	−0.08042887	−0.94163454
<i>e</i>	0.0185113	<i>i</i>	12.23739	+0.18468337	−0.33634974
<i>P</i>	4.83	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1997 12 03	910	0.0	0.3+	1998 02 03	046	0.3−	0.0	1998 02 18	046	0.3+	0.2+
1997 12 03	910	0.4+	0.3+	1998 02 03	046	0.2−	0.1−	1998 02 18	046	0.5+	0.1+
1997 12 04	910	0.3−	0.3−	1998 02 03	046	0.4−	0.1−	1999 04 21	046	0.2+	0.0
1997 12 06	910	0.1−	0.1+	1998 02 04	046	0.0	0.1−	1999 04 21	046	0.3+	0.0
1997 12 06	910	0.3+	0.1−	1998 02 04	046	0.1−	0.1−	1999 04 21	046	0.3+	0.2+
1997 12 06	910	0.2−	0.1−	1998 02 04	046	0.1+	0.1+	1999 05 07	046	0.3−	0.3−
1998 02 01	046	0.1−	0.0	1998 02 05	046	0.1+	0.2−	1999 05 07	046	0.1+	0.3+
1998 02 01	046	0.0	0.2−	1998 02 05	046	0.2+	0.2−	1999 05 07	046	0.4+	0.4+
1998 02 01	046	0.5−	0.3+	1998 02 05	046	0.3+	0.1−	1999 05 17	704	0.6+	1.1−
1998 02 02	046	0.0	0.0	1998 02 06	046	0.2−	0.2−	1999 05 17	704	(2.3+	0.7−)

M.P.C. 34900

1999 JUNE 22

1998 02 02	046	0.5−	0.1+	1998 02 06	046	0.1−	0.4+	1999 05 17	704	0.2−	0.3−
1998 02 02	046	0.2−	0.1+	1998 02 06	046	0.6+	0.0	1999 05 17	704	0.1−	0.2−
1998 02 02	046	0.1−	0.2−	1998 02 18	046	0.7+	0.0	1999 05 17	704	1.4−	0.9+

1998 CP₁ = 1999 LH₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	310.96882		(2000.0)	P	Q
<i>n</i>	0.30130552	ω	170.70418	+0.96269751	+0.27051770
<i>a</i>	2.2035927	Ω	173.59188	−0.25147382	+0.90243092
<i>e</i>	0.1748503	<i>i</i>	2.98075	−0.09987205	+0.33531868
<i>P</i>	3.27	<i>H</i>	15.1	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1996 06 23	691	0.2−	0.3+	1998 02 08	046	0.1−	0.6+	1998 03 05	046	0.5+	0.7+
1996 06 23	691	0.2−	0.3+	1998 02 08	046	0.5−	0.2−	1999 06 09	704	0.0	0.4+
1996 06 23	691	0.1+	0.4+	1998 02 08	046	0.5+	0.0	1999 06 09	704	0.2+	0.3+
1998 02 06	046	0.4+	0.5−	1998 02 08	046	0.5−	0.2−	1999 06 09	704	0.4+	0.3−
1998 02 06	046	0.2−	0.3+	1998 02 16	046	0.1−	0.5+	1999 06 09	704	0.5+	0.2+
1998 02 06	046	0.1+	0.2−	1998 02 16	046	0.0	0.2−	1999 06 09	704	0.5−	0.0
1998 02 06	046	0.4−	0.2−	1998 02 16	046	0.7−	0.2−	1999 06 15	704	0.1−	0.1−
1998 02 06	046	0.1+	0.1−	1998 02 18	046	0.0	0.1−	1999 06 15	704	0.0	0.4−
1998 02 06	046	0.2+	0.3−	1998 02 18	046	0.2+	0.0	1999 06 15	704	0.0	0.3−
1998 02 06	046	0.1−	0.6−	1998 02 18	046	0.2+	0.1−	1999 06 15	704	0.0	0.3−
1998 02 08	046	0.2+	0.4−	1998 03 05	046	0.5+	1.0+	1999 06 15	704	0.7−	0.1−
1998 02 08	046	0.6−	0.1+	1998 03 05	046	0.2+	0.8+				

1998 CD₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	248.19996		(2000.0)	P	Q
<i>n</i>	0.23515762	ω	220.65841	+0.98580319	−0.08397505
<i>a</i>	2.5995410	Ω	143.37444	+0.11322308	+0.97191010
<i>e</i>	0.1143580	<i>i</i>	14.10598	−0.12398633	+0.21986120
<i>P</i>	4.19	<i>H</i>	13.9	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 01 25	566	0.1+	0.9−	1998 02 24	104	0.5−	0.5+	1999 05 07	104	0.2+	0.2−
1998 01 25	566	0.2+	0.7−	1998 02 26	684	0.7−	0.0	1999 05 07	104	0.1−	0.4−
1998 01 25	566	0.2+	1.0−	1998 02 26	684	0.7−	0.1−	1999 05 07	104	0.0	0.5−
1998 02 13	104	0.5+	1.0+	1998 02 27	684	1.2−	0.4−	1999 05 07	104	1.0+	0.5−
1998 02 13	104	0.2+	0.5+	1998 02 27	684	1.0−	0.1−	1999 05 12	704	1.7+	1.0+
1998 02 13	104	0.1+	0.4+	1998 03 02	104	0.4−	0.2+	1999 05 12	704	0.6+	1.2−
1998 02 13	104	0.4+	0.3+	1998 03 02	104	0.4−	0.2+	1999 05 12	704	0.3+	0.1−
1998 02 13	104	0.5−	0.8+	1998 03 02	104	0.2−	0.0	1999 05 12	704	1.7+	0.9+
1998 02 14	104	0.1−	0.7+	1998 03 16	104	0.2+	0.1−	1999 05 15	704	0.1−	1.2−
1998 02 14	104	0.0	0.5+	1998 03 16	104	0.3+	0.2−	1999 05 15	704	0.6−	1.6+
1998 02 14	104	0.0	0.5+	1998 03 16	104	0.2+	0.3−	1999 05 15	704	(1.6+	2.1+)
1998 02 14	104	0.2−	0.3+	1998 03 16	104	0.3+	0.5−	1999 05 15	704	0.5−	1.0+
1998 02 15	104	0.4+	0.4+	1998 03 31	104	0.1+	0.8−	1999 05 17	704	0.3−	1.2−
1998 02 15	104	0.3+	0.5+	1998 03 31	104	0.3+	0.8−	1999 05 17	704	0.3−	0.2+
1998 02 15	104	0.5+	0.4+	1998 03 31	104	0.3+	0.7−	1999 05 17	704	0.5−	0.0
1998 02 16	104	0.6+	0.1−	1999 04 10	704	0.4−	0.3+	1999 05 17	704	(0.4−	2.2+)
1998 02 16	104	1.0+	0.0	1999 04 10	704	0.5−	0.8+	1999 05 17	704	0.8−	0.1+
1998 02 18	104	0.6+	0.9−	1999 04 10	704	0.3+	0.8+	1999 06 12	704	0.5+	0.5−
1998 02 18	104	0.3+	0.8−	1999 04 10	704	0.2−	1.1−	1999 06 12	704	0.8−	0.0
1998 02 18	104	0.1+	0.8−	1999 04 25	104	0.1−	0.8+	1999 06 12	704	0.3−	0.2−
1998 02 24	104	0.7−	0.4+	1999 04 25	104	0.2+	0.3+	1999 06 12	704	0.5−	0.4−
1998 02 24	104	0.5−	0.5+	1999 04 25	104	1.2−	0.7+	1999 06 12	704	0.4+	0.9−

1998 CY₃ = 1978 PH₁ = 1987 RX₂ = 1999 JL₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	224.35754		(2000.0)	P	Q
<i>n</i>	0.22484979	ω	243.97252	+0.80765232	−0.57911615
<i>a</i>	2.6783935	Ω	151.01941	+0.58884835	+0.78225340
<i>e</i>	0.1743634	<i>i</i>	13.24452	+0.03090892	+0.22957372
<i>P</i>	4.38	<i>H</i>	13.1	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1978 08 08	095	0.1−	0.6+	1998 03 04	809	0.1+	0.3+	1999 05 15	703	1.7+	0.6+
1987 09 01	095	0.3−	1.6+	1998 03 04	809	0.4−	0.6+	1999 05 15	703	0.6−	1.0+
1998 01 28	566	0.9−	0.1−	1998 03 04	704	(2.7−	0.1+)	1999 05 15	703	0.9+	1.6+
1998 01 28	566	1.3−	0.1+	1998 03 04	704	(2.4−	0.1+)	1999 05 15	703	(1.2−	2.3+)
1998 01 28	566	0.9−	0.5−	1998 03 04	704	(2.1−	0.0)	1999 05 15	703	(0.7+	2.2+)
1998 02 06	809	(4.3+	0.8+)	1998 03 04	704	(2.3−	0.3+)	1999 05 17	704	0.4+	0.6−
1998 02 06	809	(3.0+	1.1+)	1998 03 04	704	(2.3−	0.3+)	1999 05 17	704	0.3+	1.3−
1998 02 06	809	(3.1+	1.7+)	1998 03 20	704	0.3−	0.1−	1999 05 17	704	0.1+	1.0−
1998 02 07	809	(4.0+	0.3−)	1998 03 20	704	0.5+	0.4−	1999 05 17	704	0.2−	1.3−
1998 02 07	809	(3.9+	0.0)	1998 03 20	704	0.0	0.5−	1999 05 17	704	0.5−	0.5−
1998 02 07	809	(2.9+	0.2+)	1998 03 20	704	0.1−	0.1−	1999 05 19	703	0.4−	0.3+
1998 03 03	704	0.2−	0.4+	1998 03 20	704	0.1+	0.1−	1999 05 19	703	0.3+	0.4−
1998 03 03	809	1.8+	0.4−	1998 03 22	704	0.2−	0.1+	1999 05 19	703	0.8−	0.4+
1998 03 03	704	0.1−	1.0+	1998 03 22	704	0.2−	0.2−	1999 05 19	703	0.9−	0.7+
1998 03 03	809	(2.3+	0.9−)	1998 03 22	704	0.5+	0.3+	1999 06 08	704	0.2−	0.2+
1998 03 03	809	2.0+	0.2+	1998 03 22	704	0.2+	0.1+	1999 06 08	704	0.7−	0.4−
1998 03 03	704	0.0	1.0+	1998 03 22	704	0.5−	0.0	1999 06 08	704	0.3+	0.5+
1998 03 03	704	0.0	0.3+	1999 05 15	703	0.4+	0.7−	1999 06 08	704	0.1+	0.0
1998 03 03	704	0.2−	0.3+	1999 05 15	703	0.3−	0.0				
1998 03 04	809	0.1+	0.2+	1999 05 15	703	0.0	0.8+				

1998 CD₄ = 1990 KZ₁ = 1999 JN₈₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	141.24639		(2000.0)	P	Q
<i>n</i>	0.23283330	ω	348.38964	−0.39548491	−0.88971766
<i>a</i>	2.6168128	Ω	124.50325	+0.86328247	−0.44484473
<i>e</i>	0.0673856	<i>i</i>	16.06302	+0.31358423	+0.10254580
<i>P</i>	4.23	<i>H</i>	13.5	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1990 05 26	413	0.4−	1.9−	1999 04 19	703	0.6+	0.4+	1999 06 04	703	0.4+	0.4+
1990 05 26	413	(1.7−	4.1+)	1999 04 19	703	0.2−	1.6+	1999 06 04	703	0.5+	1.0+
1998 02 13	327	0.1−	0.6+	1999 05 12	704	0.9+	0.4+	1999 06 04	703	0.8−	2.3+
1998 02 13	327	0.1−	0.5+	1999 05 12	704	0.1−	0.3+	1999 06 04	703	0.4−	1.6+
1998 02 13	327	0.5−	0.4+	1999 05 12	704	0.1−	0.8+	1999 06 08	704	0.3+	0.2−
1998 02 21	327	0.3−	0.5+	1999 05 12	704	0.8−	0.0	1999 06 08	704	0.1+	0.6+
1998 02 21	327	0.3−	0.4+	1999 05 12	704	0.9−	1.0−	1999 06 08	704	0.2+	0.3+
1998 02 21	327	0.3−	0.4+	1999 05 15	704	0.2−	0.8−	1999 06 08	704	0.4+	0.0
1998 02 26	566	0.5+	0.5−	1999 05 15	704	0.5+	1.9−	1999 06 08	704	0.3−	0.0
1998 02 26	566	0.3+	0.4−	1999 05 15	704	1.5+	1.1−	1999 06 12	704	0.5+	0.6−
1998 02 26	566	0.8+	0.7−	1999 05 15	704	1.3−	0.8−	1999 06 12	704	0.3+	0.3−
1999 04 18	691	0.1+	0.1−	1999 05 17	704	0.0	0.3−	1999 06 12	704	0.9+	0.2−
1999 04 18	691	0.0	0.1−	1999 05 17	704	0.0	0.4−	1999 06 12	704	0.1+	0.1−
1999 04 18	691	0.3+	0.0	1999 05 17	704	0.3−	0.4+	1999 06 12	704	0.8+	0.6−
1999 04 19	703	0.1−	0.1−	1999 05 17	704	0.5−	0.6+				
1999 04 19	703	0.3+	0.6+	1999 05 17	704	2.1−	1.0−				

1998 DR = 1999 JF₅₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	311.50143		(2000.0)	P	Q
<i>n</i>	0.21619761	ω	218.68854	+0.76471569	+0.63538439
<i>a</i>	2.7493844	Ω	101.52133	−0.56064708	+0.73810425
<i>e</i>	0.1668805	<i>i</i>	6.28229	−0.31762361	+0.22691141
<i>P</i>	4.56	<i>H</i>	14.3	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 02 20	046	0.7−	0.6+	1998 03 31	046	0.0	0.3−	1999 06 05	703	(1.4+	2.3+)
1998 02 20	046	0.3−	0.7+	1998 03 31	046	0.7+	1.0−	1999 06 05	703	0.3−	1.8+
1998 02 21	046	0.1−	0.3+	1998 03 31	046	0.2−	0.2−	1999 06 14	704	0.4+	0.1−
1998 02 21	046	0.2−	0.2+	1999 05 10	704	0.4+	0.5−	1999 06 14	704	0.2−	0.7−
1998 02 21	046	0.3+	0.4−	1999 05 10	704	0.0	1.0+	1999 06 14	704	0.5−	0.5−
1998 02 22	046	0.5−	0.4+	1999 05 10	704	0.4+	0.3−	1999 06 14	704	0.8−	0.0
1998 02 22	046	0.5−	0.4+	1999 05 10	704	0.7−	0.9+	1999 06 14	704	0.2−	0.4−
1998 02 22	046	0.3−	0.3+	1999 05 10	704	0.0	0.9+				
1998 02 27	046	0.3+	0.1+	1999 05 13	704	0.4−	0.1+				

1998 DO₁

Id. L. Kornoš (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	68.81972		(2000.0)	P	Q		
<i>n</i>	0.24132808	ω	117.34944	−0.97713705	+0.19667004		
<i>a</i>	2.5550387	Ω	74.08410	−0.21233860	−0.88351741		
<i>e</i>	0.0645456	<i>i</i>	4.81804	−0.01074721	−0.42510926		
<i>P</i>	4.08	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 20	118	0.5−	0.5−	1998 02 25	118	0.2−	0.2−	1999 06 09	118	0.3−	0.9+
1998 02 20	118	0.4−	0.1−	1998 02 27	118	0.3+	0.2+	1999 06 09	118	0.3+	0.5+
1998 02 20	118	0.2−	0.0	1998 02 27	118	0.2+	0.2+	1999 06 09	118	0.6+	0.8+
1998 02 21	118	0.7+	0.4−	1998 02 27	118	0.1−	0.3+	1999 06 14	704	0.1−	1.2+
1998 02 21	118	0.5+	0.0	1998 03 15	118	0.2+	0.5−	1999 06 14	704	0.6+	0.4−
1998 02 21	118	0.6+	0.2+	1998 03 15	118	0.2+	0.3+	1999 06 14	704	1.4−	1.4−
1998 02 22	118	0.1−	0.1−	1998 03 21	118	0.4+	0.1+	1999 06 14	704	0.1−	1.5−
1998 02 22	118	0.0	0.1+	1998 03 21	118	0.3+	0.0	1999 06 14	704	0.7+	0.3−
1998 02 22	118	0.2−	0.1−	1999 05 17	118	0.3+	0.8+	1999 06 15	704	0.9+	0.2+
1998 02 23	118	0.2−	0.1−	1999 05 17	118	0.2+	0.8+	1999 06 15	704	0.2−	0.1+
1998 02 23	118	0.4−	0.0	1999 05 17	118	0.4+	1.5+	1999 06 15	704	0.3−	0.5−
1998 02 23	118	0.3−	0.0	1999 05 18	118	0.4+	1.1−	1999 06 15	704	0.4+	0.4−
1998 02 25	118	0.1−	0.3+	1999 05 18	118	1.0−	0.4−	1999 06 15	704	0.8−	1.0−
1998 02 25	118	0.5−	0.1+	1999 05 18	118	0.8−	0.0				

1998 DW₁ = 1999 JX₆₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	273.72106		(2000.0)	P	Q		
<i>n</i>	0.26611309	ω	260.15093	+0.98875074	+0.08027229		
<i>a</i>	2.3938222	Ω	95.16590	−0.02590031	+0.92292737		
<i>e</i>	0.2742007	<i>i</i>	7.28022	−0.14731310	+0.37651218		
<i>P</i>	3.70	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 01 21	691	0.1+	0.4−	1998 03 18	595	0.9+	0.4−	1999 05 13	704	0.4−	1.5+
1994 01 21	691	0.7−	0.4−	1998 03 20	595	0.1+	0.8+	1999 05 17	704	(0.9−	2.8−)
1994 01 21	691	0.5+	0.1+	1998 03 20	595	1.2+	0.4+	1999 05 17	704	1.2−	1.0+
1998 02 19	595	0.4+	0.5+	1998 04 14	595	0.4−	0.0	1999 05 17	704	0.6+	0.5+
1998 02 19	595	0.4+	1.0+	1998 04 14	595	0.1−	0.2−	1999 05 18	704	0.1−	0.1−
1998 02 20	595	0.1−	0.0	1999 04 12	704	1.1−	0.6−	1999 05 18	704	0.2−	0.8+
1998 02 20	595	0.1−	0.2−	1999 04 12	704	1.2+	0.6−	1999 05 18	704	0.5−	1.3−
1998 02 25	595	0.9−	0.7−	1999 04 12	704	0.5+	0.9+	1999 05 18	704	0.3+	0.4+
1998 02 25	595	0.5−	0.0	1999 04 12	704	1.0−	0.6−	1999 05 18	704	0.6−	0.9−
1998 02 25	595	1.6−	0.5−	1999 05 09	595	0.4+	0.7−	1999 05 18	595	0.2+	0.8+
1998 03 03	704	(3.0+	2.5+)	1999 05 09	595	0.5+	0.1−	1999 05 18	595	0.5−	0.3+
1998 03 03	704	1.7+	0.5+	1999 05 12	704	0.1+	0.1+	1999 05 19	704	0.7−	0.3−
1998 03 03	704	0.4−	0.4−	1999 05 12	704	0.2+	0.7−	1999 05 19	704	1.1+	1.5−
1998 03 03	704	0.8+	0.2+	1999 05 12	704	0.5+	0.4+	1999 05 19	704	1.1−	1.7+
1998 03 04	704	1.5+	0.8−	1999 05 12	704	1.2+	1.1−	1999 05 19	704	0.7+	0.5+
1998 03 04	704	1.3−	0.1+	1999 05 12	704	1.1−	0.4+	1999 05 19	704	1.2+	0.8−
1998 03 04	704	0.6−	0.2−	1999 05 13	704	0.7−	1.1−	1999 05 21	595	0.3−	0.3+
1998 03 04	704	0.7−	0.5+	1999 05 13	704	0.2+	0.1+	1999 05 22	595	1.2−	0.8−
1998 03 18	595	0.1−	0.4+	1999 05 13	704	1.8+	1.0+				

1998 DK₂ = 1999 LZ₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	206.70655		(2000.0)	P	Q		
<i>n</i>	0.18565699	ω	307.32875	+0.49476079	−0.84065016		
<i>a</i>	3.0431861	Ω	111.61960	+0.85329894	+0.42193268		
<i>e</i>	0.0161172	<i>i</i>	13.70595	+0.16459855	+0.33952925		
<i>P</i>	5.31	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 20	910	0.0	0.2+	1998 04 02	704	0.7+	1.5−	1999 06 08	704	0.2+	0.7+
1998 02 20	910	0.1−	0.0	1998 04 02	704	1.5+	0.4+	1999 06 08	704	0.8−	1.2+
1998 02 20	910	0.0	0.2−	1998 04 03	704	1.3−	0.0	1999 06 08	704	0.1−	0.5+
1998 02 21	910	0.0	0.2−	1998 04 03	704	0.4−	0.2−	1999 06 14	704	0.3+	0.3−
1998 02 21	910	0.2−	0.2−	1998 04 03	704	0.1−	0.8+	1999 06 14	704	0.3+	0.1−
1998 02 21	910	0.0	0.2−	1998 04 03	704	0.8−	0.6+	1999 06 14	704	0.3+	1.5−
1998 04 02	704	0.2+	0.9+	1999 06 08	704	0.4−	0.3−	1999 06 14	704	0.5−	0.6−
1998 04 02	704	0.5+	0.3−	1999 06 08	704	0.8+	0.2+				

1998 DN₄ = 1999 JC₁₀₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	145.06458		(2000.0)	P	Q		
<i>n</i>	0.21583773	ω	304.37052	−0.30379647	−0.95134521		
<i>a</i>	2.7524396	Ω	163.08752	+0.92188515	−0.30716817		
<i>e</i>	0.1528926	<i>i</i>	10.19246	+0.24049005	−0.02429016		
<i>P</i>	4.57	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 22	566	0.1−	0.1−	1998 03 04	704	0.2−	0.3+	1999 06 08	704	0.4+	0.5+
1998 02 22	566	0.6+	0.0	1998 03 04	704	0.5−	1.4+	1999 06 08	704	0.9−	0.4−
1998 02 22	566	0.3−	0.0	1998 03 04	704	0.1+	0.5−	1999 06 08	704	0.0	0.2+
1998 02 23	566	0.1−	0.1+	1998 03 04	704	0.2−	0.4−	1999 06 08	704	0.6−	0.7−
1998 02 23	566	0.4+	0.2+	1999 05 12	704	1.5−	0.2+	1999 06 08	704	0.1−	0.1+
1998 02 23	566	0.1−	0.1+	1999 05 12	704	(2.6+	0.5+)	1999 06 14	704	0.1−	0.0
1998 03 03	704	0.2−	0.5−	1999 05 12	704	(2.3−	0.7−)	1999 06 14	704	0.1−	0.7−
1998 03 03	704	0.3+	0.7+	1999 05 12	704	1.5+	0.9+	1999 06 14	704	0.3+	0.2+
1998 03 03	704	0.2−	0.5−	1999 05 17	704	1.3+	0.1−	1999 06 14	704	0.4+	0.1−
1998 03 03	704	0.1+	0.7−	1999 05 17	704	0.2+	0.3−	1999 06 14	704	0.2+	0.2−
1998 03 03	704	0.2+	0.2−	1999 05 17	704	0.2+	1.5+				
1998 03 04	704	0.1+	0.0	1999 05 17	704	1.2−	0.9−				

1998 DH₅ = 1999 JM₅₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	82.86044		(2000.0)	P	Q		
<i>n</i>	0.17708170	ω	66.89264	−0.93258569	−0.32042264		
<i>a</i>	3.1406552	Ω	94.08766	+0.23889025	−0.89304219		
<i>e</i>	0.0795353	<i>i</i>	9.58997	+0.27058339	−0.31591925		
<i>P</i>	5.57	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 22	566	0.1−	0.6+	1999 05 10	704	(1.4−	2.5−)	1999 05 19	704	0.1+	1.3−
1998 02 22	566	0.2+	0.2+	1999 05 10	704	(2.2−	0.9+)	1999 05 19	704	0.6−	0.9+
1998 02 22	566	0.0	0.2−	1999 05 13	704	0.3−	0.2+	1999 06 06	703	1.2−	0.6−
1998 02 23	566	0.1+	0.5−	1999 05 13	704	0.9−	0.2−	1999 06 06	703	0.6+	0.1+
1998 02 23	566	0.5+	0.3−	1999 05 13	704	0.2−	0.7−	1999 06 06	703	0.2+	0.9+
1998 02 23	566	0.5+	0.2−	1999 05 13	704	1.3+	1.2−	1999 06 06	703	1.1+	0.7+
1998 02 25	587	0.6−	0.1+	1999 05 13	704	0.7+	1.3−	1999 06 14	704	0.9−	0.9−
1998 02 25	587	0.7−	1.2+	1999 05 18	704	0.9−	1.6+	1999 06 14	704	0.9−	0.3+
1998 02 26	587	0.7−	0.1+	1999 05 18	704	0.4−	1.7+	1999 06 14	704	0.3+	0.4−
1998 02 26	587	0.3+	0.9−	1999 05 18	704	1.1+	1.5+	1999 06 14	704	0.8+	0.8−
1998 02 26	587	0.6+	0.1−	1999 05 18	704	0.8+	1.2+	1999 06 14	704	0.0	0.2−
1999 05 10	704	0.7−	1.0−	1999 05 19	704	(2.8+	1.5+)				
1999 05 10	704	1.1−	2.0−	1999 05 19	704	1.0+	1.4+				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	344.22034	(2000.0)		P		Q			
<i>n</i>	0.23907779	ω	186.53076	+0.50909938	+0.83608541				
<i>a</i>	2.5710463	Ω	114.24896	−0.77919509	+0.54857725				
<i>e</i>	0.1625315	<i>i</i>	12.95458	−0.36561294	−0.00491813				
<i>P</i>	4.12	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	3		
Residuals in seconds of arc									
1991 07 18	809	0.8−	0.2+	1998 02 25	587	0.6+	1.0+	1999 06 09	385 0.1− 0.3−
1991 07 18	809	0.6−	0.2+	1998 02 25	587	0.3+	0.5−	1999 06 09	385 0.3− 0.4+
1991 07 18	809	0.6−	0.4+	1998 02 26	587	0.0	0.4+	1999 06 09	385 0.1− 0.0
1991 07 19	809	0.8+	0.6−	1998 02 26	587	0.0	0.4−	1999 06 14	704 0.0 0.0
1991 07 19	809	1.2+	0.8−	1999 05 21	704	1.7+	1.1−	1999 06 14	704 0.4− 0.1+
1998 02 22	566	0.1−	0.3−	1999 05 21	704	0.4−	0.6−	1999 06 14	704 0.1− 0.4+
1998 02 22	566	0.2−	0.3−	1999 05 21	704	0.4+	0.4+	1999 06 14	704 0.0 0.7+
1998 02 22	566	0.0	0.2−	1999 05 21	704	0.4+	0.3−	1999 06 14	704 0.0 0.4+
1998 02 23	566	0.4−	0.1+	1999 05 21	704	1.2−	0.3+	1999 06 14	888 0.4− 0.3−
1998 02 23	566	0.2−	0.3−	1999 06 05	905	0.1+	0.4−	1999 06 14	888 0.0 0.2−
1998 02 23	566	0.3−	0.0	1999 06 05	905	0.7+	0.5+	1999 06 14	888 0.2− 0.2+

1998 DJ₆ = 1991 UA₅

Id. A. Doppler, A. Milani

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	296.82000		(2000.0)	P		Q					
<i>n</i>	0.21561233	ω	252.11059	+0.89777541	+0.43654475						
<i>a</i>	2.7543576	Ω	81.97189	−0.37841405	+0.83249926						
<i>e</i>	0.2016399	<i>i</i>	3.38980	−0.22539326	+0.34113584						
<i>P</i>	4.57	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4				
Residuals in seconds of arc											
1991 10 31	399	0.3−	0.5+	1998 02 22	566	1.5−	0.4+	1998 03 04	704	0.9−	0.2−
1991 10 31	399	0.1+	0.1−	1998 02 22	566	0.2−	0.2+	1998 03 04	704	0.2+	0.1+
1996 12 16	327	0.7+	1.0+	1998 02 23	566	(2.2−	3.2+)	1998 03 04	704	1.7+	1.0−
1996 12 16	327	0.6−	0.3−	1998 02 23	566	(2.1−	2.9+)	1998 03 04	704	0.0	0.4−
1996 12 16	327	0.1−	1.1−	1998 02 23	566	(2.7−	2.6+)				
1998 02 22	566	0.4−	0.6+	1998 03 04	704	1.3+	0.5+				

1998 DV₆ = 1999 JR₁₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	329.11112		(2000.0)		P		Q				
<i>n</i>	0.25871694		ω	67.38794	+0.65150890		+0.75396992				
<i>a</i>	2.4392303		Ω	243.54382	−0.72595823		+0.58743193				
<i>e</i>	0.1393777		<i>i</i>	5.38739	−0.22027438		+0.29402907				
<i>P</i>	3.81		<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	4			
Residuals in seconds of arc											
1998 02 17	691	0.3+	0.2−	1998 03 03	691	0.1−	0.1+	1999 05 18	704	1.7+	0.8+
1998 02 17	691	0.1−	0.2−	1998 03 03	691	0.5−	0.2−	1999 06 09	704	0.3−	0.2+
1998 02 17	691	0.1+	0.3−	1999 05 13	704	0.5+	0.8−	1999 06 09	704	1.0−	0.0
1998 02 23	691	0.1+	0.0	1999 05 13	704	0.3+	0.3−	1999 06 09	704	0.4−	0.7+
1998 02 23	691	0.1−	0.1−	1999 05 13	704	0.1+	0.2−	1999 06 09	704	0.5+	0.4+
1998 02 23	691	0.3−	0.1+	1999 05 13	704	1.7−	0.7+	1999 06 15	704	0.1+ 0.3+	
1998 02 28	691	0.5+	0.3+	1999 05 13	704	0.9−	1.2+	1999 06 15	704	0.2+ 0.3−	
1998 02 28	691	0.1+	0.2+	1999 05 18	704	0.6−	1.6−	1999 06 15	704	0.1− 0.5−	
1998 02 28	691	0.3+	0.4+	1999 05 18	704	0.7+	0.4−	1999 06 15	704	0.2+ 0.1−	
1998 03 03	691	0.4−	0.2−	1999 05 18	704	0.2+	0.3+	1999 06 15	704	0.3+ 0.7−	

1998 DF₁₀ = 1999 JF₁₀₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	264.71722	(2000.0)		P		Q			
<i>n</i>	0.23985213	ω	201.48733	+0.96560286	−0.25841135				
<i>a</i>	2.5655097	Ω	173.28840	+0.25965067	+0.95232503				
<i>e</i>	0.1537020	<i>i</i>	14.31199	+0.01387955	+0.16217462				
<i>P</i>	4.11	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4		
Residuals in seconds of arc									
1998 02 22	566	1.4−	0.4−	1998 03 20	704	0.6+	0.6−	1999 05 17	704 0.5+ 0.3+
1998 02 22	566	1.1−	0.8−	1998 03 22	704	0.3+	0.7+	1999 05 17	704 (2.8+ 0.2+)
1998 02 22	566	0.5−	0.5−	1998 03 22	704	0.7−	0.2+	1999 05 17	704 (0.9+ 2.7+)
1998 02 24	566	0.0	0.4+	1998 03 22	704	0.6+	1.0+	1999 05 17	704 1.8− 1.1+
1998 02 24	566	0.1−	0.3+	1998 03 22	704	0.1−	0.2+	1999 06 08	704 0.2+ 0.1−
1998 02 24	566	0.1+	0.5+	1998 03 22	704	1.6−	0.1−	1999 06 08	704 0.1− 0.1+
1998 03 03	704	1.7+	0.4+	1998 04 18	704	1.9−	0.3+	1999 06 08	704 0.7+ 0.6+
1998 03 03	704	0.4+	0.7−	1998 04 18	704	0.5+	0.8−	1999 06 08	704 0.5+ 0.1−
1998 03 03	704	0.6−	0.6−	1998 04 18	704	0.6+	0.4+	1999 06 08	704 0.1+ 1.0+
1998 03 03	704	0.7+	0.7+	1998 04 18	704	0.4−	1.6+	1999 06 12	704 0.4+ 0.2+
1998 03 03	704	0.5+	0.6+	1999 05 12	704	0.6+	0.7−	1999 06 12	704 0.7+ 0.4+
1998 03 20	704	0.0	0.3−	1999 05 12	704	0.5+	0.9−	1999 06 12	704 0.1− 0.1−
1998 03 20	704	0.2+	0.1−	1999 05 12	704	0.1−	0.5+	1999 06 12	704 1.6− 0.8−
1998 03 20	704	0.9+	0.9−	1999 05 12	704	0.7−	1.5−	1999 06 12	704 0.1+ 0.3−
1998 03 20	704	1.0+	1.2−	1999 05 12	704	(0.4−	2.1−)		

1998 DN₁₀ = 1999 DR₆ = 1999 HY₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	318.39530	(2000.0)		P		Q			
<i>n</i>	0.23449672	<i>ω</i>	163.65666	+0.74549189		+0.65864824			
<i>a</i>	2.6044231	<i>Ω</i>	154.25120	−0.63480394		+0.74833109			
<i>e</i>	0.1787414	<i>i</i>	13.59290	−0.20313983		+0.07863255			
<i>P</i>	4.20	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	3		
Residuals in seconds of arc									
1998 02 23	566	0.3+	1.1−	1999 02 20	704	0.6+	0.1+	1999 05 15	704 0.7+ 1.3−
1998 02 23	566	0.6−	1.1−	1999 02 23	704	0.9−	0.2−	1999 05 15	704 0.2+ 0.5−
1998 02 23	566	0.4−	0.7−	1999 02 23	704	(0.7+ 2.2−)		1999 05 15	704 0.2− 0.3−
1998 02 24	566	0.0	0.3+	1999 02 23	704	(2.4+ 0.2+)		1999 05 17	704 0.8+ 0.3+
1998 02 24	566	0.1−	0.3+	1999 02 23	704	(0.3− 2.8+)		1999 05 17	704 0.6+ 0.4+
1998 02 24	566	0.1+	0.6+	1999 02 23	704	(3.3− 1.1+)		1999 05 17	704 0.8+ 0.0
1998 02 26	566	0.4+	0.5−	1999 04 17	691	0.7−	0.3−	1999 05 17	704 1.0+ 0.3+
1998 02 26	566	0.7+	0.3−	1999 04 17	691	0.7−	0.3−	1999 05 17	704 0.4+ 1.5+
1998 02 26	566	0.3+	0.1−	1999 04 17	691	0.7−	0.3−	1999 06 08	704 0.1+ 0.3−
1998 02 27	098	1.4−	0.9+	1999 04 18	691	0.5−	0.1−	1999 06 08	704 0.1− 0.5−
1998 02 28	098	0.4+	1.5+	1999 04 18	691	0.6−	0.3−	1999 06 08	704 0.0 0.2−
1998 03 02	098	0.8−	0.3−	1999 04 18	691	0.5−	0.5−	1999 06 08	704 0.1+ 0.4−
1998 03 03	098	(2.1+ 1.0−)		1999 05 09	757	0.1+	0.1−	1999 06 08	704 0.5− 0.3+
1998 03 03	704	0.5−	0.5+	1999 05 09	757	0.0	0.0	1999 06 10	703 1.1+ 1.0−
1998 03 03	704	0.0	0.8+	1999 05 10	757	0.7−	0.4+	1999 06 10	703 0.1+ 0.2−
1998 03 03	704	0.3+	0.3+	1999 05 10	757	0.7−	0.3+	1999 06 10	703 1.4− 0.2−
1998 03 03	704	0.2+	0.3+	1999 05 12	704	0.2+	0.1+	1999 06 10	703 1.3− 0.4+
1998 03 03	704	(5.8− 2.8+)		1999 05 12	704	0.3−	0.0	1999 06 11	703 0.0 0.4+
1998 03 04	704	0.5+	0.5+	1999 05 12	704	0.1+	0.2+	1999 06 11	703 0.1+ 0.1+
1998 03 04	704	0.7−	0.6−	1999 05 12	704	0.1+	0.2+	1999 06 11	703 0.3− 0.1+
1998 03 04	704	0.4+	0.2−	1999 05 14	703	0.5−	0.6−	1999 06 11	703 0.4− 0.3+
1998 03 04	704	0.5+	0.5−	1999 05 14	703	0.0	0.4+	1999 06 12	704 0.3+ 0.4+
1998 03 04	704	0.2+	0.4−	1999 05 14	703	0.2−	1.0+	1999 06 12	704 0.0 0.1+
1999 02 20	704	0.5−	0.6−	1999 05 14	703	1.8+	1.1+	1999 06 12	704 0.0 0.3−
1999 02 20	704	0.7+	0.4+	1999 05 15	704	0.5+	1.5−	1999 06 12	704 0.2+ 0.2−
1999 02 20	704	0.9+	0.7+	1999 05 15	704	0.7+	1.1+	1999 06 12	704 0.3− 0.2−

1998 DV₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	208.79923		(2000.0)	P	Q
<i>n</i>	0.24165854	ω	271.56792	+0.80541632	-0.55560490
<i>a</i>	2.5527088	Ω	122.23270	+0.59264224	+0.76015667
<i>e</i>	0.2210001	<i>i</i>	14.12411	-0.00892898	+0.33684571
<i>P</i>	4.08	<i>H</i>	13.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 01 08	699	0.5+	0.5-	1998 03 20	684	0.1-	0.1-	1999 05 15	684	0.0	0.0
1998 01 08	699	0.6-	0.4+	1998 03 20	684	0.3+	0.1-	1999 05 16	684	0.3+	0.5+
1998 01 08	699	0.3+	0.5+	1998 04 16	684	0.1+	0.0	1999 05 16	684	0.5+	0.2+
1998 02 26	684	0.2+	0.3-	1998 04 16	684	0.2+	0.2+	1999 05 17	704	1.1+	0.7+
1998 02 26	684	0.1+	0.3-	1998 04 17	684	0.1+	0.1+	1999 05 17	704	1.1-	0.5+
1998 02 27	684	0.4-	0.2+	1998 04 17	684	0.1-	0.1+	1999 05 17	704	(2.2+	0.1+)
1998 02 27	684	0.3-	0.3+	1999 05 12	704	0.4+	0.2+	1999 05 17	704	0.8-	0.1-
1998 02 28	684	0.2-	0.1-	1999 05 12	704	1.4-	0.8-	1999 06 04	684	0.3+	0.2+
1998 02 28	684	0.2-	0.1-	1999 05 12	704	0.9+	1.8-	1999 06 04	684	0.1-	0.2+
1998 03 19	684	0.3+	0.1-	1999 05 12	704	(2.4+	0.3+)	1999 06 05	684	0.0	0.4+
1998 03 19	684	0.1+	0.1-	1999 05 15	684	0.4+	0.0	1999 06 05	684	0.4-	0.1-

1998 DB₁₃ = 1996 UU₄

Id. A. Nakamura (1999 observations), S. Nakano, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	189.49509		(2000.0)	P	Q
<i>n</i>	0.18265467	ω	196.46179	+0.73065249	-0.68203751
<i>a</i>	3.0764429	Ω	206.62290	+0.63399075	+0.69470998
<i>e</i>	0.1649059	<i>i</i>	3.98903	+0.25338246	+0.22847949
<i>P</i>	5.40	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1996 10 18	910	0.0	0.4+	1998 02 26	360	0.4-	0.7-	1998 03 25	709	0.2-	0.1-
1996 10 18	910	0.1-	0.3+	1998 02 26	360	0.6+	0.0	1998 04 09	709	0.0	0.5+
1996 10 18	910	0.1-	0.4+	1998 03 01	360	0.1-	0.0	1998 04 09	709	0.0	0.5+
1996 10 19	910	(1.8+	5.5+)	1998 03 01	360	0.6-	0.2+	1998 04 09	709	0.0	0.5+
1996 10 19	910	(1.7+	5.6+)	1998 03 01	360	0.2+	0.3+	1998 04 09	709	0.2+	0.3+
1996 10 20	910	(1.6+	5.6+)	1998 03 18	360	0.2+	0.4-	1998 04 09	709	0.0	0.5+
1998 02 18	867	0.2-	0.3+	1998 03 18	360	0.2-	0.9-	1999 04 14	360	0.3-	0.3+
1998 02 18	867	0.5+	0.7+	1998 03 18	360	0.8+	0.3-	1999 04 14	360	0.2-	0.5+
1998 02 21	360	0.2+	0.2+	1998 03 25	709	0.1+	0.7-	1999 04 14	360	0.6+	0.3-
1998 02 21	360	0.4-	0.4-	1998 03 25	709	0.1+	0.1-	1999 05 06	360	0.3+	0.6+
1998 02 21	360	0.1+	0.1+	1998 03 25	709	0.4-	0.6-	1999 05 06	360	0.1-	0.2+
1998 02 26	360	0.4-	0.2+	1998 03 25	709	0.2-	0.3-	1999 05 06	360	0.0	0.0

1998 DM₁₄ = 1999 JE₈₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	20.91749		(2000.0)	P	Q
<i>n</i>	0.19081558	ω	62.24677	-0.60164639	+0.79820674
<i>a</i>	2.9880888	Ω	170.59133	-0.78191002	-0.58092154
<i>e</i>	0.0501991	<i>i</i>	10.50065	-0.16321258	-0.15936171
<i>P</i>	5.17	<i>H</i>	13.4	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 01 26	566	0.2-	0.1-	1998 03 03	704	0.4-	0.1+	1999 05 15	704	0.2+	1.3-
1998 01 26	566	0.1-	0.2-	1998 03 04	704	0.5-	0.1+	1999 05 17	704	0.5+	0.3-
1998 01 26	566	0.3-	0.5-	1998 03 04	704	0.7-	0.3+	1999 05 17	704	0.4+	0.5-
1998 02 06	104	0.4-	0.1+	1998 03 04	704	0.9+	0.6+	1999 05 17	704	0.4+	0.2-
1998 02 06	104	0.0	0.3+	1998 03 04	704	0.2-	0.3-	1999 05 17	704	0.8+	0.3-
1998 02 06	104	0.4+	0.6+	1998 03 04	704	0.0	0.3-	1999 05 17	704	0.2-	0.4-
1998 02 06	104	0.6+	1.0+	1999 05 12	704	0.2-	0.2+	1999 06 05	703	0.5-	1.0+
1998 02 22	566	0.3+	1.0-	1999 05 12	704	0.4+	1.0+	1999 06 05	703	0.5-	0.4+
1998 02 22	566	0.4+	0.9-	1999 05 12	704	0.2-	1.3+	1999 06 05	703	0.4-	0.4+
1998 02 22	566	0.5+	0.8-	1999 05 12	704	0.3+	1.7-	1999 06 05	703	0.3-	0.3-
1998 02 27	566	0.0	0.4+	1999 05 14	703	0.3+	1.0-	1999 06 08	704	0.0	0.9-
1998 02 27	566	0.1+	0.1-	1999 05 14	703	0.2-	1.1+	1999 06 08	704	0.5+	0.2-

1998 02 27	566	0.0	0.5+	1999 05 14	703	1.4-	0.5+	1999 06 08	704	0.9+	0.1-
1998 03 03	704	(3.1-	2.8-)	1999 05 14	703	(2.4-	3.3+)	1999 06 08	704	0.1+	0.2+
1998 03 03	704	0.4+	0.2+	1999 05 15	704	0.3+	0.2+	1999 06 08	704	0.3-	0.4-
1998 03 03	704	0.3-	0.2-	1999 05 15	704	0.2-	0.6+				
1998 03 03	704	0.6-	0.3+	1999 05 15	704	0.7-	0.8+				

1998 DH₁₅ = 1999 KM₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	301.79756		(2000.0)	P	Q
<i>n</i>	0.20723568	ω	311.84684	+0.88276346	+0.46966302
<i>a</i>	2.8280887	Ω	20.14987	-0.42001544	+0.80042495
<i>e</i>	0.0767601	<i>i</i>	2.00551	-0.21051297	+0.37247355
<i>P</i>	4.76	<i>H</i>	13.9	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 02 22	566	1.1+	0.8-	1998 03 04	704	1.2-	0.3-	1999 05 10	704	1.0-	0.8+
1998 02 22	566	0.3+	0.0	1998 03 20	704	0.3+	0.5+	1999 05 18	704	0.1+	1.2+
1998 02 22	566	0.9+	0.7-	1998 03 20	704	0.4-	0.1-	1999 05 18	704	0.3+	0.4+
1998 02 27	566	0.1+	0.2+	1998 03 20	704	0.3+	0.2-	1999 05 18	704	0.7+	0.4+
1998 02 27	566	0.0	0.2+	1998 03 20	704	0.2-	1.7+	1999 05 18	704	0.3-	0.0
1998 02 27	566	0.2-	0.9+	1998 03 20	704	0.1+	0.7+	1999 05 19	704	0.8+	1.1+
1998 03 03	704	1.6+	0.3+	1998 03 22	704	0.0	0.3-	1999 05 19	704	(3.0-	0.8+)
1998 03 03	704	0.2+	0.2+	1998 03 22	704	0.3-	0.5-	1999 05 19	704	1.0+	0.4-
1998 03 03	704	0.5+	0.6-	1998 03 22	704	0.6-	0.3-	1999 05 19	704	1.3-	0.2-
1998 03 03	704	0.5-	0.4-	1998 03 22	704	0.5-	0.0	1999 05 19	704	0.7-	0.6-
1998 03 03	704	0.5+	0.5-	1998 03 22	704	1.1+	0.7+	1999 06 15	704	0.0	0.1+
1998 03 04	704	1.8-	0.0	1999 05 10	704	1.5-	0.8+	1999 06 15	704	0.1+	0.7-
1998 03 04	704	(2.2-	0.4-)	1999 05 10	704	0.8+	1.5-	1999 06 15	704	0.1-	0.1+
1998 03 04	704	(2.9-	0.4-)	1999 05 10	704	0.4+	0.7-	1999 06 15	704	0.5+	0.1-
1998 03 04	704	1.4-	0.6-	1999 05 10	704	0.2-	0.8-	1999 06 15	704	0.4+	0.0

1998 DL₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	222.65499		(2000.0)	P	Q
<i>n</i>	0.28199062	ω	65.40930	+0.22186891	-0.97474602
<i>a</i>	2.3031008	Ω	11.85598	+0.84396695	+0.17893246
<i>e</i>	0.0966170	<i>i</i>	7.09734	+0.48835845	+0.13361651
<i>P</i>	3.50	<i>H</i>	14.5	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 02 22	566	0.6-	0.4-	1998 03 20	704	0.6-	0.1-	1998 03 26	704	0.1+	0.0
1998 02 22	566	0.5-	0.4-	1998 03 20	704	0.5+	0.8-	1998 04 18	691	0.9-	0.2+
1998 02 22	566	0.5-	0.4-	1998 03 20	704	0.7+	0.3-	1998 04 18	691	0.7-	0.1-
1998 02 25	809	0.5+	1.8+	1998 03 20	704	0.3+	0.2-	1998 04 18	691	0.8-	0.1+
1998 02 25	809	(0.0	2.4+)	1998 03 20	704	1.0-	0.2-	1998 04 24	691	0.4+	0.2+
1998 02 25	809	(0.2-	2.8+)	1998 03 22	704	0.3-	0.4-	1998 04 24	691	0.5+	0.2+
1998 02 26	809	1.2+	1.0+	1998 03 22	704	0.4-	0.0	1998 04 24	691	0.1+	0.0
1998 02 26	809	1.1+	0.7+	1998 03 22	704	0.1-	0.1-	1999 06 07	426	0.8+	0.5-
1998 02 26	809	0.1+	1.5+	1998 03 22	704	0.0	0.4+	1999 06 07	426	0.1-	0.3+
1998 02 27	566	0.4-	0.5-	1998 03 22	704	0.6+	0.6-	1999 06 07	426	0.7-	0.2-
1998 02 27	566	0.3-	0.6-	1998 03 26	704	0.8+	0.1-	1999 06 09	426	0.1+	0.1+
1998 02 27	566	0.5-	0.6-	1998 03 26	704	0.3+	0.1-	1999 06 09	426	0.1-	0.6+

1998 DG₁₇ = 1999 JM₃₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	277.30659		(2000.0)	P	Q
<i>n</i>	0.24321154	ω	86.49894	+0.96056671	+0.25753945
<i>a</i>	2.5418306	Ω	258.55660	-0.27801792	+0.88391554
<i>e</i>	0.1107835	<i>i</i>	6.13868	-0.00420007	+0.39034184
<i>P</i>	4.05	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1998 02 23	691	0.5-	0.1+	1998 03 03	691	0.3+	0.3-	1999 05 10	704	2.8-	2.1-
1998 02 23	691	0.3-	0.1+	1998 03 03	691	0.1-	0.1+	1999 05 13	704	1.3+	0.9+
1998 02 23	691	0.2-	0.1-	1998 03 03	691	0.3+	0.2-	1999 05 13	704	0.1-	0.4-

M.P.C. 34904

1999 JUNE 22

1998 02 28	691	0.1+	0.1+	1999 05 10	704	2.3+	0.7+	1999 05 13	704	2.0-	0.6-
1998 02 28	691	0.2+	0.2+	1999 05 10	704	0.0	1.4-	1999 05 13	704	0.1+	1.7+
1998 02 28	691	0.2+	0.2+	1999 05 10	704	1.1+	1.1+				

1998 DN₂₀ = 1989 CG₇ = 1999 JB₈₄

Id. G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	231.83992		(2000.0)	P	Q
n	0.23003463	ω	273.46399	+0.77843409	-0.60255196
a	2.6379946	Ω	123.67058	+0.62635321	+0.72704760
e	0.2886779	i	12.20806	+0.04149726	+0.32913966
P	4.28	H	12.7	G 0.15	U 3

Residuals in seconds of arc

1989 02 07	399	(0.1-	3.1+)	1998 04 20	960	(2.1-	1.5-)	1999 05 15	704	1.2-	0.9-
1989 02 07	399	0.3+	1.8+	1998 04 20	960	0.0	1.3+	1999 05 15	703	0.6-	0.7-
1989 02 07	399	0.1+	0.8+	1998 04 20	960	0.6-	0.2-	1999 05 15	704	1.2-	1.1+
1998 02 24	960	0.5+	0.5-	1998 04 22	960	1.3-	0.2+	1999 05 17	704	0.2+	0.2+
1998 02 24	960	0.5+	0.5-	1998 04 23	960	0.1-	0.7-	1999 05 17	704	0.9+	0.9+
1998 02 24	960	1.2+	0.4+	1998 04 25	967	1.2-	0.5+	1999 05 17	704	0.3+	0.3-
1998 02 28	960	0.2+	0.0	1998 04 25	967	1.1-	1.3-	1999 05 17	704	0.1-	0.9-
1998 03 01	960	0.0	0.5-	1998 04 25	967	0.8-	0.3+	1999 05 17	704	0.4+	0.9+
1998 03 01	960	1.6+	0.1+	1998 04 26	967	0.6-	0.5-	1999 06 08	704	0.5+	0.1+
1998 03 02	954	0.6+	0.2-	1998 04 26	967	0.9-	0.3-	1999 06 08	704	0.7+	0.2+
1998 03 02	954	0.7+	0.2-	1998 04 26	967	0.7-	1.2-	1999 06 08	704	0.6+	0.5+
1998 03 05	960	0.0	0.3+	1998 04 26	967	0.2+	0.5-	1999 06 08	704	0.6+	0.2-
1998 03 05	960	0.5-	0.0	1999 05 12	704	0.2-	0.1+	1999 06 10	704	0.5+	0.0
1998 03 24	704	0.1+	0.1-	1999 05 12	704	1.5-	0.7+	1999 06 10	704	0.4+	0.7+
1998 03 24	704	0.0	0.1-	1999 05 12	704	0.1+	0.8-	1999 06 10	704	0.7+	0.0
1998 03 24	704	0.1+	0.2-	1999 05 12	704	0.6-	1.3+	1999 06 10	704	0.2+	0.4+
1998 03 24	704	0.4+	0.0	1999 05 12	704	0.5+	0.7-	1999 06 14	704	0.2+	0.1+
1998 03 25	704	0.5+	0.2+	1999 05 15	703	0.2-	0.3+	1999 06 14	704	0.6+	0.5-
1998 03 25	704	0.1-	0.4+	1999 05 15	703	0.8-	0.6+	1999 06 14	704	0.1+	0.8-
1998 03 25	704	0.0	0.1+	1999 05 15	704	0.1-	0.0	1999 06 14	704	0.3-	0.0
1998 03 25	704	0.2-	0.9-	1999 05 15	704	0.2+	0.5+	1999 06 14	704	0.7+	0.1-
1998 03 25	704	0.3-	0.2+	1999 05 15	703	0.3-	0.4-				

1998 DK₂₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	53.20884		(2000.0)	P	Q		
n	0.21632146	ω	263.09294	-0.71808347	+0.68871440		
a	2.7483348	Ω	320.36037	-0.56032727	-0.65746993		
e	0.2092079	i	9.03133	-0.41278261	-0.30562357		
P	4.56	H	13.6	G	0.15	U	3

Residuals in seconds of arc

1998 01 25	566	0.2-	0.1-	1998 03 02	910	0.3+	0.1-	1998 03 18	104	0.2-	0.6+
1998 01 25	566	0.1-	0.3-	1998 03 02	910	0.3+	0.2-	1998 03 18	587	0.5+	0.6+
1998 01 25	566	0.1-	0.1-	1998 03 02	587	0.6-	0.4-	1998 03 18	104	0.1-	0.2+
1998 02 27	910	0.7+	0.1+	1998 03 05	587	0.6-	0.6+	1998 04 21	587	0.1+	0.1+
1998 02 27	910	0.8+	0.2+	1998 03 05	587	0.7-	0.8-	1998 04 21	587	0.2+	0.1-
1998 02 27	587	0.4-	0.2-	1998 03 16	104	0.2+	0.0	1999 06 07	426	0.1+	0.1+
1998 02 27	910	0.7+	0.2+	1998 03 16	104	0.4+	0.3+	1999 06 07	426	0.0	0.1-
1998 02 27	587	0.8-	0.1-	1998 03 16	104	0.2+	0.2+	1999 06 07	426	0.0	0.0
1998 03 01	587	0.2+	0.1+	1998 03 16	104	0.3+	0.2+	1999 06 10	426	0.1+	0.0
1998 03 01	587	1.1-	0.0	1998 03 17	104	0.4+	0.4-	1999 06 10	426	0.3-	0.1-
1998 03 02	587	0.5-	0.1-	1998 03 17	104	0.2+	0.4-	1999 06 10	426	0.2+	0.3-
1998 03 02	587	0.4-	0.1-	1998 03 17	104	0.0	0.2-				
1998 03 02	910	0.2+	0.1-	1998 03 18	587	0.3+	0.1+				

1998 DZ₂₃ = 1999 LD₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	133.94486		(2000.0)	P	Q
n	0.21134446	ω	274.99878	-0.53163806	-0.84452141
a	2.7913147	Ω	207.42266	+0.82189834	-0.49604952
e	0.1880675	i	8.03543	+0.20455831	-0.20178818
P	4.66	H	14.0	G 0.15	U 4

Residuals in seconds of arc

1998 01 26	566	0.6-	0.0	1998 03 03	704	0.2+	0.4+	1998 04 03	385	0.2+	0.4+
1998 01 26	566	0.4-	0.2-	1998 03 03	704	0.1+	0.7+	1999 06 09	704	1.0-	0.4+
1998 01 26	566	0.5-	0.1-	1998 03 03	385	0.5-	0.4-	1999 06 09	704	0.3-	1.3-
1998 02 17	905	2.0+	2.6+	1998 03 03	385	0.3-	0.6-	1999 06 09	704	0.1-	0.6+
1998 02 17	905	2.0+	0.1-	1998 03 04	704	0.6-	0.2-	1999 06 09	704	0.4+	0.6-
1998 03 01	905	0.3-	2.5-	1998 03 04	704	0.1-	0.1+	1999 06 14	704	0.1+	0.3-
1998 03 01	905	0.4+	0.3-	1998 03 04	704	0.6-	0.4+	1999 06 14	704	0.7+	0.2-
1998 03 03	704	0.3+	0.5-	1998 03 04	704	1.2-	0.1+	1999 06 14	704	0.0	0.3+
1998 03 03	704	0.5+	0.4-	1998 03 04	704	0.7-	0.3-	1999 06 14	704	0.2-	1.1+
1998 03 03	704	0.1+	0.3+	1998 04 03	385	0.0	0.8+	1999 06 14	704	0.3+	0.0

1998 DS₂₉ = 1982 EG = 1999 JA₇₁

Id. G. V. Williams, E. Bowell, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	344.05839		(2000.0)	P	Q		
n	0.17952250	ω	85.71419	-0.25517517	+0.96642323		
a	3.1121233	Ω	169.35497	-0.93925129	-0.24034470		
e	0.0311336	i	9.40795	-0.22954881	-0.09088762		
P	5.49	H	12.8	G	0.15	U	3

Residuals in seconds of arc

1982 03 15	046	0.0	0.1-	1999 02 14	699	0.1+	0.1+	1999 05 13	704	0.3-	0.8-
1982 03 15	046	(1.0+	3.2-)	1999 04 10	699	0.7+	1.8+	1999 05 13	704	0.4-	0.1-
1998 02 28	691	0.0	0.2-	1999 04 10	699	0.4+	0.7+	1999 05 13	704	0.2+	0.0
1998 02 28	691	0.0	0.1-	1999 04 10	699	0.8+	0.2+	1999 05 13	704	0.0	0.3-
1998 02 28	691	0.1+	0.1-	1999 04 12	704	1.3+	0.3-	1999 05 13	704	0.3-	0.3-
1998 03 03	691	0.7-	0.2+	1999 04 12	704	0.9+	0.3-	1999 05 13	704	0.6+	0.2+
1998 03 03	691	0.7-	0.3+	1999 04 12	704	0.5+	0.3+	1999 05 13	704	0.6-	1.3-
1998 03 03	691	0.8+	0.6+	1999 04 12	704	0.4+	0.9-	1999 05 13	704	0.3-	0.1-
1998 03 16	327	(4.1-	2.8-)	1999 04 12	704	0.4+	0.6-	1999 05 13	704	0.4-	0.5-
1998 03 16	327	1.2-	0.5-	1999 04 15	704	1.6-	1.3+	1999 05 13	704	0.4+	0.2+
1998 03 16	327	0.5-	0.6+	1999 04 15	704	(0.3-	2.5+)	1999 05 13	704	0.7-	0.4+
1998 03 20	327	0.1-	0.1+	1999 04 15	704	0.5+	0.6-	1999 05 13	704	1.6+	1.2+
1998 03 20	327	0.3+	0.2-	1999 04 15	704	(1.3+	2.0-)	1999 05 13	704	0.1-	1.2+
1998 03 20	327	0.0	0.0	1999 05 12	704	0.3+	0.1-	1999 05 15	704	0.0	1.1+
1998 03 20	327	0.3+	0.2-	1999 05 12	704	1.0+	1.1-	1999 05 15	704	0.7+	0.4-
1998 03 26	327	0.1-	0.2-	1999 05 12	704	0.5-	1.9-	1999 05 15	704	0.1+	0.3+
1998 03 26	327	0.1+	0.2-	1999 05 12	704	0.6-	1.2-	1999 05 15	704	1.9-	0.3+
1998 03 26	327	0.4+	0.4+	1999 05 12	704	1.1-	0.7-	1999 05 15	704	0.6-	0.6+
1998 03 28	327	0.3+	0.1-	1999 05 13	704	0.3-	0.1+	1999 05 17	704	0.7-	0.2-
1998 03 28	327	0.2+	0.1+	1999 05 13	704	0.3+	0.1+	1999 05 17	704	0.5+	0.1+
1998 03 28	327	0.2+	0.0	1999 05 13	704	0.0	0.1+	1999 05 17	704	0.6+	1.1+
1998 03 28	327	0.5+	0.6-	1999 05 13	704	1.0-	0.5+	1999 05 17	704	0.1+	0.5+
1999 02 14	699	0.2+	0.0	1999 05 13	704	0.5+	0.2-	1999 05 17	704	0.8-	0.3-
1999 02 14	699	1.2-	0.0	1999 05 13	704	0.3+	0.2-				

1998 DG₃₂ = 1999 JS₄₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	110.61022		(2000.0)	P	Q
n	0.29640924	ω	259.61386	-0.73953475	-0.66885080
a	2.2277933	Ω	238.36086	+0.64712052	-0.67552029
e	0.0840022	i	5.09965	+0.18526570	-0.31034004
P	3.33	H	15.1	G 0.15	U 4

1999 JUNE 22

M.P.C. 34905

Residuals in seconds of arc

1997 11 29	704	0.5−	0.3+	1999 05 10	704	0.9+	1.7−	1999 05 18	704	0.8−	0.4+
1997 11 29	704	0.9+	1.0+	1999 05 10	704	0.3−	0.9+	1999 05 18	704	0.1+	0.2−
1997 11 29	704	1.7−	1.5−	1999 05 10	704	0.7−	0.1−	1999 05 19	704	1.5−	0.5+
1997 11 29	704	1.1+	0.3+	1999 05 10	704	0.6−	0.2+	1999 05 19	704	0.3−	0.6−
1998 02 16	327	0.5+	0.2+	1999 05 10	704	1.3+	1.0−	1999 05 19	704	0.6+	0.7−
1998 02 16	327	0.8+	0.1+	1999 05 13	704	0.3−	0.1−	1999 05 19	704	0.6−	1.1+
1998 02 16	327	0.6+	0.6+	1999 05 13	704	0.0	1.1−	1999 05 19	704	0.5−	0.5−
1998 02 16	327	0.8+	0.1−	1999 05 13	704	0.6−	0.1−	1999 06 05	703	0.1−	0.2−
1998 02 22	327	0.6−	1.5+	1999 05 13	704	0.3−	1.0+	1999 06 05	703	0.5+	0.0
1998 02 22	327	0.0	0.5+	1999 05 13	704	0.7+	1.1+	1999 06 05	703	0.6+	0.7+
1998 02 22	327	0.5−	0.7−	1999 05 17	703	0.6+	0.4+	1999 06 05	703	1.3+	1.2+
1998 02 26	327	0.3−	0.1+	1999 05 17	703	0.1+	0.5+	1999 06 15	704	0.4−	0.1+
1998 02 26	327	0.6+	0.7−	1999 05 17	703	0.0	0.6+	1999 06 15	704	0.6−	1.6−
1998 02 26	327	0.7−	0.7−	1999 05 17	703	0.1−	0.3+	1999 06 15	704	0.0	0.3−
1998 02 27	327	0.0	0.2−	1999 05 18	704	1.3+	0.1+	1999 06 15	704	0.7−	0.1−
1998 02 27	327	0.6−	0.4−	1999 05 18	704	0.2+	1.0−	1999 06 15	704	0.6−	0.1+
1998 02 27	327	0.4−	0.2−	1999 05 18	704	0.7+	0.1−				

1998 DQ₃₃ = 1999 LO₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	216.19425		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.22980465	ω	295.44384	+0.47074034	−0.88127194
a	2.6397543	Ω	126.40949	+0.82705509	+0.42420598
e	0.0882192	i	2.99086	+0.30721882	+0.20834838
P	4.29	H	13.9	G 0.15	U 4

Residuals in seconds of arc

1998 02 27	809	0.3+	0.1+	1998 03 22	704	0.1−	1.1+	1998 04 18	704	0.8−	0.2−
1998 02 27	809	0.2−	0.8+	1998 03 22	704	1.0−	0.4+	1998 04 18	704	(4.0−	1.2−)
1998 02 27	809	0.9−	0.6+	1998 03 22	704	0.7−	0.3+	1999 06 09	704	0.1−	0.0
1998 02 28	809	0.7+	0.9−	1998 03 26	704	0.4+	0.5+	1999 06 09	704	0.2−	0.9−
1998 02 28	809	0.7−	1.1−	1998 03 26	704	1.2+	0.1+	1999 06 09	704	0.9+	0.3−
1998 02 28	809	0.4−	1.7−	1998 03 26	704	0.7+	0.3+	1999 06 09	704	1.6+	1.1+
1998 03 20	704	0.1+	0.2−	1998 03 29	704	0.5+	0.2+	1999 06 15	704	0.0	0.9+
1998 03 20	704	0.1−	0.4−	1998 03 29	704	0.3+	0.0	1999 06 15	704	0.7−	0.2+
1998 03 20	704	0.7+	0.1−	1998 03 29	704	0.4+	0.2−	1999 06 15	704	0.1−	0.7+
1998 03 20	704	0.1−	0.7+	1998 03 29	704	0.5+	0.4+	1999 06 15	704	0.1−	0.1−
1998 03 20	704	0.4−	0.2−	1998 03 29	704	0.7+	0.2−	1999 06 15	704	1.2−	1.6−
1998 03 22	704	(1.1+	2.1−)	1998 04 18	704	0.1−	0.3−				
1998 03 22	704	1.0−	0.2+	1998 04 18	704	(0.3+	2.0+)				

1998 DH₃₄ = 1981 AY₂ = 1999 JX₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	306.25163		(2000.0)	P	Q
n	0.12529128	ω	217.36261	+0.40260985	+0.91375063
a	3.9553854	Ω	76.43681	−0.82573617	+0.38821512
e	0.0506091	i	3.21109	−0.39505075	+0.11978647
P	7.87	H	11.8	G 0.15	U 1

Residuals in seconds of arc

1981 01 08	381	0.5+	0.3+	1998 03 29	704	0.2−	0.2+	1999 05 13	704	0.4+	0.0
1981 01 08	381	0.4−	0.1−	1998 03 29	704	0.2+	0.8−	1999 05 13	704	1.4+	0.2+
1995 11 17	327	0.0	0.3−	1998 03 29	704	0.6−	0.8−	1999 05 13	704	0.7+	0.7+
1995 11 17	327	0.2−	0.2+	1998 03 29	704	1.7−	1.2−	1999 05 13	704	0.1−	1.2+
1995 11 17	327	0.1+	0.6+	1998 03 29	704	0.9−	1.1−	1999 05 13	704	0.0	1.4+
1998 02 27	809	(3.0+	4.6+)	1998 04 02	809	0.9+	0.1+	1999 05 14	704	0.8+	0.8+
1998 02 27	809	(1.9+	4.1+)	1998 04 02	809	0.3+	0.4−	1999 05 14	704	1.2+	0.6−
1998 02 27	809	(2.2+	3.5+)	1998 04 02	809	0.5+	0.1+	1999 05 14	704	0.1+	1.8−
1998 02 28	809	(1.4+	4.4+)	1998 04 03	809	0.3+	0.5+	1999 05 14	704	0.7−	0.1−
1998 02 28	809	(0.9+	3.7+)	1998 04 03	809	0.2−	0.5+	1999 05 18	704	1.0+	0.6+
1998 02 28	809	(0.6+	3.4+)	1998 04 03	809	0.6−	0.3+	1999 05 18	704	0.2−	0.3+
1998 03 20	704	0.0	0.0	1998 04 19	704	0.4+	0.6−	1999 05 18	704	1.2−	0.2+
1998 03 20	704	0.2+	0.4+	1998 04 19	704	1.0+	1.4+	1999 05 18	704	0.7+	0.0
1998 03 20	704	0.2+	0.2−	1998 04 19	704	0.7+	1.4+	1999 05 18	704	0.9−	0.7−
1998 03 20	704	0.5+	0.1+	1998 04 19	704	(2.5−	0.2+)	1999 06 07	703	0.2+	0.0

1998 03 20	704	0.1−	1.0+	1998 04 19	704	1.6−	0.6+	1999 06 07	703	0.5−	0.0
1998 03 22	704	0.4+	0.2−	1998 04 28	012	0.9−	0.6+	1999 06 07	703	0.2−	0.1+
1998 03 22	704	0.4+	0.1−	1998 04 28	012	0.3+	0.6+	1999 06 07	703	0.0	0.8−
1998 03 22	704	0.0	0.6−	1998 04 28	012	0.1+	0.4+	1999 06 09	704	0.0	0.2−
1998 03 22	704	0.5+	0.4+	1999 05 10	704	0.2+	0.5−	1999 06 09	704	0.3−	0.7+
1998 03 22	704	0.2−	0.6−	1999 05 10	704	(2.2+	0.9+)	1999 06 09	704	0.7−	0.7−
1998 03 26	704	0.9+	0.7−	1999 05 10	704	0.2+	0.0	1999 06 09	704	0.7−	0.4+
1998 03 26	704	0.5−	0.1+	1999 05 10	704	(2.4+	2.0+)	1999 06 09	704	0.8−	0.6−
1998 03 26	704	0.5−	1.7−	1999 05 10	704	0.6−	0.1+				

1998 DW₃₄ = 1999 LB₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	210.67889		(2000.0)	P	Q
n	0.20986445	ω	251.16362	+0.55951116	−0.82468320
a	2.8044227	Ω	163.97978	+0.82734637	+0.54976938
e	0.1359509	i	17.44473	+0.04944941	+0.13285803
P	4.70	H	13.5	G	0.15
				U	4

Residuals in seconds of arc

1998 02 27	809	1.8+	0.3−	1998 03 22	704	1.4−	0.2+	1999 05 17	704	0.3−	0.2+
1998 02 27	809	(2.2+	0.8−)	1998 03 22	704	0.4−	1.0+	1999 05 17	704	(2.7−	1.6+)
1998 02 27	809	1.3+	0.6−	1998 03 22	704	1.1−	1.1+	1999 06 08	704	0.3+	1.0+
1998 02 27	566	0.2−	1.3−	1998 03 26	704	0.4−	0.1−	1999 06 08	704	0.2+	0.8+
1998 02 27	566	0.9−	0.0	1998 03 26	704	0.9−	0.2+	1999 06 08	704	0.7−	0.4−
1998 02 27	566	0.2−	0.0	1998 03 26	704	0.1−	0.4−	1999 06 08	704	0.1+	1.1−
1998 02 28	809	(2.4+	1.0+)	1998 03 29	704	0.0	0.9−	1999 06 08	704	0.8−	0.5−
1998 02 28	809	0.3+	1.5+	1998 03 29	704	1.0+	0.3−	1999 06 08	704	0.6+	0.7−
1998 02 28	809	1.2+	0.3+	1998 03 29	704	0.2+	1.2−	1999 06 08	704	0.6−	0.4+
1998 03 03	704	0.3+	0.2−	1998 03 29	704	0.3−	1.4−	1999 06 08	704	0.2−	0.4−
1998 03 03	704	0.6+	1.0+	1998 03 29	704	0.2+	1.2−	1999 06 08	704	0.4−	0.1+
1998 03 03	704	0.3+	0.7+	1998 04 19	704	0.1−	0.5−	1999 06 08	704	0.2+	1.3−
1998 03 03	704	0.4+	0.4−	1998 04 19	704	0.0	0.5+	1999 06 12	704	0.8+	0.4+
1998 03 20	704	0.3−	0.3+	1998 04 19	704	0.6+	0.0	1999 06 12	704	1.5+	0.2−
1998 03 20	704	0.5−	0.2−	1998 04 19	704	0.7−	1.2+	1999 06 12	704	1.1+	0.2+
1998 03 20	704	0.3−	0.4+	1998 04 19	704	0.3−	0.1+	1999 06 12	704	0.4+	0.2+
1998 03 20	704	0.3+	0.5−	1999 05 17	704	0.4−	0.5+	1999 06 12	704	0.7+	1.1−
1998 03 20	704	0.5−	0.4+	1999 05 17	704	1.3−	0.7+				
1998 03 22	704	0.0	0.6+	1999 05 17	704	1.0−	1.0+				

1998 EB₃ = 1999 KY

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	283.49934		(2000.0)	P	Q
n	0.21223366	ω	267.68809	+0.93769930	+0.32799110
a	2.7835127	Ω	73.14816	−0.25165994	+0.86863840
e	0.1423257	i	6.87950	−0.23955648	+0.37133431
P	4.64	H	13.9	G	0.15
				U	4

Residuals in seconds of arc

1998 03 01	327	0.0	0.5+	1999 05 13	704	0.1−	0.0	1999 05 19	704	0.9+	0.6−
1998 03 01	327	0.2+	0.4+	1999 05 13	704	0.1+	0.9−	1999 05 19	704	0.3+	1.0+
1998 03 01	327	0.2+	0.3+	1999 05 13	704	0.0	0.2+	1999 05 19	703	0.6+	0.7−
1998 03 02	327	0.1−	0.7−	1999 05 13	704	0.3−	0.6+	1999 05 19	704	1.1+	0.5−
1998 03 02	327	0.0	0.0	1999 05 17	703	1.1+	0.0	1999 05 19	703	0.5+	0.4−

1998 EL₆ = 1999 JL₉₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	259.03790		(2000.0)	P		Q	
<i>n</i>	0.18326639	ω	184.24704	+0.99987904		−0.00580800	
<i>a</i>	3.0695933	Ω	175.99955	+0.00857568		+0.97978000	
<i>e</i>	0.1244300	<i>i</i>	11.93556	−0.01297534		+0.19999356	
<i>P</i>	5.38	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1993 03 19	809	0.1−	0.8−	1998 03 20	704	(0.5−	2.4+)	1998 04 19	704	(1.8−	2.1+)
1993 03 20	809	0.2−	0.8−	1998 03 20	704	0.2+	1.0+	1999 05 12	704	0.6+	1.0−
1993 03 24	809	0.7+	1.2−	1998 03 20	704	0.9−	1.6+	1999 05 12	704	0.5−	0.3−
1993 04 16	413	0.7−	1.4+	1998 03 22	704	1.3−	0.8−	1999 05 12	704	0.7−	0.6+
1998 03 01	910	0.6+	0.2+	1998 03 22	704	1.3+	0.0	1999 05 12	704	(0.6−	3.0−)
1998 03 01	910	0.6+	0.3+	1998 03 22	704	(2.6+	2.9+)	1999 05 17	704	0.4−	0.6−
1998 03 01	910	0.5+	0.4+	1998 03 22	704	(2.1+	1.7+)	1999 05 17	704	1.0+	0.1−
1998 03 04	704	(3.5−	0.9+)	1998 03 26	704	0.3+	1.5−	1999 05 17	704	0.5+	0.5+
1998 03 04	704	1.0−	1.6−	1998 03 26	704	0.8−	0.5+	1999 05 17	704	0.1−	0.2+
1998 03 04	704	1.2−	0.5−	1998 03 26	704	0.2+	0.5+	1999 06 14	704	0.0	0.4−
1998 03 04	704	1.7−	0.3−	1998 03 29	704	0.7+	0.2−	1999 06 14	704	0.5−	0.1−
1998 03 05	910	1.0+	0.3+	1998 03 29	704	0.1−	1.0−	1999 06 14	704	0.5−	0.9+
1998 03 06	910	1.2+	0.4+	1998 03 29	704	0.8−	0.1−	1999 06 14	704	0.0	0.1−
1998 03 06	910	0.9+	0.4+	1998 03 29	704	0.6+	0.2−	1999 06 14	704	0.6+	0.8+
1998 03 20	704	1.7−	1.6+	1998 04 19	704	1.2+	0.2+				
1998 03 20	704	(1.3−	3.8+)	1998 04 19	704	0.8+	0.1+				

1998 EM₈ = 1999 KG₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	282.71588		(2000.0)	P		Q	
<i>n</i>	0.27971330	ω	260.23481	+0.98855333		−0.13639152	
<i>a</i>	2.3155845	Ω	107.58286	+0.15069320		+0.91341181	
<i>e</i>	0.2625480	<i>i</i>	3.87938	−0.00733928		+0.38350518	
<i>P</i>	3.52	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1994 01 05	691	0.6−	0.2+	1998 03 17	587	0.5−	0.8+	1999 05 19	704	(2.8−	0.6−)
1994 01 05	691	0.4+	0.3+	1998 03 20	704	0.7−	1.5+	1999 05 19	704	(2.9−	2.0+)
1994 01 05	691	0.3+	0.2+	1998 03 20	704	0.0	0.8+	1999 06 09	704	0.6−	0.3+
1998 03 02	587	0.1+	0.0	1998 03 20	704	1.3+	0.1+	1999 06 09	704	0.6−	1.3−
1998 03 02	587	0.1−	0.3+	1998 03 20	704	1.7+	0.5−	1999 06 09	704	0.0	0.8−
1998 03 04	704	(5.0−	1.6+)	1998 03 25	587	0.2+	0.5−	1999 06 09	704	0.5+	0.5−
1998 03 04	704	(3.0−	0.6−)	1998 03 25	587	0.6−	0.3+	1999 06 11	703	0.6+	0.5+
1998 03 04	704	1.1−	1.1−	1998 03 29	587	0.2−	0.1+	1999 06 11	703	0.6+	0.9+
1998 03 04	704	1.5−	0.4−	1998 03 29	587	0.4−	0.9+	1999 06 11	703	0.6+	1.4+
1998 03 05	587	1.1+	0.7−	1999 05 18	704	0.2+	0.9+	1999 06 11	703	1.1+	2.0+
1998 03 05	587	0.5+	0.4−	1999 05 18	704	0.6−	0.8−	1999 06 15	704	0.0	0.6−
1998 03 05	587	0.1−	0.3+	1999 05 18	704	0.6−	1.8+	1999 06 15	704	0.4+	0.5−
1998 03 16	587	0.4−	0.1−	1999 05 18	704	0.9+	0.0	1999 06 15	704	1.0−	0.1−
1998 03 16	587	1.3+	0.1−	1999 05 18	704	1.0+	1.9−	1999 06 15	704	0.6−	0.7−
1998 03 17	587	0.3−	0.7−	1999 05 19	704	1.4−	1.3−				
1998 03 17	587	0.5−	1.0−	1999 05 19	704	0.4−	1.3+				

1998 ES₈ = 1999 LP₄

Id. B. G. Marsden

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	164.77718		(2000.0)	P		Q	
<i>n</i>	0.21452039	ω	264.56353	−0.12013279		−0.99260763	
<i>a</i>	2.7636964	Ω	192.37627	+0.93976469		−0.10809576	
<i>e</i>	0.1227158	<i>i</i>	4.62134	+0.32001631		−0.05518516	
<i>P</i>	4.59	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 26	566	0.4+	0.7+	1998 03 05	327	0.4−	0.3+	1999 06 11	703	0.7+	0.4−
1998 02 26	566	0.5+	0.7+	1998 03 05	327	0.2−	0.2+	1999 06 11	703	0.6−	0.3−
1998 02 26	566	0.5+	0.4+	1998 03 05	327	0.3−	0.2+	1999 06 11	703	0.5+	0.1+

1998 02 28	758	0.1−	0.0	1998 03 08	327	0.4−	0.1−	1999 06 11	703	0.8−	1.4+
1998 02 28	758	1.0+	0.2+	1998 03 08	327	0.0	0.0	1999 06 11	703	0.5+	2.0+
1998 02 28	758	0.0	0.1+	1998 03 08	327	0.6−	0.2+	1999 06 11	684	0.1−	0.2+
1998 03 03	704	0.2−	0.2−	1998 03 22	704	0.3+	0.4−	1999 06 11	684	0.6−	0.4−
1998 03 03	704	0.5−	0.1+	1998 03 22	704	0.1+	0.1+	1999 06 11	684	0.4−	0.3−
1998 03 03	704	0.5+	0.2−	1998 03 22	704	0.4−	1.1+	1999 06 12	684	0.5−	0.1+
1998 03 03	704	0.3−	0.6−	1998 03 22	704	0.2−	0.7−	1999 06 12	684	0.3+	0.1+
1998 03 03	704	0.5−	1.8−	1998 03 22	704	0.5−	1.4+	1999 06 12	684	0.6−	0.6−
1998 03 04	704	(2.6−	0.2−)	1998 03 22	327	0.1+	0.4−	1999 06 15	704	1.1+	0.7−
1998 03 04	704	(3.0−	0.3+)	1998 03 22	327	0.3+	0.4−	1999 06 15	704	0.9+	0.6−
1998 03 04	704	(2.5−	0.3+)	1998 03 22	327	0.6+	0.6−	1999 06 15	704	0.2+	0.0
1998 03 04	704	(3.0−	0.1−)	1999 06 11	703	0.4−	1.4−	1999 06 15	704	0.3−	0.7+

1998 EB₉ = 1991 JV₄

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	1.62238		(2000.0)	P		Q	
<i>n</i>	0.25677416	ω	196.58284	+0.45141145		+0.88296411	
<i>a</i>	2.4515185	Ω	100.40688	−0.80309248		+0.46495563	
<i>e</i>	0.1050987	<i>i</i>	7.52762	−0.38893467		+0.06473513	
<i>P</i>	3.84	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1976 09 15	413	0.0	0.1−	1998 03 02	327	0.4−	0.2−	1998 03 08	327	0.3+	0.8+
1976 09 15	413	0.0	0.5+	1998 03 02	327	0.2−	0.3+	1998 03 14	327	0.0	0.5−
1991 05 13	809	0.4+	0.3−	1998 03 04	704	(3.9−	0.4−)	1998 03 14	327	0.7+	0.0
1991 05 13	809	0.2−	1.4−	1998 03 04	704	1.7−	0.9+	1998 03 14	327	0.7+	0.1−
1991 05 13	809	0.4−	0.8−	1998 03 04	704	(2.8−	0.9−)	1999 06 15	704	0.5−	1.1+
1991 05 17	809	1.0+	0.0	1998 03 04	704	(4.2−	1.1+)	1999 06 15	704	0.2−	0.7+
1991 05 17	809	1.5−	0.5+	1998 03 04	704	(2.3−	1.0−)	1999 06 15	704	0.4−	0.3+
1991 05 17	809	(3.0−	0.3+)	1998 03 08	327	0.9+	0.2+	1999 06 15	704	0.7+	0.4−
1998 03 02	327	0.2−	0.3+	1998 03 08	327	0.7+	0.3+	1999 06 15	704	0.3+	0.5+

1998 EJ₉ = 1999 LS₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	160.44111		(2000.0)	P		Q	
<i>n</i>	0.23114668	ω	316.13089	+0.15731900		−0.93164362	
<i>a</i>	2.6295268	Ω	122.15600	+0.97867755		+0.10272440	
<i>e</i>	0.1057277	<i>i</i>	22.76193	+0.13206436		+0.34855109	
<i>P</i>	4.26	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 01	327	0.3+	0.5+	1998 03 16	327	0.4−	0.4−	1999 06 07	704	0.4−	0.2−
1998 03 01	327	0.5+	0.5+	1998 03 19	327	0.2−	0.1+	1999 06 07	704	0.2−	0.8+
1998 03 01	327	0.4+	0.6+	1998 03 19	327	0.2−	0.7−	1999 06 07	704	0.8−	0.0
1998 03 11	327	0.7−	0.2+	1998 03 19	327	0.1+	0.8−	1999 06 07	704	0.9−	0.3+
1998 03 11	327	0.0	0.6+	1999 05 14	704	0.6+	0.3−	1999 06 12	704	0.3+	0.4+
1998 03 11	327	0.3−	0.6+	1999 05 14	704	0.9−	0.1−	1999 06 12	704	1.0+	0.2+
1998 03 14	327	0.0	0.2−	1999 05 14	704	0.7−	1.3−	1999 06 12	704	0.1+	0.7+
1998 03 14	327	0.1+	0.5−	1999 05 14	704	0.6+	1.3−	1999 06 12	704	0.6+	0.2+
1998 03 14	327	0.3+	0.2−	1999 05 14	704	0.4+	0.2−	1999 06 12	704	0.5−	0.1−
1998 03 16	327	0.1−	0.2−	1999 06 07	704	0.6+	1.3+				

1998 EM₉ = 1991 HA₅

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	185.14571		(2000.0)	P		Q	
<i>n</i>	0.26665665	ω	77.26873	−0.26003087		−0.96356235	
<i>a</i>	2.3905680	Ω	28.04637	+0.82610402		−0.25561602	
<i>e</i>	0.0629546	<i>i</i>	7.66355	+0.49993609		−0.07879115	
<i>P</i>	3.70	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	2

1999 JUNE 22

1977 08 08	413	0.4−	0.3+	1998 03 08	327	0.6+	1.0+	1998 03 19	327	0.4−	0.2+
1977 08 08	413	0.2+	0.4+	1998 03 08	327	0.8+	0.9+	1998 03 19	327	0.1−	0.3+
1991 04 19	809	0.2−	0.4−	1998 03 08	327	0.5+	0.8+	1998 03 22	411	0.3+	0.4−
1991 04 19	809	0.3+	0.1+	1998 03 14	327	0.5−	0.1+	1998 03 22	411	0.1+	0.1+
1991 04 19	809	0.6−	0.6−	1998 03 14	327	0.2−	0.0	1998 03 24	327	0.3+	0.2+
1998 01 26	566	0.1+	0.2−	1998 03 14	327	0.1−	0.2+	1998 03 24	327	0.3+	0.2+
1998 01 26	566	0.3+	0.3−	1998 03 15	411	0.5−	0.1−	1998 03 24	327	0.1+	0.0
1998 01 26	566	0.3+	0.1−	1998 03 15	411	1.2−	0.0	1998 03 24	327	0.3+	0.2+
1998 02 27	566	0.1+	1.0−	1998 03 16	411	0.8−	0.1−				

1998 EN₉ = 1999 LV₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	327.24293		(2000.0)	P	Q
<i>n</i>	0.23124834	<i>ω</i>	244.89300	+0.67683425	+0.73477076
<i>a</i>	2.6287561	<i>Ω</i>	67.78025	−0.65676076	+0.63022557
<i>e</i>	0.0680908	<i>i</i>	2.77404	−0.33250670	+0.25085386
<i>P</i>	4.26	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1994 03 12	691	0.0	0.5−	1998 03 06	888	0.1+	0.2−	1999 06 09	704	0.0	0.2+
1994 03 12	691	0.4−	0.4−	1998 03 07	888	0.3+	0.8+	1999 06 09	704	0.0	0.1−
1994 03 12	691	0.1−	0.2−	1998 03 07	888	0.7+	1.0+	1999 06 09	704	0.2+	0.8+
1998 02 27	566	0.5+	0.3−	1998 03 07	888	0.1−	0.7+	1999 06 09	704	0.2+	0.4+
1998 02 27	566	0.3+	1.0−	1998 03 15	888	0.7+	0.3+	1999 06 09	704	1.0+	0.8+
1998 02 27	566	0.0	0.0	1998 03 16	888	0.0	0.4−	1999 06 15	704	0.4−	0.1+
1998 03 04	704	(2.6−	0.4−)	1998 03 16	888	0.2+	0.2+	1999 06 15	704	0.3−	0.4−
1998 03 04	704	(2.6−	0.4−)	1998 03 23	888	0.0	0.5−	1999 06 15	704	0.5+	0.3−
1998 03 04	704	1.9−	0.0	1998 03 23	888	0.5+	0.2+	1999 06 15	704	1.1−	0.6−
1998 03 04	704	(3.5−	1.2−)	1998 04 04	888	0.2−	0.2−	1999 06 15	704	0.0	0.4−
1998 03 06	888	0.1−	0.2+	1998 04 04	888	0.3−	0.0				
1998 03 06	888	0.3−	0.2−	1998 04 04	888	0.1+	0.5+				

1998 EU₁₁ = 1999 JM₈₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	278.50748		(2000.0)	P	Q
<i>n</i>	0.24144792	<i>ω</i>	232.85666	+0.98796990	−0.11414043
<i>a</i>	2.5541932	<i>Ω</i>	133.43503	+0.14089084	+0.94251566
<i>e</i>	0.2732418	<i>i</i>	8.26157	−0.06375936	+0.31406400
<i>P</i>	4.08	<i>H</i>	13.2	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1995 07 03	691	0.2−	0.3+	1998 03 25	704	0.1−	0.4+	1999 05 17	704	1.5+	1.2+
1995 07 03	691	0.0	0.5−	1998 04 02	809	0.2+	0.2−	1999 05 21	704	0.3−	0.2−
1995 07 03	691	0.1+	0.2−	1998 04 02	809	0.8−	0.3+	1999 05 21	704	1.4−	0.7−
1998 02 26	566	0.3−	0.4−	1998 04 02	809	0.5−	0.4−	1999 05 21	704	0.7−	1.1+
1998 02 26	566	0.2−	0.3−	1998 04 03	809	0.4+	2.0+	1999 05 21	704	1.2+	0.5−
1998 02 26	566	0.3−	0.2−	1998 04 03	809	0.0	0.4+	1999 06 06	703	0.2+	0.5−
1998 03 01	809	(3.4+	0.1+)	1998 04 03	809	0.7+	0.5+	1999 06 06	703	0.3−	0.4+
1998 03 01	809	(2.8+	0.7+)	1998 04 18	704	(2.3+	0.4+)	1999 06 06	703	1.2+	0.6+
1998 03 01	809	(2.7+	0.1+)	1998 04 18	704	1.0+	0.9+	1999 06 06	703	0.3−	1.1+
1998 03 02	809	(3.8+	0.2−)	1998 04 18	704	(2.3+	1.3−)	1999 06 08	704	0.2+	0.6+
1998 03 02	809	(2.9+	0.4+)	1998 04 18	704	(3.5+	3.3+)	1999 06 08	704	0.0	0.3+
1998 03 02	809	(2.4+	0.0)	1998 05 12	704	0.3−	0.8−	1999 06 08	704	0.1+	0.5−
1998 03 24	704	0.6+	0.9+	1999 05 12	704	0.7−	0.5−	1999 06 08	704	0.6+	0.6+
1998 03 24	704	0.9−	1.0−	1999 05 12	704	0.5+	0.0	1999 06 08	704	0.3−	0.1+
1998 03 24	704	0.4−	1.5−	1999 05 12	704	0.0	0.5−	1999 06 14	704	0.2−	0.3−
1998 03 24	704	0.3−	1.2−	1999 05 12	704	0.9+	0.1+	1999 06 14	704	0.1−	0.0
1998 03 25	704	0.0	0.7−	1999 05 17	704	0.8−	0.1−	1999 06 14	704	0.2−	0.2−
1998 03 25	704	0.3+	0.7+	1999 05 17	704	0.4−	0.4−	1999 06 14	704	0.4−	0.0
1998 03 25	704	0.3+	0.6+	1999 05 17	704	0.3+	0.3−	1999 06 14	704	0.5−	0.2−
1998 03 25	704	0.2+	0.3−	1999 05 17	704	0.1+	0.2−				

1998 EA₁₂ = 1978 WG₅

Id. A. Gnädig, G. V. Williams

M.P.C. 34907

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	107.51426		(2000.0)	P	Q
<i>n</i>	0.27046488	<i>ω</i>	131.05346	−0.82128247	+0.56732530
<i>a</i>	2.3680750	<i>Ω</i>	83.59420	−0.53996069	−0.73880103
<i>e</i>	0.1595687	<i>i</i>	3.47926	−0.18422150	−0.36375134
<i>P</i>	3.64	<i>H</i>	15.4	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1978 11 29	675	0.3−	0.4+	1998 03 02	809	(1.8+	3.2−)	1998 04 03	809	0.2+	0.5+
1978 11 30	675	(4.8−	0.0)	1998 03 02	809	(1.5+	3.6−)	1998 04 03	809	0.5−	0.1+
1987 04 27	675	0.8+	0.5+	1998 03 25	704	0.3−	0.8+	1998 04 18	704	0.1+	0.4+
1987 04 27	675	0.6−	0.5−	1998 03 25	704	0.7−	0.8+	1998 04 18	704	(0.2+	2.3−)
1995 05 30	691	0.8+	1.5+	1998 03 25	704	0.9−	0.3+	1998 04 18	704	0.1−	0.1−
1995 05 30	691	0.2+	0.1+	1998 03 25	704	0.8−	1.1+	1998 04 18	704	(1.9−	2.9+)
1995 05 30	691	0.8−	2.0−	1998 03 25	704	0.6−	1.0+	1998 04 28	699	0.0	1.0+
1998 02 26	566	0.1−	0.0	1998 03 26	704	0.1+	0.3+	1998 04 28	699	0.1+	0.3+
1998 02 26	566	0.3−	0.1−	1998 03 26	704	0.2+	0.3−	1998 04 28	699	0.2−	1.5+
1998 02 26	566	0.0	0.1−	1998 03 26	704	1.0−	0.9+	1998 04 29	566	0.3−	0.2−
1998 03 01	809	1.6+	1.1−	1998 04 02	809	1.0+	1.7−	1998 04 29	566	0.1−	0.2+
1998 03 01	809	0.0	0.9−	1998 04 02	809	0.3+	1.0−	1998 04 29	566	0.4−	0.1+
1998 03 01	809	1.6+	1.5−	1998 04 02	809	0.2+	1.8−				
1998 03 02	809	(0.6+	2.9−)	1998 04 03	809	0.5+	0.3−				

1998 FJ = 1988 DJ₃

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	79.92390		(2000.0)	P	Q
<i>n</i>	0.31170118	<i>ω</i>	3.28272	+0.19407095	+0.98077853
<i>a</i>	2.1543210	<i>Ω</i>	277.90842	−0.90050340	+0.16992341
<i>e</i>	0.1471681	<i>i</i>	1.17128	−0.38914020	+0.09591405
<i>P</i>	3.16	<i>H</i>	15.4	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1988 02 16	809	1.2+	1.0+	1998 03 22	704	0.4+	1.7−	1998 04 19	704	0.1−	0.5−
1988 02 16	809	0.1−	0.7+	1998 03 22	704	1.0+	0.1−	1998 04 19	704	0.3+	0.5+
1988 02 16	809	0.6−	0.6+	1998 03 28	704	0.1+	0.1+	1998 04 19	704	0.3−	0.4+
1995 05 29	413	0.4+	0.4−	1998 03 28	704	0.6−	0.5+	1998 04 19	704	0.5+	0.1+
1995 05 29	413	0.0	1.6+	1998 03 28	704	0.2+	0.0	1998 04 20	704	0.4+	0.2+
1997 02 03	691	0.1+	0.6−	1998 03 28	704	0.5−	0.7+	1998 04 20	704	(2.2−	2.0+)
1997 02 03	691	0.0	0.4−	1998 03 28	704	0.0	0.2+	1998 04 20	704	0.1−	0.5+
1997 02 03	691	0.2+	0.4−	1998 03 29	704	0.2+	0.2−	1998 04 20	704	0.1−	0.9+
1998 03 18	426	0.3+	0.4+	1998 03 29	704	0.3+	0.4+	1998 04 20	552	0.4+	0.8−
1998 03 18	426	0.4−	0.1−	1998 03 29	704	0.3−	0.4+	1998 04 20	552	0.0	0.6+
1998 03 18	426	0.6+	0.2−	1998 03 29	704	0.5+	0.9+	1998 04 22	426	0.4−	0.2−
1998 03 20	704	0.0	0.0	1998 03 29	704	0.4+	0.9+	1998 04 22	426	0.1+	0.7−
1998 03 20	704	0.6+	0.4−	1998 04 01	704	0.0	0.0	1998 04 22	426	0.6−	0.4−
1998 03 20	704	1.1−	0.8−	1998 04 01	704	0.1+	0.3+	1998 04 22	552	0.3−	0.4−
1998 03 20	704	0.2+	0.5+	1998 04 01	704	0.0	0.4+	1998 04 22	552	0.1−	0.7−
1998 03 20	704	0.4−	0.1−	1998 04 01	704	0.0	0.1−	1998 04 22	552	0.1−	0.9−
1998 03 20	426	0.7−	0.4−	1998 04 01	704	0.2−	0.6−	1998 04 25	552	0.1+	0.1−
1998 03 20	426	0.2−	0.1−	1998 04 02	426	0.1−	0.2−	1998 04 25	552	0.3+	0.7−
1998 03 20	426	0.2+	0.0	1998 04 02	426	0.0	0.2−	1998 04 25	552	0.2+	0.3+
1998 03 21	426	0.1+	0.0	1998 04 02	426	0.1+	0.1−	1998 05 15	426	0.4−	0.0
1998 03 21	426	0.2−	0.7−	1998 04 17	426	0.5−	0.5−	1998 05 15	426	0.0	0.3+
1998 03 21	426	0.4+	0.1−	1998 04 17	426	0.7−	0.2−	1998 05 15	426	0.1−	0.5+
1998 03 22	704	1.3−	0.8−	1998 04 17	426	0.1+	0.1+	1998 05 18	426	0.5−	0.0
1998 03 22	704	1.0+	0.4+	1998 04 19	704	0.0	0.0	1998 05 18	426	0.0	0.6+

1998 FH₂ = 1987 DN₅

M.P.C. 34908

1999 JUNE 22

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

<i>M</i>	106.23528		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.27019742	ω	236.65393	-0.70622365	+0.70310139
<i>a</i>	2.3696375	Ω	347.30510	-0.45585188	-0.54132530
<i>e</i>	0.2537945	<i>i</i>	22.20329	-0.54170769	-0.46110233
<i>P</i>	3.65	<i>H</i>	14.8	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1987 02 23	010	0.6-	1.5-	1998 01 28	566	0.6+	1.0-	1998 03 22	704	0.7-	0.1+
1987 02 23	010	0.3-	0.2+	1998 01 28	566	0.4+	0.9-	1998 03 22	704	0.2-	0.0
1989 10 09	675	1.1+	1.9+	1998 03 20	704	0.2+	0.0	1998 03 22	704	0.9-	0.3-
1989 10 09	675	1.3-	2.6-	1998 03 20	704	0.2+	0.4+	1998 03 26	704	0.1+	0.1+
1989 11 25	675	1.2-	1.1+	1998 03 20	704	0.3-	1.0+	1998 03 26	704	0.2+	0.1-
1989 11 25	675	0.3+	0.3+	1998 03 20	704	0.2+	0.5+	1998 03 26	704	0.2+	0.2-
1995 08 29	413	0.1-	0.1-	1998 03 20	704	0.1-	0.5+	1998 04 04	699	0.7-	0.6+
1995 08 29	413	0.8+	0.1-	1998 03 22	704	0.8-	0.3+	1998 04 04	699	0.7-	0.8+
1998 01 28	566	0.2+	0.8-	1998 03 22	704	2.9+	1.7-	1998 04 04	699	0.1+	0.8+

1998 FV₉ = 1999 JX₅₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	300.31979		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.29292885	ω	11.98113	+0.96025724	+0.27636349
<i>a</i>	2.2454046	Ω	331.88079	-0.26244773	+0.84631328
<i>e</i>	0.1572050	<i>i</i>	4.75945	-0.09501165	+0.45538671
<i>P</i>	3.36	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 01 29	566	0.1+	0.5-	1998 03 25	910	0.0	0.2-	1999 05 18	704	1.8-	0.9-
1998 01 29	566	0.2+	0.4-	1999 05 10	704	0.4-	0.7+	1999 05 18	704	0.9-	0.4-
1998 01 29	566	0.4+	0.9-	1999 05 10	704	1.0+	1.5-	1999 05 19	704	1.7-	1.5-
1998 02 02	372	0.3-	1.4+	1999 05 10	704	1.4+	0.5+	1999 05 19	704	0.7-	0.1-
1998 02 02	372	0.4+	0.8+	1999 05 10	704	0.5+	0.3+	1999 05 19	704	0.4-	0.4-
1998 02 04	372	(0.6-	2.7+)	1999 05 13	704	0.6+	0.4-	1999 05 19	704	0.6+	1.3+
1998 02 05	372	(1.9+	2.4+)	1999 05 13	704	1.4+	1.1-	1999 06 15	704	0.2+	0.1-
1998 03 24	910	0.5-	0.2-	1999 05 13	704	(3.0-	0.9-)	1999 06 15	704	0.2+	0.5+
1998 03 24	910	0.1-	0.1-	1999 05 13	704	0.5+	0.0	1999 06 15	704	0.7+	0.4-
1998 03 24	910	0.2-	0.0	1999 05 18	704	0.4-	0.4+	1999 06 15	704	0.2+	1.4+
1998 03 25	910	0.1+	0.2+	1999 05 18	704	1.5-	0.1+	1999 06 15	704	0.7+	0.1-
1998 03 25	910	0.2-	0.2+	1999 05 18	704	0.2+	1.7+				

1998 FR₁₀ = 1990 EH₁₀

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	14.82851		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.12610127	ω	260.11647	-0.34113316	+0.93972181
<i>a</i>	3.9384296	Ω	349.84333	-0.80184314	-0.30393307
<i>e</i>	0.1514857	<i>i</i>	7.65026	-0.49058715	-0.15667679
<i>P</i>	7.82	<i>H</i>	12.3	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1950 03 21	675	0.4-	0.2-	1998 03 22	704	0.3+	0.0	1998 03 29	704	0.1+	1.5-
1950 03 21	675	0.1-	0.1+	1998 03 22	704	0.4-	0.1+	1998 04 01	704	0.1+	0.1+
1954 11 23	675	0.6-	1.0+	1998 03 22	704	1.4-	0.1+	1998 04 01	704	0.7+	0.1+
1954 11 23	675	0.1-	0.2-	1998 03 22	704	1.0-	0.0	1998 04 01	704	0.3-	0.3+
1955 10 23	675	0.5-	1.5-	1998 03 22	704	(2.0-	0.2-)	1998 04 01	704	0.4+	0.4+
1955 11 11	675	0.9+	0.4+	1998 03 24	691	0.2-	0.6+	1998 04 01	704	0.0	0.4+
1955 11 11	675	2.1+	1.3-	1998 03 24	691	0.0	0.2+	1998 04 18	704	0.1-	0.3-
1976 09 15	413	1.3-	2.0-	1998 03 24	691	0.0	0.4+	1998 04 18	704	0.7+	0.6-
1976 09 15	413	1.3+	0.9-	1998 03 24	910	1.1+	0.3-	1998 04 18	704	0.7-	0.3+
1990 03 06	809	1.1-	0.0	1998 03 25	910	1.2+	0.3-	1998 04 18	704	0.7-	1.2-
1990 03 06	809	0.8-	0.2-	1998 03 25	910	1.1+	0.4-	1998 04 18	704	0.4-	1.1-
1990 03 06	809	0.6-	0.3-	1998 03 25	910	0.8+	0.3-	1998 04 19	704	0.3+	0.1+
1997 01 09	691	0.4-	0.3+	1998 03 25	910	1.0+	0.4-	1998 04 19	704	0.3+	0.9+
1997 01 09	691	0.4-	0.3+	1998 03 26	910	0.8+	0.2-	1998 04 19	704	0.1-	0.1+
1997 01 09	691	0.4-	0.3+	1998 03 28	704	0.0	0.1+	1998 04 19	704	0.1-	0.1+

1998 03 08	699	0.3+	0.3+	1998 03 28	704	0.0	0.1-	1998 04 19	704	0.8-	0.4-
1998 03 08	699	0.0	0.1+	1998 03 28	704	0.4+	0.1-	1998 04 20	704	0.3+	0.1+
1998 03 08	699	0.4-	0.7-	1998 03 28	704	0.4-	0.7-	1998 04 20	704	1.4+	0.9+
1998 03 20	704	0.0	0.5+	1998 03 28	704	0.3-	0.5-	1998 04 20	704	0.6+	0.7+
1998 03 20	704	0.5-	0.7-	1998 03 29	704	0.5+	0.5-	1998 04 20	704	0.4+	0.4+
1998 03 20	704	1.0-	0.2+	1998 03 29	704	0.1+	0.5+	1998 04 20	704	0.3-	0.3+
1998 03 20	704	0.8-	0.2+	1998 03 29	704	0.1-	0.0				
1998 03 20	704	0.2-	0.2+	1998 03 29	704	0.1-	0.2-				

1998 FO₁₁ = 1991 RV₃₇

Id. A. Gnädig, S. Nakano, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

<i>M</i>	108.79713		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.23249767	ω	18.77111	-0.94943154	+0.31396836
<i>a</i>	2.6193306	Ω	179.51508	-0.30907874	-0.93354627
<i>e</i>	0.0511272	<i>i</i>	12.97946	-0.05522749	-0.17296019
<i>P</i>	4.24	<i>H</i>	14.0	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1954 12 21	675	1.0+	0.2-	1998 03 28	704	0.3+	0.2-	1998 04 20	704	0.2+	0.3-
1954 12 21	675	1.1-	0.2-	1998 03 28	704	0.5-	0.5-	1998 04 20	704	0.1+	0.1-
1982 08 18	413	0.9-	1.0+	1998 03 28	704	0.0	0.1-	1998 04 20	704	0.0	0.9-
1982 08 18	413	1.0+	0.5+	1998 03 28	704	0.9-	0.5-	1998 04 20	888	0.1-	0.2+
1991 09 15	675	0.3-	1.1-	1998 03 29	704	0.4-	0.0	1998 04 20	888	0.0	0.2+
1991 09 15	675	0.6+	1.4-	1998 03 29	704	1.0-	0.1+	1998 04 20	888	0.1+	0.1+
1998 03 20	704	0.4-	0.1+	1998 03 29	704	0.1-	0.0	1998 04 22	704	0.0	0.0
1998 03 20	704	0.7-	0.3+	1998 03 29	704	0.8-	0.6+	1998 04 22	704	0.7+	0.1-
1998 03 20	704	0.5+	0.3+	1998 03 29	704	0.8-	0.7+	1998 04 22	704	0.1-	0.0
1998 03 20	704	2.2+	1.6+	1998 03 29	888	0.2+	0.1-	1998 04 22	704	0.1-	1.0-
1998 03 20	704	0.3+	2.4+	1998 03 29	888	0.0	0.1-	1998 04 22	704	0.4-	0.2-
1998 03 22	704	0.4+	0.1-	1998 03 29	888	0.1-	0.1-	1998 04 22	888	0.4+	0.2-
1998 03 22	704	0.0	0.5+	1998 04 03	886	0.7+	0.2+	1998 04 22	888	0.0	0.4-
1998 03 22	704	0.3+	0.2+	1998 04 03	886	0.9+	0.2+	1998 04 22	888	0.0	0.1-
1998 03 22	704	0.1-	0.1+	1998 04 19	704	0.4+	0.5-	1998 04 28	566	0.3+	0.0
1998 03 22	704	0.0	0.9+	1998 04 19	704	0.0	0.3-	1998 04 28	566	0.5+	0.2+
1998 03 22	905	0.4+	0.4-	1998 04 19	704	0.8-	1.6-	1998 04 28	566	0.2-	0.0
1998 03 22	905	0.6-	0.8+	1998 04 19	704	0.4-	0.5-	1998 05 03	566	0.8+	1.0-
1998 03 25	888	0.3-	0.2+	1998 04 19	886	0.2+	0.9-	1998 05 03	566	0.7+	0.2+
1998 03 25	888	0.0	0.0	1998 04 19	886	2.3-	0.4-	1998 05 03	566	0.2+	1.1-
1998 03 25	888	0.0	0.1-	1998 04 20	704	0.1+	1.0-	1998 05 21	385	0.5-	0.2+
1998 03 28	704	0.3+	0.2+	1998 04 20	704	(6.3-	0.3+)	1998 05 21	385	0.2+	0.5+

1998 FA₁₂ = 1991 HY₁

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	145.67975		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.27836917	ω	147.33988	-0.99538486	-0.06265435
<i>a</i>	2.3230325	Ω	29.33000	+0.01666290	-0.85878435
<i>e</i>	0.0483974	<i>i</i>	8.53362	+0.09450568	-0.50849176
<i>P</i>	3.54	<i>H</i>	15.4	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1974 06 17	413	0.6-	0.3-	1998 03 24	704	0.2-	0.5+	1998 03 25	566	0.8-	0.7-
1974 06 17	413	1.3+	0.6-	1998 03 24	704	0.1+	0.5+	1998 03 25	566	0.8-	1.0-
1991 04 17	675	(2.5-	0.7+)	1998 03 24	704	0.3+	0.3+	1998 03 25	566	0.7-	0.9-
1991 04 17	675	0.0	1.2-	1998 03 24	704	0.5-	0.2+	1998 04 17	327	0.3+	0.6+
1991 04 19	809	0.5+	0.3+	1998 03 24	704	0.1-	0.3-	1998 04 17	327	0.2+	1.0+
1991 04 19	809	0.6-	0.9+	1998 03 24	704	0.0	0.3-	1998 04 17	327	0.0	0.9+
1991 04 19	809	1.2-	0.1+	1998 03 24	704	0.3-	0.1-	1998 04 18	327	0.4+	0.7+
1991 05 05	413	0.2+	0.2+	1998 03 24	566	0.6-	0.6-	1998 04 18	327	0.4+	0.1+
1991 05 05	413	0.4-	1.0-	1998 03 24	566	0.6-	0.7-	1998 04 18	327	0.3+	0.6+
1996 10 18	566	0.3	0.3-	1998 03 24	566	0.8-	0.6-	1998 04 19	704	1.1+	0.6+
1996 10 18	566	0.2-	0.2-	1998 03 25	704	0.6+	0.1-	1998 04 19	704	0.9+	0.8+
1996 10 18	566	0.6+	0.3-	1998 03 25	704	0.9+	1.1-	1998 04 19	704	0.6+	0.5+
1998 02 23	566	0.5+	0.2-	1998 03 25	704	0.6+	0.9-	1998 04 19	704	0.3+	0.0
1998 02 23	566	0.9+	0.1-	1998 03 25	704	0.9+	0.3+	1998 04 19	704	0.5-	0.3-

1999 JUNE 22

1998 02 23	566	0.3+	0.2+	1998 03 25	704	0.5−	0.5+	1998 04 20	327	0.1+	0.5+
1998 03 24	704	0.7−	0.3−	1998 03 25	566	0.2−	0.6−	1998 04 20	327	0.1+	0.5+
1998 03 24	704	0.3−	0.2−	1998 03 25	566	1.0−	0.9−	1998 04 20	327	0.3+	0.8+
1998 03 24	704	0.2+	0.6+	1998 03 25	566	0.3−	0.5−				

1998 FY₁₄ = 1990 RC₁₁

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

M	43.82584		(2000.0)	P	Q
n	0.22586678	ω	285.43204	+0.27996171	+0.96000518
a	2.6703477	Ω	0.84853	−0.76936889	+0.22647765
e	0.2508642	i	13.23985	−0.57418896	+0.16461451
P	4.36	H	14.4	G 0.15	U 3

Residuals in seconds of arc

1990 09 14	675	0.9+	1.0−	1998 03 24	691	0.8−	0.2+	1998 04 01	704	0.3−	1.1+
1990 09 14	675	0.3+	1.1−	1998 03 26	910	1.2+	0.0	1998 04 01	704	0.9−	0.1+
1993 03 22	675	0.6+	1.3−	1998 03 27	910	1.3+	0.1+	1998 04 01	704	0.5−	0.1+
1993 03 22	675	0.5−	0.8+	1998 03 27	910	1.1+	0.1+	1998 04 18	704	0.2−	0.1−
1997 12 08	910	1.4−	0.5+	1998 03 28	910	1.0+	0.0	1998 04 18	704	0.6−	0.6+
1997 12 08	910	1.5−	0.3+	1998 03 28	910	1.0+	0.0	1998 04 18	704	0.0	0.1+
1997 12 08	910	1.1−	0.0	1998 03 28	910	1.0+	0.0	1998 04 18	704	0.3−	0.0
1998 02 26	566	0.4−	0.3−	1998 03 28	704	0.2+	0.1+	1998 04 19	704	0.7+	0.0
1998 02 26	566	0.1+	0.4−	1998 03 28	704	0.5−	0.1+	1998 04 19	704	0.2−	0.2+
1998 02 26	566	0.6−	0.5−	1998 03 28	704	0.0	0.4−	1998 04 19	704	0.2−	0.2+
1998 03 20	704	0.0	0.5−	1998 03 28	704	0.8−	0.4−	1998 04 19	704	0.2−	0.5+
1998 03 20	704	0.0	1.0−	1998 03 28	704	0.7−	0.3−	1998 04 19	704	0.4+	0.8+
1998 03 20	704	0.8−	0.1+	1998 03 28	910	1.3+	0.3−	1998 04 20	704	0.7−	0.1+
1998 03 20	704	0.2+	1.9−	1998 03 28	910	1.2+	0.3−	1998 04 20	704	0.9−	1.0+
1998 03 20	704	0.0	1.4−	1998 03 29	910	1.3+	0.3−	1998 04 20	704	1.1−	1.0+
1998 03 22	704	0.3−	0.9−	1998 03 29	704	0.1−	0.0	1998 04 20	704	0.7−	1.8+
1998 03 22	704	0.1−	0.6−	1998 03 29	704	0.5+	0.2−	1998 04 20	704	1.2−	0.4+
1998 03 22	704	0.4−	0.9−	1998 03 29	704	0.2−	0.2−	1998 05 02	699	0.4+	0.4+
1998 03 22	704	0.1−	0.5+	1998 03 29	704	0.9+	0.1+	1998 05 02	699	1.4+	0.2−
1998 03 22	704	0.2+	1.3−	1998 03 29	704	0.1−	0.4−	1998 05 02	699	1.2+	0.4+
1998 03 24	691	0.7−	0.5+	1998 04 01	704	0.2−	0.8−				
1998 03 24	691	0.8−	0.2+	1998 04 01	704	0.0	0.6+				

1998 FL₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	157.15408		(2000.0)	P	Q
n	0.24042168	ω	333.48737	−0.47375224	−0.87222458
a	2.5614563	Ω	144.41836	+0.84054702	−0.48903650
e	0.1643174	i	12.06140	+0.26275372	−0.00822129
P	4.10	H	14.2	G 0.15	U 3

Residuals in seconds of arc

1998 01 24	566	0.1+	0.1−	1998 03 25	704	1.6−	1.0+	1998 04 22	426	0.2−	0.0
1998 01 24	566	0.0	0.1+	1998 03 27	426	0.2+	0.6−	1998 04 22	426	0.2−	0.1−
1998 01 24	566	0.1+	0.0	1998 03 27	426	0.2−	0.7−	1998 04 22	426	0.3+	0.9−
1998 02 25	566	0.2−	0.2+	1998 03 27	426	0.1−	0.3−	1999 06 05	426	0.2−	0.3−
1998 02 25	566	0.0	0.1−	1998 03 28	426	0.3+	0.5−	1999 06 05	426	0.2−	0.2−
1998 02 25	566	0.0	0.0	1998 03 28	426	0.2+	0.1−	1999 06 05	426	0.4−	0.5−
1998 03 24	704	0.1+	0.4−	1998 03 28	426	0.2−	0.6−	1999 06 07	426	0.4−	0.2−
1998 03 24	704	0.2−	0.3−	1998 03 30	426	0.2+	0.4−	1999 06 07	426	0.2−	0.7−
1998 03 24	704	0.1+	1.0+	1998 03 30	426	0.4+	0.2−	1999 06 07	426	0.1−	0.1−
1998 03 24	704	0.1+	0.3+	1998 04 04	426	0.0	0.1+	1999 06 14	704	0.4+	0.0
1998 03 24	704	1.4−	1.4+	1998 04 04	426	0.2−	0.5−	1999 06 14	704	0.5+	0.8+
1998 03 25	704	0.6+	0.1−	1998 04 04	426	0.2+	0.3−	1999 06 14	704	0.4+	1.2+
1998 03 25	704	0.2+	0.1+	1998 04 14	426	0.3+	0.3−	1999 06 14	704	0.2+	0.3+
1998 03 25	704	0.7+	1.6+	1998 04 14	426	0.4−	0.3−				
1998 03 25	704	0.4+	0.8+	1998 04 14	426	0.7+	0.0				

1998 FO₁₅ = 1983 EZ₁

Id. A. Gnädig, G. V. Williams, M. E. Sansaturio

M.P.C. 34909

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	163.74011		(2000.0)	P	Q
n	0.26168315	ω	147.05752	−0.82967904	−0.55824022
a	2.4207626	Ω	359.00737	+0.50247550	−0.74621946
e	0.1184999	i	2.45227	+0.24320992	−0.36266288
P	3.77	H	14.9	G 0.15	U 2

Residuals in seconds of arc

1951 11 30	675	1.5+	0.7+	1998 03 21	399	0.3−	1.3−	1998 03 29	704	0.4+	0.3+
1951 11 30	675	1.5−	0.6+	1998 03 22	704	0.1−	0.4+	1998 03 29	704	0.7−	0.3+
1983 03 11	381	0.1+	0.1−	1998 03 22	704	0.5+	0.2−	1998 03 29	704	0.5+	0.1+
1983 03 11	381	0.4+	0.2−	1998 03 22	704	0.1−	0.1+	1998 03 29	704	0.3+	1.9−
1983 03 12	413	0.8+	0.8+	1998 03 22	704	0.3−	0.0	1998 04 01	704	0.2+	0.3−
1983 03 12	413	2.1−	0.0	1998 03 22	704	0.5−	0.2+	1998 04 01	704	0.1−	0.1−
1996 10 05	691	0.0	0.0	1998 03 22	704	(2.2+ 0.1−)		1998 04 01	704	0.4+	0.5+
1996 10 05	691	0.0	0.3−	1998 03 22	704	0.6−	1.7−	1998 04 01	704	0.3−	0.2−
1996 10 05	691	0.1−	0.1−	1998 03 22	704	(0.6− 2.5−)		1998 04 01	704	0.0	0.3−
1998 01 24	910	1.2−	0.1+	1998 03 22	704	0.6−	0.1+	1998 04 19	704	0.0	0.1−
1998 01 24	910	1.1−	0.1+	1998 03 22	704	0.8−	0.6+	1998 04 19	704	0.3+	0.2−
1998 01 24	910	1.2−	0.3+	1998 03 24	704	0.4+	0.0	1998 04 19	704	0.9+	0.1−
1998 02 26	566	0.3+	0.1−	1998 03 24	704	0.4+	1.0+	1998 04 19	704	0.8+	0.3+
1998 02 26	566	0.0	0.2−	1998 03 24	704	0.1+	0.5+	1998 04 19	704	1.3+	0.3−
1998 02 26	566	0.2−	0.0	1998 03 24	704	0.7+	0.5+	1998 04 20	704	0.5+	0.4−
1998 03 08	699	0.7−	0.2+	1998 03 24	704	0.3−	0.0	1998 04 20	704	0.3+	0.7+
1998 03 08	699	1.0−	1.3+	1998 03 24	399	1.1+	1.6−	1998 04 20	704	0.4+	0.3+
1998 03 08	699	0.4−	0.2+	1998 03 24	399	0.3+	0.2+	1998 04 20	704	0.3−	0.9+
1998 03 20	704	0.3+	0.3+	1998 03 28	704	0.1+	0.1−	1998 04 20	704	0.4−	0.2+
1998 03 20	704	0.3−	0.6+	1998 03 28	704	0.5−	0.7−	1998 05 02	699	0.2+	0.4+
1998 03 20	704	0.2+	0.1−	1998 03 28	704	1.3+	0.1+	1998 05 02	699	0.2+	0.0
1998 03 20	704	0.2+	1.0−	1998 03 28	704	1.2−	1.0+	1998 05 02	699	0.2+	1.2+
1998 03 20	704	0.2−	0.4−	1998 03 28	704	0.4−	1.4−				
1998 03 21	399	1.1+	0.3−	1998 03 29	704	0.1+	0.1+				

1998 FG₁₆

Id. E. Colombini (1999 observations), E. Bowell (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	207.25772		(2000.0)	P	Q		
n	0.20349921	ω	321.14759	+0.74588468	−0.66377679		
a	2.8626015	Ω	80.53353	+0.62424575	+0.66768122		
e	0.0987324	i	3.21300	+0.23232151	+0.33704920		
P	4.84	H	13.6	G	0.15	U	4

Residuals in seconds of arc

1998 03 03	704	0.6+	0.0	1998 04 21	552	0.2+	0.1−	1999 06 04	703	0.5+	0.3−
1998 03 03	704	1.0−	0.2+	1998 04 21	552	0.2+	0.1−	1999 06 04	703	0.0	0.1−
1998 03 03	704	0.7+	0.9−	1999 04 19	699	0.9+	0.1−	1999 06 04	552	0.4−	0.1−
1998 03 03	704	1.7−	0.3+	1999 04 19	699	0.0	0.8−	1999 06 04	552	0.6−	0.4−
1998 03 04	704	0.2+	0.0	1999 04 19	699	0.4+	0.8+	1999 06 05	552	0.4−	0.5+
1998 03 04	704	0.1−	0.5−	1999 05 18	704	1.4−	1.3+	1999 06 05	552	0.8−	0.3−
1998 03 04	704	1.5+	0.9+	1999 05 18	704	0.2−	0.8−	1999 06 11	552	1.1−	0.4−
1998 03 04	704	(2.1−	0.8+)	1999 05 18	704	0.1−	0.8+	1999 06 11	552	1.5−	1.5−
1998 03 04	704	0.3−	1.5−	1999 05 18	704	0.0	1.1+	1999 06 14	704	0.7+	0.3−
1998 03 18	552	0.0	0.0	1999 05 18	704	0.4−	0.3+	1999 06 14	704	0.4+	0.0
1998 03 18	552	0.2−	0.5+	1999 05 23	552	0.1+	1.0−	1999 06 14	704	1.6+	0.8+
1998 03 25	552	0.1−	0.3+	1999 05 23	552	0.0	0.5−	1999 06 14	704	0.6+	0.6−
1998 03 25	552	0.5+	0.1−	1999 05 23	552	0.3+	0.5+	1999 06 14	704	0.6+	0.1+
1998 03 26	552	0.1+	0.3+	1999 06 04	703	0.3−	0.8+				
1998 03 26	552	0.5−	0.6+	1999 06 04	703	1.2+	0.1−				

M.P.C. 34910

1999 JUNE 22

1998 FC₂₉ = 1999 JW₉₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	264.56809		(2000.0)	P		Q	
<i>n</i>	0.17508412	ω	183.61953	+0.99667428	+0.07381817		
<i>a</i>	3.1644984	Ω	171.90095	−0.06725329	+0.98430981		
<i>e</i>	0.1267072	<i>i</i>	14.18088	−0.04601488	+0.16026562		
<i>P</i>	5.63	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1998 02 26	566	1.2−	0.0	1998 03 22	704	0.1+	0.5+
1998 02 26	566	1.5−	0.2−	1998 03 29	704	0.3+	0.0
1998 02 26	566	1.0−	0.2+	1998 03 29	704	1.0+	0.9+
1998 03 05	910	1.0+	0.6−	1998 03 29	704	0.1−	0.2−
1998 03 06	910	1.0+	0.8−	1998 03 29	704	0.2+	0.2−
1998 03 06	910	1.1+	0.7−	1998 03 29	704	1.4−	0.7−
1998 03 20	704	1.2−	0.5−	1999 05 12	704	0.1−	0.9−
1998 03 20	704	0.9+	0.3+	1999 05 12	704	0.3+	0.8−
1998 03 20	704	0.1−	0.1−	1999 05 12	704	0.1+	0.1+
1998 03 20	704	1.0−	1.0+	1999 05 12	704	0.4+	0.9+
1998 03 20	704	0.5−	0.1−	1999 05 12	704	0.9−	0.9+
1998 03 22	704	0.4+	0.1−	1999 05 17	704	0.1+	1.1−
1998 03 22	704	0.1+	0.1+	1999 05 17	704	(1.1+ 2.8−)	
1998 03 22	704	0.7+	0.3+	1999 05 17	704	0.9+	0.7−
1998 03 22	704	1.0+	1.1+	1999 05 17	704	0.1+	0.2−

1998 FF₃₀ = 1981 VH₁

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	186.00227		(2000.0)	P		Q	
<i>n</i>	0.26183406	ω	277.42934	−0.39208405	−0.91929249		
<i>a</i>	2.4198324	Ω	195.78844	+0.88584078	−0.36725949		
<i>e</i>	0.0948060	<i>i</i>	7.22644	+0.24810525	−0.14149837		
<i>P</i>	3.76	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1981 11 03	033	0.4−	0.1+	1998 03 20	704	0.8+	0.5+
1981 11 03	033	0.2+	0.9+	1998 03 20	704	0.1+	1.0−
1988 10 02	413	0.6+	0.1−	1998 03 20	704	(1.0+ 2.9−)	
1988 10 02	413	0.7−	0.1−	1998 03 20	704	0.3+	1.1−
1996 09 15	566	0.4+	0.0	1998 03 22	704	0.6−	0.1−
1996 09 15	566	0.2−	0.1+	1998 03 22	704	0.3+	0.2−
1996 09 15	566	0.0	0.7−	1998 03 22	704	0.3−	0.1−
1996 09 15	566	0.5+	0.1+	1998 03 22	704	1.1−	0.8+
1996 09 15	566	0.7+	0.7−	1998 03 22	704	0.7+	0.8−
1996 09 15	566	0.4+	0.3+	1998 03 26	704	0.1+	0.4−
1996 10 18	566	0.9−	0.0	1998 03 26	704	0.4−	1.1+
1996 10 18	566	0.4−	0.2−	1998 03 26	704	0.3−	0.7+
1996 10 18	566	0.0	0.2−	1998 03 29	704	0.2−	0.7+
1998 03 20	704	0.2−	1.4−	1998 03 29	704	0.2−	1.1−

1998 FF₃₂ = 1999 JG₄₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	257.47821		(2000.0)	P		Q	
<i>n</i>	0.15942261	ω	133.53163	+0.99823400	+0.01457484		
<i>a</i>	3.3684966	Ω	225.72482	−0.03359717	+0.93801147		
<i>e</i>	0.0832310	<i>i</i>	4.61337	+0.04899089	+0.34629765		
<i>P</i>	6.18	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1993 05 23	809	1.0−	0.6+	1998 04 01	704	0.1+	1.9−
1993 05 23	809	0.5−	0.3+	1998 04 01	704	0.8−	0.6+
1993 05 23	809	1.6+	0.5+	1998 04 01	704	0.8+	0.5−
1995 11 23	327	0.1+	0.8−	1998 04 18	704	1.0+	0.7+
1995 11 23	327	0.6+	0.9−	1998 04 18	704	0.4+	0.9+
1995 11 23	327	0.0	1.1−	1998 04 18	704	1.4−	0.3−
				1999 05 17	703	0.2−	0.2−
				1999 05 17	703	0.4+	1.8+
				1999 05 18	704	0.9+	0.9−
				1999 05 18	704	0.2−	0.3+
				1999 05 18	704	0.7+	1.3+
				1999 05 18	704	1.8+	0.6−

1998 03 20	704	0.1−	0.8+	1998 04 18	704	(0.8+ 2.1−)	
1998 03 20	704	0.0	1.2+	1998 04 19	704	2.0+	1.0−
1998 03 20	704	0.6−	0.8+	1998 04 19	704	0.3−	1.0−
1998 03 20	704	1.1−	2.0−	1998 04 19	704	0.4+	0.3−
1998 03 20	704	0.4+	0.1+	1998 04 19	704	0.5−	0.6+
1998 03 22	704	1.2+	1.6+	1998 04 19	704	0.2+	0.4−
1998 03 22	704	0.0	1.0+	1999 05 10	704	(1.3− 2.3−)	
1998 03 22	704	1.0−	0.5−	1999 05 10	704	0.1+	0.4−
1998 03 22	704	0.9+	0.4+	1999 05 10	704	0.2−	1.6+
1998 03 22	704	1.4+	0.1+	1999 05 10	704	0.3−	0.9−
1998 03 29	704	0.5−	0.2−	1999 05 13	704	0.7−	0.0
1998 03 29	704	1.2−	0.0	1999 05 13	704	0.5−	0.4+
1998 03 29	704	0.2+	0.1+	1999 05 13	704	0.1+	0.9+
1998 03 29	704	1.5−	0.3+	1999 05 13	704	0.6+	0.7+
1998 03 29	704	1.3−	1.1−	1999 05 13	704	1.5+	0.8+
1998 04 01	704	1.7+	0.1+	1999 05 17	703	0.6−	1.1+
1998 04 01	704	0.6−	1.2−	1999 05 17	703	0.6+	0.1−

1998 FY₃₄ = 1976 SL = 1986 VR = 1986 VA₈ = 1999 LR₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	233.23743		(2000.0)	P		Q	
<i>n</i>	0.20483543	ω	186.02331	+0.72423941	−0.68942153		
<i>a</i>	2.8501387	Ω	217.57233	+0.63355116	+0.67288016		
<i>e</i>	0.0730401	<i>i</i>	1.24394	+0.27219515	+0.26819815		
<i>P</i>	4.81	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1976 09 20	049	0.9+	1.4−	1998 03 22	704	0.2−	0.7−
1976 09 20	049	0.5+	0.4−	1998 03 22	704	0.5+	0.5−
1976 09 20	049	0.8+	1.1−	1998 03 26	566	0.5−	0.7−
1976 09 29	049	0.5+	2.3−	1998 03 26	566	0.3−	0.8−
1976 09 29	049	(1.5+ 15.5−)		1998 03 26	566	0.7−	0.6−
1976 09 30	049	0.5−	0.3−	1998 03 29	704	0.7−	0.6−
1976 09 30	049	(20.6− 19.4−)		1998 03 29	704	0.1−	0.1−
1986 11 03	046	1.4+	1.8−	1998 03 29	704	0.3−	0.9−
1986 11 07	046	0.9−	1.6−	1998 03 29	704	0.3−	0.4−
1986 11 07	046	0.3+	0.4+	1998 03 29	704	0.1−	0.7−
1998 03 20	704	0.3+	0.6−	1998 04 01	704	0.6+	1.3+
1998 03 20	704	0.2−	0.1−	1998 04 01	704	0.5+	0.7−
1998 03 20	704	0.1−	0.5−	1998 04 01	704	0.6+	0.7+
1998 03 20	704	1.3+	0.0	1998 04 01	704	0.1+	0.9−
1998 03 20	704	0.8+	0.7−	1998 04 01	704	0.4+	0.1+
1998 03 22	704	1.4−	0.8−	1998 04 18	704	0.0	0.1−
1998 03 22	704	0.4−	0.5+	1998 04 18	704	1.2−	0.3−
1998 03 22	704	0.2+	0.4−	1998 04 18	704	1.2−	0.7−

1998 FO₄₉ = 1982 UA₉ = 1982 VS₉ = 1989 WU₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	298.50266		(2000.0)	P		Q	
<i>n</i>	0.28169010	ω	25.12493	+0.91892852	−0.39439782		
<i>a</i>	2.3047385	Ω	358.08589	+0.33493567	+0.78637704		
<i>e</i>	0.1040451	<i>i</i>	7.83499	+0.20829900	+0.47545926		
<i>P</i>	3.50	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1982 10 21	095	0.9+	0.4−	1998 03 22	704	0.1−	0.0
1982 11 11	095	1.2−	1.0+	1998 03 22	704	0.1+	0.6+
1989 11 17	364	0.8+	1.5−	1998 03 22	704	0.6−	0.0
1989 11 17	364	0.4−	0.7+	1998 03 24	566	0.3−	0.2+
1998 01 30	910	0.3+	0.2−	1998 03 24	566	0.5−	0.2+
1998 01 30	910	0.2+	0.2−	1998 03 24	566	0.4−	0.2+
1998 01 30	910	0.3+	0.1−	1998 03 28	704	0.0	0.1+
1998 02 24	566	0.1+	0.5−	1998 03 28	704	0.3−	0.0
1998 02 24	566	0.3+	0.1−	1998 03 28	704	0.1+	0.2−
1998 02 24	566	0.3+	0.5−	1998 03 28	704	0.5+	0.4−
1998 03 20	704	0.2−	0.2−	1998 03 28	704	0.4−	0.0
				1998 04 01	704	0.1+	0.6+
				1998 04 01	704	0.7+	1.0−
				1998 04 01	704	0.2+	0.5+
				1998 04 01	704	0.3+	0.1+
				1998 04 18	704	0.1−	0.3+
				1998 04 18	704	0.1+	0.4+
				1998 04 18	704	0.5+	1.2−
				1998 04 18	704	0.2+	0.4−
				1998 04 18	704	0.8+	0.7+
				1998 04 19	704	0.4−	0.2−
				1998 04 19	704	0.0	0.7−

1999 JUNE 22

1998 03 20	704	0.4−	0.2−	1998 03 29	704	0.0	0.5+	1998 04 19	704	0.6−	0.0
1998 03 20	704	0.1−	0.0	1998 03 29	704	0.5+	0.8+	1998 04 19	704	0.5+	1.6−
1998 03 20	704	0.7−	0.3+	1998 03 29	704	0.1+	0.9+	1998 04 19	704	0.6−	0.8−
1998 03 20	704	0.4−	0.7−	1998 03 29	704	0.4+	1.5+	1998 04 24	699	0.8−	0.5−
1998 03 22	704	0.1−	0.4−	1998 03 29	704	0.1+	0.9+	1998 04 24	699	0.7−	0.4−
1998 03 22	704	0.4−	0.1+	1998 04 01	704	0.7+	0.9+	1998 04 24	699	0.4+	0.1+

1998 FT₅₄ = 1991 RZ₃₇

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	162.84278		(2000.0)	P	Q
n	0.21529827	ω	289.38536	-0.40555687	-0.91378225
a	2.7570355	Ω	184.73293	$+0.90768501$	-0.39963800
e	0.1640445	i	16.13245	$+0.10784960$	-0.07274251
P	4.58	H	13.8	G 0.15	U 1

Residuals in seconds of arc

1982 11 07	413	0.0	0.3−	1998 03 20	704	0.9−	0.7−	1998 03 28	704	0.5+	0.6−
1982 11 07	413	0.4−	0.6−	1998 03 20	704	0.5−	0.2+	1998 03 28	704	0.1+	0.4−
1984 03 06	413	0.8+	0.5−	1998 03 20	704	0.6−	0.4−	1998 03 28	704	0.4−	1.2−
1984 03 06	413	0.1−	1.1−	1998 03 20	704	0.6−	0.2−	1998 03 29	704	0.3+	0.3−
1986 08 28	413	0.3−	0.3−	1998 03 22	704	0.1−	0.4−	1998 03 29	704	1.7+	0.7+
1986 08 28	413	0.7+	0.1+	1998 03 22	704	0.4+	0.2−	1998 03 29	704	0.2−	0.3−
1990 08 19	675	1.8−	0.2−	1998 03 22	704	0.6−	0.3+	1998 03 29	704	0.8+	0.6−
1991 09 13	675	1.9−	1.2−	1998 03 22	704	0.0	0.3+	1998 03 29	704	0.7+	0.6+
1991 09 13	675	0.4+	0.4−	1998 03 22	704	0.3−	0.2+	1998 04 19	704	0.1+	0.5+
1991 09 15	675	(0.4+ 2.3−)		1998 03 24	704	0.3+	0.6−	1998 04 19	704	0.1+	0.4+
1991 09 15	675	1.2+	1.7−	1998 03 24	704	0.1−	0.6−	1998 04 19	704	0.5+	0.4+
1992 11 28	675	0.1−	0.1−	1998 03 24	704	0.0	0.2−	1998 04 19	704	0.1+	0.5+
1994 06 03	691	0.1−	0.0	1998 03 24	704	0.0	0.1−	1998 04 20	704	1.0−	0.3+
1994 06 03	691	0.0	0.1+	1998 03 24	704	0.7+	0.8−	1998 04 20	704	0.2+	0.9+
1994 06 03	691	0.3−	0.1+	1998 03 24	704	0.3−	0.2−	1998 04 20	704	0.3−	0.6+
1995 08 03	675	0.8−	0.2+	1998 03 24	704	0.6+	0.6−	1998 04 20	704	0.2+	0.5+
1995 08 03	675	0.8+	1.0+	1998 03 24	704	0.3−	0.1−	1998 04 20	704	1.2−	1.1+
1996 10 09	327	0.2+	0.5−	1998 03 24	704	0.3−	0.6−	1999 06 14	704	0.1−	0.4+
1996 10 09	327	0.4+	0.9−	1998 03 24	704	1.0−	0.1+	1999 06 14	704	0.1−	0.8−
1996 10 09	327	0.2+	0.4−	1998 03 25	566	0.3+	0.3−	1999 06 14	704	0.4−	1.0−
1998 03 08	699	1.0−	1.7+	1998 03 25	566	0.5+	0.4−	1999 06 14	704	1.6+	0.7−
1998 03 08	699	0.9−	0.0	1998 03 25	566	0.3+	0.3−	1999 06 14	704	1.2+	0.8−
1998 03 08	699	0.6+	0.7+	1998 03 28	704	0.2+	1.1−				
1998 03 20	704	0.0	0.4−	1998 03 28	704	0.4−	0.9−				

1998 FH₆₀ = 1983 UV

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	315.58553		(2000.0)	P	Q
n	0.30301563	ω	205.16770	+0.94004699	−0.34099060
a	2.1952940	Ω	174.75834	+0.32309364	+0.88470925
e	0.1951154	i	3.82112	+0.10918864	+0.31782850
P	3.25	H	15.1	G 0.15	U 5

Residuals in seconds of arc

1983 10 30	675	0.4+	0.9+	1998 03 20	704	1.1+	1.8+	1998 03 28	704	1.2+	0.3−
1983 10 30	675	0.2−	0.1−	1998 03 20	704	1.3+	1.8+	1998 03 28	704	1.3+	0.6−
1983 11 04	675	0.3−	0.6−	1998 03 22	704	0.2−	0.4+	1998 03 28	704	0.2−	0.9−
1997 01 10	327	0.3+	0.2−	1998 03 22	704	0.2−	0.4+	1998 03 29	704	0.2+	0.5−
1997 01 10	327	0.1+	0.1+	1998 03 22	704	0.2−	0.6−	1998 03 29	704	0.8+	0.8−
1997 01 10	327	0.1−	0.3−	1998 03 22	704	(2.8+ 0.7−)		1998 03 29	704	1.0−	1.2−
1997 01 10	327	0.2−	0.0	1998 03 22	704	1.7−	0.4+	1998 03 29	704	(2.4− 1.4−)	
1998 03 20	704	0.8+	0.6−	1998 03 28	704	0.3+	0.4+	1998 03 29	704	1.9−	0.1−
1998 03 20	704	(2.4+ 2.1+)		1998 03 28	704	1.4−	0.5+				

1998 FW₆₁ = 1991 LJ₆

Id. A. Gnädig, M. E. Sansaturio

M.P.C. 34911

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	230.44213		(2000.0)	P	Q
n	0.25756678	ω	213.61935	+0.34108413	−0.93844186
a	2.4464864	Ω	216.52260	+0.88143024	+0.33949132
e	0.1726808	i	5.27039	+0.32671449	+0.06381630
P	3.83	H	14.2	G 0.15	U 2

Residuals in seconds of arc

1980 07 12	413	0.7+	0.8+	1998 03 20	704	0.3+	0.6+	1998 04 18	704	0.2+	1.0−
1980 07 12	413	0.4−	1.4+	1998 03 20	704	0.4+	0.0	1998 04 19	704	0.1−	0.0
1984 09 15	413	0.6−	0.6+	1998 03 20	704	0.0	0.2−	1998 04 19	704	0.2+	0.4+
1984 09 15	413	1.3−	0.4+	1998 03 20	704	0.9+	0.3+	1998 04 19	704	0.4+	1.0+
1988 10 09	413	0.6+	0.6+	1998 03 22	704	0.7+	0.0	1998 04 19	704	0.0	0.5+
1988 10 09	413	0.4−	0.9−	1998 03 22	704	0.7+	0.3+	1998 04 19	704	0.1+	0.6−
1991 06 06	809	0.3+	1.8−	1998 03 22	704	0.4+	1.2+	1998 04 20	704	0.2−	0.4+
1991 06 06	809	0.5−	1.6−	1998 03 22	704	1.0+	0.2+	1998 04 20	704	0.1−	1.1+
1991 06 06	809	0.5+	1.4−	1998 03 22	704	1.1−	0.9+	1998 04 20	704	0.2+	0.3+
1992 09 07	033	0.4+	1.1+	1998 04 01	704	0.4+	0.1−	1998 04 20	704	0.4−	0.7−
1992 09 07	033	0.1+	0.7+	1998 04 01	704	0.5+	0.0	1998 04 20	704	0.7−	0.2−
1992 10 02	691	0.4−	0.4+	1998 04 01	704	0.7−	0.3+	1998 04 22	704	0.0	1.2+
1992 10 02	691	0.4−	0.4+	1998 04 01	704	0.0	0.2+	1998 04 22	704	0.5−	0.6+
1992 10 02	691	0.4−	0.3+	1998 04 01	704	0.1+	0.4+	1998 04 22	704	0.6+	0.7+
1998 02 27	566	0.6−	0.3−	1998 04 18	704	0.1+	0.7+	1998 04 22	704	1.2+	0.7−
1998 02 27	566	0.6−	0.5−	1998 04 18	704	1.1+	0.0	1998 04 22	704	1.7−	1.2+
1998 02 27	566	1.0−	0.4−	1998 04 18	704	0.4−	0.3−				
1998 03 20	704	0.9+	0.2+	1998 04 18	704	0.9−	1.5−				

1998 FX₆₁ = 1999 LD₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	142.14332		(2000.0)	P	Q
n	0.22262040	ω	191.59718	-0.86250040	-0.50502303
a	2.6962454	Ω	318.01911	$+0.46807634$	-0.77186236
e	0.1451401	i	2.76986	$+0.19234759$	-0.38623858
P	4.43	H	15.1	G 0.15	U 5

Residuals in seconds of arc

1998 03 20	704	1.4+	0.2+	1998 04 18	704	1.7+	0.9+	1998 04 22	704	0.2−	1.1+
1998 03 20	704	0.5−	0.3−	1998 04 18	704	1.2−	0.5+	1998 04 22	704	1.2+	1.0+
1998 03 20	704	1.5+	1.0−	1998 04 18	704	0.6+	0.2+	1998 04 22	704	0.0	1.0+
1998 03 20	704	0.5+	1.0−	1998 04 18	704	0.6+	0.0	1998 04 22	704	0.3−	1.4−
1998 03 20	704	0.6−	0.5+	1998 04 18	704	1.2+	1.9−	1998 04 22	704	(4.7− 1.8+)	
1998 03 22	704	0.3+	0.2−	1998 04 19	704	0.5−	0.1+	1998 04 28	691	0.4−	0.7+
1998 03 22	704	0.5+	1.0+	1998 04 19	704	0.0	0.5+	1998 04 28	691	0.1+	0.6+
1998 03 22	704	0.0	1.2+	1998 04 19	704	0.6−	0.1+	1998 04 28	691	0.4−	0.6+
1998 03 22	704	0.5−	0.2+	1998 04 19	704	0.8−	0.2+	1999 06 08	691	0.7−	0.3+
1998 03 22	704	1.4−	0.3+	1998 04 19	704	1.2−	1.4−	1999 06 08	691	0.1+	0.1−
1998 04 01	704	0.0	0.2+	1998 04 20	704	0.5+	0.6−	1999 06 08	691	0.1+	0.4−
1998 04 01	704	0.1+	0.5−	1998 04 20	704	0.2−	0.9−	1999 06 14	691	0.2+	0.3+
1998 04 01	704	0.6−	0.2+	1998 04 20	704	0.0	1.2−	1999 06 14	691	0.3+	0.0
1998 04 01	704	1.2−	1.0+	1998 04 20	704	0.6+	0.7−	1999 06 14	691	0.1−	0.2+
1998 04 01	704	0.2+	1.2+	1998 04 20	704	0.5−	2.2−				

1998 FE₆₂

Id. F. B. Zoltowski (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	265.43542		(2000.0)	P	Q
n	0.24178677	ω	36.56671	+0.80138896	-0.59814310
a	2.5518062	Ω	0.17578	+0.47330973	+0.63336162
e	0.1789028	i	14.31203	+0.36572345	+0.49099684
P	4.08	H	13.7	G 0.15	U 4

Residuals in seconds of arc

1998 02 27	566	0.5+	0.8−	1998 03 28	704	0.1+	0.0	1998 04 19	704	0.4+	0.5+
1998 02 27	566	0.8+	0.5−	1998 03 28	704	0.2+	0.7−	1998 04 19	704	0.2+	0.1+
1998 02 27	566	0.6+	0.6−	1998 03 29	704	0.2+	0.1+	1998 04 19	704	0.8+	0.5−

1998 03 20	704	0.3+	0.1-	1998 03 29	704	0.1+	0.0	1998 04 19	704	0.3-	1.5-
1998 03 20	704	0.4-	0.7+	1998 03 29	704	0.5-	0.5+	1998 04 19	704	0.2+	0.8-
1998 03 20	704	0.5-	0.6+	1998 03 29	704	0.2-	0.4-	1998 04 20	704	0.1+	1.2-
1998 03 20	704	0.8-	1.2+	1998 03 29	704	0.3-	0.4-	1998 04 20	704	0.2+	0.9+
1998 03 20	704	0.6-	0.9+	1998 04 01	704	0.1-	0.1-	1998 04 20	704	0.7-	0.6-
1998 03 22	704	0.2+	1.4+	1998 04 01	704	0.8+	0.4+	1998 04 20	704	0.1+	0.3+
1998 03 22	704	0.0	1.6+	1998 04 01	704	1.0-	0.2+	1998 04 20	704	(3.3-	0.2+)
1998 03 22	704	0.1-	1.4-	1998 04 01	704	0.9+	0.8+	1999 06 07	426	0.1-	0.3+
1998 03 22	704	0.7-	0.9-	1998 04 01	704	0.3-	0.7+	1999 06 07	426	0.5-	1.4-
1998 03 22	704	0.0	1.2-	1998 04 18	704	0.6+	0.1+	1999 06 09	426	0.8+	0.4+
1998 03 28	704	0.3-	0.7+	1998 04 18	704	0.9-	1.6-	1999 06 09	426	0.2-	0.7+
1998 03 28	704	0.2+	0.2-	1998 04 18	704	0.9+	1.5+				
1998 03 28	704	0.0	0.8-	1998 04 18	704	0.2-	1.1+				

1998 FC₆₄ = 1987 WT₂

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams		Q	
<i>M</i>	232.16311	(2000.0)	<i>P</i>		<i>Q</i>
<i>n</i>	0.21814344	ω	21.32071	+0.52496068	-0.84917651
<i>a</i>	2.7330103	Ω	37.08112	+0.76643146	+0.44221888
<i>e</i>	0.1068306	<i>i</i>	5.48004	+0.37013389	+0.28868964
<i>P</i>	4.52	<i>H</i>	14.0	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1976 05 27	413	0.0	0.4+	1998 03 22	704	(1.3-	2.6-)	1998 04 19	704	0.6-	0.2+
1976 05 27	413	0.3-	1.3-	1998 03 22	704	0.8-	0.4+	1998 04 20	704	1.3+	0.3+
1987 11 26	033	0.3+	0.2-	1998 03 22	704	1.5-	0.3+	1998 04 20	704	1.3+	0.2+
1987 11 26	033	0.3-	0.2-	1998 03 31	704	(1.7-	2.8+)	1998 04 20	704	1.4+	0.7-
1998 03 20	704	0.4-	0.9-	1998 03 31	704	0.7-	0.1+	1998 04 20	704	0.7+	0.4+
1998 03 20	704	0.7-	0.9-	1998 03 31	704	0.7+	1.0+	1998 04 20	704	(2.3+	2.0+)
1998 03 20	704	0.1-	0.6+	1998 03 31	704	0.2+	0.1+	1998 04 22	704	0.6+	0.2+
1998 03 20	704	1.3-	0.1-	1998 03 31	704	0.5+	0.4+	1998 04 22	704	1.0+	0.4+
1998 03 20	704	1.4-	0.5-	1998 04 19	704	0.2-	0.2-	1998 04 22	704	0.1+	0.4-
1998 03 22	704	0.1-	0.4-	1998 04 19	704	0.9-	0.2-	1998 04 22	704	0.8-	0.2+
1998 03 22	704	0.1+	0.5-	1998 04 19	704	1.4+	0.8-	1998 04 22	704	0.3+	1.1+

1998 FJ₆₆ = 1999 HQ₃

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams		Q	
<i>M</i>	88.36312	(2000.0)	<i>P</i>		<i>Q</i>
<i>n</i>	0.24485702	ω	218.10033	-0.63839109	+0.76887097
<i>a</i>	2.5304301	Ω	12.36734	-0.65853811	-0.52139088
<i>e</i>	0.0627311	<i>i</i>	9.66984	-0.39847758	-0.37012023
<i>P</i>	4.03	<i>H</i>	14.0	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1951 11 29	675	1.1+	0.7+	1998 03 22	704	1.1-	0.8+	1998 04 20	704	0.2+	0.1-
1951 11 29	675	0.2-	1.6-	1998 03 24	699	1.7+	0.3-	1998 04 20	704	0.5+	1.5-
1982 04 20	413	0.4+	0.7+	1998 03 24	699	0.7+	0.7-	1998 04 20	704	0.0	0.9-
1982 04 20	413	0.2-	0.0	1998 03 24	699	0.4+	0.1+	1998 04 20	704	0.2-	1.8-
1990 04 17	046	(8.0+	2.3-)	1998 03 25	704	0.4+	0.1-	1998 04 22	704	0.5+	0.4-
1990 04 17	046	(8.0+	2.6-)	1998 03 25	704	0.6+	0.3+	1998 04 22	704	0.2-	0.2-
1991 10 01	413	0.3-	0.7-	1998 03 25	704	0.2+	0.2+	1998 04 22	704	0.1+	0.0
1991 10 01	413	0.2+	0.6+	1998 03 25	704	0.1+	0.6+	1998 04 22	704	0.1+	0.2-
1998 03 20	704	0.6-	0.0	1998 03 25	704	0.3-	0.6-	1998 04 22	704	0.2+	0.3+
1998 03 20	704	1.2-	0.1+	1998 04 04	699	1.1+	0.4-	1998 04 29	691	0.6-	0.4+
1998 03 20	704	0.6-	0.9+	1998 04 04	699	0.3+	0.2-	1998 04 29	691	0.4-	0.4+
1998 03 20	704	0.7-	0.4+	1998 04 18	704	0.4+	0.5-	1998 04 29	691	0.2-	0.3+
1998 03 20	704	0.6-	1.0+	1998 04 18	704	0.4+	0.2-	1998 05 01	699	0.7+	0.1+
1998 03 22	704	0.3-	0.2-	1998 04 18	704	0.0	0.1-	1998 05 01	699	0.6+	0.4-
1998 03 22	704	0.7-	0.6+	1998 04 18	704	0.2+	0.2+	1998 05 01	699	0.1-	0.3-
1998 03 22	704	1.5-	0.2-	1998 04 18	704	0.2+	0.0				
1998 03 22	704	0.9-	1.1+	1998 04 20	704	0.0	0.1-				

1998 FR₆₇ = 1976 UQ₁₂ = 1976 WL

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams		Q	
<i>M</i>	85.81735	(2000.0)	<i>P</i>		<i>Q</i>
<i>n</i>	0.29955627	ω	178.74628	-0.07390682	+0.99583672
<i>a</i>	2.2121629	Ω	87.01352	-0.91543728	-0.04652045
<i>e</i>	0.0935293	<i>i</i>	3.06277	-0.39561645	-0.07839051
<i>P</i>	3.29	<i>H</i>	15.1	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1976 10 22	381	0.3+	0.5-	1998 03 22	704	(2.9-	0.3+)	1998 04 22	704	0.2-	0.3-
1976 10 22	381	0.9+	1.2-	1998 03 22	704	0.7-	0.8+	1998 04 22	704	0.3+	0.6-
1976 11 18	381	0.7+	1.5-	1998 03 22	704	(2.2-	0.8+)	1998 04 22	704	0.5+	0.5+
1976 11 18	381	0.2-	1.4-	1998 03 25	704	0.4-	0.1-	1998 04 22	704	0.3+	0.6+
1989 11 01	413	1.2-	0.3-	1998 03 25	704	0.6-	0.4-	1998 04 28	699	0.1+	0.3-
1989 11 22	413	1.2+	0.7+	1998 03 25	704	0.0	0.1-	1998 04 28	699	0.3-	0.1-
1989 11 22	413	0.1+	0.2+	1998 03 25	704	0.3+	0.0	1998 04 28	699	0.2-	0.2-
1997 02 07	691	0.2-	0.2+	1998 03 25	704	0.2-	0.3-	1998 04 28	691	0.2-	0.5-
1997 02 07	691	0.3-	0.4+	1998 04 18	691	0.2-	0.2+	1998 04 28	691	0.1-	0.5-
1997 02 07	691	0.0	0.6+	1998 04 18	691	0.2-	0.3-	1998 04 28	691	0.1-	0.5-
1998 03 20	704	0.3-	0.4-	1998 04 18	691	0.2-	0.1-	1998 04 30	699	0.4+	0.5-
1998 03 20	704	0.2-	0.4-	1998 04 20	704	0.3+	0.1-	1998 04 30	699	0.3-	0.1-
1998 03 20	704	0.8-	0.6+	1998 04 20	704	1.1+	0.1-	1998 04 30	699	0.4+	0.1-
1998 03 20	704	0.2+	0.9+	1998 04 20	704	0.9+	0.4-	1998 05 01	699	0.5+	0.4+
1998 03 20	704	1.7-	0.7+	1998 04 20	704	1.1+	1.6-	1998 05 01	699	0.0	0.3-
1998 03 22	704	0.0	0.9+	1998 04 20	704	0.1-	0.4-	1998 05 01	699	0.1-	0.8-
1998 03 22	704	1.0-	0.0	1998 04 22	704	0.3+	0.3+				

1998 FC₆₈ = 1987 YT₂

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Gnädig		Q	
<i>M</i>	252.64039	(2000.0)	<i>P</i>		<i>Q</i>
<i>n</i>	0.31475761	ω	72.77482	+0.09382674	-0.99523070
<i>a</i>	2.1403521	Ω	11.93644	+0.85737643	+0.06714499
<i>e</i>	0.1148641	<i>i</i>	7.41466	+0.50606541	+0.07076303
<i>P</i>	3.13	<i>H</i>	16.3	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1977 07 21	413	1.6-	1.1-	1998 03 24	699	0.9+	0.7-	1998 04 19	704	2.1+	0.5-
1977 07 21	413	1.6+	0.7+	1998 03 24	699	0.3+	0.4-	1998 04 19	704	0.6+	1.1+
1987 12 20	010	0.8-	0.5+	1998 03 24	699	2.2-	0.9+	1998 04 19	704	1.1-	2.1-
1987 12 20	010	1.0+	0.6-	1998 03 25	566	0.5-	0.3+	1998 04 19	704	1.4+	2.0-
1987 12 20	010	0.2+	0.7-	1998 03 25	566	0.7-	0.1+	1998 04 20	704	0.2-	0.1-
1990 11 13	675	0.4-	0.6-	1998 03 25	566	0.8-	0.6+	1998 04 20	704	0.9-	0.8-
1990 11 13	675	0.5+	0.0	1998 04 01	704	0.7+	0.0	1998 04 20	704	0.2+	0.3-
1998 03 20	704	0.1+	1.0+	1998 04 01	704	0.3+	0.5-	1998 04 20	704	0.7+	0.9-
1998 03 20	704	0.6+	0.6-	1998 04 01	704	0.1+	1.0+	1998 04 22	704	0.3+	0.7-
1998 03 20	704	1.0+	1.6+	1998 04 01	704	0.1+	0.4+	1998 04 22	704	0.6+	0.7-
1998 03 20	704	(3.1-	0.3+)	1998 04 01	704	0.1+	0.2+	1998 04 22	704	0.2+	0.0
1998 03 22	704	0.7+	1.4+	1998 04 18	704	0.3-	0.8-	1998 04 22	704	1.0-	0.2+
1998 03 22	704	1.1-	3.3+	1998 04 18	704	0.2+	0.8+	1998 04 22	704	0.1-	0.6+
1998 03 22	704	0.3-	0.1+	1998 04 18	704	0.7-	0.6+				
1998 03 22	704	0.7-	1.8-	1998 04 18	704	1.4-	2.4-				

1998 FG₆₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams		Q	
<i>M</i>	332.78487	(2000.0)	<i>P</i>		<i>Q</i>
<i>n</i>	0.19070985	ω	133.08817	+0.85979892	+0.50811894
<i>a</i>	2.9891931	Ω	196.57856	-0.50469630	+0.83055173
<i>e</i>	0.1082722	<i>i</i>	10.21600	-0.07763675	+0.22

1998 03 20	704	1.7+	0.3+	1998 04 01	704	0.5−	0.3+	1998 04 28	132	1.1−	0.1+
1998 03 20	704	1.0+	1.0−	1998 04 01	704	0.4+	0.4+	1998 04 28	132	0.2+	0.9−
1998 03 20	704	0.7+	0.4−	1998 04 01	704	0.1−	0.3+	1998 05 16	704	1.6+	0.3+
1998 03 22	704	0.1−	0.2−	1998 04 20	704	0.2−	0.3+	1998 05 16	704	0.4+	0.1−
1998 03 22	704	0.7−	0.3+	1998 04 20	704	0.2−	0.5−	1998 05 16	704	0.7+	0.3−
1998 03 22	704	0.2−	0.0	1998 04 20	704	1.1−	0.1−	1998 05 16	704	0.1−	0.1+
1998 03 22	704	0.3−	0.7−	1998 04 20	704	0.9−	0.3−	1998 05 16	704	0.4−	0.9−
1998 03 22	704	0.6−	0.5−	1998 04 20	704	1.5−	0.6−	1998 05 22	566	0.1+	0.3−
1998 03 24	699	0.8−	0.9+	1998 04 22	704	0.4−	0.1+	1998 05 22	566	0.5+	0.3−
1998 03 24	699	0.0	0.5−	1998 04 22	704	1.2−	0.3−	1998 05 22	566	1.7−	0.2−
1998 03 24	699	0.0	0.4−	1998 04 22	704	0.2−	0.3−	1999 05 16	292	1.7+	0.3−
1998 03 25	704	0.1+	0.0	1998 04 22	704	0.5−	0.4+	1999 05 16	292	1.7+	0.7−
1998 03 25	704	0.1+	0.2+	1998 04 22	704	1.9−	0.7−	1999 05 21	292	1.3−	0.1−
1998 03 25	704	0.3+	0.1−	1998 04 24	699	0.2−	0.6+	1999 05 21	292	0.7−	1.6−
1998 03 25	704	0.6+	1.2+	1998 04 24	699	0.2+	0.3−	1999 06 14	704	0.3−	0.1−
1998 03 25	704	0.3+	0.2+	1998 04 24	699	0.5+	0.0	1999 06 14	704	0.2−	0.4+
1998 03 29	704	0.4−	0.1−	1998 04 25	699	0.1−	0.1+	1999 06 14	704	0.0	0.3+
1998 03 29	704	0.6+	0.0	1998 04 25	699	1.0+	0.5+	1999 06 14	704	0.4−	0.5+
1998 03 29	704	0.2+	0.2+	1998 04 25	699	1.5+	0.5+	1999 06 14	704	0.3−	1.4+
1998 03 29	704	0.6−	0.2+	1998 04 27	132	1.5+	0.8+				
1998 03 29	704	(3.4−	0.0)	1998 04 27	132	0.9+	0.4−				

1998 FA₇₁ = 1981 EA₂

Id. F. B. Zoltowski (1999 observations), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	227.26345		(2000.0)	P	Q
n	0.17529495	ω	36.86010	+0.56910660	−0.81762782
a	3.1619605	Ω	18.94891	+0.67572727	+0.40462863
e	0.0387433	i	15.57562	+0.46851931	+0.40958565
P	5.62	H	12.6	G 0.15	U 2

Residuals in seconds of arc

1981 03 15	809	2.2−	0.4−	1998 03 25	704	0.7−	0.7+	1998 04 22	704	0.7+	0.3−
1981 03 15	809	0.1−	0.4−	1998 03 25	704	0.4−	1.2+	1998 04 22	704	0.2−	0.6−
1981 03 15	809	1.8+	0.2+	1998 03 25	704	0.6+	0.6+	1998 04 22	704	0.0	0.7−
1998 03 20	704	0.3+	0.0	1998 03 29	704	0.1+	0.2−	1998 04 22	704	0.4+	0.8−
1998 03 20	704	0.0	0.8−	1998 03 29	704	0.2+	0.2+	1998 04 22	704	0.6+	1.3−
1998 03 20	704	0.2+	0.2+	1998 03 29	704	0.0	0.0	1998 04 30	699	0.2+	0.1+
1998 03 20	704	0.2+	0.6−	1998 03 29	704	0.4−	0.1−	1998 04 30	699	0.0	0.1−
1998 03 20	704	1.0−	0.1−	1998 03 29	704	0.3−	0.4−	1998 04 30	699	0.1+	0.3−
1998 03 22	704	0.1+	0.0	1998 04 01	704	0.4−	0.2−	1998 05 01	699	0.1−	1.4+
1998 03 22	704	0.0	0.1−	1998 04 01	704	0.9+	0.4−	1998 05 01	699	0.5−	1.4+
1998 03 22	704	0.6+	0.1−	1998 04 01	704	0.0	0.2−	1998 05 01	699	0.7+	1.1+
1998 03 22	704	0.7+	0.5−	1998 04 01	704	0.7+	0.4+	1998 05 16	704	0.0	0.3−
1998 03 22	704	0.7−	0.0	1998 04 01	704	1.2−	0.5+	1998 05 16	704	1.4+	0.6−
1998 03 24	704	0.7+	0.3−	1998 04 20	704	0.7−	0.0	1998 05 16	704	0.6+	0.5+
1998 03 24	704	0.5+	0.3−	1998 04 20	704	0.1+	0.2+	1998 05 16	704	0.5−	1.2−
1998 03 24	704	0.5−	0.5+	1998 04 20	704	0.3−	0.8−	1998 05 16	704	1.6−	0.2−
1998 03 24	704	0.1+	0.0	1998 04 20	704	0.3+	1.4+	1999 06 07	426	0.4−	0.1+
1998 03 24	704	0.5−	0.6−	1998 04 20	704	1.4−	0.4+	1999 06 07	426	0.5−	0.0
1998 03 24	699	0.8−	0.1+	1998 04 21	704	0.2+	0.1+	1999 06 09	426	0.5−	0.2+
1998 03 24	699	0.1+	0.2+	1998 04 21	704	0.0	0.2−	1999 06 09	426	1.0+	0.6−
1998 03 24	699	0.2−	0.6+	1998 04 21	704	0.5+	0.3−	1999 06 09	426	0.3+	0.2+
1998 03 25	704	0.9+	0.0	1998 04 21	704	0.1−	0.6+				
1998 03 25	704	0.7+	0.5+	1998 04 21	704	0.5−	0.2+				

1998 FF₇₄ = 1999 JJ₁₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	247.55943		(2000.0)	P	Q		
<i>n</i>	0.16837334	ω	299.31836	+0.94964479	−0.30876533		
<i>a</i>	3.2480335	Ω	78.70921	+0.30301227	+0.86172840		
<i>e</i>	0.1453271	<i>i</i>	3.11449	+0.07973911	+0.40260171		
<i>P</i>	5.85	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 01 14	566	0.8−	0.4+	1998 03 29	704	0.5−	0.1+	1999 05 19	704	0.0	0.1+
1997 01 14	566	0.1−	0.1+	1998 03 29	704	0.9−	1.1−	1999 05 19	704	0.7+	1.3−
1997 01 14	566	1.1+	0.2+	1998 03 29	552	0.4−	0.3+	1999 05 19	704	(5.5−	0.5−)
1998 03 20	704	0.4+	0.1−	1998 03 29	552	0.1+	0.4+	1999 06 05	552	0.2−	0.4+
1998 03 20	704	0.5+	0.3−	1998 03 30	552	0.2−	0.1+	1999 06 05	552	0.6−	0.6+
1998 03 20	704	0.2+	0.7−	1998 03 30	552	0.0	0.9+	1999 06 11	552	0.1+	0.5+
1998 03 20	704	(0.8+	2.4−)	1998 04 20	704	(3.2+	2.1+)	1999 06 11	552	0.0	0.8+
1998 03 20	704	0.2+	0.3−	1998 04 20	704	0.0	0.6−	1999 06 15	704	0.1−	0.2+
1998 03 21	691	0.8−	0.5−	1998 04 20	704	1.3+	0.7+	1999 06 15	704	0.2−	0.2+
1998 03 21	691	0.7−	0.5−	1998 04 20	704	(3.0−	1.8+)	1999 06 15	704	0.7+	0.5−
1998 03 21	691	0.6−	0.5−	1999 05 10	704	0.2−	1.9+	1999 06 15	704	0.3+	0.3−
1998 03 29	704	0.9+	0.4+	1999 05 10	704	0.3−	0.3−	1999 06 15	704	0.3−	0.5+
1998 03 29	704	0.1−	0.4+	1999 05 10	704	0.9+	1.5−				
1998 03 29	704	0.4+	0.6+	1999 05 10	704	0.5−	0.4−				

1998 FG₇₄

Id. F. B. Zoltowski (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	304.64681		(2000.0)	P	Q
n	0.17548155	ω	92.66133	+0.96818810	+0.19464579
a	3.1597186	Ω	256.14940	−0.23949231	+0.90289866
e	0.0594988	i	9.32011	+0.07249299	+0.38325843
P	5.62	H	14.8	G 0.15	U 4

Residuals in seconds of arc

1998 03 30	426	0.3−	0.4−	1998 04 22	426	0.5−	0.3+	1998 05 19	426	0.1+	0.4+
1998 03 30	426	0.7−	0.5+	1998 04 22	426	0.1−	0.0	1998 05 19	426	0.0	0.5+
1998 03 30	426	0.2−	0.2−	1998 04 22	426	1.0−	0.1+	1999 06 05	426	0.2−	0.6−
1998 04 02	426	0.4+	0.7+	1998 04 25	426	0.8−	0.6−	1999 06 05	426	0.2+	0.4+
1998 04 02	426	0.4+	0.3+	1998 04 25	426	0.0	0.5−	1999 06 05	426	0.2+	0.0
1998 04 02	426	0.9+	0.3+	1998 05 17	426	0.2−	0.2+	1999 06 10	426	0.1−	0.2+
1998 04 04	426	0.1+	0.0	1998 05 17	426	0.9+	0.5−	1999 06 10	426	0.5−	0.2−
1998 04 04	426	0.3+	0.3−	1998 05 17	426	0.9+	0.9−	1999 06 10	426	0.3+	0.2+
1998 04 04	426	0.4+	0.0	1998 05 19	426	0.7−	0.0				

1998 FV₈₈ = 1993 HA₄ = 1999 KB₁₃

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	145.18921		(2000.0)	P	Q		
n	0.18411492	ω	68.53087	−0.40122039	−0.90631533		
a	3.0601548	Ω	45.84643	+0.75694519	−0.40965267		
e	0.0309582	i	10.66012	+0.51580634	−0.10381333		
P	5.35	H	13.3	G	0.15	U	2

Residuals in seconds of arc

1955 04 13	675	1.4+	0.3+	1998 03 24	704	1.5−	1.2+	1998 03 26	704	0.9−	0.4+
1955 04 13	675	1.3−	0.3+	1998 03 25	704	0.5+	0.3−	1999 05 18	704	1.0+	1.1−
1989 09 20	413	0.6+	0.4−	1998 03 25	704	0.5+	0.1+	1999 05 18	704	2.0+	0.9−
1989 09 20	413	0.4−	0.4+	1998 03 25	704	1.1+	0.1−	1999 05 18	704	0.8−	1.5+
1993 04 20	691	0.0	0.4−	1998 03 25	704	1.0+	0.7−	1999 05 19	704	0.5−	0.6+
1993 04 20	691	0.2+	0.3−	1998 03 25	704	0.8+	1.7−	1999 05 19	704	1.7−	0.3−
1993 04 20	691	0.7+	0.9−	1998 03 25	704	0.7+	0.4+	1999 05 19	704	0.6−	1.2+
1993 04 22	691	0.6−	0.1−	1998 03 25	704	0.1+	0.6−	1999 06 15	704	0.2−	0.2+
1993 04 22	691	0.5−	0.1−	1998 03 25	704	1.4−	0.8−	1999 06 15	704	0.9+	0.2−
1993 04 22	691	0.4−	0.2−	1998 03 25	704	0.3−	0.5−	1999 06 15	704	0.8−	0.4+
1998 03 24	704	1.1−	0.3+	1998 03 25	704	0.5−	0.5−	1999 06 15	704	0.1+	0.3+
1998 03 24	704	0.2+	0.8+	1998 03 26	704	0.9+	1.1+	1999 06 15	704	0.6+	0.4−
1998 03 24	704	0.1+	0.9+	1998 03 26	704	0.1+	0.7+				

1998 FB₁₁₁ = 1984 WQ₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17990678	ω	328.98341	-0.12038104	+0.98616955		
<i>a</i>	3.1076900	Ω	293.89055	-0.88336470	-0.15877253		
<i>e</i>	0.1874832	<i>i</i>	7.15745	-0.45296269	+0.04754901		
<i>P</i>	5.48	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1984 11 27	010	0.1-	0.0	1998 03 31	704	0.1+	1.0-	1998 04 28	566	0.3+	0.2+
1984 11 28	010	0.1+	0.1+	1998 04 01	704	0.4+	0.0	1998 04 28	566	0.2+	0.3+
1997 03 07	675	0.4+	0.4+	1998 04 01	704	0.2-	0.4-	1998 04 30	566	0.6-	0.2+
1997 03 07	675	0.4-	0.2-	1998 04 01	704	0.4+	0.3-	1998 04 30	566	0.8-	0.2+
1998 03 31	704	(4.5+	0.3+)	1998 04 01	704	0.1+	0.6-	1998 04 30	566	0.9-	0.2+
1998 03 31	704	0.2-	0.3+	1998 04 01	704	0.2-	0.3-				
1998 03 31	704	0.9+	0.2-	1998 04 28	566	0.7+	1.3+				

1998 FD₁₁₃

Id. F. B. Zoltowski (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17782925	ω	88.50357	+0.57838619	+0.77861510		
<i>a</i>	3.1318473	Ω	220.24887	-0.81372625	+0.57173817		
<i>e</i>	0.1136105	<i>i</i>	22.12738	+0.05761072	+0.25860005		
<i>P</i>	5.54	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 31	704	0.3-	0.3+	1998 04 01	704	0.1+	1.2+	1998 05 16	704	0.2+	0.4+
1998 03 31	704	0.3+	0.8-	1998 04 18	704	0.5-	0.2-	1998 05 16	704	1.0+	0.1+
1998 03 31	704	0.7+	0.4-	1998 04 18	704	1.2-	0.8-	1998 05 16	704	0.6-	0.0
1998 03 31	704	1.0-	0.1+	1998 04 18	704	1.4-	0.2+	1998 05 16	704	1.5+	1.3-
1998 03 31	704	(4.3-	1.8-)	1998 04 18	704	1.1-	0.1-	1998 05 16	704	(2.9-	1.8+)
1998 04 01	704	1.5+	0.6+	1998 04 20	704	0.3-	0.5-	1999 06 09	426	0.1-	0.3-
1998 04 01	704	0.4+	0.2+	1998 04 20	704	0.6-	0.6+	1999 06 09	426	0.0	0.4-
1998 04 01	704	0.1-	1.2-	1998 04 20	704	0.2+	1.7+	1999 06 10	426	0.1-	0.5+
1998 04 01	704	1.1+	0.3+	1998 04 20	704	0.3+	0.5-	1999 06 10	426	0.2+	0.2+

1998 FX₁₁₃ = 1989 YP₈

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26713226	ω	177.82789	-0.43086148	-0.89983695		
<i>a</i>	2.3877297	Ω	297.68802	+0.82678682	-0.36333402		
<i>e</i>	0.1863139	<i>i</i>	4.41756	+0.36163786	-0.24141637		
<i>P</i>	3.69	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1989 12 17	675	1.3-	0.0	1998 03 31	704	1.0+	0.6+	1998 04 19	704	1.1-	1.2+
1989 12 17	675	0.4+	0.5-	1998 03 31	704	1.2+	2.6+	1998 04 19	704	0.1-	0.8+
1989 12 25	033	0.7+	0.4+	1998 04 01	704	0.6+	0.4+	1998 04 20	704	0.5+	0.8-
1989 12 25	033	0.2+	0.2+	1998 04 01	704	1.5+	0.2-	1998 04 20	704	0.6+	0.5+
1998 03 25	566	0.4-	0.1+	1998 04 01	704	2.6-	0.2-	1998 04 20	704	1.0-	1.2-
1998 03 25	566	0.3-	0.2-	1998 04 01	704	0.0	1.4-	1998 04 20	704	0.2+	0.3-
1998 03 25	566	0.5-	0.0	1998 04 01	704	0.6-	0.8-	1998 04 20	704	0.2+	0.0
1998 03 31	704	0.0	0.0	1998 04 19	704	1.1+	0.6-				
1998 03 31	704	0.1-	0.5-	1998 04 19	704	0.0	0.1-				

1998 FG₁₁₈ = 1971 DC₁ = 1979 WS₄Id. G. V. Williams (*MPC* 31768, unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18598807	ω	240.52112	-0.99712457	-0.04390436		
<i>a</i>	3.0395735	Ω	296.90210	+0.06609992	-0.90250612		
<i>e</i>	0.0545906	<i>i</i>	3.97155	-0.03705935	-0.42843332		
<i>P</i>	5.30	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1971 02 18	095	(2.2-	6.3+)	1998 04 01	704	0.1+	0.0	1998 05 16	704	0.2-	1.1-
1971 02 23	095	0.8+	1.7+	1998 04 01	704	0.1-	1.0+	1998 05 16	704	0.5+	0.1+
1979 11 17	095	0.1-	0.1+	1998 04 01	704	0.4-	1.3+	1998 05 16	704	(3.0-	2.4-)
1998 03 25	704	0.4+	0.1-	1998 04 20	704	0.2+	0.7-	1998 05 16	704	1.2+	1.8+
1998 03 25	699	0.1-	0.5+	1998 04 20	704	0.4+	0.7-	1998 05 16	704	1.2-	0.4+
1998 03 25	699	0.2-	0.3+	1998 04 20	704	0.3+	0.8-	1999 06 10	428	0.4-	0.8+
1998 03 25	704	0.3-	0.9+	1998 04 20	704	0.6-	0.2-	1999 06 10	428	0.4-	0.2+
1998 03 25	699	0.2+	0.4+	1998 04 20	704	0.3-	0.5-	1999 06 11	428	0.7-	0.3-
1998 03 25	704	1.1-	0.5+	1998 04 21	704	0.5+	0.4-	1999 06 11	428	1.7-	1.3+
1998 03 25	704	0.5+	0.3-	1998 04 21	704	1.3+	0.9-	1999 06 13	428	0.5+	0.1+
1998 03 25	704	1.0-	0.5+	1998 04 21	704	0.6-	1.1-	1999 06 13	428	0.1+	0.8+
1998 03 31	704	0.5+	0.3+	1998 04 21	704	0.1-	0.3+	1999 06 15	704	0.4+	0.4-
1998 03 31	704	0.1+	0.6+	1998 04 21	704	0.7+	0.3-	1999 06 15	704	0.1-	0.5-
1998 03 31	704	0.8-	0.1-	1998 04 22	704	1.1+	0.7-	1999 06 15	704	0.7+	0.1+
1998 03 31	704	0.2-	0.0	1998 04 22	704	0.8+	1.2-	1999 06 15	704	0.5+	0.0
1998 03 31	704	1.1-	1.3+	1998 04 22	704	0.1+	0.9-	1999 06 15	704	0.6+	0.3-
1998 04 01	704	0.4-	0.1+	1998 04 22	704	0.0	0.7-				
1998 04 01	704	1.0-	0.0	1998 04 22	704	0.1+	0.8-				

1998 GR₇ = 1999 LQ₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21762956	ω	329.48087	+0.46529275	-0.85102182		
<i>a</i>	2.7373109	Ω	91.79594	+0.85334785	+0.35820659		
<i>e</i>	0.1998448	<i>i</i>	14.09691	+0.23515973	+0.38399206		
<i>P</i>	4.53	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 06 07	691	0.0	0.3-	1998 04 24	704	0.9+	0.2-	1998 06 21	699	1.1+	0.4-
1994 06 07	691	0.2-	0.2-	1998 04 24	704	0.0	0.2+	1998 06 21	699	0.3-	0.1+
1994 06 07	691	0.0	0.0	1998 04 24	704	0.9+	0.2+	1998 06 22	699	0.5-	0.4+
1998 04 02	704	0.7-	1.1+	1998 04 24	704	0.3+	0.4+	1998 06 22	699	0.3+	0.2-
1998 04 02	704	0.2+	1.0-	1998 05 16	704	0.7+	0.2-	1998 06 22	699	0.1-	0.6+
1998 04 02	704	0.2-	0.6-	1998 05 16	704	0.9+	0.3+	1999 06 09	704	0.5-	0.6-
1998 04 03	704	0.1+	0.4-	1998 05 16	704	0.5+	0.0	1999 06 09	704	0.7+	0.8-
1998 04 03	704	0.2+	0.1+	1998 05 16	704	0.1-	1.4+	1999 06 09	704	0.7+	0.1-
1998 04 03	704	0.5-	0.7-	1998 05 16	704	0.2-	0.7+	1999 06 09	704	0.4-	0.3+
1998 04 03	704	0.3-	1.0-	1998 05 29	704	0.9+	0.7+	1999 06 15	704	0.4-	0.3+
1998 04 03	704	0.1+	0.2+	1998 05 29	704	(1.2+	2.1-)	1999 06 15	704	0.1-	0.7+
1998 04 23	566	1.7-	0.4+	1998 05 29	704	0.3-	0.3-	1999 06 15	704	0.3-	0.6+
1998 04 23	566	1.6-	0.4+	1998 05 29	704	1.2-	0.4-	1999 06 15	704	0.1-	0.1-
1998 04 23	566	1.4-	0.3+	1998 05 29	704	1.3+	1.2-	1999 06 15	704	0.3+	0.3-
1998 04 24	704	0.9+	0.3-	1998 06 21	699	0.5+	0.2-				

1998 HT = 1984 BQ₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22900911	ω	183.09766	+0.80832329	+0.58637731		
<i>a</i>	2.6458642	Ω	140.84635	-0.53834813	+0.77239324		
<i>e</i>	0.2003986	<i>i</i>	4.78587	-0.23831648	+0.24407034		
<i>P</i>	4.30	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1984 01 25	675	0.0	0.2-	1998 04 19	691	0.2+	0.2+	1998 04 22	704	0.1+	0.3-
1984 01 26	675	0.0	0.3+	1998 04 19	691	0.1+	0.2+	1998 04 22	704	0.4-	0.5-
1997 01 02	691	0.0	0.1+	1998 04 19	691	0.1+	0.2+	1998 04 22	704	0.6+	0.1+

1999 JUNE 22

1997 01 02	691	0.2−	0.1−	1998 04 21	704	0.3+	1.7+	1998 04 22	704	0.4+	1.4−
1997 01 02	691	0.1+	0.1−	1998 04 21	704	0.9+	0.1−	1998 04 26	691	0.5−	0.6+
1998 04 17	691	0.6−	0.1−	1998 04 21	704	1.2+	0.9−	1998 04 26	691	0.5−	0.2+
1998 04 17	691	0.5−	0.2+	1998 04 21	704	0.5−	0.2+	1998 04 26	691	0.3−	0.0
1998 04 17	691	0.6−	0.2−	1998 04 21	704	(4.3−	0.4+)				

1998 HW = 1982 VK₂

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	171.31440		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.21656222	ω	293.14947	−0.52438118	−0.85067145
a	2.7462976	Ω	188.76261	+0.84286719	−0.51238326
e	0.1606449	i	14.12676	+0.12082749	−0.11756481
P	4.55	H	13.4	G 0.15	U 1

Residuals in seconds of arc

1981 09 18	413	0.2−	0.3−	1998 03 29	704	0.3−	0.5+	1998 04 22	704	0.8+	0.6−
1982 11 14	381	0.0	0.3−	1998 04 17	691	0.1−	0.5+	1998 04 22	704	0.8−	0.3−
1982 11 14	381	0.1+	0.1+	1998 04 17	691	0.0	0.4+	1998 04 22	704	0.4−	0.3−
1984 03 05	413	0.9+	0.6−	1998 04 17	691	0.3−	0.2+	1998 04 27	691	0.8−	0.2+
1984 03 05	413	1.0−	0.5+	1998 04 19	691	0.3+	0.7+	1998 04 27	691	0.7−	0.0
1986 10 04	413	1.3+	0.9+	1998 04 19	691	0.2+	0.4+	1998 04 27	691	0.7−	0.1−
1986 10 04	413	1.0−	0.2+	1998 04 19	691	0.3+	0.3+	1998 05 16	704	0.4−	1.4−
1991 10 07	691	0.2+	0.4−	1998 04 21	704	0.1−	0.6−	1998 05 16	704	0.3+	1.0+
1991 10 07	691	0.2−	0.4−	1998 04 21	704	0.4+	0.3+	1998 05 16	704	0.5−	0.3−
1991 10 07	691	0.2−	0.1−	1998 04 21	704	0.1−	0.2+	1998 05 16	704	1.3+	0.9+
1998 03 29	704	0.1−	0.5+	1998 04 21	704	0.2+	1.6−	1998 05 16	704	0.2−	0.3−
1998 03 29	704	0.3−	0.2−	1998 04 21	704	0.7+	0.3−	1998 05 24	699	0.4+	0.2−
1998 03 29	704	1.0−	1.0+	1998 04 22	704	0.3+	0.2+	1998 05 24	699	0.4+	0.0
1998 03 29	704	0.5+	0.2+	1998 04 22	704	0.7+	0.4−	1998 05 24	699	0.0	1.1−

1998 HE_s = 1991 PD₂₁

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	94.21399		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$		
n	0.25831227	ω	36.78338	−0.38048035	+0.92277330		
a	2.4417771	Ω	210.98776	−0.87420696	−0.38041064		
e	0.0734973	i	6.80727	−0.30165692	−0.06145882		
P	3.82	H	14.3	G	0.15	U	4

Residuals in seconds of arc

1991 08 09	675	0.1−	0.1−	1998 04 22	704	0.3+	1.4−	1998 05 01	566	1.1+	0.4−
1991 08 09	675	0.3+	0.6−	1998 04 24	133	0.3−	0.7+	1998 05 01	566	1.6+	1.0−
1996 10 10	675	0.5−	1.0+	1998 04 24	133	0.1+	0.4+	1998 05 17	949	0.3−	0.1−
1996 10 10	675	0.4+	2.0−	1998 04 30	133	0.7+	0.0	1998 05 17	949	0.1−	0.9−
1998 04 21	704	0.6−	0.3−	1998 04 30	133	0.2−	0.8+	1998 05 17	949	0.3−	0.7+
1998 04 21	704	0.3+	0.9−	1998 04 30	133	0.7+	0.3+	1998 05 20	133	0.1−	0.3+
1998 04 21	704	1.5−	0.5+	1998 05 01	704	0.3+	0.2−	1998 05 20	133	0.8+	0.5−
1998 04 21	704	1.2−	1.4−	1998 05 01	704	0.7−	0.4+	1998 05 20	133	1.1−	0.6+
1998 04 21	133	(2.5+	0.3−)	1998 05 01	699	0.5+	0.4+	1998 05 22	704	0.6−	0.0
1998 04 21	133	1.2+	0.4+	1998 05 01	699	0.3+	0.1−	1998 05 22	704	0.9−	0.3+
1998 04 21	133	0.1−	1.8+	1998 05 01	704	0.1+	0.6+	1998 05 22	704	0.6−	0.6+
1998 04 22	704	0.0	0.8−	1998 05 01	699	0.2+	0.1+	1998 05 22	704	0.6−	0.3−
1998 04 22	704	0.0	0.8−	1998 05 01	704	0.5+	0.6+	1998 05 22	704	0.5−	0.7+
1998 04 22	704	0.8−	1.0−	1998 05 01	704	0.4+	1.0+				
1998 04 22	704	0.2−	1.0−	1998 05 01	566	1.1+	0.5−				

1998 HD₁₄

Id. C. W. Hergenrother (1999 observations)

M.P.C. 34915

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	226.98959		(2000.0)	P	Q
n	1.04074303	ω	260.46034	+0.09521595	−0.99540902
a	0.9643626	Ω	184.11359	+0.95826403	+0.09430275
e	0.3130680	i	7.80105	+0.26956255	+0.01636684
P	0.95	H	21.0	G 0.15	U 5

Residuals in seconds of arc

1998 04 25	566	0.3+	0.3−	1998 04 26	557	0.7+	0.3+	1998 04 30	704	0.5+	0.3+
1998 04 25	566	0.3+	0.1+	1998 04 26	557	0.3−	0.1+	1998 04 30	704	1.6+	0.0
1998 04 25	566	0.9−	1.4−	1998 04 27	568	0.7+	0.9+	1998 04 30	704	0.6+	0.5+
1998 04 25	046	0.5−	0.1−	1998 04 27	568	0.3−	0.2−	1998 04 30	046	0.7−	0.4−
1998 04 25	046	0.3−	0.1+	1998 04 27	568	0.3−	0.2−	1998 04 30	046	0.8−	0.1−
1998 04 25	046	0.3−	0.1−	1998 04 27	568	0.2−	0.1+	1998 04 30	046	0.3+	0.4+
1998 04 25	557	0.6+	1.1+	1998 04 27	568	0.0	0.2−	1998 04 30	046	0.2+	0.1+
1998 04 25	046	0.7−	0.0	1998 04 27	568	0.5−	0.6−	1998 05 01	557	0.5−	0.3−
1998 04 25	046	0.5−	0.2−	1998 04 27	568	0.1−	0.3+	1998 05 01	557	0.1−	0.2−
1998 04 25	046	0.8−	0.0	1998 04 27	568	0.2+	0.0	1998 05 01	557	0.3+	0.2−
1998 04 25	557	1.5−	0.0	1998 04 28	704	0.1+	0.1−	1998 05 15	557	1.0−	1.0−
1998 04 26	816	0.2+	0.3+	1998 04 28	704	1.1+	0.2+	1998 05 15	557	0.7−	1.7−
1998 04 26	816	0.6+	0.6+	1998 04 28	704	0.2−	0.8+	1999 05 15	693	0.1−	0.1+
1998 04 26	816	0.1+	0.1−	1998 04 28	704	0.2+	0.7+	1999 05 15	693	0.4+	0.5+
1998 04 26	046	0.5+	0.5−	1998 04 28	704	(3.1−	0.5−)	1999 05 15	693	0.2+	0.3+
1998 04 26	046	0.5+	0.1+	1998 04 28	402	0.3−	0.3+	1999 05 22	693	0.1+	0.1+
1998 04 26	046	0.0	0.3−	1998 04 28	402	0.2−	0.1+	1999 05 22	693	0.0	0.1+
1998 04 26	557	0.4+	0.5−	1998 04 28	402	0.1−	0.4−	1999 05 22	693	0.1−	0.4+
1998 04 26	046	0.0	0.2−	1998 04 30	704	1.6+	0.0				

1998 HA₁₅ = 1999 LH₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	203.13991		(2000.0)	P	Q
n	0.27702172	ω	8.95942	−0.25579852	−0.96576209
a	2.3305593	Ω	95.87017	+0.88424232	−0.25182150
e	0.1895296	i	2.49199	+0.39074626	−0.06236601
P	3.56	H	15.9	G 0.15	U 5

Residuals in seconds of arc

1998 03 20	704	0.0	1.1+	1998 04 18	691	0.7+	0.5−	1998 04 27	691	0.9−	0.0
1998 03 20	704	0.4+	3.9+	1998 04 18	691	0.6+	0.4−	1998 04 28	691	0.2+	0.7−
1998 03 20	704	3.2−	1.4+	1998 04 20	704	0.0	0.4+	1998 04 28	691	0.2+	0.3−
1998 03 20	704	2.0−	1.1−	1998 04 20	704	0.5+	0.9−	1998 04 28	691	0.3+	0.1−
1998 03 22	704	0.9+	1.9−	1998 04 20	704	0.4+	2.4−	1998 05 03	691	0.0	0.4+
1998 03 22	704	0.6+	1.5+	1998 04 20	704	1.0−	2.0−	1998 05 03	691	0.6−	0.1+
1998 03 22	704	0.0	1.4−	1998 04 20	704	1.2−	1.5−	1998 05 03	691	0.1−	0.3−
1998 03 22	704	(5.8−	1.0−)	1998 04 22	704	0.2+	0.5−	1999 06 09	691	0.1−	0.1−
1998 03 25	704	1.7+	0.6+	1998 04 22	704	0.8−	0.8+	1999 06 09	691	0.6−	0.3+
1998 03 25	704	1.4+	0.4+	1998 04 22	704	1.8−	2.0+	1999 06 09	691	0.2−	1.2+
1998 03 25	704	0.1+	1.1+	1998 04 22	704	1.8+	0.9+	1999 06 18	691	0.5+	0.1−
1998 03 25	704	1.4+	0.6+	1998 04 22	704	0.3+	0.1−	1999 06 18	691	0.0	0.3−
1998 03 25	704	1.1+	0.6−	1998 04 27	691	1.0−	0.3−	1999 06 18	691	0.1+	0.2+
1998 04 18	691	0.5+	0.2−	1998 04 27	691	0.9−	0.2−				

1998 HV₁₉ = 1987 YC₅

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	267.49885		(2000.0)	P	Q		
n	0.30808196	ω	60.26724	+0.42010956	−0.90745274		
a	2.1711602	Ω	4.90330	+0.80588962	+0.36997162		
e	0.0626760	i	4.10779	+0.41719285	+0.19912442		
P	3.20	H	16.6	G	0.15	U	4

Residuals in seconds of arc

1976 05 27	413	1.2−	0.8+	1998 03 22	704	0.1−	0.2+	1998 03 29	704	0.2+	0.1−
1976 05 27	413	1.4+	0.2+	1998 03 22	704	0.9−	0.5−	1998 03 29	704	0.6−	0.8−
1987 12 24	010	0.5−	0.0	1998 03 22	704	0.2+	0.6−	1998 03 29	704	0.5+	0.1−

1987 12 24	010	0.6+	0.0	1998 03 22	704	0.2+	0.3+	1998 03 29	704	1.5-	0.7+
1998 01 31	910	0.0	0.7+	1998 03 22	704	1.6-	1.7-	1998 04 18	704	1.7+	0.5+
1998 01 31	910	0.2+	1.0+	1998 03 24	566	0.0	0.5-	1998 04 18	704	0.1-	1.2+
1998 01 31	910	0.1-	0.9+	1998 03 24	566	0.3+	0.3-	1998 04 18	704	0.8-	0.0
1998 02 27	910	0.7+	0.5+	1998 03 24	566	0.0	0.6-	1998 04 18	704	0.2-	1.5-
1998 02 27	910	0.9+	0.6+	1998 03 28	704	0.0	0.3-	1998 04 18	704	0.8-	1.2-
1998 02 27	910	0.8+	0.3+	1998 03 28	704	0.7+	0.8+	1998 04 19	704	0.5+	0.9+
1998 03 20	704	1.7-	0.2-	1998 03 28	704	0.4+	0.9-	1998 04 19	704	0.9+	0.1-
1998 03 20	704	0.4-	0.2-	1998 03 28	704	2.2+	0.7-	1998 04 19	704	0.1-	0.6+
1998 03 20	704	0.5+	0.0	1998 03 28	704	0.5+	1.4-	1998 04 19	704	0.8-	0.6-
1998 03 20	704	2.4-	3.7+	1998 03 29	704	0.5-	0.2+	1998 04 19	704	1.1+	0.4-

1998 HC₂₀ = 1980 VV

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	12.88706		(2000.0)	P		Q	
<i>n</i>	0.31210062	ω	334.04835	+0.99935507		-0.03095378	
<i>a</i>	2.1524825	Ω	27.74381	+0.03577109		+0.90249033	
<i>e</i>	0.1785780	<i>i</i>	2.24081	-0.00314072		+0.42959639	
<i>P</i>	3.16	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1980 11 11	046	0.5-	0.3-	1998 04 22	704	0.8-	0.1+	1998 05 01	699	0.2-	0.1-
1980 11 11	046	0.5+	0.4+	1998 04 23	120	1.5+	0.1+	1998 05 01	684	0.1+	0.9-
1993 12 14	691	0.1-	0.3+	1998 04 23	120	0.2+	0.4+	1998 05 01	704	0.1+	1.9+
1993 12 14	691	0.4-	0.2-	1998 04 23	120	0.9+	1.4+	1998 05 02	684	0.1+	1.3-
1993 12 14	691	0.1-	0.2-	1998 04 27	684	0.0	0.4-	1998 05 02	684	0.1-	1.5-
1994 01 08	691	0.7+	0.0	1998 04 27	684	0.1-	0.3-	1998 05 15	684	0.6-	0.1-
1994 01 08	691	0.4-	0.1+	1998 04 28	684	0.2+	0.7-	1998 05 15	684	0.3-	0.0
1997 01 10	675	0.2+	0.2+	1998 04 28	684	0.0	0.7-	1998 05 16	684	0.4-	0.0
1997 01 10	675	0.1-	0.1-	1998 04 30	699	0.5+	1.1-	1998 05 16	684	0.0	0.0
1998 04 21	704	0.5-	0.7-	1998 04 30	699	(2.4+	1.1-)	1998 05 16	704	0.0	0.9+
1998 04 21	704	0.8+	0.5+	1998 04 30	699	0.8-	0.2-	1998 05 16	704	(2.1-	2.0+)
1998 04 21	704	0.0	1.2+	1998 05 01	704	0.2+	0.3-	1998 05 16	704	0.3+	0.2+
1998 04 21	704	(2.2-	1.6+)	1998 05 01	704	0.0	0.1-	1998 05 16	704	0.3+	0.2-
1998 04 21	704	0.7-	0.6+	1998 05 01	699	0.2-	0.3-	1998 06 26	684	0.5-	0.2+
1998 04 22	704	0.3-	0.9+	1998 05 01	704	0.4+	0.3+	1998 06 26	684	0.5-	0.7+
1998 04 22	704	0.6-	0.7+	1998 05 01	699	0.9+	0.5+	1998 06 26	684	0.6-	0.6+
1998 04 22	704	0.2-	0.7-	1998 05 01	684	0.0	0.7-	1998 06 27	684	0.6-	0.2+
1998 04 22	704	0.4+	1.0-	1998 05 01	704	0.9+	0.5+	1998 06 27	684	0.5-	0.4+

1998 HE₂₁ = 1977 EC₅

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	88.40588		(2000.0)	P		Q	
<i>n</i>	0.28296754	ω	75.99609	-0.24776640		+0.96881971	
<i>a</i>	2.2977969	Ω	179.65765	-0.91417661		-0.23364598	
<i>e</i>	0.1234640	<i>i</i>	4.09799	-0.32076930		-0.08244955	
<i>P</i>	3.48	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1977 03 12	381	0.1+	1.2-	1998 03 28	704	0.1-	0.2+	1998 04 20	704	0.6+	0.5+
1977 03 12	381	0.2-	0.7-	1998 03 28	704	0.0	0.6+	1998 04 20	704	0.2-	0.2-
1984 03 11	413	1.3-	0.6-	1998 03 28	704	0.7+	0.3+	1998 04 20	704	0.8-	1.7-
1984 03 11	413	0.2+	0.1-	1998 03 28	704	1.0-	1.5+	1998 04 20	704	0.4+	0.8-
1997 01 10	691	0.1-	0.2-	1998 03 28	704	0.4+	0.7+	1998 04 22	704	0.6-	0.1+
1997 01 10	691	0.1+	0.1-	1998 03 29	704	0.1+	0.6+	1998 04 22	704	1.6+	0.1+
1997 01 10	691	0.2+	0.2-	1998 03 29	704	0.2-	0.8+	1998 04 22	704	0.5+	0.5+
1998 03 02	910	0.5-	0.3-	1998 03 29	704	0.2-	1.1+	1998 04 22	704	0.9+	1.3-
1998 03 03	910	0.5-	0.1-	1998 03 29	704	0.1-	0.9+	1998 04 22	704	0.1-	1.0-
1998 03 03	910	0.4-	0.1-	1998 03 29	704	0.7-	1.2+	1998 04 30	699	0.9+	0.4+
1998 03 20	704	1.2+	1.6+	1998 04 19	704	0.0	0.4-	1998 04 30	699	0.8+	0.1+
1998 03 20	704	0.8-	1.1+	1998 04 19	704	0.9+	0.2-	1998 04 30	699	0.2-	1.0-
1998 03 20	704	0.1-	0.4+	1998 04 19	704	0.0	0.1+	1998 05 01	691	0.2-	2.0-
1998 03 20	704	0.8-	0.2+	1998 04 19	704	0.0	0.0	1998 05 01	691	0.5-	1.2-
1998 03 20	704	(4.4-	0.7+)	1998 04 20	704	0.4+	0.4-	1998 05 01	691	0.4-	0.6-

1998 HF₂₂ = 1991 PC₂₃

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	178.33772		(2000.0)	P		Q	
<i>n</i>	0.24581761	ω	101.22885	-0.66851298		-0.74367722	
<i>a</i>	2.5238336	Ω	30.72610	+0.67776209		-0.61247734	
<i>e</i>	0.0414227	<i>i</i>	0.65954	+0.30615183		-0.26798452	
<i>P</i>	4.01	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1979 08 14	413	0.0	1.2-	1998 03 28	704	1.0-	1.5-	1998 04 19	704	0.7+	0.4+
1979 08 14	413	0.5+	0.7-	1998 03 28	704	0.5+	0.6+	1998 04 19	704	0.2+	1.6+
1991 08 02	809	1.1+	0.1+	1998 03 28	704	(2.9-	1.3-)	1998 04 19	704	0.9+	0.8-
1991 08 02	809	0.5-	0.7+	1998 03 29	704	0.3+	0.0	1998 04 19	704	1.1+	0.4+
1991 08 02	809	1.1-	1.1+	1998 03 29	704	0.4-	0.2-	1998 04 20	704	0.3-	0.5-
1992 11 25	691	0.1-	0.4+	1998 03 29	704	0.8+	1.2+	1998 04 20	704	0.5-	0.8+
1992 11 25	691	0.3-	0.9-	1998 03 29	704	1.9-	0.4-	1998 04 20	704	0.4+	0.8+
1992 11 25	691	0.4+	0.8+	1998 03 29	704	(0.0	2.3+)	1998 04 20	704	0.2-	1.2-
1997 02 03	691	0.2-	0.2+	1998 04 01	704	0.9-	0.2-	1998 04 22	704	1.3+	1.6-
1997 02 03	691	0.0	0.1-	1998 04 01	704	1.0-	1.2+	1998 04 22	704	1.3+	0.9-
1997 02 03	691	0.1+	0.5-	1998 04 01	704	0.7-	1.2+	1998 04 22	704	0.8-	1.0-
1998 03 28	704	0.6+	0.6+	1998 04 01	704	1.6-	0.4-	1998 04 22	704	(2.1+	1.1-)
1998 03 28	704	0.2-	0.4-	1998 04 01	704	1.7+	0.1+				

1998 HC₂₉ = 1999 JO₁₀₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	198.37131		(2000.0)	P		Q	
<i>n</i>	0.21264462	ω	358.97499	+0.67780906		-0.71481278	
<i>a</i>	2.7799253	Ω	48.32432	+0.67619660		+0.51415912	
<i>e</i>	0.1229124	<i>i</i>	13.32118	+0.28867462		+0.47400748	
<i>P</i>	4.63	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1997 01 10	327	0.1-	0.2+	1998 04 29	121	0.2+	1.0+	1999 05 13	704	0.2+	0.2-
1997 01 10	327	1.0+	0.4-	1998 04 29	557	1.0-	0.5+	1999 05 13	704	0.2+	0.6-
1997 01 10	327	0.6-	0.4+	1998 04 29	557	0.2+	0.2+	1999 05 13	704	1.6-	1.0-
1997 01 10	327	0.8-	0.4+	1998 04 30	557	0.6-	0.3-	1999 05 13	704	0.7+	0.1-
1998 01 26	566	0.3-	0.7-	1998 04 30	557	0.4-	0.2+	1999 05 18	704	0.5+	0.3+
1998 01 26	566	0.0	0.8-	1998 04 30	557	0.8-	0.6+	1999 05 18	704	0.1-	0.7+
1998 01 26	566	0.4-	0.8-	1998 05 01	557	0.0	0.7+	1999 05 18	704	1.1+	0.3+
1998 04 27	557	0.5-	0.2+	1998 05 01	557	1.5-	0.9+	1999 05 18	704	0.1-	0.0
1998 04 27	557	0.3+	0.1+	1998 05 01	557	0.3+	0.1+	1999 05 18	704	0.4+	0.5-
1998 04 27	557	0.6+	0.1+	1998 05 15	557	0.1+	0.0	1999 06 07	703	1.2-	0.5-
1998 04 28	121	1.3+	0.2+	1998 05 15	557	0.1+	1.5-	1999 06 07	703	0.1-	0.1+
1998 04 28	121	0.7+	0.0	1999 04 17	691	0.9-	0.0	1999 06 07	703	1.8+	1.0+
1998 04 28	121	0.8+	0.1+	1999 04 17	691	0.7-	0.3-	1999 06 07	703	0.4+	0.8+
1998 04 28	121	0.7-	0.2+	1999 04 17	691	0.7-	0.3-				
1998 04 29	121	1.3+	0.4+	1999 05 13	704	0.1+	0.1+				

1998 HA₃₉ = 1976 UE₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	246.96096		(2000.0)	P	Q
n	0.29432120	ω	232.22046	+0.07186773	-0.99634159
a	2.2383175	Ω	213.74581	+0.93928811	+0.08320286
e	0.1227242	i	4.77513	+0.33551883	-0.01951199
P	3.35	H	15.9	G 0.15	U 5

1999 JUNE 22

1998 03 25	704	0.0	0.4−	1998 04 01	704	0.7+	0.2+	1998 04 22	704	1.1−	1.0−
1998 03 25	704	0.5+	0.1−	1998 04 01	704	0.6−	0.0				
1998 03 29	704	0.6−	0.6−	1998 04 20	704	1.1−	0.6−				

1998 HO₄₂ = 1988 AG₃

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	182.52798		(2000.0)	P	Q
<i>n</i>	0.21206679	ω	5.60344	−0.25612619	−0.95125573
<i>a</i>	2.7849727	Ω	99.32411	+0.87997912	−0.30300034
<i>e</i>	0.1118465	<i>i</i>	10.02573	+0.40004516	+0.05747468
<i>P</i>	4.65	<i>H</i>	13.8	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1956 03 11	675	0.5−	2.5−	1998 04 23	566	0.9+	1.6−	1998 05 16	704	0.4−	1.3−
1956 03 11	675	0.3−	0.7+	1998 04 23	566	1.2+	1.2−	1998 05 16	704	(2.1−	0.5+)
1976 09 15	413	0.1−	0.1−	1998 04 24	704	0.4+	0.5+	1998 05 16	704	1.3−	0.5−
1988 01 11	033	0.1+	1.3+	1998 04 24	704	1.0+	1.3+	1998 05 29	704	1.5+	0.7+
1988 01 11	033	0.0	0.8+	1998 04 24	704	1.2+	0.5+	1998 05 29	704	1.4−	1.7+
1993 01 28	675	0.7+	0.2−	1998 04 24	704	0.6+	1.3+	1998 05 29	704	0.9−	1.1−
1993 01 28	675	0.1−	0.4+	1998 04 24	704	0.1+	1.3+	1998 05 29	704	0.2+	0.2+
1995 08 29	413	1.2−	0.7−	1998 05 01	566	0.3−	0.2+	1998 05 29	704	1.1−	0.5+
1995 08 29	413	0.5+	1.1+	1998 05 01	566	0.5−	0.4+	1999 06 15	704	0.5−	0.1−
1998 03 24	704	0.2+	0.2+	1998 05 01	566	0.4−	0.1+	1999 06 15	704	0.3+	0.4+
1998 03 24	704	0.7+	0.3−	1998 05 02	566	0.2−	0.1−	1999 06 15	704	0.5+	0.1+
1998 03 24	704	0.2+	0.8−	1998 05 02	566	0.6−	0.2+	1999 06 15	704	0.0	0.6+
1998 03 24	704	0.0	0.2−	1998 05 02	566	0.6−	0.1+	1999 06 15	704	0.8+	0.5+
1998 03 24	704	0.3−	0.4−	1998 05 16	704	0.9+	1.1−				
1998 04 23	566	0.0	0.5−	1998 05 16	704	1.6−	1.8+				

1998 HL₄₅ = 1988 DM₃

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	162.21752		(2000.0)	P	Q
<i>n</i>	0.21492465	ω	174.42728	−0.80412118	−0.59343248
<i>a</i>	2.7602297	Ω	329.08699	+0.54274371	−0.70884290
<i>e</i>	0.0291091	<i>i</i>	3.90972	+0.24252504	−0.38128681
<i>P</i>	4.59	<i>H</i>	14.2	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1984 03 05	413	0.7−	1.5+	1998 03 25	704	2.7+	0.2+	1998 04 20	704	0.0	0.3−
1984 03 05	413	0.8+	0.2+	1998 03 25	704	0.1+	0.3+	1998 04 21	704	0.3−	0.1+
1984 05 23	413	1.4−	0.5+	1998 03 29	704	0.8−	0.8−	1998 04 21	704	0.7+	0.1−
1984 05 23	413	(3.5−	1.2+)	1998 03 29	704	0.4+	0.6+	1998 04 21	704	0.4+	0.4−
1988 02 16	809	0.1−	1.5−	1998 03 29	704	0.1+	0.6+	1998 04 21	704	0.7−	0.4−
1988 02 16	809	0.5+	2.1−	1998 03 29	704	0.3−	1.7+	1998 04 21	704	0.5+	0.4−
1988 02 16	809	1.1+	1.8−	1998 03 29	704	0.6−	0.9+	1998 04 22	704	1.6−	2.0−
1992 01 28	691	0.1−	1.1+	1998 04 01	704	0.3+	1.4+	1998 04 22	704	0.1+	1.4+
1992 01 28	691	0.1−	1.1+	1998 04 01	704	1.3+	0.4−	1998 04 22	704	0.5−	0.1−
1992 01 28	691	0.2−	0.6+	1998 04 01	704	0.9−	0.4+	1998 04 22	704	0.2+	0.5+
1997 01 10	675	(5.1−	1.7+)	1998 04 01	704	0.2−	0.8−	1998 04 22	704	2.1−	0.1−
1997 01 10	675	2.0−	2.2+	1998 04 20	704	1.0+	0.2−	1998 04 30	699	1.5+	0.1−
1998 03 25	704	0.4+	0.2+	1998 04 20	704	0.6−	0.4−	1998 04 30	699	0.9+	0.4−
1998 03 25	704	0.0	0.4+	1998 04 20	704	0.9+	1.8−	1998 04 30	699	0.3−	0.6+
1998 03 25	704	0.8−	0.3+	1998 04 20	704	0.0	0.2−				

1998 HH₅₁ = 1989 TN₁₃

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	206.85355		(2000.0)	P	Q
<i>n</i>	0.28658425	ω	70.64465	−0.73659612	−0.67334920
<i>a</i>	2.2784238	Ω	66.97297	+0.59176826	−0.68708325
<i>e</i>	0.1177955	<i>i</i>	3.95385	+0.32746983	−0.27297889
<i>P</i>	3.44	<i>H</i>	14.8	<i>G</i>	0.15
				<i>U</i>	5

M.P.C. 34917

Residuals in seconds of arc

1989 10 03	809	0.3+	1.0−	1998 04 25	699	1.0−	0.4−	1998 05 22	704	0.2+	0.0
1989 10 03	809	0.6+	1.2−	1998 05 01	704	0.5+	0.1−	1998 05 22	704	0.0	0.3−
1989 10 03	809	0.7+	1.3−	1998 05 01	704	0.3+	0.6−	1998 05 22	699	0.4+	1.3−
1993 12 09	675	1.3−	1.7−	1998 05 01	704	0.1−	0.4−	1998 05 22	699	1.0−	0.3−
1993 12 09	675	0.8+	0.1+	1998 05 01	704	0.3+	0.1+	1998 05 22	699	0.2−	0.6+
1998 04 22	704	0.1+	0.8−	1998 05 01	704	0.9−	0.1−	1998 05 24	704	0.2−	0.4−
1998 04 22	704	1.0+	0.1+	1998 05 05	699	0.1−	0.7−	1998 05 24	704	0.5+	0.1+
1998 04 22	704	0.4−	0.1−	1998 05 05	699	0.5−	0.1−	1998 05 24	704	1.3−	0.7+
1998 04 22	704	0.1−	0.3−	1998 05 05	699	0.0	0.1−	1998 05 24	704	0.6+	0.3−
1998 04 22	704	0.4−	0.3−	1998 05 22	704	0.7+	0.8+	1998 05 24	704	0.8−	0.5+
1998 04 25	699	0.4−	0.9−	1998 05 22	704	0.9+	0.8+				
1998 04 25	699	1.3+	0.1+	1998 05 22	704	0.6−	0.2−				

1998 HS₉₆ = 1976 UR₁₂ = 1991 PK₂₁

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

<i>M</i>	69.17403		(2000.0)	P	Q
<i>n</i>	0.25632191	ω	96.07762	+0.18237109	+0.98319768
<i>a</i>	2.4544013	Ω	184.45388	−0.93771500	+0.17149370
<i>e</i>	0.1031537	<i>i</i>	5.87095	−0.29568794	+0.06254776
<i>P</i>	3.85	<i>H</i>	15.1	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1976 10 22	381	0.3+	0.1+	1998 04 22	704	0.5+	0.0	1998 05 22	704	0.5+	0.6+
1976 10 22	381	0.2−	0.3−	1998 04 22	704	0.3+	0.3−	1998 05 22	704	0.0	0.3−
1979 06 24	413	0.9−	0.8+	1998 04 22	704	0.1−	0.8−	1998 05 22	704	0.3−	0.3+
1979 06 24	413	0.9+	0.9−	1998 04 22	704	0.9−	0.8−	1998 05 24	704	0.4+	0.5+
1991 08 09	675	0.9+	1.7−	1998 04 25	699	1.1−	1.3+	1998 05 24	704	0.3−	0.2−
1991 08 09	675	0.3+	0.3−	1998 04 25	699	0.0	0.5+	1998 05 24	704	1.6−	0.5+
1991 09 03	413	0.3−	1.0+	1998 04 25	699	0.0	0.1−	1998 05 24	704	0.5+	0.6+
1991 09 03	413	0.9−	0.8+	1998 05 01	704	0.5−	0.8−	1998 05 24	704	1.6−	0.6+
1998 04 21	704	0.7+	0.1−	1998 05 01	704	0.4−	0.1−	1998 05 27	699	0.2−	0.3−
1998 04 21	704	0.1+	0.6−	1998 05 01	704	0.6−	0.3+	1998 05 27	699	0.2+	0.5−
1998 04 21	704	0.1+	0.5−	1998 05 01	704	0.6+	0.4+	1998 05 27	699	0.2+	0.4−
1998 04 21	704	0.7+	0.2−	1998 05 01	704	0.2+	0.2+	1998 06 02	699	0.7+	0.1+
1998 04 21	704	2.2+	0.5−	1998 05 22	704	0.3−	0.5+	1998 06 02	699	0.3−	0.1+
1998 04 22	704	0.1−	0.1−	1998 05 22	704	0.2+	0.7+	1998 06 02	699	0.3+	0.4−

1998 HZ₉₆ = 1987 YX₂

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

<i>M</i>	51.23452		(2000.0)	P	Q
<i>n</i>	0.22995017	ω	236.20542	+0.15470613	+0.97160913
<i>a</i>	2.6386405	Ω	43.83039	−0.79930802	+0.22958224
<i>e</i>	0.0473989	<i>i</i>	14.97971	−0.58066574	−0.05716376
<i>P</i>	4.29	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1987 12 20	010	1.8−	0.4+	1998 04 22	704	0.2−	1.4+	1998 05 01	704	0.5−	1.0−
1987 12 20	010	1.3+	0.1−	1998 04 22	704	0.4−	0.2−	1998 05 01	704	0.1−	1.1−
1987 12 20	010	0.3+	0.5−	1998 04 22	704	0.4−	0.6+	1998 05 22	704	1.0−	0.5+
1991 10 06	675	0.1−	0.1−	1998 04 22	704	1.5+	0.7−	1998 05 22	704	0.5−	0.7−
1991 10 06	675	1.0+	0.1−	1998 04 25	120	0.7−	0.9+	1998 05 22	704	0.6−	0.3+
1995 10 19	413	1.1−	0.1+	1998 04 25	120	0.1−	0.4+	1998 05 22	704	0.1−	0.9−
1995 10 19	413	0.8+	0.1−	1998 04 25	120	0.1−	0.1−	1998 05 22	704	1.4+	0.4−
1998 04 21	704	0.3+	0.5+	1998 05 01	704	0.7−	0.0	1998 05 24	704	1.0+	0.6−
1998 04 21	704	0.5+	0.1−	1998 05 01	699	0.2−	0.6+	1998 05 24	704	0.5+	0.5+
1998 04 21	704	0.8+	0.1+	1998 05 01	704	0.3+	1.0−	1998 05 24	704	0.8+	1.2+
1998 04 21	704	0.0	0.1−	1998 05 01	699	0.5−	0.2+	1998 05 24	704	1.0−	0.2+
1998 04 21	704	0.1−	0.7+	1998 05 01	704	0.3−	0.8−	1998 05 24	704	0.4+	0.6−
1998 04 22	704	0.6+	0.1+	1998 05 01	699	1.0−	0.3−				

M.P.C. 34918

1999 JUNE 22

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5	Gnädig										
M	89.90729		(2000.0)	P			Q				
n	0.28631637	ω	72.77002	+0.05951967			+0.99747599				
a	2.2798447	Ω	200.75851	−0.95234177			+0.04511668				
e	0.1082948	i	6.27146	−0.29916980			+0.05482818				
P	3.44	H	16.3	G	0.15		U		4		
Residuals in seconds of arc											
1984 03 05	413	1.6−	0.5+	1998 04 22	704	1.0−	0.7+	1998 05 01	704	0.5+	1.0−
1984 03 05	413	1.8+	1.3−	1998 04 22	704	0.4+	2.0+	1998 05 22	704	1.3−	2.2−
1991 04 10	809	1.2−	0.6+	1998 04 22	704	0.9−	0.1+	1998 05 22	704	1.3+	0.1−
1991 04 10	809	0.6+	0.9−	1998 04 22	704	1.4−	0.3+	1998 05 22	704	0.3+	1.5+
1991 04 10	809	0.4−	0.0	1998 04 22	704	0.4−	1.8+	1998 05 22	704	2.5+	0.5−
1991 04 19	809	(0.9+	3.2−)	1998 04 29	566	0.3+	0.2+	1998 05 24	704	0.7+	0.8−
1991 04 19	809	(4.9+	5.8−)	1998 04 29	566	0.2+	0.4+	1998 05 24	704	1.3−	0.7−
1991 04 19	809	(13.9+	12.8−)	1998 04 29	566	0.1+	1.3−	1998 05 24	704	0.5−	0.0
1998 04 21	704	0.4−	0.6+	1998 05 01	704	0.6+	0.3+	1998 05 24	704	1.5−	0.4−
1998 04 21	704	0.2−	0.2−	1998 05 01	704	1.1+	0.5+	1998 05 24	704	0.7+	0.6−
1998 04 21	704	0.1+	0.3−	1998 05 01	704	0.2−	0.1+				
1998 04 21	704	0.1−	0.5+	1998 05 01	704	0.8+	0.3−				

1998 HJ₁₁₅ = 1989 AE₈

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5				Williams			
M	334.78696		(2000.0)	P		Q	
n	0.23610611	ω	197.75661	+0.99668011		+0.00895799	
a	2.5925744	Ω	161.16761	+0.00472942		+0.98588038	
e	0.1186985	i	14.51835	-0.08127975		+0.16721131	
P	4.17	H	13.6	G	0.15	U	2

Residuals in seconds of arc											
1956 03 10	675	0.3+	0.5+	1998 03 24	704	0.7−	0.8+	1998 04 24	704	0.4+	1.2−
1956 03 10	675	(3.7+	3.1−)	1998 03 24	704	0.4−	0.6−	1998 05 23	704	0.6+	0.6+
1987 11 15	413	0.2+	0.9+	1998 03 24	704	0.4−	0.1−	1998 05 23	704	0.0	0.2+
1987 11 15	413	0.1−	0.8−	1998 04 23	704	0.3+	0.3−	1998 05 23	704	0.1+	0.5−
1989 01 11	033	0.2+	0.2+	1998 04 23	704	0.2−	0.0	1998 05 23	704	1.2+	0.8+
1989 01 11	033	0.4−	0.7+	1998 04 23	704	0.0	0.3+	1998 05 23	704	1.9−	0.3+
1993 03 19	691	0.2−	0.5−	1998 04 23	704	0.4−	1.4+	1998 05 28	704	(0.9+	2.4−
1993 03 19	691	0.2−	0.5−	1998 04 23	704	(2.8+	2.3−)	1998 05 28	704	0.3+	1.0−
1994 06 02	675	1.1−	0.1+	1998 04 24	704	0.8+	0.3−	1998 05 28	704	(0.1−	2.7−
1994 06 02	675	0.1−	0.3+	1998 04 24	704	0.4+	0.7−	1998 05 28	704	1.1−	1.0−
1998 03 24	704	0.3−	0.9−	1998 04 24	704	0.2+	0.1+				
1998 03 24	704	1.4+	0.6+	1998 04 24	704	0.7+	0.7+				

1998 HT₁₄₇ = 1990 SP₁₄

Id. A. Gnädig, G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5	Gnädig				
<i>M</i>	57.95184	(2000.0)	P	Q	
<i>n</i>	0.22527810	ω	105.72414	+0.33662393	+0.94147938
<i>a</i>	2.6749977	Ω	184.07319	−0.93009000	+0.32956247
<i>e</i>	0.1932166	<i>i</i>	14.13533	−0.14702694	+0.07074711
<i>P</i>	4.38	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc											
1990 09 25	809	0.2+	1.4−	1998 04 17	691	0.2−	0.4+	1998 05 23	704	0.3−	0.1−
1990 09 25	809	0.7+	1.3−	1998 04 17	691	0.2+	0.3+	1998 05 23	704	1.0−	0.5+
1990 09 25	809	1.3+	1.3−	1998 04 23	704	0.4−	0.1−	1998 05 23	704	1.2+	0.0
1990 09 26	809	0.8−	1.7+	1998 04 23	704	0.5−	0.2+	1998 05 23	704	0.3+	0.8−
1990 09 26	809	0.6−	1.5+	1998 04 23	704	0.2+	0.5+	1998 05 23	704	0.5−	0.4−
1990 09 26	809	0.9−	1.7+	1998 04 23	704	0.2−	0.0	1998 05 27	699	0.0	1.2−
1995 12 15	413	1.2−	0.2+	1998 04 23	704	1.5−	1.0−	1998 05 27	699	0.3+	0.2−
1995 12 15	413	1.2+	0.8+	1998 04 24	704	0.3−	0.4−	1998 05 27	699	0.2−	0.8+
1998 03 24	691	0.2−	1.0+	1998 04 24	704	1.0+	0.0	1998 06 02	699	0.0	1.0+
1998 03 24	691	0.2−	0.8+	1998 05 01	699	0.1−	0.8−	1998 06 02	699	0.2−	0.9+

1998 03 24	691	0.3−	0.7+	1998 05 01	699	0.9+	1.2−	1998 06 02	699	0.1−	0.2+
1998 04 17	691	2.2+	1.4+	1998 05 01	699	0.2−	0.7−				

1998 HH₁₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5 Williams

M	346.24928		(2000.0)	P	Q
n	0.00408514	ω	21.33671	−0.80859792	+0.58705542
a	38.7553088	Ω	194.81101	−0.55956499	−0.78789460
e	0.1614571	i	8.81709	−0.18181426	−0.18597861
P	241	H	8.5	G 0.15	U 6

Residuals in seconds of arc											
1998 04 28	568	0.0	0.5+	1998 05 22	568	0.1+	0.5−	1999 04 08	568	0.4−	0.0
1998 04 28	568	0.1+	0.2+	1998 05 22	568	0.2+	0.2−	1999 04 08	568	0.6−	0.2+
1998 04 28	568	0.2+	0.2+	1998 05 22	568	0.1+	0.0	1999 05 05	950	0.5+	0.6+
1998 05 01	568	0.1−	0.1+	1998 06 30	568	0.9−	0.3−	1999 05 05	950	0.6+	0.0
1998 05 01	568	0.1+	0.0	1999 03 10	568	0.1+	0.7−	1999 05 06	950	0.1+	0.4+
1998 05 01	568	0.1+	0.2+	1999 03 10	568	0.3−	0.5−				

1998 HJ₁₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5 Marsden

M	43.64829		(2000.0)	P	Q
n	0.00349054	ω	134.91686	−0.99516480	+0.09277268
a	43.0402237	Ω	50.43370	−0.09770195	−0.90137221
e	0.0338396	i	2.39787	−0.01006709	−0.42299098
P	282	H	7.5	G 0.15	U 6

Residuals in seconds of arc											
1998 04 28	568	0.1−	0.1−	1998 05 24	568	0.1+	0.1+	1999 03 15	568	0.1−	0.1−
1998 04 28	568	0.0	0.1−	1998 05 24	568	0.2−	0.0	1999 04 08	568	0.1+	0.0
1998 04 28	568	0.1−	0.0	1998 06 29	568	0.1+	0.0	1999 04 08	568	0.1−	0.1+
1998 05 01	568	0.1+	0.0	1998 06 29	568	0.1−	0.1+				
1998 05 01	568	0.2+	0.0	1999 03 14	568	0.0	0.1+				

1998 HK₁₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5 Marsden

M	2.34257		(2000.0)	P	Q
n	0.00402384	ω	178.85065	−0.65461710	+0.75174138
a	39.1479212	Ω	50.25242	−0.69440536	−0.55625667
e	0.2242204	i	5.95425	−0.29879366	−0.35420815
P	245	H	7.5	G 0.15	U 5

Residuals in seconds of arc											
1998 04 28	568	0.1+	0.0	1998 05 22	568	0.0	0.1+	1998 07 01	568	0.1+	0.0
1998 04 28	568	0.0	0.0	1998 05 22	568	0.0	0.1+	1999 03 13	568	0.1+	0.0
1998 04 28	568	0.0	0.0	1998 05 22	568	0.2−	0.1+	1999 03 14	568	0.2+	0.1+
1998 04 30	568	0.0	0.0	1998 06 29	568	0.0	0.1−	1999 04 08	568	0.1−	0.1−
1998 04 30	568	0.0	0.0	1998 06 30	568	0.0	0.1−	1999 04 08	568	0.2−	0.1+

1998 HL₁₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5 Marsden

M	46.32778		(2000.0)	P	Q
n	0.00381855	ω	128.34235	-0.79003262	-0.59855992
a	40.5387534	Ω	16.34896	+0.30198382	-0.56813348
e	0.0881262	i	28.09659	+0.53352998	-0.56475691
P	258	H	8.1	G 0.15	U 6

1998 HM₁₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	57.39557		(2000.0)	P	Q
<i>n</i>	0.00334479	ω	115.64826	−0.99993408	−0.00759870
<i>a</i>	44.2815827	Ω	63.91739	+0.00350209	−0.91579763
<i>e</i>	0.0323342	<i>i</i>	0.54910	+0.01093460	−0.40156813
<i>P</i>	295	<i>H</i>	8.0	<i>G</i> 0.15	<i>U</i> 7

Residuals in seconds of arc

1998 04 29	568	0.1+	0.0	1998 05 02	568	0.2−	0.0	1998 05 24	568	0.1−	0.1+
1998 04 29	568	0.0	0.0	1998 05 02	568	0.0	0.4−	1999 03 14	568	0.0	0.1+
1998 04 29	568	0.3+	0.3+	1998 05 24	568	0.2+	0.0	1999 03 15	568	0.0	0.2−
1998 05 02	568	0.2−	0.0	1998 05 24	568	0.0	0.0				

1998 HN₁₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	163.58594		(2000.0)	P	Q
<i>n</i>	0.00424316	ω	338.86093	+0.94045543	−0.22373351
<i>a</i>	37.7870564	Ω	37.20430	+0.33937330	+0.66058200
<i>e</i>	0.0570603	<i>i</i>	25.03808	−0.01921813	+0.71664129
<i>P</i>	232	<i>H</i>	8.8	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1998 04 21	568	0.0	0.3−	1998 05 01	568	0.2−	0.3+	1998 07 01	568	0.3+	0.2+
1998 04 21	568	0.0	0.3−	1998 05 23	568	0.2+	0.1+	1999 01 22	568	0.0	0.2+
1998 04 21	568	0.1+	0.1−	1998 05 23	568	0.0	0.2−	1999 01 24	568	0.0	0.2−
1998 05 01	568	0.1+	0.4+	1998 05 23	568	0.4−	0.3−				
1998 05 01	568	0.0	0.2+	1998 07 01	568	0.1−	0.0				

1998 HO₁₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	208.57191		(2000.0)	P	Q
<i>n</i>	0.00372433	ω	218.20041	+0.92730597	+0.28703939
<i>a</i>	41.2195949	Ω	123.45051	−0.23124574	+0.94400733
<i>e</i>	0.1025066	<i>i</i>	16.73373	−0.29432811	+0.16266086
<i>P</i>	265	<i>H</i>	8.2	<i>G</i> 0.15	<i>U</i> 7

Residuals in seconds of arc

1998 04 22	568	0.0	0.1−	1998 05 01	568	0.2+	0.2+	1999 03 10	568	0.3−	0.5−
1998 04 22	568	0.1−	0.2−	1998 05 22	568	0.2+	0.3+	1999 05 07	568	0.1+	0.5+
1998 04 22	568	0.1−	0.0	1998 05 22	568	0.3−	0.1−	1999 05 07	568	0.2+	0.4+
1998 05 01	568	0.1+	0.0	1998 05 22	568	0.1−	0.1+				
1998 05 01	568	0.1+	0.1+	1999 03 10	568	0.2−	0.5−				

1998 HP₁₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	290.69979		(2000.0)	P	Q
<i>n</i>	0.00341100	ω	253.38455	+0.63343731	+0.77348224
<i>a</i>	43.7067248	Ω	55.94029	−0.69945408	+0.58449052
<i>e</i>	0.0772912	<i>i</i>	1.51917	−0.33093982	+0.24514497
<i>P</i>	289	<i>H</i>	7.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 04 28	568	0.0	0.2−	1998 04 30	568	0.0	0.0	1999 04 08	568	0.0	0.2+
1998 04 28	568	0.1−	0.1−	1998 05 24	568	0.1−	0.4+	1999 04 08	568	0.0	0.1−
1998 04 28	568	0.1+	0.0	1998 05 24	568	0.1−	0.1+	1999 05 06	568	0.0	0.0
1998 04 30	568	0.1+	0.1−	1998 06 29	568	0.0	0.1−	1999 05 06	568	0.0	0.1−
1998 04 30	568	0.1−	0.1+	1998 06 29	568	0.1+	0.1−				

1998 HQ₁₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	9.46942		(2000.0)	P	Q
<i>n</i>	0.00402663	ω	346.95896	−0.80679853	+0.56978042
<i>a</i>	39.1298776	Ω	228.89661	−0.52175261	−0.81121285
<i>e</i>	0.2786522	<i>i</i>	11.97069	−0.27721895	−0.13146857
<i>P</i>	245	<i>H</i>	8.8	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 04 28	568	0.1+	0.2−	1998 05 22	568	0.1−	0.2+	1999 03 14	568	0.1+	0.2+
1998 04 28	568	0.1−	0.1+	1998 05 22	568	0.1+	0.1+	1999 03 14	568	0.1+	0.1+
1998 04 28	568	0.1+	0.1−	1998 05 22	568	0.0	0.2+	1999 05 07	568	0.1−	0.1−
1998 04 30	568	0.1−	0.2−	1998 06 30	568	0.0	0.0	1999 05 07	568	0.1−	0.1−
1998 04 30	568	0.1−	0.1−	1998 07 01	568	0.2+	0.0				

1998 JO₁ = 1992 GG₇

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

<i>M</i>	27.16821		(2000.0)	P	Q
<i>n</i>	0.16912672	ω	228.90034	+0.32057464	+0.94669128
<i>a</i>	3.2383807	Ω	59.82391	−0.85768350	+0.30432996
<i>e</i>	0.1326105	<i>i</i>	2.10420	−0.40200859	+0.10563563
<i>P</i>	5.83	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1982 11 05	413	1.8+	0.7−	1998 05 01	704	0.8−	0.7+	1998 05 22	704	0.2+	0.5−
1982 11 05	413	1.2−	0.6−	1998 05 01	704	0.3−	0.4+	1998 05 22	699	0.7+	0.4+
1992 04 04	809	0.2+	0.9−	1998 05 01	704	0.3−	0.6+	1998 05 22	699	0.4+	0.5+
1992 04 04	809	0.7−	0.5−	1998 05 01	704	0.6−	1.0+	1998 05 22	699	0.9+	0.1−
1992 04 04	809	0.5−	0.9−	1998 05 01	566	0.3−	0.3+	1998 05 22	566	0.1−	0.2−
1998 04 22	704	0.1−	0.0	1998 05 01	566	0.1−	0.3+	1998 05 22	566	0.2+	0.4−
1998 04 22	704	0.5+	0.0	1998 05 01	566	0.9−	0.3+	1998 05 22	566	0.3+	0.2+
1998 04 22	704	0.1+	0.1+	1998 05 02	566	0.5−	0.4−	1998 05 24	704	0.4+	0.8−
1998 04 22	704	0.4+	0.0	1998 05 02	566	0.2−	0.2−	1998 05 24	704	0.5+	0.6−
1998 04 22	704	1.3−	0.1+	1998 05 02	566	0.4−	0.3−	1998 05 24	704	0.8+	0.5+
1998 04 25	699	0.4+	0.2−	1998 05 22	704	0.4−	0.0	1998 05 24	704	0.3−	0.3+
1998 04 25	699	0.1−	0.1+	1998 05 22	704	0.3+	0.6+	1998 05 24	704	0.5+	1.0−
1998 04 25	699	0.2+	0.2+	1998 05 22	704	0.2+	0.1−				
1998 05 01	704	0.2−	0.0	1998 05 22	704	0.3+	1.0−				

1998 KO₄ = 1986 PP₂ = 1989 ED₁₀

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	72.59834		(2000.0)	P	Q
<i>n</i>	0.23599891	ω	150.37294	+0.20357071	+0.97776069
<i>a</i>	2.5933594	Ω	131.32387	−0.91095806	+0.20803331
<i>e</i>	0.1274498	<i>i</i>	3.85025	−0.35876787	+0.02657376
<i>P</i>	4.18	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1951 02 04	675	1.5−	1.6−	1997 02 14	691	0.2−	0.3−	1998 05 24	704	0.4+	0.0
1951 02 04	675	1.4+	1.2+	1998 05 05	699	0.3+	0.0	1998 05 24	704	0.2+	0.2+
1986 08 01	675(30.9−	2.2−)		1998 05 05	699	0.3+	0.5+	1998 05 24	704	0.0	0.4−
1986 08 01	675(31.8−	1.6−)		1998 05 05	699	0.2−	0.0	1998 06 03	704	0.5+	0.3+
1986 08 02	675	1.6+	0.0	1998 05 22	704	0.1+	0.3−	1998 06 03	704	0.8+	0.1+
1986 08 02	675	0.4+	0.2+	1998 05 22	704	0.0	0.1+	1998 06 03	704	1.0−	0.9+
1986 10 02	413	2.3−	0.3−	1998 05 22	704	0.4−	0.3−	1998 06 03	704	0.6−	1.2+
1989 03 05	033	0.1+	0.5+	1998 05 22	704	0.0	0.1−	1998 06 18	704	0.5−	0.4−
1989 03 05	033	0.0	0.6+	1998 05 22	704	0.5−	0.1+	1998 06 18	704	(0.7+	2.3−)
1993 01 24	691	0.2+	0.0	1998 05 22	699	0.1−	0.5−	1998 06 18	704	1.7−	0.8+
1993 01 24	691	0.4+	0.1−	1998 05 22	699	0.6+	0.2+	1998 06 18	704	(5.1−	1.0−)
1993 01 24	691	0.3+	0.4−	1998 05 22	699	0.2−	0.3−	1998 06 26	699	0.1+	0.1−
1997 01 11	566	0.2+	0.0	1998 05 24	699	1.0+	0.1−	1998 06 26	699	0.4−	0.6−
1997 01 11	566	0.1+	0.0	1998 05 24	704	0.3+	0.3−	1998 06 26	699	0.2−	0.3−
1997 01 11	566	0.1+	0.1+	1998 05 24	699	0.5+	0.5−	1998 06 30	699	1.1−	0.5−

M.P.C. 34920

1997 02 14	691	0.4−	0.3−	1998 05 24	699	0.5+	0.0	1998 06 30	699	0.1+	0.2+
1997 02 14	691	0.4−	0.2−	1998 05 24	704	0.1−	0.5−	1998 06 30	699	0.7+	0.2+

1998 KF₃₅ = 1953 VH₂

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	28.73532		(2000.0)		P		Q
n	0.25713618	ω	272.09266		+0.95450681		+0.27460583
a	2.4492169	Ω	71.98433		−0.20099828		+0.88042647
e	0.1540766	i	7.02011		−0.22026447		+0.38657583
P	3.83	H	13.6	G	0.15	U	3

Residuals in seconds of arc

1953 11 14	760	0.2−	1.9−	1998 05 24	704	0.3−	0.3−	1998 06 20	691	0.6−	0.3+
1953 11 14	760	1.5+	1.5−	1998 05 24	704	0.1+	0.8+	1998 06 20	691	0.6−	0.0
1989 01 31	675	0.5−	0.4−	1998 05 24	704	0.2+	0.4−	1998 06 20	691	0.5−	0.1−
1989 01 31	675	0.3+	0.1−	1998 05 24	704	0.1+	0.5−	1998 06 27	699	0.5+	0.3+
1997 01 14	599	1.0−	0.5+	1998 05 24	704	0.9−	0.4−	1998 06 27	699	0.1−	0.3+
1997 01 14	599	0.3+	1.2−	1998 06 03	704	0.4−	0.6−	1998 06 27	699	0.4+	0.4−
1997 01 14	599	0.6+	0.1+	1998 06 03	704	1.6−	0.4−	1998 06 29	699	0.2+	0.5−
1998 05 18	120	0.8−	0.2+	1998 06 03	704	0.8−	0.8−	1998 06 29	699	0.2−	0.2−
1998 05 18	120	0.4+	1.3−	1998 06 03	704	0.4−	0.0	1998 06 29	699	0.2−	0.8−
1998 05 22	704	0.3+	0.1−	1998 06 16	704	0.4+	0.0	1998 07 01	691	0.4+	0.4−
1998 05 22	704	0.9+	0.2+	1998 06 16	704	0.3−	0.6−	1998 07 01	691	0.5+	0.0
1998 05 22	704	0.5−	0.8+	1998 06 16	704	0.1−	0.1−	1998 07 01	691	0.7+	0.2−
1998 05 22	704	1.2+	0.3−	1998 06 16	704	0.4+	0.5+				
1998 05 22	704	0.6−	1.0+	1998 06 16	704	1.0+	0.1−				

1998 KG₄₁ = 1977 DG₁ = 1982 UQ₁ = 1994 CP₁₉

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	350.78973		(2000.0)		P		Q
n	0.29122932	ω	307.25606		+0.89965355		−0.43496604
a	2.2541318	Ω	78.55515		+0.41179316		+0.81658171
e	0.0291504	i	2.20965		+0.14508581		+0.37947182
P	3.38	H	14.5	G	0.15	U	2

Residuals in seconds of arc

1977 02 18	381	0.0	0.6−	1994 02 10	809	0.2+	0.4−	1998 05 24	704	0.2−	0.6−
1977 02 18	381	0.5−	1.8−	1994 02 10	809	0.2−	0.7−	1998 05 24	704	0.5−	1.0−
1977 02 19	381	0.3+	0.4−	1994 02 13	809	1.5+	1.7+	1998 06 03	704	0.7−	0.7+
1977 02 19	381	0.9−	0.3−	1994 02 13	809	0.2+	1.1+	1998 06 03	704	0.0	0.2−
1982 10 16	046	1.0+	2.0−	1994 02 13	809	0.4+	0.9+	1998 06 03	704	0.8−	1.1−
1982 10 16	046	0.8+	0.5+	1998 05 22	704	0.1−	0.1+	1998 06 03	704	1.3−	0.0
1982 10 21	046	0.5+	0.6+	1998 05 22	704	0.0	1.2+	1998 06 03	704	(0.6−	2.1−)
1982 10 21	046	1.2−	1.8−	1998 05 22	704	0.3−	0.8+	1998 07 02	699	1.8+	0.6−
1994 02 07	809	0.9−	0.2−	1998 05 22	704	0.6−	1.1+	1998 07 02	699	0.3+	1.3−
1994 02 07	809	1.2−	0.6−	1998 05 24	704	1.1+	0.6−	1998 07 02	699	0.4+	0.5−
1994 02 07	809	(3.0−	0.6+)	1998 05 24	704	1.0+	1.0−				
1994 02 10	809	0.5+	0.8−	1998 05 24	704	0.4−	0.2−				

1998 KD₅₀ = 1975 UK = 1991 FG₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	2.49198		(2000.0)		P		Q
n	0.15868416	ω	132.75608		+0.73266636		+0.68041513
a	3.3789389	Ω	184.44906		−0.66780464		+0.71437476
e	0.0742467	i	11.40411		−0.13128962		+0.16341346
P	6.21	H	12.7	G	0.15	U	2

Residuals in seconds of arc

1950 08 14	675	0.4+	0.0	1998 05 23	704	0.3−	0.0	1998 06 03	704	(2.5−	1.7−)
1950 08 14	675	0.9−	1.2+	1998 05 24	699	0.1+	0.7−	1998 06 03	704	(5.8−	1.0−)
1975 10 30	033	0.1+	0.7+	1998 05 24	699	0.0	0.4−	1998 06 24	566	0.3−	0.0

1999 JUNE 22

1979 06 16	413	0.4+	0.3−	1998 05 24	699	0.6+	1.1+	1998 06 24	566	0.4−	0.3−
1987 09 24	675	0.9−	1.2+	1998 05 26	704	0.3−	0.6+	1998 06 24	566	0.8+	0.1−
1987 09 24	675	0.2+	1.1+	1998 05 26	704	0.1−	0.8+	1998 06 28	699	0.0	0.3+
1991 03 21	808	0.3+	1.1+	1998 05 26	704	0.0	1.4+	1998 06 28	699	0.4−	0.9+
1991 03 21	808	(5.0−	0.4−)	1998 05 26	704	0.4−	0.4+	1998 06 28	699	0.6−	0.6+
1998 05 23	704	0.1+	0.1−	1998 05 26	704	0.3+	0.2−	1999 05 21	704	1.4−	1.1+
1998 05 23	704	0.6−	1.0+	1998 06 03	704	1.2+	0.9−	1999 05 21	704	1.8+	2.0−
1998 05 23	704	0.2−	0.3−	1998 06 03	704	0.6−	0.7−	1999 05 21	704	0.3+	0.6−
1998 05 23	704	0.3−	0.3+	1998 06 03	704	0.9+	0.4−	1999 05 21	704	0.5+	2.0−

1998 KP₅₄ = 1990 WS₉

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	28.96200		(2000.0)		P		Q
n	0.21294844	ω	232.98070		+0.84859953		+0.47270030
a	2.7772805	Ω	97.67240		−0.37637648		+0.85499770
e	0.1531218	i	13.86900		−0.37177894		+0.21338548
P	4.63	H	14.4	G	0.15	U	4

Residuals in seconds of arc

1990 10 25	675	1.2−	0.9−	1998 05 26	704	1.4+	0.1+	1998 06 24	704	0.3+	0.1−
1990 10 25	675	0.0	1.1−	1998 05 26	704	0.4−	1.3+	1998 06 24	704	0.1+	0.4+
1990 11 21	809	(3.5+	2.6+)	1998 05 26	704	0.6+	0.7−	1998 06 26	704	0.1−	0.2−
1990 11 21	809	(2.7+	2.9+)	1998 06 03	704	0.5+	0.0	1998 06 26	704	0.3+	0.2−
1990 11 21	809	0.8+	2.5+	1998 06 03	704	1.5+	0.2+	1998 06 26	704	0.4−	0.3−
1998 05 23	704	0.5−	0.1−	1998 06 03	704	0.2−	0.1+	1998 06 26	704	0.8+	1.4+
1998 05 23	704	0.9−	0.7+	1998 06 03	704	0.1+	0.5−	1998 06 26	704	(3.4−	1.2+)
1998 05 23	704	0.4−	0.7+	1998 06 03	704	0.1+	2.1−	1998 07 01	699	0.0	0.5+
1998 05 23	704	0.5−	0.1−	1998 06 24	704	2.3−	1.4−	1998 07 01	699	0.1+	0.4+
1998 05 26	704	0.4+	0.1−	1998 06 24	704	0.1+	0.1−	1998 07 01	699	0.0	0.5+
1998 05 26	704	0.1−	0.4+	1998 06 24	704	0.4−	0.0				

1998 KR₅₅ = 1989 TN₉

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	67.63327		(2000.0)		P		Q
n	0.19226149	ω	114.15583		+0.08088719		+0.99524971
a	2.9730886	Ω	160.25443		−0.96277175		+0.09208263
e	0.0396497	i	9.22807		−0.25792988		−0.03160396
P	5.13	H	15.5	G	0.15	U	4

Residuals in seconds of arc

1988 06 13	413	1.5−	0.2+	1998 05 23	704	1.5+	0.2−	1998 06 19	704	0.4−	0.4+
1988 06 13	413	1.5+	1.5+	1998 05 26	704	0.4+	0.0	1998 06 19	704	0.6−	0.9−
1989 10 07	809	0.3+	0.4+	1998 05 26	704	0.2−	0.0	1998 07 16	910	0.0	0.2+
1989 10 07	809	0.4+	0.7−	1998 05 26	704	0.8+	0.5+	1998 07 16	910	0.2+	0.1−
1989 10 07	809	0.5−	0.4−	1998 05 26	704	0.0	0.4+	1998 07 16	910	0.2+	0.0
1998 05 23	704	1.1−	1.1−	1998 06 19	704	0.1+	0.9−	1998 07 17	910	0.8+	0.1+
1998 05 23	704	2.3−	0.7+	1998 06 19	704	0.4−	0.1−	1998 07 17	910	0.9+	0.0
1998 05 23	704	0.1+	1.4−	1998 06 19	704	0.6−	0.6+	1998 07 17	910	0.6+	0.1−

1998 MW₅ = 1999 JW₃

Id. J. E. Rogers, T. Kobayashi

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	173.08800		(2000.0)		P		Q
n	0.95301410	ω	26.56207		−0.29098693		−0.95061375
a	1.0226723	Ω	80.51381		+0.85715661		−0.30917239
e	0.3625823	i	6.28529		+0.42498135		−0.02731182
P	1.03	H	19.2	G	0.15	U	4

Residuals in seconds of arc

1998 06 24	704	(0.8+	2.7+)	1999 05 13	704	1.6−	0.1−	1999 05 21	704	0.1−	0.2−
1998 06 24	704	0.7−	0.4+	1999 05 13	704	0.7+	0.3−	1999 05 21	704	0.5+	0.2+
1998 06 24	704	0.3−	1.5+	1999 05 13	713	0.1−	0.2+	1999 05 21	704	0.3+	0.1+

1999 JUNE 22

M.P.C. 34921

1998 06 24	704	(4.9– 1.2+)	1999 05 13	713	0.1+ 0.0	1999 05 23	610	0.9+ 0.2+
1998 06 25	046	0.7+ 1.3+	1999 05 13	704	0.4– 0.3–	1999 05 23	610	0.9+ 0.2+
1998 06 25	046	1.3+ 1.5+	1999 05 13	713	0.3+ 0.2+	1999 05 23	610	0.8+ 0.1+
1998 06 25	046	0.3+ 1.2+	1999 05 13	704	0.1+ 0.6–	1999 05 23	610	0.8+ 0.1+
1998 06 25	046	0.2– 1.0+	1999 05 13	704	1.0+ 0.5+	1999 05 23	610	0.7+ 0.0
1998 06 25	046	0.4+ 0.4+	1999 05 13	704	0.5+ 0.8–	1999 05 24	422	0.1+ 0.3–
1998 06 25	046	0.3+ 0.4+	1999 05 13	704	0.5+ 1.3+	1999 05 24	422	0.1– 0.2–
1998 06 26	711	1.2+ 0.3–	1999 05 13	411	0.1– 0.5–	1999 05 24	422	0.1– 0.2–
1998 06 26	711	0.5+ 0.5+	1999 05 13	411	0.7– 0.4–	1999 05 24	422	0.1– 0.1–
1998 06 26	711	0.2+ 1.2+	1999 05 13	411	0.1+ 0.6–	1999 05 24	118	0.0 0.3–
1998 06 26	426	0.1– 0.1–	1999 05 13	411	0.0 0.1–	1999 05 24	118	0.1+ 0.2–
1998 06 26	426	0.9– 0.1–	1999 05 13	610	1.4– 0.2–	1999 05 24	118	0.1+ 0.4–
1998 06 26	426	0.5– 0.5–	1999 05 13	610	0.9– 0.4+	1999 05 26	711	0.6– 0.1–
1998 06 26	426	0.3– 0.4–	1999 05 13	610	0.4– 1.0+	1999 05 26	711	0.8– 0.2–
1998 06 26	422	0.4+ 0.9–	1999 05 13	610	0.3+ 1.5+	1999 05 27	711	0.5– 0.1+
1998 06 26	422	0.0 0.8–	1999 05 13	610	(0.8+ 2.1+)	1999 05 27	711	0.5– 0.0
1998 06 26	422	0.3– 0.8–	1999 05 14	860	0.3– 0.7–	1999 06 05	703	0.3– 0.1–
1998 06 26	422	0.8+ 0.8–	1999 05 14	860	1.1– 0.0	1999 06 05	703	0.3– 0.0
1998 06 29	426	0.2+ 0.8–	1999 05 14	860	0.1– 0.7–	1999 06 05	703	1.0+ 0.6–
1998 06 29	426	0.2+ 0.3+	1999 05 15	704	0.7+ 0.1+	1999 06 05	703	0.4+ 0.6+
1998 06 29	426	0.2+ 0.0	1999 05 15	704	0.2+ 0.2–	1999 06 09	704	0.1– 0.5–
1998 07 02	422	1.5– 0.2–	1999 05 15	704	0.6+ 0.7–	1999 06 09	704	0.6– 0.6–
1998 07 02	422	1.4– 0.8–	1999 05 15	704	0.6+ 0.6+	1999 06 09	704	0.3+ 0.9–
1999 05 12	704	0.6– 1.2–	1999 05 15	704	0.4+ 0.2–	1999 06 09	704	1.2+ 1.2–
1999 05 12	704	(0.2+ 2.4–)	1999 05 15	145	0.4+ 0.2+	1999 06 09	704	1.1– 0.6+
1999 05 12	704	0.1– 0.7–	1999 05 15	145	0.6– 0.2+	1999 06 10	557	0.2– 0.1–
1999 05 12	704	0.6– 0.7–	1999 05 15	145	0.0 0.8+	1999 06 10	557	0.5– 0.2–
1999 05 12	704	0.7– 0.4+	1999 05 15	145	0.4– 0.3+	1999 06 11	704	0.1– 0.6–
1999 05 13	704	1.3+ 0.5–	1999 05 15	145	0.6– 0.2+	1999 06 11	704	0.1– 0.5–
1999 05 13	758	0.5+ 0.4+	1999 05 17	118	0.3– 0.2–	1999 06 14	704	0.2– 0.3–
1999 05 13	758	0.1+ 0.4+	1999 05 17	118	0.3– 0.1–	1999 06 14	704	0.4– 0.1–
1999 05 13	704	1.0– 0.7+	1999 05 17	118	0.3– 0.1–	1999 06 14	704	0.1+ 0.1+
1999 05 13	758	1.0+ 0.8+	1999 05 17	704	0.4+ 0.6+	1999 06 14	704	0.8– 1.5+
1999 05 13	704	0.2+ 1.0+	1999 05 17	704	0.5– 0.8–	1999 06 14	704	0.9– 0.1+
1999 05 13	704	0.5– 0.7+	1999 05 17	704	0.5+ 0.0	1999 06 15	704	0.1– 0.2–
1999 05 13	704	1.7+ 0.4–	1999 05 17	704	0.5+ 0.7–	1999 06 15	704	0.6– 0.5–
1999 05 13	704	0.1+ 0.3+	1999 05 17	704	1.7+ 0.3+	1999 06 15	704	0.6– 0.3+
1999 05 13	704	0.3– 0.3–	1999 05 21	704	0.2+ 0.2+	1999 06 15	704	0.6– 0.2–
1999 05 13	704	0.6– 0.8–	1999 05 21	704	0.5– 0.8+	1999 06 15	704	0.3– 0.2–

1998 MG₂₉ = 1990 US₅ = 1990 UT₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	68.82430		<i>P</i>		<i>Q</i>
<i>n</i>	0.23325156	ω	240.57895	+0.85976078	+0.49981054
<i>a</i>	2.6136836	Ω	89.25418	–0.42465259	+0.81375166
<i>e</i>	0.2680440	<i>i</i>	6.02104	–0.28369274	+0.29664400
<i>P</i>	4.23	<i>H</i>	15.0	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1986 10 31	675	0.1+ 0.3–	1998 06 24	704	0.9– 2.2–	1998 06 28	809	0.8+ 0.1–
1990 10 19	809	0.4+ 0.5+	1998 06 24	704	0.3– 0.1–	1998 06 28	809	1.1+ 0.6–
1990 10 19	809	1.5– 0.6–	1998 06 24	704	0.7– 1.5–	1998 07 21	704	1.0+ 0.1+
1990 10 19	809	1.2– 0.1+	1998 06 24	704	1.1– 0.9+	1998 07 21	704	1.0– 0.6+
1990 10 24	809	1.2+ 1.2+	1998 06 26	704	0.2– 0.9–	1998 07 21	704	0.2+ 0.1–
1990 10 24	809	0.3+ 0.0	1998 06 26	704	0.5– 0.5+	1998 07 21	704	1.4+ 1.6+
1990 10 24	809	0.8+ 1.5–	1998 06 26	704	0.3+ 0.2+			
1998 06 24	704	1.0– 0.7+	1998 06 28	809	0.8+ 0.5+			

1998 MD₃₈ = 1952 BA₁ = 1961 DG

Id. A. Gnädig, G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

<i>M</i>	355.78263		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.22532994	ω	133.57456	+0.50671542	–0.82962991
<i>a</i>	2.6745874	Ω	284.58232	+0.70460897	+0.55521580
<i>e</i>	0.1671405	<i>i</i>	14.01789	+0.49675515	+0.05873364
<i>P</i>	4.37	<i>H</i>	12.6	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1952 01 25	711	0.1+ 1.6+ Y	1998 06 27	699	0.4– 0.9+	1998 08 21	143	0.4– 0.6+
1961 02 16	760	0.1+ 0.2+	1998 06 27	699	0.4– 0.6+	1998 08 21	143	0.6– 0.6+
1961 02 16	760	1.5+ 0.5+	1998 06 29	704	2.8+ 1.9–	1998 08 21	143	0.7– 0.5+
1983 03 08	413	1.0+ 0.7+	1998 06 29	704	1.3+ 2.2+	1998 08 23	133	0.7+ 0.5+
1983 03 08	413	1.1– 0.0	1998 06 29	704	0.2– 2.8–	1998 08 23	133	1.0+ 0.6+
1998 06 02	699	0.5– 0.4+	1998 06 29	704	0.4+ 0.9–	1998 08 23	133	0.7+ 0.4+
1998 06 02	699	0.1– 0.4+	1998 06 29	704	0.3– 0.3–	1998 08 24	704	0.4+ 0.1–
1998 06 02	699	0.2– 0.7+	1998 07 15	699	0.1+ 0.3+	1998 08 24	704	1.2– 0.6+
1998 06 18	699	0.3+ 0.4+	1998 07 15	699	0.3+ 0.1–	1998 08 24	704	1.8– 0.3–
1998 06 18	699	0.1+ 0.4+	1998 07 15	699	0.1+ 0.0	1998 08 24	704	0.0 0.8–
1998 06 18	699	0.1+ 0.5+	1998 08 19	138	0.3+ 0.4+	1998 08 24	704	1.5– 0.8–
1998 06 27	699	0.1– 1.1+	1998 08 19	138	1.7– 0.2–			

1998 MO₄₄ = 1982 BU₄

Id. F. B. Zoltowski (1999 observations), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	355.16809		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.08316130	ω	190.15393	+0.52827655	+0.68365920
<i>a</i>	5.1982266	Ω	113.54555	–0.73540997	+0.66481998
<i>e</i>	0.0342854	<i>i</i>	33.31562	–0.42437727	–0.30103903
<i>P</i>	11.85	<i>H</i>	11.1	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1982 01 26	381	(7.9– 1.2+)	1998 06 19	704	1.0– 1.1–	1999 06 10	426	0.1+ 0.3+
1982 01 26	381	0.1+ 0.4–	1998 06 19	704	0.8– 1.5+	1999 06 18	426	0.1+ 0.3–
1982 01 26	381	0.1+ 0.4–	1998 06 19	704	0.1– 0.1+	1999 06 18	426	0.3+ 0.3–
1998 06 03	704	1.4+ 1.8–	1998 06 19	704	0.5+ 0.1+	1999 06 18	426	0.1– 0.0
1998 06 03	704	1.3– 0.4–	1998 06 25	704	0.7– 0.3+	1999 06 20	426	0.1– 0.6–
1998 06 03	704	0.6+ 0.9+	1998 06 25	704	1.5+ 0.1–	1999 06 20	426	0.1– 0.3–
1998 06 03	704	0.4– 0.7–	1998 06 25	704	0.3+ 0.5–	1999 06 20	426	0.4– 0.1+
1998 06 03	704	0.3– 0.6–	1998 06 25	704	0.6– 2.8+	1999 06 20	426	0.3– 0.0
1998 06 19	704	1.1+ 0.1–	1999 06 10	426	0.1+ 0.2–			

1998 OZ₅ = 1988 PM₃

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	129.91860		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.29042683	ω	56.96388	+0.00442453	+0.99951432
<i>a</i>	2.2582823	Ω	213.33125	–0.93517694	–0.00678904
<i>e</i>	0.1376798	<i>i</i>	3.21822	–0.35415323	+0.03041433
<i>P</i>	3.39	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1988 08 11	413	0.6– 0.8–	1995 10 15	691	0.3+ 0.0	1998 07 17	910	0.1+ 0.3+
1988 08 11	413	0.2– 0.8–	1995 10 15	691	0.0 0.1–	1998 07 21	704	0.4– 0.4–
1988 10 09	413	1.4+ 0.2+	1998 06 26	704	0.5+ 0.1+	1998 07 21	704	0.6– 0.5+
1988 10 09	413	0.1– 0.7+	1998 06 26	704	0.5+ 0.1+	1998 07 21	704	0.0 1.4–
1989 11 04	675	0.9– 1.1+	1998 06 26	704	0.4+ 0.1–	1998 07 21	704	0.6– 0.0
1989 11 04	675	0.7+ 0.5–	1998 06 26	704	0.5+ 0.9+	1998 07 26	704	0.2– 0.7+
1991 03 23	413	0.8+ 0.7–	1998 06 26	704	0.4– 0.3–	1998 07 26	704	0.5– 0.2+
1991 03 23	413	0.6– 0.2–	1998 07 17	910	0.0 0.2+	1998 07 26	704	0.2– 0.5+
1995 10 15	691	0.1+ 0.2–	1998 07 17	910	0.1+ 0.3+	1998 07 26	704	0.5+ 0.0

1998 OG₉ = 1997 LJ₁₀

Id. A. Gnädig, G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	17.58890	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.20007879	ω 228.56731	+0.92165023	-0.38756896
<i>a</i>	2.8951340	Ω 154.21939	+0.36761649	+0.85670892
<i>e</i>	0.0508360	<i>i</i> 2.46939	+0.12417316	+0.34035295
<i>P</i>	4.93	<i>H</i> 14.5	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1991 03 09	675	0.8-	0.8-	1998 07 26	809	0.3+	0.3-	1998 08 21	566	0.1-	0.6+
1991 03 09	675	1.1+	1.7+	1998 07 27	809	0.5+	0.6-	1998 08 21	566	0.4-	0.7+
1997 06 07	809	1.1+	1.8-	1998 07 27	809	0.1+	0.6-	1998 08 23	699	0.2+	0.2-
1997 06 07	809	0.3-	0.9-	1998 07 27	809	0.2-	0.4-	1998 08 23	699	0.1+	0.4+
1997 06 07	809	0.2+	0.9-	1998 08 17	704	0.1-	0.5+	1998 08 23	699	0.3+	0.6+
1997 06 08	809	0.1-	1.3+	1998 08 17	704	0.7+	1.2+	1998 08 28	699	0.2-	1.2-
1997 06 08	809	0.0	1.1+	1998 08 17	704	0.6+	1.3+	1998 08 28	699	1.4-	1.1-
1997 06 08	809	0.8-	1.5+	1998 08 17	704	0.2-	0.2+	1998 08 28	699	1.0-	0.2+
1998 07 26	809	1.1+	0.8-	1998 08 17	704	0.3-	1.2+				
1998 07 26	809	0.3+	1.5-	1998 08 21	566	0.2-	0.3+				

1998 OH₁₂ = 1987 LC

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	47.74561	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.18903471	ω 239.04058	+0.92110560	+0.33450510
<i>a</i>	3.0068263	Ω 100.77755	-0.25042824	-0.90080643
<i>e</i>	0.1148556	<i>i</i> 11.69792	-0.29807745	+0.27686479
<i>P</i>	5.21	<i>H</i> 13.9	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1977 07 21	413	0.1+	0.9-	1998 07 29	428	0.0	0.3+	1998 09 13	428	0.1+	0.1+
1977 07 21	413	0.0	0.3-	1998 07 29	428	0.4+	0.4+	1998 09 13	428	0.4+	0.1+
1987 06 02	413	1.1-	0.7-	1998 07 30	428	0.0	0.0	1998 09 25	428	0.6-	0.0
1987 06 02	413	0.8+	0.0	1998 07 30	428	0.2+	0.1+	1998 09 25	428	0.5-	0.5+
1997 02 05	327	0.4+	0.1+	1998 07 31	428	0.1+	0.0	1998 10 07	428	0.2-	0.3-
1997 02 05	327	0.8-	0.4+	1998 07 31	428	0.1+	0.2+	1998 10 07	428	0.2-	0.3-
1997 02 05	327	0.1+	0.5+	1998 08 02	428	0.3+	0.1-	1998 10 21	428	0.3-	0.8-
1998 07 04	699	0.1+	0.7+	1998 08 10	428	0.1+	1.3-	1998 10 21	428	0.4+	0.5-
1998 07 04	699	0.4+	1.1+	1998 08 10	428	0.2-	1.3-	1998 11 17	428	0.5-	1.1+
1998 07 04	699	0.5+	1.4+	1998 08 30	428	0.5-	0.3-	1998 11 17	428	0.1+	1.0+
1998 07 29	428	0.5-	0.3+	1998 08 30	428	0.5-	0.2-				

1998 OB₁₄ = 1985 RY₄

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	188.79845	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.21602200	ω 243.00906	-0.84943519	+0.49791556
<i>a</i>	2.7508742	Ω 326.01640	-0.30035766	-0.72849820
<i>e</i>	0.0870830	<i>i</i> 18.21893	-0.43387225	-0.47050023
<i>P</i>	4.56	<i>H</i> 14.3	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1983 04 15	413	1.1+	0.1-	1998 07 27	809	0.9+	0.7+	1998 09 14	704	0.5+	0.5+
1983 04 15	413	1.0-	0.3+	1998 07 27	809	1.3+	1.0+	1998 09 14	704	1.1-	0.5+
1985 09 07	568	0.1-	0.1+	1998 08 17	704	0.5-	0.4-	1998 09 14	704	0.5-	0.0
1985 09 07	568	0.2-	0.2+	1998 08 17	704	0.7-	1.4-	1998 09 14	704	1.3-	0.0
1985 09 07	568	0.2-	0.1+	1998 08 17	704	1.0-	1.7-	1998 09 14	704	0.8+	1.5+
1985 09 07	568	0.4-	0.3+	1998 08 17	704	1.2-	0.4-	1998 09 17	910	0.5+	0.5-
1985 09 07	568	0.0	0.0	1998 08 17	704	1.1-	0.6-	1998 09 17	910	0.4+	0.1-
1985 09 07	568	0.0	0.1+	1998 08 23	699	0.2-	0.2+	1998 09 17	910	0.8+	0.5-
1985 09 07	568	0.2+	0.1+	1998 08 23	704	0.7-	0.4+	1998 09 18	704	0.1+	0.9-
1985 09 07	568	0.5+	0.0	1998 08 23	704	1.5+	0.6+	1998 09 18	704	0.3-	1.1-
1985 09 07	568	0.3-	0.4+	1998 08 23	699	0.4-	0.0	1998 09 18	704	(2.5+	2.2-)
1993 05 28	413	0.2-	0.8+	1998 08 23	704	0.4-	0.3+	1998 09 18	704	1.1-	0.7+
1993 05 28	413	0.3-	0.2-	1998 08 23	699	0.9-	1.1+	1998 09 18	704	1.3+	0.9+
1998 07 26	809	(3.1+	0.8+)	1998 08 23	704	0.0	0.9-	1998 09 22	910	0.3+	0.2-

1998 07 26	809	(2.3+	0.9+)	1998 09 10	910	0.8+	0.5-	1998 09 22	910	0.3+	0.3-
1998 07 26	809	(2.6+	1.7+)	1998 09 11	910	0.7+	0.5-	1998 09 22	910	0.4+	0.5-
1998 07 27	809	1.1+	1.6+	1998 09 11	910	0.8+	0.4-				

1998 PG

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	102.19796	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.34452253	ω 155.73126	+0.94570733	-0.31578375
<i>a</i>	2.0152285	Ω 222.91704	+0.27666950	+0.90636007
<i>e</i>	0.3919257	<i>i</i> 6.48695	+0.17056272	+0.28069919
<i>P</i>	2.86	<i>H</i> 17.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1978 10 07	675	0.9-	1.4+	1998 08 29	670	0.1-	0.1+	1998 10 15	143	0.5-	0.6+
1978 10 07	675	1.6+	0.7-	1998 08 29	670	0.9-	0.1+	1998 10 15	143	0.7-	0.7+
1978 11 02	675	0.2-	1.1+	1998 08 29	670	0.3-	0.5-	1998 10 16	670	0.3+	0.1+
1978 11 02	675	0.7-	0.9-	1998 08 30	143	1.6-	0.1+	1998 10 16	670	0.2-	0.2-
1998 08 03	699	0.6+	0.4-	1998 08 30	143	0.7-	0.3+	1998 10 16	670	0.5+	0.5-
1998 08 03	699	0.7+	0.8-	1998 08 30	143	0.0	0.4+	1998 10 16	151	0.0	0.4-
1998 08 03	699	0.8+	0.9-	1998 08 31	046	0.2-	0.0	1998 10 16	151	0.3+	0.2-
1998 08 03	611	0.3+	0.2-	1998 08 31	046	0.3-	0.0	1998 10 16	557	0.0	0.3-
1998 08 03	611	0.4+	0.1-	1998 08 31	046	0.3-	0.2-	1998 10 16	557	0.0	0.5-
1998 08 03	611	0.5+	0.1+	1998 09 02	860	0.3-	0.5-	1998 10 16	557	0.2+	0.4-
1998 08 04	954	0.7+	0.3+	1998 09 02	860	0.6-	0.3-	1998 10 17	557	0.2+	0.4-
1998 08 04	954	0.7+	0.3+	1998 09 02	860	0.3+	0.5-	1998 10 17	294	0.4+	0.1-
1998 08 04	658	0.2+	0.4-	1998 09 04	402	0.1+	0.1+	1998 10 17	294	0.1-	0.2-
1998 08 04	658	0.1-	0.5-	1998 09 04	402	0.1+	0.0	1998 10 17	557	0.7+	0.3+
1998 08 04	658	0.1-	0.5-	1998 09 04	402	0.1+	0.1-	1998 10 17	557	0.6+	0.2+
1998 08 04	699	0.5+	0.6-	1998 09 06	108	0.1-	0.5-	1998 10 17	540	1.4+	1.1+
1998 08 04	699	0.1-	0.6-	1998 09 06	108	0.4+	1.0+	1998 10 17	540	1.0+	0.8+
1998 08 04	699	0.6+	0.2-	1998 09 09	540	0.6-	0.3+	1998 10 17	540	1.0+	0.7+
1998 08 04	360	0.1+	0.3-	1998 09 09	540	0.3-	0.2+	1998 10 17	557	0.7+	0.3+
1998 08 04	360	0.2+	0.2-	1998 09 09	540	0.5-	0.1+	1998 10 18	704	0.3-	0.7+
1998 08 04	360	0.1+	0.3-	1998 09 09	540	0.4-	0.2+	1998 10 18	704	0.6-	1.7+
1998 08 04	954	0.7+	0.3+	1998 09 12	636	0.1-	0.0	1998 10 18	704	0.6+	1.0+
1998 08 04	954	0.7+	0.2+	1998 09 12	636	0.0	0.4-	1998 10 18	704	0.2-	1.5+
1998 08 05	954	0.8+	0.2+	1998 09 12	636	0.5-	0.1-	1998 10 18	704	1.9+	1.9+
1998 08 05	954	0.5+	0.3+	1998 09 16	750	0.2-	0.5+	1998 10 18	355	0.8+	0.1+
1998 08 05	360	0.2+	0.1-	1998 09 16	761	0.9-	0.1+	1998 10 18	355	0.7+	0.6+
1998 08 05	360	0.2+	0.2-	1998 09 16	750	0.2-	0.2-	1998 10 18	355	0.7+	0.1+
1998 08 05	360	0.2+	0.4-	1998 09 16	761	0.7-	0.1+	1998 10 19	750	0.2+	1.1+
1998 08 05	046	0.2-	0.3-	1998 09 17	635	0.3+	0.2-	1998 10 19	750	0.3+	0.2+
1998 08 05	046	0.2+	0.9-	1998 09 17	635	(2.1+	0.7+)	1998 10 19	151	0.3-	0.4+
1998 08 05	046	0.0	0.3-	1998 09 17	635	0.3+	1.4+	1998 10 19	151	0.1-	0.3+
1998 08 05	046	0.1+	0.1-	1998 09 18	750	0.2+	0.8-	1998 10 19	151	0.7-	0.1+
1998 08 05	046	0.4+	0.1+	1998 09 18	750	1.1+	0.3-	1998 10 19	635	0.1-	0.7-
1998 08 05	557	0.4+	0.3-	1998 09 18	557	0.0	0.1-	1998 10 19	635	0.3-	0.5-
1998 08 05	557	0.4-	0.2-	1998 09 18	138	0.1-	0.1-	1998 10 19	636	0.0	0.0
1998 08 05	557	0.1+	0.4-	1998 09 18	143	0.3-	0.1-	1998 10 19	636	0.2+	0.5+
1998 08 05	611	0.3-	0.0	1998 09 18	143	0.6-	0.3-	1998 10 20	689	0.3-	0.3-
1998 08 05	611	0.6+	0.2+	1998 09 18	143	0.5-	0.0	1998 10 20	636	0.3+	1.0-
1998 08 06	673	1.2+	1.3-	1998 09 18	138	0.4-	0.1-	1998 10 20	636	0.1+	0.7-
1998 08 06	118	0.1-	0.3-	1998 09 18	557	0.1+	0.1-	1998 10 20	636	0.1-	0.8-
1998 08 06	118	0.2+	0.1-	1998 09 18	138	0.2-	0.0	1998 10 20	557	0.1-	0.1-
1998 08 06	118	0.3+	0.3-	1998 09 18	557	0.1+	0.2-	1998 10 20	635	0.2-	0.0
1998 08 06	046	0.1-	0.3-	1998 09 18	557	0.1+	0.3-	1998 10 20	635	1.4+	0.1-
1998 08 06	046	0.0	0.3-	1998 09 19	704	0.4-	0.1+	1998 10 20	557	0.1-	0.1-
1998 08 06	046	0.2+	0.4-	1998 09 19	704	0.9+	1.2-	1998 10 20	557	0.1-	0.0
1998 08 06	046	0.2+	0.2+	1998 09 19	704	1.0-	0.5+	1998 10 20	557	0.0	0.1-
1998 08 07	046	0.1+	0.0	1998 09 19	704	0.1+	0.4-	1998 10 21	557	0.0	0.0
1998 08 07	046	0.3+	0.6-	1998 09 19	670	0.2+	0.0	1998 10 21	360	0.5-	0.4+
1998 08 07	046	0.4+	0.0	1998 09 19	670	0.3-	0.1+	1998 10 21	360	0.3-	0.4+
1998 08 10	557	0.1+	0.3-	1998 09 19	670	0.1-	0.1-	1998 10 21	360	0.2-	0.4+
1998 08 10	557	0.2+	0.3+	1998 09 19	151	0.8+	0.1+	1998 10 22	118	0.4+	0.0
1998 08 10	557	0.5-	0.1+	1998 09 19	557	0.2+	0.1-	1998 10 22	118	0.3+	0.1+
1998 08 10	557	0.1+	0.2-	1998 09 19	151	0.1+	0.1+	1998 10 23	750	0.8+	0.3+
1998 08 11	402	0.1+	0.3+	1998 09 19	557	0.2+	0.1-	1998 10 23	750	1.2-	0.9+

1998 08 11	402	0.2-	0.3-	1998 09 19	557	0.2+	0.2-	1998 10 23	750	0.6-	0.9+
1998 08 11	402	0.0	0.2-	1998 09 19	557	0.2+	0.1-	1998 10 23	750	(0.5+	2.1+)
1998 08 11	402	0.0	0.0	1998 09 20	631	0.2+	0.1-	1998 10 23	561	0.0	1.7+
1998 08 11	108	(1.5-	2.5+)	1998 09 20	628	0.1+	0.7-	1998 10 23	561	0.1-	0.7+
1998 08 11	108	0.4+	1.9+	1998 09 20	628	0.0	0.6-	1998 10 23	561	0.1+	0.2+
1998 08 11	108	1.3+	0.9+	1998 09 20	127	(2.2+	1.3-)	1998 10 23	561	0.2-	0.9-
1998 08 12	046	0.1-	0.0	1998 09 20	127	(2.0+	1.4-)	1998 10 23	561	0.2-	0.5-
1998 08 12	046	0.3-	0.1-	1998 09 20	631	0.8+	0.1+	1998 10 24	750	1.2+	0.2-
1998 08 12	046	0.1-	0.1+	1998 09 20	636	0.3-	0.3-	1998 10 24	750	0.3-	1.1-
1998 08 14	422	0.6-	0.3-	1998 09 21	127	0.4+	0.1-	1998 10 24	557	0.1+	0.3-
1998 08 14	422	0.5-	0.2-	1998 09 21	127	0.3+	0.1-	1998 10 24	557	0.4+	0.4-
1998 08 14	422	0.4-	0.2+	1998 09 21	635	1.8-	0.1+	1998 10 24	557	0.2+	0.4-
1998 08 14	422	0.4-	0.1-	1998 09 21	635	(2.9-	0.1-)	1998 10 24	561	0.0	0.4+
1998 08 14	540	0.7+	0.6-	1998 09 21	635	0.6+	0.7-	1998 10 24	561	0.4+	1.3+
1998 08 14	540	1.0-	0.0	1998 09 21	635	0.3+	0.5-	1998 10 24	561	0.6+	0.3+
1998 08 14	540	0.1-	0.1+	1998 09 22	557	0.1+	0.2-	1998 10 24	557	0.3+	0.4-
1998 08 14	557	0.3-	0.1-	1998 09 22	557	0.2+	0.3-	1998 10 24	557	0.1+	0.3-
1998 08 14	557	0.2-	0.1+	1998 09 22	557	0.1+	0.2-	1998 10 25	143	0.2+	0.1-
1998 08 14	557	0.1-	0.1+	1998 09 22	633	0.0	0.2-	1998 10 25	143	0.2-	0.1-
1998 08 14	151	0.1+	0.7+	1998 09 22	628	0.5+	0.5-	1998 10 25	143	0.1-	0.2+
1998 08 14	151	(3.5-	0.8-)	1998 09 22	633	0.2-	0.3-	1998 10 25	639	(4.7+	3.2+)
1998 08 14	557	0.0	0.0	1998 09 22	628	0.1+	0.1-	1998 10 25	639	0.4+	0.1-
1998 08 15	557	0.1-	0.2-	1998 09 22	633	0.1+	0.4-	1998 10 26	561	0.9-	0.3-
1998 08 15	360	0.1-	0.3+	1998 09 22	628	0.5+	0.2-	1998 10 26	561	1.2-	0.2-
1998 08 15	360	0.1+	0.1+	1998 09 22	628	0.3+	0.1-	1998 10 26	540	0.3+	0.3+
1998 08 15	360	0.2-	0.2+	1998 09 23	750	0.4+	0.6-	1998 10 26	540	0.0	0.2+
1998 08 15	108	(1.4+	2.5+)	1998 09 23	750	0.4-	0.4-	1998 10 26	540	0.3-	0.3+
1998 08 15	108	1.0+	0.6+	1998 09 23	704	0.6-	0.5+	1998 10 26	561	0.6-	0.1+
1998 08 15	108	0.4-	1.3+	1998 09 23	704	0.4-	0.1-	1998 10 26	118	0.1-	0.2+
1998 08 17	118	0.4+	0.6+	1998 09 23	704	0.8-	1.0+	1998 10 26	118	0.1-	0.2+
1998 08 17	118	0.2+	0.6+	1998 09 23	704	1.4-	0.7+	1998 10 26	118	0.2-	0.1+
1998 08 17	557	0.2+	0.1+	1998 09 23	704	0.4-	0.5+	1998 10 26	561	0.1-	0.1-
1998 08 17	557	0.2+	0.2-	1998 09 23	636	1.3+	0.4-	1998 10 26	561	0.3+	0.2-
1998 08 17	557	0.0	0.1-	1998 09 23	628	0.3+	0.3-	1998 10 27	561	1.1+	0.3+
1998 08 19	670	0.5-	0.1-	1998 09 23	636	1.0+	0.5-	1998 10 27	561	0.8+	0.4+
1998 08 19	670	0.7+	1.2-	1998 09 23	628	0.2-	0.1-	1998 10 27	561	0.4+	0.4+
1998 08 19	670	0.0	0.8-	1998 09 23	628	0.2+	0.4-	1998 10 27	561	0.0	0.1+
1998 08 19	704	0.0	0.1-	1998 09 23	628	0.3+	0.1-	1998 10 27	108	0.7+	0.1+
1998 08 19	704	1.9-	0.6+	1998 09 24	294	0.8+	0.4-	1998 10 27	108	1.1+	0.4+
1998 08 19	704	0.8-	1.5+	1998 09 24	294	1.8-	0.8-	1998 10 27	108	1.7+	0.2-
1998 08 19	704	0.6+	0.8+	1998 09 24	631	0.7+	0.7-	1998 10 27	108	1.1+	0.1-
1998 08 19	704	0.4+	0.5+	1998 09 24	631	0.3-	1.1-	1998 10 27	561	0.2-	0.2+
1998 08 19	557	0.0	0.3-	1998 09 24	017	0.4+	0.5-	1998 10 27	561	0.2+	0.1+
1998 08 19	557	0.5-	0.3+	1998 09 24	017	0.2+	0.9-	1998 10 28	635	0.0	0.0
1998 08 19	557	0.1+	0.2-	1998 09 25	151	0.1+	1.0-	1998 10 28	635	0.6+	0.6-
1998 08 19	557	0.1+	0.0	1998 09 25	151	0.0	0.8-	1998 10 28	635	0.3+	0.1+
1998 08 19	557	0.3+	0.4-	1998 09 28	750	0.4-	0.0	1998 11 05	635	0.2-	0.1-
1998 08 19	596	0.1-	1.2+	1998 09 28	750	0.0	0.0	1998 11 05	635	0.7-	0.5+
1998 08 19	596	0.0	0.2+	1998 09 28	635	(2.6-	1.1-)	1998 11 05	635	0.3-	0.1+
1998 08 19	596	0.6-	0.8-	1998 09 28	635	0.4-	0.1+	1998 11 05	151	0.3-	0.2+
1998 08 19	611	0.2+	0.2+	1998 09 28	635	(2.3-	1.5-)	1998 11 05	151	1.1+	0.1-
1998 08 19	611	0.4+	0.1-	1998 09 29	835	0.5-	1.6+	1998 11 05	151	0.1+	0.0
1998 08 19	611	1.4+	0.0	1998 09 29	835	0.1-	0.3-	1998 11 05	118	0.4+	0.1+
1998 08 19	557	0.5+	0.3-	1998 09 29	835	0.4+	0.3-	1998 11 05	118	0.2-	0.3+
1998 08 19	557	0.4+	0.2-	1998 09 30	750	0.8+	0.1+	1998 11 06	635	0.5+	0.1-
1998 08 19	557	0.3+	0.1-	1998 09 30	750	0.3-	0.4-	1998 11 06	635	0.7+	0.2-
1998 08 19	557	0.1+	0.2-	1998 10 02	750	0.3+	0.3-	1998 11 06	635	0.0	0.1-
1998 08 19	046	0.2+	0.2-	1998 10 02	750	0.7-	0.8-	1998 11 06	560	0.1+	0.2-
1998 08 19	046	0.1+	0.1-	1998 10 02	355	0.5-	0.3-	1998 11 06	560	0.2+	0.4-
1998 08 19	046	0.2+	0.2-	1998 10 02	355	0.4-	1.0-	1998 11 07	689	0.0	1.1-
1998 08 19	046	0.1+	0.2-	1998 10 02	355	1.2-	0.5-	1998 11 07	151	0.5+	0.6-
1998 08 20	659	1.0+	0.2+	1998 10 02	151	1.0-	0.7-	1998 11 07	151	1.7-	0.9+
1998 08 20	659	0.3+	0.2-	1998 10 02	151	1.0-	0.2-	1998 11 07	151	0.8-	0.2+
1998 08 20	659	0.4+	0.4+	1998 10 02	151	0.9-	0.7-	1998 11 08	118	0.2-	0.2+
1998 08 20	659	0.2+	0.4+	1998 10 05	670	0.0	0.0	1998 11 08	118	0.1+	0.2-
1998 08 20	959	(1.5+	5.0+)	1998 10 05	670	0.5+	0.4-	1998 11 10	699	1.5-	1.0+
1998 08 21	557	0.2-	0.2+	1998 10 05	670	0.9+	0.3+	1998 11 10	699	1.2-	0.8+
1998 08 21	557	0.8-	0.5+	1998 10 06	151	0.1+	0.7-	1998 11 10	699	0.9-	0.6-

1998 08 21	659	0.3+	0.1+	1998 10 06	151	0.6-	0.1-	1998 11 11	355	0.2+	0.4+
1998 08 21	659	0.1+	0.2+	1998 10 06	151	0.1-	0.5-	1998 11 11	355	0.3+	0.2-
1998 08 22	143	0.5-	0.6+	1998 10 07	758	0.0	0.3-	1998 11 11	151	0.9-	0.2+
1998 08 22	143	0.0	0.2-	1998 10 07	758	0.1-	0.6-	1998 11 11	151	0.1+	0.3+
1998 08 22	143	0.3+	0.0	1998 10 07	758	0.3-	0.2-	1998 11 11	151	0.4-	0.5+
1998 08 23	658	0.8-	0.2+	1998 10 07	758	0.2-	0.1-	1998 11 15	635	0.5+	0.3+
1998 08 23	658	1.0-	0.1+	1998 10 09	758	0.2+	0.5-	1998 11 15	635	0.4+	0.1-
1998 08 23	658	0.9-	0.2+	1998 10 09	758	0.0	0.1-	1998 11 15	635	0.6+	0.2+
1998 08 23	426	0.5-	0.1+	1998 10 09	758	0.2+	0.8-	1998 11 15	635	1.3+	0.1-
1998 08 23	426	0.6-	0.3+	1998 10 11	761	0.8+	0.7-	1998 11 16	566	0.2-	0.7-
1998 08 23	426	0.4-	0.2+	1998 10 11	761	1.1+	0.7-	1998 11 16	566	0.1-	0.6-
1998 08 24	704	0.2+	0.1-	1998 10 11	758	0.3-	0.2-	1998 11 16	566	0.2-	0.9-
1998 08 24	670	0.3+	0.5+	1998 10 11	758	0.5-	0.0	1998 11 18	888	0.1-	0.5-
1998 08 24	704	0.4-	0.1+	1998 10 11	758	0.3-	0.2-	1998 11 18	888	0.2-	0.2-
1998 08 24	670	0.4+	1.0+	1998 10 12	761	0.2-	0.1-	1998 11 18	888	0.2-	0.4-
1998 08 24	670	0.1-	0.2+	1998 10 12	761	0.5-	0.4+	1998 12 08	704	0.7+	0.4+
1998 08 24	704	0.3+	0.6+	1998 10 12	294	0.6+	0.1-	1998 12 08	704	0.7+	0.8-
1998 08 24	704	0.5+	0.6+	1998 10 12	294	0.8-	0.0	1998 12 08	704	0.9+	0.2+
1998 08 24	704	0.6+	0.1+	1998 10 12	294	0.0	1.2-	1998 12 08	704	0.9+	1.3+
1998 08 25	959	0.5-	0.2-	1998 10 12	704	0.4-	0.1+	1998 12 08	704	1.4-	0.3-
1998 08 25	959	0.6-	0.0	1998 10 12	704	0.9-	0.1+	1998 12 09	118	0.3+	0.1-
1998 08 25	959	0.1+	0.3-	1998 10 12	704	0.3-	0.5+	1998 12 09	118	0.4+	0.1+
1998 08 25	118	0.1-	0.4+	1998 10 12	704	1.1-	0.9+	1998 12 11	699	1.3-	0.8-
1998 08 25	118	0.1-	0.1+	1998 10 12	704	0.6+	0.1+	1998 12 11	699	0.9-	0.1+
1998 08 26	635	0.2-	1.5+	1998 10 13	750	0.0	0.2+	1998 12 11	699	0.4-	0.6-
1998 08 26	635	0.4+	1.7+	1998 10 13	750	0.1+	0.0	1998 12 12	422	0.7-	0.2-
1998 08 26	658	0.9-	0.3+	1998 10 13	104	0.1+	0.5+	1998 12 12	422	0.3-	0.2-
1998 08 26	658	0.6-	0.1+	1998 10 13	104	0.1+	0.6+	1998 12 12	422	0.2-	0.7-
1998 08 26	658	0.9-	0.3+	1998 10 13	104	0.1+	0.8+	1998 12 18	046	0.6+	0.7-
1998 08 27	704	1.0-	0.0	1998 10 13	104	0.1+	0.7+	1998 12 18	046	0.3+	0.1+
1998 08 27	704	0.2-	0.0	1998 10 14	635	1.4-	0.7-	1998 12 18	046	0.1+	0.3-
1998 08 27	704	0.8+	0.2-	1998 10 14	635	0.8+	1.2-	1998 12 18	046	0.7+	0.5-
1998 08 27	704	0.2+	1.2+	1998 10 15	294	0.6-	0.2+	1998 12 20	360	0.3+	0.1+
1998 08 27	704	0.2+	1.3+	1998 10 15	294	0.8-	0.8+	1998 12 20	360	0.7+	0.3-
1998 08 28	121	0.1-	0.4+	1998 10 15	636	0.8-	0.1+	1998 12 20	360	0.2+	0.1+
1998 08 28	121	0.2-	0.5+	1998 10 15	636	0.8+	0.2-	1999 01 24	711	1.4-	0.7-
1998 08 28	121	0.1-	0.4+	1998 10 15	636	0.8-	0.6+	1999 01 24	711	1.0-	0.4-
1998 08 29	121	0.2-	0.3+	1998 10 15	143	0.5-	0.6+				

M.P.C. 34924

1999 JUNE 22

Residuals in seconds of arc

1984 03 05	413	0.1+	0.1-	1998 08 18	133	2.0+	0.8-	1998 08 29	133	0.6+	0.5-
1984 03 05	413	0.6-	0.0	1998 08 18	133	0.4+	0.8+	1998 08 29	133	1.6+	0.6-
1984 06 01	413	0.5+	0.4-	1998 08 19	133	0.8+	0.1+	1998 08 29	699	0.8+	0.0
1984 06 01	413	1.3-	0.7+	1998 08 19	133	0.7-	0.6+	1998 09 13	699	0.5-	1.2+
1987 01 27	033	1.0+	0.2-	1998 08 20	133	0.9+	0.8+	1998 09 13	699	0.1+	0.4+
1987 01 28	033	0.5+	1.1-	1998 08 20	133	0.6+	0.2+	1998 09 18	958	0.7-	0.9+
1997 01 14	566	0.8-	0.0	1998 08 22	566	0.9-	0.2+	1998 09 18	958	0.8-	0.3-
1997 01 14	566	0.4-	0.1-	1998 08 22	566	0.7-	0.2-	1998 09 19	958	0.9-	0.7-
1997 01 14	566	0.4-	0.2-	1998 08 22	566	1.1-	0.2+	1998 09 19	958	0.2-	0.5-
1997 03 07	675	0.9-	0.0	1998 08 23	704	0.6+	0.2+	1998 09 19	958	0.5-	1.0-
1997 03 07	675	1.6+	0.0	1998 08 23	704	(1.7-	3.3+)	1998 09 20	958	(2.2+	0.2+)
1998 08 17	704	0.2-	0.0	1998 08 23	704	0.7+	0.3+	1998 12 15	910	1.3-	0.4-
1998 08 17	704	0.0	0.4-	1998 08 23	704	0.7-	0.5-	1998 12 15	910	0.9-	0.3-
1998 08 17	704	0.3-	0.1-	1998 08 23	133	1.2+	0.1-	1998 12 15	910	1.1-	0.4-
1998 08 17	704	0.9-	0.6-	1998 08 23	133	0.8+	0.1+				
1998 08 17	704	0.9-	0.5-	1998 08 23	133	0.7+	0.1-				

1998 QZ₁₅ = 1974 TQ₁

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	111.69200		(2000.0)	P	Q
<i>n</i>	0.24215417	ω	7.60536	+0.41722622	+0.88402161
<i>a</i>	2.5492245	Ω	287.25090	-0.84499861	+0.29198629
<i>e</i>	0.1571497	<i>i</i>	12.75063	-0.33451403	+0.36503397
<i>P</i>	4.07	<i>H</i>	13.6	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1952 01 31	675	1.9-	1.2-	1998 08 24	704	0.8+	0.4-	1998 09 05	954	0.2-	1.0-
1952 01 31	675	0.8+	0.9-	1998 08 25	619	1.0-	0.4+	1998 09 12	953	0.3-	0.9-
1974 10 11	033	0.3+	0.6-	1998 08 25	619	0.6-	0.1+	1998 09 12	953	0.2-	0.1-
1974 10 11	033	0.5+	0.9-	1998 08 25	619	0.3-	0.4+	1998 09 13	953	0.5+	0.8-
1990 09 15	675	0.4-	0.7+	1998 08 25	619	0.3-	0.2-	1998 09 13	953	0.6+	0.3-
1990 09 15	675	0.8-	0.3-	1998 08 26	619	0.8+	0.4+	1998 09 13	953	0.7-	0.3-
1998 06 29	704	1.8+	1.6-	1998 08 26	619	0.1-	0.2+	1998 09 13	953	1.2-	0.8-
1998 06 29	704	0.8+	0.1+	1998 08 26	619	0.1-	0.2+	1998 09 21	954	0.3+	0.2-
1998 06 29	704	0.1-	1.5+	1998 08 27	704	0.9+	0.5-	1998 09 21	954	0.1+	0.2-
1998 06 29	704	0.7-	0.5-	1998 08 27	704	0.5+	0.6-	1998 09 21	954	0.3+	0.2-
1998 06 29	704	0.0	0.7+	1998 08 27	704	0.3+	0.6+	1998 09 21	954	0.1+	0.3-
1998 06 30	699	0.7-	0.1+	1998 08 27	704	0.1-	0.8+	1998 09 21	954	0.0	0.3-
1998 06 30	699	0.3-	0.3+	1998 08 27	704	1.5-	5.8+	1998 11 21	704	2.0+	0.6+
1998 06 30	699	0.3-	0.3+	1998 08 29	619	0.4+	0.3+	1998 11 21	704	0.1-	2.1+
1998 08 02	699	0.6+	0.4-	1998 08 29	619	0.1-	0.7-	1998 11 21	704	1.6+	0.8+
1998 08 02	699	0.4+	0.7-	1998 08 29	619	0.3+	0.1-	1998 11 21	704	2.2+	0.3-
1998 08 02	699	0.5+	0.6-	1998 09 03	954	0.3-	0.9-	1998 11 21	704	1.6-	0.9+
1998 08 23	953	0.3-	0.1-	1998 09 03	954	0.3-	1.0-	1998 12 09	704	0.7+	0.3+
1998 08 23	953	0.3+	0.1-	1998 09 03	954	0.1-	0.9-	1998 12 09	704	0.4+	0.7+
1998 08 23	953	1.8-	0.0	1998 09 04	954	0.1-	0.6-	1998 12 09	704	1.7-	2.2+
1998 08 24	704	0.7+	0.1+	1998 09 04	954	0.0	0.6-	1998 12 09	704	1.3-	1.1-
1998 08 24	704	0.0	0.4+	1998 09 04	954	0.1+	0.6-	1998 12 09	704	1.0-	0.4+
1998 08 24	704	0.8+	0.3+	1998 09 05	954	0.3-	0.9-				
1998 08 24	704	0.9+	0.1-	1998 09 05	954	0.3-	1.0-				

1998 QE₃₂ = 1991 RH₃₆

Id. A. Gnädig, G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	66.53132		(2000.0)	P	Q
<i>n</i>	0.28033959	ω	241.45826	+0.96684643	-0.23828674
<i>a</i>	2.3121345	Ω	132.16638	+0.25523538	+0.91293767
<i>e</i>	0.1293966	<i>i</i>	7.11462	-0.00793014	+0.33130686
<i>P</i>	3.52	<i>H</i>	15.8	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1991 09 14	675	0.6-	0.8+	1998 08 17	704	0.1-	0.4-	1998 09 14	704	0.2-	0.1-
1991 09 14	675	0.9+	0.0	1998 08 17	704	0.8+	0.3+	1998 09 14	704	0.3+	0.1+
1991 10 26	413	0.2+	0.6-	1998 08 17	704	0.8-	1.1-	1998 09 14	704	0.1+	0.3-

1991 10 26	413	0.8-	0.0	1998 08 17	704	0.6-	0.7-	1998 09 14	704	0.3-	0.1+
1998 07 24	566	0.4-	0.8-	1998 08 23	704	0.3-	0.3-	1998 09 14	704	0.5-	0.1+
1998 07 24	566	0.8-	0.7-	1998 08 23	704	0.8+	0.3-	1998 09 18	704	0.5-	1.0+
1998 07 24	566	0.2-	0.6-	1998 08 23	704	0.5-	0.6+	1998 09 18	704	1.3+	1.4-
1998 08 01	699	0.1+	1.5+	1998 08 23	704	0.7-	1.1+	1998 09 18	704	0.2+	0.8+
1998 08 01	699	0.6+	0.7+	1998 08 28	699	0.2+	0.0	1998 09 18	704	1.3+	0.5-
1998 08 01	699	0.5+	0.4+	1998 08 28	699	0.5-	0.2-	1998 09 18	704	0.2-	0.3+
1998 08 17	704	0.4+	0.2-	1998 08 28	699	0.1-	0.0				

1998 QG₃₅ = 1974 HS₃

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	47.34380		(2000.0)	P	Q
<i>n</i>	0.21462481	ω	29.18908	+0.96840933	-0.24623157
<i>a</i>	2.7627999	Ω	344.91073	+0.18915861	+0.82834988
<i>e</i>	0.1789725	<i>i</i>	8.70809	+0.16248815	+0.50319627
<i>P</i>	4.59	<i>H</i>	13.9	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1974 04 28	413	0.1-	0.6+	1998 08 17	704	0.3+	0.3-	1998 10 12	699	0.1-	0.6+
1974 04 28	413	0.6+	0.9+	1998 08 17	704	0.3+	0.5-	1998 10 20	699	0.6-	0.0
1992 05 24	413	0.2+	0.5-	1998 08 17	704	0.6+	1.5-	1998 10 20	699	0.0	0.0
1992 05 24	413	0.1+	1.4+	1998 08 23	704	0.8+	0.2+	1998 10 20	699	0.0	0.4+
1996 01 26	691	0.0	0.1-	1998 08 23	704	0.1-	1.2-	1998 12 09	704	0.9-	0.1-
1996 01 26	691	0.2-	0.1-	1998 08 23	704	0.0	0.3-	1998 12 09	704	1.2-	1.5+
1996 01 26	691	0.1-	0.2+	1998 08 23	704	0.3+	0.3+	1998 12 09	704	(3.1-	0.1-)
1996 02 10	691	0.0	0.1-	1998 09 21	699	0.3-	0.4+	1998 12 09	704	(3.9-	1.1+)
1996 02 10	691	0.0	0.3-	1998 09 21	699	0.3-	0.7+	1998 12 11	699	0.1-	0.0
1996 02 10	691	0.0	0.2-	1998 09 21	699	0.0	0.5+	1998 12 11	699	1.1-	0.3+
1998 08 17	704	0.2+	0.2-	1998 10 12	699	0.8+	0.6+	1998 12 11	699	0.4-	0.1-
1998 08 17	704	0.2+	0.4-	1998 10 12	699	0.4-	0.7+				

1998 QW₃₇ = 1969 TA₈

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	266.63854		(2000.0)	P	Q
<i>n</i>	0.30324603	ω	203.05129	-0.99355578	-0.10611004
<i>a</i>	2.1941819	Ω	330.77124	+0.11248327	-0.87983143
<i>e</i>	0.1025763	<i>i</i>	4.68045	+0.01394362	-0.46328967
<i>P</i>	3.25	<i>H</i>	14.8	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1969 10 08	033	0.8+	0.1+	1998 08 17	704	0.7-	0.6+	1998 09 14	704	0.4-	1.7+
1969 10 08	033	0.6-	0.1+	1998 08 17	704	0.6-	0.7-	1998 09 18	704	0.5+	0.3+
1989 11 22	675	0.6-	0.0	1998 08 23	704	0.4-	1.4-	1998 09 18	704	0.7+	0.4-
1989 11 22	675	1.2+	0.3-	1998 08 23	704	(0.4-	2.8-)	1998 09 18	704	0.9-	1.0-
1991 09 07	413	1.1-	0.0	1998 08 23	704	1.9+	0.0	1998 09 18	704	0.7-	0.5+
1995 08 28	691	1.2-	0.1-	1998 08 23	704	0.8+	0.3+	1998 09 18	704	2.0+	1.2-
1995 08 28	691	1.2-	0.0	1998 08 23	704	1.1-	0.8+	1998 09 23	691	0.7+	0.2-
1995 08 28	691	1.1-	0.1-	1998 09 14	704	0.1+	0.7-	1998 09 23	691	0.7+	0.0
1998 08 17	704	0.4-	0.4-	1998 09 14	704	0.5-	0.3-	1998 09 23	691	0.6+	0.2-
1998 08 17	704	0.2+	0.5+	1998 09 14	704	0.5+	0.4+				
1998 08 17	704	0.1+	0.4+	1998 09 14	704	0.0	1.0+				

1998 QX₃₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	129.26766		(2000.0)	P	Q
<i>n</i>	0.25577319	ω	319.40575	+0.41936089	+0.90611951
<i>a</i>	2.4579103	Ω	335.23673	-0.79482359	+0.33691972
<i>e</i>	0.0469374	<i>i</i>	7.61856	-0.43862502	+0.25579784
<i>P</i>	3.85	<i>H</i>	15.2	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1989 02 11	675	1.4+	0.1+	1998 08 23</

1999 JUNE 22

1993 02 24	413	0.3+	0.6−	1998 08 23	704	0.2−	1.5−	1998 09 18	704	0.3+	0.3−
1993 02 24	413	0.7−	1.1−	1998 08 23	704	0.2−	0.2−	1998 09 18	699	0.0	1.3+
1997 02 09	910	0.1+	0.3+	1998 09 14	704	0.5−	1.4+	1998 09 18	704	(3.1+	0.9+)
1997 02 09	910	0.1−	0.6+	1998 09 14	704	0.5+	0.4−	1998 09 18	699	0.9+	1.1−
1997 02 09	910	0.4+	0.7+	1998 09 14	704	(0.6+	2.3+)	1998 09 18	704	0.4−	0.1+
1998 08 17	704	0.2+	0.2−	1998 09 14	704	0.0	0.4+	1998 09 18	704	0.4+	0.1−
1998 08 17	704	0.5+	0.9+	1998 09 14	704	0.8−	0.5+	1998 09 18	699	0.4−	0.5−
1998 08 17	704	0.0	0.2+	1998 09 14	699	0.4−	0.0				
1998 08 17	704	1.5−	1.2−	1998 09 14	699	0.2−	0.7+				

1998 QK₃₈ = 1991 HK₄

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Gnädig			
<i>M</i>	96.88036		(2000.0)	P		Q	
<i>n</i>	0.17399630	ω	328.47944	+0.39099789		+0.92038553	
<i>a</i>	3.1776743	Ω	324.53685	−0.84324311		+0.35676971	
<i>e</i>	0.1309705	<i>i</i>	0.32928	−0.36886542		+0.16001827	
<i>P</i>	5.66	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1988 12 14	675	0.2−	0.2+	1998 08 23	704	0.3−	0.5−	1998 09 18	699	0.9+	0.1+
1988 12 14	675	0.2+	0.5−	1998 09 14	704	0.8−	0.2+	1998 09 18	704	0.7−	0.6+
1991 04 19	809	0.4−	0.2+	1998 09 14	704	0.6−	0.5−	1998 09 18	699	0.6+	0.7+
1991 04 19	809	0.1+	0.2+	1998 09 14	704	0.7+	1.5−	1998 09 20	691	0.8−	0.3+
1991 04 19	809	0.3+	0.1−	1998 09 14	691	0.5−	0.5+	1998 09 20	691	1.0−	0.4+
1998 08 17	704	0.6+	0.3−	1998 09 14	704	0.5−	0.5−	1998 09 20	691	1.2−	0.0
1998 08 17	704	0.6−	1.0+	1998 09 14	691	0.5−	0.3+	1998 09 26	691	0.6−	0.1+
1998 08 17	704	0.6+	0.4+	1998 09 14	704	0.4+	1.0−	1998 09 26	691	0.4−	0.1+
1998 08 17	704	0.5+	1.2+	1998 09 14	691	0.5−	0.4+	1998 09 26	691	0.7−	0.1+
1998 08 17	704	1.1+	0.4−	1998 09 18	704	0.6+	0.5+	1998 09 29	691	0.2−	0.1+
1998 08 23	704	0.5+	0.2−	1998 09 18	704	0.9+	0.2+	1998 09 29	691	0.8−	0.1+
1998 08 23	704	1.6+	0.9−	1998 09 18	704	0.5+	0.4+	1998 09 29	691	0.9−	0.3+
1998 08 23	704	0.8+	2.4−	1998 09 18	699	0.4+	0.0				
1998 08 23	704	0.3+	0.1−	1998 09 18	704	0.4+	0.6+				

1998 QD₄₂ = 1982 VF₂

Id. A. Gnädig, G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	37.09479		(2000.0)	P		Q	
<i>n</i>	0.30330950	ω	325.24290	+0.58566706		−0.80634242	
<i>a</i>	2.1938758	Ω	88.76945	+0.76112577		+0.51210016	
<i>e</i>	0.0839812	<i>i</i>	4.73328	+0.27871428		+0.29591439	
<i>P</i>	3.25	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1982 11 14	381	0.9−	0.4+	1998 08 17	704	0.2−	0.4−	1998 08 28	699	(2.3+	0.3−)
1982 11 14	381	0.4+	0.1+	1998 08 17	704	0.2−	0.5−	1998 09 14	704	0.7+	0.7+
1984 03 07	413	0.3+	1.1+	1998 08 17	704	0.9+	1.0+	1998 09 14	704	0.1−	0.2−
1984 03 07	413	1.2+	0.5+	1998 08 17	704	0.5−	0.1+	1998 09 14	704	0.2−	0.9−
1994 05 14	691	1.2−	1.3−	1998 08 23	704	1.4+	0.1+	1998 09 14	704	0.4+	0.1+
1994 05 14	691	0.2+	0.8+	1998 08 23	704	(2.3−	2.3+)	1998 09 14	704	0.2−	0.0
1994 05 14	691	0.3+	0.7+	1998 08 23	704	1.1+	0.8−	1998 09 18	704	1.3−	0.9+
1998 07 31	699	0.2+	0.6−	1998 08 23	704	0.2+	0.8+	1998 09 18	704	0.6−	0.4+
1998 07 31	699	1.2−	0.1+	1998 08 23	704	1.0+	1.5+	1998 09 18	704	0.0	0.5−
1998 07 31	699	0.5−	0.6−	1998 08 28	699	0.8−	0.7−	1998 09 18	704	0.4−	0.4+
1998 08 17	704	0.4+	0.4−	1998 08 28	699	0.1+	0.3+	1998 09 18	704	0.5−	0.2+

1998 QR₄₂ = 1985 GC₁

Id. A. Gnädig, M. E. Sansaturio

M.P.C. 34925

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Gnädig			
<i>M</i>	239.01248		(2000.0)	P		Q	
<i>n</i>	0.17642772	ω	348.42016	−0.97176230		−0.23574477	
<i>a</i>	3.1484115	Ω	177.86343	+0.23231487		−0.96337418	
<i>e</i>	0.1269827	<i>i</i>	15.75196	+0.04132596		−0.12780685	
<i>P</i>	5.59	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1955 12 16	675	0.8+	0.7−	1998 08 23	704	0.3−	1.2+	1998 09 18	704	1.0+	0.1−
1955 12 16	675	0.6−	1.2−	1998 08 23	704	1.0+	0.1+	1998 09 18	704	0.9+	1.5+
1985 04 15	688	0.5−	2.0−	1998 08 23	704	0.2−	0.5−	1998 09 18	704	0.9−	0.5+
1985 04 15	688	0.1−	0.8−	1998 08 23	704	1.5+	1.1−	1998 10 10	699	0.2+	1.2+
1996 03 25	413	0.2+	0.5+	1998 08 23	704	0.8−	0.6−	1998 10 10	699	1.0+	1.0+
1996 03 25	413	0.0	0.1+	1998 09 14	704	0.5+	0.8−	1998 10 10	699	0.0	0.9+
1998 08 17	704	0.2−	0.0	1998 09 14	704	0.8+	1.1−	1998 12 22	910	1.2−	0.4−
1998 08 17	704	0.1+	0.4+	1998 09 14	704	0.1−	0.9−	1998 12 22	910	1.3−	0.5−
1998 08 17	704	0.8−	0.5+	1998 09 14	704	0.5−	0.0	1998 12 22	910	0.9−	0.2−
1998 08 17	704	0.6+	0.6−	1998 09 18	704	1.0+	1.8−				
1998 08 17	704	1.5−	0.0	1998 09 18	704	0.4−	0.3−				

1998 QQ₄₃ = 1991 RC₃₆

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	69.94573		(2000.0)	P		Q	
<i>n</i>	0.28253724	ω	4.94212	+0.96631443		−0.25639545	
<i>a</i>	2.3001293	Ω	9.99919	+0.23150535		+0.82807718	
<i>e</i>	0.1360937	<i>i</i>	7.38268	+0.11243530		+0.49854745	
<i>P</i>	3.49	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1951 02 04	675	0.6−	0.1−	1998 08 17	704	0.8+	0.4+	1998 09 18	704	0.2+	0.3−
1951 02 04	675	1.6+	0.7+	1998 08 17	704	0.7+	0.9+	1998 09 18	704	0.2+	0.1−
1955 04 20	675	0.2−	0.1−	1998 08 17	704	1.1−	0.5+	1998 09 19	428	0.1+	0.2−
1983 03 12	413	0.9−	0.9+	1998 08 23	704	0.1+	0.1−	1998 09 19	428	0.5+	0.2−
1983 03 12	413	0.5−	0.1+	1998 08 23	704	0.3−	0.9+	1998 09 20	428	0.1+	0.2−
1988 12 02	675	0.6−	1.0+	1998 08 23	704	0.8−	0.5+	1998 09 20	428	0.0	0.1−
1988 12 02	675	0.6+	0.1−	1998 08 23	704	0.3−	0.8−	1998 09 22	428	0.6+	0.0
1991 09 14	675	0.6+	0.8−	1998 08 23	704	0.1−	0.3−	1998 09 22	428	0.6+	0.0
1991 09 14	675	0.2+	0.1+	1998 09 13	428	0.1−	0.3−	1998 10 14	699	0.0	0.0
1991 09 14	675	0.8−	1.0−	1998 09 13	428	0.0	0.3−	1998 10 14	699	0.7−	0.4+
1991 09 14	675	0.0	0.2+	1998 09 14	704	0.4−	0.2−	1998 10 14	699	0.7−	0.2+
1997 02 02	691	0.0	0.2+	1998 09 14	704	0.4−	0.3−	1998 10 27	428	0.2−	0.2+
1997 02 02	691	0.1+	0.6+	1998 09 14	704	0.7−	0.2−	1998 10 27	428	0.2+	0.1+
1997 02 02	691	0.4−	0.4+	1998 09 14	704	0.6−	0.9+	1998 11 17	428	0.5−	0.5−
1997 04 01	809	1.3+	0.1−	1998 09 16	699	0.7+	0.1+	1998 11 17	428	0.6−	0.5−
1997 04 01	809	0.2−	0.0	1998 09 16	699	0.4+	0.8+	1998 12 09	704	1.1−	0.1+
1997 04 01	809	0.4+	0.2−	1998 09 16	699	0.4+	0.3+	1998 12 09	704	0.0	1.9−
1998 08 17	704	0.8+	0.3−	1998 09 18	704	0.3+	0.7+	1998 12 09	704	1.1+	0.6−
1998 08 17	704	0.2−	0.9+	1998 09 18	704	0.3−	0.8+	1998 12 09	704	(2.0−	1.0+)

1998 QS₄₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	99.06695		(2000.0)	P		Q	
<i>n</i>	0.26137784	ω	65.44288	+0.89615350		+0.43831555	
<i>a</i>	2.4226474	Ω	268.49712	−0.42805278		+0.81278626	
<i>e</i>	0.1189344	<i>i</i>	3.96930	−0.11696033		+0.38374205	
<i>P</i>	3.77	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1982 04 20	413	0.3+	0.3−	1998 08 17	704	0.4−	0.3−	1998 09 14	704	0.6−	1.0−
1982 04 20	413	0.7−	0.7−	1998 08 23	704	0.8+	0.1+	1998 09 16	699	0.0	0.3+
1997 02 09	910	0.5+	0.5+	1998 08 23	704	0.1−	1.7+	1998 09 16	699	0.1+	0.5+
1997 02 09	910	0.0	0.7+	1998 08 23	704	1.2−	1.7+	1998 09 16	699	0.0	0.1+
1997 02 09	910	0.3+	0.7+	1998 08 23	704	(2.5+	0.4+)	1998 09 18	704	0.5+	0.5+
1998 08 17	704	0.5+	0.3+	1998 08 23	704	0.1−	0.3−	1998 09 18	704	0.4+	0.5+

1998 08 17	704	0.7+	0.3−	1998 09 14	704	0.1−	0.3−	1998 09 18	704	(2.4+	0.5+)
1998 08 17	704	0.7+	0.1−	1998 09 14	704	0.5+	1.0−	1998 09 18	704	0.1+	0.1−
1998 08 17	704	0.7−	0.6−	1998 09 14	704	0.4−	0.4−	1998 09 18	704	0.7−	0.6−

1998 QF₄₇ = 1969 TY₆

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26925567	ω	172.50135	−0.98040450	−0.19631312		
<i>a</i>	2.3751597	Ω	356.06240	+0.16609007	−0.77903469		
<i>e</i>	0.1167877	<i>i</i>	13.79662	+0.10592974	−0.59545453		
<i>P</i>	3.66	<i>H</i>	15.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1951 11 05	675	0.1−	0.2−	1998 08 17	704	0.6+	1.1−	1998 10 20	910	0.7+	0.9−
1969 10 08	033	0.7−	1.0+	1998 08 17	704	0.9−	0.2−	1998 10 20	910	0.7+	0.7−
1969 10 08	033	0.8−	0.8+	1998 08 23	704	1.3+	1.4−	1998 10 20	910	0.7+	0.8−
1991 10 12	675	0.4+	0.0	1998 08 23	704	0.3−	1.6+	1998 10 21	910	0.9+	0.3−
1998 08 17	704	1.4+	0.9+	1998 08 23	704	2.5−	1.2+	1998 10 21	910	1.0+	0.0
1998 08 17	704	0.5+	1.0−	1998 08 23	704	3.4−	0.9+	1998 10 21	910	1.0+	0.5−

1998 QU₅₀ = 1990 EG₁₀

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17152030	ω	284.93405	+0.07785695	+0.99446549		
<i>a</i>	3.2081822	Ω	348.79548	−0.71666856	+0.00663713		
<i>e</i>	0.0370802	<i>i</i>	21.28784	−0.69305445	+0.10485386		
<i>P</i>	5.75	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1979 06 15	413	0.6+	0.3−	1998 08 17	704	0.9−	0.3+	1998 09 14	704	0.3+	0.6−
1979 06 15	413	0.3−	0.8−	1998 08 23	704	0.3−	0.1+	1998 09 18	699	0.5+	1.2+
1980 05 23	413	1.0−	1.1+	1998 08 23	704	0.2+	0.3−	1998 09 18	699	0.3−	0.2+
1980 05 23	413	0.3+	1.1−	1998 08 23	704	0.5+	2.5−	1998 09 18	704	0.6+	1.1−
1990 03 06	809	1.0−	0.2+	1998 08 23	704	1.4+	0.4−	1998 09 18	699	0.4−	0.3+
1990 03 06	809	0.2+	0.4+	1998 08 30	699	0.6+	1.2+	1998 09 18	704	1.4+	0.2+
1990 03 06	809	1.4+	0.8+	1998 08 30	699	0.5−	1.4+	1998 09 18	704	0.4+	0.3−
1998 08 17	704	0.1−	0.0	1998 08 30	699	0.4+	0.3+	1998 09 18	704	0.0	0.8−
1998 08 17	704	1.6−	0.6−	1998 09 14	704	0.1+	0.4+	1998 09 18	704	0.4−	0.2−
1998 08 17	704	0.0	0.5+	1998 09 14	704	1.3−	1.5+				
1998 08 17	704	0.6−	0.1+	1998 09 14	704	0.5−	0.0				

1998 QW₈₉ = 1982 VP₂

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23901334	ω	339.42419	+0.53378245	+0.83027254		
<i>a</i>	2.5715084	Ω	322.32851	−0.73452548	+0.36126364		
<i>e</i>	0.1550068	<i>i</i>	15.21495	−0.41898523	+0.42442442		
<i>P</i>	4.12	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1982 11 14	381	0.6−	0.9−	1998 08 24	704	0.1+	0.3−	1998 09 19	699	0.6+	0.8+
1982 11 14	381	0.8+	1.5+	1998 08 24	704	0.3+	0.0	1998 09 19	699	0.2−	0.7+
1986 11 28	675	0.8−	2.0−	1998 08 24	704	0.2+	0.5+	1998 09 20	699	0.3+	0.2+
1986 11 28	675	0.8+	1.0+	1998 08 24	704	0.1+	0.6−	1998 09 20	699	0.2−	0.2+
1998 06 29	704	1.3+	1.7−	1998 08 24	704	0.0	0.2−	1998 09 20	699	0.2−	0.1−
1998 06 29	704	0.8−	0.6+	1998 08 27	704	0.3−	0.3+	1998 12 09	704	0.0	0.9−
1998 06 29	704	1.6−	0.4+	1998 08 27	704	0.4−	0.5+	1998 12 09	704	1.2−	0.3−
1998 06 29	704	(4.7−	0.4+)	1998 08 27	704	0.1+	0.4+	1998 12 09	704	0.3−	0.3+
1998 08 20	699	0.6+	0.2−	1998 08 27	704	0.7−	0.2−	1998 12 09	704	0.2−	0.1+
1998 08 20	699	0.6+	0.4−	1998 08 27	704	0.1−	0.1−	1998 12 09	704	(3.0−	1.6+)
1998 08 20	699	0.7+	0.2+	1998 09 19	699	0.3+	0.4−				

1998 QO₉₂ = 1989 CF₂ = 1996 CC₉Id. G. V. Williams (*MPC* 33269, unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27994384	ω	262.89509	+0.52606971	−0.85025892		
<i>a</i>	2.3143131	Ω	155.33974	+0.79598527	+0.48498396		
<i>e</i>	0.1182050	<i>i</i>	2.42019	+0.29942965	+0.20457353		
<i>P</i>	3.52	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1989 02 05	049	0.2+	0.8−	1998 08 28	704	0.9+	0.2+	1998 11 11	704	0.2−	0.5+
1989 02 05	049	0.7−	0.3−	1998 08 28	704	0.6+	1.1−	1998 11 11	704	0.5+	0.4+
1996 02 10	327	0.0	0.0	1998 08 28	704	0.3+	0.3−	1998 11 11	704	0.8−	0.1+
1996 02 10	327	0.0	0.1−	1998 08 31	704	0.4−	0.1+	1998 11 11	704	0.2−	0.1−
1996 02 10	327	0.2+	0.1+	1998 08 31	704	2.2−	0.3+	1999 01 11	704	0.6−	1.3+
1996 02 10	327	0.4+	0.0	1998 08 31	704	0.2+	0.8−	1999 01 11	704	0.4−	2.4+
1996 02 12	327	0.1+	0.3−	1998 08 31	704	0.7+	2.6−	1999 01 11	704	1.1+	1.9+
1996 02 12	327	0.3+	0.2−	1998 11 10	704	0.1−	0.0	1999 01 11	704	0.3+	0.9+
1996 02 12	327	0.3+	0.2−	1998 11 10	704	0.6+	0.0	1999 02 04	704	1.0−	2.4−
1996 04 13	327	0.4−	0.0	1998 11 10	704	0.1+	0.3−	1999 02 04	704	0.7+	1.9−
1996 04 13	327	0.4−	0.2+	1998 11 10	704	0.0	0.1−	1999 02 04	704	0.1+	2.0+
1996 04 13	327	0.8−	0.2−	1998 11 10	704	0.1+	1.1−	1999 02 04	704	0.7−	1.3−
1998 08 28	704	1.2+	1.4+	1998 11 11	704	0.5−	0.2−				

1998 QZ₉₄ = 1972 GY₁

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23616905	ω	68.94196	−0.29031478	+0.95679163		
<i>a</i>	2.5921138	Ω	184.28237	−0.93898158	−0.28812011		
<i>e</i>	0.1403589	<i>i</i>	12.64267	−0.18447472	−0.03919932		
<i>P</i>	4.17	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1972 04 09	805	0.4−	1.3−	1998 08 19	704	0.6+	0.3+	1998 09 14	704	0.1−	0.8−
1972 04 09	805	0.2−	0.9−	1998 08 19	704	0.6+	0.8−	1998 09 14	704	0.5+	0.9−
1989 07 26	413	0.5+	0.1−	1998 08 19	704	0.7−	0.2+	1998 09 14	704	1.2+	0.8−
1989 07 26	413	(3.5−	1.9+)	1998 08 26	699	0.8−	1.1+	1998 09 15	699	0.2+	0.6+
1990 08 28	675	0.4−	0.6−	1998 08 26	699	0.9+	1.7+	1998 09 15	699	1.9−	1.0+
1990 08 28	675	1.6+	0.8+	1998 08 26	699	0.6+	0.8+	1998 09 15	699	0.8−	0.8+
1993 04 27	413	0.1+	0.3+	1998 08 27	704	0.3−	0.1+	1998 09 18	704	(1.8+	2.1−)
1993 04 27	413	0.1+	1.0+	1998 08 27	704	0.4−	0.4+	1998 09 18	704	0.3−	1.4−
1994 10 08	691	0.5−	0.1−	1998 08 27	704	0.4+	0.5+	1998 09 18	704	0.1−	0.1−
1994 10 08	691	0.1−	0.1−	1998 08 27	704	0.7+	0.2+	1998 09 18	704	1.4−	0.6−
1994 10 08	691	0.6−	0.2+	1998 08 27	704	0.2−	0.3+	1998 09 18	704	0.1+	1.1−
1998 08 19	704	0.0	1.1−	1998 09 14	704	0.2−	0.4−				
1998 08 19	704	0.8+	0.4−	1998 09 14	704	0.8+	1.1−				

1998 RX₁₂ = 1995 BZ₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17503068	ω	5.05880	−0.99690018	+0.07867673		
<i>a</i>	3.1651425	Ω	179.45367	−0.07259146	−0.91924228		
<i>e</i>	0.1087985	<i>i</i>	0.67497	−0.03034008	−0.38575070		
<i>P</i>	5.63	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	7

Residuals in seconds of arc

1995 01 27	399	0.0	0.9+	1998 09 19	691	0.2+	0.2+	1998 09 26	691	0.4−	0.2−
1995 01 27	399	0.4−	0.1−	1998 09 19	691	0.0	0.2−	1998 09 27	704	0.5+	0.8+
1995 01 28	399	0.2−	0.3+	1998 09 26	704	0.1+	0.2−	1998 09 27	704	1.2−	0.5+
1995 01 28	399	0.6+	1.1−	1998 09 26	704	1.3+	0.5−	1998 09 27	704	0.6+	1.3+
1998 09 14	691	0.1+	0.3−	1998 09 26	704	1.2−	0.4−	1998 09 27	704	1.6−	0.7−
1998 09 14	691	0.2+	0.2−	1998 09 26	704	1.8+	0.3−	1998 09 27	704	0.2+	0.1−

1998 09 14 691 0.2+ 0.0 1998 09 26 691 0.1+ 0.2+
 1998 09 19 691 0.7- 0.2+ 1998 09 26 691 0.1- 0.1-

1998 RM₅₂ = 1987 KU₄

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	100.66099		(2000.0)	P	Q
<i>n</i>	0.28417392	ω	307.35234	+0.95858513	+0.27872580
<i>a</i>	2.2912892	Ω	36.56781	-0.22021966	+0.85571192
<i>e</i>	0.1583214	<i>i</i>	5.63854	-0.18060414	+0.43596907
<i>P</i>	3.47	<i>H</i>	15.3	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1953 10 31	675	0.6+	0.3+	1998 09 18 704	0.2+	1.2-	1998 09 27 704	0.5-	0.4+
1953 10 31	675	0.6-	0.7+	1998 09 18 704	0.2-	0.0	1998 09 27 704	0.6+	0.1+
1955 03 23	675	1.1-	0.2-	1998 09 18 704	0.4-	0.3+	1998 09 27 699	0.5+	0.3+
1955 03 23	675	0.4-	0.1+	1998 09 18 704	0.5+	0.2+	1998 09 27 704	0.5+	0.3+
1987 05 30	413	0.8+	0.7+	1998 09 18 704	0.3-	0.1-	1998 09 27 699	0.2+	0.1+
1987 05 30	413	0.0	0.5+	1998 09 24 699	0.3+	0.2+	1998 09 27 699	0.4+	0.2+
1993 01 23	691	0.1-	0.3+	1998 09 24 699	0.2+	0.3-	1998 10 12 699	0.8+	0.1-
1993 01 23	691	0.1+	0.0	1998 09 24 699	0.4+	0.5+	1998 10 12 699	0.1+	0.2-
1993 01 23	691	0.3+	0.3-	1998 09 26 704	0.3-	0.2-	1998 10 12 699	0.3+	0.1-
1993 03 22	675	(2.6-	0.7-)	1998 09 26 704	0.9-	0.4-	1998 12 08 704	0.3-	1.5+
1993 03 22	675	1.5+	1.3+	1998 09 26 704	0.8-	0.2+	1998 12 08 704	1.0-	0.8-
1997 05 08	675	0.1-	0.2+	1998 09 26 704	1.5-	0.6+	1998 12 08 704	(1.7-	2.9-)
1998 09 14 704	0.3+	0.0		1998 09 26 704	1.4-	0.1-	1998 12 08 704	0.3-	0.9-
1998 09 14 704	0.0	0.1+		1998 09 27 704	0.4+	0.3-	1998 12 08 704	(0.8+	3.2-)
1998 09 14 704	0.3-	0.3-		1998 09 27 704	0.9+	0.1+			

1998 RE₅₉ = 1991 HB₃ = 1992 OZ₇

Id. A. Gnädig, M. E. Sansaturio, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	117.81790		(2000.0)	P	Q
<i>n</i>	0.18741484	ω	72.82659	+0.50235947	+0.86402073
<i>a</i>	3.0241273	Ω	227.37712	-0.80947592	+0.45644879
<i>e</i>	0.0542615	<i>i</i>	2.58708	-0.30394688	+0.21242100
<i>P</i>	5.26	<i>H</i>	13.9	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1982 10 17	413	1.1+	1.7+	1996 03 24 413	1.0-	0.1+	1998 09 26 704	0.4-	0.1-
1982 10 17	413	1.3-	0.4-	1996 03 24 413	1.7+	0.3-	1998 09 26 704	1.1+	0.9-
1989 12 07	675	0.1-	0.1+	1998 09 14 704	0.2-	0.2+	1998 09 26 704	(2.5+	0.1+)
1991 04 19	809	0.2+	1.8-	1998 09 14 704	0.6+	0.7+	1998 09 26 704	1.8+	0.0
1991 04 19	809	0.6-	0.7-	1998 09 14 704	0.9-	0.2-	1998 09 27 704	0.8+	0.5-
1991 04 19	809	1.5-	1.0-	1998 09 16 699	0.0	0.4-	1998 09 27 704	0.6+	0.1-
1992 05 10	413	0.2-	0.1-	1998 09 16 699	0.4+	0.4-	1998 09 27 704	(2.1+	0.2+)
1992 05 10	413	0.1-	0.6+	1998 09 16 699	0.9-	0.5+	1998 09 27 704	0.8-	0.7-
1992 07 21	809	(2.5-	0.7-)	1998 09 18 704	0.7+	1.0-	1998 09 27 704	0.1+	1.8-
1992 07 22	809	0.1+	0.4+	1998 09 18 704	0.2+	0.7-	1998 10 14 699	0.2-	0.7-
1992 07 22	809	(3.2+	1.7+)	1998 09 18 704	0.2+	0.5-	1998 10 14 699	0.2+	0.1-
1993 09 16	691	0.1-	0.1-	1998 09 18 704	0.9-	1.3+	1998 10 14 699	0.0	0.1-
1993 09 16	691	0.2+	0.3-	1998 09 18 704	1.4-	0.7+			
1993 09 16	691	0.1+	0.3-	1998 09 26 704	0.5+	0.7+			

1998 RQ₇₂ = 1976 UN₁₀ = 1976 UE₂₁

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	72.90552		(2000.0)	P	Q
<i>n</i>	0.26793978	ω	357.84441	+0.90862590	-0.41709818
<i>a</i>	2.3829298	Ω	26.83699	+0.38383307	+0.81458728
<i>e</i>	0.1932739	<i>i</i>	2.62681	+0.16453313	+0.40308395
<i>P</i>	3.68	<i>H</i>	16.4	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1976 10 22	381	1.2-	0.7-	1998 09 18 704	0.4-	0.2+	1998 09 27 704	0.2-	0.6+
1976 10 22	381	0.8+	0.1-	1998 09 18 704	1.0+	0.2-	1998 09 27 704	0.4+	0.1+
1976 10 24	381	0.4+	0.2+	1998 09 18 704	1.0-	1.2+	1998 09 27 704	0.1+	0.4+
1987 08 26	675	1.1+	0.7+	1998 09 18 704	0.5-	0.4+	1998 09 27 704	0.9-	0.5+
1987 08 26	675	0.5-	0.6-	1998 09 18 704	0.7-	1.5-	1998 10 14 699	1.3+	0.2-
1994 07 03	413	0.2+	0.3-	1998 09 26 704	0.5-	0.2-	1998 10 14 699	0.2+	0.5+
1994 07 03	413	(4.1+	0.4-)	1998 09 26 704	0.2-	1.2-	1998 10 14 699	0.1+	0.2-
1998 09 14 704	0.8-	0.3+		1998 09 26 704	0.4+	0.7+	1998 10 19 699	1.4+	0.8+
1998 09 14 704	0.7-	1.0-		1998 09 26 704	0.7+	0.5-	1998 10 19 699	0.3+	0.7+
1998 09 14 704	0.8-	0.3-		1998 09 26 704	0.6+	0.3+	1998 10 19 699	0.4-	0.7-

1998 RQ₇₇ = 1990 SM₂₃

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	47.28218		(2000.0)	P	Q
<i>n</i>	0.12384940	ω	315.54405	+0.99431943	+0.06890808
<i>a</i>	3.9860258	Ω	40.71225	-0.02147655	+0.87635846
<i>e</i>	0.2034675	<i>i</i>	7.14428	-0.10424792	+0.47670486
<i>P</i>	7.96	<i>H</i>	12.6	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1979 05 19	413	0.8-	0.6+	1998 09 18 704	0.3-	0.5+	1998 10 17 699	0.3-	0.3-
1979 05 19	413	0.6+	0.1+	1998 09 18 704	0.1+	0.7+	1998 10 17 699	0.5+	0.2+
1982 10 15	413	0.9-	0.4-	1998 09 25 699	0.6+	0.9+	1998 10 19 699	0.1-	0.1+
1982 10 15	413	0.9-	0.5+	1998 09 25 699	0.6+	0.4+	1998 10 19 699	0.1+	0.2+
1990 09 25	809	(2.3+	0.1-)	1998 09 25 699	0.2-	0.9+	1998 10 19 699	0.2-	0.6+
1990 09 25	809	1.6+	0.5+	1998 09 26 704	0.2+	0.5+	1998 10 28 704	1.6-	0.5+
1990 09 25	809	1.5+	0.9+	1998 09 26 704	0.0	0.1-	1998 10 28 704	1.0-	1.2-
1994 02 08	809	0.6+	0.8+	1998 09 26 704	0.8+	1.1-	1998 10 28 704	0.6-	1.7-
1994 02 08	809	0.1-	0.1+	1998 09 26 704	0.2-	1.0-	1998 10 28 704	0.0	0.0
1994 02 08	809	0.3+	0.2-	1998 09 26 704	0.2+	0.7-	1998 10 29 704	0.8+	1.1-
1998 09 14 704	0.0	0.2+		1998 09 27 704	0.4+	0.2+	1998 10 29 704	1.2-	0.7-
1998 09 14 704	0.1-	0.1-		1998 09 27 704	0.6-	0.3-	1998 10 29 704	0.0	0.4+
1998 09 14 704	0.9-	0.2-		1998 09 27 704	0.2-	0.0	1998 10 29 704	1.6+	0.3+
1998 09 18 704	0.1+	0.4+		1998 09 27 704	0.1-	0.4-	1998 10 29 704	0.3+	0.7+
1998 09 18 704	0.2+	0.2+		1998 09 27 704	0.6-	0.5-			
1998 09 18 704	0.2-	1.6+		1998 10 17 699	0.3-	0.7-			

1998 RL₇₈ = 1981 SB₈

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

<i>M</i>	112.70151		(2000.0)	P	Q
<i>n</i>	0.28792082	ω	283.79918	+0.91850248	+0.39031420
<i>a</i>	2.2713671	Ω	53.26394	-0.32537607	+0.83703691
<i>e</i>	0.1702400	<i>i</i>	4.53097	-0.22468556	+0.38343713
<i>P</i>	3.42	<i>H</i>	16.2	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1981 09 24	033	0.6+	0.8-	1998 09 17 699	0.3-	0.3+	1998 09 26 704	0.3-	0.6-
1981 09 24	033	0.4+	1.3-	1998 09 17 699	0.8+	0.1+	1998 09 26 704	0.6-	0.3-
1991 07 17	413	0.1+	0.0	1998 09 18 704	0.5+	0.0	1998 09 27 704	0.4+	0.1-
1991 07 17	413	0.0	0.0	1998 09 18 704	0.0	0.1+	1998 09 27 704	0.4-	0.5+
1991 10 01	413	0.6+	1.0-	1998 09 18 704	0.7-	0.9+	1998 09 27 704	0.2+	0.6+
1991 10 01	413	0.2-	0.7-	1998 09 18 704	0.1-	0.1-	1998 09 27 704	0.2+	0.9+
1998 09 14 704	0.6+	0.1-		1998 09 18 704	0.8-	1.2+	1998 09 27 704	0.1+	0.4+
1998 09 14 704	0.1-	0.0		1998 09 26 704	0.3-	0.4-	1998 10 17 699	0.3-	0.3+
1998 09 14 704	0.7-	0.6-		1998 09 26 704	0.6+	0.8-	1998 10 17 699	0.8-	0.1+
1998 09 17 699	0.6+	0.5+		1998 09 26 704	0.3+	0.5+	1998 10 17 699	0.5-	0.1-

1998 SC₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	146.41035	(2000.0)	P	Q
<i>n</i>	0.68555292	ω 277.27673	−0.42797258	−0.89934648
<i>a</i>	1.2738219	Ω 198.86007	+0.89925535	−0.41381758
<i>e</i>	0.4147107	<i>i</i> 16.07869	+0.09043942	−0.14117693
<i>P</i>	1.44	<i>H</i> 19.4	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 09 23	704	0.0	1.5+	1998 09 24	046	0.1−	0.0	1998 10 09	046	0.5−	0.5−
1998 09 23	704	0.5+	1.3+	1998 09 24	046	0.0	0.2−	1998 10 09	046	0.1−	0.5−
1998 09 23	704	1.5−	0.1−	1998 09 25	557	0.8+	0.2+	1998 10 09	046	0.6−	0.3+
1998 09 23	704	0.3−	1.1+	1998 09 25	557	0.4+	0.8+	1998 10 13	046	0.3+	0.6+
1998 09 23	704	1.1−	0.2−	1998 09 25	557	0.3−	0.5−	1998 10 13	046	0.1−	0.4+
1998 09 23	046	0.5+	0.9−	1998 09 25	422	0.8+	0.5−	1998 10 13	046	0.8−	0.1+
1998 09 23	046	0.5−	1.1−	1998 09 25	046	0.1−	0.2+	1998 10 13	046	0.5−	0.6−
1998 09 23	046	1.3−	0.4−	1998 09 25	046	0.2+	0.2+	1998 10 13	557	0.0	0.8+
1998 09 23	046	0.5−	0.2+	1998 09 25	046	0.1+	0.1−	1998 10 13	557	0.0	0.0
1998 09 23	611	0.2+	0.0	1998 09 25	046	0.1+	0.5+	1998 10 13	557	0.3+	0.6+
1998 09 23	611	0.0	0.3−	1998 09 27	557	0.2+	0.3−	1998 10 21	360	0.1+	0.2+
1998 09 23	611	0.3+	0.3+	1998 09 27	557	0.1+	0.1+	1998 10 21	360	0.3−	0.7−
1998 09 23	587	1.9+	0.4−	1998 09 27	557	0.1+	0.2−	1998 10 21	360	0.4+	0.3−
1998 09 23	587	0.1−	0.4−	1998 09 29	658	0.5+	0.3+	1999 04 26	426	0.9+	0.8−
1998 09 23	557	0.0	0.5−	1998 09 29	658	0.5+	0.4+	1999 05 12	426	0.0	0.1+
1998 09 23	557	0.0	0.1−	1998 09 29	658	0.8+	0.4+	1999 05 12	426	0.8+	0.7−
1998 09 24	704	0.5+	0.8−	1998 09 29	046	0.5+	0.2+	1999 05 15	693	0.4+	0.7+
1998 09 24	704	0.8+	0.9+	1998 09 29	046	0.1+	0.2−	1999 05 15	693	0.4+	0.8+
1998 09 24	704	0.7−	1.4+	1998 09 29	046	0.6−	0.2+	1999 05 15	693	1.0+	0.2−
1998 09 24	704	1.6+	0.7−	1998 09 29	046	1.4−	0.7+	1999 05 15	426	0.0	0.8+
1998 09 24	658	0.2+	0.6+	1998 09 29	046	0.7−	0.1+	1999 05 15	426	0.5−	0.6−
1998 09 24	658	0.5−	0.4+	1998 09 30	658	0.2+	0.1−	1999 05 23	658	1.3−	0.4+
1998 09 24	658	0.9−	0.3−	1998 09 30	658	0.5−	0.2−	1999 05 23	658	0.9−	0.1−
1998 09 24	426	0.1−	0.6−	1998 09 30	658	0.3−	0.2−	1999 05 24	658	0.1+	0.2−
1998 09 24	426	0.5+	1.0−	1998 10 01	402	0.2−	1.0−	1999 05 24	658	(2.3−	0.3+)
1998 09 24	426	0.4+	1.4−	1998 10 01	402	0.5−	0.3−	1999 05 24	658	0.6−	0.1−
1998 09 24	046	0.8+	0.2−	1998 10 01	402	0.4+	0.5+				

1998 SZ₂₁ = 1996 AO₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	37.89793	(2000.0)	P	Q
<i>n</i>	0.27629404	ω 53.35487	+0.31119324	−0.95025551
<i>a</i>	2.3346496	Ω 18.52717	+0.85817303	+0.27503391
<i>e</i>	0.0826251	<i>i</i> 2.37392	+0.40828645	+0.14618759
<i>P</i>	3.57	<i>H</i> 15.0	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1996 01 13	399	0.4+	0.8−	1998 09 26	704	0.1+	0.9−	1998 09 27	704	(0.6−	2.9+)
1996 01 13	399	0.2+	0.1−	1998 09 26	704	1.1+	1.2−	1998 10 28	704	(0.4+	3.4−)
1996 01 18	399	1.4−	1.4+	1998 09 26	704	0.2−	0.3−	1998 10 28	704	(1.1+	4.4−)
1996 01 18	399	0.7−	1.5+	1998 09 26	704	1.3−	0.0	1998 10 28	704	(0.2−	3.5−)
1996 01 21	399	0.9+	1.0−	1998 09 26	704	0.2−	0.7−	1998 10 28	704	(1.6−	4.0−)
1996 01 21	399	0.7+	0.9−	1998 09 26	327	0.2−	0.1+	1998 10 29	704	0.0	0.2−
1998 09 23	120	0.2+	0.2+	1998 09 26	327	0.4−	0.6+	1998 10 29	704	0.9+	0.0
1998 09 23	120	0.7+	1.2−	1998 09 26	327	0.2−	0.3+	1998 10 29	704	1.1−	0.1+
1998 09 23	120	1.7−	0.6+	1998 09 27	704	0.5+	0.4+	1998 10 29	704	0.4+	0.0
1998 09 24	120	0.8+	0.2−	1998 09 27	704	1.2−	0.4+	1998 10 29	704	0.1−	0.0
1998 09 24	120	1.3+	0.2+	1998 09 27	704	0.3−	0.6+				
1998 09 24	120	0.8+	0.0	1998 09 27	704	0.0	1.3+				

1998 SV₂₄ = 1990 UD₇

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

<i>M</i>	44.74533	(2000.0)	P	Q
<i>n</i>	0.23963332	ω 322.72801	+0.58903314	−0.80450917
<i>a</i>	2.5670712	Ω 91.05864	+0.75857233	+0.51796057
<i>e</i>	0.1459640	<i>i</i> 4.37036	+0.27858209	+0.29065760
<i>P</i>	4.11	<i>H</i> 15.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1977 07 20	413	1.5−	1.5−	1998 09 26	704	2.6−	0.5+	1998 10 19	699	0.5−	0.5+
1977 07 20	413	1.6+	1.0+	1998 09 26	704	0.3+	0.4−	1998 10 28	704	0.4−	0.5−
1990 10 20	801	0.2+	0.4−	1998 09 27	704	0.0	0.0	1998 10 28	704	1.0+	0.2−
1990 10 20	801	0.1+	0.7−	1998 09 27	704	0.2+	0.3+	1998 10 28	704	1.7+	2.3−
1998 09 17	699	0.8−	0.4+	1998 09 27	704	0.0	1.1−	1998 10 28	704	1.0−	0.3−
1998 09 17	699	0.1−	0.1+	1998 09 27	704	0.7−	0.3−	1998 10 28	704	0.7+	0.3+
1998 09 17	699	0.7+	0.9+	1998 09 27	704	0.2−	1.5−	1998 10 29	704	0.1−	0.9+
1998 09 24	699	0.2+	0.3−	1998 10 17	699	0.4−	0.2+	1998 10 29	704	0.1+	0.5−
1998 09 24	699	0.2+	1.5+	1998 10 17	699	0.4+	0.4+	1998 10 29	704	0.3−	1.2+
1998 09 24	699	0.6+	0.1+	1998 10 17	699	0.9+	0.1+	1998 10 29	704	0.4−	0.0
1998 09 26	704	0.1−	0.3−	1998 10 19	699	0.3−	0.1−	1998 10 29	704	1.2−	1.6+
1998 09 26	704	0.8+	1.1−	1998 10 19	699	0.7+	1.5+				

1998 ST₅₀ = 1991 PE₂₄

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

<i>M</i>	273.97414	(2000.0)	P	Q
<i>n</i>	0.17735351	ω 169.16384	−0.99973970	−0.01990293
<i>a</i>	3.1374455	Ω 9.71649	+0.01261410	−0.88954516
<i>e</i>	0.1686973	<i>i</i> 3.78938	+0.01901115	−0.45641349
<i>P</i>	5.56	<i>H</i> 13.7	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1989 01 10	675	0.1−	0.3−	1998 10 01	691	0.4−	0.3−	1998 10 28	704	1.2+	2.2+
1989 01 10	675	0.1+	0.4−	1998 10 01	691	0.3−	0.1−	1998 10 29	704	1.0−	0.3+
1991 08 02	809	0.7+	1.2−	1998 10 17	327	0.3+	0.2−	1998 10 29	704	0.3−	0.5+
1991 08 02	809	0.2+	0.1+	1998 10 17	327	0.0	0.5+	1998 10 29	704	0.3−	1.1−
1991 08 02	809	0.4−	0.7−	1998 10 17	327	0.3+	0.2−	1998 10 29	704	0.3+	0.4+
1993 12 11	675	1.1−	0.7−	1998 10 18	327	0.4+	0.1+	1998 10 29	327	0.1+	0.4−
1993 12 11	675	1.0+	1.1−	1998 10 18	327	0.5−	0.5+	1998 10 29	327	0.1+	0.3+
1998 09 26	691	0.8−	0.2−	1998 10 18	327	0.7+	0.5+	1998 10 29	327	0.0	0.3+
1998 09 26	691	0.7−	0.5−	1998 10 28	704	0.1+	0.7+	1998 10 29	327	0.1+	0.2+
1998 09 26	691	0.5−	0.2−	1998 10 28	704	1.8+	0.3−	1998 10 29	327	0.2+	0.1+
1998 10 01	691	0.4−	0.0	1998 10 28	704	0.6−	1.3−	1998 10 29	327	0.5−	0.1+

1998 SK₅₈ = 1978 UP₁ = 1982 VP₇ = 1992 DA₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	316.95112	(2000.0)	P	Q
<i>n</i>	0.24094851	ω 126.07281	−0.71070758	−0.70344818
<i>a</i>	2.5577213	Ω 9.23107	+0.62960349	−0.64074920
<i>e</i>	0.1131226	<i>i</i> 2.65912	+0.31383782	−0.30757294
<i>P</i>	4.09	<i>H</i> 14.2	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1978 10 30	010	0.0	1.7−	1998 09 17	699	0.8+	1.0+	1998 09 27	704	1.0+	0.3+
1978 11 01	010	(6.5+	0.7−)	1998 09 17	699	0.7+	0.1+	1998 09 27	704	1.3+	0.1+
1982 11 09	095	0.4−	1.2+	1998 09 25	699	0.9−	0.8−	1998 10 14	699	0.0	0.6+
1992 02 29	809	0.1+	0.0	1998 09 25	699	0.2+	0.8+	1998 10 14	699	0.1−	0.5−
1992 03 03	809	0.5−	0.6−	1998 09 25	699	0.1+	0.7+	1998 10 14	699	0.6+	0.7−
1992 03 07	809	0.1+	0.2−	1998 09 26	704	1.4−	0.6+	1998 10 16	691	0.2−	0.5+
1994 11 01	691	0.6+	0.0	1998 09 26	704	0.9−	0.2+	1998 10 16	691	0.2−	0.4+
1994 11 01	691	1.2+	0.0	1998 09 26	704	1.2−	0.4−	1998 10 16	691	(1.8+	4.6−)
1994 11 01	691	0.5+	0.0	1998 09 26	704	1.1−	0.2+	1998 10 28	691	0.4−	0.6−
1996 03 24	566	0.4+	0.7+	1998 09 26	704	1.1−	1.2−	1998 10 28	691	0.5−	0.5−
1996 03 24	566	0.6+	0.5+	1998 09 27	704	0.5+	0.4+	1998 10 28	691	0.6−	0.4−

1996 03 24 566 0.2− 1.1+ 1998 09 27 704 0.1+ 0.5+
 1998 09 17 699 0.6+ 0.4− 1998 09 27 704 0.2+ 0.7+

1998 SU₆₀ = 1976 UN₁₂

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	148.15473		(2000.0)	P	Q
<i>n</i>	0.31240878	ω	244.52305	+0.65600435	+0.75310351
<i>a</i>	2.1510668	Ω	66.56605	−0.67146441	+0.61254298
<i>e</i>	0.0671851	<i>i</i>	3.11973	−0.34466482	+0.24005459
<i>P</i>	3.15	<i>H</i>	15.8	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1976 10 22	381	0.2+	0.4−	1998 09 17	699	0.2+	0.7−	1998 09 26	704	1.0−	1.4+
1976 10 22	381	0.0	0.1−	1998 09 18	704	0.4+	0.1+	1998 09 26	704	0.8+	0.5−
1982 07 16	413	0.4−	1.8−	1998 09 18	704	0.6+	0.0	1998 09 27	704	0.5−	0.8−
1982 07 16	413	1.4+	0.5−	1998 09 18	704	0.0	0.1+	1998 09 27	704	0.0	0.6+
1992 11 27	691	0.2−	0.3−	1998 09 18	704	0.4−	0.1+	1998 09 27	704	0.9−	0.9+
1992 11 27	691	0.2+	0.2+	1998 09 18	704	0.2−	0.0	1998 09 27	704	0.6−	0.6+
1992 11 27	691	0.6+	1.8−	1998 09 25	699	0.0	0.2−	1998 09 27	704	1.3−	0.5−
1998 09 14	704	0.9−	1.1−	1998 09 25	699	0.0	0.5+	1998 10 17	699	0.0	0.4+
1998 09 14	704	0.5−	1.0+	1998 09 25	699	0.1+	0.0	1998 10 17	699	0.3+	0.0
1998 09 14	704	0.1−	0.7+	1998 09 26	704	0.3+	1.2+	1998 10 17	699	1.1+	1.4−
1998 09 17	699	0.5+	0.7+	1998 09 26	704	0.4−	1.0−				
1998 09 17	699	1.2+	0.6−	1998 09 26	704	0.2−	1.1+				

1998 SS₁₁₃ = 1987 QY₁

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	83.75402		(2000.0)	P	Q
<i>n</i>	0.27285176	ω	217.97467	+0.97462196	−0.22050065
<i>a</i>	2.3542444	Ω	154.68286	+0.22106071	+0.92083142
<i>e</i>	0.2430240	<i>i</i>	5.18157	+0.03527333	+0.32163483
<i>P</i>	3.61	<i>H</i>	16.0	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1987 08 21	809	0.4−	0.6−	1998 09 26	704	0.3−	1.0−	1998 10 17	699	0.5+	0.4+
1987 08 21	809	0.3−	1.1−	1998 09 26	704	0.1+	0.8−	1998 10 17	699	0.0	0.4−
1987 08 21	809	1.7+	0.4+	1998 09 26	704	0.0	0.6+	1998 10 28	704	0.7−	1.7−
1987 10 18	413	(3.2−	3.8−)	1998 09 26	704	0.9−	0.3+	1998 10 28	704	0.0	0.5−
1987 10 18	413	0.9−	0.2−	1998 09 26	704	0.3−	0.2+	1998 10 28	704	0.9+	1.0−
1993 03 23	691	0.8−	0.6−	1998 09 27	704	0.1−	0.0	1998 10 28	704	(3.1−	0.4+)
1993 03 23	691	0.4−	0.7−	1998 09 27	704	0.2−	0.3−	1998 10 29	704	0.9−	0.2−
1993 03 23	691	0.2+	1.0−	1998 09 27	704	0.6+	0.2+	1998 10 29	704	0.5+	0.3+
1998 09 17	699	0.2+	1.3+	1998 09 27	704	0.3−	0.1+	1998 10 29	704	0.2−	0.9−
1998 09 17	699	0.4+	0.5+	1998 09 27	704	0.3−	0.6+	1998 10 29	704	0.9+	1.1+
1998 09 17	699	0.0	0.7+	1998 10 17	699	0.3+	0.3−				

1998 SF₁₂₇ = 1976 UN₁₆

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	321.90998		(2000.0)	P	Q
<i>n</i>	0.17820911	ω	72.26470	−0.36244529	−0.92198976
<i>a</i>	3.1273953	Ω	39.84655	+0.75408207	−0.37602416
<i>e</i>	0.0245819	<i>i</i>	12.27893	+0.54771675	−0.09241596
<i>P</i>	5.53	<i>H</i>	13.0	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1976 10 22	381	0.5−	0.0	1998 09 26	704	0.1−	0.4−	1998 10 28	704	0.7−	0.1−
1976 10 22	381	0.1+	0.9+	1998 09 26	704	0.0	0.8+	1998 10 28	704	0.2−	0.5+
1979 05 19	413	0.8−	0.1+	1998 09 27	704	0.1+	0.1−	1998 10 28	704	0.3+	0.4+
1979 05 19	413	0.4+	0.4−	1998 09 27	704	0.9+	0.6−	1998 10 28	704	0.3+	0.9−
1996 03 17	566	0.4−	0.2+	1998 09 27	704	0.3−	0.1+	1998 10 28	704	0.5−	0.1−
1996 03 17	566	0.0	0.1−	1998 09 27	704	0.1+	1.0−	1998 10 29	704	0.4−	0.3−

1996 03 17 566 0.3− 0.1+ 1998 09 27 704 0.7+ 1.1− 1998 10 29 704 0.4+ 0.2+
 1996 05 21 566 0.2+ 0.1− 1998 10 17 699 0.4+ 0.4− 1998 10 29 704 0.0 0.9+
 1996 05 21 566 0.2+ 0.2− 1998 10 17 699 0.5+ 0.4− 1998 10 29 704 0.6− 0.5+
 1996 05 21 566 0.7+ 0.6+ 1998 10 17 699 0.5+ 0.2− 1998 10 29 704 0.4− 0.3+
 1998 09 26 704 1.1− 0.4+ 1998 10 19 699 0.9+ 0.5+ 1998 11 11 699 0.4+ 0.2−
 1998 09 26 704 0.3+ 0.5+ 1998 10 19 699 0.3+ 0.4− 1998 11 11 699 0.0 0.9+
 1998 09 26 704 0.6− 0.2+ 1998 10 19 699 0.1− 0.8− 1998 11 11 699 0.8− 0.4+

1998 SY₁₂₇ = 1989 VG₃

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	23.81423		(2000.0)	P	Q
<i>n</i>	0.21391317	ω	268.59123	+0.43348573	−0.90020560
<i>a</i>	2.7689240	Ω	155.58713	+0.86156232	+0.40050633
<i>e</i>	0.0555416	<i>i</i>	5.75894	+0.26419783	+0.17095191
<i>P</i>	4.61	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1989 11 03	809	0.9−	0.2+	1998 09 26	704	0.1+	1.0−	1998 10 19	699	0.3+	0.2−
1989 11 03	809	0.6−	1.6+	1998 09 26	704	0.0	0.3−	1998 10 28	704	0.1−	0.4−
1989 11 03	809	0.4−	1.3+	1998 09 27	704	0.4+	0.4−	1998 10 28	704	0.9+	0.7−
1991 01 24	675	0.6−	0.6+	1998 09 27	704	0.2−	0.2+	1998 10 28	704	1.2+	0.6−
1991 01 24	675	2.0+	1.4−	1998 09 27	704	0.7−	0.1−	1998 10 28	704	0.4−	0.9−
1992 06 05	413	0.4−	0.3+	1998 09 27	704	0.1−	0.8+	1998 10 28	704	0.6−	0.4−
1992 06 05	413	1.2+	0.7+	1998 09 27	704	1.0−	0.3+	1998 10 29	704	1.6+	1.3−
1996 03 26	691	0.7−	0.1+	1998 10 10	699	0.0	0.7−	1998 10 29	704	0.3+	0.0
1996 03 26	691	0.5−	0.2−	1998 10 10	699	0.1+	0.1+	1998 10 29	704	0.0	1.3+
1996 03 26	691	0.6−	0.2−	1998 10 10	699	1.3−	0.5+	1998 10 29	704	0.3+	1.3−
1998 09 24	699	0.4−	0.1−	1998 10 17	699	0.4−	0.4+	1998 10 29	704	1.2+	0.7−
1998 09 24	699	0.5+	0.6+	1998 10 17	699	1.0+	0.5+	1998 11 10	704	0.7−	0.2+
1998 09 24	699	0.1−	0.9+	1998 10 17	699	0.7+	0.4+	1998 11 10	704	(0.3+	2.6+)
1998 09 26	704	1.5−	1.2−	1998 10 19	699	0.5+	0.2−	1998 11 10	704	0.7−	1.5+
1998 09 26	704	0.3+	0.5−	1998 10 19	699	0.5+	0.4−	1998 11 10	704	0.1−	0.5+

1998 TU₁₂ = 1987 YO₆ = 1988 AP₂

Id. A. Gnädig, M. E. Sansaturio, G. V. Williams (d)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	325.45775		(2000.0)	P	Q
<i>n</i>	0.08396255	ω	73.80782	−0.41149654	−0.89384950
<i>a</i>	5.1651026	Ω	41.95740	+0.70087198	−0.43522776
<i>e</i>	0.1356862	<i>i</i>	15.44536	+0.58262257	−0.10774905
<i>P</i>	11.74	<i>H</i>	11.5	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1951 11 30	675	0.5−	0.6−	1998 10 18	699	0.2−	0.2+	1998 11 11	704	1.1−	0.7+
1951 11 30	675	1.4+	0.8−	1998 10 18	691	0.2−	0.3−	1998 11 11	699	0.4−	0.8+
1953 03 10	675	0.1−	0.2−	1998 10 18	691	0.1−	0.4−	1998 11 11	699	0.0	1.7+
1987 12 20	010	0.6−	0.4−	1998 11 10	704	0.1−	0.1+	1998 11 16	691	0.0	0.5−
1987 12 20	010	(4.9−	0.0)	1998 11 10	704	1.2−	0.7−	1998 11 16	691	0.0	0.4−
1988 01 11	033	0.4−	0.9+	1998 11 10	704	0.1−	0.4+	1998 11 16	691	0.2+	0.4−
1988 01 11	033	0.8+	0.3+	1998 11 10	704	1.0+	1.4+	1998 11 24	699	(2.1+	1.1+)
1998 10 13	691	0.2−	0.4−	1998 11 11	704	0.0	0.1+	1998 11 24	699	0.2+	0.8−
1998 10 13	691	0.1−	0.4−	1998 11 11	704	0.2−	1.6+	1998 11 24	699	0.1−	0.3+
1998 10 13	691	0.1−	0.3−	1998 11 11	704	0.2+	0.5−	1998 11 27	691	0.2−	0.3−
1998 10 18	699	0.3+	1.2−	1998 11 11	704	1.1+	1.4+	1998 11 27	691	0.0	0.3−
1998 10 18	699	0.6+	0.9−	1998 11 11	699	0.5+	0.2+	1998 11 27	691	0.3−	0.6−

1998 TX₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	324.86639		(2000.0)	P	Q
<i>n</i>	0.17160044	ω	313.29154	−0.64152251	−0.76706369
<i>a</i>	3.2071834	Ω	176.58541	+0.73655815	−0.61881616
<i>e</i>	0.0242282	<i>i</i>	7.60713	+0.21431512	−0.16935127
<i>P</i>	5.74	<i>H</i>	12.9	<i>G</i> 0.15	<i>U</i> 4

M.P.C. 34930

Residuals in seconds of arc

1989 02 11	675	1.0−	1.3+	1998 10 14	120	(3.1+	2.0+)	1998 10 24	120	0.8+	1.0+
1989 02 11	675	1.0+	1.0−	1998 10 14	120	1.6+	0.6+	1998 11 11	704	1.5+	0.6+
1989 02 15	413	0.3−	0.5−	1998 10 15	120	0.8+	0.5+	1998 11 11	704	0.3−	1.5+
1989 02 15	413	0.4+	0.1+	1998 10 18	809	2.0−	0.7+	1998 11 11	704	1.0−	0.3+
1997 09 19	910	0.4+	0.3+	1998 10 18	809	1.6−	0.3−	1998 11 15	120	0.9+	0.3−
1997 09 19	910	0.4+	0.1+	1998 10 18	809	(2.6−	0.1+)	1998 11 15	120	1.4+	0.0
1997 09 19	910	0.2+	0.2+	1998 10 19	809	0.6−	1.4−	1998 11 26	120	1.2−	0.7+
1997 10 09	327	0.1−	0.1−	1998 10 19	809	0.6−	1.7−	1998 11 26	120	0.5−	0.2+
1997 10 09	327	0.4−	0.4−	1998 10 19	809	0.4−	1.7−	1998 11 26	120	0.2−	0.8−
1997 10 09	327	0.8−	0.0	1998 10 24	120	1.4+	0.0				

1998 TD₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	112.92424		(2000.0)	P	Q
n	0.17597390	ω	65.97317	+0.42526461	+0.88757401
a	3.1538222	Ω	230.39305	−0.89124653	+0.37660857
e	0.2460597	i	13.28897	−0.15757422	+0.26528921
P	5.60	H	13.3	G 0.15	U 3

Residuals in seconds of arc

1986 06 12	413	0.5−	0.5+	1998 10 15	327	0.2−	0.2+	1998 10 29	327	0.5−	0.2+
1986 06 12	413	0.5+	0.5−	1998 10 28	704	0.8−	0.9+	1998 11 10	704	0.7+	1.6−
1997 05 30	910	0.0	0.0	1998 10 28	704	0.5−	0.2+	1998 11 10	704	1.2+	1.2−
1997 05 30	910	0.0	0.1+	1998 10 28	704	0.1+	0.3+	1998 11 10	704	1.2−	1.0−
1997 05 30	910	0.0	0.1−	1998 10 28	704	0.2−	0.0	1998 11 10	704	0.3+	0.8−
1998 09 20	699	0.4+	0.3−	1998 10 28	704	0.1−	0.9+	1998 11 11	704	1.2−	1.1+
1998 09 20	699	0.7+	0.4−	1998 10 29	704	0.0	0.9−	1998 11 11	704	0.8+	0.7+
1998 09 20	699	0.4−	0.0	1998 10 29	704	0.6−	1.0−	1998 11 11	704	0.7+	0.0
1998 10 13	327	0.2−	0.1+	1998 10 29	704	1.0−	0.4+	1998 11 11	704	1.1+	1.5+
1998 10 13	327	0.7+	0.3+	1998 10 29	704	0.4−	0.3+	1998 11 17	699	0.4+	0.3+
1998 10 13	327	0.6+	0.4−	1998 10 29	704	0.9−	1.1−	1998 11 17	699	0.7+	0.3+
1998 10 15	327	0.2−	0.2+	1998 10 29	327	0.6−	0.1−	1998 11 17	699	1.2+	1.0+
1998 10 15	327	0.1−	0.1+	1998 10 29	327	0.1−	0.3−				

1998 UN₆ = 1981 VF₁

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	130.00821		(2000.0)	P	Q
n	0.29092059	ω	285.79667	+0.88371521	+0.45786718
a	2.2557263	Ω	47.06689	−0.36247568	+0.80064600
e	0.1747591	i	7.61171	−0.29607230	+0.38642417
P	3.39	H	15.9	G 0.15	U 3

Residuals in seconds of arc

1981 11 03	033	0.9−	0.4−	1998 10 23	046	0.6−	0.1−	1998 11 11	704	0.1+	0.8+
1981 11 03	033	1.0+	0.3+	1998 10 23	046	0.1−	0.2+	1998 11 11	704	0.2−	0.4+
1991 09 30	413	1.2−	0.4+	1998 10 23	046	0.2−	0.2+	1998 11 11	704	0.6−	0.1+
1991 09 30	413	1.3+	0.5−	1998 10 23	046	0.1−	0.1+	1998 11 11	704	1.4+	0.4−
1998 10 14	699	0.4+	0.6+	1998 10 23	046	0.3−	0.0	1998 11 11	704	0.0	0.3−
1998 10 14	699	0.3+	0.5+	1998 10 24	046	0.1+	0.5+	1998 11 11	046	0.1+	0.3+
1998 10 14	699	0.5+	0.3−	1998 10 24	046	0.5+	0.8−	1998 11 11	046	0.4−	0.2+
1998 10 20	699	0.6+	0.5−	1998 10 24	046	1.0−	0.1+	1998 11 11	046	0.4−	0.1+
1998 10 20	699	0.4+	1.0−	1998 10 25	046	0.1−	0.3−	1998 11 24	046	0.1+	0.2−
1998 10 20	699	0.3+	0.5−	1998 10 25	046	0.0	0.7−	1998 11 24	046	0.6+	0.2+
1998 10 21	046	0.4−	0.1−	1998 10 25	046	0.2−	0.6+	1998 11 24	046	0.2+	0.1−
1998 10 21	046	0.0	0.3+	1998 11 07	046	0.5−	0.3+	1998 11 25	046	0.8+	0.3−
1998 10 21	046	0.4−	0.1+	1998 11 07	046	0.4−	0.2−	1998 11 25	046	0.2−	0.4−
1998 10 21	046	0.1−	0.2+	1998 11 07	046	0.1+	0.1+	1998 11 25	046	0.3+	0.2+
1998 10 21	046	0.4−	0.4+	1998 11 07	046	0.1−	0.1−				

1998 UM₂₄ = 1985 QK₃

Id. A. Gnädig

1999 JUNE 22

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

$\dot{M}$	171.48632		(2000.0)	P	Q		
n	0.23967949	ω	65.86965	+0.31366863	+0.94373786		
a	2.5667415	Ω	222.85816	−0.91748583	+0.27281652		
e	0.1614642	i	8.85822	−0.24460526	+0.18689568		
P	4.11	H	14.2	G	0.15	U	3

Residuals in seconds of arc

1984 03 07	413	1.1−	0.5+	1998 10 20	699	0.9−	0.7+	1998 11 18	704	0.3+	0.5+
1984 03 07	413	1.0+	0.8−	1998 11 14	691	0.8−	0.1−	1998 11 18	704	0.5+	0.6+
1985 08 23	675	0.0	1.0−	1998 11 14	691	0.6−	0.1−	1998 11 21	704	0.4−	0.4+
1985 08 23	675	0.3+	0.3+	1998 11 14	691	0.5−	1.8+	1998 11 21	704	(0.6−	2.2−)
1998 10 18	699	0.2+	1.1+	1998 11 16	691	0.8−	0.1−	1998 11 21	704	1.3+	0.7−
1998 10 18	699	(2.2+	1.0+)	1998 11 16	691	0.9−	0.0	1998 11 28	120	1.7+	1.1−
1998 10 18	699	1.5+	1.9+	1998 11 16	691	1.0−	0.0	1998 11 28	120	0.9−	0.8−
1998 10 20	699	(1.0−	2.2+)	1998 11 18	704	0.8+	1.2−	1998 11 28	120	0.1+	1.6−
1998 10 20	699	(0.6−	2.2+)	1998 11 18	704	0.6+	1.4−				

1998 UT₂₄ = 1981 XD₁

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	119.16580		(2000.0)		P	Q	
n	0.17279109	ω	267.88666		+0.84242234	+0.47731881	
a	3.1924332	Ω	63.51723		-0.31184785	+0.81026057	
e	0.0799045	i	16.21777		-0.43940360	+0.34006551	
P	5.70	H	13.0	G	0.15	U	1

Residuals in seconds of arc

1980 09 30	413	1.2−	0.3+	1998 11 11	699	0.5+	0.1−	1998 12 08	699	0.5+	0.6+
1980 09 30	413	0.8+	0.3−	1998 11 11	699	0.4+	0.6+	1998 12 08	910	1.7+	1.1−
1981 12 04	511	0.2+	1.3+	1998 11 18	704	0.3+	1.3−	1998 12 08	910	1.7+	1.0−
1981 12 04	511	0.6−	0.7+	1998 11 18	704	0.6+	1.1−	1998 12 08	910	1.6+	0.9−
1989 03 06	675	1.0−	1.3−	1998 11 18	704	0.2+	1.6−	1998 12 21	910	0.6−	0.4+
1998 03 06	675	0.2+	0.5+	1998 11 18	704	0.3−	1.1−	1998 12 21	910	0.4−	0.5+
1996 06 12	566	0.3−	0.8−	1998 11 18	704	0.9−	1.8−	1998 12 21	910	0.6−	0.5+
1996 06 12	566	0.3−	0.8−	1998 11 21	704	0.7+	0.1+	1999 01 13	910	0.5−	0.4+
1996 06 12	566	0.4−	0.8−	1998 11 21	704	0.5+	0.4+	1999 01 13	910	0.3−	0.5+
1998 10 18	699	1.6−	0.2−	1998 11 21	704	(1.3+	2.2+)	1999 01 13	910	0.6−	0.3+
1998 10 18	699	0.1+	0.5+	1998 11 21	704	0.1−	2.0+	1999 01 14	910	0.6−	0.5+
1998 10 18	699	0.7−	0.1+	1998 12 07	910	1.1+	0.6−	1999 01 14	910	0.3−	0.4+
1998 10 20	699	0.3−	0.2−	1998 12 07	910	1.3+	0.6−	1999 01 14	910	0.5−	0.6+
1998 10 20	699	1.0−	0.4−	1998 12 07	910	1.4+	0.5−	1999 01 19	910	0.8−	0.3+
1998 10 20	699	0.6−	0.1−	1998 12 08	699	0.1+	0.6−	1999 01 19	910	0.7−	0.1+
1998 11 11	699	0.1+	0.4+	1998 12 08	699	0.1+	0.2+	1999 01 19	910	0.7−	0.4+

1998 UH₄₀ = 1998 VR₈ = 1977 RL₁₄Id. G. V. Williams (d, *MPC* 34618), A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	51.53360		(2000.0)	P	Q
n	0.23598225	ω	67.23009	+0.46914156	−0.88309375
a	2.5934815	Ω	354.77434	+0.77856356	+0.41742267
e	0.2782179	i	4.52445	+0.41682728	+0.21425158
P	4.18	H	15.5	G 0.15	U 4

Residuals in seconds of arc

1977 09 09	675	0.7+	0.0	1998 10 29	704	0.2+	1.4−	1998 11 11	704	0.5+	0.2+
1977 09 10	675	0.5−	0.4−	1998 10 29	704	0.2−	0.6+	1998 11 11	704	0.9+	0.2+
1998 09 14	699	1.2−	1.6+	1998 10 29	704	0.3+	0.3−	1998 11 11	704	0.6+	0.4+
1998 09 14	699	1.1+	0.7+	1998 10 29	704	0.1+	0.1−	1998 11 11	704	0.8+	0.3−
1998 09 14	699	0.7−	0.6−	1998 10 29	704	0.4+	0.1−	1998 11 17	699	0.7−	0.9+
1998 10 28	704	0.0	0.3−	1998 11 10	704	0.2+	0.1−	1998 11 17	699	0.8−	1.4+
1998 10 28	704	0.2−	0.5+	1998 11 10	704	0.0	0.5−	1998 11 17	699	0.4−	1.3+
1998 10 28	704	0.1−	0.6−	1998 11 10	704	0.1+	1.0−				
1998 10 28	704	0.7−	0.1+	1998 11 10	704	0.4−	1.5−				

1998 VW₁₂ = 1976 UX₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	51.39090		(2000.0)	P	Q
<i>n</i>	0.17935829	ω	259.85826	+0.80976658	-0.58626518
<i>a</i>	3.1140225	Ω	136.02904	+0.55091524	+0.74566018
<i>e</i>	0.1982798	<i>i</i>	1.97275	+0.20191703	+0.31667655
<i>P</i>	5.50	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1976 10 22	381	0.9-	0.1-	1998 11 10	704	1.1+	0.2-	1998 11 11	704	0.7-	0.1-
1976 10 22	381	0.8-	0.3+	1998 11 10	704	0.5+	0.8-	1998 11 11	704	0.1+	0.0
1976 10 24	381	1.6+	0.3+	1998 11 10	704	1.4+	0.9+	1998 11 14	699	0.4-	0.4-
1998 10 20	699	0.2+	0.4-	1998 11 10	704	0.4+	0.6+	1998 11 14	699	0.6-	1.2+
1998 10 20	699	0.1+	0.7-	1998 11 11	704	0.3-	0.3-	1998 11 14	699	0.5-	0.0
1998 10 20	699	0.4-	0.2+	1998 11 11	704	0.5-	0.1-				
1998 11 10	704	0.6-	0.1-	1998 11 11	704	0.1+	0.1-				

1998 VU₁₄ = 1996 AK₁₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	91.61774		(2000.0)	P	Q
<i>n</i>	0.27402831	ω	141.14211	+0.93514457	-0.34338335
<i>a</i>	2.3475008	Ω	239.15178	+0.29441066	+0.89007618
<i>e</i>	0.1392379	<i>i</i>	5.82517	+0.19704567	+0.29975367
<i>P</i>	3.60	<i>H</i>	16.0	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1996 01 15	691	0.7+	0.2+	1998 10 19	699	0.3-	1.1+	1998 11 11	704	1.2+	0.4+
1996 01 15	691	0.3+	0.1+	1998 10 19	699	0.2+	0.2-	1998 11 11	704	0.9-	1.5-
1996 01 15	691	0.5+	0.2+	1998 10 19	699	1.4+	0.4-	1998 11 11	704	0.2-	0.5-
1996 01 24	691	0.6-	0.1+	1998 11 10	704	0.3+	0.9+	1998 11 20	699	0.8+	0.6+
1996 01 24	691	0.3-	0.4-	1998 11 10	704	1.9-	0.9-	1998 11 20	699	0.1-	0.2-
1996 01 24	691	0.5-	0.2-	1998 11 10	704	0.5-	0.4+	1998 11 20	699	(1.6+	2.1+)

1998 VO₂₂ = 1977 DX₇ = 1997 JG₄

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	103.57897		(2000.0)	P	Q
<i>n</i>	0.30557309	ω	2.22058	+0.94431779	-0.32866084
<i>a</i>	2.1830280	Ω	16.99246	+0.30105042	+0.84378619
<i>e</i>	0.1523002	<i>i</i>	3.07617	+0.13278763	+0.42427222
<i>P</i>	3.23	<i>H</i>	16.2	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1977 02 19	381	1.2-	1.4+	1997 05 05	704	0.5+	1.6-	1998 11 10	699	0.2-	0.2+
1977 02 19	381	1.2+	1.2-	1997 05 05	704	2.9-	0.4+	1998 11 11	704	0.1-	0.2-
1997 05 01	704	0.2-	0.2+	1998 11 10	704	0.4+	0.2-	1998 11 11	704	0.3+	0.9+
1997 05 01	704	0.4+	0.2-	1998 11 10	704	0.7+	0.9-	1998 11 11	704	0.1+	0.1+
1997 05 01	704	0.4+	0.2+	1998 11 10	704	0.2-	0.1+	1998 11 11	704	0.1-	0.8-
1997 05 01	704	0.7+	0.9-	1998 11 10	704	0.6-	1.4-	1998 11 11	704	1.7-	1.1+
1997 05 05	704	0.0	0.7+	1998 11 10	704	1.1-	0.7-	1998 11 20	699	1.1+	0.4-
1997 05 05	704	0.8+	0.5+	1998 11 10	699	0.1+	0.6+	1998 11 20	699	0.4+	0.1-
1997 05 05	704	0.1-	0.3-	1998 11 10	699	0.3+	0.8+	1998 11 20	699	1.1+	0.2+

1998 VH₂₆ = 1995 BA₁₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	250.25486		(2000.0)	P	Q
<i>n</i>	0.19711410	ω	234.39645	-0.84785837	+0.53016243
<i>a</i>	2.9240913	Ω	337.61668	-0.47942446	-0.77298459
<i>e</i>	0.0528134	<i>i</i>	1.20352	-0.22646935	-0.34845748
<i>P</i>	5.00	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1995 01 30	033	0.0	0.3+	1997 07 08	688	0.2+	0.7-	1998 11 11	704	0.3-	0.3+
1995 01 31	033	0.3-	0.6+	1998 10 18	699	0.2-	0.3+	1998 11 11	704	0.6+	0.8+
1995 01 31	691	0.2-	1.7-	1998 10 18	699	0.4-	0.7-	1998 11 11	704	(1.3+	3.0-)
1995 01 31	691	(0.7+	2.3-)	1998 10 18	699	0.6-	0.9+	1998 11 20	699	0.4-	1.3+
1995 01 31	691	0.5+	0.1+	1998 11 10	704	1.8+	0.3+	1998 11 20	699	1.0-	0.4+
1995 02 03	033	0.1-	0.2-	1998 11 10	704	0.8+	0.8-	1998 11 20	699	0.9-	0.8+
1995 02 22	033	0.1+	0.0	1998 11 10	704	1.3-	1.5-	1998 11 25	691	0.1-	0.8-
1995 02 22	033	0.2-	0.2-	1998 11 10	704	0.7+	0.0	1998 11 25	691	0.0	0.6-
1997 07 08	688	0.3+	0.6-	1998 11 11	704	1.2+	0.1-	1998 11 25	691	0.0	0.5-

1998 VN₃₀ = 1987 VX₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	115.26184		(2000.0)	P	Q
<i>n</i>	0.27206296	ω	94.09492	+0.99427786	+0.01357566
<i>a</i>	2.3587927	Ω	265.15035	-0.05383797	+0.92039161
<i>e</i>	0.1756080	<i>i</i>	6.10434	+0.09226597	+0.39076205
<i>P</i>	3.62	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1987 11 15	327	0.6+	0.8+	1998 11 18	704	0.3-	0.0	1998 11 24	704	0.2+	0.0
1987 11 15	327	0.8-	0.0	1998 11 18	704	0.3+	0.4-	1998 11 24	704	2.0+	0.8+
1996 02 17	691	0.1+	0.1-	1998 11 18	704	0.6+	0.6-	1998 11 24	704	0.2+	0.4-
1996 02 17	691	0.0	0.0	1998 11 18	704	1.4+	0.4+	1998 11 24	704	0.1+	0.3+
1996 02 17	691	0.1-	0.3+	1998 11 18	704	0.5+	1.6+	1998 12 14	704	1.5-	0.6-
1998 11 10	704	0.1-	1.3+	1998 11 20	699	0.6-	0.3-	1998 12 14	704	1.3-	0.8-
1998 11 10	704	0.3+	0.6-	1998 11 20	699	1.2-	0.9+	1998 12 14	704	0.9-	0.2+
1998 11 10	704	0.2+	0.3-	1998 11 20	699	0.4-	0.1-	1998 12 14	704	0.2+	0.5+
1998 11 10	704	0.8+	0.3-	1998 11 21	704	0.6-	0.3+	1998 12 14	704	0.5-	1.0+
1998 11 11	704	0.6+	0.3+	1998 11 21	704	0.6-	0.0	1999 02 06	557	0.0	0.3+
1998 11 11	704	1.0-	0.5+	1998 11 21	704	0.4+	0.2-	1999 02 06	557	0.0	0.1-
1998 11 11	704	0.6+	0.7-	1998 11 21	704	0.3+	1.9-	1999 02 06	557	0.4+	0.2-
1998 11 11	704	0.0	0.5-	1998 11 21	704	0.1+	1.4-				

1998 VX₃₀ = 1986 WD₇

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	58.42043		(2000.0)	P	Q
<i>n</i>	0.24292434	ω	168.30527	+0.47867367	-0.84917371
<i>a</i>	2.5438335	Ω	252.74578	+0.78553407	+0.52771361
<i>e</i>	0.1442055	<i>i</i>	13.51015	+0.39218329	-0.02055142
<i>P</i>	4.06	<i>H</i>	14.5	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1953 10 31	675	(3.1+	3.6-)	1998 11 10	704	0.8-	0.7+	1998 11 14	704	0.3+	0.8-
1953 10 31	675	0.0	0.3+	1998 11 10	704	1.2+	0.6+	1998 11 14	704	0.1-	0.4-
1976 06 29	413	0.3+	0.5+	1998 11 10	704	0.0	0.8+	1998 11 19	905	0.7-	0.1-
1976 06 29	413	0.7-	1.1-	1998 11 11	704	0.1-	0.1-	1998 11 19	905	0.2-	0.6+
1986 11 28	010	0.8+	0.1-	1998 11 11	704	0.6-	0.1+	1998 12 16	699	0.4+	0.1-
1986 11 28	010	2.0-	1.2-	1998 11 11	704	0.3+	0.6+	1998 12 16	699	1.2+	0.4-
1986 11 28	010	0.8+	0.2-	1998 11 11	704	0.2-	0.3+	1998 12 16	699	0.3+	0.7+
1992 05 24	413	0.7+	0.9+	1998 11 14	704	0.0	0.6-	1999 01 06	699	0.2-	1.3+
1992 05 24	413	(0.2+	3.5+)	1998 11 14	704	0.5-	0.4-	1999 01 06	699	1.1+	0.2+
1998 11 10	704	0.8-	0.0	1998 11 14	704	0.1-	0.3-	1999 01 06	699	0.2-	0.8+

1998 VC₃₂ = 1982 VM₂

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	70.50720		(2000.0)	P	Q
<i>n</i>	0.37031853	ω	189.84539	-0.08552678	-0.93544779
<i>a</i>	1.9205211	Ω	265.65942	+0.93592031	+0.04261225
<i>e</i>	0.1031017	<i>i</i>	20.11759	+0.34166993	-0.35088693
<i>P</i>	2.66	<i>H</i>	16.3	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1982 11 14	381	0.1+	1.3-	1998 12 14	704	0.3+	0.6+	1999 01 08	704	0.0	1.3-
1982 11 14	381	0.1-	1.1+	1998 12 14	704	0.4+	0.2+	1999 01 08	704	1.5-	0.2-
1994 04 01	413	0.1+	0.1-	1998 12 14	704	0.0	1.0-	1999 01 08	704	0.1+	0.5+
1994 04 01	413	0.1-	0.2+	1998 12 14	704	0.7-	1.8-	1999 01 08	704	1.9-	0.1-
1998 11 14	704	0.0	1.5+	1998 12 17	704	0.1-	0.7+	1999 01 08	704	(4.9-	0.1+)
1998 11 14	704	(2.9+	2.4+)	1998 12 17	704	0.2-	0.2-	1999 01 11	704	1.7-	0.7-
1998 11 14	704	0.7-	1.1+	1998 12 17	704	1.9+	2.2+	1999 01 11	704	0.0	0.9+
1998 11 14	704	0.1-	0.2-	1998 12 17	704	0.5+	0.7-	1999 01 11	704	0.5+	0.9+
1998 11 16	704	1.0+	1.0-	1998 12 17	704	0.8+	1.0-	1999 01 11	704	1.0+	2.4-
1998 11 16	704	0.1-	0.6-	1999 01 05	699	0.4+	0.9+	1999 01 11	704	0.1+	0.4+
1998 11 16	704	0.6-	0.1+	1999 01 05	699	0.2+	0.7+				
1998 11 16	704	0.7-	0.0	1999 01 05	699	0.7+	0.9+				

1998 VS₃₂ = 1971 BW = 1986 WY₆

Id. A. Doppler, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	281.17054		(2000.0)	P	Q
<i>n</i>	0.17656691	ω	164.88493	-0.22428213	+0.93821822
<i>a</i>	3.1467567	Ω	91.61168	-0.91922562	-0.11387914
<i>e</i>	0.0874171	<i>i</i>	15.28537	-0.32360747	-0.32676921
<i>P</i>	5.58	<i>H</i>	11.9	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1971 01 25	095	0.0	2.3-	1999 02 10	704	0.2-	1.2-	1999 05 08	704	0.5+	0.4-
1986 11 28	010	0.4+	1.4-	1999 02 10	704	0.6+	1.1-	1999 05 08	704	0.3-	0.5-
1986 11 28	010	0.2-	1.0+	1999 02 10	704	0.5+	1.7-	1999 05 08	704	0.3+	0.6+
1986 11 28	010	0.8-	0.4+	1999 02 10	704	0.2+	0.5-	1999 06 04	704	0.1+	0.9+
1998 03 16	327	0.1+	0.3+	1999 02 13	704	0.2-	0.6-	1999 06 04	704	0.4-	0.1+
1998 03 16	327	0.4+	0.2+	1999 02 13	704	0.7-	0.3-	1999 06 04	704	0.0	0.4+
1998 03 16	327	0.2+	0.1-	1999 02 13	704	0.4-	0.1-	1999 06 04	704	0.2-	0.0
1998 11 15	703	0.1+	0.4+	1999 02 13	704	1.0-	0.1+	1999 06 04	704	0.1+	0.2+
1998 11 15	703	0.2+	1.1+	1999 02 13	704	1.2-	0.1+	1999 06 07	704	0.0	0.9+
1998 11 15	703	0.1+	1.0+	1999 02 18	699	0.1+	0.7+	1999 06 07	704	0.3-	0.3-
1998 11 16	703	0.6+	0.7+	1999 02 18	699	0.6+	1.4+	1999 06 07	704	1.3+	0.2+
1998 11 16	703	0.0	0.4+	1999 02 18	699	0.6+	1.2+	1999 06 07	704	0.3-	0.2+
1999 02 10	704	0.6-	0.3-	1999 05 08	704	0.7+	1.0+	1999 06 07	704	0.6+	0.5-

1998 VX₃₂ = 1978 WW₁₃

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	123.25244		(2000.0)	P	Q
<i>n</i>	0.24520756	ω	289.70100	+0.96209183	+0.26915048
<i>a</i>	2.5280179	Ω	54.70909	-0.22565282	+0.87623677
<i>e</i>	0.1354459	<i>i</i>	3.09117	-0.15316693	+0.39970883
<i>P</i>	4.02	<i>H</i>	15.4	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1978 11 29	675	0.2-	0.3+	1998 11 16	566	0.2+	0.5+	1998 11 28	369	0.4+	0.9+
1978 11 30	675	(5.0-	1.2-)	1998 11 16	566	0.7+	0.6+	1998 11 28	369	0.0	0.0
1986 10 31	675	0.5+	0.2-	1998 11 16	566	0.6+	0.2+	1998 12 14	704	1.2+	0.6+
1986 10 31	675	0.2-	0.4-	1998 11 18	704	0.2+	0.3-	1998 12 14	704	(0.1-	2.1-)
1998 11 11	704	1.0-	0.1+	1998 11 18	704	0.8+	0.0	1998 12 14	704	(2.1+	0.1-)
1998 11 11	704	0.7+	0.7+	1998 11 18	704	0.7+	1.9-	1998 12 14	704	0.5+	0.5-
1998 11 11	704	1.7-	1.3-	1998 11 18	704	0.4-	1.9-	1998 12 17	691	0.6-	0.5-
1998 11 11	704	(0.4-	2.1-)	1998 11 18	369	0.0	0.9+	1998 12 17	691	0.9-	0.3-
1998 11 11	369	0.4+	0.0	1998 11 18	369	0.1+	0.9-	1998 12 17	691	1.1-	0.1+
1998 11 11	369	0.9+	0.3-	1998 11 19	699	0.1+	0.2+	1999 01 10	725	0.2-	0.4-
1998 11 11	369	0.2-	1.3+	1998 11 19	699	1.1+	0.5-	1999 01 10	725	0.1-	0.0
1998 11 11	120	0.5-	0.6+	1998 11 19	699	0.4+	0.6+	1999 01 13	725	0.9+	0.2+
1998 11 11	120	1.3-	0.3+	1998 11 21	704	0.4-	0.8-	1999 01 13	725	0.3+	0.4-
1998 11 12	369	0.9-	0.4-	1998 11 21	704	0.4+	0.5-	1999 01 13	725	0.3-	0.2-
1998 11 12	369	0.2-	0.8+	1998 11 21	704	1.0+	0.2-	1999 01 17	725	0.8-	0.4+
1998 11 14	369	1.0+	0.5+	1998 11 21	704	1.1-	0.2+	1999 01 17	725	0.4+	0.5+
1998 11 14	369	0.1-	0.5+	1998 11 21	704	1.5-	0.8+				

1998 WF = 1991 BF₄

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	67.85697		(2000.0)	P	Q
<i>n</i>	0.23072943	ω	243.08054	+0.96131914	-0.26465968
<i>a</i>	2.6326960	Ω	132.16033	+0.27477361	+0.90226819
<i>e</i>	0.3031394	<i>i</i>	5.90753	+0.01910417	+0.34039295
<i>P</i>	4.27	<i>H</i>	15.0	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1991 01 18	801	0.6+	0.1+	1998 09 17	699	0.6+	0.8+	1998 11 23	683	0.4+	1.0+
1991 01 18	801	0.2-	0.5-	1998 09 17	699	0.9+	0.8+	1998 12 08	704	1.3+	1.7-
1991 03 08	675	0.2-	0.3+	1998 11 16	683	0.7-	0.3-	1998 12 08	704	1.1+	0.1-
1991 03 08	675	0.3-	0.4+	1998 11 16	683	0.5-	1.0-	1998 12 08	704	0.8+	0.2-
1998 08 04	699	0.6-	0.5+	1998 11 16	683	0.7-	0.7-	1998 12 08	704	0.4+	0.4-
1998 08 04	699	0.4-	0.6+	1998 11 17	683	0.3+	0.1-	1998 12 08	704	0.7+	0.2+
1998 08 04	699	0.8-	0.2+	1998 11 17	683	0.2+	0.1-	1998 12 22	683	0.4-	0.0
1998 08 31	704	0.1+	0.3+	1998 11 17	683	0.1+	0.0	1998 12 22	683	0.4-	0.1+
1998 08 31	704	0.2+	0.3-	1998 11 22	683	0.6-	0.0	1998 12 22	683	0.3-	0.2+
1998 08 31	704	0.1+	0.9-	1998 11 22	683	0.2-	0.3+	1998 12 23	683	0.8-	0.5+
1998 08 31	704	(3.8+	1.4-)	1998 11 22	683	1.3-	0.7-	1998 12 23	683	0.4-	0.5+
1998 08 31	704	0.3-	2.0-	1998 11 23	683	0.2+	0.7+	1998 12 23	683	0.7-	0.5+
1998 09 17	699	0.6+	0.9+	1998 11 23	683	0.2+	0.9+				

1998 WV₁ = 1986 HC₁

Id. A. Gnädig, G. V. Williams, S. Nakano, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	62.31922		(2000.0)	P	Q
<i>n</i>	0.28643007	ω	9.40224	-0.00390023	-0.99805375
<i>a</i>	2.2792413	Ω	80.83961	+0.91332982	-0.02889893
<i>e</i>	0.1010947	<i>i</i>	3.61441	+0.40720195	+0.05525913
<i>P</i>	3.44	<i>H</i>	15.0	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1976 06 29	413	0.0	0.1-	1996 02 16	566	0.4-	0.3-	1998 12 14	704	0.1-	0.3-
1976 06 29	413	0.0	0.6-	1998 11 18	411	0.7-	0.4+	1998 12 16	704	1.0+	0.8-
1979 05 19	413	0.6+	1.4+	1998 11 18	411	0.2-	0.0	1998 12 16	704	0.1+	0.5+
1979 05 19	413	0.4+	0.5+	1998 11 19	411	0.2-	0.7+	1998 12 16	704	1.0+	0.5+
1980 07 12	413	0.5-	0.2+	1998 11 19	411	0.4+	0.1+	1998 12 16	704	0.8+	1.1+
1980 07 12	413	0.7+	0.9-	1998 11 25	411	0.5+	0.5+	1998 12 16	704	0.2+	1.0+
1986 04 29	675	(6.2+	0.8+)	1998 11 25	411	0.7-	0.5+	1998 12 17	704	0.9-	1.0+
1986 04 29	675	(4.8+	2.8+)	1998 12 13	411	0.6-	0.4-	1998 12 17	704	0.0	0.2-
1991 12 08	691	0.0	0.0	1998 12 13	411	0.1-	0.1-	1998 12 17	704	0.1-	0.2+
1991 12 08	691	0.3-	0.2-	1998 12 14	704	0.3-	0.9-	1998 12 17	704	(2.1+	2.1-)
1991 12 08	691	0.1+	0.0	1998 12 14	704	0.2+	1.0-	1998 12 17	704	0.8-	0.0
1996 02 16	566	0.5-	0.6-	1998 12 14	704	0.8+	1.0-	1998 12 21	411	0.2+	0.1-
1996 02 16	566	0.1-	0.5-	1998 12 14	704	0.3-	1.0-	1998 12 21	411	0.3+	0.0

1998 WW₉ = 1998 WA₁₉ = 2813 P-LId. A. Doppler (d, *MPC* 33876; unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	357.31876		(2000.0)	P	Q
<i>n</i>	0.26187731	ω	0.83567	-0.81561895	-0.57816936
<i>a</i>	2.4195660	Ω	143.81353	+0.53062859	-0.76265475
<i>e</i>	0.1419240	<i>i</i>	2.13968	+0.23064915	-0.28996192
<i>P</i>	3.76	<i>H</i>	15.1	<i>G</i>	0.15
				<i>U</i>	7

Residuals in seconds of arc

1960 09 24	675	0.8+	0.0	1998 11 11	704	1.1+	1.5-	1998 11 19	704	1.0+	1.9+
1960 09 24	675	0.2+	0.0	1998 11 18	704	1.0+	1.2-	1998 11 21	704	0.8+	0.5-
1960 09 26	675	1.2+	0.5-	1998 11 18	704	0.2-	1.1-	1998 11 21	704	1.7+	0.6+
1960 09 26	675	0.3+	0.1-	1998 11 18	704	1.0-	0.1-	1998 11 21	704	0.2+	0.0
1960 09 28	675	2.2-	1.3+	1998 11 18	704	1.4-	0.1-	1998 11 24	704	0.2+	0.7-
1960 09 28	675	0.2-	0.7-	1998 11 19	704	0.2+	0.8+	1998 11 24	704	1.3-	0.8+

1999 JUNE 22

M.P.C. 34933

1998 11 11	704	0.6−	0.7+	1998 11 19	704	0.9−	0.6−	1998 11 24	704	(1.7−	2.2−)
1998 11 11	704	0.7−	1.0+	1998 11 19	704	0.5+	1.1−	1998 11 24	704	0.3+	0.1+
1998 11 11	704	0.1+	1.3+	1998 11 19	704	1.0−	0.3−				

1998 WM₁₄ = 1991 SR₄

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	154.11198		(2000.0)	P	Q
<i>n</i>	0.29163293	ω	127.12272	+0.75524029	+0.65541309
<i>a</i>	2.2520516	Ω	191.93137	−0.61126550	+0.70056740
<i>e</i>	0.1886670	<i>i</i>	1.87557	−0.23657260	+0.28220381
<i>P</i>	3.38	<i>H</i>	15.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1984 08 02	413	0.5−	0.6+	1998 11 21	704	0.2+	0.0	1998 12 08	691	0.1−	0.1−
1984 08 02	413	0.2+	0.7+	1998 11 21	704	0.8+	1.0−	1998 12 08	691	0.0	0.5−
1991 09 16	675	0.4+	1.2−	1998 11 21	704	0.4+	1.0−	1998 12 13	691	0.9−	0.0
1991 09 16	675	0.2+	0.8−	1998 11 21	704	(0.6−	2.5−)	1998 12 13	691	0.8−	0.1−
1998 10 23	910	0.3+	0.3+	1998 11 24	704	0.3+	0.8+	1998 12 13	691	1.1−	0.0
1998 10 23	910	0.4+	0.0	1998 11 24	704	0.2−	0.1+	1998 12 15	910	0.6+	0.2+
1998 10 23	910	0.3+	0.6+	1998 11 24	704	0.5−	1.1+	1998 12 15	910	0.6+	0.1+
1998 11 15	120	0.9−	0.5−	1998 11 24	704	0.2−	0.1+	1998 12 15	910	0.5+	0.2+
1998 11 15	120	0.8−	0.0	1998 11 24	704	0.2−	1.1+	1998 12 21	910	0.2+	0.0
1998 11 18	704	0.5+	0.8+	1998 11 27	691	0.5+	0.2+	1998 12 21	910	0.2+	0.2−
1998 11 18	704	0.1−	0.1+	1998 11 27	691	(1.1+	2.1−)	1998 12 21	910	0.2+	0.1−
1998 11 18	704	0.9−	1.0−	1998 11 27	691	(0.4+	3.1−)				
1998 11 18	704	0.5+	0.8+	1998 12 08	691	0.1−	0.1−				

1998 WQ₁₆ = 1975 TH₃ = 1975 VU₆ = 1981 XU

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	71.83472		(2000.0)	P	Q
<i>n</i>	0.17334077	ω	319.90004	+0.92113978	−0.36792221
<i>a</i>	3.1856807	Ω	62.12055	+0.38368758	+0.80342104
<i>e</i>	0.1730844	<i>i</i>	8.26210	+0.06546249	+0.46813233
<i>P</i>	5.69	<i>H</i>	13.4	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1975 10 03	095	0.5+	0.4−	1998 11 18	704	1.4−	1.2−	1998 11 25	699	0.7+	0.0
1975 11 06	095	(0.9−	3.9−)	1998 11 18	704	1.5−	0.6+	1998 11 25	699	0.1+	0.0
1981 12 04	511	0.4+	0.8+	1998 11 18	704	(2.3−	0.7+)	1998 12 08	699	0.4+	0.0
1981 12 04	511	1.4−	0.7+	1998 11 18	704	1.3−	0.3+	1998 12 08	699	1.0+	0.3−
1997 05 15	696	0.3−	0.2+	1998 11 20	699	0.7+	0.6+	1998 12 08	699	1.5+	0.4−
1997 05 15	696	0.1+	0.3+	1998 11 20	699	0.1+	0.8+	1998 12 11	691	0.6−	0.0
1997 05 15	696	0.0	0.3+	1998 11 20	699	0.3+	1.4+	1998 12 11	691	0.5−	0.0
1998 08 31	704	0.3−	1.5+	1998 11 21	704	0.6+	0.0	1998 12 11	691	0.5−	0.1+
1998 08 31	704	0.2+	0.5−	1998 11 21	704	0.5+	1.1+	1998 12 14	704	1.0+	0.0
1998 08 31	704	0.3+	0.3−	1998 11 21	704	1.1−	1.4+	1998 12 14	704	0.1+	0.2−
1998 08 31	704	1.9−	0.3−	1998 11 21	704	(1.8−	3.7+)	1998 12 14	704	0.2+	0.9+
1998 08 31	704	(5.6−	1.4+)	1998 11 24	704	0.6+	0.5−	1998 12 14	704	0.1−	0.5+
1998 11 10	704	(3.1+	1.2−)	1998 11 24	704	0.6+	0.8−	1998 12 14	704	1.1−	1.4+
1998 11 10	704	0.8+	0.8−	1998 11 24	704	0.4+	1.0−	1998 12 19	691	0.1−	0.1−
1998 11 10	704	0.5+	1.8−	1998 11 24	704	0.6+	1.0−	1998 12 19	691	0.3−	0.3−
1998 11 10	704	(1.4+	2.5−)	1998 11 24	704	1.2−	1.4−	1998 12 19	691	0.3−	0.2+
1998 11 18	704	0.3−	0.4−	1998 11 25	699	1.0+	0.2−				

1998 WS₁₆ = 1996 HE₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	166.59917		(2000.0)	P	Q
<i>n</i>	0.20411803	ω	242.66918	+0.52954754	+0.84722300
<i>a</i>	2.8568129	Ω	59.36827	−0.75986015	+0.49594622
<i>e</i>	0.0494369	<i>i</i>	2.82038	−0.37708349	+0.19039574
<i>P</i>	4.83	<i>H</i>	13.4	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1996 04 17	809	0.2−	1.4+	1998 11 20	699	0.3+	0.1+	1998 11 24	704	1.2−	1.0−
1996 04 17	809	0.5−	0.7+	1998 11 20	699	1.1+	0.6+	1998 11 24	704	0.9−	0.3+
1996 04 17	809	0.9−	0.7+	1998 11 20	699	0.6+	0.1+	1998 11 24	704	0.6−	0.1−
1996 04 18	809	0.2+	0.4−	1998 11 21	704	0.1+	0.0	1998 12 08	699	0.1−	0.5−
1996 04 18	809	0.3−	0.1−	1998 11 21	704	0.7+	0.7−	1998 12 08	699	0.1−	0.2−
1996 04 18	809	0.3−	0.1+	1998 11 21	704	0.5+	0.4−	1998 12 08	699	0.3+	1.0+
1996 05 19	809	0.6+	1.2−	1998 11 21	704	1.1+	0.3+	1998 12 11	691	0.5−	0.2+
1996 05 19	809	0.8+	1.0−	1998 11 21	704	0.6+	1.8−	1998 12 11	691	0.8−	0.6+
1996 05 19	809	0.4+	1.3−	1998 11 24	704	0.2−	0.1+	1998 12 11	691	0.7−	0.3+

1998 WK₁₇ = 1981 XL

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	291.95861		(2000.0)	P	Q
<i>n</i>	0.17432762	ω	299.29629	−0.94278782	+0.04115982
<i>a</i>	3.1736468	Ω	244.82180	+0.03737023	−0.97304945
<i>e</i>	0.1022069	<i>i</i>	21.44308	−0.33129230	−0.22689346
<i>P</i>	5.65	<i>H</i>	12.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1952 09 17	675	0.5−	0.4−	1998 11 21	704	0.3−	0.5+	1998 12 11	699	0.6+	0.5−
1952 09 17	675	0.4+	0.9+	1998 11 21	704	0.2−	0.3+	1998 12 17	691	0.6−	0.1+
1981 12 04	511	0.5+	0.6+	1998 11 21	704	0.4+	0.9+	1998 12 17	691	0.3−	0.2+
1981 12 04	511	0.2−	0.5−	1998 11 21	704	(0.6−	2.4+)	1998 12 17	691	0.3−	0.1−
1998 11 11	704	1.5+	0.7−	1998 11 21	704	0.1+	0.7−	1998 12 25	691	1.7−	0.0
1998 11 11	704	1.8+	0.3−	1998 11 24	704	0.2−	1.6+	1998 12 25	691	1.6−	0.0
1998 11 11	704	0.1+	1.0−	1998 11 24	704	0.8+	1.0+	1998 12 25	691	1.6−	0.1−
1998 11 11	704	0.5+	0.2−	1998 11 24	704	0.7+	0.0	1999 01 06	699	0.4−	1.5+
1998 11 18	704	1.4−	1.5−	1998 11 24	704	0.8−	0.2−	1999 01 06	699	0.4−	2.0+
1998 11 18	704	0.5−	0.3+	1998 11 24	704	0.3−	1.1−	1999 01 06	699	1.0−	0.2+
1998 11 18	704	0.6+	0.9−	1998 12 11	699	0.7+	1.1−				
1998 11 18	704	1.1+	0.1−	1998 12 11	699	1.7+	0.5−				

1998 XT₂₁ = 1987 KP₁

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	351.08713		(2000.0)	P	Q
<i>n</i>	0.22611780	ω	258.56830	−0.98751444	−0.15126977
<i>a</i>	2.6683711	Ω	272.72007	+0.15616427	−0.90341897
<i>e</i>	0.0171221	<i>i</i>	2.52251	+0.02068686	−0.40118776
<i>P</i>	4.36	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1987 05 30	413	0.1+	0.6−	1998 12 16	691	0.7−	1.8−	1999 01 05	120	0.8−	0.3+
1987 05 30	413	0.3−	0.3−	1998 12 16	691	0.0	0.2−	1999 01 06	120	0.9+	0.0
1995 03 29	675	0.7−	0.3+	1998 12 16	691	0.0	0.4−	1999 01 06	120	0.0	0.3+
1995 03 29	675	0.8+	0.0	1998 12 22	704	0.9−	0.2+	1999 01 06	120	0.7−	0.2+
1998 11 17	691	0.3−	0.0	1998 12 22	704	(2.4+	0.6+)	1999 01 16	120	0.6+	0.6+
1998 11 17	691	0.4−	0.2−	1998 12 22	704	0.0	1.4−	1999 01 16	120	0.0	0.4+
1998 11 17	691	0.3−	0.2−	1998 12 22	704	0.2+	0.6−	1999 01 18	704	1.4+	0.3−
1998 12 10	691	0.2+	0.4−	1998 12 22	704	0.6+	1.0+	1999 01 18	704	(1.9−	2.4+)
1998 12 10	691	0.2+	0.3−	1999 01 05	120	0.4−	0.7+	1999 01 18	704	0.5+	0.7+
1998 12 10	691	0.1−	0.1−	1999 01 05	120	0.5−	0.5+				

1998 XR₂₈ = 1986 GT₂ = 1987 RV₄ = 1987 SR₃₀

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	266.87173		(2000.0)	P	Q
<i>n</i>	0.28398760	ω	337.09071	−0.60519766	+0.79030091
<i>a</i>	2.2922912	Ω	255.53325	−0.71422583	−0.59213395
<i>e</i>	0.1258568	<i>i</i>	5.67256	−0.35159244	−0.15748605
<i>P</i>	3.47	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1986 04 04	095	0.3+	0.8+	1998 11 21	704	1.2-	1.8-	1998 12 17	704	0.1-	0.2+
1987 09 02	095	0.6-	1.9+	1998 11 24	704	0.0	0.1+	1998 12 17	704	0.1-	0.6-
1987 09 17	095	0.4+	1.1-	1998 11 24	704	0.2-	0.6-	1998 12 17	704	1.0+	1.1-
1997 07 07	910	0.0	0.3+	1998 11 24	704	1.0+	1.0-	1998 12 17	704	(2.2+	0.6-)
1997 07 08	910	0.1-	0.3+	1998 11 24	704	0.1-	0.6-	1998 12 17	704	0.4+	0.9-
1997 07 08	910	0.1-	0.3+	1998 11 24	704	0.6+	0.3-	1999 01 04	327	(2.2+	1.5+)
1998 08 31	704	1.6-	1.9+	1998 11 25	699	0.2+	0.7+	1999 01 04	327	0.4-	0.2-
1998 08 31	704	0.4-	0.0	1998 11 25	699	0.1+	0.2+	1999 01 04	327	0.5-	0.1+
1998 08 31	704	0.1+	0.6-	1998 11 25	699	0.5-	0.5-	1999 01 05	699	0.2+	0.5+
1998 08 31	704	1.1-	1.9-	1998 12 11	699	0.4-	0.9+	1999 01 05	699	0.1-	0.0
1998 11 20	699	0.4+	0.7+	1998 12 11	699	0.7+	0.3+	1999 01 05	699	0.1-	0.1+
1998 11 20	699	0.3+	1.0+	1998 12 11	699	0.2+	0.2-	1999 01 22	699	0.5-	0.7+
1998 11 20	699	0.5+	0.9+	1998 12 14	704	0.5-	0.4+	1999 01 22	699	1.1+	0.9-
1998 11 21	704	0.5+	0.3+	1998 12 14	704	0.1-	0.1+	1999 01 22	699	0.8-	0.4+
1998 11 21	704	0.6+	0.6-	1998 12 14	704	0.3+	1.5+	1999 02 10	691	0.8-	0.1+
1998 11 21	704	0.2+	1.4-	1998 12 14	704	0.6+	1.0+	1999 02 10	691	0.8-	0.2-
1998 11 21	704	(3.5+	0.4-)	1998 12 14	704	0.7-	1.1+	1999 02 10	691	0.5-	1.5+

1998 XK₃₉ = 1989 HH

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	340.99365		(2000.0)	P	Q		
<i>n</i>	0.27784555	ω	108.98727	-0.99384672	+0.05560129		
<i>a</i>	2.3259502	Ω	74.28932	-0.09103693	-0.90270169		
<i>e</i>	0.1008582	<i>i</i>	5.71127	+0.06309490	-0.42665929		
<i>P</i>	3.55	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1957 04 28	675	1.8+	0.4+	1996 04 21	675	0.7-	1.5+	1998 12 17	704	0.4-	0.5+
1957 04 28	675	2.0-	0.4-	1998 12 14	704	0.5+	0.6-	1998 12 17	704	0.0	1.6-
1983 07 13	413	0.4+	0.2+	1998 12 14	704	0.4-	0.1-	1999 01 16	704	0.0	0.2+
1983 07 13	413	0.6-	0.1-	1998 12 14	704	0.0	0.1+	1999 01 16	704	0.3+	0.4+
1983 09 12	413	0.1-	1.2-	1998 12 14	704	0.6+	0.4+	1999 01 16	704	0.2+	0.2+
1983 09 12	413	0.2+	0.1-	1998 12 14	704	0.3-	0.1-	1999 01 16	704	0.5+	0.5+
1983 10 07	413	0.5-	0.3+	1998 12 16	704	0.1+	1.2-	1999 01 16	704	0.0	0.6+
1983 10 07	413	2.1+	1.2+	1998 12 16	704	0.7+	0.6+	1999 01 19	704	0.1-	0.6+
1983 10 26	413	0.7-	0.1-	1998 12 16	704	1.8-	1.1+	1999 01 19	704	1.6+	0.5+
1983 10 26	413	1.0-	0.4-	1998 12 16	704	(3.3-	1.4+)	1999 01 19	704	0.2+	0.5-
1989 04 28	399	0.1+	0.6-	1998 12 16	704	(2.3-	1.5+)	1999 01 19	704	(2.1+	0.1-)
1989 04 28	399	0.4-	0.5-	1998 12 17	704	0.1+	0.9-	1999 01 19	704	0.3-	0.4+
1989 04 28	399	1.8+	0.4-	1998 12 17	704	0.4+	0.0				
1996 04 21	675	1.1-	0.4-	1998 12 17	704	1.2-	1.1-				

1998 XJ₄₀ = 1987 YO₃ = 1989 EV₁₁

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	272.23940		(2000.0)	P	Q		
<i>n</i>	0.18248398	ω	220.13801	-0.72705465	+0.68654209		
<i>a</i>	3.0783610	Ω	3.24651	-0.59295705	-0.62260949		
<i>e</i>	0.0596511	<i>i</i>	7.28001	-0.34611195	-0.37552281		
<i>P</i>	5.40	<i>H</i>	12.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1984 06 01	413	0.8-	0.2+	1997 10 30	566	0.3-	0.3+	1998 12 17	704	(0.6-	2.1+)
1984 06 01	413	0.1-	1.0-	1997 10 30	566	0.5-	0.9+	1998 12 17	704	0.3-	0.6+
1987 12 20	010	1.8-	1.2-	1997 10 30	566	0.4-	0.6+	1998 12 17	704	0.5-	0.7-
1987 12 20	010	1.8+	1.0+	1998 11 16	704	0.6-	0.8-	1999 01 16	704	0.8+	1.3-
1989 03 03	808	0.5-	0.7-	1998 11 16	704	1.1+	0.4+	1999 01 16	704	(1.1+	2.2-)
1989 03 03	808	0.8+	0.3-	1998 11 16	704	1.6+	0.3-	1999 01 16	704	0.5+	1.4-
1994 03 04	033	0.2+	0.9+	1998 12 14	704	0.2+	0.4+	1999 01 19	704	0.1+	0.4+
1994 03 04	033	0.5-	0.3+	1998 12 14	704	0.4-	0.2+	1999 01 19	704	0.2-	0.8+
1997 10 30	704	0.3-	0.0	1998 12 14	704	0.4-	1.0+	1999 01 19	704	0.9-	0.6-
1997 10 30	704	0.8+	0.4-	1998 12 14	704	0.1-	0.6+	1999 01 19	704	0.2-	0.7-
1997 10 30	704	0.8+	0.9-	1998 12 14	704	0.8+	0.5+	1999 01 19	704	0.7-	0.5+

1997 10 30	704	0.0	0.3-	1998 12 17	704	0.4-	0.4-
1997 10 30	704	0.5+	1.2-	1998 12 17	704	0.4-	0.3+

1998 XG₄₈ = 1987 UU₃

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	111.42764		(2000.0)	P	Q		
<i>n</i>	0.19108194	ω	308.64160	+0.94744937	-0.26145819		
<i>a</i>	2.9853113	Ω	67.20623	+0.31827804	+0.82846105		
<i>e</i>	0.1324786	<i>i</i>	11.53402	-0.03223005	+0.49526952		
<i>P</i>	5.16	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1976 05 30	413	0.9-	0.9+	1998 12 14	704	0.5-	0.5-	1999 01 16	704	0.3+	0.4-
1976 05 30	413	0.6+	0.8+	1998 12 14	704	1.6+	0.7-	1999 01 16	704	0.3-	0.8-
1987 10 26	054	0.2-	1.2+	1998 12 14	704	0.8-	0.3+	1999 01 16	704	0.5+	0.8-
1987 10 26	054	0.7-	0.4+	1998 12 14	704	0.7-	0.4-	1999 01 19	704	1.3-	1.0+
1995 02 26	675	1.3-	0.2+	1998 12 17	704	0.9+	1.0-	1999 01 19	704	0.8-	0.4+
1995 02 26	675	1.0+	0.5-	1998 12 17	704	0.8+	0.3-	1999 01 19	704	0.2-	1.5+
1997 12 30	566	0.3+	1.0-	1998 12 17	704	1.8+	0.1+	1999 01 19	704	1.8-	0.7+
1997 12 30	566	0.6+	1.1-	1998 12 17	704	1.4+	1.2+	1999 01 19	704	1.2-	0.2+
1997 12 30	566	0.7+	1.3-	1998 12 17	704	0.3+	0.9+				
1998 12 14	704	0.1-	0.4-	1999 01 16	704	0.3-	0.1-				

1998 XB₅₁ = 1991 PM₂₅

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	0.05778		(2000.0)	P	Q		
<i>n</i>	0.18838484	ω	198.07131	-0.84231193	-0.52610313		
<i>a</i>	3.0137375	Ω	309.61043	+0.51138101	-0.71138012		
<i>e</i>	0.0389663	<i>i</i>	8.74722	+0.17029412	-0.46599766		
<i>P</i>	5.23	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1990 04 29	413	0.2-	1.2-	1996 07 15	566	0.1+	0.3-	1998 12 17	704	0.2-	1.0-
1990 04 29	413	0.1+	0.1-	1996 07 15	566	0.6-	0.4-	1999 01 16	704	0.1-	0.9-
1991 08 03	809	0.7-	0.5-	1996 07 15	566	0.9+	0.2-	1999 01 16	704	0.9-	0.1-
1991 08 03	809	0.2+	0.0	1996 07 15	566	0.3-	0.7-	1999 01 16	704	0.5+	1.6-
1991 08 03	809	0.6+	0.1+	1998 12 14	704	0.3+	0.4+	1999 01 16	704	1.1+	0.3-
1996 07 15	566	1.1+	0.1-	1998 12 14	704	0.5+	0.2+	1999 01 16	704	(1.6-	2.4-)
1996 07 15	566	0.2-	0.5-	1998 12 14	704	0.3+	0.3+	1999 01 19	704	0.2+	0.2-
1996 07 15	566	0.3+	0.2-	1998 12 14	704	0.1+	0.5+	1999 01 19	704	0.3-	1.2+
1996 07 15	566	0.4-	0.1+	1998 12 14	704	0.3-	1.3+	1999 01 19	704	1.1-	0.2+
1996 07 15	566	0.8+	0.3-	1998 12 17	704	0.6+	0.6-	1999 01 19	704	0.4-	0.1+
1996 07 15	566	0.2-	0.4-	1998 12 17	704	0.3+	0.9-	1999 01 19	704	(2.6-	1.8+)
1996 07 15	566	0.2-	0.3+	1998 12 17	704	0.5-	1.5-				
1996 07 15	566	0.1-	0.1-	1998 12 17	704	1.1-	1.0-				

1998 XN₇₄ = 1989 AD₈

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	1.11091		(2000.0)	P	Q		
<i>n</i>	0.18863330	ω	228.76513	-0.91398577	-0.39914654		
<i>a</i>	3.0110905	Ω	287.59505	+0.39137995	-0.81990813		
<i>e</i>	0.1162868	<i>i</i>	4.38517	+0.10701284	-0.41040553		
<i>P</i>	5.22	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1989 01 11	033	0.0	0.3+	1998 12 14	704	0.4+	0.3-	1999 01 16	704	0.1+	1.5+
1989 01 11	033	0.1-	0.4-	1998 12 17	704	0.0	1.2-	1999 01 19	704	0.7+	1.0-
1997 10 03	691	0.1-	0.0	1998 12 17	704	0.1+	0.2+	1999 01 19	704	0.5+	1.0-
1997 10 03	691	0.0	0.1+	1998 12 17	704	0.3-	0.3+	1999 01 19	704	0.8+	0.1-
1997 10 03	691	0.1+	0.2-	1998 12 17	704	0.9+	0.7-	1999 01 19	704	0.2-	0.5-
1998 12 14	704	0.4-	1.0+	1999 01 16	704	0.0	0.8+	1999 01 19	704	1.0-	1.1-

1998 12 14 704 1.0− 0.2+ 1999 01 16 704 0.2− 1.0+
 1998 12 14 704 0.1− 0.1+ 1999 01 16 704 0.2− 0.9+

1998 XV₇₇ = 1987 YA₆

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 100.27722		(2000.0)		P		Q	
<i>n</i>	0.26106099	ω	286.29183	+0.92408184	−0.30664358		
<i>a</i>	2.4246072	Ω	92.01137	+0.37446916	+0.84583110		
<i>e</i>	0.2076070	<i>i</i>	13.19517	−0.07645650	+0.43650827		
<i>P</i>	3.78	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1987 12 24 010 1.1− 0.8− 1998 12 15 704 1.3− 1.2+ 1999 01 07 704 0.1+ 0.5−
 1987 12 24 010 0.7+ 1.2− 1998 12 15 704 0.8− 0.9+ 1999 01 07 704 1.1+ 1.0+
 1987 12 24 010 0.3+ 0.8+ 1998 12 15 704 0.6− 0.7+ 1999 01 07 704 0.6− 0.5+
 1989 03 30 675 2.5− 1.7+ 1998 12 22 704 0.3− 0.2− 1999 01 07 704 0.3+ 0.1+
 1989 03 30 675 1.4+ 1.0− 1998 12 22 704 0.0 0.2− 1999 01 11 704 0.3− 0.2+
 1989 04 09 675 0.6− 0.7+ 1998 12 22 704 0.7+ 0.3− 1999 01 11 704 0.4− 0.2−
 1989 04 09 675 1.9+ 0.9− 1998 12 22 704 0.8+ 0.7− 1999 01 11 704 0.5− 0.9−
 1990 10 10 413 0.2+ 0.1+ 1998 12 22 704 0.6+ 0.6− 1999 01 11 704 (3.2− 1.3−)
 1990 10 10 413 0.2− 0.5− 1998 12 25 910 1.7+ 0.5− 1999 01 11 704 1.6− 1.2+
 1998 12 15 704 1.4− 0.2− 1998 12 26 910 1.8+ 0.5−
 1998 12 15 704 1.6− 0.7+ 1998 12 26 910 1.8+ 0.5−

1998 XE₉₇ = 1999 FV₅ = 1992 ED₃₃

Id. A. Doppler (d), S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 96.90743		(2000.0)		P		Q	
<i>n</i>	0.27208957	ω	120.07372	+0.29159975	−0.95595728		
<i>a</i>	2.3586389	Ω	312.93302	+0.86115987	+0.27756060		
<i>e</i>	0.1098950	<i>i</i>	2.61433	+0.41638116	+0.09542424		
<i>P</i>	3.62	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1992 03 01 809 0.1− 0.6+ 1998 12 12 303 0.7− 0.3+ 1999 03 16 910 0.3− 0.0
 1992 03 03 809 (5.2+ 1.9−) 1998 12 13 303 0.7+ 0.4+ 1999 03 19 910 0.3− 0.1−
 1992 03 05 809 0.1+ 0.0 1998 12 13 303 0.5+ 0.3− 1999 03 19 910 0.4− 0.2+
 1992 03 09 809 0.4+ 0.5+ 1998 12 14 303 0.6+ 0.0 1999 03 19 910 0.7− 0.0
 1997 07 16 910 0.2+ 0.1+ 1999 02 10 691 0.2+ 1.6+ 1999 03 21 691 0.1+ 0.3−
 1997 07 16 910 0.2− 0.4− 1999 02 10 691 0.2− 0.8− 1999 03 21 691 0.7+ 1.0−
 1997 07 16 910 0.1+ 0.0 1999 02 10 691 0.4− 0.7− 1999 03 21 691 0.8+ 0.7−
 1998 12 11 303 0.3− 0.0 1999 03 16 910 0.5− 0.3−
 1998 12 12 303 0.0 0.2+ 1999 03 16 910 0.2− 0.1−

1998 YE₅ = 1983 HD

Id. A. Doppler, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 289.07127		(2000.0)		P		Q	
<i>n</i>	0.17526715	ω	154.18921	−0.18177293	+0.98224422		
<i>a</i>	3.1622949	Ω	105.30939	−0.91032795	−0.15023805		
<i>e</i>	0.1929791	<i>i</i>	2.75864	−0.37183549	−0.11236021		
<i>P</i>	5.62	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1983 04 18 688 1.1− 0.7+ 1998 12 22 910 0.4+ 0.2+ 1999 02 10 704 1.1− 1.6+
 1983 04 18 688 1.1+ 0.7− 1998 12 22 910 0.7+ 0.1− 1999 02 12 699 1.1− 0.6+
 1997 01 06 327 0.2+ 0.3+ 1999 01 14 699 0.3+ 0.3+ 1999 02 12 699 0.5+ 0.6−
 1997 01 06 327 0.6− 0.4− 1999 01 14 699 0.4− 1.0+ 1999 02 12 699 0.3+ 0.2−
 1997 01 06 327 0.5+ 0.0 1999 01 14 699 0.6− 0.5+ 1999 02 13 704 0.0 0.1−
 1998 12 18 910 0.1+ 0.4− 1999 01 19 704 1.4+ 0.7+ 1999 02 13 704 0.1+ 0.5−
 1998 12 18 910 0.3+ 0.0 1999 01 19 704 0.5+ 0.3− 1999 02 13 704 0.9+ 1.1−
 1998 12 18 910 0.1− 0.2− 1999 01 19 704 0.1− 0.6− 1999 02 13 704 0.9− 0.0
 1998 12 21 910 0.8+ 0.0 1999 01 19 704 0.7− 0.7− 1999 02 13 704 1.4− 0.4−

1998 12 22 910 0.6+ 0.2− 1999 02 10 704 0.0 0.2+ 1999 02 24 699 0.1+ 0.0
 1998 12 22 910 0.6+ 0.0 1999 02 10 704 0.4− 0.0 1999 02 24 699 0.6− 0.1+
 1998 12 22 910 0.7+ 0.0 1999 02 10 704 0.7− 0.4− 1999 02 24 699 0.2+ 0.4+

1998 YP₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 49.88625		(2000.0)		P		Q	
<i>n</i>	0.43677899	ω	74.24507	−0.75493339	+0.63874873		
<i>a</i>	1.7203952	Ω	145.05819	−0.65568890	−0.73097887		
<i>e</i>	0.3890163	<i>i</i>	15.03538	−0.01215101	−0.24014567		
<i>P</i>	2.26	<i>H</i>	16.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1990 07 22 675 0.8− 1.0− 1999 02 12 428 0.6− 0.1− 1999 03 25 557 0.4− 0.0
 1990 07 22 675 0.9+ 1.5− 1999 02 12 428 0.7− 0.1− 1999 03 25 557 0.5− 0.1−
 1990 07 23 675 (2.2− 2.3−) 1999 02 12 428 0.9− 0.3− 1999 03 25 557 0.3− 0.1−
 1990 07 23 675 0.5− 1.5− 1999 02 16 118 0.3+ 0.1+ 1999 03 25 118 0.4− 0.2−
 1998 12 23 704 1.6− 1.1− 1999 02 16 118 0.3+ 0.2+ 1999 03 25 118 0.5− 0.2−
 1998 12 23 704 1.4− 0.1− 1999 02 16 118 0.3+ 0.1+ 1999 03 25 557 0.5− 0.2−
 1998 12 23 704 1.1− 0.9+ 1999 02 17 071 1.8+ 1.5+ 1999 03 26 860 0.3− 0.0
 1998 12 23 704 1.4+ 0.3− 1999 02 17 071 1.6+ 1.1+ 1999 03 26 860 0.4− 0.2−
 1998 12 23 704 0.7− 0.3− 1999 02 17 071 1.4+ 1.1+ 1999 03 26 860 0.5+ 0.0
 1998 12 24 046 0.0 0.4− 1999 02 20 704 0.1− 1.3− 1999 03 27 557 0.5− 0.3−
 1998 12 24 557 0.7− 0.6− 1999 02 20 704 0.1− 0.5− 1999 03 27 557 0.5− 0.4−
 1998 12 24 046 0.0 0.3− 1999 02 20 704 0.0 0.5− 1999 03 27 557 0.5− 0.4−
 1998 12 24 046 0.3− 0.1+ 1999 02 20 704 1.1+ 0.6− 1999 04 02 118 0.2− 0.1+
 1998 12 24 557 0.3+ 0.7− 1999 02 20 704 0.6+ 0.4− 1999 04 02 118 0.1− 0.0
 1998 12 24 046 0.0 0.4− 1999 02 21 711 0.4− 0.3+ 1999 04 02 118 0.2− 0.1+
 1998 12 24 046 0.2+ 0.1+ 1999 02 21 711 0.3− 0.2+ 1999 04 06 118 0.8− 0.3+
 1998 12 24 557 0.2+ 0.3− 1999 02 23 118 0.3+ 0.6+ 1999 04 06 118 0.6− 0.1+
 1998 12 24 046 0.1− 0.1− 1999 02 23 118 0.2+ 0.7+ 1999 04 08 355 0.2− 0.7−
 1998 12 25 422 0.8− 0.2− 1999 02 24 704 0.1− 0.9+ 1999 04 08 355 0.0 0.8−
 1998 12 25 422 0.7− 0.5− 1999 02 24 704 0.4− 0.7+ 1999 04 08 355 0.3− 0.7−
 1998 12 25 422 0.8− 0.2+ 1999 02 24 704 0.1− 1.1+ 1999 04 09 151 0.5+ 0.3+
 1998 12 25 422 0.5− 0.2− 1999 02 24 704 0.7− 1.5+ 1999 04 09 151 0.4− 0.6−
 1998 12 27 402 0.2+ 0.5− 1999 02 24 704 0.4+ 0.2+ 1999 04 09 151 0.5+ 0.9−
 1998 12 27 402 0.3+ 0.6− 1999 02 25 118 0.4− 0.4+ 1999 04 09 151 0.5− 0.6+
 1998 12 27 402 0.0 0.5− 1999 02 25 118 0.5− 0.5+ 1999 04 09 151 0.2− 0.2−
 1998 12 27 402 0.1+ 0.7− 1999 02 27 046 0.2− 0.3+ 1999 04 10 118 0.4− 0.1−
 1998 12 28 402 0.4− 0.3− 1999 02 27 046 0.0 0.3+ 1999 04 10 118 0.6− 0.2−
 1998 12 28 402 0.6− 0.1− 1999 02 27 046 0.2− 0.4+ 1999 04 26 360 0.1− 0.5−
 1998 12 28 402 0.7− 0.6− 1999 02 27 046 0.0 0.5+ 1999 04 26 360 0.2− 0.6−
 1998 12 28 402 0.3− 0.5− 1999 02 27 118 0.1+ 0.2+ 1999 04 26 360 0.1+ 0.6−
 1998 12 29 557 0.1+ 0.3− 1999 02 27 118 0.2− 0.1+ 1999 04 29 118 0.4+ 0.3+
 1998 12 29 557 0.3− 0.0 1999 02 28 151 0.0 0.2+ 1999 04 29 118 0.1+ 0.5−
 1998 12 29 557 0.2− 0.7− 1999 02 28 151 0.2− 0.1+ 1999 04 29 118 0.0 0.2+
 1999 01 12 422 0.0 0.8− 1999 02 28 151 1.3− 0.4− 1999 05 01 151 1.2− 0.4−
 1999 01 12 422 0.0 1.6− 1999 02 28 151 0.5− 0.0 1999 05 01 151 0.3+ 0.1+
 1999 01 12 422 0.1+ 1.2− 1999 02 28 151 0.4− 0.5− 1999 05 01 151 1.0+ 0.6−
 1999 01 16 426 0.4+ 0.4+ 1999 03 13 046 0.1+ 0.1− 1999 05 01 151 0.3− 0.2−
 1999 01 16 426 0.4+ 0.5+ 1999 03 13 046 0.1− 0.2− 1999 05 01 151 0.6+ 0.5−
 1999 01 16 426 0.5+ 0.4+ 1999 03 13 046 0.2− 0.2+ 1999 05 13 360 0.1+ 0.1+
 1999 01 17 402 0.1− 0.7− 1999 03 13 046 0.0 0.1− 1999 05 13 360 0.1+ 0.0
 1999 01 17 402 0.3+ 0.5− 1999 03 13 118 0.9− 0.1− 1999 05 13 360 0.1− 0.1+
 1999 01 17 402 0.1− 0.7− 1999 03 13 118 0.7− 0.2− 1999 05 25 704 0.8+ 0.0
 1999 01 19 104 0.2+ 1.1− 1999 03 14 860 0.6+ 0.6+ 1999 05 25 704 1.4+ 0.5+
 1999 01 19 104 0.4+ 1.2− 1999 03 14 860 0.5+ 0.5+ 1999 05 25 704 0.3+ 0.1−
 1999 01 19 104 0.0 1.1− 1999 03 14 860 1.5+ 0.7+ 1999 05 25 704 0.2+ 0.3+
 1999 01 19 428 0.9+ 0.3− 1999 03 14 719 0.0 0.0 1999 05 25 704 0.5− 1.5+
 1999 01 19 428 0.6+ 0.3− 1999 03 14 719 0.2− 0.5+ 1999 05 26 711 0.2+ 0.2+
 1999 01 21 360 0.4+ 0.7+ 1999 03 16 360 0.5− 0.0 1999 05 26 711 0.4+ 0.3+
 1999 01 21 360 0.3+ 0.7+ 1999 03 16 360 0.6− 0.0 1999 05 29 628 0.5− 0.3+
 1999 01 21 360 0.2+ 0.7+ 1999 03 16 360 0.6− 0.1+ 1999 05 29 628 0.1− 0.5+
 1999 01 25 711 0.9+ 1.1− 1999 03 17 402 0.5− 0.3+ 1999 05 31 402 0.2+ 0.6−
 1999 01 25 711 0.7+ 1.1− 1999 03 17 402 0.4− 0.1+ 1999 05 31 402 0.3+ 0.6−
 1999 01 26 428 0.4+ 1.4− 1999 03 17 402 0.4− 0.1+ 1999 05 31 402 0.4+ 0.7−
 1999 01 26 428 0.3+ 1.3− 1999 03 18 860 0.9+ 0.5+ 1999 06 18 610 0.1+ 0.8−

1999 02 08	402	0.2+	0.4−	1999 03 18	860	1.2+	0.2−	1999 06 18	610	0.1+	0.5−
1999 02 08	402	0.4+	0.5−	1999 03 18	860	0.4+	0.6−	1999 06 18	610	0.0	0.2−
1999 02 08	402	0.4+	0.3−	1999 03 18	151	(0.2−	2.2+)	1999 06 18	610	0.0	0.2+
1999 02 09	118	0.4−	0.3−	1999 03 18	151	0.8−	0.6+	1999 06 18	610	0.0	0.5+
1999 02 09	118	0.3−	0.3−	1999 03 18	151	1.7−	0.2+	1999 06 19	628	0.2+	0.2−
1999 02 10	426	0.1−	0.5+	1999 03 20	958	0.3+	0.4+	1999 06 19	628	0.5+	0.2−
1999 02 10	426	0.1+	0.6+	1999 03 20	958	0.6+	1.2−	1999 06 19	628	0.1+	0.2+
1999 02 10	426	0.3+	0.5+	1999 03 20	958	0.1+	0.3+				

1998 YZ₂₉ = 1997 UK₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	33.48482	(2000.0)	P		Q	
<i>n</i>	0.19071771	ω	74.34220	−0.75026454	−0.63633319	
<i>a</i>	2.9891109	Ω	65.78075	+0.50581226	−0.72719887	
<i>e</i>	0.0539317	<i>i</i>	11.34468	+0.42574298	−0.25741383	
<i>P</i>	5.17	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1997 10 29	704	0.1−	0.0	1997 11 29	704	0.4+	0.0	1999 02 13	704	0.4−	0.3+
1997 10 29	704	0.2−	0.1−	1998 11 25	704	(2.2−	0.2+)	1999 02 13	704	0.1−	0.2+
1997 10 29	704	0.7−	0.3−	1998 11 25	704	0.2+	0.7−	1999 02 13	704	0.1−	0.0
1997 10 29	704	0.6−	1.3+	1998 11 25	704	1.4−	1.3−	1999 02 13	704	0.2−	0.0
1997 10 30	704	0.9+	1.4−	1998 11 25	704	(1.3+	3.1−)	1999 02 13	704	0.0	0.2+
1997 10 30	704	(0.5+	2.0−)	1998 12 21	704	(0.2+	2.2−)	1999 02 22	699	0.5+	0.4+
1997 10 30	704	0.4+	1.6−	1998 12 21	704	0.7+	0.0	1999 02 22	699	0.0	0.5+
1997 10 30	704	0.5+	1.6−	1998 12 21	704	2.0−	0.4−	1999 02 22	699	0.2+	0.5+
1997 10 31	704	(0.0	2.6+)	1998 12 21	704	(1.7−	2.2+)	1999 05 08	704	0.8+	0.6−
1997 10 31	704	(0.2−	2.2+)	1998 12 27	699	0.1+	0.2+	1999 05 08	704	0.8−	1.0−
1997 10 31	704	0.2−	1.4+	1998 12 27	699	0.0	0.7−	1999 05 08	704	1.1+	0.9−
1997 10 31	704	0.3+	0.3+	1998 12 27	699	0.2−	0.4−	1999 05 08	704	(2.9−	0.9−)
1997 10 31	704	0.4−	0.8+	1999 01 09	699	0.1+	0.1−	1999 06 07	704	1.0−	0.2+
1997 11 06	704	(2.8−	0.8−)	1999 01 09	699	0.2+	0.2−	1999 06 07	704	0.3+	0.3−
1997 11 06	704	(2.9−	0.7−)	1999 01 09	699	0.6+	0.6−	1999 06 07	704	0.7−	0.8+
1997 11 06	704	(2.9−	0.7−)	1999 02 10	704	0.3+	0.4+	1999 06 07	704	0.0	1.6+
1997 11 29	704	0.5−	1.1+	1999 02 10	704	0.5+	0.4+	1999 06 07	704	(1.5+	2.5+)
1997 11 29	704	0.1+	0.2+	1999 02 10	704	0.1+	0.5+				
1997 11 29	704	0.4−	0.7+	1999 02 10	704	0.3+	0.5+				

1998 YF₃₀ = 1992 SA = 1993 TO₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	4.11554	(2000.0)	P		Q	
<i>n</i>	0.23606354	ω	137.01194	−0.96761687	−0.21570478	
<i>a</i>	2.5928861	Ω	31.25295	+0.10070755	−0.80615390	
<i>e</i>	0.1017710	<i>i</i>	14.63756	+0.23146402	−0.55098761	
<i>P</i>	4.18	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1992 09 17	413	0.3+	0.6−	1998 10 17	699	0.3−	0.1−	1999 06 07	704	0.9−	0.7−
1992 09 18	413	0.3−	0.4−	1998 12 24	699	0.4+	0.1+	1999 06 07	704	(2.8−	1.6−)
1993 10 09	809	1.3+	1.6+	1998 12 24	699	0.0	0.3+	1999 06 08	704	0.9−	0.2−
1993 10 09	809	1.5+	1.9+	1998 12 24	699	0.5+	0.1+	1999 06 08	704	0.8−	1.1+
1993 10 09	809	(0.6+	2.4+)	1998 12 30	699	0.2+	0.2−	1999 06 08	704	0.3−	0.8−
1993 10 11	809	0.7−	1.4−	1998 12 30	699	0.4−	0.5−	1999 06 08	704	0.3+	0.4−
1993 10 11	809	1.0−	0.5−	1998 12 30	699	0.1−	0.3−	1999 06 10	704	0.4−	0.2+
1993 10 11	809	0.9−	0.6−	1999 06 04	704	0.0	0.6−	1999 06 10	704	1.4−	0.1−
1993 10 20	809	0.1+	0.6−	1999 06 04	704	0.9+	0.2−	1999 06 10	704	0.8−	0.1−
1993 10 20	809	0.7+	0.2−	1999 06 04	704	0.5+	0.4−	1999 06 10	704	(2.2−	1.2−)
1993 10 20	809	0.7−	0.6−	1999 06 04	704	0.8+	0.1+	1999 06 10	704	(3.9−	2.5−)
1998 10 17	699	0.4−	0.2−	1999 06 04	704	1.7+	1.2+				
1998 10 17	699	0.1−	1.1+	1999 06 07	704	0.6+	0.0				

1999 AL₂ = 1986 PH₁ = 1987 YU₂

Id. A. Gnädig, S. Nakano, G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	101.49777	(2000.0)	P		Q	
<i>n</i>	0.18801939	ω	75.48347	+0.66781410	−0.74076995	
<i>a</i>	3.0176414	Ω	332.19189	+0.60873309	+0.59974756	
<i>e</i>	0.0971860	<i>i</i>	8.96444	+0.42833206	+0.30259336	
<i>P</i>	5.24	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc (or two decimals in units of degrees)

1955 11 11	675	0.9+	0.4+	1998 12 21	704	0.8−	1.3+	1999 01 22	411	0.8+	0.7+
1955 11 11	675	0.2−	1.9−	1998 12 21	704	1.3−	1.0−	1999 02 04	411	0.6−	0.5−
1986 08 01	675(34.5−	0.2+)		1998 12 21	704	1.5−	1.9−	1999 02 04	411	0.2+	0.3−
1986 08 01	675(27.2−	1.1+)		1998 12 21	704	(4.0−	0.6−)	1999 02 07	716	0.6+	1.8+
1986 08 02	675(35.2−	0.8+)		1999 01 09	411	0.6+	0.1−	1999 02 07	716	0.0	1.0+
1986 08 02	675(32.3−	1.1+)		1999 01 09	411	1.2+	0.4+	1999 02 08	716	0.9+	0.6+
1986 08 04	675(0.03−	0.00−)		1999 01 10	411	0.0	0.1−	1999 02 08	716	0.4+	0.1+
1986 08 04	675(0.03−	0.00−)		1999 01 10	411	1.1+	0.0	1999 02 10	704	0.5+	0.6−
1986 10 02	413	0.9+	1.1−	1999 01 14	411	0.7+	0.3+	1999 02 10	704	0.1+	0.4−
1986 10 02	413	0.8−	0.6+	1999 01 14	411	0.8+	0.6−	1999 02 10	704	0.4−	0.6−
1987 12 20	010	0.3−	0.2+	1999 01 16	399	(1.8−	2.4−)	1999 02 10	704	0.5−	0.4−
1987 12 20	010	1.2+	0.3+	1999 01 16	399	1.9−	0.2+	1999 02 10	704	0.4−	2.0−
1987 12 20	010	0.0	0.3−	1999 01 17	399	0.2+	0.0	1999 02 13	704	0.4−	0.8−
1998 11 14	699	0.3+	1.3+	1999 01 17	399	0.4−	0.7+	1999 02 13	704	0.5−	0.5−
1998 11 14	699	0.9+	1.2+	1999 01 19	704	0.4+	0.3+	1999 02 13	704	0.7−	0.4−
1998 11 14	699	1.3−	1.9+	1999 01 19	704	0.5−	0.4+	1999 02 13	704	0.8−	1.1−
1998 12 18	699	0.2−	0.5+	1999 01 19	704	1.5−	1.9+	1999 02 13	704	1.1−	1.2−
1998 12 18	699	0.0	0.8+	1999 01 19	704	1.1−	0.9+	1999 02 18	566	1.3+	2.0−
1998 12 18	699	1.4+	0.8+	1999 01 19	704	1.3−	0.0	1999 02 18	566	1.2+	1.9−
1998 12 21	704	1.5+	0.4+	1999 01 22	411	0.6+	0.7+	1999 02 18	566	1.3+	1.9−

1999 AV₅ = 1977 EU₈

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	164.47990	(2000.0)	P		Q	
<i>n</i>	0.21883810	ω	12.86922	+0.99877033	−0.02610942	
<i>a</i>	2.7272237	Ω	348.37785	−0.00299473	+0.81675632	
<i>e</i>	0.1344310	<i>i</i>	12.07529	+0.04948593	+0.57639172	
<i>P</i>	4.50	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1977 03 14	381	1.2−	0.5−	1999 01 20	411	0.3+	0.1−	1999 02 11	704	0.3−	0.1−
1977 03 14	381	0.2+	0.9−	1999 01 28	411	0.2−	0.3−	1999 02 11	704	0.2+	1.0−
1991 04 11	413	0.5−	0.2+	1999 01 28	411	1.8−	0.4+	1999 02 11	704	1.8+	0.3+
1991 04 11	413	1.0+	0.7+	1999 02 07	411	0.1+	0.6−	1999 02 11	704	0.9−	0.8−
1998 12 27	699	0.1−	0.1−	1999 02 07	411	0.6−	0.3−	1999 02 11	704	0.1−	1.2+
1998 12 27	699	0.8+	0.4+	1999 02 11	704	0.8+	0.1−	1999 02 11	704	0.2+	0.8+
1998 12 27	699	0.1+	0.8+	1999 02 11	704	0.4−	0.1+	1999 02 11	704	0.5+	0.5−
1999 01 12	411	0.7−	0.2−	1999 02 11	704	0.3+	0.1−	1999 02 11	704	0.2−	0.6+
1999 01 12	411	1.3−	0.1+	1999 02 11	704	0.3+	0.4+	1999 02 20	699	0.0	0.0
1999 01 13	411	0.4−	0.6−	1999 02 11	704	0.3−	0.6+	1999 02 20	699	0.8+	0.6+
1999 01 13	411	0.4+	0.1−	1999 02 11	704	0.3−	0.8+	1999 02 20	699	1.1+	0.1−
1999 01 20	411	0.7+	0.9−	1999 02 11	704	0.3−	0.0				

1999 AY₅ = 1982 BW₆

Id. A. Gnädig, S. Nakano, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	109.83558	(2000.0)	P		Q	
<i>n</i>	0.29029908	ω	349.02445	+0.37121974	−0.92076178	
<i>a</i>	2.2589447	Ω	79.09824	+0.86090898	+0.29288545	
<i>e</i>	0.1274949	<i>i</i>	7.01785	+0.34789601	+0.25771274	
<i>P</i>	3.40	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i> 3

Residual

1999 JUNE 22

1982 01 26	381	0.2−	0.0	1999 01 28	411	0.4+	0.2−	1999 02 13	704	1.0−	0.0
1996 03 25	413	1.3−	0.5+	1999 01 28	411	0.0	0.6+	1999 02 13	704	0.4+	0.1+
1996 03 25	413	2.0+	0.7+	1999 02 07	411	0.9+	0.2−	1999 02 13	704	0.3−	1.3+
1999 01 12	411	0.7+	0.3+	1999 02 07	411	0.2+	0.9−	1999 02 13	704	1.5−	0.9+
1999 01 12	411	0.9+	0.3−	1999 02 10	704	0.8+	0.3+	1999 02 13	704	1.9−	0.4+
1999 01 13	411	0.8+	0.1+	1999 02 10	704	0.2−	0.0				

1999 AX₇ = 1977 DV₁₀

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i> 287.98440 (2000.0)				P		Q	
<i>n</i>	0.17518926	ω	240.06243	−0.49914142		+0.86652054	
<i>a</i>	3.1632321	Ω	359.99428	−0.73054120		−0.42082310	
<i>e</i>	0.0509593	<i>i</i>	9.09399	−0.46601223		−0.26842146	
<i>P</i>	5.63	<i>H</i>	12.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 02 19	381	0.4−	0.5−	1999 01 13	411	0.4−	0.8+	1999 02 10	704	0.6+	0.5−
1977 02 19	381	1.0+	0.1+	1999 01 13	411	0.9−	0.5+	1999 02 10	704	0.2+	0.1−
1983 03 12	413	0.6+	0.1−	1999 01 14	411	0.1−	0.1−	1999 02 10	704	0.1−	0.8−
1983 03 12	413	1.7−	0.3−	1999 01 14	411	0.4+	0.3+	1999 02 10	704	0.2+	0.5−
1994 03 14	691	0.8−	0.8−	1999 01 18	411	0.3−	0.1+	1999 02 10	704	0.1+	0.9−
1994 03 14	691	0.8−	0.7−	1999 01 18	411	1.1−	0.1−	1999 02 13	704	0.1+	0.5−
1994 03 14	691	1.0−	0.9−	1999 01 19	704	0.5+	0.5+	1999 02 13	704	0.1+	0.7+
1996 09 20	691	0.4+	0.7+	1999 01 19	704	0.2+	0.6+	1999 02 13	704	0.1−	0.0
1996 09 20	691	0.0	1.5−	1999 01 19	704	0.3+	0.8+	1999 02 13	704	0.2+	0.4−
1996 09 20	691	0.7+	0.8+	1999 01 19	704	1.3+	0.4+	1999 02 13	704	1.0−	0.3−
1997 12 06	704	0.7−	1.1−	1999 01 19	704	0.9+	0.9+	1999 05 08	704	0.7−	0.8+
1997 12 06	704	0.4+	1.8−	1999 01 26	411	0.3+	0.6−	1999 05 08	704	0.2−	0.2−
1997 12 06	704	0.5−	0.5+	1999 01 26	411	0.2+	0.4−	1999 05 08	704	1.1+	1.2+
1997 12 06	704	0.7+	0.4+	1999 02 07	411	0.0	0.2−	1999 05 08	704	0.8+	1.8+
1997 12 06	704	0.4−	1.1−	1999 02 07	411	0.6+	0.1−				

1999 AC₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i> 88.54423 (2000.0)				P		Q	
<i>n</i>	0.23263146	ω	39.08729	−0.16093314		−0.98376869	
<i>a</i>	2.6183262	Ω	60.30680	−0.88106402		−0.17944056	
<i>e</i>	0.0546647	<i>i</i>	5.24232	+0.44477715		−0.00049995	
<i>P</i>	4.24	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1987 06 02	413	1.7−	0.5+	1997 12 24	327	0.7−	0.2+	1999 02 10	704	0.5−	0.5−
1987 06 02	413	1.8+	0.8+	1997 12 24	327	0.4−	0.1−	1999 02 10	704	0.2+	0.5+
1995 03 24	691	(0.1+	2.4−)	1997 12 24	327	0.3−	0.4+	1999 02 10	704	0.5+	0.3+
1995 03 24	691	0.3−	1.6−	1999 01 10	327	0.7+	0.3−	1999 02 10	704	0.5−	0.8+
1995 03 24	691	0.2−	0.9−	1999 01 10	327	0.0	0.3−	1999 02 13	704	0.5+	0.2−
1997 11 03	704	1.0+	0.4+	1999 01 10	327	0.4+	0.3−	1999 02 13	704	1.1+	0.3+
1997 11 03	704	0.9−	0.6−	1999 01 15	327	0.2+	0.0	1999 02 13	704	0.6−	1.0+
1997 11 03	704	1.2+	1.8+	1999 01 15	327	0.2+	0.3+	1999 02 13	704	0.6+	0.1+
1997 11 03	704	0.6+	0.9−	1999 01 15	327	0.3−	0.1−	1999 02 14	327	0.2+	0.1+
1997 11 03	704	0.0	1.3−	1999 02 09	327	0.1−	0.8+	1999 02 14	327	0.1−	0.3−
1997 12 06	910	0.3−	0.1+	1999 02 09	327	0.7−	0.5−	1999 02 14	327	0.1−	0.1−
1997 12 06	910	0.4−	0.1−	1999 02 09	327	0.1−	0.9−				
1997 12 06	910	0.2−	0.0	1999 02 10	704	1.1−	0.8+				

1999 AY₂₂ = 1981 AD₂

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i> 70.64959 (2000.0)				P		Q	
<i>n</i>	0.27821200	ω	203.32157	−0.71408467		−0.69832246	
<i>a</i>	2.3239074	Ω	292.28924	+0.65038814		−0.63572754	
<i>e</i>	0.1141004	<i>i</i>	3.05319	+0.25899491		−0.32893196	
<i>P</i>	3.54	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	1

M.P.C. 34937

Residuals in seconds of arc

1955 10 24	675	0.3+	0.6−	1998 12 23	704	1.2−	0.6−	1999 03 14	426	0.1+	0.3+
1979 09 21	413	0.8−	0.5−	1998 12 23	704	0.3+	1.4+	1999 03 14	426	0.0	0.3+
1979 09 21	413	0.5+	0.0	1998 12 23	704	0.2+	1.3+	1999 03 20	704	0.2+	0.0
1981 01 08	381	1.0+	0.8+	1998 12 23	704	(2.1−	1.2+)	1999 03 20	704	1.1−	0.7−
1981 01 08	381	0.9−	0.8−	1999 01 13	699	0.2−	0.2+	1999 03 20	704	0.1+	1.2−
1985 03 03	413	0.6−	0.6+	1999 01 13	699	0.6−	0.4−	1999 03 20	704	0.3+	1.0−
1985 03 03	413	0.3+	0.1+	1999 01 13	699	1.0−	0.2−	1999 03 20	704	0.8+	0.6−
1986 10 02	413	0.3+	0.6+	1999 01 15	426	0.1+	1.0−	1999 03 23	704	0.3−	0.1−
1990 08 28	675	0.1−	0.2+	1999 01 15	426	0.1+	0.4+	1999 03 23	704	0.0	0.4−
1990 08 28	675	0.5+	0.6−	1999 01 16	426	0.1−	0.2−	1999 03 23	704	0.1+	0.2−
1990 10 12	675	1.1−	0.6−	1999 01 16	426	0.0	0.7+	1999 03 23	699	0.8+	0.3−
1990 10 12	675	0.1−	0.1−	1999 01 16	426	0.5+	0.0	1999 03 23	704	0.3−	0.2−
1990 10 14	675	0.6−	0.3+	1999 01 22	426	0.1−	0.2+	1999 03 23	704	0.6+	0.4−
1990 10 14	675	1.7+	0.0	1999 01 22	426	0.2+	0.3−	1999 03 23	699	0.5+	0.4+
1997 10 28	704	(1.6+	2.1−)	1999 01 22	426	0.3−	0.3+	1999 03 23	699	1.0+	0.3−
1997 10 28	704	(0.6−	3.4−)	1999 02 09	426	0.4−	0.3+	1999 04 06	704	0.3−	0.1+
1997 10 28	704	(0.4−	2.9−)	1999 02 09	426	0.3−	0.4+	1999 04 06	704	0.2−	0.8−
1997 10 28	704	(1.2−	3.9−)	1999 02 09	426	0.2−	0.2+	1999 04 06	704	0.0	0.1+
1997 10 30	704	0.1+	0.3+	1999 02 10	426	0.4+	0.2+	1999 04 06	704	0.7−	0.4+
1997 10 30	704	0.0	0.8+	1999 02 10	426	0.3+	0.2+	1999 04 06	704	0.8−	1.3+
1997 10 30	704	0.6−	1.0+	1999 02 10	426	0.3+	0.2+	1999 05 15	704	(2.3−	1.7−)
1997 10 30	704	0.6−	0.1+	1999 03 13	426	0.1−	0.3+	1999 05 15	704	0.7+	0.1+
1997 10 30	704	0.4+	0.4−	1999 03 13	426	0.3−	0.2+	1999 05 15	704	0.6+	1.4+
1998 12 23	704	(0.1+	6.0−)	1999 03 13	426	0.3−	0.3+	1999 05 15	704	0.6+	1.0−

1999 BC₂ = 1989 PK₁

Id. A. Gnädig, S. Nakano, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i> 259.80991 (2000.0)				P		Q	
<i>n</i>	0.35977952	ω	325.08942	+0.54008562		+0.83329934	
<i>a</i>	1.9578455	Ω	336.89542	−0.68740777		+0.35589265	
<i>e</i>	0.0598295	<i>i</i>	17.49721	−0.48556985		+0.42302794	
<i>P</i>	2.74	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1975 06 14	413	1.4−	0.6+	1999 01 22	385	1.0+	0.2+	1999 02 13	704	0.1−	1.1+
1975 06 14	413	1.4+	0.2−	1999 01 22	385	0.0	0.3+	1999 02 13	704	0.2−	1.1+
1989 08 09	413	0.3−	0.0	1999 01 22	385	0.3+	0.2−	1999 02 13	704	0.8−	0.3+
1989 08 09	413	0.7+	0.4−	1999 01 27	385	0.4+	0.1−	1999 02 13	704	0.3−	0.5−
1998 12 27	699	0.5−	1.0−	1999 01 27	385	0.2−	0.4+	1999 02 23	888	0.4−	0.2+
1998 12 27	699	0.4−	0.7+	1999 02 04	888	0.4−	0.3−	1999 02 23	888	0.7−	0.3+
1998 12 27	699	0.4+	1.0+	1999 02 04	888	0.3−	0.4−	1999 02 23	888	0.2−	0.4+
1999 01 15	905	0.1+	1.0+	1999 02 10	704	0.8+	0.4+	1999 04 06	704	(1.0+	2.0+)
1999 01 15	905	0.7+	1.5−	1999 02 10	704	0.7+	0.2−	1999 04 06	704	1.6−	0.3+
1999 01 16	905	0.2−	1.3−	1999 02 10	704	1.0+	0.9−	1999 04 06	704	0.2−	1.5−
1999 01 16	905	0.2+	0.2−	1999 02 10	704	0.7+	0.5−	1999 04 06	704	0.6−	1.1+
1999 01 20	888	0.1−	0.1+	1999 02 10	704	1.3+	0.3−	1999 04 06	704	0.3−	0.7−
1999 01 20	888	0.2−	0.3+	1999 02 12	385	0.2+	0.2−	1999 04 07	385	(0.2+	2.9−)
1999 01 21	886	1.1−	1.7+	1999 02 12	385	0.1+	0.3−	1999 04 07	385	(0.5−	2.8−)
1999 01 21	886	0.0	1.3−	1999 02 13	704	0.4−	0.2−				

1999 BQ₆ = 1987 SG

M.P.C. 34938

1997 09 30	566	0.0	0.2+	1999 03 23	699	0.5+	0.7+	1999 04 12	704	0.7+	0.8−
1997 09 30	566	0.0	0.5+	1999 03 23	699	1.1+	0.3+	1999 04 12	704	0.2−	0.9−
1997 09 30	566	0.2−	0.0	1999 04 06	704	1.5−	1.9+	1999 04 12	704	0.4−	0.4−
1999 01 20	910	0.1+	0.0	1999 04 06	704	0.6−	0.7+	1999 04 12	704	0.8−	0.9−
1999 01 20	910	0.1+	0.0	1999 04 06	704	0.3−	0.0				
1999 01 20	910	0.1−	0.0	1999 04 06	704	0.2−	0.2−				

1999 BX₆ = 1993 FL₅₃

Id. S. Nakano, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P			Q		
<i>n</i>	0.17148023	ω	60.11661	−0.69705590	+0.71374971						
<i>a</i>	3.2086820	Ω	165.04949	−0.71455602	−0.68360532						
<i>e</i>	0.0496541	<i>i</i>	15.36784	−0.05935289	−0.15246348						
<i>P</i>	5.75	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>			3		

Residuals in seconds of arc

1993 03 17	809	0.4+	1.0−	1999 01 21	910	0.3−	0.1−	1999 04 12	704	0.7+	1.7+
1993 03 18	809	0.5−	0.2−	1999 01 21	910	0.2−	0.1+	1999 04 12	704	(2.1+ 0.2+)	
1997 12 29	566	1.6+	1.4−	1999 01 22	910	0.2−	0.1+	1999 04 12	704	0.5−	0.5+
1997 12 29	566	1.0+	1.0−	1999 01 22	910	0.0	0.1−	1999 04 12	704	0.5+	0.5+
1997 12 29	566	1.6+	0.8−	1999 01 22	910	0.1−	0.1+	1999 05 12	704	1.3+	1.3−
1998 01 26	566	0.9−	1.0+	1999 01 26	910	0.1−	0.6+	1999 05 12	704	1.0−	0.1−
1998 01 26	566	1.5−	1.0+	1999 01 26	910	0.0	0.4+	1999 05 12	704	0.2+	1.6−
1998 01 26	566	1.5−	1.1+	1999 01 26	910	0.4−	0.4+	1999 05 12	704	(1.0− 2.2−)	
1999 01 21	910	0.3−	0.2−	1999 04 12	704	0.1+	0.2+				

1999 CJ = 1988 AP₄

Id. A. Gnädig, S. Nakano, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P			Q		
<i>n</i>	0.19153058	ω	91.33288	−0.17710530	−0.98377430						
<i>a</i>	2.9806476	Ω	9.02216	+0.81457446	−0.16286817						
<i>e</i>	0.0862220	<i>i</i>	10.53355	+0.55236054	−0.07524684						
<i>P</i>	5.15	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>			1		

Residuals in seconds of arc

1984 03 29	413	0.3−	1.1+	1998 11 25	704	1.1−	0.3+	1999 02 12	411	0.0	0.3−
1984 03 29	413	0.5+	0.3−	1998 11 25	704	1.5+	0.1+	1999 02 12	411	0.4+	0.2−
1984 05 23	413	0.3−	0.2+	1998 12 27	699	0.4−	0.8−	1999 02 13	704	0.2−	0.1−
1984 05 23	413	0.8+	0.3+	1998 12 27	699	0.5−	0.4+	1999 02 13	704	0.4+	0.4+
1988 01 13	033	0.1−	0.8+	1998 12 27	699	0.7−	0.6+	1999 02 13	704	0.8+	1.1+
1988 01 13	033	0.1−	0.6+	1999 02 04	411	0.6−	0.4−	1999 02 13	704	0.3+	0.5+
1998 01 25	566	0.2+	0.3−	1999 02 04	411	0.3+	0.9−	1999 02 13	704	0.5+	0.2−
1998 01 25	566	0.2−	0.2−	1999 02 05	411	0.3+	0.9−	1999 02 20	411	0.6−	0.1−
1998 01 25	566	0.2+	0.1−	1999 02 05	411	0.2+	0.2−	1999 02 20	411	0.2−	0.0
1998 11 15	703	0.4−	0.5+	1999 02 10	704	0.9+	0.1−	1999 03 22	411	0.4−	0.8−
1998 11 15	703	0.7+	0.2−	1999 02 10	704	1.0+	0.1+	1999 03 22	411	1.6−	0.3−
1998 11 15	703	0.9−	0.2−	1999 02 10	704	0.1−	0.2−	1999 03 22	411	0.7−	0.6−
1998 11 25	704	0.1−	0.7+	1999 02 10	704	0.8+	0.2−				
1998 11 25	704	2.0−	1.3+	1999 02 10	704	0.6+	0.2+				

1999 CX₁ = 1988 LR

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P			Q		
<i>n</i>	0.23892362	ω	245.76295	+0.96251032	−0.13094621						
<i>a</i>	2.5721522	Ω	120.96583	+0.19113557	+0.94881432						
<i>e</i>	0.1912022	<i>i</i>	16.08285	−0.19246059	+0.28740996						
<i>P</i>	4.13	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>			2		

Residuals in seconds of arc

1988 06 13	675	0.2−	0.4−	1999 02 07	411	0.3−	0.5−	1999 02 13	699	1.0+	0.2+
1988 06 13	675	0.1−	0.2+	1999 02 08	411	1.1−	0.0	1999 02 13	704	0.4−	0.1+

1999 JUNE 22

1992 05 29	675	(3.2− 0.0)	1999 02 08	411	0.1−	0.2−	1999 02 13	704	0.4−	0.9+
1992 05 29	675	0.7+ 0.5+	1999 02 10	704	0.0	0.0	1999 02 13	704	0.4+	0.8−
1996 09 13	566	0.1− 0.0	1999 02 10	704	0.6+	0.5−	1999 02 13	704	0.5−	0.6−
1996 09 13	566	0.4− 0.1−	1999 02 10	704	1.3+	0.0	1999 02 14	411	0.4−	0.3−
1996 09 13	566	0.0 0.2−	1999 02 10	704	0.6+	0.0	1999 02 14	411	0.5−	0.2+
1998 11 25	699	0.1+ 0.4+	1999 02 10	704	1.0+	0.1+	1999 02 21	411	0.3−	0.2+
1998 11 25	699	0.6+ 0.5+	1999 02 13	699	0.3+	0.0	1999 02 21	411	0.2+	0.3+
1998 11 25	699	0.6− 0.3−	1999 02 13	699	0.4+	0.5+	1999 03 16	411	1.0−	0.4−
1999 02 07	411	0.3+ 0.0	1999 02 13	704	0.9−	0.5+	1999 03 16	411	0.3−	0.3−

1999 CL₃ = 1988 BP₂

Id. A. Gnädig, S. Nakano, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P			Q		
<i>n</i>	0.18581939	ω	311.00342	+0.43552873	−0.88271854						
<i>a</i>	3.0414127	Ω	112.35904	+0.87252820	+0.36576867						
<i>e</i>	0.0602799	<i>i</i>	10.99701	+0.22138037	+0.29499366						
<i>P</i>	5.30	<i>H</i>	12.5	<i>G</i>	0.15	<i>U</i>			3		

Residuals in seconds of arc

1980 07 12	413	0.6+	0.5+	1999 01 22	699	0.7+	0.4−	1999 02 13	699	0.5+	0.3+
1980 07 12	413	0.5−	0.6−	1999 01 22	699	0.1+	0.7−	1999 02 13	704	0.4+	0.7+
1988 01 20	046	(1.3+ 3.9−)		1999 01 22	699	0.4+	0.1−	1999 02 13	704	0.2+	0.2−
1988 01 20	046	(0.4+ 4.2−)		1999 02 08	365	0.7−	0.5−	1999 02 13	704	0.9+	0.4+
1995 08 13	413	1.2+	0.6−	1999 02 08	365	0.7−	0.5−	1999 02 13	704	0.8+	0.9+
1995 08 13	413	0.9−	1.3+	1999 02 09	365	0.4−	0.1+	1999 02 13	704	0.6−	1.1+
1998 11 25	704	0.5−	0.7+	1999 02 09	365	0.4−	0.3−	1999 02 16	365	0.9−	0.3−
1998 11 25	704	1.3+	0.9+	1999 02 10	704	0.5−	0.4−	1999 02 16	365	0.4−	0.5−
1998 11 25	704	1.1−	0.5+	1999 02 10	704	1.1−	0.8−	1999 03 16	365	0.1−	0.1+
1998 11 25	704	0.7+	0.5+	1999 02 10	704	1.1−	0.5−	1999 03 16	365	0.8+	0.3−
1998 11 25	704	(2.3− 1.7+)		1999 02 10	704	0.1−	0.6−	1999 06 08	703	0.8+	0.4+
1998 11 25	699	0.7+	0.8+	1999 02 10	704	0.6−	0.8−	1999 06 08	703	0.6+	0.1−
1998 11 25	699	0.4−	0.6+	1999 02 13	699	0.0	0.1−	1999 06 08	703	0.3+	0.2+
1998 11 25	699	0.8+	0.4+	1999 02 13	699	0.3+	0.1+	1999 06 08	703	0.4+	0.1+

1999 CT₅ = 1989 VW₂

Id. A. Gnädig, S. Nakano, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P			Q		
<i>n</i>	0.24609960	ω	271.47528	+0.87744336	−0.47124391						
<i>a</i>	2.5219053	Ω	116.64732	+0.47024207	+0.80819214						
<i>e</i>	0.1157319	<i>i</i>	5.75135	+0.09468658	+0.35320623						
<i>P</i>	4.00	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>			4		

Residuals in seconds of arc

1989 11 03	809	0.4+	0.1−	1997 10 30	704	0.4+	2.0−	1999 02 22	411	0.0	0.6−
1989 11 03	809	0.2−	0.6+	1997 11 06	704	0.3−	1.2+	1999 03 20	704	0.4+	1.1+
1989 11 03	809	1.0−	0.3+	1997 11 06	704	0.0	0.8+	1999 03 20	704	0.4+	0.3−
1991 01 23	675	0.1+	0.0	1997 11 06	704	0.2−	1.0+	1999 03 20	704	0.8−	1.5−
1991 01 23	675	0.5+	1.3−	1997 11 06	704	0.7−	0.8+	1999 03 20	704	0.7−	0.3−
1997 10 29	704	0.5+	1.0+	1997 11 06	704	0.5−	0.3+	1999 03 20	704	0.3−	0.3−
1997 10 29	704	0.5−	0.9+	1999 02 12	411	0.5−	0.1−	1999 03 22	411	0.8−	0.1+
1997 10 29	704	0.6−	0.8+	1999 02 12	411	0.7+	0.8−	1999 03 22	411	1.1−	0.6+
1997 10 29	704	0.7−	0.9+	1999 02 13	411	1.0−	0.3+	1999 03 23	704	0.2+	0.3+
1997 10 29	704	0.6−	0.2+	1999 02 13	411	(2.4− 1.2−)	1999 03 23	704	0.4−	0.4+	
1997 10 30	704	2.0+	0.7−	1999 02 18	699	0.2−	0.5+	1999 03 23	704	0.4−	0.4−
1997 10 30	704	0.2+	1.6−	1999 02 18	699	0.8−	0.2+	1999 03 23	704	0.0	0.0
1997 10 30	704	1.7+	0.1−	1999 02 18	699	1.3+	1.8−	1999 03 23	704	0.5−	0.8+
1997 10 30	704	0.2+	1.7−	1999 02 20	411	1.2+	0.7+	1999 04 08	411	0.5+	0.6+
1997 10 30	704 (2.2+	0.8−)	1999 02 20	411	0.4+	1.3+	1999 04 08	411	0.5−	0.5−	
1997 10 30	704	0.2−	1.5−	1999 02 22	699	0.9+	0.3+	1999 04 18	703	0.1−	0.7−
1997 10 30	704 (2.3+	0.5−)	1999 02 22	699	1.5−	0.9−	1999 04 18	703	0.6+	0.4+	
1997 10 30	704	0.0	1.1−	1999 02 22	699	1.1+	0.4+	1999 04 18	703	0.1+	1.1+
1997 10 30	704 (3.0+	1.5−)	1999 02 22	411	1.3+	0.2+	1999 04 18	703 (0.4+	2.5+)		

1999 CD₁₆ = 1992 BF₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28698766	ω	68.48022	-0.90309803	+0.27532033		
<i>a</i>	2.2762881	Ω	125.97305	-0.33623322	-0.93073035		
<i>e</i>	0.1893576	<i>i</i>	24.03062	+0.26713511	-0.24070672		
<i>P</i>	3.43	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1992 01 29	675	(2.0- 2.5+)	1998 12 21	704	(4.0- 0.0)	1999 04 09	704	0.4+ 0.6+
1992 01 30	675	(3.5+ 1.3+)	1999 02 11	704	0.2- 0.1-	1999 04 09	704	0.3+ 0.5-
1992 01 30	675	0.0 0.5+	1999 02 11	704	0.4- 0.2-	1999 04 09	704	1.8+ 1.5+
1992 02 02	675	(2.3+ 2.1-)	1999 02 11	704	0.8- 0.4-	1999 04 09	704	1.6+ 1.8+
1992 02 02	675	(2.2+ 3.2-)	1999 02 11	704	0.0 0.9-	1999 06 04	704	0.2+ 0.1+
1998 11 25	704	0.8+ 0.5+	1999 02 11	704	0.6- 1.2-	1999 06 04	704	0.5- 1.2-
1998 11 25	704	0.7+ 0.0	1999 02 18	704	0.5+ 0.0	1999 06 04	704	0.4- 0.0
1998 11 25	704	(2.5+ 0.9-)	1999 02 18	704	0.3+ 0.5-	1999 06 04	704	0.2+ 0.3-
1998 11 25	704	1.2- 1.7-	1999 02 18	704	0.1+ 0.1-	1999 06 04	704	0.4- 0.0
1998 12 17	699	0.2+ 0.6+	1999 02 18	704	0.7- 0.4+	1999 06 07	704	0.4- 0.7-
1998 12 17	699	0.2+ 1.0+	1999 02 18	704	0.2- 0.3-	1999 06 07	704	0.4- 0.1-
1998 12 17	699	0.5- 0.4-	1999 03 16	704	0.4- 0.8+	1999 06 07	704	0.1- 0.3-
1998 12 21	704	0.9+ 1.2+	1999 03 16	704	0.8- 0.7-	1999 06 07	704	0.6- 0.1-
1998 12 21	704	1.1+ 1.4-	1999 03 16	704	0.6- 0.6+	1999 06 07	704	0.2- 0.8-
1998 12 21	704	0.1+ 0.1+	1999 03 16	704	0.4+ 1.0+			
1998 12 21	704	0.1- 0.9-	1999 03 16	704	0.3- 0.6+			

1999 CG₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29809129	ω	158.32099	-0.49614050	-0.86817052		
<i>a</i>	2.2194048	Ω	321.42156	+0.79394381	-0.44844400		
<i>e</i>	0.0473580	<i>i</i>	1.02547	+0.35142257	-0.21255098		
<i>P</i>	3.31	<i>H</i>	16.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1996 03 21	566	0.5- 0.0	1998 11 25	691	0.1- 0.3-	1999 02 10	704	0.9- 0.1-
1996 03 21	566	0.6- 0.3+	1998 11 25	691	0.2+ 0.0	1999 02 10	704	0.5- 0.5-
1996 03 21	566	0.6- 0.3+	1998 11 25	691	0.2- 0.2-	1999 02 10	704	1.0- 0.4-
1996 04 16	675	0.1- 0.1-	1999 01 14	699	0.0 0.4-	1999 02 13	704	0.5+ 1.0+
1996 04 16	675	1.7+ 0.9-	1999 01 14	699	1.0+ 0.1-	1999 02 13	704	0.5+ 0.8+
1997 07 29	910	0.2+ 0.3+	1999 01 14	699	0.5- 0.7-	1999 02 13	704	0.5- 0.7+
1997 07 29	910	0.1+ 0.0	1999 01 18	691	0.4+ 0.0	1999 02 13	704	0.4+ 0.6+
1997 07 29	910	0.1- 0.0	1999 01 18	691	0.5+ 0.1+	1999 02 13	704	1.2+ 0.4+
1997 08 10	691	0.1- 0.4-	1999 01 18	691	0.6+ 0.3+	1999 02 18	566	0.1- 0.1-
1997 08 10	691	0.1- 0.0	1999 02 10	704	0.7- 0.3-	1999 02 18	566	0.5- 0.1+
1997 08 10	691	0.0 0.1-	1999 02 10	704	0.2- 0.7-	1999 02 18	566	0.2- 0.5-

1999 CZ₂₃ = 1995 MU₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17911954	ω	285.56955	+0.44797027	-0.88813975		
<i>a</i>	3.1167890	Ω	137.33350	+0.86730269	+0.40383255		
<i>e</i>	0.1698544	<i>i</i>	8.70888	+0.21704535	+0.21937879		
<i>P</i>	5.50	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1986 09 05	675	0.1+ 1.4+	1995 06 25	691	0.1- 0.1+	1999 02 10	704	0.1- 0.3+
1986 09 05	675	0.6- 0.3+	1995 07 05	691	0.1- 0.1+	1999 02 12	699	1.0+ 0.5+
1991 07 17	413	0.6- 1.2-	1995 07 05	691	0.2+ 0.1-	1999 02 12	699	0.8+ 0.7+
1991 07 17	413	0.2- 0.9-	1995 07 05	691	0.6+ 0.3+	1999 02 12	699	0.8+ 0.4-
1991 10 01	413	0.3+ 0.8-	1999 02 10	704	0.6- 0.2+	1999 02 13	704	1.3+ 0.9-
1991 10 01	413	0.9+ 0.1+	1999 02 10	704	0.1- 0.3-	1999 02 13	704	1.4- 0.4+
1995 06 25	691	0.3+ 0.4+	1999 02 10	704	0.7- 1.0-	1999 02 13	704	0.4+ 0.2-
1995 06 25	691	0.5- 0.1+	1999 02 10	704	0.5- 0.2+	1999 02 13	704	1.2- 0.7-

1999 CA₃₉ = 1997 XM₁₃

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20302403	ω	22.53549	-0.03847556	-0.99806448		
<i>a</i>	2.8670664	Ω	69.69753	+0.90867820	-0.05528657		
<i>e</i>	0.0239544	<i>i</i>	2.98603	+0.41572054	+0.02847251		
<i>P</i>	4.85	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 11 29	704	0.5- 0.2+	1998 11 20	910	0.5- 0.8-	1999 02 10	704	0.2+ 0.3+
1997 11 29	704	0.6- 0.4+	1998 11 20	910	1.0- 1.1-	1999 02 10	704	0.7- 0.3-
1997 11 29	704	0.4+ 0.2-	1998 11 20	910	1.5- 0.1+	1999 02 13	704	0.7+ 0.2-
1997 11 29	704	0.1- 0.7-	1998 12 17	699	0.2- 0.3-	1999 02 13	704	0.2+ 0.2-
1997 12 02	428	0.7+ 0.5+	1998 12 17	699	0.4+ 0.1-	1999 02 13	704	1.0+ 0.4+
1997 12 02	428	0.5- 0.8+	1998 12 17	699	0.2+ 0.7-	1999 02 13	704	0.3+ 0.6+
1997 12 02	428	0.3- 0.2+	1999 01 22	699	0.4+ 0.1-	1999 02 13	704	0.8+ 0.8+
1997 12 02	428	1.1- 1.5+	1999 01 22	699	0.4- 0.4-	1999 02 23	699	0.3- 0.4+
1998 02 23	557	1.5+ 0.7-	1999 01 22	699	0.4+ 0.1-	1999 02 23	699	0.7+ 0.4+
1998 02 23	557	0.5+ 1.2-	1999 02 10	704	0.9- 0.2+	1999 02 23	699	0.6+ 0.3+
1998 02 23	557	0.9+ 1.3-	1999 02 10	704	0.7- 0.5+			
1998 02 23	557	0.1+ 0.4+	1999 02 10	704	0.3- 0.3+			

1999 CV₄₀ = 1976 UT₁₅

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.19052818	ω	103.55330	-0.81750480	-0.56166606		
<i>a</i>	2.9910929	Ω	42.47203	+0.42797638	-0.74042693		
<i>e</i>	0.0535812	<i>i</i>	10.87093	+0.38538568	-0.36918721		
<i>P</i>	5.17	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1976 10 22	381	0.3+ 0.9+	1997 11 06	704	1.8- 0.6-	1999 02 10	704	1.2+ 0.1-
1976 10 22	381	0.2+ 0.5+	1997 11 06	704	1.0- 0.5-	1999 02 10	704	0.2+ 0.8-
1984 03 07	413	0.7- 0.3+	1997 11 06	704	1.7- 0.6-	1999 02 10	704	0.6- 0.6+
1984 03 07	413	0.2+ 0.0	1997 11 29	704	1.3+ 1.0-	1999 02 13	704	0.5+ 0.7-
1989 04 08	675	0.8- 0.9+	1997 11 29	704	1.4+ 0.7+	1999 02 13	704	0.3- 0.0
1989 04 08	675	0.2- 0.8+	1997 11 29	704	0.9+ 1.6+	1999 02 13	704	0.1+ 0.3-
1991 09 05	413	1.1- 0.4+	1997 11 29	704	1.0+ 0.3+	1999 02 13	704	0.8+ 0.3-
1991 09 05	413	1.7+ 0.7+	1997 11 29	704	0.5- 0.7+	1999 02 13	704	0.5- 0.2+
1991 09 30	413	1.2+ 0.2-	1998 12 27	699	0.1+ 1.1-	1999 02 22	699	0.0 1.2+
1991 09 30	413	1.1- 0.5-	1998 12 27	699	0.1+ 0.2-	1999 02 22	699	0.3- 0.2+
1991 10 26	413	0.0 0.4-	1998 12 27	699	0.7- 0.3+	1999 02 22	699	0.2- 0.3-
1997 11 06	704	0.9- 0.4+	1999 02 10	704	0.6+ 0.3-			
1997 11 06	704	1.2- 1.8-	1999 02 10	704	1.0+ 0.3-			

1999 CQ₅₁ = 1977 DZ₉ = 1983 TV

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22329818	ω	215.37680	-0.90274304	+0.42815646		
<i>a</i>	2.6907866	Ω	349.71900	-0.32090564	-0.73478204		
<i>e</i>	0.1280220	<i>i</i>	13.50448	-0.28648661	-0.52609638		
<i>P</i>	4.41	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1977 02 19	381	0.3- 0.5-	1999 03 19	704	(2.1+ 1.7-)	1999 05 05	699	0.0 1.5+
1977 02 19	381	(3.5- 0.9-)	1999 03 19	704	0.5+ 0.6-	1999 05 07	704	0.1+ 0.8+
1983 10 07	801	1.0- 1.3+	1999 03 19	704	0.7+ 1.6-	1999 05 07	704	1.2- 0.5+
1999 02 10	704	0.7- 0.1-	1999 03 19	704	0.6+ 1.0-	1999 05 07	704	1.7- 0.2+
1999 02 10	704	0.1- 0.2-	1999 03 20	704	0.3+ 1.0-	1999 05 07	704	1.2- 0.2-
1999 02 10	704	0.5- 0.4+	1999 03 20	704	0.4+ 0.5-	1999 05 07	704	0.9- 0.6-
1999 02 10	704	0.5- 0.2+	1999 03 20	704	0.3- 0.4-	1999 06 08	704	0.1+ 0.3-
1999 02 10	704	0.3+ 0.2-	1999 03 20	704	0.9- 0.9+	1999 06 08	704	0.5+ 0.5-
1999 02 13	704	0.3+ 0.1-	1999 03 20	704	1.9- 0.7+	1999 06 08	704	0.6+ 0.4-

1999 02 13	704	0.2+	0.3+	1999 03 20	699	0.9+	0.1+	1999 06 08	704	0.1+	1.7+
1999 02 13	704	0.4-	0.0	1999 03 20	699	0.0	1.0+	1999 06 10	704	0.1+	0.3-
1999 02 13	704	0.4+	0.6-	1999 03 20	699	0.1-	0.2+	1999 06 10	704	0.2+	0.2-
1999 02 13	704	0.5+	1.0-	1999 03 24	699	(2.8-	0.8+)	1999 06 10	704	1.1+	1.5-
1999 02 18	699	0.3+	0.6+	1999 03 24	699	0.3-	1.5+	1999 06 10	704	0.8+	0.3+
1999 02 18	699	0.0	0.6+	1999 03 24	699	0.9+	0.4+	1999 06 10	704	0.1+	0.1-
1999 02 18	699	0.9+	0.5+	1999 05 05	699	0.6+	0.7+				
1999 03 19	704	0.6+	0.6-	1999 05 05	699	0.0	1.1+				

1999 CX₅₂ = 1982 SL₁₃ = 1982 TG = 1984 DH₃ = 1992 JT₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
(2000.0)				(2000.0)			
<i>M</i>	86.49278			<i>P</i>		<i>Q</i>	
<i>n</i>	0.25973636	<i>ω</i>	55.02547		-0.20222620		-0.97502087
<i>a</i>	2.4328437	<i>Ω</i>	46.91989		+0.85254287		-0.22142881
<i>e</i>	0.1037943	<i>i</i>	7.22530		+0.48194940		-0.01742343
<i>P</i>	3.79	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1982 09 22	688	(1.1+	3.0-)	1998 12 01	704	0.6-	0.1-	1999 02 13	704	0.2-	1.2+
1982 09 22	688	0.0	0.2-	1998 12 01	704	0.7+	1.5-	1999 05 08	704	0.2-	0.2+
1982 10 13	688	(0.4+	2.9-)	1998 12 01	704	0.2-	0.4-	1999 05 08	704	0.7-	0.5+
1982 10 13	688	(4.0-	2.3-)	1998 12 01	704	0.5+	0.9-	1999 05 08	704	2.0-	0.5+
1984 02 27	095	0.3-	0.6-	1998 12 01	704	0.8+	0.9-	1999 05 08	704	(6.6-	1.7-)
1992 05 01	809	0.9-	0.2+	1998 12 21	704	1.2-	0.1+	1999 05 17	704	0.4-	0.1+
1992 05 01	809	0.5-	0.3+	1998 12 21	704	1.2+	0.5+	1999 05 17	704	0.1+	0.3-
1992 05 01	809	0.6-	0.2+	1998 12 21	704	0.6-	0.1-	1999 05 17	704	1.8-	1.7+
1992 05 02	809	0.2+	1.0-	1998 12 21	704	(0.3-	2.9+)	1999 05 17	704	1.0-	0.8-
1992 05 02	809	0.6+	0.7-	1998 12 21	704	0.2+	0.6+	1999 05 17	704	(2.9+	0.0)
1992 05 02	809	0.9+	0.8-	1999 02 10	704	0.0	0.4-	1999 06 07	704	0.2-	0.9-
1992 05 03	809	0.0	1.0+	1999 02 10	704	0.3+	0.0	1999 06 07	704	0.1-	0.4-
1992 05 03	809	0.3+	0.9+	1999 02 10	704	0.2-	0.0	1999 06 07	704	1.4+	0.6-
1992 05 03	809	0.5+	0.6+	1999 02 10	704	0.1+	0.6+	1999 06 07	704	0.1-	0.7-
1997 09 29	566	0.3-	0.3+	1999 02 10	704	0.2-	0.3-	1999 06 07	704	0.7+	0.5-
1997 09 29	566	0.1+	0.6+	1999 02 13	699	0.1-	0.4+	1999 06 08	704	0.5-	0.6-
1997 09 29	566	0.2-	0.1-	1999 02 13	699	0.2+	0.2+	1999 06 08	704	0.6+	0.2-
1998 11 25	704	0.3+	0.5-	1999 02 13	704	0.6+	0.5+	1999 06 08	704	0.3+	0.8-
1998 11 25	704	0.3+	0.1-	1999 02 13	699	0.2+	0.1+	1999 06 08	704	0.2+	0.1-
1998 11 25	704	0.3+	1.1-	1999 02 13	704	0.2+	1.1+	1999 06 08	704	0.5+	0.7-
1998 11 25	704	0.1+	0.5-	1999 02 13	704	0.2+	0.6+				
1998 11 25	704	(0.0	2.4-)	1999 02 13	704	0.6+	1.2+				

1999 CZ₆₁ = 1997 UL₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
(2000.0)				(2000.0)			
<i>M</i>	38.83558			<i>P</i>		<i>Q</i>	
<i>n</i>	0.17891097	<i>ω</i>	306.19827		-0.60373515		-0.79717805
<i>a</i>	3.1192109	<i>Ω</i>	180.95889		+0.78017364		-0.58999128
<i>e</i>	0.0705687	<i>i</i>	11.43908		+0.16380769		-0.12813056
<i>P</i>	5.51	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 03 16	691	0.2-	1.4-	1997 10 30	704	0.9+	1.9-	1999 02 14	699	1.0+	0.8+
1994 03 16	691	0.1-	1.4-	1997 10 30	704	1.7+	1.7-	1999 02 16	704	1.6+	0.6+
1994 03 16	691	0.3-	0.7-	1997 10 30	704	(2.2+	1.2-)	1999 02 16	704	(1.1+	3.5-)
1994 03 16	691	0.2-	0.4-	1999 01 15	699	0.6-	0.6+	1999 02 16	704	0.5+	1.2-
1994 03 16	691	0.0	0.2-	1999 01 15	699	0.0	0.4+	1999 02 16	704	1.2-	1.5+
1997 10 29	704	0.8+	0.5+	1999 01 15	699	0.2-	0.2+	1999 02 19	566	0.0	0.2-
1997 10 29	704	0.3+	0.7+	1999 02 12	704	0.2-	0.1-	1999 02 19	566	0.8-	0.4-
1997 10 29	704	0.1-	0.7+	1999 02 12	704	1.1+	0.4+	1999 02 19	566	0.6-	0.5-
1997 10 29	704	1.2-	0.2-	1999 02 12	704	1.3-	0.1-	1999 05 08	704	0.5-	0.7+
1997 10 29	566	1.9-	0.0	1999 02 12	704	1.4-	0.2+	1999 05 08	704	1.4+	0.6+
1997 10 29	566	(2.2-	0.2-)	1999 02 12	704	0.5-	0.0	1999 05 08	704	1.8+	1.0-
1997 10 29	566	1.9-	0.3+	1999 02 14	699	0.9+	0.5+	1999 05 08	704	0.8+	0.3-
1997 10 30	704	1.7+	1.6-	1999 02 14	699	1.0+	0.9+	1999 05 08	704	1.5-	1.1-

1999 CX₆₅ = 1991 EL₂ = 1992 OP₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden				Marsden			
(2000.0)				(2000.0)			
<i>M</i>	298.97343			<i>P</i>		<i>Q</i>	
<i>n</i>	0.23392847	<i>ω</i>	331.36658		-0.29619673		+0.95490654
<i>a</i>	2.6086391	<i>Ω</i>	281.39793		-0.87227372		-0.27919215
<i>e</i>	0.0847577	<i>i</i>	1.19935		-0.38910930		-0.10102104
<i>P</i>	4.21	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1991 03 10	809	0.4-	0.0	1992 07 31	809	0.6+	0.0	1999 02 12	704	0.1+	0.6-
1991 03 10	809	0.3-	0.3+	1999 01 09	303	1.4+	0.3-	1999 02 12	704	1.0-	0.0
1991 03 10	809	0.3-	0.1+	1999 01 09	303	1.3+	0.3-	1999 02 12	704	0.7-	0.2-
1991 03 12	809	0.1+	0.0	1999 01 09	303	0.6+	0.1-	1999 02 12	704	0.6-	0.8+
1991 03 12	809	0.3+	0.0	1999 01 10	303	2.0+	0.2-	1999 02 16	704	0.9-	0.3+
1991 03 12	809	0.7+	0.1-	1999 01 10	303	0.9+	0.4-	1999 02 16	704	0.4-	0.3-
1992 07 30	809	0.3-	0.8-	1999 01 10	303	0.8+	0.4-	1999 02 16	704	1.0-	0.3-
1992 07 30	809	0.2+	1.1-	1999 02 12	699	0.7-	0.3-	1999 02 16	704	0.6-	0.5-
1992 07 30	809	0.3+	0.6-	1999 02 12	699	0.1-	0.4+	1999 02 16	704	0.8-	0.6-
1992 07 31	809	0.5+	0.5+	1999 02 12	699	0.3-	0.2+				
1992 07 31	809	0.2-	1.0-	1999 02 12	704	0.5-	0.8-				

1999 CQ₇₂ = 1991 JQ = 1996 TO₅₅ = 1997 XB₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
(2000.0)				(2000.0)			
<i>M</i>	333.65689			<i>P</i>		<i>Q</i>	
<i>n</i>	0.23420385	<i>ω</i>	31.55509		-0.46904757		+0.87597785
<i>a</i>	2.6065938	<i>Ω</i>	210.89518		-0.84904717		-0.48231870
<i>e</i>	0.2315035	<i>i</i>	12.65653		-0.24313223		-0.00560993
<i>P</i>	4.21	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1991 05 03	374	(0.0	2.7+)	1997 12 05	372	1.1+	0.3+	1999 04 07	704	(2.2+	0.3+)
1991 05 03	374	(0.5-	2.4+)	1997 12 29	566	0.3+	0.6+	1999 05 07	704	0.3+	0.5+
1991 05 05	374	0.8-	0.5+	1997 12 29	566	0.6+	0.8+	1999 05 07	704	0.1-	0.1-
1991 05 05	374	0.7-	0.4+	1997 12 29	566	0.7+	0.6+	1999 05 07	704	1.2+	1.6+
1991 05 08	675	(1.7+	3.2-)	1999 02 12	704	0.2-	0.4-	1999 05 07	704	(2.4+	1.2+)
1991 05 08	675	1.4+	1.6+	1999 02 12	704	0.7-	0.5-	1999 05 07	704	(2.1+	2.1+)
1991 05 10	675	(0.7-	2.7-)	1999 02 12	704	0.3+	0.1-	1999 06 08	704	0.1+	1.1+
1991 05 10	374	0.2-	1.6-	1999 02 12	704	0.0	0.5-	1999 06 08	704	0.7+	0.1+
1991 05 10	374	0.5+	0.8+	1999 02 12	704	0.8-	1.1-	1999 06 08	704	0.8+	1.6+
1996 10 02	809	0.1+	0.7+	1999 02 16	704	0.0	0.3-	1999 06 08	704	1.8+	1.3-
1996 10 02	809	0.3-	0.1-	1999 02 16	704	0.0	0.2+	1999 06 10	704	0.3+	0.3-
1996 10 02	809	0.8-	0.3+	1999 02 16	704	0.7-	0.6-	1999 06 10	704	0.2-	0.3+
1996 10 03	809	(3.3+	3.4+)	1999 02 16	704	1.2-	0.4-	1999 06 10	704	0.0	0.6+
1996 10 03	809	(2.5+	2.9+)	1999 02 16	704	0.7-	0.1-	1999 06 10	704	0.6+	1.0-
1996 10 03	809	(2.4+	2.8+)	1999 04 07	704	(1.1+	2.1-)	1999 06 10	704	0.7-	1.7-
1997 12 04	372	1.0-	0.6+	1999 04 07	704	0.3+	1.7+				
1997 12 04	372	0.2+	0.4+	1999 04 07	704	0.2-	1.1+				

1999 CY₇₅ = 1991 ON₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	149.85195		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.19272178	ω	71.31545	+0.93987230	-0.32639235
a	2.9683528	Ω <td>307.61016</td> <td>+0.24546431</td> <td>+0.85026016</td>	307.61016	+0.24546431	+0.85026016
e	0.1648356	i <td>7.29131</td> <td>+0.23746016</td> <td>+0.41294756</td>	7.29131	+0.23746016	+0.41294756
P	5.11	H	13.5	G	0.15
				U	5

1999 JUNE 22

M.P.C. 34941

1991 08 05	809	0.3+	0.4−	1999 02 12	699	0.4−	0.7+	1999 02 18	566	0.4+	0.6−
1991 08 05	809	0.6−	0.7−	1999 02 12	704	0.2+	0.7−				
1999 01 15	699	1.4−	1.1−	1999 02 12	704	0.1−	0.1−				

1999 CJ₇₈ = 1979 OX₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	130.40634		(2000.0)	P	Q	Williams	
<i>n</i>	0.17369504	ω	200.60749	+0.86275014	−0.50509361		
<i>a</i>	3.1813475	Ω	189.82935	+0.48091349	+0.83393266		
<i>e</i>	0.2091969	<i>i</i>	7.84271	+0.15615507	+0.22234381		
<i>P</i>	5.67	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1979 07 24	413	0.3−	0.8−	1999 02 12	704	0.7+	0.0	1999 02 16	704	0.2−	0.1+
1979 07 26	675	0.1−	0.8+	1999 02 12	704	0.4+	1.0+	1999 02 16	704	1.0−	0.2−
1979 07 28	413	0.4+	0.1+	1999 02 12	704	0.6+	0.0	1999 02 21	699	0.3+	0.6+
1997 11 26	704	0.0	0.1+	1999 02 12	704	0.2−	0.8+	1999 02 21	699	0.2+	0.2+
1997 11 26	704	0.4+	0.1−	1999 02 16	704	1.5−	1.1−	1999 02 21	699	0.8+	0.7+
1997 11 26	704	0.4−	0.0	1999 02 16	704	0.3−	0.6−				
1999 02 12	704	0.2+	0.8−	1999 02 16	704	0.1+	0.6−				

1999 CH₇₉ = 1991 HJ₃

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	106.89482		(2000.0)	P	Q	Williams	
<i>n</i>	0.23240924	ω	208.58622	+0.29582952	−0.95493603		
<i>a</i>	2.6199950	Ω	224.21847	+0.88286905	+0.28297295		
<i>e</i>	0.1210381	<i>i</i>	1.98253	+0.36472884	+0.08957397		
<i>P</i>	4.24	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1991 04 19	809	0.3+	0.8−	1999 02 12	699	1.5+	0.4+	1999 02 18	910	0.8+	1.0−
1991 04 19	809	0.4−	0.7−	1999 02 12	704	0.2−	0.5+	1999 02 18	910	1.1+	0.9−
1991 04 19	809	0.9−	1.5−	1999 02 12	699	0.4−	0.6+	1999 02 18	910	0.9+	1.1−
1992 07 22	413	0.6−	0.4+	1999 02 12	704	1.1−	1.5+	1999 03 19	704	1.0−	0.2+
1992 07 22	413	0.4+	1.3+	1999 02 12	699	0.9−	0.1+	1999 03 19	704	1.3+	0.1+
1997 10 28	704	1.1−	1.2−	1999 02 12	704	0.8−	0.8−	1999 03 19	704	0.1+	0.3+
1997 10 28	704	1.2−	0.5−	1999 02 12	704	0.7+	0.1+	1999 03 20	704	1.7+	1.2+
1997 10 28	704	0.4+	1.5−	1999 02 12	704	(2.3−	1.4+)	1999 03 20	704	1.0−	1.4+
1997 10 28	704	(0.5−	4.0−)	1999 02 16	704	0.3−	0.7−	1999 03 20	704	0.6−	1.1+
1997 10 30	704	0.6+	0.4+	1999 02 16	704	0.1−	0.1−	1999 03 20	704	0.7+	1.7+
1997 10 30	704	1.3+	0.8+	1999 02 16	704	0.6+	0.7−	1999 03 20	704	1.7−	0.3−
1997 10 30	704	0.3+	1.1+	1999 02 16	704	0.8−	0.2−				
1997 10 30	704	(2.8+	1.1+)	1999 02 16	704	0.0	0.9−				

1999 CY₈₀ = 1983 HY = 1987 GB = 1991 GU

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	334.21732		(2000.0)	P	Q	Williams	
<i>n</i>	0.24025848	ω	35.75182	−0.51997818	+0.84918375		
<i>a</i>	2.5626162	Ω	203.34314	−0.82780121	−0.52760449		
<i>e</i>	0.1329673	<i>i</i>	13.46254	−0.21063677	−0.02281361		
<i>P</i>	4.10	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1983 04 19	688	0.1+	1.8−	1999 02 12	704	1.3−	0.9+	1999 06 08	704	0.3+	0.2−
1983 04 19	688	0.4−	1.3+	1999 02 16	704	0.9+	0.9−	1999 06 08	704	0.3+	0.9+
1987 04 03	372	(4.3−	1.9+)	1999 02 16	704	0.4+	0.3−	1999 06 08	704	0.6+	0.9+
1987 04 03	372	(3.4−	2.3−)	1999 02 16	704	0.5+	0.9−	1999 06 08	704	1.2−	0.2+
1991 04 12	675	0.7−	0.5+	1999 02 16	704	0.1−	1.5−	1999 06 08	704	0.9+	0.8+
1991 04 12	675	0.3−	0.8−	1999 02 16	704	0.4+	0.9−	1999 06 10	704	0.4−	0.0
1991 04 13	675	0.6+	0.0	1999 05 07	704	1.5−	0.5−	1999 06 10	704	0.4−	0.4+
1991 04 13	675	0.9+	0.8−	1999 05 07	704	(2.2−	0.7+)	1999 06 10	704	0.0	0.1−
1999 02 12	704	0.6−	0.2−	1999 05 07	704	0.7+	0.9+	1999 06 10	704	0.4−	0.2−

1999 02 12	704	0.1−	1.1+	1999 05 07	704	0.4−	0.5+
1999 02 12	704	0.7+	1.8+	1999 05 07	704	(1.9−	3.2+)

1999 CC₈₂ = 1987 QT₃ = 1987 ST₂₆ = 1994 BG

Id. A. Doppler, M. E. Sansaturio, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	256.78151		(2000.0)	P	Q	Williams	
<i>n</i>	0.21456768	ω	359.76467	+0.70273093	+0.70343851		
<i>a</i>	2.7632903	Ω	314.87919	−0.65250205	+0.57757062		
<i>e</i>	0.1452792	<i>i</i>	8.64463	−0.28356713	+0.41422993		
<i>P</i>	4.59	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1982 07 20	413	1.1+	0.9+	1996 10 02	809	0.2+	0.1−	1999 03 20	704	1.3+	0.8−
1982 07 20	413	0.9−	0.4+	1996 10 02	809	0.1−	0.3+	1999 03 23	704	1.1+	1.7+
1987 08 30	010	0.1+	0.4−	1999 02 12	704	0.6−	1.3−	1999 03 23	704	0.8+	0.1+
1987 08 30	010	0.8+	0.1−	1999 02 12	704	0.3−	0.6−	1999 03 23	704	0.4−	0.3+
1987 08 30	010	0.6+	0.6+	1999 02 12	704	0.5+	0.1+	1999 03 23	704	0.2−	1.0+
1987 09 26	095	1.0−	0.7+	1999 02 12	704	0.7−	0.8+	1999 03 23	704	0.1+	0.2−
1991 08 06	413	0.3−	0.0	1999 02 16	704	0.5+	1.6−	1999 06 08	704	1.2+	0.6−
1991 08 06	413	0.4−	0.0	1999 02 16	704	0.4+	1.4−	1999 06 08	704	0.8+	0.4+
1991 08 13	413	0.2−	0.7−	1999 02 16	704	0.4−	1.6−	1999 06 08	704	(2.1+	1.3+)
1991 08 13	413	0.5−	0.4−	1999 02 16	704	(0.2+	3.1−)	1999 06 08	704	0.7−	0.1+
1994 01 16	098	1.4−	0.9+	1999 02 16	704	(0.2−	2.8−)	1999 06 08	704	0.5+	2.0+
1994 01 16	098	0.8−	1.9+	1999 03 20	704	0.2+	0.2+				
1996 10 02	809	0.1−	0.1−	1999 03 20	704	0.7−	0.3+				

1999 CX₈₅ = 1990 PM

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	210.88139		(2000.0)	P	Q	Williams	
<i>n</i>	0.28676311	ω	10.05593	+0.81568252	+0.56953517		
<i>a</i>	2.2774763	Ω	314.72507	−0.54018733	+0.68710211		
<i>e</i>	0.1775995	<i>i</i>	8.20908	−0.20702579	+0.45113233		
<i>P</i>	3.44	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1990 08 13	808	0.4+	0.2−	1999 02 10	704	0.2−	1.4−	1999 02 13	704	0.7+	0.8−
1990 08 13	808	0.4−	0.3+	1999 02 10	704	0.6+	0.7+	1999 02 13	704	(1.0−	2.5−)
1993 05 24	413	0.8−	0.5−	1999 02 10	704	0.7−	1.2+	1999 03 16	910	0.4+	0.2−
1993 05 24	413	0.8+	0.5+	1999 02 10	704	0.7−	1.0+	1999 03 16	910	0.1+	0.2+
1998 12 21	704	0.4+	0.8+	1999 02 10	704	0.5+	0.8−	1999 03 16	910	0.0	0.1+
1998 12 21	704	0.0	0.5+	1999 02 13	704	0.4+	1.1−	1999 03 20	910	0.1−	0.1+
1998 12 21	704	0.3−	0.0	1999 02 13	704	(1.1−	2.6−)	1999 03 20	910	0.0	0.3+
1998 12 21	704	0.9−	0.4−	1999 02 13	704	(1.8+	2.5−)	1999 03 20	910	0.2−	0.0

1999 CF₁₀₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	116.36437		(2000.0)	P	Q	Williams	
<i>n</i>	0.24588913	ω	241.50396	+0.75951884	−0.64458952		
<i>a</i>	2.5233442	Ω	158.25818	+0.64815200	+0.73856743		
<i>e</i>	0.2307132	<i>i</i>	13.64436	+0.05504643	+0.19754113		
<i>P</i>	4.01	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1991 02 06	675	0.9+	0.8−	1999 01 15	699	0.7−	0.2+	1999 02 16	704	0.1−	0.6−
1991 02 06	675	1.0−	0.3−	1999 02 12	704	0.1+	0.1+	1999 02 16	704	0.2−	0.0
1997 09 07	910	0.1+	0.5+	1999 02 12	704	0.7−	0.1−	1999 02 16	704	0.0	0.6+
1997 09 07	910	0.1+	0.5+	1999 02 12	704	1.3−	0.2+	1999 02 16	704	0.2−	1.0+
1997 09 07	910	0.2−	0.5+	1999 02 12	704	0.0	0.1−	1999 02 20	699	0.7+	0.1−
1999 01 15	699	0.2−	0.4+	1999 02 12	704	0.4−	0.6+	1999 02 20	699	1.7+	0.0
1999 01 15	699	1.0+	0.1−	1999 02 16	704	0.1−	0.1−	1999 02 20	699	0.8+	0.5+

1999 CS₁₁₃ = 1997 WQ₃₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	342.09387		(2000.0)	P		Q	
<i>n</i>	0.19161635	ω	336.50919	-0.91501949	+0.38647636		
<i>a</i>	2.9797580	Ω	226.75369	-0.34036411	-0.89350198		
<i>e</i>	0.0064352	<i>i</i>	9.13562	-0.21654469	-0.22867059		
<i>P</i>	5.14	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1997 11 29	704	0.6-	0.8+	1997 12 04	704	0.5+	1.2+	1999 02 16	704	0.0	0.8-
1997 11 29	704	1.1-	0.4+	1997 12 04	704	1.5+	0.6-	1999 02 16	704	0.2-	0.2+
1997 11 29	704	0.1-	0.8-	1999 02 12	704	3.4+	0.9-	1999 02 16	704	1.0+	0.3-
1997 11 29	704	0.7-	0.5-	1999 02 12	704	2.6-	0.5+	1999 02 23	699	0.3-	0.4-
1997 11 29	704	1.5-	1.2+	1999 02 12	704	0.9+	0.4-	1999 02 23	699	0.7-	0.7+
1997 12 04	704	0.6+	0.9-	1999 02 16	704	1.0-	1.2+	1999 02 23	699	0.6-	0.1-
1997 12 04	704	1.3+	0.7-	1999 02 16	704	0.0	0.4+				

1999 CV₁₂₁ = 1983 UH₁ = 1997 XP₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	281.00960		(2000.0)	P		Q	
<i>n</i>	0.21742263	ω	216.00579	-0.07593971	+0.96505369		
<i>a</i>	2.7390474	Ω	51.04166	-0.82271735	+0.08147017		
<i>e</i>	0.2142251	<i>i</i>	18.81657	-0.56335542	-0.24906624		
<i>P</i>	4.53	<i>H</i>	12.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1983 10 30	675	0.8+	1.2-	1999 01 23	699	0.5-	1.0-	1999 06 05	046	0.3-	0.7+
1983 11 04	675	0.3+	0.2+	1999 02 11	704	0.3+	0.5-	1999 06 05	046	1.0-	0.4-
1992 11 23	033	1.1-	0.5-	1999 02 11	704	0.7-	0.4-	1999 06 07	704	0.2-	0.0
1992 11 23	033	0.5-	1.4+	1999 02 11	704	0.1-	0.0	1999 06 07	704	0.3-	0.0
1997 10 28	327	0.3+	0.3+	1999 02 11	704	0.3-	1.1+	1999 06 07	704	1.0+	0.7+
1997 10 28	327	1.1+	0.7+	1999 02 11	704	0.6-	0.4+	1999 06 07	704	0.1+	0.5-
1997 10 28	327	0.8+	0.4+	1999 02 18	704	0.6+	0.4+	1999 06 07	704	0.4-	1.1-
1997 12 04	327	0.4+	0.2-	1999 02 18	704	1.0+	1.3+	1999 06 07	704	0.0	0.4-
1997 12 04	327	0.7+	0.3-	1999 02 18	704	0.3+	0.8+	1999 06 07	704	1.5-	0.1-
1997 12 04	327	1.5-	0.4+	1999 02 18	704	1.6+	0.4+	1999 06 07	704	1.2-	0.6-
1997 12 08	327	0.6-	0.8-	1999 02 18	704	0.4+	0.5+	1999 06 07	118	0.5+	1.2-
1997 12 08	327	0.3-	0.9-	1999 04 15	699	0.0	0.4+	1999 06 07	118	0.6+	0.1+
1997 12 08	327	0.3-	1.0-	1999 04 15	699	0.0	0.7+	1999 06 07	118	0.7+	0.9-
1997 12 17	327	0.4+	0.0	1999 04 15	699	1.2-	0.6-	1999 06 08	704	0.8-	0.1-
1997 12 17	327	0.4+	0.0	1999 06 04	704	0.0	0.0	1999 06 08	704	0.2-	1.2-
1997 12 17	327	0.5+	0.0	1999 06 04	704	0.6-	0.4-	1999 06 08	704	0.0	0.6-
1999 01 14	704	0.4-	0.6+	1999 06 04	704	0.9+	0.5+	1999 06 08	704	0.2-	0.6-
1999 01 14	704	0.5-	0.6+	1999 06 04	704	0.2+	0.4+	1999 06 08	704	0.7-	1.2-
1999 01 14	704	0.2+	1.2+	1999 06 04	704	0.1+	0.5+	1999 06 10	704	0.0	0.4+
1999 01 14	704	0.5+	1.7+	1999 06 05	734	1.8+	0.2-	1999 06 10	704	0.3-	0.2-
1999 01 14	704	(0.1+ 2.6+)		1999 06 05	734	(2.2+ 0.6-)		1999 06 10	704	0.0	0.5-
1999 01 23	699	0.1-	1.0-	1999 06 05	734	0.2+	0.5+	1999 06 10	704	0.5-	0.9+
1999 01 23	699	0.2+	1.1-	1999 06 05	046	0.1+	0.4-	1999 06 10	704	0.6-	1.0-

1999 DC₆ = 1976 YL₅ = 1993 RV₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	352.49074		(2000.0)	P		Q	
<i>n</i>	0.27660220	ω	316.49484	-0.79090145	+0.57780856		
<i>a</i>	2.3329152	Ω	259.87037	-0.49029656	-0.79539036		
<i>e</i>	0.0520616	<i>i</i>	11.81285	-0.36617506	-0.18300668		
<i>P</i>	3.56	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1976 12 18	095	(4.4- 3.2-)		1998 12 23	704	0.2+	0.2-	1999 05 07	704	0.5+	0.3-
1993 09 12	675	(3.3+ 0.1+)		1998 12 23	704	0.8+	1.5-	1999 05 07	704	(2.8+ 1.4-)	
1993 09 12	675	0.9+	0.2-	1999 02 17	704	0.5-	0.2-	1999 05 07	704	0.6+	1.2-
1993 09 14	675	0.9-	0.5-	1999 02 17	704	0.3-	0.8-	1999 06 08	704	1.3+	0.9+
1993 09 14	675	1.1+	0.7-	1999 02 17	704	0.1-	0.3-	1999 06 08	704	0.8+	0.4+
1996 07 14	566	0.1-	0.5-	1999 02 17	704	0.7-	0.0	1999 06 08	704	0.5+	0.5+

1996 07 14	566	0.1-	0.7-	1999 02 17	704	(2.3- 0.6-)		1999 06 08	704	0.5+	0.5+
1996 07 14	566	0.4-	0.6-	1999 02 19	704	0.9-	0.5-	1999 06 08	704	0.7+	0.7+
1997 12 27	566	0.0	0.6+	1999 02 19	704	1.0-	0.0	1999 06 10	704	0.4+	0.7+
1997 12 27	566	0.1-	0.4+	1999 02 19	704	1.2-	0.2+	1999 06 10	704	1.0+	0.9+
1997 12 27	566	0.3-	0.5+	1999 02 19	704	0.7-	0.1+	1999 06 10	704	0.0	0.7+
1998 12 23	704	0.2+	0.5-	1999 02 19	704	0.2+	0.4+	1999 06 10	704	0.2+	0.1-
1998 12 23	704	0.8+	0.1-	1999 05 07	704	0.2+	0.1-				
1998 12 23	704	0.9+	1.2-	1999 05 07	704	1.7-	0.5+				

1999 DT₆ = 1980 WT₁ = 1980 XZ₁ = 1994 AZ₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	78.48679		(2000.0)	P		Q	
<i>n</i>	0.23648525	ω	95.08064	-0.89279597	-0.15843157		
<i>a</i>	2.5898027	Ω	76.29794	-0.05588819	-0.88991819		
<i>e</i>	0.0512597	<i>i</i>	25.72379	+0.44698083	-0.42772077		
<i>P</i>	4.17	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1980 11 30	095	(2.9+ 4.2-)		1999 05 15	703	0.6+	0.0	1999 06 04	106	0.8+	0.6-
1980 12 10	095	1.5+	2.2-	1999 05 15	704	0.4+	0.1+	1999 06 04	106	(2.3+ 1.3-)	
1994 01 13	675	(2.2+ 5.4+)		1999 05 15	703	0.1-	0.0	1999 06 05	106	0.0	0.2-
1994 01 13	675	(0.2- 5.2+)		1999 05 15	704	0.9+	0.7-	1999 06 05	106	0.1+	0.2-
1994 01 16	675	0.9+	0.8+	1999 05 15	704	0.6+	0.1-	1999 06 05	106	0.3-	0.1-
1994 01 16	675	0.8-	0.5-	1999 05 15	703	0.7-	0.6-	1999 06 08	704	(0.5- 2.6-)	
1999 02 20	704	0.3-	1.7-	1999 05 15	704	1.0-	0.0	1999 06 08	704	0.8-	0.1+
1999 02 20	704	0.3-	0.2-	1999 05 15	703	0.7-	0.9-	1999 06 08	704	0.5-	0.3-
1999 02 20	704	1.0+	0.4+	1999 05 15	704	0.2-	1.4+	1999 06 08	704	0.2-	0.5-
1999 02 20	704	1.8+	1.2+	1999 05 17	704	0.1+	0.3-	1999 06 10	704	0.3-	0.2-
1999 02 20	704	1.3+	0.6+	1999 05 17	704	1.5+	1.1-	1999 06 10	704	0.2+	0.2-
1999 02 23	704	0.7-	1.4-	1999 05 17	704	0.4-	0.6+	1999 06 10	704	0.2-	0.3-
1999 02 23	704	0.4-	0.6-	1999 05 17	704	0.3+	0.0	1999 06 10	704	0.3-	0.0
1999 02 23	704	(2.0- 0.8+)		1999 05 17	704	0.3-	1.2+	1999 06 10	704	0.4-	0.6-
1999 02 23	704	1.7-	1.6+	1999 05 21	704	0.5-	0.1-	1999 06 14	704	0.4-	0.0
1999 05 12	704	0.0	0.2-	1999 05 21	704	0.5+	0.0	1999 06 14	704	0.1-	0.2-
1999 05 12	704	0.4+	0.3-	1999 05 21	704	0.5-	0.0	1999 06 14	704	0.2-	0.1-
1999 05 12	704	0.3+	0.2+	1999 05 21	704	0.1-	0.9+	1999 06 14	704	0.4-	0.4+
1999 05 12	704	0.1-	1.0+	1999 05 21	704	0.1+	0.9-	1999 06 14	704	0.0	0.1+
1999 05 12	704	0.4+	0.7+	1999 06 04	106	(2.1+ 0.3-)					

1999 DU₆ = 1973 AU₁ = 1992 WM₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	243.71374		(2000.0)	P		Q	
<i>n</i>	0.23978255	ω	274.27050	+0.88819484	-0.38976300		
<i>a</i>	2.5660060	Ω	108.81668	+0.45181785	+0.83712708		
<i>e</i>	0.1195215	<i>i</i>	14.89432	-0.08348987	+0.38380080		
<i>P</i>	4.11	<i>H</i>	12.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1973 01 01	095	0.1+	1.0-	1999 02 23	704	0.2+	0.1-	1999 05 21	704	0.8+	0.1-
1992 11 20	675	0.2-	0.0	1999 02 23	704	(1.4+ 2.6+)		1999 05 21	704	0.7-	0.6+
1992 11 20	675	1.0+	0.6+	1999 05 12	704	0.0	0.0	1999 05 21	704	0.2+	0.1-
1992 11 24	675	0.2-	0.1-	1999 05 12	704	0.8-	0.5+	1999 05 21	704	1.1-	0.1-
1992 11 24	675	0.6-	0.4-	1999 05 12	704	0.1-	1.1+	1999 06 05	703	0.2+	0.0
1998 01 28	566	0.6+	0.4+	1999 05 12	704	1.1-	0.5+	1999 06 05	703	0.3+	0.5+
1998 01 28	566	0.6+	0.4+	1999 05 12	704	0.4-	0.3+	1999 06 05	703	0.5+	0.4+
1998 01 28	566	0.5+	0.4+	1999 05 15	704	0.3+	0.0	1999 06 05	703	1.7+	0.7-
1998 02 25	566	0.6-	0.0	1999 05 15	704	0.7+	0.3+	1999 06 08	704	0.2+	0.0
1998 02 25	566	0.5-	0.1-	1999 05 15	704	1.5-	1.1+	1999 06 08	704	0.2+	0.1+
1998 02 25	566	0.3-	0.0	1999 05 15	704	1.3-	0.9+	1999 06 08	704	1.0+	0.3-
1999 02 20	704	1.2-	0.2+	1999 05 15	704	0.2-	0.4+	1999 06 08	704	0.1-	0.6-
1999 02 20	704	0.0	0.4-	1999 05 17	704	0.4+	0.3+	1999 06 08	704	0.2-	0.6-
1999 02 20	704	1.2+	1.2-	1999 05 17	704	0.4-	0.4-	1999 06 14	704	(2.3+ 1.5-)	
1999 02 20	704	0.2-	1.5-	1999 05 17	704	0.6+	0.3-	1999 06 14	704	(1.6+ 3.0-)	
1999 02 20	704	1.0-	0.1+	1999 05 17	704	1.2-	0.6-	1999 06 14	704	1.0+	1.1-
1999 02 23	704	1.0-	0.9+	1999 05 17	704	0.8-	0.5+	1999 06 14	704	0.7+	1.0-
1999 02 23	704	1.1+	0.1+	1999 05 21	704	0.7+	0.1+	1999 06 14	704	1.1+	1.2-

1999 DZ₆ = 1980 WE₁ = 1993 XX₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	79.52492	(2000.0)	P		Q	
<i>n</i>	0.23371686	ω	89.78681	-0.90785334	-0.36045597	
<i>a</i>	2.6102135	Ω	69.07930	+0.23085923	-0.85614448	
<i>e</i>	0.1163998	<i>i</i>	13.25575	+0.35000905	-0.37025413	
<i>P</i>	4.22	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1980 11 30	095	0.6-	1.6+	1999 05 10	704	0.3+	0.4-	1999 06 04	703	0.3+	0.0
1980 12 10	095	(1.1-	4.4+)	1999 05 10	704	1.1-	0.5+	1999 06 04	703	0.1+	0.9-
1993 12 14	675	(2.9-	1.0-)	1999 05 13	704	0.3+	0.1+	1999 06 04	703	0.2+	0.8+
1993 12 14	675	0.9-	1.3+	1999 05 13	704	0.5+	0.4-	1999 06 05	703	0.2+	0.0
1993 12 16	675	0.9+	0.6-	1999 05 13	704	0.0	0.2-	1999 06 05	703	0.5+	0.2+
1999 02 23	704	0.3-	0.5-	1999 05 13	704	0.1-	0.3+	1999 06 05	703	0.1-	0.1+
1999 02 23	704	1.0-	0.2-	1999 05 13	704	0.1-	0.6+	1999 06 05	703	0.3+	0.3+
1999 02 23	704	1.4+	1.3+	1999 05 14	704	0.5-	0.3+	1999 06 09	704	0.4+	0.3+
1999 02 23	704	0.3+	0.7-	1999 05 14	704	0.2+	0.3+	1999 06 09	704	0.2+	0.1-
1999 02 23	704	2.0-	0.0	1999 05 14	704	0.1-	0.1+	1999 06 09	704	0.3+	0.4+
1999 02 26	704	1.4-	0.5-	1999 05 14	704	0.4-	0.3+	1999 06 09	704	0.1+	0.5-
1999 02 26	704	1.3+	0.7+	1999 05 14	704	0.5-	0.5-	1999 06 09	704	0.2+	0.2-
1999 02 26	704	0.6-	1.3-	1999 05 18	704	0.2-	0.8-	1999 06 14	704	0.2+	0.6+
1999 02 26	704	(2.0+	1.1-)	1999 05 18	704	0.2-	0.6-	1999 06 14	704	0.5+	0.9+
1999 02 26	704	0.0	0.3+	1999 05 18	704	0.0	0.5-	1999 06 14	704	0.0	0.8+
1999 05 10	704	0.8+	0.2-	1999 05 18	704	0.2-	0.3+	1999 06 14	704	0.1-	0.9+
1999 05 10	704	0.1-	0.6+	1999 05 18	704	0.3-	0.1+	1999 06 14	704	0.1+	0.8+
1999 05 10	704	1.0+	0.9-	1999 06 04	703	0.5+	0.2-				

1999 EL₂ = 1996 SY₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	160.53868	(2000.0)	P		Q	
<i>n</i>	0.17286313	ω	212.78552	+0.84207670	-0.53935777	
<i>a</i>	3.1915462	Ω	179.85422	+0.50515071	+0.78858660	
<i>e</i>	0.0307370	<i>i</i>	2.91235	+0.18902272	+0.29533772	
<i>P</i>	5.70	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1991 12 04	691	0.8+	0.0	1996 09 22	327	0.1-	0.4+	1999 03 20	704	0.5-	1.0-
1991 12 04	691	0.0	0.1-	1996 09 22	327	0.0	0.2-	1999 03 20	704	1.1-	0.5+
1991 12 04	691	0.7-	0.2-	1996 09 22	327	0.1+	0.2+	1999 03 20	704	0.3-	1.7+
1996 09 18	327	0.3-	1.2+	1999 03 10	691	0.6+	0.2-	1999 03 20	704	0.6-	0.7+
1996 09 18	327	0.9+	0.1-	1999 03 10	691	0.6+	0.2-	1999 03 23	704	(3.2+	0.5-)
1996 09 18	327	0.9-	0.4+	1999 03 10	691	0.9+	0.1+	1999 03 23	704	0.5+	0.2-
1996 09 18	327	0.7+	0.3-	1999 03 11	691	1.5-	0.4-	1999 03 23	704	1.5+	0.1+
1996 09 18	327	1.0-	0.3+	1999 03 11	691	0.7-	0.3-	1999 03 23	704	1.5+	0.4+
1996 09 18	327	0.2-	0.6-	1999 03 11	691	0.7-	0.1-				
1996 09 22	327	0.4+	0.2-	1999 03 20	704	0.1+	0.0				

1999 ER₄ = 1987 SB₂₆ = 1987 ST₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	241.62158	(2000.0)	P		Q	
<i>n</i>	0.21263751	ω	138.04280	+0.90999911	+0.41366681	
<i>a</i>	2.7799872	Ω	197.58246	-0.40074815	+0.86028503	
<i>e</i>	0.1205592	<i>i</i>	5.30957	-0.10631337	+0.29797556	
<i>P</i>	4.64	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1987 09 24	095	1.9+	1.7-	1999 03 16	120	0.3+	0.4-	1999 04 09	699	(2.1+	0.6-)
1987 09 25	095	1.6-	0.2+	1999 03 16	120	0.4-	1.4+	1999 04 09	120	0.1-	0.4-
1992 11 21	691	0.0	0.2+	1999 04 03	120	1.0-	0.4-	1999 04 09	120	1.1-	0.1-
1992 11 21	691	0.1-	0.3+	1999 04 03	120	1.0-	0.9-	1999 04 14	704	1.1+	1.2-
1992 11 21	691	0.2+	0.4+	1999 04 05	120	0.4-	0.4-	1999 04 14	704	1.1-	0.1+
1998 01 07	691	0.2+	0.0	1999 04 05	120	0.2+	0.7-	1999 04 14	704	0.4-	1.5+
1998 01 07	691	0.1-	0.4-	1999 04 05	120	0.4+	0.2-	1999 04 14	704	0.3+	0.7+

1998 01 07	691	0.2-	0.1-	1999 04 06	691	0.4-	1.0-	1999 04 14	704	(4.5-	0.7+)
1999 03 14	120	0.4+	0.3+	1999 04 06	691	0.5-	0.7-	1999 04 15	704	0.4-	0.4+
1999 03 14	120	0.5+	0.1+	1999 04 06	691	0.3-	0.5-	1999 04 15	704	0.3-	0.1-
1999 03 15	120	0.7+	0.3+	1999 04 06	120	0.9+	0.7+	1999 04 15	704	1.6+	0.6-
1999 03 15	120	0.2+	0.4-	1999 04 06	120	0.8-	0.6-	1999 04 15	704	0.2-	0.3-
1999 03 15	120	0.7+	0.3+	1999 04 09	699	0.6+	1.3+	1999 04 15	704	0.0	0.5-
1999 03 16	120	0.9-	1.2+	1999 04 09	699	1.3+	0.0				

1999 EJ₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	315.50377	(2000.0)	P		Q	
<i>n</i>	0.25978476	ω	312.41016	+0.17590748	+0.98314610	
<i>a</i>	2.4325416	Ω	327.62159	-0.87366199	+0.13260532	
<i>e</i>	0.0664294	<i>i</i>	5.33625	-0.45362020	+0.12585535	
<i>P</i>	3.79	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1993 11 13	801	0.0	0.0	1999 03 20	704	0.3-	0.9+	1999 04 15	704	0.1-	0.1-
1993 11 13	801	0.1+	0.4-	1999 03 20	704	0.1+	0.7+	1999 04 15	428	0.5-	0.7-
1999 03 15	428	0.9+	0.6+	1999 03 20	704	1.7-	1.0-	1999 04 15	428	0.1-	0.5-
1999 03 15	428	0.1+	0.5+	1999 03 23	428	0.6-	0.3+	1999 04 23	428	0.5-	0.1+
1999 03 17	428	0.6-	0.1+	1999 03 23	428	0.4-	0.2-	1999 04 23	428	0.9+	0.0
1999 03 17	428	1.4-	0.3+	1999 04 06	428	0.3+	0.2-	1999 05 05	428	0.7+	0.2-
1999 03 17	428	0.1-	0.5-	1999 04 06	428	0.1-	0.3+	1999 05 05	428	0.2-	0.1+
1999 03 18	428	0.4+	0.1-	1999 04 14	704	0.9+	0.1-	1999 05 06	704	0.5+	1.6+
1999 03 18	428	0.2-	0.3+	1999 04 14	704	0.1-	0.7-	1999 05 06	704	0.0	0.6+
1999 03 19	704	0.2-	0.5-	1999 04 14	704	0.5+	1.6+	1999 05 06	704	0.4-	1.4-
1999 03 19	704	0.9+	1.4-	1999 04 14	704	1.5+	0.3+	1999 05 06	704	0.8-	1.0+
1999 03 19	704	0.4+	0.3+	1999 04 15	704	0.4+	0.3-	1999 05 06	704	(2.3-	0.6-)
1999 03 19	704	0.7-	0.1-	1999 04 15	704	0.0	0.0	1999 06 11	428	0.1-	0.3-
1999 03 20	704	0.2+	0.3-	1999 04 15	704	1.4+	0.8-	1999 06 11	428	1.2-	1.6-
1999 03 20	704	0.2+	0.3+	1999 04 15	704	0.8-	0.4+				

1999 EL₅ = 1977 RD₁₃Id. A. Gnädig (*MPC* 34553); 1999 EL₅ = 1971 MK (*ibid.*) is invalid

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	165.39864	(2000.0)	P		Q	
<i>n</i>	0.20585326	ω	118.29477	+0.69899217	-0.71496308	
<i>a</i>	2.8407360	Ω	287.35024	+0.65033071	+0.64447607	
<i>e</i>	0.0632811	<i>i</i>	0.92557	+0.29745573	+0.27106897	
<i>P</i>	4.79	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i> 1

Residuals in seconds of arc

1977 09 09	675	0.4+	0.4-	1998 01 02	704	0.0	0.1-	1999 03 18	557	0.4-	0.5+
1977 09 10	675	0.4-	0.6+	1998 01 02	704	0.1-	0.4-	1999 03 19	557	0.3+	0.3+
1996 09 18	566	0.2+	0.7+	1998 01 02	704	0.2-	0.1-	1999 03 19	557	0.2-	0.1+
1996 09 18	566	0.4+	0.7+	1998 01 26	704	0.0	0.1-	1999 03 24	557	0.1+	0.3+
1996 09 18	566	1.0-	0.7+	1998 01 26	704	0.1+	0.5+	1999 03 25	557	0.4+	0.4+
1996 12 01	327	0.0	0.1+	1998 01 26	704	0.1-	0.1+	1999 04 17	557	0.4+	0.1+
1996 12 01	327	0.0	0.2+	1998 01 26	704	0.9+	0.8+	1999 04 17	557	0.2+	0.1-
1996 12 01	327	0.6-	0.3-	1999 03 13	557	0.0	0.2-	1999 04 17	557	0.2+	0.2+
1998 01 02	704	0.3+	0.1+	1999 03 13	557	0.6-	0.1+				
1998 01 02	704	0.6-	0.0	1999 03 18	557	0.4+	0.4+				

1999 EP₅ = 1987 QB₂ = 1991 LF₄ = 1996 TM₃₈

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	260.23341	(2000.0)	P		Q	
<i>n</i>	0.22306440	ω	169.41065	+0.76150958	+0.64682381	
<i>a</i>	2.6926663	Ω	150.15866	-0.60059934	+0.72826250	
<i>e</i>	0.2203834	<i>i</i>	4.78386	-0.24368750	+0.22639056	
<i>P</i>	4.42	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1987 08 21	809	1.1+	0.4+	1996 10 07	809	1.1-	0.6-	1999 03 14	683	0.2+	0.2+
1987 08 21	809	1.0+	0.0	1996 10 07	809	0.1+	0.1-	1999 03 14	683	0.5+	0.2-
1987 08 21	809	2.4+	0.0	1996 10 07	809	0.1-	0.4-	1999 03 20	704	1.0+	0.3-
1987 08 25	809	(0.2+	3.5-)	1996 10 08	809	1.0-	2.3+	1999 03 20	704	0.6+	0.5+
1987 08 25	809	(0.6+	3.8-)	1996 10 08	809	0.1-	2.5+	1999 03 20	704	0.4+	1.5-
1987 08 25	809	0.3+	2.1-	1996 10 08	809	0.4+	1.5+	1999 03 20	704	0.0	1.1+
1987 08 27	809	1.5-	1.7-	1996 10 10	809	(2.6+	3.1+)	1999 03 23	704	0.2+	1.7+
1987 08 27	809	1.0-	0.6-	1996 10 10	809	(2.1+	3.2+)	1999 03 23	704	0.9-	1.6-
1987 08 27	809	0.9-	1.4-	1996 10 10	809	(2.1+	2.6+)	1999 03 23	704	1.3-	0.1-
1991 06 06	809	0.7+	1.9+	1999 03 13	683	0.2-	0.5-	1999 03 23	704	(4.2-	0.7-)
1991 06 06	809	0.3+	1.2+	1999 03 13	683	1.3-	0.3-				
1991 06 06	809	0.6-	0.7+	1999 03 13	683	0.6+	0.2-				

1999 ES₅ = 1988 RV₂

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	284.22411		(2000.0)	P	Q
<i>n</i>	0.23987087	ω	294.63575	+0.54559048	+0.83783646
<i>a</i>	2.5653761	Ω	8.50549	-0.71494131	+0.47715355
<i>e</i>	0.2031520	<i>i</i>	7.38170	-0.43725273	+0.26524435
<i>P</i>	4.11	<i>H</i>	14.1	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1988 08 19	675	0.2+	0.1+	1992 09 26	691	0.2+	0.4+	1999 03 14	683	0.8-	0.9-
1988 08 19	675	0.2+	0.6-	1992 09 26	691	0.5-	0.4+	1999 03 23	683	0.5-	0.7+
1988 09 08	033	0.1-	0.1-	1999 03 13	683	0.0	0.7+	1999 03 23	683	0.5-	0.4+
1988 09 08	033	0.5+	0.5-	1999 03 13	683	0.4+	0.6+	1999 03 23	683	0.5-	0.7+
1989 11 02	675	1.1-	1.0-	1999 03 13	683	0.7-	0.2-	1999 04 11	683	0.5+	0.1-
1989 11 09	675	1.8+	0.9+	1999 03 14	683	0.0	0.1-	1999 04 11	683	0.2+	0.5+
1989 11 09	675	0.1+	0.9-	1999 03 14	683	0.9+	0.0	1999 04 12	683	1.0+	0.7-
1990 01 30	675	0.6-	0.5+	1999 03 14	683	0.4+	0.5-	1999 04 12	683	0.7+	0.2+
1990 01 30	675	0.2-	0.5+	1999 03 14	683	0.9-	1.0-	1999 04 12	683	0.5+	0.2-
1992 09 26	691	0.5-	0.5+	1999 03 14	683	0.4-	0.0				

1999 EC₈ = 1995 KW₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	341.24864		(2000.0)	P	Q
<i>n</i>	0.23362491	ω	106.86362	+0.10915804	+0.99325379
<i>a</i>	2.6108983	Ω	169.17580	-0.97278317	+0.11483779
<i>e</i>	0.1466005	<i>i</i>	12.02760	-0.20439528	-0.01609938
<i>P</i>	4.22	<i>H</i>	13.8	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1995 05 30	675	0.1+	0.1-	1999 03 20	691	1.0-	0.1+	1999 05 12	704	0.2+	0.7-
1995 05 30	675	0.2+	0.1-	1999 03 20	691	0.5-	0.2+	1999 05 12	704	0.1+	1.7-
1995 06 01	675	0.2-	0.6+	1999 04 12	704	0.5+	1.0-	1999 05 12	704	0.0	0.8-
1996 07 24	599	0.7-	1.5+	1999 04 12	704	0.4+	1.1-	1999 05 12	704	0.0	1.1-
1996 07 24	599	0.9-	0.6+	1999 04 12	704	0.0	1.0-	1999 05 12	704	0.4+	0.4-
1996 07 24	599	0.2+	1.5-	1999 04 12	704	1.1+	0.7-	1999 05 15	704	0.3-	0.5-
1996 07 26	599	0.4-	0.2-	1999 04 12	704	0.4+	1.3-	1999 05 15	704	0.4-	0.5-
1996 07 26	599	1.2+	1.5+	1999 04 15	704	0.4+	0.8-	1999 05 15	704	0.1+	0.5+
1999 02 14	699	0.3+	1.6+	1999 04 15	704	1.4+	0.0	1999 05 15	704	0.9+	1.6+
1999 02 14	699	0.1+	0.5+	1999 04 15	704	0.4+	1.4-	1999 05 15	704	0.1+	1.1+
1999 02 14	699	0.2+	1.3+	1999 04 15	704	0.2+	0.5-	1999 05 17	704	0.2-	0.7+
1999 02 23	704	0.3-	1.9+	1999 04 15	704	(1.6-	2.2-)	1999 05 17	704	0.3+	1.2+
1999 02 23	704	0.8-	0.0	1999 04 16	703	0.4-	0.4+	1999 05 17	704	0.8-	0.7+
1999 02 23	704	1.1-	0.6+	1999 04 16	703	0.1-	0.3+	1999 05 17	704	0.3-	1.5+
1999 02 23	704	1.7+	0.3+	1999 04 16	703	0.1+	0.2-	1999 05 17	704	0.9-	0.8+
1999 02 23	704	(0.2+	2.9+)	1999 04 16	703	0.0	0.3-	1999 05 18	703	0.3-	0.2+
1999 03 12	691	0.6-	0.4+	1999 05 08	703	0.2-	0.0	1999 05 18	703	0.1-	0.2+
1999 03 12	691	0.4-	0.3+	1999 05 08	703	0.1-	0.2-	1999 05 18	703	0.2+	0.0
1999 03 12	691	0.4-	0.3+	1999 05 08	703	0.4-	0.2+	1999 05 18	703	0.6+	0.1-
1999 03 20	691	0.6-	0.1+	1999 05 08	703	0.4-	0.3+				

1999 EE₁₁ = 1996 TF₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	310.74580		(2000.0)	P	Q
<i>n</i>	0.17236259	ω	262.86715	+0.10854462	+0.99346513
<i>a</i>	3.1977221	Ω	13.51750	-0.84206299	+0.11075222
<i>e</i>	0.0519151	<i>i</i>	8.68265	-0.52834458	+0.02758608
<i>P</i>	5.72	<i>H</i>	14.1	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1996 10 05	327	0.3+	0.1+	1999 03 21	691	0.0	0.0	1999 04 17	703	0.2-	0.9+
1996 10 05	327	0.1-	0.4-	1999 03 21	691	0.1+	0.4+	1999 04 17	703	0.0	0.4-
1996 10 05	327	0.3-	0.0	1999 04 09	699	0.1-	1.6-	1999 04 17	703	0.4+	0.3-
1996 10 07	327	0.3+	0.1-	1999 04 09	699	0.8+	0.3+	1999 04 17	703	0.5-	0.5-
1996 10 07	327	0.4-	0.1+	1999 04 09	699	0.7-	0.0	1999 04 18	703	0.5+	0.1-
1996 10 07	327	0.2+	0.3+	1999 04 15	704	0.5-	1.6-	1999 04 18	703	1.3+	0.4-
1999 03 14	691	0.4-	0.3-	1999 04 15	704	0.4+	0.7+	1999 04 18	703	0.7+	0.2+
1999 03 14	691	0.2-	0.5-	1999 04 15	704	1.6-	1.4+	1999 04 18	703	0.3+	0.5+
1999 03 14	691	0.9+	0.8+	1999 04 15	704	1.1-	0.6+				

1999 FQ₃ = 1981 RH = 1987 DN₂

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	84.96607		(2000.0)	P	Q
<i>n</i>	0.23764144	ω	250.32870	+0.76336581	-0.63488889
<i>a</i>	2.5813958	Ω	148.73801	+0.64447715	+0.73603083
<i>e</i>	0.1753657	<i>i</i>	13.26956	+0.04383878	+0.23489300
<i>P</i>	4.15	<i>H</i>	13.3	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1981 09 03	688	0.1-	0.8-	1999 03 19	557	1.0-	0.4+	1999 04 06	732	0.8+	0.2-
1981 09 03	688	1.1+	0.2-	1999 03 24	557	1.8+	0.4+	1999 04 06	557	0.4+	0.2+
1981 09 26	688	(4.6+	2.6+)	1999 03 24	557	0.4+	0.8-	1999 04 06	557	0.4+	0.0
1981 09 26	688	0.8-	0.2+	1999 03 24	557	0.5-	0.2+	1999 04 14	557	0.4-	0.0
1987 02 23	010	0.6-	0.5-	1999 03 24	557	0.5+	0.5+	1999 04 18	557	0.4-	0.1+
1987 02 23	010	0.1+	0.6-	1999 03 24	557	0.3-	0.3+	1999 04 18	557	0.3+	0.6+
1987 02 23	010	0.4+	0.7-	1999 03 24	557	0.0	1.5-	1999 04 18	557	0.2+	0.3-
1999 03 18	557	0.1-	0.3+	1999 04 04	732	1.1-	0.5-	1999 04 23	557	0.3-	0.1+
1999 03 18	557	0.2+	0.3+	1999 04 04	732	0.6-	0.7+	1999 04 23	557	0.4-	0.2+
1999 03 18	557	0.1-	0.3+	1999 04 04	732	0.5-	0.5+	1999 04 23	557	0.2-	0.3+
1999 03 19	557	0.5-	0.4-	1999 04 06	732	0.4+	0.1-				
1999 03 19	557	0.2+	0.4+	1999 04 06	732	0.6+	0.2-				

1999 FS₃ = 1981 WD₈ = 1997 WP₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	48.44389		(2000.0)	P	Q
<i>n</i>	0.24243560	ω	41.56116	-0.91361153	-0.38024111
<i>a</i>	2.5472513	Ω	115.55319	+0.31805252	-0.88896537
<i>e</i>	0.0951336	<i>i</i>	9.18321	+0.25329146	-0.25525922
<i>P</i>	4.07	<i>H</i>	13.0	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1981 11 25	095	0.2-	1.0+	1999 02 18	699	0.2-	0.3+	1999 04 12	704	1.1+	0.4-
1997 11 26	566	(4.1+	13.6+)	1999 02 18	699	0.3-	0.1+	1999 04 12	704	1.3-	1.1-
1997 11 26	566	(3.8+	13.6+)	1999 02 18	699	0.1+	0.5+	1999 04 12	704	1.1+	1.2-
1997 11 26	566	(4.6+	13.6+)	1999 03 19	757	0.3+	2.1-	1999 04 12	704	0.8-	0.9-
1997 11 30	566	0.1-	0.9-	1999 03 19	757	0.2+	1.7-	1999 04 12	704	0.3-	0.3-
1997 11 30	566	0.3+	1.0-	1999 03 20	757	1.0-	1.1+	1999 05 05	757	0.2-	0.7+
1997 11 30	566	0.1+	0.8-	1999 03 20	757	0.0	0.5+	1999 05 05	757	1.2+	0.6+
1998 01 24	566	0.1+	0.4+	1999 03 22	757	0.1+	0.8+	1999 06 07	704	0.2+	0.3-
1998 01 24	566	0.0	0.3+	1999 03 22	757	0.4-	0.4+	1999 06 07	704	0.5+	0.5+
1998 01 24	566	0.3+	0.9+	1999 04 07	699	0.2-	0.7+	1999 06 07	704	0.1-	0.1+
1998 11 24	699	0.4+	1.2+	1999 04 07	699	0.2+	0.2-	1999 06 07	704	0.2+	0.4+
1998 11 24	699	0.0	1.2-	1999 04 07	699	0.1-	0.8+	1999 06 07	704	0.7+	0.0
1998 11 24	699	0.4-	0.7+	1999 04 08	757	0.5-	0.3+				

1999 FH₄ = 1974 QN₂

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	199.91821		(2000.0)	P		Q	
<i>n</i>	0.17926166	ω	181.21465	+0.98750852		+0.14815737	
<i>a</i>	3.1151415	Ω	169.78395	-0.14189421		-0.98417711	
<i>e</i>	0.3240403	<i>i</i>	17.60098	-0.06850518		+0.09718443	
<i>P</i>	5.50	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1974 08 27	095	0.7+	1.9+	1999 03 16	691	0.4-	1.2-	1999 03 20	704	0.9-	0.1+
1974 09 11	095	1.9+	1.6-	1999 03 19	691	0.5-	0.1+	1999 03 20	704	0.6-	2.4+
1974 09 14	095	2.9-	2.6+	1999 03 19	691	0.4-	0.1+	1999 03 20	704	0.3+	0.0
1974 09 14	095	(2.5-	6.8+)	1999 03 19	691	0.3-	0.1-	1999 03 23	704	0.7+	2.4+
1999 03 16	691	0.3-	0.6-	1999 03 20	704	0.2-	0.2+	1999 03 23	704	1.9+	0.6+
1999 03 16	691	0.3-	0.7-	1999 03 20	704	1.2+	1.0+	1999 03 23	704	(0.6+	4.1+)

1999 FJ₅ = 1997 WV₄₇

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	246.18416		(2000.0)	P		Q	
<i>n</i>	0.29673123	ω	344.04281	+0.93075421		+0.36556712	
<i>a</i>	2.2261814	Ω	354.49700	-0.32625110		+0.82095131	
<i>e</i>	0.2062296	<i>i</i>	4.52673	-0.16509641		+0.43863382	
<i>P</i>	3.32	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 01 27	691	0.1+	0.0	1997 12 06	704	0.6-	1.5+	1999 03 23	704	(2.2+	0.1+)
1992 01 27	691	0.1+	0.4-	1999 03 18	691	0.4+	0.4-	1999 03 23	691	0.4+	0.3-
1992 01 27	691	0.1-	0.6+	1999 03 18	691	0.4+	0.2-	1999 03 23	704	1.6-	0.6+
1997 11 23	327	0.1+	0.1-	1999 03 18	691	0.7+	0.0	1999 03 23	704	(2.2+	1.1+)
1997 11 23	327	0.1+	0.1-	1999 03 19	691	0.6-	0.2-	1999 03 23	704	(2.1-	0.8+)
1997 11 23	327	0.1+	0.2-	1999 03 19	691	0.5-	0.2-	1999 04 08	360	0.5+	0.2+
1997 11 26	704	1.8+	0.4+	1999 03 19	691	0.7-	0.2-	1999 04 08	360	0.7+	0.4+
1997 11 26	704	0.1+	0.8+	1999 03 20	704	0.8+	0.1+	1999 04 08	360	0.1+	0.3+
1997 11 26	704	0.2-	1.1+	1999 03 20	704	0.0	0.2-	1999 04 10	426	0.4-	0.1+
1997 12 06	704	2.0-	1.3-	1999 03 20	704	0.3+	0.6+	1999 04 10	426	0.7-	0.0
1997 12 06	704	0.6+	1.2-	1999 03 20	704	0.2-	0.0	1999 04 10	426	0.5+	0.1+
1997 12 06	704	0.2-	1.7-	1999 03 23	691	0.3+	0.4-				
1997 12 06	704	0.2+	0.5+	1999 03 23	691	0.4-	0.5-				

1999 FQ₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	230.82921		(2000.0)	P		Q	
<i>n</i>	0.53921127	ω	198.52221	+0.97623499		-0.20993284	
<i>a</i>	1.4949617	Ω	172.91136	+0.20803120		+0.97734982	
<i>e</i>	0.1610255	<i>i</i>	25.84184	-0.06073103		-0.02674958	
<i>P</i>	1.83	<i>H</i>	17.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1994 09 02	675	1.5+	0.6+	1999 03 20	658	0.6-	1.0+	1999 03 22	859	0.5-	0.4-
1994 09 02	675	0.0	2.4+	1999 03 20	658	0.2-	1.1+	1999 03 22	684	0.4+	0.8-
1994 09 05	675	1.5-	3.6-	1999 03 20	658	1.1-	2.0+	1999 03 22	684	0.2-	0.6-
1999 03 18	691	0.5-	0.1-	1999 03 20	691	0.0	0.5-	1999 03 22	684	0.8+	0.3-
1999 03 18	691	0.1+	0.4-	1999 03 20	691	0.2-	0.3-	1999 03 22	691	0.1+	0.4-
1999 03 18	691	(2.6+	1.8-)	1999 03 20	691	0.2-	0.2-	1999 03 22	691	0.2+	0.3-
1999 03 19	046	0.5+	0.1-	1999 03 20	587	0.3+	0.7-	1999 03 23	704	0.8+	3.2+
1999 03 19	046	0.1+	0.1-	1999 03 20	587	1.6+	0.5+	1999 03 23	704	1.1+	1.9+
1999 03 19	046	0.2-	0.5-	1999 03 20	118	0.0	0.3-	1999 03 23	704	(2.5-	1.3-)
1999 03 19	046	0.8-	0.3+	1999 03 20	118	0.0	0.0	1999 03 23	704	(3.2-	1.1+)
1999 03 19	046	0.1-	0.2-	1999 03 20	118	1.1-	0.1-	1999 03 24	691	1.1-	0.3-
1999 03 19	691	0.0	0.3-	1999 03 21	859	0.4-	0.0	1999 03 24	691	1.1-	0.3-
1999 03 19	691	0.2+	0.4-	1999 03 21	859	0.6+	0.0	1999 03 24	691	1.0-	0.1-
1999 03 19	691	0.1+	0.5-	1999 03 21	859	0.1+	0.7-	1999 04 09	691	0.8+	0.1+
1999 03 19	104	0.2-	0.6+	1999 03 21	734	0.9+	0.8-	1999 04 09	691	0.7+	0.2-

1999 03 19	104	0.2+	0.3-	1999 03 21	734	1.5-	0.7-	1999 04 09	691	0.6+	0.2-
1999 03 19	104	0.4-	0.2-	1999 03 21	658	0.1+	0.2+	1999 05 24	693	0.3-	0.1+
1999 03 20	704	0.6+	0.0	1999 03 21	658	0.4+	0.5+	1999 05 24	693	0.3-	0.1+
1999 03 20	704	1.7+	0.7-	1999 03 21	658	0.3+	1.1+	1999 05 24	693	0.3-	0.3-
1999 03 20	704	1.8+	0.5-	1999 03 22	859	0.5-	0.4-				
1999 03 20	704	1.4-	0.7-	1999 03 22	859	0.5-	0.0				

1999 FA₇ = 1996 TU₄₄ = 1998 AE₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	25.37382		(2000.0)	P		Q	
<i>n</i>	0.17773861	ω	162.61188	-0.94230361		+0.33439209	
<i>a</i>	3.1329120	Ω	36.93556	-0.31015408		-0.85446005	
<i>e</i>	0.1083148	<i>i</i>	1.49512	-0.12596961		-0.39759270	
<i>P</i>	5.55	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1991 12 13	691	0.1-	0.2-	1999 03 20	910	0.4+	0.5-	1999 04 12	691	0.0	0.6+
1991 12 13	691	0.1+	0.1+	1999 03 20	910	0.1+	0.5-	1999 04 12	704	0.9+	0.9+
1996 10 06	691	0.4+	0.4+	1999 03 20	910	0.4+	0.4-	1999 04 12	691	0.3-	0.1-
1996 10 06	691	0.4+	0.5+	1999 03 21	910	0.2+	0.8-	1999 04 12	704	0.3-	0.5+
1996 10 06	691	0.5+	0.6+	1999 03 21	910	0.4+	1.0-	1999 05 08	703	0.6+	0.8-
1996 10 15	691	1.2-	0.9+	1999 03 21	910	0.2+	0.5-	1999 05 08	703	0.0	0.1+
1996 10 15	691	1.0-	0.3+	1999 04 07	704	0.4-	0.6+	1999 05 08	703	0.5-	0.0
1998 01 05	327	0.4+	0.2-	1999 04 07	704	0.8-	0.5+	1999 05 08	703	1.0-	0.1-
1998 01 05	327	0.4+	0.4-	1999 04 07	704	0.1-	0.6-	1999 05 17	703	0.9+	0.4-
1998 01 05	327	0.1-	0.0	1999 04 07	704	1.0-	1.9+	1999 05 17	703	1.9+	1.2+
1998 01 05	327	0.3-	0.1+	1999 04 12	704	0.3+	0.4+	1999 05 17	703	0.7+	1.6+
1998 01 07	327	0.2+	0.5+	1999 04 12	704	0.1+	0.9-	1999 05 17	703	1.2-	0.9+
1998 01 07	327	0.2-	0.1+	1999 04 12	691	0.2-	0.2-				
1998 01 07	327	0.3-	0.1+	1999 04 12	704	0.0	0.4-				

1999 FS₇ = 1996 HU₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	320.77056		(2000.0)	P		Q	
<i>n</i>	0.31242454	ω	167.32156	+0.19941508		+0.97963997	
<i>a</i>	2.1509945	Ω	114.17741	-0.90126203		+0.19265902	
<i>e</i>	0.1874856	<i>i</i>	1.45848	-0.38465620		+0.05646268	
<i>P</i>	3.15	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 04 21	566	0.2+	0.3-	1999 03 20	704	0.4+	0.4+	1999 04 06	704	0.4+	0.0
1996 04 21	566	0.0	0.0	1999 03 20	704	0.4+	0.6-	1999 04 06	704	0.5+	0.6-
1996 04 21	566	0.8-	0.4+	1999 03 23	704	0.8-	0.3-	1999 04 12	704	1.4-	1.1-
1996 04 22	566	0.4+	0.1+	1999 03 23	704	0.5-	0.5+	1999 04 12	704	0.1+	0.1+
1996 04 22	566	0.4+	0.0	1999 03 23	704	0.4-	0.5+	1999 04 12	704	0.6+	0.1-
1996 04 22	566	0.2-	0.2-	1999 03 23	704	0.6-	1.1-	1999 04 12	704	0.4-	1.2+
1999 03 20	704	1.0+	0.4-	1999 03 23	704	1.1-	0.2+	1999 04 12	704	0.4+	0.4+
1999 03 20	704	0.3+	0.0	1999 04 06	704	0.4+	0.1+				
1999 03 20	704	0.5+	0.5+	1999 04 06	704	0.2+	0.5+				

1999 FY₇ = 1973 ST₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	180.16228		(2000.0)	P		Q	
<i>n</i>	0.36501279	ω	227.94206	+0.72637020		-0.68652126	
<i>a</i>	1.9390871	Ω	175.07110	+0.68721804		+0.72620587	
<i>e</i>	0.0876413	<i>i</i>	22.43176	-0.01084847		+0.03624350	
<i>P</i>	2.70	<i>H</i>	16.2	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1973 09 30	675	0.8+	0.6+	1999 03 23	704	1.2-	0.9+	1999 04 08	012	1.4+	1.1-
1973 10 04	675	0.8-	0.5-	1999 03 23	704	1.8+	0.5-	1999 04 12	704	1.6-	0.1+
1999 03 20	704	0.4-	0.6+	1999 03 23	704	0.7+	0.5+	1999 04 12	704	0.5+	0.7+
1999 03 20	704	0.7-	0.1-	1999 03 23	704	0.2+	0.8-	1999 04 12	704	0.2+	0.9-
1999 03 20	704	0.6+	0.1-	1999 04 08	012	0.2-	0.5+	1999 04 12	704	0.3-	0.0

M.P.C. 34946

1999 JUNE 22

1999 03 20 704 0.2- 0.2+ 1999 04 08 012 0.5- 0.6+
 1999 03 20 704 0.9- 0.5- 1999 04 08 012 0.5+ 0.0

1999 FL₉ = 1995 DA₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 183.72361 (2000.0)		P		Q	
<i>n</i>	0.26606504	ω	233.19930	+0.86090113	-0.50594409
<i>a</i>	2.3941104	Ω	157.04774	+0.49950391	+0.82051296
<i>e</i>	0.1172876	<i>i</i>	7.89589	+0.09667000	+0.26604336
<i>P</i>	3.70	<i>H</i>	14.2	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1995 02 24 098 1.0+ 0.3- 1999 03 22 699 0.4+ 0.2- 1999 04 06 704 0.1- 0.0
 1995 02 24 098 0.1+ 1.0- 1999 03 23 699 0.4+ 1.0+ 1999 04 06 704 0.9+ 0.1+
 1995 02 25 098 1.5- 0.1- 1999 03 23 699 1.4+ 0.1+ 1999 04 06 704 0.5- 0.0
 1995 02 26 098 0.2+ 0.6+ 1999 03 23 699 0.4- 1.3+ 1999 04 12 704 0.4- 0.3+
 1997 11 30 566 0.0 0.1+ 1999 04 06 699 0.4+ 0.5- 1999 04 12 704 0.3- 0.0
 1997 11 30 566 0.0 0.2+ 1999 04 06 699 0.0 0.1- 1999 04 12 704 0.3- 0.3+
 1997 11 30 566 0.0 0.0 1999 04 06 699 0.1+ 0.2- 1999 04 12 704 0.1- 0.2-
 1999 03 22 699 0.5+ 0.7+ 1999 04 06 704 0.5- 1.1- 1999 04 12 704 0.7- 0.6-
 1999 03 22 699 0.3+ 0.8+ 1999 04 06 704 0.6- 0.8-

1999 FO₉ = 1955 VM = 1976 UU₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 146.81101 (2000.0)		P		Q	
<i>n</i>	0.28025408	ω	267.82760	+0.52472661	-0.85015535
<i>a</i>	2.3126048	Ω	150.39304	+0.81188060	+0.48440346
<i>e</i>	0.1869035	<i>i</i>	5.05884	+0.25595287	+0.20637143
<i>P</i>	3.52	<i>H</i>	14.6	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1955 11 10 760 2.0- 0.3+ 1999 03 22 699 0.7- 0.1- 1999 04 12 704 0.1+ 0.3-
 1955 11 10 760 1.6+ 0.9- 1999 03 22 699 0.4- 0.3+ 1999 04 12 704 0.5+ 1.1-
 1976 10 21 808 0.4+ 0.2+ 1999 03 23 699 0.5- 0.1+ 1999 04 12 704 (2.5- 1.0+)
 1976 10 21 808 0.7+ 0.1+ 1999 03 23 699 0.5+ 1.6+ 1999 04 15 704 0.1- 0.1-
 1997 09 30 566 0.6- 0.7+ 1999 03 23 699 0.1+ 0.0 1999 04 15 704 0.6+ 1.3+
 1997 09 30 566 0.7- 0.6+ 1999 04 06 704 0.7- 0.1+ 1999 04 15 704 0.9+ 1.0-
 1997 09 30 566 0.4- 1.2+ 1999 04 06 704 (2.2- 0.2-) 1999 04 15 704 2.0- 0.2-
 1997 12 27 566 0.4+ 0.7+ 1999 04 06 704 1.0- 0.1- 1999 04 15 704 0.6- 1.0-
 1997 12 27 566 0.0 0.1+ 1999 04 06 704 0.5+ 0.1+ 1999 04 17 703 0.3- 0.8-
 1997 12 27 566 0.6- 0.7+ 1999 04 07 699 1.3+ 0.9+ 1999 04 17 703 0.9+ 1.0-
 1999 02 26 704 (2.3+ 2.1+) 1999 04 07 699 0.2- 0.2+ 1999 04 17 703 0.7- 0.1+
 1999 02 26 704 0.7+ 0.5+ 1999 04 07 699 0.4+ 0.2+ 1999 04 17 703 0.1+ 0.1+
 1999 02 26 704 1.4+ 1.1+ 1999 04 12 704 0.3- 0.5+
 1999 03 22 699 0.2- 0.9+ 1999 04 12 704 1.2+ 0.9+

1999 FR₉ = 1992 FQ₃ = 1997 WL₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 283.65987 (2000.0)		P		Q	
<i>n</i>	0.27906754	ω	258.46098	+0.48679241	+0.87320230
<i>a</i>	2.3191553	Ω	40.69616	-0.78675435	+0.44995752
<i>e</i>	0.0617728	<i>i</i>	2.06286	-0.37954017	+0.18723240
<i>P</i>	3.53	<i>H</i>	14.4	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1992 03 30 033 0.1- 0.9- 1997 12 04 704 0.7- 0.9+ 1999 03 23 699 0.0 0.2+
 1992 03 31 033 0.8- 1.3- 1997 12 04 704 0.3- 0.5+ 1999 04 06 704 0.8+ 0.5+
 1992 04 02 033 0.7- 1.3- 1997 12 04 704 0.3- 1.1+ 1999 04 06 704 0.0 0.0
 1992 04 03 033 (3.0- 1.2-) 1997 12 04 704 1.0+ 0.3- 1999 04 06 704 0.8- 0.1+
 1997 11 29 704 0.3- 0.6- 1999 02 20 699 0.6- 0.2- 1999 04 06 704 0.4+ 0.1+
 1997 11 29 704 1.5+ 0.5+ 1999 02 20 699 0.4- 0.2- 1999 04 06 704 0.8+ 1.0-
 1997 11 29 704 0.1+ 0.5- 1999 02 20 699 0.4- 0.2+ 1999 04 12 704 0.4- 0.0
 1997 11 29 704 0.6- 0.8- 1999 03 22 699 0.1+ 0.6+ 1999 04 12 704 0.6- 0.1+
 1997 11 29 704 0.2- 1.3- 1999 03 22 699 0.8+ 0.3+ 1999 04 12 704 0.7- 0.2+
 1997 11 30 566 (2.0- 2.3-) 1999 03 22 699 0.8+ 0.5+ 1999 04 12 704 1.6+ 1.0+

1997 11 30 566 (2.6- 3.4-) 1999 03 23 699 0.1+ 0.3- 1999 04 12 704 0.3- 1.2+
 1997 11 30 566 (1.9- 2.7-) 1999 03 23 699 0.3+ 0.0

1999 FS₉ = 1955 QD₁ = 1982 BG₇ = 1988 SA

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 246.96230 (2000.0)		P		Q	
<i>n</i>	0.23953743	ω	327.86269	+0.89020777	+0.45537290
<i>a</i>	2.5677562	Ω	5.09942	-0.38130614	+0.76027883
<i>e</i>	0.1525553	<i>i</i>	8.32569	-0.24927043	+0.46326193
<i>P</i>	4.11	<i>H</i>	13.6	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1955 08 25 760 0.6+ 0.6+ 1988 09 16 511 (2.9+ 2.1+) 1999 03 23 699 0.1+ 0.6-
 1955 08 25 760 1.7- 1.2+ 1988 09 17 511 0.6+ 0.2- 1999 04 06 704 0.9- 0.3+
 1982 01 26 381 0.2+ 0.4+ 1988 09 17 511 (4.1+ 2.4+) 1999 04 06 704 1.0- 0.1+
 1982 01 26 381 0.0 0.1- 1995 03 27 691 0.5- 0.6- 1999 04 06 704 0.5- 0.5+
 1988 09 10 675 0.7- 0.1+ 1995 03 27 691 0.3- 0.2- 1999 04 06 704 0.6+ 0.5+
 1988 09 10 675 1.0- 0.8- 1995 03 27 691 0.1- 0.2- 1999 04 06 704 0.6- 1.2+
 1988 09 12 675 1.0- 0.2- 1999 02 20 699 0.6+ 0.3+ 1999 04 07 699 0.3- 0.3-
 1988 09 12 675 0.4- 1.2- 1999 02 20 699 0.2- 1.3+ 1999 04 07 699 0.5+ 0.0
 1988 09 15 511 2.4+ 0.3- 1999 02 20 699 0.1+ 0.1+ 1999 04 07 699 1.2+ 0.2+
 1988 09 15 511 1.9+ 0.2+ 1999 03 22 699 0.2- 0.2- 1999 04 12 704 0.1- 1.5-
 1988 09 15 511 (4.6+ 2.7+) 1999 03 22 699 0.5+ 0.4- 1999 04 12 704 0.9+ 0.1-
 1988 09 15 095 (2.7- 3.1+) 1999 03 22 699 0.8+ 1.0- 1999 04 12 704 0.1- 0.9-
 1988 09 15 095 1.1- 0.7+ 1999 03 23 699 0.7+ 0.2+ 1999 04 12 704 0.5- 0.1-
 1988 09 16 511 0.7+ 0.6- 1999 03 23 699 0.7- 0.0 1999 04 12 704 0.6- 0.7+

1999 FA₁₀ = 1951 RY = 1990 DP₃ = 1994 CX₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 182.15960 (2000.0)		P		Q	
<i>n</i>	0.21742938	ω	52.59980	+0.93017615	-0.36624314
<i>a</i>	2.7389907	Ω	328.86122	+0.31949366	+0.84149656
<i>e</i>	0.1110720	<i>i</i>	2.80041	+0.18082071	+0.39717693
<i>P</i>	4.53	<i>H</i>	12.5	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1951 09 04 024 0.6- 1.1+ 1994 01 18 691 0.4- 0.9+ 1999 03 22 699 0.0 0.2-
 1951 09 05 024 (5.1- 27.5+) 1994 01 18 691 0.9- 0.9+ 1999 03 23 699 0.2- 0.5+
 1951 09 06 024 (3.4+ 4.4+) 1994 01 18 691 0.9- 0.9+ 1999 03 23 699 0.5+ 0.8+
 1990 02 24 809 (2.2- 0.3+) 1994 02 12 675 0.3+ 0.1+ 1999 03 23 699 0.5- 0.4+
 1990 02 24 809 1.8- 0.5+ 1994 02 12 675 0.3+ 0.6- 1999 04 06 704 0.3+ 0.9-
 1990 02 24 809 1.8- 0.3+ 1994 02 15 675 0.9+ 1.2- 1999 04 06 704 0.2+ 0.2+
 1990 02 26 809 1.2- 0.1+ 1994 02 15 675 1.0+ 1.2- 1999 04 06 704 0.7+ 0.1-
 1990 02 26 809 0.8- 0.2+ 1996 10 16 566 0.2- 0.1+ 1999 04 06 704 0.0 0.2+
 1990 02 26 809 0.3- 0.2+ 1996 10 16 566 0.2- 0.0 1999 04 06 704 0.1- 0.4+
 1990 02 27 809 0.5+ 0.0 1996 10 16 566 0.7+ 0.3+ 1999 04 09 699 0.6- 0.7+
 1990 02 27 809 0.9+ 0.1- 1998 12 23 704 0.7+ 0.8- 1999 04 09 699 0.3- 0.5+
 1990 02 27 809 1.3+ 0.4- 1998 12 23 704 (0.2- 2.8-) 1999 04 09 699 0.3- 0.9+
 1990 03 01 809 0.9+ 0.4- 1998 12 23 704 (2.4- 3.4-) 1999 04 14 704 0.6- 0.3+
 1990 03 01 809 1.2+ 0.4- 1998 12 23 704 (3.5- 0.4-) 1999 04 14 704 1.5+ 0.7-
 1990 03 01 809 1.5+ 0.5- 1999 03 22 699 0.1- 0.1+ 1999 04 14 704 0.7+ 1.0-
 1992 10 20 095 0.6- 0.9+ 1999 03 22 699 0.6- 0.4+ 1999 04 14 704 0.5- 1.6+

1999 FC₁₀ = 1989 TD₂ = 1991 EX₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 220.94764 (2000.0)		P		Q	
<i>n</i>	0.25789493	ω	174.58227	+0.99566371	+0.09302552
<i>a</i>	2.4444107	Ω	180.08052	-0.08890979	+0.95112705
<i>e</i>	0.1455100	<i>i</i>	6.23837	-0.02736459	+0.29445474
<i>P</i>	3.82	<i>H</i>	13.3	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1989 10 01 809 0.9- 0.0 1989 10 10 809 0.9- 1.0+ 1999 03 23 699 1.0+ 0.8+
 1989 10 01 809 0.6- 0.0 1989 10 10 809 0.6- 1.0+ 1999 03 23 699 0.4- 0.3-
 1989 10 01 809 0.3- 0.0 1989 10 10 809 0.2- 1.0+ 1999 03 23 699 0.1+ 1.8+

1989 10 02	809	1.9−	0.5−	1989 10 10	809	0.3+	1.0+	1999 04 06	704	1.2−	0.8+
1989 10 02	809	1.5−	0.6−	1991 03 07	809	0.2−	0.9+	1999 04 06	704	0.4−	0.1−
1989 10 02	809	0.8−	0.6−	1991 03 07	809	0.5+	0.5+	1999 04 06	704	0.2+	0.5−
1989 10 04	046	3.4+	0.8−	1991 03 07	809	0.8+	0.7+	1999 04 06	704	0.1−	0.3−
1989 10 04	046	2.5+	1.8−	1991 03 09	809	0.2−	1.0−	1999 04 06	704	0.2−	0.8−
1989 10 05	046	(8.1+	2.2+)	1991 03 09	809	0.5−	1.1−	1999 04 12	704	0.1−	0.4−
1989 10 05	046	(6.1+	0.0)	1991 03 09	809	0.6−	0.8−	1999 04 12	704	0.1+	0.9−
1989 10 09	809	0.1+	0.3+	1999 03 22	699	0.7+	0.2−	1999 04 12	704	0.5−	0.0
1989 10 09	809	0.3+	0.2+	1999 03 22	699	0.5+	0.0	1999 04 12	704	0.1+	0.1+
1989 10 09	809	0.7+	0.3+	1999 03 22	699	0.7+	1.3+	1999 04 12	704	0.3−	0.1+

1999 FD₁₀ = 1989 UP₇

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	61.62754		(2000.0)	P	Q		
<i>n</i>	0.24498308	ω	325.36265	−0.83816545	−0.54541476		
<i>a</i>	2.5295620	Ω	181.58576	+0.50959426	−0.78234007		
<i>e</i>	0.0886770	<i>i</i>	2.45477	+0.19440257	−0.30077690		
<i>P</i>	4.02	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1989 10 23	033	0.5+	1.2+	1999 03 23	699	0.2−	0.0	1999 04 12	704	0.8+	0.6+
1989 10 23	033	0.0	0.3+	1999 03 23	699	0.5+	0.8+	1999 04 12	704	0.4−	0.1+
1989 10 25	033	0.1+	0.7−	1999 03 23	699	0.2+	0.2−	1999 04 12	704	0.6+	0.5+
1989 10 25	033	0.1+	0.5−	1999 04 06	704	0.4+	0.4−	1999 04 12	704	0.2+	0.5+
1989 10 27	033	0.8−	0.3−	1999 04 06	704	1.2−	1.2−	1999 04 15	704	0.7−	1.4−
1999 03 22	699	0.4−	0.5+	1999 04 06	704	1.2−	1.3−	1999 04 15	704	1.0+	0.6+
1999 03 22	699	0.7+	0.0	1999 04 06	704	0.5−	0.3+	1999 04 15	704	0.1+	0.5+
1999 03 22	699	0.2+	0.1−	1999 04 12	704	0.0	0.3+	1999 04 15	704	(2.2−	2.4+)

1999 FF₁₀ = 1996 TG₅₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	319.94998		(2000.0)	P	Q		
<i>n</i>	0.23446984	ω	270.37112	−0.04463884	+0.99892728		
<i>a</i>	2.6046221	Ω	356.98651	−0.79783475	−0.04306607		
<i>e</i>	0.1275142	<i>i</i>	13.54767	−0.60122132	−0.01701762		
<i>P</i>	4.20	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 09 11	566	(6.2−	2.4+)	1999 03 10	691	(3.3−	0.4−)	1999 04 06	704	0.9−	0.3+
1996 09 11	566	(6.2−	2.7+)	1999 03 19	691	0.4−	0.5−	1999 04 06	704	1.2−	0.6+
1996 09 11	566	(6.5−	2.6+)	1999 03 19	691	0.2−	0.7−	1999 04 06	704	0.1+	0.6−
1996 10 05	809	0.5+	0.6−	1999 03 19	691	0.9−	0.6−	1999 04 06	704	0.1+	1.1−
1996 10 05	809	1.1−	0.1+	1999 03 22	699	0.7+	0.6+	1999 04 09	699	0.2+	0.2−
1996 10 05	809	1.0−	0.7−	1999 03 22	699	0.2+	1.5+	1999 04 09	699	0.9+	0.4−
1996 10 06	809	1.0+	0.5+	1999 03 22	699	1.2+	0.3+	1999 04 09	699	0.5+	0.6−
1996 10 06	809	0.9+	0.4+	1999 03 23	699	0.5+	0.7+	1999 04 14	704	(1.0+	2.2−)
1996 10 06	809	0.2−	0.1+	1999 03 23	699	0.7+	1.1+	1999 04 14	704	0.5−	0.4+
1999 03 10	691	0.7−	0.5−	1999 03 23	699	0.7+	0.8+	1999 04 14	704	0.8+	0.7−
1999 03 10	691	0.6−	0.8−	1999 04 06	704	0.3−	1.0−	1999 04 14	704	1.1−	1.5+

1999 FV₁₀ = 1982 DR₁ = 1989 GX₆ = 1990 SY₁₂ = 1992 CO₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	331.52688		(2000.0)	P	Q		
<i>n</i>	0.28939652	ω	260.86811	−0.37019736	+0.92872776		
<i>a</i>	2.2636390	Ω	347.34577	−0.81140509	−0.33399930		
<i>e</i>	0.0501043	<i>i</i>	5.35941	−0.45230046	−0.16096343		
<i>P</i>	3.41	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1982 02 24	801	2.1+	0.1+	1999 02 20	699	1.0+	1.1+	1999 03 23	704	0.1−	1.2+
1989 04 03	809	0.0	0.6+	1999 02 20	699	1.8+	0.7+	1999 03 23	699	1.2+	0.6−
1989 04 03	809	0.5−	0.8+	1999 02 20	699	2.0+	0.3+	1999 04 06	704	0.7−	0.3+
1989 04 03	809	0.8−	0.3+	1999 03 16	691	0.3−	1.5−	1999 04 06	704	0.4−	0.3−
1990 09 21	809	0.1+	0.5−	1999 03 16	691	0.4−	0.1−	1999 04 06	704	0.5−	0.6−

1990 09 21	809	0.4+	0.5−	1999 03 20	704	0.2−	0.8−	1999 04 06	704	0.6−	0.8+
1990 09 21	809	0.6+	0.5−	1999 03 20	704	0.8−	0.4−	1999 04 06	704	0.8−	0.5+
1990 09 22	809	0.3−	0.1+	1999 03 20	704	0.2−	0.6−	1999 04 09	699	0.5+	0.2−
1990 09 22	809	0.1−	0.2−	1999 03 20	704	0.0	0.3−	1999 04 09	699	0.4+	1.2+
1990 09 22	809	0.4+	0.1+	1999 03 20	704	0.6−	0.4−	1999 04 09	699	0.6+	0.5−
1992 02 01	372	1.2−	0.1−	1999 03 21	691	0.8−	0.0	1999 05 09	327	0.0	0.1−
1992 02 01	372	0.1−	1.7+	1999 03 21	691	0.8−	0.1−	1999 05 09	327	0.4+	0.4−
1999 01 13	699	0.9−	0.1−	1999 03 21	691	1.1−	0.0	1999 05 09	327	0.1+	0.3−
1999 01 13	699	0.1+	0.4−	1999 03 23	704	0.0	0.3−	1999 05 10	327	0.4−	0.1−
1999 01 13	699	0.3−	0.7+	1999 03 23	704	0.5−	0.4+	1999 05 10	327	0.2−	0.4−
1999 02 19	566	0.1−	1.1−	1999 03 23	699	0.3+	0.4−	1999 05 10	327	0.3+	0.5−
1999 02 19	566	0.1+	0.8−	1999 03 23	704	0.0	0.6+				
1999 02 19	566	0.3−	0.9−	1999 03 23	699	1.2+	0.7−				

1999 FV₁₂ = 1974 DF

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	79.43130		(2000.0)	P	Q		
<i>n</i>	0.19986723	ω	94.13925	−0.48756111	−0.87236429		
<i>a</i>	2.8971767	Ω	25.13881	+0.76415929	−0.44607910		
<i>e</i>	0.2552009	<i>i</i>	4.80208	+0.42230882	−0.19998495		
<i>P</i>	4.93	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1974 02 19	029	0.3+	0.2−	1997 10 31	704	0.8−	0.2−	1999 04 14	704	1.4+	0.6−
1974 02 20	029	0.1−	0.5−	1999 03 18	691	0.3−	0.7+	1999 04 14	704	0.7−	1.3−
1974 02 23	029	1.0−	0.4−	1999 03 18	691	0.2−	0.4+	1999 04 14	704	0.5−	0.5+
1974 02 27	029	0.1+	0.5−	1999 03 18	691	0.2−	0.4+	1999 04 15	704	0.3−	0.9+
1997 10 29	704	(2.5−	0.5+)	1999 03 22	691	0.1−	0.5+	1999 04 15	704	1.3+	0.1−
1997 10 29	704	0.2−	0.1+	1999 03 22	691	0.0	0.6+	1999 04 15	704	0.8+	1.8−
1997 10 29	704	1.1+	2.0+	1999 03 22	691	0.0	0.4+	1999 04 15	704	0.0	0.4−
1997 10 29	704	0.2−	0.2+	1999 04 07	704	0.9+	0.9+	1999 04 15	704	0.7+	0.1−
1997 10 31	704	0.4−	0.3+	1999 04 07	704	1.4−	1.8+	1999 04 16	691	0.3+	0.2+
1997 10 31	704	0.4−	0.9+	1999 04 07	704	0.5−	0.8−	1999 04 16	691	0.5+	0.5+
1997 10 31	704	0.2−	0.2−	1999 04 07	704	0.3−	0.4+	1999 04 16	691	0.1+	0.9+
1997 10 31	704	0.4−	0.5+	1999 04 14	704	0.6+	0.4+				

1999 FO₁₄ = 1992 SH₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	159.70210		(2000.0)	P	Q		
<i>n</i>	0.22774414	ω	38.86505	+0.45117117	−0.89229617		
<i>a</i>	2.6556525	Ω	24.32844	+0.80887429	+0.40134405		
<i>e</i>	0.0655416	<i>i</i>	2.20889	+0.37705034	+0.20671358		
<i>P</i>	4.33	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 09 27	691	0.0	0.0	1996 07 21	809	(2.5−	3.3+)	1999 04 07	704	0.9−	1.0−
1992 09 27	691	0.2+	0.0	1996 08 10	566	0.2+	0.5−	1999 04 07	704	0.1−	0.4+
1992 09 27	691	1.6−	0.2+	1996 08 10	566	0.1+	0.1+	1999 04 15	704	0.7−	0.1−
1992 10 02	691	0.2+	0.3+	1996 08 10	566	0.1−	0.1−	1999 04 15	704	0.5−	0.0
1992 10 02	691	0.3+	0.5+	1999 03 19	691	0.2−	0.4−	1999 04 15	704	0.3−	0.1+
1992 10 02	691	0.1+	0.6+	1999 03 19	691	0.2−	0.3−	1999 04 15	704	0.3−	0.3+
1996 07 14	809	(2.4−	3.1−)	1999 03 19	691	0.0	0.1+	1999 04 15	704	0.1−	0.3+
1996 07 14	809	(2.5−	2.8−)	1999 03 23	691	0.1+	0.2+	1999 04 18	703	0.6+	0.0
1996 07 14	809	(2.3−	3.0−)	1999 03 23	691	0.2+	0.5+	1999 04 18	703	1.6+	0.1+
1996 07 21	809	(1.3−	2.7+)	1999 04 07	704	(2.4+	0.1+)	1999 04 18	703	0.1−	0.1

M.P.C. 34948

1999 JUNE 22

Residuals in seconds of arc

1995 03 02	691	0.0	0.1−	1997 12 05	691	0.1+	0.3+	1999 04 17	703	0.9−	1.1+
1995 03 02	691	0.4−	0.3−	1997 12 05	691	0.1−	0.0	1999 04 17	703	1.3−	0.7−
1995 03 02	691	0.2+	0.6−	1997 12 05	691	0.1+	0.5+	1999 04 17	703	2.0+	0.5−
1995 03 08	691	0.1+	0.1−	1999 03 19	691	0.6−	0.5+	1999 04 17	703	0.7+	0.8−
1995 03 08	691	0.2−	0.0	1999 03 19	691	0.6−	0.4+	1999 04 18	703	0.1+	0.3−
1995 03 08	691	0.2−	0.1+	1999 03 19	691	0.6−	0.5+	1999 04 18	703	0.4+	0.5+
1997 11 23	691	0.1−	0.1+	1999 03 23	691	0.4−	0.4+	1999 04 18	703	0.0	0.1−
1997 11 23	691	0.1−	0.2+	1999 03 23	691	0.2+	0.3+	1999 04 18	703	1.5+	0.3+
1997 11 23	691	0.2−	0.1+	1999 03 23	691	0.2+	0.5+				

1999 FF₁₈ = 1991 RZ₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	341.97925		(2000.0)	P	Q
<i>n</i>	0.22389792	ω	97.71863	+0.05930856	+0.99807698
<i>a</i>	2.6859794	Ω	175.56050	−0.98284606	+0.06154304
<i>e</i>	0.2101386	<i>i</i>	13.46446	−0.17463135	−0.00740314
<i>P</i>	4.40	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1991 09 13	691	0.0	0.9+	1999 03 24	699	0.9−	0.1+	1999 05 12	704	0.2−	0.7−
1991 09 13	691	0.2−	1.1+	1999 03 24	699	0.2+	0.9+	1999 05 15	704	0.2−	0.2+
1991 09 13	675	0.3−	1.1−	1999 04 12	704	0.1−	1.3−	1999 05 15	704	1.4+	0.8+
1991 09 13	691	0.6−	0.6+	1999 04 12	704	0.8−	0.1−	1999 05 15	704	1.1+	1.5+
1991 09 13	675	0.4+	1.8−	1999 04 12	704	1.6−	0.3−	1999 05 15	704	0.5+	0.8+
1991 09 16	675	0.9+	0.5+	1999 04 12	704	0.1−	0.0	1999 05 15	704	1.0+	0.1−
1991 09 16	675	0.0	0.3−	1999 04 12	704	0.6+	0.3−	1999 05 17	704	0.4+	0.3−
1999 03 20	699	0.3+	0.8+	1999 05 12	704	0.2−	0.5−	1999 05 17	704	0.3−	0.1−
1999 03 20	699	0.8+	0.1−	1999 05 12	704	0.3+	0.9−	1999 05 17	704	(2.2− 1.5−)	
1999 03 20	699	0.6+	0.7−	1999 05 12	704	0.1+	1.0−	1999 05 17	704	1.6−	0.6+
1999 03 24	699	0.1−	0.3+	1999 05 12	704	0.1−	0.7−	1999 05 17	704	1.0−	1.2+

1999 FT₁₈ = 1993 TZ₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	349.95164		(2000.0)	P	Q
<i>n</i>	0.26505421	ω	231.75477	−0.50373925	+0.86369694
<i>a</i>	2.4001934	Ω	8.04874	−0.75101823	−0.42838513
<i>e</i>	0.0893766	<i>i</i>	6.79393	−0.42687045	−0.26554428
<i>P</i>	3.72	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1993 10 12	691	0.3−	0.1−	1999 03 24	699	1.2+	1.0+	1999 04 12	704	(2.2− 0.1−)	
1993 10 12	691	0.1+	0.1−	1999 04 06	704	0.6+	1.1−	1999 04 14	704	0.6−	1.2+
1993 10 12	691	0.0	0.2−	1999 04 06	704	0.7+	0.1−	1999 04 14	704	1.3+	0.7+
1993 10 20	691	0.0	0.2+	1999 04 06	704	0.9−	0.4+	1999 04 14	704	0.1+	0.1−
1993 10 20	691	0.2+	0.1+	1999 04 06	704	0.5+	0.2+	1999 04 14	704	1.4−	0.9−
1993 10 20	691	0.1+	0.1+	1999 04 06	704	0.8−	1.3−	1999 04 14	704	(5.3− 0.6+)	
1999 03 22	699	(2.2− 0.6+)		1999 04 07	699	0.4+	0.5+	1999 04 15	704	0.6+	0.7+
1999 03 22	699	1.4−	0.1−	1999 04 07	699	1.0+	0.8+	1999 04 15	704	0.5−	1.4+
1999 03 22	699	0.5−	0.5−	1999 04 07	699	0.5+	0.2−	1999 04 15	704	0.3+	0.8+
1999 03 24	699	0.1+	0.6+	1999 04 12	704	0.2−	0.8−	1999 04 15	704	0.2+	0.4−
1999 03 24	699	0.2+	0.4−	1999 04 12	704	1.1−	1.2−	1999 04 15	704	0.3−	0.1+

1999 FW₁₈ = 1991 GV₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	357.38952		(2000.0)	P	Q
<i>n</i>	0.24264068	ω	29.63514	−0.63240347	+0.77443652
<i>a</i>	2.5458158	Ω	201.15310	−0.72002575	−0.59610014
<i>e</i>	0.1478930	<i>i</i>	2.81430	−0.28570749	−0.21192616
<i>P</i>	4.06	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1991 04 08	809	(0.9− 2.7+)		1999 03 22	699	0.5+	0.3−	1999 04 07	699	0.5+	0.1−
1991 04 08	809	1.1−	2.0+	1999 03 22	699	0.6+	0.4−	1999 04 07	699	0.3+	0.3−
1991 04 08	809	1.3−	1.0+	1999 03 22	699	0.4+	0.6+	1999 04 07	699	0.3+	0.5+

1991 04 10	809	1.2+	0.2+	1999 03 24	699	0.2+	1.2+	1999 04 14	704	0.9−	0.8+
1991 04 10	809	0.9+	0.4+	1999 03 24	699	0.2−	0.4+	1999 04 14	704	0.5+	0.6−
1991 04 10	809	0.8+	0.4+	1999 03 24	699	0.1−	0.8+	1999 04 14	704	1.7+	0.0
1991 04 19	809	1.3−	0.6+	1999 04 06	691	1.1−	0.4−	1999 04 15	704	0.1+	0.3+
1991 04 19	809	0.3−	0.5+	1999 04 06	691	1.0−	0.7−	1999 04 15	704	0.4−	0.7−
1991 04 19	809	0.1+	0.0	1999 04 06	691	1.0−	0.4−	1999 04 15	704	1.8+	0.7+
1991 04 19	675	0.5+	1.8−	1999 04 06	704	0.4−	0.3−	1999 04 15	704	0.2−	0.1−
1991 04 19	675	1.0+	1.6−	1999 04 06	704	0.8−	0.2−	1999 04 15	704	0.4−	0.0
1996 08 17	566	0.1−	0.2−	1999 04 06	704	0.3+	0.0	1999 04 20	691	0.1+	1.3−
1996 08 17	566	0.0	0.0	1999 04 06	704	0.8−	0.3−	1999 04 20	691	0.2−	0.9−
1996 08 17	566	0.1+	0.2+	1999 04 06	704	0.4−	1.1+	1999 04 20	691	0.1+	1.2−

1999 FD₁₉ = 1990 RV₁₁ = 1992 GP₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	141.80194		(2000.0)	P	Q
<i>n</i>	0.28631781	ω	82.38948	+0.31323069	−0.94956873
<i>a</i>	2.2798371	Ω	349.32323	+0.83793556	+0.28345204
<i>e</i>	0.1071043	<i>i</i>	4.44056	+0.44693459	+0.13406777
<i>P</i>	3.44	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1990 09 14	675	0.9−	0.3+	1997 10 30	704	0.2+	0.5+	1999 04 06	704	0.2−	0.5+
1990 09 14	675	0.9+	0.1+	1997 10 30	704	1.0−	0.6−	1999 04 06	704	0.2+	0.0
1990 09 14	675	0.5−	0.2+	1999 02 23	704	0.4+	1.7−	1999 04 06	704	0.4−	0.8+
1990 09 14	675	0.4+	0.5−	1999 02 23	704	(0.7+ 2.1−)		1999 04 06	704	1.2−	0.2+
1992 04 03	033	0.5+	0.1+	1999 02 23	704	(0.8− 2.1+)		1999 04 06	704	0.8−	0.3−
1992 04 03	033	0.7−	0.7−	1999 02 23	704	0.8+	1.7+	1999 04 10	699	0.5−	1.0+
1997 10 28	704	(0.1+ 4.3−)		1999 02 23	704	0.5−	1.4+	1999 04 10	699	0.1+	0.4−
1997 10 28	704	0.2+	2.0−	1999 03 22	699	0.3+	0.3+	1999 04 10	699	0.5−	0.1+
1997 10 28	704	(0.5+ 3.4−)		1999 03 22	699	0.0	1.2+	1999 04 14	704	0.5+	0.7−
1997 10 28	704	(0.2− 2.8−)		1999 03 22	699	0.8+	0.0	1999 04 14	704	0.8−	1.1−
1997 10 30	704	0.6+	0.9+	1999 03 24	699	0.1+	0.5−	1999 04 14	704	(0.9− 2.3+)	
1997 10 30	704	(0.4− 2.4+)		1999 03 24	699	0.6+	0.7−	1999 04 14	704	1.2+	0.1−
1997 10 30	704	0.4+	0.4+	1999 03 24	699	0.2−	1.8−				

1999 FE₁₉ = 1978 EN₁ = 1985 XV = 1997 SV₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	97.66582		(2000.0)	P	Q
<i>n</i>	0.23849867	ω	139.99082	−0.17517510	−0.98321518
<i>a</i>	2.5752066	Ω	320.02217	+0.88177855	−0.13363698
<i>e</i>	0.1699882	<i>i</i>	4.55336	+0.43792725	−0.12421377
<i>P</i>	4.13	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1978 03 05	095	0.3−	0.7−	1999 02 23	704	1.3+	0.3+	1999 04 06	704	0.1+	0.0
1985 12 14	010	(4.5−	3.9+)	1999 02 23	704	1.6−	0.2−	1999 04 11	699	0.3+	1.0+
1985 12 14	010	(3.2+	0.3−)	1999 02 23	704	1.2+	1.1−	1999 04 11	699	0.1−	0.4+
1997 09 30	691	1.1−	0.7+	1999 02 23	704	0.3−	0.2+	1999 04 11	699	1.2+	0.4−
1997 09 30	691	0.4+	0.6+	1999 03 22	699	0.4+	0.2−	1999 04 14	704	0.4−	0.0
1997 09 30	691	0.4+	0.6+	1999 03 22	699	0.1−	0.1−	1999 04 14	704	0.7−	0.7−
1997 10 05	691	0.3−	0.1−	1999 03 22	699	0.6+	0.2−	1999 04 14	704	(2.3−	0.0)
1997 10 05	691	0.2−	0.7+	1999 03 24	699	0.4+	1.6+	1999 04 14	704	0.7−	1.9+
1997 10 05	691	0.6−	0.5+	1999 03 24	699	0.1−	0.7+	1999 04 14	704	(2.4−	0.1−)
1998 12 23	704	0.7−	1.3−	1999 03 24	699	1.0−	1.1+	1999 04 15	704	0.1−	1.0−
1998 12 23	704	0.4+	1.2+	1999 04 06	704	1.0+	0.7+	1999 04 15	704	0.4+	0.6−
1998 12 23	704	1.0−	0.2+	1999 04 06	704	0.6+	0.5+	1999 04 15	704	0.5−	0.1−
1998 12 23	704	0.3−	0.1−	1999 04 06	704	0.1+	0.4−	1999 04 15	704	0.5+	0.6−
1999 02 23	704	0.5+	0.3−	1999 04 06	704	0.6+	1.1+	1999 04 15	704	1.0−	0.3−

1999 FG₁₉ = 1997 ST₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	48.70532		(2000.0)	P		Q	
<i>n</i>	0.23918184	ω	240.42934	−0.94526481	−0.32455868		
<i>a</i>	2.5703006	Ω	280.61453	+0.30998917	−0.86094401		
<i>e</i>	0.1751433	<i>i</i>	1.96523	+0.10188798	−0.39171045		
<i>P</i>	4.12	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1997 09 27	910	0.3−	0.2−	1999 02 23	704	(0.6+ 2.1+)	1999 04 10 699 0.7+ 0.5+
1997 09 27	910	0.4−	0.1−	1999 02 23	704	(2.4− 1.8+)	1999 04 14 704 0.2− 1.4−
1997 09 27	910	0.2−	0.2−	1999 02 23	704	1.8− 0.6+	1999 04 14 704 0.3− 1.6−
1997 10 01	910	0.3−	0.1+	1999 03 22	699	0.3+ 0.7+	1999 04 14 704 (1.1+ 2.2+)
1997 10 01	910	0.3−	0.1+	1999 03 22	699	0.3+ 0.1+	1999 04 14 704 0.4− 0.4−
1997 10 01	910	0.4−	0.1+	1999 03 22	699	1.4+ 0.7+	1999 04 14 704 1.4− 0.1+
1997 11 03	704	1.6+	0.6+	1999 03 24	699	0.7+ 0.0	1999 04 15 704 0.6+ 0.5−
1997 11 03	704	0.1−	1.3−	1999 03 24	699	1.1+ 0.7−	1999 04 15 704 0.2− 1.0−
1997 11 03	704	0.4−	0.4+	1999 03 24	699	0.9+ 0.7−	1999 04 15 704 0.4− 0.5−
1997 11 03	704	1.1+	0.6−	1999 04 06	704	0.6+ 0.6+	1999 04 15 704 0.7− 0.5−
1998 12 23	704	1.0+	0.1+	1999 04 06	704	0.7− 0.3−	1999 04 15 704 0.9− 0.5−
1998 12 23	704	1.2−	0.5+	1999 04 06	704	0.4− 0.1+	1999 06 08 704 0.9− 1.9+
1998 12 23	704	1.0+	1.7+	1999 04 06	704	0.1− 0.7+	1999 06 08 704 0.7+ 0.3+
1998 12 23	704	1.4−	1.7−	1999 04 06	704	0.0 0.1−	1999 06 08 704 0.9− 0.0
1999 02 23	704	1.1+	0.5+	1999 04 10	699	0.6− 0.9+	1999 06 08 704 0.4+ 0.8−
1999 02 23	704	0.2+	0.1−	1999 04 10	699	0.6+ 1.1+	

1999 FO₂₃ = 1988 AJ₄ = 1991 TH₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	21.42746		(2000.0)	P		Q	
<i>n</i>	0.18796775	ω	196.63162	−0.98506466	−0.15680795		
<i>a</i>	3.0181940	Ω	334.02342	+0.17060020	−0.83292527		
<i>e</i>	0.0585536	<i>i</i>	9.34543	+0.02330632	−0.53070402		
<i>P</i>	5.24	<i>H</i>	12.5	<i>G</i>	0.15	<i>U</i>	2
Residuals in seconds of arc							
1988 01 12	033	0.4+	0.2+	1999 03 19	704	0.3− 0.2−	1999 05 15 704 0.7− 1.8−
1988 01 12	033	0.2−	0.5+	1999 03 19	704	1.8+ 0.7−	1999 05 15 704 0.4− 0.8+
1991 10 04	033	0.2−	0.3+	1999 03 19	704	0.4− 1.0−	1999 05 15 704 0.6− 0.4−
1991 10 05	033	0.0	0.2+	1999 03 19	704	1.0− 0.4+	1999 05 15 704 1.8+ 0.8+
1991 10 05	033	(0.6+ 2.2−)		1999 03 20	704	0.4+ 0.8−	1999 06 08 704 0.5− 0.5−
1997 12 06	704	1.3+	0.9+	1999 03 20	704	0.1− 0.3−	1999 06 08 704 0.7+ 0.5+
1997 12 06	704	0.7+	0.5−	1999 03 20	704	0.1+ 0.2−	1999 06 08 704 0.6− 0.1+
1997 12 06	704	0.5−	1.0−	1999 03 20	704	0.6+ 0.2−	1999 06 08 704 0.5− 0.3−
1997 12 06	704	0.1+	0.5+	1999 03 20	704	0.4+ 0.2−	1999 06 10 704 0.4− 0.8+
1997 12 06	704	1.7−	0.3−	1999 03 23	699	0.1+ 0.0	1999 06 10 704 0.2− 0.2−
1998 12 16	699	0.2−	0.6+	1999 03 23	699	0.4+ 1.0+	1999 06 10 704 0.3− 1.0−
1998 12 16	699	1.9−	0.6−	1999 03 23	699	1.2+ 0.8+	1999 06 10 704 0.0 0.7+
1998 12 16	699	1.0−	0.0	1999 05 15	704	0.1− 1.5+	1999 06 10 704 0.4+ 0.7+

1999 FU₂₄ = 1993 BJ₁₃ = 1999 GR₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	346.41993		(2000.0)	P		Q	
<i>n</i>	0.18424479	ω	68.21143	−0.49802561	+0.86713520		
<i>a</i>	3.0587166	Ω	171.90885	−0.81252072	−0.46386626		
<i>e</i>	0.1370766	<i>i</i>	2.79309	−0.30295309	−0.18139635		
<i>P</i>	5.35	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	5
Residuals in seconds of arc							
1993 01 22	809	0.6+	0.6−	1999 03 20	704	0.7+ 0.0	1999 04 15 704 0.3− 0.0
1993 01 22	809	0.9+	0.5−	1999 03 20	704	0.2− 0.3−	1999 04 15 704 1.5+ 0.0
1993 01 22	809	0.6−	0.3+	1999 03 20	704	0.1+ 0.1−	1999 04 15 704 0.2+ 1.8+
1993 01 28	809	1.2+	1.2+	1999 03 24	699	0.2+ 0.1+	1999 04 15 704 0.0 0.0
1993 01 28	809	0.7−	0.2+	1999 03 24	699	0.1+ 0.7−	1999 04 15 704 0.9+ 0.3+
1993 01 28	809	1.4−	0.6−	1999 03 24	699	0.2+ 0.8+	1999 04 16 704 0.3+ 0.7−
1999 03 19	704	0.5+	1.2−	1999 04 12	704	0.3− 0.6+	1999 04 16 704 0.1+ 1.0−

1999 03 19	704	1.0−	0.0	1999 04 12	704	0.1−	0.1−	1999 04 16	704	0.7+	0.1−
1999 03 19	704	0.5+	1.1+	1999 04 12	704	0.2+	0.7−	1999 04 16	704	0.7−	0.8+
1999 03 19	704	1.0−	0.2+	1999 04 12	704	0.2+	0.8−	1999 04 16	704	2.3−	0.6−
1999 03 20	704	0.0	0.2+	1999 04 12	704	0.6−	0.5+				

1999 FU₂₅ = 1991 HR₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	58.51631		(2000.0)	P		Q	
<i>n</i>	0.24411814	ω	328.07071	−0.94022830	−0.34004613		
<i>a</i>	2.5355334	Ω	192.09157	+0.32801693	−0.88977567		
<i>e</i>	0.1026892	<i>i</i>	5.04533	+0.09151850	−0.30441399		
<i>P</i>	4.04	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1989 11 05	675	1.0−	0.3−	1999 03 19	704	0.2+ 0.4+	1999 04 07 691 0.1− 0.2+
1989 11 05	675	0.1−	0.2−	1999 03 19	704	0.5− 0.3+	1999 04 07 691 0.0 0.1−
1989 11 05	675	(3.6+ 1.0+)		1999 03 19	704	(2.2− 0.0)	1999 04 10 699 0.2+ 0.1−
1991 04 19	809	(0.1+ 2.6−)		1999 03 19	704	1.0− 0.2−	1999 04 10 699 (3.5+ 1.0−)
1991 04 19	809	0.5− 1.7−		1999 03 19	704	1.5− 0.3−	1999 04 10 699 0.9+ 0.8+
1991 04 19	809	(1.4− 2.1−)		1999 03 20	704	0.5− 0.2−	1999 04 11 691 0.1− 0.0
1993 11 20	691	0.7+ 0.5+		1999 03 20	704	0.3+ 0.6+	1999 04 11 691 0.0 0.1+
1993 11 20	691	1.3+ 0.3+		1999 03 20	704	0.5− 0.1−	1999 04 11 691 0.1+ 0.2−
1993 11 20	691	0.2− 1.2+		1999 03 20	704	(2.2− 1.0−)	1999 04 12 704 0.8+ 0.6−
1997 12 04	704	0.2+ 0.6−		1999 04 07	699	1.0+ 0.1+	1999 04 12 704 0.1− 0.9−
1997 12 04	704	(2.9− 0.7+)		1999 04 07	691	0.1− 0.0	1999 04 12 704 0.2+ 0.2+
1997 12 04	704	1.1+ 0.3−		1999 04 07	699	0.6+ 0.1−	1999 04 12 704 0.4+ 1.2+
1997 12 04	704	2.0− 1.1−		1999 04 07	699	0.1− 0.1−	1999 04 12 704 0.3+ 0.5+

1999 FB₂₆ = 1994 EU₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	110.65962		(2000.0)	P		Q	
<i>n</i>	0.20885120	ω	102.70337	−0.06233476	−0.99767185		
<i>a</i>	2.8134859	Ω	350.73637	+0.83600585	−0.03705383		
<i>e</i>	0.1458529	<i>i</i>	9.89509	+0.54516841	−0.05725281		
<i>P</i>	4.72	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1994 03 06	894	1.1+ 1.5−		1999 03 20	704	1.4− 0.5−	1999 04 14 704 1.4+ 0.2−
1994 03 06	894	0.1+ 1.1+		1999 03 20	704	1.3− 0.5+	1999 04 14 704 0.5+ 0.1+
1994 03 14	894	0.6− 0.7+		1999 03 20	704	1.9− 1.8+	1999 04 14 704 1.3+ 0.4+
1994 03 14	894	0.1+ 1.1+		1999 03 20	704	0.0 1.0+	1999 04 15 704 0.5− 0.7+
1997 12 06	704	1.7− 0.1+		1999 03 20	704	(2.3− 1.1+)	1999 04 15 704 0.1− 1.5−
1997 12 06	704	0.6− 0.3−		1999 04 06	704	0.0 0.4−	1999 04 15 704 0.6+ 0.9−
1997 12 06	704	(1.7− 3.5−)		1999 04 06	704	0.5− 0.2−	1999 04 15 704 0.5+ 1.3+
1997 12 06	704	1.0+ 0.3+		1999 04 06	704	0.5− 0.7−	1999 04 15 704 1.1+ 1.8−
1997 12 06	704	1.3+ 0.3−		1999 04 06	704	0.3+ 0.3−	1999 05 07 704 2.0+ 1.6+
1999 03 19	704	0.2+ 0.9−		1999 04 11	699	0.2− 0.1+	1999 05 07 704 1.0+ 1.3+
1999 03 19	704	0.5− 0.8−		1999 04 11	699	0.4− 0.6−	1999 05 07 704 (1.0+ 2.5+)
1999 03 19	704	0.8− 0.5+		1999 04 11	699	0.4+ 0.1−	
1999 03 19	704	1.2− 0.1+		1999 04 14	704	0.6− 1.7−	

1999 FC₂₆ = 1996 TQ₅₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	144.18667		(2000.0)	P		Q	
<i>n</i>	0.18792909	ω	73.90386	+0.41866521	−0.90775743		
<i>a</i>	3.0186080	Ω	351.20671	+0.75324904	+0.36333752		
<i>e</i>	0.0969114	<i>i</i>	9.93681	+0.50728230	+0.20967186		
<i>P</i>	5.24	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1996 10 04	809	(2.1+ 2.9+)		1999 03 19	704	1.4+ 0.2−	1999 04 14 704 0.3− 0.6−
1996 10 04	809	0.7+ 1.6+		1999 03 19	704	0.2+ 1.1+	1999 04 14 704 (1.6+ 2.7−)
1996 10 04	809	0.1+ 1.9+		1999 03 19	704	1.1− 0.9+	1999 04 14 704 0.8+ 0.2−
1996 10 05	809	0.3− 0.7−		1999 03 20	704	0.3− 0.2−	1999 04 14 704 (0.7+ 2.3+)

M.P.C. 34950

1999 JUNE 22

1996 10 05	809	0.7−	0.3−	1999 03 20	704	0.2+	0.6+	1999 04 15	704	0.1+	0.4+
1996 10 05	809	1.2−	0.4−	1999 03 20	704	0.0	0.6+	1999 04 15	704	1.3+	0.5+
1997 11 30	327	0.4+	0.1+	1999 03 20	704	0.4+	0.3+	1999 04 15	704	1.3+	0.6+
1997 11 30	327	0.0	0.2+	1999 03 20	704	0.6−	0.6+	1999 04 15	704	0.3+	1.2−
1997 11 30	327	0.1+	0.2+	1999 04 06	704	0.4+	0.8−	1999 04 15	704	0.7−	0.9+
1997 12 26	566	0.6−	0.1−	1999 04 06	704	0.5−	0.1−	1999 05 07	704	1.0+	0.4−
1997 12 26	566	0.3+	0.3−	1999 04 06	704	0.3−	0.4−	1999 05 07	704	1.3−	0.1−
1997 12 26	566	0.1−	0.2+	1999 04 06	704	0.2−	1.3−	1999 05 07	704	0.4−	1.7+
1999 03 19	704	0.8−	0.2+	1999 04 06	704	0.4+	0.3−	1999 05 07	704	(2.5−	0.0)

1999 FJ₂₇ = 1983 WO = 1997 WD₄₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	187.55951		(2000.0)	P	Q		
<i>n</i>	0.27959054	ω	316.53950	+0.82477558	−0.55860702		
<i>a</i>	2.3162623	Ω	77.61838	+0.54027747	+0.73268814		
<i>e</i>	0.1710102	<i>i</i>	5.15551	+0.16686970	+0.38874965		
<i>P</i>	3.53	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1983 11 28	688	1.3−	0.7−	1997 11 08	910	1.2+	0.7−	1999 03 19	704	1.1−	1.6−
1983 11 28	688	1.1+	0.6+	1997 11 08	910	1.2+	0.5−	1999 03 20	704	0.3−	0.7−
1983 11 29	688	0.8−	1.3+	1997 11 29	704	0.1−	0.5+	1999 03 20	704	0.6+	0.1−
1983 11 29	688	(5.2+ 1.2+)		1997 11 29	704	1.0−	1.0+	1999 03 20	704	1.4+	1.7−
1983 12 01	688	(0.1− 2.9−)		1997 11 29	704	0.5−	0.6+	1999 03 23	703	0.2+	1.1+
1983 12 01	688	0.4+	0.9−	1997 11 29	704	0.1−	0.3−	1999 03 23	703	1.3−	0.8+
1983 12 05	688	1.1−	1.1−	1997 11 29	704	1.1+	0.3−	1999 03 23	703	1.1−	1.1+
1983 12 05	688	1.5+ 0.1+		1997 11 30	566	1.3−	0.0	1999 03 23	703	1.2−	0.5−
1983 12 06	688	0.7+	2.0−	1997 11 30	566	1.8−	0.0	1999 04 12	704	0.5−	0.0
1983 12 06	688	(2.9− 1.9−)		1997 11 30	566	0.0	0.7+	1999 04 12	704	0.4−	0.2+
1983 12 09	688	1.4−	1.9+	1999 03 19	704	0.2+	0.9−	1999 04 12	704	0.9+	0.3+
1983 12 09	688	1.0+	0.4+	1999 03 19	704	1.6+	0.0	1999 04 12	704	0.2−	0.4+
1997 11 08	910	1.0+	0.6−	1999 03 19	704	0.3−	0.9+	1999 04 12	704	1.2+	0.4+

1999 FP₂₈ = 1615 T-2

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	324.35179		(2000.0)	P	Q		
<i>n</i>	0.29503377	ω	108.10467	+0.29698428	+0.95488171		
<i>a</i>	2.2347120	Ω	179.16941	−0.90272222	+0.28114404		
<i>e</i>	0.1629137	<i>i</i>	4.43453	−0.31127631	+0.09570237		
<i>P</i>	3.34	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1973 09 19	675	0.6+	0.3−	1999 03 20	704	0.2−	1.3+	1999 04 07	704	0.1−	1.1+
1973 09 19	675	1.7−	0.1−	1999 03 20	704	1.0−	1.6+	1999 04 12	704	1.0+	0.3−
1973 09 20	675	1.2−	0.3+	1999 03 20	704	0.1−	1.0+	1999 04 12	704	0.1−	0.6−
1973 09 24	675	0.8+	0.1+	1999 03 23	703	0.7−	0.4+	1999 04 12	704	0.7+	1.4−
1973 09 24	675	1.5+ 0.1−		1999 03 23	703	0.3−	0.2−	1999 04 12	704	1.1+	0.6−
1999 03 19	704	1.6+	0.5−	1999 03 23	703	0.4−	1.1−	1999 04 12	704	1.5+	0.7−
1999 03 19	704	0.1−	0.1+	1999 03 23	703	(0.1+ 2.2−)		1999 05 17	703	0.1−	0.2+
1999 03 19	704	0.1+	0.8−	1999 04 07	704	0.2−	0.7−	1999 05 17	703	0.6+	0.1+
1999 03 19	704	0.3+	0.6−	1999 04 07	704	0.2−	0.7−	1999 05 17	703	0.1−	0.8−
1999 03 19	704	1.2−	1.5+	1999 04 07	704	0.5−	0.3−	1999 05 17	703	0.8−	1.9+
1999 03 20	704	0.9−	0.0	1999 04 07	704	0.3−	0.2+				

**1999 FQ₂₈ = 1999 GS₁₈ = 1937 AS = 1982 DT₅ = 1990 QN₆
= 1990 QX₁₂ = 1990 QT₁₉ = 1996 SB₁ = 1998 BQ₄₈**

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	56.74841		(2000.0)	P	Q		
<i>n</i>	0.17780264	ω	109.15316	−0.87961171	−0.47528948		
<i>a</i>	3.1321598	Ω	42.47471	+0.42482313	−0.80339745		
<i>e</i>	0.1393215	<i>i</i>	1.66111	+0.21402933	−0.35868154		
<i>P</i>	5.54	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1937 01 13	754	0.1+	0.4+	1996 09 22	327	0.4−	0.6+	1999 03 23	703	0.4+	1.6−
1937 01 13	754	0.1+	1.2+	1996 09 23	327	1.1+	0.7+	1999 04 07	704	1.4+	0.2−
1982 02 25	010	1.1+	1.1−	1996 09 23	327	0.1+	0.7+	1999 04 07	704	0.9+	0.8+
1982 02 26	010	(3.8+ 1.4+)		1996 09 23	327	0.5+	0.1+	1999 04 07	704	0.4+	0.6+
1982 02 27	010	0.2−	0.1−	1996 09 23	327	0.3−	0.4+	1999 04 07	704	0.4+	0.2+
1982 02 28	010	0.1+	2.0+	1998 01 26	327	0.6−	0.2−	1999 04 07	704	0.0	0.2+
1990 08 16	809	0.1−	0.6+	1998 01 26	327	0.8−	0.3−	1999 04 07	699	0.6+	0.7+
1990 08 16	809	0.3−	0.3+	1998 01 26	327	0.5−	0.4−	1999 04 07	699	1.1+	0.1+
1990 08 16	809	0.1+	0.5+	1999 03 19	704	1.1+	0.7−	1999 04 07	699	1.0+	0.1+
1990 08 20	809	0.5−	0.6+	1999 03 19	704	1.0+	1.4+	1999 04 12	704	0.5−	0.4−
1990 08 20	809	0.1−	0.6−	1999 03 19	704	1.3−	0.4+	1999 04 12	704	0.8−	0.1−
1990 08 20	809	1.0−	1.6−	1999 03 19	704	0.7−	0.7−	1999 04 12	704	0.3+	0.3−
1990 08 26	809	0.8−	1.0+	1999 03 19	704	1.0−	1.3+	1999 04 12	704	0.1−	0.5−
1990 08 26	809	(2.3− 0.6+)		1999 03 20	704	0.2+	0.4−	1999 04 12	704	0.0	0.0
1990 08 26	809	2.0−	0.2−	1999 03 20	704	1.8−	1.0+	1999 04 15	704	0.5+	0.5−
1996 09 18	327	0.6+	0.7+	1999 03 20	704	0.4+	0.3+	1999 04 15	704	0.2+	0.1+
1996 09 18	327	0.1+	0.4+	1999 03 20	704	0.3+	0.9+	1999 04 15	704	0.0	0.1+
1996 09 18	327	0.2+	0.4+	1999 03 20	704	1.0+	1.0+	1999 04 15	704	1.2−	0.1+
1996 09 21	327	0.5−	0.3+	1999 03 22	699	0.4−	0.0	1999 04 15	704	0.7+	0.1+
1996 09 21	327	0.1+	0.6+	1999 03 22	699	0.6+	0.7−	1999 04 16	704	0.3+	0.2−
1996 09 21	327	0.3+	0.6+	1999 03 22	699	0.2+	0.7+	1999 04 16	704	0.2−	0.7+
1996 09 22	327	0.8+	0.9+	1999 03 23	703	0.9−	0.4−	1999 04 16	704	1.8−	0.3+
1996 09 22	327	0.1−	0.5+	1999 03 23	703	0.3−	0.8+	1999 04 16	704	0.5−	0.8+
1996 09 22	327	0.3−	0.2+	1999 03 23	703	0.9+	0.9−	1999 04 16	704	0.2+	0.2+

1999 FY₂₈ = 1979 WF = 1993 FZ₇₉ = 1998 FW₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	126.17962		(2000.0)	P	Q		
<i>n</i>	0.17117288	ω	49.41763	+0.24479698	−0.96785116		
<i>a</i>	3.2125218	Ω	26.58061	+0.84599436	−0.18410227		
<i>e</i>	0.1553716	<i>i</i>	7.41936	+0.47367497	+0.17137818		
<i>P</i>	5.76	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1979 11 25	046	(1.1+ 3.3−)		1998 03 27	566	0.4−	0.0	1999 03 23	703	0.0	0.4+
1979 11 25	046	0.1−	0.1+	1998 03 27	566	0.6−	0.2+	1999 03 23	703	0.8−	0.7+
1993 03 17	809	1.7+	0.1+	1999 03 19	704	0.7+	0.1−	1999 03 23	703	1.1−	0.7−
1993 03 20	691	0.1−	0.5+	1999 03 19	704	1.2+	0.7−	1999 04 07	704	1.1−	0.7+
1993 03 20	691	0.1−	0.5+	1999 03 19	704	0.6−	0.5−	1999 04 07	704	(3.2− 0.2+)	
1993 03 20	691	0.1−	0.5+	1999 03 19	704	0.9+	1.1−	1999 04 07	704	1.8−	0.2−
1997 12 29	566	0.8+	0.3+	1999 03 19	704	0.9−	0.1−	1999 04 07	704	1.7−	0.6−
1997 12 29	566	0.6+	0.1+	1999 03 20	704	1.2−	0.7−	1999 04 07	704	(2.3− 0.6−)	
1997 12 29	566	0.9+	0.1+	1999 03 20	704	0.3−	0.0	1999 04 07	699	0.8+	0.1+
1998 01 25	566	0.2−	0.5−	1999 03 20	704	0.9−	0.8+	1999 04 07	699	1.0+	0.3+
1998 01 25	566	0.1−	0.6−	1999 03 20	704	0.7−	0.3−	1999 04 07	699	1.4+	0.2−
1998 01 25	566	0.3−	0.5−	1999 03 20	704	0.3−	0.4−	1999 04 12	704	0.1+	0.5−
1998 03 26	566	0.1−	0.2+	1999 03 22	699	1.2+	0.5+	1999 04 12	704	0.1+	0.3+
1998 03 26	566	0.4−	0.1−	1999 03 22	699	0.7+	0.5+	1999 04 12	704	0.6+	0.5+
1998 03 26	566	0.5−	0.2+	1999 03 22	699	0.3+	0.6−	1999 04 12	704	0.8+	0.7+
1998 03 27	566	0.6−	0.1+	1999 03 23	703	(0.0 2.5+)		1999 04 12	704	0.4+	0.2−

1999 FR₂₉ = 1990 BM₅

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	75.29538		(2000.0)	P	Q
n	0.22974052	ω	73.72426	−0.68260287	−0.72210349
a	2.6402456	Ω	59.87700	+0.61106493	−0.64830013
e	0.1573396	i	7.46256	+0.40081539	−0.24139901
P	4.29	H	14.3	G 0.15	U 1

1990 01 30	046	0.2+	0.1−	1997 11 06	704	0.4−	0.2−	1999 03 23	703	(0.0	2.4−)
1990 01 30	046	0.4−	0.1−	1997 11 06	704	0.5+	0.4+	1999 04 12	704	(0.5−	2.3+)
1997 10 28	327	1.3−	0.4+	1997 11 06	704	(4.3+	2.0−)	1999 04 12	704	0.2−	0.2+
1997 10 28	327	1.2−	0.2+	1997 11 06	704	1.7+	0.2+	1999 04 12	704	0.4−	0.5−
1997 10 28	327	1.5−	0.5+	1997 11 06	704	1.1−	0.2−	1999 04 12	704	0.6−	0.8+
1997 10 29	704	(2.6−	0.7+)	1997 11 06	704	1.0−	0.4+	1999 04 15	704	0.6−	0.1+
1997 10 29	704	(2.6−	0.7+)	1999 03 19	704	0.1−	0.3−	1999 04 15	704	1.8+	0.6−
1997 10 29	704	(2.3−	1.1+)	1999 03 19	704	0.5+	0.0	1999 04 15	704	1.6+	1.2−
1997 10 29	704	(4.0−	1.3+)	1999 03 19	704	0.4+	1.0−	1999 04 15	704	0.3+	0.5+
1997 10 29	704	(2.7−	0.9+)	1999 03 19	704	1.0+	0.1+	1999 04 16	704	1.2−	0.1+
1997 10 30	704	1.5+	0.2−	1999 03 19	704	0.7−	0.7−	1999 04 16	704	0.6−	0.8−
1997 10 30	704	0.7+	0.5−	1999 03 20	699	0.4−	1.1+	1999 04 16	704	0.5−	1.4−
1997 10 30	704	0.8+	0.4−	1999 03 20	704	0.0	0.1−	1999 04 16	704	(3.1−	1.4−)
1997 10 30	704	1.1+	0.3−	1999 03 20	699	0.1+	0.7+	1999 05 17	703	0.2−	0.6+
1997 10 31	704	0.4+	0.7+	1999 03 20	704	0.3+	0.1+	1999 05 17	703	0.1−	1.6+
1997 10 31	704	1.2−	0.3−	1999 03 20	699	0.2−	0.6+	1999 05 17	703	0.3+	0.3+
1997 10 31	704	0.2−	0.5+	1999 03 20	704	0.2+	0.7−	1999 05 17	703	0.5+	1.4+
1997 10 31	704	0.0	0.8+	1999 03 20	704	0.8+	0.4−				

1999 FY₂₉ = 1995 DH₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	124.45185			P		Q	
<i>n</i>	0.26072257	ω	292.08161	−0.01822067	−0.99900356		
<i>a</i>	2.4267049	Ω	158.83993	+0.95389961	−0.02957831		
<i>e</i>	0.1219824	<i>i</i>	6.48056	+0.29957225	+0.03342173		
<i>P</i>	3.78	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1995 02 24	691	0.2+	0.0	1999 03 20	704	0.2+	0.6−	1999 04 10	699	1.6+	0.2+
1995 02 24	691	0.5+	0.2+	1999 03 20	704	0.1−	1.0−	1999 04 12	704	0.3+	0.2+
1995 02 24	691	0.2+	0.3+	1999 03 20	704	0.7+	0.5−	1999 04 12	704	1.2−	0.6−
1995 03 01	691	0.2−	0.1−	1999 03 20	704	0.7−	1.3−	1999 04 12	704	0.7−	0.6+
1995 03 01	691	0.4−	0.1+	1999 04 07	704	0.2−	0.7+	1999 04 12	704	0.3+	0.4−
1995 03 01	691	0.1−	0.1−	1999 04 07	704	0.5−	0.1+	1999 04 12	704	1.1+	0.3+
1999 03 19	704	0.8+	1.2+	1999 04 07	704	1.0−	0.3−	1999 05 17	703	(1.4−	3.3+)
1999 03 19	704	0.2−	0.4+	1999 04 07	704	0.1−	0.4−	1999 05 17	703	0.6+	0.7+
1999 03 19	704	(2.6+	0.2−)	1999 04 07	704	0.7−	0.3−	1999 05 17	703	0.9−	1.0+
1999 03 19	704	(0.8+	3.4+)	1999 04 10	699	0.3+	0.6+	1999 05 17	703	0.3+	0.7−
1999 03 19	704	(0.9−	2.8+)	1999 04 10	699	(0.1+	2.5+)				

1999 FB₃₀ = 1990 SK₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	123.94389			P		Q	
<i>n</i>	0.28778109	ω	15.90434	−0.14973802	−0.98687091		
<i>a</i>	2.2721023	Ω	82.73676	+0.90035657	−0.16139918		
<i>e</i>	0.0886993	<i>i</i>	3.49856	+0.40857872	−0.00600933		
<i>P</i>	3.42	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1990 09 22	809	0.6+	0.1−	1999 03 19	704	0.4+	0.9+	1999 04 07	704	0.2−	0.6+
1990 09 22	809	0.4+	0.6−	1999 03 19	704	0.6−	1.2+	1999 04 07	704	0.7−	0.1−
1990 09 22	809	0.2−	1.7−	1999 03 20	704	0.1−	1.6−	1999 04 07	704	0.3+	0.4+
1990 09 25	809	0.4+	1.1+	1999 03 20	704	0.4−	0.1+	1999 04 10	699	0.2+	0.1−
1990 09 25	809	0.5−	0.0	1999 03 20	704	0.6−	0.8+	1999 04 10	699	0.3+	0.9+
1990 09 25	809	0.7−	1.4+	1999 03 20	704	0.9+	0.1−	1999 04 10	699	0.1−	0.4−
1999 03 19	704	0.8+	1.3−	1999 04 07	704	0.4+	0.9−				
1999 03 19	704	0.2−	0.2−	1999 04 07	704	0.3−	0.0				

1999 FG₃₀ = 1995 FS₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	76.08550			P		Q	
<i>n</i>	0.25776181	ω	111.98478	−0.81838138	−0.57353703		
<i>a</i>	2.4452522	Ω	33.04939	+0.49977576	−0.74136540		
<i>e</i>	0.0919999	<i>i</i>	3.80124	+0.28368311	−0.34847183		
<i>P</i>	3.82	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1995 03 23	691	0.3−	0.3+	1999 03 19	704	0.6−	0.3+	1999 04 07	704	1.3+	0.5+
1995 03 23	691	0.1−	0.0	1999 03 20	704	0.5−	0.4+	1999 04 07	704	0.2−	0.3+
1995 03 23	691	0.1−	0.1−	1999 03 20	704	0.6−	0.8+	1999 04 07	704	0.5−	0.4−
1995 03 29	691	0.1+	0.1−	1999 03 20	704	0.3+	0.2−	1999 04 07	704	0.3−	0.1−
1995 03 29	691	0.4+	0.1+	1999 03 20	704	0.5+	1.4+	1999 04 07	704	0.3+	0.9−
1995 03 29	691	0.1−	0.1−	1999 03 20	704	0.8+	0.1−	1999 04 12	704	0.3+	0.4−
1999 03 19	704	0.1−	0.8−	1999 03 23	703	0.2−	1.2+	1999 04 12	704	0.4+	0.1+
1999 03 19	704	1.4−	1.2−	1999 03 23	703	0.1+	0.0	1999 04 12	704	0.1+	0.2−
1999 03 19	704	1.5+	1.8−	1999 03 23	703	0.9−	0.1−	1999 04 12	704	0.2−	0.4+
1999 03 19	704	0.6+	0.4+	1999 03 23	703	(4.0−	1.7−)	1999 04 12	704	0.6−	0.4+

1999 FU₃₀ = 1990 RB₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	311.03132			P		Q	
<i>n</i>	0.19109567	ω	64.47833	+0.16931106	+0.98022938		
<i>a</i>	2.9851683	Ω	215.74423	−0.95543300	+0.13775467		
<i>e</i>	0.0688817	<i>i</i>	10.09486	−0.24182958	+0.14203522		
<i>P</i>	5.16	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1990 09 14	675	0.4−	0.3+	1999 03 19	704	1.1−	0.5−	1999 04 07	704	0.9−	0.2+
1990 09 14	675	0.5−	0.2−	1999 03 19	704	0.3−	0.7+	1999 04 07	704	1.3−	0.5+
1990 09 15	675	1.0+	0.7−	1999 03 19	704	1.0+	1.8+	1999 04 14	704	0.5+	1.0−
1990 09 15	675	(0.9−	2.8−)	1999 03 19	704	(2.6−	1.2+)	1999 04 14	704	0.2−	1.2−
1996 10 08	691	0.3+	0.3−	1999 03 20	704	0.5+	0.3−	1999 04 14	704	1.5−	0.7−
1996 10 08	691	0.2+	0.4−	1999 03 20	704	0.4+	1.0+	1999 04 14	704	1.0+	0.8+
1996 10 08	691	0.2+	0.3−	1999 03 20	704	0.6+	0.5+	1999 04 15	704	0.4+	1.2−
1996 10 08	566	0.1−	0.1−	1999 03 20	704	0.8+	0.1+	1999 04 15	704	0.8+	1.1−
1996 10 08	566	0.1−	0.4−	1999 04 07	704	0.6−	1.1−	1999 04 15	704	0.1−	0.3+
1996 10 08	566	0.3−	0.4−	1999 04 07	704	0.1−	0.2+	1999 04 15	704	0.2+	0.1+
1999 03 19	704	0.9+	1.4−	1999 04 07	704	1.3−	0.7+	1999 04 15	704	0.2+	0.2−

1999 FZ₃₀ = 1987 YD₄

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	67.06396			P		Q	
<i>n</i>	0.28740901	ω	135.52609	−0.94797075	−0.31243989		
<i>a</i>	2.2740629	Ω	26.44869	+0.24023449	−0.82797600		
<i>e</i>	0.0649370	<i>i</i>	7.88430	+0.20889913	−0.46565767		
<i>P</i>	3.43	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1954 02 26	675	1.4−	0.1+	1999 03 19	704	0.3+	0.1−	1999 04 12	704	0.3−	0.5−
1954 02 26	675	0.6+	0.6−	1999 03 20	704	0.2−	0.1+	1999 04 12	704	0.2−	0.8−
1983 07 13	413	1.2+	0.3−	1999 03 20	704	1.2−	1.2+	1999 04 12	704	0.8−	0.3−
1983 07 13	413	0.1−	0.7+	1999 03 20	704	0.4−	0.9+	1999 04 12	704	0.9−	0.8−
1987 12 23	010	2.4+	1.8−	1999 03 20	704	0.1+	0.7+	1999 04 15	704	0.6+	1.5+
1987 12 23	010	(3.1+	2.7−)	1999 03 20	704	0.2−	1.1+	1999 04 15	691	0.2+	0.2−
1997 09 01	910	0.6−	0.2+	1999 03 22	699	1.3+	0.7+	1999 04 15	704	0.2+	0.3+
1997 09 01	910	0.5−	0.4+	1999 03 22	699	0.9+	0.4+	1999 04 15	704	(2.4−	0.8−)
1997 09 01	910	0.6−	0.1+	1999 03 22	699	1.2+	1.1+	1999 04 15	691	0.3+	0.2+
1997 11 03	704	1.1−	1.6+	1999 04 07	704	0.6−	0.0	1999 04 15	691	0.0	0.2+
1997 11 03	704	0.7+	0.4−	1999 04 07	704	0.7−	0.8−	1999 04 15	704	0.1+	0.1−
1997 11 03	704	0.9−	0.9+	1999 04 07	704	0.5−	0.4−	1999 04 16	704	0.1+	0.6−
1997 11 03	704	1.8−	1.4+	1999 04 07	704	0.7−	0.2−	1999 04 16	704	0.8+	0.2+
1997 11 03	704	(2.3−	1.6+)	1999 04 07	704	0.9−	0.2−	1999 04 16	704	1.4−	0.3−
1999 03 19	704	0.7+	0.2+	1999 04 07	699	0.7+	1.0+	1999 04 16	704	0.4−	0.3−

1999 FJ₃₁ = 1996 TR₆₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	318.35963		(2000.0)		P		Q				
<i>n</i>	0.22406240	ω	247.86469		+0.32801148		+0.93432909				
<i>a</i>	2.6846647	Ω	42.10881		−0.77190717		+0.35016666				
<i>e</i>	0.1944415	<i>i</i>	12.00049		−0.54458038		+0.06642639				
<i>P</i>	4.40	<i>H</i>	13.8		<i>G</i> 0.15		<i>U</i> 3				
Residuals in seconds of arc											
1996 10 08	566	0.1−	0.3−	1999 03 20	704	0.1+	1.4+	1999 04 12	704	0.2−	0.7−
1996 10 08	566	0.5+	0.4−	1999 03 20	704	0.2+	0.2−	1999 04 12	704	0.3+	0.5−
1996 10 08	566	0.6+	0.5+	1999 03 20	704	0.4+	0.5+	1999 06 08	704	0.9−	0.4−
1996 10 18	691	0.2−	0.1−	1999 03 20	704	0.1+	1.0+	1999 06 08	704	0.2−	0.0
1996 10 18	691	0.3−	0.0	1999 04 07	704	0.5−	0.2−	1999 06 08	704	0.8+	0.7+
1996 10 18	691	0.3−	0.0	1999 04 07	704	0.8−	0.6−	1999 06 08	704	0.1+	0.4+
1999 03 19	704	0.9+	0.4+	1999 04 07	704	0.2−	0.1+	1999 06 10	704	0.1−	0.2+
1999 03 19	704	0.9−	0.2−	1999 04 07	704	0.1+	0.0	1999 06 10	704	0.1+	0.6+
1999 03 19	704	0.0	1.7−	1999 04 07	704	0.5−	0.6+	1999 06 10	704	0.4+	0.3−
1999 03 19	704	0.2−	1.0+	1999 04 12	704	1.1+	0.7−	1999 06 10	704	0.0	0.4−
1999 03 19	704	0.2−	0.3−	1999 04 12	704	0.7−	0.1−	1999 06 10	704	0.0	0.3−
1999 03 20	704	0.6+	0.0	1999 04 12	704	0.1−	0.3−				

1999 FO₃₁ = 1972 TJ₄ = 1972 VK = 1976 SY₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	174.39618	(2000.0)	P		Q	
<i>n</i>	0.23885022	ω	24.58762	+0.69503735	-0.71331446	
<i>a</i>	2.5726791	Ω	21.74923	+0.61287831	+0.52234080	
<i>e</i>	0.1566675	<i>i</i>	14.06183	+0.37590326	+0.46727140	
<i>P</i>	4.13	<i>H</i>	12.9	<i>G</i> 0.15	<i>U</i> 3	
Residuals in seconds of arc						
1972 10 05	095	(2.5+ 10.6-)	1999 03 23	120	0.1+ 0.3-	1999 04 14 704 1.1- 0.4+
1972 11 08	095	0.3+ 0.4-	1999 03 27	120	1.9+ 0.4-	1999 04 15 704 0.7- 0.5-
1976 09 24	095	0.8+ 1.1-	1999 03 27	120	(0.8+ 2.1-)	1999 04 15 704 0.0 0.8-
1999 03 19	704	0.7+ 0.3+	1999 03 27	120	1.7+ 1.7-	1999 04 15 704 0.5+ 0.2+
1999 03 19	704	0.1- 1.8+	1999 04 07	704	0.6- 0.5+	1999 04 15 704 0.8- 0.2-
1999 03 19	704	0.7+ 0.8-	1999 04 07	704	0.5- 0.5-	1999 04 15 704 0.2+ 1.1-
1999 03 19	704	0.5- 1.7+	1999 04 07	704	0.2- 0.2+	1999 04 16 703 0.0 0.3-
1999 03 19	704	0.4+ 0.3+	1999 04 07	704	0.8- 0.2+	1999 04 16 703 0.1- 0.4-
1999 03 20	704	0.0 0.0	1999 04 07	704	0.4- 0.1+	1999 04 16 703 0.6- 0.1+
1999 03 20	704	1.1- 0.4+	1999 04 07	699	0.4+ 0.2-	1999 04 16 703 0.3- 0.2-
1999 03 20	704	0.0 0.3+	1999 04 07	699	0.5+ 0.0	1999 05 15 704 0.5+ 0.3+
1999 03 20	704	0.5+ 0.1+	1999 04 07	699	0.1+ 0.2+	1999 05 15 704 0.2- 0.5+
1999 03 20	704	0.4- 1.1-	1999 04 14	704	0.3- 1.0-	1999 05 15 704 (1.1+ 3.0+)
1999 03 23	120	0.1+ 0.1+	1999 04 14	704	0.4+ 0.7-	1999 05 15 704 (2.1+ 0.8+)
1999 03 23	120	0.2+ 0.1-	1999 04 14	704	0.2- 0.1+	1999 05 15 704 1.1- 1.0+

1999 FT₃₁ = 1995 AP₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	72.70185	(2000.0)	P		Q	
<i>n</i>	0.28759855	ω	186.86294	-0.92837673	-0.37125814	
<i>a</i>	2.2730636	Ω	331.32569	+0.34262128	-0.83743674	
<i>e</i>	0.0679435	<i>i</i>	2.01289	+0.14396983	-0.40108241	
<i>P</i>	3.43	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 4	
Residuals in seconds of arc						
1995 01 05	033	0.3- 0.7-	1999 03 19	704	1.2+ 0.8-	1999 04 07 704 0.4+ 1.1-
1995 01 05	033	0.4- 0.1-	1999 03 19	704	(0.9- 2.0-)	1999 04 14 704 0.3- 0.6-
1995 01 07	033	0.6+ 0.1-	1999 03 19	704	1.4+ 0.8+	1999 04 14 704 0.6+ 0.7-
1997 09 30	910	0.3+ 0.1-	1999 03 20	704	0.2+ 0.5+	1999 04 14 704 1.6- 1.4+
1997 09 30	910	0.3+ 0.2-	1999 03 20	704	1.1- 0.8+	1999 04 14 704 (0.8- 2.3+)
1997 10 01	910	0.3+ 0.2-	1999 03 20	704	1.3+ 0.4+	1999 04 15 704 0.4- 0.2-
1997 11 03	704	0.1+ 0.5+	1999 03 20	704	0.4+ 1.5+	1999 04 15 704 0.1+ 0.8-
1997 11 03	704	(2.5- 1.1+)	1999 03 20	704	0.5- 0.1+	1999 04 15 704 0.1+ 0.5-
1997 11 03	704	0.5- 0.3-	1999 04 07	704	0.8- 0.6+	1999 04 15 704 0.6- 0.5-

1997 11 03	704	0.9-	0.0	1999 04 07	704	0.2+ 0.4+	1999 04 15	704	0.2+ 0.9-
1997 11 03	704	0.2+	1.0+	1999 04 07	704	0.3- 0.2+			
1999 03 19	704	1.1-	0.5+	1999 04 07	704	0.7+ 0.5-			

1999 FX₃₂ = 1986 PM₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	307.97977		(2000.0)		P		Q		
n	0.21198676	ω	163.60165		+0.38489668		+0.91389943		
a	2.7856736	Ω	128.84725		-0.86431258		+0.40593104		
e	0.0907989	i	9.53452		-0.32375656		+0.00279703		
P	4.65	H	12.9		G	0.15	U	2	
Residuals in seconds of arc									
1986 08 08	095	0.2+	1.7-	1999 03 28	699	0.3-	0.5+	1999 05 12	704 0.2+ 0.1-
1994 02 15	675	0.1+	1.3-	1999 04 12	704	0.3+	0.7+	1999 05 12	704 0.6- 0.6-
1994 02 15	675	0.9-	1.3-	1999 04 12	704	0.1+	0.3+	1999 05 12	704 1.3+ 0.0
1997 12 24	910	1.2+	0.1-	1999 04 12	704	1.4+	0.2+	1999 05 12	704 0.4- 0.4-
1997 12 24	910	0.4+	0.0	1999 04 12	704	0.7+	0.2+	1999 05 12	704 1.5- 0.4+
1997 12 24	910	0.4+	0.2+	1999 04 12	704	0.9+	1.0+	1999 05 15	704 0.7- 0.3-
1998 01 22	704	0.6-	0.5+	1999 04 15	704	0.4+	0.7+	1999 05 15	704 0.0 0.3-
1998 01 22	704	0.3-	0.2-	1999 04 15	704	0.8+	0.7-	1999 05 15	704 0.5- 0.8+
1998 01 22	704	0.0	0.3-	1999 04 15	704	0.3+	0.3+	1999 05 15	704 (2.2- 0.6-)
1998 01 22	704	0.2-	0.1-	1999 04 15	704	0.0	0.2+	1999 05 15	704 (2.1- 1.2-)
1998 01 22	704	0.9-	0.5-	1999 04 15	704	0.7-	0.2+	1999 05 31	716 (2.0+ 0.9-)
1999 03 24	699	0.0	0.0	1999 04 16	704	0.8+	1.1-	1999 05 31	716 0.5- 0.0
1999 03 24	699	0.4+	0.2+	1999 04 16	704	0.1-	0.5+	1999 06 05	716 0.4+ 0.2-
1999 03 24	699	0.2+	0.0	1999 04 16	704	0.2-	1.3-	1999 06 05	716 0.3+ 0.3-
1999 03 28	699	0.3+	0.1-	1999 04 16	704	0.9-	0.3-		
1999 03 28	699	0.1+	0.1-	1999 04 16	704	1.8-	0.7+		

1999 FK₃₃ = 1997 WG₄₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	222.20063	(2000.0)	P		Q	
<i>n</i>	0.28653781	ω	259.15114	+0.98747931	-0.12208319	
<i>a</i>	2.2786700	Ω	107.80410	+0.15057214	+0.91829466	
<i>e</i>	0.1288495	<i>i</i>	6.02294	-0.04703873	+0.37660405	
<i>P</i>	3.44	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 5	
Residuals in seconds of arc						
1997 11 26	704	1.1+ 0.6-	1997 11 29	704	0.8+ 0.8-	1999 03 23 703 0.5+ 0.3+
1997 11 26	704	1.2+ 0.1-	1999 03 19	704	0.9- 0.4+	1999 03 23 703 (2.2- 0.7+)
1997 11 26	704	1.0- 1.0-	1999 03 19	704	0.2+ 0.3+	1999 03 23 703 0.3- 0.4+
1997 11 28	566	0.6- 0.9+	1999 03 19	704	0.8+ 0.1+	1999 04 12 704 1.1- 1.5-
1997 11 28	566	0.5- 0.4+	1999 03 20	704	0.5+ 0.4+	1999 04 12 704 0.2+ 1.1-
1997 11 28	566	1.0- 1.4+	1999 03 20	704	1.5+ 1.2-	1999 04 12 704 1.4+ 0.7+
1997 11 29	704	0.1+ 0.5+	1999 03 20	704	0.8- 0.4+	1999 04 12 704 0.6+ 1.4+
1997 11 29	704	0.5+ 0.0	1999 03 20	704	1.2- 1.6-	1999 04 12 704 0.5- 0.9+
1997 11 29	704	(3.4+ 1.2+)	1999 03 20	704	(2.6- 1.3+)	
1997 11 29	704	0.6- 0.5-	1999 03 23	703	0.8- 0.1+	

1999 FQ₃₃ = 1991 HA₃ = 1992 SO₄ = 1996 TJ₃₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	319.34008	(2000.0)	P		Q	
<i>n</i>	0.24418766	ω	246.56793	+0.19673486	+0.97910797	
<i>a</i>	2.5350522	Ω	34.90227	-0.86357323	+0.19787160	
<i>e</i>	0.1423010	<i>i</i>	5.15495	-0.46425928	+0.04684462	
<i>P</i>	4.04	<i>H</i>	14.5	<i>G</i> 0.15	<i>U</i> 2	
Residuals in seconds of arc						
1991 04 19	809	1.9- 1.7-	1996 10 08	809	1.7- 1.7+	1999 03 23 703 (0.0 2.3+)
1991 04 19	809	0.1- 1.0-	1996 10 08	809	0.2+ 1.4+	1999 03 23 703 0.8+ 2.0+
1991 04 19	809	0.6- 0.9-	1996 10 10	809	0.3- 0.0	1999 03 23 703 0.3- 1.5+
1992 09 24	691	0.1- 1.7+	1996 10 10	809	0.1+ 0.2-	1999 03 23 703 0.9- 0.3+

1999 JUNE 22

M.P.C. 34953

1992 09 24	691	(2.7+	3.0+)	1996 10 10	809	0.1+	0.7-	1999 04 10	699	1.3+	0.9+
1992 09 24	691	0.7+	0.2-	1999 03 19	704	0.0	0.2+	1999 04 10	699	1.5+	0.5+
1992 09 25	691	0.2+	0.1-	1999 03 19	704	0.3-	0.3+	1999 04 10	699	1.4+	0.2+
1992 09 25	691	0.2+	0.3-	1999 03 19	704	1.0+	0.4+	1999 04 12	704	0.1+	0.7-
1992 09 25	691	0.2+	0.3-	1999 03 19	704	0.3+	1.2+	1999 04 12	704	0.7-	0.6+
1996 10 07	809	1.8-	0.1-	1999 03 20	704	0.7-	0.4+	1999 04 12	704	0.1+	1.0+
1996 10 07	809	0.8-	0.9+	1999 03 20	704	(0.6-	2.1+)	1999 04 12	704	0.1+	0.3+
1996 10 07	809	1.6-	0.7+	1999 03 20	704	1.7+	0.0	1999 04 12	704	0.4+	0.3-
1996 10 08	809	1.6+	1.4+	1999 03 20	704	0.0	0.9+				

1999 FV₃₃ = 1993 FJ₅₃

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.16982100	ω	167.70873	+0.83585909	+0.54390703		
<i>a</i>	3.2295483	Ω	158.82592	-0.51943969	+0.82739004		
<i>e</i>	0.1037021	<i>i</i>	11.85337	-0.17754432	+0.13996735		
<i>P</i>	5.80	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1993 03 17	809	0.3+	0.5+	1999 03 20	704	(0.3-	2.3+)	1999 03 23	703	0.4-	0.4-
1993 03 18	809	0.3-	0.5-	1999 03 20	704	0.2+	0.5-	1999 04 12	704	0.0	0.4-
1999 03 19	704	0.8+	0.4+	1999 03 20	704	0.7+	0.7+	1999 04 12	704	1.0+	0.7+
1999 03 19	704	(2.2+	0.0)	1999 03 23	703	0.6-	0.2-	1999 04 12	704	1.1-	0.8-
1999 03 19	704	(1.0-	2.4-)	1999 03 23	703	0.0	0.5-	1999 04 12	704	0.4+	0.1+
1999 03 20	704	1.0-	0.7+	1999 03 23	703	0.1+	0.4-	1999 04 12	704	0.2-	0.7+

1999 FW₃₃ = 1990 WE₁₂ = 1996 VO₂₂ = 1998 DX₂₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17131791	ω	233.58226	+0.98382557	-0.15833628		
<i>a</i>	3.2107084	Ω	135.35551	+0.17695323	+0.93172864		
<i>e</i>	0.0950895	<i>i</i>	6.84628	-0.02783523	+0.32682009		
<i>P</i>	5.75	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1990 11 22	385	1.3-	1.1+	1998 02 27	910	0.1+	0.1-	1999 03 23	703	0.4-	0.4-
1990 11 22	385	0.7+	0.8+	1998 02 27	910	0.0	0.1+	1999 03 23	703	0.4-	0.1+
1996 11 03	691	0.2+	0.1-	1998 03 02	910	0.1-	0.1-	1999 03 23	703	0.1-	0.3+
1996 11 03	691	1.3-	0.4+	1998 03 02	910	0.0	0.1-	1999 03 23	703	0.4-	0.4+
1996 11 03	691	1.1+	1.2+	1998 03 02	910	0.0	0.1+	1999 04 10	699	0.8+	0.3-
1996 11 09	691	0.5-	0.7-	1999 03 19	704	0.4-	1.0-	1999 04 10	699	0.6+	0.5+
1996 11 09	691	0.1-	0.3-	1999 03 19	704	0.2+	0.2-	1999 04 10	699	0.4+	1.2+
1996 11 09	691	0.2-	0.2-	1999 03 19	704	1.6+	0.8+	1999 04 12	704	0.8+	1.1-
1996 11 11	691	0.6+	0.2-	1999 03 19	704	0.3+	1.8-	1999 04 12	704	0.6+	1.0+
1996 11 11	691	0.5+	0.4-	1999 03 20	704	1.5-	0.3+	1999 04 12	704	1.5-	0.9+
1996 11 11	691	0.2-	0.2-	1999 03 20	704	0.3-	1.2+	1999 04 12	704	0.6+	0.5+
1998 02 27	910	0.1+	0.3-	1999 03 20	704	0.6-	0.8-				

1999 FC₃₄ = 1996 TF₅₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27252661	ω	333.38651	+0.37107614	+0.92856389		
<i>a</i>	2.3561165	Ω	318.39400	-0.84968914	+0.33585163		
<i>e</i>	0.2455022	<i>i</i>	0.73019	-0.37460762	+0.15802782		
<i>P</i>	3.62	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 09 05	691	0.2-	0.0	1999 03 19	704	0.3+	0.0	1999 04 09	699	1.9+	0.9+
1996 09 05	691	0.3-	0.0	1999 03 19	704	0.7+	0.0	1999 04 09	699	(0.4+	2.1+)
1996 09 05	691	0.1-	0.1+	1999 03 19	704	(1.2+	2.2+)	1999 04 09	699	0.8+	1.2+
1996 10 05	809	(1.9-	3.2-)	1999 03 19	704	(0.7-	2.3-)	1999 04 14	704	1.4-	0.7-
1996 10 05	809	(2.4-	3.0-)	1999 03 20	704	0.3+	0.3+	1999 04 14	704	1.0-	0.3+
1996 10 05	809	(2.1-	2.4-)	1999 03 20	704	0.5+	1.3-	1999 04 14	704	(1.8-	2.2-)

1996 10 06	809	0.0	0.4+	1999 03 20	704	0.6+	0.8+	1999 04 15	704	0.1+	0.4+
1996 10 06	809	0.2+	0.3+	1999 03 20	704	0.1-	1.1-	1999 04 15	704	0.8+	1.6-
1996 10 06	809	0.2+	0.3-	1999 04 07	704	0.4-	0.3+	1999 04 15	704	0.4+	0.8-
1999 03 09	691	0.4-	0.6+	1999 04 07	704	0.8-	0.3+	1999 04 15	704	(2.7+	0.3-)
1999 03 09	691	0.5-	0.6+	1999 04 07	704	0.8-	0.6+	1999 04 15	704	0.9+	1.6-
1999 03 09	691	0.5-	0.8+	1999 04 07	704	1.3-	1.0+				

1999 FO₃₄ = 1993 BU₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18388069	ω	22.63048	-0.99918220	-0.02195678		
<i>a</i>	3.0627529	Ω	156.03619	+0.00968294	-0.94521730		
<i>e</i>	0.1019986	<i>i</i>	4.79530	+0.03925773	-0.32570256		
<i>P</i>	5.36	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1993 01 22	809	0.3-	0.4+	1999 03 19	704	2.0-	1.9-	1999 04 07	704	1.6-	0.1+
1993 01 22	809	0.1-	0.8+	1999 03 20	704	0.1+	0.2+	1999 04 07	704	1.0-	0.8-
1993 01 22	809	0.0	0.2+	1999 03 20	704	0.8+	0.1-	1999 04 07	704	1.5-	0.4+
1993 01 28	809	1.7+	0.2-	1999 03 20	704	1.0+	0.5+	1999 04 12	704	0.3+	0.0
1993 01 28	809	0.8-	0.2-	1999 03 20	704	0.1+	0.2-	1999 04 12	704	0.4-	0.1-
1993 01 28	809	0.5-	0.9-	1999 03 20	704	1.7-	1.1+	1999 04 12	704	0.6+	0.3+
1999 03 19	704	1.5+	0.4-	1999 03 22	699	1.7+	0.0	1999 04 12	704	0.3-	0.6+
1999 03 19	704	1.0-	1.6-	1999 03 22	699	1.3+	0.2+	1999 04 12	704	0.5+	1.2+
1999 03 19	704	0.2+	0.7-	1999 03 22	699	0.9+	0.1+				
1999 03 19	704	0.0	0.2+	1999 04 07	704	0.4+	0.8+				

1999 FR₃₄ = 1985 SP₂ = 1994 LE₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18082070	ω	225.60857	+0.29656445	-0.94706858		
<i>a</i>	3.0972097	Ω	207.84464	+0.93385746	+0.31452494		
<i>e</i>	0.0815134	<i>i</i>	15.25888	+0.19989942	-0.06430531		
<i>P</i>	5.45	<i>H</i>	12.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1985 09 19	095	0.0	0.0	1999 03 20	704	(0.4+	3.3+)	1999 04 15	704	0.5-	0.2+
1994 06 08	691	0.5-	0.1+	1999 03 20	704	(0.1-	2.9+)	1999 04 15	704	0.1+	1.1-
1994 06 08	691	0.1-	0.7-	1999 04 07	704	0.8-	0.8+	1999 04 15	704	0.7+	1.0-
1994 06 08	691	0.2+	0.1-	1999 04 07	704	0.5-	0.1-	1999 04 15	704	0.3-	0.9-
1994 06 09	691	0.8-	0.6+	1999 04 07	704	0.4-	0.9+	1999 04 15	704	0.1+	0.4-
1994 06 09	691	0.9+	0.4-	1999 04 07	704	0.2+	0.4-	1999 04 17	703	0.2-	1.2+
1994 06 09	691	0.2+	0.5+	1999 04 07	704	0.3-	0.6-	1999 04 17	703	0.9+	1.0+
1999 03 19	704	1.1+	0.3-	1999 04 14	704	0.2+	0.7-	1999 04 17	703	0.9+	0.7+
1999 03 19	704	0.8-	0.0	1999 04 14	704	0.4+	1.3-	1999 04 17	703	0.7+	0.4+
1999 03 19	704	0.1+	0.3+	1999 04 14	704	0.1+	0.6+				
1999 03 20	704	(1.4-	2.8+)	1999 04 14	704	1.5-	0.9+				

1999 FS₃₄ = 1992 SK₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23521087	ω	178.81444	-0.99868751	+0.04875315		
<i>a</i>	2.5991487	Ω	4.08055	-0.04861993	-0.80604629		
<i>e</i>	0.1659860	<i>i</i>	12.74363	-0.01610476	-0.58984108		
<i>P</i>	4.19	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 09 22	809	0.1-	0.9+	1999 03 20	704	0.3+	0.3+	1999 04 14	704	0.4-	0.7+
1992 09 22	809	0.6-	0.2-	1999 03 20	704	0.6-	0.2+	1999 04 14	704	0.6-	0.2-
1992 09 22	809	1.4-	0.8-	1999 03 20	704	(2.6-	0.9+)	1999 04 15	704	0.3-	0.1+
1992 09 23	809	0.4-	0.3+	1999 03 20	704	(4.5-	1.3+)	1999 04 15	704	1.2-	0.1-
1992 09 23	809	0.9+	1.1+	1999 04 07	704	0.6+	0.3-	1999 04 15	704	0.2-	0.9-
1992 09 23	809	1.0+	0.3-	1999 04 07	704	0.7+	0.4+	1999 04 15	704	0.4+	0.7-
1999 02 12	691	0.4+	0.4-	1999 04 07	704	0.1+	0.0	1999 04 15	704	0.2-	0.8-
1999 02 12	691	0.5+	0.3-	1999 04 07	704	0.3-	0.2+	1999 05 06	704	1.4+	0.9-

M.P.C. 34954

1999 02 12	691	0.3+	0.3−	1999 04 07	704	0.4−	0.8+	1999 05 06	704	(1.0−	3.1+)
1999 03 19	704	0.3−	0.7+	1999 04 09	699	0.5+	0.0	1999 05 06	704	0.4−	0.0
1999 03 19	704	0.6+	0.0	1999 04 09	699	1.1+	0.2−	1999 05 06	704	0.1+	1.1+
1999 03 19	704	1.1−	1.1+	1999 04 09	699	0.9+	0.0	1999 05 06	704	1.4−	0.8+
1999 03 19	704	0.0	1.0+	1999 04 14	704	0.2−	1.0−				
1999 03 19	704	0.4+	0.4+	1999 04 14	704	0.2−	1.0−				

1999 FD₃₅ = 1994 LZ₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	35.58037		(2000.0)	P	Q
n	0.17590914	ω	315.20135	-0.99985894	-0.01605223
a	3.1545962	Ω	223.87960	$+0.01670264$	-0.91936452
e	0.1438186	i	0.40851	$+0.00176594$	-0.39307914
P	5.60	H	14.0	G 0.15	U 6

Residuals in seconds of arc

1994 06 08	809	0.8−	0.4+	1999 03 20	704	1.9−	1.2−	1999 04 09	691	1.1−	0.0
1994 06 08	809	0.6+	1.1+	1999 03 23	703	1.3+	0.8−	1999 04 09	691	0.9−	0.1+
1994 06 08	809	1.5−	0.1−	1999 03 23	703	0.4+	0.2−	1999 04 09	691	0.9−	0.1−
1994 06 09	809	0.4−	0.2−	1999 03 23	703	0.0	0.2+	1999 04 14	704	1.0+	1.3+
1994 06 09	809	0.3+	0.3−	1999 03 23	703	0.3−	1.0−	1999 04 14	704	0.8−	1.2−
1994 06 09	809	1.8+	1.1−	1999 04 07	704	0.8−	0.1+	1999 04 14	704	1.5+	0.2+
1999 03 19	704	0.9−	1.1−	1999 04 07	704	1.2−	0.2+	1999 04 14	704	0.5+	1.4+
1999 03 19	704	0.8+	0.9+	1999 04 07	704	0.8−	0.2−	1999 04 15	704	0.7−	1.3−
1999 03 19	704	1.0+	0.3+	1999 04 07	704	0.4−	0.1−	1999 04 15	704	1.6+	0.3−
1999 03 19	704	0.6+	0.9+	1999 04 07	704	0.9−	0.4+	1999 04 15	704	0.6+	0.2+
1999 03 20	704	0.7−	0.3+	1999 04 07	699	1.2+	0.0	1999 04 15	704	0.9+	0.2+
1999 03 20	704	(1.3−	2.4−)	1999 04 07	699	1.3+	0.3+	1999 04 15	704	0.0	0.2−
1999 03 20	704	(3.0−	1.5−)	1999 04 07	699	0.9+	0.6+				

1999 FR₄₆ = 1989 EC₇ = 1997 XX₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	88.68464		(2000.0)	P	Q		
n	0.19497535	ω	39.50086	-0.36728541	-0.92887609		
a	2.9454359	Ω	72.09464	+0.84012649	-0.35339377		
e	0.0322035	i	2.88301	+0.39911015	-0.11091465		
P	5.06	H	13.4	G	0.15	U	5

Residuals in seconds of arc

1989 03 06	033	0.3−	1.1−	1999 03 20	704	0.2+	1.6−	1999 04 06	704	0.1−	0.1+
1989 03 06	033	0.4−	0.5−	1999 03 20	704	0.8+	1.1−	1999 04 06	704	0.2−	0.9−
1997 12 04	704	0.2+	0.6+	1999 03 20	704	0.9−	0.7−	1999 04 06	704	0.5−	0.3−
1997 12 04	704	(1.1+	3.7+)	1999 03 23	704	0.0	1.0+	1999 04 06	704	1.0−	0.1+
1997 12 04	704	1.0+	0.8−	1999 03 23	704	0.7+	0.4+	1999 04 06	704	1.2−	0.7−
1997 12 04	704	1.1−	0.5−	1999 03 23	704	0.4+	0.3+	1999 04 07	699	1.5+	1.0−
1997 12 05	704	0.2−	0.5+	1999 03 23	704	0.0	1.0+	1999 04 07	699	0.7+	1.7+
1997 12 05	704	0.0	0.2−	1999 03 23	704	0.8+	1.2+	1999 04 07	699	0.9+	0.9+
1997 12 05	704	1.2−	0.1+	1999 03 23	704	0.3+	0.6+	1999 04 12	704	1.1−	0.6−
1997 12 05	704	0.9+	0.1−	1999 03 23	704	0.1+	0.5+	1999 04 12	704	1.0−	0.3−
1997 12 05	704	0.4+	0.2+	1999 03 23	704	0.3−	0.2+	1999 04 12	704	0.8−	0.3−
1999 03 20	704	1.2+	0.6−	1999 03 23	704	1.1+	0.8+	1999 04 12	704	0.8−	0.7+
1999 03 20	704	0.5+	0.6+	1999 03 23	704	1.0−	1.2−	1999 04 12	704	0.1+	0.6+

1999 FW₄₆ = 1983 VH₃ = 1997 WC₄₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	268.54521		(2000.0)	P	Q		
n	0.28273499	ω	296.70451	+0.74687881	+0.66356062		
a	2.2990567	Ω	21.80985	−0.56138471	+0.66397198		
e	0.1319701	i	6.66489	−0.35639761	+0.34471512		
P	3.49	H	14.5	G	0.15	U	3

Residuals in seconds of arc

1983 11 08	381	0.2−	1.3+	1997 12 29	566	0.8+	0.4−	1999 03 23	704	0.9−	0.9−
1983 11 08	381	0.5−	0.1−	1997 12 29	566	0.4+	0.5−	1999 03 23	704	0.9+	0.1−
1983 11 08	381	0.0	0.5+	1997 12 29	566	0.6+	0.9−	1999 03 23	704	0.7−	0.5−

1999 JUNE 22

1992 02 23	691	0.1+	0.1+	1999 02 20	699	0.1−	0.9+	1999 03 23	704	0.6+	0.5−
1992 02 23	691	0.6+	0.6+	1999 02 20	699	0.4+	0.9+	1999 04 06	704	0.7+	0.6+
1992 02 23	691	0.2+	0.1+	1999 02 20	699	0.3+	0.3+	1999 04 06	704	0.1−	0.1+
1997 11 26	704	1.4+	0.3−	1999 03 20	704	0.0	0.2−	1999 04 06	704	1.0−	1.4+
1997 11 26	704	0.8+	0.3−	1999 03 20	704	0.1+	0.8−	1999 04 06	704	0.7−	0.5−
1997 11 26	704	1.4+	0.1−	1999 03 20	704	0.3−	0.7−	1999 04 06	704	1.1+	0.3+
1997 11 30	566	0.7−	0.8+	1999 03 20	704	0.3−	0.3−	1999 04 07	699	1.0+	0.7+
1997 11 30	566	0.6−	0.8+	1999 03 20	704	0.2−	0.6−	1999 04 07	699	0.7+	0.4+
1997 11 30	566	0.7−	1.0+	1999 03 23	704	0.4+	0.6+	1999 04 07	699	0.9+	0.3+
1997 12 06	704	0.5+	0.9−	1999 03 23	704	0.3+	0.3−	1999 04 12	704	0.3+	0.5−
1997 12 06	704	0.3−	0.0	1999 03 23	704	0.9−	0.8−	1999 04 12	704	0.8−	0.4−
1997 12 06	704	0.5−	0.5−	1999 03 23	704	0.6+	0.4+	1999 04 12	704	1.2−	0.9+
1997 12 06	704	0.8−	0.2−	1999 03 23	704	0.5+	0.7−	1999 04 12	704	1.0−	0.1+
1997 12 06	704	1.4−	0.6−	1999 03 23	704	(2.2+	1.1+)	1999 04 12	704	1.1−	0.1−

1999 FK₅₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	178.82571		(2000.0)	P	Q
n	0.27944342	ω	15.02683	+0.39071001	−0.91403581
a	2.3170752	Ω	52.09655	+0.82966646	+0.29837123
e	0.0487534	i	7.94139	+0.39874711	+0.27479657
P	3.53	H	14.2	G 0.15	U 4

Residuals in seconds of arc

1997 12 05	704	0.0	0.4+	1999 04 12	704	0.5−	0.5+	1999 05 13	704	0.2−	0.3+
1997 12 05	704	0.4−	0.4+	1999 04 12	704	0.8−	1.4−	1999 05 13	704	0.2−	0.8−
1997 12 05	704	0.4+	0.5−	1999 04 14	120	0.5+	0.6+	1999 05 18	704	0.2−	0.4−
1997 12 05	704	1.0−	0.5+	1999 04 14	120	0.3+	0.8+	1999 05 18	704	1.3−	0.5−
1997 12 05	704	1.0+	0.6−	1999 04 14	120	0.8+	0.6+	1999 05 18	704	0.7−	0.8−
1999 03 28	120	(16.5−	0.3−)	1999 04 25	120	1.4+	0.4−	1999 05 18	704	1.5−	0.6+
1999 03 28	120	(16.9−	1.3+)	1999 04 25	120	1.2+	0.8−	1999 05 18	704	0.8−	0.9+
1999 04 05	120	1.5+	0.2−	1999 04 26	120	1.6+	0.2−	1999 05 19	704	0.4−	0.8+
1999 04 05	120	0.3−	0.7+	1999 05 10	704	0.4+	0.2−	1999 05 19	704	0.4−	0.7+
1999 04 05	120	0.1−	0.3+	1999 05 10	704	1.7+	0.2−	1999 05 19	704	0.0	0.4+
1999 04 10	120	0.6−	0.1+	1999 05 10	704	0.4+	0.8−	1999 05 19	704	0.9+	0.0
1999 04 10	120	1.5−	0.7−	1999 05 10	704	0.9+	0.1+	1999 05 19	704	0.8−	0.7−
1999 04 10	120	0.6−	0.1+	1999 05 10	704	0.0	0.0	1999 06 09	704	0.7+	0.3+
1999 04 12	704	0.5−	0.6−	1999 05 13	704	0.3−	0.4+	1999 06 09	704	(2.4−	0.9−)
1999 04 12	704	0.2−	0.0	1999 05 13	704	0.6−	0.0	1999 06 09	704	1.0+	0.8+
1999 04 12	704	0.5−	0.3+	1999 05 13	704	0.4−	0.1+	1999 06 09	704	0.3+	0.2−

1999 FA₅₅ = 1995 GS

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	54.24592		(2000.0)	P	Q
n	0.23099965	ω	316.55238	-0.83214909	-0.55335974
a	2.6306425	Ω	190.04087	+0.54852033	-0.81168877
e	0.1368868	i	12.03175	+0.08156794	-0.18696082
P	4.27	H	13.2	G 0.15	U 4

Residuals in seconds of arc

1995 04 01	408	0.2−	1.0−	1999 03 20	704	0.3−	0.3+	1999 03 23	699	0.7+	0.9+
1995 04 01	408	0.9−	1.4−	1999 03 20	704	0.8−	0.8−	1999 04 12	704	0.1+	0.4−
1995 04 03	408	0.1−	0.3−	1999 03 23	704	0.6−	0.8−	1999 04 12	704	1.3+	0.5−
1995 04 03	408	0.3+	0.7+	1999 03 23	704	0.9+	0.9+	1999 04 12	704	0.7+	0.3+
1995 04 07	400	0.5+	0.6+	1999 03 23	704	0.1+	0.6−	1999 04 12	704	0.6+	0.9+
1995 04 07	400	0.3+	0.8+	1999 03 23	699	0.4+	1.1+	1999 06 08	704	0.3+	0.3+
1999 03 20	704	1.3−	0.0	1999 03 23	704	0.1−	0.8−	1999 06 08	704	0.4+	0.1+
1999 03 20	704	0.8−	1.0−	1999 03 23	699	0.8+	1.2+	1999 06 08	704	1.6−	0.1−
1999 03 20	704	0.4−	1.1−	1999 03 23	704	0.3−	0.1+	1999 06 08	704	(1.3−	3.0−)

1999 FQ₅₈ = 1990 WE₆ = 1992 HA₂ = 1997 QK₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	36.11346		(2000.0)		P	Williams	Q	
<i>n</i>	0.27078808	ω	341.32788		-0.99918428		-0.01803131	
<i>a</i>	2.3661904	Ω	197.75557		+0.02779482		-0.95618431	
<i>e</i>	0.0686436	<i>i</i>	6.80483		-0.02929532		-0.29220958	
<i>P</i>	3.64	<i>H</i>	14.9	<i>G</i>	0.15		<i>U</i>	2

Residuals in seconds of arc

1990 11 21	809	0.5+	0.3+	1997 09 05	910	0.3+	0.2+	1999 03 23	704	1.0+	1.2-
1990 11 21	809	0.0	1.7-	1997 09 05	910	0.4+	0.1+	1999 03 23	699	1.5+	0.9+
1990 11 21	809	1.0-	1.9-	1997 10 29	566	0.3-	1.1+	1999 04 06	704	0.5-	0.1-
1990 11 22	809	1.0+	0.6-	1997 10 29	566	0.0	1.1+	1999 04 06	704	0.1+	0.6+
1990 11 22	809	0.2+	0.2+	1997 10 29	566	0.1-	1.2+	1999 04 06	704	0.0	0.4-
1990 11 22	809	0.4-	1.8-	1999 03 20	704	0.7-	0.2+	1999 04 06	704	1.0-	0.6+
1992 04 27	691	0.3-	0.3-	1999 03 20	704	0.9-	0.1-	1999 04 06	704	0.9-	0.1-
1992 04 27	691	0.1-	0.5-	1999 03 20	704	0.5-	0.3-	1999 04 09	699	0.5+	0.7+
1992 04 27	691	0.1-	0.5-	1999 03 20	704	0.0	0.1+	1999 04 09	699	0.9+	1.1+
1992 04 30	691	0.4-	1.1-	1999 03 20	704	1.4-	0.5+	1999 04 09	699	0.7+	0.8+
1992 04 30	691	0.2-	1.0-	1999 03 23	704	0.3+	0.4-	1999 04 12	704	0.7-	1.5+
1992 04 30	691	0.3+	1.1-	1999 03 23	704	0.8+	0.1-	1999 04 12	704	0.3-	0.7+
1997 08 30	910	0.3-	0.1+	1999 03 23	704	0.3+	0.7-	1999 04 12	704	0.8+	0.6-
1997 08 30	910	0.3-	0.0	1999 03 23	699	0.2+	1.6+	1999 04 12	704	0.2-	0.6-
1997 08 30	910	0.6-	0.0	1999 03 23	704	0.0	1.3-				
1997 09 05	910	0.3+	0.0	1999 03 23	699	1.2+	0.9+				

1999 GN = 1993 TP₁₄

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	295.42962		(2000.0)		P	Williams	Q	
<i>n</i>	0.28184836	ω	106.48137		+0.55833757		+0.82887751	
<i>a</i>	2.3038757	Ω	197.59388		-0.79842777		+0.52543119	
<i>e</i>	0.1754199	<i>i</i>	6.63899		-0.22532700		+0.19205243	
<i>P</i>	3.50	<i>H</i>	14.6	<i>G</i>	0.15		<i>U</i>	5

Residuals in seconds of arc

1993 10 09	809	0.6+	0.1+	1993 10 20	809	0.6-	0.2+	1999 04 06	120	1.3-	0.6+
1993 10 09	809	1.2+	0.1+	1993 10 20	809	0.1-	0.2+	1999 04 09	120	0.1+	0.8-
1993 10 09	809	0.5+	0.8+	1999 04 05	120	0.8-	0.3-	1999 04 09	120	1.0+	0.1+
1993 10 11	809	0.7-	0.6-	1999 04 05	120	0.8+	0.4+	1999 04 09	120	0.2+	1.3-
1993 10 11	809	0.2-	0.5-	1999 04 05	120	1.0+	0.9+	1999 04 15	704	1.7-	1.6+
1993 10 11	809	1.3-	1.2-	1999 04 06	120	0.0	0.2+	1999 04 15	704	0.5-	1.2-
1993 10 20	809	0.8+	0.6+	1999 04 06	120	(3.8+	1.2-)	1999 04 15	704	0.9+	0.6-

1999 GR = 1991 XL₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	260.32860		(2000.0)		P	Doppler	Q	
<i>n</i>	0.18692831	ω	313.22947		+0.75892964		+0.65095414	
<i>a</i>	3.0293723	Ω	6.22515		-0.54323706		+0.64720312	
<i>e</i>	0.0821023	<i>i</i>	8.94881		-0.35905335		+0.39672008	
<i>P</i>	5.27	<i>H</i>	14.2	<i>G</i>	0.15		<i>U</i>	5

Residuals in seconds of arc

1991 12 11	033	0.8+	0.1-	1999 04 05	120	0.7+	0.0	1999 04 09	120	0.5-	0.5+
1991 12 11	033	0.1-	0.5-	1999 04 06	120	0.7-	0.1+	1999 04 19	120	0.0	0.3-
1991 12 12	033	0.6-	0.6+	1999 04 06	120	0.5-	0.1-	1999 04 19	120	0.2+	0.6-
1999 04 05	120	(2.6-	0.4+)	1999 04 06	120	0.0	0.1-	1999 04 19	120	0.2-	0.9+
1999 04 05	120	0.1+	0.0	1999 04 09	120	0.8+	0.3-				

1999 GM₁ = 1997 UM₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	64.73698		(2000.0)		P	Williams	Q	
<i>n</i>	0.30198382	ω	93.69713		-0.99479005		-0.01896889	
<i>a</i>	2.2002917	Ω	85.23461		-0.02317833		-0.91471961	
<i>e</i>	0.0570061	<i>i</i>	5.76866		+0.09927503		-0.40364366	
<i>P</i>	3.26	<i>H</i>	15.1	<i>G</i>	0.15		<i>U</i>	4

Residuals in seconds of arc

1997 10 29	704	0.5-	1.2-	1999 04 12	704	0.4-	1.2-	1999 05 15	704	0.1-	0.4+
1997 10 29	704	0.7+	0.7+	1999 04 12	704	0.6-	0.7+	1999 05 15	704	1.3-	0.5+
1997 10 29	704	0.8+	0.1+	1999 04 12	704	0.4-	1.9-	1999 05 17	704	0.8-	1.4+
1997 10 29	704	1.2+	0.3+	1999 04 14	411	0.3-	0.5+	1999 05 17	704	0.7-	1.4+
1997 10 29	704	2.0+	0.2-	1999 04 14	411	0.8+	0.3-	1999 05 17	704	0.7+	0.1+
1997 11 06	704	1.1-	0.9+	1999 05 06	411	0.0	0.7+	1999 05 17	704	0.5-	0.3-
1997 11 06	704	0.5-	0.3-	1999 05 06	411	0.2-	0.2-	1999 05 17	704	0.5-	0.6+
1997 11 06	704	0.7-	0.9-	1999 05 06	411	0.7-	0.4-	1999 05 18	704	1.0+	0.8-
1997 11 06	704	1.5-	0.1-	1999 05 12	704	1.0+	0.4-	1999 05 18	704	1.1+	0.8-
1999 04 07	411	0.0	0.0	1999 05 12	704	(0.7+	2.2+)	1999 05 18	704	(0.7+	2.0-)
1999 04 07	411	0.6+	0.2-	1999 05 12	704	0.6-	0.1+	1999 05 18	704	0.3+	0.5-
1999 04 08	411	0.1+	0.4-	1999 05 12	704	0.5+	0.8-	1999 05 18	704	0.5+	0.5-
1999 04 08	411	0.4-	0.0	1999 05 12	704	0.2-	1.2-	1999 05 19	704	0.6+	0.1-
1999 04 09	411	1.1-	1.0+	1999 05 13	704	0.1+	0.6-	1999 05 19	704	1.2+	0.7+
1999 04 09	411	0.8-	0.5+	1999 05 13	704	0.1+	1.1+	1999 05 19	704	1.8+	1.6+
1999 04 09	411	0.1+	0.1-	1999 05 13	704	1.1-	0.1-	1999 05 19	704	0.9+	1.8-
1999 04 11	699	1.2+	0.5+	1999 05 13	704	0.4+	0.7-	1999 05 21	704	0.1-	1.2-
1999 04 11	699	0.6+	0.2+	1999 05 13	704	1.1-	0.7-	1999 05 21	704	1.8+	1.6+
1999 04 11	699	0.6-	1.6+	1999 05 15	704	0.6-	0.2+	1999 05 21	704	0.8-	0.9-
1999 04 12	704	1.0+	0.7-	1999 05 15	704	0.5-	0.3+	1999 05 21	704	1.1+	0.1-
1999 04 12	704	0.2-	0.2+	1999 05 15	704	1.9-	0.3+	1999 05 21	704	1.7-	0.0

1999 GL₂ = 1977 UB₄ = 1991 RD₃₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	33.16872		(2000.0)		P	Williams	Q	
<i>n</i>	0.20542887	ω	339.26386		-0.97426077		+0.22509789	
<i>a</i>	2.8446471	Ω	213.75204		-0.20362880		-0.90185480	
<i>e</i>	0.0127550	<i>i</i>	1.24992		-0.09670191		-0.36876668	
<i>P</i>	4.80	<i>H</i>	13.0	<i>G</i>	0.15		<i>U</i>	5

Residuals in seconds of arc

1977 10 18	675	0.3-	0.5-	1999 04 09	699	1.0+	0.2+	1999 04 15	704	0.6+	0.1+
1977 10 19	675	0.5+	0.2-	1999 04 09	699	1.3+	0.3+	1999 04 15	704	0.9+	0.4+
1991 09 11	675	1.1+	0.1+	1999 04 09	699	1.1+	0.2+	1999 05 02	120	0.3-	0.2+
1991 09 11	675	0.9-	0.4-	1999 04 09	120	0.1+	0.4-	1999 05 02	120	0.8-	0.3-
1999 04 06	120	0.3-	0.6-	1999 04 09	120	0.1-	0.8-	1999 05 03	120	0.4-	0.5+
1999 04 06	120	0.3+	0.5-	1999 04 14	704	0.3+	0.3-	1999 05 03	120	0.1-	0.1+
1999 04 06	120	0.1+	0.2-	1999 04 14	704	0.7+	0.4-	1999 05 03	120	0.2-	0.1-
1999 04 07	704	1.1-	0.5-	1999 04 14	704	1.7-	0.7-	1999 05 03	120	0.2-	0.1-
1999 04 07	704	0.7-	0.5-	1999 04 14	704	1.6-	1.0+	1999 05 03	120	0.2+	0.0
1999 04 07	704	0.9-	0.4+	1999 04 15	704	0.6+	0.1+	1999 05 07	120	0.3-	0.3+
1999 04 07	704	0.8-	0.0	1999 04 15	704	1.3+	0.3+	1999 05 07	120	0.5-	0.0
1999 04 07	704	0.9-	0.0	1999 04 15	704	1.1+	0.1+	1999 05 07	120	1.0+	0.3+

1999 GE₃ = 1996 TA₁₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	282.50793		(2000.0)		P	Williams	Q	
<i>n</i>	0.20204231	ω	280.65699		+0.40443523		+0.91453570	
<i>a</i>	2.8763463	Ω	13.20638		-0.82569934		+0.36866172	
<i>e</i>	0.0438883	<i>i</i>	1.88720		-0.39325912		+0.16647221	
<i>P</i>	4.88	<i>H</i>	15.6	<i>G</i>	0.15		<i>U</i>	5

Residuals in seconds of arc

1996 10 03	327	0.2+	0.2-	1999 04 07	691	0.3+	0.2+	1999 04 14	691	0.6+	0.6+
1996 10 03	327	0.3-	0.3+	1999 04 07	691	0.3+	0.2+	1999 04 14	691	0.6+	0.4-

M.P.C. 34956

1999 JUNE 22

1996 10 03	327	0.3+	0.2+	1999 04 07	691	0.5+	0.3+	1999 04 14	691	0.4+	0.1-
1996 10 05	327	0.2+	0.1+	1999 04 09	691	0.8-	0.4-	1999 04 17	691	0.3-	0.1-
1996 10 05	327	0.7-	0.5-	1999 04 09	691	0.5-	0.2-	1999 04 17	691	0.2-	0.1+
1996 10 05	327	0.4+	0.2+	1999 04 09	691	0.6-	0.2-	1999 04 17	691	0.3-	0.1+

1999 GW₃ = 1995 BU₁₅

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	281.06192		(2000.0)		P		Q
n	0.29909781	ω	217.01601		+0.84532950		+0.53152175
a	2.2144229	Ω	110.79171		-0.47532485		+0.79430446
e	0.1121951	i	3.30375		-0.24389407		+0.29421939
P	3.30	H	14.9	G	0.15	U	5

Residuals in seconds of arc

1995 01 30	691	(2.9-	1.1-)	1999 04 10	704	0.1+	0.2+	1999 04 12	704	0.7-	0.1+
1995 01 30	691	0.3-	0.0	1999 04 10	704	0.3+	0.3+	1999 04 12	704	0.4-	0.2+
1995 01 30	691	0.0	0.4-	1999 04 10	704	0.1-	0.1+	1999 04 12	704	0.2+	0.7+
1995 01 30	033	0.9+	0.2+	1999 04 10	704	0.5-	0.4-	1999 04 12	704	0.5-	0.4+
1995 01 30	033	0.6+	0.1+	1999 04 10	704	0.6+	0.8-	1999 04 13	104	(0.5-	7.5-)
1995 02 02	033	1.2-	0.2+	1999 04 10	704	0.1-	0.1-	1999 04 13	104	(0.7-	7.4-)
1999 04 06	104	1.5+	0.1+	1999 04 10	704	0.9-	0.2+	1999 04 13	104	(0.9-	7.2-)
1999 04 06	104	0.3-	0.3-	1999 04 10	704	0.8-	1.2-	1999 04 18	104	1.5-	0.0
1999 04 06	104	0.2+	0.2-	1999 04 10	704	1.6+	1.1+	1999 04 18	104	1.0-	0.6-
1999 04 07	704	0.8+	0.0	1999 04 10	704	0.9-	0.4+	1999 04 18	104	(2.0-	0.2-)
1999 04 07	704	0.2-	1.0-	1999 04 10	104	(3.5-	3.4-)	1999 05 16	703	0.7+	0.4-
1999 04 07	704	0.3+	0.3+	1999 04 10	104	(3.2-	3.2-)	1999 05 16	703	0.6+	0.5-
1999 04 07	704	0.8+	0.0	1999 04 10	104	(3.0-	2.9-)	1999 05 16	703	0.2-	0.9+
1999 04 07	704	(3.0+	0.7+)	1999 04 12	704	0.6+	0.4+	1999 05 16	703	0.1-	0.3+

1999 GN₄ = 1992 EJ₁

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	159.03756		(2000.0)		P	Q	
n	0.29165652	ω	344.40404		+0.25174497	-0.96320894	
a	2.2519302	Ω	90.94453		+0.89769352	+0.19607666	
e	0.0892002	i	5.39971		+0.36162248	+0.18380012	
P	3.38	H	14.7	G	0.15	U	6

Residuals in seconds of arc

1992 03 10	372	0.4+	0.3+	1999 04 13	120	0.3+	0.4+	1999 05 13	704	0.6+	0.2-
1992 03 10	372	1.3-	0.7+	1999 04 13	120	(2.1+	0.2-)	1999 05 13	704	0.7-	0.8-
1992 03 11	372	1.2+	0.5-	1999 04 14	120	0.6+	0.5-	1999 05 13	704	0.2-	1.4-
1992 03 11	372	(2.6+	1.5+)	1999 04 18	120	0.3+	0.3+	1999 05 17	703	0.4+	0.1+
1999 04 10	120	0.8-	0.2-	1999 04 18	120	0.3+	0.2+	1999 05 17	704	0.1+	0.0
1999 04 10	120	1.5-	0.3-	1999 04 18	120	0.6+	0.1+	1999 05 17	703	0.5-	0.8+
1999 04 10	120	0.0	0.0	1999 05 12	704	0.9+	1.5-	1999 05 17	704	1.5-	0.8-
1999 04 12	704	1.0-	1.2+	1999 05 12	704	1.4+	1.8+	1999 05 17	703	0.3-	0.2+
1999 04 12	704	1.4-	1.0-	1999 05 12	704	0.3+	0.8-	1999 05 17	704	1.4+	0.9-
1999 04 12	704	0.4+	0.2-	1999 05 12	704	(2.7-	0.2-)	1999 05 17	703	(2.3-	1.0+)
1999 04 12	704	0.0	0.3-	1999 05 13	704	0.4+	1.4+	1999 05 17	704	0.1+	2.0+
1999 04 12	704	0.4-	0.8-	1999 05 13	704	0.2+	0.8+	1999 05 17	704	(1.5-	2.6+)

1999 GO₄ = 1995 KY₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	24.30865		(2000.0)		P		Q
n	0.23647041	ω	50.99829		-0.83923669		+0.54250784
a	2.5899110	Ω	161.76221		-0.52825315		-0.79728171
e	0.1213449	i	6.78476		-0.12895884		-0.26462637
P	4.17	H	14.8	G	0.15	U	4

Residuals in seconds of arc

1995 05 31	691	0.6+	0.2+	1999 04 13	120	0.1+	0.0	1999 05 12	704	1.2+	0.4+
1995 05 31	691	0.2+	0.3+	1999 04 14	120	0.3-	0.1-	1999 05 12	704	0.0	1.9+
1995 05 31	691	0.4-	0.1+	1999 04 14	120	0.6+	0.3-	1999 05 12	704	1.6-	0.2-

1995 07 05	691	0.9+	0.9-	1999 04 18	120	0.1-	0.1+	1999 05 12	704	1.2+	1.2-
1995 07 05	691	1.4-	0.4+	1999 04 18	120	0.8+	0.1+	1999 05 13	704	0.9-	0.6+
1999 04 10	120	0.5-	0.4-	1999 04 18	120	0.1+	0.2-	1999 05 13	704	0.5-	1.5-
1999 04 10	120	0.4-	0.1-	1999 04 19	120	0.2-	0.2+	1999 05 13	704	1.2+	0.2+
1999 04 10	120	0.1-	0.0	1999 04 19	120	0.6+	0.2-	1999 05 13	704	0.5+	0.5-
1999 04 12	704	0.6-	0.2-	1999 04 19	120	0.1+	0.3+	1999 05 13	704	0.6-	0.6-
1999 04 12	704	0.6+	0.7+	1999 04 23	120	0.4+	0.5+	1999 05 17	704	0.3-	0.7-
1999 04 12	704	0.4+	0.3-	1999 04 23	120	0.2-	0.6+	1999 05 17	704	1.0+	0.3+
1999 04 12	704	1.6-	0.2+	1999 04 23	120	0.4-	0.1+	1999 05 17	704	(2.3-	1.3-)
1999 04 12	704	0.4-	0.7+	1999 05 07	120	0.4+	0.8-	1999 05 17	704	1.3-	1.4+
1999 04 13	120	0.1-	0.3-	1999 05 07	120	0.1-	0.1-	1999 05 17	704	0.5-	0.1-
1999 04 13	120	0.5+	0.6-	1999 05 07	120	1.1+	0.2-				

1999 GV₄ = 1983 TP = 1992 TA₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	118.26153		(2000.0)		P		Q
n	0.21751792	ω	263.29584		-0.14954345		-0.98799026
a	2.7382474	Ω	195.46868		+0.95498159		-0.13413288
e	0.1735892	i	8.38318		+0.25621656		-0.07670478
P	4.53	H	13.1	G	0.15	U	3

Residuals in seconds of arc

1983 10 06	046	0.2-	2.1-	1999 04 12	704	0.0	0.1-	1999 05 12	704	1.0-	0.4+
1983 10 06	046	0.8-	1.3+	1999 04 12	704	0.1+	0.3-	1999 05 13	704	0.2+	0.4+
1983 10 07	046	0.8+	0.2-	1999 04 14	678	0.5+	0.8-	1999 05 13	704	0.4-	0.6+
1983 10 07	046	0.4-	1.4-	1999 04 14	678	1.2-	0.3-	1999 05 13	704	0.5-	1.1+
1983 10 13	046	1.3-	2.0+	1999 04 15	704	(0.1+	3.6-)	1999 05 13	704	0.4-	0.5+
1983 10 13	046	(4.5-	1.1-)	1999 04 15	704	(1.0+	3.7-)	1999 05 13	704	0.6-	1.0+
1983 10 14	046	1.7+	0.8+	1999 04 15	704	1.6+	0.2+	1999 05 17	704	0.5-	0.6+
1983 10 14	046	(2.0-	4.3+)	1999 04 15	704	1.0-	1.4+	1999 05 17	704	0.9+	1.7+
1992 10 01	372	0.3-	0.2+	1999 04 16	704	0.7+	0.3+	1999 05 17	704	0.1-	1.6+
1992 10 01	372	0.3+	0.1+	1999 04 16	704	0.2-	0.3+	1999 05 17	704	0.6+	1.7+
1992 10 02	372	(2.3-	4.1+)	1999 04 16	704	0.9-	0.8-	1999 05 17	704	1.3-	0.7+
1992 10 02	372	(1.5-	4.4+)	1999 04 16	704	0.3+	0.0	1999 05 18	704	0.1+	0.5-
1999 04 11	699	0.3-	0.1+	1999 04 16	704	0.9-	0.2-	1999 05 18	704	0.8-	0.5-
1999 04 11	699	0.1+	0.3+	1999 04 19	678	0.1+	1.4-	1999 05 18	704	0.4-	1.4-
1999 04 11	678	1.7+	0.4+	1999 04 19	678	0.5+	0.1+	1999 05 18	704	1.2-	1.4-
1999 04 11	678	1.3+	0.5+	1999 05 08	678	0.3+	0.5+	1999 05 18	704	(2.3-	0.4-)
1999 04 11	699	0.4+	0.3+	1999 05 08	678	0.3+	0.9-	1999 05 19	704	0.1-	1.2-
1999 04 11	678	0.1+	0.1-	1999 05 12	704	0.5-	1.0-	1999 05 19	704	0.7+	0.4-
1999 04 12	704	0.5+	0.2+	1999 05 12	704	0.2+	1.2+	1999 05 19	704	1.6-	1.2-
1999 04 12	704	0.6+	0.5-	1999 05 12	704	0.0	0.4+	1999 05 19	704	0.8+	0.9-
1999 04 12	704	0.1-	0.3+	1999 05 12	704	1.2+	0.5-	1999 05 19	704	0.2+	1.5-

1999 GN₅ = 1996 TL₄₄

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	350.51096		(2000.0)		P		Q
n	0.23898532	ω	13.46278		-0.19727004		+0.98017758
a	2.5717095	Ω	245.16238		-0.90131422		-0.18869448
e	0.1664604	i	1.15814		-0.38563871		-0.06038465
P	4.12	H	14.5	G	0.15	U	4

Residuals in seconds of arc

1996 10 06	691	0.2-	0.2-	1999 04 15	704	0.2-	1.2-	1999 04 20	684	0.3+	0.1+
1996 10 06	691	0.3-	0.0	1999 04 16	684	0.1-	0.2-	1999 05 07	684	0.0	0.6-
1996 10 06	691	0.4-	0.1-	1999 04 16	684	0.0	0.2-	1999 05 07	684	0.2+	0.2-
1996 10 16	691	0.2+	0.3-	1999 04 17	704	0.3+	0.1-	1999 05 08	684	0.3-	0.1-
1996 10 16	691	0.6+	0.0	1999 04 17	704	0.1-	0.4+	1999 05 08	684	0.2-	0.2+
1996 10 16	691	0.3+	0.0	1999 04 17	704	0.6-	0.1+	1999 05 10	704	0.3-	0.6-
1999 03 29	699	0.4+	0.0	1999 04 17	704	0.2-	0.3-	1999 05 10	704	0.6-	0.7+
1999 03 29	699	0.2-	0.5+	1999 04 17	704	0.1-	0.1-	1999 05 10	704	0.4-	0.2+
1999 03 29	699	0.3+	0.1+	1999 04 18	684	0.2+	0.0	1999 05 10	704	1.1-	0.5-
1999 04 15	704	0.4+	0.2+	1999 04 18	684	0.5+	0.0	1999 05 10	704	0.5+	0.5+
1999 04 15	704	0.5-	0.5+	1999 04 18	704	1.6+	0.5-	1999 05 13	704	1.0+	0.3+
1999 04 15	684	0.0	0.3-	1999 04 18	704	0.7-	1.4+	1999 05 13	704	0.0	0.5+

1999 04 15	684	0.2−	0.2−	1999 04 18	704	0.7+	0.7−	1999 05 13	704	0.6+	0.3+
1999 04 15	704	0.4−	0.1−	1999 04 18	704	2.0−	0.3+	1999 05 13	704	0.2−	0.2−
1999 04 15	704	0.5+	0.4−	1999 04 20	684	0.5+	0.4−	1999 05 13	704	0.3+	0.3+

1999 GP₅ = 1993 BB₂

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	202.74202		(2000.0)		P		Q
<i>n</i>	0.19665948	ω	267.45887	+0.97395445			−0.02943343
<i>a</i>	2.9285959	Ω	94.16255	+0.11382673			+0.92101424
<i>e</i>	0.0706383	<i>i</i>	13.02757	−0.19610251			+0.38841531
<i>P</i>	5.01	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1993 01 16	010	0.4−	0.0	1999 04 07	905	1.1+	0.5+	1999 04 13	888	0.3−	0.5+
1993 01 16	010	0.5−	0.8−	1999 04 07	905	0.9−	0.6−	1999 04 13	888	0.5−	0.8+
1993 01 16	010	1.3−	0.9−	1999 04 12	704	0.0	0.0	1999 04 14	888	0.1+	0.8+
1993 01 17	010	1.3+	0.1+	1999 04 12	704	0.2−	0.6−	1999 04 14	888	0.0	0.6+
1993 01 17	010	0.3+	0.4+	1999 04 12	704	0.4−	0.6−	1999 05 07	888	0.0	0.1+
1993 01 17	010	0.5+	1.2+	1999 04 12	704	1.2+	1.1−	1999 05 07	888	0.1−	0.4−

1999 GQ₅ = 1996 TA₅₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	292.98759		(2000.0)		P		Q
<i>n</i>	0.22451209	ω	259.52520	+0.38907231			+0.92067200
<i>a</i>	2.6810787	Ω	33.42637	−0.82133118			+0.36212293
<i>e</i>	0.0494529	<i>i</i>	3.26745	−0.41717841			+0.14570535
<i>P</i>	4.39	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 10 05	809	0.2−	1.3+	1999 04 12	704	0.3−	0.6+	1999 04 16	385	1.2−	1.2−
1996 10 05	809	0.3+	1.1+	1999 04 12	704	0.1−	1.1+	1999 04 16	385	0.3+	0.3−
1996 10 05	809	1.4−	0.1+	1999 04 12	704	0.0	0.2+	1999 04 16	385	0.9+	1.0+
1996 10 06	809	1.0+	0.7−	1999 04 12	704	1.5+	0.5+	1999 04 16	888	0.1−	0.4−
1996 10 06	809	0.3+	0.7−	1999 04 15	888	0.1−	0.0	1999 05 12	888	0.5−	0.1+
1996 10 06	809	0.1−	1.0−	1999 04 15	888	0.0	1.1−	1999 05 12	888	0.5+	0.1+
1999 04 12	704	0.7−	0.1−	1999 04 15	888	0.3−	0.5−				

1999 GS₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	81.16428		(2000.0)		P		Q
<i>n</i>	0.26390961	ω	99.48432	−0.69841456			−0.71499749
<i>a</i>	2.4071284	Ω	34.88445	+0.63308849			−0.63776598
<i>e</i>	0.1218467	<i>i</i>	3.16277	+0.33379045			−0.28641430
<i>P</i>	3.73	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 11 03	704	0.6−	1.1−	1999 03 24	699	(2.1+	0.5+)	1999 04 15	678	0.2+	0.8−
1997 11 03	704	0.3+	0.0	1999 04 10	699	0.5+	0.1−	1999 04 15	678	0.2−	0.1−
1997 11 03	704	0.2+	1.5+	1999 04 10	699	0.1+	0.8−	1999 04 17	678	0.4−	0.1−
1999 03 23	703	(2.1−	0.4−)	1999 04 10	699	0.3+	0.9+	1999 04 17	678	1.7−	0.2−
1999 03 23	703	0.7−	0.1−	1999 04 12	704	0.7−	1.1−	1999 04 19	678	0.3+	0.5−
1999 03 23	703	0.7−	0.1−	1999 04 12	704	0.2−	0.1−	1999 04 19	678	0.2+	0.7+
1999 03 23	703	0.0	0.3+	1999 04 12	704	0.8+	0.5+	1999 06 06	691	0.4+	0.0
1999 03 24	699	1.6+	0.1+	1999 04 12	704	0.0	0.4+	1999 06 06	691	0.1+	0.9+
1999 03 24	699	0.2+	0.7+	1999 04 12	704	(2.2+	0.7−)	1999 06 06	691	0.1+	0.1+

1999 GW₅ = 1994 LZ₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	62.10265		(2000.0)		P		Q
<i>n</i>	0.18513326	ω	92.94276	−0.89834973			−0.35221265
<i>a</i>	3.0489227	Ω	66.55504	+0.19243051			−0.85274078
<i>e</i>	0.1753016	<i>i</i>	16.62686	+0.39489020			−0.38571936
<i>P</i>	5.32	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1994 06 03	809	0.4+	0.5−	1999 04 16	426	0.1−	0.4−	1999 05 13	704	0.2−	0.4−
1994 06 03	809	1.1−	0.9−	1999 04 16	426	0.1−	0.5+	1999 05 13	704	0.4−	0.1+
1994 06 03	809	0.5+	0.8−	1999 04 26	426	0.2+	0.3+	1999 05 15	426	0.2+	0.5−
1994 06 04	809	0.0	0.3+	1999 04 26	426	0.3+	0.1−	1999 05 15	426	0.7+	0.3+
1994 06 04	809	0.1−	1.0+	1999 04 26	426	0.8−	0.9+	1999 05 15	426	0.3−	0.5+
1994 06 04	809	0.3+	1.0+	1999 05 12	704	0.2+	0.6−	1999 05 17	426	0.2+	0.3−
1999 04 15	426	0.8+	0.0	1999 05 12	704	0.5+	0.8−	1999 05 17	426	0.6+	0.5+
1999 04 15	426	0.6−	0.3−	1999 05 12	704	0.7−	0.0	1999 05 17	426	0.3+	0.5+
1999 04 15	426	0.1+	0.0	1999 05 13	704	0.2−	0.7−				
1999 04 16	426	0.3−	0.1−	1999 05 13	704	0.4−	0.4+				

1999 GE₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	358.50200		(2000.0)		P		Q
<i>n</i>	0.19980887	ω	146.89565	−0.32439633			+0.93370942
<i>a</i>	2.8977408	Ω	103.78154	−0.89822870			−0.25384796
<i>e</i>	0.2401216	<i>i</i>	8.97456	−0.29656741			−0.25248353
<i>P</i>	4.93	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1995 08 29	413	(0.3+	3.3−)	1999 04 15	704	0.8−	0.4−	1999 05 12	704	1.1+	0.2+
1995 08 29	413	0.7+	1.8−	1999 04 16	704	0.1+	0.5−	1999 05 12	704	0.4−	0.2+
1999 02 23	704	1.0−	0.1+	1999 04 16	704	0.4−	1.2−	1999 05 12	704	0.9+	0.3−
1999 02 23	704	0.8−	0.3+	1999 04 16	704	0.0	0.6−	1999 05 15	704	1.3+	0.3−
1999 02 23	704	0.6−	0.3+	1999 04 16	704	0.7−	1.0+	1999 05 15	704	0.2−	0.7−
1999 02 23	704	0.5−	1.6+	1999 04 16	704	1.6−	1.4+	1999 05 15	704	0.4+	0.5+
1999 02 23	704	(2.8+	0.5−)	1999 04 16	888	0.4−	1.3−	1999 05 15	704	1.4−	0.5+
1999 03 24	699	1.2+	0.8+	1999 04 16	888	0.8−	0.1+	1999 05 15	704	0.1−	0.4+
1999 03 24	699	0.8+	0.2+	1999 04 20	385	0.6−	0.1−	1999 05 17	704	0.6+	0.8+
1999 03 24	699	0.8+	0.0	1999 04 20	385	0.4−	0.2−	1999 05 17	704	1.4−	0.1−
1999 04 12	704	0.5−	1.0−	1999 04 24	888	0.1+	0.1+	1999 05 17	704	0.8+	0.0
1999 04 12	704	0.1+	0.2−	1999 04 24	888	0.1+	0.4+	1999 05 17	704	1.3−	1.0−
1999 04 12	704	1.1−	0.2−	1999 05 03	611	0.4+	1.2+	1999 05 31	716	1.3+	0.3+
1999 04 12	704	0.2−	0.9−	1999 05 03	611	0.8+	0.2+	1999 05 31	716	1.0+	1.1+
1999 04 12	704	1.0−	1.3−	1999 05 03	611	1.1+	0.5+	1999 06 08	704	0.2−	1.0+
1999 04 14	905	0.2+	0.5−	1999 05 06	886	1.0+	1.0−	1999 06 08	704	0.7+	0.9+
1999 04 14	905	0.5−	0.9−	1999 05 06	886	(1.7+	3.9−)	1999 06 08	704	0.8+	0.3+
1999 04 15	704	0.2−	0.1−	1999 05 07	905	0.1+	0.8−	1999 06 08	704	0.7−	0.8+
1999 04 15	704	0.6+	1.2−	1999 05 07	905	0.8+	0.3−	1999 06 08	704	0.2+	0.3−
1999 04 15	704	0.2−	0.4−	1999 05 12	704	0.2+	0.0				
1999 04 15	704	0.4−	0.4+	1999 05 12	704	0.2+	0.4+				

1999 GO₇ = 1997 UO₁₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	22.30281		(2000.0)		P		Q
<i>n</i>	0.27843659	ω	35.05280	−0.84093426			+0.54113243
<i>a</i>	2.3226575	Ω	177.70429	−0.50865859			−0.78900705
<i>e</i>	0.1777156	<i>i</i>	3.28580	−0.18465108			−0.29093567
<i>P</i>	3.54	<i>H</i>	16.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1997 10 28	691	0.2−	0.1−	1999 04 07	699	0.3−	1.1−	1999 04 12	704	0.8−	1.0+
1997 10 28	691	0.2−	0.2−	1999 04 07	699	0.6+	0.5+	1999 04 12	704	0.3+	1.3−
1997 10 28	691	0.3+	0.1−	1999 04 07	699	0.1+	0.5−	1999 04 12	704	1.2−	1.0−
1997 11 02	691	0.1−	0.2+	1999 04 10	699	0.5−	0.3−	1999 04 12	704	1.8+	0.2+

M.P.C. 34958

1999 JUNE 22

1997 11 02 691 0.1+ 0.1+ 1999 04 10 699 0.5+ 1.2+
 1997 11 02 691 0.0 0.1+ 1999 04 10 699 0.6- 1.3+

1999 GC₈ = 1996 KV₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	282.71893		(2000.0)	P	Q
<i>n</i>	0.29463947	ω	96.89898	+0.79628489	+0.60174896
<i>a</i>	2.2367053	Ω	226.12868	-0.58336559	+0.73681943
<i>e</i>	0.2530720	<i>i</i>	4.92381	-0.16004673	+0.30821311
<i>P</i>	3.35	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1992 02 29	809	0.3-	0.8-	1999 02 23	704	(3.8+	2.2-)	1999 04 11	699	1.7+	0.1-
1992 04 07	809	0.5-	1.5-	1999 02 23	704	0.1+	0.7+	1999 04 11	699	0.3-	0.7+
1996 05 19	809	0.1+	0.0	1999 02 23	704	(0.9+	3.3-)	1999 04 11	699	0.3+	1.9+
1996 05 19	809	0.2-	0.2-	1999 02 23	704	1.1+	0.0	1999 04 14	704	0.6+	0.7-
1996 05 19	809	0.7-	1.0-	1999 03 24	699	0.5-	0.7+	1999 04 14	704	1.7-	0.3-
1996 05 19	566	0.1-	0.2+	1999 03 24	699	0.1-	0.9+	1999 04 14	704	0.7+	0.0
1996 05 19	566	0.5+	0.2+	1999 03 24	699	0.5+	0.1-	1999 04 14	704	1.2-	0.0
1996 05 19	566	0.3+	0.1-	1999 04 06	704	0.9-	0.2-	1999 04 15	704	(0.7-	2.6-)
1996 05 22	809	(0.3-	3.4+)	1999 04 06	704	0.4-	0.1-	1999 04 15	704	0.2+	1.2+
1996 05 22	809	(0.5-	2.9+)	1999 04 06	704	0.6+	1.2-	1999 04 15	704	1.1+	0.4+
1996 05 22	809	(0.8-	2.5+)	1999 04 06	704	0.1-	0.2+	1999 04 15	704	0.4-	0.3+
1996 05 23	809	(1.8+	4.5+)	1999 04 09	699	0.4+	0.5-	1999 04 15	704	1.8-	0.6-
1996 05 23	809	(1.3+	4.7+)	1999 04 09	699	0.6+	0.4-				
1996 05 23	809	(0.7+	4.5+)	1999 04 09	699	0.5+	0.1-				

1999 GO₈ = 1998 AV₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	206.51727		(2000.0)	P	Q
<i>n</i>	0.24405043	ω	295.17377	+0.85346797	-0.51685746
<i>a</i>	2.5360024	Ω	96.01172	+0.49903559	+0.77364327
<i>e</i>	0.0287138	<i>i</i>	3.84647	+0.15018625	+0.36651666
<i>P</i>	4.04	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 01 02	704	0.2-	0.2-	1999 04 12	704	0.5-	0.5-	1999 05 17	704	1.4-	0.8-
1998 01 02	704	0.2+	0.2-	1999 04 12	704	0.3+	0.4-	1999 05 17	704	0.7-	1.2+
1998 01 02	704	0.2-	0.0	1999 04 12	704	0.5+	0.4+	1999 05 17	704	1.0-	0.1+
1998 01 02	704	0.6-	0.4-	1999 04 12	704	0.7-	0.9+	1999 05 17	704	0.2-	0.5+
1998 01 06	704	0.2+	0.4-	1999 05 12	704	1.5+	0.7+	1999 05 18	704	0.6+	0.2-
1998 01 06	704	0.3+	0.3+	1999 05 12	704	(2.1+	0.1+)	1999 05 18	704	0.6-	1.3-
1998 01 06	704	0.2+	0.7+	1999 05 12	704	1.9+	0.3-	1999 05 18	704	0.2-	0.1-
1999 04 10	699	0.6+	0.9+	1999 05 12	704	1.1+	1.2-	1999 05 18	704	1.5+	1.1+
1999 04 10	699	0.7+	0.0	1999 05 12	704	0.1+	0.9-	1999 05 18	704	0.3+	0.1-
1999 04 10	699	0.5-	0.4-	1999 05 13	704	0.6-	0.3+	1999 05 19	704	(1.3-	2.4+)
1999 04 11	699	0.3+	0.6+	1999 05 13	704	0.2+	1.1-	1999 05 19	704	1.7+	1.3-
1999 04 11	699	0.5+	0.1+	1999 05 13	704	(2.7-	1.7+)	1999 05 19	704	0.1+	1.6+
1999 04 11	699	0.5-	0.2+	1999 05 13	704	1.9-	0.2-	1999 05 19	704	1.2-	0.7+
1999 04 12	704	0.4-	0.3-	1999 05 13	704	1.4-	0.2-				

1999 GQ₈ = 6828 P-L = 1989 WF₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	97.36918		(2000.0)	P	Q
<i>n</i>	0.24271449	ω	0.50095	-0.54534443	-0.83592595
<i>a</i>	2.5452996	Ω	122.54861	+0.76878906	-0.52822342
<i>e</i>	0.1568920	<i>i</i>	4.20885	+0.33401024	-0.14902290
<i>P</i>	4.06	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1960 09 26	675	0.5+	0.1-	1999 04 10	699	0.3+	0.3-	1999 05 13	704	0.3-	1.7-
1960 09 27	675	0.3-	0.2+	1999 04 10	699	0.7+	0.4+	1999 05 17	704	0.5-	1.2+
1960 09 28	675	0.2-	0.9+	1999 04 11	699	0.1-	0.6-	1999 05 17	704	1.8+	0.2+
1989 11 25	881	(9.4-	2.9-)	1999 04 11	699	0.4-	1.1+	1999 05 17	704	0.4-	0.6-
1989 11 25	881	(3.9-	2.5-)	1999 04 11	699	1.2+	0.9-	1999 05 17	704	(1.9+	2.8+)

1995 03 31	691	0.5-	0.3+	1999 04 12	704	0.3+	0.1-	1999 05 17	704	0.4-	1.9+
1995 03 31	691	0.6-	0.0	1999 04 12	704	0.0	0.5+	1999 05 18	704	1.0+	0.2+
1995 03 31	691	0.5-	0.0	1999 04 12	704	0.8+	0.4+	1999 05 18	704	0.6-	0.7+
1995 04 25	691	0.2+	0.8+	1999 04 12	704	0.7+	0.4-	1999 05 18	704	0.4-	0.3-
1995 04 25	691	0.2-	0.2+	1999 04 12	704	1.2-	0.2+	1999 05 18	704	0.7+	0.2-
1995 04 25	691	0.0	0.7+	1999 05 12	704	0.7-	1.1-	1999 05 18	704	1.0-	0.2-
1997 11 29	704	1.3-	0.4-	1999 05 12	704	0.0	0.4+	1999 05 19	704	0.8-	0.5-
1997 11 29	704	0.0	0.3-	1999 05 12	704	0.2-	0.4+	1999 05 19	704	0.2+	1.2-
1997 11 29	704	0.1+	0.8+	1999 05 12	704	0.9+	0.2-	1999 05 19	704	1.4-	0.0
1997 11 29	704	0.5+	0.1+	1999 05 12	704	0.1-	0.3+	1999 05 19	704	0.7+	0.7-
1997 11 29	704	0.2+	0.4+	1999 05 13	704	(2.1+	1.0-)				
1999 04 10	699	1.1+	0.4+	1999 05 13	704	(2.3+	0.0)				

1999 GR₈ = 1998 BT₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	323.90334		(2000.0)	P	Q
<i>n</i>	0.17670365	ω	157.53783	+0.02997823	+0.99724172
<i>a</i>	3.1451332	Ω	114.12466	-0.92800564	+0.05300567
<i>e</i>	0.0375140	<i>i</i>	4.26657	-0.37135811	-0.05195528
<i>P</i>	5.58	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1995 08 29	809	0.4-	0.2+	1999 04 11	699	0.2-	0.4+	1999 05 13	704	1.0+	0.7-
1995 08 30	809	0.2+	0.3+	1999 04 11	699	0.8-	0.8+	1999 05 13	704	0.7-	0.1-
1997 12 29	327	0.4+	0.7+	1999 04 11	699	0.2-	0.3+	1999 05 17	704	0.1-	0.0
1997 12 29	327	0.1+	0.2+	1999 04 12	704	0.9-	0.1+	1999 05 17	704	1.5+	0.6+
1997 12 29	327	0.8+	0.0	1999 04 12	704	0.6+	1.2-	1999 05 17	704	0.4-	0.7-
1998 01 25	691	0.1-	0.0	1999 04 12	704	0.2-	0.6-	1999 05 17	704	(2.3-	1.7-)
1998 01 25	691	0.2+	0.1+	1999 04 12	704	(2.5-	1.5+)	1999 05 17	704	0.8-	1.3+
1998 01 25	691	0.2-	0.3-	1999 04 12	704	(4.8-	0.5+)	1999 05 18	704	0.7+	1.2+
1998 01 30	691	0.4-	0.1-	1999 05 12	704	0.2+	1.0-	1999 05 18	704	1.1-	1.5-
1998 01 30	691	0.3-	0.2-	1999 05 12	704	1.0+	1.6+	1999 05 18	704	(2.2-	1.5-)
1998 01 30	691	0.3-	0.1+	1999 05 12	704	0.1-	0.1-	1999 05 19	704	0.1-	0.3-
1999 04 10	699	0.2-	1.1+	1999 05 12	704	1.3-	1.3-	1999 05 19	704	1.7-	1.6-
1999 04 10	699	0.2+	0.5-	1999 05 13	704	1.2+	1.3-	1999 05 19	704	1.1+	1.4+
1999 04 10	699	1.2+	0.6+	1999 05 13	704	1.3+	1.3+	1999 05 19	704	0.9-	0.3+

1999 GV₈ = 1951 XU = 1984 BO₁ = 1987 SK₂₇ = 1987 UA₈ = 1998 DY₃

Id. G. V. Williams, N. S. Chernykh (d)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	223.79596		(2000.0)	P	Q
<i>n</i>	0.21713245	ω	295.77606	+0.94886184	-0.29112725
<i>a</i>	2.7414872	Ω	81.34659	+0.31531121	+0.85499487
<i>e</i>	0.1444564	<i>i</i>	7.09394	+0.01549344	+0.42921871
<i>P</i>	4.54	<i>H</i>	13.1	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1951 12 05	711	0.4+	2.4-	Y	1999 04 11	699	0.2-	0.8+	1999 05 17	704	0.3+	0.5+
1984 01 24	381	(7.2-	19.0-)		1999 04 12	704	0.8-	0.3+	1999 05 17	704	1.2-	0.2-
1984 01 24	381	0.8+	1.4+		1999 04 12	704	0.6-	0.7+	1999 05 17	704	0.6-	0.3+
1987 09 27	095	1.5+	1.7-		1999 04 12	704	0.9-	0.3-	1999 05 17	704	0.3+	1.0+
1987 10 23	095	0.8-	0.2+		1999 04 12	704	1.1-	0.7-	1999 05 18	704	0.1+	1.2-
1998 02 22	566	0.5-	0.0		1999 04 12	704	(2.1-	0.0)	1999 05 18	704	0.2+	0.4-
1998 02 22	566	0.2+	0.5+		1999 05 13	704	0.2+	0.3-	1999 05 18	704	0.6-	1.1-
1998 02 22	566	0.6-	0.4+		1999 05 13	704	1.4+	0.3-	1999 05 18	704	0.3+	0.2+
1998 02 23	566	0.1-	0.3-		1999 05 13	704	1.2+	0.3+	1999 05 18	704	1.7-	0.3+
1998 02 23	566	0.1+	0.4-		1999 05 13	704	1.2+	1.2-	1999 05 19	704	0.9+	0.2+
1998 02 23	566	0.1-	0.3-		1999 05 13	704	0.5+	1.0-	1999 05 19	704	0.2+	0.4-
1999 04 10	699	0.1-	0.7+		1999 05 15	704	0.2+	0.7-	1999 05 19	704	0.3-	1.0-
1999 04 10	699	0.0	0.4+		1999 05 15	704	0.6+	1.7-	1999 05 19	704	0.8-	0.8-
1999 04 10	699	0.0	0.6+		1999 05 15	704	0.8-	0.3-	1999 05 19	704	0.1-	0.9+
1999 04 11	699	0.3-	0.1-		1999 05 15	704	0.3+	0.8+				
1999 04 11	699	0.2-	0.3+		1999 05 17	704	1.2+	0.0				

1999 GW₈ = 1997 WE₅₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	76.61654	(2000.0)	P		Q	
<i>n</i>	0.29009537	ω	60.91610	-0.95791943	-0.27560031	
<i>a</i>	2.2600022	Ω	102.99025	+0.22632758	-0.89710341	
<i>e</i>	0.0410697	<i>i</i>	4.72217	+0.17653949	-0.34532586	
<i>P</i>	3.40	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1997 11 29	704	1.9-	1.2-	1999 04 10	699	0.4-	0.0	1999 05 12	704	1.0-	1.7+
1997 11 29	704	0.5+	1.4+	1999 04 10	699	0.3-	0.6+	1999 05 12	704	0.3-	1.1-
1997 11 29	704	0.6-	1.1-	1999 04 10	699	1.5+	0.3-	1999 05 12	704	0.3+	0.5+
1997 11 29	704	0.2-	0.2-	1999 04 11	699	0.0	1.5+	1999 05 12	704	0.9+	1.4-
1997 11 29	704	1.4+	0.1-	1999 04 11	699	0.1-	0.4+	1999 05 13	704	0.5+	0.7+
1997 12 04	704	1.5+	1.0-	1999 04 11	699	0.5+	0.1+	1999 05 13	704	0.7-	0.9-
1997 12 04	704	0.0	0.8+	1999 04 12	704	1.4-	0.3-	1999 05 13	704	(0.6-	2.4+)
1997 12 04	704	0.4-	1.3+	1999 04 12	704	0.6-	0.8-	1999 05 13	704	1.1+	1.3-
1998 02 16	327	0.3-	0.6-	1999 04 12	704	0.2+	0.0	1999 05 17	704	0.2+	0.8+
1998 02 16	327	0.5-	0.2-	1999 04 12	704	1.1+	0.9-	1999 05 17	704	0.8+	0.7+
1998 02 16	327	1.2+	0.2+	1999 04 12	704	(3.2-	2.1-)	1999 05 17	704	0.8-	0.5+
1998 02 16	327	0.6-	0.6+	1999 05 12	704	1.6-	0.5-	1999 05 17	704	(3.2-	0.1+)

1999 GX₈ = 1982 KS₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	315.88133	(2000.0)	P		Q	
<i>n</i>	0.17033090	ω	95.13785	+0.21582282	+0.97581358	
<i>a</i>	3.2230999	Ω	187.59794	-0.96720331	+0.20876413	
<i>e</i>	0.0615240	<i>i</i>	15.24255	-0.13393386	+0.06484902	
<i>P</i>	5.79	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1982 05 22	381	1.4-	0.2+	1999 04 10	699	1.2+	1.0-	1999 05 13	704	0.4+	1.0-
1982 05 23	381	0.8+	0.1-	1999 04 11	699	1.1+	0.3+	1999 05 13	704	(0.1-	3.2+)
1982 05 23	381	0.2+	0.2-	1999 04 11	699	1.3+	0.2-	1999 05 13	704	0.6-	1.4-
1982 05 24	381	0.4+	0.6+	1999 04 11	699	0.9+	0.6-	1999 05 13	704	1.5-	0.3+
1993 03 24	809	(2.0-	2.3+)	1999 04 12	704	0.8+	1.1-	1999 05 13	704	1.3-	0.8-
1993 04 14	691	0.3-	0.1-	1999 04 12	704	0.9-	1.3+	1999 05 13	704	1.4+	0.7+
1993 04 14	691	0.3-	0.3-	1999 04 12	704	0.9-	1.1+	1999 05 13	704	0.5+	0.2-
1993 04 14	691	0.5-	0.2-	1999 04 12	704	0.7-	0.5+	1999 05 17	704	0.6-	0.6-
1993 04 18	413	0.9+	0.4-	1999 04 12	704	0.2-	0.4+	1999 05 17	704	0.8-	0.4+
1998 02 26	566	0.4-	0.4+	1999 05 12	704	1.4-	0.4+	1999 05 17	704	0.9+	1.0+
1998 02 26	566	0.2+	0.0	1999 05 12	704	1.1+	0.6+	1999 05 17	704	(0.3-	2.8-)
1998 02 26	566	0.2+	0.0	1999 05 12	704	0.6-	0.1-	1999 05 17	704	0.4-	0.1+
1999 04 10	699	0.5+	0.8+	1999 05 12	704	0.7-	0.5-				
1999 04 10	699	0.6+	0.4+	1999 05 13	704	0.1-	0.6-				

1999 GA₉ = 1991 NP₇ = 1996 XH₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	331.47771	(2000.0)	P		Q	
<i>n</i>	0.23443413	ω	195.34630	+0.43520788	+0.89514238	
<i>a</i>	2.6048866	Ω	100.53222	-0.81535867	+0.43732243	
<i>e</i>	0.2352322	<i>i</i>	5.63346	-0.38181716	+0.08642458	
<i>P</i>	4.20	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1991 07 15	809	0.2-	0.6-	1999 04 11	699	0.6+	0.6+	1999 05 17	704	1.4-	1.3+
1991 07 15	809	0.4+	0.4-	1999 04 12	704	1.0+	0.0	1999 05 17	704	0.9-	0.5+
1991 07 15	809	0.9+	0.3-	1999 04 12	704	0.2-	0.2+	1999 05 17	704	0.3-	0.4-
1991 07 16	809	0.7-	0.6+	1999 04 12	704	1.3+	0.6+	1999 05 17	704	0.1+	0.5-
1991 07 16	809	0.4-	0.8+	1999 04 12	704	0.6-	1.0+	1999 05 18	704	0.6-	0.1-
1991 07 16	809	0.1-	0.7+	1999 04 12	704	0.2+	0.4+	1999 05 18	704	0.4-	0.5-
1996 12 02	691	0.2+	0.3+	1999 05 12	704	0.1-	1.1-	1999 05 18	704	0.8-	0.9-
1996 12 02	691	0.3+	0.2-	1999 05 12	704	(0.0	2.2-)	1999 05 18	704	0.7-	0.3-
1996 12 09	691	0.9-	0.1+	1999 05 12	704	0.7-	0.1+	1999 05 18	704	0.3-	1.1-
1996 12 09	691	0.1+	0.1-	1999 05 12	704	(0.1-	2.5-)	1999 05 19	704	1.2+	0.8-

1996 12 09	691	0.1+	0.0	1999 05 13	704	0.2+	0.9+	1999 05 19	704	1.4-	0.3-
1999 04 10	699	1.2+	0.6-	1999 05 13	704	0.4+	0.8-	1999 05 19	704	0.6-	1.7+
1999 04 10	699	0.6+	1.0+	1999 05 13	704	0.3-	0.6+	1999 05 19	704	0.6+	1.1-
1999 04 10	699	0.8+	0.0	1999 05 13	704	0.4+	0.3+	1999 05 19	704	0.6+	0.3-
1999 04 11	699	(2.3+	1.0+)	1999 05 13	704	0.6+	0.1-				
1999 04 11	699	0.3-	0.2-	1999 05 17	704	(0.1-	2.2-)				

1999 GC₉ = 1975 TD₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	349.27751	(2000.0)	P		Q	
<i>n</i>	0.27613151	ω	74.35576	-0.12449156	+0.99209607	
<i>a</i>	2.3355656	Ω	188.53927	-0.94608620	-0.12346430	
<i>e</i>	0.0865521	<i>i</i>	6.07867	-0.29903637	-0.02240434	
<i>P</i>	3.57	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1975 10 15	675	1.2+	0.5+	1999 04 12	704	(4.3-	1.1-)	1999 05 17	704	0.4-	0.2-
1975 10 16	675	1.2-	0.6-	1999 05 12	704	0.3+	1.0-	1999 05 17	704	1.1-	0.1+
1999 04 10	699	0.6+	0.3-	1999 05 12	704	1.3-	0.5+	1999 05 17	704	0.3-	0.2-
1999 04 10	699	0.7+	0.9+	1999 05 12	704	1.2-	0.4+	1999 05 17	704	0.8-	0.0
1999 04 10	699	0.1-	0.4+	1999 05 12	704	1.2+	1.3-	1999 05 18	704	1.1+	0.1-
1999 04 11	699	0.3-	0.1+	1999 05 13	704	1.1+	0.5+	1999 05 18	704	0.6+	0.8+
1999 04 11	699	0.6-	0.3-	1999 05 13	704	0.7-	1.9+	1999 05 18	704	0.1-	0.0
1999 04 11	699	0.4-	0.2+	1999 05 13	704	0.5-	0.8-	1999 05 18	704	0.4-	0.3-
1999 04 11	699	0.3-	0.4-	1999 05 13	704	0.7-	0.2+	1999 05 18	704	1.0-	0.0
1999 04 11	699	0.5+	0.7+	1999 05 13	704	0.3+	0.2+	1999 05 19	704	0.3+	0.2+
1999 04 11	699	0.6+	0.5+	1999 05 15	703	0.4+	0.3+	1999 05 19	704	1.0-	0.4+
1999 04 12	704	0.5-	1.4-	1999 05 15	703	0.9+	0.4+	1999 05 19	704	1.0-	1.4-
1999 04 12	704	0.5+	0.6-	1999 05 15	703	0.5+	0.3+	1999 05 19	704	1.5+	1.5-
1999 04 12	704	0.8-	0.4-	1999 05 15	703	1.9+	0.8+				
1999 04 12	704	(0.6-	3.2-)	1999 05 17	704	0.6+	0.0				

1999 GE₉ = 6249 P-L = 1977 ED₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	6.72022	(2000.0)	P		Q	
<i>n</i>	0.27171960	ω	57.86904	-0.45692070	+0.88945496	
<i>a</i>	2.3607794	Ω	184.97185	-0.84905149	-0.43935222	
<i>e</i>	0.0933161	<i>i</i>	6.40098	-0.26520756	-0.12585511	
<i>P</i>	3.63	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i> 1

Residuals in seconds of arc

1960 09 24	675	0.5-	0.6+	1999 04 10	699	0.4+	0.1-	1999 05 13	704	0.3-	0.4+
1960 09 24	675	0.6-	0.4+	1999 04 10	699	0.7+	0.0	1999 05 17	704	0.5-	0.1+
1960 09 25	675	0.4+	0.9+	1999 04 11	699	1.0+	1.3-	1999 05 17	704	0.1-	0.8+
1960 09 25	675	0.2+	1.2+	1999 04 11	699	0.3+	0.5-	1999 05 17	704	0.3+	1.3+
1960 09 26	675	0.1-	0.2-	1999 04 11	699	1.3+	0.1+	1999 05 17	704	1.9-	0.4-
1960 09 26	675	0.5-	0.1-	1999 04 12	704	0.7+	0.6-	1999 05 17	704	1.6-	0.4+
1960 09 28	675	0.1+	0.2-	1999 04 12	704	1.0+	1.2-	1999 05 18	704	0.6-	1.1-
1960 09 28	675	0.4+	0.7-	1999 04 12	704	1.0+	0.2-	1999 05 18	704	1.2-	0.7+
1977 03 12	381	1.1-	1.1+	1999 04 12	704	0.2-	0.0	1999 05 18	704	1.0+	0.3-
1977 03 12	381	0.3-	0.3+	1999 04 12	704	1.1+	0.6+	1999 05 18	704	0.2+	0.1+
1977 03 14	381	0.9+	0.2-	1999 05 12	704	0.2-	1.1+	1999 05 18	704	0.8-	0.4+
1977 03 14	381	1.5+	0.3-	1999 05 12	704	1.2+	1.4+	1999 05 19	704	0.5-	1.1-
1977 03 15	381	0.5-	0.4+	1999 05 12	704	0.1-	0.5+	1999 05 19	704	1.2-	0.6-
1977 03 15	381	0.3-	0.4-	1999 05 12	704	0.2-	0.0	1999 05 19	704	0.3+	0.9-
1995 02 26	691	0.0	0.4+	1999 05 12	704	0.0	0.0	1999 05 19	704	0.6-	0.1-
1995 02 26	691	0.1-	0.3+	1999 05 13	704	0.3+	0.8-	1999 05 19	704	0.1+	0.6+
1995 02 26	691	0.1+	0.0	1999 05 13	704	0.1-	0.2+				
1999 04 10	699	0.4+	0.7+	1999 05 13	704	1.1-	0.4+				

1999 GG₉ = 1997 WN₄₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	92.92476		(2000.0)	P		Q	
<i>n</i>	0.24312524	ω	63.24783	-0.73529886	-0.67339638		
<i>a</i>	2.5424320	Ω	74.31577	+0.59011453	-0.69173287		
<i>e</i>	0.1065132	<i>i</i>	4.56550	+0.33331730	-0.26085045		
<i>P</i>	4.05	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1995 05 29	691	0.2+	0.5+	1998 01 02	704	1.4-	0.1+	1999 05 15	703	0.4-	1.1-
1995 05 29	691	1.0+	0.5+	1998 01 02	704	0.9-	0.2+	1999 05 15	703	0.4+	0.0
1995 05 29	691	0.5-	0.6+	1999 04 10	699	0.9+	0.0	1999 05 15	703	0.2-	0.9+
1997 11 29	704	1.0-	1.0+	1999 04 10	699	0.3-	0.5+	1999 05 15	703	0.8-	1.4-
1997 11 29	704	1.6-	0.1-	1999 04 10	699	1.9+	0.1+	1999 05 17	704	0.1+	0.2-
1997 11 29	704	(2.7-	0.3-)	1999 04 11	699	0.5-	1.5+	1999 05 17	704	0.3+	0.4-
1997 11 29	704	(3.0-	0.6-)	1999 04 11	699	0.5-	0.4-	1999 05 17	704	(0.3-	2.2+)
1997 11 29	704	(3.7-	0.3+)	1999 04 11	699	0.0	0.2+	1999 05 17	704	0.9-	1.0+
1997 12 04	704	0.2-	0.3+	1999 04 12	704	0.2+	1.2-	1999 05 17	704	1.6-	0.4-
1997 12 04	704	(3.8+	1.5+)	1999 04 12	704	0.5+	0.9-	1999 05 18	704	0.7-	0.9+
1997 12 04	704	1.4+	0.8-	1999 04 12	704	0.5+	0.4+	1999 05 18	704	0.4-	0.3-
1997 12 04	704	0.6-	0.5-	1999 04 12	704	(1.0+	2.3-)	1999 05 18	704	1.5-	0.0
1997 12 04	704	1.6+	0.1-	1999 04 12	704	0.2-	0.8-	1999 05 18	704	0.0	0.8-
1997 12 05	704	0.0	0.3-	1999 05 13	704	0.1-	0.1+	1999 05 19	704	0.4+	0.7+
1997 12 05	704	0.9+	0.0	1999 05 13	704	1.2+	1.4+	1999 05 19	704	0.4+	1.6+
1997 12 05	704	1.6+	0.3+	1999 05 13	704	0.8-	0.7-	1999 05 19	704	0.5+	0.8+
1997 12 05	704	0.4+	0.6+	1999 05 13	704	0.0	0.0	1999 05 19	704	0.5+	0.0
1997 12 05	704	0.7-	0.2+	1999 05 14	704	0.0	0.9-	1999 05 19	704	0.5+	0.7-
1998 01 02	704	0.2+	0.1+	1999 05 14	704	0.0	0.0				
1998 01 02	704	0.2+	0.8-	1999 05 14	704	0.2-	1.2-				

1999 GK₉ = 1992 OK_s

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	325.10417		(2000.0)	P		Q	
<i>n</i>	0.25971499	ω	335.03443	+0.14847981	+0.98451900		
<i>a</i>	2.4329772	Ω	303.37700	-0.88755645	+0.09113090		
<i>e</i>	0.1537431	<i>i</i>	6.40423	-0.43611616	+0.14972474		
<i>P</i>	3.79	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1992 07 22	809	0.6+	0.4-	1992 07 28	809	0.3-	0.2+	1999 04 14	704	0.3-	0.1+
1992 07 22	809	0.9+	0.1-	1999 04 11	699	0.2-	0.3-	1999 04 14	704	1.1-	1.1-
1992 07 22	809	1.3+	0.5-	1999 04 11	699	0.1+	0.3-	1999 04 14	704	0.6-	1.9+
1992 07 23	809	0.8-	0.2+	1999 04 11	699	0.8+	0.5-	1999 04 15	704	0.2-	0.2+
1992 07 23	809	0.4-	0.3+	1999 04 14	699	0.5+	0.2-	1999 04 15	704	0.7-	0.2+
1992 07 23	809	0.0	0.4+	1999 04 14	699	1.1+	0.3-	1999 04 15	704	0.0	0.4+
1992 07 28	809	0.8-	0.2-	1999 04 14	699	0.2+	0.2-	1999 04 15	704	0.3-	0.1-
1992 07 28	809	0.5-	0.1+	1999 04 14	704	0.5+	1.1+	1999 04 15	704	0.1+	0.7-

1999 GO₉ = 1993 TX₄ = 1995 BG₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	324.38410		(2000.0)	P		Q	
<i>n</i>	0.29632784	ω	328.35203	+0.67341567	+0.73892493		
<i>a</i>	2.2282012	Ω	343.94231	-0.66024709	+0.58753734		
<i>e</i>	0.2506720	<i>i</i>	4.64285	-0.33254342	+0.32983302		
<i>P</i>	3.33	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1993 10 08	691	0.3+	0.3+	1996 11 12	566	0.6+	0.1+	1999 05 13	704	0.5-	0.0
1993 10 08	691	0.3+	0.2+	1996 11 12	566	0.4-	0.5+	1999 05 13	704	0.1-	0.2+
1993 10 08	691	0.4+	0.2+	1996 11 12	566	0.5-	0.6-	1999 05 13	704	1.0+	0.3-
1993 10 12	691	0.5-	0.2+	1999 04 15	699	0.2+	0.6+	1999 05 18	704	0.2-	0.9+
1993 10 12	691	0.5-	0.6+	1999 04 15	699	0.5+	0.8-	1999 05 18	704	0.4-	1.3+
1993 10 12	691	0.8-	0.4+	1999 04 15	699	0.5+	1.7+	1999 05 18	704	0.1-	0.4-
1995 01 28	691	0.5+	0.6+	1999 04 17	699	0.1+	1.0-	1999 05 18	704	0.4+	0.3-
1995 01 28	691	0.1+	0.4+	1999 04 17	699	1.1+	0.1-	1999 05 18	704	1.1-	0.2+

1995 01 28	691	0.3+	0.3+	1999 04 17	699	0.2+	0.8-	1999 05 19	704	0.3-	1.2+
1995 02 06	691	0.5+	0.5-	1999 05 10	704	1.4+	0.8+	1999 05 19	704	0.3-	0.8-
1995 02 06	691	0.2-	0.1+	1999 05 10	704	0.5+	1.8+	1999 05 19	704	0.5-	0.3-
1995 02 06	691	0.5-	0.0	1999 05 10	704	0.2+	0.7-	1999 05 19	704	0.5-	0.1-
1996 10 03	327	0.1+	0.4+	1999 05 10	704	0.5-	0.6-	1999 05 19	704	0.1-	0.6+
1996 10 03	327	0.4+	0.3+	1999 05 13	704	0.2+	0.5-				
1996 10 03	327	0.2-	0.2+	1999 05 13	704	0.9-	0.1+				

1999 GV₉ = 1992 SE₅ = 1999 GH₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	61.00171		(2000.0)	P		Q	
<i>n</i>	0.23680922	ω	4.35964	-0.95672716	-0.28654772		
<i>a</i>	2.5874401	Ω	158.77668	+0.26256746	-0.92511984		
<i>e</i>	0.1339774	<i>i</i>	8.04001	+0.12542520	-0.24908568		
<i>P</i>	4.16	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 09 25	691	0.1+	0.0	1999 04 12	704	0.3-	0.4-	1999 04 15	704	0.3+	0.8+
1992 09 25	691	0.0	0.1+	1999 04 12	704	0.0	0.5+	1999 04 16	704	0.7-	0.3-
1992 09 25	691	0.1-	0.2+	1999 04 12	704	0.6+	0.1+	1999 04 16	704	1.0-	0.5-
1992 09 27	691	0.2-	0.6-	1999 04 12	704	0.2-	0.5+	1999 04 16	704	1.2-	1.0-
1992 09 27	691	0.8+	0.1+	1999 04 14	683	0.1-	0.0	1999 04 16	704	0.5+	0.1+
1992 09 27	691	0.7-	0.2+	1999 04 14	683	0.2-	0.1+	1999 04 16	704	0.3-	1.3-
1995 04 26	691	0.1+	0.4+	1999 04 14	683	0.1-	0.0	1999 05 12	704	0.6+	0.5-
1995 04 26	691	0.0	0.6+	1999 04 15	683	0.1+	0.2-	1999 05 12	704	(2.6+	0.5+)
1995 04 26	691	0.1+	0.3+	1999 04 15	683	0.3+	0.1+	1999 05 12	704	0.0	0.8-
1999 03 24	699	0.2+	0.1+	1999 04 15	683	0.1+	0.1+	1999 05 12	704	2.0+	0.8-
1999 03 24	699	0.6+	0.7+	1999 04 15	704	0.1+	0.8+	1999 05 12	704	0.1+	1.1-
1999 03 24	699	0.2-	0.7+	1999 04 15	704	0.9-	0.1-				
1999 04 12	704	0.1-	0.0	1999 04 15	704	0.0	1.1+				

1999 GY₁₀ = 1996 TA₄₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	10.65474		(2000.0)	P		Q	
<i>n</i>	0.17339767	ω	161.31059	-0.85554191	+0.51703511		
<i>a</i>	3.1849837	Ω	49.85298	-0.47938158	-0.77148457		
<i>e</i>	0.1431131	<i>i</i>	2.01551	-0.19555394	-0.37079139		
<i>P</i>	5.68	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1996 10 07	691	0.2+	0.3-	1999 03 23	703	0.1+	1.2-	1999 04 11	691	0.5-	0.3+
1996 10 07	691	0.4+	0.1+	1999 03 23	703	0.8-	0.1-	1999 04 12	704	0.1+	0.1+
1996 10 08	691	0.1-	0.3+	1999 04 07	704	0.6-	0.1-	1999 04 12	704	0.1-	0.7+
1996 10 08	691	0.0	0.1+	1999 04 07	704	0.9-	1.5+	1999 04 12	704	0.4-	0.3-
1996 10 08	691	0.2-	0.2+	1999 04 07	704	0.6+	0.2-	1999 04 12	704	1.1-	0.6-
1996 10 12	691	0.1-	0.1-	1999 04 07	704	0.3-	0.6-	1999 04 12	704	0.3+	0.7-
1996 10 12	691	0.1-	0.1-	1999 04 07	699	1.9+	0.0	1999 04 16	691	0.1+	0.5+
1996 10 12	691	0.2-	0.0	1999 04 07	699	1.2+	0.6-	1999 04 16	691	0.3+	0.3+
1999 03 23	703	0.2-	0.1-	1999 04 07	699	0.8+	0.2+	1999 04 16	691	0.2+	0.2+
1999 03 23	703	0.1-	0.6+	1999 04 11	691	0.7-	0.1+				

1999 GC₁₃ = 1996 MW₁ = 1997 WD₅₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	33.47648		(2000.0)	P		Q	
<i>n</i>	0.27789054	ω	94.62133	-0.86018683	+0.49575997		
<i>a</i>	2.3256992	Ω	115.14072	-0.50440788	-0.79250261		
<i>e</i>	0.0632538	<i>i</i>	7.59094	-0.07517511	-0.35519244		
<i>P</i>	3.55	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1996 06 22	566	0.5-	0.1+	1999 04 12	704	0.6-	0.4-	1999 05 12	704	1.5+	1.0-
1996 06 22	566	0.3-	0.1-	1999 04 14	905	0.3+	2.0-	1999 05 12	704	1.1+	0.5-
1996 06 22	566	0.5-	0.1-	1999 04 14	905	(0.1+	2.6-)	1999 05 12	704	0.5-	0.5+
1996 07 22	566	0.3+	0.0	1999 04 15	704	0.7-	0.7-	1999 05 15	704	1.3+	0.4+
1996 07 22	566	0.5+	0.0	1999 04 15	704	0.2+	1.8-	1999 05 15	704	(2.3+	0.5-)

1999 JUNE 22

M.P.C. 34961

1996 07 22	566	0.3+	0.3-	1999 04 15	704	1.0-	0.6+	1999 05 15	704	0.4-	0.3-
1997 11 30	566	0.1-	0.4+	1999 04 15	704	(2.2-	1.2+)	1999 05 15	704	0.2-	1.3+
1997 11 30	566	0.1+	0.5+	1999 04 15	704	1.2-	0.4-	1999 05 15	704	0.4-	1.0-
1997 11 30	566	0.2+	0.1+	1999 04 16	703	0.6-	1.0+	1999 05 17	704	0.3+	0.1+
1997 12 29	566	0.1-	0.0	1999 04 16	703	0.2-	0.3+	1999 05 17	704	0.1-	0.8+
1997 12 29	566	0.1-	0.0	1999 04 16	703	0.3+	1.2+	1999 05 17	704	1.4+	0.0
1997 12 29	566	0.3-	0.1-	1999 04 16	703	0.3-	1.2+	1999 05 17	704	0.0	1.9+
1999 03 20	699	0.6+	1.2+	1999 04 16	704	0.1+	0.6-	1999 05 17	704	0.4+	0.2+
1999 03 20	699	1.6+	1.1-	1999 04 16	704	0.1-	0.6-	1999 06 08	704	0.3+	0.9+
1999 03 20	699	0.4+	1.0+	1999 04 16	704	(0.8-	2.4-)	1999 06 08	704	0.8+	0.2-
1999 04 12	704	0.7-	0.1-	1999 04 16	704	0.3+	0.5-	1999 06 08	704	0.5-	0.8+
1999 04 12	704	0.2-	0.2+	1999 04 16	704	1.6-	0.7-	1999 06 08	704	0.4-	0.7-
1999 04 12	704	1.2-	0.2-	1999 05 12	704	1.2+	0.5+	1999 06 08	704	0.3+	0.3-
1999 04 12	704	1.3-	0.6-	1999 05 12	704	0.7+	0.3+				

1999 GS₁₃ = 1996 SY

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	29.23286		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$		
n	0.27382638	ω	77.40664	-0.64421683	+0.75713870		
a	2.3486548	Ω	151.56793	-0.75982161	-0.61734449		
e	0.0889746	i	13.14605	-0.08749741	-0.21360423		
P	3.60	H	14.9	G	0.15	U	3

Residuals in seconds of arc

1995 02 05	691	0.1-	0.2-	1999 04 16	691	0.3+	0.2-	1999 05 17	704	0.8-	0.0
1995 02 05	691	0.0	0.4-	1999 04 16	691	0.5+	0.2-	1999 05 17	704	0.1-	0.3-
1995 02 05	691	0.1-	0.2-	1999 04 16	691	0.5+	0.0	1999 05 19	703	0.5-	0.5+
1996 08 13	327	0.3-	0.0	1999 05 12	704	0.4+	0.2-	1999 05 19	703	0.5-	0.5+
1996 08 13	327	0.2+	0.2-	1999 05 12	704	1.0+	0.0	1999 05 19	703	0.5-	0.0
1996 08 13	327	0.1+	0.3-	1999 05 12	704	1.1+	0.1-	1999 05 19	703	0.6-	0.3+
1996 08 13	327	0.1+	0.1-	1999 05 12	704	1.1+	0.3+	1999 06 08	704	0.3+	0.8-
1996 08 15	566	0.7-	0.4-	1999 05 14	703	0.4+	0.5-	1999 06 08	704	0.1-	0.2-
1996 08 15	566	0.5-	0.3-	1999 05 14	703	0.6+	1.0+	1999 06 08	704	0.2-	1.8-
1996 08 15	566	0.3-	0.3-	1999 05 14	703	0.3+	0.9+	1999 06 08	704	0.2-	0.7-
1996 09 18	327	0.2-	0.1+	1999 05 14	703	0.2-	1.8+	1999 06 08	704	1.2-	0.1+
1996 09 18	327	0.3+	0.3+	1999 05 15	703	0.1+	1.2+	1999 06 10	703	1.3+	0.5-
1996 09 18	327	0.7+	0.1+	1999 05 15	703	0.1+	0.0	1999 06 10	703	0.2-	0.2+
1996 09 20	327	0.1+	0.2+	1999 05 15	704	(2.4+	0.8+)	1999 06 10	703	0.9-	0.5+
1996 09 20	327	0.1+	0.0	1999 05 15	703	1.5-	0.3-	1999 06 10	703	0.6-	1.0+
1996 09 20	327	0.6+	0.1+	1999 05 15	704	0.1+	1.0+	1999 06 12	704	0.0	0.4+
1999 04 09	691	0.3-	0.3-	1999 05 15	703	0.6-	0.9-	1999 06 12	704	0.5-	0.1+
1999 04 09	691	0.2-	0.2-	1999 05 15	704	0.2-	0.3+	1999 06 12	704	0.6-	0.9+
1999 04 09	691	0.4-	0.2-	1999 05 15	704	1.1+	0.8-	1999 06 12	704	0.1-	0.4+
1999 04 12	691	0.1-	0.1-	1999 05 17	704	0.4+	0.0	1999 06 12	704	0.1+	0.1-
1999 04 12	691	0.4+	0.2-	1999 05 17	704	1.2+	0.8-				
1999 04 12	691	0.1-	0.3-	1999 05 17	704	0.0	1.5-				

1999 GF₁₄ = 1992 UH₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	27.14389		(2000.0)	P	Q
n	0.22200189	ω	176.85979	-0.87769982	+0.46191860
a	2.7012509	Ω	31.67087	-0.44479214	-0.68619586
e	0.0827875	i	14.06210	-0.17833390	-0.56193101
P	4.44	H	13.9	G 0.15	U 4

Residuals in seconds of arc

1992 10 31	033	0.3+	0.1+	1999 04 15	704	0.6+	1.0+	1999 05 10	704	0.1+	0.0
1992 10 31	033	0.1-	0.1-	1999 04 16	704	0.6+	0.2-	1999 05 10	704	0.4+	0.5-
1992 11 01	033	0.2-	0.0	1999 04 16	704	0.7+	1.2-	1999 05 10	704	0.4-	0.0
1999 04 12	704	0.4-	0.6+	1999 04 16	704	0.5+	1.8-	1999 05 10	704	0.6+	0.5-
1999 04 12	704	0.3-	0.3+	1999 04 16	704	0.1+	0.9-	1999 05 10	704	0.3+	0.1-
1999 04 12	704	1.0+	1.7+	1999 04 16	704	1.0-	1.8-	1999 05 13	704	0.8-	0.2+
1999 04 12	704	0.7-	0.4+	1999 04 18	704	1.7+	0.1+	1999 05 13	704	0.6-	0.3+
1999 04 12	704	1.3-	0.3+	1999 04 18	704	1.0-	1.7+	1999 05 13	704	0.5+	0.3+
1999 04 15	704	0.4-	0.3+	1999 04 18	704	(0.4+	3.9-)	1999 05 13	704	0.1-	0.4+

1999 04 15	704	1.1-	0.8-	1999 04 18	704	0.6-	0.9+	1999 05 13	704	0.2+	0.1+
1999 04 15	704	1.5+	0.6-	1999 04 18	704	(2.9-	0.5-)				

1999 GQ₁₅ = 1981 QR₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	309.40890		(2000.0)	P	Q
n	0.26561137	ω	114.65626	+0.78419825	+0.62038881
a	2.3968358	Ω	207.00427	-0.57863849	+0.72399005
e	0.2271207	i	1.54995	-0.22407724	+0.30158935
P	3.71	H	14.7	G 0.15	U 1

Residuals in seconds of arc

1981 08 30	704	(22.3-	0.8+)	1999 04 15	691	0.3-	0.1+	1999 05 15	703	0.2+	0.3-
1981 08 30	675	0.4+	0.4+	1999 04 15	704	0.5+	0.1+	1999 05 15	703	0.4-	0.4+
1981 08 31	675	0.2-	0.7-	1999 04 15	691	0.1-	0.2+	1999 05 15	703	0.1+	0.1+
1981 09 01	704	(1.3+	4.0+)	1999 04 15	704	0.2-	0.4-	1999 05 15	703	0.1+	1.5+
1981 09 02	704	(3.5+	3.4+)	1999 04 21	691	0.1-	0.8-	1999 05 18	704	0.2+	0.6-
1995 03 27	691	0.1+	0.1-	1999 04 21	691	0.1-	0.4-	1999 05 18	704	1.4+	0.7-
1995 03 27	691	0.2-	0.3+	1999 04 21	691	0.2-	0.2-	1999 05 18	704	0.4-	1.1+
1995 03 27	691	0.0	0.2+	1999 05 10	704	0.3+	0.0	1999 05 18	704	0.4-	0.4+
1996 10 19	910	0.4-	0.7+	1999 05 10	704	1.0+	0.4+	1999 05 19	704	0.2+	1.5-
1996 10 19	910	0.3-	0.9+	1999 05 10	704	0.1-	1.0+	1999 05 19	704	0.9-	0.8-
1996 10 19	910	0.3-	0.7+	1999 05 10	704	0.2-	0.7+	1999 05 19	704	0.4+	0.1-
1998 03 31	910	0.1+	0.4+	1999 05 10	704	0.4-	0.3+	1999 05 19	704	0.4+	0.5+
1998 03 31	910	0.3+	0.3+	1999 05 13	704	0.1-	0.2+	1999 05 19	704	0.0	0.4+
1998 03 31	910	0.0	0.1+	1999 05 13	704	0.7-	0.2-	1999 05 19	703	0.3-	0.1+
1999 04 15	704	(3.7-	2.2-)	1999 05 13	704	(2.5-	0.3+)	1999 05 19	703	0.6-	1.0+
1999 04 15	704	0.7+	0.7-	1999 05 13	704	0.3-	0.3+	1999 05 19	703	0.6+	0.5+
1999 04 15	704	0.4-	0.5+	1999 05 13	704	0.2+	0.6-	1999 05 19	703	0.8+	0.4-

1999 GF₁₆ = 1992 AP₄ = 1998 BD₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	157.02179		(2000.0)	P	Q
n	0.17459121	ω	24.65357	+0.55207478	-0.83334652
a	3.1704516	Ω	31.85726	+0.75614267	+0.48657680
e	0.0734657	i	2.96830	+0.35137117	+0.26225291
P	5.65	H	13.5	G 0.15	U 5

Residuals in seconds of arc

1992 01 02	033	0.1-	0.1+	1999 03 23	703	0.4-	0.1+	1999 04 09	704	1.3-	0.7-
1992 01 03	033	0.1+	0.1+	1999 03 23	703	0.1-	0.1+	1999 04 09	704	1.0-	0.2+
1998 01 23	704	0.7-	0.2+	1999 03 23	703	0.4+	0.2+	1999 04 09	704	0.9-	0.6-
1998 01 23	704	0.1+	0.6-	1999 03 23	703	0.3+	0.4+	1999 04 09	704	1.0-	0.9-
1998 01 23	704	0.6-	0.2+	1999 04 07	704	0.7+	0.9-	1999 04 09	704	1.4-	0.5-
1998 01 23	704	0.1-	0.2+	1999 04 07	704	1.0-	0.3+	1999 04 10	704	0.5+	0.5+
1998 01 24	704	0.4+	0.1+	1999 04 07	704	0.2-	0.7-	1999 04 10	704	0.1+	0.7+
1998 01 24	704	0.4+	0.3+	1999 04 07	704	0.2+	1.5-	1999 04 10	704	0.3-	0.6+
1998 01 24	704	0.2-	0.9+	1999 04 07	704	0.1-	1.1-	1999 04 10	704	1.5+	1.3+
1998 01 24	704	0.0	0.3+	1999 04 07	699	0.4+	0.7+	1999 04 10	704	0.4-	0.7-
1998 01 25	704	0.5-	0.7+	1999 04 07	699	0.6+	0.5+	1999 04 12	704	1.2-	1.5+
1998 01 25	704	0.1+	0.1+	1999 04 07	699	1.2+	0.4-	1999 04 12	704	1.4+	0.5+
1998 01 25	704	1.6+	0.0	1999 04 09	704	0.3+	0.7+	1999 04 12	704	0.4+	0.9-
1998 01 25	704	0.1-	0.3-	1999 04 09	704	0.7+	0.7+	1999 04 12	704	0.1-	0.6-
1998 01 29	566	0.3-	1.1-	1999 04 09	704	0.4-	0.8+	1999 04 12	704	0.8+	0.1+
1998 01 29	566	0.1-	0.9-	1999 04 09	704	0.1-	0.6-				
1998 01 29	566	0.1-	0.4-	1999 04 09	704	0.1+	0.1+				

1999 GO₁₆ = 19

Residuals in seconds of arc

1979 03 31	095	0.4−	1.6−	1999 03 22	699	0.3+	0.2−	1999 04 15	704	0.6−	0.2+
1992 10 26	400	0.1+	0.5+	1999 03 22	699	0.0	0.4−	1999 04 15	704	0.6+	0.2−
1992 10 26	400	0.0	1.1−	1999 04 07	699	1.0+	0.7+	1999 04 15	704	(1.8+ 2.3+)	
1992 10 28	400	0.0	0.1+	1999 04 07	699	1.4+	0.5+	1999 04 15	704	0.8+	0.8−
1992 10 28	400	0.1−	0.3+	1999 04 07	699	0.4+	0.1−	1999 04 15	704	0.7−	0.1+
1994 03 08	675	0.1−	0.2+	1999 04 12	704	0.4−	0.6−	1999 04 16	704	0.5+	0.5−
1994 03 08	675	(3.4− 0.6−)		1999 04 12	704	0.4−	0.9+	1999 04 16	704	0.3+	0.0
1994 03 10	675	(0.8+ 3.1−)		1999 04 12	704	0.9−	0.7+	1999 04 16	704	(1.0− 2.8−)	
1994 03 10	675	0.1−	0.8−	1999 04 12	704	0.3−	1.3+	1999 04 16	704	0.7−	0.7−
1999 03 22	699	0.2+	0.2+	1999 04 12	704	1.1−	0.9+	1999 04 16	704	(2.4− 0.5−)	

1999 GP₁₆ = 1997 UN₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	46.50700		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.22545746	ω	121.65936	-0.91342463	-0.38459709
a	2.6735787	Ω	36.21651	$+0.25299173$	-0.79286144
e	0.1085688	i	13.02826	$+0.31882697$	-0.47271114
P	4.37	H	13.2	G 0.15	U 3

Residuals in seconds of arc

1997 10 29	704	0.3+	0.4+	1999 04 12	704	0.4−	0.5+	1999 05 08	704	0.0	1.3+
1997 10 29	704	0.4+	0.2+	1999 04 12	704	0.3−	0.1+	1999 05 08	704	(2.4− 2.0+)	
1997 10 29	704	0.2+	0.4+	1999 04 12	704	0.6−	0.1−	1999 05 08	704	1.5+	0.0
1997 10 29	704	0.1+	0.1+	1999 04 15	704	0.6−	0.4+	1999 05 08	704	(2.4− 1.0−)	
1997 10 29	704	0.1−	0.1+	1999 04 15	704	0.4−	0.2−	1999 05 17	704	0.1+	0.2+
1997 10 30	704	0.4+	0.0	1999 04 15	704	0.0	0.9−	1999 05 17	704	0.3−	0.2−
1997 10 30	704	0.2−	0.7−	1999 04 15	704	0.3+	0.0	1999 05 17	704	0.6−	0.1+
1997 10 30	704	0.4−	0.4−	1999 04 15	704	1.1+	0.5−	1999 05 17	704	(0.4− 2.2+)	
1997 10 30	704	0.7−	0.1−	1999 04 16	704	0.3+	0.1−	1999 05 17	704	0.1+	0.1−
1999 04 06	699	0.4+	0.2+	1999 04 16	704	0.7+	0.1−	1999 06 08	704	0.3+	0.3+
1999 04 06	699	0.2+	0.5+	1999 04 16	704	1.1−	0.2−	1999 06 08	704	0.4+	0.8+
1999 04 06	699	0.7+	0.3+	1999 04 16	704	0.3−	1.1−	1999 06 08	704	0.2−	1.2−
1999 04 12	704	0.1−	0.5−	1999 04 16	704	0.5−	0.1+	1999 06 08	704	0.6−	0.6−
1999 04 12	704	0.1−	0.3+	1999 05 08	704	0.2+	0.8+				

1999 GS₁₆ = 2302 T-2

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	345.29428		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.21366650	ω	215.91470	−0.58381490	+0.81025384
a	2.7710546	Ω	18.53938	−0.70201148	−0.47194518
e	0.0957407	i	9.31540	−0.40784806	−0.34750031
P	4.61	H	14.0	G 0.15	U 5

Residuals in seconds of arc

1973 09 29	675	0.1−	0.6+	1999 04 06	704	1.6−	0.3−	1999 04 15	704	1.0−	2.2−
1973 09 29	675	0.5−	0.5−	1999 04 07	699	0.3+	1.0+	1999 04 15	704	2.0−	0.2−
1973 09 30	675	0.0	2.0−	1999 04 07	699	1.3+	0.3−	1999 04 16	704	0.3+	0.9+
1973 09 30	675	0.5+	1.7−	1999 04 07	699	0.9+	0.0	1999 04 16	704	0.7+	0.7+
1973 10 04	675	0.4+	0.5+	1999 04 12	704	0.1−	0.2−	1999 04 16	704	0.0	1.2−
1973 10 04	675	0.2+	0.4+	1999 04 12	704	0.8+	0.0	1999 04 16	704	0.7+	1.1−
1973 10 05	675	0.8+	1.8+	1999 04 12	704	0.7+	0.2+	1999 04 16	704	0.8−	1.5+
1973 10 05	675	0.8−	0.1−	1999 04 12	704	0.2−	0.2−	1999 04 17	703	0.8+	0.4−
1999 04 06	704	0.2−	0.2+	1999 04 12	704	0.4+	0.1−	1999 04 17	703	1.0+	0.6+
1999 04 06	704	0.2+	0.4+	1999 04 15	704	1.1−	0.2+	1999 04 17	703	0.6+	0.1+
1999 04 06	704	0.5−	0.9−	1999 04 15	704	1.0−	0.9−	1999 04 17	703	0.8+	0.1−
1999 04 06	704	0.3−	0.9+	1999 04 15	704	1.4−	0.4+				

1999 GT₁₆ = 5555 P-L = 1978 EB₅ = 1986 TZ₉ = 1991 RC₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	114.86350		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.19030436	ω	62.56416	+0.08866467	−0.99336734
a	2.9934377	Ω	22.70664	+0.83376705	+0.03380451
e	0.0866574	i	10.93297	+0.54495054	+0.10990263
P	5.18	H	13.2	G	0.15
				U	1

Residuals in seconds of arc

1960 10 17	675	0.3−	1.4+	1999 02 26	704	0.4−	0.4−	1999 04 12	704	1.4−	1.7−
1960 10 22	675	0.4−	0.0	1999 03 22	699	0.2−	0.6+	1999 04 15	704	0.5−	1.3+
1960 10 25	675	0.1+	0.4+	1999 03 22	699	0.2+	0.4+	1999 04 15	704	0.5+	0.7+
1960 10 26	675	0.0	0.5+	1999 03 22	699	0.2+	0.3+	1999 04 15	704	1.7−	0.8−
1978 03 06	095	1.7−	0.8−	1999 04 06	704	0.0	0.2+	1999 04 15	704	(2.7− 0.8+)	
1986 10 03	095	(3.2− 0.1−)		1999 04 06	704	0.0	0.4+	1999 04 16	704	0.1+	0.8−
1991 09 02	413	0.4−	0.2−	1999 04 06	704	0.5−	0.2+	1999 04 16	704	0.8−	0.3+
1991 09 02	413	0.3+	0.9−	1999 04 06	704	0.2+	0.6−	1999 04 16	704	1.5+	0.9−
1991 09 03	413	0.5−	0.1−	1999 04 06	704	0.2−	1.3+	1999 04 16	704	0.6−	0.2−
1997 12 06	704	0.6+	0.6+	1999 04 07	699	0.6+	1.1+	1999 04 16	704	0.6−	0.0
1997 12 06	704	0.0	0.6+	1999 04 07	699	0.9+	1.4+	1999 04 17	703	0.2−	0.7−
1997 12 06	704	0.7+	0.1−	1999 04 07	699	1.0+	1.3+	1999 04 17	703	0.2+	0.3+
1997 12 06	704	0.9−	1.0−	1999 04 12	704	(2.3+ 1.1−)		1999 04 17	703	0.2+	0.4+
1999 02 26	704	1.8+	0.3−	1999 04 12	704	0.6+	1.3−	1999 04 17	703	0.1−	0.0
1999 02 26	704	1.9+	0.7+	1999 04 12	704	0.3+	1.3−				

1999 GA₁₇ = 1978 WX₁ = 1981 RG₆ = 1996 RG₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	329.41227		(2000.0)	P	Q
n	0.26385351	ω	223.92451	+0.12510287	+0.99160766
a	2.4074695	Ω	53.28877	−0.89868039	+0.12718396
e	0.2064580	i	2.33146	−0.42038415	+0.02320552
P	3.74	H	14.3	G 0.15	U 1

Residuals in seconds of arc

1978 11 29	675	0.0	0.3−	1999 04 07	699	0.7+	1.0+	1999 04 15	704	0.9+	0.1−
1978 11 30	675	0.2+	0.9−	1999 04 12	704	0.2−	0.4−	1999 04 15	704	0.1−	0.0
1981 09 01	675	0.2+	0.5−	1999 04 12	704	0.4−	0.8−	1999 04 15	704	0.5−	0.3−
1981 09 02	675	0.3+	0.6−	1999 04 12	704	0.8+	0.2+	1999 04 16	704	0.5+	0.0
1996 09 11	691	0.6−	0.0	1999 04 12	704	1.0−	1.1+	1999 04 16	704	0.4+	0.2−
1996 09 11	691	0.2−	0.3+	1999 04 12	704	0.0	0.8+	1999 04 16	704	0.1+	0.7−
1996 09 17	691	0.2+	0.5+	1999 04 14	704	0.4+	0.1−	1999 04 16	704	0.2+	0.5+
1996 09 17	691	0.0	0.3+	1999 04 14	704	0.0	0.2−	1999 04 16	704	1.5−	0.3−
1999 03 23	699	0.4+	0.3+	1999 04 14	704	1.3−	0.9−	1999 06 08	704	0.7−	0.8−
1999 03 23	699	0.4+	0.6+	1999 04 14	704	1.1−	1.3−	1999 06 08	704	0.1+	0.3−
1999 03 23	699	0.6+	0.1−	1999 04 14	704	(2.2− 0.1−)		1999 06 08	704	0.3−	0.2+
1999 04 07	699	0.3+	1.8+	1999 04 15	704	0.1+	1.8−	1999 06 08	704	0.0	0.2−
1999 04 07	699	0.6+	1.4+	1999 04 15	704	0.4+	0.3−	1999 06 08	704	0.0	0.2+

1999 GP₁₇ = 1997 YL₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	4.26569		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$		
n	0.28321029	ω	192.25735	−0.61251466	+0.78359684		
a	2.2964837	Ω	40.10086	−0.71092490	−0.48862288		
e	0.1308245	i	9.28530	−0.34555979	−0.38369737		
P	3.48	H	14.9	G	0.15	U	5

Residuals in seconds of arc

1997 12 21	691	0.7+	0.3−	1999 04 12	704	0.3−	0.3−	1999 04 15	704	0.2+	0.4−
1997 12 21	691	0.0	0.0	1999 04 12	704	0.6−	0.6−	1999 04 16	704	0.6+	0.3−
1997 12 21	691	0.1+	0.1−	1999 04 12	704	0.5+	0.7−	1999 04 16	704	1.5−	1.0−
1997 12 27	691	0.2−	0.1+	1999 04 12	704	0.3+	0.6−	1999 04 16	704	0.8−	0.9+
1997 12 27	691	0.3−	0.1−	1999 04 12	704	0.1+	0.1+	1999 04 16	704	0.6+	0.4+
1997 12 27	691	0.2−	0.3+	1999 04 15	704	1.0+	0.0	1999 04 17	703	0.3−	0.8+
1999 04 10	699	0.3+	0.4+	1999 04 15	704	1.0−	1.4+	1999 04 17	703	0.3+	0.0

1999 JUNE 22

1999 04 10	699	0.0	0.9+	1999 04 15	704	0.4−	0.9−	1999 04 17	703	0.3+	0.0
1999 04 10	699	0.2−	0.2+	1999 04 15	704	0.3+	0.3−	1999 04 17	703	0.6+	0.1+

1999 GZ₁₇ = 1992 RM₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	27.40927		(2000.0)	P		Q	
<i>n</i>	0.24090231	ω	32.58762	−0.94922085		+0.30752127	
<i>a</i>	2.5580483	Ω	164.88653	−0.31433165		−0.93589498	
<i>e</i>	0.1268942	<i>i</i>	14.75646	+0.01324329		−0.17184659	
<i>P</i>	4.09	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 09 02	809	1.5−	0.7−	1999 04 12	704	0.1+	0.7−	1999 04 16	704	0.3−	0.6+
1992 09 02	809	1.8+	0.4+	1999 04 12	704	0.8+	1.0−	1999 04 16	704	0.7+	0.8+
1992 09 02	809	2.0+	0.9+	1999 04 12	704	0.1+	0.9−	1999 04 16	704	1.1−	1.0+
1992 09 03	809	2.4−	0.3−	1999 04 12	704	0.2+	1.3−	1999 04 16	704	0.0	1.6+
1999 03 23	703	0.6−	0.8+	1999 04 15	704	0.1+	1.7−	1999 04 16	704	0.2−	1.2+
1999 03 23	703	0.2+	0.3+	1999 04 15	704	0.5+	0.5+	1999 06 07	704	0.5−	0.1−
1999 03 23	703	0.1+	0.3−	1999 04 15	704	0.6−	0.4+	1999 06 07	704	0.1+	0.4−
1999 03 23	703	0.1+	1.2−	1999 04 15	704	0.6−	0.6+	1999 06 07	704	1.0+	0.1−
1999 04 12	704	0.3+	0.2+	1999 04 15	704	0.5+	0.1+	1999 06 07	704	1.1−	0.5−

1999 GD₁₈ = 1960 WD₁ = 1981 UO₁₈ = 1994 EH₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	120.52489		(2000.0)	P		Q	
<i>n</i>	0.18755217	ω	25.93298	+0.25168846		−0.95568384	
<i>a</i>	3.0226508	Ω	49.88798	+0.84958924		+0.14260345	
<i>e</i>	0.0783685	<i>i</i>	11.51830	+0.46352028		+0.25755128	
<i>P</i>	5.26	<i>H</i>	12.2	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1960 11 24	033	0.5−	0.6+	1999 04 12	704	0.3−	0.2+	1999 04 16	704	1.5−	0.3+
1981 10 25	095	0.8+	1.4−	1999 04 12	704	0.4+	0.1+	1999 04 18	703	0.2−	0.3−
1994 03 12	098	1.5−	0.4−	1999 04 12	704	0.1+	0.0	1999 04 18	703	0.1−	0.5+
1994 03 13	098	0.4−	1.3−	1999 04 15	704	(1.0−	2.3−)	1999 04 18	703	0.2−	1.0+
1994 03 14	098	0.5−	0.5−	1999 04 15	704	0.1−	0.2−	1999 04 18	703	0.2+	1.5+
1994 03 14	098	1.1+	1.7−	1999 04 15	704	1.1+	0.7−	1999 06 07	704	1.1−	0.3+
1999 04 10	699	0.7+	0.4+	1999 04 15	704	0.5−	1.4−	1999 06 07	704	1.5−	0.3−
1999 04 10	699	0.2+	0.6+	1999 04 16	704	1.6+	0.7−	1999 06 07	704	0.5+	0.3+
1999 04 10	699	0.3−	1.3+	1999 04 16	704	(0.1+	2.8+)	1999 06 07	704	0.1−	0.7+
1999 04 12	704	0.1+	0.7−	1999 04 16	704	0.0	1.4+	1999 06 07	704	0.8+	0.3+
1999 04 12	704	0.3+	0.9−	1999 04 16	704	0.4+	0.1−				

1999 GN₁₈ = 1978 EX₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	338.37543		(2000.0)	P		Q	
<i>n</i>	0.18986458	ω	64.41266	−0.44768387		+0.89418619	
<i>a</i>	2.9980583	Ω	178.97553	−0.87108041		−0.43530301	
<i>e</i>	0.0588698	<i>i</i>	10.29427	−0.20198532		−0.10460567	
<i>P</i>	5.19	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1978 03 15	675	0.2−	0.8−	1999 03 22	699	0.1+	0.9+	1999 04 15	704	0.4+	1.1−
1978 03 16	675	0.2−	0.8−	1999 03 22	699	0.4−	0.4+	1999 04 15	704	0.7+	0.5−
1994 04 14	675	0.9−	0.3−	1999 04 12	704	0.4−	0.2+	1999 04 16	704	1.2+	0.1−
1994 04 14	675	0.7+	0.7−	1999 04 12	704	0.1−	0.2−	1999 04 16	704	0.9−	0.5−
1996 11 14	691	0.1−	0.3+	1999 04 12	704	0.3−	0.5+	1999 04 16	704	0.7+	0.4+
1996 11 14	691	0.0	0.2+	1999 04 12	704	0.2+	0.1+	1999 04 16	704	1.1+	0.2+
1996 11 14	691	0.1−	0.2+	1999 04 12	704	0.3−	0.3+	1999 04 16	704	0.7−	0.5+
1999 03 22	699	0.5+	0.8+	1999 04 15	704	0.9−	1.2+				

M.P.C. 34963

1999 GP₁₈ = 1990 OB₆ = 1993 BA₁₅ = 1995 QW₁ = 1998 BV₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	333.89008		(2000.0)	P		Q	
<i>n</i>	0.19059384	ω	143.72860	−0.35139068		+0.91602906	
<i>a</i>	2.9904059	Ω	104.98898	−0.89919206		−0.27267139	
<i>e</i>	0.0547823	<i>i</i>	11.55121	−0.26072634		−0.29417863	
<i>P</i>	5.17	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1990 07 28	675	0.6+	1.4+	1993 02 01	695	1.1−	0.3−	1998 01 24	704	0.2+	0.4+
1990 07 28	675	0.3−	0.8+	1993 02 01	695	0.3+	0.4−	1998 01 24	704	0.4+	0.9+
1993 01 29	695	0.5+	0.2+	1993 02 01	695	0.7−	0.4−	1998 01 24	704	(0.0	2.6+)
1993 01 29	695	0.8+	0.1+	1993 02 01	695	0.3+	0.4−	1998 01 24	704	0.2−	0.1−
1993 01 29	695	0.4+	0.1+	1993 02 01	695	0.5−	0.1−	1998 01 24	704	(2.5−	0.5+)
1993 01 29	695	0.9+	0.2+	1993 02 01	695	0.1+	0.2−	1999 04 12	704	0.2−	0.2+
1993 01 29	695	0.5+	0.6+	1993 02 01	695	0.0	0.2−	1999 04 12	704	0.6−	0.1+
1993 01 29	695	1.0+	0.0	1993 02 01	695	0.3−	0.1−	1999 04 12	704	0.4−	0.2+
1993 01 29	695	0.9+	0.3+	1993 02 01	695	0.6−	0.3−	1999 04 12	704	0.5+	0.5+
1993 01 29	695	0.9+	0.5+	1993 02 01	695	0.6−	0.3−	1999 04 12	704	0.3−	0.2+
1993 01 29	695	0.9+	0.3+	1993 02 01	695	0.3−	0.4−	1999 04 15	704	0.5−	0.7+
1993 01 29	695	0.9+	0.4+	1993 02 01	695	0.7−	0.5−	1999 04 15	704	0.0	0.4+
1993 01 29	695	0.1−	0.7+	1993 02 01	695	0.2−	0.5−	1999 04 15	704	0.2+	1.3−
1993 01 29	695	0.2+	0.4+	1993 02 04	695	(3.4+	1.3−)Y	1999 04 16	704	1.1−	0.7−
1993 01 29	695	1.0+	0.5+	1993 02 04	695	0.3−	0.5−	Y 1999 04 16	704	0.9+	0.3−
1993 01 31	695	0.3−	0.4−	1993 02 04	695	0.8+	0.2+	Y 1999 04 16	704	0.2+	0.1+
1993 01 31	695	0.5−	0.1−	1993 02 04	695	0.4+	0.1+	Y 1999 04 16	704	0.1−	0.1+
1993 01 31	695	0.4−	0.1+	1993 02 04	695	0.7−	0.7−	Y 1999 04 16	704	1.0−	0.2+
1993 01 31	695	0.2−	0.1+	1995 08 20	905	0.4−	1.6−	1999 04 19	703	0.4+	0.4−
1993 01 31	695	1.3−	0.1−	1995 08 20	905	0.4−	0.9−	1999 04 19	703	0.2−	0.0
1993 01 31	695	0.2−	0.1−	1997 12 26	566	0.2−	0.2+	1999 04 19	703	0.2−	0.2−
1993 01 31	695	0.6−	0.2−	1997 12 26	566	0.2+	0.3+	1999 04 19	703	0.2−	0.9−
1993 01 31	695	0.4−	0.0	1997 12 26	566	0.1+	0.2+	1999 06 07	704	1.3+	0.2+
1993 01 31	695	0.4−	0.1+	1998 01 23	704	0.3+	0.3+	1999 06 07	704	0.1−	0.5+
1993 01 31	695	0.0	0.0	1998 01 23	704	0.3−	0.4+	1999 06 07	704	1.1+	0.3+
1993 01 31	695	0.3−	0.1−	1998 01 23	704	0.2−	0.4−	1999 06 07	704	0.5−	0.1−
1993 01 31	695	0.3−	0.1−	1998 01 23	704	0.4−	0.9−	1999 06 07	704	2.0+	0.7+
1993 01 31	695	0.4−	0.3−	1998 01 23	704	0.5+	0.4+				

1999 GQ₁₈ = 1981 JM₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	6.57238		(2000.0)	P		Q	
<i>n</i>	0.27163094	ω	170.93645	−0.49566544		+0.85090423	
<i>a</i>	2.3612930	Ω	69.17996	−0.80805640		−0.37837026	
<i>e</i>	0.2550572	<i>i</i>	10.72883	−0.31837183		−0.36441451	
<i>P</i>	3.63	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1981 05 08	675	0.4−	0.3+	1999 04 16	704	0.6−	0.4+	1999 05 15	704	1.2+	0.1+
1981 05 09	675	0.5+	0.1−	1999 04 16	704	0.1−	0.0	1999 05 15	704	0.7+	0.6−
1999 04 12	704	0.4−	0.2+	1999 04 16	704	1.0−	0.2−	1999 05 15	704	(3.0+	1.0+)
1999 04 12	704	0.5−	0.6−	1999 04 19	703	0.1+	0.2−	1999 06 08	704	0.5−	0.5+
1999 04 12	704	0.3−	0.4−	1999 04 19	703	0.0	0.2+	1999 06 08	704	0.0	0.0
1999 04 12	704	1.0+	0.2−	1999 04 19	703	0.3−	0.5−	1999 06 08	704	0.5+	0.4−
1999 04 12	704	0.2+	0.1−	1999 04 19	703	0.5−	0.7−	1999 06 08	704	1.5−	0.5−
1999 04 15	704	0.5+	0.1+	1999 05 08	704	0.9+	0.5+	1999 06 08	704	0.5−	1.6−
1999 04 15	704	(2.1+	0.7−)	1999 05 08	704	0.2+	0.8+	1999 06 10	704	0.1−	0.2+
1999 04 15	704	0.2−	0.9+	1999 05 08	704	0.8+	0.9−	1999 06 10	704	0.2+	0.0
1999 04 15	704	0.8−	0.0	1999 05 08	704	0.9+	0.4+	1999 06 10	704	0.2−	0.2+
1999 04 15	704	0.7+	0.4+	1999 05 08	704	0.1−	1.2−	1999 06 10	704	0.1−	0.2+
1999 04 16	704	0.3+	0.7+	1999 05 15	704	(0.4−	4.6+)	1999 06 10	704	0.2−	0.3+
1999 04 16	704	0.8−	0.3+	1999 05 15	704	0.1−	1.9+				

1999 GW₁₈ = 1993 FB₂ = 1998 BX₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	47.44627	(2000.0)	P		Q		Williams			
<i>n</i>	0.16845854	ω	55.07790	−0.97690866	−0.18170988					
<i>a</i>	3.2469382	Ω	114.22077	+0.13252581	−0.92794554					
<i>e</i>	0.0240710	<i>i</i>	7.07890	+0.16758994	−0.32542063					
<i>P</i>	5.85	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	4			
Residuals in seconds of arc										
1993 03 23	010	0.5−	1.3−	1998 01 30	691	0.9+	0.7+	1999 04 12	704	0.5−
1993 03 23	010	0.1−	1.6−	1998 01 30	691	1.0+	0.7+	1999 04 12	704	0.3−
1993 03 23	010	0.3−	1.7−	1999 03 20	699	0.9+	0.7+	1999 04 15	704	0.3+
1993 03 25	010	1.5−	1.2−	1999 03 20	699	0.1−	1.1−	1999 04 15	704	0.0
1997 12 26	566	1.8−	1.1−	1999 03 20	699	1.4+	0.4+	1999 04 15	704	2.0−
1997 12 26	566	1.9−	1.1−	1999 04 10	699	0.5+	0.7+	1999 04 15	704	1.1−
1997 12 26	566	1.6−	0.6−	1999 04 10	699	0.9+	0.4+	1999 04 16	704	0.0
1998 01 23	691	0.8+	1.0+	1999 04 10	699	0.7+	1.0+	1999 04 16	704	1.4−
1998 01 23	691	0.7+	0.5+	1999 04 12	704	0.3−	0.2−	1999 04 16	704	1.6+
1998 01 23	691	0.9+	0.5+	1999 04 12	704	0.4−	0.1−	1999 04 16	704	1.3+
1998 01 30	691	0.9+	1.0+	1999 04 12	704	0.1+	0.2−	1999 04 16	704	0.6+

1999 GB₁₉ = 1990 VP₁₀ = 1997 TP₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	74.27927	(2000.0)	P		Q		Williams			
<i>n</i>	0.27529477	ω	73.65256	−0.82925522	−0.51578279					
<i>a</i>	2.3402958	Ω	74.83927	+0.38860335	−0.80887386					
<i>e</i>	0.0951207	<i>i</i>	12.88193	+0.40165063	−0.28229629					
<i>P</i>	3.58	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	2			
Residuals in seconds of arc										
1990 11 11	809	0.2−	0.2+	1999 04 10	704	0.1+	0.1+	1999 04 16	704	0.3−
1990 11 11	809	0.4+	0.3−	1999 04 10	704	0.5+	0.9−	1999 04 19	703	0.1−
1990 11 11	809	0.1−	0.1−	1999 04 10	704	0.0	0.4+	1999 04 19	703	0.3+
1997 10 09	327	0.1+	0.3+	1999 04 15	704	1.0+	0.8−	1999 04 19	703	0.1−
1997 10 09	327	0.5+	0.3+	1999 04 15	704	1.8+	0.1+	1999 04 19	703	0.3−
1997 10 09	327	0.5+	0.2−	1999 04 15	704	1.0−	0.5+	1999 06 08	704	0.4−
1997 10 12	327	0.7−	0.5+	1999 04 15	704	1.1+	0.2−	1999 06 08	704	0.6+
1997 10 12	327	0.3−	0.4+	1999 04 16	704	0.0	0.4−	1999 06 08	704	0.9−
1997 10 12	327	0.4−	0.3−	1999 04 16	704	0.9−	0.1+	1999 06 08	704	0.6−
1997 10 12	327	0.3−	0.4+	1999 04 16	704	0.1+	0.6+			
1999 04 10	704	0.8−	0.3−	1999 04 16	704	0.0	1.0+			

1999 GF₁₉ = 1991 VA₆ = 1997 WE₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	330.29185	(2000.0)	P		Q		Nakano			
<i>n</i>	0.18958908	ω	160.13537	−0.20095133	+0.95721278					
<i>a</i>	3.0009620	Ω	97.83181	−0.92478547	−0.11525975					
<i>e</i>	0.0629844	<i>i</i>	12.13388	−0.32309503	−0.26544091					
<i>P</i>	5.20	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	3			
Residuals in seconds of arc										
1991 11 02	809	0.1−	0.9−	1997 11 28	691	0.1−	0.0	1999 04 15	704	0.3−
1991 11 02	809	1.7−	0.6−	1997 11 28	691	0.1+	0.0	1999 04 15	704	0.6+
1991 11 02	809	(3.4−	0.2−)	1997 12 05	691	0.1+	0.0	1999 04 15	704	0.3−
1991 11 09	809	(11.7−	3.3−)	1997 12 05	691	0.0	0.2−	1999 04 15	704	0.9−
1991 11 09	809	(12.5−	3.1−)	1997 12 05	691	0.2−	0.2−	1999 04 15	704	(1.6+
1991 11 09	809	(14.6−	1.7−)	1999 04 12	704	0.3−	0.6−	1999 04 16	704	0.2−
1991 11 12	809	1.5+	0.3+	1999 04 12	704	0.8+	0.4−	1999 04 16	704	0.4+
1991 11 12	809	0.0	0.2+	1999 04 12	704	0.6+	0.1+	1999 04 16	704	0.4−
1991 11 12	809	0.3+	0.9+	1999 04 12	704	0.5+	0.0	1999 04 16	704	0.1−
1997 11 28	691	0.1+	0.3+	1999 04 12	704	0.7+	0.8−	1999 04 16	704	1.4−

1999 GJ₁₉ = 1992 EM₂₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	84.72955	(2000.0)	P		Q		Williams			
<i>n</i>	0.29315293	ω	346.74167	−0.84355735	−0.53648898					
<i>a</i>	2.2442603	Ω	160.75409	+0.49920523	−0.80001016					
<i>e</i>	0.0600187	<i>i</i>	4.22800	+0.19800287	−0.26863231					
<i>P</i>	3.36	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	5			
Residuals in seconds of arc										
1992 03 02	809	1.1+	0.0	1999 04 12	704	0.1+	0.4−	1999 05 08	703	0.1+
1992 03 04	809	1.0−	0.2+	1999 04 15	704	0.9−	0.0	1999 05 08	703	0.3+
1999 04 07	704	0.3−	0.3−	1999 04 15	704	0.6+	0.5−	1999 05 08	703	0.3−
1999 04 07	704	0.8+	0.2−	1999 04 15	704	0.9−	0.0	1999 05 16	703	0.1+
1999 04 07	704	0.9+	0.2−	1999 04 15	704	(3.3+	0.7+)	1999 05 16	703	0.9+
1999 04 07	704	0.8+	0.1−	1999 04 16	704	0.3+	1.4+	1999 05 16	703	0.1+
1999 04 07	704	0.9+	0.2−	1999 04 16	704	0.0	0.4+	1999 05 16	703	0.3−
1999 04 12	704	0.4−	0.1−	1999 04 16	704	1.4−	1.0−	1999 05 17	703	0.8−
1999 04 12	704	1.1−	0.2−	1999 04 16	704	0.4−	0.5+	1999 05 17	703	0.4−
1999 04 12	704	0.5+	0.4−	1999 04 16	704	0.3+	0.1+	1999 05 17	703	0.1−
1999 04 12	704	0.3−	0.0	1999 05 08	703	0.2−	0.6−	1999 05 17	703	1.1+

1999 GQ₁₉ = 1993 TW₁₁ = 1993 TF₃₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	328.05250	(2000.0)	P		Q		Williams			
<i>n</i>	0.28803526	ω	246.77482	+0.32889328	+0.94115864					
<i>a</i>	2.2707655	Ω	42.67660	−0.81907877	+0.32528399					
<i>e</i>	0.1733447	<i>i</i>	6.58877	−0.47004168	+0.09171006					
<i>P</i>	3.42	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4			
Residuals in seconds of arc										
1993 10 09	809	1.2+	0.4+	1999 04 15	704	0.0	0.8−	1999 05 08	703	0.1+
1993 10 09	809	0.5+	1.1+	1999 04 15	704	0.4−	0.2−	1999 05 08	703	0.2+
1993 10 09	809	1.2+	1.2+	1999 04 15	704	1.7−	0.6−	1999 05 08	703	0.6−
1993 10 11	809	0.6−	0.1−	1999 04 16	704	0.4+	0.5−	1999 05 09	703	1.0+
1993 10 11	809	0.4−	0.6−	1999 04 16	704	0.9+	0.0	1999 05 09	703	0.0
1993 10 11	809	0.5−	0.2−	1999 04 16	704	0.3+	1.0+	1999 05 09	703	0.6+
1993 10 13	675	0.4+	0.9−	1999 04 16	704	0.5+	0.3+	1999 05 09	703	0.2+
1993 10 13	675	1.5−	1.5−	1999 04 16	704	0.8+	1.6+	1999 05 15	704	1.0−
1999 04 12	704	0.3−	0.1−	1999 05 02	120	0.4−	0.4−	1999 05 15	704	1.7−
1999 04 12	704	0.2−	0.3−	1999 05 02	120	0.9+	1.9+	1999 05 15	704	(2.4−
1999 04 12	704	0.5−	0.3−	1999 05 03	120	0.6−	0.1−	1999 05 15	704	(2.4−
1999 04 12	704	0.2−	0.2+	1999 05 03	120	0.3−	0.0	1999 05 16	703	0.7+
1999 04 12	704	0.2+	1.1−	1999 05 03	120	0.4+	0.3−	1999 05 16	703	1.2+
1999 04 15	704	0.7−	0.1−	1999 05 03	120	0.0	0.6−	1999 05 16	703	0.1+
1999 04 15	704	0.0	0.7+	1999 05 08	703	0.7+	0.7−	1999 05 16	703	0.6−

1999 GY₁₉ = 1995 ML₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	125.15127		(2000.0)		P			Q		
n	0.22384062	ω	258.08778			-0.02869304			-0.99850404	
a	2.6864378	Ω	193.81336			+0.97612577			-0.01795976	
e	0.1453971	i	11.24136			+0.21530255			-0.05164418	
P	4.40	H	14.0		G	0.15		U	3	
Residuals in seconds of arc										
1995 06 22	691	0.1−	0.1+	1999 04 10	699	0.7+	0.2+	1999 04 16	704 (1.3− 2.4−)	
1995 06 22	691	0.1−	0.4−	1999 04 12	704	0.3+	0.1+	1999 05 08	703 1.1− 0.9+	
1995 06 22	691	0.1−	0.0	1999 04 12	704	1.0−	0.5−	1999 05 08	703 0.2− 0.3+	
1995 06 29	691	0.1+	0.1−	1999 04 12	704	1.0−	0.9−	1999 05 08	703 0.0 0.1+	
1995 06 29	691	0.2+	0.2−	1999 04 12	704	0.7−	0.3−	1999 05 08	703 0.1+ 0.7−	
1995 06 29	691	0.0	0.2−	1999 04 12	704	1.0+	0.3−	1999 05 12	704 0.5+ 1.2−	
1997 11 30	566	0.3+	0.6+	1999 04 15	704	1.2−	0.0	1999 05 12	704 0.7+ 0.2+	
1997 11 30	566	0.2+	0.4+	1999 04 15	704	1.3−	0.0	1999 05 12	704 0.9+ 0.4−	
1997 11 30	566	0.2+	0.7+	1999 04 15	704	1.0+	1.1+	1999 05 12	704 1.1− 0.5+	
1997 12 29	566	0.3−	0.3−	1999 04 15	704	(0.2− 2.4−)		1999 05 13	704 0.2+ 0.8+	

1999 JUNE 22

1997 12 29	566	0.1−	0.9−	1999 04 16	704	0.0	1.0+	1999 05 13	704	1.2+	0.6+
1997 12 29	566	0.2−	0.6−	1999 04 16	704	(2.5−	0.9−)	1999 05 13	704	1.0−	0.1+
1999 04 10	699	0.1+	0.8+	1999 04 16	704	0.2−	0.9−	1999 05 13	704	1.7+	0.1−
1999 04 10	699	0.6+	0.1−	1999 04 16	704	0.1+	0.7−	1999 05 13	704	0.3−	0.1+

1999 GA₂₀ = 1998 BU₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	294.80373	<i>ω</i>	144.13987	+0.61473564	+0.78846701		
<i>a</i>	2.7367593	<i>Ω</i>	163.76086	−0.73965041	+0.58530756		
<i>e</i>	0.0861737	<i>i</i>	4.20202	−0.27389300	+0.18903657		
<i>P</i>	4.53	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 04 03	691	0.0	0.1−	1999 04 10	699	0.7+	0.4+	1999 04 16	704	(2.7−	0.4+)
1994 04 03	691	0.1+	0.2+	1999 04 10	699	0.6+	0.1+	1999 05 12	704	0.0	0.3−
1994 04 03	691	0.1+	0.3+	1999 04 10	699	1.0+	0.1+	1999 05 12	704	0.6−	0.4+
1998 01 18	910	0.5+	0.2−	1999 04 12	704	0.1+	0.7+	1999 05 12	704	0.7−	0.2−
1998 01 18	910	0.5+	0.1−	1999 04 12	704	0.1+	0.0	1999 05 12	704	0.2−	1.4−
1998 01 18	910	0.5+	0.1−	1999 04 12	704	0.4+	0.6+	1999 05 12	704	0.7+	1.4−
1998 01 23	910	0.6+	0.0	1999 04 12	704	0.4−	0.6+	1999 05 13	704	0.3−	0.8−
1998 01 23	910	0.5+	0.0	1999 04 15	704	0.3−	1.1−	1999 05 13	704	0.2+	0.0
1998 01 23	910	0.6+	0.1+	1999 04 15	704	0.7+	0.4+	1999 05 13	704	1.0+	0.1+
1998 02 23	566	0.9−	0.0	1999 04 15	704	1.1−	0.4+	1999 05 13	704	0.2+	0.7−
1998 02 23	566	1.3−	0.3−	1999 04 15	704	(0.8−	3.1+)	1999 05 13	704	0.1−	0.1+
1998 02 23	566	1.3−	0.2−	1999 04 16	704	0.0	0.5+	1999 05 15	704	0.6+	0.0
1999 02 17	910	0.0	0.4+	1999 04 16	704	0.9−	0.6−	1999 05 15	704	(0.3+	2.1−)
1999 02 17	910	0.2−	0.3+	1999 04 16	704	0.7−	0.6−	1999 05 15	704	(1.8+	2.4+)
1999 02 17	910	0.2−	0.4+	1999 04 16	704	1.5−	1.3+	1999 05 15	704	0.8+	0.2+

1999 GD₂₀ = 1989 TD₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	266.16205	<i>ω</i>	176.19136	+0.93547766	+0.35175011		
<i>a</i>	2.3786867	<i>Ω</i>	163.09268	−0.32723255	+0.89851883		
<i>e</i>	0.0965273	<i>i</i>	6.70616	−0.13341814	+0.26255624		
<i>P</i>	3.67	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1989 10 03	809	0.1+	0.4−	1999 04 12	704	0.4+	1.3−	1999 05 08	703	0.2−	0.5+
1989 10 03	809	0.6+	0.3−	1999 04 12	704	0.2−	1.5−	1999 05 08	703	0.2+	0.1+
1989 10 03	809	1.2+	0.3−	1999 04 15	704	0.5−	0.4−	1999 05 12	704	0.8−	0.3−
1989 10 04	809	1.0−	0.9+	1999 04 15	704	0.3+	1.4+	1999 05 12	704	1.2−	0.6+
1989 10 04	809	0.8−	0.8+	1999 04 15	704	1.2+	0.4−	1999 05 12	704	0.4−	0.6−
1989 10 04	809	0.4−	0.7+	1999 04 15	704	0.8+	0.7+	1999 05 12	704	0.6−	1.1−
1999 04 07	704	0.2−	0.7+	1999 04 16	704	0.3−	0.1−	1999 05 12	704	2.0−	0.9−
1999 04 07	704	0.6−	0.5+	1999 04 16	704	0.4−	0.4+	1999 05 13	704	1.1−	1.6−
1999 04 07	704	0.3−	1.0+	1999 04 16	704	0.2+	0.6+	1999 05 13	704	0.1−	0.5−
1999 04 07	704	2.8+	1.4+	1999 04 16	704	0.2+	0.5+	1999 05 13	704	0.0	0.1+
1999 04 12	704	1.0+	0.5−	1999 04 16	704	1.2−	0.9+	1999 05 13	704	0.3+	0.2−
1999 04 12	704	0.4+	0.1+	1999 05 08	703	0.3−	0.5+	1999 05 13	704	0.8+	0.1−
1999 04 12	704	1.3+	0.0	1999 05 08	703	0.6+	0.5+				

1999 GG₂₀ = 1995 KH₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	19.99490	<i>ω</i>	118.56198	−0.80128405	+0.57235450		
<i>a</i>	2.5838791	<i>Ω</i>	96.86890	−0.59169608	−0.71501893		
<i>e</i>	0.1831936	<i>i</i>	10.10683	−0.08854167	−0.40144521		
<i>P</i>	4.15	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1995 05 31	691	(2.2+	1.0+)	1999 04 12	704	0.6+	0.1−	1999 05 12	704	0.4+	0.0
1995 05 31	691	1.4+	0.9+	1999 04 15	704	0.3−	0.0	1999 05 12	704	0.0	0.9−
1995 05 31	691	1.0+	1.2+	1999 04 15	704	0.0	0.1+	1999 05 12	704	1.3−	0.7−

M.P.C. 34965

1995 06 05	691	1.6−	0.8−	1999 04 15	704	0.1−	0.2+	1999 05 15	704	0.1−	0.4+
1995 06 05	691	0.6−	0.6−	1999 04 15	704	0.2+	0.8+	1999 05 15	704	0.9+	0.8+
1995 06 05	691	(2.3−	1.0−)	1999 04 15	704	1.4−	0.4−	1999 05 15	704	0.0	1.0+
1999 03 28	699	0.2+	0.3+	1999 04 16	704	0.1−	0.1+	1999 05 15	704	(1.7−	2.6+)
1999 03 28	699	0.8+	0.1+	1999 04 16	704	0.2−	0.4−	1999 05 15	704	0.7−	0.3+
1999 03 28	699	0.9+	0.6+	1999 04 16	704	0.4−	0.7−	1999 06 08	704	0.9−	0.0
1999 04 12	704	0.3+	0.4−	1999 04 16	704	0.2+	0.4−	1999 06 08	704	0.6−	0.0
1999 04 12	704	0.2+	0.3+	1999 04 16	704	1.4−	1.0−	1999 06 08	704	0.4+	0.4−
1999 04 12	704	0.2+	0.2+	1999 05 12	704	1.1+	0.4−	1999 06 08	704	0.3−	0.0
1999 04 12	704	0.2+	0.5+	1999 05 12	704	0.2+	0.1+	1999 06 08	704	1.0+	0.7−

1999 GJ₂₀ = 1996 TN₃₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	2.70713	<i>ω</i>	104.63289	−0.42059675	+0.90596656		
<i>a</i>	2.4651738	<i>Ω</i>	140.38333	−0.85876566	−0.38042456		
<i>e</i>	0.1818429	<i>i</i>	4.33488	−0.29260880	−0.18574643		
<i>P</i>	3.87	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1996 10 07	809	(1.9−	5.6−)	1999 04 12	704	0.9+	0.1−	1999 05 12	704	0.0	0.0
1996 10 07	809	(0.9−	3.6−)	1999 04 15	704	0.3+	1.2+	1999 05 12	704	1.0−	1.0+
1996 10 07	809	(2.8−	4.6−)	1999 04 15	704	1.7+	0.5+	1999 05 12	704	0.3−	0.4−
1996 10 08	809	0.5+	0.0	1999 04 15	704	0.0	0.4−	1999 05 12	704	(2.1−	0.4+)
1996 10 08	809	0.9−	0.3−	1999 04 15	704	0.3+	0.5−	1999 05 13	704	0.4−	0.7−
1996 10 08	809	0.0	0.2−	1999 04 15	704	0.7+	1.4+	1999 05 13	704	0.8−	0.5−
1996 10 10	809	0.2−	1.5+	1999 04 16	704	0.4+	0.6+	1999 05 13	704	0.4−	0.2+
1996 10 10	809	0.2+	0.8+	1999 04 16	704	0.4−	0.5+	1999 05 13	704	0.4−	0.1−
1996 10 10	809	0.4−	0.6+	1999 04 16	704	0.0	0.7+	1999 05 13	704	0.2+	0.8−
1999 04 12	704	0.2−	1.0+	1999 04 16	704	0.6−	0.3+	1999 05 15	704	0.6+	1.1−
1999 04 12	704	1.4+	0.9−	1999 04 16	704	(0.0	2.5+)	1999 05 15	704	0.1+	0.0
1999 04 12	704	0.1+	0.7+	1999 05 12	704	0.9−	0.1−	1999 05 15	704	1.2−	0.9−

1999 GL₂₀ = 1990 RA₁₄ = 1992 DO₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	73.42079	<i>ω</i>	82.00082	−0.95479420	−0.28628993		
<i>a</i>	2.2373758	<i>Ω</i>	81.33620	+0.23073946	−0.88349986		
<i>e</i>	0.0558746	<i>i</i>	4.64386	+0.18742287	−0.37076417		
<i>P</i>	3.35	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1990 09 14	809	0.4+	1.2−	1999 04 12	704	0.3−	0.5+	1999 05 12	704	0.3−	0.5+
1990 09 14	809	0.2+	1.3−	1999 04 12	704	1.0+	0.6+	1999 05 12	704	1.0+	0.5−
1990 09 14	809	0.2+	1.0−	1999 04 15	704	0.1+	0.7−	1999 05 12	704	1.1−	0.8−
1990 09 25	809	0.9−	1.9+	1999 04 15	704	1.0−	1.0−	1999 05 13	704	1.2+	0.8−
1990 09 25	809	0.7+	1.1+	1999 04 15	704	1.0−	0.0	1999 05 13	704	1.7+	0.8−
1990 09 25	809	0.0	0.7−	1999 04 15	704	0.3−	1.0+	1999 05 13	704	(2.8+	1.6+)
1992 02 27	033	0.0	0.5−	1999 04 16	704	0.4−	0.2−	1999 05 13	704	(2.3+	0.1−)
1992 02 27	033	0.2−	0.0	1999 04 16	704	1.1−	0.4+	1999 05 13	704	0.4+	0.3−
1992 02 28	033	0.1+	0.0	1999 04 16	704	0.7−	0.4+	1999 05 15	704	0.7+	0.9−
1999 04 12	704	0.1−	0.6−	1999 04 16	704	1.3−	0.2−	1999 05 15	704	0.0	0.8+
1999 04 12	704	0.6+	0.3−	1999 04 16	704	0.6−	0.0	1999 05 15	704	0.4+	1.1+
1999 04 12	704	0.2+	0.0	1999 05 12	704	0.9+	0.5−	1999 05 15	704	0.1+	1.6+

Residuals in seconds of arc

1960 09 24	675	1.3+	0.1+	1999 04 15	704	0.2+	0.2-	1999 05 13	704	0.3+	0.2+
1960 09 24	675	0.1+	1.0-	1999 04 15	704	(2.2+	0.9-)	1999 05 13	704	1.1-	1.5-
1960 09 26	675	0.1+	0.8+	1999 04 15	704	0.1-	0.1-	1999 05 13	704	1.3+	1.2-
1960 09 26	675	0.9+	0.3+	1999 04 16	704	0.1-	0.3+	1999 05 13	704	0.2+	0.2-
1960 09 28	675	1.3-	0.7+	1999 04 16	704	0.2-	0.1+	1999 05 17	703	0.2+	0.7+
1960 09 28	675	0.3+	1.4-	1999 04 16	704	0.6-	0.4-	1999 05 17	704	1.6+	0.0
1960 09 29	675	1.0-	1.1-	1999 04 16	704	1.1-	0.6+	1999 05 17	703	0.7-	0.3+
1960 09 29	675	0.5-	1.9+	1999 04 16	704	0.5-	0.7-	1999 05 17	704	(2.1-	0.4-)
1999 04 12	704	0.0	0.2-	1999 05 12	704	0.7+	1.0+	1999 05 17	703	0.5-	0.7+
1999 04 12	704	0.9-	0.5-	1999 05 12	704	0.4-	0.8-	1999 05 17	704	0.6+	1.5+
1999 04 12	704	0.1+	0.4+	1999 05 12	704	1.6+	0.2-	1999 05 17	703	1.0-	0.6+
1999 04 12	704	0.6+	1.4+	1999 05 12	704	0.3+	1.3-	1999 05 17	704	1.7-	1.0-
1999 04 12	704	0.2+	0.1+	1999 05 12	704	0.3-	0.7-	1999 05 17	704	1.6-	0.7+
1999 04 15	704	1.5+	0.3+	1999 05 13	704	1.3+	0.6+				

1999 GS₂₀ = 1997 WF₅₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	13.19506		(2000.0)	P	Q
n	0.26708274	ω	147.25001	-0.64094188	+0.76594899
a	2.3880248	Ω	82.83665	-0.71468033	-0.57164768
e	0.0937772	i	2.89759	-0.28004559	-0.29417865
P	3.69	H	14.3	G 0.15	U 5

Residuals in seconds of arc

1997 11 29	704	0.9+	1.1+	1999 04 12	704	0.3+	0.6+	1999 05 12	704	0.3+	0.0
1997 11 29	704	0.4-	0.3+	1999 04 12	704	0.2-	0.3+	1999 05 12	704	0.3+	0.8-
1997 11 29	704	0.6-	0.5+	1999 04 15	704	0.4+	0.4-	1999 05 12	704	0.6-	1.3-
1997 11 29	704	2.2-	1.3-	1999 04 15	704	0.8+	0.5+	1999 05 13	704	0.0	0.1-
1997 12 31	704	0.7+	0.6-	1999 04 15	704	0.8+	0.3-	1999 05 13	704	0.4-	0.2-
1997 12 31	704	0.2+	0.2-	1999 04 15	704	0.9+	0.6+	1999 05 13	704	0.5-	0.6+
1997 12 31	704	1.0+	0.5-	1999 04 15	704	1.2+	2.2+	1999 05 13	704	0.4-	0.9-
1997 12 31	704	0.7+	0.7-	1999 04 16	704	0.3+	0.1-	1999 05 13	704	0.1-	1.2-
1999 04 09	699	0.7+	0.7+	1999 04 16	704	0.1+	0.6+	1999 05 17	704	0.3+	0.6-
1999 04 09	699	0.4+	0.3+	1999 04 16	704	0.9-	0.3-	1999 05 17	704	1.0-	1.1-
1999 04 09	699	0.5+	0.1+	1999 04 16	704	0.1+	0.1+	1999 05 17	704	1.5-	0.2+
1999 04 12	704	0.1-	0.7+	1999 04 16	704	1.7-	2.1-	1999 05 17	704	1.6-	0.0
1999 04 12	704	0.7-	0.0	1999 05 12	704	0.2+	0.6-	1999 05 17	704	1.1-	0.5+
1999 04 12	704	0.1-	1.1+	1999 05 12	704	2.5+	0.0				

1999 GW₂₀ = 1997 WP₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	76.27056		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.26704860	ω	66.75456	-0.91175033	-0.39009248
a	2.3882283	Ω	90.08109	+0.31391630	-0.86370051
e	0.0482611	i	7.38899	+0.26489224	-0.31913836
P	3.69	H	14.3	G 0.15	U 4

Residuals in seconds of arc

1997 11 29	704	0.5-	0.6+	1998 01 17	910	0.9-	0.4+	1999 04 16	704	0.2-	0.2-
1997 11 29	704	0.0	0.4-	1998 01 17	910	1.0-	0.4+	1999 04 16	704	0.2-	0.9+
1997 11 29	704	1.1-	0.2+	1998 01 17	910	0.9-	0.5+	1999 04 16	704	0.3+	0.5+
1997 11 29	704	0.7-	0.8-	1999 03 24	699	0.9+	1.2+	1999 04 16	704	0.0	0.2+
1997 11 29	704	0.4+	1.0+	1999 03 24	699	0.8+	0.1-	1999 04 16	704	(0.5-	2.3+)
1997 12 04	704	(0.7+	2.5+)	1999 03 24	699	1.2+	0.9-	1999 05 12	704	0.5-	0.4+
1997 12 04	704	0.7+	0.7-	1999 04 12	704	0.0	0.1+	1999 05 12	704	0.4+	0.7+
1997 12 04	704	0.1-	0.3-	1999 04 12	704	0.2-	0.1+	1999 05 12	704	0.2+	1.2+
1997 12 04	704	1.6+	0.3-	1999 04 12	704	0.0	0.5-	1999 05 12	704	0.8+	0.3-
1997 12 04	704	(1.7-	3.2-)	1999 04 12	704	0.5-	0.2-	1999 05 12	704	0.6-	0.0
1997 12 05	704	0.2+	0.1-	1999 04 12	704	0.9-	0.6-	1999 05 13	704	0.3+	0.1-
1997 12 05	704	0.1+	0.8-	1999 04 15	704	1.0-	0.9-	1999 05 13	704	0.1+	0.1+
1997 12 05	704	1.0+	0.1-	1999 04 15	704	1.7-	0.1+	1999 05 13	704	0.3+	0.4+
1997 12 05	704	0.8+	0.7+	1999 04 15	704	0.5-	1.6-	1999 05 13	704	0.4+	0.9-
1997 12 05	704	0.2-	0.1-	1999 04 15	704	0.7+	0.1+	1999 05 13	704	0.2-	0.1+

1999 GA₂₁ = 1993 FO₅₃ = 1998 DN₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	182.83042		(2000.0)	P	Q
n	0.17429671	ω	242.50831	+0.71336148	-0.69702518
a	3.1740220	Ω	161.37291	+0.69598563	+0.69253398
e	0.0345405	i	13.13860	+0.08197199	+0.18588324
P	5.65	H	13.0	G 0.15	U 1

Residuals in seconds of arc

1993 03 17	809	0.5+	0.6-	1999 04 12	704	1.5-	0.6+	1999 05 12	704	0.7+	1.3+
1993 03 18	809	0.5-	0.5+	1999 04 12	704	0.6-	0.1+	1999 05 12	704	0.3+	0.3-
1996 10 11	691	0.1-	0.2+	1999 04 12	704	0.6+	0.1+	1999 05 12	704	1.6-	1.3-
1996 10 11	691	0.0	0.1+	1999 04 12	704	0.0	0.1-	1999 05 12	704	1.8-	0.7+
1998 01 26	566	0.4-	0.1+	1999 04 15	704	1.2-	1.3+	1999 05 15	704	0.5+	0.6-
1998 01 26	566	0.3-	0.3+	1999 04 15	704	0.4-	0.3-	1999 05 15	704	1.8+	0.7-
1998 01 26	566	0.6-	0.1-	1999 04 15	704	1.2+	0.7+	1999 05 15	704	1.3+	0.8-
1998 02 22	691	0.4+	0.0	1999 04 15	704	1.4+	0.2-	1999 05 15	704	1.2+	0.0
1998 02 22	691	0.1+	0.1-	1999 04 16	704	0.5+	0.3-	1999 05 15	704	(0.6-	2.0-)
1998 02 22	691	1.1+	0.0	1999 04 16	704	1.1-	0.1+	1999 05 17	704	0.1-	0.8+
1998 02 28	691	0.1-	0.2-	1999 04 16	704	(0.3-	2.2-)	1999 05 17	704	0.9+	0.6-
1998 02 28	691	0.1-	0.2-	1999 04 16	704	0.7-	0.5-	1999 05 17	704	(1.8+	2.4+)
1998 02 28	691	0.0	0.1-	1999 04 16	704	(3.2-	1.4-)	1999 05 17	704	1.3+	0.2-
1999 04 12	704	0.0	0.2+	1999 05 12	704	1.6-	0.6+	1999 05 17	704	0.9-	0.3-

1999 GB₂₁ = 1989 SN

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	44.08006		(2000.0)	P	Q
n	0.17218448	ω	127.22801	-0.94202797	-0.13247852
a	3.1999268	Ω	47.51478	-0.09351083	-0.77869755
e	0.1187341	i	24.71001	+0.32224064	-0.61325327
P	5.72	H	12.8	G 0.15	U 4

Residuals in seconds of arc

1989 09 24	413	0.0	0.1+	1999 04 15	704	0.0	1.6+	1999 05 15	704	1.2+	0.1-
1989 09 24	413	0.3+	0.1+	1999 04 15	704	0.0	0.0	1999 05 15	704	0.7+	0.7+
1989 09 24	413	0.2-	0.5-	1999 04 15	704	0.8+	0.2-	1999 05 21	704	0.9-	0.2-
1989 09 24	413	0.1+	0.7-	1999 04 16	704	0.7-	0.5-	1999 05 21	704	1.1-	0.9-
1989 09 28	413	0.7+	0.2+	1999 04 16	704	0.3-	0.2+	1999 05 21	704	0.6-	1.5-
1989 09 28	413	1.0-	0.9+	1999 04 16	704	0.5-	0.7-	1999 05 21	704	1.3-	0.2+
1999 03 28	699	0.5+	0.1+	1999 04 16	704	0.5+	0.6+	1999 05 21	704	0.8-	0.2+
1999 03 28	699	1.0+	0.1+	1999 04 16	704	1.6-	0.5+	1999 06 08	704	1.6+	1.7-
1999 03 28	699	0.5+	0.7-	1999 05 12	704	0.8+	0.3-	1999 06 08	704	0.9+	0.1-
1999 04 12	704	0.7-	0.3+	1999 05 12	704	1.3+	0.0	1999 06 08	704	0.1-	0.2+
1999 04 12	704	0.3+	0.9-	1999 05 12	704	1.0-	0.8+	1999 06 08	704	0.4-	0.7+
1999 04 12	704	0.1+	0.7+	1999 05 12	704	0.2+	0.3+	1999 06 08	704	0.3-	0.4+
1999 04 12	704	0.6+	0.7-	1999 05 12	704	0.3-	0.3-	1999 06 08	704	0.9+	0.1+
1999 04 12	704	0.3-	0.4-	1999 05 15	704	0.5+	1.0+	1999 06 08	704	0.9-	0.5+
1999 04 15	704	0.0	0.3-	1999 05 15	704	0.2-	0.6+	1999 06 08	704	0.7-	0.6+
1999 04 15	704	0.2+	0.5-	1999 05 15	704	0.3+	0.6-				

1999 GK₂₁ = 1976 GC₁ = 1976 GC₄ = 1987 BJ₃ = 1996 QQ₂**= 1997 WH₄₇**Id. G. V. Williams, O. Kippes (*MPC* 5440)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	37.14017		(2000.0)	P	Q
n	0.25933402	ω	21.05658	-0.93667067	+0.35021069
a	2.4353594	Ω	179.44204	-0.33111703	-0.88491689
e	0.1681632	i	4.31985	-0.11405953	-0.30704165
P	3.80	H	14.3	G 0.15	U 2

Residuals in seconds of arc

1976 04 01	095	(3.4+	2.6-)	1999 02 26	704	0.4+	0.0	1999 05 13	704</

1999 JUNE 22

M.P.C. 34967

1987 01 30	010	0.3−	0.4+	1999 04 12	704	0.7+	0.7−	1999 05 15	704	0.5−	0.6−
1987 01 30	010	(3.0−	1.6+)	1999 04 12	704	0.4+	0.2+	1999 05 15	704	0.5−	1.2−
1996 08 18	010	0.0	0.5−	1999 04 12	704	(3.3+	0.1−)	1999 05 15	704	1.8−	0.5+
1996 08 18	010	0.8−	0.8+	1999 04 12	704	(1.0+	2.6+)	1999 05 15	704	1.5−	0.5+
1996 08 18	010	0.1+	0.5+	1999 04 15	704	0.6+	0.8−	1999 05 17	704	(2.1+	0.2−)
1996 08 20	010	(2.3−	3.6−)	1999 04 15	704	0.1+	0.4+	1999 05 17	704	0.4+	0.1+
1996 08 20	010	(1.4−	4.0−)	1999 04 15	704	0.3−	0.4−	1999 05 17	704	0.1+	0.9+
1996 08 20	010	(1.9−	3.2−)	1999 04 15	704	0.9+	0.4−	1999 05 17	704	0.3−	0.0
1997 11 26	704	1.6−	0.8−	1999 04 15	704	0.2−	0.6+	1999 05 17	704	(2.0−	0.1+)
1997 11 26	704	(4.0−	0.5−)	1999 04 16	704	1.6+	1.6+	1999 05 18	704	1.2+	0.1+
1997 11 26	704	(3.2−	0.3−)	1999 04 16	704	0.5+	0.4−	1999 05 18	704	0.4+	0.7−
1997 11 29	704	(1.1−	2.1−)	1999 04 16	704	0.5+	0.5+	1999 05 18	704	0.7−	0.3+
1997 11 29	704	1.1+	1.0+	1999 04 16	704	0.6+	0.2+	1999 05 18	704	(1.5−	2.8−)
1997 11 29	704	0.7+	1.3+	1999 04 16	704	0.6−	0.1−	1999 05 18	704	1.7−	0.3+
1997 11 29	704	0.2+	0.8+	1999 05 12	704	0.2+	0.1−	1999 05 19	704	0.3+	0.6−
1997 11 29	704	0.6−	0.7+	1999 05 12	704	0.0	0.2+	1999 05 19	704	1.4+	0.7+
1997 12 04	704	0.7−	1.3−	1999 05 12	704	0.9+	0.1−	1999 05 19	704	0.2+	0.4−
1997 12 04	704	0.3+	1.9+	1999 05 12	704	0.3+	0.3+	1999 05 19	704	0.1+	0.1+
1997 12 04	704	0.2+	0.7+	1999 05 12	704	0.3−	0.5+	1999 05 19	704	0.4−	0.6+
1997 12 04	704	1.0+	0.2+	1999 05 13	704	0.7+	0.1−				
1999 02 26	704	0.4−	0.1+	1999 05 13	704	0.2+	0.3+				

1999 GO₂₁ = 1986 WM₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	113.52003		(2000.0)	P	Q
<i>n</i>	0.19008374	ω	64.71531	−0.39472641	−0.90667242
<i>a</i>	2.9957535	Ω	49.36664	+0.75662904	−0.41263311
<i>e</i>	0.0609782	<i>i</i>	11.30618	+0.52125192	−0.08763010
<i>P</i>	5.19	<i>H</i>	12.6	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1986 11 30	381	0.3−	0.1−	1999 04 15	704	0.5+	1.2−	1999 05 14	704	(2.5−	0.7−)
1986 11 30	381	0.1−	0.1−	1999 04 16	704	0.4+	0.7−	1999 05 14	704	(3.2−	0.5+)
1986 12 01	381	1.9+	0.0	1999 04 16	704	0.0	1.1−	1999 05 14	704	0.8−	0.9−
1986 12 01	381	1.1−	0.4−	1999 04 16	704	0.8+	0.6−	1999 05 17	704	0.3+	0.5−
1999 02 14	699	0.7+	0.6+	1999 04 16	704	0.0	1.3−	1999 05 17	704	1.4+	0.1+
1999 02 14	699	0.5+	0.1−	1999 04 16	704	1.2−	0.5+	1999 05 17	704	0.1+	0.5+
1999 02 14	699	0.4+	1.2+	1999 05 12	704	0.8−	0.1−	1999 05 17	704	0.8+	0.1+
1999 04 11	699	0.0	0.5+	1999 05 12	704	0.7−	0.9+	1999 05 17	704	1.4−	0.3−
1999 04 11	699	0.1+	0.6+	1999 05 12	704	0.6−	1.2+	1999 05 18	704	0.5+	0.1+
1999 04 11	699	0.4−	0.0	1999 05 12	704	0.4−	0.2+	1999 05 18	704	1.1+	0.0
1999 04 12	704	0.3+	1.7−	1999 05 12	704	1.4−	0.2+	1999 05 18	704	0.6+	0.4−
1999 04 12	704	0.1−	0.3−	1999 05 13	704	0.7−	0.4+	1999 05 18	704	0.4+	0.1−
1999 04 12	704	1.0+	0.0	1999 05 13	704	0.8−	0.8+	1999 05 18	704	0.6−	0.4+
1999 04 12	704	1.5+	0.2−	1999 05 13	704	1.1−	0.4+	1999 05 21	704	0.9+	0.6+
1999 04 12	704	1.1+	0.4+	1999 05 13	704	0.7−	0.7+	1999 05 21	704	(2.0+	0.2−)
1999 04 15	704	0.8−	0.8+	1999 05 13	704	1.6−	1.0+	1999 05 21	704	1.2−	1.0+
1999 04 15	704	0.8+	0.7−	1999 05 14	704	1.3+	0.2−	1999 05 21	704	0.2+	1.4−
1999 04 15	704	1.3+	0.6−	1999 05 14	704	1.7−	0.5−	1999 05 21	704	0.1−	0.2−

1999 GQ₂₁ = 1987 KY₁ = 1997 AL₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	298.41930		(2000.0)	P	Q
<i>n</i>	0.24222146	ω	261.50030	+0.70163370	+0.67772595
<i>a</i>	2.5487524	Ω	55.48807	−0.50216331	+0.68936243
<i>e</i>	0.1674694	<i>i</i>	15.48471	−0.50551179	+0.25586515
<i>P</i>	4.07	<i>H</i>	13.5	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1987 05 30	413	0.2−	0.9−	1999 04 15	704	1.9−	0.1−	1999 05 13	704	0.6−	1.2+
1987 05 30	413	0.9−	0.9−	1999 04 16	703	0.5+	1.6+	1999 05 15	704	0.3+	0.8+
1997 01 06	327	0.9−	1.4−	1999 04 16	703	1.3+	1.1+	1999 05 15	704	1.7−	1.6−
1997 01 06	327	0.1−	0.3+	1999 04 16	703	0.1+	1.2+	1999 05 15	704	1.1+	0.4+
1997 01 06	327	0.1+	0.3+	1999 04 16	703	0.5+	1.3+	1999 05 15	704	(0.8+	2.3+)
1997 01 18	327	0.5−	0.1+	1999 04 16	704	0.1+	0.5−	1999 05 17	703	0.6+	0.9+
1997 01 18	327	0.1+	0.9+	1999 04 16	704	0.0	0.6−	1999 05 17	704	0.4+	0.8+

1997 01 18	327	0.1−	1.5+	1999 04 16	704	0.1−	0.2+	1999 05 17	703	0.2−	0.8+
1997 12 29	566	0.1−	0.4−	1999 04 16	704	0.1−	0.9−	1999 05 17	704	1.0+	0.6+
1997 12 29	566	0.3−	0.7−	1999 04 16	704	0.0	1.1−	1999 05 17	703	0.7−	0.8−
1997 12 29	566	0.1−	0.5−	1999 05 12	704	0.2−	0.1+	1999 05 17	704	1.4+	0.6+
1999 04 12	704	0.2−	0.2−	1999 05 12	704	0.0	0.3+	1999 05 17	703	0.7+	0.5−
1999 04 12	704	0.6+	0.0	1999 05 12	704	0.1−	0.1+	1999 05 17	704	0.4+	0.3+
1999 04 12	704	(0.5−	3.0−)	1999 05 12	704	0.5−	0.1+	1999 05 17	704	0.2−	0.4−
1999 04 12	704	0.2−	0.2+	1999 05 12	704	0.9−	0.2−	1999 05 21	704	1.4−	0.6−
1999 04 12	704	0.2−	0.7−	1999 05 13	704	0.5−	0.4−	1999 05 21	704	0.8+	0.5−
1999 04 15	704	0.6+	0.3−	1999 05 13	704	0.4−	0.1+	1999 05 21	704	0.5+	0.7−
1999 04 15	704	1.9+	1.1+	1999 05 13	704	0.3+	0.2+	1999 05 21	704	1.8+	0.5+
1999 04 15	704	0.8−	1.4−	1999 05 13	704	1.1−	0.3+	1999 05 21	704	0.6−	0.5−

1999 GS₂₁ = 1997 WW₃₉ = 1998 FG₁₃₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	1.86383		(2000.0)	P	Q
<i>n</i>	0.29188844	ω	143.58400	−0.41085437	+0.90367847
<i>a</i>	2.2507372	Ω	101.87850	−0.86288909	−0.34270446
<i>e</i>	0.0802460	<i>i</i>	7.08385	−0.29431463	−0.25674670
<i>P</i>	3.38	<i>H</i>	14.7	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1996 06 15	566	0.0	0.6+	1998 03 21	327	0.1+	0.5+	1999 05 09	120	0.5−	0.5−
1996 06 15	566	0.0	0.4−	1999 03 24	699	0.8+	1.4+	1999 05 09	120	0.4−	0.1+
1996 06 15	566	0.1+	0.5+	1999 03 24	699	1.8+	1.3+	1999 05 12	704	0.0	0.2−
1997 11 29	704	(0.0	2.4−)	1999 03 24	699	(0.2+	3.4+)	1999 05 12	704	0.2+	0.2−
1997 11 29	704	0.9−	1.7−	1999 04 12	704	0.1−	0.2+	1999 05 12	704	0.1+	0.1−
1997 11 29	704	1.3−	1.4−	1999 04 12	704	0.2−	0.9−	1999 05 12	704	0.5−	0.3+
1997 11 29	704	1.2−	1.1−	1999 04 12	704	0.0	0.1+	1999 05 12	704	1.3−	1.4−
1997 11 29	704	0.4−	0.7−	1999 04 12	704	0.0	0.9+	1999 05 15	704	0.4+	0.6−
1997 11 30	566	0.9+	0.3+	1999 04 12	704	0.4+	0.1+	1999 05 15	704	0.6−	0.9−
1997 11 30	566	0.7+	0.5+	1999 04 15	704	0.3+	1.1+	1999 05 15	704	0.3+	0.1−
1997 11 30	566	0.6+	0.4+	1999 04 15	704	(0.4+	2.3+)	1999 05 15	704	0.4+	0.3−
1997 12 04	704	1.2+	0.2−	1999 04 15	704	0.6+	0.1+	1999 05 15	704	0.8−	1.4+
1997 12 04	704	0.6+	0.1−	1999 04 15	704	(3.6+	1.0+)	1999 05 17	704	0.3−	0.1+
1997 12 04	704	0.3+	1.2+	1999 04 16	704	0.6+	0.1−	1999 05 17	704	0.3−	0.8−
1997 12 04	704	0.9+	0.0	1999 04 16	704	0.1+	0.1−	1999 05 17	704	0.2−	0.8−
1997 12 04	704	0.0	0.1+	1999 04 16	704	0.0	0.2+	1999 05 17	704	1.2−	0.3−
1998 03 19	327	0.3−	1.1+	1999 04 16	704	0.1+	0.3−	1999 05 17	704	0.5−	0.1+
1998 03 19	327	1.1−	0.1+	1999 04 16	704	0.9+	0.5−	1999 06 08	704	0.4+	0.2−
1998 03 21	327	0.2+	0.3−	1999 05 07	120	0.8−	0.3−	1999 06 08	704	1.0+	0.6−
1998 03 21	327	0.1+	0.5−	1999 05 07	120	1.0−	0.1+	1999 06 08	704	0.0	0.5+
1998 03 21	327	0.3−	0.2+	1999 05 07	120	0.8−	0.3−	1999 06 08	704	0.4+	1.0−

1999 GP₂₂ = 1976 GR₈ = 1976 JU = 1981 UA₂₈ = 1996 QM₃

Id. G. V. Williams, O. Kippes (d)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	343.70862		(2000.0)	P	Q
<i>n</i>	0.25500150	ω	344.80306	−0.36212855	+0.93108481
<i>a</i>	2.4628666	Ω	263.95021	−0.85052119	−0.34940966
<i>e</i>	0.1562761	<i>i</i>	2.54120	−0.38141398	−0.10485213
<i>P</i>	3.87	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 1

M.P.C. 34968

1996 08 20	010	0.7+	1.1-	1999 04 06	704	0.1+	0.8-	1999 04 15	704	0.2-	0.4+
1996 08 20	010	0.4-	0.5-	1999 04 06	704	0.1+	0.5-	1999 04 15	704	0.6-	0.3+
1997 12 04	704	0.2-	1.1-	1999 04 06	704	0.1+	0.7-	1999 04 15	704	1.0-	0.1-
1997 12 04	704	0.4+	0.0	1999 04 06	704	0.4-	0.5-	1999 04 15	704	1.6-	0.4-

1999 GD₂₄ = 1962 QN = 1969 TU₃ = 1976 UO₁ = 1986 QE = 1993 TS₃₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	285.12660		(2000.0)		P		Q
<i>n</i>	0.28678408	ω	72.67849		+0.71556331		+0.69344602
<i>a</i>	2.2773653	Ω	243.32362		-0.67137290		+0.64938214
<i>e</i>	0.1636889	<i>i</i>	5.41165		-0.19294448		+0.31214652
<i>P</i>	3.44	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1962 08 29	760	0.7-	1.1-	1999 02 26	704	1.3-	0.9+	1999 04 14	704	0.6+	0.8+
1962 08 29	760	0.5-	0.8+	1999 02 26	704	0.7-	0.9-	1999 04 14	704	0.5-	1.3-
1969 10 11	095	2.3+	2.1+	1999 02 26	704	1.6-	0.6-	1999 04 14	704	0.8-	1.2+
1976 10 26	095	2.1-	0.8+	1999 02 26	704	0.9-	1.4+	1999 04 15	704	0.8+	0.1-
1986 08 26	046	(2.1+	3.2-)	1999 04 06	704	0.2+	0.4-	1999 04 15	704	(2.2+	0.8-)
1986 08 26	046	(1.5+	4.6-)	1999 04 06	704	0.2+	0.9-	1999 04 15	704	1.0+	0.4+
1993 10 12	675	0.2-	0.6+	1999 04 06	704	1.2+	0.8+	1999 04 15	704	0.3+	0.2+
1993 10 12	675	0.3-	0.4-	1999 04 06	704	0.2+	0.7-	1999 04 15	704	0.2+	0.2+
1993 10 14	675	0.1-	0.2-	1999 04 06	704	0.4+	0.6-	1999 06 10	704	0.0	0.3+
1993 10 14	675	0.6+	0.1-	1999 04 12	704	0.9-	1.0+	1999 06 10	704	0.3+	0.1+
1998 12 23	704	0.6-	0.4-	1999 04 12	704	(4.4-	4.3+)	1999 06 10	704	0.1+	0.6+
1998 12 23	704	(2.6+	0.2-)	1999 04 12	704	0.3-	0.5+	1999 06 10	704	0.3+	0.2-
1998 12 23	704	0.9+	0.1+	1999 04 14	704	0.6+	0.1+	1999 06 10	704	0.0	0.0
1998 12 23	704	(3.2-	2.0-)	1999 04 14	704	1.6+	0.2+				

1999 GE₂₄ = 1997 WJ₄₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	306.77210		(2000.0)		P		Q
<i>n</i>	0.29600001	ω	87.23979		+0.44178898		+0.89680802
<i>a</i>	2.2298461	Ω	209.01501		-0.84122761		+0.40497384
<i>e</i>	0.1495275	<i>i</i>	2.79118		-0.31170276		+0.17813356
<i>P</i>	3.33	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1993 08 18	010	0.5+	0.6+	1997 12 04	704	1.4+	1.9+	1999 04 14	704	1.4-	0.4+
1993 08 18	010	0.1-	0.2-	1999 03 22	699	1.7+	0.7+	1999 04 14	704	0.0	0.9+
1993 08 18	010	0.4-	0.2-	1999 03 22	699	1.0+	0.4+	1999 04 14	704	0.7-	0.1-
1996 06 21	566	0.0	0.0	1999 03 22	699	1.2+	1.7+	1999 04 15	704	0.2-	0.1+
1996 06 21	566	0.3-	0.1-	1999 04 06	704	0.0	1.0-	1999 04 15	704	0.5-	0.6+
1996 06 21	566	0.0	0.0	1999 04 06	704	0.8-	1.3-	1999 04 15	704	1.3-	0.9+
1997 11 29	704	0.4-	0.1-	1999 04 06	704	0.8+	1.2-	1999 04 15	704	0.1-	0.1-
1997 11 29	704	1.2-	1.6-	1999 04 06	704	0.4+	0.6-	1999 04 15	704	1.0-	1.1+
1997 11 29	704	0.7-	1.2-	1999 04 06	704	1.5-	0.6-	1999 06 08	704	0.1+	0.6+
1997 11 29	704	0.2+	0.4-	1999 04 12	704	1.2+	0.7-	1999 06 08	704	0.8+	0.5+
1997 11 29	704	0.7-	1.0-	1999 04 12	704	0.4+	0.5+	1999 06 08	704	0.3-	0.2-
1997 12 04	704	1.2+	0.8+	1999 04 12	704	0.1-	1.4-	1999 06 08	704	0.3+	0.1-
1997 12 04	704	(3.2+	2.8+)	1999 04 14	704	0.4+	0.7-				
1997 12 04	704	0.0	1.5+	1999 04 14	704	0.2+	0.2-				

1999 GW₂₄ = 1976 UA₇ = 1996 SE₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	302.96466		(2000.0)		P		Q
<i>n</i>	0.19716777	ω	89.55351		+0.15532267		+0.98785498
<i>a</i>	2.9235606	Ω	189.38510		-0.91622060		+0.14247774
<i>e</i>	0.0632498	<i>i</i>	1.46615		-0.36934357		+0.06198898
<i>P</i>	5.00	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1976 10 22	381	0.3-	0.3+	1996 10 14	327	0.0	0.1+	1999 04 14	704	1.2+	0.3+
1976 10 22	381	0.2+	0.3+	1996 10 14	327	0.1-	0.1-	1999 04 14	704	(1.7-	2.2-)
1976 10 24	381	0.1-	0.3-	1996 10 14	327	(5.2+	1.7-)	1999 04 14	704	0.2+	0.6-

1999 JUNE 22

1996 09 21	327	0.2+	0.1+	1999 04 06	704	1.7-	0.5-	1999 04 14	704	0.2-	1.2-
1996 09 21	327	0.0	0.4-	1999 04 06	704	0.9+	1.1+	1999 04 15	704	0.8+	0.7+
1996 09 21	327	0.1-	0.1+	1999 04 06	704	1.5+	0.3-	1999 04 15	704	1.8-	0.4+
1996 09 22	327	0.5+	0.1+	1999 04 06	704	0.1-	1.2+	1999 04 15	704	0.1+	0.0
1996 09 22	327	0.3+	0.3-	1999 04 12	704	0.1-	1.0-	1999 04 15	704	1.3-	0.3-
1996 09 22	327	0.9+	0.2-	1999 04 12	704	0.7+	1.5-	1999 04 15	704	0.8-	0.6-
1996 10 05	327	0.5-	0.0	1999 04 12	704	0.1+	0.3+	1999 05 05	691	0.2+	0.4+
1996 10 05	327	0.7-	0.1+	1999 04 12	704	0.0	0.6+	1999 05 05	691	0.1-	0.1+
1996 10 05	327	0.3-	0.2-	1999 04 12	704	0.4+	0.5+	1999 05 05	691	0.2-	0.2+

1999 GU₃₀ = 1990 EA₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	114.23868		(2000.0)		P		Q
<i>n</i>	0.22577776	ω	283.58420		-0.18951833		-0.98182594
<i>a</i>	2.6710495	Ω	177.27967		+0.96263601		-0.18780741
<i>e</i>	0.1232779	<i>i</i>	12.20205		+0.19342887		-0.02731670
<i>P</i>	4.37	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1990 03 02	809	0.2-	0.2-	1999 04 07	704	1.4-	1.4-	1999 05 08	703	1.7+	0.9-
1990 03 02	809	0.9-	0.5-	1999 04 10	699	0.1-	0.6+	1999 05 08	703	0.2-	0.8-
1990 03 02	809	0.1+	0.5-	1999 04 10	699	0.4-	1.7+	1999 05 08	703	1.6+	0.1+
1990 03 04	809	0.5+	0.3+	1999 04 10	699	0.3+	0.5+	1999 05 08	703	1.0+	0.7+
1990 03 04	809	0.4+	0.6+	1999 04 12	704	0.8+	0.5+	1999 05 16	703	0.8-	0.2-
1990 03 04	809	0.0	0.3+	1999 04 12	704	0.0	0.5+	1999 05 16	703	0.5-	0.9-
1999 04 07	704	0.1-	1.3-	1999 04 12	704	1.0-	0.5+	1999 05 16	703	1.4-	0.4+
1999 04 07	704	0.4-	0.2+	1999 04 12	704	1.4-	0.5+	1999 05 16	703	0.3+	0.4+
1999 04 07	704	0.5+	0.0	1999 04 12	704	1.5+	1.1-				

1999 GQ₃₁ = 1982 VK₁ = 1993 SH₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	99.90568		(2000.0)		P		Q
<i>n</i>	0.25981722	ω	314.87409		-0.49305376		-0.86991028
<i>a</i>	2.4323390	Ω	164.65381		+0.81084731		-0.46465532
<i>e</i>	0.1449534	<i>i</i>	2.68840		+0.31531671		-0.16538299
<i>P</i>	3.79	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1982 11 14	801	(9.5-	0.5-)	1999 02 18	910	0.7-	0.1+	1999 05 12	704	(2.8+	0.6+)
1982 11 16	801	0.2-	0.2-	1999 04 07	704	0.3-	0.2+	1999 05 12	704	0.5+	1.1+
1982 11 18	801	0.2+	0.7+	1999 04 07	704	0.6-	0.1+	1999 05 12	704	(2.5+	0.7+)
1993 09 17	809	1.1+	0.1+	1999 04 07	704	0.5-	0.2+	1999 05 12	704	0.2+	0.4-
1993 09 17	809	0.5-	0.6+	1999 04 07	704	0.6+	0.8+	1999 05 13	704	1.4+	0.5+
1993 09 17	809	1.3-	0.2-	1999 04 12	704	0.4+	0.3+	1999 05 13	704	(0.4-	2.6+)
1993 09 18	809	(1.7+	2.8+)	1999 04 12	704	0.4-	0.4+	1999 05 13	704	(2.2+	2.4+)
1993 09 18	809	(1.1+	3.6+)	1999 04 12	704	0.1+	0.4-	1999 05 13	704	0.2-	1.1+
1993 09 18	809	(0.7+	2.9+)	1999 04 12	704	0.1-	0.8-	1999 05 16	703	0.7+	0.2+
1997 10 29	566	0.3-	1.1+	1999 04 12	704	(5.1-	0.7-)	1999 05 16	703	0.3+	0.5+
1997 10 29	566	0.2-	0.6+	1999 05 08	703	0.1-	0.7-	1999 05 16	703	0.7+	0.3-
1997 10 29	566	0.2-	1.2+	1999 05 08	703	0.8+	0.1-	1999 05 16	703	0.8-	1.8-
1999 02 18	910	0.2-	0.1-	1999 05 08	703	0.6+	1.2+				
1999 02 18	910	0.4-	0.0	1999 05 08	703	0.7-	1.4+				

1999 GW₃₁ = 1998 AF₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	96.00756		(2000.0)		P		Q
n	0.19886132	ω	47.37614		-0.63743675		-0.76789327
a	2.9069384	Ω	82.33582		+0.68689210		-0.60359551
e	0.0152786	i	3.66540		+0.34907540		-0.21450495
P	4.96	H	14.1	G	0.15	U	4

1999 JUNE 22

M.P.C. 34969

1998 01 05	327	0.1+	0.5+	1998 01 08	327	0.2+	0.4-	1999 05 09	703	0.6-	0.9-
1998 01 05	327	0.0	0.2+	1998 01 17	327	1.1+	0.1-	1999 05 09	703	0.6-	0.2+
1998 01 05	327	0.1+	0.2+	1998 01 17	327	0.9+	0.7-	1999 05 09	703	0.2+	0.4+
1998 01 05	327	0.2+	0.3+	1998 01 17	327	0.5-	0.0	1999 05 09	703	0.9+	0.4-
1998 01 06	327	0.2-	0.0	1999 04 07	704	0.1-	0.4+	1999 05 16	703	1.8+	0.6-
1998 01 06	327	0.7+	0.5+	1999 04 07	704	0.4+	0.3-	1999 05 16	703	1.1-	1.8+
1998 01 06	327	0.3+	0.1+	1999 04 07	704	1.0+	0.4-	1999 05 16	703	0.0	0.0
1998 01 06	327	0.2-	0.6+	1999 04 07	704	0.3-	0.3-	1999 05 16	703	0.7-	0.2+
1998 01 07	691	1.0-	0.0	1999 04 12	704	0.7-	0.4-				
1998 01 07	691	1.1-	0.3-	1999 04 12	704	1.1-	0.1+				

1999 GF₃₂ = 1993 XZ₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	142.86783		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.24399117	ω	333.57209	+0.12778235	-0.99130269
a	2.5364130	Ω	109.07297	+0.91575501	+0.10573836
e	0.0938454	i	1.90845	+0.38087325	+0.07834774
P	4.04	H	15.0	G 0.15	U 4

Residuals in seconds of arc

1993 12 14	381	0.6-	0.2+	1997 12 31	704	0.1+	0.0	1999 04 12	704	(2.1+	0.2-)
1993 12 14	381	0.6-	0.1+	1997 12 31	704	0.4-	0.2+	1999 05 08	703	1.2-	0.7-
1993 12 14	381	0.9-	1.1+	1998 01 02	704	0.2+	1.0+	1999 05 08	703	1.3+	0.4-
1993 12 14	381	0.1+	0.2+	1998 01 02	704	0.6+	1.1-	1999 05 08	703	0.3-	0.1+
1993 12 15	381	0.8+	0.0	1998 01 02	704	0.7-	0.9-	1999 05 08	703	1.5+	0.6-
1993 12 15	381	0.4+	0.1+	1998 01 02	704	(3.4-	0.1-)	1999 05 13	704	0.1+	0.7-
1993 12 15	381	0.4+	0.1+	1999 04 07	704	0.2-	0.2-	1999 05 13	704	1.7+	1.6+
1993 12 15	381	0.3+	0.1-	1999 04 07	704	1.0+	0.6-	1999 05 13	704	0.0	0.7-
1997 11 29	704	0.4+	1.6-	1999 04 07	704	1.3-	0.1-	1999 05 13	704	1.2-	0.6-
1997 11 29	704	0.0	0.7-	1999 04 07	704	0.4+	0.2+	1999 05 17	703	0.9-	0.8-
1997 11 29	704	0.2-	0.3+	1999 04 12	704	0.3+	1.0+	1999 05 17	703	1.4-	0.1+
1997 11 29	704	0.3-	1.3+	1999 04 12	704	1.5-	1.5+	1999 05 17	703	(2.3+	0.9+)
1997 12 31	704	0.4+	0.5-	1999 04 12	704	0.5+	1.0+	1999 05 17	703	1.0+	0.5-
1997 12 31	704	0.3+	0.1-	1999 04 12	704	(2.4-	0.5+)				

1999 GM₃₂ = 1993 TX₄₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	333.87238		(2000.0)	P	Q
n	0.29206057	ω	86.55506	+0.25975225	+0.96516030
a	2.2498528	Ω	198.59290	-0.92061700	+0.23764187
e	0.1717140	i	5.67585	-0.29153577	+0.10950771
P	3.37	H	15.1	G 0.15	U 3

Residuals in seconds of arc

1992 04 07	809	0.3-	0.8-	1999 04 12	704	0.1+	0.5+	1999 05 12	704	0.1+	0.2+
1993 10 10	809	0.5+	0.7+	1999 04 12	704	(2.2-	1.2+)	1999 05 12	704	0.5-	0.5+
1993 10 10	809	0.2+	0.4-	1999 04 12	691	(0.0	2.5+)	1999 05 12	704	1.2-	0.2+
1993 10 10	809	1.2-	0.1-	1999 04 12	704	1.3-	1.8+	1999 05 13	704	0.8-	0.4-
1993 10 22	809	1.0+	1.0-	1999 04 12	691	0.1-	0.3+	1999 05 13	704	0.8+	0.8-
1993 10 22	809	0.6+	0.6-	1999 04 12	704	0.8+	0.3-	1999 05 13	704	0.0	0.1+
1993 10 22	809	0.6-	0.1+	1999 04 12	704	0.5-	0.8-	1999 05 13	704	0.4-	0.6-
1999 04 07	704	0.4-	0.1-	1999 04 12	691	0.3-	0.0	1999 05 13	704	0.2-	0.8+
1999 04 07	704	0.4+	0.0	1999 05 08	703	0.3+	0.4+	1999 05 16	703	0.4+	0.9+
1999 04 07	704	1.0-	0.2-	1999 05 08	703	0.4+	0.2-	1999 05 16	703	0.4+	0.9-
1999 04 07	704	0.7-	0.2+	1999 05 08	703	0.1+	0.4-	1999 05 16	703	0.7+	0.6-
1999 04 09	699	0.2+	0.3+	1999 05 08	703	1.0+	0.3-	1999 05 16	703	0.4+	0.9-
1999 04 09	699	0.6+	0.4-	1999 05 12	704	0.1+	0.4+				
1999 04 09	699	1.0+	0.2-	1999 05 12	704	0.4-	0.1-				

1999 GX₃₃ = 1996 XS₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	335.81389		(2000.0)	P	Q
n	0.23410316	ω	251.96276	+0.29040296	+0.94918535
a	2.6073412	Ω	35.64738	-0.78023984	+0.30826392
e	0.2471883	i	12.01291	-0.55397826	+0.06340761
P	4.21	H	14.9	G 0.15	U 4

Residuals in seconds of arc

1996 12 09	691	0.1+	0.0	1999 04 12	704	0.0	0.6-	1999 04 16	704	(5.3-	0.8+)
1996 12 09	691	0.1+	0.1-	1999 04 12	704	0.5+	0.0	1999 05 10	704	(0.1-	2.7+)
1996 12 09	691	0.4+	0.2+	1999 04 12	704	0.8+	1.0+	1999 05 10	704	0.3-	0.5-
1996 12 15	691	0.2-	0.3-	1999 04 12	704	0.7+	0.4-	1999 05 10	704	(0.7-	2.8+)
1996 12 15	691	0.2-	0.2+	1999 04 12	704	1.9-	0.3+	1999 05 10	704	1.0-	0.5-
1996 12 15	691	0.3-	0.0	1999 04 16	704	0.4-	0.1-	1999 05 13	704	0.6-	0.8-
1999 04 11	699	0.5+	0.1-	1999 04 16	704	0.4-	0.1+	1999 05 13	704	0.7+	0.8+
1999 04 11	699	0.2+	0.1-	1999 04 16	704	0.8-	0.3-	1999 05 13	704	1.3+	0.3-
1999 04 11	699	0.4+	0.0	1999 04 16	704	0.5+	0.2+	1999 05 13	704	0.0	1.3+

1999 GH₃₄ = 1997 WU₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	28.56520		(2000.0)	P	Q
n	0.24012486	ω	339.36503	-0.98139030	+0.18766396
a	2.5635668	Ω	211.53798	-0.16347010	-0.92765871
e	0.1751178	i	4.46117	-0.10075024	-0.32284912
P	4.10	H	15.2	G 0.15	U 3

Residuals in seconds of arc

1993 12 14	691	0.4-	0.4+	1999 03 22	699	0.5-	0.4+	1999 04 14	704	1.2-	0.8+
1993 12 14	691	0.2+	0.4+	1999 04 06	704	0.8+	0.6-	1999 04 14	704	(2.7-	0.2-)
1993 12 14	691	0.0	0.6+	1999 04 06	704	0.1+	1.3-	1999 04 15	704	0.8-	0.4-
1997 11 22	691	0.1-	1.0-	1999 04 06	704	0.1-	0.1-	1999 04 15	704	0.6-	0.0
1997 11 22	691	0.0	0.4-	1999 04 06	704	0.1-	0.4-	1999 04 15	704	0.1+	0.8+
1997 11 22	691	0.3-	0.9-	1999 04 06	704	0.3-	0.1-	1999 04 15	704	0.1+	0.4-
1997 11 28	691	0.6+	0.0	1999 04 10	699	0.3+	0.8+	1999 04 15	704	0.6-	0.9+
1997 11 28	691	0.3+	0.1+	1999 04 10	699	0.0	0.9+	1999 05 17	691	0.1-	1.0-
1997 11 28	691	0.1+	0.2-	1999 04 10	699	1.1+	1.0+	1999 05 17	691	0.2-	0.7-
1999 03 22	699	(2.4-	0.3-)	1999 04 14	704	0.7+	0.4-	1999 05 17	691	0.2+	1.0-
1999 03 22	699	0.2+	0.3-	1999 04 14	704	0.4+	0.0				

1999 GK₃₄ = 1996 RP₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	73.04043		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.20226231	ω	152.94808	-0.73291465	-0.67850648
a	2.8742602	Ω	344.01070	+0.58702659	-0.59383575
e	0.0615825	i	10.38397	+0.34385449	-0.43242116
P	4.87	H	13.6	G 0.15	U 4

Residuals in seconds of arc

1996 08 12	608	0.6+	0.6-	1999 02 23	704	0.2-	0.4+	1999 04 14	704	1.0-	1.3-
1996 08 12	608	0.7-	0.5+	1999 04 06	704	0.0	0.3-	1999 04 14	704	1.4+	0.1+
1996 09 10	566	0.2+	0.5-	1999 04 06	704	0.2+	0.0	1999 04 14	704	0.7-	1.4-
1996 09 10	566	0.0	0.3-	1999 04 06	704	0.2-	0.0	1999 04 14	704	(2.7-	1.0-)
1996 09 10	566	0.8-	0.1+	1999 04 06	704	0.5-	0.8+	1999 04 15	704	1.0-	1.5-
1996 09 13	566	0.9+	0.1+	1999 04 06	704	0.2-	1.3+	1999 04 15	704	0.2+	0.1+
1996 09 13	566	0.4-	0.3+	1999 04 11	699	0.2+	0.2+	1999 04 15	704	0.7+	0.6+
1996 09 13	566	0.1-	0.4+	1999 04 11	699	0.1-	0.1-	1999 04 15	704	0.4-	0.7+
1999 02 23	704	0.3+	0.9-	1999 04 11	699	0.2+	0.5+	1999 04 15	704	0.6-	0.2+
1999 02 23	704	0.3+	0.3+	1999 04 14	704	1.5+	0.3+				

1999 GM₃₄ = 1996 RE₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	312.91096		(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.24449843	ω	292.93683	+0.21194403	+0.97726038		
<i>a</i>	2.5329036	Ω	349.29339	-0.88339678	+0.18874731		
<i>e</i>	0.1336533	<i>i</i>	1.99594	-0.41795915	+0.09662605		
<i>P</i>	4.03	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 09 08	691	0.0	0.4+	1996 09 14	566	0.3-	0.3-	1999 04 06	704	0.9-	1.2+
1996 09 08	691	0.1+	0.3+	1999 02 23	704	1.3-	2.1-	1999 04 06	704	0.9+	0.7-
1996 09 08	691	0.1+	0.3+	1999 02 23	704	0.5-	0.7+	1999 04 14	704	1.9+	0.7-
1996 09 08	566	0.3-	0.6-	1999 02 23	704	0.4+	0.9-	1999 04 14	704	0.2-	1.0-
1996 09 08	566	0.1+	0.3-	1999 02 23	704	(6.6-	0.1-)	1999 04 14	704	1.8-	1.1-
1996 09 08	566	0.1+	0.4-	1999 03 24	699	1.0+	1.0+	1999 04 14	704	0.8+	0.9+
1996 09 11	691	0.1+	0.1+	1999 03 24	699	0.7+	1.2+	1999 04 15	704	0.6+	0.2-
1996 09 11	691	0.2+	0.2+	1999 03 24	699	1.4+	0.2+	1999 04 15	704	0.9+	0.0
1996 09 11	691	0.3+	0.2+	1999 04 06	704	1.6-	0.3-	1999 04 15	704	1.6+	0.2+
1996 09 14	566	0.1-	0.1-	1999 04 06	704	0.8-	0.7-	1999 04 15	704	2.7-	0.6+
1996 09 14	566	0.1-	0.2-	1999 04 06	704	0.7-	1.0+				

1999 GQ₃₅ = 1981 JU₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	303.78334		(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.27054700	ω	69.47641	+0.57538390	+0.81381066		
<i>a</i>	2.3675958	Ω	235.91440	-0.78228022	+0.51850862		
<i>e</i>	0.1498445	<i>i</i>	5.64881	-0.23868604	+0.26241383		
<i>P</i>	3.64	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1981 05 08	675	0.3-	0.3+	1999 04 07	704	0.2-	0.2-	1999 04 14	704	(2.4-	1.6-)
1981 05 09	675	0.3+	0.0	1999 04 07	704	0.8-	1.1+	1999 04 15	704	1.2-	0.2-
1993 11 12	033	0.5-	0.1+	1999 04 09	699	0.0	0.6-	1999 04 15	704	0.4-	0.7+
1993 11 12	033	0.5+	0.1+	1999 04 09	699	1.2+	0.3+	1999 04 15	704	0.1+	0.6+
1999 04 07	704	1.1+	1.2-	1999 04 09	699	1.1+	0.6+	1999 04 15	704	0.4+	0.3-
1999 04 07	704	0.5-	0.4-	1999 04 14	704	0.3-	0.3+	1999 04 15	704	0.3-	0.8-
1999 04 07	704	0.2-	0.2+	1999 04 14	704	(3.3-	1.7-)				

1999 GM₃₆ = 1990 TR₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	339.10052		(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.29566468	ω	17.70028	-0.14985002	+0.98509677		
<i>a</i>	2.2315318	Ω	243.75167	-0.91812789	-0.17033183		
<i>e</i>	0.1493224	<i>i</i>	5.40199	-0.36685984	+0.02390460		
<i>P</i>	3.33	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1990 10 10	033	0.4+	1.0-	1998 01 03	910	0.0	0.3+	1999 04 14	704	0.4-	0.0
1990 10 11	033	0.1-	0.7-	1998 02 22	327	0.1+	0.6+	1999 04 15	704	0.9-	0.3-
1990 10 11	033	0.7+	0.6-	1998 02 22	327	0.3-	0.0	1999 04 15	704	0.8+	0.4-
1990 10 12	033	0.2+	0.4+	1998 02 22	327	0.1-	0.5+	1999 04 15	704	0.2+	0.8+
1990 10 13	033	(0.6+	2.2-)	1999 04 12	704	0.4-	1.4-	1999 04 15	704	0.3-	0.5+
1990 10 14	033	0.2-	0.5-	1999 04 12	704	1.3+	1.4-	1999 04 15	704	1.1-	0.5+
1993 06 26	691	0.0	0.3+	1999 04 12	704	0.7-	0.8+	1999 06 10	704	0.7-	0.9-
1993 06 26	691	0.3-	0.3+	1999 04 14	704	0.0	0.5+	1999 06 10	704	0.6+	0.1-
1993 06 26	691	0.4-	0.2+	1999 04 14	704	0.3+	0.8-	1999 06 10	704	0.5+	0.5-
1998 01 03	910	0.2+	0.1+	1999 04 14	704	0.0	0.3+	1999 06 10	704	1.5+	0.3+
1998 01 03	910	0.1-	0.5+	1999 04 14	704	0.4-	0.2+	1999 06 10	704	0.1+	0.1+

1999 HF = 1993 SY₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	62.13180		(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.27845469	ω	2.35297	-0.99663283	+0.08009233		
<i>a</i>	2.3225569	Ω	182.45688	-0.08031745	-0.99669076		
<i>e</i>	0.1941527	<i>i</i>	24.17619	-0.01649562	+0.01388353		
<i>P</i>	3.54	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1993 09 17	809	0.1-	0.5+	1999 05 07	327	0.2-	0.3-	1999 06 07	704	0.1+	0.1+
1993 09 17	809	0.2-	0.8-	1999 05 07	327	0.1-	0.2-	1999 06 07	704	0.6-	0.6+
1993 09 17	809	0.9-	0.5+	1999 05 07	327	0.1-	0.2-	1999 06 08	704	0.5+	0.2-
1993 09 18	809	0.8+	1.1+	1999 05 08	327	0.1-	0.2-	1999 06 08	704	0.2-	0.2-
1993 09 18	809	0.2+	0.1+	1999 05 08	327	0.1-	0.2-	1999 06 08	704	0.2-	0.1-
1993 09 18	809	0.1+	0.4-	1999 05 08	327	0.2-	0.1-	1999 06 08	704	0.2-	0.4+
1999 04 16	703	0.1-	1.3+	1999 05 13	704	0.3-	0.3-	1999 06 08	704	0.0	0.0
1999 04 16	703	0.3+	0.9+	1999 05 13	704	0.2+	0.4+	1999 06 11	704	0.4+	0.1-
1999 04 16	703	0.3-	0.5+	1999 05 13	704	0.2+	0.0	1999 06 11	704	0.3+	0.6+
1999 04 16	703	0.3+	0.3+	1999 05 13	704	0.1-	0.6-	1999 06 11	704	0.1-	0.0
1999 04 16	327	0.2-	0.2-	1999 05 13	704	0.0	0.1+	1999 06 11	704	0.1-	0.2+
1999 04 16	327	0.1+	0.3-	1999 05 14	704	0.0	0.1-	1999 06 11	704	0.1-	0.6-
1999 04 16	327	0.1-	0.2-	1999 05 14	704	0.2-	0.8-	1999 06 12	704	0.7+	0.2+
1999 04 18	327	0.0	0.2+	1999 05 14	704	0.2-	0.2+	1999 06 12	704	0.4+	0.1+
1999 04 18	327	0.1-	0.2+	1999 05 14	704	0.8-	0.3+	1999 06 12	704	0.3+	0.3+
1999 04 18	327	0.2-	0.2+	1999 05 14	704	(2.5-	0.0)	1999 06 12	704	0.2+	0.4-
1999 04 27	327	0.1-	0.1-	1999 05 17	704	0.6+	0.5+	1999 06 12	704	0.5+	0.2-
1999 04 27	327	0.2-	0.2-	1999 05 17	704	0.7+	0.5-	1999 06 12	704	0.4+	0.1-
1999 04 27	327	0.1+	0.2-	1999 05 17	704	0.3+	0.7+	1999 06 12	704	0.6+	0.1-
1999 04 27	327	1.3-	0.9+	1999 05 17	704	0.3-	1.1-	1999 06 12	704	0.2+	0.3-
1999 05 04	327	0.1+	0.1+	1999 05 17	704	0.9-	0.1+	1999 06 12	704	0.6+	0.4-
1999 05 04	327	0.0	0.0	1999 06 07	704	0.2-	0.1-	1999 06 12	704	0.1-	0.4-
1999 05 04	327	0.1-	0.0	1999 06 07	704	0.1+	0.3+				

1999 HL = 1993 SV₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	13.53971		(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.27636913	ω	210.25653	-0.79865591	+0.60174101		
<i>a</i>	2.3342267	Ω	6.75306	-0.53852847	-0.70907232		
<i>e</i>	0.1384583	<i>i</i>	3.66445	-0.26858111	-0.36759244		
<i>P</i>	3.57	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1993 09 22	809	0.2+	0.7-	1999 04 15	704	0.7-	0.6+	1999 04 19	557	0.1+	0.4-
1993 09 22	809	1.6+	1.1-	1999 04 15	704	0.7-	0.2-	1999 04 19	557	0.0	0.3-
1993 09 22	809	(2.6-	0.9+)	1999 04 15	704	0.5-	0.9-	1999 04 19	557	0.2+	0.3+
1993 09 24	809	0.5+	1.1+	1999 04 15	704	1.7-	0.1+	1999 04 19	557	0.0	0.3+
1993 09 24	809	0.1+	0.0	1999 04 17	557	0.3+	0.1-	1999 04 22	557	0.4+	0.2+
1993 09 24	809	1.8-	0.6-	1999 04 17	557	0.3+	0.2-	1999 04 22	557	0.5+	0.1-
1999 04 07	699	0.2-	0.3-	1999 04 17	557	0.2+	0.5-	1999 04 22	557	0.3+	0.1-
1999 04 07	699	0.6+	0.1-	1999 04 18	557	0.1+	0.3-	1999 05 09	557	0.1+	0.9+
1999 04 07	699	0.3+	0.2+	1999 04 18	557	0.4-	0.4-	1999 05 09	557	0.2+	0.2+

1999 HP = 1996 TO₄₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	353.03639		(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.23953171	ω	31.44494	-0.17032795	+0.98523150		
<i>a</i>	2.5677971	Ω	228.75437	-0.90884425	-0.16394644		
<i>e</i>	0.1413196	<i>i</i>	1.33588	-0.38077620	-0.04940090		
<i>P</i>	4.11	<i>H</i>	16.0	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 10 06	691	0.3+	0.3+	1999 04 18	426	0.1+	0.2+	1999 05 10	704	(5.1-	1.0-)
1996 10 06	691	0.3+	0.4+	1999 04 18	426	0.1-	0.5+	1999 05 13	704	0.4-	0.6+
1996 10 06	691	0.5+	0.1-	1999 05 05	426	0.3-	1.2+	1999 05 13	704	0.5-	1.2-
1996 10 16	691	0.4-	0.0	1999 05 05	426	0.1-	0.2+	1999 05 13	704	1.1+	0.8-

1999 JUNE 22

M.P.C. 34971

1996 10 16	691	0.4−	0.0	1999 05 06	426	1.0+	0.3−	1999 05 13	704	(4.1−	0.4−)
1996 10 16	691	0.5−	0.1+	1999 05 06	426	1.4+	0.1+	1999 05 18	691	0.1+	0.3−
1999 04 17	426	0.1+	0.0	1999 05 10	704	1.2−	1.3−	1999 05 18	691	0.1−	0.1−
1999 04 17	426	0.4−	1.0+	1999 05 10	704	1.2−	0.5−	1999 05 18	691	0.1+	0.3−
1999 04 17	426	0.2+	0.4+	1999 05 10	704	1.3+	0.5+				
1999 04 18	426	0.3−	0.8−	1999 05 10	704	0.7−	1.5+				

1999 HQ = 1981 SZ₁ = 1981 TY

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	287.05661		(2000.0)		P	Williams	Q
<i>n</i>	0.26233459	ω	117.19593	+0.93311739	+0.35840265		
<i>a</i>	2.4167534	Ω	221.81961	−0.34336319	+0.86423687		
<i>e</i>	0.1935405	<i>i</i>	2.49044	−0.10674108	+0.35304697		
<i>P</i>	3.76	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1981 09 25	688	0.0	1.2+	1999 05 05	426	0.6−	0.2−	1999 05 13	704	0.7−	0.8−
1981 09 25	688	0.4+	0.1−	1999 05 05	426	0.2+	0.1−	1999 05 15	703	0.0	0.0
1981 10 05	688	(6.3−	5.5−)	1999 05 06	426	0.4+	0.2+	1999 05 15	703	0.1−	0.0
1981 10 05	688	0.4−	1.1−	1999 05 06	426	0.5−	0.5−	1999 05 15	703	1.0−	0.0
1999 04 15	704	1.8+	1.5−	1999 05 06	426	0.6−	0.0	1999 05 15	703	0.4−	0.4+
1999 04 15	704	(1.9−	2.2+)	1999 05 10	704	0.1+	0.1−	1999 05 18	704	1.3−	0.8+
1999 04 15	704	0.5−	0.7+	1999 05 10	704	0.6−	1.4−	1999 05 18	704	0.5−	1.1+
1999 04 15	704	0.3−	1.7+	1999 05 10	704	1.4+	0.1+	1999 05 18	704	0.7+	0.6+
1999 04 17	426	0.1+	0.1−	1999 05 10	704	0.4−	0.2+	1999 05 18	704	1.9+	1.6+
1999 04 17	426	0.1−	0.4+	1999 05 10	704	(5.7−	1.9+)	1999 05 19	704	0.1−	0.3−
1999 04 17	426	0.3+	0.1−	1999 05 13	704	0.2−	0.7−	1999 05 19	704	0.5+	0.1+
1999 04 18	426	0.2+	0.4+	1999 05 13	704	0.1+	0.9−	1999 05 19	704	1.3+	0.5+
1999 04 18	426	0.0	0.2+	1999 05 13	704	0.8−	1.3−	1999 05 19	704	(2.2+	0.8+)
1999 04 18	426	0.2−	0.3+	1999 05 13	704	0.2−	1.3−				

1999 HS = 1976 UA₁₃ = 1978 EL₆ = 1997 WZ₃₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	38.13035		(2000.0)		P	Williams	Q
<i>n</i>	0.28642433	ω	131.12763	−0.85811589	+0.51064492		
<i>a</i>	2.2792718	Ω	79.64337	−0.48591883	−0.77388598		
<i>e</i>	0.1344934	<i>i</i>	3.12668	−0.16589155	−0.37462280		
<i>P</i>	3.44	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1976 10 22	381	0.7−	0.0	1999 04 15	704	1.1+	0.8+	1999 05 10	704	0.7−	0.7+
1976 10 22	381	0.8+	0.3−	1999 04 15	704	0.8+	1.2−	1999 05 13	704	0.3+	0.0
1978 03 06	095	0.3+	0.9+	1999 04 15	704	1.2−	1.1+	1999 05 13	704	0.7+	0.4−
1997 11 29	704	1.0+	1.6+	1999 04 15	704	0.6+	0.8−	1999 05 13	704	0.1+	0.6+
1997 11 29	704	0.5+	0.8−	1999 04 18	426	0.5−	0.0	1999 05 13	704	0.4−	0.2+
1997 11 29	704	0.5−	0.7−	1999 04 18	426	0.3−	0.0	1999 05 13	704	0.3+	0.8+
1997 11 29	704	0.6−	0.5+	1999 04 18	426	0.4−	0.0	1999 05 14	704	0.3+	0.1+
1997 11 29	704	0.4+	0.1+	1999 04 19	426	0.5−	0.1+	1999 05 14	704	0.1−	0.5+
1997 12 04	704	0.4+	1.3−	1999 04 19	426	0.3−	0.2+	1999 05 14	704	0.2−	0.2−
1997 12 04	704	0.3−	1.5−	1999 04 19	426	0.7−	0.1+	1999 05 14	704	0.8−	0.4−
1997 12 04	704	(2.6−	0.6−)	1999 05 05	426	0.2+	0.3−	1999 05 14	704	0.6+	0.3−
1997 12 04	704	0.6−	1.6+	1999 05 05	426	0.1+	0.1−	1999 05 18	704	1.2+	0.3−
1999 04 12	704	0.1−	0.7−	1999 05 05	426	0.2−	0.0	1999 05 18	704	1.1+	0.5−
1999 04 12	704	0.0	0.9−	1999 05 06	426	0.3−	0.3−	1999 05 18	704	1.1+	1.0−
1999 04 12	704	0.2−	0.1+	1999 05 06	426	0.1−	0.1−	1999 05 18	704	0.6+	0.5+
1999 04 12	704	0.1−	1.0−	1999 05 06	426	0.5−	0.2−	1999 05 18	704	0.7+	1.2−
1999 04 12	704	1.0−	1.3−	1999 05 10	704	0.1+	0.2−	1999 06 07	703	0.0	0.2−
1999 04 14	699	0.2−	0.3+	1999 05 10	704	0.8−	0.2+	1999 06 07	703	0.2−	0.0
1999 04 14	699	0.1−	0.3+	1999 05 10	704	0.1−	1.1+	1999 06 07	703	0.4+	0.6+
1999 04 14	699	0.2−	0.4+	1999 05 10	704	1.1−	0.6+	1999 06 07	703	0.6+	0.9+

1999 HU = 1986 WV₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	108.50727		(2000.0)		P	Williams	Q
<i>n</i>	0.18976425	ω	284.64254	−0.63886507	−0.76623612		
<i>a</i>	2.9991150	Ω	205.46510	+0.75297974	−0.60445743		
<i>e</i>	0.0395762	<i>i</i>	9.20793	+0.15771153	−0.21797575		
<i>P</i>	5.19	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1986 11 30	675	1.6−	0.6+	1999 05 10	704	0.4−	0.1+	1999 05 18	704	0.3+	0.5−
1986 11 30	675	(6.1−	1.4−)	1999 05 10	704	0.0	0.8+	1999 05 18	704	1.1+	0.2−
1986 12 03	675	1.4+	0.7−	1999 05 13	704	0.8−	0.3−	1999 05 18	704	0.3−	0.9+
1986 12 03	675	0.2+	0.1+	1999 05 13	704	1.0−	0.1+	1999 05 18	704	1.0+	0.4−
1999 04 18	426	0.0	0.1−	1999 05 13	704	0.0	0.3+	1999 05 19	704	0.1−	0.6−
1999 04 18	426	0.1−	0.0	1999 05 13	704	0.8+	0.1+	1999 05 19	704	0.5−	0.4+
1999 04 19	426	0.2+	0.3−	1999 05 13	704	0.4−	0.2+	1999 05 19	704	0.2+	0.4+
1999 04 19	426	0.2+	0.3−	1999 05 14	703	1.1+	0.2+	1999 05 19	704	0.9−	0.7+
1999 04 19	426	0.0	0.3−	1999 05 14	703	0.1−	0.1−	1999 06 07	703	0.9−	0.6−
1999 05 05	426	0.9+	0.1−	1999 05 14	703	0.6+	0.4+	1999 06 07	703	0.9−	0.2+
1999 05 05	426	0.1+	0.6−	1999 05 14	704	0.3−	0.2−	1999 06 07	703	0.1+	0.3−
1999 05 05	426	0.2+	0.0	1999 05 14	704	0.3−	0.3−	1999 06 07	703	0.1−	0.1+
1999 05 06	426	0.1−	0.3−	1999 05 14	703	0.2−	1.2+	1999 06 14	704	0.8+	0.6−
1999 05 06	426	0.5−	0.1+	1999 05 14	704	0.4+	1.3−	1999 06 14	704	0.4+	0.9−
1999 05 10	704	0.3+	0.2+	1999 05 14	704	0.1−	0.2−	1999 06 14	704	0.1−	0.6−
1999 05 10	704	0.0	0.4+	1999 05 14	704	0.8−	0.1+	1999 06 14	704	0.6+	0.8+
1999 05 10	704	0.0	1.0+	1999 05 18	704	0.4+	0.4−	1999 06 14	704	1.0−	0.8+

1999 HW = 1239 T-2

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	257.21678		(2000.0)		P	Williams	Q
<i>n</i>	0.21672259	ω	165.35720	+0.98727116	+0.15718495		
<i>a</i>	2.7449425	Ω	185.76610	−0.15902772	+0.97328940		
<i>e</i>	0.1842155	<i>i</i>	13.97327	−0.00241539	+0.16733391		
<i>P</i>	4.55	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1973 09 19	675	0.9−	1.3−	1999 04 12	704	2.5+	2.5−	1999 05 12	704	2.9+	1.0+
1973 09 19	675	1.8−	1.3−	1999 04 12	704	0.1+	0.0	1999 05 12	704	1.4+	1.0−
1973 09 20	675	0.1−	0.1+	1999 04 12	704	0.6−	1.1−	1999 05 12	704	0.1+	2.8−
1973 09 24	675	1.5−	0.8−	1999 04 18	557	0.3+	0.3+	1999 05 12	704	1.6−	2.5−
1973 09 24	675	0.6−	0.3+	1999 04 18	557	0.3+	0.3+	1999 05 13	704	0.7−	0.7+
1973 09 25	675	2.1−	2.0−	1999 04 18	557	0.2+	0.3+	1999 05 13	704	0.3−	0.7+
1973 09 25	675	0.5−	0.7+	1999 04 18	104	0.0	2.2+	1999 05 13	704	1.7−	0.6+
1973 09 29	675	1.0+	0.3+	1999 04 18	104	1.7+	0.5+	1999 05 13	704	0.8+	0.5+
1973 09 29	675	0.2−	0.1−	1999 04 19	557	0.3+	0.2+	1999 05 13	704	3.9−	0.1+
1973 09 30	675	1.1+	1.7+	1999 04 20	557	0.6−	0.9+	1999 05 17	704	0.2+	1.1+
1973 09 30	675	2.5+	0.8+	1999 04 20	557	0.5−	0.7+	1999 05 17	704	1.9+	2.0−
1973 10 04	675	0.5+	0.6+	1999 04 23	557	0.1+	0.5+	1999 05 17	704	0.4+	0.2+
1973 10 04	675	0.3−	0.5+	1999 04 23	557	0.3−	0.6+	1999 05 17	704	3.6−	0.5+
1973 10 05	675	0.5+	0.7+	1999 05 09	557	0.5+	0.3+	1999 05 21	557	0.4+	0.3+
1973 10 05	675	0.2+	0.6+	1999 05 09	557	0.2−	0.9+	1999 05 21	557	0.6+	0.9−
1999 04 12	704	0.5−	0.0	1999 05 12	704	0.1+	0.0				

1999 HG₁ = 1998 BF₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	342.25924		(2000.0)		P	Williams	Q
<i>n</i>	0.17032140	ω	246.83809	−0.10962204	+0.99311544		
<i>a</i>	3.2232196	Ω	17.02343	−0.85258335	−0.07259398		
<i>e</i>	0.0368746	<i>i</i>	8.10745	−0.51096443	−0.09193384		
<i>P</i>	5.79	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

M.P.C. 34972

1999 JUNE 22

1998 01 26	566	0.0	0.2−	1999 04 21	428	0.9−	0.1−	1999 05 13	704	0.3−	0.2+
1998 01 26	566	0.1+	0.3−	1999 04 21	428	1.7−	0.2−	1999 05 13	704	0.0	0.7−
1998 01 26	566	0.1−	0.4−	1999 04 21	428	0.2+	0.1−	1999 05 13	704	0.4+	0.0
1998 01 26	566	0.2+	0.3−	1999 04 22	428	0.2+	0.1−	1999 05 13	704	0.2+	0.0
1998 01 26	566	0.5+	0.4+	1999 04 22	428	0.5−	0.4−	1999 05 13	704	0.4−	0.3+
1998 01 26	566	0.2−	0.0	1999 04 25	428	1.0+	0.0	1999 06 09	704	1.8+	1.3−
1999 04 15	704	0.1+	0.0	1999 04 25	428	0.1+	0.0	1999 06 09	704	0.3+	0.1−
1999 04 15	704	(0.8+	2.3−)	1999 05 05	428	0.0	0.5+	1999 06 09	704	1.3−	0.1+
1999 04 15	704	1.4+	1.2+	1999 05 05	428	0.1−	0.5+	1999 06 09	704	0.6−	0.8+
1999 04 15	704	0.6−	1.8−	1999 05 10	704	0.2+	0.0	1999 06 14	428	0.6+	0.7−
1999 04 15	704	(2.9−	2.1−)	1999 05 10	704	0.2−	1.3+	1999 06 14	428	0.7−	0.2−

1999 HD₂ = 1982 BY₉ = 1987 SQ₂ = 1992 EU₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	232.70409		(2000.0)	P	Q
<i>n</i>	0.30438762	<i>ω</i>	247.30642	+0.95578495	−0.28364291
<i>a</i>	2.1886924	<i>Ω</i>	129.08171	+0.29287440	+0.89443071
<i>e</i>	0.1846646	<i>i</i>	5.73737	+0.02645225	+0.34574616
<i>P</i>	3.24	<i>H</i>	14.7	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1982 01 19	095	0.3−	1.8−	1999 04 16	703	0.5−	0.0	1999 05 12	704	0.8−	0.8+
1987 09 19	071	0.3+	1.5−	1999 04 16	703	0.1+	1.6+	1999 05 13	704	0.6−	1.4−
1987 09 20	071	0.4−	1.9+	1999 04 19	120	0.5−	0.8−	1999 05 13	704	1.0−	0.8+
1987 09 23	071	(4.6+	3.9+)	1999 04 19	120	0.1−	0.1−	1999 05 13	704	1.5−	0.4−
1987 09 23	071	(7.7+	5.8+)	1999 04 19	120	0.2−	0.2−	1999 05 13	704	0.4+	0.7−
1992 03 01	809	1.0+	0.5+	1999 04 23	120	1.0−	0.1+	1999 05 17	703	0.0	1.2−
1992 03 04	809	0.5+	0.6+	1999 04 23	120	0.0	0.7−	1999 05 17	704	2.0+	0.1+
1992 03 06	809	0.7−	1.1+	1999 04 23	120	0.3+	0.1−	1999 05 17	703	0.3+	0.3−
1999 04 12	704	0.2−	0.7+	1999 05 09	557	0.6−	0.1−	1999 05 17	704	0.2+	1.1−
1999 04 12	704	0.8+	1.5+	1999 05 09	557	0.2−	0.0	1999 05 17	703	0.9+	0.3+
1999 04 12	704	0.1+	0.4−	1999 05 12	704	0.1+	0.5+	1999 05 17	704	0.2+	1.9+
1999 04 12	704	0.7−	0.1+	1999 05 12	704	1.6+	1.8−	1999 05 17	703	(1.8+	2.9+)
1999 04 16	703	(2.2−	1.6−)	1999 05 12	704	(2.5+	1.4−)	1999 05 17	704	(2.4+	0.7+)
1999 04 16	703	0.8+	1.2+	1999 05 12	704	0.4−	1.6−	1999 05 17	704	(2.2−	0.5−)

1999 HF₂ = 1995 EC₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	53.46740		(2000.0)	P	Q
<i>n</i>	0.26877234	<i>ω</i>	140.18748	−0.98982570	+0.14028665
<i>a</i>	2.3780063	<i>Ω</i>	47.89388	−0.13733884	−0.89834137
<i>e</i>	0.1453696	<i>i</i>	1.83556	−0.03719029	−0.41629610
<i>P</i>	3.67	<i>H</i>	15.6	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1995 03 05	897	0.6−	0.4+	1999 04 23	120	0.9−	1.7−	1999 05 10	704	0.7−	0.0
1995 03 05	897	0.4+	1.6+	1999 04 23	120	1.3−	0.2−	1999 05 13	704	1.3+	0.0
1995 03 06	897	0.2+	0.0	1999 04 23	120	1.4+	0.5−	1999 05 13	704	1.0+	0.4+
1995 03 06	897	0.1+	0.4−	1999 04 25	120	1.2+	0.8+	1999 05 13	704	0.4+	0.6+
1995 03 06	897	0.1+	1.1−	1999 04 25	120	(0.8+	2.8−)	1999 05 13	704	0.4−	0.0
1999 04 14	699	0.2−	0.8−	1999 05 09	120	0.5+	0.1+	1999 05 13	704	0.4+	0.8+
1999 04 14	699	1.2−	0.1+	1999 05 09	120	0.1+	0.2+	1999 05 19	704	0.1−	0.7+
1999 04 14	699	0.9+	1.2−	1999 05 10	704	1.3−	0.7−	1999 05 19	704	0.1−	0.3+
1999 04 20	120	1.4−	0.4+	1999 05 10	704	1.3−	1.3−	1999 05 19	704	0.4−	0.6−
1999 04 20	120	1.2−	1.1+	1999 05 10	704	0.7+	0.4−	1999 05 19	704	(1.2+	2.7−)
1999 04 20	120	1.6+	0.2+	1999 05 10	704	0.8+	1.6+				

1999 HG₂ = 1993 TF₄₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	1.70872		(2000.0)	P	Q
<i>n</i>	0.29159061	<i>ω</i>	39.04303	−0.17099121	+0.98458994
<i>a</i>	2.2522695	<i>Ω</i>	221.14897	−0.91735908	−0.17267311
<i>e</i>	0.1455762	<i>i</i>	3.19459	−0.35946394	−0.02768841
<i>P</i>	3.38	<i>H</i>	15.0	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1993 10 10	809	1.3+	1.3+	1999 04 20	120	0.2−	0.2+	1999 05 13	704	0.5+	0.2+
1993 10 10	809	0.2+	0.1+	1999 04 20	120	0.2−	0.1+	1999 05 13	704	1.2+	0.8−
1993 10 10	809	1.6−	0.4+	1999 04 23	120	0.7−	0.0	1999 05 14	704	0.4−	0.3+
1993 10 22	809	0.7+	0.3−	1999 04 23	120	0.6−	0.4−	1999 05 14	704	0.2+	0.4+
1993 10 22	809	0.1+	0.6−	1999 04 23	120	1.0−	1.0−	1999 05 14	704	0.0	0.1−
1993 10 22	809	0.9−	0.7−	1999 04 25	120	0.3+	0.6−	1999 05 14	704	0.1−	0.6+
1999 04 14	699	1.0+	1.5+	1999 04 26	120	0.2−	0.4−	1999 05 14	704	0.0	0.0
1999 04 14	699	0.3−	0.5+	1999 05 10	704	0.1+	0.7−	1999 05 17	691	0.3−	0.1−
1999 04 14	699	0.4+	0.6+	1999 05 10	704	0.0	0.2−	1999 05 17	691	0.0	0.4−
1999 04 15	704	0.3+	0.1−	1999 05 10	704	0.4+	1.3+	1999 05 17	691	0.2−	0.2−
1999 04 15	704	(2.3+	0.1−)	1999 05 10	704	0.5−	0.5+	1999 05 18	704	0.5+	0.3−
1999 04 15	704	0.1−	0.2−	1999 05 10	704	0.1−	0.6+	1999 05 18	704	0.2−	0.3−
1999 04 15	704	0.0	0.1+	1999 05 13	704	0.3+	0.3−	1999 05 18	704	0.3+	0.1−
1999 04 15	704	0.1+	0.1−	1999 05 13	704	0.2+	0.2−	1999 05 18	704	0.8−	0.5−
1999 04 20	120	0.1−	0.2+	1999 05 13	704	0.4+	0.6+				

1999 HO₂ = 1989 UR₂ = 1989 VA₅ = 1989 VL₅ = 1996 TJ₆₁Id. G. V. Williams (unpublished; d, *MPC* 18600)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	312.14181		(2000.0)	P	Q
<i>n</i>	0.27565161	<i>ω</i>	306.35655	+0.77453886	+0.63218682
<i>a</i>	2.3382756	<i>Ω</i>	14.46952	−0.55052109	+0.68989204
<i>e</i>	0.2426989	<i>i</i>	4.75700	−0.31147404	+0.35268796
<i>P</i>	3.58	<i>H</i>	14.8	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1989 10 29	877	(3.3−	5.1+)	1996 10 07	809	1.4+	0.6+	1999 04 24	859	0.3+	0.2−
1989 10 29	877	(1.7+	5.6+)	1996 10 07	809	0.9+	0.7+	1999 04 24	859	0.4+	0.5−
1989 11 03	675	0.1+	0.2+	1996 10 07	809	1.0+	0.6+	1999 04 24	859	0.8+	0.3−
1989 11 03	675	0.5+	0.7−	1999 04 15	704	0.3−	1.2−	1999 05 07	678	0.5−	0.2+
1989 11 04	675	0.3+	0.2+	1999 04 15	704	0.2+	0.9−	1999 05 07	678	0.6+	0.1−
1989 11 04	675	0.2−	1.0−	1999 04 15	704	0.4−	0.9−	1999 05 13	704	0.3+	0.3+
1989 11 04	877	(8.9+	1.3+)	1999 04 15	704	0.3−	0.6+	1999 05 13	704	0.4+	0.6+
1989 11 04	877	(8.7+	2.8+)	1999 04 15	704	0.5−	0.6−	1999 05 13	704	1.2−	0.1+
1996 10 06	809	1.1−	0.3−	1999 04 20	860	0.4+	0.0	1999 05 13	704	0.0	0.4+
1996 10 06	809	0.9−	1.0−	1999 04 20	860	0.3−	0.3+	1999 05 13	704	0.5−	0.5+
1996 10 06	809	1.0−	1.1−	1999 04 20	860	0.3−	0.2−				

1999 HU₂ = 1976 JC₃ = 1998 BE₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	335.12554		(2000.0)	P	Q
<i>n</i>	0.17101939	<i>ω</i>	161.98316	+0.03579104	+0.95816873
<i>a</i>	3.2144437	<i>Ω</i>	109.29271	−0.94992507	+0.12087779
<i>e</i>	0.1009980	<i>i</i>	17.50879	−0.31042128	−0.25942485
<i>P</i>	5.76	<i>H</i>	12.6	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1976 05 03	095	0.4−	0.9−	1999 04 23	327	0.2+	0.3−	1999 05 15	704	1.5+	0.4+
1998 01 25	566	0.1−	0.2+	1999 04 24	327	0.2+	0.6−	1999 05 15	704	0.8+	0.8+
1998 01 25	566	0.1−	0.1+	1999 04 24	327	0.3+	0.3−	1999 05 15	704	0.2+	1.0+
1998 01 25	566	0.4+	0.4+	1999 04 24	327	0.1−	0.2−	1999 05 15	704	0.4−	0.1−
1998 01 26	566	0.1−	0.1−	1999 04 27	327	0.3−	0.7−	1999 05 17	704	0.6+	0.7+
1998 01 26	566	0.0	0.2−	1999 04 27	327	0.4+	0.5−	1999 05 17	704	0.0	0.9+
1998 01 26	566	0.1−	0.3−	1999 04 27	327	0.2+	0.5−	1999 05 17	704	0.5+	1.2+
1999 03 28	699	0.8+	0.6+	1999 04 27	327	0.1+	0.5−	1999 05 17	704	0.1−	0.7+
1999 03 28	699	0.0	0.4+	1999 05 04	327	0.4−	0.0	1999 05 17	704	0.3−	0.0
1999 03 28	699	0.1−	0.6+	1999 05 04	327	0.7−	0.0	1999 06 08	704	0.9+	0.1−
1999 04 10	704	0.7+	0.1−	1999 05 04	327	0.7−	0.1−	1999 06 08	704	0.6−	0.2+
1999 04 10	704	0.6−	0.7+	1999 05 07	327	0.1−	0.1+	1999 06 08	704	1.0−	0.0
1999 04 10	704	1.0−	0.0	1999 05 07	327	0.2−	0.1+	1999 06 08	704	0.2−	0.1−
1999 04 10	704	1.1−	1.1−	1999 05 07	327	0.5−	0.2+	1999 06 08	704	0.6−	0.2−
1999 04 22	327	0.5+	0.3−	1999 05 12	704	0.6+	0.6+	1999 06 12	704	0.2−	0.3−
1999 04 22	327	0.2+	0.2−	1999 05 12	704	0.7+	1.0−	1999 06 12	704	0.5+	0.4−
1999 04 22	327	0.6+	0.3−	1999 05 12	704	0.1+	0.3+	1999 06 12	704	0.5−	0.1−
1999 04 23	327	0.5+	0.3−	1999 05 12	704	0.1+	0.0	1999 06 12	704	0.4−	0.1+

1999 JUNE 22

M.P.C. 34973

1999 04 23 327 0.2+ 0.3- 1999 05 12 704 0.8- 0.2+ 1999 06 12 704 0.1- 0.0
 1999 04 23 327 0.0 0.3- 1999 05 15 704 (2.1+ 0.1+)

1999 HY₂ = 1997 WG₅₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	168.35184		(2000.0)	P	Q
<i>n</i>	0.27028452	ω	229.63672	+0.31650327	-0.94532577
<i>a</i>	2.3691284	Ω	202.29061	+0.92100227	+0.32608956
<i>e</i>	0.0593531	<i>i</i>	11.96634	+0.22711339	-0.00497781
<i>P</i>	3.65	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1993 10 12	809	0.0	0.6+	1999 05 02	104	0.1-	0.3-	1999 05 13	704	2.9-	0.1-
1993 10 12	809	0.1+	1.3+	1999 05 02	104	0.7-	0.2-	1999 05 15	703	0.1-	0.1+
1993 10 12	809	0.6-	0.6+	1999 05 02	104	0.1+	0.5+	1999 05 15	703	0.0	0.1+
1997 11 30	566	0.1-	0.8+	1999 05 09	108	1.2+	2.4+	1999 05 15	703	0.2+	1.0+
1997 11 30	566	0.0	0.4+	1999 05 09	108	0.9+	1.6+	1999 05 15	703	0.7+	1.7+
1997 11 30	566	0.5-	0.3+	1999 05 09	108	0.6+	1.2+	1999 05 17	704	0.1+	0.8-
1997 12 28	566	0.2-	0.5-	1999 05 12	704	1.0+	0.5+	1999 05 17	704	1.6-	1.5-
1997 12 28	566	0.3+	0.1-	1999 05 12	704	0.0	1.1+	1999 05 17	704	0.8+	1.8-
1997 12 28	566	0.6+	0.0	1999 05 12	704	1.0+	0.3+	1999 05 17	704	0.1+	0.5+
1999 04 25	104	1.9+	0.1+	1999 05 12	704	0.8-	1.1+	1999 05 17	704	1.5-	1.0-
1999 04 25	104	1.3+	1.5+	1999 05 12	704	0.7-	0.8-	1999 05 19	108	1.5-	0.1-
1999 04 25	104	1.4+	0.3+	1999 05 13	704	0.1-	1.6-	1999 05 19	108	0.6+	0.6-
1999 04 26	104	1.0+	0.0	1999 05 13	704	1.8-	0.3+	1999 05 19	108	0.2+	1.4-
1999 04 26	104	1.4+	0.6+	1999 05 13	704	0.6-	1.6-	1999 05 19	108	1.2-	0.3-
1999 05 02	104	0.6+	0.3+	1999 05 13	704	1.4-	0.2+				

1999 HD₃ = 1993 FG₂ = 1998 FB₉₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	267.91879		(2000.0)	P	Q
<i>n</i>	0.19005325	ω	313.50647	+0.98526546	+0.02481810
<i>a</i>	2.9960739	Ω	45.86964	+0.07109112	+0.84046701
<i>e</i>	0.1139192	<i>i</i>	13.63670	-0.15555715	+0.54129407
<i>P</i>	5.19	<i>H</i>	13.4	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1993 03 23	010	1.0+	0.4+	1998 03 25	704	0.1-	0.2+	1999 05 13	704	0.5-	0.1+
1993 03 23	010	0.4-	0.0	1998 03 25	704	1.5+	0.7-	1999 05 13	704	1.0+	1.4+
1993 03 23	010	0.2+	0.5-	1998 03 25	704	1.8+	0.6+	1999 05 13	704	1.7-	0.8-
1993 03 25	010	0.5-	0.6+	1999 04 24	428	0.6+	0.4+	1999 06 15	704	0.1+	0.1+
1998 03 24	704	1.6-	0.2-	1999 04 24	428	0.0	0.2+	1999 06 15	704	0.3+	0.2-
1998 03 24	704	0.4-	0.5+	1999 04 25	428	0.2+	0.7-	1999 06 15	704	0.1-	0.5+
1998 03 24	704	0.6-	1.0-	1999 04 25	428	0.9+	0.4-	1999 06 15	704	0.3-	0.1-
1998 03 24	704	0.3+	0.4-	1999 04 27	428	0.2+	0.4-	1999 06 15	704	0.1+	0.4+
1998 03 25	704	0.8-	0.5+	1999 05 08	428	0.1-	0.2+	1999 06 16	428	0.9-	0.1+
1998 03 25	704	0.5-	0.0	1999 05 13	704	0.5+	0.9-	1999 06 16	428	0.1-	0.0

1999 HE₃ = 1993 QS₅ = 1997 WC₄₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	138.15886		(2000.0)	P	Q
<i>n</i>	0.29044222	ω	204.26137	-0.46146650	-0.88544128
<i>a</i>	2.2582025	Ω	273.26088	+0.82271470	-0.40385416
<i>e</i>	0.0672174	<i>i</i>	3.16706	+0.33194756	-0.22999035
<i>P</i>	3.39	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1993 08 17	010	(1.1+ 3.8+)	1999 04 26	428	0.1+	0.8+	1999 05 19	704	1.0+	0.0	
1993 08 19	010	1.0+	0.2+	1999 04 28	428	0.1+	0.5-	1999 05 19	704	0.3+	0.9-
1993 08 19	010	0.3-	0.3-	1999 04 28	428	0.8+	0.1+	1999 05 19	704	1.6+	0.7-
1993 08 19	010	0.7-	0.1+	1999 05 08	428	0.1+	0.1-	1999 06 09	704	0.6-	0.3+
1997 11 29	704	0.4-	0.3-	1999 05 08	428	0.3+	0.4+	1999 06 09	704	0.3-	0.4+
1997 11 29	704	1.0-	0.7-	1999 05 13	704	1.8+	0.1-	1999 06 09	704	1.2-	1.4+
1997 11 29	704	1.1-	0.5-	1999 05 13	704	0.3-	0.1-	1999 06 09	704	1.4-	0.6+
1997 11 29	704	1.0-	1.1-	1999 05 13	704	0.8-	1.4+	1999 06 15	704	0.2+	0.4-

1997 11 29	704	1.5-	0.1-	1999 05 13	704	0.7-	0.0	1999 06 15	704	0.2-	0.6-
1997 12 04	704	1.3+	1.3+	1999 05 13	704	1.1-	0.5-	1999 06 15	704	0.6-	1.0-
1997 12 04	704	1.7+	0.3+	1999 05 18	704	0.5+	0.2+	1999 06 15	704	0.0	0.2-
1997 12 04	704	0.1+	0.0	1999 05 18	704	0.3+	0.1+	1999 06 15	704	0.1+	0.0
1997 12 04	704	1.9+	0.2-	1999 05 18	704	0.3+	0.0	1999 06 16	428	0.0	0.3-
1999 04 24	428	0.7-	0.1+	1999 05 18	704	0.1+	2.0-	1999 06 16	428	0.5+	0.4-
1999 04 24	428	0.6-	0.3+	1999 05 19	704	0.2-	0.1-				
1999 04 26	428	0.5-	0.3+	1999 05 19	704	0.6+	0.3+				

1999 HK₃ = 4328 P-L

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	18.78415		(2000.0)	P	Q
<i>n</i>	0.27004489	ω	331.84527	-0.80629195	+0.59122183
<i>a</i>	2.3705297	Ω	244.41065	-0.53873913	-0.74704241
<i>e</i>	0.0882120	<i>i</i>	1.18863	-0.24424052	-0.30394802
<i>P</i>	3.65	<i>H</i>	16.0	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1960 09 24	675	0.6-	0.1-	1999 04 07	704	0.3+	1.1+	1999 04 16	703	1.1+	0.1-
1960 09 25	675	0.8+	0.6-	1999 04 09	699	1.0+	1.6+	1999 04 16	703	0.2-	0.1+
1960 09 25	675	0.5-	1.2+	1999 04 09	699	1.9+	0.1-	1999 04 16	703	0.7-	0.5+
1960 09 26	675	0.2-	0.5-	1999 04 09	699	0.7+	0.1-	1999 04 16	703	0.2-	0.1+
1960 09 28	675	0.1+	0.1-	1999 04 15	704	0.0	0.1+	1999 04 17	703	0.2-	0.2+
1960 09 28	675	0.2+	0.2+	1999 04 15	704	0.4+	0.1+	1999 04 17	703	0.2+	0.1+
1999 04 07	704	0.7-	0.0	1999 04 15	704	0.4-	1.2-	1999 04 17	703	1.4+	0.2-
1999 04 07	704	0.6-	0.5-	1999 04 15	704	1.0-	1.6-	1999 04 17	703	0.9-	0.7+
1999 04 07	704	1.6-	1.0-	1999 04 15	704	0.5-	0.0				

1999 HO₄ = 1987 QG₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	288.48032		(2000.0)	P	Q
<i>n</i>	0.23053671	ω	135.62703	+0.92810924	+0.37138778
<i>a</i>	2.6341630	Ω	202.61104	-0.35771212	+0.87003861
<i>e</i>	0.2231024	<i>i</i>	3.90150	-0.10322439	+0.32419736
<i>P</i>	4.28	<i>H</i>	14.5	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1987 08 27	095	0.2-	0.5-	1999 04 06	691	0.3-	0.1+	1999 05 10	704	0.7-	0.2-
1987 09 02	095	0.4+	0.2-	1999 04 16	691	0.4+	0.5-	1999 05 10	704	1.2-	0.4+
1994 03 07	691	0.2+	0.5-	1999 04 16	691	0.3+	0.2-	1999 05 10	704	0.7-	1.0+
1994 03 07	691	0.5-	0.2-	1999 04 16	691	0.2+	0.4-	1999 05 10	704	0.1-	0.5-
1994 03 07	691	0.0	0.2-	1999 04 17	691	1.1+	0.1-	1999 05 13	704	0.3-	0.3+
1999 04 06	691	0.1-	0.1+	1999 04 17	691	0.3+	0.1+	1999 05 13	704	0.5+	0.2+
1999 04 06	691	0.3-	0.1-	1999 04 17	691	0.8+	0.3-	1999 05 13	704	0.2+	0.0

1999 HJ₅ = 1993 SS₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	87.76305		(2000.0)	P	Q
<i>n</i>	0.27200260	ω	304.45318	-0.85949628	-0.50933669
<i>a</i>	2.3591416	Ω	205.00941	+0.49593157	-0.81064150
<i>e</i>	0.0939443	<i>i</i>	5.82705	+0.12376600	-0.28885375
<i>P</i>	3.62	<i>H</i>	14.6	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1993 09 22	809	0.7-	1.3+	1999 04 14	699	0.1+	0.1-	1999 05 13	704	0.8+	0.4-
1993 09 22	809	0.4-	0.5+	1999 04 14	699	0.6+	0.5+	1999 05 13	704	0.2+	0.1+
1993 09 22	809	0.4+	0.2+	1999 04 14	699	0.5+	0.1-	1999 05 13	704	(1.2+ 4.3-)	
1993 09 24	809	(3.3- 0.8-)		1999 04 17	691	0.1+	0.4+	1999 05 14	704	0.3+	0.1-
1993 09 24	809	(4.9- 2.3-)		1999 04 17	691	0.4+	0.7+	1999 05 14	704	1.3-	0.5+
1993 09 24	809	(4.9- 2.6-)		1999 04 17	691	0.6+	0.5+	1999 05 14	704	0.4-	0.3-
1997 12 04	704	0.7-	0.5+	1999 04 18	691	0.1-	0.0	1999 05 14	704	0.4+	1.5+
1997 12 04	704	0.8+	0.1-	1999 04 18	691	0.0	0.0	1999 05 14	704	1.3-	1.3+
1997 12 04	704	0.4-	1.4+	1999 04 18	691	0.1-	0.0	1999 05 15	703	0.2-	0.2+
1999 04 06	691	(1.1- 2.9+)		1999 05 10	704	0.3-	0.1-	1999 05 15	703	0.6-	0.1-
1999 04 06	691	0.5-	0.5+	1999 05 10	704	0.3+	0.8-	1999 05 15	703	0.1+	0.6-

M.P.C. 34974

1999 04 06	691	0.7−	0.6+	1999 05 10	704	0.7+	0.5−	1999 05 15	703	0.7+	1.2−
1999 04 12	704	0.3+	0.7+	1999 05 10	704	0.7−	0.3−	1999 05 18	704	0.6−	0.2+
1999 04 12	704	0.9+	0.6+	1999 05 10	704	0.3−	0.3−	1999 05 18	704	0.7−	0.7−
1999 04 12	704	0.6−	0.3+	1999 05 13	704	0.2+	0.5+	1999 05 18	704	0.0	0.6+
1999 04 12	704	(2.0+	2.8−)	1999 05 13	704	0.1+	0.2−	1999 05 18	704	1.7+	0.4−

1999 HP₅ = 1999 HO₉ = 1988 DW₂ = 1990 TA₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	302.06055		(2000.0)		P		Q
n	0.19043010	ω	88.92454		+0.44722651		+0.89023538
a	2.9921199	Ω	208.15376		−0.87607627		+0.41653439
e	0.0966637	i	10.55433		−0.18021882		+0.18433686
P	5.18	H	13.8	G	0.15	U	4

Residuals in seconds of arc

1988 02 21	809	0.5+	0.8+	1999 04 15	704	0.7−	1.1+	1999 04 22	691	0.3−	0.2+
1988 02 21	809	0.2−	0.5+	1999 04 17	704	1.2+	1.2−	1999 04 22	691	0.3−	0.5+
1988 02 21	809	0.5−	0.3−	1999 04 17	704	1.1+	0.1−	1999 05 08	703	0.3+	0.2+
1988 02 23	809	0.1+	0.4+	1999 04 17	704	0.8−	0.2+	1999 05 08	703	0.1−	0.2−
1988 02 23	809	0.4−	0.2+	1999 04 17	691	0.6−	0.2+	1999 05 08	703	0.9+	0.3+
1988 02 23	809	0.7+	1.1−	1999 04 17	704	0.8+	0.7−	1999 05 08	703	1.0−	0.1−
1990 10 09	413	0.5+	0.4+	1999 04 17	691	0.8−	0.1+	1999 05 13	704	0.1+	1.9−
1990 10 11	413	0.6−	0.0	1999 04 17	691	0.6−	0.0	1999 05 13	704	1.2+	1.8+
1999 04 07	704	0.2+	0.2−	1999 04 18	704	0.9+	0.2+	1999 05 13	704	0.2−	1.0+
1999 04 07	704	0.9+	0.5−	1999 04 18	704	1.4+	1.2−	1999 05 13	704	1.7−	0.2+
1999 04 07	704	0.5−	0.4−	1999 04 18	704	0.3−	0.0	1999 05 13	704	0.4−	0.7−
1999 04 07	704	1.4−	0.6−	1999 04 18	704	0.2−	1.0−	1999 05 17	703	0.6−	0.4−
1999 04 15	704	0.1+	0.7−	1999 04 18	704	(0.3+ 2.3+)		1999 05 17	703	0.0	0.5+
1999 04 15	704	0.1−	0.6−	1999 04 18	704	1.6+	0.2−	1999 05 17	703	0.7+	0.2−
1999 04 15	704	1.3−	0.4−	1999 04 18	704	0.5−	1.9+	1999 05 17	703	0.0	1.0+
1999 04 15	704	0.3+	0.3+	1999 04 22	691	0.7+	1.6+				

1999 HW₆ = 1977 CL₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	46.04792		(2000.0)		P		Q	
n	0.27264287	ω	338.98348		−0.98856887		+0.14720778	
a	2.3554467	Ω	209.53994		−0.12718219		−0.93025708	
e	0.1911109	i	3.78892		−0.08097081		−0.33608279	
P	3.62	H	14.9		G	0.15	U	3

Residuals in seconds of arc

1977 02 11	675	0.1−	0.6+	1999 04 16	691	0.2+	1.0−	1999 05 13	704	0.3−	0.1+
1977 02 12	675	0.5+	0.4+	1999 04 16	691	0.3+	0.7−	1999 05 14	704	0.8+	0.1+
1997 10 29	704	0.9+	0.8+	1999 04 17	704	0.4−	1.1−	1999 05 14	704	1.1+	0.1+
1997 10 29	704	(0.9− 3.1+)		1999 04 17	704	0.2−	0.5−	1999 05 14	704	0.1+	0.6+
1997 10 29	704	0.2+	1.0+	1999 04 17	704	0.3−	0.7−	1999 05 14	704	0.0	1.8+
1997 11 06	704	0.9−	1.8+	1999 04 17	704	0.2+	1.4−	1999 05 14	704	0.0	0.0
1997 11 06	704	(1.8− 2.1+)		1999 04 17	704	0.5−	1.2−	1999 05 17	704	0.3+	0.8−
1997 11 06	704	1.5−	1.9+	1999 04 18	704	0.9+	1.1−	1999 05 17	704	0.7+	1.6+
1997 11 06	704	(1.6− 2.1+)		1999 04 18	704	0.5−	0.6+	1999 05 17	704	1.1−	0.4+
1997 11 06	704	(2.0− 2.2+)		1999 04 18	704	0.6+	1.5+	1999 05 17	704	0.5+	1.5+
1999 02 23	704	(0.3− 4.0−)		1999 04 18	704	0.0	0.6−	1999 05 17	704	1.1−	1.8+
1999 02 23	704	(0.8+ 2.6−)		1999 04 18	704	(2.2− 1.0+)		1999 05 18	704	0.3+	0.3+
1999 02 23	704	0.6−	1.2−	1999 05 10	704	1.6+	0.4+	1999 05 18	704	0.5−	1.2+
1999 02 23	704	0.5+	0.2+	1999 05 10	704	0.6−	0.6+	1999 05 18	704	0.5−	0.3+
1999 02 23	704	0.0	1.0+	1999 05 10	704	(2.5− 2.1+)		1999 05 18	704	0.2+	0.3+
1999 04 15	704	0.1+	0.3−	1999 05 10	704	0.4−	0.8+	1999 05 18	704	1.0−	1.2+
1999 04 15	704	0.2+	0.2−	1999 05 10	704	(1.3+ 2.3+)		1999 05 19	691	0.3−	0.2+
1999 04 15	704	0.8+	0.1−	1999 05 13	704	0.4+	0.6−	1999 05 19	691	0.2−	0.1+
1999 04 15	704	0.4+	0.2+	1999 05 13	704	0.3−	0.1−	1999 05 19	691	0.2−	0.4+
1999 04 15	704	0.3+	0.3+	1999 05 13	704	1.0−	0.1+				
1999 04 16	691	0.4+	0.8−	1999 05 13	704	0.1+	0.6−				

1999 JUNE 22

1999 HG₇ = 1976 UC₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	154.05228		(2000.0)		P		Q
n	0.24074843	ω	232.87309		+0.15728535		−0.98561059
a	2.5591382	Ω	208.26551		+0.94246421		+0.16853591
e	0.0440871	i	7.51223		+0.29499581		−0.01293905
P	4.09	H	14.4	G	0.15	U	5

Residuals in seconds of arc

1976 10 22	381	0.7+	0.5+	1999 04 17	704	0.7+	0.5−	1999 05 12	704	(5.1− 0.5−)
1976 10 22	381	0.1−	0.0	1999 04 17	704	0.9+	0.5−	1999 05 13	704	0.3− 0.5−
1976 10 24	381	0.5−	0.6−	1999 04 17	704	0.3+	0.1+	1999 05 13	704	0.4− 1.3−
1999 04 15	704	1.0+	0.8−	1999 04 18	704	0.6−	1.1−	1999 05 13	704	1.3− 0.9+
1999 04 15	704	0.4+	0.9+	1999 04 18	704	0.8−	0.4+	1999 05 13	704	0.5− 0.8−
1999 04 15	704	(0.1− 2.3+)		1999 04 18	704	0.1+	0.7−	1999 05 17	704	0.7+ 0.3+
1999 04 15	704	1.3−	1.3+	1999 04 18	704	1.2−	1.5+	1999 05 17	704	(2.8+ 1.5−)
1999 04 15	704	(4.8− 2.0+)		1999 05 12	704	(0.5− 2.0+)		1999 05 17	704	0.5+ 1.0+
1999 04 17	704	0.9+	0.2−	1999 05 12	704	0.9−	0.1+	1999 05 17	704	0.4+ 0.7−
1999 04 17	704	0.1−	0.1−	1999 05 12	704	1.2+	1.0−	1999 05 17	704	0.2+ 1.9+

1999 HP₇ = 1993 QJ₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	47.20991		(2000.0)		P		Q
n	0.28886867	ω	141.22333		−0.95022325		+0.31132495
a	2.2663958	Ω	56.92005		−0.28940643		−0.86725160
e	0.0696074	i	0.84460		−0.11541098		−0.38852471
P	3.41	H	15.4	G	0.15	U	5

Residuals in seconds of arc

1993 08 19	010	1.3+	0.9+	1999 04 15	704	0.1+	0.2+	1999 05 13	704	1.0− 0.7−
1993 08 19	010	1.1+	0.2−	1999 04 15	691	0.1−	0.1+	1999 05 13	704	(0.4− 2.3−)
1993 08 19	010	0.8+	1.4−	1999 04 19	691	0.4−	0.1−	1999 05 13	704	0.2− 0.9−
1993 08 20	809	0.6−	0.8−	1999 04 19	691	0.3−	0.1−	1999 05 13	704	0.0 0.4+
1993 08 20	809	1.2−	0.6+	1999 04 19	691	0.2−	0.0	1999 05 14	704	1.6+ 0.1−
1993 08 20	809	0.9−	0.2−	1999 04 21	691	0.0	0.6−	1999 05 14	704	1.9+ 1.8+
1993 08 24	809	(0.6+ 4.2+)		1999 04 21	691	0.2−	0.6−	1999 05 14	704	0.3+ 0.8−
1993 08 24	809	(1.2+ 3.9+)		1999 04 21	691	0.5−	0.0	1999 05 18	704	0.0 1.2+
1993 08 24	809	(1.4+ 4.1+)		1999 05 10	704	0.6+	0.9+	1999 05 18	704	0.6− 0.4−
1999 04 15	704	0.1−	2.0−	1999 05 10	704	1.6+	0.1−	1999 05 18	704	0.3+ 0.6+
1999 04 15	704	2.0−	1.8−	1999 05 10	704	0.8−	0.5+	1999 05 18	704	0.4+ 1.2+
1999 04 15	704	0.0	0.7−	1999 05 10	704	(1.1+ 2.2+)		1999 05 18	704	0.1− 0.2+
1999 04 15	691	0.2−	0.2−	1999 05 10	704	0.0	1.3+			

1999 HS₇ = 1997 WO₅₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	91.39959		(2000.0)		P		Q
n	0.25447263	ω	96.59365		−0.76549488		−0.64162830
a	2.4662778	Ω	43.50755		+0.55916697		−0.70048140
e	0.1232965	i	4.02116		+0.31835497		−0.31247231
P	3.87	H	14.2	G	0.15	U	4

Residuals in seconds of arc

1997 11 29	704	0.9−	0.7−	1999 04 15	691	0.6+	0.1−	1999 05 13	704	0.4+	0.3−
1997 11 29	704	0.5−	0.2−	1999 04 19	691	0.4−	0.0	1999 05 14	704	0.0	0.3+
1997 11 29	704	0.7−	1.9−	1999 04 19	691	0.2−	0.0	1999 05 14	704	1.3+	0.2−
1997 11 29	704	(0.2+	2.6−)	1999 04 19	691	0.3−	0.0	1999 05 14	704	0.0	0.5−
1997 11 29	704	(0.0	2.3−)	1999 04 21	691	0.2−	0.0	1999 05 14	704	0.6−	0.4+
1997 12 04	704	1.0+	0.4−	1999 04 21	691	0.3−	0.4−	1999 05 14	704	0.5−	1.2+
1997 12 04	704	1.6+	1.6+	1999 04 21	691	0.0	0.2−	1999 05 15	703	0.4+	0.1+
1997 12 04	704	0.1+	0.4+	1999 05 10	704	0.2−	0.2+	1999 05 15	703	0.2−	0.3+
1997 12 04	704	0.5−	0.8+	1999 05 10	704	0.5−	0.5−	1999 05 15	703	0.5+	0.0
1997 12 04	704	(3.0−	1.9+)	1999 05 10	704	0.5+	0.3+	1999 05 15	703	0.1+	0.8−
1999 04 15	704	0.7+	0.4+	1999 05 10	704	0.2−	0.0	1999 05 18	704	0.3+	1.0−
1999 04 15	704	0.1−	0.4+	1999 05 10	704	0.6−	0.2+	1999 05 18	704	0.1+	0.7−
1999 04 15	704	0.4+	0.5+	1999 05 13	704	1.2+	0.1−	1999 05 18	704	0.3−	0.5−

1999 JUNE 22

1999 04 15	691	0.5+	0.2+	1999 05 13	704	0.9+	1.2+	1999 05 18	704	0.1-	0.5+
1999 04 15	704	0.4+	0.4-	1999 05 13	704	0.6-	1.2-	1999 05 18	704	0.7-	0.2+
1999 04 15	704	0.7-	0.4-	1999 05 13	704	1.6-	0.6+				

1999 HY₇ = 1992 OR₈ = 1996 TS₃₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	296.09441		(2000.0)		P		Q		Williams		
<i>n</i>	0.26433697	ω	260.41803		+0.88906487		+0.45618717				
<i>a</i>	2.4045332	Ω	72.43243		-0.40273772		+0.81908056				
<i>e</i>	0.1902259	<i>i</i>	2.29457		-0.21763729		+0.34785098				
<i>P</i>	3.73	<i>H</i>	14.8		<i>G</i>	0.15	<i>U</i>	2			

Residuals in seconds of arc

1992 07 23	809	1.6-	1.0-	1997 12 07	910	0.3+	0.6+	1999 05 13	704	0.6-	0.9-
1992 07 23	809	1.2-	0.7-	1999 04 12	704	0.9-	0.1+	1999 05 13	704	1.7-	0.4-
1992 07 23	809	0.5-	0.6-	1999 04 12	704	0.4-	1.7+	1999 05 13	704	0.8-	0.5+
1992 07 26	809	0.8+	0.5+	1999 04 12	704	(0.4-	3.1+)	1999 05 13	704	0.3-	1.1-
1992 07 26	809	1.3+	0.4+	1999 04 12	704	(0.4-	3.1+)	1999 05 15	703	0.2+	1.3+
1992 07 26	809	1.4+	0.7+	1999 04 19	691	0.3+	0.0	1999 05 15	703	0.3-	0.4+
1996 10 07	809	1.0-	0.9-	1999 04 19	691	0.3+	0.3+	1999 05 15	703	1.5+	1.0+
1996 10 07	809	0.7-	0.9-	1999 04 19	691	0.4+	0.3+	1999 05 15	703	1.0+	0.4+
1996 10 07	809	0.3-	0.4-	1999 04 21	691	0.7+	0.6+	1999 05 18	704	0.3-	0.0
1996 10 08	809	0.2-	0.8+	1999 04 21	691	0.4+	0.6+	1999 05 18	704	0.8-	0.3-
1996 10 08	809	0.8-	0.6+	1999 04 21	691	0.2+	0.1+	1999 05 18	704	0.4-	1.0-
1996 10 08	809	0.2-	0.5+	1999 05 10	704	0.6+	0.9+	1999 05 18	704	1.9+	0.7-
1996 10 10	809	0.8+	1.4+	1999 05 10	704	(2.5+	1.7-)	1999 05 19	704	0.1+	1.2+
1996 10 10	809	0.6+	1.4+	1999 05 10	704	0.2+	0.1+	1999 05 19	704	0.5-	1.3-
1996 10 10	809	0.4+	0.8+	1999 05 10	704	0.8+	0.9-	1999 05 19	704	0.3-	0.0
1997 12 07	910	0.0	0.4+	1999 05 10	704	0.6+	0.7+	1999 05 19	704	0.4-	0.0
1997 12 07	910	0.3+	0.6+	1999 05 13	704	0.3-	0.1+				

**1999 HF₈ = 1972 EN = 1978 PE₄ = 1979 YJ₆ = 1987 SJ₂₂ = 1987 ST₃₀
= 1990 FV₃ = 1996 RA₂₄ = 1997 YF₈**

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	25.75996		(2000.0)		P		Q		Williams		
<i>n</i>	0.21993320	ω	353.09514		-0.98348557		+0.17515229				
<i>a</i>	2.7181631	Ω	197.19668		-0.15780586		-0.95320004				
<i>e</i>	0.1105589	<i>i</i>	8.86910		-0.08861967		-0.24643734				
<i>P</i>	4.48	<i>H</i>	13.1		<i>G</i>	0.15	<i>U</i>	1			

Residuals in seconds of arc

1972 03 14	095	(3.4+	7.7-)	1998 12 23	704	0.2-	0.8-	1999 04 15	704	1.6+	0.6+
1978 08 09	095	1.1-	2.4-	1998 12 23	704	0.6+	1.9-	1999 04 15	704	(3.3+	0.8+)
1979 12 23	095	(9.0-	2.5-)	1999 03 24	699	0.5+	0.0	1999 04 16	704	0.6-	0.5-
1987 09 16	095	1.7+	0.3+	1999 03 24	699	0.6+	0.1-	1999 04 16	704	0.1-	0.4-
1987 09 20	095	1.0+	0.2+	1999 03 24	699	0.5+	0.1+	1999 04 16	704	1.0-	0.0
1990 03 30	095	1.2-	0.5+	1999 04 06	704	0.1+	0.4-	1999 04 16	704	0.6+	1.8-
1990 03 30	095	1.6+	0.1+	1999 04 06	704	0.5-	0.0	1999 04 16	704	1.3-	1.0+
1996 09 05	693	0.5+	0.4+	1999 04 06	704	0.6-	0.2+	1999 04 17	704	0.4-	0.1-
1996 09 05	693	1.3+	1.4-	1999 04 06	704	0.2-	0.3-	1999 04 17	704	0.5-	0.7+
1996 09 06	693	0.4+	0.7-	1999 04 06	704	0.2-	0.1-	1999 04 17	704	0.7+	0.0
1996 09 06	693	1.9-	0.4-	1999 04 10	699	0.5+	0.3-	1999 04 17	704	0.6-	0.6+
1997 12 25	566	0.9+	1.5-	1999 04 10	699	0.7+	0.0	1999 04 17	704	0.5-	0.1+
1997 12 25	566	0.8+	1.4-	1999 04 10	699	0.6+	0.2-	1999 04 17	704	0.4+	0.6+
1997 12 25	566	1.1+	1.3-	1999 04 12	704	0.0	0.5-	1999 04 17	704	0.6-	0.1-
1997 12 29	566	0.1-	1.0+	1999 04 12	704	0.3-	0.1-	1999 04 17	704	0.1-	1.2+
1997 12 29	566	0.6-	1.4+	1999 04 12	704	0.4-	0.5+	1999 04 17	704	1.3-	0.5+
1997 12 29	566	0.0	1.0+	1999 04 14	704	0.4+	1.5-	1999 04 17	704	0.9-	0.1-
1997 12 30	566	0.7-	0.6-	1999 04 14	704	0.2-	0.1-	1999 06 08	704	0.0	1.0-
1997 12 30	566	0.6-	0.3-	1999 04 14	704	0.8+	1.5+	1999 06 08	704	0.5-	1.1-
1997 12 30	566	0.5-	0.6-	1999 04 14	704	0.4+	0.0	1999 06 08	704	0.6-	1.1-
1998 12 23	704	0.5-	0.3+	1999 04 14	704	1.4-	0.6+	1999 06 08	704	0.0	1.3-
1998 12 23	704	0.3+	0.9-	1999 04 15	704	1.3+	0.3+	1999 06 08	704	0.8+	1.6+
1998 12 23	704	0.3-	0.0	1999 04 15	704	0.9+	0.6-	1999 06 08	704	0.3+	1.4-

M.P.C. 34975

1999 HH₈ = 1983 OG = 1987 YW₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	310.66655		(2000.0)		P		Q		Williams		
<i>n</i>	0.29494551	ω	329.04250		+0.34963244		+0.93108060				
<i>a</i>	2.2351578	Ω	321.14872		-0.82202783		+0.25153808				
<i>e</i>	0.1300275	<i>i</i>	9.55649		-0.44947458		+0.26423002				
<i>P</i>	3.34	<i>H</i>	13.4		<i>G</i>	0.15	<i>U</i>	3			

Residuals in seconds of arc

1983 07 17	688	0.1-	0.7+	1999 04 12	704	0.7+	0.3-	1999 04 15	704	0.6+	0.0
1983 07 17	688	0.1+	0.5-	1999 04 12	704	0.1+	0.1+	1999 04 15	704	0.5+	0.3-
1987 12 20	010	0.5-	0.1+	1999 04 14	699	0.4+	0.5-	1999 04 16	704	0.7-	1.2+
1987 12 20	010	1.0+	0.0	1999 04 14	699	0.5+	1.1-	1999 04 16	704	0.6-	0.7+
1987 12 20	010	0.5-	0.3-	1999 04 14	699	0.5+	0.6-	1999 04 16	704	1.0-	0.3+
1998 12 23	704	0.9+	0.9-	1999 04 14	704	0.8+	0.2-	1999 04 16	704	1.0-	1.3+
1998 12 23	704	1.4+	1.3+	1999 04 14	704	0.5-	0.5+	1999 04 17	704	0.4+	0.1-
1998 12 23	704	0.3+	1.9-	1999 04 14	704	1.5-	0.3-	1999 04 17	704	0.3+	0.1+
1998 12 23	704	1.8-	0.6+	1999 04 14	704	0.0	0.1-	1999 04 17	704	0.8+	0.1-
1999 02 23	704	0.4+	0.8+	1999 04 14	704	1.0-	0.0	1999 04 17	704	0.1-	0.0
1999 02 23	704	0.7+	0.3+	1999 04 15	704	0.1-	0.2-	1999 04 17	704	0.9-	0.0
1999 02 23	704	0.4+	0.1+	1999 04 15	704	0.1-	0.8-				
1999 04 12	704	0.3-	0.2-	1999 04 15	704	0.3+	0.1-				

1999 HM₈ = 1982 JQ₄ = 1982 KV₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	34.97210		(2000.0)		P		Q		Williams		
<i>n</i>	0.22751800	ω	343.06162		-0.99685344		+0.04149600				
<i>a</i>	2.6574119	Ω	199.69176		-0.02595217		-0.97592273				
<i>e</i>	0.1544863	<i>i</i>	11.56220		-0.07489796		-0.21413293				
<i>P</i>	4.33	<i>H</i>	13.6		<i>G</i>	0.15	<i>U</i>	3			

Residuals in seconds of arc

1982 05 15	095	0.3+	0.0	1999 04 10	699	0.6+	0.5+	1999 04 16	704	0.4+	1.0-
1982 05 26	095	0.3-	0.2+	1999 04 10	699	0.5+	0.6+	1999 04 16	704	1.7-	0.5-
1998 12 23	704	0.4+	0.5-	1999 04 14	704	1.2+	0.3-	1999 04 16	704	1.6-	0.3+
1998 12 23	704	0.2+	0.2-	1999 04 14	704	0.6+	0.1-	1999 04 17	704	0.0	0.2-
1998 12 23	704	1.0-	0.5-	1999 04 14	704	0.4-	1.3-	1999 04 17	704	0.2-	0.1+
1998 12 23	704	0.0	0.3+	1999 04 14	704	0.7-	0.1+	1999 04 17	704	0.5-	0.1+
1998 12 23	704	1.9+	0.5+	1999 04 14	704	1.2-	0.3-	1999 04 17	704	0.6-	0.3+
1999 04 06	704	0.1+	0.4+	1999 04 15	704	0.1+	0.2+	1999 04 17	704	0.5-	0.4+
1999 04 06	704	0.2-	0.6+	1999 04 15	704	0.3-	0.3-	1999 06 08	704	0.1+	0.7-
1999 04 06	704	0.3+	0.6+	1999 04 15	704	0.7+	0.4-	1999 06 08	704	0.2+	0.5-
1999 04 06	704	0.3+	0.4+	1999 04 15	704	0.3-	0.1+	1999 06 08	704	0.5+	0.2+
1999 04 06	704	0.3-	0.5-	1999 04 15	704	0.5+	0.6-	1999 06 08	704	0.9+	0.1+
1999 04 10	699	0.3+	0.9+	1999 04 16	704	0.0	0.6+	1999 06 08	704	1.3+	0.1+

**1999 HP₈ = 1930 BB = 1959 CS = 1970 EN₂ = 1977 CB₂ = 1988 CB₇
= 1997 UC₂₀**

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	95.42000		(2000.0)		P		Q		Williams		
<i>n</i>	0.27291215	ω	138.07456		-0.49042374		-0.86955623				
<i>a</i>	2.3538971	Ω	341.06510		+0.74459184		-0.38354469				
<i>e</i>	0.1612527	<i>i</i>	10.28479		+0.45284384		-0.31107142				
<i>P</i>	3.61	<i>H</i>	13.7		<i>G</i>	0.15	<i>U</i>	1			

Residuals in seconds of arc

1930 01 24	024	(16.1-	7.0-)	1999 04 14	704	0.2-	0.2-	1999 04 17	704</

M.P.C. 34976

1988 02 13	054	0.1+	0.8−	1999 04 16	704	2.0+	0.2−	1999 05 08	704	0.4−	1.1−
1997 10 25	691	0.0	0.5−	1999 04 16	704	0.7+	1.1−	1999 06 09	704	0.1+	1.0+
1997 10 25	691	0.0	0.4−	1999 04 16	704	1.1−	1.6−	1999 06 09	704	0.3+	0.6+
1997 10 25	691	0.2+	0.4−	1999 04 16	704	0.5+	0.4+	1999 06 09	704	0.0	0.6+
1997 11 03	691	0.4+	0.0	1999 04 17	704	0.6−	0.9−	1999 06 09	704	0.5+	1.9+
1997 11 03	691	0.4+	0.1−	1999 04 17	704	0.7−	0.8+	1999 06 09	704	0.4+	1.6+
1997 11 03	691	0.4+	0.2−	1999 04 17	704	0.7−	0.5+				

1999 HU₈ = 1985 QF₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.19244284	ω	130.94688	+0.93832353	+0.33618980		
<i>a</i>	2.9712205	Ω	209.67254	−0.34541452	+0.90102903		
<i>e</i>	0.0889915	<i>i</i>	9.39138	−0.01541960	+0.27408593		
<i>P</i>	5.12	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1985 08 16	675	2.1−	3.0+	1999 04 07	704	1.9−	0.3−	1999 04 17	704	1.9+	0.4+
1985 08 16	675	(1.1+	5.0+)	1999 04 15	704	0.1−	0.8+	1999 04 17	704	0.3−	0.8+
1985 08 17	675	0.1−	2.0−	1999 04 15	704	1.0−	0.4−	1999 04 18	703	1.1−	0.1−
1985 08 17	675	1.6+	0.3−	1999 04 15	704	0.6+	0.6−	1999 04 18	703	0.7−	0.9−
1985 08 23	675	0.1−	1.0−	1999 04 15	704	0.5−	2.1−	1999 04 18	703	0.3−	0.6−
1985 08 23	675	0.7+	0.3+	1999 04 15	704	0.1+	0.1−	1999 04 18	704	0.5+	1.5−
1999 04 07	704	1.0−	0.7−	1999 04 17	704	0.3+	0.2−	1999 04 18	703	1.7−	1.1−
1999 04 07	704	0.4+	1.4+	1999 04 17	704	0.2−	1.7+	1999 04 18	704	1.4+	0.4−
1999 04 07	704	1.4+	0.3−	1999 04 17	704	0.1+	2.9+	1999 04 18	704	1.9+	1.5+

1999 HD₉ = 1981 UG₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.25803130	ω	289.95609	+0.48560839	+0.87400744		
<i>a</i>	2.4435494	Ω	9.15365	−0.75620837	+0.42986044		
<i>e</i>	0.1385882	<i>i</i>	6.20322	−0.43855832	+0.22656344		
<i>P</i>	3.82	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1981 10 24	675	0.3+	0.4+	1999 03 25	704	(2.4−	1.8+)	1999 04 17	704	0.4+	0.4−
1981 10 25	675	0.5+	0.1−	1999 04 07	704	0.7+	0.2+	1999 04 17	704	0.6+	0.0
1981 10 26	675	0.7−	0.4−	1999 04 07	704	0.8+	0.1+	1999 04 18	704	0.9+	0.1+
1996 09 17	691	0.1+	0.0	1999 04 07	704	0.6+	0.7+	1999 04 18	704	1.5−	0.1−
1996 09 17	691	0.0	0.0	1999 04 07	704	1.0+	0.9+	1999 04 18	704	0.8−	0.9−
1996 09 17	691	0.1+	0.1−	1999 04 14	704	0.0	0.8+	1999 04 18	704	1.7−	0.5−
1996 09 21	691	0.1−	0.1+	1999 04 14	704	0.2−	0.6+	1999 05 10	704	(2.0−	2.3−)
1996 09 21	691	0.1−	0.2+	1999 04 14	704	0.7+	0.6+	1999 05 10	704	0.2+	1.1−
1996 09 21	691	0.1−	0.0	1999 04 14	704	1.3−	0.4−	1999 05 10	704	0.8−	1.0+
1999 03 25	704	1.1+	1.3−	1999 04 17	704	0.4−	0.5−	1999 05 10	704	(2.2+	0.0)
1999 03 25	704	0.5−	0.3+	1999 04 17	704	0.9−	0.1+				
1999 03 25	704	(0.9+	2.2+)	1999 04 17	704	1.1+	0.1−				

1999 HE₉ = 1980 RX₆ = 1996 VD₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18990612	ω	148.79788	+0.99247925	−0.07059258		
<i>a</i>	2.9976212	Ω	215.67470	+0.04192813	+0.96359063		
<i>e</i>	0.1065222	<i>i</i>	9.87428	+0.11500854	+0.25789491		
<i>P</i>	5.19	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1980 09 13	675	0.1−	0.7−	1999 04 07	704	0.1−	0.5−	1999 04 17	704	0.0	0.3−
1980 09 14	675	0.3+	0.2−	1999 04 07	704	0.0	0.2−	1999 04 17	704	0.9−	0.7+
1994 05 05	691	0.1−	1.0−	1999 04 07	704	0.6+	0.2+	1999 04 17	704	0.5+	1.5−
1994 05 05	691	0.1−	1.1−	1999 04 07	704	0.4+	0.2+	1999 04 17	704	0.7+	0.4+
1994 05 05	691	0.0	0.5−	1999 04 09	699	0.6+	1.6−	1999 04 17	704	1.5−	1.2−
1996 11 07	399	1.3+	0.1+	1999 04 09	699	0.1−	0.4+	1999 04 18	704	0.2+	0.3+
1996 11 07	399	0.6−	0.3−	1999 04 09	699	0.5−	0.5+	1999 04 18	704	1.8+	2.0+

1999 JUNE 22

1996 11 12	399	0.4+	1.1−	1999 04 15	704	0.9−	0.3−	1999 04 18	704	0.8−	0.6−
1996 11 12	399	1.0+	0.3−	1999 04 15	704	0.6−	0.8+	1999 04 18	704	(3.8−	0.9−)
1996 11 15	399	1.8−	0.8−	1999 04 15	704	(0.7−	2.4+)				
1996 11 15	399	(2.5−	0.2+)	1999 04 15	704	0.3+	0.1+				

1999 HL₁₀ = 1998 BZ₄₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17506510	ω	78.53648	+0.31683416	+0.93843180		
<i>a</i>	3.1647276	Ω	211.04722	−0.94052869	+0.29208848		
<i>e</i>	0.0545189	<i>i</i>	15.48564	−0.12256385	+0.18447244		
<i>P</i>	5.63	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1995 08 13	662	0.0	0.4+	Y	1999 04 15	704	1.9−	1.8+	1999 05 12	704	(2.2+	2.0−)
1998 01 31	683	0.3−	0.1+		1999 04 15	704	(0.1−	2.4+)	1999 05 12	704	(1.2−	2.3−)
1998 01 31	683	0.1−	0.1+		1999 04 17	704	0.4−	1.0−	1999 05 13	704	1.2−	0.2−
1998 01 31	683	0.3−	0.1−		1999 04 17	704	0.8+	0.1+	1999 05 13	704	0.7+	1.8−
1998 02 02	683	0.2+	0.3+		1999 04 17	704	1.0+	0.5−	1999 05 13	704	1.4−	0.9+
1998 02 02	683	0.3+	0.1+		1999 04 17	704	0.9+	0.0	1999 05 13	704	0.8+	0.8−
1998 02 02	683	0.2+	0.3−		1999 04 17	704	0.2+	0.2−	1999 05 13	704	1.7−	1.4−
1999 04 09	699	0.7+	0.3+		1999 04 18	704	0.9+	0.4−	1999 05 17	703	1.5−	0.5−
1999 04 09	699	0.5+	1.5−		1999 04 18	704	1.3−	0.5+	1999 05 17	703	(1.6−	2.1+)
1999 04 09	699	0.4−	1.3+		1999 04 18	704	0.5+	0.4+	1999 05 17	703	(3.1−	0.5−)
1999 04 15	704	0.1+	0.5+		1999 05 12	704	1.2+	1.2+	1999 05 17	703	(3.0−	0.9+)
1999 04 15	704	0.7+	1.2+		1999 05 12	704	0.7+	0.5+				

1999 HN₁₀ = 1978 EZ₉ = 1991 XP₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.19192345	ω	108.02091	+0.99493094	−0.09997644		
<i>a</i>	2.9765786	Ω	257.71797	+0.08756524	+0.91424291		
<i>e</i>	0.0979176	<i>i</i>	0.63464	+0.04944440	+0.39263803		
<i>P</i>	5.14	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1978 03 15	675	0.0	0.1−	1999 04 09	699	0.7+	1.0+	1999 04 18	704	(2.0−	0.1−)
1978 03 16	675	0.3+	0.8−	1999 04 09	699	1.1+	0.1+	1999 04 18	704	0.8−	1.5+
1991 12 04	399	1.0+	1.1+	1999 04 15	704	0.6+	0.8−	1999 04 18	704	(2.6−	0.4+)
1991 12 04	399	1.1−	0.4−	1999 04 15	704	(3.7+	0.3+)	1999 05 05	691	0.4−	0.2+
1992 01 01	691	0.5+	0.1−	1999 04 15	704	0.5+	1.0+	1999 05 05	691	0.3−	0.2−
1992 01 01	691	0.0	0.2+	1999 04 15	704	0.8+	1.1+	1999 05 05	691	0.2+	0.4−
1992 01 01	691	0.1−	0.0	1999 04 15	704	0.1+	1.3+	1999 05 10	704	0.8−	0.2−
1994 05 04	691	1.2−	0.3−	1999 04 17	704	0.2+	0.3−	1999 05 10	704	0.6−	1.3−
1994 05 04	691	1.1−	0.4−	1999 04 17	704	1.1+	0.0	1999 05 10	704	0.5−	0.5+
1994 05 04	691	1.2−	0.2−	1999 04 17	704	0.4+	0.8−	1999 05 10	704	(2.5−	0.1+)
1998 03 04	691	0.3+	0.2−	1999 04 17	704	0.3+	0.8−	1999 05 10	704	1.1−	0.4−
1998 03 04	691	0.4+	0.1−	1999 04 17	704	0.5−	0.1+	1999 05 13	704	0.6+	0.7+
1998 03 04	691	0.3+	0.2−	1999 04 18	704	1.8+	0.7−	1999 05 13	704	0.7−	0.8+
1998 03 20	691	0.9−	0.5−	1999 04 18	704	1.8+	0.1−	1999 05 13	704	1.0−	0.9−
1998 03 20	691	0.8−	0.4+	1999 04 18	704	0.9+	1.2+	1999 05 13	704	1.1+	0.0
1998 03 20	691	0.8−	0.1+	1999 04 18	704	0.7−	1.3+	1999 05 13	704	0.1+	0.8−
1999 04 09	699	0.1−	0.4+	1999 04 18	704	0.8−	1.3−				

1999 HR₁₀ = 1997 WS₃₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	181.46940		(2000.0)	P	Q
n	0.27584539	ω	20.22612	+0.57182808	−0.81888122
a	2.3371803	Ω	34.94772	+0.74030563	+0.48910125
e	0.0543907	i	4.95319	+0.35349713	+0.30035564
P	3.57	H	14.9	G 0.15	U 4

1999 JUNE 22

1997 11 26	704	(4.1− 0.3+)	1997 12 29	566	0.5− 1.2+	1999 04 17	704	1.5− 1.3−
1997 11 29	704	1.2− 0.6−	1997 12 29	566	0.5− 0.7+	1999 04 18	704	0.8+ 0.8−
1997 11 29	704	(2.7− 0.6−)	1999 04 09	699	0.6+ 0.5+	1999 04 18	704	(0.5+ 2.3+)
1997 11 29	704	1.8− 0.7−	1999 04 09	699	0.7− 0.2−	1999 04 18	704	(2.8− 0.6+)
1997 11 29	704	1.7− 0.6−	1999 04 09	699	0.9+ 0.5−	1999 04 18	704	1.4− 0.9+
1997 11 29	704	1.0− 0.5−	1999 04 12	704	0.8+ 0.7−	1999 04 18	704	0.6+ 0.8+
1997 12 04	704	(2.9+ 0.2+)	1999 04 12	704	0.7− 0.6−	1999 04 18	704	0.3− 0.2−
1997 12 04	704	0.6+ 0.3−	1999 04 12	704	1.3+ 0.7+	1999 04 18	704	1.2− 1.2−
1997 12 04	704	(2.7+ 0.9+)	1999 04 12	704	0.5− 0.5−	1999 04 18	704	0.6− 0.5+
1997 12 04	704	0.4+ 0.5+	1999 04 12	704	(3.8− 1.2−)	1999 04 22	691	0.6− 0.3+
1997 12 04	704	1.2+ 0.9−	1999 04 17	691	0.2+ 0.2+	1999 04 22	691	0.4− 0.1+
1997 12 05	704	1.0+ 0.2+	1999 04 17	704	1.3+ 0.9+	1999 04 22	691	0.5− 0.0
1997 12 05	704	1.2+ 0.4−	1999 04 17	704	0.7+ 0.2+	1999 05 16	691	0.0 0.8−
1997 12 05	704	0.6+ 0.3−	1999 04 17	691	0.2+ 0.0	1999 05 16	691	0.6− 0.1−
1997 12 05	704	0.6+ 0.5+	1999 04 17	704	1.2+ 0.8+	1999 05 16	691	0.1− 0.4−

1999 HY₁₀ = 1988 EE

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	70.35073		(2000.0)	P	Q
<i>n</i>	0.27533973	ω	133.02384	−0.90315728	−0.42884050
<i>a</i>	2.3400410	Ω	21.60584	+0.37633487	−0.81334076
<i>e</i>	0.1795349	<i>i</i>	3.12424	+0.20658893	−0.39315725
<i>P</i>	3.58	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1988 03 07	888	0.7− 0.5−	1999 04 15	704	0.8− 0.3−	1999 05 10	704	0.2− 1.1−
1988 03 07	888	0.4− 0.1−	1999 04 17	704	1.4+ 0.6−	1999 05 10	704	1.5− 1.3+
1988 03 08	888	1.5+ 0.2+	1999 04 17	704	0.1− 0.4+	1999 05 10	704	0.5+ 0.3+
1988 03 08	888	0.6− 0.9+	1999 04 17	704	0.8+ 0.2+	1999 05 10	704	0.3+ 1.4−
1988 03 10	888	0.4+ 0.1−	1999 04 17	704	0.4+ 0.8+	1999 05 10	704	1.1− 0.3−
1988 03 10	888	0.3− 0.5−	1999 04 17	704	0.5+ 0.5+	1999 05 13	704	0.1+ 0.2+
1999 04 15	704	0.2− 0.3+	1999 04 18	704	0.7+ 0.1−	1999 05 13	704	0.7+ 0.7+
1999 04 15	704	0.3− 0.8−	1999 04 18	704	0.3− 0.8+	1999 05 13	704	0.7+ 0.5−
1999 04 15	704	0.7+ 0.6−	1999 04 18	704	0.5+ 0.4+	1999 05 13	704	0.0 0.4−
1999 04 15	704	0.2− 0.0	1999 04 18	704	1.8− 0.6+	1999 05 13	704	1.0− 0.2−

1999 HQ₁₁ = 1977 HR

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	35.87476		(2000.0)	P	Q
<i>n</i>	0.22527554	ω	2.57395	−0.86779126	+0.47695124
<i>a</i>	2.6750179	Ω	207.33523	−0.46117777	−0.87752293
<i>e</i>	0.1659110	<i>i</i>	17.68343	−0.18507672	−0.04970941
<i>P</i>	4.38	<i>H</i>	13.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1977 04 24	675	0.2+ 0.6+	1999 05 15	704	1.0+ 0.2−	1999 05 21	704	0.1− 0.1+
1977 04 25	675	0.1− 0.7+	1999 05 15	704	1.2+ 0.9+	1999 05 21	704	0.2− 0.3+
1999 04 21	358	0.0 1.3−	1999 05 15	704	0.3− 0.0	1999 05 21	704	0.1− 0.2+
1999 04 21	358	0.2− 0.7−	1999 05 15	704	0.0 0.1−	1999 06 08	704	0.1− 1.4−
1999 04 21	358	0.6+ 0.5−	1999 05 15	704	0.3+ 1.7+	1999 06 08	704	0.6− 0.7−
1999 04 29	358	(0.1− 2.2−)	1999 05 17	704	0.2+ 0.9+	1999 06 08	704	0.7− 0.1−
1999 04 29	358	(0.1+ 2.4−)	1999 05 17	704	0.6− 0.7−	1999 06 08	704	1.1− 0.4−
1999 04 29	358	(0.6+ 3.7−)	1999 05 17	704	0.2− 0.5−	1999 06 08	704	1.8− 0.0
1999 05 05	358	0.7+ 0.0	1999 05 17	704	0.4− 0.4+	1999 06 11	703	0.3+ 0.5+
1999 05 05	358	0.1+ 0.2−	1999 05 17	704	0.2− 0.1+	1999 06 11	703	0.0 0.7+
1999 05 05	358	0.2+ 0.3+	1999 05 17	392	0.7+ 0.1−	1999 06 11	703	0.7+ 0.7+
1999 05 08	358	0.1+ 1.5−	1999 05 17	392	0.7+ 0.1+	1999 06 11	703	0.6+ 1.1+
1999 05 08	358	1.0+ 1.6−	1999 05 17	392	0.2+ 0.1−	1999 06 14	704	0.1+ 0.6−
1999 05 08	358	0.4+ 0.7−	1999 05 17	392	0.4+ 0.3+	1999 06 14	704	0.0 0.1−
1999 05 12	704	0.3− 0.2−	1999 05 17	358	0.5+ 0.7+	1999 06 14	704	0.2+ 0.2+
1999 05 12	704	0.8− 0.9+	1999 05 17	358	1.0− 0.0	1999 06 14	704	0.2− 0.0
1999 05 12	704	0.5+ 0.8+	1999 05 17	358	0.4− 0.1+	1999 06 14	704	1.2− 0.4+
1999 05 12	704	0.0 0.7+	1999 05 21	704	0.0 0.2−			
1999 05 12	704	0.1+ 0.3+	1999 05 21	704	0.7− 1.7−			

M.P.C. 34977

1999 JT = 1996 XV₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	307.98020		(2000.0)	P	Q
<i>n</i>	0.28367287	ω	253.61997	+0.90455718	+0.14293382
<i>a</i>	2.2939864	Ω	96.77433	−0.00759973	+0.94738563
<i>e</i>	0.2746463	<i>i</i>	23.86001	−0.42628459	+0.28640946
<i>P</i>	3.47	<i>H</i>	14.6	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1996 12 03	413	0.3+ 1.0+	1999 05 11	327	0.7+ 0.1+	1999 06 08	704	0.1+ 0.4+
1996 12 03	413	0.9− 1.5−	1999 05 11	327	0.9+ 0.1−	1999 06 08	704	0.2+ 0.2+
1996 12 04	413	0.6+ 0.6+	1999 05 12	704	0.1+ 1.0−	1999 06 08	704	0.2+ 0.7+
1996 12 04	413	(1.3+ 7.2−)	1999 05 12	704	0.8+ 1.0+	1999 06 10	704	0.0 0.3−
1999 05 04	327	0.1+ 0.4−	1999 05 12	704	(2.4+ 0.9+)	1999 06 10	704	0.2+ 0.3−
1999 05 04	327	0.1+ 0.3−	1999 05 12	704	0.1+ 0.5−	1999 06 10	704	0.2+ 0.2−
1999 05 04	327	0.2+ 0.0	1999 05 12	704	0.0 0.6+	1999 06 10	704	0.3− 0.5−
1999 05 06	327	0.0 0.6−	1999 05 17	704	0.3− 0.2+	1999 06 10	704	0.1− 0.5−
1999 05 06	327	0.0 0.2−	1999 05 17	704	0.8− 0.4+	1999 06 14	704	0.1− 0.2−
1999 05 06	327	0.0 0.0	1999 05 17	704	1.2− 1.2+	1999 06 14	704	0.5+ 0.2+
1999 05 08	327	0.0 0.2−	1999 05 17	704	(1.3+ 3.5+)	1999 06 14	704	0.2− 0.4+
1999 05 08	327	0.2+ 0.4−	1999 05 17	704	1.2− 1.3+	1999 06 14	704	0.1+ 0.2−
1999 05 08	327	0.0 0.2−	1999 06 08	704	0.1− 0.5−			
1999 05 11	327	0.3− 0.1−	1999 06 08	704	0.1− 0.1−			

1999 JG₁ = 1953 VZ₁ = 1980 TE₁₁ = 1990 RZ₁₁ = 1990 SW₁₂
= 1998 DP₂₀Id. G. V. Williams; 1953 VZ₁ = 1953 XU (NAZ 13) is invalid

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	186.14498		(2000.0)	P	Q
<i>n</i>	0.29082180	ω	272.68826	+0.71414124	−0.69948085
<i>a</i>	2.2562371	Ω	131.69894	+0.65575020	+0.65500338
<i>e</i>	0.1587851	<i>i</i>	2.07211	+0.24493664	+0.28582708
<i>P</i>	3.39	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1953 11 11	760	(54.0+ 18.0−)X	1998 02 26	327	0.2+ 0.3+	1999 05 08	703	1.1− 0.7+
1980 10 08	095	0.4− 1.1+	1998 02 26	327	0.0 0.2+	1999 05 08	703	0.1− 1.2+
1990 09 14	675	0.1− 0.1−	1998 02 26	327	0.1− 0.2+	1999 05 08	703	0.7+ 1.4+
1990 09 14	675	0.4− 0.4−	1998 02 27	327	0.1− 0.4+	1999 05 09	703	0.1− 1.1−
1990 09 21	809	0.5− 0.1−	1998 02 27	327	0.4− 0.6+	1999 05 09	703	1.1+ 0.4−
1990 09 21	809	0.2+ 0.2−	1998 02 27	327	0.1− 0.4+	1999 05 09	703	1.6+ 1.1+
1990 09 21	809	0.9+ 0.3−	1999 04 07	704	0.4− 0.9+	1999 05 09	703	0.8+ 1.0+
1990 09 22	809	0.8− 1.0+	1999 04 07	704	0.3− 0.0	1999 05 15	704	(0.9− 2.2+)
1990 09 22	809	0.3− 1.2+	1999 04 07	704	0.5− 0.0	1999 05 15	704	0.3+ 0.5+
1990 09 22	809	0.2+ 0.9+	1999 04 07	704	0.5− 0.5+	1999 05 15	704	1.4− 1.4+
1998 02 21	327	0.4+ 0.5−	1999 04 12	704	0.2− 0.6−	1999 05 16	703	0.9+ 0.6+
1998 02 21	327	0.1+ 0.6+	1999 04 12	704	0.3− 0.2+	1999 05 16	703	0.3+ 0.3+
1998 02 21	327	0.7− 0.3+	1999 04 12	704	0.4− 0.3−	1999 05 16	703	1.0+ 0.4−
1998 02 22	327	0.1− 0.2+	1999 04 12	704	1.5+ 0.0	1999 05 16	703	0.1+ 0.5−
1998 02 22	327	0.1+ 0.3+	1999 04 12	704	1.0− 1.5−			
1998 02 22	327	0.1+ 0.2+	1999 05 08	703	0.1+ 0.3−			

1999 JH₁ = 1993 TU₃₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	232.56241		(2000.0)	P	Q
<i>n</i>	0.27440387	ω	174.62367	+0.99034662	−0.13643711
<i>a</i>	2.3453585	Ω	193.29322	+0.12288022	+0.94582716
<i>e</i>	0.1295611	<i>i</i>	6.10759	+0.06414067	+0.29461143
<i>P</i>	3.59	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1992 05 06	691	0.0 0.6+	1999 04 07	704	0.6+ 0.1−	1999 05 08	703	0.9+ 1.1−
1992 05 06	691	0.0 0.3+	1999 04 07	704	0.1− 0.7+	1999 05 08	703	0.6+ 0.9−
1992 05 06	691	0.1+ 0.1−	1999 04 07	704	0.3− 0.1−	1999 05 08	703	0.9− 1.6+
1993 10 11	809	(2.6+ 2.8+)	1999 04 07	704	(2.2+ 0.0)	1999 05 08	703	0.8− 1.1+

M.P.C. 34978

1999 JUNE 22

1993 10 11	809	(2.2+ 2.8+)	1999 04 12	704	0.5- 1.6-	1999 05 09	703	(0.5- 2.1-)
1993 10 11	809	(1.7+ 2.9+)	1999 04 12	704	0.9- 0.4-	1999 05 09	703	0.4- 0.5-
1993 10 20	809	0.4- 0.0	1999 04 12	704	0.2+ 0.9+	1999 05 09	703	0.9- 1.6+
1993 10 20	809	0.0 1.1+	1999 04 12	704	(1.1+ 2.0+)	1999 05 09	703	0.2- 0.5+
1993 10 20	809	0.1- 0.4+	1999 04 12	704	(3.2- 0.7+)	1999 05 16	703	1.2+ 0.3-
1999 03 21	691	0.1+ 0.2+	1999 04 13	104	0.0 0.3+	1999 05 16	703	0.2- 0.1-
1999 03 21	691	0.1+ 0.3+	1999 04 13	104	0.3+ 0.4+	1999 05 16	703	0.9- 1.5-
1999 03 21	691	0.1+ 0.6+	1999 04 13	104	0.7+ 0.1+	1999 05 16	703	0.6- 1.5-
1999 04 07	704	1.0+ 0.7+	1999 04 13	104	1.0+ 0.0			

1999 JK₂ = 1995 BQ₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.27359122	<i>ω</i>	58.88066	-0.87146817	-0.48022023		
<i>a</i>	2.3500005	<i>Ω</i>	92.25123	+0.40914645	-0.82388034		
<i>e</i>	0.0774588	<i>i</i>	5.72392	+0.27044854	-0.30101449		
<i>P</i>	3.60	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1995 01 31	033	0.2+ 0.0	1999 04 12	704	1.7+ 1.7-	1999 05 09	703	0.2- 1.0+
1995 01 31	033	0.3+ 0.4-	1999 04 12	704	(2.3- 1.4-)	1999 05 09	703	0.6- 0.7+
1995 02 03	033	0.5- 0.2+	1999 04 12	704	0.4- 0.9-	1999 05 09	703	0.4+ 0.6+
1997 10 29	704	(2.9+ 0.9-)	1999 05 04	327	0.4- 0.5-	1999 05 09	703	0.7- 1.0+
1997 10 29	704	0.9+ 0.3+	1999 05 04	327	0.2- 0.2+	1999 05 09	327	0.4+ 0.2-
1997 10 29	704	0.1+ 0.1-	1999 05 04	327	0.1- 0.9-	1999 05 09	327	0.7- 0.6-
1997 10 29	704	0.7+ 0.3-	1999 05 04	327	0.3- 0.4-	1999 05 09	327	0.2- 0.2-
1997 10 29	704	0.7+ 0.6-	1999 05 04	327	0.4- 0.2-	1999 05 16	703	0.5- 0.4-
1997 11 06	704	(2.3- 0.1+)	1999 05 04	327	0.4- 0.6-	1999 05 16	703	0.2- 0.5+
1997 11 06	704	(2.9- 0.9-)	1999 05 08	703	1.3+ 0.1+	1999 05 16	703	0.2+ 0.9+
1997 11 06	704	1.9- 0.7+	1999 05 08	703	0.3+ 0.8+	1999 05 16	703	0.1+ 1.2+
1997 11 06	704	1.3- 1.7+	1999 05 08	703	0.3+ 0.6+			
1999 04 12	704	0.6+ 0.0	1999 05 08	703	0.5+ 1.2+			

1999 JN₂ = 1993 SZ₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.29223517	<i>ω</i>	205.00872	+0.81131748	+0.57883463		
<i>a</i>	2.2489565	<i>Ω</i>	119.37642	-0.51931105	+0.77795681		
<i>e</i>	0.1948777	<i>i</i>	5.39565	-0.26847716	+0.24440473		
<i>P</i>	3.37	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1993 09 18	675	0.4+ 0.4-	1999 04 16	704	1.6+ 1.0-	1999 05 09	703	0.1+ 0.0
1993 09 18	675	0.5- 0.8+	1999 04 16	704	1.0- 0.2-	1999 05 09	703	0.2- 0.5-
1993 09 22	675	0.1- 0.3-	1999 04 16	704	0.6+ 0.3+	1999 05 09	703	0.3- 0.2+
1993 09 22	675	0.2+ 0.0	1999 04 16	704	1.1- 1.4+	1999 05 16	703	0.6- 0.5-
1999 04 12	704	0.3+ 0.6+	1999 05 08	703	1.9+ 0.1+	1999 05 16	703	0.8+ 1.0-
1999 04 12	704	0.5- 1.4-	1999 05 08	703	0.9- 0.0	1999 05 16	703	0.4- 0.6-
1999 04 12	704	0.2+ 1.0+	1999 05 08	703	0.6- 0.3+	1999 05 16	703	1.1- 1.0+
1999 04 12	704	0.3+ 0.7-	1999 05 08	703	1.0+ 1.1+			
1999 04 12	704	0.7- 0.2-	1999 05 09	703	0.6+ 0.1+			

1999 JW₂ = 1990 JC₁ = 1997 YC₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.30729164	<i>ω</i>	358.28225	+0.43307952	-0.84396989		
<i>a</i>	2.1748813	<i>Ω</i>	65.94671	+0.83105517	+0.23793804		
<i>e</i>	0.1548395	<i>i</i>	20.27764	+0.34898344	+0.48072893		
<i>P</i>	3.21	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1990 05 03	413	0.2+ 1.4-	1999 05 08	683	0.0 0.4-	1999 05 14	704	1.7- 0.9+
1990 05 04	413	0.1- 0.3-	1999 05 12	704	0.3+ 0.3-	1999 05 18	704	0.2+ 0.1-
1997 12 04	704	1.2+ 0.6-	1999 05 12	704	0.3+ 0.7+	1999 05 18	704	1.2+ 0.4-
1997 12 04	704	1.1+ 1.1-	1999 05 12	704	0.5+ 0.2+	1999 05 18	704	1.5- 0.3+

1997 12 04	704	0.7+ 1.9-	1999 05 12	704	0.0 0.4+	1999 05 18	704	0.2- 0.5-
1997 12 04	704	1.2+ 0.7-	1999 05 12	704	0.9+ 0.4+	1999 05 19	704	1.2+ 0.3-
1997 12 04	704	0.0 0.6-	1999 05 13	704	0.1- 0.5-	1999 05 19	704	1.0- 1.6-
1997 12 26	566	0.2- 0.2+	1999 05 13	704	0.1+ 0.3-	1999 05 19	704	1.0- 0.8-
1997 12 26	566	0.1- 0.2-	1999 05 13	704	0.2- 0.6+	1999 05 19	704	1.1+ 0.2+
1997 12 26	566	0.3- 0.0	1999 05 13	704	0.3- 0.4-	1999 06 09	704	0.5+ 0.2+
1997 12 28	566	0.6- 0.3+	1999 05 13	704	1.2- 0.1+	1999 06 09	704	0.2- 0.6-
1997 12 28	566	0.4- 0.3+	1999 05 13	704	0.3- 0.9+	1999 06 09	704	0.1+ 0.2+
1997 12 28	566	0.5- 0.5+	1999 05 13	704	0.7+ 0.3+	1999 06 09	704	0.6+ 0.7+
1999 05 06	683	0.1+ 0.0	1999 05 13	704	0.2+ 0.3+	1999 06 09	704	0.1- 0.7-
1999 05 06	683	0.2+ 0.4-	1999 05 13	704	0.5- 0.3-	1999 06 14	704	0.6+ 0.1-
1999 05 07	683	0.3+ 0.3-	1999 05 13	704	0.4- 1.0+	1999 06 14	704	0.7+ 0.6-
1999 05 07	683	0.1+ 0.1+	1999 05 14	704	0.7- 0.2-	1999 06 14	704	0.6+ 0.5-
1999 05 07	683	0.1+ 0.1-	1999 05 14	704	0.2+ 0.3+	1999 06 14	704	0.6- 1.1-
1999 05 08	683	0.1- 0.5-	1999 05 14	704	1.9- 0.3-	1999 06 14	704	0.5+ 0.4-
1999 05 08	683	0.2- 0.2-	1999 05 14	704	1.9- 0.1-			

1999 JC₃ = 1998 EC₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.20345834	<i>ω</i>	134.42857	-0.38219419	+0.92266631		
<i>a</i>	2.8629849	<i>Ω</i>	113.03881	-0.86283030	-0.33650422		
<i>e</i>	0.0180031	<i>i</i>	3.18521	-0.33083451	-0.18828647		
<i>P</i>	4.84	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1994 05 14	691	0.1+ 0.1+	1999 05 09	120	0.2- 0.5+	1999 05 18	704	0.6- 0.1-
1994 05 14	691	0.2+ 0.3+	1999 05 10	704	0.9+ 0.7-	1999 05 18	704	0.9- 0.5+
1994 05 14	691	0.1- 0.3+	1999 05 10	704	0.6+ 1.5+	1999 05 19	704	(2.6- 0.1-)
1995 07 25	372	0.6- 1.7+	1999 05 10	704	0.3+ 0.5+	1999 05 19	704	1.1- 0.2+
1995 07 25	372	0.5- 2.0+	1999 05 10	704	1.7+ 0.0	1999 05 19	704	0.1- 0.6-
1998 01 27	012	1.8- 0.1+	1999 05 10	704	0.9- 0.0	1999 05 19	704	1.1- 0.6-
1998 01 27	012	0.4+ 0.1+	1999 05 10	120	0.2+ 0.7+	1999 05 19	704	1.0- 0.1+
1998 01 27	012	0.0 0.5+	1999 05 10	120	1.2+ 1.4+	1999 06 05	120	0.1+ 0.3-
1998 03 03	704	0.2+ 0.5+	1999 05 13	704	0.3- 0.1+	1999 06 05	120	0.1+ 1.5-
1998 03 03	704	(1.6+ 3.7-)	1999 05 13	704	0.3+ 0.8+	1999 06 09	704	0.5+ 1.0-
1998 03 03	704	0.4+ 0.1+	1999 05 13	704	0.6+ 1.7+	1999 06 09	704	0.1+ 1.0-
1998 03 03	704	0.8+ 0.8+	1999 05 13	704	0.2+ 1.4+	1999 06 09	704	0.3+ 0.4-
1998 03 04	704	0.5- 0.4+	1999 05 13	704	0.2- 2.0+	1999 06 09	704	1.0+ 1.4-
1998 03 04	704	1.0+ 0.4-	1999 05 16	120	1.0- 0.0	1999 06 09	704	0.3+ 1.1-
1998 03 04	704	0.3+ 0.3+	1999 05 16	120	0.4- 0.4-	1999 06 15	704	0.1+ 0.0
1998 03 04	704	0.1+ 0.1+	1999 05 16	120	0.4- 0.1+	1999 06 15	704	0.4+ 0.6-
1998 03 04	704	(5.4- 0.8+)	1999 05 18	704	0.5- 0.0	1999 06 15	704	0.5+ 1.1-
1999 05 09	120	0.7+ 0.3-	1999 05 18	704	0.4- 0.1+	1999 06 15	704	0.6+ 1.1-
1999 05 09	120	0.1- 0.1-	1999 05 18	704	1.4- 0.4+	1999 06 15	704	0.4- 1.1-

1999 JD₃ = 1994 CA₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.22586773	<i>ω</i>	130.67120	+0.02831691	+0.99040049		
<i>a</i>	2.6703402	<i>Ω</i>	140.32119	-0.96911278	+0.06037301		
<i>e</i>	0.1738661	<i>i</i>	12.23386	-0.24498687	-0.12434618		
<i>P</i>	4.36	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 02 07	809	0.6+	1.7+	1999 05 11	757	0.8-	0.0	1999 06 05	716	0.6+	0.4+
1994 02 07	809	0.3+	1.4+	1999 05 12	704	0.3+	0.2-	1999 06 05	716	1.0+	0.5+
1994 02 07	809	0.2-	0.4+	1999 05 12	704	0.1+	0.1-	1999 06 05	703	0.2+	0.1+
1994 02 09	809	0.0	1.3-	1999 05 12	704	0.3-	0.6-	1999 06 05	703	0.0	0.3+
1994 02 09	809	0.4+	1.5-	1999 05 12	704	0.5-	0.7-	1999 06 05	703	0.2+	0.4+
1994 02 09	809	0.7-	1.2-	1999 05 12	704	0.5-	0.1-	1999 06 05	703	0.6+	0.4+
1994 02 12	809	0.1-	1.1+	1999 05 14	703	0.6-	1.6-	1999 06 08	704	0.0	0.2+
1994 02 12	809	0.3+	0.6+	1999 05 14	703	0.3-	0.2+	1999 06 08	704	0.1-	0.2+
1994 02 12	809	0.1-	0.6+	1999 05 14	703	0.1-	0.2+	1999 06 08	704	0.1-	0.2+
1996 10 11	691	0.0	0.4-	1999 05 14	703	0.1-	1.5+	1999 06 08	704	0.2-	0.6+
1996 10 11	691	0.0	0.1-	1999 05 15	704	0.8+	0.5-	1999 06 08	704	0.5-	0.2+

1999 JUNE 22

M.P.C. 34979

1999 03 24	704	(0.8+	2.1−)	1999 05 15	704	1.4+	0.0	1999 06 10	703	0.7+	0.0
1999 03 24	704	0.7−	0.9−	1999 05 15	704	0.0	1.0−	1999 06 10	703	0.0	0.4+
1999 03 24	704	0.7−	0.8−	1999 05 15	704	1.1+	1.8−	1999 06 10	703	0.7−	1.1+
1999 03 24	704	1.0−	0.5+	1999 05 15	704	0.9+	0.4−	1999 06 10	703	0.4−	1.1+
1999 03 24	704	(4.8−	1.0+)	1999 05 17	704	0.5+	0.1−	1999 06 12	704	0.0	0.1−
1999 04 22	691	0.2+	0.6−	1999 05 17	704	(1.6+	2.1−)	1999 06 12	704	0.2+	0.2+
1999 04 22	691	0.4+	0.8−	1999 05 17	704	1.3−	0.7−	1999 06 12	704	0.4+	0.1−
1999 04 22	691	0.2+	0.7−	1999 05 17	704	(0.4+	2.2−)	1999 06 12	704	0.2−	0.2+
1999 05 10	757	0.8−	0.3+	1999 05 17	704	1.4−	0.0	1999 06 12	704	0.3−	0.5+
1999 05 10	757	0.5+	0.4+	1999 05 31	716	1.4+	0.2+				
1999 05 11	757	0.1+	0.5+	1999 05 31	716	0.8−	0.1+				

1999 JH₃ = 1998 AF₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	2.62229		(2000.0)	P	Q		
<i>n</i>	0.25456062	ω	157.69579	−0.27722059	+0.95497054		
<i>a</i>	2.4657095	Ω	96.08219	−0.89679745	−0.21768520		
<i>e</i>	0.1386734	<i>i</i>	6.10404	−0.34482327	−0.20160461		
<i>P</i>	3.87	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 01 02	704	0.0	0.3−	1999 05 13	704	0.7+	0.4+	1999 06 03	704	0.2+	0.1−
1998 01 02	704	0.0	0.2−	1999 05 13	704	0.1−	0.6+	1999 06 03	704	0.1+	0.4+
1998 01 02	704	0.4−	0.0	1999 05 13	704	1.1+	0.6+	1999 06 03	704	0.4−	0.1+
1998 01 02	704	0.3+	0.2−	1999 05 13	704	0.1−	1.0+	1999 06 03	704	0.1−	0.1+
1998 01 02	704	0.2+	0.4−	1999 05 14	704	0.7+	0.2+	1999 06 03	704	0.3−	0.1−
1998 01 06	704	0.1−	0.3−	1999 05 14	704	0.3+	0.0	1999 06 03	704	0.4−	0.2−
1998 01 06	704	0.4+	0.5−	1999 05 14	704	0.5−	0.5+	1999 06 04	704	0.9+	0.5−
1998 01 06	704	0.3−	0.5−	1999 05 14	704	0.1−	0.5−	1999 06 04	704	0.9+	0.1−
1999 02 14	699	0.7+	1.2+	1999 05 14	704	1.1−	0.2+	1999 06 04	704	0.7+	1.3−
1999 02 14	699	1.1+	0.8+	1999 05 17	704	0.4+	0.4+	1999 06 04	704	1.7−	0.6+
1999 02 14	699	0.3−	0.2+	1999 05 17	704	0.1−	0.3+	1999 06 04	704	0.5−	0.4+
1999 04 15	704	0.6+	1.2−	1999 05 17	704	0.8−	0.3+	1999 06 04	704	0.7−	0.7−
1999 04 15	704	0.7−	1.1−	1999 05 17	704	0.2−	0.3+	1999 06 04	704	0.3−	0.5+
1999 04 15	704	0.9−	0.9+	1999 05 17	704	0.3−	0.4−	1999 06 04	704	(0.4−	2.3+)
1999 04 15	704	0.6+	0.7+	1999 05 18	704	0.7+	0.3−	1999 06 04	704	1.7−	0.6−
1999 05 07	905	0.4+	0.1+	1999 05 18	704	0.2−	0.1−	1999 06 04	704	1.5−	0.5−
1999 05 07	905	0.5−	0.4−	1999 05 18	704	0.1+	0.4−	1999 06 07	703	0.5−	0.4−
1999 05 08	703	0.7+	0.5+	1999 05 18	704	1.0+	0.1+	1999 06 07	703	0.0	0.4−
1999 05 08	703	0.1−	0.0	1999 05 18	704	0.2−	1.4+	1999 06 07	703	0.7−	0.9+
1999 05 08	703	0.2+	0.3−	1999 05 19	703	0.2+	0.2−	1999 06 07	703	0.9−	1.2+
1999 05 08	703	0.1−	1.2−	1999 05 19	703	0.2−	0.3+	1999 06 08	704	0.9+	0.1+
1999 05 12	704	1.1+	0.4+	1999 05 19	703	0.3−	0.4+	1999 06 08	704	(1.8+	2.4−)
1999 05 12	704	0.0	0.3+	1999 05 19	703	0.2+	0.9+	1999 06 08	704	0.8+	1.0−
1999 05 12	704	0.5+	0.5+	1999 05 21	704	0.0	0.5−	1999 06 08	704	0.6+	0.3−
1999 05 12	704	0.4+	0.4+	1999 05 21	704	1.5+	0.6−	1999 06 08	704	1.0−	0.0
1999 05 12	704	0.5+	0.9+	1999 05 21	704	0.8+	1.7−	1999 06 14	704	0.4+	0.3+
1999 05 12	385	0.3−	0.1−	1999 05 21	704	0.7+	0.9+	1999 06 14	704	1.2+	0.9−
1999 05 12	385	0.3−	0.2−	1999 05 21	704	0.2+	1.2−	1999 06 14	704	0.2+	0.9−
1999 05 12	385	0.4−	0.1−	1999 06 03	704	0.5−	0.2+	1999 06 14	704	0.3+	0.4−
1999 05 12	886	1.4−	1.2−	1999 06 03	704	0.9+	0.2+	1999 06 14	704	0.4−	1.2−
1999 05 12	886	1.9−	0.7+	1999 06 03	704	0.2−	0.1+				
1999 05 13	704	0.1−	0.3+	1999 06 03	704	0.3−	1.3−				

1999 JK₃ = 1998 BT₄₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	333.88745		(2000.0)	P	Q		
<i>n</i>	0.23419361	ω	202.79713	+0.49930451	+0.83093048		
<i>a</i>	2.6066698	Ω	97.95180	−0.75183425	+0.55632109		
<i>e</i>	0.1550754	<i>i</i>	14.34978	−0.43062776	−0.00783488		
<i>P</i>	4.21	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 01 28	566	0.3+	0.1+	1999 05 13	411	0.3−	0.2+	1999 06 05	716	0.3+	0.7+
1998 01 28	566	0.3+	0.2−	1999 05 13	411	0.7+	0.3+	1999 06 05	716	0.2+	0.6+
1998 01 28	566	0.6+	0.2−	1999 05 15	704	0.1+	0.4−	1999 06 08	704	0.5+	0.4+

1998 02 24	566	0.4−	0.3+	1999 05 15	704	0.7+	0.0	1999 06 08	704	0.1+	0.2−
1998 02 24	566	0.4−	0.2+	1999 05 15	704	1.0−	0.2−	1999 06 08	704	0.2+	0.0
1998 02 24	566	0.4−	0.5+	1999 05 15	704	1.3−	0.1+	1999 06 08	704	0.1+	0.0
1999 02 23	704	0.3−	0.0	1999 05 15	704	(0.1−	2.2−)	1999 06 08	704	0.4−	0.1+
1999 02 23	704	0.1+	0.1+	1999 05 17	704	0.1+	0.2+	1999 06 09	716	0.6+	0.4+
1999 02 23	704	0.3+	0.4+	1999 05 17	704	0.1+	0.4−	1999 06 10	704	0.1−	0.7+
1999 02 23	704	1.5−	0.5+	1999 05 17	704	0.5+	0.4−	1999 06 10	704	0.1−	1.2+
1999 05 08	411	0.0	0.1−	1999 05 17	704	0.3−	0.7+	1999 06 10	704	(2.1−	3.6+)
1999 05 08	411	0.3−	0.6−	1999 05 17	704	0.2−	1.1+	1999 06 10	704	(2.3−	3.0+)
1999 05 12	704	0.9+	0.5−	1999 05 21	704	0.1−	1.2−	1999 06 10	704	0.8−	1.9+
1999 05 12	704	0.2+	0.9−	1999 05 21	704	0.3−	0.3−	1999 06 14	704	(2.4−	0.4−)
1999 05 12	704	0.5+	0.5−	1999 05 21	704	0.1−	0.2+	1999 06 14	704	0.2+	0.0
1999 05 12	704	0.6+	1.4−	1999 05 21	704	0.6+	0.3−	1999 06 14	704	0.3+	0.4−
1999 05 12	704	0.5−	1.1−	1999 05 21	704	0.5−	0.8−	1999 06 14	704	0.0	0.4−
1999 05 12	411	0.2+	0.2+	1999 05 31	716	0.2+	0.1+	1999 06 14	704	0.1−	0.1+
1999 05 12	411	0.8−	0.1−	1999 05 31	716	0.0	0.3+				

1999 JR₃ = 1991 JS = 1992 WB₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	162.25368		(2000.0)	P	Q		
<i>n</i>	0.36831863	ω	230.25915	+0.07414376	−0.97163099		
<i>a</i>	1.9274669	Ω	217.38901	+0.99008760	+0.09865790		
<i>e</i>	0.0406338	<i>i</i>	21.70614	+0.11928637	−0.21494145		
<i>P</i>	2.68	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1991 05 08	675	0.5−	0.1+	1999 04 20	704	0.0	0.7−	1999 05 13	888	0.1−	0.5−
1991 05 08	675	0.5+	0.8−	1999 04 20	704	0.7+	0.9−	1999 05 17	704	0.5−	0.4−
1991 05 10	675	(6.8+	0.6+)	1999 04 20	704	0.3+	0.1+	1999 05 17	704	0.1−	0.1−
1992 11 21	675	1.0+	1.7+	1999 04 20	704	1.1+	0.7−	1999 05 17	704	0.9−	0.7+
1992 11 21	675	0.3+	0.6−	1999 05 10	704	1.1−	0.1−	1999 05 17	704	0.3−	0.5+
1992 11 22	675	1.2−	0.6−	1999 05 10	704	(2.5−	1.9+)	1999 05 17	704	0.0	0.3−
1999 03 25	704	0.4+	1.8−	1999 05 10	704	(2.6−	2.3+)	1999 05 18	704	0.1+	0.1−
1999 03 25	704	1.0−	0.3−	1999 05 10	704	(2.2−	1.1+)	1999 05 18	704	0.1+	0.4+
1999 03 25	704	1.9+	1.9+	1999 05 10	704	0.7+	0.4+	1999 05 18	704	0.7−	0.2+
1999 03 25	704	0.4+	0.0	1999 05 12	704	0.3−	0.7+	1999 05 18	704	0.3+	0.5−
1999 03 25	704	(1.2−	2.7+)	1999 05 12	704	0.5+	1.5+	1999 05 18	704	0.0	0.7+
1999 04 14	699	0.5−	0.1+	1999 05 12	704	0.8−	1.5+	1999 05 19	704	0.2−	0.2−
1999 04 14	699	0.4−	0.2−	1999 05 12	704	0.8+	1.2+	1999 05 19	704	0.6−	0.5−
1999 04 14	699	0.1−	0.3+	1999 05 12	704	0.8+	0.1+	1999 05 19	704	0.2−	0.9−
1999 04 15	704	0.2−	0.0	1999 05 12	888	0.3+	0.7+	1999 05 19	704	0.3−	0.4−
1999 04 15	704	0.3+	0.4+	1999 05 12	888	0.3+	1.1+	1999 05 19	704	0.2+	1.3−
1999 04 15	704	0.6−	0.2+	1999 05 12	888	0.1+	0.8+	1999 05 21	704	0.1−	0.3+
1999 04 15	704	0.2+	0.2+	1999 05 12	888	0.3+	0.4+	1999 05 21	704	0.0	0.7+
1999 04 15	704	0.5+	1.1+	1999 05 13	704	0.5−	0.1+	1999 05 21	704	0.7+	1.0+
1999 04 17	704	0.9+	0.2−	1999 05 13	704	0.0	0.3+	1999 05 21	704	1.1−	1.2−
1999 04 17	704	0.4+	1.3−	1999 05 13	704	1.1−	1.1+	1999 06 08	704	0.1−	1.0−
1999 04 17	704	0.2+	1.0−	1999 05 13	704	(2.2−	0.4+)	1999 06 08	704	0.3−	0.7−
1999 04 17	704	0.2−	0.5−	1999 05 13	704	1.1−	0.3+	1999 06 08	704	0.2−	0.5−
1999 04 17	704	0.6+	1.1−	1999 05 13	888	0.1−	0.2+	1999 06 08	704	0.9+	0.8−
1999 04 20	704	0.3−	0.2+	1999 05 13	888	0.0	0.3−	1999 06 08	704	(3.4+	2.8−)

M.P.C. 34980

1999 JUNE 22

1998 02 25	566	1.5+	0.3-	1999 05 12	704	0.8-	0.5-	1999 06 05	426	0.1-	0.5+
1998 03 24	704	(1.4+	2.4+)	1999 05 12	704	0.7+	1.1-	1999 06 05	426	0.0	0.5+
1998 03 24	704	0.2-	1.6+	1999 05 12	704	0.4-	0.6-	1999 06 08	704	0.7+	0.0
1998 03 24	704	1.0+	0.8-	1999 05 12	704	0.3+	0.6-	1999 06 08	704	0.1+	0.1-
1998 03 24	704	0.1-	0.7-	1999 05 12	704	1.1-	1.4-	1999 06 08	704	(2.2+	0.6+)
1998 03 24	704	(2.4-	0.2+)	1999 05 12	426	0.2+	0.5+	1999 06 08	704	0.3-	0.3-
1998 03 25	704	0.3+	0.3+	1999 05 12	426	0.3+	0.6+	1999 06 08	704	1.4-	1.2-
1998 03 25	704	0.6-	1.1+	1999 05 12	426	0.3+	0.6+	1999 06 14	704	0.0	0.1+
1998 03 25	704	0.1+	0.3+	1999 05 15	704	1.7+	1.5+	1999 06 14	704	0.5+	0.1+
1998 03 25	704	0.4+	0.2-	1999 05 15	704	0.8-	0.2+	1999 06 14	704	0.0	0.4-
1998 03 25	704	1.1-	0.1+	1999 05 15	704	(1.3-	3.1-)	1999 06 14	704	0.1-	0.5-
1999 05 06	426	0.3-	0.6+	1999 05 15	704	0.3+	0.6-	1999 06 14	704	0.1-	0.5-
1999 05 06	426	0.2+	0.6+	1999 05 17	704	0.6+	1.0-				

1999 JC₄ = 1978 WZ₂₀ = 1989 UM₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	324.86953		(2000.0)	P		Q	
<i>n</i>	0.36362066	ω	69.48457		+0.37368513		+0.89790760
<i>a</i>	1.9440332	Ω	224.76518		-0.92534832		+0.34358734
<i>e</i>	0.0692541	<i>i</i>	19.29059		-0.06395241		+0.27515391
<i>P</i>	2.71	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1978 11 28	675	0.2-	0.8-	1999 04 15	704	0.8-	1.9-	1999 05 13	704	0.3-	0.9+
1978 11 29	675	0.0	0.7-	1999 04 17	704	0.1-	0.3-	1999 05 13	704	0.6-	0.7+
1989 10 27	675	0.9+	1.4+	1999 04 17	704	0.5+	0.1-	1999 05 13	704	0.6-	1.0+
1989 10 27	675	0.2+	1.4+	1999 04 17	704	0.4+	0.3-	1999 05 13	704	0.3-	0.6+
1989 10 29	675	(1.0-	2.9-)	1999 04 17	704	0.7+	0.3-	1999 05 13	704	1.0-	0.3+
1989 10 29	675	0.2-	1.5-	1999 04 17	704	1.1+	0.5-	1999 05 14	704	0.5-	0.2+
1997 11 30	566	0.3-	0.2+	1999 04 20	704	0.5-	0.1+	1999 05 14	704	0.7+	0.5+
1997 11 30	566	0.4-	0.1-	1999 04 20	704	0.0	0.1-	1999 05 14	704	1.4-	0.3+
1997 11 30	566	0.2-	0.4+	1999 04 20	704	0.1-	0.2+	1999 05 14	704	1.2-	1.0+
1998 01 03	327	0.1+	0.0	1999 04 20	704	0.1-	0.6+	1999 05 14	704	0.7-	1.3+
1998 01 03	327	0.0	0.2+	1999 04 20	704	0.5+	0.9+	1999 06 08	704	0.3+	0.7-
1998 01 03	327	0.5+	1.5+	1999 05 10	704	0.4-	0.2-	1999 06 08	704	0.5+	0.5-
1999 04 15	704	0.6+	0.2-	1999 05 10	704	0.1+	0.0	1999 06 08	704	0.9+	0.2-
1999 04 15	704	0.7+	0.2+	1999 05 10	704	0.5+	0.2-	1999 06 08	704	0.5+	0.3-
1999 04 15	704	(1.9+	3.0-)	1999 05 10	704	0.8+	0.2-	1999 06 08	704	0.5+	0.9+
1999 04 15	704	0.2+	0.9-	1999 05 10	704	0.3-	1.4-				

1999 JU₄ = 1996 VF₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	357.56387		(2000.0)	P		Q	
<i>n</i>	0.22821332	ω	37.48052		-0.12316480		+0.97372787
<i>a</i>	2.6520114	Ω	226.35057		-0.96249349		-0.16422238
<i>e</i>	0.2046014	<i>i</i>	15.34922		-0.24173685		+0.15774993
<i>P</i>	4.32	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 11 05	691	0.3-	0.2+	1999 05 14	704	0.7+	0.4+	1999 05 18	704	0.2+	0.4+
1996 11 05	691	0.2-	0.0	1999 05 14	704	0.1-	0.6+	1999 05 18	704	(0.3+	3.1+)
1996 11 05	691	0.4-	0.3+	1999 05 14	704	0.2+	0.0	1999 06 04	703	0.6+	0.4+
1996 11 11	691	0.4+	0.0	1999 05 14	704	0.2-	1.0+	1999 06 04	703	0.4+	0.8+
1996 11 11	691	0.2+	0.1+	1999 05 14	704	1.3-	0.5+	1999 06 04	703	1.4+	0.4+
1996 11 11	691	0.2+	0.1+	1999 05 14	704	0.0	1.1-	1999 06 04	703	1.2+	0.4-
1999 04 15	704	0.3-	0.8+	1999 05 14	704	0.7+	0.4-	1999 06 05	703	0.8+	0.0
1999 04 15	704	1.0+	0.1-	1999 05 14	704	0.4+	0.4+	1999 06 05	703	0.3-	0.6+
1999 04 15	704	0.2-	0.8-	1999 05 14	704	0.6+	0.2-	1999 06 05	703	0.6+	0.9+
1999 04 15	704	0.6-	1.4+	1999 05 14	704	0.8-	0.8+	1999 06 05	703	0.7+	0.9+
1999 05 10	704	0.2-	0.6-	1999 05 14	704	0.7-	0.5+	1999 06 08	704	0.3-	0.2+
1999 05 10	704	0.8-	0.9-	1999 05 14	704	0.9+	0.1+	1999 06 08	704	0.0	0.0
1999 05 10	704	0.1+	0.9-	1999 05 14	704	0.7-	0.3+	1999 06 08	704	0.2-	0.4+
1999 05 10	704	0.4-	1.7-	1999 05 14	704	0.2+	0.1+	1999 06 08	704	0.9-	1.1+
1999 05 10	704	0.3-	0.6-	1999 05 14	557	0.2+	0.1-	1999 06 08	704	1.4-	0.5-
1999 05 13	704	0.5-	0.2-	1999 05 14	557	0.3+	0.1+	1999 06 14	704	0.3-	0.7-
1999 05 13	704	0.3-	0.6-	1999 05 14	557	0.5+	0.1+	1999 06 14	704	1.1-	0.7-

1999 05 13	704	0.2+	1.1-	1999 05 16	557	0.0	0.2-	1999 06 14	704	0.2-	0.8-
1999 05 13	704	0.2-	0.4+	1999 05 16	557	0.4+	0.0	1999 06 14	704	0.2+	1.1-
1999 05 13	704	0.0	0.8+	1999 05 18	704	0.1-	0.4+	1999 06 14	704	0.5-	0.2-
1999 05 14	704	0.1-	0.5-	1999 05 18	704	0.1+	0.5+				

1999 JE₆ = 1997 WV₄₁

Id. T. Urata

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	35.25346		(2000.0)	P		Q	
<i>n</i>	0.28532817	ω	128.04430		-0.78466253		+0.60568617
<i>a</i>	2.2851056	Ω	89.62381		-0.60208383		-0.69383086
<i>e</i>	0.1364683	<i>i</i>	7.59081		-0.14764748		-0.38954203
<i>P</i>	3.45	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 11 29	704	0.3+	0.8+	1999 05 12	704	0.1+	0.6+	1999 05 19	704	0.2-	0.7-
1997 11 29	704	0.7-	0.6-	1999 05 12	905	0.7+	0.3+	1999 05 20	886	0.3-	0.8-
1997 11 29	704	0.3-	0.3-	1999 05 12	905	0.8-	0.3-	1999 05 20	886	0.6-	0.9+
1997 11 29	704	0.0	0.4-	1999 05 13	888	1.4+	1.1-	1999 05 21	704	0.8+	0.8-
1997 11 29	704	1.7-	0.9+	1999 05 13	888	0.3+	0.1-	1999 05 21	704	0.1+	0.1-
1997 12 04	704	(2.7+	1.7-)	1999 05 13	888	0.1+	0.5-	1999 05 21	704	0.4+	0.4-
1997 12 04	704	1.4+	0.3+	1999 05 17	704	0.3-	0.3+	1999 05 21	704	(2.1-	0.2-)
1997 12 04	704	0.6+	0.8-	1999 05 17	704	1.4-	0.8+	1999 05 21	704	0.3-	0.2+
1997 12 04	704	0.6+	0.5-	1999 05 17	704	0.3-	0.5+	1999 06 08	704	0.4+	1.8+
1999 05 09	703	0.7+	0.4-	1999 05 17	704	0.0	0.8+	1999 06 08	704	0.1+	0.7-
1999 05 09	703	0.1+	0.0	1999 05 17	704	0.4-	1.3+	1999 06 08	704	0.4-	1.3-
1999 05 09	703	0.2+	0.1+	1999 05 18	704	0.1+	0.2+	1999 06 08	704	0.7-	0.7-
1999 05 09	703	0.0	0.5+	1999 05 18	704	0.9+	0.0	1999 06 08	704	(2.3-	1.4-)
1999 05 11	905	0.1+	0.3+	1999 05 18	704	1.1+	0.7-	1999 06 14	704	0.2+	0.2+
1999 05 11	905	0.1+	0.7+	1999 05 18	704	0.5-	0.6+	1999 06 14	704	0.2-	0.2+
1999 05 12	704	0.4+	1.1-	1999 05 18	704	0.5-	0.5+	1999 06 14	704	0.1+	0.2+
1999 05 12	704	0.4-	0.2-	1999 05 19	704	0.4+	1.3-	1999 06 14	704	0.3+	0.4-
1999 05 12	704	0.9+	1.1+	1999 05 19	704	1.5-	0.6-	1999 06 14	704	0.1-	0.0
1999 05 12	704	1.6-	0.7-	1999 05 19	704	(2.9+	0.9-)				

1999 JG₆ = 1991 CZ₄ = 1996 RM₄

Id. T. Urata

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	17.44185		(2000.0)	P		Q	
<i>n</i>	0.26703514	ω	80.06568		-0.49682990		+0.86742924
<i>a</i>	2.3883086	Ω	160.07437		-0.82400993		-0.46175893
<i>e</i>	0.1174736	<i>i</i>	4.53646		-0.27233745		-0.18532462
<i>P</i>	3.69	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1991 02 09	675	1.4+	0.6+	1999 05 13	704	0.4-	0.2-	1999 05 18	704	0.2-	0.3+
1991 02 09	675	1.2-	0.2+	1999 05 13	704	1.0+	0.0	1999 05 18	704	1.0-	0.6-
1996 09 13	566	0.5-	0.5+	1999 05 13	704	(2.3-	0.1-)	1999 05 18	704	0.2-	0.1-
1996 09 13	566	0.4-	0.8+	1999 05 13	704	0.2+	0.7+	1999 05 20	888	0.6+	0.1+
1996 09 13	566	0.5-	0.6+	1999 05 13	704	0.4+	0.2+	1999 05 20	888	0.3-	0.5+
1996 09 17	566	0.1+	0.5-	1999 05 13	888	0.6-	1.9-	1999 06 08	704	0.7+	0.7-
1996 09 17	566	0.8+	0.5-	1999 05 13	888	0.0	0.4-	1999 06 08	704	0.1-	0.3+
1996 09 17	566	0.3+	0.3-	1999 05 13	888	0.6+	1.2-	1999 06 08	704	0.3-	0.0
1999 05 10	704	0.5-	0.1+	1999 05 14	704	0.3-	0.1+	1999 06 08	704	0.6-	0.3-
1999 05 10	704	0.2+	0.1-	1999 05 14	704	0.2+	0.7-	1999 06 08	704	1.0-	0.5+
1999 05 10	704	0.6-	0.5+	1999 05 14	704	1.7+	0.4-	1999 06 14	704	0.7+	0.0
1999 05 10	704	0.2+	0.3+	1999 05 14	704	0.2-	0.7+	1999 06 14	704	0.6+	0.2+
1999 05 10	704	0.4-	0.9+	1999 05 14	704	1.4-	1.2+	1999 06 14	704	0.0	0.6+
1999 05 11	905	(0.4-	2.5-)	1999 05 18	704	0.4-	0.1-	1999 06 14	704	0.3+	0.3+
1999 05 11	905	1.1+	0.8-	1999 05 18	704	0.2+	0.5+	1999 06 14	704	0.2-	0.0

1999 JUNE 22

M.P.C. 34981

1999 JJ₆ = 1997 YG₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	99.45560		(2000.0)	P		Q	
<i>n</i>	0.21978780	ω	32.83817	−0.39844184	−0.70704551		
<i>a</i>	2.7193618	Ω	87.21231	+0.66341718	−0.66201486		
<i>e</i>	0.1992982	<i>i</i>	35.79786	+0.63334173	+0.24864226		
<i>P</i>	4.48	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1997 12 26	566	0.3+	0.2+	1999 05 13	704	(2.4−	1.0−)	1999 05 17	704	0.5−	0.8+
1997 12 26	566	0.0	0.2−	1999 05 13	704	0.2−	0.7−	1999 06 07	704	0.4+	1.5−
1997 12 26	566	0.1+	0.1−	1999 05 13	704	0.1−	0.6−	1999 06 07	704	0.9−	0.2+
1997 12 29	566	0.3−	0.0	1999 05 13	704	0.2−	1.1−	1999 06 07	704	1.2−	0.7+
1997 12 29	566	0.2−	0.0	1999 05 14	704	0.0	0.1−	1999 06 07	704	1.5+	0.5+
1997 12 29	566	0.3−	0.4+	1999 05 14	704	0.1+	0.6+	1999 06 07	704	1.3+	0.9+
1999 02 24	704	1.1+	0.9+	1999 05 14	704	(2.2+	1.1+)	1999 06 12	704	0.2−	0.4−
1999 02 24	704	1.6−	0.2−	1999 05 14	704	0.3+	0.7−	1999 06 12	704	0.7+	0.1+
1999 02 24	704	1.3−	0.0	1999 05 17	704	0.1+	0.8+	1999 06 12	704	0.1+	0.3−
1999 02 24	704	(2.4−	1.8+)	1999 05 17	704	0.1+	0.5+	1999 06 12	704	0.2−	0.1−
1999 02 24	704	0.6+	0.7−	1999 05 17	704	0.3−	1.2+	1999 06 12	704	0.3−	0.1−
1999 05 13	704	0.1+	0.8−	1999 05 17	704	0.7+	0.7+				

1999 JN₆ = 1996 OR₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	288.08587		(2000.0)	P		Q	
<i>n</i>	0.27481874	ω	147.81514	+0.96286684	−0.07912849		
<i>a</i>	2.3429975	Ω	219.39771	+0.06166875	+0.99527003		
<i>e</i>	0.3003639	<i>i</i>	23.99652	+0.26283914	+0.05635819		
<i>P</i>	3.59	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 07 25	599	0.4+	0.0	1999 05 14	704	0.1+	1.2+	1999 06 08	699	0.5+	0.3+
1996 07 25	599	0.1+	0.1−	1999 05 14	704	0.1−	1.2−	1999 06 08	699	0.4−	0.4−
1996 07 25	599	0.5−	0.3+	1999 05 14	704	0.4+	1.2+	1999 06 08	699	1.6−	1.3−
1996 07 25	599	0.0	0.2−	1999 05 14	704	0.3+	1.2+	1999 06 09	699	0.2+	0.2+
1999 05 12	704	0.7+	0.9−	1999 06 05	703	0.7−	0.6+	1999 06 09	699	1.6+	0.8+
1999 05 12	704	0.1−	1.2−	1999 06 05	703	0.5−	0.5+	1999 06 09	699	1.3+	1.2+
1999 05 12	704	0.8−	0.1+	1999 06 05	703	1.3−	0.8−				
1999 05 12	704	(2.5−	2.8−)	1999 06 05	703	0.4+	1.4−				

1999 JX₆ = 1997 WD₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	310.15798		(2000.0)	P		Q	
<i>n</i>	0.27904437	ω	225.71205	+0.71866933	+0.68118615		
<i>a</i>	2.3192837	Ω	90.81371	−0.59157884	+0.70450264		
<i>e</i>	0.1404413	<i>i</i>	8.02793	−0.36544339	+0.19915187		
<i>P</i>	3.53	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 11 28	691	0.1+	0.2+	1999 05 12	704	0.9+	0.7−	1999 05 14	703	0.1−	0.3+
1997 11 28	691	0.1−	0.1+	1999 05 12	704	0.9+	0.4+	1999 05 16	703	0.1−	1.0−
1997 11 28	691	0.1+	0.1+	1999 05 12	704	0.6−	0.6+	1999 05 16	703	0.2−	0.0
1997 12 05	691	0.0	0.1−	1999 05 12	704	0.1−	1.7−	1999 05 16	703	0.9−	0.2−
1997 12 05	691	0.1−	0.0	1999 05 12	704	(2.9−	0.5+)	1999 05 17	704	0.9+	1.7−
1999 04 12	704	0.2+	1.5+	1999 05 13	704	0.3−	0.0	1999 05 17	704	0.5−	0.6+
1999 04 12	704	1.4−	0.6−	1999 05 13	704	0.4−	0.9−	1999 05 17	704	0.2+	1.0+
1999 04 12	704	0.1−	1.7−	1999 05 13	704	0.9−	0.4+	1999 05 17	704	0.1−	1.2+
1999 04 12	704	(4.7−	1.3−)	1999 05 13	704	0.4−	1.2+	1999 06 07	703	1.1−	0.8−
1999 05 08	703	1.9+	1.0−	1999 05 13	704	0.2−	1.2+	1999 06 07	703	0.8+	0.4+
1999 05 08	703	0.3+	0.3+	1999 05 14	703	0.8+	0.2+	1999 06 07	703	0.3−	0.8+
1999 05 08	703	0.5+	0.1+	1999 05 14	703	0.6−	0.2−	1999 06 07	703	0.7+	0.1+
1999 05 08	703	1.0+	0.4+	1999 05 14	703	0.8−	0.3−				

1999 JA₇ = 1977 OW

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	338.61042		(2000.0)	P		Q	
<i>n</i>	0.26355084	ω	222.50261	+0.43163174	+0.87894058		
<i>a</i>	2.4093124	Ω	74.00138	−0.76049104	+0.47552656		
<i>e</i>	0.2635124	<i>i</i>	12.18374	−0.48512618	+0.03657804		
<i>P</i>	3.74	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1977 07 16	413	0.1+	0.1−	1999 05 08	703	0.6+	0.6−	1999 05 17	704	0.2+	0.3+
1977 07 16	413	0.3+	1.7−	1999 05 12	704	0.3+	0.1−	1999 05 17	704	0.9+	0.3−
1977 07 20	413	0.4−	0.3−	1999 05 12	704	1.4+	0.1+	1999 05 17	704	0.6−	0.6+
1977 07 20	413	0.1+	0.0	1999 05 12	704	0.5−	1.3−	1999 05 17	704	0.3−	0.3+
1977 07 22	413	0.7−	1.2+	1999 05 12	704	0.5+	0.6−	1999 05 17	704	0.7−	0.2−
1977 07 22	413	0.6+	0.6+	1999 05 12	704	0.3−	0.7+	1999 05 18	703	0.0	0.6+
1999 04 12	704	0.0	0.1−	1999 05 14	703	0.7+	1.3−	1999 05 18	703	0.6+	0.1+
1999 04 12	704	(2.6+	1.1−)	1999 05 14	703	0.1+	0.3−	1999 05 18	703	0.1+	0.4−
1999 04 12	704	1.6−	1.0−	1999 05 14	703	0.2−	0.4+	1999 05 18	703	0.1+	0.2−
1999 04 12	704	0.7−	0.7+	1999 05 14	703	0.5+	0.3+	1999 06 08	704	0.3−	0.6+
1999 04 12	704	1.5−	1.5+	1999 05 15	704	0.2+	0.2+	1999 06 08	704	0.4+	0.5+
1999 05 08	703	0.9+	1.0+	1999 05 15	704	0.4−	0.2−	1999 06 08	704	0.2+	0.4−
1999 05 08	703	0.3+	0.0	1999 05 15	704	(2.3−	1.7+)	1999 06 08	704	1.4−	0.2+
1999 05 08	703	0.0	0.9−	1999 05 15	704	(2.3−	0.4+)				

1999 JB₇ = 1998 BD₃₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	352.91134		(2000.0)	P		Q	
<i>n</i>	0.18100738	ω	123.26736	−0.23783919	+0.96597792		
<i>a</i>	3.0950798	Ω	132.62581	−0.93075598	−0.19675760		
<i>e</i>	0.1502153	<i>i</i>	7.93559	−0.27771536	−0.16784846		
<i>P</i>	5.45	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 01 26	691	0.1+	0.0	1999 05 08	703	0.1−	0.8+	1999 05 14	703	0.7+	0.8−
1998 01 26	691	0.2+	0.0	1999 05 08	703	0.9+	0.6−	1999 05 16	703	0.5−	0.0
1998 01 26	691	0.1+	0.5−	1999 05 08	703	0.7+	0.0	1999 05 16	703	0.2+	0.1+
1998 02 03	691	0.2−	0.3+	1999 05 12	704	0.3+	1.4−	1999 05 16	703	1.0−	0.4−
1998 02 03	691	0.2−	0.1+	1999 05 12	704	0.6+	0.2−	1999 05 16	703	0.7+	1.2+
1998 02 03	691	0.0	0.1+	1999 05 12	704	(0.7+	2.1+)	1999 05 17	704	0.9−	0.0
1999 04 12	704	0.4+	0.0	1999 05 12	704	1.0+	0.4+	1999 05 17	704	0.2+	1.0+
1999 04 12	704	0.0	1.8+	1999 05 12	704	0.1−	1.0−	1999 05 17	704	1.7−	0.3−
1999 04 12	704	(0.6−	3.4+)	1999 05 14	703	0.1+	1.3−	1999 05 17	704	0.0	1.9+
1999 04 12	704	1.2−	1.1−	1999 05 14	703	0.1+	1.8−	1999 05 17	704	1.0−	1.5+
1999 05 08	703	0.6−	0.4+	1999 05 14	703	0.9+	0.3−				

1999 JF₇ = 1978 EN₅ = 1982 BQ₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	46.78845		(2000.0)	P		Q	
<i>n</i>	0.23861299	ω	72.84742	−0.97020829	+0.22273529		
<i>a</i>	2.5743840	Ω	119.93121	−0.24208250	−0.90684107		
<i>e</i>	0.1358521	<i>i</i>	6.31437	+0.00958812	−0.35781037		
<i>P</i>	4.13	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1978 03 06	095	(4.3−	3.1−)	1999 05 12	704	0.2−	0.5+	1999 05 18	704	0.3+	0.9+
1982 01 20	033	0.1+	0.1+	1999 05 12	704	0.0	0.2+	1999 05 19	704	0.0	0.1+
1982 01 20	033	0.1−	0.0	1999 05 12	704	0.3+	0.6+	1999 05 19	704	0.3+	1.3+
1997 12 05	704	0.6+	0.7−	1999 05 12	704	0.8−	0.3+	1999 05 19	704	0.2−	1.2+
1997 12 05	704	0.1+	0.2−	1999 05 12	704	0.4+	0.2+	1999 05 19	704	1.3+	0.8+
1997 12 05	704	0.1−	0.1+	1999 05 14	703	0.9+	0.3−	1999 05 21	704	(2.8+	0.5+)
1997 12 05	704	0.3+	0.9+	1999 05 14	703	0.2+	0.4+	1999 05 21	704	0.3−	0.9−
1997 12 05	704	0.9−	0.3−	1999 05 14	703	0.3−	0.5−	1999 05 21	704	0.2−	0.0
1999 02 23	704	0.4+	0.2−	1999 05 14	703	0.3+	1.5−	1999 05 21	704	0.9−	0.2−
1999 02 23	704	1.0−	0.4+	1999 05 15	704	0.9+	0.5−	1999 05 21	704	0.6−	0.5−
1999 02 23	704	1.1−	0.8+	1999 05 15	704	1.3+	0.6−	1999 06 08	704	0.6+	0.5+

M.P.C. 34982

1999 02 23	704	0.6−	0.6+	1999 05 15	704	1.0+	0.8−	1999 06 08	704	0.9−	1.0+
1999 02 23	704	1.9+	0.5+	1999 05 15	704	0.2+	0.1−	1999 06 08	704	1.4−	0.2+
1999 04 12	704	0.1+	0.6−	1999 05 15	704	0.9−	0.7−	1999 06 08	704	0.9−	0.4−
1999 04 12	704	0.7−	0.1+	1999 05 16	703	0.4+	0.2−	1999 06 08	704	(2.5−	2.3−)
1999 04 12	704	0.6−	1.7−	1999 05 16	703	0.2+	0.0	1999 06 14	704	0.4+	0.7+
1999 04 12	704	(2.4−	2.3−)	1999 05 16	703	0.1−	0.6−	1999 06 14	704	0.0	0.1−
1999 04 12	704	0.2−	0.8−	1999 05 16	703	1.3−	0.2−	1999 06 14	704	0.2−	0.2+
1999 05 08	703	0.7+	0.1−	1999 05 18	704	0.2+	0.2−	1999 06 14	704	0.3−	0.3+
1999 05 08	703	0.6+	0.2+	1999 05 18	704	0.5+	0.4−	1999 06 14	704	0.4−	0.9−
1999 05 08	703	0.7−	0.7+	1999 05 18	704	1.1+	0.3−				
1999 05 08	703	0.7−	0.9+	1999 05 18	704	0.1+	0.1+				

1999 JS₇ = 1982 PY = 1982 RO₃ = 1982 SF₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	325.45274	(2000.0)	
	P	Q	
<i>n</i>	0.28389693	<i>ω</i>	57.66105
<i>a</i>	2.2927793	<i>Ω</i>	269.54460
<i>e</i>	0.2160003	<i>i</i>	2.15952
<i>P</i>	3.47	<i>H</i>	15.6
		<i>G</i>	0.15
		<i>U</i>	4

Residuals in seconds of arc

1982 08 14	095	1.5+	0.8+	1999 05 14	428	0.3−	0.2+	1999 05 19	704	0.1−	1.0+
1982 08 16	095	1.5−	0.6−	1999 05 14	428	0.3+	0.3−	1999 05 19	704	0.4−	1.2−
1982 09 12	095	1.7−	0.1−	1999 05 15	428	1.6+	0.2−	1999 05 22	428	0.5+	0.0
1982 09 17	095	1.7+	0.0	1999 05 15	428	1.1−	0.2−	1999 05 22	428	0.3−	0.1−
1999 05 13	704	1.0+	0.5+	1999 05 18	704	0.4−	0.6+	1999 06 14	428	0.0	0.1+
1999 05 13	704	0.8+	1.3−	1999 05 18	704	0.1−	0.4−	1999 06 14	428	0.2−	0.5−
1999 05 13	704	0.3+	1.3+	1999 05 18	704	1.2−	0.1−	1999 06 15	704	0.4+	0.5−
1999 05 13	704	0.5−	0.5−	1999 05 18	704	0.8−	1.9+	1999 06 15	704	0.0	0.1+
1999 05 13	704	(2.3+	2.0+)	1999 05 19	704	0.1+	1.3−	1999 06 15	704	0.3+	0.3+
1999 05 13	428	0.0	0.6+	1999 05 19	704	0.4−	0.9−	1999 06 15	704	0.3−	0.2+
1999 05 13	428	0.4−	1.2+	1999 05 19	704	1.1+	0.5−				

1999 JZ₇ = 1995 KF₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	341.13261	(2000.0)	
	P	Q	
<i>n</i>	0.23993855	<i>ω</i>	217.98895
<i>a</i>	2.5648936	<i>Ω</i>	61.18445
<i>e</i>	0.2442552	<i>i</i>	19.59805
<i>P</i>	4.11	<i>H</i>	14.2
		<i>G</i>	0.15
		<i>U</i>	4

Residuals in seconds of arc

1995 05 30	691	0.3+	0.1−	1999 05 12	704	0.9+	0.4+	1999 05 17	704	1.0−	0.9+
1995 05 30	691	0.6+	0.4−	1999 05 12	704	0.2−	0.7+	1999 05 17	704	0.4−	0.4−
1995 05 30	691	0.1−	0.1+	1999 05 12	704	0.6+	0.6−	1999 05 17	704	1.2−	1.0+
1995 05 31	691	0.0	0.3+	1999 05 12	704	0.5+	0.8−	1999 05 17	704	0.8−	0.5+
1995 05 31	691	1.0−	0.3+	1999 05 12	704	1.4+	0.2−	1999 05 17	704	0.1+	1.0+
1995 05 31	691	0.1−	0.5−	1999 05 15	704	0.1+	0.5−	1999 06 08	704	0.6+	0.1−
1999 04 12	704	0.0	0.0	1999 05 15	704	0.1+	0.2−	1999 06 08	704	0.3−	0.5−
1999 04 12	704	0.3+	0.5+	1999 05 15	704	0.1−	0.0	1999 06 08	704	0.0	0.3+
1999 04 12	704	0.1+	0.3+	1999 05 15	704	0.5+	0.2+	1999 06 08	704	0.6+	0.5−
1999 04 12	704	1.0−	1.5−	1999 05 15	704	0.4−	0.5−				

1999 JB₈ = 1992 JK = 1997 WN₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	81.46932	(2000.0)	
	P	Q	
<i>n</i>	0.27741657	<i>ω</i>	83.66109
<i>a</i>	2.3283474	<i>Ω</i>	61.73480
<i>e</i>	0.1472235	<i>i</i>	22.95787
<i>P</i>	3.55	<i>H</i>	14.1
		<i>G</i>	0.15
		<i>U</i>	2

Residuals in seconds of arc

1992 05 02	675	0.6+	0.2+	1999 02 24	704	1.6+	0.3+	1999 05 15	704	0.6−	0.8+
1992 05 03	675	0.4−	0.3+	1999 04 10	704	1.1+	0.6+	1999 05 15	704	0.0	1.1−
1992 05 03	675	0.0	0.2−	1999 04 10	704	0.4+	0.3+	1999 05 17	704	1.1+	0.1+

1999 JUNE 22

1997 11 26	566	0.7−	1.0+	1999 04 10	704	0.9+	0.1−	1999 05 17	704	0.6+	0.9+
1997 11 26	566	0.8−	0.7+	1999 04 10	704	1.3+	0.0	1999 05 17	704	0.4+	0.9+
1997 11 26	566	0.7−	0.8+	1999 05 12	704	0.5+	0.2−	1999 05 17	704	0.1−	0.2+
1997 11 30	566	0.7−	0.8+	1999 05 12	704	0.1+	0.4+	1999 05 17	704	0.0	0.6+
1997 11 30	566	0.2−	1.1+	1999 05 12	704	0.4−	0.1+	1999 06 08	704	0.3−	0.2−
1997 11 30	566	0.9−	0.2+	1999 05 12	704	0.0	0.1−	1999 06 08	704	0.5−	0.4−
1999 02 24	704	1.4−	0.1−	1999 05 12	704	0.4−	0.7+	1999 06 08	704	1.0−	0.7−
1999 02 24	704	0.1+	1.1−	1999 05 15	704	0.1+	0.9+	1999 06 08	704	0.3−	0.4−
1999 02 24	704	0.1−	0.1−	1999 05 15	704	0.8+	1.6+	1999 06 08	704	0.2−	0.0
1999 02 24	704	0.8−	1.6−	1999 05 15	704	0.6−	0.8+				

1999 JD₈ = 1994 UF₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	0.01475	(2000.0)	
	P	Q	
<i>n</i>	0.17636537	<i>ω</i>	59.72279
<i>a</i>	3.1491535	<i>Ω</i>	218.29287
<i>e</i>	0.4623113	<i>i</i>	25.00306
<i>P</i>	5.59	<i>H</i>	15.5
		<i>G</i>	0.15
		<i>U</i>	3

Residuals in seconds of arc

1994 10 30	691	0.2−	0.0	1999 05 17	704	0.7+	0.2+	1999 06 08	703	1.6−	0.3−
1994 10 30	691	0.0	0.7+	1999 05 17	704	0.7+	0.1−	1999 06 08	703	0.0	0.6+
1994 10 30	691	0.2−	0.1+	1999 05 17	704	0.3+	0.0	1999 06 08	703	0.6+	0.6+
1994 10 31	691	0.3+	0.4−	1999 05 17	704	1.0+	0.6+	1999 06 08	703	1.2+	1.9+
1994 10 31	691	0.0	0.2+	1999 05 17	704	1.2+	0.3+	1999 06 08	704	0.2−	0.0
1994 10 31	691	0.1+	0.0	1999 05 21	704	1.4+	1.4−	1999 06 08	704	0.1−	0.8+
1999 04 20	704	0.7+	1.1+	1999 05 21	704	0.1+	0.4+	1999 06 08	704	0.6+	0.2+
1999 04 20	704	0.5−	0.4+	1999 05 21	704	1.3−	0.2−	1999 06 08	704	0.3+	0.1+
1999 04 20	704	0.7−	0.4−	1999 05 21	704	1.1−	0.6−	1999 06 08	704	0.2+	0.2−
1999 04 20	704	(1.2−	2.4−)	1999 05 21	704	0.7−	0.2−	1999 06 10	704	0.2+	0.1+
1999 04 20	704	1.0−	0.1−	1999 05 23	610	0.9−	0.4−	1999 06 10	704	0.0	0.1−
1999 05 12	704	0.2+	0.3+	1999 05 23	610	0.7−	0.3−	1999 06 10	704	0.1+	0.0
1999 05 12	704	0.4−	0.5+	1999 05 23	610	0.7−	0.2−	1999 06 10	704	0.6+	1.1−
1999 05 12	704	1.3−	0.2−	1999 05 23	610	0.5−	0.1−	1999 06 10	704	0.5−	0.6+
1999 05 12	704	0.2−	0.4+	1999 05 23	610	0.4−	0.0	1999 06 12	704	0.1−	0.0
1999 05 15	704	0.5+	1.6+	1999 05 24	610	0.1−	0.4−	1999 06 12	704	0.5+	0.0
1999 05 15	704	0.4+	1.2−	1999 05 24	610	0.2−	0.4−	1999 06 12	704	0.2−	0.5−
1999 05 15	704	0.5+	0.4+	1999 05 24	610	0.2−	0.4−	1999 06 12	704	0.3−	0.2+
1999 05 15	704	1.0+	0.0	1999 05 24	610	0.3−	0.5−	1999 06 12	704	0.4+	0.7−
1999 05 15	704	1.1+	0.7−	1999 05 24	610	0.3−	0.4−				

1999 JJ₈ = 1992 LA

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	353.16724	(2000.0)	
	P	Q	
<i>n</i>	0.28267185	<i>ω</i>	88.86493
<i>a</i>	2.2993990	<i>Ω</i>	209.46422
<i>e</i>	0.2975989	<i>i</i>	21.01052
<i>P</i>	3.49	<i>H</i>	15.2
		<i>G</i>	0.15
		<i>U</i>	5

Residuals in seconds of arc

1992 06 01	675	0.2−	2.1−	1999 05 15	704	0.0	0.5+	1999 06 12	704	0.1+	0.5−
1992 06 01	675	0.4+	2.5−	1999 05 15	704	0.6+	1.3+	1999 06 12	704	0.5+	0.6−
1992 06 02	675	1.0+	1.1−	1999 05 15	704	1.1+	0.2+	1999 06 12	704	0.5+	0.4−
1999 05 12	704	0.7−	0.6+	1999 05 17	704	0.8+	0.5−	1999 06 12	704	0.8+	0.2−
1999 05 12	704	1.9−	0.7+	1999 05 17	704	0.2−	0.5+	1999 06 14	704	0.2+	0.9+
1999 05 12	704	0.2−	0.9+	1999 05 17	704	1.8−	1.6−	1999 06 14	704	0.3+	0.6+
1999 05 12	704	0.8−	0.6+	1999 05 17	704	0.0	0.4+	1999 06 14	704	0.0	0.8+
1999 05 15	704	0.1−	0.1+	1999 05 17	704	0.3−	0.1−	1999 06 14	704	0.2+	0.7+
1999 05 15	704	0.2−	0.1−	1999 06 12	704	0.1+	0.1+	1999 06 14	704	0.1−	0.8+

1999 JUNE 22

M.P.C. 34983

1999 JL₈ = 1990 BU₁ = 1997 YG₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	252.39966	(2000.0)	P		Q	
<i>n</i>	0.35894633	ω	297.10490	+0.84012789	-0.29840408	
<i>a</i>	1.9608741	Ω	83.27244	+0.49148624	+0.77202132	
<i>e</i>	0.0593971	<i>i</i>	27.13343	-0.22940444	+0.56119344	
<i>P</i>	2.75	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>

Residuals in seconds of arc

1990 01 23	675	1.3+	0.7+	1999 05 15	704	0.2-	0.4-	1999 06 05	703	0.3+	0.4+
1990 01 23	675	1.5-	1.4+	1999 05 15	704	0.6-	0.2-	1999 06 05	703	(2.1+	1.0-)
1990 01 25	675	0.7-	0.8-	1999 05 15	704	0.3-	0.2+	1999 06 05	703	0.3-	0.8-
1997 12 26	566	1.1+	0.5-	1999 05 15	704	0.3+	0.7+	1999 06 08	704	0.2-	0.3-
1997 12 26	566	0.7+	0.3-	1999 05 15	704	0.7-	0.8-	1999 06 08	704	0.6-	0.1-
1997 12 26	566	1.1+	0.6-	1999 05 17	704	1.2-	0.5-	1999 06 08	704	0.0	0.1-
1997 12 27	566	0.5-	0.1-	1999 05 17	704	0.0	1.9-	1999 06 08	704	0.2-	0.2-
1997 12 27	566	0.3-	0.1-	1999 05 17	704	0.6+	0.2+	1999 06 08	704	0.5+	0.1+
1997 12 27	566	0.8-	0.2-	1999 05 17	704	0.2-	0.4+	1999 06 10	704	0.1-	0.1+
1997 12 29	566	0.3+	0.3-	1999 05 17	704	0.4+	0.4+	1999 06 10	704	0.0	0.2-
1997 12 29	566	0.2+	0.4-	1999 05 21	704	0.1+	0.3-	1999 06 10	704	0.3+	0.4-
1997 12 29	566	0.3+	0.2-	1999 05 21	704	0.7+	0.5-	1999 06 10	704	0.1-	0.1-
1998 01 24	566	0.1+	0.0	1999 05 21	704	0.6+	0.2+	1999 06 10	704	0.3+	0.4-
1998 01 24	566	0.0	0.0	1999 05 21	704	0.8+	0.4-	1999 06 10	704	0.1+	0.3-
1998 01 24	566	0.2-	0.0	1999 05 31	716	0.2+	0.5+	1999 06 10	704	0.4-	0.1-
1999 02 24	704	0.4-	0.4-	1999 05 31	716	0.5-	0.6+	1999 06 10	704	0.3+	0.3-
1999 02 24	704	1.0-	0.6+	1999 06 04	703	0.0	0.0	1999 06 10	704	0.1-	0.1-
1999 02 24	704	0.2+	0.9-	1999 06 04	703	0.2+	0.2+	1999 06 10	704	0.0	0.1-
1999 02 24	704	1.5-	0.7-	1999 06 04	703	0.8+	0.7+	1999 06 14	704	0.1-	0.3-
1999 05 12	704	1.8-	0.1+	1999 06 04	703	0.9+	0.7+	1999 06 14	704	0.0	0.3-
1999 05 12	704	0.2-	0.3+	1999 06 05	716	0.4+	0.8+	1999 06 14	704	0.0	0.3-
1999 05 12	704	0.6-	0.6+	1999 06 05	716	0.0	0.6+	1999 06 14	704	0.1-	0.3-
1999 05 12	704	0.4+	0.5+	1999 06 05	703	0.4+	0.9+	1999 06 14	704	0.3-	0.5-

1999 JU₈ = 1991 NZ

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	32.28077	(2000.0)	P		Q	
<i>n</i>	0.23895314	ω	319.83361	-0.65849789	+0.75156691	
<i>a</i>	2.5719403	Ω	268.94343	-0.68006334	-0.61648545	
<i>e</i>	0.1024899	<i>i</i>	2.24042	-0.32232652	-0.23471872	
<i>P</i>	4.12	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>

Residuals in seconds of arc

1991 07 07	675	1.5+	0.5-	1999 05 13	704	0.1-	0.3+	1999 05 19	704	0.1+	0.7+
1991 07 07	675	1.1+	1.2+	1999 05 13	704	0.2-	0.9+	1999 05 19	704	0.1-	0.5-
1991 07 09	675	1.8-	0.4-	1999 05 13	704	0.8+	0.4+	1999 05 19	704	0.6-	0.4-
1991 07 09	675	0.9-	0.4-	1999 05 13	704	0.2+	0.9+	1999 05 19	704	0.9-	0.5+
1998 01 02	704	0.3+	0.1-	1999 05 13	704	0.1-	0.8-	1999 05 22	428	0.3-	0.4+
1998 01 02	704	0.1+	0.1-	1999 05 14	428	0.2-	0.5+	1999 05 22	428	0.2+	0.2+
1998 01 02	704	0.3-	0.1-	1999 05 14	428	1.0-	0.3+	1999 06 09	704	0.0	0.6-
1998 01 02	704	1.1+	1.5+	1999 05 15	428	0.2+	0.2+	1999 06 09	704	0.5+	0.0
1998 01 02	704	0.4-	0.4-	1999 05 15	428	0.0	0.3-	1999 06 09	704	0.1-	0.6-
1998 01 24	566	0.2-	1.0-	1999 05 17	428	0.5-	0.5+	1999 06 09	704	0.1+	1.0-
1998 01 24	566	0.5-	0.5-	1999 05 17	428	0.7-	0.3+	1999 06 09	704	0.4-	0.1+
1998 01 24	566	0.3-	0.5-	1999 05 18	704	0.1+	0.1+	1999 06 14	428	0.6+	0.6-
1999 05 10	704	0.1+	0.2+	1999 05 18	704	0.4-	0.3+	1999 06 14	428	0.1+	0.5-
1999 05 10	704	0.6+	0.3-	1999 05 18	704	0.3-	0.4+	1999 06 15	704	0.2+	0.3-
1999 05 10	704	0.1+	0.2-	1999 05 18	704	0.4-	1.1+	1999 06 15	704	0.3+	1.2-
1999 05 10	704	0.4-	0.7-	1999 05 18	704	0.1-	0.8+	1999 06 15	704	0.5+	1.1-
1999 05 10	704	0.5+	0.3-	1999 05 19	704	0.1-	0.6+	1999 06 15	704	1.7+	1.4-

1999 JV₈ = 1998 FA₈₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	223.85382	(2000.0)	P		Q	
<i>n</i>	0.18324175	ω	299.37259	+0.85612639	-0.48225551	
<i>a</i>	3.0698684	Ω	90.01960	+0.51464638	+0.76316002	
<i>e</i>	0.1064815	<i>i</i>	10.70081	+0.04676233	+0.43013533	
<i>P</i>	5.38	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>

Residuals in seconds of arc

1998 03 24	704	0.4+	1.7-	1999 05 13	704	0.3-	1.0-	1999 05 15	684	0.1-	0.1+
1998 03 24	704	1.0+	0.7-	1999 05 13	704	(3.2-	0.5-)	1999 05 15	704	(0.6-	2.1+)
1998 03 24	704	0.4+	0.3+	1999 05 13	704	0.4-	2.0-	1999 05 15	704	1.6+	1.2+
1998 03 24	704	1.1-	1.1+	1999 05 13	704	0.8-	0.6+	1999 05 15	704	0.1+	0.4+
1998 03 25	704	1.1+	0.8-	1999 05 13	704	(3.0-	0.3-)	1999 05 15	704	(3.4-	1.4-)
1998 03 25	704	0.1-	0.2+	1999 05 14	704	0.9-	1.5-	1999 05 17	704	0.1+	0.2+
1998 03 25	704	0.8-	0.2+	1999 05 14	704	0.2-	0.9-	1999 05 17	704	0.2+	0.4-
1998 03 25	704	(1.8-	2.4-)	1999 05 14	704	1.1-	1.2+	1999 05 17	704	0.2+	1.0-
1998 03 25	704	1.0-	1.3+	1999 05 14	704	1.0+	0.3+	1999 05 17	704	0.2+	0.2+
1999 05 12	704	0.4-	0.9+	1999 05 14	684	0.4-	0.6-	1999 05 17	704	(3.5-	0.5+)
1999 05 12	704	1.1+	0.1+	1999 05 14	704	0.3-	0.2+	1999 05 20	684	0.2-	0.2-
1999 05 12	704	0.8-	0.0	1999 05 14	684	0.0	0.2-	1999 05 20	684	0.1-	0.3-
1999 05 12	704	1.4+	0.7+	1999 05 14	704	0.1+	0.7-	1999 05 20	684	0.0	0.4-
1999 05 12	704	(0.6+	2.1+)	1999 05 14	704	1.6+	0.6+	1999 06 05	703	0.3-	0.7-
1999 05 13	704	0.2+	0.7+	1999 05 14	704	0.7+	0.6+	1999 06 05	703	1.2+	0.1-
1999 05 13	704	(2.3+	0.2-)	1999 05 14	704	1.2-	1.1+	1999 06 05	703	0.5+	0.4-
1999 05 13	704	0.1-	0.5-	1999 05 14	704	0.1+	0.7-	1999 06 05	703	0.3-	0.0
1999 05 13	704	1.7+	0.3+	1999 05 14	704	1.7-	1.4+	1999 06 08	684	0.2-	0.2-
1999 05 13	704	0.4-	0.3-	1999 05 14	704	0.3-	0.5+	1999 06 08	684	0.1+	0.5-
1999 05 13	704	1.4-	1.6-	1999 05 14	704	0.6+	0.5-	1999 06 09	684	0.4-	0.5-
1999 05 13	704	0.6+	1.7+	1999 05 15	704	1.4-	1.2+	1999 06 09	684	0.5-	0.6-
1999 05 13	704	0.0	1.2-	1999 05 15	704	0.6+	0.4+	1999 06 14	704	0.2-	0.1+
1999 05 13	704	0.3-	0.3-	1999 05 15	704	1.6-	0.5-	1999 06 14	704	0.1+	1.0+
1999 05 13	704	1.8+	1.0+	1999 05 15	704	0.6+	0.6-	1999 06 14	704	0.2+	1.0+
1999 05 13	704	0.2-	0.0	1999 05 15	704	(1.7-	2.1-)	1999 06 14	704	0.1-	0.1-
1999 05 13	704	0.3-	0.1+	1999 05 15	684	0.2+	0.0	1999 06 14	704	0.1+	0.4+

1999 JC₉ = 1989 TQ₅ = 1995 FL₁₈ = 1996 RS₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	342.57512	(2000.0)	P		Q	
<i>n</i>	0.27141612	ω	127.34962	+0.16873453	+0.98409436	
<i>a</i>	2.3625388	Ω	152.21114	-0.93782406	+0.17763756	
<i>e</i>	0.1157972	<i>i</i>	6.84440	-0.30333924	-0.00178705	
<i>P</i>	3.63	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>

Residuals in seconds of arc

1989 10 07	809	(0.0	4.7+)	1996 09 11	691	0.2+	0.1+	1999 05 17	704	1.0+	1.8-
1989 10 07	809	(2.3-	3.7+)	1996 09 11	691	0.3+	0.3-	1999 05 17	704	0.1-	0.0
1989 10 07	809	(2.3-	4.5+)	1996 09 16	566	0.4-	0.4-	1999 05 17	704	0.8-	0.5+
1989 10 08	809	(3.0+	3.8+)	1996 09 16	566	0.7+	0.2+	1999 05 17	704	1.3-	0.8-
1989 10 08	809	(1.5+	3.8+)	1996 09 16	566	0.2+	0.7-	1999 05 19	703	0.3+	0.7+
1989 10 08	809	(1.0-	2.8+)	1999 05 07	703	0.6-	0.6+	1999 05 19	703	0.2+	0.6+
1993 12 10	691	0.2-	0.1+	1999 05 07	703	0.2+	0.3+	1999 05 19	703	0.4+	0.6+
1993 12 10	691	0.0	0.2+	1999 05 07	703	1.1+	0.8+	1999 05 19	703	0.2+	0.6+
1993 12 10	691	0.1+	0.1-	1999 05 07	703	0.1+	0.7+	1999 06 08	704	(0.4+	2.6+)
1995 03 29	691	0.2+	0.4-	1999 05 12	704	0.9-	0.4-	1999 06 08	704	0.5+	0.8+
1995 03 29	691	0.1+	0.2+	1999 05 12	704	0.3+	0.7-	1999 06 08	704	0.5-	0.1+
1995 03 29	691	0.1+	0.1+	1999 05 12	704	0.5-	0.7-	1999 06 08	704	0.3+	0.2-
1995 04 04	691	0.1-	0.0	1999 05 12	704	0.1+	0.5-	1999 06 14	704	0.5+	0.1+
1995 04 04	691	0.1-	0.1-	1999 05 12	704	0.5+	0.2+	1999 06 14	704	0.6-	0.3+
1995 04 04	691	0.3-	0.4-	1999 05 16	703	0.5-	0.0	1999 06 14	704	0.1-	0.3+
1996 08 14	566	0.3-	0.3+	1999 05 16	703	0.8+	0.9-	1999 06 14	704	0.5+	0.3+
1996 08 14	566	0.1-	0.1+	1999 05 16	703	0.3-	0.2-	1999 06 14	704	0.1-	0.3-
1996 08 14	566	0.4-	0.0	1999 05 16	703	0.9-	0.2-				
1996 09 11	691	(2.8-	0.5-)	1999 05 17	704	0.3+	0.3-				

1999 JG₁₀ = 1988 CQ₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	340.15461		(2000.0)	P		Q	
<i>n</i>	0.19267079	ω	112.93244	-0.04541682	+0.99558611		
<i>a</i>	2.9688765	Ω	154.05356	-0.97147394	-0.02486110		
<i>e</i>	0.0851947	<i>i</i>	10.81953	-0.23275672	-0.09049980		
<i>P</i>	5.12	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1988 02 13	809	0.3+	0.1-	1999 04 15	704	(2.7+	2.4+)	1999 05 15	704	0.1+	0.2-
1988 02 13	809	1.1+	0.3+	1999 04 16	703	0.3-	1.6+	1999 05 15	704	0.6-	0.2+
1988 02 13	809	0.9+	0.4-	1999 04 16	703	0.0	0.8+	1999 05 16	703	0.7+	1.2-
1988 02 17	809	(3.3-	0.5+)	1999 04 16	703	0.6-	0.7+	1999 05 16	703	0.5-	0.3+
1988 02 17	809	2.3-	0.4+	1999 04 16	703	0.2-	0.1+	1999 05 16	703	0.4+	0.9+
1998 01 25	566	0.2+	0.1+	1999 05 08	703	0.2+	0.5+	1999 05 16	703	0.6-	1.4+
1998 01 25	566	0.1-	0.0	1999 05 08	703	0.4-	0.2-	1999 05 17	704	0.2-	0.4-
1998 01 25	566	0.1-	0.1-	1999 05 08	703	0.6-	0.2+	1999 05 17	704	0.4-	0.3+
1999 04 12	704	0.8+	0.3-	1999 05 08	703	1.6-	0.3+	1999 05 17	704	0.3+	0.3+
1999 04 12	704	0.3+	0.2-	1999 05 12	704	0.2+	0.2+	1999 05 17	704	0.2+	0.4-
1999 04 12	704	0.2-	0.8-	1999 05 12	704	0.9+	0.8-	1999 05 17	704	0.0	0.3+
1999 04 12	704	0.3+	1.0-	1999 05 12	704	0.1+	0.9-	1999 06 08	704	0.2+	0.3-
1999 04 12	704	0.5+	0.8-	1999 05 12	704	0.4-	0.3-	1999 06 08	704	1.4+	1.1+
1999 04 15	704	0.9+	1.2+	1999 05 12	704	1.0-	1.1-	1999 06 08	704	0.2-	1.3-
1999 04 15	704	0.6+	1.0-	1999 05 15	704	0.2-	1.1+	1999 06 08	704	1.2-	0.3+
1999 04 15	704	1.5+	1.3-	1999 05 15	704	0.5-	0.5+				

1999 JE₁₁ = 6817 P-L

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	357.49273		(2000.0)	P		Q	
<i>n</i>	0.27421202	ω	191.73753	+0.10471252	+0.99273616		
<i>a</i>	2.3464523	Ω	84.29376	-0.90755246	+0.11974902		
<i>e</i>	0.1964047	<i>i</i>	3.41352	-0.40667410	-0.01162262		
<i>P</i>	3.59	<i>H</i>	15.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1960 09 24	675	1.0-	0.1+	1999 05 13	704	1.3-	0.2-	1999 05 19	120	0.6+	0.6-
1960 09 24	675	0.3-	0.2+	1999 05 13	704	0.6+	1.2+	1999 05 19	120	0.2+	0.0
1960 09 26	675	0.3-	0.4-	1999 05 13	704	0.1+	1.6+	1999 06 05	691	0.3+	0.4-
1960 09 26	675	1.3+	0.3-	1999 05 14	704	0.6+	0.3+	1999 06 05	691	0.2+	0.7-
1960 09 27	675	0.3+	1.0+	1999 05 14	704	0.3+	0.9+	1999 06 05	120	0.2+	0.2-
1960 09 27	675	0.5+	0.2+	1999 05 14	704	1.3-	1.6+	1999 06 05	120	0.4+	0.7-
1960 09 28	675	0.6-	0.5-	1999 05 14	704	0.2-	1.1-	1999 06 06	703	0.2+	0.7+
1999 05 09	120	0.2+	0.5-	1999 05 14	704	0.2-	0.7+	1999 06 06	703	0.1-	0.0
1999 05 09	120	0.5+	0.3-	1999 05 16	120	0.1-	0.3+	1999 06 06	703	0.6-	0.9+
1999 05 09	120	0.4-	0.4-	1999 05 16	120	0.2-	0.1+	1999 06 06	703	1.4-	0.8+
1999 05 10	704	0.1-	0.6-	1999 05 16	120	0.0	0.2+	1999 06 09	704	0.4+	0.1-
1999 05 10	704	1.3+	0.0	1999 05 18	704	0.4+	0.5-	1999 06 09	704	0.4+	1.9+
1999 05 10	704	0.4-	0.0	1999 05 18	704	0.3-	0.4-	1999 06 09	704	1.3+	0.0
1999 05 10	704	0.1+	0.6-	1999 05 18	704	0.3-	0.4-	1999 06 09	704	0.2-	0.8-
1999 05 10	704	0.0	0.2-	1999 05 18	704	(0.5+	3.1-)	1999 06 13	691	0.8-	0.7-
1999 05 13	704	0.9+	0.1-	1999 05 18	704	0.9-	0.7-	1999 06 13	691	0.7-	1.3-
1999 05 13	704	0.5+	0.4-	1999 05 19	120	0.5+	1.2+	1999 06 13	691	0.6-	0.6-

1999 JW₁₁ = 1995 AA₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	68.67131		(2000.0)	P		Q	
<i>n</i>	0.28180326	ω	70.73579	-0.91201915	-0.15703097		
<i>a</i>	2.3041215	Ω	98.78107	+0.03307105	-0.94895162		
<i>e</i>	0.2341559	<i>i</i>	22.54382	+0.40881215	-0.27355456		
<i>P</i>	3.50	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1995 01 02	010	0.2+	0.1-	1999 06 04	703	0.4-	0.6+	1999 06 12	704	0.7+	0.0
1995 01 02	010	1.9+	1.2-	1999 06 04	703	0.0	0.8+	1999 06 12	704	0.5+	0.1-
1995 01 03	010	1.9-	1.8+	1999 06 04	703	0.5-	0.2+	1999 06 12	704	0.7+	0.1+

1995 01 04	010	0.3-	0.1-	1999 06 04	703	0.5-	0.4-	1999 06 12	704	0.6+	0.1-
1999 05 12	704	0.1-	1.0+	1999 06 08	704	0.1-	0.4+	1999 06 14	704	0.4+	0.3+
1999 05 12	704	1.2+	1.0+	1999 06 08	704	0.2-	0.9+	1999 06 14	704	0.3+	0.1-
1999 05 12	704	0.2-	1.5+	1999 06 08	704	0.3-	0.0	1999 06 14	704	0.2+	0.1-
1999 05 12	704	0.2+	1.2-	1999 06 08	704	0.6-	0.5+	1999 06 14	704	0.4+	0.0
1999 05 12	704	1.2-	0.4+	1999 06 08	704	(1.4-	2.9+)	1999 06 14	704	0.5+	0.6-
1999 05 17	704	0.8-	0.1+	1999 06 10	704	0.2-	0.4+	1999 06 14	704	0.6+	0.2+
1999 05 17	704	0.5-	0.8-	1999 06 10	704	0.2-	0.1+	1999 06 14	704	0.4+	0.0
1999 05 17	704	0.4-	1.4-	1999 06 10	704	0.1-	0.1-	1999 06 14	704	0.2+	0.3-
1999 05 17	704	0.4-	1.5-	1999 06 10	704	0.0	0.3+	1999 06 14	704	0.2-	0.0
1999 05 17	704	0.4-	0.6-	1999 06 12	704	0.1+	1.1-	1999 06 14	704	0.4+	0.4-

1999 JZ₁₂ = 1989 YU₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	359.61472		(2000.0)	P		Q	
<i>n</i>	0.24619588	ω	123.94987	-0.41506116	+0.90695791		
<i>a</i>	2.5212478	Ω	121.36899	-0.86000138	-0.36538134		
<i>e</i>	0.0230881	<i>i</i>	4.82207	-0.29685328	-0.20958013		
<i>P</i>	4.00	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1989 12 25	033	0.1+	0.1-	1999 05 13	704	0.7+	0.9-	1999 05 17	704	1.1+	0.8+
1989 12 26	033	0.1-	0.1+	1999 05 13	704	0.3+	0.2+	1999 05 17	704	2.0-	0.8+
1999 04 11	699	0.3-	0.4-	1999 05 13	704	0.4+	1.4+	1999 05 18	704	1.2-	1.3-
1999 04 11	699	0.2-	0.2+	1999 05 13	704	0.6+	1.0-	1999 05 18	704	(0.2-	2.3-)
1999 04 11	699	1.4-	0.1-	1999 05 15	703	0.0	0.0	1999 05 18	704	0.4+	0.1+
1999 04 12	704	0.2+	0.1-	1999 05 15	703	0.3+	0.2+	1999 05 18	704	0.9+	0.2-
1999 04 12	704	0.2+	0.7-	1999 05 15	704	0.4-	0.1-	1999 05 18	704	0.7-	0.6+
1999 04 12	704	0.2-	0.3-	1999 05 15	703	0.2+	0.4-	1999 05 18	703	1.2+	1.3-
1999 04 12	704	0.4+	1.6+	1999 05 15	704	0.8-	0.6+	1999 05 18	703	1.1+	0.7-
1999 04 12	704	1.5+	0.1+	1999 05 15	703	0.7+	0.6-	1999 05 18	703	0.2-	0.7+
1999 05 12	704	0.2+	0.2-	1999 05 15	704	1.0-	1.2+	1999 05 18	703	0.0	0.5+
1999 05 12	704	1.1-	1.9-	1999 05 15	704	1.3-	1.8+	1999 05 19	704	0.4+	1.5+
1999 05 12	704	0.8+	0.3-	1999 05 15	704	0.8+	0.1+	1999 05 19	704	0.0	0.2+
1999 05 12	704	0.1-	0.8-	1999 05 17	704	0.6-	0.2+	1999 05 19	704	0.5+	1.1-
1999 05 12	704	0.5-	0.2+	1999 05 17	704	0.9-	0.8-	1999 05 19	704	0.2-	1.5-
1999 05 13	704	0.2-	0.4+	1999 05 17	704	0.3+	1.2+				

1999 JF₁₃ = 1990 RU₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	305.45286		(2000.0)	P		Q	
<i>n</i>	0.31077102	ω	105.67846	+0.88979163	+0.45372568		
<i>a</i>	2.1586176	Ω	227.36698	-0.44007208	+0.82460296		
<i>e</i>	0.1474301	<i>i</i>	3.82115	-0.12086114	+0.33788010		
<i>P</i>	3.17	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1990 09 15	675	0.4-	0.9-	1999 05 13	704	1.0-	0.8+	1999 05 18	691	0.4-	0.1+
1990 09 15	675	0.4+	0.9-	1999 05 13	704	0.4-	1.3-	1999 05 18	691	0.5-	0.5-
1990 09 20	675	1.2+	1.0+	1999 05 15	691	0.3-	0.7+	1999 05 19	704	0.4+	1.0+
1990 09 20	675	1.2-	0.8+	1999 05 15	691	0.3-	0.7+	1999 05 19	704	1.1+	0.1-
1999 05 10	704	(1.0+	3.4+)	1999 05 15	691	0.2-	0.7+	1999 05 19	704	0.4+	0.2-
1999 05 10	704	1.3-	0.7-	1999 05 18	704	0.5-	0.6-	1999 05 19	704	0.4+	0.8-
1999 05 10	704	0.9+	0.4-	1999 05 18	704	1.6+	0.7+	1999 05 22	691	0.9-	0.0
1999 05 10	704	(1.5-	2.8+)	1999 05 18	704	1.0+	0.5+	1999 05 22	691	0.6-	0.1+
1999 05 13	704	0.3+	0.3+	1999 05 18	704	0.5+	0.7-	1999 05 22	691	0.8-	0.2-
1999 05 13	704	0.9+	0.2-	1999 05 18	704	0.3+	0.2-				
1999 05 13	704	0.2-	0.1+	1999 05 18	691	0.5-	0.5+				

1999 JUNE 22

M.P.C. 34985

1999 JT₁₄ = 1989 EJ₁₀ = 1990 SV₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	321.87734	(2000.0)	P		Q	
<i>n</i>	0.31079989	ω	181.12171	+0.72084420	+0.69205486	
<i>a</i>	2.1584839	Ω	135.00416	-0.63548499	+0.68181459	
<i>e</i>	0.2097618	<i>i</i>	3.08049	-0.27666309	+0.23704206	
<i>P</i>	3.17	<i>H</i>	15.4	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1989 03 05	033	0.1+	0.1-	1999 05 12	704	0.2+	0.6+	1999 05 17	704	0.0	0.4-
1989 03 05	033	0.3-	0.3-	1999 05 12	704	0.1+	0.7-	1999 05 17	704	0.4+	0.6-
1990 09 18	675	0.5-	1.3-	1999 05 12	704	0.6-	0.5-	1999 05 17	704	0.2+	1.0+
1990 09 18	675	0.3+	1.2+	1999 05 12	704	1.0+	0.3-	1999 05 17	704	0.4+	0.9+
1990 09 20	675	0.2+	0.1-	1999 05 12	704	0.2+	1.1+	1999 05 18	704	0.1-	0.9+
1990 09 20	675	(2.2+	3.9+)	1999 05 13	704	0.0	0.6-	1999 05 18	704	1.6+	0.4+
1999 04 14	699	1.6+	0.3+	1999 05 13	704	0.9-	0.4-	1999 05 18	704	1.0-	0.0
1999 04 14	699	0.6-	0.5+	1999 05 13	704	0.1-	0.3-	1999 05 18	704	0.3-	0.5+
1999 04 14	699	0.2-	0.4+	1999 05 13	704	1.8-	1.5-	1999 05 18	704	1.9-	0.7-
1999 05 10	704	0.2-	0.2+	1999 05 14	703	0.7-	0.5+	1999 05 19	704	1.4+	1.4-
1999 05 10	704	1.2-	0.7+	1999 05 14	703	0.3-	0.4+	1999 05 19	704	0.2+	0.4-
1999 05 10	704	0.2+	0.1+	1999 05 14	703	1.0+	0.3+	1999 05 19	704	0.6+	0.0
1999 05 10	704	0.6-	0.2-	1999 05 14	703	1.2+	0.5-				
1999 05 10	704	0.1-	1.0-	1999 05 17	704	0.2+	0.7+				

1999 JB₁₅ = 1991 LR₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	11.12815	(2000.0)	P		Q	
<i>n</i>	0.24419162	ω	173.36865	-0.35774523	+0.89813916	
<i>a</i>	2.5350248	Ω	75.42577	-0.86843966	-0.21934548	
<i>e</i>	0.1585855	<i>i</i>	15.31733	-0.34326506	-0.38109527	
<i>P</i>	4.04	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1991 06 06	809	1.3+	0.6+	1999 05 12	704	1.1-	0.4+	1999 06 09	704	0.3+	1.5-
1991 06 06	809	0.5+	0.7+	1999 05 18	704	0.1+	0.0	1999 06 09	704	1.0-	1.9+
1991 06 06	809	0.2+	1.8+	1999 05 18	704	0.1+	0.4+	1999 06 09	704	0.5-	0.6-
1991 06 08	809	0.9-	1.4-	1999 05 18	704	0.1-	0.0	1999 06 09	704	0.6-	0.5+
1991 06 08	809	1.2-	1.2-	1999 05 18	704	0.2-	0.6-	1999 06 09	704	0.2+	0.6-
1991 06 08	809	0.1+	0.8-	1999 05 19	704	0.5+	0.1+	1999 06 14	704	0.3+	0.2+
1999 05 12	704	0.1-	0.5+	1999 05 19	704	0.1-	0.3-	1999 06 14	704	0.3+	0.6+
1999 05 12	704	0.3-	0.3+	1999 05 19	704	0.2+	0.2+	1999 06 14	704	0.7+	0.0
1999 05 12	704	0.1+	0.0	1999 05 19	704	0.3+	0.1-	1999 06 14	704	0.1+	0.0
1999 05 12	704	0.4-	0.4-	1999 05 19	704	1.1+	0.8-	1999 06 14	704	0.3+	0.0

1999 JE₁₅ = 1993 TN₃₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	335.78693	(2000.0)	P		Q	
<i>n</i>	0.29605977	ω	253.39477	+0.40047244	+0.91286055	
<i>a</i>	2.2295461	Ω	40.50531	-0.78718529	+0.38710682	
<i>e</i>	0.1998098	<i>i</i>	7.02337	-0.46900015	+0.12974559	
<i>P</i>	3.33	<i>H</i>	16.1	<i>G</i> 0.15	<i>U</i> 5	

Residuals in seconds of arc

1993 10 09	809	1.5-	0.7-	1999 04 18	691	0.2+	0.2-	1999 05 18	704	0.7-	1.6-
1993 10 09	809	(3.1-	0.4-)	1999 05 10	704	0.9+	1.3+	1999 05 18	704	1.2+	1.3-
1993 10 09	809	0.5-	1.2-	1999 05 10	704	0.1-	1.6+	1999 05 18	704	0.8+	1.0-
1993 10 20	809	1.0+	0.8+	1999 05 10	704	1.2-	1.4+	1999 05 18	691	0.2-	0.3-
1993 10 20	809	1.2+	1.7+	1999 05 10	704	1.8-	1.1+	1999 05 18	691	0.2-	0.0
1993 10 20	809	0.6-	0.3+	1999 05 13	704	0.7-	1.3-	1999 05 18	691	0.0	0.4-
1999 04 11	691	0.1-	0.1-	1999 05 13	704	0.4-	0.2+	1999 05 19	704	1.0-	1.1-
1999 04 11	691	0.4+	0.1-	1999 05 13	704	0.8-	1.1-	1999 05 19	704	1.1-	0.7-
1999 04 11	691	0.4+	0.3+	1999 05 13	704	0.8+	1.1-	1999 05 19	704	0.1-	0.2-
1999 04 12	704	0.6+	1.6+	1999 05 13	704	0.0	1.0-	1999 05 19	704	0.4+	0.2+
1999 04 12	704	(2.2-	2.1+)	1999 05 15	703	(2.8+	0.6-)	1999 05 19	704	0.4+	0.6+
1999 04 12	704	(2.8-	0.8-)	1999 05 15	703	0.2+	0.9+	1999 05 19	703	0.7+	1.1+

1999 04 12	704	0.4+	1.5-	1999 05 15	703	0.4+	0.7+	1999 05 19	703	0.5+	0.8+
1999 04 18	691	0.2-	0.1-	1999 05 15	703	0.6-	0.8+	1999 05 19	703	0.1+	0.1-
1999 04 18	691	0.2+	0.1-	1999 05 18	704	0.9+	1.1+	1999 05 19	703	0.2+	0.1+

1999 JQ₁₅ = 1977 RQ₁ = 1991 EJ₃ = 1992 SF₂₀

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	333.75616	(2000.0)	P		Q	
<i>n</i>	0.26461924	ω	154.66246	+0.67357741	+0.73836156	
<i>a</i>	2.4028229	Ω	157.63261	-0.69219158	+0.64601451	
<i>e</i>	0.2062047	<i>i</i>	5.03553	-0.25916072	+0.19361678	
<i>P</i>	3.72	<i>H</i>	14.5	<i>G</i> 0.15	<i>U</i> 2	

Residuals in seconds of arc

1977 09 08	095	0.6+	2.1-	1999 05 12	358	0.9-	1.2-	1999 05 17	358	1.5+	0.9+
1991 03 11	809	0.4-	0.0-	1999 05 12	358	1.2-	0.4+	1999 05 17	358	0.4+	0.1+
1991 03 11	809	0.6-	0.1+	1999 05 13	704	0.6+	0.2-	1999 05 18	704	0.1-	0.0
1991 03 11	809	0.7-	0.2+	1999 05 13	704	(1.1+	2.1-)	1999 05 18	704	1.4+	0.2+
1991 03 13	809	0.2-	1.5-	1999 05 13	704	1.0-	0.1-	1999 05 18	704	1.1-	0.6+
1991 03 13	809	0.0	1.6-	1999 05 13	704	0.6+	0.5-	1999 05 18	704	0.2+	0.7+
1991 03 13	809	0.3+	1.6-	1999 05 13	358	0.0	1.0-	1999 05 20	358	1.9+	1.2+
1992 09 22	809	0.6+	0.6+	1999 05 13	358	1.0-	1.6-	1999 05 20	358	(1.9+	2.1-)
1992 09 22	809	0.0	0.0	1999 05 13	358	1.1+	1.0-	1999 05 20	358	0.2+	1.5+
1992 09 22	809	0.3-	0.1+	1999 05 14	704	0.0	0.8+	1999 06 09	704	0.3-	0.1-
1992 09 23	809	0.5+	0.1-	1999 05 14	704	0.3+	0.6+	1999 06 09	704	0.2-	0.1+
1992 09 23	809	0.2-	0.7-	1999 05 14	704	0.3-	0.5+	1999 06 09	704	0.7-	0.5+
1992 09 23	809	0.3-	0.6-	1999 05 14	704	0.3-	0.5-	1999 06 09	704	0.7-	0.4-
1999 05 10	704	1.2+	0.3-	1999 05 14	704	0.5-	0.8+	1999 06 09	704	1.0-	0.4-
1999 05 10	704	0.0	0.4+	1999 05 17	392	0.2-	0.2+	1999 06 14	704	0.1+	0.7-
1999 05 10	704	0.9+	1.3+	1999 05 17	392	(0.4-	2.3-)	1999 06 14	704	0.0	0.3-
1999 05 10	704	1.0+	1.6+	1999 05 17	392	0.7-	0.6-	1999 06 14	704	0.3+	0.8-
1999 05 10	704	0.5+	0.1-	1999 05 17	392	0.6-	0.5+	1999 06 14	704	0.3-	0.8-
1999 05 12	358	(2.4-	2.0+)	1999 05 17	358	0.9-	0.5-	1999 06 14	704	0.0	1.0-

1999 JJ₁₇ = 1998 GH₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	142.38397	(2000.0)	P		Q	
<i>n</i>	0.17630370	ω	6.67552	-0.14906757	-0.95627133	
<i>a</i>	3.1498879	Ω	92.11434	+0.89518950	-0.23860475	
<i>e</i>	0.1846301	<i>i</i>	14.58488	+0.42001740	+0.16915353	
<i>P</i>	5.59	<i>H</i>	13.6	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1998 04 02	704	0.2+	0.7+	1998 04 03	704	0.6+	0.2+	1999 06 10	691	0.2-	0.1-
1998 04 02	704	0.4+	0.7-	1998 04 03	704	0.4+	0.1+	1999 06 10	691	0.2-	0.2-
1998 04 02	704	0.0	0.3+	1999 05 15	691	0.1+	0.3+	1999 06 10	691	0.1+	0.1+
1998 04 02	704	0.1-	1.2-	1999 05 15	691	0.1-	0.0	1999 06 15	691	0.2+	0.4+
1998 04 02	704	0.1-	0.2+	1999 05 20	691	0.0	0.2+	1999 06 15	691	0.1-	0.4-
1998 04 03	704	0.5-	0.1+	1999 05 20	691	0.0	0.2-	1999 06 15	691	0.2+	0.3+
1998 04 03	704	0.8-	0.3+	1999 05 20	691	0.1+	0.3-				

1999 JX₁₈ = 1997 WM₄₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	11.82846	(2000.0)	P		Q	
<i>n</i>	0.27946591	ω	327.54388	-0.57329601	+0.81277441	
<i>a</i>	2.3169509	Ω	267.27338	-0.72786462	-0.56324840	
<i>e</i>	0.0698483	<i>i</i>	5.95230	-0.37622438	-0.14882540	
<i>P</i>	3.53	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1997 11 29	704	(2.5-	0.3-)	1999 03 25	704	0.2+	1.2-	1999 05 13	704	0.3-	0.2-
1997 11 29	704	(3.1-	0.8+)	1999 03 25	704	(3.5-	1.5-)	1999 05 13	704	0.4-	0.4+
1997 11 29	704	(3.3-	1.0+)	1999 04 15	704	0.1+	1.3-	1999 05 13	704	0.3-	0.0
1997 11 29	704	0.9-	1.5+	1999 04 15	704	0.2-	0.1-	1999 05 13	704	0.2+	0.8-
1997 11 29	704	(4.4-	0.4+)	1999 04 15	704	0.7-	0.3+	1999 05 13	704	0.4-	0.5-

1997 12 04	704	0.2+	0.6−	1999 04 15	704	0.5−	0.1−	1999 05 14	704	0.3−	0.6+
1997 12 04	704	0.9+	0.2+	1999 04 15	699	0.3+	0.3−	1999 05 14	704	0.6−	1.8+
1997 12 04	704	0.5−	1.2−	1999 04 15	704	1.5−	0.0	1999 05 14	704	0.2−	0.8+
1997 12 04	704	0.0	1.5−	1999 04 15	699	0.2+	0.2−	1999 05 14	704	0.5+	1.0+
1997 12 31	704	0.5−	0.4−	1999 04 15	699	0.2+	0.8−	1999 05 14	704	0.6−	0.6+
1997 12 31	704	0.0	0.6+	1999 05 10	704	1.3+	1.0+	1999 05 18	704	0.1−	0.6−
1997 12 31	704	0.2+	0.6+	1999 05 10	704	0.6+	0.1+	1999 05 18	704	0.4+	0.4+
1997 12 31	704	0.7+	0.9+	1999 05 10	704	0.3+	0.0	1999 05 18	704	0.4−	0.2−
1999 03 25	704	1.2+	0.3+	1999 05 10	704	0.3+	0.3−	1999 05 18	704	0.8+	0.5−
1999 03 25	704	(0.9+	3.7−)	1999 05 10	704	1.2+	0.1−	1999 05 18	704	0.6−	0.4+

1999 JO₁₉ = 1986 SR₁ = 1998 AE₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	286.60923		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.28622452	<i>ω</i>	35.38494	+0.86849123	+0.49297933
<i>a</i>	2.2803324	<i>Ω</i>	294.99856	−0.46697314	+0.77852314
<i>e</i>	0.1027966	<i>i</i>	3.28327	−0.16631015	+0.38842386
<i>P</i>	3.44	<i>H</i>	14.3	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1986 09 29	010	0.1−	0.2+	1999 04 15	704	1.2−	1.2−	1999 05 13	704	1.9+	1.1−
1998 01 02	704	0.0	0.7−	1999 04 15	704	0.2+	0.7−	1999 05 13	704	1.0−	0.3−
1998 01 02	704	0.1−	0.2+	1999 04 15	704	0.3+	0.3−	1999 05 13	704	0.1+	1.2+
1998 01 02	704	0.1+	0.0	1999 04 15	704	0.7+	0.9−	1999 05 18	704	(2.5−	1.7−)
1998 01 02	704	0.1+	0.7−	1999 04 15	704	0.6+	0.3+	1999 05 18	704	0.3−	1.2−
1998 01 02	704	0.3+	0.3+	1999 05 10	704	1.4−	0.7+	1999 05 18	704	0.3+	1.0−
1998 01 06	704	0.2−	0.5+	1999 05 10	704	0.1−	0.0	1999 05 18	704	0.8−	0.1−
1998 01 06	704	0.2+	0.8+	1999 05 10	704	0.2+	1.1+	1999 05 19	704	0.5−	0.9+
1998 01 06	704	0.5−	0.2−	1999 05 10	704	0.3+	0.1−	1999 05 19	704	0.7−	0.4+
1999 04 14	699	0.4+	0.7+	1999 05 10	704	0.5+	0.3−	1999 05 19	704	1.0−	0.6+
1999 04 14	699	1.4+	0.3+	1999 05 13	704	0.4+	1.4−	1999 05 19	704	0.4+	0.7+
1999 04 14	699	0.5+	0.3+	1999 05 13	704	0.5−	1.9+	1999 05 19	704	0.5−	0.1−

1999 JU₁₉ = 3061 P-L

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	336.18794		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.24691716	<i>ω</i>	16.59332	+0.17460806	+0.97932835
<i>a</i>	2.5163354	<i>Ω</i>	263.54997	−0.91466038	+0.12292478
<i>e</i>	0.1415879	<i>i</i>	5.89859	−0.36456607	+0.16064085
<i>P</i>	3.99	<i>H</i>	14.3	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1960 09 24	675	0.6+	0.3+	1999 04 15	704	0.4−	0.6+	1999 05 14	704	0.1+	0.4+
1960 09 25	675	(3.2+	1.5+)	1999 04 15	704	0.1−	0.1+	1999 05 14	704	0.4−	1.0+
1960 09 26	675	0.1+	0.4−	1999 04 15	699	0.1+	0.2+	1999 05 14	704	0.2+	0.1+
1960 09 27	675	0.3+	0.1+	1999 04 15	704	0.4+	0.0	1999 05 14	704	0.4−	0.7−
1960 09 28	675	0.6+	1.4+	1999 04 15	699	0.4+	0.5−	1999 05 14	704	0.4−	0.0
1960 09 29	675	0.1−	1.5−	1999 04 15	699	0.4+	1.0−	1999 05 18	704	0.0	1.4−
1960 09 29	675	1.3−	0.5−	1999 05 10	704	0.0	0.1+	1999 05 18	704	0.5+	1.3−
1992 10 25	691	0.8−	0.3−	1999 05 10	704	0.2−	0.0	1999 05 18	704	0.9−	0.3+
1992 10 25	691	0.1−	0.5−	1999 05 10	704	0.5−	0.1−	1999 05 18	704	0.6−	0.2+
1992 10 25	691	1.3+	0.4−	1999 05 10	704	0.7+	1.2+	1999 05 18	704	1.1−	0.1+
1997 12 27	566	0.1−	0.3−	1999 05 10	704	0.4+	0.6+	1999 05 19	704	(0.3−	2.1−)
1997 12 27	566	0.1+	0.3−	1999 05 13	704	0.5+	0.2+	1999 05 19	704	0.9−	0.3−
1997 12 27	566	0.1−	0.3−	1999 05 13	704	1.3+	0.5+	1999 05 19	704	0.1+	1.7−
1999 04 15	704	0.2−	0.8−	1999 05 13	704	0.2+	0.5−	1999 05 19	704	0.7−	1.1+
1999 04 15	704	0.8−	0.5+	1999 05 13	704	1.6+	1.0−				

1999 JD₂₀ = 1969 TU₇ = 1988 JK₁ = 1993 BD₈ = 1994 LO₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	16.97301		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.18679263	<i>ω</i>	330.62601	−0.76584006	+0.63948187
<i>a</i>	3.0308392	<i>Ω</i>	249.28560	−0.57500209	−0.72800767
<i>e</i>	0.1357601	<i>i</i>	4.13640	−0.28785692	−0.24711894
<i>P</i>	5.28	<i>H</i>	13.5	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1969 10 08	033	0.3−	0.0	1994 06 04	809	(1.8−	3.3−)	1999 05 10	704	0.3−	0.4−
1969 10 08	033	0.9−	0.5−	1994 06 04	809	(2.1−	3.0−)	1999 05 10	704	0.1−	0.3+
1988 05 11	413	0.4−	1.1+	1998 01 25	566	0.6−	0.9+	1999 05 10	704	0.9−	0.4+
1988 05 11	413	(3.6−	0.7+)	1998 01 25	566	0.5−	1.0+	1999 05 13	704	0.1−	0.1+
1991 12 14	691	0.3+	0.3+	1998 01 25	566	0.8−	0.9+	1999 05 13	704	1.1−	0.1−
1991 12 14	691	0.7+	0.0	1998 04 14	704	(2.4−	1.2+)	1999 05 13	704	0.8−	0.1−
1991 12 14	691	0.3+	0.1−	1998 04 14	704	1.2+	1.7+	1999 05 13	704	0.8−	0.3+
1992 01 01	691	0.9−	0.5+	1998 04 14	704	0.2+	0.1−	1999 05 13	704	0.8−	0.1+
1992 01 01	691	0.4+	0.7+	1998 04 14	704	1.6+	0.3+	1999 05 14	704	0.9−	0.5−
1992 01 01	691	(2.3+	0.5+)	1998 04 14	704	1.8−	1.3−	1999 05 14	704	(1.5+	2.3+)
1993 01 23	809	0.6+	0.0	1999 04 14	699	0.5+	0.5+	1999 05 14	704	0.8−	0.3+
1993 01 23	809	0.2+	0.5+	1999 04 14	699	0.1+	0.2+	1999 05 14	704	0.0	0.6+
1993 01 23	809	0.2+	0.6−	1999 04 14	699	(2.1−	0.3+)	1999 05 14	704	0.8−	0.1−
1993 01 28	809	1.0+	0.4−	1999 04 15	704	0.6+	0.9−	1999 05 18	704	0.5+	0.6+
1993 01 28	809	0.2+	0.6−	1999 04 15	704	0.8+	0.6−	1999 05 18	704	0.5−	0.3−
1993 01 28	809	0.1−	0.9−	1999 04 15	704	0.5+	1.4−	1999 05 18	704	0.4+	0.2+
1994 06 03	809	1.0+	1.8+	1999 04 15	704	1.2+	0.6−	1999 05 18	704	0.8+	0.2+
1994 06 03	809	(1.7+	2.1+)	1999 04 15	704	0.5+	1.1−	1999 05 18	704	1.1−	0.4+
1994 06 03	809	1.7+	1.9+	1999 05 10	704	0.0	0.1−				
1994 06 04	809	(2.4−	3.0−)	1999 05 10	704	0.1−	0.5+				

1999 JN₂₀ = 1977 DB₉ = 1981 LM = 1988 EZ₁ = 1996 PK₄= 1997 WG₃₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	34.51990		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.27184593	<i>ω</i>	189.04659	−0.89144854	+0.45310906
<i>a</i>	2.3600479	<i>Ω</i>	17.89794	−0.41503292	−0.81346545
<i>e</i>	0.1489546	<i>i</i>	0.63690	−0.18184380	−0.36464522
<i>P</i>	3.63	<i>H</i>	14.8	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1977 02 19	381	0.2+	0.4−	1997 11 06	327	0.5+	0.6+	1999 05 10	704	0.5−	0.5+
1977 02 19	381	0.8+	0.2−	1997 11 28	327	0.2−	0.2−	1999 05 13	704	0.9+	0.7+
1981 06 03	801	0.5+	1.3−	1997 11 28	327	0.4+	0.2+	1999 05 13	704	0.3+	1.0−
1988 03 13	054	0.8−	0.7+	1997 11 28	327	0.3−	0.2−	1999 05 13	704	0.3+	0.3+
1988 03 14	054	0.3−	0.0	1997 11 29	704	0.1+	0.1−	1999 05 13	704	0.5+	1.5+
1988 04 13	054	1.5−	0.7+	1997 11 29	704	0.4+	1.5−	1999 05 13	704	0.5−	0.6+
1995 01 28	691	0.3−	0.2−	1997 11 29	704	1.0+	1.4−	1999 05 18	704	1.1+	0.0
1995 01 28	691	0.2−	0.1+	1997 11 29	704	(1.7−	3.0−)	1999 05 18	704	0.8−	0.0
1995 01 28	691	0.2−	0.5+	1997 11 29	704	(3.3−	2.6−)	1999 05 18	704	0.0	1.5−
1996 08 12	566	0.3−	0.5−	1997 12 04	704	(0.6+	3.3+)	1999 05 18	704	0.5−	0.1−
1996 08 12	566	0.2+	0.4−	1997 12 04	704	(3.8+	0.0)	1999 05 18	704	0.0	0.2+
1996 08 12	566	0.6−	0.6−	1997 12 04	704	(2.7+	1.5+)	1999 05 19	704	0.0	0.6−
1996 08 17	566	0.2−	0.2+	1997 12 04	704	(2.4+	1.3+)	1999 05 19	704	0.1+	0.5+
1996 08 17	566	0.7−	0.4+	1999 05 10	704	0.2+	0.7−	1999 05 19	704	0.2−	0.8−
1996 08 17	566	0.1+	0.5+	1999 05 10	704	0.7+	0.5−	1999 05 19	704	0.2+	0.4+
1997 11 06	327	0.2+	0.5+	1999 05 10	704	0.2+	0.2+	1999 05 19	704	0.5−	0.5+
1997 11 06	327	0.3−	1.3+	1999 05 10	704	0.4+	0.7−				

1999 JS₂₀ = 1996 KJ₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	317.15026		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.31100019	<i>ω</i>	93.51069	+0.56003645	+0.82703807
<i>a</i>	2.1575570	<i>Ω</i>	210.70814	−0.79290767	+0.51805171
<i>e</i>	0.1185077	<i>i</i>	5.46718	−0.24011788	+0.21824401
<i>P</i>	3.17	<i>H</i>	15.5	<i>G</i> 0.15	<i>U</i> 5

1999 JUNE 22

M.P.C. 34987

1999 04 06	691	0.2+	0.1-	1999 05 17	704	1.0+	0.5-	1999 05 19	704	0.3+	0.3+
1999 05 10	704	1.7-	0.5-	1999 05 17	704	1.6+	0.7-	1999 05 19	704	0.2-	0.6-
1999 05 10	704	0.4-	1.2+	1999 05 17	704	0.0	1.2-	1999 05 19	691	0.1+	0.1-
1999 05 10	704	0.3-	1.3+	1999 05 18	704	0.1-	1.1-	1999 05 19	704	1.1-	0.8+
1999 05 10	704	1.1+	0.3-	1999 05 18	704	1.1+	0.4-				

1999 JV₂₀ = 1994 LW₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	87.23061		(2000.0)		P		Q
n	0.17999323	ω	82.83783		-0.66153846		-0.74931352
a	3.1066949	Ω	48.62477		+0.67132651		-0.60953206
e	0.1361893	i	2.28629		+0.33419693		-0.25884342
P	5.48	H	12.8	G	0.15	U	7

Residuals in seconds of arc

1994 06 03	809	0.4-	0.6-	1999 05 10	704	1.0-	0.2+	1999 05 14	704	0.2+	0.5+
1994 06 03	809	0.3+	0.6-	1999 05 10	704	0.1+	0.9+	1999 05 14	704	0.1+	1.3-
1994 06 03	809	0.4+	1.0-	1999 05 13	704	0.2+	0.9+	1999 05 14	704	0.7-	0.3+
1994 06 04	809	0.1+	0.8+	1999 05 13	704	0.1+	0.4-	1999 05 18	704	0.6+	0.2+
1994 06 04	809	0.2-	0.9+	1999 05 13	704	0.2-	0.2-	1999 05 18	704	1.0-	0.3+
1994 06 04	809	0.2-	0.5+	1999 05 13	704	0.8+	0.5+	1999 05 18	704	0.0	1.0-
1999 05 10	704	0.8+	0.3-	1999 05 13	704	0.6-	0.8-	1999 05 18	704	0.3-	0.3-
1999 05 10	704	0.9+	0.3-	1999 05 14	704	1.2+	0.1-	1999 05 18	704	0.6-	1.1+
1999 05 10	704	0.3-	0.3+	1999 05 14	704	0.3-	0.5-				

1999 JP₂₁ = 1973 FG = 1993 TB₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	126.88617		(2000.0)		P		Q
n	0.26778307	ω	83.60406		-0.35880335		-0.93167557
a	2.3838594	Ω	27.63672		+0.80053452		-0.33851541
e	0.0703625	i	7.04942		+0.48000482		-0.13186336
P	3.68	H	14.4	G	0.15	U	1

Residuals in seconds of arc

1973 03 29	805	0.7-	1.2-	1997 12 29	566	0.0	1.1-	1999 05 13	704	0.6-	0.1-
1993 10 11	809	1.6+	0.9-	1997 12 29	566	0.1-	1.0-	1999 05 13	704	1.0-	0.4-
1993 10 11	809	0.5+	1.1-	1997 12 29	566	0.3-	1.0-	1999 05 13	704	0.2-	0.8-
1993 10 11	809	0.5+	0.9-	1999 04 14	699	0.5+	0.4-	1999 05 13	704	0.1-	1.2-
1993 10 12	809	0.3+	0.6-	1999 04 14	699	0.5+	0.3-	1999 05 18	704	1.3-	0.2+
1993 10 12	809	0.5-	0.6-	1999 04 14	699	0.3+	0.1+	1999 05 18	704	0.1-	0.4-
1993 10 12	809	0.7-	0.3-	1999 04 15	704	0.7-	0.4+	1999 05 18	704	1.0+	1.8+
1993 10 20	809	0.1+	0.7-	1999 04 15	704	(0.2+	2.2-)	1999 05 18	704	0.4+	0.7+
1993 10 20	809	0.4+	0.0	1999 04 15	704	0.8+	0.9-	1999 05 18	704	1.2-	0.3+
1993 10 20	809	0.3+	0.6-	1999 04 15	704	0.7-	1.8-	1999 05 19	704	0.2-	0.1-
1993 10 22	809	(4.3+	2.2-)	1999 05 10	704	0.0	0.3+	1999 05 19	704	0.7-	0.7+
1993 10 22	809	1.0+	0.8-	1999 05 10	704	1.2-	0.9-	1999 05 19	704	0.6-	0.5-
1993 10 22	809	(5.3-	2.1+)	1999 05 10	704	0.2-	0.9-	1999 05 19	704	(2.1-	1.8-)
1997 11 26	704	0.7+	0.1+	1999 05 10	704	0.3+	1.4-	1999 05 19	704	1.2-	0.6+
1997 11 26	704	0.5+	0.1+	1999 05 10	704	1.8+	1.4-				
1997 11 26	704	0.2+	0.2+	1999 05 13	704	0.7+	0.6-				

1999 JU₂₁ = 1991 EX₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	21.33830		(2000.0)		P		Q
n	0.26165639	ω	240.60945		-0.70708619		+0.70673797
a	2.4209277	Ω	344.32013		-0.61496393		-0.63096956
e	0.0627799	i	4.98064		-0.34906801		-0.31999821
P	3.77	H	14.7	G	0.15	U	4

Residuals in seconds of arc

1991 03 13	809	0.4+	1.3+	1996 08 09	566	0.8-	0.1+	1999 05 13	704	(2.8-	1.3-)
1991 03 13	809	0.9+	1.1+	1996 08 09	566	0.6+	0.1-	1999 05 13	704	1.3-	0.2+
1991 03 13	809	1.7+	0.8+	1996 08 09	566	0.5+	0.3-	1999 05 18	704	0.3-	1.0+
1991 03 15	809	1.0-	0.8-	1999 04 17	699	0.9+	0.5-	1999 05 18	704	1.3+	0.7-
1991 03 15	809	0.7-	0.6-	1999 04 17	699	0.3-	0.3-	1999 05 18	704	1.3+	0.8-

1991 03 15	809	0.5-	0.3-	1999 04 17	699	0.6-	0.7-	1999 05 18	704	0.1+	0.2+
1991 03 15	809	0.3-	0.3-	1999 05 10	704	0.0	0.0	1999 05 18	704	0.2-	0.1-
1991 03 15	809	0.4-	0.7-	1999 05 10	704	0.9-	1.6+	1999 05 19	704	0.3-	0.5-
1991 03 15	809	0.3-	0.9-	1999 05 10	704	0.4-	0.3-	1999 05 19	704	0.3-	0.9+
1996 08 09	566	0.0	0.1-	1999 05 10	704	0.2+	0.4+	1999 05 19	704	1.2+	0.8+
1996 08 09	566	0.3-	0.0	1999 05 13	704	0.4-	0.2+	1999 05 19	704	1.1+	0.8-
1996 08 09	566	0.3+	0.2-	1999 05 13	704	(1.1-	2.5-)	1999 05 19	704	1.1-	0.6-

1999 JH₂₂ = 1982 BZ₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	54.49802		(2000.0)		P		Q
n	0.24055393	ω	255.53524		-0.99451687		+0.07894269
a	2.5605175	Ω	288.95680		-0.04316519		-0.90726217
e	0.0851999	i	4.15878		-0.09525209		-0.41309007
P	4.10	H	13.9	G	0.15	U	5

Residuals in seconds of arc

1982 01 30	675	0.5-	0.2+	1999 05 10	704	0.2-	0.4-	1999 05 18	704	(2.4+	0.7-)
1982 01 31	675	0.6+	0.1-	1999 05 10	704	0.1-	0.4-	1999 05 18	704	0.4+	0.2-
1999 04 17	699	0.3-	0.3-	1999 05 13	704	0.3+	0.5-	1999 05 18	704	0.4-	0.2+
1999 04 17	699	0.4+	0.1-	1999 05 13	704	0.1+	0.0	1999 05 19	704	0.3+	0.6+
1999 04 17	699	0.3+	0.2+	1999 05 13	704	0.6+	1.1-	1999 05 19	704	0.1+	0.7+
1999 05 10	704	0.1-	0.3-	1999 05 13	704	0.6-	0.5-	1999 05 19	704	0.2-	1.4+
1999 05 10	704	0.3+	0.6-	1999 05 13	704	0.6-	0.0	1999 05 19	704	0.2+	0.5+
1999 05 10	704	0.2+	0.6-	1999 05 18	704	(2.4+	0.2-)	1999 05 19	704	0.4-	1.5+

1999 JR₂₂ = 1997 WQ₄₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	7.33946		(2000.0)		P		Q
n	0.28813729	ω	3.42563		-0.40150790		+0.91346270
a	2.2702294	Ω	242.91109		-0.84203748		-0.39659550
e	0.1064177	i	4.26177		-0.36022811		-0.09109289
P	3.42	H	14.7	G	0.15	U	4

Residuals in seconds of arc

1997 11 29	704	1.3-	0.6+	1999 04 14	699	0.3+	0.3+	1999 05 13	704	0.5-	0.6+
1997 11 29	704	0.8-	0.7-	1999 04 14	699	0.3-	0.3-	1999 05 13	704	0.7-	0.6+
1997 11 29	704	0.9-	1.3-	1999 04 14	699	0.0	0.7-	1999 05 13	704	0.3-	1.5+
1997 11 29	704	1.2-	1.0+	1999 04 15	704	0.3+	0.1-	1999 05 13	704	1.3-	0.9+
1997 12 04	704	0.9+	0.8-	1999 04 15	704	0.3+	0.5-	1999 05 14	704	0.8+	1.3-
1997 12 04	704	(2.5+	0.4+)	1999 04 15	704	0.5-	0.0	1999 05 14	704	1.0+	0.3+
1997 12 04	704	(3.4+	1.5+)	1999 04 15	704	1.1+	0.1-	1999 05 14	704	0.3-	0.5+
1997 12 04	704	0.7-	0.5-	1999 04 15	704	0.5-	1.1+	1999 05 14	704	0.4+	0.8-
1997 12 04	704	0.5+	0.1-	1999 05 10	704	0.2-	1.2-	1999 05 14	704	0.1+	0.2+
1997 12 05	704	(2.4+	0.4-)	1999 05 10	704	0.1+	1.2-	1999 05 18	704	0.5+	0.0
1997 12 05	704	1.4+	0.4+	1999 05 10	704	0.6-	0.5-	1999 05 18	704	0.2+	0.5+
1997 12 05	704	0.4+	0.3-	1999 05 10	704	0.1-	0.3-	1999 05 18	704	0.5-	0.0
1997 12 05	704	0.7+	0.8+	1999 05 10	704	0.1-	0.6-	1999 05 18	704	0.6+	0.9+
1997 12 05	704	1.0+	1.2+	1999 05 13	704	0.5+	0.4-	1999 05 18	704	0.3-	0.9+

1999 JZ₂₂ = 1977 EN₆ = 1991 NB₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	32.15646		(2000.0)		P		Q
n	0.22744518	ω	342.46884		-0.88747486		+0.46008288
a	2.6579791	Ω	224.95465		-0.41817287		-0.82826576
e	0.0516002	i	2.16453		-0.19370038		-0.31984305
P	4.33	H	14.6	G	0.15	U	4

Residuals in seconds of arc

1977 03 12	381	0.5+	0.0	1999 04 19	691	0.4-	0.1+	1999 05 18	704	0.3+	0.2+
1977 03 14	381	1.6+	0.1+	1999 04 19	691	0.5-	0.4+	1999 05 18	704	0.7-	0.9+
1977 03 14	381	1.8+	0.4+	1999 05 10	704	0.9+	0.9-	1999 05 18	704	1.7-	0.1-
1977 03 15	381	2.1-	1.0-	1999 05 10	704	0.5+	0.4-	1999 05 19	704	0.5-	0.8+
1977 03 15	381	1.8-	0.4+	1999 05 10	704	0.0	0.5+	1999 05 19	704	1.7-	0.6-
1991 07 12	809	0.2-	0.3+	1999 05 10	704	0.1+	1.4+	1999 05 19	704	1.4+	1.5-

M.P.C. 34988

1991 07 12	809	0.1−	0.1−	1999 05 10	704	1.0−	0.7+	1999 05 19	704	0.5+	0.5−
1991 07 12	809	0.3+	0.2−	1999 05 13	704	1.7+	0.6−	1999 05 19	704	0.9−	0.8+
1999 04 15	704	0.1−	0.2−	1999 05 13	704	1.3+	0.2−	1999 05 19	703	1.2+	0.9+
1999 04 15	704	0.6−	0.4−	1999 05 13	704	0.3−	1.3−	1999 05 19	703	0.7−	0.9−
1999 04 15	704	0.2−	0.6−	1999 05 13	704	0.2−	0.5+	1999 05 19	703	0.3+	0.6+
1999 04 15	704	0.6+	1.4+	1999 05 13	704	0.5+	1.0+	1999 05 19	703	0.4−	0.1+
1999 04 15	704	(3.0−	1.3+)	1999 05 18	704	0.1−	1.3−				
1999 04 19	691	0.4−	0.1−	1999 05 18	704	1.2+	0.7−				

1999 JO₂₃ = 1996 TM₄₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	346.30886		(2000.0)	P	Q		
<i>n</i>	0.27984389	ω	228.44110	+0.24200570	+0.96863231		
<i>a</i>	2.3148641	Ω	55.64919	−0.86862663	+0.24220221		
<i>e</i>	0.2407371	<i>i</i>	3.91946	−0.43234363	+0.05558368		
<i>P</i>	3.52	<i>H</i>	15.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 10 07	809	(3.0−	0.8−)	1999 04 12	704	0.9−	0.8−	1999 05 15	703	0.5+	0.8+
1996 10 07	809	(4.5−	1.5−)	1999 05 10	704	1.0−	0.9+	1999 05 15	703	0.1−	0.1−
1996 10 07	809	(4.2−	0.9−)	1999 05 10	704	0.3−	0.3+	1999 05 15	703	0.6+	0.7−
1996 10 08	809	0.7−	0.7+	1999 05 10	704	0.8−	0.1−	1999 05 18	704	0.9+	0.3+
1996 10 08	809	(2.8−	0.2−)	1999 05 10	704	1.4−	0.9+	1999 05 18	704	0.9−	1.0−
1996 10 08	809	0.4+	0.5+	1999 05 10	704	0.6−	1.1−	1999 05 18	704	0.3+	1.6−
1996 10 10	809	0.1−	0.3−	1999 05 13	704	0.1+	0.1+	1999 05 18	704	0.3+	0.5−
1996 10 10	809	0.3+	0.1−	1999 05 13	704	0.8−	0.3−	1999 05 19	704	0.1+	1.6+
1996 10 10	809	0.0	0.4−	1999 05 13	704	0.8−	1.4−	1999 05 19	704	0.8+	1.1+
1999 04 12	704	0.5+	0.3+	1999 05 13	704	0.4+	0.1+	1999 05 19	704	0.5−	0.1−
1999 04 12	704	1.1+	0.1+	1999 05 13	704	0.5+	0.9+	1999 05 19	704	1.1+	0.0
1999 04 12	704	1.3+	0.9+	1999 05 15	703	0.2+	0.0	1999 05 19	704	0.4−	0.5−

1999 JL₂₄ = 1989 TV₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	282.77006		(2000.0)	P	Q		
<i>n</i>	0.27205035	ω	305.72727	+0.94232958	+0.30895091		
<i>a</i>	2.3588656	Ω	36.76852	−0.19257093	+0.81501907		
<i>e</i>	0.1664288	<i>i</i>	12.41620	−0.27373599	+0.49019716		
<i>P</i>	3.62	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1989 09 29	675	0.2−	1.0−	1999 04 15	704	0.9+	0.8−	1999 05 15	703	0.7+	0.2+
1989 09 29	675	0.1−	1.3−	1999 04 15	704	0.1−	0.1+	1999 05 15	703	0.1+	0.1+
1989 10 03	809	0.5+	2.3−	1999 04 15	704	1.5−	0.1−	1999 05 15	703	0.3+	0.3−
1989 10 03	809	(0.4+	3.5−)	1999 05 10	704	1.0−	0.5+	1999 05 18	704	0.2−	0.4−
1989 10 03	809	(1.0+	3.2−)	1999 05 10	704	0.0	0.2+	1999 05 18	704	1.3−	0.4−
1989 10 07	809	0.8−	1.9+	1999 05 10	704	0.9−	0.3+	1999 05 18	704	0.1−	0.4−
1989 10 07	809	1.3−	1.5+	1999 05 10	704	0.0	0.2−	1999 05 18	704	0.8+	0.2−
1989 10 07	809	1.2−	2.0+	1999 05 10	704	0.6+	0.2+	1999 05 18	704	0.4+	0.5+
1989 10 08	809	0.5+	1.5−	1999 05 13	704	0.4−	0.9+	1999 05 19	704	0.5+	0.9−
1989 10 08	809	0.9+	1.4−	1999 05 13	704	0.7+	1.0+	1999 05 19	704	0.5−	0.8−
1989 10 08	809	0.2−	1.1−	1999 05 13	704	0.2−	0.3+	1999 05 19	704	0.2−	0.8−
1989 10 08	809	0.9+	1.2+	1999 05 13	704	0.4−	0.0	1999 05 19	704	(2.1+	0.4+)
1989 10 08	809	0.6+	1.2+	1999 05 13	704	0.6−	0.6+	1999 05 19	704	1.0+	0.2+
1989 10 08	809	0.2+	1.0+	1999 05 14	704	0.3−	0.1−	1999 06 09	704	0.9+	1.1+
1999 04 14	699	0.0	0.9+	1999 05 14	704	0.2−	0.3−	1999 06 09	704	0.0	0.3−
1999 04 14	699	0.4+	0.1−	1999 05 14	704	0.6−	0.5+	1999 06 09	704	0.2+	0.6−
1999 04 14	699	0.3+	0.4+	1999 05 14	704	(2.7−	1.8+)	1999 06 09	704	0.3−	0.8−
1999 04 15	704	0.4−	0.0	1999 05 14	704	1.3+	1.0−				
1999 04 15	704	0.2+	0.0	1999 05 15	703	0.4+	0.9+				

1999 JUNE 22

1999 JB₂₅ = 1962 WK₁ = 1975 WJ = 1998 HV₄₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	172.91824		(2000.0)	P	Q		
<i>n</i>	0.22798611	ω	43.83033	+0.42764366	−0.89998375		
<i>a</i>	2.6537731	Ω	21.28902	+0.75189090	+0.30222259		
<i>e</i>	0.1575056	<i>i</i>	13.46770	+0.50177781	+0.31415085		
<i>P</i>	4.32	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc (or two decimals in units of degrees)

1962 11 30	760	(0.03+	0.01+)	X	1999 04 15	704	0.6+	1.5−	1999 05 13	704	0.3+	0.6+
1975 11 27	095	0.2−	0.4+		1999 04 17	699	0.9−	0.7+	1999 05 18	704	0.8−	0.8−
1998 04 18	699	0.1+	0.0		1999 04 17	699	0.9+	0.3−	1999 05 18	704	0.8+	1.7−
1998 04 18	699	0.1+	0.0		1999 04 17	699	0.9+	1.0−	1999 05 18	704	1.0−	0.7+
1998 04 18	699	0.1+	0.5−		1999 05 10	704	0.3−	0.9−	1999 05 18	704	0.5−	0.7−
1998 04 19	699	0.0	0.3−		1999 05 10	704	0.2+	0.5−	1999 05 18	704	0.8+	0.0
1998 04 19	699	0.2−	0.1+		1999 05 10	704	1.8−	0.4+	1999 05 19	704	0.5+	1.0+
1998 04 19	699	0.2−	0.1+		1999 05 10	704	0.6−	1.2+	1999 05 19	704	0.5−	0.5−
1999 04 15	704	0.8−	0.7+		1999 05 13	704	1.2+	0.6+	1999 05 19	704	1.1+	1.3+
1999 04 15	704	1.1+	1.0+		1999 05 13	704	0.6+	1.0−	1999 05 19	704	1.4−	1.0+
1999 04 15	704	1.2+	2.0+		1999 05 13	704	0.4+	0.9−	1999 05 19	704	1.7−	0.6−

1999 JK₂₅ = 1996 TP₆₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	340.73155		(2000.0)	P	Q		
<i>n</i>	0.27538392	ω	12.02296	+0.32248138	+0.94416808		
<i>a</i>	2.3397906	Ω	276.81903	−0.87399963	+0.26962634		
<i>e</i>	0.2056702	<i>i</i>	3.89637	−0.36349746	+0.18933642		
<i>P</i>	3.58	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 10 03	809	0.4−	0.8−	1999 05 10	704	1.0+	0.4+	1999 05 18	704	0.1−	1.2−
1996 10 03	809	0.3+	0.2−	1999 05 10	704	1.5+	1.6−	1999 05 18	704	0.6−	1.6−
1996 10 03	809	0.0	0.1−	1999 05 10	704	0.5−	0.6+	1999 05 18	704	0.1+	0.8+
1996 10 04	809	1.1−	0.3−	1999 05 10	704	0.9+	0.3+	1999 05 18	704	0.2−	0.2−
1996 10 04	809	0.3+	0.3+	1999 05 13	704	0.5+	0.9+	1999 05 19	704	0.6−	0.8−
1996 10 04	809	0.8+	1.4+	1999 05 13	704	0.5−	0.8+	1999 05 19	704	0.6+	0.4+
1999 04 15	704	1.8−	1.0+	1999 05 13	704	0.7−	0.6−	1999 05 19	704	0.1−	1.7+
1999 04 15	704	0.4+	0.5+	1999 05 13	704	0.7−	0.8−	1999 05 19	704	0.0	0.6+
1999 04 15	704	0.1+	0.2+	1999 05 13	704	0.0	0.3−	1999 05 19	704	0.0	0.4−
1999 04 15	704	0.2+	0.3−	1999 05 18	704	0.6+	0.3−				

1999 JM₂₅ = 1978 EO₇ = 1983 VE₄ = 1993 TA₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	277.29821		(2000.0)	P	Q		
<i>n</i>	0.29099922	ω	103.27906	+0.98676853	+0.12571920		
<i>a</i>	2.2553200	Ω	249.57306	−0.15459426	+0.91989364		
<i>e</i>	0.2006349	<i>i</i>	6.27234	+0.04887204	+0.37147057		
<i>P</i>	3.39	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1978 03 05	095	0.1−	0.2−	1999 05 10	704	0.4+	0.2−	1999 05 14	704	0.0	0.9−
1983 11 08	381	0.1+	0.1−	1999 05 10	704	0.6+	0.0	1999 05 18	704	1.2−	0.6−
1993 10 13	675	0.1−	0.0	1999 05 10	704	0.7+	0.3−	1999 05 18	704	0.3−	0.6−
1993 10 13	675	0.0	0.2−	1999 05 10	704	0.3+	0.4−	1999 05 18	704	0.6−	0.2−
1993 10 15	675	0.0	0.1+	1999 05 13	704	0.3+	0.9−	1999 05 18	704	0.7−	0.6−
1999 04 15	704	0.9−	0.3+	1999 05 13	704	0.6+	0.1+	1999 05 18	704	0.2−	0.0
1999 04 15	704	0.9−	0.6+	1999 05 13	704	0.2+	0.5+	1999 06 09	704	0.0	0.0
1999 04 15	704	0.7−	0.5+	1999 05 13	704	0.2−	0.5−	1999 06 09	704	0.0	0.1−
1999 04 15	704	0.3+	1.6+	1999 05 13	704	0.1−	0.2−	1999 06 09	704	0.2−	0.5+
1999 04 17	699	0.5+	0.3+	1999 05 14	704	0.7+	1.5−	1999 06 09	704	0.3+	1.0+
1999 04 17	699	0.0	0.3+	1999 05 14	704	0.8+	0.8−	1999 06 09	704	0.2−	1.3+
1999 04 17	699	0.0	0.7+	1999 05 14	704	0.0	0.2+				
1999 05 10	704	0.5+	0.0	1999 05 14	704	0.3−	0.1+				

1999 JUNE 22

M.P.C. 34989

1999 JN₂₅ = 1992 DY₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	330.71598	(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.30095427	ω	297.96362	+0.50347332	+0.86400948	
<i>a</i>	2.2053069	Ω	2.26810	-0.77883955	+0.45459168	
<i>e</i>	0.1780221	<i>i</i>	2.16665	-0.37406359	+0.21641172	
<i>P</i>	3.27	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1980 10 13	095(74.8- 34.1-)	1999 04 15	704	0.3-	0.1+	1999 05 13	704	0.7-	0.2-	
1992 02 24	691 0.4- 1.0-	1999 04 15	704	0.7+	0.1+	1999 05 13	704	1.0-	0.7-	
1992 02 24	691 0.2- 1.3-	1999 04 15	704	0.5+	0.1+	1999 05 18	704	0.1-	0.4-	
1992 02 24	691 0.7- 0.9-	1999 04 15	704	0.0	0.2+	1999 05 18	704	0.2-	1.3+	
1992 02 29	691 0.7+ 0.5-	1999 04 15	704	1.5-	0.8+	1999 05 18	704	0.3+	0.5-	
1992 02 29	691 0.4+ 0.5-	1999 05 10	704	0.5+	0.0	1999 05 18	704	0.9+	0.2-	
1992 02 29	691 0.0	0.6-	1999 05 10	704	0.0	0.5-	1999 05 18	704	0.6+	1.1-
1992 03 07	809 1.2- 0.5-	1999 05 10	704	0.0	0.3+	1999 05 19	704	0.1-	0.4-	
1992 04 06	809 0.8- 0.1+	1999 05 10	704	0.3-	0.8+	1999 05 19	704	0.2-	0.3-	
1993 09 16	809 0.7+ 1.7-	1999 05 10	704	1.0-	0.1+	1999 05 19	704	0.4-	0.6-	
1993 09 16	809 1.1+ 1.5-	1999 05 13	704	0.1+	0.1+	1999 05 19	704	0.2+	0.4-	
1993 09 16	809 0.5+ 1.6-	1999 05 13	704	0.9+	0.0	1999 05 19	704	0.3+	0.6-	

1999 JZ₂₅ = 1993 VB₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	156.05727	(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.25605844	ω	217.07315	+0.19232019	-0.97224230	
<i>a</i>	2.4560846	Ω	222.30718	+0.94114485	+0.22119843	
<i>e</i>	0.1445391	<i>i</i>	11.41862	+0.27795562	-0.07626378	
<i>P</i>	3.85	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1993 11 11	399 0.2- 0.9-	1999 05 13	704	0.4-	0.5+	1999 05 18	704	1.2-	0.0
1993 11 11	399 1.2+ 0.9-	1999 05 13	704	0.1+	0.9+	1999 05 18	704	1.4+	1.7-
1993 11 16	399 0.4- 0.9+	1999 05 13	704	2.2-	0.2-	1999 05 18	704	1.7+	0.8+
1993 11 16	399 0.6- 0.4+	1999 05 13	704	0.2-	1.0-	1999 05 19	704	0.9-	0.1+
1999 05 10	704 0.4+ 0.3+	1999 05 15	703	0.0	0.6+	1999 05 19	704	2.1+	1.2+
1999 05 10	704 0.1- 1.4+	1999 05 15	703	0.2+	0.2+	1999 05 19	704	0.4+	0.2-
1999 05 10	704 0.4+ 0.0	1999 05 15	703	0.0	0.9+	1999 05 19	704	2.1-	1.9-
1999 05 10	704 1.0+ 1.2-	1999 05 15	703	1.0-	0.8+				
1999 05 13	704 0.2+ 1.4-	1999 05 18	704	0.1+	0.9-				

1999 JD₂₆ = 1996 TB₃₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	354.27121	(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.22746741	ω	209.54649	-0.27971629	+0.94135631	
<i>a</i>	2.6578059	Ω	44.96395	-0.82015524	-0.13211402	
<i>e</i>	0.0986980	<i>i</i>	15.48749	-0.49910338	-0.31047414	
<i>P</i>	4.33	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1996 10 09	691	0.3+	0.1+	1999 05 10	704	0.3+	0.7+	1999 05 15	703	1.1-	1.7+
1996 10 09	691	0.1+	0.4+	1999 05 10	704	0.9-	0.6-	1999 05 18	704	0.4-	0.6+
1996 10 09	691	0.4+	0.2-	1999 05 10	704	0.7+	0.5+	1999 05 18	704	0.8+	1.3+
1996 10 10	691	0.3-	0.2-	1999 05 13	704	0.5+	0.2-	1999 05 18	704	0.1-	0.3+
1996 10 10	691	0.2-	0.3-	1999 05 13	704	2.0-	1.4-	1999 05 18	704	(2.6-	1.7+)
1996 10 10	691	0.2-	0.0	1999 05 13	704	1.4+	0.4+	1999 05 19	704	0.0	0.6+
1996 10 12	691	0.0	0.1+	1999 05 13	704	1.2-	0.9-	1999 05 19	704	0.5+	1.3-
1996 10 12	691	0.2-	0.2+	1999 05 15	703	1.4+	0.9-	1999 05 19	704	0.6+	1.0-
1996 10 12	691	0.1+	0.0	1999 05 15	703	0.4-	0.0	1999 05 19	704	1.3-	0.6-
1999 05 10	704	0.1+	0.2-	1999 05 15	703	1.3+	1.1+				

1999 JE₂₆ = 1988 VN₉ = 1996 TD₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	65.77933	(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.23155848	ω	313.75519	-0.97471797	-0.16497677	
<i>a</i>	2.6264084	Ω	217.50907	+0.19409750	-0.95926257	
<i>e</i>	0.0703148	<i>i</i>	14.32872	-0.11068443	-0.22934251	
<i>P</i>	4.26	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1988 11 02	372	(5.7- 8.3-)	1999 04 15	704	0.6- 1.3+	1999 05 15	703	0.2- 0.0
1988 11 02	372	0.0 0.7+	1999 04 15	704	0.8+ 0.8+	1999 05 15	703	1.0+ 0.8-
1996 10 10	327	0.3+ 0.3+	1999 05 10	704	0.8- 0.1-	1999 05 15	703	0.0 0.4+
1996 10 10	327	0.0 0.7+	1999 05 10	704	(2.9+ 0.3-)	1999 05 15	703	1.0- 0.8-
1996 10 10	327	0.8+ 0.1+	1999 05 10	704	0.4- 0.1-	1999 05 18	704	1.1+ 0.6+
1996 10 14	327	0.2- 0.7-	1999 05 10	704	1.2- 0.5+	1999 05 18	704	1.0+ 0.5+
1996 10 14	327	0.3- 0.4-	1999 05 13	704	0.1- 0.7+	1999 05 18	704	0.2+ 0.0
1996 10 14	327	0.4- 0.1-	1999 05 13	704	0.5+ 0.3+	1999 05 18	704	0.4- 0.2+
1996 10 18	327	0.2+ 0.2-	1999 05 13	704	0.0 0.0	1999 05 18	704	1.8- 1.7+
1996 10 18	327	0.2- 0.4-	1999 05 13	704	0.6+ 0.4-	1999 05 19	704	0.8- 1.1+
1996 10 18	327	0.2- 0.7+	1999 05 13	704	0.5+ 1.2-	1999 05 19	704	0.4+ 1.1-
1999 04 14	699	0.9+ 0.0	1999 05 14	704	0.1- 0.1+	1999 05 19	704	0.4+ 0.5+
1999 04 14	699	1.1+ 0.7-	1999 05 14	704	(1.0- 2.2+)	1999 05 19	704	0.1+ 0.5-
1999 04 14	699	0.5+ 0.1-	1999 05 14	704	0.4+ 0.4-	1999 05 19	704	0.1+ 0.8-
1999 04 15	704	0.2- 0.0	1999 05 14	704	(2.1- 0.7+)			
1999 04 15	704	0.9- 1.3-	1999 05 14	704	1.1- 0.3+			

1999 JL₂₆ = 1994 CB₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	83.91849	(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.21544004	ω	68.36297	-0.81885828	-0.57028015	
<i>a</i>	2.7558259	Ω	76.81103	+0.49876186	-0.76314798	
<i>e</i>	0.1111588	<i>i</i>	3.84004	+0.28409104	-0.30395017	
<i>P</i>	4.57	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1994 02 08	809	0.6+	0.1+	1999 04 12	704	1.7-	1.3+	1999 05 15	703	0.1-	0.3+
1994 02 08	809	0.6+	0.2+	1999 04 12	704	(2.4+	0.2-)	1999 05 15	703	0.2+	0.1-
1994 02 08	809	0.4-	0.3+	1999 04 12	704	1.1+	0.0	1999 05 15	703	0.2-	1.3-
1994 02 10	809	0.1+	0.4-	1999 05 10	704	0.6+	0.6+	1999 05 18	704	0.7+	0.5-
1994 02 10	809	0.3-	0.5-	1999 05 10	704	0.0	1.0-	1999 05 18	704	1.6+	1.9-
1994 02 10	809	0.8-	0.6-	1999 05 10	704	1.6+	0.6+	1999 05 18	704	1.5-	0.1-
1994 02 13	809	0.9+	0.4+	1999 05 10	704	1.3-	0.2+	1999 05 18	704	1.3-	0.8-
1994 02 13	809	0.1-	0.4+	1999 05 10	704	(2.1-	0.4-)	1999 05 19	704	0.2-	1.7+
1994 02 13	809	0.7-	0.0	1999 05 13	704	0.4+	0.4-	1999 05 19	704	0.1-	0.4+
1996 09 18	566	0.3+	0.1+	1999 05 13	704	1.3-	1.0+	1999 05 19	704	0.2-	0.8-
1996 09 18	566	0.0	0.3-	1999 05 13	704	0.1-	0.2+	1999 05 19	704	0.1-	0.9+
1996 09 18	566	0.3-	0.1+	1999 05 13	704	1.3+	0.0	1999 05 19	704	0.3-	1.1+
1999 04 12	704	(1.9+	2.3-)	1999 05 13	704	0.7+	1.0-				
1999 04 12	704	0.2+	0.4-	1999 05 15	703	0.1-	0.2+				

1999 JO₂₆ = 1976 JV₁ = 1978 TW₈ = 1982 KU

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	304.76828	(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.17098801	ω	255.21240	+0.56849792	+0.80531277	
<i>a</i>	3.2148369	Ω	50.68835	-0.64615975	+0.56361025	
<i>e</i>	0.1164538	<i>i</i>	12.55379	-0.50920299	+0.18388811	
<i>P</i>	5.76	<i>H</i>	12.2	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1976 05 02	095 0.3+ 0.5+	1999 04 14	699	0.2+	0.7+	1999 05 14	704	0.0	0.1+
1978 10 09	095 0.9- 0.8+	1999 04 15	704	0.1+	0.1-	1999 05 14	704	0.8-	0.2+
1978 11 01	095 0.2+ 0.6+	1999 04 15	704	0.6+	1.8-	1999 05 14	704	1.0-	0.1-
1982 05 21	688 2.0+ 0.4-	1999 04 15	704	0.4-	0.3-	1999 05 14	704	1.0-	0.3-
1982 05 21	688 0.9- 1.7+	1999 04 15	704	0.9-	0.8-	1999 05 15	703	0.5-	0.8+
1982 05 28	688 1.8- 1.5-	1999 04 15	704	0.7+	0.4-	1999 05 15	703	0.1+	0.3+

M.P.C. 34990

1999 JUNE 22

1982 05 28	688	0.7+	0.4+	1999 05 10	704	1.0+	0.0	1999 05 15	703	0.6+	0.2+
1999 03 25	699	0.1-	0.1-	1999 05 10	704	1.0+	0.1+	1999 05 15	703	0.1+	0.5-
1999 03 25	699	0.2+	1.2+	1999 05 10	704	0.6+	0.1+	1999 05 18	704	0.1+	0.0
1999 03 25	699	0.5+	0.4-	1999 05 10	704	0.6+	0.0	1999 05 18	704	0.2-	0.1-
1999 04 12	704	0.2-	0.2-	1999 05 10	704	1.2-	0.2-	1999 05 18	704	0.8-	0.0
1999 04 12	704	0.3-	0.3+	1999 05 13	704	0.1+	0.4+	1999 05 18	704	0.2-	0.5-
1999 04 12	704	0.1-	0.3+	1999 05 13	704	0.6+	0.5+	1999 06 09	704	0.8+	0.7+
1999 04 12	704	0.4-	0.1+	1999 05 13	704	0.2+	0.0	1999 06 09	704	0.1+	0.3-
1999 04 12	704	0.1+	0.8+	1999 05 13	704	1.0+	0.4-	1999 06 09	704	0.5+	0.5+
1999 04 14	699	0.6+	0.2-	1999 05 13	704	0.3-	0.2+	1999 06 09	704	0.1-	0.0
1999 04 14	699	0.1+	0.0	1999 05 14	704	0.3-	0.1-	1999 06 09	704	1.1-	0.0

1999 JX₂₆ = 1986 ST = 1996 VH₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	258.10945		(2000.0)		P		Q
<i>n</i>	0.20455035	ω	284.52976	+0.98693161			+0.15419833
<i>a</i>	2.8527863	Ω	66.61729	-0.12111458			+0.90134625
<i>e</i>	0.0836592	<i>i</i>	2.92171	-0.10628855			+0.40471942
<i>P</i>	4.82	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1986 09 30	046	1.4-	0.6+	1999 04 16	691	0.4+	0.5-	1999 05 14	704	0.9+	0.9-
1986 09 30	046	0.3-	0.6+	1999 04 16	691	0.3+	0.7-	1999 05 14	704	1.6-	1.6+
1986 10 01	046	1.7+	1.2-	1999 04 16	691	0.3+	0.6-	1999 05 14	704	0.2+	0.5-
1986 10 01	046	0.9-	1.8-	1999 05 10	704	0.3+	0.0	1999 05 18	704	0.2+	0.4-
1986 10 03	046	(5.2+	0.5-)	1999 05 10	704	(1.7+	2.1-)	1999 05 18	704	1.6-	0.2-
1986 10 03	046	2.2+	1.0-	1999 05 10	704	1.6+	0.2+	1999 05 18	704	0.2+	0.2-
1996 11 02	560	(3.0-	0.9+)	1999 05 10	704	0.1+	0.5+	1999 05 18	704	0.8-	0.5-
1996 11 02	560	1.5+	0.9-	1999 05 10	704	1.5+	0.1-	1999 05 18	704	1.0-	0.2+
1996 11 02	560	0.1+	0.9-	1999 05 13	704	0.4+	0.9-	1999 05 19	704	0.8-	1.4-
1996 11 08	560	0.3+	0.6-	1999 05 13	704	0.1-	0.5-	1999 05 19	704	0.4-	1.1+
1996 11 09	560	0.0	0.4-	1999 05 13	704	0.5-	0.1-	1999 05 19	704	0.5-	1.0-
1996 11 09	560	0.9-	0.5-	1999 05 13	704	0.2+	1.1-	1999 05 19	704	0.8-	0.2+
1998 02 26	566	0.1+	1.2-	1999 05 13	704	(1.0+	2.3-)	1999 05 19	704	0.4-	0.7-
1998 02 26	566	0.1-	0.3-	1999 05 14	704	0.8-	0.7+				
1998 02 26	566	0.5-	0.3+	1999 05 14	704	0.4+	0.1-				

1999 JL₂₇ = 1992 JA₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	302.00254		(2000.0)		P		Q
<i>n</i>	0.28247785	ω	168.88663	+0.69472686			+0.71878891
<i>a</i>	2.3004517	Ω	145.10947	-0.66340917			+0.65452063
<i>e</i>	0.0558738	<i>i</i>	2.64557	-0.27792600			+0.23440401
<i>P</i>	3.49	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1992 05 03	691	0.1-	0.1+	1999 04 12	704	0.9-	0.3-	1999 05 14	704	0.3+	0.7+
1992 05 03	691	0.3-	0.6+	1999 05 10	704	1.0+	0.0	1999 05 14	704	0.6-	0.3-
1992 05 03	691	0.2+	0.5+	1999 05 10	704	(2.3+	0.3+)	1999 05 14	704	0.1+	1.2+
1992 05 04	691	0.8+	0.6-	1999 05 10	704	0.2+	0.9-	1999 05 18	704	0.7+	1.0+
1992 05 04	691	0.3-	0.2+	1999 05 10	704	0.4+	1.3+	1999 05 18	704	0.7+	1.1-
1992 05 04	691	0.0	0.2-	1999 05 13	704	1.2+	0.6+	1999 05 18	704	0.2-	0.2-
1996 07 21	566	0.2+	0.1+	1999 05 13	704	0.2-	1.2-	1999 05 18	704	0.5+	0.1+
1996 07 21	566	0.0	0.1-	1999 05 13	704	0.5-	0.4-	1999 05 18	704	0.3+	0.6-
1996 07 21	566	0.2-	0.0	1999 05 13	704	0.5-	0.5-	1999 05 19	704	0.2-	0.1+
1999 04 12	704	0.4-	0.1-	1999 05 13	704	1.3-	1.1-	1999 05 19	704	0.7-	0.4+
1999 04 12	704	0.8+	0.1-	1999 05 14	704	0.1-	0.3-	1999 05 19	704	0.2-	0.9-
1999 04 12	704	0.3-	0.2-	1999 05 14	704	1.5+	1.2+	1999 05 19	704	1.8-	0.9+

1999 JR₂₇ = 1975 VB₄ = 1985 SN = 1998 DO₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	236.85507		(2000.0)		P		Q
<i>n</i>	0.19058236	ω	157.74863	+0.97758710			-0.18848293
<i>a</i>	2.9905260	Ω	213.54888	+0.15837427			+0.95192053
<i>e</i>	0.1104835	<i>i</i>	9.77158	+0.13871215			+0.24149841
<i>P</i>	5.17	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1975 11 02	095	0.0	0.4-	1999 04 12	704	0.7-	0.9-	1999 05 18	704	0.6+	0.7-
1985 09 18	046	0.6+	0.2+	1999 05 10	704	0.7+	0.5+	1999 05 18	704	0.3-	0.8-
1985 09 18	046	0.5-	0.9-	1999 05 10	704	0.5+	0.5-	1999 05 18	704	0.0	0.8-
1985 09 19	046	2.5+	0.1+	1999 05 10	704	0.5+	0.9+	1999 05 19	704	0.7+	0.6-
1985 09 19	046	1.9-	1.9-	1999 05 10	704	0.2+	0.7+	1999 05 19	704	0.2+	0.7+
1998 02 22	566	0.6-	0.3+	1999 05 10	704	0.4+	0.7+	1999 05 19	704	0.3-	0.5+
1998 02 22	566	0.2-	0.2-	1999 05 13	704	0.5+	0.5+	1999 05 19	704	0.6+	1.9-
1998 02 22	566	0.1-	0.3+	1999 05 13	704	0.1-	0.8+	1999 05 19	704	1.0+	1.7-
1998 02 23	566	0.3-	0.1+	1999 05 13	704	0.7+	0.7+	1999 06 07	703	0.2-	0.6-
1998 02 23	566	0.1-	0.1+	1999 05 13	704	0.1+	0.7-	1999 06 07	703	0.6-	0.3+
1998 02 23	566	0.4-	0.3+	1999 05 13	704	0.2+	0.4+	1999 06 07	703	0.2-	1.5+
1998 03 24	566	0.7+	1.0-	1999 05 14	704	0.7-	1.7-	1999 06 07	703	0.1-	1.5+
1998 03 24	566	0.3+	0.9-	1999 05 14	704	1.5+	0.9-	1999 06 08	704	0.6-	0.4-
1998 03 24	566	0.4+	1.3-	1999 05 14	704	(2.6+	0.4-)	1999 06 08	704	0.0	0.4-
1999 04 12	704	1.1-	0.4+	1999 05 14	704	1.6+	0.0	1999 06 08	704	0.5-	1.1+
1999 04 12	704	1.1-	0.6+	1999 05 18	704	0.2-	0.8-	1999 06 08	704	0.4-	0.5+
1999 04 12	704	0.7-	0.5+	1999 05 18	704	1.8-	1.5-	1999 06 08	704	1.3-	0.7+

1999 JZ₂₇ = 1982 JX₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	285.65554		(2000.0)		P		Q
<i>n</i>	0.17239501	ω	237.77056	+0.75087563			+0.65794760
<i>a</i>	3.1973212	Ω	81.01822	-0.58472412			+0.70265824
<i>e</i>	0.0428890	<i>i</i>	3.32945	-0.30705616			+0.27088071
<i>P</i>	5.72	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1982 05 15	675	0.3+	0.4-	1999 05 10	704	0.0	0.6-	1999 05 18	704	0.6-	0.6-
1982 05 16	675	1.0-	1.6-	1999 05 10	704	0.7-	0.4+	1999 05 19	704	1.0+	0.7-
1982 05 16	675	0.1+	0.0	1999 05 13	704	1.3+	0.3+	1999 05 19	704	0.8+	0.0
1982 05 17	675	0.5-	1.2-	1999 05 13	704	0.2-	0.3+	1999 05 19	704	0.7+	0.4+
1982 05 18	675	0.1+	0.2+	1999 05 13	704	0.9+	1.3+	1999 05 19	704	0.1-	0.2-
1999 02 14	699	0.2+	1.7-	1999 05 13	704	1.1+	0.7+	1999 05 19	704	0.1-	0.4-
1999 02 14	699	1.0-	0.2+	1999 05 13	704	0.3-	0.0	1999 06 07	703	0.1-	0.2+
1999 02 14	699	0.3-	0.2-	1999 05 14	704	1.3+	0.7+	1999 06 07	703	0.5+	0.2+
1999 04 12	704	0.4+	0.1-	1999 05 14	704	0.8-	1.7+	1999 06 07	703	0.1+	0.1+
1999 04 12	704	1.5-	0.5-	1999 05 14	704	0.1+	0.8+	1999 06 07	703	0.2+	0.3-
1999 04 12	704	1.4-	0.1-	1999 05 14	704	0.9+	1.5+	1999 06 09	704	0.2-	0.2-
1999 04 12	704	0.8-	0.2-	1999 05 14	704	1.6-	1.1+	1999 06 09	704	0.2+	0.8+
1999 04 12	704	(2.8-	0.4+)	1999 05 18	704	0.7+	0.3-	1999 06 09	704	0.4+	0.1-
1999 05 10	704	0.6+	0.3-	1999 05 18	704	0.6+	1.0-	1999 06 09	704	0.6-	0.0
1999 05 10	704	1.4+	0.8+	1999 05 18	704	0.3-	0.4-	1999 06 09	704	1.2-	0.6-
1999 05 10	704	0.4-	0.2+	1999 05 18	704	0.8-	0.8-				

1999 JE₂₉ = 1973 UX₂ = 1993 RV₂₀ = 1997 XW₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	275.38372		(2000.0)		P		Q
<i>n</i>	0.29500728	ω	40.04197	+0.99858485			+0.01432980
<i>a</i>	2.2348458	Ω	319.04905	-0.03591526			+0.89194826
<i>e</i>	0.2135260	<i>i</i>	4.48174	+0.03922245			+0.45191034
<i>P</i>	3.34	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1973 10 27	095	0.2+	0.5-	1998 01 24	691	0.1+	0.5-	1999 05 18	704	1.1+	0.4-
1993 09 15	095	0.3-	0.1-	1998 01 24	566	0.0	0.5-	1999 05 18	704	0.3+	0.5-
1993 09 23	095	0.3+	0.1+	1998 01 24	566	0.3+	0.6-	1999 05 18	704	0.1-	0.6-

1997 12 07	910	0.1+	0.2+	1998 01 24	566	0.2-	0.4-	1999 05 18	704	0.3+	1.0-
1997 12 07	910	0.2+	0.3+	1999 05 10	704	0.4+	0.2+	1999 05 19	704	0.9-	0.3-
1997 12 07	910	0.2+	0.0	1999 05 10	704	1.3-	1.4+	1999 05 19	704	(2.1-	0.2-)
1997 12 08	910	0.1+	0.1+	1999 05 10	704	0.2-	0.9-	1999 05 19	704	1.3+	0.2-
1997 12 08	910	0.1+	0.1+	1999 05 10	704	(4.1-	0.3+)	1999 05 19	704	0.2+	0.1-
1997 12 08	910	0.1+	0.1+	1999 05 13	704	0.8+	0.4-	1999 05 19	704	0.4+	0.0
1997 12 28	566	0.3-	0.4+	1999 05 13	704	(2.3-	1.4-)	1999 06 09	704	0.6-	0.4+
1997 12 28	566	0.1-	1.1+	1999 05 13	704	0.6+	1.3-	1999 06 09	704	0.4-	0.2+
1997 12 28	566	0.2-	0.5+	1999 05 13	704	0.7-	1.3+	1999 06 09	704	0.7-	0.8+
1998 01 24	691	0.1-	0.4-	1999 05 13	704	0.0	1.1+	1999 06 09	704	0.4-	0.3+
1998 01 24	691	0.1-	0.3-	1999 05 18	704	0.2-	0.0	1999 06 09	704	(2.5-	0.7+)

1999 JC₃₀ = 1977 DU₁ = 1990 SJ₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	305.51704		(2000.0)	P	Q
<i>n</i>	0.18714978	ω	259.98573	+0.56527241	+0.82355980
<i>a</i>	3.0269819	Ω	44.54373	-0.72811152	+0.52495511
<i>e</i>	0.0928836	<i>i</i>	3.84832	-0.38771216	+0.21487530
<i>P</i>	5.27	<i>H</i>	12.9	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1977 02 18	381	0.1+	2.0-	1998 01 26	566	0.1+	0.3-	1999 05 13	704	0.6-	0.7-
1977 02 18	381	0.9+	0.6-	1998 02 27	566	0.1-	0.5+	1999 05 13	704	0.2+	0.4-
1977 02 19	381	1.2-	0.5-	1998 02 27	566	0.3+	0.7+	1999 05 14	704	0.4+	0.4-
1977 02 19	381	1.0-	1.3-	1998 02 27	566	0.0	0.5+	1999 05 14	704	0.4-	0.2+
1990 09 18	675	(0.3+	2.4-)	1999 04 12	704	0.5+	0.2+	1999 05 14	704	0.2+	0.2+
1990 09 18	675	0.5+	1.3-	1999 04 12	704	0.6-	0.2-	1999 05 14	704	(2.1-	1.2-)
1990 09 20	675	0.6+	1.2-	1999 04 12	704	0.5+	0.9+	1999 05 15	703	0.8+	0.4+
1990 09 20	675	1.2-	1.4-	1999 04 12	704	0.3-	0.1-	1999 05 15	703	0.3+	0.5+
1995 08 27	809	(4.0-	1.2+)	1999 04 12	704	0.3+	1.6+	1999 05 15	703	0.3+	0.5+
1995 08 27	809	0.1+	0.9-	1999 04 15	704	(2.3+	1.8-)	1999 05 15	703	0.4-	0.6+
1995 08 28	809	0.3-	0.7-	1999 04 15	704	0.3+	0.3+	1999 05 18	704	0.9-	0.5-
1995 08 28	809	0.7+	0.2+	1999 04 15	704	0.7+	0.1+	1999 05 18	704	0.0	0.7-
1995 08 29	809	0.1-	0.0	1999 04 15	704	1.0+	0.3+	1999 05 18	704	0.3-	0.3-
1995 08 29	809	(2.6+	1.4+)	1999 04 15	704	(1.0+	4.9+)	1999 05 18	704	0.6-	0.5-
1995 08 30	809	0.6+	0.1+	1999 05 10	704	0.4-	0.2-	1999 05 18	704	1.6-	0.4+
1995 08 30	809	0.3+	0.2+	1999 05 10	704	0.7+	0.7-	1999 05 19	704	0.0	0.0
1995 08 31	809	0.2+	0.1-	1999 05 10	704	0.6-	0.4-	1999 05 19	704	0.3-	0.1-
1995 09 29	809	0.7+	0.5+	1999 05 13	704	0.2+	0.7-	1999 05 19	704	0.4+	0.1-
1998 01 26	566	0.2+	0.5-	1999 05 13	704	0.0	0.9-	1999 05 19	704	0.5-	0.9-
1998 01 26	566	0.0	0.3-	1999 05 13	704	0.2+	0.1+	1999 05 19	704	0.9-	0.8-

1999 JN₃₀ = 1996 TD₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	282.33714		(2000.0)	P	Q
<i>n</i>	0.25195050	ω	53.49862	+0.94000547	+0.32918596
<i>a</i>	2.4827094	Ω	287.13002	-0.33525194	+0.84265192
<i>e</i>	0.1300220	<i>i</i>	5.37929	-0.06321270	+0.42611541
<i>P</i>	3.91	<i>H</i>	14.3	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1996 10 07	691	0.5-	0.0	1999 05 10	704	0.0	0.9+	1999 05 13	704	0.2-	1.2+
1996 10 07	691	0.4-	0.1-	1999 05 10	704	3.3-	1.5+	1999 05 18	704	0.6+	1.6+
1996 10 07	691	0.2-	0.0	1999 05 13	704	0.1-	1.0-	1999 05 18	704	0.4-	0.4-
1996 10 08	691	0.2+	0.0	1999 05 13	704	0.6-	0.9-	1999 05 18	704	0.6+	0.7+
1996 10 08	691	0.4+	0.1-	1999 05 13	704	2.4+	0.7+	1999 05 18	704	2.0+	0.4+
1996 10 08	691	0.4+	0.1+	1999 05 13	704	0.1+	1.6-	1999 05 18	704	0.9-	0.0
1999 05 10	704	0.2+	0.6+	1999 05 13	704	0.9+	0.2+	1999 05 19	704	2.2-	0.2-
1999 05 10	704	0.0	1.2-	1999 05 13	704	0.4-	0.2-	1999 05 19	704	0.8-	0.7-
1999 05 10	704	1.2+	0.4+	1999 05 13	704	0.5+	0.6-	1999 05 19	704	0.6+	0.2-

1999 JO₃₀ = 1988 CK₃ = 1997 YC₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	90.92203		(2000.0)	P	Q
<i>n</i>	0.19210503	ω	245.25120	-0.81060010	-0.56379694
<i>a</i>	2.9747026	Ω	260.05731	+0.57837995	-0.72847827
<i>e</i>	0.0638798	<i>i</i>	9.24862	+0.09167392	-0.38916889
<i>P</i>	5.13	<i>H</i>	13.8	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1988 02 13	809	1.6+	2.2+	1998 01 26	566	0.5-	1.5-	1999 05 18	704	1.0+	0.5+
1988 02 13	809	0.5+	1.6+	1998 01 26	566	0.2-	1.8-	1999 05 18	704	0.7-	0.3-
1988 02 13	809	0.5+	2.2+	1999 05 10	704	0.3-	1.2-	1999 05 18	704	0.7+	1.0-
1997 12 27	683	0.6+	0.1+	1999 05 10	704	(2.3+	1.1-)	1999 05 18	704	0.3+	0.5+
1997 12 27	683	1.3+	0.4-	1999 05 10	704	1.4+	0.9+	1999 05 18	704	1.1+	1.5-
1997 12 31	683	1.1-	0.2-	1999 05 10	704	0.1-	0.0	1999 05 19	704	0.4+	0.2+
1997 12 31	683	0.9-	0.2-	1999 05 13	704	0.4-	0.9-	1999 05 19	704	1.6-	0.8-
1997 12 31	683	0.7-	0.5-	1999 05 13	704	1.8-	0.8+	1999 05 19	704	1.0+	0.7+
1998 01 26	566	0.8-	1.6-	1999 05 13	704	0.9-	0.2+	1999 05 19	704	0.5-	0.9-

1999 JT₃₀ = 1991 RQ₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	299.09220		(2000.0)	P	Q
<i>n</i>	0.21583451	ω	322.41622	+0.82586912	+0.56384007
<i>a</i>	2.7524670	Ω	3.27386	-0.49398239	+0.72773116
<i>e</i>	0.1650721	<i>i</i>	4.98084	-0.27188527	+0.39050192
<i>P</i>	4.57	<i>H</i>	13.7	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1991 09 11	675	1.0+	0.4-	1999 05 13	704	0.3-	1.2-	1999 05 19	704	1.4-	0.3+
1991 09 11	675	0.2-	0.3-	1999 05 13	704	0.9+	0.2+	1999 05 19	704	0.7+	0.1-
1991 09 13	675	0.0	0.0	1999 05 13	704	0.4-	0.6+	1999 05 19	704	0.8-	1.0-
1991 09 13	675	0.8-	0.8+	1999 05 13	704	1.7+	0.1+	1999 06 09	704	1.1+	0.6-
1999 05 10	704	1.2+	0.0	1999 05 18	704	0.3+	0.4-	1999 06 09	704	1.1-	1.3-
1999 05 10	704	1.1-	0.2+	1999 05 18	704	0.8+	0.1+	1999 06 09	704	0.4+	1.1+
1999 05 10	704	1.5-	0.7+	1999 05 18	704	0.2-	0.4-	1999 06 09	704	0.0	0.4+
1999 05 10	704	0.2-	0.0	1999 05 18	704	0.5+	0.1+	1999 06 09	704	0.7-	0.2+
1999 05 10	704	0.4+	0.5+	1999 05 18	704	1.4+	0.1+				
1999 05 13	704	1.0-	0.2-	1999 05 19	704	0.5-	0.5+				

1999 JQ₃₁ = 1978 WD₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	58.75408		(2000.0)	P	Q
<i>n</i>	0.26156905	ω	134.18721	-0.98714405	+0.13009102
<i>a</i>	2.4214666	Ω	53.50444	-0.15836418	-0.87465547
<i>e</i>	0.0375497	<i>i</i>	6.63311	+0.02161955	-0.46696267
<i>P</i>	3.77	<i>H</i>	14.0	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1978 11 29	675	0.0	0.4+	1999 05 13	704	0.4-	0.0	1999 05 19	704	0.2+	0.1-
1978 11 30	675	0.2-	0.2+	1999 05 13	704	0.1-	0.5+	1999 05 19	704	0.1-	0.6-
1999 02 23	704	0.7+	1.5-	1999 05 13	704	0.6+	0.4-	1999 05 19	704	0.8-	1.3-
1999 02 23	704	0.2-	0.0	1999 05 13	704	1.4+	0.0	1999 05 21	691	0.1-	0.1-
1999 02 23	704	0.8-	1.0-	1999 05 14	704	0.9-	0.6+	1999 05 21	691	0.1+	0.3+
1999 02 23	704	(2.6+	0.6+)	1999 05 14	704	0.6-	0.5+	1999 05 21	691	0.1+	0.0
1999 04 12	704	0.6-	0.3+	1999 05 14	704	0.3+	1.2-	1999 06 07	703	0.9+	0.7-
1999 04 12	704	0.2+	0.9+	1999 05 14	704	0.3-	0.4+	1999 06 07	703	0.4+	0.3+
1999 04 12	704	1.3-	0.7+	1999 05 14	704	0.8-	1.6+	1999 06 07	703	0.4+	0.6+
1999 04 12	704	0.2+	1.4+	1999 05 18	704	0.3+	0.7-	1999 06 07	703	0.7-	0.2-
1999 04 12	704	(0.5-	2.4-)	1999 05 18	704	0.1+	0.5-	1999 06 09	704	1.1+	0.4-
1999 05 10	704	0.4+	0.3+	1999 05 18	704	0.2-	1.1-	1999 06 09	704	0.3+	0.6-
1999 05 10	704	0.5-	0.5+	1999 05 18	704	0.6+	1.0-	1999 06 09	704	0.2-	0.4-
1999 05 10	704	0.5+	0.7+	1999 05 18	704	0.5+	0.7-	1999 06 09	704	0.6-	1.4+
1999 05 10	704	0.0	1.1+	1999 05 19	704	0.2-	0.6-	1999 06 09	704	0.5-	0.2+
1999 05 13	704	0.2-	0.4+	1999 05 19	704	0.9+	0.1+				</

M.P.C. 34992

1999 JUNE 22

1999 JB₃₂ = 1993 BC₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	265.65738	(2000.0)	P		Q	
<i>n</i>	0.20140646	ω	240.24307	+0.97017520	+0.23622833	
<i>a</i>	2.8823969	Ω	106.04784	-0.19825165	+0.90231235	
<i>e</i>	0.0862502	<i>i</i>	3.24331	-0.13948608	+0.36059479	
<i>P</i>	4.89	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1993 01 27	010	0.4+	0.7+	1999 05 10	704	0.3-	0.3-	1999 05 18	704	0.4+	0.1-
1993 01 27	010	1.3+	0.2-	1999 05 13	704	1.9+	0.6+	1999 05 18	704	1.6+	1.7+
1993 01 27	010	(2.2+	0.1+)	1999 05 13	704	0.2+	0.6-	1999 05 19	704	1.7+	0.9-
1993 01 28	010	0.8-	0.2-	1999 05 13	704	0.1+	0.1-	1999 05 19	704	1.2-	1.4-
1993 01 28	010	0.6-	0.3-	1999 05 13	704	0.3+	0.1-	1999 05 19	704	0.3-	1.5+
1993 01 28	010	0.3-	0.1+	1999 05 13	704	0.2-	0.2-	1999 05 19	704	0.4+	0.7-
1994 04 12	691	0.6-	0.3+	1999 05 14	703	0.5-	1.1-	1999 06 07	703	0.3+	0.3+
1994 04 12	691	0.3+	0.4+	1999 05 14	703	1.0-	0.6+	1999 06 07	703	0.1-	0.0
1994 04 12	691	0.2+	1.2-	1999 05 14	703	0.5-	1.7+	1999 06 07	703	0.5-	0.0
1999 05 10	704	(2.9+	0.1+)	1999 05 14	703	(0.4-	2.4+)	1999 06 07	703	0.6-	0.6-
1999 05 10	704	(2.5+	0.7-)	1999 05 18	704	(2.2+	0.2+)				
1999 05 10	704	0.9-	0.0	1999 05 18	704	0.6-	0.1+				

1999 JP₃₂ = 1981 UB₂₄ = 1993 BL₆ = 1998 BY₄₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	288.41432	(2000.0)	P		Q	
<i>n</i>	0.19865799	ω	204.47809	+0.79409556	+0.60593666	
<i>a</i>	2.9089217	Ω	118.14179	-0.54839151	+0.74797101	
<i>e</i>	0.0559208	<i>i</i>	3.08569	-0.26206678	+0.27088766	
<i>P</i>	4.96	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i> 1

Residuals in seconds of arc

1981 10 24	675	0.5+	0.7+	1998 01 27	012	0.1-	0.9-	1999 05 14	704	0.5-	1.4-
1981 10 25	675	0.0	0.8+	1998 02 26	566	0.1-	0.1-	1999 05 18	704	0.6+	0.3-
1991 11 29	691	0.4+	0.8+	1998 02 26	566	0.3+	0.0	1999 05 18	704	0.2-	0.6+
1991 11 29	691	0.2+	0.3+	1998 02 26	566	0.2-	0.1+	1999 05 18	704	1.0-	0.1+
1991 12 03	691	1.4-	0.1-	1999 05 10	704	0.2+	0.6-	1999 05 18	704	0.6+	0.6+
1991 12 03	691	(5.6-	0.5-)	1999 05 10	704	0.0	0.9+	1999 05 18	704	0.5-	0.3-
1991 12 03	691	0.5-	0.2+	1999 05 10	704	0.5+	0.8-	1999 06 09	704	0.7+	0.6+
1993 01 27	010	0.6+	0.6-	1999 05 10	704	0.9+	0.8+	1999 06 09	704	0.1-	1.4+
1993 01 27	010	0.7-	0.6-	1999 05 10	704	0.5-	0.5-	1999 06 09	704	0.4+	0.3-
1993 01 27	010	0.2-	1.1-	1999 05 13	704	0.3-	0.4+	1999 06 09	704	0.6+	1.0-
1993 01 28	010	0.1-	0.9+	1999 05 13	704	0.5-	0.5+	1999 06 09	704	0.3+	1.4-
1993 01 28	010	0.6-	0.9+	1999 05 13	704	0.0	0.6+	1999 06 14	704	1.3+	0.2-
1993 01 28	010	1.1-	1.1+	1999 05 13	704	0.0	1.2+	1999 06 14	704	0.1+	0.1+
1998 01 25	566	0.6+	0.2-	1999 05 13	704	0.7-	0.7+	1999 06 14	704	0.3-	0.3+
1998 01 25	566	0.6+	0.2-	1999 05 14	704	0.5-	0.1-	1999 06 14	704	0.6-	0.4-
1998 01 25	566	0.6+	0.2-	1999 05 14	704	0.6-	0.4-	1999 06 14	704	0.2-	0.1+
1998 01 27	012	0.1-	0.4+	1999 05 14	704	0.3-	0.7+				
1998 01 27	012	0.5+	0.1+	1999 05 14	704	1.3+	0.8+				

1999 JR₃₂ = 1997 WP₅₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	64.28656	(2000.0)	P		Q	
<i>n</i>	0.26959065	ω	108.32932	-0.98869271	-0.08586640	
<i>a</i>	2.3731918	Ω	66.89407	+0.02286357	-0.89655981	
<i>e</i>	0.1431146	<i>i</i>	7.68113	+0.14820251	-0.43451981	
<i>P</i>	3.66	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1997 11 29	704	0.2-	0.3+	1999 05 10	704	0.4-	0.2-	1999 05 18	704	0.3-	0.1-
1997 11 29	704	(0.8-	2.7-)	1999 05 10	704	0.0	0.3-	1999 05 18	704	0.1-	0.3+
1997 11 29	704	1.1-	1.9-	1999 05 10	704	0.1-	0.1+	1999 06 07	703	0.1-	0.7+
1997 11 29	704	0.6+	1.2-	1999 05 10	704	0.7-	0.5-	1999 06 07	703	0.0	0.9+
1997 11 29	704	0.6-	1.1-	1999 05 13	704	0.1-	0.5-	1999 06 07	703	0.1+	0.1-
1997 12 04	704	0.4-	0.4-	1999 05 13	704	0.5-	0.1+	1999 06 07	703	0.8+	0.6+

1997 12 04	704	1.1+	0.9+	1999 05 13	704	0.1-	0.0	1999 06 09	704	0.4+	0.5-
1997 12 04	704	1.1+	0.1+	1999 05 13	704	0.6+	0.4+	1999 06 09	704	0.2+	0.0
1997 12 04	704	(4.3-	0.6+)	1999 05 13	704	1.1-	0.6+	1999 06 09	704	0.4+	0.6-
1998 01 26	327	0.0	0.4+	1999 05 14	704	0.6-	0.3-	1999 06 09	704	0.1+	1.1-
1998 01 26	327	0.7+	0.4+	1999 05 14	704	0.3-	0.7-	1999 06 09	704	0.5-	0.0
1998 01 26	327	0.2+	0.2+	1999 05 14	704	0.1-	0.9-	1999 06 14	704	1.0+	0.0
1999 04 15	704	0.4-	0.3+	1999 05 14	704	0.6+	0.9-	1999 06 14	704	0.1-	0.1-
1999 04 15	704	0.9+	0.4+	1999 05 14	704	0.3-	0.1+	1999 06 14	704	0.3-	0.2+
1999 04 15	704	0.5-	0.4+	1999 05 18	704	0.1+	0.4-	1999 06 14	704	0.1+	0.1-
1999 04 15	704	0.7+	0.4+	1999 05 18	704	0.6+	0.1+	1999 06 14	704	0.2-	1.0-
1999 05 10	704	0.4-	0.2-	1999 05 18	704	0.0	0.4+				

1999 JS₃₂ = 1981 UH₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	326.88611	(2000.0)	P		Q	
<i>n</i>	0.19909671	ω	135.20754	+0.18636350	+0.98204108	
<i>a</i>	2.9046468	Ω	145.50174	-0.91532821	+0.18441855	
<i>e</i>	0.0293727	<i>i</i>	2.97480	-0.35699147	+0.03981358	
<i>P</i>	4.95	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i> 1

Residuals in seconds of arc

1981 10 25	675	0.1-	1.0+	1999 05 10	704	1.1+	0.8-	1999 05 18	704	0.1+	0.5-
1981 10 26	675	0.5-	1.1+	1999 05 10	704	0.0	0.6+	1999 05 18	704	0.3-	0.1-
1991 11 04	691	0.1+	0.1+	1999 05 10	704	0.2-	0.6-	1999 05 18	704	1.3-	0.1+
1991 11 04	691	0.3+	0.2-	1999 05 13	704	1.8-	1.4-	1999 06 08	704	1.2+	0.1-
1991 11 04	691	0.0	0.1+	1999 05 13	704	0.4+	0.1+	1999 06 08	704	1.9+	0.9+
1993 01 22	809	0.6-	0.0	1999 05 13	704	0.0	1.3+	1999 06 08	704	1.0+	1.4+
1993 01 22	809	0.4+	0.5+	1999 05 13	704	0.1+	0.6+	1999 06 08	704	0.1+	1.2+
1993 01 22	809	0.1-	0.1+	1999 05 14	704	0.3+	0.6-	1999 06 14	704	0.6+	0.4-
1995 06 04	691	0.6-	1.9-	1999 05 14	704	0.3-	1.4+	1999 06 14	704	1.3+	1.1-
1995 06 04	691	0.1-	0.6+	1999 05 14	704	(2.2-	0.9+)	1999 06 14	704	0.5-	0.6-
1995 06 04	691	0.0	0.8+	1999 05 14	704	1.1-	0.1+	1999 06 14	704	0.4+	0.3-
1999 05 10	704	0.4-	0.1-	1999 05 18	704	0.1+	0.0	1999 06 14	704	0.7-	0.2+
1999 05 10	704	0.8-	0.3-	1999 05 18	704	0.2+	0.5+				

1999 JA₃₃ = 1996 TV₆₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	339.60929	(2000.0)	P		Q	
<i>n</i>	0.25911110	ω	174.65260	+0.16487824	+0.98596194	
<i>a</i>	2.4367559	Ω	104.83562	-0.90593275	+0.16195007	
<i>e</i>	0.1059905	<i>i</i>	1.56188	-0.39000130	+0.04063523	
<i>P</i>	3.80	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1996 09 14	566	0.1+	0.8-	1999 04 12	704	(2.1-	1.2-)	1999 05 13	704	0.4-	0.6+
1996 09 14	566	0.0	0.6-	1999 04 12	704	0.7-	1.2-	1999 05 18	704	0.2+	0.3-
1996 09 14	566	0.3-	0.8-	1999 04 12	704	(3.1-	1.6-)	1999 05 18	704	0.3+	0.5+
1996 10 06	809	0.2+	0.5+	1999 05 10	704	1.2+	0.1+	1999 05 18	704	0.2+	0.3-
1996 10 06	809	0.4+	0.6-	1999 05 10	704	0.5+	0.4+	1999 05 18	704	0.6-	1.9-
1996 10 06	809	0.3+	0.1+	1999 05 10	704	0.7+	0.7+	1999 05 19	704	0.5-	1.8-
1996 10 07	809	1.7-	0.6+	1999 05 10	704	0.5-	1.3+	1999 05 19	704	0.9-	0.2+
1996 10 07	809	1.4+	0.9+	1999 05 13	704	0.9+	0.6-	1999 05 19	704	0.3-	1.0+
1996 10 07	809	0.5-	0.8+	1999 05 13	704	0.2+	0.0	1999 05 19	704	0.0	0.4-
1999 04 12	704	(1.9+	3.3-)	1999 05 13	704	0.0	0.7+	1999 05 19	704	0.7-	0.2+
1999 04 12	704	0.1-	0.2+	1999 05 13	704	0.3+	0.8+				

1999 JN₃₃ = 1996 TF₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	332.12952		(2000.0)	P	Q
n	0.26556952	ω	267.38790	+0.48533366	+0.87397455
a	2.3970875	Ω	31.68508	-0.78217099	+0.44672511
e	0.1918747	i	2.71657	-0.39071701	+0.19132478
P	3.71	H	14.5	G 0.15	U 4

Residuals in seconds of arc

1996 09 15	566	0.3+	0.8+	1998 01 23	704	0.3+	0.1-	1999 05 14	704	0.5+	0.2-
1996 09 15	566	0.5+	0.8+	1998 01 23	704	1.0+	0.1-	1999 05 14	704	0.3+	0.4+
1996 09 15	566	0.4+	0.5+	1998 01 23	704	0.6-	1.0+	1999 05 14	704	1.1-	0.4+
1996 10 14	400	0.6+	0.8-	1999 04 14	699	0.7+	0.3-	1999 05 14	704	0.4-	0.1-
1996 10 14	400	0.0	1.0+	1999 04 14	699	0.6+	0.4+	1999 05 14	704	0.4-	1.9+
1996 10 15	964	0.3-	0.7+	1999 04 14	699	0.4+	0.2-	1999 05 18	704	0.4+	0.3-
1996 10 15	964	1.7-	0.3+	1999 04 15	704	0.8-	0.1-	1999 05 18	704	0.5+	0.1+
1996 10 17	964	0.4-	0.1+	1999 04 15	704	0.7-	0.9-	1999 05 18	704	1.4+	0.1-
1996 10 17	964	1.3-	0.3-	1999 04 15	704	1.8+	1.9+	1999 05 18	704	0.4+	0.3+
1996 10 17	400	0.2+	0.9+	1999 04 15	704	0.7+	1.8+	1999 05 18	704	0.7+	0.1+
1996 10 17	400	0.5+	0.7+	1999 05 10	704	0.2+	0.2+	1999 06 07	703	0.8+	0.8+
1996 10 17	964	1.2-	0.5-	1999 05 10	704	0.5-	0.7-	1999 06 07	703	0.6+	0.2+
1996 10 17	964	0.3+	0.1+	1999 05 10	704	0.9-	0.0	1999 06 07	703	0.1-	0.4-
1996 10 21	400	0.2+	0.1+	1999 05 10	704	0.1-	0.1-	1999 06 07	703	0.4+	0.6-
1996 10 21	400	0.3+	1.0-	1999 05 10	704	1.9-	0.5+	1999 06 09	704	0.5+	0.1-
1998 01 07	691	0.2+	0.0	1999 05 13	704	(0.4+	2.7+)	1999 06 09	704	0.1-	0.9-
1998 01 07	691	0.0	0.1+	1999 05 13	704	0.1+	0.4-	1999 06 09	704	0.6-	1.0-
1998 01 07	691	0.1+	0.1+	1999 05 13	704	0.4-	0.7-	1999 06 09	704	0.2-	0.8+
1998 01 23	704	0.7-	1.1+	1999 05 13	704	0.1-	0.2+	1999 06 09	704	0.8-	0.0
1998 01 23	704	0.2+	0.3-	1999 05 13	704	0.5-	0.5+				

1999 JY₃₃ = 1973 UA₄ = 1993 TX₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	319.58322		(2000.0)	P	Q
n	0.29467103	ω	49.13060	+0.65237096	+0.75208947
a	2.2365456	Ω	261.84440	-0.72071644	+0.57737352
e	0.1432775	i	5.42969	-0.23447802	+0.31780693
P	3.34	H	14.0	G 0.15	U 3

Residuals in seconds of arc

1973 10 29	095	0.1+	0.3-	1999 05 10	704	0.5+	1.6+	1999 05 19	704	0.6-	0.4+
1993 10 13	675	0.0	0.1+	1999 05 10	704	0.4-	0.9+	1999 05 19	704	0.3-	0.2-
1993 10 13	675	0.3+	0.3+	1999 05 13	704	1.5-	1.0-	1999 05 19	704	0.6+	0.2+
1993 10 15	675	0.2-	0.7-	1999 05 13	704	1.9-	0.1+	1999 05 19	704	0.6-	0.2-
1999 04 15	704	1.3+	0.5-	1999 05 13	704	0.2-	0.6+	1999 05 19	704	0.1+	0.5+
1999 04 15	704	1.0+	0.3-	1999 05 13	704	1.1-	0.0	1999 06 09	704	0.9+	0.6-
1999 04 15	704	0.4+	1.7-	1999 05 13	704	0.5+	1.7+	1999 06 09	704	0.2-	1.1-
1999 04 15	704	0.9+	1.0-	1999 05 18	704	0.2-	0.0	1999 06 09	704	0.4+	0.4-
1999 04 15	704	0.5-	0.9-	1999 05 18	704	0.2-	1.0-	1999 06 09	704	0.6+	0.0
1999 05 10	704	0.7+	0.3-	1999 05 18	704	0.4-	0.5+	1999 06 09	704	0.8-	0.2+
1999 05 10	704	0.7+	0.2-	1999 05 18	704	0.4+	0.6-				
1999 05 10	704	0.3+	1.8+	1999 05 18	704	0.0	0.5+				

1999 JZ₃₃ = 1991 RM₁₃ = 1998 EV₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	287.04108		(2000.0)	P	Q
n	0.21729378	ω	35.60606	+0.89343033	+0.44529232
a	2.7401301	Ω	297.84885	-0.42607225	+0.79835357
e	0.1177106	i	3.83489	-0.14228380	+0.40539652
P	4.54	H	13.7	G 0.15	U 1

Residuals in seconds of arc

1991 09 13	675	0.2+	0.7-	1998 03 03	704	1.0+	1.3-	1999 05 13	704	(0.2+	2.6+)
1991 09 13	675	0.3+	0.3-	1998 03 04	704	0.5-	1.4+	1999 05 13	704	(2.1-	0.2+)
1991 09 15	675	0.6+	0.5+	1998 03 04	704	1.3-	1.0+	1999 05 18	704	0.3+	0.6-
1991 09 15	675	0.5-	0.8-	1998 03 04	704	0.5-	1.3-	1999 05 18	704	0.1-	0.0
1996 12 27	327	0.3-	0.5+	1998 03 04	704	0.4-	0.5-	1999 05 18	704	0.3-	0.1+
1996 12 27	327	0.4-	0.6+	1998 03 04	704	(3.9-	1.3-)	1999 05 18	704	0.3-	0.9+
1996 12 27	327	0.2+	0.9-	1999 05 10	704	0.1+	1.1+	1999 05 18	704	1.7+	0.2-
1997 01 05	327	0.4+	0.9+	1999 05 10	704	0.7+	1.9-	1999 05 19	704	1.2-	1.1-
1997 01 05	327	0.5-	0.1+	1999 05 10	704	1.1-	1.2+	1999 05 19	704	0.1-	0.7-
1997 01 05	327	0.4+	0.4-	1999 05 10	704	0.3+	0.5-	1999 05 19	704	0.4-	1.5-
1998 03 03	704	0.4+	0.7-	1999 05 10	704	1.1+	0.6+	1999 05 19	704	0.9-	0.7+
1998 03 03	704	0.7+	0.1-	1999 05 13	704	0.9+	0.2+	1999 05 19	704	1.3-	1.3+
1998 03 03	704	(1.2+	3.5-)	1999 05 13	704	0.3+	0.5+				

1999 JE₃₄ = 1998 BV₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	336.65225		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$		
n	0.23777959	ω	307.76555	+0.24651244	+0.96855390		
a	2.5803958	Ω	336.43923	-0.86056191	+0.20277465		
e	0.1176390	i	4.83472	-0.44571831	+0.14417278		
P	4.15	H	14.2	G	0.15	U	4

Residuals in seconds of arc

1994 01 12	691	0.6-	0.6-	1998 01 24	704	0.4-	0.4-	1999 05 18	704	0.5+	0.7+
1994 01 12	691	0.1-	0.8-	1998 01 25	704	(1.8-	2.2+)	1999 05 18	704	0.9-	0.8-
1994 01 12	691	0.0	0.4-	1998 01 25	704	0.1-	0.1-	1999 05 18	704	0.5+	0.6+
1997 12 28	566	0.1+	0.1-	1998 01 25	704	0.2-	0.7+	1999 05 18	704	0.4-	0.4+
1997 12 28	566	0.0	0.2-	1998 01 25	704	0.6+	0.1-	1999 05 19	704	0.0	0.8-
1997 12 28	566	0.3+	0.3-	1999 05 10	704	0.4-	0.0	1999 05 19	704	1.6+	0.3-
1998 01 23	704	0.5+	0.2+	1999 05 10	704	0.3+	0.3+	1999 05 19	704	1.1+	0.5-
1998 01 23	704	0.1+	0.5+	1999 05 10	704	0.1-	0.6+	1999 05 19	704	1.2+	0.0
1998 01 23	704	0.3+	0.2-	1999 05 10	704	0.7+	0.4+	1999 05 19	704	0.8+	1.2-
1998 01 23	704	0.0	0.0	1999 05 10	704	0.5-	1.1-	1999 06 09	704	0.7+	0.3-
1998 01 23	704	0.3+	0.5+	1999 05 13	704	0.6-	0.5+	1999 06 09	704	0.6+	0.9-
1998 01 24	704	0.4-	0.1+	1999 05 13	704	0.5-	0.1+	1999 06 09	704	0.6+	0.7+
1998 01 24	704	0.3-	0.8+	1999 05 13	704	1.3-	0.2-	1999 06 09	704	1.9-	0.5+
1998 01 24	704	0.1-	0.2-	1999 05 13	704	1.5-	1.8+				
1998 01 24	704	0.3-	0.5+	1999 05 18	704	0.2-	0.2-				

1999 JN₃₄ = 1992 QJ₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	309.87203		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$		
n	0.26358327	ω	305.62892	+0.88489167	+0.46056590		
a	2.4091148	Ω	27.14811	-0.36261375	+0.77493753		
e	0.2659119	i	8.77528	-0.29236622	+0.43284047		
P	3.74	H	14.5	G	0.15	U	2

Residuals in seconds of arc

1992 08 25	675	(0.1+	3.3+)	1999 05 13	704	0.0	0.4+	1999 05 19	704	0.2-	1.2+
1992 08 25	675	0.4-	0.5-	1999 05 13	704	0.8-	0.3+	1999 05 19	704	0.9+	0.4+
1992 08 27	675	0.4+	0.9+	1999 05 13	704	0.3+	0.1-	1999 05 19	704	0.4+	0.3-
1992 08 27	675	0.1-	0.2-	1999 05 13	704	(2.4-	0.7+)	1999 05 19	704	0.3-	0.3-
1997 01 30	704	0.5-	0.6+	1999 05 13	704	0.7-	0.6+	1999 06 09	704	0.3+	0.2-
1997 01 30	704	0.2+	0.3+	1999 05 18	704	0.7+	1.0+	1999 06 09	704	0.8+	1.0-
1999 05 10	704	(0.1+	2.3+)	1999 05 18	704	0.0	0.0	1999 06 09	704	0.1+	1.0-
1999 05 10	704	1.6-	1.4+	1999 05 18	704	0.8+	1.2-	1999 06 09	704	0.0	0.1-
1999 05 10	704	0.5-	0.6+	1999 05 18	704	(0.9+	2.2+)	1999 06 09	704	0.6+	0.0
1999 05 10	704	0.1-	0.5+	1999 05 19	704	0.2-	1.8-				

1999 JR₃₄ = 1987 SQ₂₀ = 1987 UH₇ = 1990 RL₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	258.72785		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$		
n	0.30911574	ω	6.77995	+0.98968270	-0.14327091		
a	2.1663168	Ω	1.45901	+0.12901555	+0.88730864		
e	0.1342193	i	2.84191	+0.06231480	+0.43835696		
P	3.19	H	14.7	G	0.15	U	4

Residuals in seconds of arc

1987 09 17	095	0.7-	2.2-	1999 05 13	704	1.0-	0.7+	1999 06 09	704	0.9-	0.5-
1987 10 23	095	1.5+	0.8+	1999 05 13	704	0.0	1.1+	1999 06 09	426	0.0	0.3-
1990 09 14	675	0.3-	0.3+	1999 05 13	704	0.8-	0.0	1999 06 09	426	0.5+	0.7-
1990 09 14	675	0.6-	0.6+	1999 05 18	704	0.1-	1.1+	1999 06 09	426	0.3-	0.3+
1990 09 15	675	0.1-	0.6-	1999 05 18	704	0.5-	0.4-	1999 06 09	046	0.5+	0.5-
1990 09 15	675	0.5+	0.0	1999 05 18	704	0.9-	0.1+	1999 06 09	046	0.2+	0.3+
1990 09 18	675	0.6-	1.6+	1999 05 18	704	0.2-	0.5+	1999 06 09	046	0.2-	0.3-
1990 09 18	675	0.5+	0.2-	1999 05 18	704	0.1+	0.5+	1999 06 09	046	0.2-	0.1+
1999 05 10	704	0.1+	0.2+	1999 06 06	699	1.1+	0.5+	1999 06 10	426	0.1+	0.2-
1999 05 10	704	0.3-	1.1+	1999 06 06	699	0.0	0.9-	1999 06 10	426	0.2+	0.1-
1999 05 10	704	0.8+	0.8-	1999 06 06	699	0.9-	1.9-	1999 06 10	426	0.2+	0.1-

M.P.C. 34994

1999 JUNE 22

1999 05 10	704	0.0	0.3+	1999 06 09	704	0.2+	0.1+	1999 06 11	428	0.9+	0.2-
1999 05 10	704	1.0-	0.2-	1999 06 09	704	1.0+	0.2-	1999 06 11	428	0.5+	0.1-
1999 05 13	704	0.0	0.0	1999 06 09	704	0.3+	0.2-	1999 06 12	428	0.0	0.6-
1999 05 13	704	0.4+	0.7+	1999 06 09	704	0.1+	0.1+	1999 06 12	428	0.0	1.1-

1999 JN₃₅ = 1997 YD₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18035003	ω	6.17905	-0.57380696	-0.81812818		
<i>a</i>	3.1025960	Ω	118.84315	+0.74956062	-0.54309623		
<i>e</i>	0.1357011	<i>i</i>	2.45853	+0.33000675	-0.18897823		
<i>P</i>	5.46	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1993 03 20	691	0.3-	0.3-	1998 01 06	369	0.0	0.2+	1999 06 04	703	0.8-	0.5-
1993 03 20	691	0.2-	0.3-	1999 05 10	704	1.0-	0.0	1999 06 04	703	0.4+	0.4-
1993 03 20	691	0.2+	0.3-	1999 05 10	704	0.6-	0.8-	1999 06 04	703	0.4+	0.2-
1997 01 06	327	0.3-	1.1+	1999 05 10	704	0.2+	1.2+	1999 06 04	703	0.3-	0.2-
1997 01 06	327	0.5-	0.9+	1999 05 10	704	0.3+	1.0-	1999 06 09	704	(2.2+	0.7-)
1997 01 06	327	0.6-	1.1+	1999 05 10	704	1.4-	0.9+	1999 06 09	704	0.4+	0.5+
1997 10 08	691	0.3+	0.6-	1999 05 13	704	1.4+	0.3+	1999 06 09	704	1.2+	0.8-
1997 10 08	691	0.4+	0.3-	1999 05 13	704	0.6-	0.1-	1999 06 09	704	0.8+	0.6-
1997 10 08	691	0.3+	0.3-	1999 05 13	704	0.1+	0.6+	1999 06 09	704	0.4-	1.8+
1997 12 31	369	0.1-	0.1+	1999 05 13	704	1.5-	0.4+	1999 06 14	704	1.2+	0.8-
1997 12 31	369	0.3-	0.2-	1999 05 13	704	0.9-	1.7+	1999 06 14	704	1.3+	0.4-
1997 12 31	369	0.5-	0.1+	1999 05 18	704	0.3+	0.0	1999 06 14	704	0.6+	0.2+
1998 01 05	369	0.2-	0.6+	1999 05 18	704	1.0-	0.2-	1999 06 14	704	0.5+	0.2-
1998 01 05	369	0.4+	0.3+	1999 05 18	704	0.4-	1.3+	1999 06 14	704	0.6+	0.3-
1998 01 06	369	0.1+	0.4+	1999 05 18	704	0.3+	0.2-				
1998 01 06	369	0.2+	0.1+	1999 05 18	704	0.3+	0.5+				

1999 JB₃₆ = 1998 BG₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26067798	ω	159.35765	+0.37646893	+0.92542073		
<i>a</i>	2.4269816	Ω	132.72975	-0.85801922	+0.36588254		
<i>e</i>	0.1771602	<i>i</i>	3.37279	-0.34939114	+0.09862269		
<i>P</i>	3.78	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1995 04 09	691	0.5-	0.0	1999 04 15	704	0.2-	0.7+	1999 05 18	704	0.0	0.2+
1995 04 09	691	0.8-	0.0	1999 04 15	704	1.2+	1.1+	1999 05 18	704	0.6-	0.3+
1995 04 09	691	0.4-	0.1+	1999 05 10	704	0.0	0.1-	1999 06 04	703	0.6-	0.2+
1995 04 22	691	0.3+	0.5-	1999 05 10	704	0.1+	0.2-	1999 06 04	703	0.3-	0.0
1995 04 22	691	0.1+	0.9-	1999 05 10	704	0.8+	0.7-	1999 06 04	703	0.6+	0.2-
1995 04 22	691	0.6+	0.6-	1999 05 10	704	0.2-	0.4-	1999 06 04	703	0.7+	0.8-
1998 01 20	704	0.2+	0.3-	1999 05 10	704	0.1+	0.4-	1999 06 08	704	0.5+	0.3-
1998 01 20	704	0.3-	0.3-	1999 05 13	704	0.4-	0.4-	1999 06 08	704	0.2+	0.7+
1998 01 20	704	0.3-	0.6-	1999 05 13	704	0.0	0.0	1999 06 08	704	(0.1-	2.0-)
1998 01 20	704	0.5+	0.2-	1999 05 13	704	0.6-	0.7+	1999 06 08	704	0.5-	1.4-
1998 01 20	704	0.2+	0.5-	1999 05 13	704	0.8-	0.7+	1999 06 08	704	1.0-	1.3+
1998 01 27	012	0.2-	0.1+	1999 05 13	704	0.5-	0.5+	1999 06 10	704	0.6+	0.4-
1998 01 27	012	0.8-	0.3+	1999 05 14	704	0.3-	0.2+	1999 06 10	704	0.3-	0.4-
1998 01 27	012	0.1-	0.3+	1999 05 14	704	0.6-	0.3+	1999 06 10	704	0.3+	0.4-
1998 02 01	012	0.8-	0.4+	1999 05 14	704	0.0	0.1+	1999 06 10	704	0.0	0.0
1998 02 02	012	1.5+	0.2+	1999 05 14	704	0.0	0.6+	1999 06 10	704	0.8-	0.4-
1998 02 02	012	0.1+	0.2+	1999 05 14	704	0.7-	0.6+	1999 06 14	704	1.7+	0.3+
1999 04 15	704	1.2+	1.0+	1999 05 18	704	0.2-	0.1-	1999 06 14	704	1.4+	1.9-
1999 04 15	704	0.6-	0.5-	1999 05 18	704	0.2-	0.2-	1999 06 14	704	(0.9-	2.2+)
1999 04 15	704	1.2+	1.8+	1999 05 18	704	0.5+	0.3+	1999 06 14	704	1.0-	1.0-

1999 JD₃₆ = 1978 RY₈ = 1987 BL₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27079775	ω	207.81674	+0.91941502	-0.39324251		
<i>a</i>	2.3661341	Ω	175.32736	+0.37317980	+0.86746320		
<i>e</i>	0.1092806	<i>i</i>	4.24458	+0.12414857	+0.30474238		
<i>P</i>	3.64	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1978 09 02	809	0.2+	0.8-	1998 01 26	566	0.5+	0.1-	1999 05 18	704	0.4-	0.4+
1978 09 02	809	0.2+	0.6-	1998 01 26	566	0.3+	0.2-	1999 06 04	703	0.7-	0.1+
1978 09 02	809	0.0	0.5-	1999 04 14	699	1.3+	1.2-	1999 06 04	703	0.3-	0.1-
1978 09 02	809	0.1+	0.1+	1999 04 14	699	1.0+	1.2+	1999 06 04	703	0.2-	0.5+
1978 09 06	809	0.3+	0.4-	1999 04 14	699	0.6-	1.5+	1999 06 04	703	0.2+	0.9-
1978 09 10	809	1.0-	1.3+	1999 05 10	704	1.0-	0.8-	1999 06 05	703	0.1+	0.4-
1978 09 10	809	0.1+	1.0-	1999 05 10	704	0.2-	0.1+	1999 06 05	703	0.6+	0.3+
1978 09 10	809	0.1-	1.0+	1999 05 10	704	1.8-	1.1+	1999 06 05	703	0.1+	1.2+
1978 09 10	809	0.9+	0.2-	1999 05 10	704	(0.2-	2.3-)	1999 06 05	703	0.4+	0.8+
1987 01 30	010	1.2+	0.7-	1999 05 10	704	0.2-	0.3+	1999 06 08	704	(0.5+	2.2-)
1987 01 30	010	0.8-	1.0+	1999 05 13	704	0.1-	0.1+	1999 06 08	704	0.5-	0.8+
1987 01 30	010	1.6-	1.1+	1999 05 13	704	0.1-	1.1-	1999 06 08	704	1.1+	0.6-
1995 03 27	691	0.1+	0.6-	1999 05 13	704	0.3+	1.0-	1999 06 08	704	0.7-	0.3-
1995 03 27	691	0.2+	0.7-	1999 05 13	704	0.3+	0.3+	1999 06 14	704	1.2+	0.3-
1995 03 27	691	0.3+	0.7-	1999 05 13	704	0.1-	1.2-	1999 06 14	704	0.1+	1.3+
1997 12 26	566	0.4-	0.0	1999 05 18	704	1.3+	1.2-	1999 06 14	704	0.4+	0.5-
1997 12 26	566	0.2-	0.3-	1999 05 18	704	1.3-	0.3-	1999 06 14	704	0.2+	0.8-
1997 12 26	566	0.1-	0.3-	1999 05 18	704	1.6-	0.4+				
1998 01 26	566	0.3+	0.9-	1999 05 18	704	0.3+	1.1+				

1999 JF₃₆ = 2017 T-1 = 1998 EZ₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21584280	ω	243.39052	+0.88195449	-0.46970634		
<i>a</i>	2.7523965	Ω	144.58625	+0.45289998	+0.82153337		
<i>e</i>	0.0896488	<i>i</i>	3.87328	+0.13052921	+0.32320099		
<i>P</i>	4.57	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1971 03 24	675	0.0	2.1-	1998 03 03	704	0.0	0.1+	1999 05 13	704	(1.4-	2.1+)
1971 03 25	675	0.3+	2.0-	1998 03 03	704	(2.6-	0.1-)	1999 05 18	704	1.5-	0.1+
1971 03 25	675	0.0	1.2-	1998 03 04	704	0.6+	1.8+	1999 05 18	704	0.2+	0.5+
1971 03 26	675	1.8-	0.6+	1998 03 04	704	0.0	1.0+	1999 05 18	704	0.3-	0.4-
1971 03 27	675	0.1-	0.6+	1998 03 04	704	0.0	0.1+	1999 05 18	704	0.9-	0.3-
1998 01 26	566	0.0	0.5-	1998 03 04	704	1.0+	0.2+	1999 06 04	703	1.5+	0.2+
1998 01 26	566	0.4-	0.0	1998 03 04	704	0.3+	0.2-	1999 06 04	703	0.5+	0.9+
1998 01 26	566	0.4-	0.6-	1999 05 10	704	0.5-	0.3-	1999 06 04	703	0.2-	0.7-
1998 02 27	566	0.4+	0.5-	1999 05 10	704	0.7-	0.3+	1999 06 04	703	1.0+	1.7+
1998 02 27	566	0.3+	0.2+	1999 05 10	704	1.0-	1.7+	1999 06 14	704	0.3+	0.5+
1998 02 27	566	0.1-	0.2+	1999 05 13	704	0.9-	0.5+	1999 06 14	704	0.9+	0.6+
1998 03 03	704	0.3-	0.2-	1999 05 13	704	1.7+	1.4-	1999 06 14	704	1.3+	0.3-
1998 03 03	704	0.5-	0.9+	1999 05 13	704	0.4+	0.8-	1999 06 14	704	0.6+	0.8-
1998 03 03	704	0.3+	1.1+	1999 05 13	704	0.9-	0.6+	1999 06 14	704	0.7-	0.7-

1999 JO₃₆ = 1969 TS₇ = 1990 SU = 1995 SD₅₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18754621	ω	52.72971	-0.05398472	+0.99414208		
<i>a</i>	3.0227149	Ω	214.53118	-0.96045862	-0.07734665		
<i>e</i>	0.0518362	<i>i</i>	9.50771	-0.27313894	+0.07549187		
<i>P</i>	5.26	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1999 JUNE 22

1990 09 16	675	1.4+	0.7-	1999 05 10	704	0.4-	0.7-	1999 05 19	704	0.7-	0.4+
1990 09 17	675	0.4+	0.6+	1999 05 10	704	0.2+	0.6-	1999 06 04	703	0.1+	0.1+
1990 09 17	675	1.3+	0.9-	1999 05 10	704	0.2-	1.4-	1999 06 04	703	0.0	0.3+
1990 09 18	675	0.8+	2.3-	1999 05 13	704	0.1-	1.2-	1999 06 04	703	0.3+	0.4-
1990 09 18	675	0.2+	2.4-	1999 05 13	704	0.1+	0.8-	1999 06 04	703	0.0	1.4-
1990 09 20	675	0.9+	1.4-	1999 05 13	704	0.5+	0.4-	1999 06 05	703	0.6+	0.5-
1990 09 20	675	0.1-	0.7+	1999 05 13	704	0.3+	0.2+	1999 06 05	703	0.0	0.2+
1995 09 20	693	0.7+	0.7-	1999 05 13	704	2.0-	1.2+	1999 06 05	703	0.3-	0.1+
1995 09 20	693	0.0	1.3-	1999 05 14	704	0.2+	0.5-	1999 06 05	703	0.3+	0.6+
1995 09 25	693	2.0-	0.8-	1999 05 14	704	0.0	0.3-	1999 06 09	704	1.6+	0.6-
1995 09 25	693	1.1-	1.4-	1999 05 14	704	0.4-	0.4+	1999 06 09	704	0.4+	2.2+
1998 01 29	566	0.6-	1.6-	1999 05 14	704	1.0-	0.8-	1999 06 09	704	1.6+	1.6-
1998 01 29	566	0.9-	1.4-	1999 05 14	704	0.5-	1.0+	1999 06 09	704	2.3-	0.2+
1998 01 29	566	0.7-	1.8-	1999 05 18	704	0.1+	0.7-	1999 06 14	704	1.4+	0.8-
1998 02 26	566	0.1-	0.8-	1999 05 18	704	0.4+	0.1-	1999 06 14	704	0.7+	1.1-
1998 02 26	566	0.3-	0.7-	1999 05 18	704	0.0	0.3-	1999 06 14	704	0.4+	0.2+
1998 02 26	566	0.1-	0.6-	1999 05 18	704	0.4+	1.0+	1999 06 14	704	1.2+	0.3+
1999 04 22	691	1.3-	1.3+	1999 05 18	704	0.4-	0.6+	1999 06 14	704	0.5-	1.2+

1999 JY₃₆ = 1996 NN

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	348.21079		(2000.0)	P	Q
<i>n</i>	0.29092325	ω	218.84038	+0.03708948	+0.99921729
<i>a</i>	2.2557126	Ω	53.28943	-0.91251756	+0.03947537
<i>e</i>	0.0687964	<i>i</i>	0.98306	-0.40735251	+0.00254935
<i>P</i>	3.39	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1996 07 14	566	0.5-	0.7-	1998 01 06	704	1.7+	0.8-	1999 05 14	704	0.3-	0.8+
1996 07 14	566	0.1+	0.1-	1998 01 06	704	1.5-	0.8-	1999 05 18	704	(2.9-	0.2-)
1996 07 14	566	0.1+	0.5-	1999 05 10	704	0.2-	0.3-	1999 05 18	704	0.5-	0.3-
1996 07 14	566	0.2-	0.0	1999 05 10	704	0.9+	1.3-	1999 05 18	704	0.8-	0.9-
1996 07 14	566	0.8+	0.1-	1999 05 10	704	1.0+	0.5-	1999 05 18	704	0.6-	0.4+
1996 07 14	566	0.4+	0.6+	1999 05 10	704	0.1+	0.7-	1999 05 18	704	0.2-	0.6+
1996 07 15	566	0.1-	0.3+	1999 05 10	704	0.2-	0.7-	1999 06 07	703	0.6+	1.0+
1996 07 15	566	0.2+	0.3+	1999 05 13	704	0.4-	0.2+	1999 06 07	703	0.1+	0.6+
1996 07 15	566	0.1-	0.4-	1999 05 13	704	0.8-	0.3-	1999 06 07	703	0.6-	0.3+
1996 07 15	566	0.2-	0.6+	1999 05 13	704	0.1-	0.1-	1999 06 07	703	0.5+	0.9-
1996 07 15	566	0.2+	0.1+	1999 05 13	704	0.3-	0.2+	1999 06 09	704	0.2+	0.1+
1996 07 15	566	0.1-	0.5-	1999 05 13	704	1.7+	0.3+	1999 06 09	704	0.4+	0.6+
1996 07 15	566	0.3-	0.3-	1999 05 14	704	0.7+	0.9+	1999 06 09	704	0.6-	0.8-
1996 07 15	566	0.3-	0.5-	1999 05 14	704	0.3-	0.2+	1999 06 09	704	0.9-	0.4+
1996 07 15	566	0.1+	0.1-	1999 05 14	704	0.9+	0.5+				
1998 01 06	704	0.0	0.1+	1999 05 14	704	0.5-	0.6-				

1999 JZ₃₆ = 1996 VM₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	73.88982		(2000.0)	P	Q
<i>n</i>	0.19187715	ω	117.14924	-0.97057593	-0.19365795
<i>a</i>	2.9770574	Ω	52.03324	+0.09960159	-0.86395187
<i>e</i>	0.0270031	<i>i</i>	10.45833	+0.21923023	-0.46484812
<i>P</i>	5.14	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1992 01 31	691	0.3-	0.1-	1996 11 28	327	1.5+	0.3-	1999 05 18	704	1.5-	1.9-
1992 01 31	691	0.1-	0.2+	1999 05 10	704	0.0	1.1+	1999 05 18	704	1.0+	0.3-
1992 01 31	691	0.3+	0.0	1999 05 10	704	0.8+	0.2+	1999 05 18	704	0.4+	0.1+
1996 11 06	691	0.3-	0.6-	1999 05 10	704	0.3+	0.7+	1999 05 18	704	0.4-	0.3+
1996 11 06	691	0.0	0.5-	1999 05 10	704	0.0	0.8-	1999 05 19	704	0.2+	0.5-
1996 11 06	691	0.4-	0.7-	1999 05 10	704	1.2-	0.5+	1999 05 19	704	0.2-	0.6-
1996 11 18	691	0.5-	0.3-	1999 05 13	704	0.0	0.2-	1999 05 19	704	0.9-	0.6-
1996 11 18	691	0.5-	0.3-	1999 05 13	704	1.3-	0.4-	1999 05 19	704	0.7+	0.8-
1996 11 18	691	0.6-	0.3-	1999 05 13	704	0.6+	0.2-	1999 06 07	703	0.0	0.9+
1996 11 28	327	0.4+	0.5+	1999 05 13	704	0.2-	0.2+	1999 06 07	703	0.4+	0.3+
1996 11 28	327	1.3+	0.1+	1999 05 13	704	0.5-	0.8+	1999 06 07	703	(2.6+	0.7+)
1996 11 28	327	0.0	0.8+	1999 05 18	704	0.9+	0.3-	1999 06 07	703	(2.1+	1.8-)

M.P.C. 34995

1999 JF₃₇ = 1990 SC₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	166.46520		(2000.0)	P	Q
<i>n</i>	0.18413959	ω	195.66090	+0.28079289	-0.95130317
<i>a</i>	3.0598815	Ω	238.18578	+0.89586173	+0.30733367
<i>e</i>	0.0803942	<i>i</i>	8.60831	+0.34436480	-0.02383899
<i>P</i>	5.35	<i>H</i>	12.7	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1990 09 17	675	0.1-	0.2-	1999 04 15	704	0.6+	1.0-	1999 05 14	704	1.0-	0.2-
1990 09 17	675	0.4-	0.1-	1999 04 15	704	0.9-	0.9-	1999 05 14	704	0.8-	0.6+
1990 09 19	675	0.4+	0.0	1999 05 10	704	0.5+	0.1+	1999 05 18	704	0.1-	0.6-
1990 09 19	675	0.2+	0.0	1999 05 10	704	0.5+	0.6-	1999 05 18	704	0.7-	0.3-
1998 01 24	566	0.3-	0.5+	1999 05 10	704	0.2-	0.3+	1999 05 18	704	0.5+	0.4-
1998 01 24	566	0.1-	0.4+	1999 05 10	704	0.2+	0.6+	1999 05 18	704	1.0-	0.7+
1998 01 24	566	0.6-	0.4+	1999 05 10	704	0.2-	0.9+	1999 05 18	704	0.3+	0.6+
1998 02 25	566	0.1-	0.6-	1999 05 13	704	0.3-	0.0	1999 06 07	703	0.6+	0.5+
1998 02 25	566	0.1-	0.5-	1999 05 13	704	0.9-	0.1-	1999 06 07	703	0.2-	0.3+
1998 02 25	566	0.0	0.4-	1999 05 13	704	0.3+	0.1+	1999 06 07	703	1.1+	0.1+
1998 03 25	699	0.0	0.2+	1999 05 13	704	0.9-	0.4-	1999 06 07	703	1.0+	0.9-
1998 03 25	699	0.8+	0.5+	1999 05 13	704	0.1+	0.0	1999 06 09	704	0.5+	0.8-
1998 03 25	699	0.5+	0.2-	1999 05 14	704	0.5-	0.0	1999 06 09	704	1.5+	1.0+
1999 04 15	704	0.1+	0.8+	1999 05 14	704	0.4-	0.6+	1999 06 09	704	0.5+	1.1+
1999 04 15	704	0.0	1.7-	1999 05 14	704	0.1-	0.7-	1999 06 09	704	(2.2+	2.6+)

1999 JN₃₇ = 1978 WR₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	245.68754		(2000.0)	P	Q
<i>n</i>	0.26572475	ω	140.98109	+0.95648975	-0.28049628
<i>a</i>	2.3961539	Ω	235.49074	+0.23729817	+0.90802409
<i>e</i>	0.1393046	<i>i</i>	5.59268	+0.16975550	+0.31114963
<i>P</i>	3.71	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1978 11 30	675	0.3-	0.1-	1999 05 13	704	1.0+	1.2+	1999 05 19	704	0.4-	1.3+
1978 12 01	675	0.3+	0.1+	1999 05 13	704	1.8+	0.3+	1999 06 07	703	0.2-	0.2+
1999 05 10	704	0.1+	1.4-	1999 05 18	704	0.7-	0.2+	1999 06 07	703	0.2+	0.4-
1999 05 10	704	0.8-	0.1-	1999 05 18	704	0.3-	0.3-	1999 06 07	703	0.6+	0.1+
1999 05 10	704	0.8-	0.2-	1999 05 18	704	1.1-	0.8-	1999 06 07	703	1.1+	1.1-
1999 05 10	704	0.1+	0.8-	1999 05 18	704	1.1+	0.2-	1999 06 09	704	0.0	0.4+
1999 05 10	704	0.4+	0.6-	1999 05 18	704	0.5-	0.3+	1999 06 09	704	0.1-	0.2-
1999 05 13	704	0.1+	0.3-	1999 05 19	704	0.8+	0.6+	1999 06 09	704	1.2-	1.2-
1999 05 13	704	0.3-	0.9-	1999 05 19	704	1.3-	1.4+	1999 06 09	704	0.2-	0.7+
1999 05 13	704	(3.1+	1.7+)	1999 05 19	704	0.7+	1.6+				

1999 JX₃₇ = 1974 VF₁ = 1985 XH

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	169.75352		(2000.0)	P	Q
<i>n</i>	0.17922962	ω	183.28402	+0.38480245	-0.88560343
<i>a</i>	3.1155127	Ω	244.22089	+0.85327996	+0.44874971
<i>e</i>	0.1869021	<i>i</i>	16.78658	+0.35190962	-0.11970905
<i>P</i>	5.50	<i>H</i>	12.1	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1974 11 12	095(30.5-	8.0+)	1999 05 10	704	0.1-	1.2+	1999 05 18	704	0.8-	0.6-	
1974 11 17	095(30.6-	2.3+)	1999 05 10	704	0.6+	0.1+	1999 05 18	704	0.1+	0.9-	
1985 12 09	046	0.5+	2.0+	1999 05 10	704	0.8+	0.8+	1999 05 19	704	0.4+	0.3-
1985 12 09	046	0.4-	0.8+	1999 05 10	704	0.2+	0.4+	1999 05 19	704	0.5+	1.2+
1998 03 25	699	1.1-	0.1-	1999 05 13	704	0.6+	0.4+	1999 05 19	704	0.5+	0.5+
1998 03 25	699	0.6+	0.8-	1999 05 13	704	0.6-	0.2-	1999 05 19	704	0.6-	0.2+
1998 03 25	699	0.2+	0.0	1999 05 13	704	0.0	1.0-	1999 06 15	704	0.0	0.4+
1999 04 15	704	0.6-	1.1+	1999 05 13	704	0.0	1.1+	1999 06 15	704	0.4-	0.1+
1999 04 15	704	0.8-	0.3+	1999 05 13	704	0.4+	0.5+	1999 06 15	704	0.3+	0.4+
1999 04 15	704	(1.1-	2.3-)	1999 05 18	704	0.6-	0.3-	1999 06 15	704	0.2-	0.0

M.P.C. 34996

1999 JUNE 22

1999 04 15 704 (5.0− 0.8+) 1999 05 18 704 0.3− 0.8− 1999 06 15 704 0.1+ 0.2+
 1999 05 10 704 0.2− 0.4− 1999 05 18 704 0.5+ 0.9−

1999 JM₃₈ = 1991 JZ

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	0.13433	(2000.0)	P	Q	
<i>n</i>	0.24574636	ω 26.47125	−0.24510299	+0.95165555	
<i>a</i>	2.5243214	Ω 229.93882	−0.92686832	−0.28601714	
<i>e</i>	0.1398168	<i>i</i> 13.99858	−0.28432313	+0.11200850	
<i>P</i>	4.01	<i>H</i> 14.6	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1991 05 07	675	(2.9− 2.6−)	1999 05 10	704	1.6− 0.1+	1999 05 18	704	0.3+ 0.1−
1991 05 09	675	0.6− 1.2−	1999 05 13	704	0.0 0.3−	1999 05 18	704	0.2+ 0.0
1991 05 09	675	0.8+ 1.1−	1999 05 13	704	0.3− 0.9−	1999 05 19	704	0.8− 1.1+
1991 05 10	675	0.6+ 1.3−	1999 05 13	704	0.7− 0.0	1999 05 19	704	1.5− 0.7+
1991 05 15	675	1.0− 0.5+	1999 05 13	704	0.2+ 0.4+	1999 05 19	704	0.4− 0.4+
1991 05 15	675	(1.7− 2.0+)	1999 05 13	704	(1.6− 2.4−)	1999 05 19	704	1.2− 0.1−
1999 04 15	704	0.7+ 0.2+	1999 05 14	704	0.2− 0.2+	1999 06 07	703	0.2− 0.3+
1999 04 15	704	0.2+ 0.2+	1999 05 14	704	1.0+ 1.0+	1999 06 07	703	0.4− 0.4−
1999 04 15	704	1.2+ 0.2−	1999 05 14	704	0.9+ 0.2+	1999 06 07	703	0.9+ 0.2+
1999 04 15	704	1.8+ 0.1+	1999 05 14	704	0.7+ 0.3+	1999 06 07	703	0.5− 0.0
1999 04 15	704	0.1+ 0.7+	1999 05 14	704	0.7+ 0.5+	1999 06 09	704	(2.6+ 0.7−)
1999 05 10	704	1.3− 0.4−	1999 05 18	704	0.1− 0.1+	1999 06 09	704	0.5+ 0.6+
1999 05 10	704	0.7− 0.6−	1999 05 18	704	0.4+ 0.3−	1999 06 09	704	1.6+ 0.3+
1999 05 10	704	0.9− 0.1−	1999 05 18	704	0.2− 0.5−	1999 06 09	704	0.1+ 0.1−

1999 JO₃₈ = 1991 PQ₂₀ = 1996 TZ₅₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	146.23947	(2000.0)	P	Q	
<i>n</i>	0.20918601	ω 244.93982	+0.01987609	−0.99794977	
<i>a</i>	2.8104830	Ω 204.15734	+0.96250839	+0.03556365	
<i>e</i>	0.1360145	<i>i</i> 8.54918	+0.27052271	−0.05321171	
<i>P</i>	4.71	<i>H</i> 13.3	<i>G</i> 0.15	<i>U</i> 1	

Residuals in seconds of arc

1991 08 06	675	0.2+ 0.9−	1999 05 13	704	0.2− 0.5−	1999 06 07	703	0.0 0.4+
1991 08 06	675	0.1+ 1.3−	1999 05 13	704	0.3+ 0.4−	1999 06 07	703	0.6− 0.3−
1994 04 15	691	0.5− 0.3−	1999 05 13	704	0.9− 0.1+	1999 06 07	703	0.0 0.7−
1994 04 15	691	0.2− 0.3−	1999 05 13	704	0.4+ 0.9+	1999 06 07	703	0.1− 0.9−
1994 04 15	691	0.4+ 1.7−	1999 05 13	704	(2.3− 2.7+)	1999 06 08	704	0.1− 1.7−
1996 10 03	809	0.1+ 0.6−	1999 05 18	704	0.1− 0.2+	1999 06 08	704	0.8+ 0.0
1996 10 03	809	0.6+ 0.5−	1999 05 18	704	0.8− 0.2+	1999 06 08	704	0.4+ 1.4−
1996 10 03	809	0.4+ 0.6−	1999 05 18	704	0.2+ 0.2+	1999 06 08	704	0.3+ 0.1−
1996 10 04	809	(2.4+ 0.6−)	1999 05 18	704	1.1− 0.6+	1999 06 10	704	0.4+ 0.1−
1996 10 04	809	0.4+ 1.8−	1999 05 18	704	0.3− 0.9+	1999 06 10	704	0.5+ 0.4−
1996 10 04	809	(0.7+ 2.2−)	1999 05 19	704	0.8− 0.5−	1999 06 10	704	0.2+ 0.2−
1997 12 26	566	0.2− 1.6−	1999 05 19	704	(0.2− 2.5+)	1999 06 10	704	0.2+ 0.0
1997 12 26	566	0.5− 1.4−	1999 05 19	704	0.0 0.5+	1999 06 10	704	0.0 0.4−
1997 12 26	566	0.4− 1.5−	1999 05 19	704	(2.9− 0.5+)	1999 06 14	704	1.0+ 0.1+
1999 05 10	704	1.0− 0.5−	1999 06 04	703	1.1− 0.3−	1999 06 14	704	1.0+ 0.2−
1999 05 10	704	1.1− 0.1+	1999 06 04	703	0.1+ 0.1+	1999 06 14	704	0.7+ 0.0
1999 05 10	704	0.1+ 0.6+	1999 06 04	703	(2.4+ 1.0−)	1999 06 14	704	0.8+ 0.1−
1999 05 10	704	0.1− 1.1+	1999 06 04	703	0.6+ 0.4−			

1999 JZ₃₈ = 1983 ST = 1990 XT₁ = 1997 YT₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	195.96836	(2000.0)	P	Q	
<i>n</i>	0.28863987	ω 133.36889	+0.50488651	−0.85875875	
<i>a</i>	2.2675933	Ω 286.11527	+0.76335493	+0.49142385	
<i>e</i>	0.1107769	<i>i</i> 5.21430	+0.40296261	+0.14503800	
<i>P</i>	3.41	<i>H</i> 14.0	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1983 09 17	095	0.8+ 0.1+	1998 01 26	704	0.5− 0.0	1999 05 18	704	0.5− 0.4+
1990 12 14	801	0.7− 0.7−	1998 01 26	704	0.2+ 0.4−	1999 05 18	704	1.0− 0.2+
1990 12 14	801	0.6− 0.7−	1998 01 26	704	0.1− 0.7−	1999 05 18	704	1.9+ 0.1−
1997 12 29	327	0.2+ 0.5+	1999 05 10	704	1.4+ 0.2−	1999 05 18	704	0.7+ 0.3−
1997 12 29	327	0.1+ 0.4+	1999 05 10	704	0.3− 1.3−	1999 05 18	704	0.6− 0.2+
1997 12 29	327	0.1+ 0.4+	1999 05 10	704	0.1+ 0.7−	1999 06 15	704	0.4− 0.4+
1998 01 03	327	0.1+ 0.1+	1999 05 10	704	1.9+ 0.2−	1999 06 15	704	0.2− 0.8+
1998 01 03	327	0.6+ 0.0	1999 05 10	704	0.6+ 0.3+	1999 06 15	704	1.3− 0.5−
1998 01 03	327	0.1− 0.2−	1999 05 13	704	(2.1− 0.8+)	1999 06 15	704	0.7− 0.4−
1998 01 26	704	0.3+ 0.2+	1999 05 13	704	(2.4+ 0.6+)	1999 06 15	704	0.6− 0.4+
1998 01 26	704	0.0 0.1−	1999 05 13	704	1.7− 0.3+			

1999 JM₄₀ = 1997 XH₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	95.87892	(2000.0)	P	Q	
<i>n</i>	0.27708752	ω 75.04961	−0.81483110	−0.57531589	
<i>a</i>	2.3301904	Ω 69.77981	+0.49846100	−0.75800328	
<i>e</i>	0.1184073	<i>i</i> 4.34832	+0.29595086	−0.30731523	
<i>P</i>	3.56	<i>H</i> 15.0	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1996 07 15	566	0.1− 0.2+	1999 04 21	691	0.0 0.1−	1999 05 13	704	(2.2− 1.7−)
1996 07 15	566	0.8+ 0.8+	1999 04 21	691	0.1+ 0.4−	1999 05 14	704	(0.8− 2.3−)
1996 07 15	566	0.8− 0.6−	1999 04 21	691	0.1− 0.5−	1999 05 14	704	0.1+ 0.2−
1997 11 29	704	1.7− 1.5−	1999 05 10	704	1.2− 0.6−	1999 05 14	704	0.4− 1.8+
1997 11 29	704	0.2− 0.1−	1999 05 10	704	0.4+ 1.4+	1999 05 14	704	0.3− 1.7−
1997 11 29	704	0.9+ 0.5−	1999 05 10	704	0.8− 1.5+	1999 05 14	704	1.6− 0.1+
1997 11 29	704	0.4− 0.4+	1999 05 10	704	1.0− 0.8+	1999 05 18	704	0.3+ 0.3−
1997 11 29	704	0.4− 1.1−	1999 05 10	704	0.7+ 0.5−	1999 05 18	704	0.8− 0.0
1997 12 05	910	0.2+ 0.6+	1999 05 13	704	0.3− 0.9−	1999 05 18	704	0.1+ 0.1+
1997 12 05	910	0.2+ 0.7+	1999 05 13	704	0.7+ 1.0−	1999 05 18	704	0.7+ 0.5−
1997 12 05	910	0.0 0.6+	1999 05 13	704	0.8+ 0.0	1999 05 18	704	0.2+ 0.0
1997 12 07	910	0.4+ 0.7+	1999 05 13	704	0.2− 1.0−	1999 06 04	703	1.1+ 0.2−
1997 12 07	910	0.3+ 0.7+	1999 05 13	704	0.0 1.4+	1999 06 04	703	0.6+ 0.5−
1997 12 07	910	0.3+ 0.8+	1999 05 13	704	0.1+ 0.4−	1999 06 04	703	0.4+ 0.5+
1999 04 19	699	0.6+ 1.3+	1999 05 13	704	0.5+ 0.8−	1999 06 04	703	0.2− 0.9+
1999 04 19	699	0.8+ 1.0+	1999 05 13	704	0.8− 0.4−			
1999 04 19	699	0.6+ 0.3+	1999 05 13	704	0.5− 0.1−			

1999 JT₄₀ = 1996 QO₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	5.84033	(2000.0)	P	Q	
<i>n</i>	0.27929143	ω 74.16560	−0.26611642	+0.96394076	
<i>a</i>	2.3179158	Ω 180.40215	−0.90973652	−0.25132598	
<i>e</i>	0.1286007	<i>i</i> 4.14169	−0.31868717	−0.08748406	
<i>P</i>	3.53	<i>H</i> 15.6	<i>G</i> 0.15	<i>U</i> 5	

Residuals in seconds of arc

1996 08 18	010	1.3− 0.4+	1999 05 13	704	0.4− 0.8−	1999 05 18	704	0.2− 0.4+
1996 08 18	010	1.7− 1.0−	1999 05 13	704	0.8− 1.0−	1999 05 18	704	0.7+ 0.9+
1996 08 18	010	1.7− 2.4−	1999 05 13	704	1.3− 0.2−	1999 05 19	704	1.0+ 0.2+
1996 08 20	010	0.3+ 0.5−	1999 05 13	704	0.8− 0.0	1999 05 19	704	0.5− 0.4−
1996 08 20	010	2.1+ 1.8+	1999 05 14	704	0.6+ 0.5+	1999 05 19	704	0.6+ 0.2−
1996 08 20	010	2.3+ 1.6+	1999 05 14	704	0.0 0.9+	1999 05 19	704	0.7− 0.3+
1999 05 10	704	0.3+ 0.5−	1999 05 14	704	1.4− 1.2+	1999 05 19	704	1.3+ 0.7+
1999 05 10	704	1.1− 0.3−	1999 05 14	704	0.3− 0.6−	1999 06 14	704	0.9+ 0.3+
1999 05 10	704	1.4+ 0.1−	1999 05 14	704	0.8+ 0.4−	1999 06 14	704	1.5− 0.9−
1999 05 10	704	0.8− 0.3−	1999 05 18	704	0.8+ 0.2+	1999 06 14	704	0.5− 0.2+
1999 05 10	704	1.0+ 0.5+	1999 05 18	704	0.4− 0.1−	1999 06 14	704	0.7+ 0.2+
1999 05 13	704	0.1+ 0.3−	1999 05 18	704	0.3+ 0.4−	1999 06 14	704	0.1+ 0.2+

1999 JUNE 22

M.P.C. 34997

1999 JA₄₁ = 1995 KP₂ = 1998 CE₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	342.11577		(2000.0)	P		Q	
<i>n</i>	0.24037262	ω	178.79580	+0.24833059	+0.96595645		
<i>a</i>	2.5618049	Ω	105.57955	-0.88937048	+0.25702989		
<i>e</i>	0.1834178	<i>i</i>	4.31803	-0.38386465	+0.02938989		
<i>P</i>	4.10	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1995 05 22	010	0.4+	2.0-	1999 04 14	699	0.4-	1.1+	1999 05 19	704	0.4+	0.1-
1995 05 22	010	0.8-	0.2-	1999 05 10	704	0.1-	0.0	1999 05 19	704	0.2+	1.1-
1995 05 22	010	0.5+	1.0-	1999 05 10	704	0.2+	1.8-	1999 05 19	704	1.4-	0.6+
1995 05 23	010	1.8-	0.2+	1999 05 10	704	1.0-	0.2+	1999 06 05	703	0.7+	0.2+
1995 05 23	010	0.7+	1.9-	1999 05 10	704	0.6-	0.7+	1999 06 05	703	0.2+	0.7+
1995 05 23	010	(0.8+	3.6-)	1999 05 13	704	0.0	0.6+	1999 06 05	703	0.2+	1.1+
1998 02 01	327	0.4-	0.1-	1999 05 13	704	0.8+	1.0-	1999 06 05	703	0.3-	0.7+
1998 02 01	327	0.1-	0.3-	1999 05 13	704	0.4+	0.1-	1999 06 08	704	0.9+	1.2+
1998 02 01	327	0.1-	0.2-	1999 05 13	704	0.5-	0.3+	1999 06 08	704	0.7+	0.7-
1998 02 06	327	1.2+	0.3+	1999 05 13	704	0.9+	0.3+	1999 06 08	704	0.5+	1.2-
1998 02 06	327	0.2-	0.0	1999 05 18	704	0.4-	1.0+	1999 06 08	704	0.7-	0.9-
1998 02 06	327	0.7+	0.2+	1999 05 18	704	0.6-	0.3+	1999 06 14	704	0.3+	0.3+
1998 02 17	327	0.3-	0.4-	1999 05 18	704	0.4-	0.5-	1999 06 14	704	1.0+	0.7-
1998 02 17	327	0.6-	0.5-	1999 05 18	704	0.7-	0.8+	1999 06 14	704	0.6+	0.6+
1998 02 17	327	0.3-	0.6-	1999 05 18	704	0.4-	0.0	1999 06 14	704	0.4+	0.5-
1999 04 14	699	1.0+	0.1+	1999 05 19	704	0.8+	1.0+	1999 06 14	704	0.5-	0.5-
1999 04 14	699	0.5+	0.4+	1999 05 19	704	0.8-	1.4+				

1999 JB₄₁ = 1990 TD₃ = 1995 DN₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	230.79267		(2000.0)	P		Q	
<i>n</i>	0.29721442	ω	238.00609	+0.85596676	-0.51594988		
<i>a</i>	2.2237679	Ω	153.01123	+0.49573434	+0.80063538		
<i>e</i>	0.1450807	<i>i</i>	4.22270	+0.14686174	+0.30459598		
<i>P</i>	3.32	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1990 10 15	675	1.7+	0.8+	1995 02 27	098	(2.7+	0.1-)	1999 05 18	704	0.8-	0.7-
1990 10 15	675	0.1+	0.2-	1999 05 10	704	0.4+	0.3+	1999 05 18	704	0.1-	0.2-
1990 10 17	675	0.5-	0.5+	1999 05 10	704	0.1-	0.1-	1999 05 18	704	0.6+	0.9+
1990 10 17	675	1.4-	0.9-	1999 05 10	704	1.1-	2.0-	1999 05 19	704	1.1-	0.5-
1992 04 26	691	0.5-	0.8-	1999 05 10	704	1.3+	1.3-	1999 05 19	704	1.3-	0.1+
1992 04 26	691	0.2-	0.8-	1999 05 13	704	0.7+	0.4+	1999 05 19	704	0.8+	1.0+
1992 04 26	691	0.0	0.5-	1999 05 13	704	0.6-	0.5+	1999 05 19	704	0.8+	1.7-
1995 02 24	098	0.7-	0.5+	1999 05 13	704	0.1-	1.1+	1999 06 14	704	0.5+	0.5-
1995 02 24	098	0.5-	1.4+	1999 05 13	704	0.5+	1.7+	1999 06 14	704	0.7+	0.2+
1995 02 25	098	0.7+	1.1-	1999 05 13	704	0.8-	1.8+	1999 06 14	704	0.2+	0.4-
1995 02 26	098	0.9-	0.1-	1999 05 18	704	0.3-	0.5+	1999 06 14	704	0.0	0.3-
1995 02 27	098	1.7+	0.3+	1999 05 18	704	0.8+	0.6+	1999 06 14	704	0.5-	0.1-

1999 JP₄₁ = 1993 TW₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	17.42233		(2000.0)	P		Q	
<i>n</i>	0.28466882	ω	64.85914	-0.48400249	+0.87505234		
<i>a</i>	2.2886328	Ω	176.18258	-0.82747093	-0.45581122		
<i>e</i>	0.1231644	<i>i</i>	4.30631	-0.28466375	-0.16284817		
<i>P</i>	3.46	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1993 10 09	809	0.2-	0.3-	1999 05 10	704	0.7-	0.1-	1999 05 18	704	0.1+	0.0
1993 10 09	809	1.0+	0.6+	1999 05 10	704	0.9+	0.3+	1999 05 18	704	0.3-	0.2-
1993 10 09	809	0.3-	0.4-	1999 05 13	704	0.1+	0.4-	1999 06 04	703	0.7+	0.3-
1993 10 11	809	0.0	0.2-	1999 05 13	704	0.6-	0.9-	1999 06 04	703	0.2+	0.5+
1993 10 11	809	0.2+	0.4+	1999 05 13	704	0.5+	0.6-	1999 06 04	703	0.1-	0.3-
1993 10 11	809	0.8-	0.0	1999 05 13	704	0.7+	0.1+	1999 06 04	703	0.2-	0.1-
1993 10 20	809	(1.8+	3.6+)	1999 05 13	704	0.4-	0.5+	1999 06 08	704	0.5-	0.4-

1993 10 20	809	(1.3+	3.5+)	1999 05 14	704	0.1+	0.8+	1999 06 08	704	(0.2+	2.6+)
1993 10 20	809	(1.2+	2.9+)	1999 05 14	704	0.6-	1.7+	1999 06 08	704	0.2-	0.6-
1999 04 14	699	0.0	0.2+	1999 05 14	704	0.2+	0.6-	1999 06 08	704	(0.1-	2.9+)
1999 04 14	699	0.0	0.4+	1999 05 14	704	0.5-	0.3+	1999 06 14	704	0.9+	0.1-
1999 04 14	699	0.0	0.1-	1999 05 14	704	0.1-	0.7+	1999 06 14	704	0.4+	0.5+
1999 05 10	704	0.2+	0.1-	1999 05 18	704	0.5+	0.4-	1999 06 14	704	0.2-	0.5+
1999 05 10	704	0.3+	0.5-	1999 05 18	704	0.4+	0.1-	1999 06 14	704	0.8-	0.3+
1999 05 10	704	1.1-	0.9-	1999 05 18	704	0.4+	0.1+				

1999 JQ₄₁ = 1995 GB₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	177.54805		(2000.0)	P		Q	
<i>n</i>	0.27370843	ω	235.67312	+0.37053857	-0.92849047		
<i>a</i>	2.3493295	Ω	192.64881	+0.88484915	+0.36093601		
<i>e</i>	0.2340169	<i>i</i>	6.45807	+0.28238831	+0.08735354		
<i>P</i>	3.60	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1995 04 06	695	0.2-	0.5-	1999 05 10	704	0.8-	1.0+	1999 05 19	704	0.2+	0.4+
1995 04 06	695	0.3-	0.3-	1999 05 10	704	0.4+	0.4+	1999 05 19	704	0.3+	0.8+
1995 04 06	695	0.4-	0.3-	1999 05 10	704	0.1+	1.5-	1999 05 19	704	1.3-	1.1-
1995 04 08	695	0.1-	0.3+	1999 05 10	704	0.7-	0.7-	1999 06 08	704	0.3+	0.0
1995 04 08	695	0.3+	0.2+	1999 05 13	704	0.8-	0.1+	1999 06 08	704	0.3+	0.5+
1995 04 08	695	0.2+	0.1+	1999 05 13	704	0.3+	0.1+	1999 06 08	704	1.1+	0.8-
1995 04 08	695	0.2+	0.2+	1999 05 13	704	0.2+	0.1+	1999 06 08	704	0.2-	1.1+
1995 04 08	695	0.4+	0.2+	1999 05 13	704	1.4+	0.0	1999 06 14	704	0.5+	0.3-
1995 04 08	695	0.3+	0.3+	1999 05 18	704	0.1-	0.2+	1999 06 14	704	0.1+	0.2+
1995 04 09	695	0.0	0.6-	1999 05 18	704	0.9+	0.7+	1999 06 14	704	0.5-	0.8+
1995 04 09	695	0.4-	0.3+	1999 05 18	704	0.8+	1.2+	1999 06 14	704	0.1-	0.4-
1995 04 09	695	0.1-	0.2+	1999 05 18	704	1.3-	1.8-	1999 06 14	704	1.1-	1.0-

1999 JY₄₁ = 1969 TK₄ = 1976 UX₄ = 1979 OL₁₆ = 1986 QJ₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	206.04059		(2000.0)	P		Q	
<i>n</i>	0.28509594	ω	208.00778	+0.64852852	-0.76044327		
<i>a</i>	2.2863464	Ω	201.61610	+0.71436057	+0.62332910		
<i>e</i>	0.1591856	<i>i</i>	5.25135	+0.26286830	+0.18217265		
<i>P</i>	3.46	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1969 10 13	095	(1.2+ 3.4+)	1999 05 13	704	0.5- 0.8-	1999 05 19	703	0.4+ 0.6+
1969 10 15	095	0.2- 0.7+	1999 05 13	704	0.9- 0.2+	1999 05 19	703	0.1+ 0.6+
1969 10 17	095	(1.7+ 3.1+)	1999 05 13	704	0.1- 0.6+	1999 06 04	703	0.8+ 0.8-
1976 10 30	095	(3.5+ 5.4-)	1999 05 14	704	0.1- 0.3+	1999 06 04	703	0.4+ 0.4+
1979 07 31	095	0.2- 0.5+	1999 05 14	704	1.1- 0.7+	1999 06 04	703	0.1- 0.6-
1986 08 29	095	0.3+ 1.0-	1999 05 14	704	0.8- 0.4+	1999 06 04	703	0.7+ 1.6+
1993 09 18	010	(3.7+ 4.5-)	1999 05 14	704	0.1+ 0.3+	1999 06 05	703	0.4- 0.3+
1993 09 18	010	(2.4+ 4.6-)	1999 05 14	704	0.0 0.1-	1999 06 05	703	0.2- 0.2+
1993 09 18	010	(3.0+ 3.3-)	1999 05 18	704	0.2- 0.6-	1999 06 05	703	0.4+ 0.3+
1999 04 19	699	0.9- 0.4+	1999 05 18	704	0.3+ 0.8-	1999 06 05	703	0.1+ 0.2+
1999 04 19	699	0.3+ 0.4+	1999 05 18	704	0.2- 1.2-	1999 06 09	704	0.2+ 0.1+
1999 04 19	699	1.2+ 0.2+	1999 05 18	704	0.5- 0.4-	1999 06 09	704	0.7+ 1.1-
1999 05 10	704	0.2+ 0.2-	1999 05 18	704	0.2- 0.3-	1999 06 09	704	0.3- 0.6-
1999 05 10	704	0.4- 0.7+	1999 05 19	704	0.4- 0.5-	1999 06 09	704	0.1+ 0.0
1999 05 10	704	0.1+ 0.1+	1999 05 19	704	0.6+ 0.3-	1999 06 14	704	0.8+ 0.3+
1999 05 10	704	0.2+ 0.9-	1999 05 19	704	1.1- 0.0	1999 06 14	704	0.4+ 0.2+
1999 05 10	704	0.1- 0.6+	1999 05 19	703	0.2+ 0.1-	1999 06 14	704	0.5+ 0.6+
1999 05 13	704	0.0 0.2-	1999 05 19	704	1.0- 0.1+	1999 06 14	704	0.5+ 0.1+
1999 05 13	704	0.3+ 1.2-	1999 05 19	703	0.3+ 0.2+	1999 06 14	704	0.2+ 0.7+

1999 JB₄₂ = 1996 RX₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	23.36491	(2000.0)	P		Q	
<i>n</i>	0.26235993	ω	73.40695	−0.63752949	+0.77035442	
<i>a</i>	2.4165978	Ω	156.97516	−0.71668986	−0.58800782	
<i>e</i>	0.1398707	<i>i</i>	1.53803	−0.28268675	−0.24657830	
<i>P</i>	3.76	<i>H</i>	15.8	<i>G</i> 0.15	<i>U</i> 5	

Residuals in seconds of arc

1996 09 06	691	0.1−	0.1+	1999 05 13	704	1.2+	0.2−	1999 05 23	691	0.6−	0.1−
1996 09 06	691	0.6−	0.1+	1999 05 13	704	0.3+	0.5+	1999 06 04	703	0.5+	0.3−
1996 09 06	691	0.0	0.1+	1999 05 14	704	0.7+	1.3−	1999 06 04	703	0.7+	0.4+
1996 09 08	691	0.3+	0.2−	1999 05 14	704	0.2−	0.4+	1999 06 04	703	0.2−	0.8+
1996 09 08	691	0.2+	0.2−	1999 05 14	704	0.6−	0.9−	1999 06 04	703	1.0+	1.3+
1996 09 08	691	0.3+	0.2−	1999 05 14	704	1.2−	0.3−	1999 06 14	704	0.7+	0.1+
1999 05 10	704	0.1+	0.5−	1999 05 18	704	0.6−	1.2−	1999 06 14	704	1.0−	0.2+
1999 05 10	704	0.2−	0.9−	1999 05 18	704	0.2+	1.6−	1999 06 14	704	0.3+	0.2−
1999 05 10	704	1.1+	0.7+	1999 05 18	704	0.5−	0.4−	1999 06 14	704	0.1+	0.1+
1999 05 10	704	0.3−	1.9+	1999 05 18	704	0.6−	1.1+	1999 06 14	704	0.4−	0.0
1999 05 10	704	0.3+	0.2−	1999 05 23	691	0.5−	0.0				
1999 05 13	704	0.2+	0.7+	1999 05 23	691	0.4−	0.0				

1999 JS₄₂ = 1997 WL₄₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	108.44969	(2000.0)	P		Q	
<i>n</i>	0.28546315	ω	267.74413	−0.77688459	−0.62472229	
<i>a</i>	2.2843852	Ω	233.58296	+0.60951526	−0.71487582	
<i>e</i>	0.0571676	<i>i</i>	5.60272	+0.15792873	−0.31412516	
<i>P</i>	3.45	<i>H</i>	15.6	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1993 09 16	691	0.2+	0.0	1999 05 10	704	0.3+	0.2−	1999 05 18	704	1.1−	1.4+
1993 09 16	691	0.1−	0.8−	1999 05 10	704	0.5−	0.1−	1999 05 18	704	1.1+	0.2+
1993 09 16	691	0.3+	0.4−	1999 05 10	704	0.6+	0.2+	1999 05 19	704	0.5+	1.6−
1997 11 29	704	0.3−	0.1−	1999 05 10	704	0.5+	0.3−	1999 05 19	704	0.6−	1.9−
1997 11 29	704	0.0	0.3−	1999 05 13	704	1.0−	0.7−	1999 05 19	704	0.8−	0.8+
1997 11 29	704	0.7+	1.6−	1999 05 13	704	1.2−	0.4−	1999 05 19	704	0.9+	0.5−
1997 11 29	704	0.4−	0.7−	1999 05 13	704	(3.1+	2.0−)	1999 06 15	704	0.6+	1.3+
1997 11 29	704	0.3+	0.9−	1999 05 13	704	0.6+	0.7+	1999 06 15	704	0.8+	0.0
1997 11 30	566	(3.7+	2.3−)	1999 05 13	704	0.1+	1.1+	1999 06 15	704	0.7−	0.6−
1997 11 30	566	(4.0+	2.4−)	1999 05 18	704	0.2+	0.2−	1999 06 15	704	0.0	0.5−
1997 11 30	566	(3.7+	2.7−)	1999 05 18	704	1.2−	0.7−	1999 06 15	704	0.6+	0.4+
1999 05 10	704	0.2−	0.3−	1999 05 18	704	0.3−	2.0−				

1999 JM₄₃ = 1991 GG₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	104.19688	(2000.0)	P		Q	
<i>n</i>	0.25358421	ω	129.23359	−0.74567122	−0.66621575	
<i>a</i>	2.4720348	Ω	9.01109	+0.58660483	−0.66451920	
<i>e</i>	0.1039014	<i>i</i>	4.19089	+0.31602090	−0.33848311	
<i>P</i>	3.89	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 5	

Residuals in seconds of arc

1991 04 08	809	1.3−	0.2+	1999 04 15	699	0.7−	0.6−	1999 05 18	704	0.4+	0.7−
1991 04 08	809	0.3−	0.8+	1999 04 15	704	0.3+	1.3−	1999 05 18	704	0.7−	0.4−
1991 04 08	809	1.2−	0.5−	1999 04 15	699	0.4+	0.1+	1999 05 18	704	0.3−	0.7+
1991 04 08	809	(2.2+	0.7−)	1999 04 15	704	1.3−	1.0−	1999 05 19	704	0.9+	0.9+
1991 04 08	809	1.2+	1.2−	1999 05 10	704	0.4+	1.0−	1999 05 19	704	0.0	0.3−
1991 04 08	809	1.2+	1.8−	1999 05 10	704	1.0+	0.2−	1999 05 19	704	0.1+	0.2−
1991 04 10	809	0.1+	1.5+	1999 05 10	704	0.8+	0.5−	1999 05 19	704	1.0−	0.4+
1991 04 10	809	0.7−	0.7+	1999 05 10	704	0.9+	0.6+	1999 06 09	704	0.1+	0.1+
1991 04 10	809	0.1−	0.1+	1999 05 10	704	0.4−	0.1+	1999 06 09	704	0.0	0.3−
1991 04 10	809	0.9+	0.4+	1999 05 13	704	0.3−	0.4−	1999 06 09	704	0.2+	0.9−
1991 04 10	809	0.8+	0.5+	1999 05 13	704	0.3+	0.5+	1999 06 09	704	1.6−	1.0+
1991 04 10	809	0.2−	0.2+	1999 05 13	704	0.7−	0.1−	1999 06 15	704	0.7+	0.0

1999 04 15	704	(0.6−	2.8+)	1999 05 13	704	0.5−	0.3+	1999 06 15	704	0.2+	0.2+
1999 04 15	704	0.5−	0.0	1999 05 13	704	0.1−	0.7+	1999 06 15	704	0.9+	1.0+
1999 04 15	699	0.1+	0.7+	1999 05 18	704	0.2−	0.2−	1999 06 15	704	0.7+	0.1−
1999 04 15	704	0.5+	0.2+	1999 05 18	704	0.5−	0.9−	1999 06 15	704	0.0	0.6+

1999 JR₄₃ = 1969 RD₁ = 1978 EK₈ = 1985 FH₂ = 1988 BS₄= 1997 WU₄₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	120.72920	(2000.0)	P		Q	
<i>n</i>	0.28815325	ω	197.17187	−0.69659198	−0.71527288	
<i>a</i>	2.2701456	Ω	297.02401	+0.66543514	−0.61487658	
<i>e</i>	0.0267055	<i>i</i>	3.60899	+0.26824555	−0.33213176	
<i>P</i>	3.42	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 1	

Residuals in seconds of arc

1969 09 13	095	(0.7−	4.7+)	1997 12 05	704	0.5+	0.6−	1999 05 13	704	0.9+	0.1−
1978 03 05	095	1.8−	0.3+	1997 12 05	704	(2.3+	1.0−)	1999 05 13	704	0.5+	0.2+
1985 03 24	688	0.9+	0.1−	1997 12 05	704	0.8+	0.5−	1999 05 13	704	0.6+	0.6+
1985 03 24	688	1.7+	0.4−	1997 12 05	704	0.2+	1.5−	1999 05 18	704	0.1−	0.7−
1988 01 18	071	(4.9+	4.9+)	1997 12 05	704	0.2+	2.0−	1999 05 18	704	0.1+	1.2−
1988 01 18	071	(4.8+	3.2+)	1998 01 08	699	1.1+	0.9+	1999 05 18	704	0.2+	0.8−
1988 01 18	071	(2.0+	3.6+)	1998 01 08	699	0.4+	1.4+	1999 05 18	704	0.1−	0.4−
1988 01 19	071	0.2−	0.9−	1998 01 08	699	0.4+	0.9+	1999 05 18	704	0.1+	0.1−
1996 07 21	566	0.3+	0.7−	1999 04 15	704	0.8+	0.6+	1999 05 19	704	0.1+	0.9−
1996 07 21	566	0.3+	0.7−	1999 04 15	704	0.8−	0.7−	1999 05 19	704	0.2+	0.4−
1996 07 21	566	0.3+	0.7−	1999 04 15	704	1.1−	0.5+	1999 05 19	704	0.1+	0.7−
1997 11 29	704	0.2−	0.1−	1999 04 15	704	(1.2−	2.7−)	1999 06 09	704	1.2−	0.3+
1997 11 29	704	0.8−	0.1+	1999 04 15	704	0.2−	0.3+	1999 06 09	704	1.3−	0.0
1997 11 29	704	1.6−	0.3−	1999 05 10	704	0.4+	0.6−	1999 06 09	704	1.1−	1.4+
1997 11 29	704	0.1−	0.2−	1999 05 10	704	0.0	0.7−	1999 06 09	704	1.0−	0.7+
1997 11 29	704	(2.2−	0.3+)	1999 05 10	704	0.2+	0.4−	1999 06 09	704	(2.0−	2.6+)
1997 12 04	704	0.1−	0.4+	1999 05 10	704	1.1+	0.2−	1999 06 15	704	0.0	0.0
1997 12 04	704	0.3−	0.7−	1999 05 10	704	0.2+	0.8−	1999 06 15	704	0.5−	0.6+
1997 12 04	704	0.5−	0.1+	1999 05 13	704	0.6+	0.0	1999 06 15	704	0.8−	0.8+
1997 12 04	704	0.2+	1.3−	1999 05 13	704	0.3+	0.0	1999 06 15	704	1.0−	0.6+

1999 JS₄₃ = 1951 AA₁ = 1990 UM₁₀ = 1995 AR₄Id. G. V. Williams; see *MPC* 34860

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	112.76280	(2000.0)	P		Q	
<i>n</i>	0.29149033	ω	199.62207	−0.67657581	−0.73211585	
<i>a</i>	2.2527860	Ω	293.04355	+0.68656765	−0.58835036	
<i>e</i>	0.1126026	<i>i</i>	4.92909	+0.26621428	−0.34329322	
<i>P</i>	3.38	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 1	

Residuals in seconds of arc

1951 01 09	012	0.8+	3.0+	1999 04 15	704	0.3+	0.4+	1999 05 18	704	1.1+	0.1+
1990 10 17	372	1.0+	1.5+	1999 04 15	704	0.0	1.1−	1999 05 18	704	0.8+	0.4+
1990 10 17	372	1.6−	0.6−	1999 04 15	704	0.6−	0.6−	1999 05 18	704	0.5+	0.2−
1995 01 05	033	0.1−	0.4−	1999 04 15	704	0.7−	1.9−	1999 05 18	704	0.8+	0.9+
1995 01 06	033	0.0	0.5−	1999 05 10	704	0.2+	0.0	1999 06 09	704	0.7+	0.1+
1995 01 08	033	0.6−	0.0	1999 05 10	704	1.5+	0.4−	1999 06 09	704	0.2−	1.1+
1997 11 30	566	0.7−	1.4+	1999 05 10	704	(4.9−	0.9+)	1999 06 09	704	0.5−	0.6−
1997 11 30	566	0.1−	1.3+	1999 05 13	704	0.6−	0.7+	1999 06 09	704	3.5−	2.4+
1997 11 30	566	0.6−	1.2+	1999 05 13	704	0.2+	0.7+	1999 06 15	704	0.3+	0.6+
1998 02 25	566	0.3+	0.1+	1999 05 13	704	0.0	0.0	1999 06 15	704	0.8+	0.0
1998 02 25	566	0.4+	0.2−	1999 05 13	704	0.4−	0.4+	1999 06 15	704	0.2+	0.3+
1998 02 25	566	0.4+	0.4−	1999 05 13	704	0.5−	0.1+	1999 06 15	704	0.7+	0.8+
1999 04 15	704	0.3−	1.1+	1999 05 18	704	0.7+	0.3−	1999 06 15	704	0.6+	0.8+

1999 JUNE 22

M.P.C. 34999

1999 JZ₄₃ = 1998 FY₉₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	256.23672	(2000.0)	P		Q	
<i>n</i>	0.18412916	ω	90.47587	+0.97848184	-0.13479122	
<i>a</i>	3.0599970	Ω	277.27662	+0.05966969	+0.90962865	
<i>e</i>	0.1385531	<i>i</i>	9.06113	+0.19751663	+0.39294663	
<i>P</i>	5.35	<i>H</i>	12.9	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1998 03 31	704	1.0+	0.1-	1998 04 18	704	0.8-	0.4-	1999 05 18	704	0.4-	0.1-
1998 03 31	704	0.1-	0.5+	1999 05 10	704	1.4+	1.1-	1999 05 18	704	0.8-	1.2-
1998 03 31	704	1.1-	0.5+	1999 05 10	704	0.3-	1.9-	1999 06 09	704	0.5-	0.1-
1998 03 31	704	1.1+	0.9-	1999 05 10	704	1.2-	0.0	1999 06 09	704	0.0	0.6-
1998 03 31	704	0.3-	0.6+	1999 05 10	704	1.3-	1.8+	1999 06 09	704	(0.5-	2.2+)
1998 04 01	704	0.9+	1.2-	1999 05 13	704	0.8+	0.7+	1999 06 09	704	1.0-	1.6+
1998 04 01	704	0.2+	0.9-	1999 05 13	704	0.5+	1.4+	1999 06 15	704	0.0	0.1-
1998 04 01	704	(2.4+	0.1+)	1999 05 13	704	0.1-	0.5-	1999 06 15	704	0.7+	0.3+
1998 04 01	704	(2.2+	1.2+)	1999 05 13	704	1.1+	0.9-	1999 06 15	704	0.0	0.0
1998 04 01	704	0.3-	1.3+	1999 05 13	704	(2.4+	0.2-)	1999 06 15	704	0.6+	1.5-
1998 04 18	704	0.1-	0.1+	1999 05 18	704	0.2+	0.4+	1999 06 15	704	0.3+	0.2+
1998 04 18	704	0.5-	0.5+	1999 05 18	704	0.5-	0.5+				
1998 04 18	704	(1.4-	2.3+)	1999 05 18	704	0.4+	1.1+				

1999 JL₄₄ = 1988 LO

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	63.98423	(2000.0)	P		Q	
<i>n</i>	0.17443737	ω	299.20396	-0.97479351	-0.05415913	
<i>a</i>	3.1723155	Ω	238.47328	+0.11162287	-0.95833727	
<i>e</i>	0.0633780	<i>i</i>	14.70926	-0.19317852	-0.28045760	
<i>P</i>	5.65	<i>H</i>	12.5	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1988 06 15	675	1.1-	0.7-	1999 05 10	704	0.9-	0.5+	1999 05 19	704	0.2-	0.0
1988 06 17	675	1.1+	0.7+	1999 05 13	704	0.6+	0.0	1999 05 19	704	0.3+	0.1+
1999 04 15	704	0.7+	0.3-	1999 05 13	704	1.0-	0.6-	1999 06 09	704	0.1-	0.2+
1999 04 15	704	0.1-	0.3+	1999 05 13	704	0.2-	0.5-	1999 06 09	704	0.4-	0.1-
1999 04 15	699	0.1-	0.1+	1999 05 13	704	0.0	0.6-	1999 06 09	704	0.4+	0.6+
1999 04 15	704	0.9+	1.2+	1999 05 13	704	0.3+	0.0	1999 06 09	704	0.2+	0.1-
1999 04 15	699	0.9+	0.8+	1999 05 18	704	0.8+	0.5-	1999 06 09	704	0.4-	0.9+
1999 04 15	704	1.0-	0.4+	1999 05 18	704	0.0	0.5+	1999 06 15	704	0.4+	0.1-
1999 04 15	699	0.5+	0.4-	1999 05 18	704	0.2+	0.0	1999 06 15	704	0.2+	0.4+
1999 04 15	704	0.7+	0.7+	1999 05 18	704	0.6-	0.2+	1999 06 15	704	0.2-	0.6+
1999 05 10	704	0.1-	0.0	1999 05 18	704	1.6-	0.1+	1999 06 15	704	0.5+	0.2+
1999 05 10	704	0.9+	0.6-	1999 05 19	704	0.3+	1.2-	1999 06 15	704	0.6-	0.1+
1999 05 10	704	0.0	1.2-	1999 05 19	704	0.5-	0.6-				
1999 05 10	704	0.5-	0.9-	1999 05 19	704	0.1-	0.1+				

1999 JZ₄₄ = 1996 VR₂₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	41.11182	(2000.0)	P		Q	
<i>n</i>	0.17848319	ω	327.52870	-0.94330662	+0.25475219	
<i>a</i>	3.1241929	Ω	228.77178	-0.21035870	-0.95470304	
<i>e</i>	0.1643688	<i>i</i>	16.43419	-0.25675250	-0.15376417	
<i>P</i>	5.52	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1996 11 10	691	0.4+	0.2+	1999 05 13	704	0.3+	0.5-	1999 06 04	703	0.0	0.5+
1996 11 10	691	0.5+	0.1+	1999 05 13	704	0.4-	0.5-	1999 06 04	703	0.3+	0.2+
1996 11 10	691	0.4+	0.1+	1999 05 13	704	0.6+	0.3-	1999 06 04	703	1.3+	0.4-
1996 11 17	691	0.3-	0.0	1999 05 13	704	0.9+	0.3-	1999 06 04	703	0.5+	1.1-
1996 11 17	691	0.3-	0.0	1999 05 13	704	0.1-	0.7-	1999 06 09	704	0.1+	0.4-
1996 11 17	691	0.8-	0.1+	1999 05 18	704	1.3+	0.2+	1999 06 09	704	0.5+	0.1+
1999 04 15	704	0.1+	1.1-	1999 05 18	704	0.1+	1.4+	1999 06 09	704	1.5-	1.0-
1999 04 15	704	0.4+	0.2+	1999 05 18	704	0.2-	0.1-	1999 06 09	704	0.1-	0.9+
1999 04 15	704	0.1-	1.5+	1999 05 18	704	0.3-	0.1-	1999 06 14	704	0.0	0.1-

1999 04 15	704	0.5-	0.2-	1999 05 18	704	0.6-	0.3+	1999 06 14	704	0.2+	0.1+
1999 04 15	704	1.0-	0.2-	1999 05 19	704	0.0	1.3+	1999 06 14	704	0.4+	0.6+
1999 05 10	704	0.2+	0.1+	1999 05 19	704	0.5-	0.3+	1999 06 14	704	0.4-	0.1-
1999 05 10	704	0.3-	0.1+	1999 05 19	704	0.8-	0.0	1999 06 14	704	0.9-	0.5-
1999 05 10	704	0.2-	0.4-	1999 05 19	704	0.9-	0.6+				
1999 05 10	704	1.4+	0.5-	1999 05 19	704	0.1-	0.8+				

1999 JH₄₅ = 1992 PE₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	340.94053	(2000.0)	P		Q	
<i>n</i>	0.26408365	ω	86.51348	+0.33615283	+0.94172809	
<i>a</i>	2.4060706	Ω	203.14073	-0.87597347	+0.30786067	
<i>e</i>	0.1744005	<i>i</i>	1.78274	-0.34593607	+0.13553599	
<i>P</i>	3.73	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 1	

Residuals in seconds of arc

1992 08 03	675	0.5+	0.3-	1999 05 10	704	0.2+	0.3-	1999 06 04	703	0.6+	0.1+
1992 08 03	675	1.3-	0.1+	1999 05 10	704	0.5-	0.4-	1999 06 04	703	0.5+	0.3+
1992 08 06	675	0.1-	0.3+	1999 05 13	704	0.2+	0.6-	1999 06 04	703	0.2-	0.6+
1992 08 06	675	1.1+	0.8-	1999 05 13	704	0.5-	0.6-	1999 06 04	703	0.6+	0.5+
1995 04 05	691	0.7-	0.4-	1999 05 13	704	0.1+	0.6-	1999 06 05	703	0.4+	0.4+
1995 04 05	691	1.4+	1.9+	1999 05 13	704	0.1+	0.0	1999 06 05	703	0.6+	0.3+
1996 10 18	566	0.1-	0.1+	1999 05 13	704	0.8-	0.2-	1999 06 05	703	0.2+	1.5+
1996 10 18	566	0.1-	0.3+	1999 05 14	704	0.3+	0.3-	1999 06 05	703	1.3+	0.8+
1996 10 18	566	0.2-	0.5+	1999 05 14	704	0.3-	0.3-	1999 06 09	704	0.8+	0.1+
1999 04 15	704	0.1+	0.0	1999 05 14	704	0.7-	1.9-	1999 06 09	704	0.4-	0.9+
1999 04 15	704	0.6+	0.0	1999 05 14	704	0.0	0.1+	1999 06 09	704	(0.2+	2.4+)
1999 04 15	704	0.5-	1.2-	1999 05 14	704	0.2-	0.5-	1999 06 09	704	1.0-	0.1-
1999 04 15	704	1.1-	0.0	1999 05 19	704	0.1-	0.4+	1999 06 14	704	0.7+	0.5+
1999 04 15	704	(3.5-	0.6+)	1999 05 19	704	0.5-	0.5+	1999 06 14	704	0.2+	0.7+
1999 05 10	704	0.4-	0.5-	1999 05 19	704	0.0	0.2-	1999 06 14	704	0.5+	0.3+
1999 05 10	704	0.4+	0.1-	1999 05 19	704	0.0	0.5-	1999 06 14	704	0.2+	0.5-
1999 05 10	704	0.1-	0.9+	1999 05 19	704	0.2-	0.7-	1999 06 14	704	0.9-	0.6+

1999 JM₄₅ = 1982 JN

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	58.99948	(2000.0)	P		Q	
<i>n</i>	0.17390389	ω	117.59716	-0.98083214	-0.08935192	
<i>a</i>	3.1787998	Ω	57.75378	-0.00700071	-0.87193210	
<i>e</i>	0.1416105	<i>i</i>	11.81421	+0.19472879	-0.48140487	
<i>P</i>	5.67	<i>H</i>	13.5	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1982 05 15	675	0.4+	1.0-	1999 05 13	704	0.1-	0.6+	1999 05 19	704	0.6-	0.1-
1982 05 16	675	1.6-	1.9-	1999 05 13	704	0.6+	0.9+	1999 05 19	704	0.3+	0.2+
1982 05 16	675	0.5-	0.3-	1999 05 13	704	0.2+	0.0	1999 05 19	704	0.9-	0.0
1993 05 25	691	0.1-	0.2+	1999 05 14	704	0.3-	0.5+	1999 05 19	704	0.5-	0.1+
1993 05 25	691	0.2+	0.0	1999 05 14	704	0.3+	0.6+	1999 06 05	703	1.1+	1.0+
1993 05 25	691	0.0	0.0	1999 05 14	704	(0.0	2.3+)	1999 06 05	703	0.6+	0.1-
1999 05 10	704	0.5+	0.3-	1999 05 14	704	1.5+	0.2+	1999 06 05	703	0.5-	0.6+
1999 05 10	704	0.2+	0.8+	1999 05 14	704	0.7-	1.1+	1999 06 05	703	0.2-	0.1+
1999 05 10	704	0.7+	0.7-	1999 05 18	704	0.1+	0.2-	1999 06 15	704	0.4+	0.1-
1999 05 10	704	0.5+	0.6+	1999 05 18	704	0.7+	0.5-	1999 06 15	704	0.4+	0.1-
1999 05 10	704	0.9-	0.7-	1999 05 18	704	0.1-	0.5-	1999 06 15	704	0.0	0.4-
1999 05 13	704	0.0	0.8-	1999 05 18	704	0.3+	0.3+	1999 06 15	704	0.1-	0.3-
1999 05 13	704	1.0-	0.6+	1999 05 18	704	0.9-	0.1-	1999 06 15	704	0.2-	0.2-

1999 JR₄₅ = 1995 QT₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	72.71067		(2000.0)	P	Q
n	0.17174428	ω	294.19895	-0.89228135	-0.40009634
a	3.2053923	Ω	223.05567	+0.43649041	-0.88287329
e	0.1627448	i	17.84237	-0.11536950	-0.24588142
P	5.74	H	13.8	G 0.15	U 3

M.P.C. 35000

1999 JUNE 22

Residuals in seconds of arc

1995 08 22	327	0.9+	0.6+	1999 05 10	704	0.6+	0.2+	1999 05 18	704	0.1+	0.5+
1995 08 22	327	0.1-	0.1-	1999 05 10	704	0.4-	1.3-	1999 05 18	704	1.2-	0.1+
1995 08 22	327	0.2-	0.2+	1999 05 10	704	0.6+	0.4+	1999 05 19	704	0.5-	1.4-
1995 08 22	327	0.5-	0.2-	1999 05 13	704	1.1-	0.2-	1999 05 19	704	0.3+	1.1+
1995 08 23	327	0.2-	0.3-	1999 05 13	704	0.2+	0.3-	1999 05 19	704	0.9+	1.0-
1995 08 23	327	0.1-	0.1+	1999 05 13	704	0.9+	1.3+	1999 05 19	704	1.1-	0.9+
1995 08 23	327	0.0	0.4-	1999 05 13	704	0.5-	1.5+	1999 06 14	704	0.4+	0.3-
1995 08 23	327	0.3+	0.2+	1999 05 17	703	0.9+	0.1-	1999 06 14	704	0.4-	0.5-
1996 11 28	327	0.5+	0.6-	1999 05 17	703	0.4+	0.3+	1999 06 14	704	0.0	0.1-
1996 11 28	327	0.2-	0.5+	1999 05 17	703	0.2-	0.3-	1999 06 14	704	0.3+	1.3+
1996 11 28	327	0.2-	0.4-	1999 05 17	703	0.1-	0.2+	1999 06 14	704	0.4-	0.2+
1999 05 10	704	0.2-	1.0-	1999 05 18	704	1.7+	1.9-				
1999 05 10	704	0.9-	1.0+	1999 05 18	704	0.3-	1.1-				

1999 JS₄₅ = 1997 WX₃₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	102.99267		(2000.0)	P	Q
n	0.27701068	ω	3.28129	-0.80881312	-0.58729773
a	2.3306213	Ω	140.70282	+0.53845394	-0.76015021
e	0.0800566	i	2.71909	+0.23640790	-0.27794431
P	3.56	H	14.8	G 0.15	U 4

Residuals in seconds of arc

1997 11 29	704	1.9-	0.4-	1997 12 05	704	(2.1+	1.5+)	1999 05 17	703	1.7-	0.5+
1997 11 29	704	1.7-	0.8-	1997 12 29	566	0.4+	0.4-	1999 05 18	704	1.1+	0.7+
1997 11 29	704	0.2-	0.8-	1997 12 29	566	0.5+	0.1-	1999 05 18	704	1.1-	0.2+
1997 11 29	704	(2.0-	0.3-)	1997 12 29	566	0.4+	0.2-	1999 05 18	704	0.9-	0.8+
1997 11 29	704	0.7-	0.0	1999 05 10	704	1.3+	0.2-	1999 05 18	704	0.8-	0.4+
1997 11 30	566	0.1+	0.1+	1999 05 10	704	1.0-	0.4-	1999 05 18	704	1.1-	0.4+
1997 11 30	566	0.6+	0.1+	1999 05 10	704	0.7+	0.0	1999 05 19	704	0.4+	0.1+
1997 11 30	566	0.0	0.5+	1999 05 10	704	0.2-	0.2-	1999 05 19	704	0.1-	0.8+
1997 12 04	704	0.9+	0.0	1999 05 10	704	0.5+	0.7-	1999 05 19	704	0.3-	0.8-
1997 12 04	704	0.3-	0.2+	1999 05 13	704	0.7+	0.9-	1999 05 19	704	0.2-	0.2+
1997 12 04	704	0.5+	0.1+	1999 05 13	704	0.5+	0.6-	1999 05 19	704	0.1-	1.8-
1997 12 04	704	0.9+	0.1+	1999 05 13	704	0.4+	0.3+	1999 06 14	704	0.3+	0.2+
1997 12 04	704	0.2+	1.1+	1999 05 13	704	1.1+	0.4+	1999 06 14	704	0.2-	0.1-
1997 12 05	704	0.1-	1.2+	1999 05 13	704	0.6+	0.2+	1999 06 14	704	0.1-	0.9+
1997 12 05	704	(2.0-	1.4+)	1999 05 17	703	1.0+	0.4-	1999 06 14	704	0.2+	0.3+
1997 12 05	704	0.5+	0.3+	1999 05 17	703	0.1-	0.6+	1999 06 14	704	0.1-	0.2+
1997 12 05	704	(2.6+	1.3+)	1999 05 17	703	0.6-	0.0				

1999 JV₄₅ = 1996 TS₅₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	352.00599		(2000.0)	P	Q
n	0.29921264	ω	94.97939	+0.27536640	+0.96124402
a	2.2138563	Ω	191.03293	-0.90767215	+0.25532863
e	0.2326604	i	4.05669	-0.31670903	+0.10400591
P	3.29	H	15.8	G 0.15	U 2

Residuals in seconds of arc

1992 03 02	809	0.3-	1.6+	1999 05 10	704	0.0	0.7-	1999 05 18	704	0.8-	0.0
1992 03 05	809	0.5+	0.9-	1999 05 13	704	0.2+	0.1-	1999 05 18	704	0.5-	0.2-
1996 08 09	010	0.3-	0.6+	1999 05 13	704	0.4+	0.1+	1999 05 19	704	0.3+	0.4-
1996 08 09	010	0.3+	0.2+	1999 05 13	704	0.3+	0.1-	1999 05 19	704	1.3+	0.4-
1996 08 09	010	0.0	0.3+	1999 05 13	704	0.1-	1.0+	1999 05 19	704	1.2+	0.7-
1996 10 09	327	0.0	0.6-	1999 05 13	704	0.1-	0.4+	1999 05 19	704	0.3-	0.4+
1996 10 09	327	0.2+	0.0	1999 05 14	704	0.0	0.1-	1999 05 19	704	(2.8-	1.3+)
1996 10 09	327	0.0	0.0	1999 05 14	704	0.1-	0.4+	1999 06 08	704	0.9+	0.1-
1996 10 14	327	0.9-	0.0	1999 05 14	704	0.2-	1.0+	1999 06 08	704	0.0	0.1-
1996 10 14	327	0.5+	0.2-	1999 05 14	704	(1.3+	2.1+)	1999 06 08	704	0.1-	0.9-
1996 10 14	327	0.3-	0.5+	1999 05 14	704	0.8-	1.6+	1999 06 08	704	0.6-	0.0
1999 04 19	699	0.4-	0.5-	1999 05 17	703	0.3+	0.1+	1999 06 08	704	0.1-	0.0
1999 04 19	699	0.5+	0.7+	1999 05 17	703	0.4+	0.4+	1999 06 14	704	0.2+	0.4-
1999 04 19	699	0.3+	0.7+	1999 05 17	703	0.9-	0.3+	1999 06 14	704	0.1-	0.3-
1999 05 10	704	0.0	0.2+	1999 05 17	703	(2.0+	1.0-)	1999 06 14	704	0.1-	0.9+

1999 05 10	704	0.3-	0.0	1999 05 18	704	0.1+	1.0-	1999 06 14	704	0.1+	0.6-
1999 05 10	704	0.3-	1.1-	1999 05 18	704	0.2-	0.0	1999 06 14	704	0.8-	0.2+
1999 05 10	704	0.1-	1.2-	1999 05 18	704	0.4+	0.4+				

1999 JM₄₆ = 1994 NZ₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	342.15509		(2000.0)	P	Q
n	0.18310216	ω	159.36232	+0.22269078	+0.97381810
a	3.0714285	Ω	123.47887	-0.90194695	+0.22358796
e	0.1992587	i	3.13979	-0.37000070	+0.04106972
P	5.38	H	14.4	G 0.15	U 5

Residuals in seconds of arc

1994 07 08	809	0.5+	1.1+	1999 05 13	704	0.5+	1.1-	1999 05 18	704	0.1+	0.0
1994 07 08	809	0.5-	0.2-	1999 05 13	704	0.3-	0.9+	1999 05 18	704	1.2+	0.8-
1994 07 08	809	0.3-	0.9+	1999 05 13	704	0.2+	0.4-	1999 06 05	703	0.9+	0.7+
1994 07 09	809	0.2-	0.9-	1999 05 13	704	0.1-	0.8+	1999 06 05	703	0.2-	0.2+
1994 07 09	809	0.1-	0.7-	1999 05 14	704	1.2+	0.1-	1999 06 05	703	0.6+	0.9-
1994 07 09	809	0.6+	0.1+	1999 05 14	704	0.9-	0.9+	1999 06 05	703	0.3-	0.7-
1999 05 10	704	0.3+	0.4-	1999 05 14	704	0.4+	0.6-	1999 06 14	704	0.3+	0.0
1999 05 10	704	1.1-	0.1+	1999 05 14	704	0.1-	0.5+	1999 06 14	704	0.3-	0.2-
1999 05 10	704	0.2+	1.9+	1999 05 18	704	0.1-	0.0	1999 06 14	704	0.6-	0.4+
1999 05 10	704	0.0	0.7+	1999 05 18	704	0.2-	0.9+	1999 06 14	704	0.2-	0.0
1999 05 10	704	0.9-	1.3-	1999 05 18	704	0.4-	1.2-	1999 06 14	704	0.5-	0.6-

1999 JX₄₆ = 1982 JK₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	343.73582		(2000.0)	P	Q
n	0.17361550	ω	144.39386	+0.13359707	+0.99089037
a	3.1823190	Ω	133.27699	-0.91457144	+0.12986806
e	0.1860588	i	1.33590	-0.38172098	+0.03564496
P	5.68	H	13.7	G 0.15	U 5

Residuals in seconds of arc

1982 05 15	675	1.2+	0.3-	1999 05 13	704	0.5+	0.1+	1999 05 19	704	0.4-	0.4-
1982 05 16	675	1.6-	0.6-	1999 05 13	704	0.1+	0.3-	1999 05 19	704	1.6-	0.1+
1982 05 16	675	0.1+	1.1+	1999 05 13	704	0.2-	0.8-	1999 05 19	704	0.4-	0.1-
1982 05 17	675	0.2+	0.2+	1999 05 14	704	0.7+	0.4-	1999 06 05	703	0.3+	0.6-
1982 05 18	675	0.5+	0.8+	1999 05 14	704	0.6-	1.4-	1999 06 05	703	0.3+	0.5+
1992 02 05	691	0.4+	0.7+	1999 05 14	704	0.7-	1.1-	1999 06 05	703	1.4+	0.5+
1992 02 05	691	0.3-	0.4-	1999 05 14	704	0.1-	0.4-	1999 06 05	703	(2.9+	0.6+)
1999 05 10	704	0.6+	0.3+	1999 05 14	704	0.4-	0.6+	1999 06 15	704	0.6+	0.1+
1999 05 10	704	0.4+	0.9-	1999 05 18	704	0.1-	1.4+	1999 06 15	704	0.5+	0.5+
1999 05 10	704	1.0+	0.7+	1999 05 18	704	0.1+	0.2-	1999 06 15	704	0.2+	0.4-
1999 05 10	704	0.1-	0.4+	1999 05 18	704	0.2-	0.1+	1999 06 15	704	0.2+	0.5+
1999 05 10	704	0.0	0.5-	1999 05 18	704	0.2+	0.5+	1999 06 15	704	0.6-	0.4+
1999 05 13	704	0.1-	0.1-	1999 05 18	704	0.7-	0.6+				
1999 05 13	704	0.1-	0.3-	1999 05 19	704	0.9-	0.3-				

1999 JC₄₇ = 1991 NL₂ = 1998 BY₄₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	323.36530		(2000.0)	P	Q
n	0.23736660	ω	75.26212	+0.53294752	+0.82502459
a	2.5833880	Ω	228.52443	-0.84022435	+0.48977544
e	0.1292241	i	14.52309	-0.09994993	+0.28187665
P	4.15	H	13.5	G 0.15	U 3

Residuals in seconds of arc

1991 07 14	675	0.6-	1.6-	1999 05 13	704	0.3-	0.9-	1999 05 18	704	0.3-	0.5-
1991 07 14	675	0.5+	0.3-	1999 05 13	704	0.6-	1.1-	1999 05 18	704	(2.6+	0.6+)
1991 07 18	675	0.5+	0.4+	1999 05 13	704	0.4-	0.1+	1999 05 19	704	0.5-	0.4+
1991 07 18	675	0.1+	0.5-	1999 05 13	704	0.4-	0.1+	1999 05 19	704	0.3-	0.2-
1998 01 31	683	0.2+	0.8-	1999 05 13	704	0.1+	0.8-	1999 05 19	704	0.5-	0.6-
1998 01 31	683	0.1-	0.4-	1999 05 14	704	1.0-	0.4+	1999 05 19	704	0.1+	1.2-
1998 01 31	683	0.4-	0.3-	1999 05 14	704	0.8-	0.0	1999 05 19	704	0.6-	0.5-

1999 JUNE 22

M.P.C. 35001

1998 02 02	683	0.2+	0.1−	1999 05 14	704	0.5−	0.2+	1999 06 09	704	0.3+	0.3+
1998 02 02	683	0.2+	0.3+	1999 05 14	704	0.4−	0.4−	1999 06 09	704	0.7+	0.3−
1998 02 02	683	0.2−	0.2+	1999 05 14	704	0.9−	0.4−	1999 06 09	704	0.7+	1.1+
1999 03 29	699	0.2−	0.3+	1999 05 17	703	0.6+	0.7+	1999 06 09	704	0.2−	0.6+
1999 03 29	699	0.3−	0.4−	1999 05 17	703	0.8+	1.8+	1999 06 09	704	0.6+	1.2+
1999 03 29	699	0.5+	0.5+	1999 05 17	703	0.3+	1.3+	1999 06 14	704	0.7+	0.4+
1999 05 10	704	0.2+	1.1−	1999 05 17	703	0.4+	1.4+	1999 06 14	704	0.3+	0.5+
1999 05 10	704	0.6+	0.3−	1999 05 18	704	0.1−	0.6−	1999 06 14	704	0.5+	0.7+
1999 05 10	704	0.5+	0.1−	1999 05 18	704	0.3−	1.1−	1999 06 14	704	0.5+	0.6+
1999 05 10	704	0.3−	0.8−	1999 05 18	704	0.4+	0.4−	1999 06 14	704	0.4+	0.8+

1999 JJ₄₇ = 1996 TO₄₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	3.75432		(2000.0)	P	Q
<i>n</i>	0.25884157	ω	25.58285	−0.21589164	+0.97461831
<i>a</i>	2.4384472	Ω	232.00581	−0.90826299	−0.22272357
<i>e</i>	0.1216386	<i>i</i>	4.31138	−0.35839802	−0.02265741
<i>P</i>	3.81	<i>H</i>	15.0	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1996 10 04	809	0.9+	0.1−	1999 05 13	704	1.7+	0.3+	1999 05 18	704	0.1−	1.0−
1996 10 04	809	0.3−	0.1+	1999 05 14	704	1.1+	0.5−	1999 05 18	704	0.1−	0.4−
1996 10 04	809	0.9−	0.3−	1999 05 14	704	1.3+	0.6−	1999 05 18	704	0.6−	0.3+
1996 10 05	809	1.7+	1.1+	1999 05 14	704	0.2+	3.5−	1999 06 09	704	0.0	0.0
1996 10 05	809	0.4−	0.0	1999 05 14	704	1.1−	1.0+	1999 06 09	704	0.2+	0.0
1996 10 05	809	1.1−	0.8−	1999 05 14	704	1.0−	0.4+	1999 06 09	704	0.1+	0.0
1999 05 10	704	0.9−	0.0	1999 05 15	691	0.2−	1.1+	1999 06 09	704	0.3−	0.0
1999 05 10	704	0.3+	0.4−	1999 05 15	691	0.3−	0.6+	1999 06 09	704	0.6−	0.6+
1999 05 10	704	0.0	0.0	1999 05 15	691	0.2−	0.6+	1999 06 15	704	0.3+	0.2−
1999 05 10	704	0.0	0.5+	1999 05 17	703	0.2+	0.0	1999 06 15	704	0.4+	0.2−
1999 05 10	704	0.7+	1.0−	1999 05 17	703	0.3+	0.3+	1999 06 15	704	0.0	0.4−
1999 05 13	704	0.4−	0.7+	1999 05 17	703	0.0	0.6+	1999 06 15	704	0.3+	0.4−
1999 05 13	704	0.9−	0.2−	1999 05 17	703	0.3−	1.3+	1999 06 15	704	0.4−	0.5+
1999 05 13	704	0.2−	0.6+	1999 05 18	704	0.0	0.3−				
1999 05 13	704	0.7+	0.7+	1999 05 18	704	0.1−	0.8−				

1999 JS₄₇ = 1978 WH₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	308.50181		(2000.0)	P	Q
<i>n</i>	0.27081177	ω	33.96345	+0.89618964	+0.44320690
<i>a</i>	2.3660524	Ω	299.71530	−0.41207637	+0.81454809
<i>e</i>	0.2155932	<i>i</i>	1.33883	−0.16442991	+0.37427135
<i>P</i>	3.64	<i>H</i>	15.2	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1978 11 30	675	0.2+	0.0	1999 05 10	704	0.4−	1.2+	1999 05 19	704	1.3+	1.9−
1978 12 01	675	0.2−	0.2−	1999 05 13	704	1.0−	0.6+	1999 05 19	704	0.9+	0.9−
1996 10 06	691	0.3+	0.1+	1999 05 13	704	1.0−	0.5−	1999 05 19	704	0.5+	0.3+
1996 10 06	691	0.2+	0.0	1999 05 13	704	0.5−	0.0	1999 06 09	704	0.3−	0.1−
1996 10 06	691	0.5−	0.2−	1999 05 13	704	0.3−	0.4−	1999 06 09	704	0.9+	0.4−
1998 03 25	691	0.1−	0.2−	1999 05 13	704	0.1−	1.4−	1999 06 09	704	0.2−	0.2+
1998 03 25	691	0.0	0.2+	1999 05 18	704	1.0+	0.2+	1999 06 09	704	1.9−	0.7−
1998 03 25	691	0.1+	0.1+	1999 05 18	704	0.8+	1.1+	1999 06 15	704	0.7−	0.1−
1999 05 10	704	0.7+	1.0+	1999 05 18	704	0.5+	0.5+	1999 06 15	704	0.5−	0.3+
1999 05 10	704	0.3−	0.0	1999 05 18	704	0.2+	0.7+	1999 06 15	704	0.6−	1.2+
1999 05 10	704	0.7−	1.3−	1999 05 18	704	0.3−	1.5−	1999 06 15	704	0.2−	1.2+
1999 05 10	704	0.1+	0.4−	1999 05 19	704	1.9+	1.2+				

1999 JA₄₈ = 1995 BO₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	11.56446		(2000.0)	P	Q
<i>n</i>	0.28791141	ω	231.41466	−0.29593991	+0.95464865
<i>a</i>	2.2714166	Ω	21.43990	−0.84627411	−0.24618928
<i>e</i>	0.1507201	<i>i</i>	5.12351	−0.44298951	−0.16744194
<i>P</i>	3.42	<i>H</i>	15.3	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1992 05 07	691	0.2+	0.1+	1999 05 10	704	0.9−	0.6−	1999 06 09	704	0.5+	1.3−
1992 05 07	691	0.4−	0.3−	1999 05 10	704	0.6+	0.5+	1999 06 09	704	0.2−	1.0−
1992 05 07	691	0.3−	0.6−	1999 05 10	704	(2.2−	0.5−)	1999 06 09	704	0.3−	0.6−
1995 01 31	033	0.5+	1.0+	1999 05 13	704	0.8−	0.3−	1999 06 09	704	1.7+	0.3−
1995 01 31	033	0.1+	0.5+	1999 05 13	704	0.2−	0.0	1999 06 09	704	0.5−	0.5−
1995 02 03	033	0.1−	0.5−	1999 05 13	704	0.7−	0.5+	1999 06 09	704	1.4+	0.6−
1996 11 07	327	0.2−	0.1−	1999 05 13	704	1.7+	1.2−	1999 06 09	704	0.9−	0.9+
1996 11 07	327	0.6−	0.4+	1999 05 18	704	0.3−	0.4−	1999 06 15	704	1.4+	0.1−
1996 11 07	327	0.4+	0.3+	1999 05 18	704	0.0	0.9−	1999 06 15	704	0.8+	0.7+
1999 04 15	699	0.9−	0.7−	1999 05 18	704	1.5−	1.6+	1999 06 15	704	0.3+	0.4+
1999 04 15	699	0.2−	0.1+	1999 05 18	704	0.7−	1.3+	1999 06 15	704	0.1−	1.0+
1999 04 15	699	0.4+	0.8+	1999 05 18	704	0.8+	1.7+	1999 06 15	704	1.3−	0.7−
1999 05 10	704	0.6−	0.4−	1999 06 09	704	1.2+	0.1−				
1999 05 10	704	0.7−	0.3+	1999 06 09	704	0.5+	0.4+				

1999 JD₄₈ = 1976 YD₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	112.04174		(2000.0)	P	Q
<i>n</i>	0.23659954	ω	236.82923	−0.62245885	−0.75625608
<i>a</i>	2.5889686	Ω	252.99534	+0.76976431	−0.54501904
<i>e</i>	0.1158497	<i>i</i>	12.16705	+0.14144925	−0.36198203
<i>P</i>	4.17	<i>H</i>	13.4	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1976 12 18	095	0.6+	0.8+	1999 05 13	704	0.2+	1.5−	1999 06 09	704	0.6−	0.3−
1976 12 20	095	0.7−	1.0−	1999 05 18	704	1.3+	1.7−	1999 06 09	704	0.2−	0.4−
1999 05 10	704	0.3−	0.2+	1999 05 18	704	0.9−	0.2−	1999 06 09	704	0.6+	0.2+
1999 05 10	704	0.5−	0.0	1999 05 18	704	0.1+	0.9+	1999 06 09	704	0.5+	0.0
1999 05 10	704	0.5−	0.2+	1999 05 18	704	0.4+	0.5+	1999 06 15	704	0.9+	0.1+
1999 05 10	704	1.6−	1.2+	1999 05 18	704	0.9+	0.6+	1999 06 15	704	0.2+	0.1−
1999 05 10	704	0.1+	0.7+	1999 05 19	704	1.2−	1.1−	1999 06 15	704	0.1+	0.2+
1999 05 13	704	0.4−	0.7+	1999 05 19	704	0.6+	0.4−	1999 06 15	704	0.3+	0.2−
1999 05 13	704	0.2+	0.1−	1999 05 19	704	0.5+	0.1+	1999 06 15	704	0.4−	0.1+
1999 05 13	704	0.3−	0.2+	1999 06 09	704	0.2+	0.1+				

1999 JH₄₈ = 1997 WS₄₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	108.96042		(2000.0)	P	Q
<i>n</i>	0.23686413	ω	223.46308	−0.55693684	−0.80421840
<i>a</i>	2.5870403	Ω	261.43237	+0.80783972	−0.46649981
<i>e</i>	0.2054244	<i>i</i>	12.11277	+0.19291538	−0.36825356
<i>P</i>	4.16	<i>H</i>	14.1	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1997 11 29	704	(3.5−	0.8+)	1998 01 02	704	0.0	0.2−	1999 05 18	704	0.5−	0.6+
1997 11 29	704	(2.7−	0.5−)	1998 01 02	704	0.1+	0.0	1999 05 18	704	0.4−	0.9−
1997 11 29	704	(4.1−	0.6+)	1999 05 10	704	0.4+	0.5+	1999 05 18	704	(0.5+	2.1+)
1997 11 29	704	(4.2−	0.4+)	1999 05 10	704	1.5+	0.4+	1999 06 09	704	0.4−	0.3−
1997 11 29	704	(3.7−	1.2+)	1999 05 10	704	1.7−	0.2+	1999 06 09	704	0.7−	0.2−
1997 12 04	704	1.2−	0.1+	1999 05 10	704	1.4+	0.1+	1999 06 09	704	(2.4+	0.6−)
1997 12 04	704	0.7+	0.7−	1999 05 13	704	1.2−	0.5−	1999 06 09	704	1.5−	1.0−
1997 12 04	704	0.2+	0.6+	1999 05 13	704	0.4+	0.3+	1999 06 15	704	0.2+	0.4−
1997 12 04	704	0.2+	0.1+	1999 05 13	704	1.1+	0.8+	1999 06 15	704	0.1+	0.4−
1997 12 04	704	0.1+	1.3−	1999 05 13	704	0.1−	0.9−	1999 06 15	704	0.0	0.1−
1998 01 02	704	0.1+	0.1+	1999 05 18	704	1.1+	0.9−	1999 06 15	704	0.6+	0.7+
1998 01 02	704	0.2−	0.4+	1999 05 18	704	0.5−	1.0+				

1999 JV₄₈ = 1993 SH₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	246.77654		(2000.0)	P		Q	
<i>n</i>	0.28795076	ω	141.92112	+0.92511420	−0.37468695		
<i>a</i>	2.2712097	Ω	240.18980	+0.32867854	+0.87127409		
<i>e</i>	0.1487234	<i>i</i>	4.05971	+0.19008982	+0.31700339		
<i>P</i>	3.42	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1993 09 19	033	0.6−	0.4−	1999 05 10	704	0.0	0.7+
1993 09 22	033	0.3+	0.1+	1999 05 10	704	0.3−	0.3+
1993 09 22	033	0.3+	0.2+	1999 05 10	704	0.5−	0.2+
1997 12 29	566	1.4+	1.4+	1999 05 10	704	1.0−	0.3−
1997 12 29	566	1.6+	1.4+	1999 05 10	704	0.2−	0.5+
1997 12 29	566	1.4+	1.6+	1999 05 13	704	0.4+	0.1−
1998 01 25	566	1.2−	1.0−	1999 05 13	704	0.5+	0.2+
1998 01 25	566	1.0−	0.9−	1999 05 13	704	0.7+	0.0
1998 01 25	566	1.1−	0.7−	1999 05 13	704	0.5+	0.8−
1998 02 28	691	0.2−	1.1−	1999 05 17	703	0.2+	0.5+
1998 02 28	691	0.3−	0.7−	1999 05 17	703	0.1+	0.1+
1998 02 28	691	0.2−	0.6−	1999 05 17	703	0.2−	1.3+
1998 04 14	704	0.9+	0.1+	1999 05 17	703	1.0−	1.1+
1998 04 14	704	0.6+	0.3+	1999 05 18	704	1.1+	0.0
1998 04 14	704	1.2−	0.5+	1999 05 18	704	0.9+	0.6+
1998 04 14	704	(0.6−	2.3−)	1999 05 18	704	0.0	1.1+

1999 JQ₄₉ = 1995 ER₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	37.43287		(2000.0)	P		Q	
<i>n</i>	0.26714088	ω	58.43975	−0.81431979	+0.58034039		
<i>a</i>	2.3876783	Ω	157.03057	−0.54035078	−0.75209753		
<i>e</i>	0.1345675	<i>i</i>	1.37985	−0.21190636	−0.31233690		
<i>P</i>	3.69	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1995 03 05	033	0.5+	0.6−	1999 05 13	704	0.9−	0.4+
1995 03 05	033	1.3+	0.7−	1999 05 13	704	0.5+	0.1−
1995 03 07	033	1.8−	1.1+	1999 05 14	704	0.1+	0.5−
1996 08 21	809	0.2+	0.5−	1999 05 14	704	1.4+	1.4+
1999 05 10	704	0.2+	0.8−	1999 05 14	704	0.0	0.4−
1999 05 10	704	1.1+	1.0+	1999 05 14	704	0.6−	1.4+
1999 05 10	704	0.8−	0.5−	1999 05 18	704	0.1−	0.1−
1999 05 10	704	0.4−	0.5+	1999 05 18	704	0.5−	1.0−
1999 05 10	704	0.7+	0.0	1999 05 18	704	0.2−	0.1+
1999 05 13	704	1.0+	0.1−	1999 05 18	704	0.6−	1.0−
1999 05 13	704	0.3+	0.5−	1999 05 19	704	1.5−	1.3−
1999 05 13	704	0.2−	0.9+	1999 05 19	704	0.2+	0.8−

1999 JV₄₉ = 1995 DW₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	42.03635		(2000.0)	P		Q	
<i>n</i>	0.26377897	ω	89.15403	−0.88561665	+0.46206425		
<i>a</i>	2.4079231	Ω	118.36518	−0.44440808	−0.81397701		
<i>e</i>	0.1512599	<i>i</i>	3.04145	−0.13485031	−0.35204839		
<i>P</i>	3.74	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	5
Residuals in seconds of arc							
1995 02 25	098	0.2−	0.9−	1999 05 13	704	0.5−	0.0
1995 02 25	098	0.7−	0.9−	1999 05 14	704	0.1+	0.2−
1995 02 27	098	(3.4−	4.0+)	1999 05 14	704	0.7+	1.3−
1995 02 27	098	0.8+	1.5+	1999 05 14	704	1.6−	0.7+
1999 05 10	704	0.2+	0.1+	1999 05 14	704	0.4+	0.7+
1999 05 10	704	0.3−	0.4−	1999 05 14	704	0.9+	0.6+
1999 05 10	704	0.6+	0.4+	1999 05 18	704	0.5−	0.2+
1999 05 10	704	0.3−	0.7+	1999 05 18	704	0.9+	0.0
				1999 06 14	704	0.5+	0.4−

1999 05 10	704	0.4+	0.3+	1999 05 18	704	(0.5+	3.0+)
1999 05 13	704	0.2+	0.7+	1999 05 18	704	0.2−	0.1+
1999 05 13	704	0.2−	0.1+	1999 05 19	704	0.3+	0.4−
1999 05 13	704	0.0	0.0	1999 05 19	704	0.2−	0.4−
1999 05 13	704	0.2−	0.0	1999 05 19	704	0.4+	0.5+

1999 JW₄₉ = 1976 UW₁₈ = 1981 EE₄₉ = 1986 QW

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	193.51163		(2000.0)	P		Q	
<i>n</i>	0.28571888	ω	297.94833	+0.45864824	−0.88707975		
<i>a</i>	2.2830220	Ω	124.65705	+0.83598843	+0.41079779		
<i>e</i>	0.1448383	<i>i</i>	3.64274	+0.30127253	+0.21055807		
<i>P</i>	3.45	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	2
Residuals in seconds of arc							
1976 10 22	381	1.1−	0.3+	1986 09 01	809	0.6−	0.2+
1976 10 22	381	0.0	0.3−	1986 09 01	809	0.4−	0.1−
1976 10 24	381	0.7−	0.4+	1986 09 01	809	0.4−	0.3−
1976 10 24	381	0.2+	0.1−	1995 03 29	691	1.3+	0.6+
1981 03 08	095	1.4+	1.7+	1995 03 29	691	0.2−	0.1−
1986 08 26	809	2.4+	1.2+	1995 03 29	691	0.4−	0.1−
1986 08 26	809	2.4+	1.3+	1995 04 04	691	0.0	0.1−
1986 08 26	809	(2.7+	1.4+)	1995 04 04	691	0.0	0.1+
1986 08 27	809	0.6+	0.3+	1995 04 04	691	0.2−	0.5−
1986 08 27	809	1.0+	0.5+	1999 05 10	704	0.3−	0.1−
1986 08 27	809	0.8+	0.5+	1999 05 10	704	0.3−	0.5+
1986 08 28	809	0.2−	0.8−	1999 05 10	704	(0.4−	2.2+)
1986 08 28	809	0.0	0.4−	1999 05 10	704	1.1−	0.4+
1986 08 28	809	0.4+	0.4−	1999 05 10	704	0.7−	1.3−
1986 08 29	809	1.9−	0.0	1999 05 13	704	1.9−	0.0
1986 08 29	809	1.5−	0.1−	1999 05 13	704	0.4+	1.2−
1986 08 29	809	1.2−	0.0	1999 05 13	704	0.4−	0.1−

1999 JB₅₀ = 1978 WH₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	106.18909		(2000.0)	P		Q	
<i>n</i>	0.21196309	ω	57.27136	−0.68397577	−0.70811663		
<i>a</i>	2.7858810	Ω	76.94434	+0.59449539	−0.68035911		
<i>e</i>	0.1027782	<i>i</i>	10.36999	+0.42279117	−0.18889766		
<i>P</i>	4.65	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	6
Residuals in seconds of arc							
1978 11 29	675	3.4−	0.3−	1999 05 14	704	0.1−	0.4+
1978 11 29	675	3.3+	0.0	1999 05 14	704	0.3−	2.1+
1978 11 30	675	2.8−	0.3+	1999 05 14	704	0.3+	0.2−
1978 11 30	675	2.8+	0.2+	1999 05 14	704	1.2−	2.0+
1999 05 10	704	0.0	0.5−	1999 05 18	704	0.1−	0.6−
1999 05 10	704	0.6+	1.2−	1999 05 18	704	0.0	1.2−
1999 05 10	704	0.9−	1.0−	1999 05 18	704	0.3+	0.3−
1999 05 10	704	0.5−	0.6+	1999 05 18	704	0.1−	0.2−
1999 05 10	704	0.2−	0.7+	1999 05 18	704	0.6−	0.2−
1999 05 13	704	0.4−	0.2−	1999 05 19	704	1.1+	1.3−
1999 05 13	704	0.6+	0.1−	1999 05 19	704	1.1+	0.7−
1999 05 13	704	0.2+	0.8+	1999 05 19	704	0.1+	0.4−
1999 05 13	704	0.5+	1.1+	1999 05 19	704	1.9−	0.1−
1999 05 13	704	0.3−	0.0	1999 06 05	703	0.2+	0.4−

1999 JE₅₀ = 1991 RF₄₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	328.16646		(2000.0)	P		Q	
<i>n</i>	0.21815212	ω	128.64032	+0.39947298	+0.91646339		
<i>a</i>	2.7329378	Ω	164.85660	−0.86580635	+0.38530675		
<i>e</i>	0.0930282	<i>i</i>	4.98940	−0.30133154	+0.10785904		
<i>P</i>	4.52	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	5

1999 JUNE 22

M.P.C. 35003

Residuals in seconds of arc

1991 09 10	033	0.2−	0.2−	1999 05 13	704	1.0+	1.5+	1999 06 05	703	0.3+	0.5−
1991 09 10	033	0.7+	0.4+	1999 05 13	704	0.6+	0.7−	1999 06 05	703	0.3−	0.9−
1991 09 13	033	0.5−	0.8−	1999 05 14	704	0.8+	0.4+	1999 06 08	704	0.7−	1.1−
1991 10 03	691	0.2+	0.4+	1999 05 14	704	0.2−	2.0+	1999 06 08	704	0.9+	1.1−
1991 10 03	691	0.1−	0.3+	1999 05 14	704	0.5−	0.6+	1999 06 08	704	1.7+	1.2+
1991 10 03	691	0.2−	0.0	1999 05 14	704	(0.5+	2.1+)	1999 06 08	704	0.9+	0.0
1999 05 10	704	0.5−	0.2−	1999 05 18	704	0.4−	0.2+	1999 06 14	704	0.3−	0.2+
1999 05 10	704	0.1−	1.2−	1999 05 18	704	0.0	0.4−	1999 06 14	704	0.1−	0.9+
1999 05 10	704	0.9+	0.3+	1999 05 18	704	0.4−	0.4+	1999 06 14	704	0.8−	0.4−
1999 05 10	704	0.9+	1.1−	1999 05 18	704	0.6−	0.3+	1999 06 14	704	0.2−	0.2−
1999 05 13	704	0.1−	0.3−	1999 05 18	704	0.5−	1.0+	1999 06 14	704	0.5−	0.8−
1999 05 13	704	0.6−	0.2+	1999 06 05	703	1.3−	0.8+				
1999 05 13	704	0.5+	1.2−	1999 06 05	703	0.5−	0.2+				

1999 JV₅₀ = 1978 WG₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	297.26321		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.22506608	ω	126.00278	+0.92807062	+0.35218614
a	2.6766773	Ω	213.85427	−0.37113934	+0.90146892
e	0.1945527	i	12.54866	+0.03066768	+0.25163208
P	4.38	H	14.1	G 0.15	U 4

Residuals in seconds of arc

1978 11 28	675	0.8−	0.2+	1999 05 13	704	0.5−	1.7+	1999 06 08	704	0.8+	0.6−
1978 11 29	675	0.8+	0.2−	1999 05 13	704	0.3−	0.2+	1999 06 08	704	0.1−	0.3−
1999 05 10	704	0.6−	0.6−	1999 05 13	704	(3.1−	0.6+)	1999 06 08	704	0.1−	0.4−
1999 05 10	704	0.3+	1.3−	1999 05 18	704	0.3−	0.9−	1999 06 08	704	0.1+	0.7+
1999 05 10	704	0.2−	1.2+	1999 05 18	704	0.7−	0.7+	1999 06 14	704	0.1+	0.5+
1999 05 10	704	0.5−	0.2+	1999 05 18	704	1.3+	0.2−	1999 06 14	704	0.3+	1.3+
1999 05 10	704	0.6−	0.4−	1999 05 18	704	1.1+	0.2+	1999 06 14	704	0.4−	0.4−
1999 05 13	704	0.2−	1.2−	1999 05 18	704	0.0	0.1−	1999 06 14	704	1.0−	0.2−
1999 05 13	704	0.7+	0.5+	1999 06 08	704	0.8+	0.5−				

1999 JZ₅₀ = 1992 HU = 1997 YX₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	339.66273		(2000.0)	P	Q
n	0.28843329	ω	167.35062	+0.43719762	+0.89847368
a	2.2686759	Ω	128.56028	−0.82954799	+0.42005723
e	0.1675623	i	2.93521	−0.34743110	+0.12765961
P	3.42	H	15.0	G 0.15	U 1

Residuals in seconds of arc

1992 04 23	691	0.4+	0.1−	1998 01 02	704	0.1−	0.4+	1999 05 14	704	0.0	0.3+
1992 04 23	691	0.6−	0.2−	1998 01 02	704	0.2−	0.3+	1999 05 18	704	0.3−	0.3−
1992 04 23	691	0.5+	0.1+	1998 01 02	704	0.1−	0.5+	1999 05 18	704	1.0+	0.5+
1992 04 28	691	0.3−	0.4−	1999 05 10	704	0.1+	0.1−	1999 05 18	704	0.5+	0.6+
1992 04 28	691	0.3−	0.7−	1999 05 10	704	0.6+	0.3−	1999 05 18	704	0.0	0.0
1992 04 28	691	0.2−	0.1−	1999 05 10	704	0.4−	0.5−	1999 05 18	704	(2.2−	2.2+)
1995 02 04	691	0.2−	0.8−	1999 05 10	704	1.1+	0.0	1999 06 09	704	0.5+	0.3−
1995 02 04	691	0.3−	0.1−	1999 05 13	704	(0.5+	2.4+)	1999 06 09	704	0.2+	0.1−
1995 02 04	691	0.1+	0.5−	1999 05 13	704	1.0−	0.7−	1999 06 09	704	0.8+	0.3−
1996 06 17	566	0.3+	0.3−	1999 05 13	704	0.1+	0.3+	1999 06 09	704	0.1+	0.8+
1996 06 17	566	0.3+	0.4−	1999 05 13	704	0.3−	0.9+	1999 06 09	704	0.2−	0.5+
1996 06 17	566	0.1+	1.3−	1999 05 13	704	0.3−	0.3−	1999 06 14	704	0.6+	0.2−
1997 12 28	566	0.1−	0.1+	1999 05 14	704	0.1−	0.0	1999 06 14	704	0.7−	0.2+
1997 12 28	566	0.1+	0.2−	1999 05 14	704	0.2−	0.4+	1999 06 14	704	0.4+	0.0
1997 12 28	566	0.1+	0.2+	1999 05 14	704	0.0	0.6+	1999 06 14	704	0.0	0.2−
1998 01 02	704	0.3+	0.7−	1999 05 14	704	1.4−	0.3+	1999 06 14	704	0.6−	0.2−

1999 JH₅₁ = 1998 BM₄₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	5.45727		(2000.0)	P	Q
n	0.21925898	ω	47.46619	−0.35519276	+0.93420361
a	2.7237325	Ω	201.79567	−0.88172661	−0.34661113
e	0.0148058	i	5.12880	−0.31047750	−0.08440581
P	4.50	H	14.5	G 0.15	U 4

Residuals in seconds of arc

1996 10 16	566	0.2+	0.2+	1999 05 10	704	1.5−	0.5+	1999 05 18	704	0.1−	0.1−
1996 10 16	566	0.0	0.6−	1999 05 10	704	1.7−	1.7−	1999 05 18	704	0.3+	0.6+
1996 10 16	566	0.1+	0.7−	1999 05 13	704	0.4−	0.7−	1999 05 18	704	1.9+	1.0+
1998 01 24	566	0.1+	0.4+	1999 05 13	704	1.1+	0.6−	1999 05 18	704	0.2−	1.0+
1998 01 24	566	0.0	0.3+	1999 05 13	704	0.2+	0.8−	1999 05 18	704	0.5+	1.8−
1998 01 24	566	0.3+	0.6+	1999 05 13	704	1.6+	0.4−	1999 06 05	703	0.3+	1.0+
1998 01 26	691	0.4−	0.1−	1999 05 13	704	0.4+	1.5−	1999 06 05	703	0.7+	0.7+
1998 01 26	691	0.3−	0.5−	1999 05 13	704	0.9−	1.1−	1999 06 05	703	0.4+	0.1−
1998 01 26	691	0.3+	0.1−	1999 05 13	704	0.8−	0.2−	1999 06 05	703	0.3+	0.7+
1998 01 29	566	0.1+	0.3−	1999 05 13	704	0.0	0.4−	1999 06 14	704	0.7+	0.5−
1998 01 29	566	0.0	0.1+	1999 05 13	704	0.9−	0.1−	1999 06 14	704	0.0	1.2+
1998 01 29	566	0.1+	0.2−	1999 05 14	704	1.2+	0.5−	1999 06 14	704	0.0	1.0+
1999 05 10	704	0.9−	0.5−	1999 05 14	704	1.3−	0.7−	1999 06 14	704	0.0	0.3+
1999 05 10	704	1.2−	0.6+	1999 05 14	704	0.2−	1.2+	1999 06 14	704	0.6+	0.9+

1999 JJ₅₁ = 1998 AK₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	298.31626		(2000.0)	P	Q
n	0.19885487	ω	223.64799	+0.73659170	+0.67393006
a	2.9070013	Ω	93.88933	−0.60378094	+0.69321770
e	0.0361222	i	3.27616	−0.30476423	+0.25547504
P	4.96	H	13.5	G 0.15	U 4

Residuals in seconds of arc

1994 05 01	691	0.0	0.0	1999 05 10	704	0.5−	0.5−	1999 05 18	704	0.0	0.5−
1994 05 01	691	0.0	0.1+	1999 05 10	704	0.4−	1.0+	1999 05 18	704	0.0	1.4−
1998 01 06	688	0.5+	0.4+	1999 05 10	704	0.4−	0.3+	1999 05 19	704	0.0	0.2−
1998 01 06	688	0.1−	0.2+	1999 05 13	704	0.4−	0.4−	1999 05 19	704	0.6+	0.0
1998 01 08	688	0.2+	0.3+	1999 05 13	704	0.3+	0.7−	1999 05 19	704	0.2−	0.1−
1998 01 08	688	0.6+	0.2−	1999 05 13	704	0.2+	0.1+	1999 05 19	704	0.5+	0.8−
1998 01 08	688	0.7+	0.1−	1999 05 13	704	0.2−	0.4+	1999 06 09	704	0.0	0.1+
1998 01 08	688	0.2+	0.2+	1999 05 13	704	0.0	0.7−	1999 06 09	704	0.5+	0.7+
1998 02 24	566	0.8−	0.1−	1999 05 14	704	0.9+	1.1−	1999 06 09	704	0.3+	0.5−
1998 02 24	566	0.5−	0.4−	1999 05 14	704	0.0	0.4+	1999 06 09	704	0.2+	1.0+
1998 02 24	566	0.5−	0.3−	1999 05 14	704	0.2−	1.1+	1999 06 09	704	1.2−	0.2−
1999 04 19	699	0.6+	0.1+	1999 05 14	704	0.1+	1.0+	1999 06 15	704	0.1+	0.5+
1999 04 19	699	0.6+	1.3+	1999 05 14	704	0.9+	0.1+	1999 06 15	704	0.3+	1.7+
1999 04 19	699	0.4+	0.9+	1999 05 18	704	0.3−	1.7−	1999 06 15	704	0.6−	0.0
1999 05 10	704	0.1−	0.2+	1999 05 18	704	1.2−	0.4−	1999 06 15	704	0.1+	0.1+
1999 05 10	704	0.2−	0.6−	1999 05 18	704	0.1−	0.4−	1999 06 15	704	0.4−	0.3−

1999 JP₅₁ = 1972 TP₅ = 1985 JO₂ = 1989 EE₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	358.65898		(2000.0)	P	Q
n	0.21223564	ω	36.79332	−0.08607747	+0.98667803
a	2.7834954	Ω	228.70911	−0.95225566	−0.12221769
e	0.2166479	i	10.58698	−0.29291609	+0.10737456
P	4.64	H	13.2	G 0.15	U 1

Residuals in seconds of arc

1972 10 06	095	1.8+	1.5−	1999 05 13	704	0.2+	0.1−	1999 05 26	704	(0.4+	2.3−)
1985 05 15	675	1.7−	2.3+	1999 05 13	704	0.9+	0.6−	1999 06 05	703	0.8+	0.2+
1989 03 01	809	0.4+	0.1+	1999 05 13	704	1.2−	0.2+	1999 06 05	703	0.0	0.3+
1989 03 01	809	0.3+	0.7−	1999 05 13	704	0.1−	0.1+	1999 06 05	703	0.1−	0.4+
1989 03 01	809	0.3+	1.6−	1999 05 13	704	0.4+	0.1+	1999 06 05	703	0.0	0.7+

M.P.C. 35004

1996 12 18	691	0.2+	0.9−	1999 05 14	704	0.5+	0.3−	1999 06 09	704	0.3+	0.1−
1996 12 18	691	0.0	0.5−	1999 05 14	704	0.5+	0.9−	1999 06 09	704	0.6−	0.5−
1997 01 10	691	0.9−	0.1−	1999 05 14	704	0.6−	0.1+	1999 06 09	704	0.0	0.4+
1997 01 10	691	0.9−	0.2−	1999 05 14	704	0.4+	0.4+	1999 06 09	704	0.7−	0.2+
1997 01 10	691	1.0−	0.3−	1999 05 18	704	0.5+	1.5−	1999 06 09	704	0.4+	0.8−
1997 12 30	566	0.2+	0.0	1999 05 18	704	0.9−	1.1−	1999 06 09	704	0.0	0.2−
1997 12 30	566	0.2+	0.1−	1999 05 18	704	0.5−	0.2−	1999 06 09	704	0.0	0.5+
1997 12 30	566	0.1−	0.2+	1999 05 18	704	1.0−	0.6−	1999 06 09	704	0.0	0.2+
1999 03 29	699	0.6−	0.7+	1999 05 19	704	0.2−	1.0−	1999 06 09	704	1.1−	0.7+
1999 03 29	699	0.1+	0.3+	1999 05 19	704	0.9−	0.6−	1999 06 14	704	0.8+	1.1−
1999 03 29	699	0.3+	0.6+	1999 05 19	704	1.4−	0.7−	1999 06 14	704	0.4+	0.1+
1999 05 10	704	1.4+	0.2−	1999 05 19	704	(2.5−	0.1+)	1999 06 14	704	0.4+	0.1+
1999 05 10	704	0.5+	0.7−	1999 05 19	704	(2.1−	4.2−)	1999 06 14	704	0.5+	0.3+
1999 05 10	704	0.9+	1.1+	1999 05 26	704	0.9−	0.5−	1999 06 14	704	0.8−	0.8+
1999 05 10	704	0.9+	0.4+	1999 05 26	704	0.2+	0.4−				
1999 05 10	704	(1.0−	2.2+)	1999 05 26	704	0.5−	0.3−				

1999 JU₅₁ = 1987 SN₂ = 1992 EW₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	216.63611		(2000.0)		P		Q
<i>n</i>	0.30683606	ω	351.81218	+0.68505008		−0.72262143	
<i>a</i>	2.1770335	Ω	54.88970	+0.67461318		+0.58142914	
<i>e</i>	0.1082410	<i>i</i>	6.48051	+0.27496080		+0.37384277	
<i>P</i>	3.21	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1987 09 19	071	0.8+	0.8+	1999 05 13	704	0.3−	0.1+	1999 05 18	704	0.5+	0.3+
1987 09 20	071	1.1−	0.2−	1999 05 13	704	0.7+	0.7+	1999 05 18	704	0.9+	0.5−
1992 03 01	809	0.8+	0.2−	1999 05 13	704	1.5+	0.2+	1999 05 18	704	0.2−	0.3−
1992 03 04	809	0.5−	0.3+	1999 05 13	704	1.3−	0.5−	1999 05 18	704	1.2−	1.0−
1992 04 04	809	0.2−	0.3+	1999 05 13	704	0.3−	0.2+	1999 06 09	704	0.0	0.2−
1999 05 10	704	0.0	0.3−	1999 05 14	704	0.3−	0.5+	1999 06 09	704	0.4−	0.3+
1999 05 10	704	1.9+	0.8−	1999 05 14	704	0.2+	0.4−	1999 06 09	704	1.3−	0.6+
1999 05 10	704	0.5+	1.2−	1999 05 14	704	0.7−	1.4+	1999 06 09	704	1.5−	0.7−
1999 05 10	704	0.6+	0.5+	1999 05 14	704	0.8+	1.0+	1999 06 09	704	0.8−	0.4+
1999 05 10	704	0.6+	0.2+	1999 05 14	704	(2.3−	0.8−)				

1999 JC₅₂ = 1996 TD₂₉ = 1998 DO₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	81.39518		(2000.0)		P		Q
<i>n</i>	0.17395395	ω	121.68616	−0.88145957		−0.46961204	
<i>a</i>	3.1781900	Ω	30.38891	+0.39296803		−0.78799693	
<i>e</i>	0.1623964	<i>i</i>	5.66506	+0.26192586		−0.39815245	
<i>P</i>	5.67	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1996 10 07	691	0.1+	0.1−	1998 02 23	566	0.1+	0.0	1999 05 18	704	0.3+	0.4+
1996 10 07	691	0.4+	0.1−	1998 02 23	566	0.3+	0.3+	1999 05 18	704	0.9+	1.3+
1996 10 07	691	0.2+	0.2−	1998 02 23	566	0.2−	0.0	1999 05 18	704	0.8−	0.1−
1996 10 12	691	0.1+	0.1−	1999 05 10	704	0.1+	0.6−	1999 05 19	704	1.2+	1.0−
1996 10 12	691	0.1+	0.3−	1999 05 10	704	1.0−	1.6−	1999 05 19	704	(1.6−	2.1+)
1996 10 12	691	0.1+	0.0	1999 05 10	704	(1.3−	2.2−)	1999 05 19	704	0.5−	1.2+
1996 11 28	327	1.4−	0.2+	1999 05 10	704	1.9−	1.2+	1999 05 19	704	1.1+	0.2+
1996 11 28	327	0.4+	0.6+	1999 05 13	704	1.6−	0.1+	1999 06 15	704	0.0	0.2+
1996 11 28	327	0.2+	0.5−	1999 05 13	704	1.3+	0.7+	1999 06 15	704	0.1−	0.3−
1998 02 22	566	0.2−	0.2−	1999 05 13	704	0.8+	0.3−	1999 06 15	704	0.8+	0.4+
1998 02 22	566	0.3−	0.3−	1999 05 13	704	1.6−	1.1−	1999 06 15	704	0.0	1.2−
1998 02 22	566	0.2+	0.1+	1999 05 18	704	0.8+	0.1−				

1999 JUNE 22

1999 JE₅₂ = 1993 SJ₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	343.01782		(2000.0)		P		Q
<i>n</i>	0.30359684	ω	331.89707	+0.40564129		+0.91372807	
<i>a</i>	2.1924913	Ω	322.02090	−0.83126394		+0.35805788	
<i>e</i>	0.1594262	<i>i</i>	2.19628	−0.38007289		+0.19208218	
<i>P</i>	3.25	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1993 09 16	809	0.9−	0.7−	1999 05 13	704	0.8−	0.4+	1999 05 19	704	1.2−	0.2+
1993 09 16	809	0.2+	0.2+	1999 05 13	704	0.8−	0.3+	1999 05 19	704	0.0	0.5+
1993 09 16	809	1.4−	0.8−	1999 05 13	704	1.5+	0.2+	1999 05 19	704	0.2−	1.0−
1993 09 23	809	2.3+	1.3+	1999 05 13	704	0.0	0.2+	1999 05 19	704	0.4−	0.2−
1993 09 23	809	0.1−	0.1+	1999 05 18	704	0.6+	0.8−	1999 06 15	704	0.7+	0.3−
1993 09 23	809	0.0	0.2−	1999 05 18	704	0.7−	0.2+	1999 06 15	704	0.3−	0.3−
1999 05 10	704	0.5−	0.2+	1999 05 18	704	1.2+	0.4+	1999 06 15	704	0.4+	0.4−
1999 05 10	704	0.2+	1.2−	1999 05 18	704	0.2+	1.1−	1999 06 15	704	0.1+	1.3+
1999 05 10	704	0.8+	1.4+	1999 05 18	704	0.0	0.3+	1999 06 15	704	0.5−	0.9+
1999 05 10	704	1.0−	0.1−	1999 05 19	704	0.8+	1.2−				

1999 JF₅₂ = 1227 T-3 = 1986 WT₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	292.00441		(2000.0)		P		Q
<i>n</i>	0.21375212	ω	81.60916	+0.94653681		+0.29512199	
<i>a</i>	2.7703146	Ω	261.15049	−0.32258759		+0.86878642	
<i>e</i>	0.1698230	<i>i</i>	7.57608	+0.00230335		+0.39763447	
<i>P</i>	4.61	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1977 10 16	675	0.3−	0.6+	1999 05 10	704	0.2−	0.5−	1999 05 19	704	0.2−	0.0
1977 10 16	675	0.8−	0.6−	1999 05 10	704	0.4−	0.1−	1999 05 19	704	0.2+	0.5−
1977 10 17	675	0.8+	0.0	1999 05 10	704	0.8−	0.9−	1999 05 19	704	0.3+	0.3−
1977 10 17	675	0.8+	0.6−	1999 05 10	704	0.1+	0.0	1999 05 19	704	0.5−	1.1−
1977 10 22	675	0.0	1.1−	1999 05 10	704	0.2+	0.3−	1999 06 09	704	0.0	0.8−
1977 10 22	675	0.1−	0.7−	1999 05 13	704	0.3−	0.2−	1999 06 09	704	0.1−	0.5−
1986 11 26	010	(3.1+	3.0−)	1999 05 13	704	0.5−	0.3−	1999 06 09	704	0.1+	0.6−
1986 11 26	010	0.5+	1.3−	1999 05 13	704	0.2−	0.5+	1999 06 09	704	0.1+	0.2+
1986 11 26	010	2.3+	1.8−	1999 05 13	704	0.4−	0.6+	1999 06 09	704	0.2−	0.2−
1995 06 24	691	0.6−	1.0+	1999 05 13	704	1.5+	0.4−	1999 06 15	704	0.3+	0.8−
1995 06 24	691	0.2−	0.9+	1999 05 18	704	0.6+	0.5−	1999 06 15	704	0.0	0.1−
1995 06 24	691	0.4−	1.0+	1999 05 18	704	1.7+	0.7+	1999 06 15	704	0.3−	0.6−
1995 07 22	691	0.2−	0.1−	1999 05 18	704	1.2−	0.7−	1999 06 15	704	0.1+	0.3+
1995 07 22	691	0.3−	0.3+	1999 05 18	704	0.5−	0.3+	1999 06 15	704	0.2−	1.1+
1995 07 22	691	0.5−	0.4+	1999 05 19	704	0.4+	0.2−				

1999 JH₅₂ = 1979 RA₁ = 1992 CY₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	280.63696		(2000.0)		P		Q
<i>n</i>	0.18719375	ω	81.01637	+0.96241615		+0.22673906	
<i>a</i>	3.0265080	Ω	265.77495	−0.26777962		+0.88401855	
<i>e</i>	0.1179950	<i>i</i>	8.62045	+0.04526847		+0.40877941	
<i>P</i>	5.27	<i>H</i>	12.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1979 09 14	095	0.1+	0.4−	1998 04 18	704	0.9+	0.3+	1999 05 13	704	0.6−	0.9−
1992 01 30	809	(0.1−	2.5+)	1998 04 18	704	0.0	1.3+	1999 05 18	704	0.4+	0.1−
1992 01 30	809	1.1−	0.6+	1998 04 18	704	0.1−	0.4+	1999 05 18	704	0.9−	0.6+
1992 01 30	809	1.3−	0.6+	1998 04 18	704	1.6−	1.2+	1999 05 18	704	0.1+	0.8+
1992 02 02	809	1.4+	0.3+	1998 04 28	566	0.6+	0.4+	1999 05 18	704	0.0	0.5+
1992 02 02	809	0.6+	0.2−	1998 04 28	566	0.6+	0.4+	1999 05 18	704	0.2−	1.1+
1992 02 02	809	0.4+	0.5−	1998 04 28	566	0.1−	0.7+	1999 06 09	704	0.8+	0.8−
1992 02 06	809	1.0+	1.5−	1999 05 10	704	0.3+	0.0	1999 06 09	704	0.0	0.9−
1992 02 06	809	0.3−	0.5−	1999 05 10	704	0.0	0.6−	1999 06 09	704	0.1+	0.2−
1992 02 06	809	0.0	1.6−	1999 05 10	704	0.3−	0.1+	1999 06 09	704	0.7+	0.4+
1992 02 12	809	(2.1+	1.5−)	1999 05 10	704	0.3+	0.4+	1999 06 09	704	0.1+	0.9+

1999 JUNE 22

M.P.C. 35005

1992 02 12	809	0.9−	0.6−	1999 05 10	704	1.8−	0.1+	1999 06 15	704	0.7+	0.8−
1992 02 12	809	0.9−	0.7−	1999 05 13	704	0.5−	0.1+	1999 06 15	704	0.5+	0.6−
1998 03 31	699	0.4−	0.4−	1999 05 13	704	0.0	0.3−	1999 06 15	704	0.3+	1.6−
1998 03 31	699	0.9−	0.4+	1999 05 13	704	0.3+	0.3+	1999 06 15	704	0.2+	1.0−
1998 03 31	699	2.0+	1.0−	1999 05 13	704	0.5−	0.2−	1999 06 15	704	0.1−	1.1−

1999 JK₅₂ = 1993 OC₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	335.67078		(2000.0)	P	Q		
<i>n</i>	0.31526802	ω	353.34806	+0.49406296	+0.86856115		
<i>a</i>	2.1380414	Ω	306.25280	−0.79545108	+0.43357500		
<i>e</i>	0.1068222	<i>i</i>	2.75587	−0.35094069	+0.24002970		
<i>P</i>	3.13	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1992 02 09	691	0.5−	1.8−	1993 07 24	809	0.8+	1.2−	1999 05 18	704	0.5−	0.6−
1992 02 09	691	(3.4−	3.2+)	1999 05 10	704	0.1−	1.0+	1999 05 18	704	0.8+	0.2+
1992 02 09	691	(8.3+	0.8+)	1999 05 10	704	0.8+	0.4+	1999 06 09	704	0.8+	0.1−
1993 07 13	809	0.2+	0.4+	1999 05 10	704	0.2+	0.1−	1999 06 09	704	0.5+	0.7−
1993 07 13	809	0.8+	0.2−	1999 05 10	704	0.5−	0.3+	1999 06 09	704	0.2+	1.1−
1993 07 13	809	0.4+	0.2−	1999 05 10	704	0.6−	0.6+	1999 06 09	704	0.4−	0.7−
1993 07 20	809	0.1+	0.5+	1999 05 13	704	0.4−	0.8+	1999 06 09	704	1.0−	0.0
1993 07 20	809	0.5+	0.7+	1999 05 13	704	0.4+	1.2+	1999 06 15	704	0.6−	0.5−
1993 07 20	809	0.9−	0.2+	1999 05 13	704	0.9+	0.1−	1999 06 15	704	0.5+	0.5−
1993 07 20	809	0.6−	0.9−	1999 05 13	704	0.2−	0.4−	1999 06 15	704	1.9−	0.1−
1993 07 20	809	1.2−	0.8−	1999 05 18	704	0.4+	0.3+	1999 06 15	704	0.8+	0.0
1993 07 20	809	1.2−	0.5−	1999 05 18	704	0.3+	0.1+				
1993 07 24	809	1.4+	1.1+	1999 05 18	704	0.6−	0.1+				

1999 JL₅₂ = 1986 RQ₁₀ = 1989 MQ

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	342.34593		(2000.0)	P	Q		
<i>n</i>	0.29035855	ω	27.31451	+0.41577932	+0.90721707		
<i>a</i>	2.2586363	Ω	267.31308	−0.84566208	+0.35979707		
<i>e</i>	0.1652278	<i>i</i>	3.66842	−0.33463891	+0.21795240		
<i>P</i>	3.39	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1986 09 09	095	0.8+	1.2−	1999 05 10	704	0.6+	0.1+	1999 05 19	704	0.1−	0.1+
1989 06 29	808	0.7−	1.2−	1999 05 10	704	0.4+	0.1−	1999 05 19	704	0.2+	0.2−
1989 06 29	808	(3.2−	0.9+)	1999 05 10	704	0.7−	0.1+	1999 05 19	704	0.5+	0.3+
1989 07 01	808	(2.9+	0.3+)	1999 05 13	704	0.1−	0.3−	1999 06 09	704	0.1+	0.5−
1989 07 05	808	0.7+	0.9+	1999 05 13	704	0.5+	0.1−	1999 06 09	704	0.3+	1.2−
1989 07 05	808	0.4−	1.4+	1999 05 13	704	0.1−	0.1+	1999 06 09	704	0.5+	0.2−
1993 11 21	691	0.5−	0.0	1999 05 13	704	0.5+	0.2+	1999 06 09	704	0.1−	1.0+
1993 11 21	691	0.2+	0.2+	1999 05 13	704	0.0	0.7+	1999 06 09	704	0.9−	0.7+
1993 11 21	691	0.1−	0.1+	1999 05 18	704	0.2+	0.4+	1999 06 15	704	0.1−	1.1−
1998 04 14	704	0.3+	0.7−	1999 05 18	704	0.0	0.9+	1999 06 15	704	0.1+	0.7−
1998 04 14	704	1.3−	0.4−	1999 05 18	704	0.2−	0.5+	1999 06 15	704	0.2+	0.7−
1998 04 14	704	0.7+	0.3+	1999 05 18	704	0.2+	0.3+	1999 06 15	704	0.1−	0.7−
1998 04 14	704	0.1+	0.5−	1999 05 18	704	0.2−	1.2+	1999 06 15	704	0.6−	0.5−
1999 05 10	704	0.4+	0.9−	1999 05 19	704	(2.5+	2.6−)				
1999 05 10	704	0.4−	1.0−	1999 05 19	704	1.3−	0.0				

1999 JR₅₂ = 1996 TZ₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	98.73833		(2000.0)	P	Q		
<i>n</i>	0.20621655	ω	326.99576	−0.88657967	−0.46256683		
<i>a</i>	2.8373987	Ω	185.45378	+0.43074606	−0.82327105		
<i>e</i>	0.0214849	<i>i</i>	1.74962	+0.16862480	−0.32902388		
<i>P</i>	4.78	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1991 09 12	691	0.2−	0.3−	1999 05 10	704	0.8−	1.6−	1999 05 18	704	1.0+	0.1+
1991 09 12	691	0.1+	0.1−	1999 05 10	704	0.8+	1.0+	1999 05 18	704	0.1+	1.1+

1991 09 12	691	0.2+	0.2+	1999 05 10	704	0.6−	0.6−	1999 05 22	691	0.2+	0.8−
1996 10 03	327	0.2−	0.1+	1999 05 13	704	0.4+	0.2+	1999 05 22	691	0.3−	0.5−
1996 10 03	327	0.4−	0.2−	1999 05 13	704	0.4−	0.3−	1999 05 22	691	0.1+	0.5−
1996 10 03	327	0.7−	0.0	1999 05 13	704	0.4−	0.2−	1999 06 06	703	0.3+	1.0+
1996 10 05	327	0.4+	0.3+	1999 05 13	704	0.1−	0.1+	1999 06 06	703	0.6+	0.2+
1996 10 05	327	0.5+	0.2−	1999 05 13	704	0.5−	1.1−	1999 06 06	703	0.3+	1.0+
1996 10 05	327	0.4+	0.3−	1999 05 18	704	0.2−	0.2−	1999 06 06	703	0.5+	0.3+
1999 05 10	704	0.7+	0.5+	1999 05 18	704	0.5−	0.0				
1999 05 10	704	0.5−	0.0	1999 05 18	704	0.6−	0.1−				

1999 JT₅₂ = 1979 WQ = 1986 WP₄ = 1993 VG₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	274.13448		(2000.0)	P	Q		
<i>n</i>	0.28517990	ω	157.30437	+0.99132072	−0.12307428		
<i>a</i>	2.2858976	Ω	209.87964	+0.10182253	+0.94115897		
<i>e</i>	0.2184919	<i>i</i>	5.32300	+0.08315886	+0.31475785		
<i>P</i>	3.46	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1979 11 16	095	(14.4+	3.3+)	1999 05 13	704	0.7−	1.2−	1999 06 07	711	0.3−	0.2+
1986 11 25	010	(2.7−	1.3−)	1999 06 05	703	1.2+	0.4+	1999 06 07	426	0.1−	0.1+
1986 11 25	010	0.2+	2.2−	1999 06 05	703	0.9−	0.3+	1999 06 07	426	0.1−	0.2+
1986 11 25	010	(2.8+	1.0−)	1999 06 05	703	0.3−	0.6+	1999 06 07	426	0.0	0.3+
1986 11 25	010	0.6+	1.8−	1999 06 05	703	1.4−	0.3−	1999 06 09	734	0.2+	1.6+
1993 11 11	033	0.1−	1.1+	1999 06 05	046	0.1+	0.0	1999 06 09	734	1.8+	0.2+
1993 11 12	033	(0.4−	2.6+)	1999 06 05	046	0.4+	0.4+	1999 06 09	734	1.5+	1.3+
1993 11 12	033	0.2−	1.4+	1999 06 05	046	0.2+	0.1−	1999 06 09	734	1.8+	0.8+
1993 11 13	033	0.1+	1.2+	1999 06 05	046	0.1+	0.1+	1999 06 09	426	0.3+	0.1−
1999 05 10	704	0.6−	1.4−	1999 06 05	046	0.2−	0.2−	1999 06 09	426	0.2−	0.2+
1999 05 10	704	0.0	1.3−	1999 06 05	046	0.3−	0.2+	1999 06 09	426	0.1+	0.3+
1999 05 10	704	0.3+	0.3−	1999 06 05	046	0.1−	0.1+	1999 06 14	704	0.2+	0.3−
1999 05 10	704	0.6−	0.0	1999 06 06	426	0.0	0.1−	1999 06 14	704	0.7+	0.3+
1999 05 10	704	0.6+	0.5+	1999 06 06	426	0.3−	0.2+	1999 06 14	704	0.1+	0.1+
1999 05 13	704	0.5−	1.2−	1999 06 06	426	0.2−	0.0	1999 06 14	704	0.5+	0.9−
1999 05 13	704	(0.4−	3.5−)	1999 06 07	711	1.9−	0.2+	1999 06 14	704	0.0	0.7−
1999 05 13	704	0.6−	1.1−	1999 06 07	711	0.4−	0.3−				

1999 JX₅₂ = 1983 TK₂ = 1993 SE₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	281.67399		(2000.0)	P	Q		
<i>n</i>	0.29412997	ω	260.11814	+0.99466822	+0.08161864		
<i>a</i>	2.2392876	Ω	95.18055	−0.05055813	+0.91868752		
<i>e</i>	0.1523784	<i>i</i>	3.62893	−0.08988331	+0.38646040		
<i>P</i>	3.35	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1983 10 09	675	0.5−	0.3−	1999 05 10	704	0.0	0.1+	1999 05 13	704	1.3−	1.4−
1983 10 09	675	0.4+	0.4+	1999 05 10	704	0.5+	0.5−	1999 06 12	691	0.3+	0.4+
1993 09 21	675	0.6+	0.5−	1999 05 10	704	0.8−	0.1−	1999 06 12	691	0.3+	0.2+
1993 09 21	675	0.2−	0.0	1999 05 13	704	0.6+	0.1+	1999 06 12	691	0.2+	0.1+
1993 09 23	675	0.2−	0.0	1999 05 13	704	0.8−	0.9−	1999 06 18	691	0.5+	0.2+
1999 05 10	704	0.5+	0.3−	1999 05 13	704	0.1+	0.4−	1999 06 18	691	0.5+	0.3+
1999 05 10	704	0.2−	1.8+	1999 05 13	704	0.7−	0.0	1999 06 18	691	0.3+	0.1+

1999 JB₅₃ = 1979 WG₁ = 1996 VL₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	266.35127		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.23388627	ω	165.20192	+0.99041493	-0.12956792
a	2.6089529	Ω	202.41121	+0.11051150	+0.95118452
e	0.1905084	i	7.21134	+0.08285815	+0.28010740
P	4.21	H	13.9	G 0.15	U 1

M.P.C. 35006

1999 JUNE 22

1996 11 15	372	0.6+	0.5−	1999 05 13	704	0.2−	0.1−	1999 06 05	703	0.7+	1.2−
1996 11 15	372	0.7−	0.8−	1999 05 13	704	0.2−	0.2−	1999 06 09	704	0.5+	0.3−
1996 11 19	372	1.0+	0.4+	1999 05 13	704	0.1−	0.3+	1999 06 09	704	0.3−	0.1−
1998 03 20	704	0.6−	1.2+	1999 05 18	704	0.8−	0.3+	1999 06 09	704	1.0−	1.0−
1998 03 20	704	1.5−	1.1−	1999 05 18	704	0.1+	0.9−	1999 06 09	704	1.7−	0.9+
1998 03 20	704	0.2+	1.2−	1999 05 18	704	0.3−	0.1+	1999 06 14	704	0.1+	0.2+
1998 03 20	704	1.2+	0.2−	1999 05 18	704	0.7+	0.1+	1999 06 14	704	0.0	0.6−
1998 03 20	704	0.4+	0.7+	1999 05 18	704	0.4−	0.4−	1999 06 14	704	0.2−	0.0
1999 05 10	704	1.6+	1.2+	1999 05 19	704	0.5−	0.5−	1999 06 14	704	0.5+	0.8−
1999 05 10	704	1.2+	0.0	1999 05 19	704	(2.7−	2.0−)	1999 06 14	704	0.2+	0.3+
1999 05 10	704	0.8−	0.5+	1999 05 19	704	1.2+	0.4−				
1999 05 10	704	0.4−	0.0	1999 06 05	703	0.2−	0.9+				

1999 JV₅₃ = 1980 GJ

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	33.48690		(2000.0)	P	Q		
<i>n</i>	0.26148075	ω	156.10463	−0.76668211	+0.62420951		
<i>a</i>	2.4220117	Ω	63.37686	−0.61280130	−0.64169133		
<i>e</i>	0.1999113	<i>i</i>	9.67258	−0.19150222	−0.44563968		
<i>P</i>	3.77	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1980 04 13	046	(3.8−	0.1−)	1999 05 10	704	0.3−	0.3+	1999 05 18	704	0.7−	0.2+
1980 04 13	046	(2.6+	1.6+)	1999 05 10	704	0.4−	0.5+	1999 05 18	704	0.0	0.0
1980 04 14	046	0.6−	0.6−	1999 05 10	704	0.3+	0.4+	1999 05 19	704	0.2+	0.6+
1980 04 14	046	1.6+	1.2−	1999 05 10	704	0.3−	1.0+	1999 05 19	704	0.1−	0.2−
1980 04 15	046	0.1−	0.4+	1999 05 10	704	1.5−	0.4+	1999 05 19	704	0.7+	0.4+
1980 04 15	046	1.5−	0.3+	1999 05 13	704	0.2−	0.3+	1999 05 19	704	0.8+	1.0−
1997 11 29	704	0.2+	1.7+	1999 05 13	704	0.0	0.3+	1999 05 19	704	0.4−	0.7−
1997 11 29	704	0.3−	0.5−	1999 05 13	704	0.3−	1.0+	1999 06 05	691	0.1−	0.1−
1997 11 29	704	1.1+	0.8+	1999 05 13	704	0.1−	0.7+	1999 06 05	691	0.2−	0.5+
1997 11 29	704	1.3−	0.8−	1999 05 13	704	0.0	1.2−	1999 06 05	691	0.0	0.1−
1997 11 29	704	(4.3−	0.4−)	1999 05 14	704	0.1+	0.4+	1999 06 15	704	0.0	0.1−
1999 03 24	704	0.9−	0.0	1999 05 14	704	1.3+	0.1−	1999 06 15	704	0.2−	0.2−
1999 03 24	704	(0.8−	2.6+)	1999 05 14	704	0.4+	0.0	1999 06 15	704	0.3+	0.4−
1999 03 24	704	0.3+	0.6+	1999 05 14	704	0.5+	0.4−	1999 06 15	704	0.3−	0.6−
1999 03 24	704	0.1−	1.3−	1999 05 14	704	0.9+	0.1−	1999 06 15	704	0.1−	0.4−
1999 03 24	704	1.6+	0.4+	1999 05 18	704	0.7−	0.5+				

1999 JX₅₃ = 1978 WB₁₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	226.98300		(2000.0)	P	Q		
<i>n</i>	0.26574765	ω	314.94697	+0.78899382	−0.60676660		
<i>a</i>	2.3960162	Ω	82.64940	+0.58755457	+0.69919503		
<i>e</i>	0.1207210	<i>i</i>	5.58694	+0.17963403	+0.37810131		
<i>P</i>	3.71	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1978 11 30	675	0.6−	0.5+	1999 05 13	704	1.2−	0.0	1999 05 18	704	0.7+	0.5+
1978 12 01	675	0.6+	0.5−	1999 05 13	704	1.4+	0.9+	1999 05 18	704	0.1−	1.4+
1999 05 10	704	0.7+	0.2+	1999 05 13	704	0.7−	0.4−	1999 05 19	704	0.2−	1.2−
1999 05 10	704	0.0	0.8−	1999 05 13	704	0.6−	0.8+	1999 05 19	704	1.6+	0.3−
1999 05 10	704	0.5−	1.3−	1999 05 18	704	0.7−	0.4−	1999 05 19	704	0.7−	0.7+
1999 05 10	704	0.6+	1.2+	1999 05 18	704	1.8+	1.4−	1999 05 19	704	2.0−	0.1+

1999 JY₅₃ = 1982 KG₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	341.22406		(2000.0)	P	Q		
<i>n</i>	0.23253578	ω	92.17245	+0.39504003	+0.91838280		
<i>a</i>	2.6190444	Ω	201.14069	−0.86592109	+0.36398480		
<i>e</i>	0.2017123	<i>i</i>	3.61253	−0.30679642	+0.15520342		
<i>P</i>	4.24	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1982 05 16	675	0.4−	0.6−	1999 05 14	704	1.7−	0.1+	1999 06 06	703	1.4+	0.3−
1982 05 16	675	0.5−	0.4+	1999 05 14	704	0.7−	1.3+	1999 06 06	703	0.7+	0.4+
1982 05 17	675	0.6+	0.2−	1999 05 14	704	0.4−	2.0+	1999 06 06	703	0.4+	1.7+
1982 05 18	675	0.4+	1.2+	1999 05 14	704	0.2+	0.7−	1999 06 06	703	0.8+	1.6+
1999 05 10	704	0.4+	0.2+	1999 05 14	704	0.4−	0.4−	1999 06 09	704	0.3−	0.4−
1999 05 10	704	0.3+	0.8−	1999 05 18	704	0.8−	0.7−	1999 06 09	704	1.1−	0.6+
1999 05 10	704	1.1+	0.1+	1999 05 18	704	0.2+	0.3−	1999 06 09	704	0.9−	0.6+
1999 05 10	704	1.6+	0.2+	1999 05 18	704	0.3−	0.2+	1999 06 09	704	0.6−	0.2−
1999 05 10	704	0.7−	1.7−	1999 05 18	704	0.4−	0.0	1999 06 09	704	0.7−	1.0−
1999 05 13	704	0.2+	0.7−	1999 05 18	704	0.6−	0.3+	1999 06 14	704	0.2+	0.0
1999 05 13	704	0.3+	0.3+	1999 05 19	704	0.5−	0.4+	1999 06 14	704	0.2+	0.4−
1999 05 13	704	0.0	0.2+	1999 05 19	704	0.2+	0.3−	1999 06 14	704	0.1+	1.0−
1999 05 13	704	0.6+	0.6+	1999 05 19	704	0.6−	1.9−	1999 06 14	704	0.1−	0.1−
1999 05 13	704	0.4+	0.2−	1999 05 19	704	0.7+	0.0	1999 06 14	704	0.3+	0.4−

1999 JE₅₄ = 1996 XN₃₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	347.77951		(2000.0)	P	Q		
<i>n</i>	0.17259966	ω	186.06081	+0.07495436	+0.99656376		
<i>a</i>	3.1947932	Ω	88.24156	−0.91341365	+0.08279646		
<i>e</i>	0.1528026	<i>i</i>	2.02100	−0.40007168	−0.00232612		
<i>P</i>	5.71	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 12 08	327	0.3−	0.4+	1999 05 13	704	0.2−	0.0	1999 05 18	704	0.3+	0.4−
1996 12 08	327	0.2−	0.0	1999 05 13	704	0.8−	0.5+	1999 05 18	704	0.3+	0.1+
1996 12 08	327	0.6−	0.2−	1999 05 13	704	0.2+	0.5+	1999 05 18	704	0.0	0.2−
1996 12 18	327	0.4+	0.3−	1999 05 13	704	0.6−	0.0	1999 05 18	704	0.7−	0.3−
1996 12 18	327	0.2+	0.3+	1999 05 13	704	0.9−	0.5+	1999 06 08	691	0.2+	0.1+
1996 12 18	327	0.4+	0.1−	1999 05 14	704	0.4−	0.8+	1999 06 08	691	0.1+	0.0
1999 05 10	704	0.1−	0.2−	1999 05 14	704	1.3+	0.8−	1999 06 08	691	0.1+	0.0
1999 05 10	704	0.2−	0.2−	1999 05 14	704	0.1+	1.2+	1999 06 14	691	0.3−	0.3−
1999 05 10	704	2.0+	0.5−	1999 05 14	704	0.2+	0.2+	1999 06 14	691	0.1−	0.1+
1999 05 10	704	0.7+	1.3−	1999 05 14	704	0.8−	0.7+	1999 06 14	691	0.2−	0.1+
1999 05 10	704	0.5−	0.6−	1999 05 18	704	0.2+	0.2−				

1999 JJ₅₄ = 1990 TR₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	90.58271		(2000.0)	P	Q		
<i>n</i>	0.17696030	ω	275.32236	−0.86584883	−0.49397812		
<i>a</i>	3.1420914	Ω	235.09875	+0.48874318	−0.80125312		
<i>e</i>	0.1076127	<i>i</i>	5.54994	+0.10693881	−0.33760784		
<i>P</i>	5.57	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1990 10 10	033	0.4−	0.5−	1999 05 10	704	1.5+	0.5+	1999 05 19	704	0.2−	0.8−
1990 10 11	033	0.3+	0.0	1999 05 13	704	0.4+	1.3−	1999 05 19	704	0.5+	0.2+
1990 10 11	033	0.0	0.1+	1999 05 13	704	0.6+	0.3−	1999 05 19	704	0.6+	1.3+
1990 10 12	033	0.0	0.4−	1999 05 13	704	0.5−	0.8+	1999 06 07	691	0.4−	0.7+
1990 10 13	033	0.1−	0.4+	1999 05 13	704	0.4−	1.7+	1999 06 07	691	0.3−	0.5+
1990 10 14	033	0.2+	0.4+	1999 05 13	704	1.3+	0.4−	1999 06 14	691	0.4−	0.1−
1996 11 08	691	0.1+	0.3+	1999 05 18	704	0.4+	0.6+	1999 06 14	691	0.5−	0.1+
1996 11 08	691	0.2−	0.5+	1999 05 18	704	0.1+	1.0+	1999 06 14	691	0.5−	0.2+
1996 11 08	691	0.1−	0.4+	1999 05 18	704	0.6−	0.4+	1999 06 15	704	0.0	0.8+
1999 05 10	704	0.9+	1.2−	1999 05 18	704	1.1−	0.4+	1999 06 15	704	0.1+	0.2−
1999 05 10	704	0.8−	0.2−	1999 05 18	704	1.0−	0.5−	1999 06 15	704	1.3+	0.2−
1999 05 10	704	0.4+	0.1+	1999 05 19	704	0.6+	0.6+	1999 06 15	704	0.6−	0.9−
1999 05 10	704	0.4−	1.2−	1999 05 19	704	0.3−	0.0	1999 06 15	704	0.8−	1.4−

1999 JUNE 22

M.P.C. 35007

1999 JQ₅₄ = 1995 DN₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	92.46966		(2000.0)	P		Q					
<i>n</i>	0.27367634	ω	152.06012	−0.94696962		−0.32080913					
<i>a</i>	2.3495131	Ω	9.28285	+0.26981565		−0.82460298					
<i>e</i>	0.0711144	<i>i</i>	6.46647	+0.17449370		−0.46595217					
<i>P</i>	3.60	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	1				
Residuals in seconds of arc											
1993 10 15	691	0.1−	0.5+	1997 12 06	704	0.3−	0.1−	1999 05 18	704	0.0	0.2−
1993 10 15	691	0.4−	0.4+	1997 12 06	704	1.0+	0.2+	1999 05 18	704	(0.2+	3.6−)
1993 10 15	691	0.4−	0.8+	1997 12 06	704	0.3+	1.9+	1999 05 18	704	1.2−	0.1−
1995 02 25	691	0.1−	0.1+	1999 05 10	704	1.2−	0.2+	1999 06 09	704	1.1+	0.4+
1995 02 25	691	0.1−	0.3+	1999 05 10	704	0.9−	0.6+	1999 06 09	704	0.6+	0.3−
1995 02 25	691	0.2−	0.5+	1999 05 10	704	0.3−	1.3+	1999 06 09	704	1.0+	1.4+
1995 02 27	691	0.7+	0.2+	1999 05 10	704	0.1+	1.3+	1999 06 09	704	1.3+	1.4−
1995 02 27	691	0.3+	0.1−	1999 05 13	704	0.5−	1.1+	1999 06 09	704	1.0+	0.3+
1995 02 27	691	0.3+	0.1+	1999 05 13	704	1.8+	0.8+	1999 06 15	704	0.1−	0.3−
1995 03 23	033	0.0	0.7−	1999 05 13	704	1.1−	0.0	1999 06 15	704	0.0	0.4−
1995 03 24	033	0.7−	0.0	1999 05 13	704	1.3+	0.7−	1999 06 15	704	0.2+	0.6−
1997 12 06	704	0.8−	0.1−	1999 05 13	704	1.2−	0.3−	1999 06 15	704	0.5−	1.1−
1997 12 06	704	0.2−	1.1−	1999 05 18	704	0.6−	0.1+				

1999 JR₅₄ = 1991 RT₂₄ = 1998 FC₈₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	303.68594		(2000.0)	P		Q					
<i>n</i>	0.22654014	ω	307.79595	+0.94161875		+0.31182153					
<i>a</i>	2.6650536	Ω	34.56601	-0.19251386		+0.80805125					
<i>e</i>	0.2405830	<i>i</i>	12.93193	-0.27621105		+0.49982048					
<i>P</i>	4.35	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	3				
Residuals in seconds of arc											
1991 09 12	675	0.0	0.3-	1999 05 10	704	0.3+	0.7+	1999 05 18	704	1.8-	0.1-
1991 09 12	675	1.4-	0.6+	1999 05 10	704	0.9-	0.5-	1999 06 09	704	0.1-	0.1-
1991 09 17	675	0.7+	0.6-	1999 05 10	704	0.8-	1.2+	1999 06 09	704	0.1+	0.4-
1991 09 17	675	1.1+	0.3-	1999 05 10	704	1.7+	0.5+	1999 06 09	704	0.9+	0.4-
1998 03 24	704	0.7+	0.4+	1999 05 13	704	0.5-	0.0	1999 06 09	704	1.9+	0.8+
1998 03 24	704	0.7+	0.0	1999 05 13	704	0.7-	0.8+	1999 06 09	704	0.4+	1.0-
1998 03 24	704	1.3+	1.1-	1999 05 13	704	0.7-	0.4-	1999 06 15	704	0.6+	0.4-
1998 03 24	704	1.7-	0.4-	1999 05 13	704	(1.1-	2.4-)	1999 06 15	704	0.3+	0.3-
1998 03 25	704	0.5-	0.7+	1999 05 18	704	0.4-	0.0	1999 06 15	704	0.7+	0.1-
1998 03 25	704	0.9+	1.1+	1999 05 18	704	1.4-	0.5-	1999 06 15	704	0.2+	0.7-
1998 03 25	704	1.9-	0.5-	1999 05 18	704	0.2+	0.1+	1999 06 15	704	1.0+	0.9-
1998 03 25	704	0.1-	1.2-	1999 05 18	704	1.1-	1.2+				

1999 JK₅₅ = 1998 BV₄₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	307.47395		(2000.0)	P		Q					
<i>n</i>	0.26814900	ω	208.32575	+0.87363862	+0.48126247						
<i>a</i>	2.3816902	Ω	122.73004	-0.42879076	+0.83113863						
<i>e</i>	0.1513137	<i>i</i>	4.88993	-0.22998706	+0.27855880						
<i>P</i>	3.68	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	5				
Residuals in seconds of arc											
1998 01 28	910	1.3+	0.5-	1999 05 13	704	0.8+	1.5+	1999 05 19	704	0.2-	0.4+
1998 01 28	910	0.7+	0.6-	1999 05 13	704	0.5+	0.9-	1999 05 19	704	0.5-	1.4-
1998 01 28	910	0.7+	0.8-	1999 05 13	704	0.1-	1.4+	1999 05 19	704	1.5-	1.1+
1998 01 30	691	0.8-	0.7+	1999 05 13	704	1.1-	0.9-	1999 06 14	704	0.2+	0.5-
1998 01 30	691	1.0-	0.5+	1999 05 18	704	0.8-	1.3-	1999 06 14	704	0.4-	0.7+
1998 01 30	691	1.0-	0.4+	1999 05 18	704	1.5-	1.3+	1999 06 14	704	0.2-	1.1-
1999 05 10	704	0.9+	0.5-	1999 05 18	704	0.2+	0.1+	1999 06 14	704	0.8+	0.1-
1999 05 10	704	1.1+	1.4+	1999 05 18	704	0.0	0.1-	1999 06 14	704	0.0	0.3-
1999 05 10	704	(2.2+	0.0)	1999 05 19	704	1.3+	0.3-				
1999 05 10	704	0.1-	0.2-	1999 05 19	704	0.6+	0.4-				

1999 JP₅₅ = 1992 DA₂ = 1994 NQ₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	273.86560		(2000.0)	P		Q					
<i>n</i>	0.17509711	ω	245.17279	+0.98181412	+0.10982753						
<i>a</i>	3.1643419	Ω	108.21419	-0.05028933	+0.93699442						
<i>e</i>	0.1275305	<i>i</i>	9.38220	-0.18306289	+0.33163137						
<i>P</i>	5.63	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	2				
Residuals in seconds of arc											
1992 02 28	033	0.7+	0.1+	1999 05 10	704	0.6-	0.1+	1999 05 19	704	0.6-	0.8-
1992 02 29	033	0.4-	0.3+	1999 05 10	704	0.7-	0.1+	1999 06 06	703	0.2+	0.1-
1992 02 29	033	0.2+	1.1+	1999 05 13	704	0.5+	0.0	1999 06 06	703	0.4-	0.2+
1994 07 11	809	0.5-	0.9-	1999 05 13	704	0.9+	0.1-	1999 06 06	703	0.4-	0.8+
1994 07 11	809	0.5-	0.1-	1999 05 13	704	1.2+	0.5-	1999 06 06	703	0.2-	1.2+
1994 07 11	809	1.1+	0.2-	1999 05 13	704	0.7-	1.1-	1999 06 08	704	1.0+	0.4+
1994 07 12	809	0.5+	0.9+	1999 05 13	704	0.4+	1.0-	1999 06 08	704	0.1-	0.5+
1994 07 12	809	0.1-	0.4+	1999 05 18	704	0.2+	0.4-	1999 06 08	704	0.1-	0.4-
1994 07 12	809	0.5-	0.2+	1999 05 18	704	0.5+	0.4-	1999 06 08	704	0.8-	0.3-
1998 03 24	704	0.1-	0.7-	1999 05 18	704	0.3+	0.1-	1999 06 08	704	1.8-	0.3-
1998 03 24	704	0.5-	0.7+	1999 05 18	704	0.7+	0.1-	1999 06 14	704	0.1-	0.5+
1998 03 24	704	0.0	0.6-	1999 05 18	704	0.8-	0.4+	1999 06 14	704	0.3-	0.8+
1998 03 24	704	0.1+	0.5-	1999 05 19	704	0.6-	1.3-	1999 06 14	704	0.3-	0.5+
1999 05 10	704	1.6+	1.2+	1999 05 19	704	0.4+	0.5+	1999 06 14	704	0.2-	0.6+
1999 05 10	704	0.9+	0.0	1999 05 19	704	0.9-	0.1+	1999 06 14	704	0.1+	1.1+
1999 05 10	704	0.3+	0.9-	1999 05 19	704	0.3+	0.8-				

1999 JQ₅₅ = 1998 DU₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	315.50652		(2000.0)	P			Q				
<i>n</i>	0.23568339	ω	173.26789	+0.59028354		+0.80359536					
<i>a</i>	2.5956735	Ω	132.87623	-0.74534940		+0.57884377					
<i>e</i>	0.0212082	<i>i</i>	5.96507	-0.30987032		+0.13847164					
<i>P</i>	4.18	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	5				
Residuals in seconds of arc											
1998 02 26	684	0.1+	0.1+	1999 05 13	704	0.2+	0.8+	1999 06 08	704	0.2+	0.3-
1998 02 26	684	0.0	0.0	1999 05 13	704	0.4-	0.3+	1999 06 08	704	0.4-	0.3+
1998 02 27	684	0.1-	0.1-	1999 05 13	704	0.8-	0.7+	1999 06 08	704	0.5-	0.3+
1998 02 27	684	0.0	0.1-	1999 05 14	704	0.6+	0.8+	1999 06 08	704	1.0+	1.1+
1999 05 10	704	0.5+	0.5+	1999 05 14	704	(2.2-	1.6+)	1999 06 14	704	0.1-	0.2-
1999 05 10	704	0.6+	1.5-	1999 05 14	704	1.6-	0.3-	1999 06 14	704	0.6-	0.2-
1999 05 10	704	0.9+	1.1+	1999 05 18	704	0.9+	0.2-	1999 06 14	704	0.2-	0.5-
1999 05 10	704	0.2+	0.9-	1999 05 18	704	0.7-	1.5-	1999 06 14	704	0.2+	0.4-
1999 05 10	704	0.2+	1.5+	1999 05 18	704	0.4-	0.6+	1999 06 14	704	0.5+	0.1+
1999 05 13	704	0.0	0.4+	1999 05 18	704	0.2-	1.2-				
1999 05 13	704	(2.8+	1.5-)	1999 05 18	704	0.2-	1.2-				

1999 JG₅₆ = 5094 T-3

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	305.56000		(2000.0)	P		Q					
n	0.21326575	ω	239.36823	+0.77851973	+0.61025528						
a	2.7745250	Ω	82.62113	-0.51327778	+0.75350362						
e	0.1368090	i	8.50165	-0.36118272	+0.24458288						
P	4.62	H	14.3	G	0.15	U	4				
Residuals in seconds of arc											
1977 10 11	675	1.8-	0.0	1999 05 10	704	0.8+	0.5-	1999 05 18	704	0.3-	0.5+
1977 10 11	675	1.6-	0.6-	1999 05 10	704	1.4-	1.1+	1999 06 09	704	0.1+	0.7-
1977 10 12	675	0.8-	0.8-	1999 05 10	704	0.4-	0.4+	1999 06 09	704	0.3-	0.1-
1977 10 12	675	0.1-	0.0	1999 05 13	704	1.0+	0.2-	1999 06 09	704	0.1+	1.4+
1977 10 16	675	1.8+	1.1-	1999 05 13	704	0.2+	0.3-	1999 06 09	704	0.0+	1.3+
1977 10 16	675	1.8+	1.2-	1999 05 13	704	0.9+	1.1-	1999 06 14	704	0.9-	0.2-
1977 10 17	675	1.3+	0.0	1999 05 18	704	0.1+	0.8-	1999 06 14	704	0.2-	1.1-
1977 10 17	675	0.1+	0.9+	1999 05 18	704	0.0	1.4-	1999 06 14	704	0.2-	0.3+

M.P.C. 35008

1999 JUNE 22

1977 10 21 675 0.6− 1.3+ 1999 05 18 704 1.0− 1.3+ 1999 06 14 704 0.9+ 0.2−
 1977 10 21 675 0.2− 1.5+ 1999 05 18 704 0.1− 0.9+ 1999 06 14 704 0.7+ 0.5−

1999 JH₅₆ = 1982 DK₁ = 1992 EK₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	77.54647		(2000.0)	P	Q
<i>n</i>	0.29609476	ω	7.14373	−0.99193735	−0.12467571
<i>a</i>	2.2293704	Ω	165.63450	+0.11127117	−0.94264315
<i>e</i>	0.0945347	<i>i</i>	5.25447	+0.06065495	−0.30964473
<i>P</i>	3.33	<i>H</i>	16.0	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1982 02 23	801	0.4−	1.4−	1999 05 13	704	0.4−	1.1−	1999 05 17	704	0.1−	0.3−
1992 03 01	809	0.7+	0.7+	1999 05 13	704	1.2+	1.1−	1999 05 17	704	0.7−	1.0−
1992 03 03	809	0.5−	0.4+	1999 05 13	704	0.0	0.9−	1999 06 05	703	1.2−	1.8+
1992 03 06	809	0.4+	0.8+	1999 05 13	704	0.2+	0.9−	1999 06 05	703	1.0+	0.8+
1999 05 10	704	1.1+	1.6+	1999 05 13	704	0.2−	0.4+	1999 06 05	703	0.6+	0.6+
1999 05 10	704	1.2−	1.1−	1999 05 17	704	1.6−	0.5−	1999 06 05	703	0.6+	0.8+
1999 05 10	704	0.7+	1.0+	1999 05 17	704	0.1+	0.2−				

1999 JV₅₆ = 2314 T-1

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	337.76718		(2000.0)	P	Q
<i>n</i>	0.28505779	ω	176.78163	+0.52389442	+0.85006324
<i>a</i>	2.2865504	Ω	124.80548	−0.78295992	+0.50560420
<i>e</i>	0.1904282	<i>i</i>	3.77802	−0.33542272	+0.14750214
<i>P</i>	3.46	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1971 03 25	675	1.3−	0.2−	1999 05 10	704	0.8+	0.6−	1999 05 19	704	0.0	0.5+
1971 03 25	675	1.0−	0.3−	1999 05 10	704	0.6−	0.9−	1999 05 19	704	1.0−	0.4−
1971 03 26	675	1.0−	0.5−	1999 05 13	704	0.4+	0.1−	1999 05 19	704	0.4−	1.5−
1971 03 26	675	0.6+	0.0	1999 05 13	704	0.6+	0.5+	1999 05 19	704	0.2−	0.5−
1971 03 26	675	2.1+	0.4−	1999 05 13	704	(0.3+	2.9+)	1999 06 06	703	0.2−	0.1−
1971 03 27	675	(2.6−	1.4−)	1999 05 13	704	0.7+	0.3+	1999 06 06	703	0.3−	0.1−
1971 04 02	675	(3.8+	3.0−)	1999 05 13	704	1.3+	0.3+	1999 06 06	703	0.1−	0.4+
1995 02 25	691	0.5+	0.1−	1999 05 14	704	0.3−	0.5+	1999 06 06	703	0.1+	0.8+
1995 02 25	691	0.5+	0.3−	1999 05 14	704	1.1+	1.2+	1999 06 09	704	0.2+	0.7+
1995 02 25	691	0.3+	0.2−	1999 05 14	704	0.5−	1.7+	1999 06 09	704	1.4+	0.8+
1998 02 03	691	0.2−	0.8+	1999 05 14	704	1.6+	0.4−	1999 06 09	704	0.2+	0.3+
1998 02 03	691	0.2−	0.4+	1999 05 14	704	0.3−	0.2+	1999 06 09	704	1.1+	0.3+
1998 02 03	691	0.2−	0.5+	1999 05 18	704	0.5−	0.2+	1999 06 09	704	0.4−	1.1−
1999 03 19	910	1.8−	0.5+	1999 05 18	704	0.5−	0.4−	1999 06 14	704	0.1−	0.3−
1999 03 19	910	1.9−	0.3+	1999 05 18	704	0.1−	0.4+	1999 06 14	704	0.2−	0.1−
1999 03 19	910	1.8−	0.1+	1999 05 18	704	0.6−	0.3−	1999 06 14	704	0.1+	0.2−
1999 05 10	704	(2.4−	1.5−)	1999 05 18	704	0.8+	0.4+	1999 06 14	704	0.1−	0.4−
1999 05 10	704	0.1+	1.3−	1999 05 19	704	0.3−	0.1+	1999 06 14	704	0.2−	0.5−

1999 JE₅₇ = 1996 TQ₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	95.68672		(2000.0)	P	Q
<i>n</i>	0.19512489	ω	305.50278	−0.78166657	−0.62214837
<i>a</i>	2.9439309	Ω	196.17197	+0.61104083	−0.74979126
<i>e</i>	0.1645818	<i>i</i>	9.07241	+0.12500595	−0.22526533
<i>P</i>	5.05	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1991 09 30	691	0.4+	0.6+	1999 05 13	704	(2.9−	1.3−)	1999 06 08	704	0.2+	0.1+
1991 09 30	691	0.7−	0.6+	1999 05 18	704	0.0	0.7−	1999 06 08	704	0.8−	0.5+
1991 09 30	691	0.3−	1.2+	1999 05 18	704	0.4−	0.1−	1999 06 08	704	0.3+	0.5+
1996 10 12	566	1.0−	0.7−	1999 05 18	704	1.0+	0.6+	1999 06 08	704	0.8+	0.5−
1996 10 12	566	0.1−	0.5−	1999 05 18	704	0.4+	1.3+	1999 06 08	704	0.5+	0.1+
1996 10 12	566	0.5+	1.0−	1999 05 18	704	0.4−	0.3−	1999 06 08	704	0.1−	0.4+
1996 10 16	566	(2.9+	0.3−)	1999 05 19	704	0.6−	1.0+	1999 06 08	704	0.4−	0.1−
1996 10 16	566	0.4+	0.3−	1999 05 19	704	0.3−	0.7−	1999 06 08	704	0.7−	1.0+

1996 10 16	566	0.7+	0.1−	1999 05 19	704	1.2+	0.1−	1999 06 08	704	0.7+	1.8+
1999 05 10	704	1.3+	0.1−	1999 05 20	691	0.4−	0.0	1999 06 14	704	0.8−	0.1−
1999 05 10	704	0.9+	1.5−	1999 05 20	691	1.6+	0.5−	1999 06 14	704	0.0	0.5−
1999 05 10	704	0.5+	0.5−	1999 05 20	691	0.1+	0.1−	1999 06 14	704	0.3−	0.5−
1999 05 10	704	1.4−	0.5+	1999 06 06	703	0.7−	1.6−	1999 06 14	704	0.4−	0.6+
1999 05 13	704	0.5−	0.6+	1999 06 06	703	0.2−	0.0	1999 06 14	704	0.1+	0.5+
1999 05 13	704	(2.4+	1.6−)	1999 06 06	703	0.9−	0.2−				
1999 05 13	704	0.3−	1.4−	1999 06 06	703	0.1−	0.1+				

1999 JG₅₇ = 1991 NB₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	317.80383		(2000.0)	P	Q
<i>n</i>	0.23422229	ω	166.64620	+0.62545197	+0.77899891
<i>a</i>	2.6064570	Ω	142.04197	−0.72234405	+0.59959715
<i>e</i>	0.0701712	<i>i</i>	4.13864	−0.29500663	+0.18342288
<i>P</i>	4.21	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1991 07 12	809	0.3+	0.4−	1999 05 10	704	0.3−	1.5+	1999 05 18	704	0.0	0.9+
1991 07 12	809	0.4+	0.6−	1999 05 13	704	0.4−	0.8−	1999 05 18	704	0.4−	0.4+
1991 07 12	809	0.8+	0.7−	1999 05 13	704	0.2−	1.2+	1999 05 18	704	0.3−	0.4+
1991 07 15	809	0.9−	0.4+	1999 05 13	704	0.2+	1.2+	1999 06 09	704	0.4−	0.4−
1991 07 15	809	0.5−	0.5+	1999 05 13	704	0.9+	0.5−	1999 06 09	704	1.1+	1.4−
1991 07 15	809	0.1−	0.9+	1999 05 13	704	1.0+	0.4+	1999 06 09	704	0.3−	0.4+
1998 02 26	691	0.1−	0.2−	1999 05 14	704	0.1−	1.0−	1999 06 09	704	0.8−	1.4−
1998 02 26	691	0.0	0.2−	1999 05 14	704	1.3−	0.3−	1999 06 09	704	0.7+	0.0
1998 02 26	691	0.0	0.2−	1999 05 14	704	0.6+	0.4+	1999 06 14	704	0.4−	1.1−
1999 05 10	704	0.3+	0.2−	1999 05 14	704	0.2−	0.1−	1999 06 14	704	0.2−	0.3+
1999 05 10	704	0.5+	1.3+	1999 05 14	704	0.5+	0.4−	1999 06 14	704	0.5−	0.8−
1999 05 10	704	0.5+	1.0+	1999 05 18	704	0.0	0.1+	1999 06 14	704	0.7−	0.4−
1999 05 10	704	1.0+	0.4−	1999 05 18	704	0.1−	0.1+	1999 06 14	704	0.7−	0.9−

1999 JO₅₇ = 1998 ED₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	2.27819		(2000.0)	P	Q
<i>n</i>	0.20563013	ω	144.31773	−0.24546505	+0.96799982
<i>a</i>	2.8427907	Ω	111.42248	−0.90191250	−0.20830892
<i>e</i>	0.0269588	<i>i</i>	3.21356	−0.35538818	−0.13994192
<i>P</i>	4.79	<i>H</i>	13.3	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1993 01 26	691	0.0	0.6+	1999 05 10	704	1.7−	0.1−	1999 05 19	704	0.8+	0.5−
1993 01 26	691	0.1+	0.3+	1999 05 10	704	0.2+	1.6−	1999 05 19	704	0.3+	1.1+
1993 01 26	691	0.1+	0.2−	1999 05 10	704	(2.1−	1.5+)	1999 05 19	704	1.4+	0.5+
1998 03 03	704	0.2+	0.3+	1999 05 13	704	0.2+	0.6−	1999 05 19	704	1.0−	0.4−
1998 03 03	704	0.6+	1.3+	1999 05 13	704	0.2−	0.8+	1999 05 19	704	0.7−	0.0
1998 03 03	704	0.2+	0.4−	1999 05 13	704	0.1+	0.1+	1999 06 09	704	0.6−	0.2+
1998 03 03	704	0.4+	0.6+	1999 05 13	704	0.4−	0.1+	1999 06 09	704	0.2−	1.0−
1998 03 03	704	0.6−	0.4−	1999 05 13	704	0.6+	0.9−	1999 06 09	704	1.3−	0.7+
1998 03 04	704	0.1−	0.5−	1999 05 14	704	0.3−	0.5+	1999 06 09	704	0.8−	1.9+
1998 03 04	704	0.0	0.9−	1999 05 14	704	1.2+	0.3−	1999 06 11	703	0.1+	0.2−
1998 03 04	704	0.3+	0.6−	1999 05 14	704	1.0+	1.1−	1999 06 11	703	0.3+	0.7+
1998 03 04	704	0.5+	0.3−	1999 05 14	704	0.4+	0.7−	1999 06 11	703	0.3+	1.3+
1998 03 04	704	1.6−	0.9+	1999 05 14	704	0.2−	0.1+	1999 06 11	703	0.6+	1.3+
1999 02 26	704	0.3−	0.7−	1999 05 18	704	0.5+	0.3+	1999 06 15	704	0.1−	0.3−
1999 02 26	704	1.7−	0.4−	1999 05 18	704	0.1−	0.2+	1999 06 15	704	0.0	0.5−
1999 02 26	704	1.4+	0.2+	1999 05 18	704	0.1+	0.1−	1999 06 15	704	0.5−	0.0
1999 02 26	704	0.2+	1.1−	1999 05 18	704	0.4+	0.1−	1999 06 15	704	0.1−	0.1+
1999 05 10	704										

1999 JUNE 22

M.P.C. 35009

1999 JP₅₇ = 1996 NM₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	339.83582		(2000.0)	P	Q
n	0.29959509	ω	157.61326	+0.37098483	+0.92838737
a	2.2119718	Ω	134.15545	-0.85650843	+0.35107006
e	0.0873643	i	1.72633	-0.35883640	+0.12184706
P	3.29	H	15.8	G 0.15	U 4

Residuals in seconds of arc

1996 07 14	566	0.5-	0.5+	1998 01 02	704	1.0-	0.2+	1999 05 19	704	0.6+	1.1+
1996 07 14	566	0.1-	0.5+	1999 05 10	704	1.6+	0.4+	1999 05 19	704	0.9-	1.3-
1996 07 14	566	0.6-	0.4+	1999 05 10	704	0.9+	0.1-	1999 05 19	704	0.9+	0.1-
1996 07 22	566	0.2+	0.0	1999 05 10	704	0.6-	0.4-	1999 05 19	704	0.1-	0.9-
1996 07 22	566	0.2+	0.1+	1999 05 10	704	0.7+	0.3+	1999 06 09	704	0.6+	1.2-
1996 07 22	566	0.1+	0.1-	1999 05 13	704	0.3+	0.1+	1999 06 09	704	0.4-	0.1+
1996 07 23	566	0.3+	0.5-	1999 05 13	704	0.3+	0.1-	1999 06 09	704	1.5-	1.6-
1996 07 23	566	0.1-	0.2+	1999 05 13	704	0.1-	0.2+	1999 06 09	704	0.9+	1.5-
1996 07 23	566	0.4-	0.7+	1999 05 13	704	1.5+	0.3-	1999 06 15	704	0.3-	0.3-
1996 07 23	566	0.0	0.1-	1999 05 13	704	0.4+	0.8+	1999 06 15	704	0.0	0.5-
1996 07 23	566	0.5+	0.2-	1999 05 18	704	0.0	0.7+	1999 06 15	704	0.4-	0.5+
1996 07 23	566	0.2+	0.0	1999 05 18	704	1.0-	1.4+	1999 06 15	704	0.3-	0.4+
1998 01 02	704	0.3+	0.9+	1999 05 18	704	1.6-	1.5+	1999 06 15	704	0.4-	0.1-
1998 01 02	704	0.0	0.5-	1999 05 18	704	0.1-	0.1-				
1998 01 02	704	0.6+	0.4+	1999 05 18	704	0.9-	1.0+				

1999 JS₅₇ = 1980 XO₂ = 1990 VS₁₃ = 1992 JL₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	180.10818		(2000.0)	P	Q
n	0.29109198	ω	201.98404	+0.15755664	-0.98328276
a	2.2548408	Ω	239.05663	+0.92113181	+0.17965182
e	0.0705716	i	6.10899	+0.35593833	-0.02966885
P	3.39	H	14.3	G 0.15	U 4

Residuals in seconds of arc

1980 12 10	095	0.0	0.7+	1999 05 13	704	(1.3+	2.9+)	1999 06 09	704	0.1-	0.3-
1990 11 14	095(19.0+	7.1+)		1999 05 13	704	(0.4+	2.3+)	1999 06 09	704	0.5-	0.1+
1990 11 14	095(18.2+	6.1+)		1999 05 18	704	1.9+	0.5-	1999 06 09	704	0.5+	0.5+
1992 05 04	809	0.8-	0.9+	1999 05 18	704	0.6+	0.8+	1999 06 09	704	0.2-	0.0
1992 05 04	809	0.6-	0.5+	1999 05 18	704	0.9+	0.5+	1999 06 09	704	0.4+	0.2+
1992 05 04	809	0.2+	0.7+	1999 05 18	704	0.2+	0.2+	1999 06 12	691	0.3-	0.2+
1992 05 07	809	0.6+	1.0-	1999 05 18	704	0.8+	0.3+	1999 06 12	691	0.5-	0.3+
1992 05 07	809	0.3+	0.5-	1999 05 19	704	0.6+	0.7-	1999 06 12	691	1.2-	0.3+
1992 05 07	809	0.4+	0.6-	1999 05 19	704	0.2+	0.1+	1999 06 15	704	0.3-	0.0
1999 05 10	704	0.4+	1.7-	1999 05 19	704	0.7+	0.1+	1999 06 15	704	0.4-	0.0
1999 05 10	704	1.1-	1.0-	1999 05 19	704	1.2+	0.7-	1999 06 15	704	0.2+	0.4+
1999 05 10	704	1.6-	0.3-	1999 05 19	704	0.4+	0.5+	1999 06 15	704	0.2-	0.2-
1999 05 10	704	0.3-	0.2+	1999 06 07	691	0.6-	0.4+	1999 06 15	704	0.2-	0.1+
1999 05 13	704	0.7-	0.1-	1999 06 07	691	0.7-	0.4+				
1999 05 13	704	0.3+	0.7+	1999 06 07	691	0.6-	0.3+				

1999 JV₅₇ = 1958 VD₁ = 1974 SC₂ = 1977 QQ = 1982 BU₆ = 1987 UW₈
= 1990 SQ₂₈ = 1990 UP₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	270.50210		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.30668445	ω	338.26325	+0.98416421	-0.16707008
a	2.1777509	Ω	31.53594	+0.17469714	+0.85757967
e	0.1381676	i	6.50249	+0.03002845	+0.48646141
P	3.21	H	13.5	G 0.15	U 2

Residuals in seconds of arc

1958 11 13	760	0.9-	1.6-	1998 01 24	566	0.1-	0.9+	1999 05 19	704	1.1+	1.1+
1958 11 13	760	1.6+	1.4-	1999 05 10	704	0.1+	0.3-	1999 05 19	704	(2.7-	1.2+)
1974 09 19	095	(5.7-	2.7-)	1999 05 10	704	0.6+	0.2+	1999 05 19	704	0.5-	0.4+
1974 09 22	095	(2.0-	3.7-)	1999 05 10	704	0.6+	0.6+	1999 05 19	704	1.3-	0.5+
1977 08 18	095	0.5+	0.3+	1999 05 10	704	0.7+	1.4+	1999 06 09	704	0.1-	0.4+

1982 01 26	381	0.1+	0.0	1999 05 10	704	0.7-	0.8+	1999 06 09	704	0.1+	0.7+
1982 01 26	381	0.9+	0.4+	1999 05 13	704	0.2+	1.0-	1999 06 09	704	0.7-	1.0+
1987 10 23	095	0.3+	2.1+	1999 05 13	704	0.1+	1.3-	1999 06 09	704	0.4+	1.0+
1990 09 24	095	0.1-	0.6+	1999 05 13	704	0.3+	1.4-	1999 06 09	704	0.4+	0.8+
1990 09 24	095	0.0	0.4+	1999 05 13	704	(3.1+	1.2-)	1999 06 15	704	0.1+	0.2-
1990 10 22	399	0.0	0.4-	1999 05 18	704	0.8+	0.8-	1999 06 15	704	0.3-	0.3+
1990 10 22	399	(2.6-	1.4+)	1999 05 18	704	0.3-	0.7-	1999 06 15	704	0.5-	0.4+
1990 10 22	399	1.8-	1.7+	1999 05 18	704	0.2+	0.4-	1999 06 15	704	0.2-	0.2-
1998 01 24	566	0.0	0.8+	1999 05 18	704	0.9-	0.7-	1999 06 15	704	0.0	0.0
1998 01 24	566	0.1-	0.7+	1999 05 18	704	0.4+	0.1-				

1999 JF₅₈ = 1989 RR₂ = 1989 WO₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	274.17816		(2000.0)	P	Q
n	0.26851259	ω	328.03111	+0.99365388	-0.09485440
a	2.3795397	Ω	37.55857	+0.11215112	+0.87661175
e	0.1501098	i	5.69157	-0.00860728	+0.47175681
P	3.67	H	14.4	G 0.15	U 3

Residuals in seconds of arc

1989 09 07	033	1.0+	0.0	1999 05 10	704	1.4+	0.2+	1999 06 09	704	0.8+	0.6+
1989 09 08	033	0.4+	0.8+	1999 05 10	704	0.6+	1.4+	1999 06 09	704	0.2+	1.2-
1989 09 08	033	0.8-	0.3-	1999 05 13	704	0.6+	0.0	1999 06 09	704	0.1+	0.7+
1989 11 28	033	(3.0-	2.8+)	1999 05 13	704	0.1+	1.0-	1999 06 09	704	0.1-	0.7-
1989 11 28	033	(3.0+	1.5+)	1999 05 13	704	0.6-	0.5-	1999 06 09	704	0.7-	0.4-
1989 11 29	033	1.1-	0.7+	1999 05 13	704	(2.2-	0.4-)	1999 06 15	704	0.8+	0.7-
1989 11 29	033	0.1-	1.3+	1999 05 19	704	0.1-	0.9+	1999 06 15	704	0.5+	0.2+
1994 01 18	098	(0.8-	3.3+)	1999 05 19	704	0.6-	0.5+	1999 06 15	704	0.3-	0.1+
1994 01 18	098	0.1+	0.0	1999 05 19	704	0.3+	0.2-	1999 06 15	704	1.1+	0.9+
1999 05 10	704	0.4-	0.4+	1999 05 19	704	1.3-	0.0	1999 06 15	704	0.1+	0.2-
1999 05 10	704	0.5+	1.8+	1999 05 19	704	1.9-	0.2-				

1999 JH₅₈ = 1998 FZ₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	293.59150		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.23420404	ω	337.16473	+0.97766969	+0.20991341
a	2.6065925	Ω	10.73226	-0.18365137	+0.87638726
e	0.1680943	i	3.05258	-0.10214771	+0.43345327
P	4.21	H	13.9	G 0.15	U 5

Residuals in seconds of arc

1998 02 26	566	0.6-	1.0-	1998 03 24	691	0.3+	0.2+	1999 05 19	704	0.7-	0.8-
1998 02 26	566	0.6-	0.7-	1998 03 24	691	0.2+	0.2+	1999 05 19	704	(2.7-	0.2-)
1998 02 26	566	0.5-	0.9-	1999 05 10	704	1.7+	0.1-	1999 06 09	704	0.2+	0.1+
1998 03 20	704	0.1-	0.1+	1999 05 10	704	0.2+	0.5-	1999 06 09	704	0.2+	1.4-
1998 03 20	704	0.1-	0.0	1999 05 10	704	1.3+	0.8-	1999 06 09	704	0.1+	0.6+
1998 03 20	704	0.2-	1.1+	1999 05 10	704	1.1+	1.2-	1999 06 09	704	0.7-	0.3+
1998 03 20	704	0.9+	0.5+	1999 05 13	704	0.4-	0.6-	1999 06 09	704	0.5-	0.7-
1998 03 20	704	0.2-	0.3-	1999 05 13	704	0.0	1.9-	1999 06 15	704	0.0	0.5+
1998 03 22	704	0.2+	0.5+	1999 05 13	704	1.4-	1.7+	1999 06 15	704	0.3+	0.1+
1998 03 22	704	0.0	0.7+	1999 05 13	704	1.0+	1.0+	1999 06 15	704	0.3+	0.9+
1998 03 22	704	(1.3+	2.4+)	1999 05 13	704	1.2-	0.4+	1999 06 15	704	0.2+	0.1-
1998 03 22	704	1.5+	0.5+	1999 05 19	704	0.1+	0.8-	1999 06 15	704	0.3+	0.4+
1998 03 22	704	1.5-	0.8-	1999 05 19	704	1.6-	0.8+				
1998 03 24	691	0.6+	0.2+	1999 05 19	704	0.5-	1.8+				

1999 JL₅₈ = 1998 FW₈₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	323.91992		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.17896744	ω	262.01853	+0.59432493	+0.80075900
a	3.1185547	Ω	44.72615	-0.68980033	+0.55524754
e	0.1329476	i	6.08402	-0.41346509	+0.22468911
P	5.51	H	12.9	G 0.15	U 1

M.P.C. 35010

1999 JUNE 22

Residuals in seconds of arc

1992 01 30	691	0.2−	0.2+	1998 03 25	566	0.3+	0.4−	1999 05 18	704	0.6+	0.2−
1992 01 30	691	0.3+	0.2−	1998 03 25	566	0.3+	0.3−	1999 05 18	704	1.2−	0.6+
1992 01 30	691	0.0	0.5+	1998 03 25	566	0.2+	0.6−	1999 05 19	704	0.3+	0.1+
1995 09 27	327	0.8−	0.3+	1998 03 26	704	0.1+	0.1+	1999 05 19	704	0.9+	0.4+
1995 09 27	327	0.2−	0.7+	1998 03 26	704	0.0	0.4+	1999 05 19	704	0.1+	0.4+
1995 09 27	327	0.2−	0.4+	1998 03 26	704	0.8+	0.9+	1999 05 19	704	0.2+	0.6−
1995 09 27	327	0.2+	0.4+	1999 05 10	704	0.2−	0.8+	1999 05 19	704	0.1−	0.4−
1995 10 15	327	0.4−	0.1−	1999 05 10	704	1.2−	1.4+	1999 06 09	704	0.5+	0.3−
1995 10 15	327	0.1+	0.4+	1999 05 10	704	0.5−	0.2−	1999 06 09	704	0.6+	1.1−
1995 10 15	327	0.3+	0.1+	1999 05 10	704	(1.1+	2.7+)	1999 06 09	704	0.4+	0.9−
1998 03 24	704	0.3+	0.4+	1999 05 10	704	0.5−	0.1+	1999 06 09	704	0.1−	0.8−
1998 03 24	704	0.5−	0.2+	1999 05 13	704	0.2−	0.0	1999 06 09	704	0.0	0.2+
1998 03 24	704	0.3−	0.1−	1999 05 13	704	0.6−	0.1+	1999 06 15	704	0.3+	0.1+
1998 03 24	704	0.4−	0.7−	1999 05 13	704	0.4+	0.5+	1999 06 15	704	0.2+	0.3−
1998 03 25	704	0.1+	0.3+	1999 05 13	704	0.6−	1.5+	1999 06 15	704	0.1+	0.2−
1998 03 25	704	0.4−	0.9+	1999 05 13	704	(0.3+	2.3+)	1999 06 15	704	0.2+	0.0
1998 03 25	704	0.5−	0.1+	1999 05 18	704	0.6+	0.1+	1999 06 15	704	0.2+	0.1+
1998 03 25	704	0.6+	0.8−	1999 05 18	704	0.3−	0.3+				
1998 03 25	704	0.2−	0.0	1999 05 18	704	0.5+	0.1+				

1999 JM₅₈ = 1995 UU₄₄ = 1998 FG₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	322.38784	(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.17758820	<i>ω</i> 42.59600	+0.56706709	+0.82360330		
<i>a</i>	3.1346807	<i>Ω</i> 261.95263	−0.75855885	+0.51717760		
<i>e</i>	0.1043466	<i>i</i> 0.61382	−0.32097255	+0.23281954		
<i>P</i>	5.55	<i>H</i> 13.3	<i>G</i> 0.15	<i>U</i> 1		

Residuals in seconds of arc

1993 04 21	691	0.1+	0.2+	1998 03 22	704	1.3−	0.5−	1999 05 13	704	1.9−	1.8+
1993 04 21	691	0.3+	0.7+	1998 03 22	704	0.2+	1.3+	1999 05 18	704	0.6+	1.2−
1993 04 21	691	0.1+	0.7+	1998 03 26	704	0.4+	1.4−	1999 05 18	704	0.1−	0.5−
1995 10 25	033	0.5+	0.2−	1998 03 26	704	1.2+	0.7+	1999 05 18	704	(2.2+	0.6−)
1995 10 25	033	0.1−	0.2−	1998 03 26	704	0.6−	0.3−	1999 05 19	704	0.1+	0.2−
1995 10 27	399	0.8+	0.8+	1998 03 29	704	0.1+	0.9+	1999 05 19	704	1.2+	1.2−
1995 10 27	399	0.7−	0.2−	1998 03 29	704	0.1+	0.1−	1999 05 19	704	0.3−	1.0−
1995 10 28	399	0.4−	0.9+	1998 03 29	704	0.5−	0.8−	1999 05 19	704	0.3+	0.9−
1995 10 28	399	0.4−	0.6+	1998 03 29	704	1.1+	1.0−	1999 06 09	704	0.3−	0.2+
1996 12 20	327	0.1−	0.8+	1998 03 29	704	0.9+	1.5−	1999 06 09	704	0.3+	1.6+
1996 12 20	327	0.0	1.2+	1999 05 10	704	1.4+	1.6+	1999 06 09	704	0.3−	0.9+
1996 12 20	327	0.1+	1.0+	1999 05 10	704	0.5+	0.3+	1999 06 09	704	0.5−	0.9+
1998 03 20	704	0.6−	1.5+	1999 05 10	704	0.8−	1.2−	1999 06 15	704	0.3+	0.0
1998 03 20	704	1.2−	0.2−	1999 05 10	704	(2.0−	1.6+)	1999 06 15	704	0.6+	0.2−
1998 03 20	704	0.6−	0.5+	1999 05 10	704	0.9+	0.6+	1999 06 15	704	0.5−	0.2−
1998 03 20	704	0.2+	0.1−	1999 05 13	704	0.1−	0.4+	1999 06 15	704	0.2+	0.1−
1998 03 20	704	0.2−	0.0	1999 05 13	704	0.6−	0.4−	1999 06 15	704	0.3+	0.4−
1998 03 22	704	0.7+	0.8−	1999 05 13	704	0.0	0.8+				
1998 03 22	704	0.3−	0.3−	1999 05 13	704	0.9−	1.2+				

1999 JS₅₈ = 1986 WQ₄ = 1996 QD₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	319.54845	(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.28854820	<i>ω</i> 256.99912	+0.85284325	+0.51226539		
<i>a</i>	2.2680736	<i>Ω</i> 72.10500	−0.42833089	+0.79716968		
<i>e</i>	0.2164557	<i>i</i> 6.10499	−0.29864869	+0.31953823		
<i>P</i>	3.42	<i>H</i> 14.6	<i>G</i> 0.15	<i>U</i> 2		

Residuals in seconds of arc

1986 11 25	010	(5.1−	6.6−)	1999 05 10	704	0.4+	0.7−	1999 05 19	704	0.1+	0.1−
1986 11 25	010	(4.3−	5.0−)	1999 05 10	704	0.5−	0.7−	1999 05 19	704	0.3−	0.7+
1986 11 25	010	(5.4−	5.2−)	1999 05 13	704	0.1−	0.4+	1999 05 19	704	0.1+	0.5+
1986 11 25	010	(0.5−	4.1−)	1999 05 13	704	0.6−	0.6+	1999 05 19	704	1.0+	0.3+
1986 11 30	381	0.8+	0.4+	1999 05 13	704	0.3+	0.0	1999 05 19	704	0.7−	0.3+
1986 11 30	381	0.6−	0.3+	1999 05 13	704	0.0	0.1−	1999 06 09	704	0.1−	0.9+
1986 12 01	381	0.3+	0.8+	1999 05 13	704	0.5−	0.7+	1999 06 09	704	0.1+	0.1+

1986 12 01	381	1.4−	0.7+	1999 05 14	704	0.4+	0.1−	1999 06 09	704	0.0	0.1+
1993 11 13	033	0.1+	0.7+	1999 05 14	704	0.7+	1.0+	1999 06 09	704	0.1−	0.2−
1993 11 13	033	0.2−	0.1−	1999 05 14	704	1.0+	0.3−	1999 06 09	704	0.0	0.9−
1996 08 24	399	0.3+	1.0+	1999 05 14	704	0.1+	0.2+	1999 06 15	704	0.1−	0.4−
1996 08 24	399	0.5+	0.9−	1999 05 14	704	0.5+	0.7−	1999 06 15	704	0.7+	0.3−
1996 08 25	399	0.1−	0.5+	1999 05 18	704	1.1−	0.8+	1999 06 15	704	0.0	0.0
1996 08 25	399	0.8−	0.6−	1999 05 18	704	0.1−	0.0	1999 06 15	704	0.0	0.2−
1999 05 10	704	0.3+	0.5+	1999 05 18	704	0.5−	0.8−	1999 06 15	704	0.0	0.3−
1999 05 10	704	0.0	0.4+	1999 05 18	704	0.5−	0.6+				
1999 05 10	704	0.1+	0.8−	1999 05 18	704	0.8+	1.0+				

1999 JV₅₈ = 1993 TD₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	356.34375	(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.29758246	<i>ω</i> 61.88277	+0.15869855	+0.98629004		
<i>a</i>	2.2219340	<i>Ω</i> 217.33509	−0.93001228	+0.13394424		
<i>e</i>	0.1593591	<i>i</i> 4.27802	−0.33149951	+0.09638932		
<i>P</i>	3.31	<i>H</i> 14.6	<i>G</i> 0.15	<i>U</i> 4		

Residuals in seconds of arc

1993 10 10	675	0.0	0.1−	1999 05 13	704	0.2−	0.5−	1999 05 19	704	0.5−	0.8−
1993 10 10	675	0.1−	0.9−	1999 05 13	704	0.1−	0.0	1999 06 09	704	0.3−	0.3−
1993 10 12	809	(1.0+	3.0+)	1999 05 13	704	0.8+	0.7+	1999 06 09	704	0.4−	0.0
1993 10 12	809	(0.5+	3.5+)	1999 05 13	704	1.0−	0.1+	1999 06 09	704	2.0+	1.7+
1993 10 12	809	(0.1−	3.6+)	1999 05 13	704	0.3+	0.5+	1999 06 09	704	0.5−	1.2+
1993 10 13	675	0.2+	0.7−	1999 05 14	704	0.2+	0.4+	1999 06 11	703	0.1+	0.2−
1993 10 13	675	0.3+	0.6+	1999 05 14	704	0.3+	0.2+	1999 06 11	703	0.4+	0.1−
1993 10 22	809	(4.1+	1.5+)	1999 05 14	704	0.6+	0.1−	1999 06 11	703	0.4+	0.1+
1993 10 22	809	(2.9+	2.3+)	1999 05 14	704	1.1−	0.9−	1999 06 11	703	0.3+	0.1+
1993 10 22	809	(0.6−	2.9+)	1999 05 14	704	0.2−	1.7+	1999 06 11	703	0.3+	0.2+
1999 02 26	704	(3.6+	1.7−)	1999 05 18	704	1.1+	0.1−	1999 06 11	703	0.5+	0.1+
1999 02 26	704	(3.9+	0.2−)	1999 05 18	704	0.1−	0.5+	1999 06 11	703	0.1+	0.2−
1999 02 26	704	0.2+	0.5+	1999 05 18	704	0.3+	1.4−	1999 06 11	703	0.9+	0.6+
1999 02 26	704	0.0	1.6−	1999 05 18	704	0.0	0.1+	1999 06 15	704	0.6−	0.1−
1999 05 10	704	0.2+	0.2−	1999 05 18	704	0.2+	0.2+	1999 06 15	704	0.6−	0.2−
1999 05 10	704	0.0	0.3−	1999 05 19	704	0.6+	0.4−	1999 06 15	704	0.9−	0.6−
1999 05 10	704	0.1−	0.3−	1999 05 19	704	0.6−	0.3−	1999 06 15	704	0.7−	0.2−
1999 05 10	704	0.2−	0.7−	1999 05 19	704	0.8−	0.1+	1999 06 15	704	0.5−	0.1+
1999 05 10	704	1.1−	0.6−	1999 05 19	704	0.5+	0.4−				

1999 JB₅₉ = 1996 JP₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	342.47778	(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.29778611	<i>ω</i> 126.04780	+0.53525900	+0.84468024		
<i>a</i>	2.2209209	<i>Ω</i> 176.30810	−0.79193543	+0.50331632		
<i>e</i>	0.2127793	<i>i</i> 3.22107	−0.29382999	+0.18217567		
<i>P</i>	3.31	<i>H</i> 16.0	<i>G</i> 0.15	<i>U</i> 3		

Residuals in seconds of arc

1996 05 15	691	0.4−	1.0+	1999 05 10	704	0.3−	0.6+	1999 05 18	704	0.0	0.3−
1996 05 15	691	0.3+	0.5+	1999 05 13	704	0.3+	0.1+	1999 05 18	704	0.1+	0.5−
1996 05 15	691	0.1+	0.3+	1999 05 13	704	0.2−	0.3+	1999 05 18	704	0.3+	0.3−
1996 05 16	691	0.2−	0.5+	1999 05 13	704	0.6+	0.5+	1999 06 09	704	0.8+	0.1+
1996 05 16	691	0.3−	0.6+	1999 05 13	704	0.1+	0.1+	1999 06 09	704	0.7−	0.2+
1996 05 16	691	0.4−	0.6+	1999 05 13	704	0.0	0.6−	1999 06 09	704	0.2−	0.1−
1996 08 19	566	0.3+	0.7−	1999 05 14	704	0.4−	0.1+	1999 06 09	704	0.2+	0.5−
1996 08 19	566	0.1−	0.3−	1999 05 14	704	0.6+	1.0+	1999 06 09	704	0.1−	0.4+
1996 08 19	566	0.2+	0.3−	1999 05 14	704	0.5−	0.6−	1999 06 14	704	0.0	0.0
1999 05 10	704	0.0	0.6+	1999 05 14	704	1.6+	0.2−	1999 06 14	704	0.3+	0.6−
1999 05 10	704	1.1−	0.6−	1999 05 14	704	0.2−	0.8+	1999 06 14	704	0.2−	0.5−
1999 05 10	704	1.3−	1.4−	1999 05 18	704	0.2+	0.2+	1999 06 14	704	0.1+	0.3−
1999 05 10	704	0.1−	0.4−	1999 05 18	704	0.2−	0.4−	1999 06 14	704	0.3−	0.7+

1999 JUNE 22

M.P.C. 35011

1999 JF₅₉ = 1950 BZ = 4714 T-1 = 1981 CV = 1981 ES₄₈ = 1990 WU₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	191.77680		(2000.0)		P		Q
<i>n</i>	0.28655619	ω	302.90412		+0.33592502		-0.93937853
<i>a</i>	2.2785725	Ω	127.31510		+0.89045552		+0.29295531
<i>e</i>	0.1246477	<i>i</i>	4.95685		+0.30699079		+0.17817171
<i>P</i>	3.44	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1950 01 28	760	(1.1+	3.1+)	1998 04 14	704	0.1-	0.0	1999 05 14	704	1.9-	1.9+
1950 01 28	760	0.1+	2.4+	1998 04 14	704	0.2-	0.1+	1999 05 14	704	1.0-	1.6+
1950 01 28	760	0.4+	0.7+	1998 04 14	704	1.6-	0.1+	1999 05 18	704	0.4-	0.3+
1950 01 28	760	1.0-	1.7-	1998 04 14	704	0.9-	0.7-	1999 05 18	704	0.1+	0.1-
1971 05 13	675	0.1+	0.9-	1999 05 10	704	0.4+	0.4-	1999 05 18	704	0.1-	0.0
1971 05 14	675	0.9-	0.7-	1999 05 10	704	0.0	0.5-	1999 05 18	704	0.5-	1.1-
1971 05 16	675	0.9+	0.9-	1999 05 10	704	0.5-	0.3-	1999 05 18	704	0.5-	0.2+
1981 02 08	688	1.1+	0.9+	1999 05 10	704	0.3+	0.4-	1999 06 09	704	1.0+	0.2-
1981 02 08	688	0.2+	0.5+	1999 05 10	704	0.8-	0.6-	1999 06 09	704	0.7+	0.4-
1981 03 08	095	(2.9-	2.3+)	1999 05 13	704	0.1+	0.5-	1999 06 09	704	0.8+	0.0
1990 11 21	809	0.3+	1.2-	1999 05 13	704	0.1-	0.5-	1999 06 09	704	0.6+	0.1-
1990 11 21	809	0.9+	0.7-	1999 05 13	704	0.2+	0.8-	1999 06 09	704	0.3+	0.3+
1990 11 21	809	0.9+	0.7-	1999 05 13	704	0.3-	0.5-	1999 06 14	704	0.1+	0.3-
1990 11 22	809	(0.2-	2.2-)	1999 05 13	704	0.5-	0.9-	1999 06 14	704	0.3+	0.5-
1990 11 22	809	0.3+	1.3-	1999 05 14	704	0.6-	0.6+	1999 06 14	704	0.6+	0.3-
1990 11 22	809	0.0	1.4-	1999 05 14	704	0.3-	0.5-	1999 06 14	704	0.4+	0.3-
1998 04 14	704	0.1-	0.8-	1999 05 14	704	(1.1+	2.2+)	1999 06 14	704	0.5+	0.4-

1999 JO₅₉ = 1998 EA₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	0.33465		(2000.0)		P		Q
<i>n</i>	0.18965341	ω	92.37789		-0.17693391		+0.98390877
<i>a</i>	3.0002833	Ω	167.34856		-0.94210085		-0.16199789
<i>e</i>	0.0658992	<i>i</i>	6.51699		-0.28485151		-0.07536724
<i>P</i>	5.20	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 03 03	809	0.6+	0.6+	1999 05 13	704	0.3+	1.4-	1999 06 05	691	0.5-	0.1-
1998 03 03	809	0.2+	0.7-	1999 05 13	704	1.0+	0.1-	1999 06 10	691	0.3-	0.1+
1998 03 03	809	0.1-	0.3+	1999 05 18	704	0.2+	0.3+	1999 06 10	691	0.2-	0.2-
1998 03 04	809	1.3+	0.2-	1999 05 18	704	1.3+	0.3+	1999 06 10	691	0.3-	0.3+
1998 03 04	809	0.4-	0.3-	1999 05 18	704	0.9-	0.4-	1999 06 14	704	0.7+	0.1-
1998 03 04	809	1.6-	0.3+	1999 05 19	704	1.0-	0.2-	1999 06 14	704	0.3+	0.1-
1999 05 10	704	0.2-	1.4+	1999 05 19	704	1.1+	1.6+	1999 06 14	704	0.1+	0.6-
1999 05 10	704	1.4-	1.0-	1999 05 19	704	0.1+	1.2+	1999 06 14	704	1.2+	1.7-
1999 05 10	704	0.3+	1.5-	1999 05 19	704	1.2+	0.9+	1999 06 18	691	0.3-	0.5+
1999 05 10	704	0.8-	0.2+	1999 06 05	691	0.3-	0.3-	1999 06 18	691	0.5-	0.1+
1999 05 13	704	0.4-	0.3+	1999 06 05	691	0.2-	0.1+	1999 06 18	691	0.7-	0.3+

1999 JR₅₉ = 1996 TV₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	334.64003		(2000.0)		P		Q
<i>n</i>	0.26713568	ω	118.51281		+0.50596804		+0.86254582
<i>a</i>	2.3877093	Ω	181.89262		-0.82238430		+0.48123990
<i>e</i>	0.1199319	<i>i</i>	5.77636		-0.26015457		+0.15627819
<i>P</i>	3.69	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 09 15	566	0.2+	0.4+	1999 05 13	704	1.0-	0.6+	1999 05 19	704	0.2+	0.6-
1996 09 15	566	0.5-	0.7+	1999 05 13	704	1.1-	0.7+	1999 05 19	704	1.2+	1.0+
1996 09 15	566	0.4-	0.1-	1999 05 13	704	0.5+	0.0	1999 06 05	691	0.3-	0.5+
1996 10 12	566	0.6-	0.3-	1999 05 14	704	1.5-	1.5+	1999 06 05	691	0.2-	0.0
1996 10 12	566	0.2-	0.1-	1999 05 14	704	1.0-	0.4+	1999 06 05	691	0.2-	0.0
1996 10 12	566	0.5-	0.0	1999 05 14	704	0.8-	1.2+	1999 06 10	691	0.6+	0.3-
1996 10 18	566	0.4+	0.0	1999 05 14	704	0.4-	1.8-	1999 06 10	691	0.9+	1.6-
1996 10 18	566	1.4+	0.2-	1999 05 18	704	1.3+	0.5+	1999 06 14	704	0.3+	0.2-

1996 10 18	566	0.3+	0.4-	1999 05 18	704	0.0	0.4-	1999 06 14	704	0.7+	0.3-
1999 05 10	704	0.8+	1.4-	1999 05 18	704	1.6+	0.2-	1999 06 14	704	0.4-	0.6-
1999 05 10	704	0.5+	0.7-	1999 05 18	704	0.7+	0.6-	1999 06 14	704	0.7+	0.8+
1999 05 10	704	0.3-	0.4+	1999 05 18	704	0.3-	0.0	1999 06 14	704	0.2-	0.0
1999 05 10	704	0.8-	0.2-	1999 05 19	704	0.2+	0.6+	1999 06 15	691	0.0	0.5+
1999 05 13	704	0.9-	0.2-	1999 05 19	704	0.1-	1.0-	1999 06 15	691	0.2-	0.0
1999 05 13	704	0.2-	1.0+	1999 05 19	704	(2.0-	2.9+)	1999 06 15	691	0.4-	0.1+

1999 JM₆₀ = 1996 VY₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	307.42911		(2000.0)		P		Q
<i>n</i>	0.23820944	ω	83.96123		+0.85405778		+0.48533714
<i>a</i>	2.5772907	Ω	246.87142		-0.52015497		+0.79342178
<i>e</i>	0.1304566	<i>i</i>	11.74346		-0.00491028		+0.36732783
<i>P</i>	4.14	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 11 02	327	0.6+	0.5+	1999 05 10	704	0.7-	1.6+	1999 05 19	704	1.3+	0.2-
1996 11 02	327	0.6+	0.3-	1999 05 10	704	1.6-	0.2-	1999 05 19	704	1.2-	0.4-
1996 11 02	327	0.5+	0.2+	1999 05 10	704	0.7-	1.2-	1999 05 19	704	1.2-	1.4-
1996 11 13	327	0.2+	0.4+	1999 05 13	704	0.1+	0.1+	1999 06 09	704	1.0+	0.2+
1996 11 13	327	0.7+	0.3+	1999 05 13	704	1.3-	1.8+	1999 06 09	704	0.7+	0.9-
1996 11 13	327	1.0+	0.5+	1999 05 13	704	0.2-	1.1+	1999 06 09	704	1.6+	0.2+
1996 11 28	327	0.1-	0.2-	1999 05 13	704	(1.7+	2.5+)	1999 06 09	704	0.5-	0.2-
1996 11 28	327	0.3-	0.3-	1999 05 18	704	0.3+	0.2+	1999 06 09	704	0.5+	0.9-
1996 11 28	327	0.0	0.5-	1999 05 18	704	(2.2+	1.3+)	1999 06 15	704	0.3-	0.3+
1996 11 28	327	0.3-	0.1+	1999 05 18	704	0.4-	0.9+	1999 06 15	704	0.3-	0.3+
1996 12 17	566	1.2-	0.1-	1999 05 18	704	1.0+	0.1-	1999 06 15	704	0.3-	0.3+
1996 12 17	566	1.2-	0.1-	1999 05 18	704	0.0	1.4-	1999 06 15	704	0.1+	0.2-
1996 12 17	566	0.7-	0.1-	1999 05 19	704	1.6+	0.9-				
1999 05 10	704	0.1+	0.1+	1999 05 19	704	0.2+	1.3+				

1999 JP₆₀ = 1984 JH = 1986 WU₁ = 1993 CB₂ = 1998 FS₁₁₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	285.79334		(2000.0)		P		Q
<i>n</i>	0.19968383	ω	235.08366		+0.94692962		+0.31622039
<i>a</i>	2.8989504	Ω	106.42179		-0.27180415		+0.88352393
<i>e</i>	0.0642586	<i>i</i>	3.44848		-0.17160071		+0.34552877
<i>P</i>	4.94	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1984 05 07	675	0.1-	1.5-	1998 03 22	704	1.6-	0.9+	1999 05 18	704	0.3-	0.9-
1984 05 08	675	1.5-	1.6-	1998 03 26	704	0.4+	0.3-	1999 05 19	704	0.6-	1.3-
1984 05 09	675	0.7+	0.7-	1998 03 26	704	0.7+	0.5+	1999 05 19	704	0.0	0.8+
1986 11 29	046	0.2+	0.7-	1998 03 26	704	0.2-	1.0+	1999 05 19	704	1.6+	0.8+
1986 11 29	046	0.1-	0.6+	1999 05 10	704	0.5+	0.1+	1999 05 19	704	0.3+	0.4-
1986 11 30	046	(1.4+	4.1+)	1999 05 10	704	1.1+	0.4+	1999 05 19	704	0.0	0.1+
1986 11 30	046	(1.7+	3.9+)	1999 05 10	704	0.5+	0.6-	1999 06 09	704	0.7-	0.3+
1993 02 15	399	0.1-	0.3+	1999 05 10	704	0.5-	0.1+	1999 06 09	704	0.1-	0.1-
1993 02 15	399	1.1-	1.1+	1999 05 10	704	1.4-	0.5+	1999 06 09	704	0.3+	0.3+
1998 03 20	704	0.4-	2.1-	1999 05 13	704	0.8-	0.5-	1999 06 09	704	1.0-	0.0
1998 03 20	704	0.0	0.6-	1999 05 13	704	0.4+	1.2+	1999 06 09	704	1.1-	1.0+
1998 03 20	704	0.2+	1.3-	1999 05 13	704	0.5-	0.0	1999 06 15	704	0.1-	0.1+
1998 03 20	704	0.5+	0.0	1999 05 13	704	0.1-	1.6+	1999 06 15	704	0.2-	0.2+
1998 03 20	704	0.4-	0.9+	1999 05 13	704	0.0	2.4+	1999 06 15	704	0.1-	0.2+
1998 03 22	704	0.3+	1.8+	1999 05 18	704	1.2+	0.7-	1999 06 15	704	0.2-	0.3+
1998 03 22	704	2.1+	0.8-	1999 05 18	704	0.7+	2.2-	1999 06 15	704	0.4+	0.5+
1998 03 22	704	0.4-	0.4+	1999 05 18	704	0.0	0.1-				
1998 03 22	704	0.3+	0.6-	1999 05 18	704	0.7+	0.4-				

1999 JT₆₀ = 1997 XQ₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	67.89436		(2000.0)		P	Williams	Q		
<i>n</i>	0.25469917	ω	19.66430		-0.99930668		-0.03165388		
<i>a</i>	2.4648152	Ω	158.49346		+0.02274918		-0.93588494		
<i>e</i>	0.1779808	<i>i</i>	3.06477		+0.02947246		-0.35088090		
<i>P</i>	3.87	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	2		
Residuals in seconds of arc									
1993 11 20	691	0.4+	0.4-	1999 05 10	704	0.6+	0.0	1999 06 09	704 0.1- 0.7+
1993 11 20	691	0.2+	0.5-	1999 05 10	704	0.4-	0.3-	1999 06 09	704 0.1- 0.6-
1993 11 20	691	0.2-	0.3-	1999 05 10	704	0.3+	0.8-	1999 06 09	704 0.0 0.6+
1997 12 04	704	0.1-	0.0	1999 05 10	704	0.1-	0.2-	1999 06 09	704 0.7- 0.3-
1997 12 04	704	(0.5+ 2.1+)		1999 05 10	704	0.6+	0.4-	1999 06 09	704 0.0 0.7-
1997 12 04	704	0.4-	0.1+	1999 05 13	704	0.0	0.4-	1999 06 11	703 1.2+ 0.1+
1997 12 04	704	(2.6- 0.7+)		1999 05 13	704	0.3-	0.6+	1999 06 11	703 0.7- 1.0-
1997 12 04	704	1.2-	0.9+	1999 05 13	704	1.0+	0.6+	1999 06 11	703 0.5- 0.1+
1997 12 05	704	2.0+	0.5-	1999 05 13	704	0.2-	0.5-	1999 06 11	703 0.8- 0.1-
1997 12 05	704	1.2+	0.7-	1999 05 13	704	0.6+	0.7+	1999 06 11	703 0.7- 0.1-
1997 12 05	704	0.5-	0.1-	1999 05 14	704	0.2+	1.6+	1999 06 11	703 1.0- 0.4+
1997 12 05	704	(1.0+ 2.3+)		1999 05 14	704	0.2-	0.6-	1999 06 11	703 0.6- 0.4-
1997 12 05	704	1.4+	0.7+	1999 05 14	704	0.3-	0.1+	1999 06 11	703 0.4- 0.2+
1997 12 30	566	1.1-	0.0	1999 05 14	704	0.7+	0.4+	1999 06 15	704 0.8- 0.4+
1997 12 30	566	0.8-	0.4-	1999 05 14	704	0.3+	0.4+	1999 06 15	704 0.0 0.5+
1997 12 30	566	0.9-	0.3+	1999 05 18	704	0.1+	0.3+	1999 06 15	704 0.5- 0.5-
1999 02 20	704	1.2-	1.2-	1999 05 18	704	1.0+	0.1-	1999 06 15	704 0.5- 0.8-
1999 02 20	704	0.9+	0.9-	1999 05 18	704	0.1-	0.3-	1999 06 15	704 0.6+ 0.1-
1999 02 20	704	0.4-	0.4+	1999 05 18	704	1.8+	0.2-		
1999 02 20	704	(3.2- 0.9+)		1999 05 18	704	0.1+	1.3+		

1999 JW₆₀ = 1994 NW

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	301.42702		(2000.0)		P	Williams	Q		
<i>n</i>	0.18051807	ω	267.13501		+0.96440251		+0.16025092		
<i>a</i>	3.1006703	Ω	83.57819		-0.06164171		+0.90978138		
<i>e</i>	0.3014906	<i>i</i>	12.22076		-0.25715385		+0.38290663		
<i>P</i>	5.46	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	3		
Residuals in seconds of arc									
1992 02 24	691	0.5-	0.2-	1999 05 13	704	0.2+	0.5+	1999 06 09	704 0.1+ 0.5-
1992 02 24	691	0.3+	0.7+	1999 05 13	704	1.1+	0.4+	1999 06 09	704 0.5- 0.3-
1992 02 24	691	1.3+	0.3+	1999 05 13	704	0.3-	0.4-	1999 06 09	704 0.1- 0.3+
1994 07 05	675	0.2-	0.8+	1999 05 13	704	0.2+	1.0-	1999 06 09	704 0.5+ 0.4+
1994 07 05	675	1.0-	0.2-	1999 05 14	704	1.2+	1.3+	1999 06 09	704 0.4- 1.1+
1994 07 08	675	0.3+	0.1-	1999 05 14	704	(2.4+ 0.7+)		1999 06 11	703 1.6+ 0.4-
1994 07 08	675	0.7+	1.2-	1999 05 14	704	0.4-	0.2-	1999 06 11	703 0.3+ 1.7-
1998 04 24	704	0.3-	0.1+	1999 05 14	704	0.3-	1.0+	1999 06 11	703 0.3+ 0.5-
1998 04 24	704	0.4+	0.2-	1999 05 18	704	1.8-	0.2+	1999 06 11	703 0.1- 0.2+
1998 04 24	704	0.8-	0.9-	1999 05 18	704	0.0	0.5+	1999 06 11	703 0.2+ 0.2+
1998 04 24	704	0.3+	0.3+	1999 05 18	704	0.6-	0.8+	1999 06 11	703 0.8+ 0.5+
1998 04 24	704	1.6-	1.0-	1999 05 18	704	1.0-	1.1+	1999 06 11	703 0.4+ 0.2-
1999 05 10	704	0.3-	0.4+	1999 05 18	704	0.2-	1.1+	1999 06 11	703 0.7+ 0.3+
1999 05 10	704	0.1+	1.0+	1999 05 19	704	0.4-	0.0	1999 06 15	704 0.8- 0.1-
1999 05 10	704	1.1+	1.8-	1999 05 19	704	0.9+	0.3+	1999 06 15	704 0.4- 0.2+
1999 05 10	704	1.6+	1.8-	1999 05 19	704	1.3-	0.5-	1999 06 15	704 0.2- 0.1-
1999 05 10	704	0.9+	1.6-	1999 05 19	704	0.1-	0.0	1999 06 15	704 0.2- 0.0
1999 05 13	704	0.3+	0.0	1999 05 19	704	1.0-	0.6+	1999 06 15	704 0.9- 0.3-

1999 JX₆₀ = 1982 KP₂ = 1991 NF₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	268.99938		(2000.0)		P	Williams	Q		
<i>n</i>	0.23334557	ω	256.80360		+0.99307921		-0.05417763		
<i>a</i>	2.6129816	Ω	106.22778		+0.08907466		+0.92570776		
<i>e</i>	0.0987902	<i>i</i>	6.23046		-0.07654667		+0.37433931		
<i>P</i>	4.22	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	2		
Residuals in seconds of arc									
1982 05 16	675	0.5+	1.5-	1999 05 13	704	0.9+	0.6+	1999 05 19	704 (2.5- 2.0+)
1982 05 16	675	0.8-	1.0-	1999 05 13	704	1.1-	0.0	1999 06 09	704 0.5- 0.7+
1982 05 17	675	1.2-	1.0-	1999 05 13	704	1.6+	1.5+	1999 06 09	704 0.6- 0.6+
1982 05 18	675	0.3+	0.3-	1999 05 13	704	0.0	0.9+	1999 06 09	704 1.8- 0.4-
1991 07 10	809	0.9+	0.6-	1999 05 14	704	(2.3- 0.0)		1999 06 09	704 0.3- 0.3-
1991 07 10	809	1.1+	0.4-	1999 05 14	704	1.5-	1.1-	1999 06 11	703 1.5+ 0.3+
1991 07 10	809	1.5+	0.6-	1999 05 14	704	1.1-	0.2+	1999 06 11	703 0.2+ 0.1-
1991 07 11	809	1.4-	0.2-	1999 05 14	704	0.8-	1.0+	1999 06 11	703 0.2+ 0.4+
1991 07 11	809	1.0-	0.2-	1999 05 14	704	0.3-	0.6+	1999 06 11	703 0.3+ 0.2-
1991 07 11	809	1.0-	0.1+	1999 05 18	704	0.5+	0.4+	1999 06 11	703 0.2- 0.1+
1998 02 28	910	0.1-	0.3-	1999 05 18	704	0.2+	0.0	1999 06 11	703 0.3+ 0.6+
1998 02 28	910	0.1-	0.3-	1999 05 18	704	0.3+	1.3-	1999 06 11	703 0.3+ 0.2+
1998 02 28	910	0.1-	0.2-	1999 05 18	704	1.1+	0.1-	1999 06 11	703 0.9+ 1.1+
1999 05 10	704	0.4+	0.8+	1999 05 18	704	0.2-	0.5+	1999 06 14	704 0.4- 0.4+
1999 05 10	704	0.9+	0.2+	1999 05 19	704	0.7+	0.7+	1999 06 14	704 0.1- 0.4+
1999 05 10	704	0.7+	0.7-	1999 05 19	704	0.4-	0.1-	1999 06 14	704 0.2- 0.3-
1999 05 10	704	0.5+	1.7-	1999 05 19	704	0.7-	0.9-	1999 06 14	704 0.3+ 0.2-
1999 05 10	704	(0.2+ 2.6-)		1999 05 19	704	0.3-	0.0	1999 06 14	704 0.3+ 0.8+

1999 JL₆₁ = 1991 LB₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	343.75236		(2000.0)		P	Williams	Q		
<i>n</i>	0.24547062	ω	98.66344		+0.49210282		+0.86992749		
<i>a</i>	2.5262115	Ω	200.91240		-0.83028699		+0.45777546		
<i>e</i>	0.2290103	<i>i</i>	5.23583		-0.26164544		+0.18348786		
<i>P</i>	4.02	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	5		
Residuals in seconds of arc									
1991 06 06	809	0.3+	0.3+	1999 05 13	704	0.3-	0.1+	1999 05 19	704 0.6+ 0.0
1991 06 06	809	0.1+	0.5+	1999 05 13	704	(2.4+ 0.2-)		1999 06 09	704 0.3- 0.4-
1991 06 06	809	0.7-	0.1-	1999 05 13	704	0.1-	1.8-	1999 06 09	704 0.1+ 0.6+
1991 06 08	809	0.9+	0.0	1999 05 18	704	0.3-	1.3+	1999 06 09	704 0.3- 1.2+
1991 06 08	809	0.8-	0.5-	1999 05 18	704	(2.5+ 1.3+)		1999 06 09	704 0.1- 0.0
1991 06 08	809	0.1+	0.4+	1999 05 18	704	0.4+	1.0+	1999 06 09	704 0.5+ 1.1+
1999 05 10	704	0.3-	0.3-	1999 05 18	704	0.8+	0.8+	1999 06 14	704 0.1+ 0.3-
1999 05 10	704	0.0	0.3-	1999 05 19	704	0.2+	0.1-	1999 06 14	704 0.1- 0.9-
1999 05 10	704	0.3+	1.1-	1999 05 19	704	0.7-	0.6+	1999 06 14	704 0.3- 0.7-
1999 05 10	704	1.5-	0.6-	1999 05 19	704	0.6-	0.7+	1999 06 14	704 0.3+ 0.6-
1999 05 10	704	1.0+	0.2-	1999 05 19	704	1.0+	0.3+	1999 06 14	704 0.4- 0.9-

1999 JR₆₁ = 1992 DO₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	346.69285		(2000.0)		P	Williams	Q		
<i>n</i>	0.30499723	ω	62.71809		+0.39793562		+0.91644712		
<i>a</i>	2.1857750	Ω	230.79463		-0.85974871		+0.35651964		
<i>e</i>	0.1493080	<i>i</i>	3.11402		-0.32012402		+0.18170973		
<i>P</i>	3.23	<i>H</i>	16.2	<i>G</i>	0.15	<i>U</i>	5		
Residuals in seconds of arc									
1992 02 29	809	1.0-	0.4-	1999 05 13	704	0.9-	0.7-	1999 06 09	704 0.6- 0.5+
1992 03 03	809	1.0+	0.6-	1999 05 18	704	0.1+	1.1-	1999 06 09	704 0.6+ 0.9-
1992 03 05	809	0.1-	0.8+	1999 05 18	704	0.2-	0.5-	1999 06 09	704 0.4+ 0.3+
1999 05 10	704	0.5-	1.2-	1999 05 18	704	1.8+	0.2+	1999 06 09	704 0.0 0.1+
1999 05 10	704	1.0-	0.3+	1999 05 18	704	1.9+	0.9+	1999 06 09	704 (2.7+ 1.3+)
1999 05 10	704	0.9-	0.1-	1999 05 18	704	0.1-	1.5+	1999 06 15	704 0.2- 0.5+
1999 05 10	704	1.8-	0.2+	1999 05 19	704	0.3-	1.2-	1999 06 15	704 0.6- 1.2-

1999 JUNE 22

1999 05 13	704	0.9+	0.2+	1999 05 19	704	1.2+	0.4-	1999 06 15	704	0.3-	0.0
1999 05 13	704	0.4+	0.6+	1999 05 19	704	1.1-	1.8+	1999 06 15	704	0.2-	0.5-
1999 05 13	704	0.4+	0.7+	1999 05 19	704	0.5+	0.1+	1999 06 15	704	0.1+	0.1-

1999 JS₆₁ = 1989 CF₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	310.99049		(2000.0)	<i>P</i>	<i>Q</i>		
<i>n</i>	0.31661273	ω	132.69579	+0.79190850	+0.61063903		
<i>a</i>	2.1319833	Ω	189.66862	-0.56189416	+0.72808183		
<i>e</i>	0.0360862	<i>i</i>	0.32458	-0.23907298	+0.31147523		
<i>P</i>	3.11	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1989 02 02	033	0.4-	0.2-	1999 05 18	704	1.1+	0.3+	1999 06 09	704	(1.3+	2.1-)
1989 02 04	033	0.1+	0.8-	1999 05 18	704	0.6+	0.3+	1999 06 09	704	0.3+	2.0-
1999 05 10	704	0.8+	0.7-	1999 05 18	704	0.3+	0.7-	1999 06 09	704	0.2-	0.5-
1999 05 10	704	0.4-	1.1+	1999 05 18	704	0.6+	1.0+	1999 06 15	704	0.3-	0.8-
1999 05 10	704	0.9-	1.4+	1999 05 18	704	0.4-	0.2+	1999 06 15	704	0.1-	0.6-
1999 05 10	704	(2.9-	2.8+)	1999 05 19	704	0.1+	1.6+	1999 06 15	704	0.3-	0.4-
1999 05 13	704	0.7+	1.2-	1999 05 19	704	0.0	0.0	1999 06 15	704	0.4-	0.5-
1999 05 13	704	1.0-	1.2+	1999 05 19	704	0.7+	0.6+	1999 06 15	704	0.6-	0.0
1999 05 13	704	1.0-	0.8-	1999 05 19	704	0.6-	0.5+				
1999 05 13	704	0.3+	1.6+	1999 06 09	704	0.3+	1.7-				

1999 JT₆₁ = 1992 UV₃ = 1998 GZ₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	168.93470		(2000.0)	<i>P</i>	<i>Q</i>		
<i>n</i>	0.22575043	ω	16.29584	+0.13326054	-0.95779004		
<i>a</i>	2.6712651	Ω	66.63046	+0.87551804	-0.00667261		
<i>e</i>	0.2928983	<i>i</i>	16.10974	+0.46444568	+0.28739122		
<i>P</i>	4.37	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 09 29	675	0.8-	0.8-	1998 04 03	704	0.2+	0.4+	1999 05 19	704	0.3-	0.8+
1992 09 29	675	(0.0	9.8+)	1999 05 10	704	1.6-	0.2+	1999 05 19	704	0.1-	1.8+
1992 10 20	095	(1.2+	2.7+)	1999 05 10	704	0.5+	1.2+	1999 05 19	704	0.5-	0.4-
1992 10 28	402	(3.1+	0.1-)	1999 05 10	704	0.5+	0.1+	1999 05 19	704	0.5+	0.3-
1992 10 28	402	0.5+	0.4+	1999 05 10	704	0.6-	1.1-	1999 05 19	704	1.6-	0.4+
1992 10 30	402	1.0+	0.3-	1999 05 10	704	1.7-	0.1-	1999 06 09	704	1.7+	0.9-
1992 10 30	402	0.3-	0.0	1999 05 13	704	0.5-	0.9+	1999 06 09	704	0.4+	0.5-
1998 04 02	704	0.1-	0.1+	1999 05 13	704	0.3-	0.8+	1999 06 09	704	1.0+	0.1-
1998 04 02	704	0.6-	0.7-	1999 05 13	704	(2.1-	1.0-)	1999 06 09	704	0.6+	0.9-
1998 04 02	704	0.8-	0.3+	1999 05 13	704	0.0	0.2+	1999 06 15	704	0.7+	1.0-
1998 04 02	704	0.1-	0.2-	1999 05 13	704	0.8-	1.3+	1999 06 15	704	0.6+	0.2-
1998 04 02	704	0.5-	0.2+	1999 05 18	704	1.4-	1.1+	1999 06 15	704	1.0+	0.5-
1998 04 03	704	0.1+	0.7-	1999 05 18	704	0.3-	1.3-	1999 06 15	704	0.9+	1.3-
1998 04 03	704	0.4+	0.2+	1999 05 18	704	0.7-	0.1+	1999 06 15	704	1.0+	1.4-
1998 04 03	704	0.1+	0.0	1999 05 18	704	1.3+	0.4-				
1998 04 03	704	1.0+	0.2-	1999 05 18	704	1.0-	0.6+				

1999 JC₆₂ = 1993 SD₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	354.39210		(2000.0)	<i>P</i>	<i>Q</i>		
<i>n</i>	0.30215908	ω	232.88193	+0.27437926	+0.95724380		
<i>a</i>	2.1994408	Ω	53.29298	-0.84203553	+0.28519573		
<i>e</i>	0.1551875	<i>i</i>	6.56460	-0.46442674	+0.04845308		
<i>P</i>	3.26	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1992 03 09	809	0.2+	1.1+	1999 05 10	704	1.1+	1.0-	1999 05 19	704	0.6+	0.4+
1992 04 04	809	0.4+	0.4+	1999 05 10	704	0.0	0.4+	1999 05 19	704	1.0-	0.2-
1993 09 21	675	0.5+	1.0+	1999 05 10	704	0.1+	0.5-	1999 05 19	704	0.4-	0.0
1993 09 21	675	0.4-	0.5+	1999 05 10	704	0.9-	1.6-	1999 05 19	704	0.3-	1.8+
1993 09 23	675	0.8-	0.0	1999 05 13	704	0.9-	0.3+	1999 06 09	704	0.7+	0.3+
1999 02 20	704	0.4+	0.3-	1999 05 13	704	0.1-	0.4+	1999 06 09	704	0.3+	0.3+

M.P.C. 35013

1999 02 20	704	0.7+	1.2-	1999 05 13	704	(0.3+	2.1+)	1999 06 09	704	0.1-	0.0
1999 02 20	704	(1.3-	2.1-)	1999 05 13	704	0.5-	1.9+	1999 06 09	704	0.4-	0.4-
1999 02 20	704	1.0+	0.9-	1999 05 13	704	0.3+	0.1+	1999 06 09	704	0.4-	0.1+
1999 03 24	704	0.8-	0.6+	1999 05 18	704	0.5+	0.8+	1999 06 15	704	0.1+	0.1+
1999 03 24	704	1.2-	0.9+	1999 05 18	704	1.1-	0.6+	1999 06 15	704	0.3+	0.3-
1999 03 24	704	(3.8-	1.5-)	1999 05 18	704	0.2+	0.7-	1999 06 15	704	0.2+	0.8-
1999 03 24	704	0.2+	0.6-	1999 05 18	704	0.5+	1.0-	1999 06 15	704	0.1+	0.9-
1999 03 24	704	(3.5-	1.1+)	1999 05 18	704	(0.1+	2.3+)	1999 06 15	704	0.0	0.4-
1999 05 10	704	1.3+	0.1+	1999 05 19	704	0.1-	1.0+				

1999 JF₆₂ = 1991 KL₂ = 1998 HQ₄₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	320.57856		(2000.0)	<i>P</i>	<i>Q</i>		
<i>n</i>	0.24627096	ω	239.67389	+0.59743136	+0.76542492		
<i>a</i>	2.5207353	Ω	68.95920	-0.61922315	+0.62983298		
<i>e</i>	0.0453624	<i>i</i>	14.84777	-0.50954731	+0.13204209		
<i>P</i>	4.00	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1991 05 17	809	0.1-	1.6-	1999 05 10	704	0.3-	0.3+	1999 05 18	704	1.6-	1.0+
1991 05 17	809	0.9-	0.6-	1999 05 10	704	1.3-	1.2+	1999 05 19	704	0.1+	0.8+
1991 05 17	809	(0.3-	2.1-)	1999 05 10	704	(0.4+	2.8+)	1999 05 19	704	0.4-	0.4+
1997 12 28	566	0.1+	0.1-	1999 05 10	704	(0.8+	3.7+)	1999 05 19	704	0.5-	0.1-
1997 12 28	566	0.1+	0.2-	1999 05 10	704	(1.7-	2.3+)	1999 05 19	704	0.0	0.1+
1997 12 28	566	0.2+	0.2-	1999 05 13	704	0.1+	0.8+	1999 05 19	704	0.5-	0.4-
1998 04 18	699	0.1+	0.1+	1999 05 13	704	0.5-	1.9+	1999 06 09	704	0.5+	0.2+
1998 04 18	699	0.3+	0.8+	1999 05 13	704	0.2+	0.8+	1999 06 09	704	1.8+	0.3+
1998 04 18	699	0.5-	0.3+	1999 05 13	704	0.3+	0.7-	1999 06 09	704	0.3+	0.7-
1998 04 19	699	0.5+	0.2-	1999 05 13	704	0.4+	0.5-	1999 06 09	704	0.7+	0.5-
1998 04 19	699	0.4-	0.3+	1999 05 14	704	(1.0-	3.3-)	1999 06 15	704	1.0+	0.4-
1998 04 19	699	0.5-	0.1+	1999 05 14	704	(0.8+	2.2-)	1999 06 15	704	1.0+	0.3-
1999 02 26	704	1.8-	1.5-	1999 05 14	704	1.5+	1.6-	1999 06 15	704	0.9+	0.6-
1999 02 26	704	0.8+	1.0+	1999 05 18	704	0.8-	0.7+	1999 06 15	704	1.0+	0.6-
1999 02 26	704	0.3+	1.4-	1999 05 18	704	0.7-	0.0	1999 06 15	704	1.0+	1.1-
1999 02 26	704	0.3+	0.7+	1999 05 18	704	1.2-	0.4+				
1999 02 26	704	0.2-	1.6-	1999 05 18	704	1.7-	2.0+				

1999 JK₆₂ = 1992 EK₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	20.71073		(2000.0)	<i>P</i>	<i>Q</i>		
<i>n</i>	0.29884362	ω	152.45607	-0.36512050	+0.92740584		
<i>a</i>	2.2156784	Ω	96.03423	-0.86846833	-0.30786471		
<i>e</i>	0.1695166	<i>i</i>	4.68782	-0.33533533	-0.21245642		
<i>P</i>	3.30	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1992 03 02	809	(3.2+	2.3+)	1999 05 13	704	0.3+	1.1+	1999 05 19	704	0.1-	0.6-
1992 03 04	809	0.5-	1.0-	1999 05 13	704	0.6-	0.6+	1999 06 09	704	0.8-	0.1-
1992 03 06	809	0.5-	0.7-	1999 05 13	704	0.1-	1.5+	1999 06 09	704	0.4-	0.3-
1992 04 04	809	0.8+	1.0+	1999 05 18	704	0.3+	0.8-	1999 06 09	704	0.6-	0.2+
1999 05 10	704	0.9+	0.6-	1999 05 18	704	0.3+	0.2-	1999 06 09	704	0.4-	0.1+
1999 05 10	704	1.0+	0.1-	1999 05 18	704	0.8-	0.3-	1999 06 09	704	0.8+	0.3-
1999 05 10	704	0.5-	0.5+	1999 05 18	704	0.3+	0.2-	1999 06 15	704	0.3+	0.3-
1999 05 10	704	0.6+	1.0+	1999 05 18	704	0.5-	0.7-	1999 06 15	704	0.2-	0.4-
1999 05 10	704	0.6-	0.7+	1999 05 19	704	0.4+	0.7-	1999 06 15	704	0.3-	0.4-
1999 05 13	704	0.5+	0.4+	1999 05 19	704	1.0+	0.5-	1999 06 15	704	0.1-	0.1-
1999 05 13	704	0.2-	1.0+	1999 05 19	704	(1.3-	2.5-)	1999 06 15	704	0.5-	0.4-

Residuals in seconds of arc

1942 11 05	062	(6.1– 0.7+)	1999 05 10	704	0.7– 0.9–	1999 05 14	704	0.2– 2.0+
1942 11 06	062	0.2– 0.6+	1999 05 10	704	0.7– 0.4–	1999 05 18	704	0.5+ 0.2–
1969 10 08	033	0.2+ 0.4+	1999 05 10	704	0.7+ 0.1+	1999 05 18	704	0.1– 0.0
1969 10 08	033	0.2– 0.3+	1999 05 13	704	0.1– 0.3–	1999 05 18	704	0.2– 0.2+
1986 09 11	095	(5.4+ 0.8+)	1999 05 13	704	0.6– 0.8–	1999 05 18	704	0.8+ 0.0
1986 09 12	095	0.1+ 1.1–	1999 05 13	704	0.6+ 0.3+	1999 05 18	704	0.6+ 0.1–
1998 02 25	566	0.4+ 0.1+	1999 05 13	704	0.2+ 0.4+	1999 06 14	704	0.6– 0.6+
1998 02 25	566	0.2– 0.2–	1999 05 13	704	0.2– 0.4+	1999 06 14	704	1.1– 0.4+
1998 02 25	566	0.1– 0.1+	1999 05 14	704	0.5+ 0.9–	1999 06 14	704	0.6– 0.4+
1999 05 10	704	1.6+ 1.0–	1999 05 14	704	1.1+ 0.4–	1999 06 14	704	0.8– 0.7+
1999 05 10	704	0.2+ 0.9–	1999 05 14	704	0.3+ 0.3+	1999 06 14	704	0.8– 0.8+

1999 JN₆₂ = 1995 GV₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	9.32605		(2000.0)	P	Q
n	0.26659332	ω	62.30308	−0.18761147	+0.98181485
a	2.3909466	Ω	196.95818	−0.93259046	−0.18732110
e	0.0927009	i	5.70794	−0.30834554	−0.03082859
P	3.70	H	15.1	G 0.15	U 4

Residuals in seconds of arc

1995 04 10	695	0.1– 0.1+	1999 05 10	704	0.4+ 0.8–	1999 05 18	704	0.6– 0.2+
1995 04 10	695	0.0 0.0	1999 05 10	704	0.2+ 0.1–	1999 05 18	704	0.6– 0.4–
1995 04 10	695	0.0 0.2–	1999 05 10	704	1.1– 0.5+	1999 05 18	704	0.2– 1.0–
1995 04 10	695	0.6+ 0.0	1999 05 13	704	0.4+ 1.2+	1999 06 09	704	0.0 0.0
1995 04 11	695	0.0 0.4–	1999 05 13	704	1.7+ 0.8+	1999 06 09	704	0.4– 0.5+
1995 04 11	695	0.8– 0.4+	1999 05 13	704	0.5– 0.3+	1999 06 09	704	0.5– 1.1+
1995 04 12	695	0.1+ 0.3–	1999 05 13	704	1.0+ 0.1+	1999 06 09	704	0.9+ 0.4+
1995 04 12	695	0.4– 0.1+	1999 05 13	704	1.1+ 0.8+	1999 06 09	704	0.6+ 0.5+
1995 04 12	695	0.6+ 0.0	1999 05 14	704	0.5– 0.7–	1999 06 14	704	0.0 0.1–
1995 04 12	695	0.3– 0.4+	1999 05 14	704	0.7+ 0.3+	1999 06 14	704	0.0 1.0–
1995 04 12	695	0.2+ 0.0	1999 05 14	704	0.6+ 0.5+	1999 06 14	704	(0.9– 2.2–)
1995 04 12	695	0.1+ 0.2–	1999 05 14	704	0.9– 0.2+	1999 06 14	704	0.0 0.7–
1999 05 10	704	0.7– 0.6–	1999 05 18	704	0.4– 0.4–	1999 06 14	704	0.2– 0.1+
1999 05 10	704	0.0 1.2–	1999 05 18	704	0.6– 0.6–			

1999 JQ₆₂ = 1994 NO₁₂ = 1998 FY₈₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	334.14010		(2000.0)	P	Q
n	0.18312186	ω	187.35228	+0.34316081	+0.92290751
a	3.0712082	Ω	102.84035	−0.85239771	+0.38406990
e	0.0590665	i	10.31560	−0.39453618	−0.02705611
P	5.38	H	13.8	G 0.15	U 4

Residuals in seconds of arc

1994 07 08	809	0.8– 0.0	1998 03 25	704	1.4+ 1.9+	1999 05 18	704	0.8– 0.4–
1994 07 08	809	0.5– 0.3–	1998 03 25	704	0.4– 1.2+	1999 05 18	704	1.2– 0.4–
1994 07 08	809	0.3– 0.2–	1998 03 25	704	4.0– 0.1–	1999 05 18	704	0.5– 0.2–
1994 07 09	809	0.1+ 0.1–	1999 05 10	704	0.4+ 0.5+	1999 05 18	704	0.5+ 1.5+
1994 07 09	809	0.5+ 0.3+	1999 05 10	704	1.1+ 0.2+	1999 05 19	704	0.2+ 0.5–
1994 07 09	809	1.0+ 0.2+	1999 05 10	704	1.6+ 0.1–	1999 05 19	704	1.2– 0.5–
1998 03 24	704	0.4– 1.4–	1999 05 10	704	0.6+ 0.4–	1999 05 19	704	0.4+ 0.4–
1998 03 24	704	1.7+ 0.3+	1999 05 13	704	0.7– 0.5+	1999 05 19	704	0.9+ 0.5+
1998 03 24	704	0.7+ 1.8–	1999 05 13	704	1.2+ 1.7+	1999 06 14	704	0.7– 0.3+
1998 03 24	704	0.8– 1.2–	1999 05 13	704	2.2– 0.8–	1999 06 14	704	0.4+ 0.2+
1998 03 25	704	0.6+ 0.2–	1999 05 13	704	1.7– 0.9–	1999 06 14	704	0.1+ 0.3–
1998 03 25	704	1.1+ 1.1+	1999 05 18	704	1.4+ 0.5–	1999 06 14	704	0.2+ 0.2+

1999 JY₆₂ = 1982 JV

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	27.20223		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.29111262	ω	22.76813	-0.50590538	$+0.86088329$
a	2.2547342	Ω	216.90343	-0.80466032	-0.49364326
e	0.1538663	i	5.18057	-0.31077569	-0.12327330
P	3.39	H	15.5	G 0.15	U 3

Residuals in seconds of arc

1982 05 15	675	1.0+ 1.2–	1999 05 10	704	0.9– 1.2+	1999 05 19	704	0.8+ 0.5+
1982 05 16	675	1.0– 0.4–	1999 05 13	704	0.2+ 0.1+	1999 05 19	704	0.1– 0.4+
1982 05 16	675	0.7– 1.9+	1999 05 13	704	0.4+ 1.1–	1999 05 19	704	0.2– 1.0–
1982 05 17	675	(4.1+ 0.8+)	1999 05 13	704	0.3+ 0.1+	1999 05 19	704	0.1– 0.9–
1982 05 18	675	0.9+ 0.9+	1999 05 13	704	0.6+ 0.9+	1999 05 19	704	0.6– 0.7–
1993 10 12	809	1.2– 0.7+	1999 05 13	704	0.1– 1.1+	1999 06 09	704	0.6+ 0.5–
1993 10 12	809	0.3+ 1.3+	1999 05 14	704	0.4– 0.1+	1999 06 09	704	0.9+ 0.2–
1993 10 12	809	0.2+ 0.3+	1999 05 14	704	0.8+ 0.1–	1999 06 09	704	0.3+ 0.1+
1999 03 24	704	0.1– 1.6+	1999 05 14	704	0.5+ 0.2+	1999 06 09	704	0.5+ 0.1–
1999 03 24	704	(1.2– 3.3+)	1999 05 14	704	0.9– 0.1+	1999 06 09	704	0.1– 0.4–
1999 03 24	704	0.7– 1.3+	1999 05 14	704	0.1+ 0.2–	1999 06 15	704	0.7+ 0.2+
1999 03 24	704	(6.4– 2.0+)	1999 05 18	704	0.6+ 1.0–	1999 06 15	704	0.7– 0.2–
1999 05 10	704	1.1+ 0.8+	1999 05 18	704	0.4– 0.2–	1999 06 15	704	0.3– 0.1–
1999 05 10	704	0.0 0.7–	1999 05 18	704	1.1– 0.4–	1999 06 15	704	0.5– 0.1–
1999 05 10	704	0.1+ 0.5+	1999 05 18	704	0.2– 0.4–	1999 06 15	704	0.6– 0.2–
1999 05 10	704	0.6– 0.4+	1999 05 18	704	0.4– 0.2+			

1999 JK₆₃ = 1992 HN₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	335.11114		(2000.0)	P	Q
n	0.28738588	ω	229.04754	+0.63973981	+0.76158708
a	2.2741849	Ω	81.03187	−0.66993195	+0.61856142
e	0.1677564	i	6.01619	−0.37672822	+0.19330518
P	3.43	H	15.1	G 0.15	U 3

Residuals in seconds of arc

1992 04 29	691	0.4– 0.1–	1999 05 13	704	0.2– 1.0+	1999 05 19	704	1.3+ 0.8–
1992 04 29	691	0.4– 0.6+	1999 05 13	704	1.3– 0.0	1999 05 19	704	0.5+ 0.9–
1992 04 29	691	0.4+ 0.1+	1999 05 13	704	0.4– 0.5–	1999 05 19	704	0.0 0.9–
1992 05 02	691	0.1+ 0.1+	1999 05 13	704	1.2– 1.0–	1999 06 09	704	0.3+ 0.2+
1992 05 02	691	0.3+ 0.1+	1999 05 14	704	0.6– 0.5+	1999 06 09	704	0.3+ 0.7+
1992 05 02	691	0.5+ 0.2+	1999 05 14	704	1.4+ 0.8–	1999 06 09	704	0.1+ 0.3–
1993 12 17	691	0.1– 0.1–	1999 05 14	704	1.0+ 0.3+	1999 06 09	704	0.6+ 0.4+
1993 12 17	691	0.1+ 0.1+	1999 05 14	704	1.0– 0.3–	1999 06 09	704	0.2– 0.2+
1993 12 17	691	0.1+ 0.1–	1999 05 18	704	0.1– 0.4–	1999 06 15	704	0.5+ 0.3+
1999 05 10	704	0.1– 0.0	1999 05 18	704	0.7– 0.3–	1999 06 15	704	0.1– 0.1+
1999 05 10	704	0.4– 1.2+	1999 05 18	704	0.0 0.2+	1999 06 15	704	0.1+ 0.4+
1999 05 10	704	0.7+ 0.5–	1999 05 18	704	0.1– 0.3+	1999 06 15	704	0.3+ 0.1+
1999 05 10	704	0.2– 0.6–	1999 05 18	704	0.5+ 0.1+	1999 06 15	704	0.1– 0.3+
1999 05 10	704	0.0 0.6+	1999 05 19	704	0.3– 0.4+			
1999 05 13	704	0.8– 0.3–	1999 05 19	704	0.0 0.5–			

1999 JO₆₃ = 1997 WT₃₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	89.54906		(2000.0)	P	Q
n	0.27367714	ω	290.01453	−0.92795205	−0.35863638
a	2.3495085	Ω	229.11247	+0.37193433	−0.87367528
e	0.1791939	i	7.70930	+0.02387140	−0.32874222
P	3.60	H	14.7	G 0.15	U 4

Residuals in seconds of arc

1997 11 29	704	1.1+ 1.9+	1999 05 10	704	0.3+ 0.2–	1999 05 19	704	(2.8– 1.4–)
1997 11 29	704	1.5– 0.0	1999 05 10	704	0.0 0.1+	1999 05 19	704	0.2– 0.0
1997 11 29	704	1.1+ 0.8–	1999 05 10	704	0.4– 0.1+	1999 06 09	704	0.4+ 0.3–
1997 11 29	704	0.6– 0.6–	1999 05 10	704	1.0– 0.3+	1999 06 09	704	0.2– 1.3–
1997 11 29	704	0.0 1.4–	1999 05 13	704	0.5– 1.2–	1999 06 09	704	0.3+ 0.2+

1999 JUNE 22

1997 12 04	704	0.2−	0.8+	1999 05 13	704	1.1+	0.5+	1999 06 09	704	0.2+	0.7−
1997 12 04	704	0.6−	0.5+	1999 05 13	704	0.2−	1.0+	1999 06 09	704	0.2+	0.3−
1997 12 04	704	0.4−	0.5+	1999 05 13	704	1.4+	0.1+	1999 06 15	704	0.1−	0.6+
1997 12 04	704	(0.3−	2.8+)	1999 05 14	704	1.2+	1.0−	1999 06 15	704	0.2+	0.3+
1997 12 04	704	0.3+	1.3+	1999 05 14	704	0.1−	0.8−	1999 06 15	704	0.0	0.6+
1997 12 06	691	0.3+	1.4−	1999 05 14	704	1.8−	1.3+	1999 06 15	704	0.3−	0.3+
1997 12 06	691	(1.2+	2.3−)	1999 05 14	704	1.5−	0.5−	1999 06 15	704	0.1+	0.4+
1997 12 06	691	0.6+	1.1−	1999 05 19	704	0.3+	0.4+				
1999 05 10	704	0.7+	0.3−	1999 05 19	704	0.3−	0.2−				

1999 JZ₆₃ = 1998 FN₃₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	280.71686		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$		
n	0.23733347	ω	193.51113	+0.99710902	−0.07400940		
a	2.5836284	Ω	170.68193	+0.07576416	+0.95115102		
e	0.1616922	i	6.10188	+0.00577960	+0.29972379		
P	4.15	H	14.3	G	0.15	U	4

Residuals in seconds of arc

1998 03 20	704	0.4+	0.1−	1998 03 29	704	1.5+	0.5−	1999 05 18	704	0.6−	0.3−
1998 03 20	704	0.6−	0.4+	1998 03 29	704	0.8+	1.1−	1999 05 19	704	0.1−	1.1−
1998 03 20	704	(2.1+	1.6+)	1998 03 29	704	0.5−	0.3−	1999 05 19	704	(3.2+	0.7+)
1998 03 20	704	1.0+	0.4+	1999 05 10	704	1.0+	1.7−	1999 05 19	704	0.3+	1.6−
1998 03 22	704	0.7+	0.2−	1999 05 10	704	0.0	0.4+	1999 05 19	704	1.7+	0.3+
1998 03 22	704	0.2+	0.6−	1999 05 10	704	(2.1+	2.4+)	1999 06 09	704	0.1+	0.1+
1998 03 22	704	0.2−	0.2+	1999 05 10	704	0.4+	0.1−	1999 06 09	704	0.9−	0.8+
1998 03 22	704	1.9−	0.4+	1999 05 10	704	1.5−	1.9+	1999 06 09	704	0.0	0.3−
1998 03 22	704	1.7−	1.2+	1999 05 13	704	0.0	0.1−	1999 06 09	704	0.7+	0.3−
1998 03 25	566	0.9−	0.1+	1999 05 13	704	0.5−	0.6+	1999 06 09	704	0.3−	0.2−
1998 03 25	566	0.3+	0.4−	1999 05 13	704	0.3+	0.0	1999 06 14	704	0.2−	0.8−
1998 03 25	566	0.2+	0.1−	1999 05 13	704	0.2−	0.1+	1999 06 14	704	0.5+	0.2−
1998 03 26	704	1.2+	1.6+	1999 05 13	704	0.8+	1.2−	1999 06 14	704	0.2+	0.9+
1998 03 26	704	0.6−	0.5−	1999 05 18	704	0.8+	0.7+	1999 06 14	704	0.5−	0.1−
1998 03 26	704	0.6+	0.4+	1999 05 18	704	1.2−	1.2+	1999 06 14	704	0.5−	0.6−
1998 03 29	704	0.3+	0.5−	1999 05 18	704	1.2−	0.0				
1998 03 29	704	1.0−	0.7−	1999 05 18	704	0.6+	1.7+				

1999 JE₆₄ = 1971 LB = 1985 LB

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	350.47612		(2000.0)	P	Q
n	0.21117551	ω	211.21216	+0.29578209	+0.94263638
a	2.7928033	Ω	76.37812	−0.84033019	+0.33380061
e	0.1960583	i	9.16254	−0.45426659	−0.00371537
P	4.67	H	13.3	G 0.15	U 3

Residuals in seconds of arc

1971 06 13	323	1.2+	2.3+	1999 02 20	704	(3.4−	1.6−)	1999 05 19	704	0.5+	1.7−
1971 06 13	323	1.7+	2.4+	1999 05 10	704	0.8+	0.8−	1999 05 19	704	0.1+	0.8−
1971 06 20	323	0.0	1.4+	1999 05 10	704	0.3+	1.7−	1999 05 19	704	(1.2+	2.5−)
1971 06 20	323	1.1−	0.8+	1999 05 10	704	0.0	1.0−	1999 05 19	704	(1.2+	2.5−)
1985 06 13	046	0.1−	1.9−	1999 05 10	704	1.0−	1.6−	1999 05 19	704	(1.3+	3.2−)
1985 06 13	046	(4.9+	1.4+)	1999 05 10	704	0.6+	1.9−	1999 06 09	704	0.5+	1.0+
1993 01 25	691	0.4+	0.3+	1999 05 13	704	0.7+	0.7−	1999 06 09	704	0.1−	0.0
1993 01 25	691	0.5+	0.1−	1999 05 13	704	(2.5−	3.7−)	1999 06 09	704	0.6−	0.5+
1993 01 25	691	0.6+	0.1−	1999 05 13	704	0.6−	1.9−	1999 06 09	704	0.2−	0.1+
1998 02 24	566	0.4−	0.6+	1999 05 13	704	(2.8−	1.0+)	1999 06 09	704	0.6−	0.8+
1998 02 24	566	0.2−	0.7+	1999 05 18	704	0.7+	0.8−	1999 06 15	704	0.3−	0.5+
1998 02 24	566	0.5−	0.7+	1999 05 18	704	0.4−	0.0	1999 06 15	704	0.0	0.4+
1999 02 20	704	0.4−	1.0+	1999 05 18	704	0.2−	0.2+	1999 06 15	704	0.2−	0.7+
1999 02 20	704	(1.6+	2.3+)	1999 05 18	704	0.5−	0.3+	1999 06 15	704	0.2−	0.9+
1999 02 20	704	0.6+	0.5+	1999 05 18	704	0.5−	0.1+	1999 06 15	704	0.0	1.2+

M.P.C. 35015

1999 JG₆₄ = 1985 GQ = 1992 JN

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	25.18646		(2000.0)	P	Q
n	0.28586468	ω	176.93955	−0.43732421	+0.89451659
a	2.2822456	Ω	67.11128	−0.82721673	−0.35970351
e	0.1673602	i	5.77312	−0.35278890	−0.26543068
P	3.45	H	14.8	G 0.15	U 4

Residuals in seconds of arc

1985 04 15	688	1.1−	1.4−	1999 05 10	704	0.3−	1.6−	1999 05 19	704	0.7+	1.4+
1985 04 15	688	0.2+	0.3−	1999 05 13	704	0.2−	0.5+	1999 05 19	704	1.0+	0.1+
1992 04 27	399	1.8−	0.3−	1999 05 13	704	0.3−	0.3+	1999 06 09	704	0.2−	0.0
1992 04 27	399	0.3+	0.6+	1999 05 13	704	1.4−	1.2+	1999 06 09	704	0.5−	0.1+
1992 05 02	399	0.4−	0.9+	1999 05 13	704	0.5−	1.3+	1999 06 09	704	0.2−	0.2−
1992 05 02	399	1.6+	1.1+	1999 05 13	704	(0.7−	2.3+)	1999 06 09	704	0.2+	0.1+
1992 05 08	691	0.7+	0.5+	1999 05 18	704	0.7+	1.1−	1999 06 09	704	0.3−	0.3+
1992 05 08	691	0.9+	0.3+	1999 05 18	704	0.9+	1.1−	1999 06 15	704	0.3−	0.3−
1992 05 08	691	0.2+	0.0	1999 05 18	704	(3.7+	2.3−)	1999 06 15	704	0.2−	0.3−
1999 05 10	704	0.2−	0.5−	1999 05 18	704	(0.1+	2.3−)	1999 06 15	704	0.1−	0.1+
1999 05 10	704	1.3+	1.7−	1999 05 18	704	0.9+	0.4−	1999 06 15	704	0.1−	0.1−
1999 05 10	704	1.5−	0.7+	1999 05 19	704	0.1−	0.5−	1999 06 15	704	0.1−	0.2−
1999 05 10	704	0.1+	0.4−	1999 05 19	704	0.0	0.4+				

1999 JH₆₄ = 1985 HM₁ = 1993 TL₃₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	39.39933		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$		
n	0.28533522	ω	160.85782	−0.70982407	+0.69861477		
a	2.2850680	Ω	63.80094	−0.65862431	−0.61302030		
e	0.1579489	i	5.75215	−0.24972745	−0.36897630		
P	3.45	H	15.1	G	0.15	U	2

Residuals in seconds of arc

1985 04 23	688	0.9+	0.6−	1999 05 10	704	0.6+	0.8−	1999 05 19	704	0.7−	0.1−
1985 04 23	688	1.3−	0.2−	1999 05 10	704	0.3+	1.6+	1999 05 19	704	0.3+	0.9−
1993 10 09	809	0.5−	0.8+	1999 05 10	704	1.0−	0.4+	1999 05 19	704	0.5+	1.1−
1993 10 09	809	0.0	1.0+	1999 05 10	704	1.0−	0.7−	1999 05 19	704	0.3+	0.6+
1993 10 09	809	1.3−	0.4−	1999 05 13	704	0.2+	0.9+	1999 06 09	704	0.5+	0.5+
1993 10 11	809	1.6+	1.4−	1999 05 13	704	1.9−	0.4+	1999 06 09	704	1.0+	1.5+
1993 10 11	809	0.0	0.6−	1999 05 13	704	0.2−	0.2+	1999 06 09	704	0.5+	1.5+
1993 10 11	809	1.1−	0.9−	1999 05 13	704	0.8−	1.1+	1999 06 09	704	1.1−	0.6+
1993 10 21	809	0.9+	1.2+	1999 05 18	704	0.0	1.0−	1999 06 09	704	1.0+	0.1−
1993 10 21	809	0.9+	1.2+	1999 05 18	704	0.2+	1.2−	1999 06 15	704	1.1−	0.1+
1993 10 21	809	0.9−	0.2+	1999 05 18	704	1.4+	0.3−	1999 06 15	704	0.1−	0.2−
1995 02 03	033	0.4+	0.9+	1999 05 18	704	0.4+	0.8−	1999 06 15	704	0.2−	0.5−
1995 02 03	033	0.0	0.8+	1999 05 18	704	(0.4−	2.3−)	1999 06 15	704	0.3−	0.3−
1999 05 10	704	1.7+	0.9+	1999 05 19	704	0.2−	0.2−				

1999 JK₆₄ = 1978 WV₁₈ = 1991 SP₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	18.50729		(2000.0)	P	Q
n	0.21841462	ω	177.85607	−0.37580523	+0.91644338
a	2.7307477	Ω	70.04646	−0.85239113	−0.28363663
e	0.1561548	i	8.41052	−0.36359290	−0.28227964
P	4.51	H	13.8	G 0.15	U 2

Residuals in seconds of arc

1978 11 30	675	0.2−	0.3−	1999 05 13	704	0.1+	0.2−	1999 05 19	704	0.2−	0.1−
1978 12 01	675	0.2+	0.0	1999 05 13	704	0.1−	0.4−	1999 05 19	704	0.3+	0.5−
1991 09 16	675	0.4+	0.1−	1999 05 13	704	0.5−	1.4+	1999 06 09	704	0.2+	1.2+
1991 09 16	675	0.2+	0.2−	1999 05 13	704	0.5−	1.2−	1999 06 09	704	0.3+	1.4+
1997 12 26	566	0.3+	0.6+	1999 05 13	704	0.1−	1.9−	1999 06 09	704	0.1−	1.9+
1997 12 26	566	0.2−	0.1+	1999 05 18	704	0.2+	0.7−	1999 06 09	704	(0.7−	2.1+)
1997 12 26	566	0.0	0.6+	1999 05 18	704	0.1−	0.5−	1999 06 09	704	(2.4−	2.3+)
1999 05 10	704	0.2−	0.4−	1999 05 18	704	0.3+	0.7+	1999 06 15	704	0.7−	0.6+
1999 05 10	704	0.4−	0.9−	1999 05 18	704	1.5+	0.3+	1999 06 15	704	0.3−	0.6+

M.P.C. 35016

1999 05 10	704	1.3+	1.2-	1999 05 18	704	0.0	0.1-	1999 06 15	704	0.1-	0.7+
1999 05 10	704	0.6-	0.4-	1999 05 19	704	0.4-	0.6-	1999 06 15	704	0.3+	1.0+
1999 05 10	704	(1.8-	2.0-)	1999 05 19	704	0.3+	1.6-	1999 06 15	704	0.0	0.9+

1999 JN₆₄ = 1996 RY

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	36.94282		(2000.0)	P		Q	
<i>n</i>	0.27100055	ω	267.76769	-0.71409335	+0.69811844		
<i>a</i>	2.3649535	Ω	316.50243	-0.60852955	-0.65572544		
<i>e</i>	0.1110011	<i>i</i>	4.33044	-0.34606716	-0.28749746		
<i>P</i>	3.64	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 09 10	566	0.1-	0.1-	1999 05 10	704	1.0-	0.9-	1999 05 19	704	0.5-	0.7-
1996 09 10	566	0.3-	0.5+	1999 05 13	704	0.1+	0.7+	1999 06 09	704	0.2+	0.4-
1996 09 10	566	0.4+	0.8-	1999 05 13	704	0.5+	0.5-	1999 06 09	704	0.1+	1.0-
1996 09 11	566	0.1+	0.9-	1999 05 13	704	(1.0-	2.5+)	1999 06 09	704	0.9+	0.0
1996 09 11	566	1.0-	0.5-	1999 05 13	704	1.0-	1.1+	1999 06 09	704	1.2+	0.5+
1996 09 11	566	0.1-	0.2-	1999 05 13	704	0.5+	0.3-	1999 06 09	704	0.8-	0.3-
1996 09 18	566	0.5+	0.9+	1999 05 18	704	0.5+	0.1-	1999 06 15	704	0.3-	0.3+
1996 09 18	566	0.6+	0.3+	1999 05 18	704	1.0+	0.1+	1999 06 15	704	0.2-	0.0
1996 09 18	566	0.0	0.8+	1999 05 18	704	1.4-	0.8-	1999 06 15	704	0.2-	0.5+
1999 05 10	704	0.3+	1.2+	1999 05 18	704	0.8-	0.8-	1999 06 15	704	0.2-	0.7+
1999 05 10	704	0.1-	0.5+	1999 05 19	704	0.3+	0.6-	1999 06 15	704	0.3-	1.1+
1999 05 10	704	1.2+	0.2-	1999 05 19	704	(2.1-	0.6-)				

1999 JT₆₄ = 1966 PQ = 1991 PL₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	309.48202		(2000.0)	P		Q	
<i>n</i>	0.23599137	ω	234.89319	+0.94805979	+0.31027851		
<i>a</i>	2.5934147	Ω	106.94170	-0.26278206	+0.88810033		
<i>e</i>	0.2314794	<i>i</i>	4.20064	-0.17924346	+0.33912393		
<i>P</i>	4.18	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1966 08 07	074	0.0	1.0+	1999 05 10	704	0.9+	0.9-	1999 05 19	704	0.5+	1.2+
1966 08 07	074	0.7-	1.2+	1999 05 10	704	(4.6-	0.6-)	1999 05 19	704	1.4-	0.4+
1966 08 08	074	0.5+	0.9-	1999 05 13	704	0.1+	0.1-	1999 05 19	704	1.1-	0.0
1966 08 08	074	1.0-	1.9+	1999 05 13	704	0.6-	0.6-	1999 06 09	704	0.7+	0.0
1966 08 09	074	0.1+	0.8+	1999 05 13	704	1.6-	1.0+	1999 06 09	704	0.7+	0.1+
1966 08 16	074	(10.8-	5.1-)	1999 05 13	704	0.8-	2.0-	1999 06 09	704	0.8+	0.2+
1991 08 05	809	0.9+	1.2-	1999 05 18	704	0.3-	1.2-	1999 06 09	704	(1.2-	2.3-)
1991 08 05	809	0.2+	1.6-	1999 05 18	704	0.2+	1.0-	1999 06 15	704	1.0+	0.6+
1991 08 05	809	0.3-	1.2-	1999 05 18	704	0.6-	0.9+	1999 06 15	704	0.3-	0.4+
1994 04 03	691	0.5+	0.4+	1999 05 18	704	0.5+	0.3+	1999 06 15	704	0.1-	1.3+
1994 04 03	691	0.2+	0.7+	1999 05 18	704	1.1+	0.4-	1999 06 15	704	0.8+	0.6+
1994 04 03	691	0.1-	0.3+	1999 05 19	704	0.0	1.4-	1999 06 15	704	0.7+	1.5+
1999 05 10	704	(2.7+	0.4-)	1999 05 19	704	1.1-	0.8-				

1999 JV₆₄ = 3507 P-L

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	356.67315		(2000.0)	P		Q	
<i>n</i>	0.27415381	ω	41.60543	+0.22833615	+0.95630656		
<i>a</i>	2.3467844	Ω	242.33832	-0.93882167	+0.16660893		
<i>e</i>	0.1961494	<i>i</i>	11.89719	-0.25783032	+0.24024826		
<i>P</i>	3.60	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1960 10 17	675	0.1+	0.1+	1999 05 13	704	1.8+	0.7+	1999 06 09	704	0.5+	0.2-
1960 10 17	675	0.2+	1.7-	1999 05 13	704	1.3+	0.1+	1999 06 09	704	0.3+	0.7-
1960 10 17	675	0.3-	0.3+	1999 05 13	704	0.1+	0.9-	1999 06 09	704	0.3+	0.5-
1960 10 22	675	0.3+	0.8+	1999 05 18	704	0.5-	0.2+	1999 06 09	704	0.8-	0.5-
1960 10 22	675	1.3-	0.3+	1999 05 18	704	0.2+	0.1+	1999 06 09	704	0.2-	0.2-
1960 10 22	675	1.3-	0.3+	1999 05 18	704	0.7-	0.0	1999 06 11	703	0.1+	0.2+
1960 10 24	675	0.9+	1.1-	1999 05 18	704	0.3-	0.4-	1999 06 11	703	1.1+	1.6+

1999 JUNE 22

1960 10 25	675	0.6-	0.6+	1999 05 18	704	0.1+	0.4+	1999 06 11	703	1.3+	0.8+
1960 10 25	675	0.6+	1.2+	1999 05 19	704	0.7-	0.3-	1999 06 11	703	0.4+	0.7+
1960 10 26	675	1.0+	0.7+	1999 05 19	704	0.5-	0.4+	1999 06 11	703	0.2-	1.7+
1960 10 26	675	0.5+	1.3-	1999 05 19	704	0.8-	0.2-	1999 06 11	703	(0.5-	2.5+)
1999 05 10	704	0.6-	0.1+	1999 05 19	704	1.3-	0.1+	1999 06 15	704	0.4-	0.6-
1999 05 10	704	0.4-	1.3-	1999 05 19	704	0.0	0.2+	1999 06 15	704	0.1-	0.1+
1999 05 10	704	(2.2+	0.3+)	1999 06 07	684	0.1-	0.4-	1999 06 15	704	0.0	0.4-
1999 05 10	704	1.1-	1.7+	1999 06 07	684	0.0	0.2-	1999 06 15	704	0.3-	0.1+
1999 05 13	704	0.0	0.1+	1999 06 08	684	0.2-	0.7-	1999 06 15	704	0.1-	1.0-
1999 05 13	704	2.0+	0.5-	1999 06 08	684	0.1-	0.5-				

1999 JS₆₆ = 1991 PX₂₆ = 1998 BB₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	338.35224		(2000.0)	P		Q	
<i>n</i>	0.22520927	ω	154.56256	-0.12234668	+0.99098080		
<i>a</i>	2.6755426	Ω	108.37081	-0.92014791	-0.09261420		
<i>e</i>	0.0583434	<i>i</i>	3.30213	-0.37196655	-0.09684862		
<i>P</i>	4.38	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1991 08 05	809	0.6+	0.4-	1999 04 12	704	0.4+	0.2+	1999 05 17	704	1.0-	1.2-
1991 08 05	809	0.6+	0.4-	1999 04 12	704	(2.7-	0.2+)	1999 05 17	704	(1.2-	2.5-)
1991 08 05	809	0.9-	1.0-	1999 05 12	704	0.2-	1.0-	1999 05 17	704	1.5-	0.7+
1998 01 23	704	0.2-	0.0	1999 05 12	704	0.2+	1.2+	1999 05 18	704	1.4+	0.0
1998 01 23	704	0.4+	1.2+	1999 05 12	704	1.4-	0.3-	1999 05 18	704	0.2-	0.4-
1998 01 23	704	0.3-	1.1-	1999 05 12	704	1.3+	0.9-	1999 05 18	704	1.4+	0.7-
1998 01 23	704	0.9-	0.2-	1999 05 12	704	0.9-	0.4-	1999 05 18	704	0.0	0.2-
1998 01 25	704	0.6-	1.2-	1999 05 13	704	1.8+	0.5+	1999 05 19	704	1.9+	0.0
1998 01 25	704	1.6+	0.2-	1999 05 13	704	1.0-	1.4-	1999 05 19	704	0.2+	1.2+
1998 01 25	704	0.6+	0.3+	1999 05 13	704	0.7-	1.1+	1999 05 19	704	(2.8+	2.2-)
1998 01 25	704	0.8-	0.7-	1999 05 13	704	1.2+	0.9+	1999 05 19	704	(1.1+	3.3-)
1999 04 12	704	1.5-	0.2+	1999 05 13	704	0.1-	0.3-	1999 05 19	704	0.7-	0.0
1999 04 12	704	1.3-	0.2+	1999 05 17	704	0.9+	0.0				

1999 JB₆₇ = 1989 YJ₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	4.27217		(2000.0)	P		Q	
<i>n</i>	0.24311081	ω	116.97921	-0.51247490	+0.85474447		
<i>a</i>	2.5425327	Ω	121.95348	-0.81824193	-0.45698724		
<i>e</i>	0.1068432	<i>i</i>	5.56961	-0.26047959	-0.24611898		
<i>P</i>	4.05	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1989 12 25	033	0.8-	0.3+	1999 05 12	704	(8.8-	5.3+)	1999 05 18	704	0.9+	0.8-
1989 12 26	033	0.0	0.3+	1999 05 12	704	(9.4-	4.7+)	1999 05 18	704	0.8+	0.2-
1989 12 26	033	0.8+	0.5-	1999 05 12	704	(8.9-	4.5+)	1999 05 18	704	0.7-	0.9-
1999 04 12	704	1.0+	2.6-	1999 05 13	704	(6.0-	3.6+)	1999 05 18	704	1.6+	1.8+
1999 04 12	704	2.6+	1.5-	1999 05 13	704	(9.7-	3.9+)	1999 05 18	704	2.1+	1.0-
1999 04 12	704	(1.5+	4.9-)	1999 05 13	704	(7.2-	4.5+)	1999 05 18	704	(2.2+	4.2-)
1999 04 12	704	2.9+	1.6-	1999 05 13	704	(9.1-	3.5+)	1999 05 18	704	0.5+	1.4-
1999 04 12	704	1.8+	2.7-	1999 05 17	704	2.2-	0.4+	1999 05 18	704	3.5-	0.4-
1999 04 16	703	1.5-	2.4+	1999 05 17	704	0.3+	0.0	1999 05 19	704	1.5+	0.7-
1999 04 16	703	1.8-	1.9+	1999 05 17	704	1.8-	0.7+	1999 05 19	704	1.7+	0.7-
1999 04 16	703	2.7-	2.5+	1999 05 17	704	3.6-	3.3+	1999 05 19	704	(4.1+	0.8-)
1999 04 16	703	2.1-	1.6+	1999 05 17	704	1.6-	2.0+	1999 05 19	704	2.2+	0.8-
1999 05 12	704	(7.8-	5.5+)	1999 05 18	704	0.3-	0.5-	1999 05 19	704	0.0	0.8-
1999 05 12	704	(8.3-	6.3+)	1999 05 18	704	2.3+	0.2-				

1999 JE₆₇ = 1994 AC₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	1.42426		(2000.0)	P		Q	

Residuals in seconds of arc

1994 01 07	691	0.4+	1.2-	1999 05 12	704	1.2-	0.4-	1999 05 17	704	1.0-	1.0+
1994 01 07	691	0.6-	0.0	1999 05 12	704	0.2+	1.5+	1999 05 18	704	1.3+	0.1+
1994 01 07	691	0.5+	0.4+	1999 05 12	704	0.4-	0.3+	1999 05 18	704	1.9+	1.5-
1994 01 11	691	0.7+	0.2-	1999 05 12	704	0.9+	0.2+	1999 05 18	704	0.1+	1.9-
1994 01 11	691	0.9-	0.3+	1999 05 12	704	0.0	0.1-	1999 05 18	704	0.2+	0.1+
1994 01 11	691	0.1-	0.1+	1999 05 13	704	0.5-	0.4-	1999 05 19	704	0.8+	0.8+
1995 05 22	010	0.3-	0.1+	1999 05 13	704	1.0+	0.8+	1999 05 19	704	0.4-	0.7+
1995 05 22	010	0.6+	0.4-	1999 05 13	704	0.1-	0.4-	1999 05 19	704	0.9+	0.4+
1995 05 22	010	0.6-	0.9-	1999 05 13	704	0.2+	0.0	1999 05 19	704	1.0-	0.2+
1999 04 12	704	0.2-	0.0	1999 05 13	704	0.5-	0.0	1999 05 19	704	1.3+	0.1-
1999 04 12	704	1.0-	0.7+	1999 05 17	704	(2.2+	0.5-)	1999 05 20	704	1.1+	0.5+
1999 04 12	704	0.4+	0.0	1999 05 17	704	1.4+	0.7+	1999 05 20	704	0.7-	1.4-
1999 04 12	704	1.8-	0.6-	1999 05 17	704	0.6-	0.3+	1999 05 20	704	1.9-	0.0
1999 04 12	704	1.0-	0.4+	1999 05 17	704	1.3+	0.2-	1999 05 20	704	0.1-	0.9-

1999 JQ₆₇ = 1997 WO₃₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	122.79019		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.28637741	ω	46.27190	-0.46878021	-0.87907125
a	2.2795207	Ω	71.86823	+0.78201944	-0.45855146
e	0.0419338	i	5.22109	+0.41071974	-0.13024707
P	3.44	H	14.6	G 0.15	U 4

Residuals in seconds of arc

1997 11 29	704	0.3-	1.1+	1999 04 12	704	0.3+	0.5-	1999 05 14	704	1.0-	1.2+
1997 11 29	704	0.7-	0.7-	1999 04 12	704	0.6+	0.5+	1999 05 14	704	0.1-	1.7+
1997 11 29	704	0.4-	0.8-	1999 04 12	704	0.6-	1.3+	1999 05 15	703	1.1+	0.4-
1997 11 29	704	0.1-	0.1-	1999 04 12	704	0.4-	0.6-	1999 05 15	703	0.8+	0.2+
1997 11 29	704	0.7-	0.5+	1999 05 02	104	(2.9-	1.2+)	1999 05 15	703	0.1+	0.5+
1997 12 04	704	0.2-	0.4-	1999 05 02	104	(2.4-	0.6+)	1999 05 15	703	0.3-	0.7-
1997 12 04	704	0.2+	0.1+	1999 05 02	104	1.7-	0.3+	1999 05 17	704	0.3-	0.3+
1997 12 04	704	0.1-	0.2-	1999 05 02	104	0.3+	0.3-	1999 05 17	704	0.6-	1.6+
1997 12 04	704	0.5+	0.7-	1999 05 12	704	0.7+	0.2-	1999 05 17	704	1.0-	0.6+
1997 12 04	704	0.5-	0.1+	1999 05 12	704	1.5-	0.6+	1999 05 18	704	0.4+	0.9+
1997 12 05	704	0.6-	1.0+	1999 05 12	704	0.1+	0.5-	1999 05 18	704	1.0-	0.5-
1997 12 05	704	0.7+	0.5-	1999 05 12	704	0.4+	0.5-	1999 05 18	704	0.0	0.3+
1997 12 05	704	0.4+	0.4-	1999 05 12	704	0.2+	0.3+	1999 05 18	704	0.7+	0.1-
1997 12 05	704	1.3+	0.1+	1999 05 13	704	0.6+	1.1-	1999 05 18	704	0.6-	0.4-
1997 12 05	704	0.5+	0.8+	1999 05 13	704	(2.9-	0.7+)	1999 05 19	704	0.7+	1.0-
1999 04 11	699	0.6+	0.2-	1999 05 13	704	1.0-	0.7-	1999 05 19	704	0.7-	1.2-
1999 04 11	699	0.1+	0.3+	1999 05 14	704	(1.3+	2.7+)	1999 05 19	704	1.9+	1.5-
1999 04 11	699	0.0	0.6+	1999 05 14	704	0.6+	1.8+	1999 05 19	704	1.0+	1.7-
1999 04 12	704	0.3+	1.8-	1999 05 14	704	1.1+	0.9+	1999 05 19	704	1.6-	0.2-

1999 JB₆₈ = 1991 PR₃₁ = 1994 EX₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	193.32476		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.21723235	ω	276.44801	+0.72809621	-0.68008912
a	2.7406467	Ω	126.44285	+0.66349311	+0.66778121
e	0.0033066	i	6.11973	+0.17219989	+0.30256743
P	4.54	H	13.9	G 0.15	U 4

Residuals in seconds of arc

1991 08 14	809	0.1+	0.1-	1999 04 12	704	0.0	1.0-	1999 05 13	704	0.2+	0.7+
1991 08 14	809	0.4-	1.4+	1999 04 12	704	1.4+	0.7-	1999 05 17	704	0.5-	0.2-
1994 02 08	809	2.3+	1.9+	1999 04 12	704	0.6-	1.9+	1999 05 17	704	0.6+	1.2-
1994 02 08	809	0.9+	3.2+	1999 04 12	704	0.0	1.2+	1999 05 17	704	0.4+	1.4+
1994 02 08	809	0.3+	1.0+	1999 04 12	704	1.6-	0.5+	1999 05 17	704	1.3+	1.3+
1994 02 13	809	1.1+	1.8-	1999 05 12	704	1.0+	0.2-	1999 05 17	704	0.0	0.2+
1994 02 13	809	0.2+	1.1-	1999 05 12	704	0.6+	0.3+	1999 05 18	704	0.7+	0.1-
1994 02 13	809	0.6-	1.7-	1999 05 12	704	0.1+	0.5+	1999 05 18	704	0.4-	1.1-
1994 03 09	010	1.2-	0.3+	1999 05 12	704	0.3-	1.0-	1999 05 18	704	0.4+	0.0
1994 03 09	010	1.6-	1.0+	1999 05 12	704	0.8-	0.6+	1999 05 18	704	1.6+	0.6-
1994 03 09	010	0.5-	0.9+	1999 05 13	704	1.2-	0.9+	1999 05 18	704	1.0+	0.5+
1994 03 10	010	0.7-	0.5-	1999 05 13	704	1.3-	0.5-	1999 05 19	704	1.3-	0.1+

1994 03 10	010	0.1-	1.1-	1999 05 13	704	0.7-	0.3-	1999 05 19	704	0.5+	0.7-
1994 03 10	010	0.3+	1.0-	1999 05 13	704	0.1-	1.0-	1999 05 19	704	1.2-	1.7-

1999 JF₆₈ = 1998 AS₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	201.59134		(2000.0)	P	Q		
n	0.27715373	ω	298.38299	+0.76169731	-0.63688271		
a	2.3298193	Ω	101.43407	+0.62885560	+0.68236592		
e	0.2073408	i	6.98252	+0.15607003	+0.35882748		
P	3.56	H	14.6	G	0.15	U	5

Residuals in seconds of arc

1992 04 26	691	0.4+	0.5+	1998 01 06	704	0.1-	0.6-	1999 05 13	704	0.8+	1.1-
1992 04 26	691	0.4-	0.4+	1998 04 12	704	0.6-	0.9+	1999 05 13	704	1.3+	0.4-
1992 04 26	691	0.2+	0.0	1999 04 12	704	0.1-	0.5+	1999 05 13	704	1.0+	1.1-
1998 01 02	704	0.2+	0.2+	1999 04 12	704	0.2+	0.1+	1999 05 17	704	0.3-	0.7-
1998 01 02	704	0.9-	0.3+	1999 04 12	704	1.5-	0.3-	1999 05 17	704	0.2-	1.7+
1998 01 02	704	0.1+	0.2+	1999 05 12	704	0.3-	1.3-	1999 05 17	704	0.3-	0.5+
1998 01 02	704	0.3+	0.2-	1999 05 12	704	1.0+	0.4-	1999 05 17	704	0.3-	0.8+
1998 01 02	704	0.1+	0.3+	1999 05 12	704	0.6-	1.1-	1999 05 22	691	0.2-	0.3+
1998 01 06	704	0.3+	0.1+	1999 05 12	704	0.1-	0.5-	1999 05 22	691	0.2+	0.3+
1998 01 06	704	0.2+	0.1-	1999 05 13	704	0.4-	1.2+	1999 05 22	691	0.1+	0.1-

1999 JH₆₈ = 1989 AX₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	352.48219		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.21506169	ω	128.28221	-0.34235760	+0.93541232
a	2.7590571	Ω	121.47771	-0.89113266	-0.29348979
e	0.0754110	i	5.94212	-0.29778156	-0.19714849
P	4.58	H	13.8	G 0.15	U 4

Residuals in seconds of arc

1989 01 04	413	0.2-	0.2-	1999 04 12	704	0.0	0.3-	1999 05 17	704	0.5+	0.5-
1989 01 04	413	1.5+	1.0-	1999 04 12	704	0.3-	0.1+	1999 05 17	704	0.8-	0.0
1989 01 10	413	1.5-	0.7+	1999 04 12	704	0.7-	0.2+	1999 05 17	704	0.2-	0.4+
1989 01 10	413	0.0	0.8-	1999 04 12	704	1.3+	1.2+	1999 05 18	704	0.4+	1.2-
1997 12 28	566	0.5-	0.1+	1999 04 12	704	0.1+	0.3-	1999 05 18	704	0.3-	0.9-
1997 12 28	566	0.4-	0.1-	1999 05 12	704	0.0	0.6-	1999 05 18	704	1.0-	0.6-
1997 12 28	566	0.7-	0.4+	1999 05 12	704	0.7+	0.3+	1999 05 18	704	0.9+	0.5+
1998 01 08	704	0.3+	0.2+	1999 05 12	704	0.3+	0.4+	1999 05 18	704	0.8-	0.4-
1998 01 08	704	0.0	0.1+	1999 05 12	704	0.1-	0.1+	1999 05 19	704	1.4+	1.2+
1998 01 08	704	0.4+	0.2+	1999 05 12	704	0.1-	0.4-	1999 05 19	704	0.4+	0.7+
1998 01 08	704	0.6+	0.3+	1999 05 13	704	0.3-	0.5-	1999 05 19	704	0.5-	0.0
1998 01 24	566	0.2+	0.0	1999 05 13	704	0.3-	0.8+	1999 05 19	704	1.4-	0.6-
1998 01 24	566	0.1+	0.1-	1999 05 13	704	0.9-	0.5+	1999 05 21	691	0.0	0.0
1998 01 24	566	0.1+	0.1-	1999 05 13	704	0.1-	0.6-	1999 05 21	691	0.2-	0.2+
1999 04 11	699	0.3+	0.0	1999 05 13	704	0.8-	0.7-	1999 05 21	691	0.2-	0.2+
1999 04 11	699	0.4+	0.1+	1999 05 17	704	1.4+	0.6+				
1999 04 11	699	1.2+	0.0	1999 05 17	704	0.1-	0.1+				

1999 JM₆₈ = 1997 WL₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	26.45672		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$		
n	0.29018247	ω	157.89476	-0.75236740	+0.64858685		
a	2.2595499	Ω	63.06400	-0.62208349	-0.64200031		
e	0.0654471	i	7.42650	-0.21669201	-0.40886514		
P	3.40	H	14.8	G	0.15	U	4

M.P.C. 35018

1999 JUNE 22

1997 11 29	704	0.8+	0.0	1999 05 12	704	0.3-	0.2-	1999 05 17	704	0.4-	0.5+
1997 12 05	704	(2.9+	0.1+)	1999 05 12	704	0.6-	0.6-	1999 05 17	704	0.4+	0.6-
1997 12 05	704	(2.6+	2.1-)	1999 05 13	704	1.2-	0.9-	1999 05 18	704	0.5+	0.9-
1997 12 05	704	1.3-	0.6-	1999 05 13	704	1.0+	1.0+	1999 05 18	704	0.8-	0.3+
1997 12 05	704	0.0	0.2-	1999 05 13	704	1.6-	0.6+	1999 05 18	704	0.2-	0.6-
1997 12 05	704	1.5+	1.0+	1999 05 13	704	0.5+	0.1+	1999 05 18	704	0.7+	0.8-
1999 04 12	704	0.3+	0.9+	1999 05 13	704	1.8-	0.5-	1999 05 18	704	0.2+	0.0
1999 04 12	704	0.4+	0.5+	1999 05 14	704	0.0	0.2+	1999 05 19	704	0.6+	1.0-
1999 04 12	704	0.1-	0.5+	1999 05 14	704	(2.4+	0.9-)	1999 05 19	704	0.4+	0.4+
1999 04 12	704	1.2-	0.5+	1999 05 14	704	0.0	1.6+	1999 05 19	704	0.2-	0.8+
1999 04 12	704	0.8-	0.1-	1999 05 14	704	0.6+	0.2-	1999 05 19	704	0.1-	0.7-
1999 04 23	704	0.8+	0.6-	1999 05 15	703	1.1+	0.2+	1999 05 19	704	1.1-	0.5+

1999 JP₆₈ = 1995 CX₂ = 1997 WK₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	43.98817		(2000.0)	P	Q
<i>n</i>	0.27256171	ω	26.94327	-0.96307819	+0.26910956
<i>a</i>	2.3559143	Ω	168.65986	-0.25358512	-0.89706449
<i>e</i>	0.1545246	<i>i</i>	2.26603	-0.09041565	-0.35050726
<i>P</i>	3.62	<i>H</i>	15.4	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1995 02 01	691	0.0	0.0	1999 05 12	704	0.6+	0.6+	1999 05 17	704	0.4-	0.1+
1995 02 01	691	0.2+	0.1+	1999 05 12	704	0.6+	1.0+	1999 05 17	704	0.5+	0.5+
1995 02 02	691	0.0	0.0	1999 05 12	704	0.7+	0.8-	1999 05 17	704	1.4-	1.2+
1995 02 02	691	0.1-	0.0	1999 05 13	704	1.0+	0.5+	1999 05 17	704	0.2-	0.4+
1995 02 02	691	0.0	0.0	1999 05 13	704	(1.4+	2.6-)	1999 05 17	704	0.7-	1.0+
1997 11 29	691	0.5-	0.1-	1999 05 13	704	1.6-	1.7-	1999 05 18	704	0.4-	0.9+
1997 11 29	691	0.4-	0.3+	1999 05 13	704	0.8-	0.8-	1999 05 18	704	1.3-	1.2-
1997 11 29	691	0.4-	0.3+	1999 05 13	704	0.1-	0.2+	1999 05 18	704	0.3-	0.5+
1997 12 05	691	0.1+	0.5+	1999 05 14	704	1.2+	0.5-	1999 05 18	704	0.4+	0.5-
1997 12 05	691	0.3+	0.3+	1999 05 14	704	0.1+	1.3+	1999 05 18	704	0.2-	0.4+
1997 12 05	691	0.6+	0.4+	1999 05 14	704	(3.0-	1.5-)	1999 05 19	704	0.7-	0.5-
1999 04 12	704	0.6-	0.6+	1999 05 14	704	0.2+	0.3+	1999 05 19	704	0.5+	0.9+
1999 04 12	704	1.2+	0.3-	1999 05 15	703	0.4-	1.3-	1999 05 19	704	0.9+	0.6-
1999 04 12	704	0.0	1.0-	1999 05 15	703	0.8-	0.5+	1999 05 19	704	1.7+	0.8-
1999 04 12	704	0.1-	1.8-	1999 05 15	703	0.3+	1.5+	1999 05 19	704	0.6+	0.8-
1999 05 12	704	0.2+	0.5+	1999 05 15	703	1.5+	0.8+				

1999 JV₆₈ = 1996 TO₅₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	8.22836		(2000.0)	P	Q
<i>n</i>	0.25905227	ω	105.95856	-0.45486185	+0.88984344
<i>a</i>	2.4371248	Ω	136.92740	-0.83579800	-0.41267932
<i>e</i>	0.1519240	<i>i</i>	3.00223	-0.30747748	-0.19461354
<i>P</i>	3.80	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1996 10 05	809	1.3+	0.8+	1999 05 12	704	0.3-	1.2+	1999 05 17	704	0.6-	0.3+
1996 10 05	809	0.6-	0.7+	1999 05 12	704	0.8-	0.3+	1999 05 17	704	1.2-	0.5+
1996 10 05	809	0.4-	0.8-	1999 05 13	704	0.7+	0.0	1999 05 17	704	1.0+	0.6+
1996 10 06	809	0.1+	1.0+	1999 05 13	704	0.7+	1.2+	1999 05 17	704	0.3+	0.6+
1996 10 06	809	0.4+	0.9-	1999 05 13	704	0.5-	0.6-	1999 05 17	704	1.1-	0.0
1996 10 06	809	0.9-	0.6-	1999 05 13	704	0.5+	0.3-	1999 05 18	704	0.5-	1.0-
1999 04 11	699	0.1-	0.6+	1999 05 13	704	0.7-	0.8-	1999 05 18	704	(1.6-	2.3-)
1999 04 11	699	0.1-	0.0	1999 05 14	704	1.0+	0.8-	1999 05 18	704	0.6-	1.6-
1999 04 11	699	0.2+	0.5+	1999 05 14	704	0.5+	0.9+	1999 05 18	704	0.6-	0.0
1999 04 12	704	0.6+	0.2+	1999 05 14	704	(0.1+	2.6-)	1999 05 18	704	0.8-	0.2+
1999 04 12	704	0.4+	0.0	1999 05 14	704	0.4-	0.3-	1999 05 19	704	0.2+	0.2+
1999 04 12	704	0.0	0.3-	1999 05 14	704	0.2+	0.6+	1999 05 19	704	0.5-	0.7-
1999 04 12	704	0.6-	0.9-	1999 05 15	703	0.3+	0.0	1999 05 19	704	0.9+	0.9-
1999 05 12	704	1.0-	0.8-	1999 05 15	703	0.6+	0.2+	1999 05 19	704	1.1+	0.3-
1999 05 12	704	0.9+	0.4-	1999 05 15	703	0.0	0.2+	1999 05 19	704	0.6-	1.4-
1999 05 12	704	0.7+	1.4+	1999 05 15	703	0.2+	1.4+				

1999 JX₆₈ = 1990 EZ

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	103.14007		(2000.0)	P	Q
<i>n</i>	0.22957549	ω	286.51125	-0.63653124	-0.76774502
<i>a</i>	2.6415106	Ω	203.50997	+0.75904627	-0.60673443
<i>e</i>	0.0812891	<i>i</i>	10.61092	+0.13666288	-0.20601192
<i>P</i>	4.29	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1990 02 24	809	1.1+	0.5-	1999 04 14	699	0.9-	0.6-	1999 05 15	703	1.2-	0.7+
1990 02 24	809	0.8+	1.2-	1999 04 14	699	0.5+	0.9-	1999 05 17	704	0.2+	0.3+
1990 02 24	809	0.2-	0.1-	1999 05 12	704	0.1+	0.4+	1999 05 17	704	0.9-	0.2+
1990 03 02	809	0.9+	0.7+	1999 05 12	704	1.1+	0.2-	1999 05 17	704	1.6-	0.1+
1990 03 02	809	0.4+	0.5+	1999 05 12	704	0.8+	0.1-	1999 05 17	704	0.5+	0.0
1990 03 02	809	0.3+	0.5-	1999 05 12	704	0.3+	0.1+	1999 05 17	704	0.3+	0.1-
1990 03 04	809	1.0-	0.3+	1999 05 12	704	0.2-	0.8-	1999 05 18	704	1.9-	1.5+
1990 03 04	809	1.3-	0.8+	1999 05 13	704	0.3+	0.5-	1999 05 18	704	0.8-	0.9+
1990 03 04	809	0.8-	0.3+	1999 05 13	704	1.1+	0.6+	1999 05 18	704	0.4-	0.3+
1999 04 12	704	0.6+	1.2-	1999 05 13	704	1.7+	0.2+	1999 05 18	704	0.5+	0.1+
1999 04 12	704	0.0	0.1-	1999 05 13	704	0.2-	0.1+	1999 05 18	704	0.9-	0.1-
1999 04 12	704	0.7-	0.4-	1999 05 13	704	0.4+	1.0-	1999 05 19	704	1.9-	0.6-
1999 04 12	704	0.6+	0.6+	1999 05 15	703	0.2-	1.6+	1999 05 19	704	0.5+	0.4+
1999 04 12	704	0.7+	1.3+	1999 05 15	703	1.9+	0.2+	1999 05 19	704	0.3+	0.6-
1999 04 14	699	1.0+	1.0-	1999 05 15	703	1.0-	0.3+	1999 05 19	704	0.6-	1.9-

1999 JZ₆₈ = 4891 P-L

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	40.92192		(2000.0)	P	Q
<i>n</i>	0.21927792	ω	19.19384	-0.95915194	+0.28285904
<i>a</i>	2.7235757	Ω	177.22638	-0.26973891	-0.90989422
<i>e</i>	0.0944709	<i>i</i>	5.07383	-0.08525531	-0.30345225
<i>P</i>	4.49	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1960 09 24	675	0.1-	0.1-	1999 05 12	704	0.8+	1.3-	1999 05 17	704	1.4+	1.6+
1960 09 24	675	0.0	0.1+	1999 05 13	704	0.8-	1.2-	1999 05 17	704	3.1-	1.8+
1960 09 26	675	0.6+	0.3-	1999 05 13	704	0.5+	0.1+	1999 05 18	704	0.4+	1.2-
1960 09 26	675	0.5-	0.4-	1999 05 13	704	1.6-	0.0	1999 05 18	704	0.0	0.2+
1960 09 28	675	0.4-	0.5+	1999 05 13	704	0.6-	0.5+	1999 05 18	704	1.4+	0.7-
1960 09 28	675	0.4+	0.2+	1999 05 15	703	0.3+	0.4+	1999 05 18	704	0.9+	1.6-
1999 04 11	699	0.2-	0.5-	1999 05 15	703	0.3+	0.2+	1999 05 18	704	2.0-	0.2-
1999 04 11	699	0.0	0.2-	1999 05 15	703	0.6+	0.2-	1999 05 19	704	0.1-	1.2+
1999 04 11	699	0.1+	0.6+	1999 05 15	703	0.3-	0.4+	1999 05 19	704	1.1-	1.8-
1999 05 12	704	1.0+	0.3+	1999 05 17	704	1.9+	1.7-	1999 05 19	704	0.5-	0.3-
1999 05 12	704	0.8+	2.2+	1999 05 17	704	0.7-	0.0	1999 05 19	704	0.6+	1.2+

1999 JE₆₉ = 1983 UN = 1987 SU₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	291.75020		(2000.0)	P	Q
<i>n</i>	0.22988368	ω	132.96539	+0.85324126	+0.51826652
<i>a</i>	2.6391493	Ω	196.09949	-0.51833339	+0.83045275
<i>e</i>	0.1742830	<i>i</i>	12.10045	-0.05753129	+0.20432339
<i>P</i>	4.29	<i>H</i>	13.5	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1983 10 30	675	(3.7+ 2.9-)	1999 05 12	704	0.6+ 0.3+	1999 05 17	704	0.6- 0.1+
1983 11 04	675	0.2- 0.5+	1999 05 12	704	0.6+ 0.3+	1999 05 17	704	0.8- 0.3+
1987 09 29	054	1.0+ 1.1+	1999 05 12	704	1.0+ 0.1-	1999 05 17	704	(2.6- 1.0+)
1987 09 29	054	0.9- 0.9-	1999 05 12	704	0.1- 0.5+	1999 05 17	704	1.3- 1.0+
1987 09 30	054	0.7+ 0.0	1999 05 12	704	0.1- 0.2-	1999 05 18	704	0.4+ 0.0
1987 09 30	054	0.4- 0.0	1999 05 13	704	0.1+ 0.2+	1999 05 18	704	0.9- 0.2-
1987 10 01	054	0.5- 0.7+	1999 05 13	704	0.4- 0.2+	1999 05 18	704	1.2- 0.7-
1999 04 11	699	1.1+ 0.6+	1999 05 13	704	0.6+ 0.5+	1999 05 18	704	1.2- 0.5-
1999 04 11	699	0.4+ 1.2+	1999 05 13	704	0.3- 0.7+	1999 05 18	704	0.5- 0.1-
1999 04 11	699	0.1+ 1.5+	1999 05 13	704	0.4+ 0.2+	1999 05 19	704	0.5- 0.0

1999 04 12	704	0.7+	0.1-	1999 05 15	704	1.9+	1.1-	1999 05 19	704	1.3-	0.4-
1999 04 12	704	0.9+	0.5-	1999 05 15	704	0.7+	0.1+	1999 05 19	704	0.2-	0.9-
1999 04 12	704	0.6+	0.6+	1999 05 15	704	0.3-	1.7-	1999 05 19	704	0.1-	1.2-
1999 04 12	704	0.5+	0.7+	1999 05 15	704	1.3-	0.2+	1999 05 19	704	0.2+	0.9-
1999 04 12	704	0.2+	1.3+	1999 05 17	704	0.1+	0.7-				

1999 JP₆₉ = 1990 VP₁₂ = 1997 RK₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27725898	ω	257.63362	+0.11101441	-0.99376696		
<i>a</i>	2.3292296	Ω	186.02031	+0.94527986	+0.10873976		
<i>e</i>	0.1520123	<i>i</i>	5.55374	+0.30679275	+0.02455385		
<i>P</i>	3.55	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1990 11 15	809	0.3+	1.5-	1997 11 03	704	0.2+	0.2-	1999 05 13	704	0.3-	1.8-
1990 11 15	809	(2.8+	2.8-)	1997 11 06	704	0.2-	1.8+	1999 05 13	704	0.9-	0.1+
1990 11 15	809	0.1+	1.7-	1997 11 06	704	0.5-	1.1+	1999 05 13	704	0.4+	0.2+
1997 09 04	910	0.1+	0.6-	1997 11 06	704	0.2+	0.8+	1999 05 17	704	0.6+	0.6+
1997 09 04	910	0.1+	0.4-	1997 11 06	704	0.1-	0.9+	1999 05 17	704	0.4-	0.3+
1997 09 04	910	0.0	0.4-	1997 11 06	704	0.1+	1.1+	1999 05 17	704	1.5-	0.8-
1997 09 05	910	0.5+	0.3-	1999 04 11	699	1.1+	0.1-	1999 05 17	704	1.4-	0.6+
1997 09 05	910	0.3+	0.3-	1999 04 11	699	0.7+	0.7+	1999 05 17	704	(3.8-	0.3-)
1997 09 05	910	0.6+	0.3-	1999 04 11	699	0.0	1.0+	1999 05 18	704	0.9+	0.9-
1997 10 31	704	0.8-	0.6-	1999 04 12	704	0.4-	0.1+	1999 05 18	704	0.6+	0.1-
1997 10 31	704	0.5-	0.2-	1999 04 12	704	0.5+	0.4+	1999 05 18	704	0.2+	0.4+
1997 10 31	704	1.1-	1.0-	1999 04 12	704	1.3+	0.7-	1999 05 18	704	(0.0	2.3-)
1997 10 31	704	1.1-	0.3-	1999 05 12	704	0.5-	1.1+	1999 05 18	704	0.4-	1.1-
1997 10 31	704	1.5-	1.0-	1999 05 12	704	0.6-	0.5+	1999 05 19	704	0.4-	1.5-
1997 11 03	704	1.9+	0.3-	1999 05 12	704	0.6-	0.1-	1999 05 19	704	0.3-	0.4-
1997 11 03	704	(2.3+	0.5+)	1999 05 12	704	0.7-	0.5+	1999 05 19	704	0.7+	0.8+
1997 11 03	704	0.6+	0.5+	1999 05 13	704	0.4-	0.2-	1999 05 19	704	1.5+	1.1-
1997 11 03	704	1.6+	0.1-	1999 05 13	704	(1.2-	2.3-)	1999 05 19	704	0.8-	1.4-

1999 JF₇₀ = 1979 HO₅ = 1981 UF₈ = 1984 JE₁ = 1986 XS₅ = 1991 VU₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.19609580	ω	193.08021	-0.28551600	+0.93626182		
<i>a</i>	2.9342055	Ω	60.65955	-0.85680080	-0.15367839		
<i>e</i>	0.0609524	<i>i</i>	13.57987	-0.42938678	-0.31590624		
<i>P</i>	5.03	<i>H</i>	12.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1979 04 25	095	0.1-	1.3+	1999 04 15	704	0.0	0.4+	1999 05 14	703	0.0	0.4+
1981 10 30	381	0.1-	1.1+	1999 04 15	704	0.1-	0.2-	1999 05 14	704	0.5+	0.4-
1981 10 30	381	0.5+	0.4+	1999 04 15	704	0.2+	0.1-	1999 05 14	703	0.6-	0.6+
1984 05 04	688	0.8+	0.3-	1999 04 15	704	0.9+	0.9-	1999 05 14	703	0.2-	1.0+
1984 05 04	688	(0.9-	10.3-)	1999 04 15	704	0.5-	0.0	1999 05 17	704	0.0	0.4+
1986 12 01	381	0.5-	1.6-	1999 05 12	704	0.0	0.6-	1999 05 17	704	0.2+	1.1+
1986 12 01	381	0.9-	0.5+	1999 05 12	704	1.0+	0.1+	1999 05 17	704	(0.2-	2.2+)
1991 11 02	400	1.4+	1.0-	1999 05 12	704	0.1-	1.4-	1999 05 17	704	0.2+	0.6+
1991 11 02	400	0.9-	0.2+	1999 05 12	704	0.2-	0.3-	1999 05 17	704	1.0-	0.5-
1991 11 04	400	0.3-	1.2+	1999 05 12	704	2.0-	0.1+	1999 05 18	704	0.4+	0.1-
1991 11 04	400	0.3+	0.4+	1999 05 13	704	0.1-	0.1-	1999 05 18	704	1.3-	1.0+
1999 04 10	699	0.4+	0.7+	1999 05 13	704	0.1+	0.6+	1999 05 18	704	0.6-	0.2-
1999 04 10	699	0.4+	0.7+	1999 05 13	704	0.3-	1.1+	1999 05 18	704	0.0	0.1-
1999 04 10	699	(2.5+	0.0)	1999 05 13	704	1.8+	0.1-	1999 05 18	704	(2.0-	0.1+)
1999 04 12	704	0.2-	0.3+	1999 05 14	704	0.4+	0.5-	1999 05 19	704	0.7+	0.3+
1999 04 12	704	0.1-	0.0	1999 05 14	704	1.7+	0.3-	1999 05 19	704	1.0+	0.6+
1999 04 12	704	0.0	0.1-	1999 05 14	704	0.1-	0.2-	1999 05 19	704	0.6-	0.7-
1999 04 12	704	0.6-	1.2-	1999 05 14	703	1.0+	0.1+	1999 05 19	704	0.0	0.1-
1999 04 12	704	1.4-	0.3-	1999 05 14	704	0.3-	0.3+	1999 05 19	704	0.5-	1.8-

1999 JF₇₁ = 1992 UM₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.24432404	ω	232.30282	+0.95720489	+0.25735932		
<i>a</i>	2.5341088	Ω	112.43796	-0.19924649	+0.91776602		
<i>e</i>	0.2100746	<i>i</i>	8.23451	-0.20990388	+0.30244292		
<i>P</i>	4.03	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 10 26	400	0.1+	2.0-	1999 05 12	704	0.9+	0.2+	1999 05 13	704	0.0	1.0-
1992 10 26	400	0.7-	0.4-	1999 05 12	704	0.0	1.7-	1999 05 14	703	0.1-	0.2+
1992 10 28	400	0.9+	1.3+	1999 05 12	704	0.3+	1.3-	1999 05 14	703	0.7+	0.8+
1992 10 28	400	0.3+	1.0+	1999 05 12	704	0.4-	1.2-	1999 05 14	703	0.2+	1.4+
1994 02 13	691	1.3+	0.0	1999 05 13	704	0.1-	0.6+	1999 05 14	703	0.6-	1.3+
1994 02 13	691	0.6-	0.0	1999 05 13	704	0.9+	1.3-	1999 05 17	704	0.3-	0.3+
1994 02 13	691	0.7-	0.2-	1999 05 13	704	0.4+	1.4-	1999 05 17	704	0.4+	0.9-
1999 04 12	704	0.1-	1.0+	1999 05 13	704	1.2-	0.7+	1999 05 17	704	(1.1+	2.1-)
1999 04 12	704	(2.2+	1.8+)	1999 05 13	704	0.5-	1.2+	1999 05 17	704	0.2+	1.3+
1999 04 12	704	0.2-	0.5+	1999 05 13	704	1.0+	0.1+	1999 05 17	704	(2.9-	0.2+)
1999 04 12	704	0.1-	0.0	1999 05 13	704	1.4-	0.8-				

1999 JJ₇₂ = 1991 XV₃ = 1998 HS₄₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18957833	ω	96.61135	-0.95256500	-0.21360590		
<i>a</i>	3.0010755	Ω	71.22468	+0.09506082	-0.88549426		
<i>e</i>	0.0203215	<i>i</i>	13.23590	+0.28910787	-0.41264080		
<i>P</i>	5.20	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1991 12 09	399	0.3-	1.6+	1999 05 12	704	0.3+	0.8-	1999 05 18	704	0.6+	1.2+
1991 12 09	399	0.1-	0.9-	1999 05 12	704	0.4-	0.2-	1999 05 19	704	0.2+	0.1-
1998 04 18	699	0.4-	0.3-	1999 05 13	704	0.5+	0.0	1999 05 19	704	0.4-	0.1+
1998 04 18	699	0.1-	0.3-	1999 05 13	704	0.1-	0.6-	1999 05 19	704	0.2+	0.3+
1998 04 18	699	0.2-	0.4+	1999 05 13	704	0.3-	0.0	1999 05 19	704	0.1+	0.0
1998 04 19	699	0.5+	0.1-	1999 05 13	704	0.5+	0.6-	1999 05 19	704	0.7-	0.7-
1998 04 19	699	0.4-	0.6-	1999 05 13	704	0.1-	0.0	1999 05 21	704	(0.6-	2.8+)
1998 04 19	699	0.7+	0.7+	1999 05 15	704	0.4-	0.7-	1999 05 21	704	0.5-	1.5+
1999 04 12	704	0.5-	0.0	1999 05 15	704	0.8-	0.4+	1999 05 21	704	(0.6-	2.4+)
1999 04 12	704	0.4+	0.2+	1999 05 15	704	0.5+	0.3-	1999 05 21	704	0.8-	0.6-
1999 04 12	704	0.2+	0.5+	1999 05 15	704	0.6+	0.1-	1999 05 21	704	1.8-	0.5-
1999 04 12	704	0.1+	0.2+	1999 05 17	704	0.5+	0.2-	1999 06 07	703	0.0	0.8-
1999 04 12	704	1.2-	0.5+	1999 05 17	704	0.6-	0.5+	1999 06 07	703	0.1-	0.0
1999 04 15	704	(0.1-	2.1-)	1999 05 17	704	0.0	0.7+	1999 06 07	703	0.9+	0.7+
1999 04 15	704	0.8-	1.0-	1999 05 17	704	0.8-	1.3+	1999 06 07	703	1.0+	0.7+
1999 04 15	704	0.4-	0.1+	1999 05 17	704	0.5-	1.1+	1999 06 08	704	0.5+	0.3-
1999 04 15	704	0.2-	0.0	1999 05 18	704	0.5+	0.0	1999 06 08	704	0.5+	0.1-
1999 05 12	704	0.9+	0.1-	1999 05 18	704	1.6+	0.4+	1999 06 08	704	0.2-	1.0-
1999 05 12	704	0.3+	0.8-	1999 05 18	704	0.7+	1.2+	1999 06 08	704	0.0	0.2-
1999 05 12	704	0.1+	1.2-	1999 05 18	704	0.9+	1.1+	1999 06 08	704	0.4-	1.2-

1999 JO₇₂ = 1992 EV₂₉ = 1996 QO₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	13.47613		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.29286937	ω	97.06490	-0.41204108	+0.91046878
a	2.2457087	Ω	148.52605	-0.86059789	-0.37603441
e	0.1727487	i	3.91187	-0.29932159	-0.17217640
P	3.37	H	16.2	G 0.15	U 3

M.P.C. 35020

1999 JUNE 22

1996 08 23	118	0.3−	1.0+	1999 05 12	704	1.0+	0.2+	1999 05 18	704	0.8+	0.0
1996 08 23	118	0.1+	0.8+	1999 05 13	704	0.2+	0.5−	1999 05 18	704	0.4−	0.2+
1996 08 23	118	1.0+	0.1+	1999 05 13	704	1.2+	0.3+	1999 05 18	704	0.0	0.3−
1996 08 24	118	0.3+	0.4+	1999 05 13	704	0.5+	0.5+	1999 05 18	704	0.3+	0.1+
1996 08 24	118	0.7+	0.1+	1999 05 13	704	0.4−	1.2+	1999 05 18	704	0.9+	0.9−
1996 08 24	118	0.4−	0.1−	1999 05 13	704	0.0	0.2+	1999 06 07	703	0.2−	0.2+
1999 04 12	704	0.1−	0.3+	1999 05 14	704	0.2−	0.4+	1999 06 07	703	0.1+	0.8+
1999 04 12	704	0.8+	0.7−	1999 05 14	704	(2.1−	0.2+)	1999 06 07	703	0.1−	0.5−
1999 04 12	704	1.2−	1.5−	1999 05 14	704	0.9+	1.0+	1999 06 07	703	0.5−	0.9−
1999 04 12	704	(1.8−	2.4−)	1999 05 14	704	0.1+	1.5+				

1999 JO₇₃ = 1998 HT₄₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17219349	<i>ω</i>	76.08139	−0.86620126	−0.45909854		
<i>a</i>	3.1998152	<i>Ω</i>	76.27514	+0.34286658	−0.83327658		
<i>e</i>	0.1077887	<i>i</i>	11.71774	+0.36350776	−0.30802382		
<i>P</i>	5.72	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 18	699	0.5+	0.7+	1999 05 14	704	1.2−	0.9+	1999 05 19	704	0.3−	0.7+
1998 04 18	699	0.7−	0.9+	1999 05 14	704	1.1−	0.9+	1999 05 19	704	0.9+	0.0
1998 04 18	699	0.2−	0.7+	1999 05 14	704	0.9+	0.9−	1999 05 19	704	1.2−	1.7−
1998 04 19	699	0.6+	1.9−	1999 05 14	704	1.2+	0.8+	1999 05 19	704	0.0	0.9−
1998 04 19	699	0.8+	0.3−	1999 05 14	704	0.6−	0.4−	1999 06 04	703	0.3+	1.4+
1998 04 19	699	1.0−	0.1−	1999 05 17	704	0.4+	0.3−	1999 06 04	703	0.2+	0.2+
1999 05 12	704	0.1+	0.4−	1999 05 17	704	0.5+	0.4−	1999 06 04	703	0.2+	0.0
1999 05 12	704	0.8−	0.9−	1999 05 17	704	0.0	0.1+	1999 06 04	703	1.4−	0.3+
1999 05 12	704	1.6+	0.9−	1999 05 17	704	0.0	0.4+	1999 06 14	704	0.6+	0.8−
1999 05 12	704	1.0−	0.3−	1999 05 17	704	0.0	0.4+	1999 06 14	704	0.1−	0.0
1999 05 13	704	0.2−	0.1−	1999 05 18	704	0.4+	0.4+	1999 06 14	704	0.7+	0.7−
1999 05 13	704	0.2+	0.2+	1999 05 18	704	0.8+	0.2+	1999 06 14	704	0.4−	0.2−
1999 05 13	704	0.8−	0.5+	1999 05 18	704	(2.3+	0.8−)	1999 06 14	704	0.3−	0.5+
1999 05 13	704	0.4−	0.7+	1999 05 18	704	0.8−	0.4+				
1999 05 13	704	1.3+	0.6+	1999 05 18	704	0.3+	0.6−				

1999 JZ₇₃ = 1978 WW₁₂ = 1990 KO₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21743552	<i>ω</i>	201.59827	+0.02871014	+0.98546134		
<i>a</i>	2.7389392	<i>Ω</i>	70.36356	−0.88910302	+0.10173411		
<i>e</i>	0.2450702	<i>i</i>	10.24143	−0.45680580	−0.13607396		
<i>P</i>	4.53	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1978 11 29	675	0.6+	1.0+	1999 04 15	704	0.3+	0.3+	1999 05 18	704	0.0	0.6+
1978 11 30	675	1.1−	0.6+	1999 04 15	704	0.3−	0.0	1999 05 18	704	0.2+	0.5+
1990 05 23	095	(2.3−	1.9−)	1999 04 15	704	1.6−	0.9+	1999 05 18	704	0.4+	0.9+
1990 05 23	095	(1.3−	9.2−)	1999 05 12	704	(2.3−	1.2−)	1999 05 18	704	0.8+	0.5+
1997 01 10	691	0.0	0.1+	1999 05 12	704	0.7+	0.1+	1999 05 18	704	0.6−	0.2−
1997 01 10	691	0.2−	0.3+	1999 05 12	704	0.0	0.2+	1999 05 19	704	0.1+	0.2+
1997 01 10	691	0.0	0.2+	1999 05 12	704	0.0	0.8−	1999 05 19	704	0.0	0.1+
1997 02 10	691	0.2−	0.0	1999 05 13	704	0.5−	0.2+	1999 05 19	704	0.2−	0.4−
1997 02 10	691	0.1+	0.3+	1999 05 13	704	0.2−	0.3−	1999 05 19	704	0.5+	0.0
1997 02 10	691	0.1+	0.1+	1999 05 13	704	0.3−	0.1+	1999 05 19	704	0.4+	1.1−
1999 04 12	704	0.7+	0.4−	1999 05 13	704	0.6−	0.3−	1999 06 08	704	1.2+	0.4+
1999 04 12	704	0.1+	0.1+	1999 05 13	704	0.7−	0.1−	1999 06 08	704	1.6+	0.3−
1999 04 12	704	0.2−	0.1−	1999 05 17	704	0.0	0.3+	1999 06 08	704	0.7+	0.5+
1999 04 12	704	1.1−	0.1−	1999 05 17	704	1.7+	0.3−	1999 06 08	704	0.6+	0.7+
1999 04 12	704	0.8−	1.2−	1999 05 17	704	0.3−	0.1−	1999 06 08	704	0.3+	0.6−
1999 04 15	704	0.3+	0.2−	1999 05 17	704	0.5−	0.5+				
1999 04 15	704	0.4−	0.2−	1999 05 17	704	1.2−	0.8+				

1999 JF₇₄ = 1993 QW₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28552734	<i>ω</i>	293.99073	−0.45630964	−0.88979960		
<i>a</i>	2.2840429	<i>Ω</i>	183.17882	+0.85152884	−0.43464731		
<i>e</i>	0.0612140	<i>i</i>	6.39764	+0.25822500	−0.13906253		
<i>P</i>	3.45	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1993 08 16	010	(2.8−	2.0−)	1999 05 14	704	0.4−	1.9−	1999 06 04	704	0.7+	0.7−
1993 08 16	010	1.1−	0.7−	1999 05 14	704	0.8−	0.6+	1999 06 04	704	0.8+	0.2−
1993 08 16	010	1.7−	0.7−	1999 05 14	704	2.0−	0.5+	1999 06 04	704	0.3+	0.7−
1993 08 17	010	(3.6−	1.9−)	1999 05 17	704	0.1+	0.3+	1999 06 04	704	0.3+	0.7−
1993 09 18	010	0.8+	0.3+	1999 05 17	704	0.2+	0.4+	1999 06 04	704	0.0	0.6−
1993 09 18	010	1.4+	1.1+	1999 05 17	704	0.6−	0.2+	1999 06 04	704	0.8−	1.9−
1993 09 18	010	0.3+	0.6+	1999 05 17	704	0.8+	0.9+	1999 06 04	704	0.4+	0.4+
1997 11 26	704	0.7+	0.2+	1999 05 17	704	0.3−	0.8+	1999 06 04	704	1.1+	1.6+
1997 11 26	704	0.3−	0.3−	1999 05 18	704	1.2−	0.5−	1999 06 04	704	0.1+	1.3−
1997 11 26	704	0.3−	0.1+	1999 05 18	704	1.1+	0.1+	1999 06 04	704	0.9−	0.8−
1999 04 14	699	0.1+	0.3+	1999 05 18	704	0.1−	1.7−	1999 06 07	703	0.1+	0.0
1999 04 14	699	1.2+	0.0	1999 05 18	704	0.4−	0.5+	1999 06 07	703	1.0−	0.1−
1999 04 14	699	0.2+	0.3+	1999 05 19	704	1.2+	0.0	1999 06 07	703	0.3+	0.0
1999 05 12	704	0.2−	0.7−	1999 05 19	704	0.0	0.4+	1999 06 07	703	0.1−	0.3−
1999 05 12	704	0.2+	0.0	1999 05 19	704	1.8+	0.6+	1999 06 08	704	0.6−	0.8−
1999 05 12	704	0.6−	0.7−	1999 05 19	703	0.3−	1.2+	1999 06 08	704	0.1−	0.6+
1999 05 12	704	0.1+	0.1+	1999 05 19	703	0.2−	0.2+	1999 06 08	704	0.2−	0.2−
1999 05 13	704	0.6−	0.6−	1999 05 19	703	0.3−	0.7+	1999 06 08	704	0.4+	1.7+
1999 05 13	704	0.2+	0.2−	1999 05 19	703	0.4−	0.2−	1999 06 14	704	0.9+	1.0−
1999 05 13	704	0.0	1.3+	1999 05 21	704	0.6−	0.3−	1999 06 14	704	0.4+	0.7+
1999 05 13	704	0.4−	0.5+	1999 05 21	704	0.3−	0.1−	1999 06 14	704	0.5+	0.6−
1999 05 13	704	0.3+	0.6+	1999 05 21	704	1.4−	0.7+	1999 06 14	704	0.1−	0.1−
1999 05 14	704	0.8+	0.4+	1999 05 21	704	0.7−	0.2+	1999 06 14	704	1.1+	1.7−
1999 05 14	704	0.3−	0.2−	1999 05 21	704	0.7+	1.9+				

1999 JJ₇₄ = 1997 WE₄₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.30798245	<i>ω</i>	274.05026	+0.98532177	−0.13279911		
<i>a</i>	2.1716278	<i>Ω</i>	93.60472	+0.16452681	+0.90630963		
<i>e</i>	0.0550305	<i>i</i>	6.16983	−0.04551855	+0.40120725		
<i>P</i>	3.20	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1994 12 03	691	0.4−	0.3+	1997 12 05	704	0.5+	0.4−	1999 05 14	703	1.0+	0.4−
1994 12 03	691	0.4+	0.3+	1999 04 12	704	1.0+	0.6−	1999 05 14	703	1.2+	1.3−
1997 11 29	704	1.8−	0.2−	1999 04 12	704	0.2−	0.2+	1999 05 17	704	1.7+	0.8+
1997 11 29	704	0.9−	0.1+	1999 04 12	704	0.9−	0.9+	1999 05 17	704	0.1−	0.9+
1997 11 29	704	1.3−	0.6−	1999 04 12	704	1.1−	0.0	1999 05 17	704	0.9+	0.2+
1997 11 29	704	1.8−	0.2+	1999 05 12	704	0.3−	0.3−	1999 05 17	704	0.4+	0.2−
1997 11 29	704	(2.4−	0.7−)	1999 05 12	704	1.5−	0.5−	1999 05 17	704	(0.7+	3.3+)
1997 12 04	704	0.5+	0.3+	1999 05 12	704	1.2+	0.1−	1999 05 18	704	1.8−	1.8+
1997 12 04	704	0.3+	1.6+	1999 05 13	704	0.4−	0.9−	1999 05 18	704	0.7+	0.2−
1997 12 04	704	0.7+	0.4+	1999 05 13	704	0.5+	1.3−	1999 05 18	704	0.4−	0.4+
1997 12 04	704	0.5+	0.9−	1999 05 13	704	0.4−	0.6+	1999 05 18	704	0.6−	0.3−
1997 12 05	704	2.0+	1.1−	1999 05 13	704	(2.4−	0.8−)	1999 05 18	704	1.4−	0.9−
1997 12 05	704	(2.4+	1.2−)	1999 05 13	704	1.6−	0.9+	1999 05 19	704	0.8−	0.5−
1997 12 05	704	0.2+	0.6+	1999 05 14	703	1.0+	1.2+	1999 05 19	704	0.6+	0.5+
1997 12 05	704	1.2+	0.8−	1999 05 14	703	0.5+	0.1+	1999 05 19	704	0.4+	1.7−

1999 JUNE 22

M.P.C. 35021

1999 JU₇₄ = 1991 PK₇ = 1998 BN₄₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22946874	ω	135.77086	−0.02961962	+0.98531765		
<i>a</i>	2.6423299	Ω	131.76401	−0.96820773	+0.01351944		
<i>e</i>	0.1403243	<i>i</i>	13.02779	−0.24838774	−0.17019504		
<i>P</i>	4.30	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1991 08 06	809	0.0	0.2−	1999 05 13	704	0.1+	0.2−	1999 05 15	704	1.3−	0.5+
1991 08 06	809	0.6−	0.4+	1999 05 13	704	0.7+	0.5+	1999 05 17	704	0.5+	0.4+
1991 08 06	809	0.7−	0.1+	1999 05 13	704	1.3+	0.2+	1999 05 17	704	1.3+	0.5+
1991 08 14	809	1.3+	0.4−	1999 05 13	704	0.3+	1.5−	1999 05 17	704	0.4−	0.2+
1991 08 14	809	0.0	0.8−	1999 05 13	704	0.2−	0.6−	1999 05 17	704	0.7+	0.3+
1991 08 14	809	0.1+	0.4−	1999 05 13	704	0.2+	0.3+	1999 05 17	704	0.5−	1.9+
1998 01 17	910	0.3+	0.7−	1999 05 13	704	0.5+	0.3−	1999 06 08	703	0.3+	0.4+
1998 01 17	910	0.6+	0.6−	1999 05 13	704	0.4+	0.7+	1999 06 08	703	0.1+	0.0
1998 01 18	910	0.7+	0.7−	1999 05 13	704	0.6+	0.4+	1999 06 08	703	0.9−	0.1+
1998 01 24	566	0.4−	0.1−	1999 05 13	704	0.4+	0.2+	1999 06 08	703	1.0−	0.7+
1998 01 24	566	0.3−	0.2−	1999 05 13	704	0.3−	1.1−	1999 06 08	704	0.4+	0.5−
1998 01 24	566	0.8−	0.2−	1999 05 13	704	0.2−	0.3+	1999 06 08	704	0.4+	1.5−
1999 05 12	704	0.1−	0.1−	1999 05 13	704	1.1−	0.3−	1999 06 08	704	0.3−	0.7−
1999 05 12	704	0.1−	0.1+	1999 05 13	704	0.3−	0.1−	1999 06 08	704	0.2+	0.4−
1999 05 12	704	0.9−	0.2−	1999 05 15	703	0.9+	0.3−	1999 06 08	704	0.7+	0.8−
1999 05 12	704	0.2−	0.2+	1999 05 15	703	0.1−	0.2+	1999 06 12	704	0.1−	0.3−
1999 05 12	704	0.2−	0.3−	1999 05 15	704	1.5−	0.1−	1999 06 12	704	0.2+	1.3−
1999 05 13	704	0.2+	0.9−	1999 05 15	704	0.4+	0.7+	1999 06 12	704	(0.0	2.1−)
1999 05 13	704	1.1+	0.1+	1999 05 15	703	0.3−	1.0+	1999 06 12	704	0.0	0.9−
1999 05 13	704	0.4−	0.1+	1999 05 15	704	0.5−	0.4+	1999 06 12	704	0.6−	1.2−
1999 05 13	704	0.6+	0.1+	1999 05 15	703	0.3−	1.1+				
1999 05 13	704	0.2−	0.8+	1999 05 15	704	0.7−	0.7−				

1999 JX₇₄ = 1997 YQ₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23772292	ω	4.82538	−0.85732620	−0.49468000		
<i>a</i>	2.5808059	Ω	144.35817	+0.46374062	−0.86228798		
<i>e</i>	0.0779251	<i>i</i>	14.14681	+0.22346460	−0.10840264		
<i>P</i>	4.15	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1997 12 26	566	1.7+	0.3−	1999 05 12	704	0.0	0.0	1999 06 08	704	0.4−	0.6−
1997 12 26	566	0.9+	0.1+	1999 05 12	704	0.3−	0.9+	1999 06 08	704	0.7−	0.3−
1997 12 26	566	1.3+	0.2+	1999 05 12	704	0.8+	0.6+	1999 06 08	704	0.8−	0.7−
1997 12 30	566	1.0−	0.4−	1999 05 13	704	0.2−	0.9+	1999 06 12	704	0.2−	0.4−
1997 12 30	566	1.0−	0.4−	1999 05 13	704	0.2+	1.5+	1999 06 12	704	0.6−	0.3−
1997 12 30	566	1.3−	0.1−	1999 05 13	704	0.7+	0.0	1999 06 12	704	0.8−	0.1−
1998 04 14	704	1.0−	0.2−	1999 05 13	704	0.4−	0.1−	1999 06 12	704	0.3−	0.5−
1998 04 14	704	0.5+	0.1−	1999 05 13	704	0.6−	0.6−	1999 06 12	704	0.4−	0.2+
1998 04 14	704	0.4−	0.1−	1999 05 17	704	1.4+	0.7−	1999 06 14	704	0.3+	0.1−
1999 04 19	703	0.2+	1.4+	1999 05 17	704	0.2−	0.1−	1999 06 14	704	0.4−	0.2−
1999 04 19	703	0.2+	0.7+	1999 05 17	704	1.0−	0.8−	1999 06 14	704	0.7+	0.1−
1999 04 19	703	0.1−	1.0+	1999 05 17	704	0.6+	0.5−	1999 06 14	704	0.2−	0.6+
1999 04 19	703	0.3−	0.7+	1999 05 17	704	1.0+	0.3+	1999 06 14	704	0.2+	0.0
1999 05 12	704	0.6+	0.9−	1999 06 08	704	0.8+	1.0−				
1999 05 12	704	0.5+	0.6+	1999 06 08	704	0.3−	1.3−				

1999 JH₇₆ = 5042 T-2

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21966180	ω	83.35754	+0.65581195	+0.74090239		
<i>a</i>	2.7204016	Ω	228.69486	−0.74614831	+0.60698213		
<i>e</i>	0.1557523	<i>i</i>	11.11568	−0.11477539	+0.28746539		
<i>P</i>	4.49	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1973 09 19	675	(5.0+	1.9+)	1999 05 10	704	0.2+	0.2−	1999 05 19	704	0.3+	0.8−
1973 09 20	675	0.3−	0.2−	1999 05 14	704	0.9−	0.4+	1999 05 19	704	0.6+	0.5−
1973 09 20	675	1.9+	0.3−	1999 05 14	704	0.1+	0.2−	1999 05 19	704	(0.4+	2.4−)
1973 09 24	675	0.0	1.0+	1999 05 14	704	1.3−	0.6+	1999 06 09	704	0.1+	0.5+
1973 09 24	675	0.7+	1.4+	1999 05 14	704	1.5+	0.3+	1999 06 09	704	0.2−	0.9−
1973 09 25	675	0.7−	0.8−	1999 05 14	704	0.3+	0.2−	1999 06 09	704	0.1+	0.3+
1973 09 25	675	0.9−	1.0−	1999 05 17	703	0.8+	0.3−	1999 06 09	704	1.4−	0.8−
1973 09 29	675	0.7+	1.0−	1999 05 17	703	0.4+	0.4+	1999 06 09	704	0.3−	1.2+
1973 09 29	675	0.2−	0.3+	1999 05 17	703	1.2+	1.3+	1999 06 14	704	0.5+	0.1−
1973 09 30	675	0.9−	0.1−	1999 05 17	703	0.0	1.4+	1999 06 14	704	0.2+	0.3−
1973 09 30	675	0.4−	0.8+	1999 05 18	704	1.1+	1.2−	1999 06 14	704	0.3+	0.7−
1999 05 10	704	0.2+	0.7−	1999 05 18	704	1.5−	0.4+	1999 06 14	704	0.3−	0.4+
1999 05 10	704	0.0	0.6−	1999 05 18	704	0.1+	0.1−	1999 06 14	704	0.2+	0.3+
1999 05 10	704	0.6−	0.3−	1999 05 18	704	1.1−	0.8+				
1999 05 10	704	0.3−	0.5+	1999 05 19	704	0.1−	0.7−				

1999 JM₇₆ = 1993 SS₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	153.99443	ω	274.34419	−0.26442527	−0.96418911		
<i>a</i>	2.3037791	Ω	191.05348	+0.92175062	−0.24643306		
<i>e</i>	0.0619164	<i>i</i>	6.12614	+0.28364604	−0.09803113		
<i>P</i>	3.50	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1993 09 17	809	1.2−	0.4−	1999 05 10	704	1.0−	0.7+	1999 05 19	704	0.1−	0.8−
1993 09 17	809	(2.6−	0.3−)	1999 05 10	704	(2.2+	1.7−)	1999 05 19	704	(2.1−	0.0)
1993 09 17	809	(2.8−	1.0−)	1999 05 10	704	0.2+	0.3+	1999 05 19	704	0.2+	0.1−
1993 09 18	809	0.8+	1.9+	1999 05 14	704	0.8+	1.4−	1999 05 19	704	0.7−	0.0
1993 09 18	809	1.5+	1.9+	1999 05 14	704	1.9−	1.6+	1999 06 09	704	0.6+	1.0−
1993 09 18	809	0.5+	1.4+	1999 05 14	704	0.3−	0.1−	1999 06 09	704	0.1+	0.5−
1993 09 22	809	0.3−	1.6−	1999 05 14	704	1.1+	1.1+	1999 06 09	704	0.3+	0.3+
1993 09 22	809	1.3−	1.9−	1999 05 14	704	0.7−	0.3−	1999 06 09	704	0.3+	0.2−
1993 09 22	809	(2.3−	1.4−)	1999 05 18	704	0.1−	0.2−	1999 06 09	704	0.5−	0.3+
1993 09 24	809	(2.2+	0.2−)	1999 05 18	704	0.3−	0.0	1999 06 14	704	0.3+	0.5+
1993 09 24	809	0.4+	0.8−	1999 05 18	704	0.7+	0.0	1999 06 14	704	0.2−	0.7+
1993 09 24	809	0.3−	0.4−	1999 05 18	704	0.2+	0.1+	1999 06 14	704	0.5+	0.2+
1999 05 10	704	0.2+	0.2−	1999 05 18	704	0.6−	0.1−	1999 06 14	704	0.1+	0.0
1999 05 10	704	0.0	0.0	1999 05 19	704	0.4+	0.3−	1999 06 14	704	0.3+	0.4−

1999 JO₇₆ = 1992 OB₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	345.61654	ω	163.04925	+0.32719143	+0.94000585		
<i>a</i>	2.3762789	Ω	125.94689	−0.88023472	+0.34037249		
<i>e</i>	0.1405175	<i>i</i>	6.85427	−0.34370423	+0.02314250		
<i>P</i>	3.66	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1992 07 31	801	0.0	0.3−	1999 05 10	704	0.6+	0.2−	1999 06 05	691	0.3+	0.7+
1992 07 31	801	0.9+	0.2−	1999 05 10	704	0.3−	0.0	1999 06 05	691	1.9+	1.6+
1992 08 02	801	0.4−	0.0	1999 05 10	704	0.7−	0.5−	1999 06 08	704	0.1−	0.2−
1992 08 02	801	0.5−	0.1+	1999 05 10	704	0.0	0.4+	1999 06 08	704	0.0	0.4−
1998 01 20	704	0.2+	0.2−	1999 05 10	704	0.4−	0.4+	1999 06 08	704	0.4+	0.5−
1998 01 20	704	0.7+	0.6−	1999 05 14	704	0.3−	0.0	1999 06 08	704	1.1+	0.9+
1998 01 20	704	0.2+	0.2−	1999 05 14	704	0.5+	1.0+	1999 06 09	691	0.2+	0.8+
1998 01 20	704	0.2+	0.5+	1999 05 14	704	0.1+	0.5+	1999 06 09	691	0.2−	0.2+
1998 01 20	704	0.4+	0.2+	1999 05 17	704	1.1+	0.0	1999 06 09	691	0.3+	0.3+
1998 01 20	704	0.8−	0.6+	1999 05 17	704	0.3−	0.1+	1999 06 14	704	0.2+	0.3−
1998 02 03	691	0.3−	0.1−	1999 05 17	704	0.0	0.4−	1999 06 14	691	0.3−	0.3+
1998 02 03	691	0.2−	0.0	1999 05 17	704	1.2+	1.2−	1999 06 14	704	0.0	0.0
1998 02 03	691	0.4−	0.0	1999 05 17	704	1.2−	0.4+	1999 06 14	704	0.2−	0.1−
1999 03 24	704	1.4−	0.3−	1999 05 21	704	0.1+	0.1+	1999 06 14	691	0.3−	0.2+
1999 03 24	704	0.8+	1.6−	1999 05 21	704	0.4−	0.6−	1999 06 14	704	0.3−	0.1+
1999 03 24	704	0.1−	1.5+	1999 05 21	704	0.0	0.7−	1999 06 14	704	1.1−	0.5+

M.P.C. 35022

1999 03 24	704	1.3−	0.2+	1999 05 21	704	0.3−	0.4−	1999 06 14	691	0.2−	0.2−
1999 03 24	704	1.9+	1.1−	1999 05 21	704	1.4−	1.4−				

1999 JQ₇₆ = 1993 UQ₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	4.52287		(2000.0)	P	Q
<i>n</i>	0.28511954	ω	99.30314	−0.06105612	+0.99785087
<i>a</i>	2.2862202	Ω	167.12430	−0.95255785	−0.05113271
<i>e</i>	0.0703877	<i>i</i>	6.12763	−0.29817057	−0.04097668
<i>P</i>	3.46	<i>H</i>	15.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1993 10 20	809	(0.4−	2.9−)	1996 08 17	566	0.4−	0.6+	1999 06 08	704	0.0	0.5−
1993 10 20	809	0.7+	1.8−	1996 08 17	566	0.3−	0.5+	1999 06 08	704	0.0	0.2−
1993 10 20	809	1.8+	0.7−	1999 05 10	704	0.4+	0.9+	1999 06 08	704	0.3+	0.3+
1993 10 21	809	0.6−	0.3−	1999 05 10	704	(0.8−	2.5−)	1999 06 08	704	0.2−	0.1−
1993 10 21	809	0.8−	0.5+	1999 05 10	704	1.4+	1.5−	1999 06 08	704	0.3+	1.1−
1993 10 21	809	0.9−	0.8+	1999 05 10	704	0.6−	0.4−	1999 06 14	704	0.3−	1.0+
1996 08 17	566	0.2+	0.3−	1999 05 14	704	0.9−	0.6+	1999 06 14	704	0.2+	0.4−
1996 08 17	566	0.4+	0.5−	1999 05 14	704	1.2−	1.2+	1999 06 14	704	0.3−	0.1−
1996 08 17	566	0.2+	0.3+	1999 05 14	704	0.5+	0.8+	1999 06 14	704	0.2−	1.3−
1996 08 17	566	0.3−	0.7+	1999 05 14	704	(2.5+	2.0+)	1999 06 14	704	0.3+	0.7−

1999 JR₇₆ = 1991 TN₄ = 1994 GM₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	349.35852		(2000.0)	P	Q
<i>n</i>	0.22381966	ω	73.10165	+0.26292305	+0.95851987
<i>a</i>	2.6866055	Ω	212.78506	−0.94438805	+0.23232833
<i>e</i>	0.1568885	<i>i</i>	11.72631	−0.19749098	+0.16511574
<i>P</i>	4.40	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1991 10 04	033	0.4−	1.0+	1999 05 10	704	0.3+	0.6+	1999 06 08	704	0.2−	0.4−
1991 10 05	033	0.6−	0.3−	1999 05 10	704	0.2−	0.2−	1999 06 08	704	0.2−	0.4−
1991 10 05	033	0.9+	0.1+	1999 05 14	704	1.0+	0.3+	1999 06 14	704	0.2+	0.1+
1994 04 06	033	0.6+	0.1+	1999 05 14	704	0.9−	1.1+	1999 06 14	704	0.4+	0.0
1994 04 06	033	0.4+	0.4−	1999 05 14	704	1.6−	0.8+	1999 06 14	704	0.5+	0.1+
1994 04 08	033	0.9−	0.8+	1999 05 14	704	1.6−	0.2+	1999 06 14	704	0.7+	0.0
1999 05 10	704	0.0	0.1+	1999 06 08	704	0.2+	0.5−	1999 06 14	704	0.2+	0.2+
1999 05 10	704	0.3−	0.4+	1999 06 08	704	0.3+	0.0				
1999 05 10	704	0.6+	1.4−	1999 06 08	704	0.5+	0.8−				

1999 JX₇₆ = 1990 WN = 1991 CF₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	94.40552		(2000.0)	P	Q
<i>n</i>	0.16996759	ω	61.39878	−0.64145509	−0.72333181
<i>a</i>	3.2276912	Ω	70.85292	+0.57477573	−0.67379704
<i>e</i>	0.0649334	<i>i</i>	15.69746	+0.50810258	−0.15095905
<i>P</i>	5.80	<i>H</i>	12.4	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1990 11 19	413	0.1+	0.3+	1999 05 12	704	0.6−	0.7−	1999 05 15	704	(2.9−	0.4−)
1990 11 20	413	0.0	0.1−	1999 05 12	704	0.7−	0.8−	1999 05 17	704	0.2+	0.8+
1990 11 20	413	0.2+	0.1−	1999 05 12	704	0.7−	1.0−	1999 05 17	704	1.0+	0.2−
1991 02 15	493	0.7−	0.3+	1999 05 14	704	0.3−	0.7−	1999 05 17	704	0.4+	1.2+
1991 02 15	493	(4.5−	3.9−)	1999 05 14	704	0.3−	1.1−	1999 05 17	704	0.0	0.8+
1999 04 12	704	0.7+	0.9−	1999 05 14	704	0.3−	0.2+	1999 05 17	704	1.4−	0.3+
1999 04 12	704	0.6+	0.2−	1999 05 14	704	0.6+	0.7+	1999 05 18	703	0.5+	0.6+
1999 04 12	704	0.4−	0.1−	1999 05 14	704	0.1+	0.5−	1999 05 18	703	0.3+	0.9+
1999 04 12	704	0.2+	0.3−	1999 05 14	704	0.2+	0.9−	1999 05 18	703	0.1+	0.8+
1999 04 12	704	0.6−	0.1−	1999 05 14	704	0.5+	0.1+	1999 05 18	703	0.0	1.3+
1999 04 16	703	0.4+	0.3+	1999 05 14	704	0.8+	0.5+	1999 05 21	704	1.4+	0.1−
1999 04 16	703	0.0	0.4+	1999 05 14	704	0.2−	0.1+	1999 05 21	704	1.4−	0.9+
1999 04 16	703	0.2+	0.0	1999 05 15	704	0.1−	0.3−	1999 05 21	704	0.4+	1.2−
1999 04 16	703	0.3−	0.1+	1999 05 15	704	0.3+	0.6−	1999 05 21	704	0.1+	1.0−

1999 JUNE 22

1999 05 12	704	0.8+	0.1+	1999 05 15	704	0.5−	0.7−	1999 05 21	704	1.8−	1.3+
1999 05 12	704	0.2+	0.3−	1999 05 15	704	0.4−	0.2+				

1999 JA₇₇ = 1978 TF = 1979 YK₄ = 1988 LX = 1990 UV₁ = 1998 DJ₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	351.77274		(2000.0)	P	Q
<i>n</i>	0.17347203	ω	156.06757	−0.37287750	+0.90680931
<i>a</i>	3.1840734	Ω	91.54925	−0.87989892	−0.27830644
<i>e</i>	0.0825164	<i>i</i>	11.34355	−0.29451699	−0.31661079
<i>P</i>	5.68	<i>H</i>	12.6	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1978 10 03	095	0.7−	0.3−	1999 04 15	704	1.5+	1.0−	1999 05 14	704	0.8−	0.1+
1979 12 18	095	0.7+	0.9−	1999 04 15	704	0.6−	0.5+	1999 05 14	704	0.0	0.0
1988 06 08	675	0.0	0.3−	1999 04 15	704	0.3+	0.4−	1999 05 14	704	0.5+	0.3+
1988 06 08	675	0.2−	1.4−	1999 04 16	703	0.8+	0.3+	1999 05 14	704	1.5+	0.8+
1990 10 20	413	0.1+	1.2−	1999 04 16	703	0.1+	0.6+	1999 05 14	704	0.8+	1.6+
1990 10 20	413	(2.6+	0.2+)	1999 04 16	703	0.6+	0.3+	1999 05 14	704	(1.9+	3.2+)
1990 10 27	413	1.0+	0.1−	1999 04 16	703	0.3+	0.6+	1999 05 15	704	0.1+	0.8+
1998 02 26	098	0.1−	1.0−	1999 05 12	704	0.4+	0.5−	1999 05 15	704	1.0−	0.0
1998 02 26	098	1.1−	0.7+	1999 05 12	704	0.3+	1.3−	1999 05 15	704	(2.1−	0.4+)
1998 02 27	098	(2.7+	0.8−)	1999 05 12	704	0.9−	1.8−	1999 05 15	704	0.5+	0.5−
1998 02 27	098	0.6+	0.5−	1999 05 12	704	0.3−	0.3−	1999 05 15	704	1.1−	0.3+
1999 03 24	699	0.3+	1.2+	1999 05 12	704	1.7−	1.3−	1999 05 17	704	0.2+	0.2+
1999 03 24	699	(2.1+	1.4+)	1999 05 14	704	0.3+	0.1+	1999 05 17	704	0.2−	0.4+
1999 03 24	699	0.1+	1.1+	1999 05 14	704	0.3+	0.2−	1999 05 17	704	0.5+	1.4+
1999 04 12	704	0.7+	0.9−	1999 05 14	704	0.7−	0.2+	1999 05 17	704	0.4−	0.6+
1999 04 12	704	0.2+	0.1−	1999 05 14	704	0.4+	1.1+	1999 05 17	704	0.9−	0.1+
1999 04 12	704	0.4+	0.4−	1999 05 14	704	1.2−	0.1+	1999 06 08	704	0.9+	0.2−
1999 04 12	704	0.9+	0.1+	1999 05 14	704	0.3+	0.6−	1999 06 08	704	1.2−	0.3+
1999 04 12	704	0.7−	0.2−	1999 05 14	704	0.7−	0.5−	1999 06 08	704	0.7−	0.7−
1999 04 15	704	0.9+	0.4+	1999 05 14	704	0.3−	0.4−	1999 06 08	704	0.3−	0.2+
1999 04 15	704	0.1+	1.3−	1999 05 14	704	0.5−	0.2−	1999 06 08	704	0.4−	1.3−

1999 JC₇₇ = 1993 FC₃₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	139.29537		(2000.0)	P	Q
<i>n</i>	0.17579224	ω	270.57166	+0.02129935	−0.99972999
<i>a</i>	3.1559946	Ω	178.13050	+0.99254662	+0.02002939
<i>e</i>	0.0980257	<i>i</i>	16.54319	+0.11998979	+0.01178017
<i>P</i>	5.61	<i>H</i>	13.1	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1993 03 19	809	1.1−	0.3+	1999 04 16	703	0.2+	0.7+	1999 05 14	704	1.2+	1.9−
1993 03 20	809	0.7−	0.2+	1999 04 16	703	1.1+	1.5+	1999 05 14	704	2.8−	0.5−
1993 03 24	809	1.0+	0.2−	1999 04 16	703	0.9+	0.7+	1999 05 14	704	1.4−	0.9+
1993 03 24	691	0.3+	0.2−	1999 05 12	704	0.2−	0.4+	1999 05 14	704	0.5−	0.3−
1993 03 24	691	0.4+	0.0	1999 05 12	704	0.8+	1.3−	1999 05 14	704	0.7−	0.5+
1993 03 24	691	0.1+	0.3−	1999 05 12	704	0.9−	0.4−	1999 05 14	704	1.2−	1.0−
1999 04 12	704	0.1+	0.1+	1999 05 12	704	1.0+	0.6+	1999 05 14	704	1.4−	2.6−
1999 04 12	704	0.5+	1.1−	1999 05 12	704	0.2−	0.5+	1999 05 17	704	0.7+	1.0−
1999 04 12	704	1.0+	0.2−	1999 05 14	704	0.6+	0.4+	1999 05 17	704	0.1−	0.8+
1999 04 12	704	3.0−	1.9−	1999 05 14	704	0.2+	1.1+	1999 05 17	704	2.5+	2.4+
1999 04 16	703	0.2+	1.0+	1999 05 14	704	1.1+	0.8+	1999 05 17	704	0.5+	0.3−

1999 JD₇₇ = 1997 YU₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	103.45260		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.23033678	ω	39.99914	−0.51588469	−0.82640860
a	2.6356871	Ω	82.18355	+0.71617480	−0.56058235
e	0.1309194	i	13.16479	+0.47006026	−0.05287959
P	4.28	H	14.4	G 0.15	U 4

Residuals in seconds of arc

1997 11 29	704	1.1−	0.2+	1999 04 12	704	(2.7+ 1.2+)	1999 05 15	704	0.6−	0.0	
1997 11 29	704	0.8−	0.1−	1999 04 12	704	(2.6− 1.0+)	1999 05 15	704	0.3−	0.7+	
1997 12 04	704	0.1−	0.9−	1999 05 12	704	1.0−	1.1−	1999 05 15	704	0.6+	0.8−
1997 12 04	704	0.3−	1.3−	1999 05 12	704	0.9−	0.3−	1999 05 15	704	0.6+	0.1−
1997 12 04	704	1.2+	0.8+	1999 05 12	704	0.1+	1.0−	1999 05 15	704	0.2+	1.1−
1997 12 04	704	0.6+	0.7+	1999 05 12	704	0.9−	0.6−	1999 05 15	704	0.9+	1.0−
1997 12 04	704	1.3+	0.2+	1999 05 14	704	0.1−	0.5+	1999 05 15	704	0.9−	0.7+
1997 12 28	566	0.7−	0.5+	1999 05 14	704	0.2+	0.0	1999 05 17	704	0.8+	1.2−
1997 12 28	566	0.7−	0.2+	1999 05 14	704	0.1−	0.7−	1999 05 17	704	0.5−	0.7+
1997 12 28	566	0.5−	0.5+	1999 05 14	704	1.5−	0.5+	1999 05 17	704	0.7+	1.4+
1997 12 31	704	0.2+	0.5−	1999 05 14	704	0.7+	1.4−	1999 05 17	704	1.5−	0.4−
1997 12 31	704	0.1−	0.4+	1999 05 14	704	0.2+	0.9+	1999 05 17	704	(3.3− 1.0+)	
1997 12 31	704	1.0+	0.9−	1999 05 14	704	0.6+	1.2−	1999 05 18	703	0.2+	0.3+
1997 12 31	704	0.1−	0.1−	1999 05 14	704	0.5+	0.5+	1999 05 18	703	0.1+	1.1+
1999 04 12	704	(0.1+ 2.0−)		1999 05 14	704	(0.3− 2.8+)		1999 05 18	703	0.2+	1.2+
1999 04 12	704	0.6−	0.2−	1999 05 15	704	0.5−	0.8−	1999 05 18	703	0.8+	1.0+
1999 04 12	704	1.1+	1.3+	1999 05 15	704	0.6+	1.0+				

1999 JH₇₇ = 1990 WL₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	22.92110		(2000.0)	P	Q
<i>n</i>	0.28586983	ω	125.16113	−0.56261225	+0.82080236
<i>a</i>	2.2822182	Ω	110.30633	−0.78861907	−0.49699701
<i>e</i>	0.1319548	<i>i</i>	6.04391	−0.24808751	−0.28156253
<i>P</i>	3.45	<i>H</i>	14.7	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1990 11 14	675	(1.5+ 3.3+)	1999 02 23	704	0.2−	0.7−	1999 05 21	704	(2.0+ 0.7−)
1990 11 14	675	0.4+ 1.0+	1999 02 23	704	(5.1− 0.4−)		1999 05 21	704	0.0 0.6−
1990 11 16	809	0.1+ 1.5−	1999 05 12	704	0.3−	1.3+	1999 05 21	704	0.1− 0.8+
1990 11 17	809	0.4+ 1.3−	1999 05 12	704	0.1−	0.2−	1999 05 21	704	0.2− 0.1+
1990 11 21	809	0.3+ 0.3−	1999 05 12	704	0.0 1.0+		1999 06 05	703	0.4− 0.0
1990 11 21	809	0.5+ 0.1+	1999 05 12	704	0.3+	1.1+	1999 06 05	703	0.2+ 0.1+
1990 11 21	809	0.4− 0.1+	1999 05 12	704	0.0 1.0+		1999 06 05	703	0.7+ 0.3+
1990 11 22	809	0.2− 0.2−	1999 05 14	704	0.2−	0.9−	1999 06 05	703	1.1+ 1.1−
1990 11 22	809	0.1− 0.5+	1999 05 14	704	0.7+ 0.2−		1999 06 08	704	0.3+ 0.6+
1990 11 22	809	0.8− 0.1−	1999 05 14	704	0.0 1.0−		1999 06 08	704	0.9+ 0.2−
1997 12 04	704	1.0− 0.1+	1999 05 14	704	0.5+ 0.8+		1999 06 08	704	0.2+ 0.0
1997 12 04	704	0.4+ 0.2−	1999 05 17	704	1.0+ 0.3−		1999 06 08	704	0.5+ 1.4−
1997 12 04	704	0.8+ 0.0	1999 05 17	704	0.1+ 1.0+		1999 06 08	704	0.6− 1.6−
1997 12 04	704	0.2− 0.3+	1999 05 17	704	1.3− 0.7−		1999 06 14	704	1.1− 0.4+
1997 12 04	704	(0.1+ 2.4+)	1999 05 17	704	0.0 1.1−		1999 06 14	704	0.7− 0.1+
1999 02 23	704	0.1− 0.5+	1999 05 17	704	1.1− 0.1+		1999 06 14	704	0.6− 0.2+
1999 02 23	704	0.4− 0.4+	1999 05 21	704	1.2+ 0.2−		1999 06 14	704	1.0− 0.0

1999 JN₇₇ = 1977 DU₈ = 1998 DD₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	304.77451		(2000.0)	P	Q
<i>n</i>	0.28048569	ω	212.70968	+0.95377756	+0.28492181
<i>a</i>	2.3113315	Ω	130.43315	−0.24162049	+0.91610942
<i>e</i>	0.2446277	<i>i</i>	7.21071	−0.17868383	+0.28206929
<i>P</i>	3.51	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1977 02 19	381	0.9+	0.2−	1999 05 12	704	0.1+	0.3−	1999 05 21	704	0.6−	0.0
1977 02 19	381	1.2−	0.7−	1999 05 12	704	0.3−	0.4+	1999 06 05	703	0.3−	0.3+
1995 03 24	691	0.1+	0.1−	1999 05 12	704	0.0	1.0+	1999 06 05	703	0.0	0.4+
1995 03 24	691	0.3−	0.2−	1999 05 14	704	0.2+	0.4−	1999 06 05	703	0.2−	0.1−
1995 03 24	691	0.5−	0.9−	1999 05 14	704	1.0−	0.3−	1999 06 05	703	0.3+	0.2−
1997 01 13	910	0.0	0.8−	1999 05 14	704	(3.0−	1.1−)	1999 06 08	704	0.3+	0.1−
1997 01 13	910	0.3+	0.5−	1999 05 14	704	0.1−	0.8+	1999 06 08	704	0.0	0.6−
1997 01 13	910	0.3+	0.5−	1999 05 14	704	1.6−	0.5+	1999 06 08	704	0.4−	0.7+
1998 02 22	566	0.3−	0.0	1999 05 17	704	0.3−	0.5−	1999 06 08	704	0.6+	0.3−
1998 02 22	566	0.6+	0.8+	1999 05 17	704	0.1+	1.3−	1999 06 08	704	0.0	0.1−
1998 02 22	566	0.2+	0.3+	1999 05 17	704	1.2−	0.6−	1999 06 14	704	0.2+	0.2−

1998 02 23	566	0.1−	0.1+	1999 05 17	704	1.7+	0.8+	1999 06 14	704	0.3+	0.2−
1998 02 23	566	0.3+	0.0	1999 05 21	704	0.1+	0.2+	1999 06 14	704	0.1+	0.5−
1998 02 23	566	0.2−	0.4+	1999 05 21	704	0.8+	0.0	1999 06 14	704	0.0	0.2−
1999 05 12	704	0.2+	0.5−	1999 05 21	704	0.5+	1.4+	1999 06 14	704	0.2+	0.1−
1999 05 12	704	0.1−	0.0	1999 05 21	704	0.4+	0.3−				

1999 JO₇₇ = 1998 FV₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	262.51519		(2000.0)	P	Q
<i>n</i>	0.23921064	ω	226.98007	+0.97329323	−0.21469965
<i>a</i>	2.5700943	Ω	145.18526	+0.22913274	+0.93027543
<i>e</i>	0.2008084	<i>i</i>	8.18345	−0.01408803	+0.29747551
<i>P</i>	4.12	<i>H</i>	13.7	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1998 03 20	704	0.2−	0.1−	1999 05 12	704	0.9+	0.9+	1999 06 05	703	0.8−	1.1+
1998 03 20	704	0.6+	0.2−	1999 05 12	704	0.2−	1.8−	1999 06 05	703	0.1+	0.0
1998 03 20	704	0.7+	0.6−	1999 05 12	704	0.5+	0.3−	1999 06 05	703	0.4−	1.3−
1998 03 20	704	0.6−	0.6−	1999 05 14	704	0.3+	1.4+	1999 06 08	704	0.8+	0.5+
1998 03 20	704	(2.3−	2.3−)	1999 05 14	704	0.3−	0.9−	1999 06 08	704	0.4−	0.0
1998 03 22	704	1.1+	0.0	1999 05 14	704	0.2−	0.6−	1999 06 08	704	0.4−	0.2−
1998 03 22	704	0.9+	0.2−	1999 05 14	704	0.1+	0.8+	1999 06 08	704	0.0	0.3−
1998 03 22	704	0.1+	0.9+	1999 05 14	704	0.7−	1.1+	1999 06 08	704	0.0	0.2+
1998 03 22	704	0.5+	0.3−	1999 05 17	704	0.7+	0.0	1999 06 14	704	0.5+	0.2−
1998 03 22	704	0.2−	0.2+	1999 05 17	704	0.1+	0.1−	1999 06 14	704	0.2+	0.2−
1998 03 26	704	0.3−	0.3+	1999 05 17	704	0.8−	0.0	1999 06 14	704	0.7+	0.7−
1998 03 26	704	1.2−	0.0	1999 05 17	704	0.3+	0.1+	1999 06 14	704	0.3+	0.0
1998 03 26	704	1.5−	0.6+	1999 05 17	704	0.0	0.1−	1999 06 14	704	0.5+	0.1+
1999 05 12	704	0.2−	0.2−	1999 06 05	703	1.5−	0.7+				

1999 JP₇₇ = 1998 DH₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	342.80950		(2000.0)	P	Q
<i>n</i>	0.26283943	ω	123.27654	+0.56662892	+0.82396782
<i>a</i>	2.4136579	Ω	181.25059	−0.79379334	+0.54491115
<i>e</i>	0.2910188	<i>i</i>	7.76974	−0.22096107	+0.15539907
<i>P</i>	3.75	<i>H</i>	15.2	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1993 01 23	691	0.1−	0.1−	1999 05 14	704	1.5−	0.9+	1999 05 21	704	0.5+ 0.1−
1993 01 23	691	0.5+ 0.1−		1999 05 14	704	0.6−	0.6+	1999 05 21	704	(2.0− 2.9+)
1993 01 23	691	0.6−	0.1−	1999 05 14	704	0.0	0.3+	1999 06 08	703	0.1+ 0.3+
1995 04 25	691	0.1−	0.1−	1999 05 14	704	0.1+	0.7−	1999 06 08	703	0.1− 0.2−
1995 04 25	691	0.3−	0.4−	1999 05 15	704	(1.7− 2.2−)		1999 06 08	703	0.1− 0.4+
1995 04 25	691	0.3+ 0.5−		1999 05 15	704	0.4+	1.1−	1999 06 08	703	0.9− 0.1−
1998 02 28	691	0.4+ 0.1+		1999 05 15	704	(2.5− 0.6−)		1999 06 08	704	0.8+ 0.1+
1998 02 28	691	0.4+ 0.2+		1999 05 15	704	0.2+	0.4−	1999 06 08	704	0.9+ 0.5−
1998 02 28	691	0.4+ 0.2+		1999 05 15	704	1.6+	0.2−	1999 06 08	704	1.1+ 0.7+
1998 03 03	691	0.6−	0.3+	1999 05 17	704	0.4−	0.1+	1999 06 08	704	1.5+ 0.6+
1998 03 03	691	0.1+ 0.1+		1999 05 17	704	0.5−	0.1−	1999 06 08	704	1.9+ 1.1+
1998 03 03	691	0.1− 0.3+		1999 05 17	704	0.2+	0.0	1999 06 14	704	0.4+ 0.1−
1999 05 12	704	0.4−	0.7−	1999 05 17	704	0.2−	0.3+	1999 06 14	704	0.4+ 0.2+
1999 05 12	704	0.7−	0.5−	1999 05 17	704	1.0−	0.1−	1999 06 14	704	0.5+ 0.2−
1999 05 12	704	0.0	0.1−	1999 05 21	704	0.2−	0.3+	1999 06 14	704	0.1+ 0.2−
1999 05 12	704	0.7−	0.9−	1999 05 21	704	1.6−	0.8+	1999 06 14	704	0.1+ 0.1−
1999 05 12	704	0.2−	0.0	1999 05 21	704	1.6−	0.1+			

Residuals in seconds of arc

1995 03 02	691	0.1−	0.1+	1999 05 12	704	0.8+	0.1−	1999 06 06	703	0.5+	0.1−
1995 03 02	691	0.1+	0.4+	1999 05 14	704	0.3−	0.2+	1999 06 06	703	0.9+	0.4+
1995 03 02	691	0.1−	0.1+	1999 05 14	704	0.2−	1.3+	1999 06 08	704	0.3−	0.1+
1995 03 29	691	0.3−	0.1−	1999 05 14	704	1.4+	1.0+	1999 06 08	704	1.2+	1.5−
1995 03 29	691	0.1−	0.2−	1999 05 14	704	1.0−	0.7+	1999 06 08	704	1.5+	0.2−
1995 03 29	691	0.3+	0.0	1999 05 17	704	0.4+	0.5+	1999 06 08	704	1.0−	0.3+
1995 04 04	691	0.1−	0.2−	1999 05 17	704	0.1−	0.4−	1999 06 08	704	1.3−	0.2−
1995 04 04	691	0.1+	0.3−	1999 05 17	704	0.2−	0.5−	1999 06 14	704	0.1−	0.3−
1995 04 04	691	0.0	0.3−	1999 05 17	704	0.4−	0.1+	1999 06 14	704	0.7−	0.2−
1999 05 12	704	0.9−	1.3−	1999 05 17	704	0.4+	0.0	1999 06 14	704	0.6−	0.8−
1999 05 12	704	0.3−	0.3−	1999 06 06	703	0.0	1.0+	1999 06 14	704	0.0	0.8+
1999 05 12	704	0.0	0.6+	1999 06 06	703	0.7+	0.0	1999 06 14	704	0.6−	0.8−

1999 JV₇₇ = 1998 DH₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	327.10325	(2000.0)	P		Q	
<i>n</i>	0.26405586	ω	218.01270	+0.67233130	+0.70928671	
<i>a</i>	2.4062395	Ω	95.33093	−0.61631828	+0.69488023	
<i>e</i>	0.1805891	<i>i</i>	12.28510	−0.41002732	+0.11854885	
<i>P</i>	3.73	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1955 10 23	675	0.0	0.6+	1999 05 12	704	1.6+	1.4−	1999 05 21	704	0.7−	0.4+
1955 10 23	675	0.4−	0.0	1999 05 12	704	0.0	0.2−	1999 06 05	106	1.5+	0.8−
1997 12 29	566	0.1+	0.4−	1999 05 12	704	0.2+	0.6−	1999 06 05	106	0.1+	1.5−
1997 12 29	566	0.1−	0.2−	1999 05 14	704	0.1−	0.5+	1999 06 05	106	1.7−	0.3−
1997 12 29	566	0.1−	0.4−	1999 05 14	704	0.3−	1.0+	1999 06 06	106	0.9−	0.9+
1998 01 25	566	0.6+	0.7+	1999 05 14	704	0.3−	0.4+	1999 06 06	106	0.1−	0.0
1998 01 25	566	0.5+	0.6+	1999 05 14	704	0.2−	0.2−	1999 06 06	106	0.2−	0.1−
1998 01 25	566	0.4+	0.5+	1999 05 14	704	0.4−	0.2+	1999 06 08	704	0.0	0.2+
1998 02 26	098	0.4−	0.6−	1999 05 17	704	0.1+	0.2+	1999 06 08	704	0.0	0.4+
1998 02 26	098	0.4+	0.7+	1999 05 17	704	0.8+	0.3−	1999 06 08	704	0.2+	0.3+
1998 02 27	098	0.4+	0.5+	1999 05 17	704	0.7−	0.4+	1999 06 08	704	0.0	0.2+
1998 02 27	098	1.7−	0.5−	1999 05 17	704	0.8+	0.9+	1999 06 08	704	0.1−	0.1+
1999 03 24	704	0.5−	1.4−	1999 05 17	704	0.0	1.1+	1999 06 14	704	0.3+	0.2+
1999 03 24	704	0.2−	1.3−	1999 05 21	704	0.3−	0.0	1999 06 14	704	0.4+	0.1−
1999 03 24	704	0.2+	0.2+	1999 05 21	704	0.1+	0.0	1999 06 14	704	0.0	0.1−
1999 03 24	704	(2.4+	1.4−)	1999 05 21	704	0.0	0.9+	1999 06 14	704	0.4+	0.1−
1999 05 12	704	0.5−	0.2+	1999 05 21	704	0.6+	0.3−	1999 06 14	704	(0.4−	2.0−)

1999 JX₇₇ = 3337 T-2

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	355.73160	(2000.0)	P		Q	
<i>n</i>	0.29547526	ω	108.29000	+0.02744062	+0.99891566	
<i>a</i>	2.2324854	Ω	163.14909	−0.95914724	+0.03690887	
<i>e</i>	0.0418995	<i>i</i>	7.45474	−0.28157340	−0.02837689	
<i>P</i>	3.34	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1973 09 19	675	0.2+	0.2+	1999 05 12	704	0.3+	0.3−	1999 05 21	704	0.6−	0.4+
1973 09 19	675	1.6−	0.0	1999 05 12	704	0.2−	0.1+	1999 05 21	704	0.7−	0.3+
1973 09 20	675	0.7+	0.3+	1999 05 12	704	0.6−	0.2−	1999 05 21	704	0.7−	0.3−
1973 09 24	675	0.1−	0.6−	1999 05 14	704	0.5−	0.5+	1999 06 08	704	0.5+	0.3−
1973 09 24	675	0.3+	0.3+	1999 05 14	704	0.6+	0.4+	1999 06 08	704	0.4+	0.2−
1973 09 25	675	0.7+	1.0−	1999 05 14	704	1.5−	0.1−	1999 06 08	704	0.3+	0.2−
1973 09 25	675	0.6+	2.1−	1999 05 14	704	1.2−	0.9−	1999 06 08	704	0.2−	0.1−
1993 09 14	691	(1.5+	2.6+)	1999 05 14	704	0.2+	0.2+	1999 06 08	704	0.0	0.3−
1993 09 14	691	0.8−	1.5+	1999 05 17	704	0.7−	0.3−	1999 06 14	704	0.6+	0.3+
1993 09 14	691	0.0	1.0+	1999 05 17	704	0.1−	0.3−	1999 06 14	704	0.5+	0.6+
1999 05 11	752	0.3+	0.2+	1999 05 17	704	0.1−	0.2+	1999 06 14	704	0.8+	0.5+
1999 05 11	752	0.5+	0.3+	1999 05 17	704	0.0	0.3+	1999 06 14	704	0.4+	0.1+
1999 05 11	752	0.8+	0.3+	1999 05 17	704	0.3−	0.8+	1999 06 14	704	0.4+	0.0
1999 05 12	704	0.2+	0.4−	1999 05 21	704	0.4+	0.0				
1999 05 12	704	0.3−	1.1−	1999 05 21	704	0.6+	1.0−				

1999 JM₇₈ = 1949 ON

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	349.82549	(2000.0)	P		Q	
<i>n</i>	0.23261411	ω	113.49322	−0.34718321	+0.91920101	
<i>a</i>	2.6184564	Ω	134.79761	−0.92725243	−0.30683978	
<i>e</i>	0.0415880	<i>i</i>	15.18176	−0.14023819	−0.24681746	
<i>P</i>	4.24	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1949 07 28	024	1.9+	1.5+	1999 05 13	704	0.3+	0.1+	1999 05 17	704	1.2+	0.3−
1949 07 30	024	2.0−	1.1+	1999 05 13	704	0.1−	0.5−	1999 05 17	704	0.6+	0.3−
1994 01 31	010	0.2+	0.2−	1999 05 13	704	0.6+	0.1+	1999 05 17	704	0.3−	1.2−
1994 01 31	010	0.1−	1.8+	1999 05 13	704	0.7−	0.2+	1999 05 17	704	0.0	0.3+
1994 01 31	010	0.1−	0.3+	1999 05 13	704	1.8−	0.5−	1999 05 17	704	1.4−	0.4−
1999 04 10	704	0.2+	0.2+	1999 05 14	704	1.3+	0.0	1999 06 07	704	0.1−	0.7+
1999 04 10	704	0.7+	1.3+	1999 05 14	704	0.6+	0.2−	1999 06 07	704	0.4−	0.4+
1999 04 10	704	0.2−	1.4+	1999 05 14	704	0.4+	0.4−	1999 06 07	704	0.1−	0.5−
1999 04 10	704	0.2−	1.2+	1999 05 14	704	(0.3+	2.5−)	1999 06 07	704	0.1+	0.6−
1999 04 10	704	0.2+	0.1+	1999 05 14	704	(0.5+	2.7−)	1999 06 07	704	0.8−	1.2−

1999 JC₇₉ = 1998 CH₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	277.96108	(2000.0)	P		Q	
<i>n</i>	0.23839200	ω	204.40013	+0.93076222	+0.30939310	
<i>a</i>	2.5759748	Ω	136.03936	−0.27202098	+0.94202904	
<i>e</i>	0.1580358	<i>i</i>	16.29986	−0.24430774	+0.12983522	
<i>P</i>	4.13	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1986 03 04	675	0.1+	0.4+	1998 02 06	563	0.0	0.1−	1999 05 14	704	0.1−	0.3+
1998 02 05	403	0.7−	0.1−	1998 02 06	563	0.8+	0.4−	1999 05 17	704	1.0+	0.2−
1998 02 05	403	0.2−	0.1+	1999 04 10	704	0.9−	0.8−	1999 05 17	704	1.5−	0.5−
1998 02 05	403	0.1+	0.4+	1999 04 10	704	0.5+	1.2+	1999 05 17	704	0.1+	1.1−
1998 02 05	563	0.6−	0.5+	1999 04 10	704	0.2−	0.0	1999 05 17	704	1.2−	0.7+
1998 02 05	563	0.1+	0.2−	1999 04 10	704	0.5−	1.1−	1999 05 17	704	0.9+	0.1−
1998 02 05	563	0.3−	0.1−	1999 05 13	704	0.2+	0.5+	1999 06 07	704	1.5+	0.2−
1998 02 06	563	0.1+	0.1+	1999 05 13	704	(2.3+	0.6+)	1999 06 07	704	0.1+	0.2+
1998 02 06	563	0.5+	0.0	1999 05 13	704	0.5−	1.9+	1999 06 07	704	0.0	1.3−
1998 02 06	563	0.2+	0.1−	1999 05 14	704	0.2+	0.0	1999 06 07	704	(0.1+	2.2−)
1998 02 06	563	0.3+	0.5−	1999 05 14	704	0.2−	0.0	1999 06 07	704	0.3+	0.2−
1998 02 06	563	0.3−	0.3+	1999 05 14	704	0.4+	0.2+				
1998 02 06	563	0.1−	0.2−	1999 05 14	704	0.2+	0.2+				

1999 JH₇₉ = 1998 DH₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	354.15448	(2000.0)	P		Q	
<i>n</i>	0.22894687	ω	124.49277	−0.03024924	+0.98301218	
<i>a</i>	2.6463436	Ω	142.47297	−0.98653331	−0.00023650	
<i>e</i>	0.1976122	<i>i</i>	17.28905	−0.16073893	−0.18354020	
<i>P</i>	4.30	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1998 02 17	691	0.6−	0.3−	1999 05 07	703	0.1+	0.2+	1999 06 07	704	0.0	0.9+
1998 02 17	691	0.5−	0.2−	1999 05 07	703	0.1+	0.2+	1999 06 07	704	0.1−	0.1+
1998 02 17	691	0.3−	0.1+	1999 05 13	704	1.9+	0.9−	1999 06 07	704	0.4+	0.7+
1998 02 28	691	0.3+	0.2+	1999 05 13	704	1.5+	0.1−	1999 06 07	704	0.4+	0.5−
1998 02 28	691	0.8+	0.4+	1999 05 13	704	0.9−	1.9−	1999 06 07	704	0.1−	0.2+
1998 02 28	691	0.3+	0.5+	1999 05 13	704	0.4+	0.4−	1999 06 12	704	0.4+	0.7+
1999 03 28	699	0.9−	0.1+	1999 05 14	704	0.6−	0.3−	1999 06 12	704	0.5+	0.0
1999 03 28	699	0.2+	0.0	1999 05 14	704	0.9−	0.3+	1999 06 12	704	0.0	0.4+
1999 03 28	699	0.3+	0.2+	1999 05 14	704	0.8−	0.1−	1999 06 12	704	0.1−	0.6+
1999 05 07	703	0.3−	0.1−	1999 05 14	704	0.7−	0.3−	1999 06 12	704	0.0	0.7+
1999 05 07	703	0.2+	0.0	1999 05 14	704	0.9−	0.3−				

1999 JUNE 22

M.P.C. 35025

1999 JL₇₉ = 1994 GN₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	17.03913		(2000.0)	P	Q
<i>n</i>	0.21311685	ω	8.15460	-0.57656772	+0.81168921
<i>a</i>	2.7758171	Ω	226.69580	-0.75668626	-0.57360714
<i>e</i>	0.1629110	<i>i</i>	7.37686	-0.30821350	-0.11016115
<i>P</i>	4.62	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1994 04 06	033	1.1+	0.7+	1999 05 13	704	0.3+	0.5+	1999 05 19	704	0.7-	1.6-
1994 04 06	033	0.5+	0.0	1999 05 14	704	1.3-	0.5-	1999 06 05	703	0.0	0.4+
1994 04 08	033	1.3-	0.1+	1999 05 14	704	0.8-	0.6-	1999 06 05	703	0.4+	0.0
1996 10 12	691	0.1+	0.1+	1999 05 14	704	0.3+	0.1+	1999 06 05	703	0.7+	1.0+
1996 10 12	691	0.1+	0.2-	1999 05 14	704	1.0-	0.6+	1999 06 05	703	1.1+	1.8+
1996 10 12	691	0.2-	0.1-	1999 05 14	704	(3.0-	0.6-)	1999 06 09	704	0.2-	0.2-
1999 05 10	704	0.4+	0.0	1999 05 18	704	0.1-	0.7-	1999 06 09	704	1.0-	0.4+
1999 05 10	704	1.0+	0.5-	1999 05 18	704	0.2+	1.2-	1999 06 09	704	0.6+	0.6+
1999 05 10	704	0.6+	0.0	1999 05 18	704	0.9+	0.1-	1999 06 09	704	0.7-	0.3+
1999 05 10	704	0.9-	0.4+	1999 05 18	704	0.2-	0.4-	1999 06 14	704	0.5-	0.1-
1999 05 13	704	0.9+	1.9-	1999 05 19	704	0.1+	0.1+	1999 06 14	704	0.5-	0.3+
1999 05 13	704	0.3+	0.1-	1999 05 19	704	0.2+	0.3+	1999 06 14	704	0.0	0.5+
1999 05 13	704	0.6+	0.0	1999 05 19	704	0.5-	0.7+	1999 06 14	704	0.4-	0.2+
1999 05 13	704	0.4+	0.5-	1999 05 19	704	0.2+	1.1-	1999 06 14	704	0.8-	0.9+

1999 JV₇₉ = 1990 VY₈ = 1990 VA₁₅ = 1990 WK₁₄Id. G. V. Williams, S. Nakano (d, *MPC* 20913)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	194.85818		(2000.0)	P	Q
<i>n</i>	0.29057396	ω	334.89352	+0.37626549	-0.92107693
<i>a</i>	2.2575199	Ω	92.87163	+0.86609428	+0.31124911
<i>e</i>	0.1421483	<i>i</i>	5.75838	+0.32909722	+0.23396854
<i>P</i>	3.39	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1990 11 11	400	(5.5-	0.1+)	1998 04 14	704	0.2+	0.6-	1999 05 19	704	(0.4-	2.6-)
1990 11 11	400	(6.5-	0.7+)	1998 04 14	704	0.2-	0.8+	1999 05 19	704	(1.4-	3.7-)
1990 11 15	095	(11.5+	4.8-)	1998 04 14	704	(2.5+	1.6-)	1999 05 19	704	(1.3-	5.3-)
1990 11 15	095	1.5+	1.9-	1998 04 14	704	(5.1-	0.8+)	1999 05 19	704	(6.0-	6.3-)
1990 11 21	095	(3.1-	2.9-)	1999 05 13	704	0.5-	0.3-	1999 06 11	703	0.3+	0.5-
1990 11 21	095	0.0	0.3-	1999 05 13	704	0.0	0.7+	1999 06 11	703	0.2+	0.6-
1990 11 24	400	1.4-	1.0+	1999 05 13	704	0.7+	0.6-	1999 06 11	703	0.2+	0.2-
1990 11 24	400	0.1-	0.8+	1999 05 13	704	0.4+	0.7+	1999 06 11	703	1.5+	0.8+
1992 04 07	691	0.2-	0.3-	1999 05 13	704	0.1-	0.3-	1999 06 11	703	0.2-	0.6+
1992 04 07	691	0.1+	0.3-	1999 05 14	704	1.9-	0.5+	1999 06 11	703	0.3+	0.3+
1992 04 07	691	0.0	0.4-	1999 05 14	704	1.1-	0.2-	1999 06 11	703	0.3+	0.3+
1998 01 02	704	0.2-	0.1+	1999 05 14	704	0.8+	0.1+	1999 06 11	703	0.9+	1.0+
1998 01 02	704	0.3-	0.3+	1999 05 14	704	0.4-	0.5+	1999 06 15	704	0.5-	0.4-
1998 01 02	704	0.6+	0.2+	1999 05 18	704	0.5+	0.4+	1999 06 15	704	0.3-	0.1+
1998 01 02	704	0.2+	0.1-	1999 05 18	704	1.2+	0.7-	1999 06 15	704	0.8-	0.0
1998 01 02	704	0.3+	0.1+	1999 05 18	704	(2.8-	0.5-)	1999 06 15	704	0.7-	0.5-
1998 04 14	704	1.5-	0.6-	1999 05 18	704	(3.9+	0.7-)	1999 06 15	704	0.6-	1.0-

1999 JB₈₀ = 1989 WN

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	310.61546		(2000.0)	P	Q
<i>n</i>	0.28215596	ω	277.08652	+0.92465657	+0.03376685
<i>a</i>	2.3022010	Ω	81.51318	+0.13923571	+0.89711129
<i>e</i>	0.3370323	<i>i</i>	22.55074	-0.35443426	+0.44051235
<i>P</i>	3.49	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1989 11 22	675	0.4+	0.6-	1999 05 18	704	0.8-	0.1-	1999 06 09	704	1.0+	0.2-
1989 11 25	675	0.1+	0.0	1999 05 18	704	0.5-	0.3-	1999 06 11	703	0.7+	0.9+
1996 12 12	691	0.1-	0.4+	1999 05 18	704	0.0	0.1+	1999 06 11	703	0.3+	0.4+
1996 12 12	691	0.4-	0.4+	1999 05 19	704	0.5-	0.2-	1999 06 11	703	1.2-	0.8+

1996 12 12	691	0.4-	0.5+	1999 05 19	704	0.5-	0.5+	1999 06 11	703	0.9+	1.1-
1999 05 14	704	1.0-	1.1+	1999 05 19	704	0.1-	0.2+	1999 06 15	704	0.4+	0.1-
1999 05 14	704	0.1+	0.6+	1999 05 19	704	0.0	0.0	1999 06 15	704	0.6+	0.1-
1999 05 14	704	1.8-	0.1-	1999 06 09	704	0.4+	0.2-	1999 06 15	704	0.5+	0.2-
1999 05 14	704	0.7-	0.1-	1999 06 09	704	1.1+	0.6-	1999 06 15	704	0.6+	0.3-
1999 05 14	704	0.3+	0.9+	1999 06 09	704	0.9+	0.3-	1999 06 15	704	0.1-	0.4-
1999 05 18	704	0.6-	0.4-	1999 06 09	704	0.1+	0.0				

1999 JF₈₀ = 1998 FA₉₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	333.37322		(2000.0)	P	Q
<i>n</i>	0.12541480	ω	169.53956	+0.24590677	+0.94534531
<i>a</i>	3.9527881	Ω	114.42197	-0.90543014	+0.30289078
<i>e</i>	0.1812929	<i>i</i>	13.60183	-0.34601463	-0.12074529
<i>P</i>	7.86	<i>H</i>	12.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 24	704	0.5-	1.7-	1999 05 15	704	0.9+	1.7-	1999 06 08	704	0.0	0.7-
1998 03 24	704	1.1-	0.9+	1999 05 15	704	0.7-	0.3-	1999 06 08	704	0.2-	0.1+
1998 03 24	704	0.5-	0.6+	1999 05 15	704	0.0	1.2+	1999 06 08	704	0.7-	0.5-
1998 03 24	704	0.4-	0.6-	1999 05 17	704	0.8+	0.0	1999 06 08	704	0.8-	0.6-
1998 03 25	704	1.6+	0.0	1999 05 17	704	0.3-	0.5+	1999 06 11	703	0.9+	0.1+
1998 03 25	704	1.2+	0.8-	1999 05 17	704	0.7+	0.2-	1999 06 11	703	1.0+	0.9+
1998 03 25	704	0.8-	0.8+	1999 05 17	704	1.3-	1.4-	1999 06 11	703	0.6+	1.5+
1998 03 25	704	0.5+	0.9+	1999 05 17	704	0.8-	0.4+	1999 06 11	703	(0.9-	2.2+)
1999 05 12	704	0.2+	0.4+	1999 05 21	704	0.8-	0.0	1999 06 14	704	0.1+	0.3+
1999 05 12	704	0.5-	0.3-	1999 05 21	704	0.9+	0.2-	1999 06 14	704	0.1-	0.2-
1999 05 12	704	0.5+	0.2-	1999 05 21	704	1.9-	0.3-	1999 06 14	704	0.2-	0.2-
1999 05 12	704	0.3-	0.6+	1999 05 21	704	0.1-	0.1-	1999 06 14	704	0.2-	0.4-
1999 05 12	704	1.1+	0.9+	1999 05 21	704	1.6+	1.6+	1999 06 14	704	0.3-	0.3-
1999 05 15	704	0.1-	1.0-	1999 06 08	704	0.0	0.1-				

1999 JJ₈₀ = 1991 TL₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	339.55078		(2000.0)	P	Q
<i>n</i>	0.22698700	ω	130.25574	+0.43738885	+0.89798273
<i>a</i>	2.6615547	Ω	165.45537	-0.87227171	+0.43666857
<i>e</i>	0.2307042	<i>i</i>	11.05279	-0.21870769	+0.05429162
<i>P</i>	4.34	<i>H</i>	14.5	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1991 10 01	691	0.0	0.4+	1999 05 15	704	1.1-	0.4-	1999 05 21	704	0.5+	0.1-
1991 10 01	691	0.1-	0.2+	1999 05 15	704	1.7-	0.4+	1999 06 08	704	0.1+	0.1+
1991 10 01	691	0.1-	0.3+	1999 05 15	704	0.5+	0.5+	1999 06 08	704	0.1+	0.1-
1991 10 14	691	0.1+	0.1-	1999 05 17	704	0.3+	1.0-	1999 06 08	704	0.2+	0.1-
1991 10 14	691	0.0	0.4-	1999 05 17	704	0.4+	0.7+	1999 06 08	704	0.5+	0.2+
1991 10 14	691	0.1+	0.5-	1999 05 17	704	0.4-	0.2+	1999 06 08	704	0.1+	0.8-
1999 05 12	704	0.1+	1.0-	1999 05 17	704	1.0+	0.3-	1999 06 12	704	0.3-	0.0
1999 05 12	704	0.8-	0.4-	1999 05 17	704	1.2-	0.2-	1999 06 12	704	0.2+	0.0
1999 05 12	704	0.8+	0.6+	1999 05 21	704	0.7+	0.2+	1999 06 12	704	0.2-	0.0
1999 05 12	704	1.6-	0.8+	1999 05 21	704	0.5-	0.2-	1999 06 12	704	0.2-	0.3+
1999 05 12	704	0.4+	0.3-	1999 05 21	704	0.9+	1.4+	1999 06 12	704	0.3-	0.3-
1999 05 15	704	0.2-	0.1-	1999 05 21	704	1.7+	0.3-				

1999 JQ₈₀ = 1997 XY₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	307.62030		(2000.0)	P	Q
<i>n</i>	0.27922405	ω	212.95717	+0.82912841	+0.54301935
<i>a</i>	2.3182886	Ω	113.59656	-0.47639344	+0.81071279
<i>e</i>	0.1678309	<i>i</i>	8.34204	-0.29256686	+0.21880302
<i>P</i>	3.53	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1997 12 07	910	0.2-	0.1-	1999 05 15	704	1.8+	0.9+	1999 05 21	704	0.8+	1.1-
1997 12 07	910	0.1+	0.1-	1999 05 15	704	0.3-	1.4-	1999 05 21	704	0.4-	1.4-

1997 12 07	910	0.0	0.1+	1999 05 15	704	(0.5−	2.4+)	1999 06 08	704	0.4−	0.1+
1997 12 07	910	0.1−	0.2−	1999 05 15	704	1.0+	0.3−	1999 06 08	704	0.0	0.2−
1997 12 08	910	0.1−	0.2−	1999 05 15	704	0.1+	1.0+	1999 06 08	704	0.0	0.1−
1997 12 08	910	0.1−	0.0	1999 05 17	704	0.1+	0.3+	1999 06 08	704	0.5−	0.4+
1998 03 01	327	0.2+	0.0	1999 05 17	704	0.2+	0.1+	1999 06 08	704	1.1−	0.2+
1998 03 01	327	0.1+	0.0	1999 05 17	704	0.2−	0.5−	1999 06 14	704	0.2+	0.0
1998 03 01	327	0.1+	0.1+	1999 05 17	704	0.7−	0.6+	1999 06 14	704	0.5+	0.4−
1999 05 12	704	0.7−	0.6+	1999 05 17	704	0.7−	0.4−	1999 06 14	704	0.2−	0.1+
1999 05 12	704	0.1−	0.4+	1999 05 21	704	0.0	0.6−	1999 06 14	704	0.3+	0.2−
1999 05 12	704	0.2−	1.1+	1999 05 21	704	0.2+	0.4−	1999 06 14	704	0.4−	0.8−
1999 05 12	704	0.1−	0.8+	1999 05 21	704	0.5+	1.1+				

1999 JS₈₀ = 1998 FS₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		296.58855		(2000.0)		P		Q	
<i>n</i>		0.23724996	ω	150.39322		+0.94954544		+0.31046564	
<i>a</i>		2.5842347	Ω	191.77589		−0.31308374		+0.92997629	
<i>e</i>		0.1524199	<i>i</i>	12.57590		−0.01849395		+0.19686336	
<i>P</i>		4.15	<i>H</i>	14.2		<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 22	691	0.5−	0.2−	1999 05 17	704	0.3+	1.0−	1999 06 08	704	1.0+	0.2+
1998 03 22	691	0.7−	0.4+	1999 05 17	704	0.5−	0.2−	1999 06 08	704	0.4+	0.8+
1998 03 22	691	0.6−	0.0	1999 05 17	704	0.4+	0.7+	1999 06 08	704	0.3−	0.5−
1998 03 23	691	0.6+	0.4−	1999 05 17	704	0.3+	0.3−	1999 06 08	704	1.0−	0.8−
1998 03 23	691	0.8+	0.2+	1999 05 17	704	0.4−	0.3+	1999 06 14	704	0.0	0.4−
1998 03 23	691	0.3+	0.0	1999 05 21	704	0.9+	1.4+	1999 06 14	704	0.1+	0.2−
1999 05 12	704	0.3+	0.2−	1999 05 21	704	0.0	0.1+	1999 06 14	704	0.3−	0.1+
1999 05 12	704	0.6−	0.0	1999 05 21	704	0.5+	0.4+	1999 06 14	704	0.4−	0.3−
1999 05 12	704	0.2−	0.0	1999 05 21	704	0.3+	0.6+	1999 06 14	704	0.3−	0.4+
1999 05 12	704	0.1−	0.4−	1999 05 21	704	0.7−	0.5−				
1999 05 12	704	0.3−	0.3−	1999 06 08	704	0.6+	0.0				

1999 JV₈₀ = 1993 BP₁₂ = 1998 FL₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		298.25012		(2000.0)		P		Q	
<i>n</i>		0.21575220	ω	207.81905		+0.91512274		+0.37953186	
<i>a</i>		2.7531670	Ω	129.21544		−0.32959175		+0.89856290	
<i>e</i>		0.1297605	<i>i</i>	10.11254		−0.23220606		+0.22031859	
<i>P</i>		4.57	<i>H</i>	13.6		<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1993 01 22	809	0.1+	0.3−	1998 03 27	566	0.5−	0.5−	1999 05 21	704	0.2+	0.1−
1993 01 22	809	0.3+	0.0	1998 03 27	566	0.3−	0.7−	1999 05 21	704	0.1−	0.4−
1993 01 22	809	0.8+	0.5−	1999 05 12	704	0.2−	0.2+	1999 05 21	704	0.9−	0.4−
1993 01 28	809	0.1+	0.5+	1999 05 12	704	0.4+	0.2+	1999 06 08	704	(2.2−	0.7+)
1993 01 28	809	0.0	0.3−	1999 05 12	704	0.2+	0.3+	1999 06 08	704	0.6−	0.4−
1993 01 28	809	1.2−	0.3+	1999 05 12	704	0.6+	1.3+	1999 06 08	704	0.2−	0.5−
1998 03 25	704	1.8+	1.2+	1999 05 12	704	0.8−	0.1−	1999 06 08	704	1.8−	0.2−
1998 03 25	704	0.2+	0.6+	1999 05 17	704	0.7+	0.7−	1999 06 14	704	0.0	0.1−
1998 03 25	704	0.2−	0.9−	1999 05 17	704	0.1+	0.3−	1999 06 14	704	0.2−	0.5+
1998 03 25	704	0.7−	0.5−	1999 05 17	704	0.5+	0.6−	1999 06 14	704	0.1+	0.3+
1998 03 26	566	0.2−	0.4+	1999 05 17	704	0.4+	0.1−	1999 06 14	704	0.3+	0.4+
1998 03 26	566	0.0	0.5+	1999 05 17	704	0.2+	0.1+	1999 06 14	704	0.0	0.1+
1998 03 26	566	0.2−	0.5+	1999 05 21	704	0.3−	0.1−				
1998 03 27	566	0.2+	0.4−	1999 05 21	704	1.4+	0.4+				

1999 JA₈₁ = 1997 YU₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		21.90318		(2000.0)		P		Q	
<i>n</i>		0.23337006	ω	135.49352		−0.43419274		+0.86937343	
<i>a</i>		2.6127988	Ω	107.44368		−0.87999617		−0.35335891	
<i>e</i>		0.1378943	<i>i</i>	14.31844		−0.19257050		−0.34543788	
<i>P</i>		4.22	<i>H</i>	14.2		<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 12 31	691	0.3+	0.2−	1999 05 12	704	0.4+	0.7+	1999 06 08	704	0.2−	0.4−
1997 12 31	691	0.3+	0.2−	1999 05 12	704	0.2−	0.5+	1999 06 08	704	0.2+	0.1+
1997 12 31	691	0.2+	0.1−	1999 05 21	704	0.2+	0.5−	1999 06 08	704	0.6+	0.1−
1998 01 07	691	0.2−	0.3+	1999 05 21	704	0.0	0.0	1999 06 14	704	0.1−	0.0
1998 01 07	691	0.5−	0.1+	1999 05 21	704	0.0	0.0	1999 06 14	704	0.5−	0.1−
1998 01 07	691	0.0	0.1+	1999 05 21	704	0.9−	0.3−	1999 06 14	704	0.1−	0.0
1999 05 12	704	0.0	0.2−	1999 05 21	704	0.1+	1.2−	1999 06 14	704	0.0	0.5+
1999 05 12	704	0.6−	0.3+	1999 06 08	704	0.0	0.4−	1999 06 14	704	0.1+	0.6+
1999 05 12	704	0.6+	0.9+	1999 06 08	704	0.5+	0.2−				

1999 JC₈₁ = 1975 TB₃ = 1975 TH₄ = 1982 FJ₁ = 1987 QO

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		9.66520		(2000.0)		P		Q	
<i>n</i>		0.23723514	ω	78.49296		−0.14372469		+0.98952140	
<i>a</i>		2.5843423	Ω	183.33781		−0.97500288		−0.14397721	
<i>e</i>		0.1467820	<i>i</i>	13.71749		−0.16944795		−0.01086151	
<i>P</i>		4.15	<i>H</i>	13.3		<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1975 10 03	095	(1.9−	3.1−)	1999 03 24	704	0.9−	0.5+	1999 05 17	704	1.0+	1.3−
1975 10 13	095	0.1+	2.4−	1999 03 24	704	0.1−	0.6−	1999 05 17	704	0.8+	1.2−
1982 03 24	046	0.1+	0.0	1999 03 24	704	0.2−	0.5+	1999 05 17	704	0.8−	0.6−
1982 03 24	046	1.6−	0.9+	1999 03 24	704	0.8−	1.0+	1999 05 17	704	(1.4+	2.3−)
1982 03 27	046	0.6+	2.3−	1999 03 24	704	0.1−	0.8+	1999 05 17	704	(2.2−	2.4+)
1982 03 27	046	(2.7+	2.4−)	1999 05 12	704	0.5+	0.1−	1999 05 21	704	0.5+	0.4−
1982 03 27	046	(0.0	2.8+)	1999 05 12	704	1.1−	0.3−	1999 05 21	704	0.6+	0.1+
1982 03 27	046	1.1+	1.7+	1999 05 12	704	0.2−	0.1−	1999 05 21	704	0.5+	0.7−
1987 08 24	675	0.2−	1.5+	1999 05 12	704	0.0	0.0	1999 05 21	704	0.8+	0.5−
1987 08 26	675	0.0	1.2+	1999 05 15	704	0.4+	0.0	1999 05 21	704	0.6−	0.3+
1999 02 20	704	0.3−	0.9+	1999 05 15	704	0.6+	0.2+	1999 06 12	704	0.2−	0.2−
1999 02 20	704	0.4+	0.4+	1999 05 15	704	1.1−	0.2−	1999 06 12	704	0.1−	0.5−
1999 02 20	704	0.1−	0.5−	1999 05 15	704	1.1+	0.5+	1999 06 12	704	0.1+	0.4+
1999 02 20	704	1.6−	0.9+	1999 05 15	704	0.1+	0.1−	1999 06 12	704	0.9−	0.2+

1999 JS₈₁ = 1998 BH₄₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		241.97460		(2000.0)		P		Q	
<i>n</i>		0.26142278	ω	226.81126		+0.98591537		−0.10580003	
<i>a</i>		2.4223697	Ω	138.75552		+0.13617832		+0.95743984	
<i>e</i>		0.2024787	<i>i</i>	11.33057		−0.09708940		+0.26854295	
<i>P</i>		3.77	<i>H</i>	14.3		<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 01 24	566	0.2+	0.1+	1999 05 12	704	0.4+	0.2+	1999 05 15	704	1.8+	0.9−
1998 01 24	566	0.3+	0.1+	1999 05 12	704	0.2+	1.4−	1999 05 15	704	0.1+	1.3−
1998 01 24	566	0.3+	0.2−	1999 05 12	704	0.3−	0.3−	1999 05 15	704	0.6−	0.3+
1998 01 29	566	0.4−	0.1+	1999 05 15	704	0.5+	0.2−	1999 05 15	704	0.2+	0.8+
1998 01 29	566	0.4−	0.0	1999 05 15	704	0.7+	1.0−	1999 05 15	704	0.8−	0.3−
1998 01 29	566	0.1+	0.1−	1999 05 15	704	0.9−	2.1+	1999 05 15	704	0.3−	1.0+
1999 04 12	704	0.2+	0.1−	1999 05 15	704	1.4+	0.9+	1999 05 17	704	1.3+	1.3+
1999 04 12	704	0.8−	0.0	1999 05 15	704	2.8−	0.3−	1999 05 17	704	0.4−	0.7−
1999 04 12	704	0.6−	1.1+	1999 05 15	704	1.1+	1.1+	1999 05 17	704	2.2−	0.2−
1999 04 12	704	0.3+	0.5+	1999 05 15	704	0.3+	0.4+	1999 05 17	704	0.6+	0.3+
1999 04 12	704	0.2+	1.7−	1999 05 15	704	1.6−	0.5−	1999 05 17	704	1.5−	0.3−
1999 05 12	704	1.2+	1.8−	1999 05 15	704	1.9+	0.0				
1999 05 12	704	0.8+	1.3+	1999 05 15	704	0.6−	0.1+				

1999 JUNE 22

M.P.C. 35027

1999 JA₈₂ = 1982 KQ₁ = 1991 NJ = 1995 KC₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	290.63697		(2000.0)		P		Q
<i>n</i>	0.22858948	ω	218.79154	+0.80370945			+0.54511575
<i>a</i>	2.6491013	Ω	106.55447	-0.46483523			+0.82546581
<i>e</i>	0.1763554	<i>i</i>	14.40960	-0.37145570			+0.14647530
<i>P</i>	4.31	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1982 05 22	381	0.2-	0.3+	1991 07 13	809	0.7+	0.0	1999 04 10	704	0.6-	1.7-
1982 05 22	381	1.3-	0.0	1991 07 14	809	0.2+	0.5+	1999 05 12	704	0.6+	0.2+
1982 05 23	381	2.3+	1.3+	1991 07 14	809	0.6+	0.4+	1999 05 12	704	0.9+	0.1+
1982 05 23	381	(1.3-	4.5+)	1991 07 14	809	1.0+	0.6+	1999 05 12	704	0.1+	0.1+
1982 05 24	381	(6.2+	3.9+)	1994 02 12	675	0.1+	0.2-	1999 05 12	704	0.1+	0.0
1991 07 06	809	0.3-	0.5+	1994 02 12	675	0.2-	0.1-	1999 05 12	704	0.7-	0.9-
1991 07 06	809	0.2-	0.8+	1995 05 29	675	0.3-	0.9+	1999 05 15	704	0.1+	0.5+
1991 07 06	809	0.2+	1.1+	1995 05 29	675	0.4-	0.6+	1999 05 15	704	0.3-	0.7+
1991 07 07	809	0.3+	0.6+	1995 05 31	675	0.2+	1.1+	1999 05 15	704	0.0	0.4-
1991 07 07	809	0.6+	0.6+	1995 05 31	675	0.5+	0.0	1999 05 15	704	0.7-	0.1-
1991 07 08	809	1.9-	1.4-	1998 01 25	566	0.2-	0.1-	1999 05 15	704	0.2-	1.3+
1991 07 08	809	1.4-	1.2-	1998 01 25	566	0.1-	0.1-	1999 05 17	704	0.4+	0.2+
1991 07 09	675	0.3-	1.5-	1998 01 25	566	0.1-	0.1+	1999 05 17	704	0.2+	0.1-
1991 07 09	675	0.1+	1.3-	1999 03 28	699	1.2+	0.7+	1999 05 17	704	0.2-	0.3+
1991 07 11	675	(0.4-	3.0-)	1999 03 28	699	0.2+	0.3+	1999 05 17	704	0.1-	0.0
1991 07 12	809	0.4-	0.9-	1999 03 28	699	0.9+	0.2+	1999 05 17	704	1.1-	0.6-
1991 07 12	809	0.0	0.8-	1999 04 10	704	0.3+	0.6-	1999 06 07	704	0.8+	0.4+
1991 07 12	809	0.7+	0.6-	1999 04 10	704	0.6-	0.4-	1999 06 07	704	0.2+	1.0-
1991 07 13	809	0.2-	0.1+	1999 04 10	704	0.5-	0.6-	1999 06 07	704	0.6-	0.5-
1991 07 13	809	0.2+	0.1+	1999 04 10	704	0.3-	1.4-	1999 06 07	704	(2.5-	0.3+)

1999 JD₈₂ = 1975 XQ₆ = 1998 DM₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	322.93646		(2000.0)		P		Q
<i>n</i>	0.18871786	ω	165.81519	+0.10055282			+0.97668805
<i>a</i>	3.0101910	Ω	109.68354	-0.93134208			+0.15945551
<i>e</i>	0.0401764	<i>i</i>	11.62038	-0.34998723			-0.14371636
<i>P</i>	5.22	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1975 12 06	809	0.6-	0.1+	1999 04 12	704	0.6-	0.3-	1999 05 15	704	0.2-	0.6-
1975 12 06	809	0.4+	0.2+	1999 04 12	704	1.0+	0.5+	1999 05 15	704	0.2-	1.4+
1975 12 07	809	0.1-	0.2-	1999 04 12	704	1.2-	0.1-	1999 05 17	704	0.8+	0.4-
1975 12 07	809	0.5+	0.6-	1999 04 12	704	0.7+	0.2-	1999 05 17	704	0.4-	0.4+
1998 01 28	566	0.1+	0.5-	1999 04 12	704	0.2-	0.1-	1999 05 17	704	0.6+	0.8+
1998 01 28	566	0.1-	0.5-	1999 05 12	704	0.4+	0.5-	1999 05 17	704	1.4+	1.8+
1998 01 28	566	1.6+	0.6-	1999 05 12	704	0.8+	0.3+	1999 05 17	704	1.5-	0.0
1998 02 22	566	0.6-	0.7+	1999 05 12	704	0.0	0.8+	1999 06 08	704	1.0+	0.4-
1998 02 22	566	0.1-	0.3+	1999 05 12	704	0.9+	0.7-	1999 06 08	704	0.3+	0.5-
1998 02 22	566	0.4-	0.2+	1999 05 12	704	0.8-	0.5+	1999 06 08	704	0.6-	0.5-
1998 02 23	566	0.5-	0.0	1999 05 15	704	0.7+	0.5+	1999 06 08	704	0.4+	1.5-
1998 02 23	566	0.0	0.4+	1999 05 15	704	0.7-	1.7-	1999 06 08	704	0.9-	0.7-
1998 02 23	566	0.0	0.1-	1999 05 15	704	1.9-	0.2+				

1999 JE₈₂ = 1994 EY₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	143.37990		(2000.0)		P		Q
<i>n</i>	0.22900645	ω	322.48103	+0.11908230			-0.98294299
<i>a</i>	2.6458846	Ω	120.27731	+0.94574424			+0.06931504
<i>e</i>	0.1450928	<i>i</i>	9.33976	+0.30230323			+0.17034820
<i>P</i>	4.30	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1994 03 11	098	0.2-	0.4+	1999 04 15	704	(2.1-	0.7-)	1999 05 15	704	1.6-	0.4-
1994 03 12	098	0.2+	0.7-	1999 04 15	704	(2.2-	0.2-)	1999 05 15	704	0.9+	0.2-
1995 05 29	691	0.9+	0.7-	1999 04 16	703	1.1-	1.1+	1999 05 15	704	0.4+	0.6-

1995 07 02	691	0.1+	0.4+	1999 04 16	703	0.4+	0.9+	1999 05 15	704	0.6+	0.3-
1995 07 02	691	0.5-	0.3+	1999 04 16	703	0.1-	1.3+	1999 05 15	704	0.2-	0.6+
1995 07 02	691	0.7-	0.3+	1999 04 16	703	0.2-	0.8+	1999 05 17	704	0.9+	0.6-
1999 04 12	704	0.3-	0.3+	1999 05 12	704	0.2+	0.0	1999 05 17	704	0.4+	1.1-
1999 04 12	704	0.2+	0.0	1999 05 12	704	0.6+	0.5-	1999 05 17	704	0.6+	1.0-
1999 04 12	704	0.4-	0.1-	1999 05 12	704	0.4-	0.3-	1999 05 17	704	0.1-	0.7-
1999 04 12	704	0.1-	0.3+	1999 05 12	704	0.7+	0.4-	1999 05 17	704	(3.2-	0.2-)
1999 04 12	704	1.2-	0.1+	1999 05 12	704	0.1-	0.6+				

1999 JS₈₂ = 1989 AY₁ = 1991 NY₃ = 1998 BM₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	195.87900		(2000.0)		P		Q
<i>n</i>	0.22452594	ω	291.66436	+0.69182131			-0.69266135
<i>a</i>	2.6809685	Ω	112.85091	+0.71685812			+0.62498229
<i>e</i>	0.0487888	<i>i</i>	12.78779	+0.08658933			+0.36002416
<i>P</i>	4.39	<i>H</i>	12.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1989 01 02	046	0.3-	1.8-	1998 01 22	704	0.1+	0.3+	1999 05 12	704	0.0	0.4-
1989 01 02	046	0.5+	1.9-	1998 01 23	704	0.2+	0.3+	1999 05 12	704	1.0-	0.4-
1989 01 03	046	1.0+	1.7-	1998 01 23	704	1.0-	0.6+	1999 05 12	704	0.1-	0.5-
1989 01 03	046	0.1-	1.4-	1998 01 23	704	0.2+	0.7+	1999 05 12	704	0.4+	0.7+
1991 07 07	809	0.8+	0.3-	1998 01 23	704	0.1+	0.2+	1999 05 12	704	0.2-	0.4+
1991 07 07	809	0.7+	0.3-	1998 01 23	704	0.0	0.2+	1999 05 15	704	0.4+	1.2-
1991 07 08	809	0.4-	0.0	1998 01 24	704	0.1-	0.3+	1999 05 15	704	1.3-	0.2+
1991 07 08	809	0.1-	0.0	1998 01 24	704	0.0	0.1+	1999 05 15	704	0.2+	0.4-
1991 07 08	809	0.1+	0.0	1998 01 24	704	0.1-	0.1-	1999 05 15	704	0.0	0.2-
1991 07 08	809	(2.6+	0.1-)	1998 01 24	704	0.4-	0.0	1999 05 15	704	1.2-	0.9+
1991 07 08	809	(2.9+	0.2-)	1998 01 24	704	0.2-	0.0	1999 05 17	704	0.1+	1.1-
1991 07 08	809	(3.2+	0.3-)	1998 01 25	704	0.0	0.4+	1999 05 17	704	0.0	0.7-
1991 07 10	809	0.4-	1.2+	1998 01 25	704	0.1-	0.5+	1999 05 17	704	0.6+	0.7-
1991 07 10	809	0.2-	1.1+	1998 01 25	704	0.1-	0.2+	1999 05 17	704	0.4-	0.7-
1998 01 20	704	0.1-	0.5+	1998 01 25	704	0.2-	0.0	1999 05 17	704	0.6-	0.5-
1998 01 20	704	0.1+	0.4+	1998 01 25	704	0.3+	0.2+	1999 05 18	703	0.8+	0.1-
1998 01 20	704	0.2+	0.6+	1999 04 12	704	0.7+	0.2+	1999 05 18	703	0.3+	0.1-
1998 01 20	704	0.1+	0.4+	1999 04 12	704	1.3-	0.6+	1999 05 18	703	0.4+	0.5+
1998 01 20	704	0.2+	0.5+	1999 04 12	704	0.7+	0.9+	1999 05 18	703	0.0	0.7+
1998 01 20	704	0.1-	0.4+	1999 04 12	704	0.4-	0.3-	1999 06 08	704	1.4+	0.4+
1998 01 22	704	0.3+	0.0	1999 04 12	704	1.0-	0.4+	1999 06 08	704	0.7+	0.0
1998 01 22	704	0.4+	0.2+	1999 04 15	704	0.7+	0.1-	1999 06 08	704	0.5-	0.3+
1998 01 22	704	0.1+	0.2+	1999 04 15	704	(0.1+	2.7+)	1999 06 08	704	0.1-	0.6-
1998 01 22	704	(0.5+	3.5+)	1999 04 15	704	(0.8+	3.4+)	1999 06 08	704	0.9-	1.0-

1999 JF₈₃ = 1991 JN₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	302.79609		(2000.0)		P		Q
<i>n</i>	0.24098990	ω	152.58469	+0.84865058			+0.52861388
<i>a</i>	2.5574285	Ω	175.36808	-0.51806630			+0.83788433
<i>e</i>	0.1764892	<i>i</i>	13.58063	-0.10676846			+0.13607801
<i>P</i>	4.09	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1991 05 11	675	0.7+	1.0-	1999 05 12	704	0.5-	0.0	1999 05 17	704	1.3-	0.6-
1991 05 11	675	1.4-	0.0	1999 05 12	704	0.5-	0.3-	1999 06 08	704	0.1-	1.5+
1991 05 12	675	0.6+	0.4-	1999 05 12	704	0.4-	0.1+	1999 06 08	704	0.3+	0.4+
1999 03 24	704	0.1+	0.7+	1999 05 12	704	0.1+	0.9+	1999 06 08	704	0.0	0.3+
1999 03 24	704	0.4-	0.3-	1999 05 15	704	0.7+	0.8-	1999 06 08	704	0.4+	0.4-
1999 03 24	704	0.8-	1.6-	1999 05 15	704	0.1+	1.0-	1999 06 08	704	0.4-	0.5+
1999 03 24	704	1.2+	0.4+	1999 05 15	704	0.3-	1.0-	1999 06 12	704	1.2+	0.5+
1999 03 24	704	1.4+	0.3+	1999 05 15	704	0.3+	1.2-	1999 06 12	704	0.7+	0.1-
1999 05 07	703	0.2-	0.5+	1999 05 17	704	0.1-	1.1-	1999 06 12	704	0.3-	0.4+
1999 05 07	703	0.4+	0.6+	1999 05 17	704	0.5-	0.1-	1999 06 12	704	0.3+	0.7+
1999 05 07	703	0.7+	0.7+	1999 05 17	704	0.0	0.1-	1999 06 12	704	0.8-	0.2+
1999 05 07	703	0.1+	1.1+	1999 05 17	704	0.9-	0.3+				

1999 JG₈₃ = 1998 BC₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	7.47845	(2000.0)	P	Q
<i>n</i>	0.17445579	ω 117.29573	−0.51506867	+0.83694642
<i>a</i>	3.1720922	Ω 120.50089	−0.84258423	−0.45476437
<i>e</i>	0.1310097	<i>i</i> 12.39859	−0.15734063	−0.30448326
<i>P</i>	5.65	<i>H</i> 13.5	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 01 25	566	0.1+	0.4+	1999 05 12	704	0.4+	0.2+	1999 06 08	704	0.6+	0.2+
1998 01 25	566	0.2−	0.8+	1999 05 12	704	0.8−	0.2−	1999 06 08	704	0.1+	0.7+
1998 01 25	566	0.3−	0.7+	1999 05 15	704	(0.7−	2.2−)	1999 06 08	704	0.4+	1.4−
1998 01 26	566	0.2−	0.7−	1999 05 15	704	0.6−	1.5−	1999 06 08	704	0.3−	0.0
1998 01 26	566	0.2+	0.4−	1999 05 15	704	0.1−	1.9−	1999 06 08	704	0.4−	0.4+
1998 01 26	566	0.3+	0.9−	1999 05 15	704	0.0	1.0−	1999 06 12	704	0.3−	0.4+
1999 05 07	703	0.6+	0.8+	1999 05 15	704	1.3−	0.5+	1999 06 12	704	0.1+	0.2−
1999 05 07	703	0.4+	0.6+	1999 05 17	704	0.4+	0.5−	1999 06 12	704	0.1−	0.3+
1999 05 07	703	0.6+	0.6+	1999 05 17	704	0.3+	0.1−	1999 06 12	704	0.4+	0.2+
1999 05 07	703	0.0	1.7+	1999 05 17	704	1.0+	0.3+	1999 06 12	704	0.5−	0.2−
1999 05 12	704	0.2+	0.9−	1999 05 17	704	0.6+	0.1+				
1999 05 12	704	0.7−	0.7+	1999 05 17	704	0.9−	0.4+				

1999 JK₈₃ = 1992 QU

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	338.90150	(2000.0)	P	Q
<i>n</i>	0.26124205	ω 108.58790	+0.38810862	+0.92142534
<i>a</i>	2.4234868	Ω 184.38481	−0.91045094	+0.38019294
<i>e</i>	0.1913905	<i>i</i> 14.10273	−0.14300628	+0.08017900
<i>P</i>	3.77	<i>H</i> 14.1	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1992 08 31	675	0.5+	0.6−	1999 05 07	703	0.3−	0.7+	1999 05 17	704	0.4−	0.7−
1992 09 01	675	0.1−	0.0	1999 05 07	703	0.7+	1.3+	1999 05 17	704	0.1+	0.0
1992 09 01	675	0.4−	0.3+	1999 05 07	703	0.4+	0.8+	1999 05 17	704	1.3−	1.0−
1999 02 23	704	0.4+	0.3−	1999 05 12	704	0.5+	1.1−	1999 06 08	704	(2.6+	0.3+)
1999 02 23	704	0.2−	0.7−	1999 05 12	704	0.2+	0.7−	1999 06 08	704	0.5+	0.2+
1999 02 23	704	0.8−	1.7+	1999 05 12	704	0.4−	0.2−	1999 06 08	704	0.8+	1.5+
1999 02 23	704	0.7+	0.2−	1999 05 12	704	1.3+	0.3−	1999 06 08	704	0.1−	0.2+
1999 02 23	704	(1.5−	2.2+)	1999 05 15	704	1.0−	0.2−	1999 06 08	704	0.4−	1.9+
1999 03 24	704	0.5−	0.0	1999 05 15	704	0.2−	0.2−	1999 06 12	704	(2.3+	0.3+)
1999 03 24	704	1.5+	1.7−	1999 05 15	704	0.2−	0.2+	1999 06 12	704	1.2+	0.1+
1999 03 24	704	0.2−	0.0	1999 05 15	704	0.7−	0.8−	1999 06 12	704	(0.5+	2.3+)
1999 03 24	704	0.3−	0.5+	1999 05 15	704	0.9−	0.4−	1999 06 12	704	0.4+	0.3−
1999 03 24	704	0.1−	0.5+	1999 05 17	704	0.9+	0.2−	1999 06 12	704	0.8−	0.5−
1999 05 07	703	0.3−	1.0+	1999 05 17	704	0.2−	1.0−				

1999 JN₈₃ = 1997 XL₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	313.98540	(2000.0)	P	Q
<i>n</i>	0.24345530	ω 195.11469	+0.65070845	+0.71648890
<i>a</i>	2.5401336	Ω 116.19144	−0.66437293	+0.69755730
<i>e</i>	0.1202935	<i>i</i> 16.27280	−0.36767800	+0.00758054
<i>P</i>	4.05	<i>H</i> 14.4	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1997 12 07	910	0.0	0.1−	1999 05 12	704	0.1+	1.2+	1999 05 17	704	0.9+	1.0+
1997 12 07	910	0.1−	0.2−	1999 05 12	704	0.5+	1.1+	1999 06 08	704	0.5+	0.2−
1997 12 07	910	0.3−	0.1+	1999 05 12	704	0.6−	0.3+	1999 06 08	704	1.4+	0.9−
1997 12 07	910	0.2−	0.1−	1999 05 15	704	0.2+	0.0	1999 06 08	704	0.0	0.7+
1997 12 08	910	0.2−	0.2−	1999 05 15	704	0.3−	0.5−	1999 06 08	704	0.5−	1.2−
1997 12 08	910	0.0	0.1−	1999 05 15	704	0.5+	0.8−	1999 06 12	704	0.7−	0.6−
1998 01 18	327	0.4+	0.3+	1999 05 15	704	0.2+	1.2−	1999 06 12	704	0.4−	0.1+
1998 01 18	327	0.1+	0.5−	1999 05 17	704	0.6+	0.6+	1999 06 12	704	0.6−	0.1+
1998 01 18	327	0.2+	0.4+	1999 05 17	704	0.9−	0.3+	1999 06 12	704	0.7+	0.3−

1999 05 12	704	0.3−	0.2−	1999 05 17	704	0.3+	0.5+	1999 06 12	704	0.9−	0.1−
1999 05 12	704	0.1+	0.6+	1999 05 17	704	1.1−	0.8−				

1999 JU₈₃ = 1971 FC₁ = 1993 FU₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	119.68155	(2000.0)	P	Q
<i>n</i>	0.17913356	ω 295.41666	−0.49419447	−0.86878120
<i>a</i>	3.1166264	Ω 184.58524	+0.86928443	−0.49428173
<i>e</i>	0.1099552	<i>i</i> 23.19091	−0.01078955	−0.03007973
<i>P</i>	5.50	<i>H</i> 12.1	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1971 03 19	095	0.1+	0.1+	1999 03 24	704	0.7−	0.5−	1999 05 17	704	0.1+	0.9−
1993 03 21	675	0.0	1.7+	1999 03 24	704	0.3+	1.8−	1999 05 17	704	0.4−	0.7−
1993 03 22	675	0.3−	0.9+	1999 03 24	704	1.6−	1.4+	1999 05 17	704	0.6−	0.8−
1993 03 22	675	1.4−	0.8+	1999 05 12	704	0.3+	0.6+	1999 05 17	704	0.4−	0.2+
1993 03 24	809	1.0+	1.0+	1999 05 12	704	1.0+	0.4+	1999 06 07	704	1.0+	0.5−
1998 03 19	699	0.1+	1.5−	1999 05 12	704	1.2+	0.7+	1999 06 07	704	0.1+	0.0
1998 03 19	699	0.2+	1.5−	1999 05 12	704	0.6+	0.7+	1999 06 07	704	0.2−	0.3+
1998 03 19	699	0.2−	0.6−	1999 05 12	704	1.6+	1.2+	1999 06 07	704	0.2+	0.7−
1999 02 20	704	1.0−	0.6+	1999 05 15	704	0.6+	1.0+	1999 06 07	704	1.9−	1.1−
1999 02 20	704	1.0−	1.3+	1999 05 15	704	1.6+	1.4+	1999 06 12	704	0.2−	0.5−
1999 02 20	704	1.7+	0.6+	1999 05 15	704	0.9+	0.4−	1999 06 12	704	0.2−	0.6−
1999 02 20	704	0.4−	1.3−	1999 05 15	704	0.5−	0.6−	1999 06 12	704	0.6−	0.1−
1999 03 24	704	0.4+	1.7−	1999 05 15	704	0.8−	0.3−	1999 06 12	704	0.7−	0.7−
1999 03 24	704	0.1−	0.5+	1999 05 17	704	0.7+	0.1−	1999 06 12	704	1.0−	0.8−

1999 JV₈₃ = 1993 FC₅₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	11.90612	(2000.0)	P	Q
<i>n</i>	0.17679399	ω 71.61852	−0.49533553	+0.86702147
<i>a</i>	3.1440617	Ω 168.23287	−0.86290242	−0.48390570
<i>e</i>	0.1967901	<i>i</i> 15.35584	−0.10021042	−0.11878151
<i>P</i>	5.57	<i>H</i> 13.4	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1993 03 17	809	0.4+	0.8+	1999 05 15	703	0.4+	0.6+	1999 05 17	704	0.1−	0.3−
1993 03 18	809	0.3−	0.3−	1999 05 15	703	0.1+	0.1+	1999 05 17	704	0.6−	0.4+
1999 03 24	704	0.6+	0.5+	1999 05 15	704	0.8−	0.2+	1999 06 08	704	1.0+	0.6−
1999 03 24	704	0.7−	0.2−	1999 05 15	704	0.7−	0.4+	1999 06 08	704	0.1+	0.8−
1999 03 24	704	0.4+	0.9−	1999 05 15	703	0.1−	0.3−	1999 06 08	704	1.1−	0.6+
1999 03 24	704	0.7+	1.3−	1999 05 15	704	1.0−	0.6+	1999 06 08	704	0.1+	0.2−
1999 03 24	704	(4.5−	0.0)	1999 05 15	703	0.6−	0.8−	1999 06 08	704	0.5−	0.2−
1999 05 12	704	0.6+	0.3−	1999 05 15	704	0.3−	0.5+	1999 06 12	704	0.4+	0.5+
1999 05 12	704	0.0	0.1+	1999 05 15	704	0.4−	0.5−	1999 06 12	704	0.2+	0.4+
1999 05 12	704	0.5+	0.2+	1999 05 17	704	0.4+	0.5−	1999 06 12	704	0.4−	0.9+
1999 05 12	704	0.6+	0.0	1999 05 17	704	0.4+	0.1−	1999 06 12	704	0.3+	0.6−
1999 05 12	704	(2.1+	0.6+)	1999 05 17	704	0.9+	0.6+	1999 06 12	704	0.4−	0.2+

1999 JJ₈₄ = 1990 KA₂ = 1998 BL₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	122.82172	(2000.0)	P	Q
<i>n</i>	0.23138279	ω 3.34269	−0.60792459	−0.75996220
<i>a</i>	2.6277377	Ω 124.23431	+0.72187243	−0.64962746
<i>e</i>	0.0678979	<i>i</i> 16.15046	+0.33064766	+0.02101465
<i>P</i>	4.26	<i>H</i> 13.7	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1990 05 26	413	(0.8−	2.9−)	1998 01 22	704	0.4−	0.6+	1999 06 05	703	0.1−	1.1+
1990 05 26	413	0.5+	1.7+	1998 01 22	704	0.4−	0.6+	1999 06 05	703	0.2+	0.1+
1994 02 15	675	0.1−	0.6−	1999 05 12	704	0.3+	0.1−	1999 06 05	703	0.2−	0.0
1994 02 15	675	0.4−	1.4−	1999 05 12	704	0.0	0.6+	1999 06 05	703	0.2+	0.8−
1997 12 26	566	0.0	1.1−	1999 05 12	704	1.3+	0.2+	1999 06 08	704	0.1+	0.1+
1997 12 26	566	0.4+	0.4−	1999 05 12	704	1.3−	0.7+	1999 06 08	704	0.9−	0.3+
1997 12 26	566	0.2−	0.6−	1999 05 12	704	0.1−	0.7−	1999 06 08	704	0.2−	1.2−

1999 JUNE 22

1998 01 20	704	0.4+	0.2+	1999 05 15	704	0.9+	1.3-	1999 06 08	704	1.5-	0.2-
1998 01 20	704	0.0	0.8+	1999 05 15	704	0.8-	0.1+	1999 06 12	704	0.1+	0.1-
1998 01 20	704	0.2+	0.1+	1999 05 15	704	0.9+	0.2-	1999 06 12	704	0.3-	0.1-
1998 01 20	704	0.3+	0.3+	1999 05 17	704	0.7+	0.4-	1999 06 12	704	0.2-	0.4-
1998 01 20	704	0.1+	0.2+	1999 05 17	704	0.9+	0.5+	1999 06 12	704	0.2-	0.3-
1998 01 20	704	0.7-	0.6-	1999 05 17	704	1.1+	0.2-	1999 06 12	704	0.0	0.2-
1998 01 22	704	0.4+	0.6+	1999 05 17	704	0.8-	1.1+				
1998 01 22	704	0.1-	0.1+	1999 05 17	704	0.5-	0.6+				

1999 JK₈₄ = 1998 FM₈₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	154.68414	(2000.0)		P	Q		
<i>n</i>	0.17291850	ω	309.38781	-0.07528794	-0.98244317		
<i>a</i>	3.1908648	Ω	143.81109	+0.98049222	-0.10410615		
<i>e</i>	0.1028761	<i>i</i>	16.80379	+0.18156744	+0.15481385		
<i>P</i>	5.70	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 01 28	566	0.2-	0.3-	1999 05 14	703	0.5-	0.5+	1999 06 10	704	0.3-	0.1+
1998 01 28	566	0.2-	0.1-	1999 05 14	703	0.3+	0.2-	1999 06 10	704	0.4-	0.3+
1998 01 28	566	0.2-	0.3-	1999 05 14	703	0.5+	0.3-	1999 06 10	704	0.4+	0.0
1998 02 25	566	0.4+	0.6+	1999 05 15	704	0.5+	1.2-	1999 06 10	704	0.1+	0.2-
1998 02 25	566	0.2+	0.6+	1999 05 15	704	0.5+	0.5-	1999 06 10	704	0.0	0.9-
1998 02 25	566	0.3+	0.9+	1999 05 15	704	0.7-	0.1-	1999 06 12	704	0.4-	0.3+
1998 03 24	704	0.4+	0.1-	1999 05 15	704	0.2-	0.1+	1999 06 12	704	0.4+	0.6+
1998 03 24	704	0.2+	0.2+	1999 05 17	704	0.2-	2.0-	1999 06 12	704	0.3-	0.5+
1998 03 24	704	0.7-	0.1-	1999 05 17	704	0.8+	0.8+	1999 06 12	704	0.6-	0.3+
1998 03 24	704	0.5-	0.5+	1999 05 17	704	1.2+	0.6+	1999 06 12	704	0.3-	0.3+
1998 03 25	704	0.2+	0.7+	1999 05 17	704	0.3+	0.5-	1999 06 15	704	0.2+	0.2+
1998 03 25	704	0.2-	0.0	1999 05 17	704	0.7-	0.1+	1999 06 15	704	0.5+	0.3+
1998 03 25	704	0.1-	0.4-	1999 06 04	703	0.6-	0.2+	1999 06 15	704	0.3+	0.2-
1998 03 25	704	0.7+	0.7-	1999 06 04	703	0.8+	0.5+	1999 06 15	704	0.0	0.1+
1998 03 25	704	0.3-	1.4-	1999 06 04	703	0.4-	0.4+	1999 06 15	704	0.4+	0.2-
1999 05 12	704	1.1-	0.3-	1999 06 04	703	0.7+	1.1+	1999 06 15	704	0.0	0.1+
1999 05 12	704	1.1+	0.8-	1999 06 08	704	0.1-	0.9-	1999 06 15	704	0.4+	0.3+
1999 05 12	704	0.7-	1.3+	1999 06 08	704	1.1-	0.4-	1999 06 15	704	0.4+	0.1-
1999 05 12	704	0.0	0.2+	1999 06 08	704	0.0	1.3-	1999 06 15	704	0.5+	0.5+
1999 05 12	704	(0.0	2.2-)	1999 06 08	704	0.2-	0.6-	1999 06 15	704	0.2-	0.5+
1999 05 14	703	0.4-	0.7-	1999 06 08	704	1.0-	1.3+				

1999 JP₈₄ = 1990 FS₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	123.93444	(2000.0)		P	Q		
<i>n</i>	0.23546041	ω	321.88520	-0.64381419	-0.76318576		
<i>a</i>	2.5973120	Ω	167.85149	+0.75056657	-0.64391051		
<i>e</i>	0.1146488	<i>i</i>	15.21611	+0.14883922	-0.05409949		
<i>P</i>	4.19	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1990 03 17	033	0.2-	0.3+	1999 05 15	704	0.1-	0.2-	1999 06 08	704	0.3-	0.4-
1990 03 18	033	0.1+	0.5-	1999 05 15	704	0.8-	1.6-	1999 06 08	704	0.0	0.3+
1999 04 19	703	0.7+	0.7-	1999 05 15	704	(1.4-	3.0-)	1999 06 08	704	0.3+	0.2-
1999 04 19	703	0.5+	0.6+	1999 05 17	704	0.4-	0.8-	1999 06 08	704	0.3-	1.2-
1999 04 19	703	0.5-	0.2+	1999 05 17	704	0.2+	0.5+	1999 06 08	704	0.2+	0.6-
1999 05 12	704	0.7+	0.4+	1999 05 17	704	0.7-	0.7+	1999 06 14	704	0.1+	0.5-
1999 05 12	704	1.2-	0.4+	1999 05 17	704	1.0-	1.7+	1999 06 14	704	1.0+	0.6-
1999 05 12	704	0.4-	0.4+	1999 06 06	703	0.6-	0.5-	1999 06 14	704	0.6+	0.3-
1999 05 12	704	1.7-	0.5+	1999 06 06	703	0.4+	0.3+	1999 06 14	704	0.0	0.1+
1999 05 12	704	0.6+	0.5+	1999 06 06	703	1.1+	0.9+	1999 06 14	704	0.6+	0.7-
1999 05 15	704	0.4+	0.4-	1999 06 06	703	1.0+	1.3+				

M.P.C. 35029

1999 JQ₈₄ = 1994 AN₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	70.12579	(2000.0)		P	Q		
<i>n</i>	0.22377183	ω	13.73559	-0.96558172	-0.22744260		
<i>a</i>	2.6869883	Ω	152.12424	+0.20579210	-0.96473130		
<i>e</i>	0.2602915	<i>i</i>	15.65683	+0.15906461	-0.13252689		
<i>P</i>	4.40	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1994 01 14	033	0.4-	0.2-	1999 05 15	704	1.3-	1.7+	1999 06 06	703	(0.9-	2.2+)
1994 01 15	033	0.2+	0.7-	1999 05 15	704	1.7-	1.2-	1999 06 08	704	0.5+	0.2-
1994 01 15	033	0.1+	0.1-	1999 05 15	704	0.4-	0.3+	1999 06 08	704	0.1+	0.2+
1999 03 24	704	1.2-	1.5+	1999 05 15	704	1.0+	1.1-	1999 06 08	704	0.1+	0.5-
1999 03 24	704	0.5-	1.1+	1999 05 15	704	0.6-	0.9-	1999 06 08	704	0.2+	0.2-
1999 03 24	704	0.3+	1.8+	1999 05 17	704	0.7+	0.7-	1999 06 08	704	0.2-	0.4-
1999 03 24	704	1.1-	0.9+	1999 05 17	704	0.0	0.5-	1999 06 12	704	0.0	0.0
1999 03 24	704	(4.3-	0.4+)	1999 05 17	704	0.8+	0.6-	1999 06 12	704	0.3+	0.1-
1999 05 12	704	0.4+	0.2-	1999 05 17	704	1.1+	1.0-	1999 06 12	704	0.0	0.0
1999 05 12	704	0.7+	0.2-	1999 05 17	704	0.3+	0.5-	1999 06 12	704	0.1+	0.2+
1999 05 12	704	0.3-	0.4+	1999 06 06	703	0.1+	0.0	1999 06 12	704	0.5+	0.4-
1999 05 12	704	0.7-	0.3-	1999 06 06	703	0.5+	0.3+				
1999 05 12	704	0.1-	0.4+	1999 06 06	703	0.4-	0.9+				

1999 JS₈₄ = 1982 KU₁ = 1998 GS₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	89.49338	(2000.0)		P	Q		
<i>n</i>	0.17556077	ω	58.81420	-0.93933878	-0.19414216		
<i>a</i>	3.1587681	Ω	108.68206	+0.10852599	-0.95026426		
<i>e</i>	0.0653644	<i>i</i>	17.36656	+0.32536866	-0.24352957		
<i>P</i>	5.61	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1982 05 22	381	1.0+	0.3-	1998 04 03	704	1.7-	0.0	1999 05 17	704	0.8+	0.0
1982 05 22	381	(0.6+	2.9-)	1998 04 03	704	0.3-	1.7-	1999 05 17	704	(0.2-	5.8-)
1982 05 23	381	0.4-	0.3-	1999 05 12	704	0.6+	0.1+	1999 05 17	704	0.3-	0.5-
1982 05 23	381	1.2+	0.0	1999 05 12	704	0.3+	0.0	1999 05 17	704	0.5-	0.5-
1982 05 23	381	2.0-	0.2-	1999 05 12	704	1.4+	0.6+	1999 06 08	704	0.7-	0.3+
1982 05 24	381	1.9-	0.2+	1999 05 12	704	0.1-	0.1+	1999 06 08	704	0.8-	0.2+
1982 05 24	381	0.4+	0.1+	1999 05 12	704	0.9-	0.2+	1999 06 08	704	0.3-	0.0
1982 05 24	381	1.5+	0.2+	1999 05 15	704	0.8+	0.9+	1999 06 08	704	1.1-	0.5-
1998 04 02	704	0.7+	1.3+	1999 05 15	704	1.3+	0.9+	1999 06 08	704	0.7-	0.5-
1998 04 02	704	0.4+	0.1+	1999 05 15	704	0.5-	0.9-	1999 06 14	704	0.1+	0.4+
1998 04 02	704	0.7+	0.6-	1999 05 17	704	(0.6-	7.3-)	1999 06 14	704	0.3+	0.3+
1998 04 02	704	0.1-	0.4-	1999 05 17	704	0.3+	0.3-	1999 06 14	704	0.8+	0.2-
1998 04 02	704	0.6-	0.4-	1999 05 17	704	(2.5+	6.9-)	1999 06 14	704	0.4-	0.1+
1998 04 03	704	0.4+	0.3+	1999 05 17	704	0.2-	0.4-				
1998 04 03	704	0.5+	1.5+	1999 05 17	704	(1.2+	6.4-)				

1999 JV₈₄ = 1993 UQ₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	321.77566	(2000.0)		P	Q		
<i>n</i>	0.29184899	ω	228.23127	+0.69427192	+0.71389251		
<i>a</i>	2.2509400	Ω	85.98733	-0.63017702	+0.66429286		
<i>e</i>	0.2403551	<i>i</i>	5.25393	-0.34765418	+0.22152310		
<i>P</i>	3.38	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1993 10 16	033	0.6+	0.3-	1999 05 13	704	0.6-	0.9-	1999 05 18	704	0.7-	0.8-
1993 10 16	033	0.6-	0.4-	1999 05 15	704	1.7+	0.9-	1999 05 18	704	0.3-	0.8+
1993 10 18	033	0.1+	0.4+	1999 05 15	704	0.8-	0.4+	1999 05 18	704	0.2+	0.1+
1999 04 12	704	0.3+	0.7+	1999 05 15	704	1.3-	0.4-	1999 05 19	704	0.1+	0.1-
1999 04 12	704	1.3+	1.5+	1999 05 15	704	0.4-	0.1+	1999 05 19	704	0.2-	0.1-
1999 04 12	704	0.4+	0.3+	1999 05 17	704	1.0+	0.5+	1999 05 19	704	0.3+	0.6-
1999 04 12	704	0.5-	1.5-	1999 05 17	704	0.2+	0.6+	1999 05 19	704	0.4-	0.8+
1999 04 12	704	0.6+	0.8-	1999 05 17	704	0.8-	0.3-	1999 05 19	704	0.8-	0.1-

M.P.C. 35030

1999 JUNE 22

1999 05 13	704	0.1−	0.2−	1999 05 17	704	0.5+	0.2+	1999 06 10	704	1.2+	0.2−
1999 05 13	704	0.5+	0.3+	1999 05 17	704	1.4−	0.3+	1999 06 10	704	0.3+	0.8+
1999 05 13	704	0.3−	0.2+	1999 05 18	704	0.8−	1.0−	1999 06 10	704	0.7+	0.6−
1999 05 13	704	0.8+	0.2+	1999 05 18	704	0.7−	0.1+	1999 06 10	704	0.4+	0.4+

1999 JL₈₅ = 1980 FJ = 1989 SS₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	246.51976		(2000.0)	P	Q
<i>n</i>	0.27047841	ω	217.55375	+0.86552485	−0.49637870
<i>a</i>	2.3679961	Ω	171.38528	+0.49402537	+0.86805360
<i>e</i>	0.1892277	<i>i</i>	26.52532	−0.08249650	−0.00954699
<i>P</i>	3.64	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1980 03 16	809	0.0	0.3−	1999 05 14	704	(0.1+	2.3−)	1999 05 15	704	0.8−	0.5−
1980 03 16	809	0.0	0.1+	1999 05 15	704	0.8+	1.0−	1999 05 15	704	1.8+	0.0
1989 09 21	413	(3.3+	2.4−)	1999 05 15	704	0.3−	0.9+	1999 06 07	704	0.2+	1.0−
1989 09 21	413	(1.0+	8.5−)	1999 05 15	704	2.0−	0.0	1999 06 07	704	1.3−	0.3−
1998 01 26	566	0.2+	0.1+	1999 05 15	704	0.5+	0.1−	1999 06 07	704	0.9+	1.0+
1998 01 26	566	0.0	0.1−	1999 05 15	704	1.6−	1.2−	1999 06 07	704	1.2−	0.2−
1998 01 26	566	0.3−	0.1+	1999 05 15	704	0.2+	1.2+	1999 06 11	704	0.4−	0.4+
1999 04 17	699	0.8−	0.6−	1999 05 15	704	0.9+	0.6+	1999 06 11	704	0.5+	0.2+
1999 04 17	699	0.7+	0.0	1999 05 15	704	(0.8−	2.4+)	1999 06 11	704	0.1+	0.3+
1999 04 17	699	0.4+	1.2+	1999 05 15	704	0.9−	0.2−	1999 06 11	704	0.5−	0.5−
1999 05 14	704	0.5−	0.2−	1999 05 15	704	0.2+	1.1+	1999 06 11	704	0.2+	0.0
1999 05 14	704	1.8+	0.1+	1999 05 15	704	1.1+	1.2−				

1999 JM₈₅ = 1998 FG₈₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	271.42397		(2000.0)	P	Q
<i>n</i>	0.19108669	ω	244.78831	+0.95454768	+0.22228146
<i>a</i>	2.9852618	Ω	101.85853	−0.14242253	+0.92538644
<i>e</i>	0.0681931	<i>i</i>	11.70656	−0.26182923	+0.30700306
<i>P</i>	5.16	<i>H</i>	13.0	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 02 24	566	0.3−	0.2−	1998 03 25	704	(5.7−	0.8−)	1999 05 21	704	0.3+	1.2+
1998 02 24	566	0.1−	0.2−	1999 05 15	704	1.0+	1.0−	1999 05 21	704	0.7−	1.0+
1998 02 24	566	0.5−	0.2−	1999 05 15	704	1.5+	0.7+	1999 05 21	704	0.4+	0.8+
1998 03 24	704	0.3+	1.8+	1999 05 15	704	0.5+	1.0−	1999 06 05	703	0.1−	0.3+
1998 03 24	704	0.2−	0.5+	1999 05 15	704	1.5−	0.2−	1999 06 05	703	0.7−	0.5−
1998 03 24	704	0.9+	1.0−	1999 05 17	704	0.1−	0.2+	1999 06 05	703	0.4+	0.5+
1998 03 24	704	1.6+	1.5−	1999 05 17	704	0.0	0.8−	1999 06 05	703	0.3+	0.2−
1998 03 24	704	0.2−	0.1−	1999 05 17	704	1.4−	0.2−	1999 06 14	704	0.0	0.3−
1998 03 25	704	0.4−	1.2+	1999 05 17	704	0.2−	0.7−	1999 06 14	704	0.2−	0.2−
1998 03 25	704	0.4−	1.0+	1999 05 17	704	0.3−	0.6−	1999 06 14	704	0.1−	0.3−
1998 03 25	704	0.6+	0.6−	1999 05 21	704	1.2+	1.5+	1999 06 14	704	0.0	0.3+
1998 03 25	704	1.2−	0.7−	1999 05 21	704	0.1−	0.5−	1999 06 14	704	0.2−	0.1+

1999 JU₈₅ = 1996 NV₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	234.23251		(2000.0)	P	Q
<i>n</i>	0.26891648	ω	238.49957	+0.81393325	−0.57892559
<i>a</i>	2.3771565	Ω	156.76537	+0.56599582	+0.77134866
<i>e</i>	0.1336417	<i>i</i>	7.07031	+0.13100156	+0.26432255
<i>P</i>	3.67	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1996 07 14	809	0.8−	0.5−	1996 09 08	566	(3.6−	0.6−)	1999 06 09	595	0.6+	0.3+
1996 07 14	809	0.8−	1.2−	1999 05 10	704	0.3+	0.2−	1999 06 09	595	0.7−	0.0
1996 07 14	809	1.6−	1.0−	1999 05 10	704	0.7+	0.8−	1999 06 09	595	0.2−	0.1+
1996 07 16	809	1.2+	0.9+	1999 05 10	704	0.2−	0.8−	1999 06 12	595	0.7−	1.1+
1996 07 16	809	0.4+	1.2+	1999 05 17	704	0.3−	0.4−	1999 06 12	595	0.4−	0.4+
1996 07 16	809	0.4−	0.8+	1999 05 17	704	0.1−	1.2−	1999 06 12	595	(2.2+	1.1+)
1996 08 09	809	1.5+	0.4−	1999 05 17	704	0.0	0.8+	1999 06 12	595	0.3+	1.9+

1996 08 09	809	1.0+	1.8−	1999 05 21	691	0.5−	0.0	1999 06 14	704	0.7+	0.3+
1996 08 09	809	(2.2+	2.1−)	1999 05 21	691	0.5−	0.1+	1999 06 14	704	0.1+	0.3+
1996 09 08	809	0.1+	1.0+	1999 05 21	691	0.7−	0.1+	1999 06 14	704	0.1−	0.7−
1996 09 08	809	0.5−	0.4+	1999 06 06	703	0.5+	0.6−	1999 06 14	704	0.6−	0.1−
1996 09 08	809	0.3−	0.3+	1999 06 06	703	0.2+	0.2+	1999 06 14	704	0.3+	0.8−
1996 09 08	566	(4.2−	0.1−)	1999 06 06	703	1.4+	0.3+				
1996 09 08	566	(4.1−	0.8−)	1999 06 06	703	(2.3+	0.6−)				

1999 JS₈₆ = 1978 SR₁ = 1989 TK₁₁ = 1995 EU₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	287.83425		(2000.0)	P	Q
<i>n</i>	0.27049924	ω	158.64993	+0.85039568	+0.52573186
<i>a</i>	2.3678745	Ω	169.55730	−0.49783075	+0.81680610
<i>e</i>	0.1265274	<i>i</i>	6.59394	−0.17026960	+0.23755800
<i>P</i>	3.64	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1978 09 28	095	0.1−	0.4+	1999 04 12	704	1.1+	0.0	1999 05 17	704	0.4−	0.5+
1989 10 04	046	0.6+	1.4+	1999 04 12	704	0.2−	0.5+	1999 05 18	704	0.6−	1.0−
1989 10 04	046	0.3−	2.3−	1999 05 12	704	0.1+	0.4+	1999 05 18	704	2.2−	0.1+
1995 03 05	033	0.2+	0.8−	1999 05 12	704	1.9+	0.9+	1999 05 18	704	0.9−	2.1−
1995 03 05	033	0.3+	0.6−	1999 05 12	704	0.8+	1.1+	1999 05 18	704	1.5−	1.5−
1995 03 07	033	0.9−	0.7+	1999 05 12	704	1.3+	0.1−	1999 05 18	704	0.6−	0.1−
1999 04 11	699	1.0+	0.6−	1999 05 12	704	0.8+	0.4+	1999 05 19	704	0.6−	0.7−
1999 04 11	699	0.4+	0.4+	1999 05 17	704	0.9+	1.7+	1999 05 19	704	0.6−	0.2+
1999 04 11	699	0.9+	0.0	1999 05 17	704	0.2−	1.1−	1999 05 19	704	1.8−	0.8−
1999 04 12	704	0.7+	0.1−	1999 05 17	704	0.2+	0.6+	1999 05 19	704	0.6−	0.4−
1999 04 12	704	0.3+	0.4+	1999 05 17	704	0.4+	0.3+	1999 05 19	704	0.6−	1.2+

1999 JF₉₁ = 1983 RU₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	301.94059		(2000.0)	P	Q
<i>n</i>	0.17257120	ω	167.05171	+0.68514861	+0.71407627
<i>a</i>	3.1951445	Ω	145.86639	−0.68905323	+0.69937773
<i>e</i>	0.1222269	<i>i</i>	14.84451	−0.23617160	+0.03107860
<i>P</i>	5.71	<i>H</i>	12.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1983 09 02	809	0.4+	0.0	1983 09 09	809	0.3+	0.6+	1999 05 17	704	1.1+	1.2+
1983 09 02	809	0.5+	0.0	1983 09 12	809	0.2+	0.6−	1999 05 17	704	1.8+	0.6+
1983 09 02	809	0.7+	0.0	1983 09 12	809	0.2+	0.5−	1999 05 17	704	0.9+	0.4−
1983 09 03	809	(1.3−	2.8−)	1983 09 12	809	0.1+	0.7−	1999 05 17	704	0.5−	0.4+
1983 09 03	809	1.1−	1.0−	1999 05 12	704	0.1−	0.6−	1999 06 08	704	0.9+	0.1+
1983 09 03	809	0.2−	1.4−	1999 05 12	704	0.9−	1.3−	1999 06 08	704	0.1−	0.1−
1983 09 04	809	0.7−	0.2+	1999 05 12	704	0.0	0.6+	1999 06 08	704	0.5−	0.1−
1983 09 04	809	0.7−	0.4+	1999 05 12	704	0.3+	0.3+	1999 06 08	704	0.2−	0.6+
1983 09 04	809	0.7−	0.5+	1999 05 12	704	0.4−	0.7+	1999 06 08	704	0.4−	0.5−
1983 09 08	809	0.4+	0.2+	1999 05 16	703	0.5−	0.7+	1999 06 12	704	0.7+	0.1+
1983 09 08	809	(4.7−	4.1−)	1999 05 16	703	0.5−	0.2−	1999 06 12	704	0.3−	0.4+
1983 09 08	809	1.1+	1.5+	1999 05 16	703	0.1−	1.0−	1999 06 12	704	0.3−	0.1+
1983 09 09	809	0.1+	0.4+	1999 05 16	703	0.3−	0.4−	1999 06 12	704	0.1−	0.2−
1983 09 09	809	0.1+	0.5+	1999 05 17	704	0.3−	0.4−	1999 06 12	704	0.2−	0.5−

1999 JP₉₁ = 1988 FV = 1994 LX₂ = 1998 FQ₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	249.23409		(2000.0)	P	Q
<i>n</i>	0.18980474	ω	246.48502	+0.97896758	−0.08998249
<i>a</i>	2.9986885	Ω	118.23617	+0.14262957	+0.94357202
<i>e</i>	0.1236097	<i>i</i>	11.99527	−0.14587422	+0.31870833
<i>P</i>	5.19	<i>H</i>	13.2	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1988 03 17	033	1.6+	0.3+	1998 03 24	

1999 JUNE 22

M.P.C. 35031

1988 03 19	033	2.0−	0.5+	1998 03 25	704	1.2−	0.6+	1999 05 17	704	0.0	0.2−
1994 06 14	691	0.3+	0.2−	1998 03 25	704	1.2+	0.9+	1999 05 17	704	0.2−	1.1−
1994 06 14	691	0.2−	0.3+	1998 03 25	704	0.7−	0.1+	1999 05 17	704	0.5−	0.8+
1994 06 14	691	0.2−	0.5+	1998 03 26	566	0.0	0.1−	1999 05 17	704	(2.5+ 0.9−)	
1994 06 15	691	0.8+	0.4+	1998 03 26	566	0.1+	0.3−	1999 06 08	704	1.4+	0.5−
1994 06 15	691	0.5+	0.1+	1998 03 26	566	0.2−	0.3−	1999 06 08	704	0.7+	0.9−
1994 06 15	691	0.5−	0.8+	1998 03 27	566	0.1+	0.6−	1999 06 08	704	0.5+	0.3−
1998 01 24	566	0.4+	0.3−	1998 03 27	566	0.2−	0.4−	1999 06 08	704	0.1−	0.2−
1998 01 24	566	0.3+	0.4−	1998 03 27	566	0.1−	0.7−	1999 06 08	704	0.3−	0.8−
1998 01 24	566	0.1−	0.2−	1999 05 07	703	0.5−	0.9+	1999 06 14	704	0.3+	0.1−
1998 02 25	566	0.5+	0.4+	1999 05 07	703	0.2−	0.8+	1999 06 14	704	0.1+	0.2+
1998 02 25	566	0.4+	0.2+	1999 05 07	703	(1.5− 2.2−)		1999 06 14	704	0.3+	0.2−
1998 02 25	566	0.6+	0.3+	1999 05 07	703	(0.5+ 2.3−)		1999 06 14	704	0.1−	0.4−
1998 03 24	704	0.6+	0.5+	1999 05 12	704	0.0	0.1+	1999 06 14	704	0.1+	0.1−
1998 03 24	704	0.5−	0.4−	1999 05 12	704	0.9−	0.0				
1998 03 24	704	0.4−	1.0−	1999 05 12	704	0.5−	0.6−				

1999 JL₉₄ = 1994 NV₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	340.90385	(2000.0)	
<i>n</i>	0.17378488	<i>ω</i>	162.05183
<i>a</i>	3.1802509	<i>Ω</i>	105.52154
<i>e</i>	0.0677612	<i>i</i>	17.44193
<i>P</i>	5.67	<i>H</i>	13.0
		<i>G</i>	0.15
		<i>U</i>	5

Residuals in seconds of arc

1994 07 11	809	0.6+	0.9−	1999 05 12	704	0.2−	0.9+	1999 06 08	704	0.4−	0.2+
1994 07 11	809	1.2−	1.4−	1999 05 12	704	0.5+	1.3+	1999 06 08	704	1.5+	1.1−
1994 07 11	809	0.9−	0.8−	1999 05 12	704	1.0−	2.0+	1999 06 08	704	0.8+	0.0
1994 07 12	809	1.4+	1.8+	1999 05 17	704	0.9+	3.4−	1999 06 12	704	0.8−	0.0
1994 07 12	809	0.4+	0.8+	1999 05 17	704	1.0+	2.7−	1999 06 12	704	0.5−	0.2+
1994 07 12	809	0.2−	0.6+	1999 05 17	704	1.1−	2.1−	1999 06 12	704	0.9−	0.1−
1999 05 12	704	0.8+	1.1+	1999 05 17	704	1.2−	1.5−	1999 06 12	704	0.2−	0.8+
1999 05 12	704	1.3+	3.3+	1999 06 08	704	0.4−	0.2+	1999 06 12	704	0.2−	0.7+

1999 JC₉₅ = 1601 T-2

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	347.09012	(2000.0)	
<i>n</i>	0.21970589	<i>ω</i>	85.24198
<i>a</i>	2.7200377	<i>Ω</i>	189.35069
<i>e</i>	0.1305037	<i>i</i>	12.06348
<i>P</i>	4.49	<i>H</i>	14.5
		<i>G</i>	0.15
		<i>U</i>	3

Residuals in seconds of arc

1973 09 19	675	0.7−	0.5+	1999 05 12	704	0.6+	0.8+	1999 06 11	703	1.5+	1.6+
1973 09 19	675	1.3+	0.6+	1999 05 17	704	0.1+	0.2+	1999 06 11	703	0.2−	0.4+
1973 09 20	675	1.2−	1.3−	1999 05 17	704	1.0−	0.6−	1999 06 11	703	1.0−	0.2+
1973 09 24	675	0.6+	0.9−	1999 05 17	704	0.8+	0.6−	1999 06 11	703	1.1+	1.2+
1973 09 24	675	0.6+	1.3−	1999 05 17	704	0.1+	0.6−	1999 06 11	703	1.2−	0.2+
1991 10 05	691	0.4+	0.6+	1999 05 17	704	0.1−	0.0	1999 06 11	703	(1.2− 2.1+)	
1991 10 05	691	0.1+	0.7+	1999 06 08	704	0.0	0.1+	1999 06 11	703	0.6−	0.5−
1991 10 05	691	1.0−	1.1+	1999 06 08	704	0.3+	0.5+	1999 06 14	704	0.8+	0.7−
1999 05 12	704	0.4+	0.9−	1999 06 08	704	0.2−	1.3−	1999 06 14	704	0.4+	0.2+
1999 05 12	704	1.5+	0.5+	1999 06 08	704	0.6−	0.8+	1999 06 14	704	0.2+	0.3−
1999 05 12	704	0.3−	0.3+	1999 06 08	704	1.4−	0.6−	1999 06 14	704	0.3−	0.4−
1999 05 12	704	0.5+	0.5−	1999 06 11	703	0.5−	1.0+	1999 06 14	704	0.9−	0.3−

1999 JQ₉₅ = 1987 SV₈ = 1991 NT₇ = 1998 FF₈₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	269.43005	(2000.0)	
<i>n</i>	0.22918635	<i>ω</i>	254.30105
<i>a</i>	2.6444999	<i>Ω</i>	112.56074
<i>e</i>	0.2370468	<i>i</i>	10.16790
<i>P</i>	4.30	<i>H</i>	13.4
		<i>G</i>	0.15
		<i>U</i>	3

Residuals in seconds of arc

1987 09 19	010	1.5−	0.1−	1998 03 25	704	1.2−	1.2+	1999 06 05	703	0.0	0.4+
1987 09 19	010	1.7+	2.2+	1998 03 25	704	0.2−	0.4+	1999 06 05	703	0.1−	1.5+
1991 07 15	809	0.6−	0.1+	1998 03 25	704	0.1−	0.5−	1999 06 05	703	(3.3+ 1.2−)	
1991 07 15	809	0.2−	0.0	1999 05 12	704	1.2+	1.4−	1999 06 08	704	0.9−	0.1+
1991 07 15	809	0.3+	0.0	1999 05 12	704	0.7−	1.2+	1999 06 08	704	0.9+	0.3−
1991 07 16	809	0.8−	0.5−	1999 05 12	704	1.1+	0.6−	1999 06 08	704	0.6+	1.5−
1991 07 16	809	0.6−	0.4−	1999 05 12	704	0.6−	1.1+	1999 06 08	704	0.7−	1.2−
1991 07 16	809	0.1+	0.4−	1999 05 12	704	0.3+	0.4+	1999 06 08	704	0.2−	0.1+
1998 03 24	704	0.7−	0.2−	1999 05 17	704	0.5+	0.1+	1999 06 14	704	0.1−	0.1+
1998 03 24	704	0.5+	0.0	1999 05 17	704	0.3+	0.2−	1999 06 14	704	0.4+	0.2+
1998 03 24	704	1.0+	1.1−	1999 05 17	704	0.4+	0.1−	1999 06 14	704	0.3−	0.3+
1998 03 24	704	1.2+	0.6+	1999 05 17	704	0.0	0.6−	1999 06 14	704	0.2+	1.7+
1998 03 25	704	0.5−	0.1−	1999 05 17	704	0.5−	0.7−	1999 06 14	704	0.1+	1.1+
1998 03 25	704	0.6−	1.2+	1999 06 05	703	0.2+	0.6−				

1999 JR₉₅ = 1998 BM₄₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	329.00615	(2000.0)	
<i>n</i>	0.18626074	<i>ω</i>	165.05621
<i>a</i>	3.0366064	<i>Ω</i>	127.58216
<i>e</i>	0.1187796	<i>i</i>	8.45251
<i>P</i>	5.29	<i>H</i>	13.9
		<i>G</i>	0.15
		<i>U</i>	4

Residuals in seconds of arc

1998 01 07	691	0.3+	0.0	1999 05 12	704	0.7+	0.3+	1999 06 08	704	0.4+	0.1−
1998 01 07	691	0.1−	0.2−	1999 05 17	704	0.6−	0.6−	1999 06 08	704	0.3+	0.0
1998 01 07	691	0.2+	0.2+	1999 05 17	704	0.1−	1.2−	1999 06 08	704	0.6+	0.2−
1998 01 23	691	0.0	0.1+	1999 05 17	704	0.6+	0.2−	1999 06 08	704	0.1−	0.1+
1998 01 23	691	0.1+	0.1+	1999 05 17	704	0.9−	0.7−	1999 06 14	704	0.8−	0.0
1998 01 23	691	0.2+	0.0	1999 05 17	704	0.3+	0.3−	1999 06 14	704	0.0	0.1+
1998 01 29	691	0.3−	0.0	1999 06 05	703	0.4−	0.7+	1999 06 14	704	0.2+	0.7+
1998 01 29	691	0.3−	0.2−	1999 06 05	703	0.0	0.1+	1999 06 14	704	0.5−	0.2+
1999 05 12	704	0.6−	0.8+	1999 06 05	703	0.3+	0.2+	1999 06 14	704	0.3−	0.6−
1999 05 12	704	0.3−	0.2+	1999 06 05	703	0.3+	0.3+				
1999 05 12	704	0.3+	1.3+	1999 06 08	704	0.4+	1.2−				

1999 JA₉₆ = 1997 XA₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	259.03800	(2000.0)	
<i>n</i>	0.19552131	<i>ω</i>	220.02278
<i>a</i>	2.9399502	<i>Ω</i>	136.83644
<i>e</i>	0.0681343	<i>i</i>	12.92471
<i>P</i>	5.04	<i>H</i>	13.9
		<i>G</i>	0.15
		<i>U</i>	4

Residuals in seconds of arc

1997 12 06	910	0.3−	0.1+	1998 03 25	704	0.6−	0.4+	1999 05 17	704	0.4−	0.6−
1997 12 06	910	0.4+	0.1−	1998 03 25	704	(6.0− 0.2+)		1999 06 08	704	0.1−	0.1−
1997 12 06	910	0.0	0.1+	1999 05 12	704	0.4+	0.4−	1999 06 08	704	0.5+	0.4+
1997 12 07	910	0.2−	0.5+	1999 05 12	704	1.0−	0.7+	1999 06 08	704	0.7−	0.5+
1997 12 07	910	0.1−	0.3+	1999 05 12	704	1.2−	0.3−	1999 06 08	704	0.5−	0.3+
1997 12 07	910	0.3−	0.2+	1999 05 12	704	0.3+	0.9+	1999 06 08	704	0.2−	0.0
1998 02 27	566	0.1+	0.3−	1999 05 12	704	0.2−	0.3−	1999 06 12	704	0.1−	0.4−
1998 02 27	566	0.4+	0.9−	1999 05 17	704	0.6+	1.0−	1999 06 12	704	0.6−	0.9+
1998 02 27	566	0.2−	0.8−	1999 05 17	704	2.0+	1.0+	1999 06 12	704	(0.9+ 2.2−)	
1998 03 25	704	(1.5− 2.4−)		1999 05 17	704	(0.5+ 2.6−)		1999 06 12	704	0.1+	0.1−
1998 03 25	704	0.6+	1.0+	1999 05 17	704	0.8+	1.2−				

1999 JF₉₆ = 1994 CO₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	126.28752		(2000.0)		P		Q
<i>n</i>	0.22504055	ω	338.20080	−0.40541756	−0.89857780		
<i>a</i>	2.6768797	Ω	135.24450	+0.86998205	−0.43566711		
<i>e</i>	0.1249000	<i>i</i>	13.79706	+0.28065609	+0.05246046		
<i>P</i>	4.38	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1994 02 08	809	0.2+	0.7+	1994 02 13	809	0.7+	0.2+	1999 06 08	704	0.1−	0.1−
1994 02 08	809	0.9+	0.6+	1999 05 12	704	0.3+	0.3−	1999 06 08	704	0.5+	0.9−
1994 02 08	809	0.4+	0.9+	1999 05 12	704	0.7−	0.7+	1999 06 08	704	1.5+	0.2+
1994 02 10	809	2.6−	0.2−	1999 05 12	704	0.7+	0.0	1999 06 08	704	1.0+	0.3+
1994 02 10	809	2.4−	0.2+	1999 05 12	704	0.2−	1.8+	1999 06 08	704	0.4+	0.8+
1994 02 10	809	2.3−	0.2−	1999 05 12	704	0.5−	0.2+	1999 06 12	704	0.1−	0.3+
1994 02 10	809	0.5+	0.6−	1999 05 17	704	0.5+	0.9+	1999 06 12	704	0.3−	0.2−
1994 02 10	809	0.7+	0.0	1999 05 17	704	0.1−	1.5−	1999 06 12	704	0.2−	0.2−
1994 02 10	809	0.6+	1.3−	1999 05 17	704	0.0	1.7−	1999 06 12	704	0.4−	0.5+
1994 02 13	809	1.5+	0.2+	1999 05 17	704	0.8−	1.1−	1999 06 12	704	0.7−	0.3+
1994 02 13	809	1.7+	0.3−	1999 05 17	704	0.8−	0.1+				

1999 JK₉₆ = 1978 RF₈ = 1998 FA₃₇ = 1998 FK₁₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	255.17790		(2000.0)		P		Q
<i>n</i>	0.17712491	ω	192.05376	+0.99872959	+0.01053422		
<i>a</i>	3.1401445	Ω	167.03565	−0.00089480	+0.98145785		
<i>e</i>	0.0428438	<i>i</i>	12.68841	−0.05038251	+0.19138842		
<i>P</i>	5.56	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1978 09 02	809	0.3−	1.1−	1998 03 20	704	0.7+	0.2−	1999 05 17	704	1.1−	1.3−
1978 09 02	809	0.3+	0.3−	1998 03 20	704	0.2+	0.7−	1999 05 17	704	0.1−	0.7−
1978 09 02	809	0.2−	0.2−	1998 03 20	704	1.1−	0.6+	1999 05 17	704	0.3+	0.9−
1978 09 02	809	0.2+	0.8−	1998 03 22	704	0.0	0.8−	1999 05 17	704	0.5+	1.0−
1978 09 06	809	0.5+	0.3−	1998 03 22	704	0.1−	0.5−	1999 05 17	704	0.2−	0.4−
1978 09 10	809	1.0−	2.0+	1998 03 22	704	0.4−	0.5−	1999 06 08	704	0.5−	0.2−
1978 09 10	809	0.2+	0.9−	1998 03 22	704	0.0	0.1−	1999 06 08	704	0.2−	0.1+
1978 09 10	809	0.3−	0.1−	1998 03 22	704	(0.1+	2.5−)	1999 06 08	704	0.3+	0.2+
1978 09 10	809	1.0+	0.4−	1998 03 26	704	0.3−	0.5−	1999 06 08	704	0.1−	0.4−
1993 04 28	691	0.3+	0.6+	1998 03 26	704	0.1−	1.1−	1999 06 14	704	0.3+	0.2+
1993 04 28	691	0.2+	0.5+	1998 03 26	704	0.0	0.3+	1999 06 14	704	0.5+	0.2−
1993 04 28	691	0.2−	0.4−	1999 05 12	704	0.1+	0.8+	1999 06 14	704	0.2+	0.6+
1998 02 27	566	0.0	0.4−	1999 05 12	704	0.2−	1.1+	1999 06 14	704	0.0	0.4+
1998 02 27	566	0.0	0.3−	1999 05 12	704	0.2−	0.6−	1999 06 14	704	0.0	0.5+
1998 02 27	566	0.1+	0.0	1999 05 12	704	1.5+	0.1−				
1998 03 20	704	0.7+	1.2+	1999 05 12	704	1.2−	1.2+				

1999 JM₉₆ = 1996 XH₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	296.60926		(2000.0)		P		Q
<i>n</i>	0.24533321	ω	250.89535	+0.92517784	+0.28274586		
<i>a</i>	2.5271547	Ω	92.04204	−0.17498884	+0.90973244		
<i>e</i>	0.2176933	<i>i</i>	14.67537	−0.33678610	+0.30404220		
<i>P</i>	4.02	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1995 06 25	691	0.1−	0.4−	1999 05 12	704	0.5−	0.5−	1999 06 08	704	1.0−	0.6−
1995 06 25	691	0.1+	0.1−	1999 05 12	704	0.1+	0.5−	1999 06 08	704	0.4+	1.6+
1995 06 25	691	0.3−	0.1+	1999 05 12	704	0.9+	0.5−	1999 06 08	704	0.0	0.1+
1996 12 05	691	0.0	0.1+	1999 05 12	704	0.5+	0.4−	1999 06 14	704	0.3−	0.1−
1996 12 05	691	0.2−	0.2+	1999 05 12	704	0.1+	0.4−	1999 06 14	704	0.4+	0.1+
1996 12 05	691	0.1−	0.3+	1999 05 17	704	0.2+	0.6−	1999 06 14	704	1.1+	1.8+
1996 12 13	691	0.0	0.1+	1999 05 17	704	0.6−	0.5−	1999 06 14	704	(3.8−	1.1+)
1996 12 13	691	0.1−	0.1+	1999 05 17	704	1.7+	1.3+	1999 06 14	704	1.4−	0.3+
1996 12 13	691	0.1−	0.2+	1999 06 08	704	1.0−	0.4+				

1999 JK₉₇ = 1981 AM₂ = 1989 AN₈ = 1990 HX₁ = 1998 FU₈₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	263.43539		(2000.0)		P		Q
<i>n</i>	0.23931320	ω	258.72910	+0.95660990	−0.21627992		
<i>a</i>	2.5693599	Ω	113.52045	+0.26949445	+0.91150700		
<i>e</i>	0.2051512	<i>i</i>	12.29446	−0.11077108	+0.34982564		
<i>P</i>	4.12	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1981 01 08	381	(1.1+	3.5+)	1999 05 12	704	1.4+	0.1+	1999 06 08	704	0.4−	0.3−
1981 01 08	381	0.0	1.6+	1999 05 12	704	0.7+	0.9+	1999 06 08	704	0.9−	0.6−
1989 01 10	054	0.4−	0.7−	1999 05 12	704	0.1+	0.8+	1999 06 08	704	0.0	0.8−
1989 01 10	054	0.4+	0.3+	1999 05 12	704	1.0−	0.7+	1999 06 10	704	0.8+	0.3+
1990 04 27	413	(4.6−	1.3+)	1999 05 14	703	0.6−	1.3−	1999 06 10	704	1.1+	0.8−
1990 04 29	413	(5.6−	0.0)	1999 05 14	703	0.5−	1.0+	1999 06 10	704	0.5+	0.7−
1998 03 24	704	0.5+	0.2−	1999 05 14	703	2.0−	0.2+	1999 06 10	704	0.4+	0.5−
1998 03 24	704	0.5+	0.5+	1999 05 14	703	(1.5−	3.3+)	1999 06 10	704	0.1+	0.7−
1998 03 24	704	0.1+	0.3−	1999 05 17	704	0.1−	0.2−	1999 06 14	704	0.7+	0.1+
1998 03 24	704	0.0	1.6−	1999 05 17	704	0.2+	0.5−	1999 06 14	704	0.3+	0.7+
1998 03 25	704	0.3+	0.9−	1999 05 17	704	1.4−	0.6−	1999 06 14	704	0.3+	0.6+
1998 03 25	704	0.2−	0.9+	1999 05 17	704	1.0+	0.5+	1999 06 14	704	0.6+	0.9+
1998 03 25	704	0.7−	0.0	1999 05 17	704	1.3−	1.2+	1999 06 14	704	0.4+	0.3+
1998 03 25	704	0.8−	0.2+	1999 06 08	704	0.2−	0.4+				
1998 03 25	704	(4.1−	0.7−)	1999 06 08	704	0.5+	0.6−				

1999 JM₉₇ = 1992 SP₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	351.71866		(2000.0)		P		Q
<i>n</i>	0.25546052	ω	117.00791	+0.08949638	+0.99507139		
<i>a</i>	2.4599155	Ω	158.00159	−0.94943653	+0.09818879		
<i>e</i>	0.1071556	<i>i</i>	6.54569	−0.30093299	−0.01385270		
<i>P</i>	3.86	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1992 09 22	809	0.7+	0.5+	1999 05 12	704	2.0−	1.1+	1999 06 08	704	0.3−	0.6+
1992 09 22	809	1.3+	0.6+	1999 05 12	704	0.9−	1.3+	1999 06 08	704	0.9−	0.4−
1992 09 22	809	0.5−	0.2+	1999 05 17	704	0.2+	0.1−	1999 06 08	704	0.4+	0.3+
1992 09 23	809	0.1+	0.3−	1999 05 17	704	1.3+	0.1+	1999 06 14	704	0.1+	0.1+
1992 09 23	809	1.1−	0.5−	1999 05 17	704	0.7+	1.1−	1999 06 14	704	0.5−	0.3+
1992 09 23	809	0.6−	0.3−	1999 05 17	704	2.2+	0.6−	1999 06 14	704	0.2−	0.5−
1999 05 12	704	0.8−	0.7+	1999 05 17	704	0.4+	0.1−	1999 06 14	704	0.5+	0.6−
1999 05 12	704	0.2+	1.0−	1999 06 08	704	0.0	0.3+	1999 06 14	704	0.4+	0.2−
1999 05 12	704	0.0	0.0	1999 06 08	704	0.8−	0.0				

1999 JN₉₇ = 1998 FX₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	320.61065		(2000.0)		P		Q
<i>n</i>	0.18503500	ω	137.68091	+0.51362052	+0.85663683		
<i>a</i>	3.0500020	Ω	163.04083	−0.82511474	+0.50868257		
<i>e</i>	0.0601285	<i>i</i>	9.60201	−0.23532878	+0.08611256		
<i>P</i>	5.33	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 25	566	1.0−	0.4+	1998 03 22	704	0.4−	0.0	1999 06 06	703	0.8+	0.4−
1998 02 25	566	0.5−	0.2−	1999 05 12	704	(0.3−	2.2−)	1999 06 08	704	0.4−	1.1+
1998 02 25	566	0.5−	0.2+	1999 05 12	704	1.1+	0.8−	1999 06 08	704	1.3−	0.3−
1998 03 20	704	1.6+	0.4+	1999 05 12	704	(3.0+	0.6+)	1999 06 08	704	0.8−	0.1+
1998 03 20	704	0.5−	0.0	1999 05 17	704	0.6−	0.4−	1999 06 08	704	0.5−	0.7−
1998 03 20	704	0.9+	0.6−	1999 05 17	704	0.2+	0.3−	1999 06 08	704	0.3−	0.0
1998 03 20	704	0.1−	0.2−	1999 05 17	704	0.2+	0.7+	1999 06 10	704	0.0	0.2−
1998 03 20	704	0.0	1.0−	1999 05 17	704	1.0+	0.9+	1999 06 10	704	0.6+	0.1+
1998 03 22	704	0.2−	0.4+	1999 05 17	704	0.3−	0.8+	1999 06 10	704	0.9−	0.2+
1998 03 22	704	(0.9−	2.4−)	1999 06 06	703	0.1+	0.2+	1999 06 10	704	0.1−	0.2−
1998 03 22	704	0.4−	0.6−	1999 06 06	703	0.5+	0.1+	1999 06 10	704	0.2−	0.2−
1998 03 22	704	1.2+	1.0+	1999 06 06	703	0.8+	0.6−				

1999 JU₉₇ = 1993 FU₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	355.90024		(2000.0)	P	Q
<i>n</i>	0.17910571	ω	114.14853	-0.07768391	+0.98870833
<i>a</i>	3.1169495	Ω	150.50559	-0.98284821	-0.05438457
<i>e</i>	0.1752859	<i>i</i>	15.08653	-0.16725613	-0.13963583
<i>P</i>	5.50	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1993 03 23	010	0.7-	1.2+	1999 05 14	703	0.6-	0.3+	1999 06 08	704	0.1+	0.7-
1993 03 23	010	0.6-	0.3+	1999 05 14	703	0.1+	0.9+	1999 06 08	704	0.1-	0.3+
1993 03 23	010	0.4-	0.1-	1999 05 14	703	0.6-	1.3+	1999 06 08	704	0.5-	0.2+
1993 03 25	010	1.7+	1.9-	1999 05 17	704	0.1+	0.3-	1999 06 08	704	0.5-	0.2+
1999 05 12	704	0.3-	0.9+	1999 05 17	704	1.3+	1.1-	1999 06 12	704	0.2-	0.3+
1999 05 12	704	1.4-	0.2-	1999 05 17	704	1.0+	0.8-	1999 06 12	704	0.4-	0.1-
1999 05 12	704	0.7+	0.0	1999 05 17	704	0.4+	0.0	1999 06 12	704	0.1-	0.4-
1999 05 12	704	0.7+	0.6+	1999 05 17	704	0.3-	0.0	1999 06 12	704	0.8+	0.7-
1999 05 14	703	0.7+	0.4+	1999 06 08	704	0.4-	0.5-	1999 06 12	704	0.7-	0.5-

1999 JL₉₈ = 1992 DZ₁ = 1998 GD₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	185.50704		(2000.0)	P	Q
<i>n</i>	0.17573685	ω	288.39954	+0.39640219	-0.88764172
<i>a</i>	3.1566577	Ω	135.81912	+0.91673797	+0.36891598
<i>e</i>	0.2140552	<i>i</i>	19.65632	+0.04956616	+0.27566860
<i>P</i>	5.61	<i>H</i>	12.4	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1992 02 28	033	0.2-	0.4+	1998 04 03	704	1.2+	0.7-	1999 06 08	704	0.4-	1.1-
1992 02 29	033	0.7+	0.4-	1999 05 12	704	1.4+	0.2+	1999 06 08	704	0.4-	0.4-
1992 02 29	033	0.5-	0.2+	1999 05 12	704	0.5+	0.9+	1999 06 08	704	0.3-	0.0
1998 04 02	704	0.3-	0.0	1999 05 12	704	1.1-	0.1-	1999 06 08	704	0.1+	0.6+
1998 04 02	704	0.5-	0.7+	1999 05 17	704	0.0	1.1-	1999 06 08	704	0.8+	0.7+
1998 04 02	704	0.6-	0.1-	1999 05 17	704	0.7+	0.9+	1999 06 12	704	0.0	1.3+
1998 04 02	704	1.0-	1.1+	1999 05 17	704	0.6-	0.4-	1999 06 12	704	0.5+	0.1-
1998 04 02	704	1.1-	0.5+	1999 05 17	704	1.2-	1.9-	1999 06 12	704	0.1+	0.4+
1998 04 03	704	0.5+	0.0	1999 06 05	703	0.7-	0.5+	1999 06 12	704	0.5+	0.4-
1998 04 03	704	1.6+	0.4+	1999 06 05	703	0.1-	0.4+	1999 06 12	704	0.1-	0.2-
1998 04 03	704	0.1+	0.7-	1999 06 05	703	0.3+	0.8+				
1998 04 03	704	0.1+	1.5-	1999 06 05	703	0.1+	0.9-				

1999 JV₉₈ = 1941 UC = 1998 FO₉₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	255.79546		(2000.0)	P	Q
<i>n</i>	0.21693465	ω	229.77525	+0.94124458	-0.32521965
<i>a</i>	2.7431534	Ω	148.88754	+0.33772562	+0.90656743
<i>e</i>	0.1761553	<i>i</i>	10.14940	-0.00022237	+0.26901240
<i>P</i>	4.54	<i>H</i>	13.4	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc (or two decimals in units of degrees)

1941 10 16	053(0.10-	0.03-)X	1998 04 03	809	0.2+	1.4+	1999 05 17	704	1.1+	1.8+	
1941 10 17	053(0.10-	0.03-)X	1998 04 03	809	0.5-	0.8+	1999 06 04	703	0.5+	0.2-	
1998 02 27	566	0.3-	0.7+	1998 04 03	809	1.5-	0.2+	1999 06 04	703	0.2+	0.3+
1998 02 27	566	0.3+	0.2+	1998 04 19	704	0.5-	0.3-	1999 06 04	703	0.0	0.4+
1998 02 27	566	0.3+	0.4+	1998 04 19	704	1.6+	1.0+	1999 06 04	703	0.4-	1.0+
1998 03 24	704	0.4-	0.5-	1998 04 19	704	0.8+	0.4-	1999 06 08	704	0.2+	0.6-
1998 03 24	704	(2.1+	0.6+)	1998 04 19	704	1.7+	0.7+	1999 06 08	704	0.3+	0.6-
1998 03 24	704	0.5+	0.5+	1998 04 19	704	0.6-	0.3-	1999 06 08	704	0.1-	0.8-
1998 03 24	704	1.7-	0.2-	1999 05 12	704	0.7+	0.3+	1999 06 08	704	0.7+	0.6-
1998 03 25	704	0.1-	0.6-	1999 05 12	704	0.1+	0.1+	1999 06 08	704	1.1-	0.1-
1998 03 25	704	1.0+	0.4+	1999 05 12	704	(2.2+	1.9+)	1999 06 14	704	0.1-	0.1+
1998 03 25	704	0.9+	0.9-	1999 05 12	704	0.1-	0.5-	1999 06 14	704	0.5-	0.3-
1998 03 25	704	1.3+	1.9-	1999 05 12	704	1.0-	0.4-	1999 06 14	704	0.7-	0.5-
1998 03 25	704	0.5+	1.1-	1999 05 17	704	0.1+	0.5+	1999 06 14	704	0.0	0.5-
1998 04 02	809	0.7-	0.2-	1999 05 17	704	0.4-	0.3+	1999 06 14	704	0.0	0.1-

1998 04 02	809	1.1-	0.2-	1999 05 17	704	0.5+	0.2+
1998 04 02	809	1.6-	0.1+	1999 05 17	704	0.1-	0.3+

1999 JW₉₈ = 1982 HE₃ = 1998 DC₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	123.08449		(2000.0)	P	Q
<i>n</i>	0.18003805	ω	297.61462	-0.54936884	-0.83525186
<i>a</i>	3.1061793	Ω	185.87418	+0.82436230	-0.53720463
<i>e</i>	0.1080407	<i>i</i>	13.22502	+0.13645762	-0.11732653
<i>P</i>	5.47	<i>H</i>	13.5	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1982 04 27	033	0.4-	0.6-	1998 03 04	704	(3.2-	0.5-)	1999 06 04	703	0.4-	1.1+
1982 04 27	033	0.1+	0.9-	1998 03 04	704	(4.7-	0.2+)	1999 06 04	703	0.3+	0.5+
1998 02 25	566	0.2-	0.5+	1998 03 04	704	(2.9-	1.1-)	1999 06 04	703	0.2+	0.5-
1998 02 25	566	0.2-	0.4+	1998 03 24	691	1.0+	1.3+	1999 06 04	703	1.0-	0.0
1998 02 25	566	0.5+	0.5+	1998 03 24	691	0.3+	0.7+	1999 06 08	704	0.1+	0.7+
1998 02 27	566	0.8+	1.2-	1998 03 24	691	0.0	0.3+	1999 06 08	704	0.2+	0.4-
1998 02 27	566	0.3+	0.5-	1999 05 12	704	1.1+	0.3-	1999 06 08	704	0.0	0.2-
1998 02 27	566	0.5+	1.2-	1999 05 12	704	0.6+	0.4+	1999 06 08	704	0.1+	1.5+
1998 03 03	704	1.1-	0.0	1999 05 12	704	0.8-	0.8+	1999 06 14	704	0.3+	0.2+
1998 03 03	704	0.5-	0.1+	1999 05 12	704	1.6+	0.6-	1999 06 14	704	0.5+	0.1-
1998 03 03	704	0.4-	0.4+	1999 05 17	704	0.3+	0.2-	1999 06 14	704	0.5+	0.5-
1998 03 03	704	0.6-	0.1+	1999 05 17	704	0.6-	0.6+	1999 06 14	704	0.2-	0.2-
1998 03 03	704	0.3-	0.3-	1999 05 17	704	1.3-	1.1-	1999 06 14	704	0.2-	0.2-
1998 03 04	704	(3.0-	0.4+)	1999 05 17	704	0.3-	1.0-				
1998 03 04	704	(3.3-	0.3-)	1999 05 17	704	0.9-	0.2+				

1999 JE₉₉ = 1998 DS₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	350.14017		(2000.0)	P	Q
<i>n</i>	0.21300103	ω	146.80945	+0.29118205	+0.94826085
<i>a</i>	2.7768233	Ω	139.70980	-0.91481806	+0.31469390
<i>e</i>	0.2575195	<i>i</i>	11.28532	-0.27985877	-0.04206092
<i>P</i>	4.63	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 02 24	691	0.2-	0.3-	1999 05 17	704	0.6+	0.1+	1999 06 08	704	0.3-	0.1-
1998 02 24	691	0.5-	0.5+	1999 05 17	704	0.8-	0.1+	1999 06 08	704	0.2-	0.8-
1998 02 24	691	0.3-	0.2-	1999 05 17	704	0.2+	1.3-	1999 06 08	704	0.5+	0.5+
1998 02 26	691	0.4+	0.2-	1999 05 17	704	0.1+	0.7+	1999 06 08	704	0.3-	0.5+
1998 02 26	691	0.1+	0.1+	1999 05 17	704	1.2-	1.0+	1999 06 14	704	0.2+	0.8-
1998 02 26	691	0.4+	0.1-	1999 06 04	703	1.0-	0.8+	1999 06 14	704	0.0	0.9-
1999 05 12	704	1.9+	1.5-	1999 06 04	703	0.1-	1.0+	1999 06 14	704	0.1+	0.3-
1999 05 12	704	0.3-	0.3-	1999 06 04	703	0.0	0.0	1999 06 14	704	0.4-	0.1-
1999 05 12	704	0.1-	0.6+	1999 06 04	703	0.4+	0.3+	1999 06 14	704	0.1+	0.4-
1999 05 12	704	0.2+	1.0+	1999 06 08	704	0.5+	0.3-				

1999 JG₉₉ = 1987 RW₄ = 1987 SA₂₀ = 1987 WA₃ = 1996 TT₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	203.46703		(2000.0)	P	Q
<i>n</i>	0.22289441	ω	229.83576	+0.51528016	-0.85581303
<i>a</i>	2.6940352	Ω	189.47516	+0.84606726	+0.51643808
<i>e</i>	0.1805624	<i>i</i>	16.04576	+0.13658896	+0.02959336
<i>P</i>	4.42	<i>H</i>	13.5	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1987 09 02	095	(2.8+	3.5-)	1998 03 26	704	0.5-	0.0	1999 05 17	704	0.8-	0.5+
1987 09 17	095	(0.0	11.8-)	1998 04 04	699	0.2-	1.3-	1999 05 17	704	0.8+	0.3-
1987 11 17	010	0.0	1.3-	1998 04 04	699	0.4+	0.3-	1999 05 17	704	1.6-	1.2-
1987 11 17	010	0.1+	0.3-	1998 04 04	699	0.3-	0.4-	1999 06 08	704	0.4+	0.2+
1996 10 09	399	0.6-	1.5-	1998 04 18	704	0.9+	0.5+	1999 06 08	704	0.8-	0.0
1996 10 09	399	0.6+	0.0	1998 04 18	704	0.3+	0.8+	1999 06 08	704	0.3+	0.4+
1996 10 10	399	0.5+	1.1-	1998 04 18	704	0.8+	0.6+	1999 06 08	704	0.6-	0.8-
1996 10 10	399	(0.3-	3.2-)	1998 04 18	704	0.8-	0.8+	1999 06 14	704	0.7+	1.6-

M.P.C. 35034

1999 JUNE 22

1998 02 25	566	0.4−	0.9−	1999 05 12	704	(0.7−	2.6+)	1999 06 14	704	1.0+	0.4−
1998 02 25	566	0.2−	1.1−	1999 05 12	704	(0.6−	2.6+)	1999 06 14	704	0.6+	0.3+
1998 02 25	566	0.3−	0.9−	1999 05 12	704	0.7−	0.1+	1999 06 14	704	0.6+	0.2−
1998 03 26	704	0.2+	0.1−	1999 05 12	704	(0.7−	2.3+)	1999 06 14	704	1.0+	0.3−
1998 03 26	704	0.5−	0.7−	1999 05 12	704	0.8−	0.2+				

1999 JT₉₉ = 1998 EX₁₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	223.04221		(2000.0)	P		Q	
<i>n</i>	0.22650046	ω	248.93624	+0.71900553		−0.68479159	
<i>a</i>	2.6653648	Ω	153.82486	+0.69446500		+0.70116267	
<i>e</i>	0.0929726	<i>i</i>	15.61116	+0.02737533		+0.19857339	
<i>P</i>	4.35	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 01	691	(0.0	3.6−)	1999 05 12	704	0.5+	2.0+	1999 06 08	704	0.8+	0.3+
1998 03 01	691	(1.7−	4.2−)	1999 05 17	704	0.9−	1.4−	1999 06 08	704	(2.4+	1.8−)
1998 03 01	691	(1.8−	4.2−)	1999 05 17	704	0.8−	1.2−	1999 06 08	704	0.0	0.8−
1998 03 03	809	(1.8−	2.3+)	1999 05 17	704	0.8−	0.5+	1999 06 11	704	0.2−	0.3−
1998 03 03	809	1.4−	0.6+	1999 05 17	704	0.6−	0.0	1999 06 11	704	0.2+	0.2−
1998 03 03	809	0.6−	0.0	1999 05 17	704	1.0−	0.5−	1999 06 11	704	0.4+	0.1−
1998 03 04	809	1.6+	0.6−	1999 06 04	703	0.9−	1.2+	1999 06 11	704	0.1+	0.1+
1998 03 04	809	0.1−	0.4−	1999 06 04	703	0.5−	0.9+	1999 06 11	704	0.4+	0.2+
1998 03 04	809	0.4+	0.5+	1999 06 04	703	0.3+	0.8−	1999 06 12	704	0.5+	0.2+
1999 04 18	691	0.2+	0.4−	1999 06 04	703	0.9+	0.9+	1999 06 12	704	0.9+	0.2+
1999 04 18	691	0.6+	0.4−	1999 06 05	703	0.4+	0.5+	1999 06 12	704	0.3+	0.9−
1999 04 18	691	0.0	0.5−	1999 06 05	703	0.3−	0.0	1999 06 12	704	0.2−	0.3−
1999 05 12	704	1.0+	0.7−	1999 06 05	703	0.6−	0.6+	1999 06 12	704	0.2−	0.1−
1999 05 12	704	0.1+	0.3+	1999 06 05	703	0.5−	0.8+				
1999 05 12	704	0.7+	0.5+	1999 06 08	704	0.6−	0.8−				

1999 JV₉₉ = 1995 OO₁ = 1998 GC₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	220.48923		(2000.0)	P		Q	
<i>n</i>	0.20524418	ω	284.36652	+0.69116376		−0.68409571	
<i>a</i>	2.8463533	Ω	119.42006	+0.72205145		+0.64002171	
<i>e</i>	0.1147341	<i>i</i>	15.51775	+0.03056735		+0.34983605	
<i>P</i>	4.80	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1995 07 19	327	0.2+	0.3−	1998 04 02	704	1.3+	1.2+	1999 05 17	704	1.2+	0.8+
1995 07 19	327	0.3+	0.0	1998 04 02	704	0.2+	0.2+	1999 05 17	704	0.6−	0.1+
1995 07 19	327	0.1−	0.3−	1998 04 02	704	1.8−	0.4−	1999 05 17	704	1.2+	0.7+
1995 07 19	327	0.3−	0.2+	1998 04 03	704	0.2−	0.2+	1999 06 08	704	0.4−	1.1+
1995 07 19	327	0.0	0.4+	1998 04 03	704	0.7+	1.4+	1999 06 08	704	0.9−	0.5+
1995 07 21	327	0.1−	0.1+	1998 04 03	704	1.9−	2.0−	1999 06 08	704	0.9−	0.0
1995 07 21	327	0.4−	0.1+	1998 04 03	704	0.0	0.7−	1999 06 08	704	0.3−	0.1−
1995 07 21	327	0.1+	0.0	1998 04 03	704	0.5+	0.5+	1999 06 08	704	0.4−	0.7+
1995 07 21	327	0.3+	0.4+	1999 05 12	704	0.6−	0.7−	1999 06 14	704	0.7+	0.4−
1998 01 28	566	0.3+	0.1+	1999 05 12	704	0.7−	0.2−	1999 06 14	704	1.1+	0.8−
1998 01 28	566	0.6+	0.3−	1999 05 12	704	1.2+	1.1+	1999 06 14	704	0.4−	0.5−
1998 01 28	566	0.2+	0.2+	1999 05 12	704	0.8−	0.2−	1999 06 14	704	0.0	0.3−
1998 04 02	704	0.1−	0.4+	1999 05 12	704	0.9−	0.0	1999 06 14	704	0.2+	0.9−
1998 04 02	704	0.6+	0.2−	1999 05 17	704	1.1+	1.4−				

1999 JY₉₉ = 1998 FY₈₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	226.59129		(2000.0)	P		Q	
<i>n</i>	0.19843372	ω	277.60960	+0.77258033		−0.60467057	
<i>a</i>	2.9111130	Ω	119.80426	+0.63401648		+0.71849483	
<i>e</i>	0.0654586	<i>i</i>	12.89397	+0.03380444		+0.34371308	
<i>P</i>	4.97	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 24	566	0.8−	0.6−	1998 03 25	704	0.7+	0.6+	1999 05 17	704	0.2+	0.4−
1998 02 24	566	0.4−	0.3−	1998 03 25	704	0.3−	0.2−	1999 06 08	704	0.6−	0.4+
1998 02 24	566	0.3−	0.6−	1998 03 25	704	1.3+	0.2−	1999 06 08	704	0.2+	0.0
1998 03 24	704	0.0	1.1+	1998 03 25	704	0.8+	0.7+	1999 06 08	704	0.3−	0.4−
1998 03 24	704	0.4−	0.3−	1999 05 12	704	0.3−	0.4+	1999 06 08	704	0.4−	1.1−
1998 03 24	704	0.2−	0.1−	1999 05 12	704	0.5−	0.7−	1999 06 14	704	0.4−	0.0
1998 03 24	704	1.0−	1.5−	1999 05 12	704	(0.6+	2.2+)	1999 06 14	704	0.1+	0.0
1998 03 24	566	0.6+	0.0	1999 05 17	704	1.6+	1.3+	1999 06 14	704	0.2+	0.1−
1998 03 24	566	0.4+	0.1−	1999 05 17	704	0.2−	0.5+	1999 06 14	704	0.3−	0.4−
1998 03 24	566	0.1−	0.2+	1999 05 17	704	0.1+	0.8+				
1998 03 25	704	0.2−	1.2+	1999 05 17	704	0.5+	0.5−				

1999 JA₁₀₀ = 1998 FR₉₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	135.28808		(2000.0)	P		Q	
<i>n</i>	0.17239029	ω	3.16994	−0.46379595		−0.86353762	
<i>a</i>	3.1973794	Ω	114.54039	+0.80797370		−0.50395001	
<i>e</i>	0.0774842	<i>i</i>	12.57044	+0.36341687		+0.01836212	
<i>P</i>	5.72	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1993 06 14	691	0.1−	0.4−	1998 03 25	704	0.5−	0.6+	1999 06 08	704	0.0	0.2+
1993 06 14	691	0.3−	0.5−	1998 03 25	704	0.6+	0.6+	1999 06 08	704	0.1−	0.4+
1993 06 14	691	0.1−	0.7−	1998 03 25	704	0.1−	0.7−	1999 06 08	704	0.2−	0.2+
1998 02 26	566	0.5−	0.2−	1999 05 12	704	0.1+	0.7+	1999 06 08	704	0.1−	0.0
1998 02 26	566	0.3−	0.2−	1999 05 12	704	0.4+	0.0	1999 06 10	704	0.3+	0.4−
1998 02 26	566	0.4−	0.4−	1999 05 12	704	0.1+	0.7−	1999 06 10	704	0.1−	0.0
1998 03 24	704	0.4−	0.1−	1999 05 12	704	1.0−	0.6+	1999 06 10	704	0.2+	0.4−
1998 03 24	704	0.4+	0.1+	1999 05 17	704	0.6−	1.0−	1999 06 10	704	0.1−	0.0
1998 03 24	704	0.9+	0.2+	1999 05 17	704	0.6−	1.8+	1999 06 10	704	0.3−	0.3−
1998 03 24	704	0.3+	0.6−	1999 05 17	704	1.0+	1.0+	1999 06 14	704	0.4+	0.4−
1998 03 25	704	0.1+	0.3+	1999 05 17	704	0.2−	0.9−	1999 06 14	704	0.6+	0.3−
1998 03 25	704	0.0	0.6+	1999 06 08	704	0.2−	0.3+	1999 06 14	704	1.0+	0.5+

1999 JB₁₀₀ = 4272 T-3

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	50.53744		(2000.0)	P		Q	
<i>n</i>	0.20971799	ω	38.59205	−0.93171919		+0.36064429	
<i>a</i>	2.8057282	Ω	162.40135	−0.35834895		−0.89373554	
<i>e</i>	0.1552805	<i>i</i>	8.14523	−0.05903710		−0.26678170	
<i>P</i>	4.70	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1977 10 11	675	0.1+	0.2−	1999 05 12	704	0.5−	0.2+	1999 06 10	704	0.3−	0.4−
1977 10 11	675	0.6+	0.3−	1999 05 12	704	1.3−	0.6+	1999 06 10	704	1.3+	0.4−
1977 10 12	675	1.7+	0.2−	1999 05 12	704	0.1+	1.2−	1999 06 10	704	0.6+	0.2−
1977 10 12	675	0.9+	1.1−	1999 05 17	704	0.3+	1.0−	1999 06 10	704	0.2+	0.8−
1977 10 16	675	1.4−	2.0+	1999 05 17	704	1.6+	0.9+	1999 06 10	704	0.5−	0.6−
1977 10 16	675	0.8−	1.1+	1999 05 17	704	0.1−	0.4+	1999 06 14	704	0.3−	0.1+
1977 10 17	675	1.1−	0.3+	1999 05 17	704	0.3+	1.3+	1999 06 14	704	0.3+	0.2+
1977 10 17	675	0.3+	1.0+	1999 06 08	704	0.7−	0.3−	1999 06 14	704	0.4−	0.3+
1977 10 21	675	0.2−	1.4−	1999 06 08	704	0.6−	0.6+	1999 06 14	704	0.6+	0.3−
1977 10 21	675	0.1−	1.1−	1999 06 08	704	0.2−	0.2+	1999 06 14	704	0.1−	0.8+
1999 05 12	704	0.8+	0.1+	1999 06 08	704	0.3−	0.5+				
1999 05 12	704	0.2−	0.9−	1999 06 08	704	0.5−	0.2−				

1999 JH₁₀₀ = 1998 FJ₁₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

|--|--|--|--|

Residuals in seconds of arc

1998 02 22	566	1.3+	0.0	1999 05 12	704	0.9+	0.0	1999 06 08	704	0.2+	0.4-
1998 02 22	566	0.7+	0.2+	1999 05 12	704	0.6-	0.9+	1999 06 08	704	0.1+	0.0
1998 02 22	566	0.9+	0.3+	1999 05 12	704	0.5+	0.3-	1999 06 08	704	0.1-	0.0
1998 03 26	704	0.3-	0.7+	1999 05 17	704	0.9-	0.8+	1999 06 08	704	0.5+	0.0
1998 03 26	704	0.2-	0.6+	1999 05 17	704	1.0-	0.5-	1999 06 08	704	0.2+	0.3-
1998 03 26	704	1.4-	0.9-	1999 05 17	704	0.7+	0.0	1999 06 12	704	0.2+	0.5-
1998 04 01	704	0.1+	1.7-	1999 05 17	704	1.8-	0.3+	1999 06 12	704	0.6+	0.4-
1998 04 01	704	1.1+	0.8-	1999 06 06	703	0.1-	2.0+	1999 06 12	704	1.5+	0.8-
1998 04 01	704	1.0-	0.2+	1999 06 06	703	0.3+	0.0	1999 06 12	704	0.5+	0.3-
1998 04 01	704	0.1-	0.3+	1999 06 06	703	0.9-	0.2+	1999 06 12	704	0.0	1.0-
1998 04 01	704	1.1-	1.0+	1999 06 06	703	0.9-	0.4+				

1999 JN₁₀₀ = 1993 FL₄₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	345.55070		(2000.0)	P	Q
n	0.18261328	ω	101.45115	+0.27457589	+0.96136278
a	3.0769078	Ω	184.62882	-0.94972306	+0.26792507
e	0.1476267	i	14.15910	-0.15044666	+0.06322784
P	5.40	H	14.2	G 0.15	U 4

Residuals in seconds of arc

1993 03 19	809	0.8-	1.2+	1999 05 17	704	1.8+	1.4+	1999 06 08	704	0.6-	0.7-
1993 03 20	809	0.0	0.2-	1999 05 17	704	0.3-	0.2+	1999 06 08	704	1.5-	0.5-
1993 03 24	809	0.7+	1.1-	1999 06 06	703	0.7+	0.0	1999 06 14	704	0.0	0.3-
1999 05 12	704	1.0+	0.4-	1999 06 06	703	0.5+	0.3+	1999 06 14	704	0.0	0.1-
1999 05 12	704	1.1+	0.7-	1999 06 06	703	0.9+	0.8+	1999 06 14	704	0.2+	0.1-
1999 05 12	704	1.0-	0.1+	1999 06 06	703	0.9+	1.5+	1999 06 14	704	0.8-	0.2-
1999 05 12	704	(2.0-	0.8+)	1999 06 08	704	0.2+	0.4-	1999 06 14	704	0.7+	0.4+
1999 05 17	704	(2.9+	1.9+)	1999 06 08	704	0.5-	1.0-				
1999 05 17	704	1.0-	0.4-	1999 06 08	704	0.3-	0.1-				

1999 JP₁₀₀ = 1989 GP₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	98.76825		(2000.0)	P	Q
n	0.20854180	ω	0.78547	-0.91638183	-0.39421815
a	2.8162680	Ω	155.62885	+0.36634782	-0.89591715
e	0.0870767	i	9.70250	+0.16134934	-0.20475478
P	4.73	H	14.0	G	0.15
				U	5

Residuals in seconds of arc

1989 04 01	474	0.3+	1.0+	1999 05 12	704	0.5-	0.8-	1999 06 08	704	0.0	0.5-
1989 04 01	474	0.8+	0.9+	1999 05 12	704	1.5-	1.2-	1999 06 08	704	0.2+	0.3-
1989 04 03	474	0.1-	1.5+	1999 05 12	704	0.8+	1.4+	1999 06 08	704	0.7-	0.1-
1989 04 03	474	1.2-	0.0	1999 05 12	704	0.5-	0.0	1999 06 14	704	0.3-	0.4-
1989 04 04	474	1.5-	1.3-	1999 05 17	704	0.4-	0.3-	1999 06 14	704	0.1+	0.1-
1989 04 04	474	1.8+	1.4-	1999 05 17	704	0.8-	0.5+	1999 06 14	704	0.3+	0.4-
1998 04 04	691	0.1-	0.2-	1999 05 17	704	2.0+	1.4+	1999 06 14	704	0.1+	0.7-
1998 04 04	691	0.0	0.2-	1999 05 17	704	1.1+	0.2+	1999 06 14	704	0.0	0.2+
1998 04 04	691	0.1-	0.6-	1999 06 08	704	0.2+	0.5+				

1999 JQ₁₀₀ = 1996 VL₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	85.43314		(2000.0)	P	Q
n	0.18729210	ω	333.40885	-0.97260105	-0.22749832
a	3.0254484	Ω	193.69843	+0.23247046	-0.94980086
e	0.1003315	i	11.66280	+0.00216266	-0.21476227
P	5.26	H	14.0	G 0.15	U 3

Residuals in seconds of arc

1996 11 03	691	0.0	0.4-	1999 05 12	704	0.1+	0.6+	1999 06 08	704	0.1+	0.3+
1996 11 03	691	0.4-	0.7-	1999 05 12	704	0.2+	1.3-	1999 06 08	704	0.3+	0.6+
1996 11 03	691	0.1+	0.6-	1999 05 12	704	0.7-	1.1-	1999 06 08	704	0.2-	0.4+
1996 11 19	691	0.5+	0.6-	1999 05 17	704	1.0+	1.6-	1999 06 14	704	0.1+	0.3-
1996 11 19	691	0.1+	0.8-	1999 05 17	704	0.0	0.8-	1999 06 14	704	0.6-	0.4+

1996 11 19	691	0.0	0.3-	1999 05 17	704	0.3-	0.7-	1999 06 14	704	0.7-	0.3-
1998 01 28	566	0.3+	0.1-	1999 05 17	704	0.1-	1.0+	1999 06 14	704	0.5-	1.1-
1998 01 28	566	0.3+	0.5-	1999 05 17	704	0.7+	0.5+	1999 06 14	704	0.1-	0.1+
1998 01 28	566	0.9-	0.1-	1999 06 08	704	0.3+	0.2+				
1999 05 12	704	0.6+	0.8-	1999 06 08	704	0.2-	0.5+				

1999 JW₁₀₀ = 1998 BR₄₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	34.79040		(2000.0)	P	Q		
n	0.21792847	ω	79.81425	-0.72368021	+0.67431618		
a	2.7348073	Ω	142.34131	-0.68893304	-0.69329904		
e	0.1444871	i	13.91432	-0.04072126	-0.25423244		
P	4.52	H	14.0	G	0.15	U	3

Residuals in seconds of arc

1998 01 26	566	0.1+	0.7-	1999 04 19	703	0.3+	0.3+	1999 05 17	704	0.7-	0.4-
1998 01 26	566	0.1+	0.8-	1999 04 19	703	0.2+	0.3-	1999 06 08	704	0.2-	0.0
1998 01 26	566	0.3+	0.6-	1999 04 19	703	0.3+	0.6+	1999 06 08	704	0.1-	0.1+
1998 01 31	691	0.2-	0.3+	1999 05 12	704	1.0+	0.3-	1999 06 08	704	0.7-	0.6-
1998 01 31	691	0.2-	0.4+	1999 05 12	704	1.1+	1.5+	1999 06 08	704	0.1+	0.6-
1998 01 31	691	0.0	0.2+	1999 05 12	704	0.6-	1.0-	1999 06 08	704	0.8-	1.2-
1999 03 24	704	0.2-	0.3+	1999 05 12	704	(2.5+	0.4+)	1999 06 12	704	0.3-	0.6-
1999 03 24	704	1.8-	1.2+	1999 05 12	704	0.3-	1.0+	1999 06 12	704	0.0	0.5-
1999 03 24	704	0.7+	1.3-	1999 05 17	704	0.7+	0.0	1999 06 12	704	0.0	0.1+
1999 03 24	704	0.6-	0.6+	1999 05 17	704	1.3+	0.5+	1999 06 12	704	0.8-	0.2-
1999 03 24	704	(4.3-	0.7-)	1999 05 17	704	0.5-	0.1-	1999 06 12	704	0.2-	0.4-
1999 04 19	703	0.5+	0.7+	1999 05 17	704	1.1+	0.5+				

1999 JE₁₀₁ = 1998 ES₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	245.15296		(2000.0)	P	Q
n	0.21789596	ω	223.97552	+0.95755983	-0.26746554
a	2.7350793	Ω	151.02250	+0.28480308	+0.93532489
e	0.0212548	i	12.81188	-0.04434380	+0.23158050
P	4.52	H	14.2	G 0.15	U 5

Residuals in seconds of arc

1998 03 03	704	1.5+	0.1+	1999 05 12	704	0.3+	0.0	1999 06 04	703	0.9+	1.3+
1998 03 03	704	1.7-	0.2-	1999 05 12	704	1.1-	1.3-	1999 06 08	704	0.4-	0.7-
1998 03 03	704	0.5-	0.6-	1999 05 17	704	0.1+	0.4-	1999 06 08	704	0.0	0.7-
1998 03 03	704	(4.6-	0.6-)	1999 05 17	704	0.5+	1.1+	1999 06 08	704	0.3-	0.8-
1998 03 04	704	1.9+	1.2-	1999 05 17	704	0.5-	0.3-	1999 06 08	704	1.4+	0.6-
1998 03 04	704	0.1+	0.9+	1999 05 17	704	1.3+	1.3+	1999 06 14	704	1.0-	0.4-
1998 03 04	704	(2.6+	0.4+)	1999 05 17	704	0.6-	1.3+	1999 06 14	704	0.2-	0.2+
1998 03 04	704	1.3-	0.7+	1999 06 04	703	0.3-	0.5-	1999 06 14	704	0.2-	0.0
1999 05 12	704	1.3-	0.9+	1999 06 04	703	1.0+	0.2+	1999 06 14	704	0.5-	0.2-
1999 05 12	704	1.3+	0.1-	1999 06 04	703	0.3+	0.4+	1999 06 14	704	0.8-	0.9-

1999 JG₁₀₁ = 1998 BB₄₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	175.55554		(2000.0)	P	Q
n	0.24111121	ω	339.41436	+0.07718182	-0.97132513
a	2.5565705	Ω	105.62090	+0.94429657	-0.00115682
e	0.1383636	i	13.50342	+0.31991710	+0.23775229
P	4.09	H	14.3	G	0.15
				U	4

Residuals in seconds of arc

1998 01 24	566	0.0	0.0	1999 05 12	704	0.0	0.7-	1999 06 08	704	1.7-	1.2+
1998 01 24	566	0.1+	0.0	1999 05 12	704	1.9-	1.4+	1999 06 08	704	1.1-	0.3-
1998 01 24	566	0.1-	0.2+	1999 05 12	704	1.7-	1.1+	1999 06 08	704	(3.1-	2.2-)
1998 01 29	566	0.1+	0.2-	1999 05 17	704	1.2+	1.5-	1999 06 14	704	0.3+	0.2+
1998 01 29	566	0.7+	0.0	1999 05 17	704	0.5+	1.5-	1999 06 14	704	0.3+	0.2-
1998 01 29	566	0.3+	0.1-	1999 05 17	704	0.1+	0.9+	1999 06 14	704	0.3+	0.2-
1998 02 25	566	0.5-	0.1+	1999 05 17	704	1.6-	1.4-	1999 06 14	704	0.5+	0.0
1998 02 25	566	0.3-	0.1+	1999 05 17	704	1.0+	1.4-	1999 06 14	704	0.1-	0

M.P.C. 35036

1999 JUNE 22

1998 02 25 566 0.3− 0.1− 1999 06 08 704 1.8+ 0.3+
 1999 05 12 704 1.8+ 1.8+ 1999 06 08 704 0.5+ 0.0

1999 JB₁₀₂ = 1998 CP₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18987008	ω	54.74551	−0.91002300	+0.39131853		
<i>a</i>	2.9980005	Ω	147.65297	−0.41162970	−0.89210734		
<i>e</i>	0.0258430	<i>i</i>	14.81937	+0.04918463	−0.22586344		
<i>P</i>	5.19	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1995 08 30	809	0.3+	0.0	1999 05 12	704	0.1+	0.0	1999 05 17	704	0.3+	0.1+
1995 08 31	809	0.3+	0.0	1999 05 12	704	0.9+	0.5−	1999 05 17	704	0.3+	0.5−
1995 08 31	809	0.1−	0.9+	1999 05 12	704	0.6−	1.3−	1999 05 17	704	1.2+	1.1+
1995 09 01	809	0.9−	0.6+	1999 05 12	704	(2.3−	0.4+)	1999 05 17	704	0.5+	0.9+
1998 02 06	809	1.8+	0.4+	1999 05 13	704	1.3−	1.2−	1999 05 17	704	1.1−	0.4−
1998 02 06	809	1.7+	0.3+	1999 05 13	704	1.3−	0.1+	1999 06 06	703	0.3+	0.6+
1998 02 06	809	1.5+	0.5+	1999 05 13	704	0.8+	1.4+	1999 06 06	703	0.1+	0.7+
1998 02 07	809	1.6−	0.3−	1999 05 13	704	0.6−	0.9+	1999 06 06	703	1.6+	0.0
1998 02 07	809	1.6−	0.3+	1999 05 13	704	0.9−	0.7+	1999 06 06	703	1.6+	0.1−
1998 02 07	809	1.5−	0.0	1999 05 13	704	1.0+	0.1+	1999 06 08	704	0.1−	0.1−
1998 02 28	691	0.2+	0.2−	1999 05 13	704	0.6−	1.1−	1999 06 08	704	0.0	0.0
1998 02 28	691	0.1+	0.2−	1999 05 13	704	0.6−	0.0	1999 06 08	704	0.3−	0.1−
1998 02 28	691	0.0	0.2−	1999 05 13	704	0.5−	0.6+	1999 06 08	704	0.1−	0.3−
1998 03 25	704	(4.5−	0.9−)	1999 05 13	704	0.6+	0.9+	1999 06 08	704	0.4−	0.3−
1998 03 25	704	0.2+	0.5+	1999 05 13	704	0.1−	0.4+	1999 06 14	704	0.7−	0.2−
1998 03 25	704	0.8+	0.1+	1999 05 13	704	0.3−	0.1+	1999 06 14	704	0.3−	0.2−
1998 03 25	704	0.0	0.1+	1999 05 13	704	0.2−	0.6−	1999 06 14	704	0.0	0.9−
1998 03 25	704	1.5−	0.0	1999 05 13	704	1.0+	0.1+	1999 06 14	704	0.1−	0.7−
1999 05 12	704	0.4+	0.1−	1999 05 13	704	0.4−	1.4+	1999 06 14	704	0.3−	1.1−

1999 JF₁₀₂ = 1993 DD₃ = 1998 EY₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.19976952	ω	226.03333	+0.99294728	+0.11109078		
<i>a</i>	2.8981213	Ω	127.54516	−0.08821047	+0.92561792		
<i>e</i>	0.0857161	<i>i</i>	2.99358	−0.07921247	+0.36178765		
<i>P</i>	4.93	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1993 02 20	010	0.1+	0.4−	1998 03 04	704	0.4+	0.5−	1999 05 17	704	0.3−	0.8+
1993 02 20	010	0.5−	0.9+	1999 05 13	704	1.8+	1.6+	1999 05 17	704	(3.3−	0.9+)
1993 02 20	010	0.9−	0.1−	1999 05 13	704	0.5+	0.4+	1999 05 18	704	0.5−	0.4+
1993 02 22	010	0.5+	0.2−	1999 05 13	704	0.3+	1.5−	1999 05 18	704	0.5−	1.1−
1993 02 23	010	0.5+	1.3−	1999 05 13	704	0.5+	0.5−	1999 05 18	704	0.5−	0.8−
1998 03 03	704	0.7−	1.7+	1999 05 15	703	0.7−	0.5+	1999 05 18	704	0.4−	1.0−
1998 03 03	704	0.5+	0.1−	1999 05 15	703	1.3−	0.6+	1999 05 18	704	0.3−	0.2+
1998 03 03	704	0.9+	0.2−	1999 05 15	703	0.6−	0.4+	1999 05 19	704	0.1+	0.9−
1998 03 03	704	1.0−	0.3−	1999 05 15	703	0.3+	1.2+	1999 05 19	704	0.1+	1.3+
1998 03 04	704	0.1−	0.9+	1999 05 17	704	0.1−	1.3−	1999 05 19	704	0.0	1.0−
1998 03 04	704	0.3+	0.4−	1999 05 17	704	1.4+	0.7+	1999 05 19	704	0.0	0.2+
1998 03 04	704	(3.0+	2.1+)	1999 05 17	704	0.6+	0.8+	1999 05 19	704	0.3−	1.0−

1999 JR₁₀₂ = 1990 WC₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27958265	ω	34.13670	−0.62790185	−0.76830635		
<i>a</i>	2.3163059	Ω	95.08107	+0.68332370	−0.62064867		
<i>e</i>	0.0718624	<i>i</i>	7.16728	+0.37256944	−0.15652660		
<i>P</i>	3.53	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1990 11 16	809	(0.5+	2.4−)	1999 04 12	704	0.4+	0.2+	1999 05 17	704	0.6−	0.2+
1990 11 17	809	1.0+	1.9−	1999 04 12	704	(2.6−	3.3−)	1999 05 18	704	1.1−	0.5−

1990 11 21	809	0.5+	0.6−	1999 05 13	704	0.4−	0.6−	1999 05 18	703	(2.0+	2.6+)
1990 11 21	809	1.2−	0.3−	1999 05 13	704	1.4−	1.4−	1999 05 18	703	0.5+	0.2+
1990 11 21	809	1.5−	0.1+	1999 05 13	704	0.1+	0.8−	1999 05 18	704	0.9+	0.6−
1990 11 22	809	(2.6+	0.1−)	1999 05 13	704	1.0−	0.4+	1999 05 18	703	1.5+	0.3+
1990 11 22	809	1.6+	0.9+	1999 05 13	704	1.0−	0.8+	1999 05 18	704	0.6−	0.6−
1990 11 22	809	0.2+	0.0	1999 05 14	703	0.2−	1.9−	1999 05 18	703	0.1−	1.1−
1997 11 29	704	0.2+	0.3+	1999 05 14	703	1.7+	1.0+	1999 05 18	704	1.8+	0.7−
1997 11 29	704	0.3+	1.2+	1999 05 14	703	0.6−	0.4+	1999 05 18	704	0.5+	1.9+
1997 11 29	704	0.7−	1.0+	1999 05 14	703	1.2−	0.6+	1999 05 19	704	0.5−	1.5+
1997 11 29	704	0.6−	0.0	1999 05 17	704	0.2+	0.4+	1999 05 19	704	(1.5+	2.3−)
1997 11 29	704	0.2−	0.4+	1999 05 17	704	0.0	0.5+	1999 05 19	704	0.1−	1.8+
1999 04 12	704	1.1+	1.0−	1999 05 17	704	1.3+	0.5+				
1999 04 12	704	0.2−	0.8−	1999 05 17	704	0.5−	0.3+				

1999 JX₁₀₃ = 1991 PY₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23374243	ω	151.79879	+0.33716960	+0.92530683		
<i>a</i>	2.6100230	Ω	137.25798	−0.90468305	+0.36946449		
<i>e</i>	0.1588385	<i>i</i>	14.81675	−0.26050956	−0.08545914		
<i>P</i>	4.22	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1991 08 06	809	1.1−	0.6+	1999 05 17	704	0.2+	0.0	1999 06 12	704	0.2−	0.2+
1991 08 06	809	1.8−	1.0−	1999 05 17	704	0.5+	0.5+	1999 06 12	704	0.1−	0.2−
1991 08 06	809	1.6−	1.5−	1999 05 17	704	(2.0−	2.7+)	1999 06 12	704	0.2+	0.2+
1991 08 14	809	1.5+	1.0+	1999 06 06	703	0.2−	0.1+	1999 06 12	704	0.2+	0.0
1991 08 14	809	1.6+	1.2+	1999 06 06	703	0.8+	1.5−	1999 06 12	704	0.2−	0.0
1991 08 14	809	1.3+	0.3−	1999 06 06	703	1.2+	0.5+	1999 06 15	704	0.5−	0.0
1999 05 13	704	0.4+	1.1+	1999 06 06	703	0.9+	0.4+	1999 06 15	704	0.3+	0.2+
1999 05 13	704	0.9−	1.9+	1999 06 08	704	0.9−	0.2+	1999 06 15	704	0.1+	0.3+
1999 05 13	704	0.1+	0.8−	1999 06 08	704	0.4−	0.4−	1999 06 15	704	0.7+	0.2−
1999 05 13	704	0.3−	0.4−	1999 06 08	704	0.2−	0.0	1999 06 15	704	0.2−	0.0
1999 05 17	704	1.1−	1.5−	1999 06 08	704	0.4−	0.3−				
1999 05 17	704	1.1+	0.3+	1999 06 08	704	1.2−	0.5−				

1999 JJ₁₀₅ = 1978 TJ₂ = 1992 EE₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17615585	ω	170.96149	+0.99960806	+0.01403096		
<i>a</i>	3.1516501	Ω	188.34972	−0.01945575	+0.97038760		
<i>e</i>	0.1812011	<i>i</i>	9.60315	+0.02012961	+0.24114527		
<i>P</i>	5.60	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1978 10 03	095	0.0−	2.2+	1998 03 29	704	(2.0+	1.3−)	1999 05 18	704	0.8+	0.3−
1978 10 07	095	0.0	0.9+	1998 03 29	704	0.7+	0.3+	1999 06 10	704	0.1−	0.8−
1992 03 03	809	0.2−	1.1+	1998 03 29	704	(4.8−	0.3−)	1999 06 10	704	1.6−	0.3+
1992 03 05	809	0.8+	0.5+	1999 05 12	704	1.2+	0.7+	1999 06 10	704	1.0−	0.3−
1992 03 08	809	1.1+	0.1−	1999 05 12	704	1.2+	1.8+	1999 06 10	704	0.3+	0.2−
1998 03 20	704	0.0	2.0+	1999 05 12	704	(0.9+	2.8+)	1999 06 10	704	0.3+	0.9+
1998 03 20	704	(3.6+	2.4+)	1999 05 12	704	0.7+	0.6−	1999 06 14	704	0.4−	0.3−
1998 03 20	704	1.8−	1.3−	1999 05 18	704	0.6−	0.1−	1999 06 14	704	0.5+	0.4+
1998 03 20	704	(4.2−	1.3+)	1999 05 18	704	1.0−	1.0+	1999 06 14	704	0.1+	0.7+
1998 03 29	704	0.2−	0.2−	1999 05 18	704	0.3−	0.2−	1999 06 14	704	0.3−	0.3+
1998 03 29	704	(2.2+	1.5+)	1999 05 18	704	0.4+	1.0−	1999 06 14	704	0.1+	0.4−

1999 JJ₁₁₁ = 1995 FP₇ = 1998 BA₂₄

Residuals in seconds of arc

1995 03 25	691	0.0	0.2+	1999 05 10	704	1.5+	0.7+	1999 05 18	704	1.0+	0.1-
1995 03 25	691	0.1+	0.5+	1999 05 10	704	(2.3+	1.5-)	1999 05 18	704	0.9-	1.4-
1995 03 25	691	0.1+	0.2+	1999 05 10	704	(2.8+	0.7+)	1999 05 18	704	1.2-	0.3+
1995 04 01	691	0.0	0.2-	1999 05 10	704	0.8-	1.3-	1999 05 19	704	0.7+	0.7-
1995 04 01	691	0.0	0.0	1999 05 10	704	0.5-	0.9+	1999 05 19	704	0.1-	0.8+
1995 04 01	691	0.0	0.2-	1999 05 13	704	0.3+	1.5-	1999 05 19	704	0.0	0.1+
1998 01 26	691	0.1-	0.1-	1999 05 13	704	0.2+	0.3+	1999 06 14	704	0.9+	0.4-
1998 01 26	691	0.2-	0.1-	1999 05 13	704	(0.1+	2.2-)	1999 06 14	704	0.8+	0.8+
1998 01 26	691	0.1-	0.4-	1999 05 13	704	0.3+	0.2-	1999 06 14	704	0.1+	0.2-
1998 01 29	691	0.2+	0.0	1999 05 13	704	1.0-	1.9+	1999 06 14	704	0.6+	0.3-
1998 01 29	691	0.1+	0.0	1999 05 18	704	1.5-	0.4-	1999 06 14	704	0.5+	0.6-
1998 01 29	691	0.0	0.0	1999 05 18	704	1.1-	0.5+				

1999 JM₁₁₄ = 1988 ET₂ = 1992 LM₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	35.36328		(2000.0)	P	Q
<i>n</i>	0.27917637	ω	344.71763	-0.74798676	+0.65945284
<i>a</i>	2.3185526	Ω	236.78921	-0.59914938	-0.71956046
<i>e</i>	0.1146564	<i>i</i>	5.14886	-0.28554480	-0.21761133
<i>P</i>	3.53	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1988 03 10	413	0.5-	0.6-	1997 12 30	566	0.2-	0.4+	1999 05 18	704	0.1+	1.0+
1988 03 10	413	1.1-	0.4+	1999 02 26	704	0.2-	0.9-	1999 05 18	704	0.3-	1.5+
1988 03 13	413	0.6+	1.1+	1999 02 26	704	1.1-	0.3-	1999 06 05	691	1.2-	1.4+
1988 03 13	413	1.1+	0.5-	1999 02 26	704	(2.3-	2.9+)	1999 06 05	691	0.2-	0.2-
1992 06 03	809	(0.1-	2.2-)	1999 02 26	704	0.8+	0.4+	1999 06 05	691	(0.0	2.7-)
1992 06 03	809	(0.3-	2.2-)	1999 02 26	704	0.7-	0.5-	1999 06 09	704	0.6+	0.7-
1992 06 03	809	(0.1+	2.3-)	1999 04 15	699	0.4+	0.3-	1999 06 09	704	0.6-	0.1-
1992 06 09	809	(0.6-	2.7-)	1999 04 15	699	0.2+	0.5+	1999 06 09	704	0.5-	0.1-
1992 06 09	809	(1.0-	3.3-)	1999 04 15	699	0.4+	0.0	1999 06 09	704	0.7-	0.3-
1992 06 09	809	(2.6-	2.8-)	1999 05 13	704	0.9+	0.6+	1999 06 09	704	0.5-	0.4-
1997 12 05	704	0.6-	0.9-	1999 05 13	704	0.5+	0.2-	1999 06 15	704	0.6+	0.9-
1997 12 05	704	1.5+	0.6-	1999 05 13	704	0.6+	0.9-	1999 06 15	704	0.3-	1.3-
1997 12 05	704	1.5-	0.7-	1999 05 13	704	0.5-	0.2+	1999 06 15	704	0.3+	0.5-
1997 12 05	704	(2.1+	2.8-)	1999 05 13	704	0.4-	0.6-	1999 06 15	704	0.0	0.2+
1997 12 05	704	1.8+	1.4-	1999 05 18	704	0.5+	0.2-	1999 06 15	704	1.0-	0.4-
1997 12 30	566	0.4-	0.5+	1999 05 18	704	0.8+	0.3+				
1997 12 30	566	0.6-	0.5+	1999 05 18	704	0.5+	0.1-				

1999 JA₁₁₇ = 1997 YV₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	78.35558		(2000.0)	P	Q
<i>n</i>	0.23724356	ω	188.79859	-0.92839744	-0.37013683
<i>a</i>	2.5842811	Ω	329.41278	+0.34472979	-0.82496052
<i>e</i>	0.2127626	<i>i</i>	3.69765	+0.13870674	-0.42712863
<i>P</i>	4.15	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1997 12 01	327	0.3+	0.2+	1997 12 24	327	0.1+	0.1-	1999 05 19	704	1.2+	0.0
1997 12 01	327	0.5+	0.3+	1999 05 10	704	0.7+	1.8-	1999 05 19	704	0.0	0.9+
1997 12 01	327	0.3+	0.8+	1999 05 10	704	(2.6+	1.5-)	1999 05 19	704	0.4-	0.7+
1997 12 22	327	0.1-	0.2-	1999 05 10	704	0.8+	0.7-	1999 05 19	704	1.5-	0.7+
1997 12 22	327	0.6-	0.0	1999 05 13	704	0.2-	0.2+	1999 05 19	704	(0.7+	2.3+)
1997 12 22	327	0.1+	0.4-	1999 05 13	704	1.0-	1.7-	1999 06 15	704	0.1+	0.2-
1997 12 22	327	0.0	0.3-	1999 05 13	704	0.4+	0.9+	1999 06 15	704	0.1-	0.5+
1997 12 24	327	0.1-	0.0	1999 05 18	704	0.1+	0.7-	1999 06 15	704	0.3+	0.8-
1997 12 24	327	0.2-	0.1+	1999 05 18	704	0.6-	0.2+	1999 06 15	704	0.1-	0.7-
1997 12 24	327	0.1-	0.1+	1999 05 18	704	0.8+	1.0+	1999 06 15	704	0.5+	0.5-
1997 12 24	327	0.2-	0.3-	1999 05 18	704	0.3-	1.6+				
1997 12 24	327	0.2+	0.0	1999 05 18	704	0.4-	0.4+				

1999 JL₁₁₇ = 1998 FO₉₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	266.18541		(2000.0)	P	Q
<i>n</i>	0.19144229	ω	298.85621	+0.98329235	-0.02469276
<i>a</i>	2.9815640	Ω	63.06862	+0.10881590	+0.87398423
<i>e</i>	0.1210739	<i>i</i>	11.67086	-0.14592893	+0.48532652
<i>P</i>	5.15	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 02 27	566	0.5-	0.6-	1998 03 25	704	(2.4+	1.6-)	1999 06 09	704	0.6+	0.2-
1998 02 27	566	0.2-	0.2+	1999 05 13	704	1.3+	0.7-	1999 06 09	704	0.5-	0.2+
1998 02 27	566	0.1-	0.3-	1999 05 13	704	0.4-	0.5-	1999 06 09	704	0.2+	0.2+
1998 03 24	704	1.0-	0.2+	1999 05 13	704	0.5+	0.6-	1999 06 09	704	0.2+	0.0
1998 03 24	704	1.1-	0.7+	1999 05 13	704	0.0	1.0-	1999 06 09	704	0.4-	0.1-
1998 03 24	704	0.2-	0.5-	1999 05 13	704	0.3+	0.1-	1999 06 15	704	0.2-	0.0
1998 03 24	704	0.6+	0.2+	1999 05 18	704	0.1-	0.3-	1999 06 15	704	0.1-	0.3-
1998 03 25	704	0.3-	0.3+	1999 05 18	704	1.1-	0.4+	1999 06 15	704	0.5+	0.3-
1998 03 25	704	0.1+	0.4+	1999 05 18	704	0.7-	0.7+	1999 06 15	704	0.1+	0.2+
1998 03 25	704	0.8+	0.0	1999 05 18	704	0.1-	1.3+	1999 06 15	704	0.2-	0.5+
1998 03 25	704	1.7+	0.5-	1999 05 18	704	0.2+	0.4+				

1999 JA₁₁₈ = 1977 XF₁ = 1988 TD₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	348.22135		(2000.0)	P	Q
<i>n</i>	0.25144868	ω	22.58887	+0.03579249	+0.98904839
<i>a</i>	2.4860116	Ω	249.70446	-0.93864022	-0.01590989
<i>e</i>	0.0508610	<i>i</i>	8.78133	-0.34303560	+0.14673160
<i>P</i>	3.92	<i>H</i>	13.2	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1977 12 07	675	0.2-	0.4-	1999 05 10	704	0.4+	0.7-	1999 05 18	704	0.3-	0.9-
1977 12 08	675	0.3+	0.8-	1999 05 10	704	0.2+	0.6+	1999 05 19	704	0.0	0.4+
1988 10 07	675	0.2+	0.4-	1999 05 10	704	0.4+	0.2+	1999 05 19	704	0.1-	0.2+
1988 10 09	675	0.3+	1.1-	1999 05 10	704	0.2+	0.4+	1999 05 19	704	0.7+	0.2-
1997 12 29	566	0.1+	0.4-	1999 05 13	704	1.4-	0.2+	1999 05 19	704	0.3+	1.1-
1997 12 29	566	0.2-	0.3-	1999 05 13	704	0.8+	0.1-	1999 05 19	704	0.3-	0.6-
1997 12 29	566	0.1-	0.6-	1999 05 13	704	0.4+	0.7+	1999 06 15	704	0.0	0.5-
1999 02 26	704	(1.1-	2.2+)	1999 05 13	704	0.6-	0.7+	1999 06 15	704	0.1+	0.3-
1999 02 26	704	(0.1+	3.3+)	1999 05 18	704	0.3+	0.3-	1999 06 15	704	0.2+	0.0
1999 02 26	704	(2.6-	1.2+)	1999 05 18	704	0.5-	1.1-	1999 06 15	704	0.1+	0.1+
1999 02 26	704	1.5-	0.2+	1999 05 18	704	0.5+	0.5-	1999 06 15	704	0.1-	0.8+
1999 05 10	704	0.2-	1.1-	1999 05 18	704	0.4-	0.8+				

1999 JO₁₁₈ = 1997 YO₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	2.83025		(2000.0)	P	Q
<i>n</i>	0.25784682	ω	169.52107	-0.03982590	+0.99741813
<i>a</i>	2.4447148	Ω	98.17764	-0.92106641	-0.01346099
<i>e</i>	0.2006860	<i>i</i>	3.46114	-0.38736361	-0.07053996
<i>P</i>	3.82	<i>H</i>	16.0	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1995 04 22	691	(1.9-	2.7-)	1999 05 13	704	0.3+	0.1+	1999 06 09	704	0.3+	0.9+
1995 04 22	691	0.6-	1.4-	1999 05 18	704	0.8+	0.6+	1999 06 09	704	0.2+	0.7-
1995 04 22	691	(2.2+	2.4+)	1999 05 18	704	0.1+	0.2-	1999 06 11	703	0.9+	0.4-
1997 12 29	691	0.7-	0.0	1999 05 18	704	0.7+	0.3-	1999 06 11	703	0.5+	0.6+
1997 12 29	691	0.2-	0.4+	1999 05 18	704	0.2+	0.3-	1999 06 11	703	0.4+	1.0+
1997 12 29	691	0.8-	1.2+	1999 05 18	704	0.6-	1.0-	1999 06 11	703	0.5-	1.0+
1998 01 02	691	0.7+	0.0	1999 05 19	704	0.4-	0.2+	1999 06 15	704	0.2-	0.1-
1998 01 02	691	0.6+	0.2+	1999 05 19	704	1.5+	0.8+	1999 06 15	704	0.4-	0.7-
1998 01 02	691	0.6+	0.2-	1999 05 19	704	0.3+	0.4+	1999 06 15	704	0.2-	0.2+
1999 05 13	704	0.3-	0.4+	1999 05 19	704	1.2-	0.4-	1999 06 15	704	0.3+	0.1-
1999 05 13	704	0.2+	1.1+	1999 05 19	704	0.6+	1.0-	1999 06 15	704	0.5-	0.1-
1999 05 13	704	0.2+	0.1+	1999 06 09	704	0.7-	0.1+				
1999 05 13	704	1.9-	0.0	1999 06 09	704	0.3-	0.0				

1999 JK₁₁₉ = 1992 ES₃₂ = 1998 FO₁₄₀
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	315.53818	ω	20.42506	+0.65806615	+0.75155864		
<i>a</i>	3.2422317	Ω	290.75746	−0.69746529	+0.58545205		
<i>e</i>	0.0850878	<i>i</i>	2.81473	−0.28370956	+0.30398275		
<i>P</i>	5.84	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1992 03 02	809	1.0+	0.5+	1998 03 29	704	1.1+	1.0−	1999 05 18	704	0.2+	1.7+
1992 03 05	809	0.4−	0.6+	1998 03 29	704	0.2−	1.4−	1999 05 18	704	0.6+	1.3+
1992 03 09	809	0.0	0.5−	1998 04 01	704	0.8−	0.3−	1999 05 18	704	0.6−	0.4−
1992 04 07	809	0.0	0.6+	1998 04 01	704	(2.8−	1.0+)	1999 06 09	704	0.4+	0.6−
1995 10 25	033	0.5−	0.6+	1998 04 01	704	0.7−	0.6+	1999 06 09	704	0.5−	0.0
1995 10 25	033	0.2+	0.3+	1998 04 01	704	(2.4−	0.5+)	1999 06 09	704	0.1−	0.5−
1998 03 22	704	0.8−	0.5−	1998 04 01	704	0.9−	0.8+	1999 06 09	704	0.9−	1.1−
1998 03 22	704	1.1+	1.1+	1999 05 13	704	0.3−	1.7+	1999 06 15	704	0.6−	0.2−
1998 03 22	704	(1.1−	2.6+)	1999 05 13	704	0.2+	0.7+	1999 06 15	704	0.5+	0.4−
1998 03 22	704	0.5+	0.2−	1999 05 13	704	0.9+	1.4−	1999 06 15	704	0.3−	0.9−
1998 03 29	704	0.1+	0.2+	1999 05 13	704	(2.7−	0.2−)	1999 06 15	704	0.5+	0.0
1998 03 29	704	0.5−	0.2−	1999 05 18	704	0.4−	1.2+	1999 06 15	704	0.1+	0.1−
1998 03 29	704	0.6+	0.5−	1999 05 18	704	0.3+	0.2+				

1999 JY₁₂₀ = 1987 SP₂₇ = 1991 RV₁₁
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	315.25776	ω	168.02782	+0.90770665	+0.41936739		
<i>a</i>	2.5992009	Ω	167.14979	−0.39003250	+0.85567229		
<i>e</i>	0.2356511	<i>i</i>	3.64242	−0.15473621	+0.30324235		
<i>P</i>	4.19	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1987 09 24	095	(31.4+	7.1+)	1999 05 18	704	1.1−	0.7−	1999 06 11	703	1.3+	0.2+
1991 09 04	809	0.7+	0.2+	1999 05 18	704	0.9+	1.1+	1999 06 11	703	0.4+	0.1−
1991 09 04	809	0.3+	1.7−	1999 05 18	704	1.6−	1.4−	1999 06 11	703	0.3+	0.2+
1991 09 04	809	0.3−	1.5−	1999 05 18	704	1.0−	0.5+	1999 06 11	703	0.8+	0.1+
1991 09 05	809	0.3+	1.2+	1999 05 19	704	1.6−	0.2−	1999 06 11	703	0.7+	1.2+
1991 09 05	809	0.7+	1.8+	1999 05 19	704	0.2+	0.3−	1999 06 14	703	1.4−	0.4+
1991 09 05	809	(1.2+	2.1+)	1999 05 19	704	1.5+	1.5+	1999 06 14	703	1.0+	0.5−
1991 09 06	809	0.7+	0.6−	1999 05 19	704	0.4+	1.1−	1999 06 14	703	0.3+	0.2+
1991 09 06	809	0.1+	0.3+	1999 05 19	704	0.4−	0.7+	1999 06 14	703	0.5+	0.7−
1991 09 06	809	0.7−	0.4+	1999 06 09	704	1.5−	0.7−	1999 06 15	704	1.2−	0.1+
1991 09 07	809	0.8−	0.5−	1999 06 09	704	0.7−	1.1+	1999 06 15	704	0.8−	0.5+
1991 09 07	809	1.0−	0.2+	1999 06 09	704	1.6−	0.2−	1999 06 15	704	0.4−	0.5−
1999 05 13	704	0.1−	0.4−	1999 06 09	704	1.7+	1.4+	1999 06 15	704	0.7−	0.8+
1999 05 13	704	1.6+	0.3−	1999 06 11	703	1.0+	0.5−	1999 06 15	704	0.4−	0.2+
1999 05 13	704	0.1−	0.0	1999 06 11	703	0.7+	1.4−				
1999 05 13	704	0.6+	1.3−	1999 06 11	703	0.7+	0.2+				

1999 JC₁₂₁ = 1998 FC₉₄
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	263.91678	ω	265.39426	+0.98485818	−0.09650925		
<i>a</i>	3.0172523	Ω	100.09498	+0.14403983	+0.91780807		
<i>e</i>	0.0912029	<i>i</i>	8.41139	−0.09647222	+0.38511598		
<i>P</i>	5.24	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1993 04 16	413	0.3−	0.7−	1999 05 13	704	0.7−	0.2+	1999 06 14	704	0.0	0.1+
1998 03 24	704	(0.6−	2.9+)	1999 05 13	704	0.4+	0.4−	1999 06 14	704	0.8+	0.6−
1998 03 24	704	0.3−	0.3−	1999 05 13	704	1.5+	0.9−	1999 06 14	704	0.8−	0.3−
1998 03 24	704	1.7−	0.8+	1999 05 13	704	0.8+	0.5−	1999 06 14	704	0.5+	0.9−
1998 03 24	704	0.3−	0.2−	1999 05 18	704	0.9−	0.7−	1999 06 15	704	0.1+	0.4+
1998 03 25	704	0.4+	1.1+	1999 05 18	704	0.1+	0.9+	1999 06 15	704	0.6−	1.2+
1998 03 25	704	0.7+	0.2+	1999 05 18	704	1.2+	0.1−	1999 06 15	704	0.2+	0.2−

1998 03 25 704 0.9+ 0.6− 1999 05 18 704 1.3− 1.2+ 1999 06 15 704 0.1− 0.1+
1998 03 25 704 0.6+ 0.4− 1999 06 14 704 0.6− 0.0 1999 06 15 704 0.5− 0.7+

1999 JD₁₂₁ = 1996 PE₁
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	95.84813	ω	334.65054	−0.96704827	−0.25377642		
<i>a</i>	2.3515254	Ω	190.70834	+0.24825384	−0.92219617		
<i>e</i>	0.0472449	<i>i</i>	6.29565	+0.05645947	−0.29180774		
<i>P</i>	3.61	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 11 06	691	0.2+	1.3−	1999 05 10	704	1.3+	0.4−	1999 05 19	704	0.1−	0.3−
1994 11 06	691	0.2−	0.4−	1999 05 10	704	1.2−	0.4−	1999 05 19	704	1.1+	0.4−
1994 11 06	691	0.4−	0.7−	1999 05 10	704	0.8−	1.9−	1999 05 19	704	0.6+	1.0−
1995 03 27	691	0.6−	0.3+	1999 05 10	704	(3.1−	1.2+)	1999 05 19	704	0.3−	0.6+
1995 03 27	691	0.4−	0.0	1999 05 10	704	0.3+	1.8+	1999 06 09	704	0.9−	0.0
1995 03 27	691	0.3−	0.3+	1999 05 13	704	0.5+	0.6+	1999 06 09	704	0.1+	0.1−
1995 04 01	691	0.1−	0.3−	1999 05 13	704	0.0	1.1+	1999 06 09	704	0.3−	0.0
1995 04 01	691	0.0	0.5−	1999 05 13	704	0.7−	0.9+	1999 06 09	704	0.6−	0.7+
1995 04 01	691	1.2+	0.2−	1999 05 13	704	0.2+	0.6+	1999 06 09	704	0.2−	0.3+
1996 08 12	721	0.0	1.0−	1999 05 13	704	0.5+	0.2+	1999 06 14	704	0.2+	0.1−
1996 08 12	721	0.4+	0.1+	1999 05 18	704	1.5−	0.8+	1999 06 14	704	0.2+	0.3−
1996 08 12	721	0.1−	0.1−	1999 05 18	704	0.8−	0.6−	1999 06 14	704	0.8+	0.5+
1996 08 13	721	0.4+	0.0	1999 05 18	704	0.3+	0.7−	1999 06 14	704	0.4+	0.5−
1996 08 13	721	0.3−	0.4−	1999 05 19	704	0.6+	0.5−	1999 06 14	704	0.3+	0.7−

1999 JS₁₂₁ = 1982 BW₁₁ = 1990 UG₁₂ = 1998 FZ₁₂
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	328.37149	ω	36.84922	+0.47825807	+0.86429045		
<i>a</i>	2.9818020	Ω	262.20583	−0.83860286	+0.39676129		
<i>e</i>	0.0816431	<i>i</i>	9.04702	−0.26079583	+0.30916417		
<i>P</i>	5.15	<i>H</i>	12.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1982 01 20	095	0.0	0.2+	1999 05 13	704	0.3−	1.6+	1999 06 09	704	0.2+	0.4−
1990 10 23	095	0.1+	0.0	1999 05 18	704	0.4+	0.2+	1999 06 09	704	0.7−	0.6−
1998 03 26	566	0.1−	0.0	1999 05 18	704	0.9+	0.0	1999 06 09	704	0.9−	0.3−
1998 03 26	566	0.0	0.2−	1999 05 18	704	0.3−	0.8−	1999 06 09	704	1.1−	1.4−
1998 03 26	566	0.2−	0.0	1999 05 18	704	0.1+	0.5−	1999 06 09	704	0.5−	0.3+
1998 03 27	566	0.0	0.2−	1999 05 18	704	0.4−	0.1+	1999 06 15	704	0.2−	0.7−
1998 03 27	566	0.0	0.2−	1999 05 19	704	0.3+	0.0	1999 06 15	704	0.2−	0.5−
1998 03 27	566	0.1−	0.1−	1999 05 19	704	0.8+	1.2+	1999 06 15	704	0.1+	0.4−
1999 05 13	704	1.2+	0.6+	1999 05 19	704	1.0+	0.9+	1999 06 15	704	0.5−	0.7−
1999 05 13	704	(2.3+	1.7+)	1999 05 19	704	0.1+	0.8+	1999 06 15	704	0.2+	1.1−
1999 05 13	704	0.4−	1.0+	1999 05 19	704	0.1+	0.9+				

1999 JE₁₂₂ = 1998 FE₁₇
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	164.82553		(2000.0)			P		Q
n	0.20038090	ω	324.98565			−0.14188362		−0.98912019
a	2.8922234	Ω	133.13681			+0.91992245		−0.14625139
e	0.0259246	i	3.05281			+0.36552937		−0.01586744
P	4.92	H	14.0		G	0.15		6

Residuals in seconds of arc

1998 03 20	704	0.4−	0.0	1999 05 13	704	1.4+	3.0+	1999 06 15	704	0.6−	0.8−
1998 03 20	704	0.9+	0.1+	1999 05 18	704	0.3−	1.8−	1999 06 15	704	0.1−	0.3−
1998 03 20	704	0.6+	2.3+	1999 05 18	704	0.4+	0.6+	1999 06 15	704	0.2−	0.4−
1998 03 20	704	0.5−	0.1−	1999 05 18	704	0.7−	0.4+	1999 06 15	704	0.2+	0.1−
1998 03 22	704	0.0	1.4−	1999 05 18	704	2.7−	0.6−	1999 06 18	747	0.7+	0.4−
1998 03 22	704	0.7+	0.2+	1999 06 09	704	1.2−	0.4−	1999 06 18	747	0.9−	0.7+
1998 03 22	704	1.1−	1.9−	1999 06 09	704	0.9+	1.8+	1999 06 18	747	0.4+	0.0
1998 03 22	704	0.2−	0.7+	1999 06 09	704	0.5+	0.1+	1999 06 18	747	0.3−	0.1+

1999 JUNE 22

M.P.C. 35039

1999 05 13 704 1.3+ 0.9- 1999 06 09 704 1.2+ 0.2- 1999 06 19 747 0.0 0.7-
 1999 05 13 704 0.1+ 0.1- 1999 06 15 704 0.2- 0.0

1999 JU₁₂₂ = 1996 TK₅₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	13.96463		(2000.0)	P	Q
<i>n</i>	0.26717951	ω	25.52081	-0.21283880	+0.97266563
<i>a</i>	2.3874481	Ω	232.32845	-0.91536363	-0.23173079
<i>e</i>	0.0687600	<i>i</i>	6.73662	-0.34177342	+0.01491323
<i>P</i>	3.69	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1996 10 02	809	(4.2- 0.9-)	1997 12 29	566	0.1- 0.4+	1999 05 19	704	0.7- 0.4+
1996 10 02	809	(4.4- 0.6-)	1997 12 29	566	0.3+ 0.3+	1999 05 19	704	0.6+ 0.7+
1996 10 02	809	(3.9- 0.7-)	1997 12 29	566	0.0 0.2+	1999 05 19	704	0.8+ 0.2-
1996 10 03	809	(2.5- 1.1-)	1999 05 13	704	0.5- 0.8+	1999 06 09	704	0.5+ 0.3-
1996 10 03	809	2.0- 0.9-	1999 05 13	704	0.6- 0.8-	1999 06 09	704	0.6+ 0.1+
1996 10 03	809	2.0- 0.2-	1999 05 13	704	(0.7- 2.2-)	1999 06 09	704	0.1- 0.3+
1996 10 03	809	0.5+ 0.9+	1999 05 13	704	0.6- 0.5+	1999 06 09	704	0.4+ 0.1+
1996 10 03	809	0.6+ 1.3+	1999 05 13	704	1.3- 1.0+	1999 06 09	704	0.3- 0.1-
1996 10 03	809	0.4+ 1.0+	1999 05 18	704	0.2- 0.0	1999 06 15	704	0.2+ 0.5-
1996 10 04	809	0.9+ 0.3+	1999 05 18	704	0.1- 0.1+	1999 06 15	704	0.2- 0.3-
1996 10 04	809	1.2+ 0.4-	1999 05 18	704	0.2+ 0.1+	1999 06 15	704	0.6- 0.2-
1996 10 04	809	1.3+ 0.3-	1999 05 18	704	0.8+ 0.1+	1999 06 15	704	0.3- 0.4-
1996 10 11	691	0.4- 0.1-	1999 05 18	704	(0.8+ 2.4+)	1999 06 15	704	0.3- 0.5-
1996 10 11	691	0.5- 0.4-	1999 05 19	704	0.8+ 0.3+			
1996 10 11	691	0.3- 0.3-	1999 05 19	704	0.8+ 0.4-			

1999 JR₁₂₃ = 1993 UA₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	5.49285		(2000.0)	P	Q
<i>n</i>	0.29327696	ω	150.55905	+0.02442599	+0.99567872
<i>a</i>	2.2436275	Ω	120.70873	-0.93637808	+0.05417642
<i>e</i>	0.1584743	<i>i</i>	5.98151	-0.35014207	-0.07542416
<i>P</i>	3.36	<i>H</i>	15.5	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1993 10 10	809	0.9- 1.4+	1999 05 10	704	0.8+ 0.0	1999 05 19	704	1.1- 0.5+
1993 10 10	809	0.3- 1.4+	1999 05 10	704	0.2+ 0.9+	1999 06 09	704	0.4+ 0.2-
1993 10 10	809	0.3+ 0.6+	1999 05 13	704	0.0 0.0	1999 06 09	704	0.8+ 0.3+
1993 10 20	809	0.0 0.3-	1999 05 13	704	1.5- 0.2-	1999 06 09	704	0.0 0.1+
1993 10 20	809	0.4+ 1.2-	1999 05 13	704	1.5- 1.1-	1999 06 09	704	0.3- 0.1-
1993 10 20	809	0.1- 1.0-	1999 05 18	704	0.4+ 0.3+	1999 06 09	704	0.4- 0.3+
1993 10 21	809	0.3+ 0.3-	1999 05 18	704	0.1- 0.1-	1999 06 14	704	0.1- 0.1+
1993 10 21	809	0.0 0.4-	1999 05 18	704	(0.6+ 2.1-)	1999 06 14	704	0.6+ 0.2-
1993 10 21	809	0.4+ 0.3-	1999 05 18	704	1.0+ 1.3+	1999 06 14	704	0.3- 0.2-
1999 05 10	704	0.6+ 0.2+	1999 05 19	704	0.8- 0.7-	1999 06 14	704	0.1- 0.5-
1999 05 10	704	0.8+ 0.7-	1999 05 19	704	0.3+ 0.9-	1999 06 14	704	0.3- 0.0
1999 05 10	704	0.5- 0.2+	1999 05 19	704	0.9+ 0.1+			

1999 JC₁₂₄ = 1981 JW = 1986 RN₈ = 1990 KV

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	20.04732		(2000.0)	P	Q
<i>n</i>	0.22030025	ω	12.50993	-0.40448434	+0.90445541
<i>a</i>	2.7151431	Ω	233.78661	-0.85288214	-0.42652233
<i>e</i>	0.2433345	<i>i</i>	9.66626	-0.33012796	-0.00625444
<i>P</i>	4.47	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1981 05 05	688	0.4+ 1.7-	1997 12 25	566	0.5- 0.8-	1999 05 19	704	0.4+ 0.1-
1981 05 05	688	0.0 1.1-	1997 12 25	566	0.7- 1.4-	1999 05 19	704	0.3+ 0.1-
1986 09 08	095	0.7+ 1.9-	1997 12 25	566	0.3- 0.7-	1999 05 19	704	0.8+ 0.0
1990 05 21	675	(2.8- 0.8-)	1999 03 25	704	0.7+ 0.9-	1999 05 19	704	0.2+ 0.3+
1990 05 21	675	(3.5- 1.9-)	1999 03 25	704	0.1- 0.7-	1999 05 19	704	0.0 0.4+
1990 05 22	095	(2.8- 9.7-)	1999 03 25	704	1.4+ 1.6+	1999 06 09	704	0.4- 0.3-

1990 05 22	095	0.7- 1.4-	1999 03 25	704	0.3+ 0.0	1999 06 09	704	0.2- 0.0
1990 05 23	675	(2.6- 0.4-)	1999 05 14	704	0.3- 0.1-	1999 06 09	704	0.7- 0.3-
1990 05 23	675	(3.4- 0.8-)	1999 05 14	704	0.4+ 0.1+	1999 06 09	704	0.6- 0.1+
1990 05 25	675	1.2- 0.8+	1999 05 14	704	0.8+ 0.0	1999 06 09	704	0.9- 0.5+
1990 05 25	675	1.5- 1.0+	1999 05 14	704	0.6+ 0.1+	1999 06 14	704	0.7- 0.6-
1990 05 29	046	1.4+ 1.1-	1999 05 14	704	0.2+ 0.6+	1999 06 14	704	0.8- 0.5-
1990 05 29	046	1.2+ 0.2+	1999 05 18	704	0.7- 0.4+	1999 06 14	704	0.5+ 0.8-
1996 11 08	691	0.4+ 0.3-	1999 05 18	704	0.2+ 0.2+	1999 06 14	704	0.9- 0.2+
1996 11 08	691	0.3+ 0.6-	1999 05 18	704	(2.1+ 1.6+)	1999 06 14	704	0.8- 0.7-
1996 11 08	691	0.3+ 0.6-	1999 05 18	704	1.9+ 1.5+			

1999 JD₁₂₄ = 1993 UE₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	22.64542		(2000.0)	P	Q
<i>n</i>	0.28880356	ω	142.74103	-0.34914572	+0.93126640
<i>a</i>	2.2667364	Ω	106.61376	-0.88378833	-0.29032360
<i>e</i>	0.1686403	<i>i</i>	6.23761	-0.31147303	-0.22012521
<i>P</i>	3.41	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1993 10 10	809	0.6- 1.1-	1999 05 14	704	1.7- 0.6+	1999 06 09	704	0.1- 0.4-
1993 10 10	809	1.3- 0.9-	1999 05 18	704	0.0 0.0	1999 06 09	704	0.1- 0.9-
1993 10 10	809	1.0- 0.4-	1999 05 18	704	0.4- 0.2+	1999 06 09	704	0.2- 0.1-
1993 10 20	809	1.0+ 0.8+	1999 05 18	704	0.2- 1.0-	1999 06 11	703	0.5+ 0.4+
1993 10 20	809	(2.9+ 0.6+)	1999 05 18	704	0.6- 0.1+	1999 06 11	703	0.2+ 0.5+
1993 10 20	809	0.5+ 1.2+	1999 05 18	704	1.0+ 0.9+	1999 06 11	703	0.2- 0.3+
1993 10 21	809	1.0+ 0.4+	1999 05 19	704	0.1+ 0.5+	1999 06 11	703	0.5+ 0.1-
1993 10 21	809	0.6+ 0.2-	1999 05 19	704	0.2+ 0.0	1999 06 15	704	0.1- 0.2+
1993 10 21	809	0.3- 0.1-	1999 05 19	704	0.4- 0.2+	1999 06 15	704	0.2- 0.1+
1999 05 14	704	0.4- 0.6-	1999 05 19	704	1.8+ 1.4-	1999 06 15	704	0.3+ 0.0
1999 05 14	704	0.1- 0.6-	1999 05 19	704	(1.3+ 3.0-)	1999 06 15	704	0.3+ 0.7+
1999 05 14	704	0.1- 0.4-	1999 06 09	704	0.2+ 0.0	1999 06 15	704	0.2- 0.1+
1999 05 14	704	0.1- 1.0+	1999 06 09	704	0.1- 0.4-			

1999 JG₁₂₄ = 1992 KN

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	34.35522		(2000.0)	P	Q
<i>n</i>	0.28100309	ω	61.10625	-0.83495617	+0.50619758
<i>a</i>	2.3084935	Ω	147.84642	-0.52694778	-0.84851509
<i>e</i>	0.2893690	<i>i</i>	23.93369	+0.15866390	-0.15422763
<i>P</i>	3.51	<i>H</i>	14.6	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1992 05 30	675	0.2+ 1.0-	1999 05 15	704	0.8+ 0.3-	1999 06 04	704	0.5+ 1.0+
1992 05 30	675	(1.1+ 2.7-)	1999 05 15	704	0.0 0.8-	1999 06 04	704	0.6+ 0.9+
1992 06 02	675	(0.5- 2.1-)	1999 05 15	704	0.0 0.7-	1999 06 10	704	0.2+ 0.2-
1992 06 02	675	0.6- 1.2-	1999 05 15	704	0.2+ 1.8-	1999 06 10	704	0.1+ 0.2-
1999 02 24	704	0.2+ 0.0	1999 05 15	704	1.6- 1.1-	1999 06 10	704	0.2- 0.1-
1999 02 24	704	0.2+ 0.2-	1999 05 18	704	0.9+ 1.6+	1999 06 10	704	0.2- 0.2-
1999 02 24	704	0.6- 0.4+	1999 05 18	704	(0.2- 2.5+)	1999 06 10	704	0.4- 0.0
1999 02 24	704	0.5- 0.0	1999 05 18	704	1.6+ 0.0	1999 06 11	704	0.0 0.1+
1999 02 24	704	0.7+ 0.2-	1999 05 18	704	0.5- 1.7+	1999 06 11	704	0.1- 0.0
1999 04 09	704	0.0 0.3+	1999 05 18	704	2.0- 0.7+	1999 06 11	704	0.2- 0.0
1999 04 09	704	0.1- 0.6-	1999 06 04	704	0.2+ 0.2+	1999 06 11	704	0.0 0.2+
1999 04 09	704	0.2- 0.3-	1999 06 04	704	0.6+ 0.4+	1999 06 11	704	0.1- 0.2-
1999 04 09	704	0.0 0.9+	1999 06 04	704	0.0 0.9+			

1999 JS₁₂₄ = 1993 FD₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	7.78066		(2000.0)	P	Q
<i>n</i>	0.17503749	ω	171.16700	-0.58712220	+0.80405517
<i>a</i>	3.1650604	Ω	62.82613	-0.74898637	-0.49566121
<i>e</i>	0.1072404	<i>i</i>	6.04699	-0.30709436	-0.32835233
<i>P</i>	5.63	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 5

M.P.C. 35040

1999 JUNE 22

Residuals in seconds of arc

1993 03 17	809	2.3−	0.8+	1999 05 10	704	0.9+	1.4+	1999 06 07	703	0.0	1.4+
1993 03 18	809	0.2+	0.4+	1999 05 19	704	0.3+	1.8−	1999 06 07	703	1.7−	0.4−
1993 03 23	809	2.1+	1.3−	1999 05 19	704	1.2−	0.8+	1999 06 07	703	1.2+	0.1−
1999 05 10	704	0.3+	0.3−	1999 05 19	704	1.5−	0.3+				
1999 05 10	704	0.7+	0.8−	1999 06 07	703	1.0+	0.5−				

1999 JR₁₂₅ = 1992 FQ

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	155.91436		(2000.0)	P		Q	
<i>n</i>	0.29885529	ω	96.20455	−0.32911463	−0.94397362		
<i>a</i>	2.2156207	Ω	13.09030	+0.81808530	−0.29795978		
<i>e</i>	0.0525404	<i>i</i>	6.19509	+0.47161424	−0.14189353		
<i>P</i>	3.30	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1992 03 23	400	1.6+	0.6−	1997 12 06	704	0.8+	1.1+	1999 06 09	704	0.4−	1.8+
1992 03 23	400	0.6−	1.0+	1997 12 06	704	0.5−	1.8+	1999 06 09	704	0.2−	1.1+
1992 03 24	400	1.0+	0.4+	1997 12 06	704	1.3−	0.8+	1999 06 09	704	1.2+	0.0
1992 03 24	400	1.4−	0.7−	1999 05 10	704	0.1−	1.1−	1999 06 09	704	1.2+	1.8+
1992 03 28	400	0.2−	0.7+	1999 05 10	704	0.6+	0.3+	1999 06 15	704	0.0	0.4−
1992 03 28	400	0.2−	1.6−	1999 05 10	704	(2.7−	1.3−)	1999 06 15	704	0.0	0.1−
1995 02 03	033	0.1−	0.2−	1999 05 19	704	0.7+	0.2−	1999 06 15	704	0.2−	0.3+
1995 02 03	033	0.9−	0.6+	1999 05 19	704	0.7−	0.0	1999 06 15	704	0.2−	0.4+
1997 12 06	704	1.3+	0.7+	1999 05 19	704	0.9−	0.5+	1999 06 15	704	0.2+	0.2+

1999 JN₁₂₇ = 1998 FB₃₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	309.80075		(2000.0)	P		Q	
<i>n</i>	0.20929800	ω	331.01328	+0.84571703	+0.53362600		
<i>a</i>	2.8094803	Ω	356.73282	−0.48093669	+0.76020678		
<i>e</i>	0.1217323	<i>i</i>	2.46405	−0.23121984	+0.37057919		
<i>P</i>	4.71	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1992 01 28	691	0.0	0.5−	1998 03 20	704	(2.3−	0.3+)	1999 05 19	704	1.0+	1.4+
1992 01 28	691	0.1−	0.0	1998 03 22	704	1.5−	0.6−	1999 05 19	704	0.3−	0.6+
1992 01 28	691	0.4+	0.4−	1998 03 22	704	0.8−	0.5−	1999 05 19	704	0.2−	0.4−
1995 09 17	327	0.1−	0.4−	1998 03 22	704	0.7−	0.1−	1999 05 19	704	0.3−	0.4−
1995 09 17	327	0.5+	0.2−	1998 03 22	704	(1.3−	2.6+)	1999 06 09	704	0.0	0.0
1995 09 17	327	0.0	0.4−	1998 03 26	704	0.3−	0.9−	1999 06 09	704	0.7+	0.1+
1995 09 17	327	0.7−	0.5−	1998 03 26	704	0.9+	0.3−	1999 06 09	704	0.4+	0.4+
1995 09 19	691	0.4+	0.1−	1998 03 26	704	0.4−	0.2+	1999 06 09	704	1.5+	0.8−
1995 09 19	691	0.3+	0.1+	1999 05 13	704	1.4−	1.2−	1999 06 15	704	0.7−	0.4−
1995 09 19	691	0.2+	0.0	1999 05 13	704	0.9+	0.8+	1999 06 15	704	0.2−	0.8−
1998 03 20	704	0.5−	0.1−	1999 05 13	704	0.6−	1.7−	1999 06 15	704	0.1−	0.2+
1998 03 20	704	1.1+	0.1−	1999 05 13	704	(0.1+	2.5+)	1999 06 15	704	0.7−	0.3+
1998 03 20	704	1.3+	0.8+	1999 05 13	704	0.2+	1.9+	1999 06 15	704	0.5−	0.6−

1999 JO₁₂₇ = 1998 GS₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	260.17190		(2000.0)	P		Q	
<i>n</i>	0.23949642	ω	300.63685	+0.88525013	−0.39349174		
<i>a</i>	2.5680494	Ω	83.53750	+0.46395019	+0.78476771		
<i>e</i>	0.1740300	<i>i</i>	14.45211	−0.03290025	+0.47885686		
<i>P</i>	4.12	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 02	704	0.1+	0.9+	1999 05 13	704	1.1+	0.5−	1999 06 09	704	0.0	1.3−
1998 04 02	704	1.0+	0.8+	1999 05 13	704	0.4−	1.4+	1999 06 09	704	0.5+	0.6+
1998 04 02	704	2.0−	1.2−	1999 05 13	704	3.5−	1.2−	1999 06 09	704	0.2−	0.3+
1998 04 02	704	1.1−	1.5+	1999 05 13	704	2.2+	0.2+	1999 06 09	704	0.2+	0.0
1998 04 02	704	0.6−	1.3−	1999 05 19	704	0.3−	0.0	1999 06 15	704	0.0	0.7+
1998 04 03	704	0.1+	0.8+	1999 05 19	704	0.4−	0.2+	1999 06 15	704	0.4+	0.2−
1998 04 03	704	0.0	1.0−	1999 05 19	704	0.3+	1.3−	1999 06 15	704	0.1+	0.5+

1998 04 03	704	1.8+	0.3−	1999 05 19	704	1.1+	1.4+	1999 06 15	704	0.1−	0.0
1998 04 03	704	0.7+	0.1−	1999 06 09	704	0.2−	0.8−	1999 06 15	704	0.8−	0.0

1999 JQ₁₂₉ = 1991 RJ₃₄ = 1998 FM₁₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	272.76592		(2000.0)	P		Q	
<i>n</i>	0.22614305	ω	184.37043	+0.99885800	−0.04726632		
<i>a</i>	2.6681724	Ω	178.29148	+0.04776016	+0.98387741		
<i>e</i>	0.1766193	<i>i</i>	13.52041	+0.00128823	+0.17248520		
<i>P</i>	4.36	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1991 09 12	675	0.2+	0.6−	1999 05 12	704	1.0−	1.2−	1999 06 05	703	0.1−	0.9+
1991 09 12	675	0.1+	1.9−	1999 05 12	704	(2.3−	1.3−)	1999 06 05	703	0.4−	0.5+
1994 04 02	691	0.2+	0.4−	1999 05 12	704	0.2−	1.6+	1999 06 05	703	0.4+	0.8−
1994 04 02	691	0.3−	0.5−	1999 05 14	703	0.2+	0.7−	1999 06 08	704	0.0	0.1−
1994 04 02	691	0.1−	0.5−	1999 05 14	703	0.2+	0.9+	1999 06 08	704	0.6+	0.6+
1998 03 22	704	0.9+	0.0	1999 05 14	703	0.0	1.6+	1999 06 08	704	0.5−	1.3−
1998 03 22	704	1.6+	1.3−	1999 05 14	703	0.2−	1.3+	1999 06 08	704	0.9−	1.2−
1998 03 22	704	1.2+	0.8−	1999 05 17	704	0.3+	0.2−	1999 06 14	704	0.4−	0.1+
1998 03 22	704	0.3+	1.9−	1999 05 17	704	(3.6+	1.3−)	1999 06 14	704	0.3−	0.4−
1998 03 22	704	0.7−	0.4−	1999 05 17	704	0.2−	0.9−	1999 06 14	704	0.1+	0.4+
1998 03 26	704	1.4−	0.2+	1999 05 17	704	1.9+	0.4−	1999 06 14	704	0.1−	0.1−
1998 03 26	704	1.8−	1.1+	1999 05 17	704	0.6+	0.1+	1999 06 14	704	0.3−	0.3−
1998 03 26	704	0.4−	0.9+	1999 06 05	703	0.3+	0.7+				

1999 KA = 1998 BL₄₄

Id. B. G. Marsden

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	276.37391		(2000.0)	P		Q	
<i>n</i>	0.23850230	ω	228.11665	+0.91012714	+0.34791379		
<i>a</i>	2.5751804	Ω	110.40121	−0.27186268	+0.91125267		
<i>e</i>	0.1370581	<i>i</i>	13.88989	−0.31266479	+0.22039639		
<i>P</i>	4.13	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 01 19	327	0.3−	0.3+	1999 05 12	704	0.7+	1.5+	1999 05 17	704	0.1+	0.0
1998 01 19	327	0.5−	0.2−	1999 05 12	704	1.3+	0.7−	1999 05 17	704	0.3+	0.2+
1998 01 19	327	0.6−	0.2+	1999 05 15	684	0.5−	0.0	1999 05 20	684	0.0	0.3−
1998 01 28	566	0.4+	0.2−	1999 05 15	684	0.3−	0.0	1999 05 20	684	0.0	0.1−
1998 01 28	566	0.5+	0.2−	1999 05 16	684	0.4−	0.3+	1999 06 06	684	0.0	0.3+
1998 01 28	566	0.4+	0.2+	1999 05 16	684	0.1−	0.2−	1999 06 06	684	0.1−	0.0
1999 05 12	704	0.1+	0.9+	1999 05 17	704	0.7−	0.1−	1999 06 07	684	0.3−	0.1+
1999 05 12	704	0.5−	0.5−	1999 05 17	704	0.4−	0.1−	1999 06 07	684	0.2−	0.2+
1999 05 12	704	0.5−	0.6−	1999 05 17	704	1.5+	0.4−				

1999 KF = 1989 TK

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	299.55171		(2000.0)	P		Q	
<i>n</i>	0.27770604	ω	246.34865	+0.95373575	+0.29906287		
<i>a</i>	2.3267292	Ω	96.23852	−0.26330999	+0.88036421		
<i>e</i>	0.2342451	<i>i</i>	1.77633	−0.14510675	+0.36813075		
<i>P</i>	3.55	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1989 09 29	675	0.7+	0.0	1999 05 10	704	1.3+	1.7−	1999 05 18	704	0.5−	0.8−
1989 09 29	675	0.9+	0.0	1999 05 13	704	0.2−	0.3+	1999 05 18	704	0.1+	0.8+
1989 10 02	071	1.8−	1.7+	1999 05 13	704	0.7+	0.2+	1999 05 18	704	0.4−	0.8+
1989 10 03	071	2.2−	0.1+	1999 05 13	704	0.1+	0.9−	1999 05 18	704	0.8−	0.9+
1989 10 07	809	1.2+	0.8−	1999 05 13	704	1.1+	0.3−	1999 05 18	704	0.5+	1.0+
1989 10 07	809	1.4+	0.2−	1999 05 16	691	1.4−	0.6+	1999 05 20	691	0.3−	0.0
1989 10 07	809	1.0+	0.2−	1999 05 16	691	0.2−	0.2+	1999 05 20	691	0.3−	0.0
1989 10 08	809	0.9−	0.0	1999 05 17	703	0.3+	0.2+	1999 05 20	691	0.3−	0.1−
1989 10 08	809	0.5−	0.6−	1999 05 17	703	0.1−	1.0+	1999 06 14	704	1.1+	0.6−
1989 10 08	809	0.3+	0.2−	1999 05 17	703	1.2+	0.2−	1999 06 14	704	0.4−	0.3−

1999 JUNE 22

M.P.C. 35041

1999 05 10	704	0.5−	1.1−	1999 05 17	691	0.3−	0.2+	1999 06 14	704	0.3+	0.1+
1999 05 10	704	0.3+	0.7+	1999 05 17	703	0.1−	0.5+	1999 06 14	704	0.3−	0.0
1999 05 10	704	0.5+	1.8−	1999 05 17	691	0.1−	0.1+				
1999 05 10	704	0.8−	0.0	1999 05 17	691	0.3−	0.2−				

1999 KM = 1998 DB₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams					
<i>M</i>	221.64175		(2000.0)	P		Q		
<i>n</i>	0.19108788	ω	294.13213	+0.89986607		−0.33493255		
<i>a</i>	2.9852494	Ω	86.43148	+0.42596751		+0.81256355		
<i>e</i>	0.0096982	<i>i</i>	16.25646	−0.09376964		+0.47703319		
<i>P</i>	5.16	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	4	

Residuals in seconds of arc

1998 02 22	566	0.2−	0.3−	1999 05 16	703	0.5−	0.2−	1999 05 18	703	(4.1−	1.8+)
1998 02 22	566	0.1−	0.3−	1999 05 16	703	0.5−	0.7+	1999 06 08	704	1.0−	0.4+
1998 02 22	566	0.1−	0.0	1999 05 16	703	0.1+	1.2+	1999 06 08	704	0.1+	0.5−
1998 02 23	566	0.3+	0.1+	1999 05 16	703	1.3+	0.9+	1999 06 08	704	0.3−	0.2+
1998 02 23	566	0.2+	0.1+	1999 05 17	704	0.6+	0.4+	1999 06 08	704	0.8−	1.0+
1998 02 23	566	0.1−	0.4+	1999 05 17	704	0.8−	1.9−	1999 06 08	704	0.2+	0.4+
1999 05 12	704	0.7+	0.0	1999 05 17	704	0.6−	0.2+	1999 06 14	704	0.7+	0.1+
1999 05 12	704	(3.0+	0.6+)	1999 05 17	704	0.4−	1.2−	1999 06 14	704	0.3−	0.1−
1999 05 12	704	0.5+	1.5−	1999 05 18	703	0.1+	0.3+	1999 06 14	704	0.8−	0.0
1999 05 12	704	(1.0+	2.8−)	1999 05 18	703	0.3−	0.6+	1999 06 14	704	1.1+	1.6−
1999 05 12	704	(1.5−	2.2−)	1999 05 18	703	0.0	0.5+	1999 06 14	704	1.1+	0.1−

1999 KT = 1998 BZ₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams					
<i>M</i>	327.70605		(2000.0)	P		Q		
<i>n</i>	0.28412223	ω	138.72088	+0.57347563		+0.81868405		
<i>a</i>	2.2915670	Ω	166.18655	−0.78048542		+0.55701605		
<i>e</i>	0.1792327	<i>i</i>	7.14580	−0.24893415		+0.13960498		
<i>P</i>	3.47	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	4	

Residuals in seconds of arc

1996 08 19	566	0.0	0.1+	1999 05 12	704	(0.2−	2.1−)	1999 05 17	704	(4.3−	1.9+)
1996 08 19	566	0.0	0.1−	1999 05 12	704	(2.5−	0.0)	1999 05 19	703	0.5−	0.6+
1996 08 19	566	0.1+	0.3−	1999 05 12	704	1.4−	0.8−	1999 05 19	703	0.4+	0.7+
1998 01 26	691	0.1+	0.1+	1999 05 16	703	0.7+	0.1−	1999 05 19	703	0.1+	0.7+
1998 01 26	691	0.2−	0.1−	1999 05 16	703	0.4+	0.6+	1999 05 19	703	0.3+	0.8+
1998 01 31	691	0.2−	0.1+	1999 05 16	703	0.0	0.2−	1999 06 14	704	1.4+	0.3+
1998 01 31	691	0.0	0.2−	1999 05 16	703	1.2−	0.3−	1999 06 14	704	0.4+	0.5+
1998 01 31	691	0.3+	0.0	1999 05 17	704	0.7+	0.9−	1999 06 14	704	0.0	0.9−
1999 05 12	704	1.5−	1.5−	1999 05 17	704	0.5−	0.4+	1999 06 14	704	0.2+	0.4+
1999 05 12	704	0.1+	1.4−	1999 05 17	704	1.0+	1.2+	1999 06 14	704	0.3−	0.1−

1999 KU = 1995 LG₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams					
<i>M</i>	323.31644		(2000.0)	P		Q		
<i>n</i>	0.23592954	ω	210.05292	+0.65563932		+0.74198496		
<i>a</i>	2.5938678	Ω	101.29798	−0.66121839		+0.65370731		
<i>e</i>	0.2326911	<i>i</i>	8.20700	−0.36459199		+0.14874498		
<i>P</i>	4.18	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	4	

Residuals in seconds of arc

1995 06 05	327	1.0−	0.1−	1999 05 16	703	1.4−	1.5−	1999 06 10	704	0.2+	0.2−
1995 06 05	327	0.2+	0.3+	1999 05 16	703	1.3−	0.6+	1999 06 10	704	0.8+	0.2+
1995 06 05	327	0.4+	0.6+	1999 05 17	704	0.3+	0.3+	1999 06 10	704	0.6+	0.6+
1995 06 06	327	0.8−	0.8−	1999 05 17	704	0.4+	1.0+	1999 06 10	704	0.1−	0.0
1995 06 06	327	0.0	0.5−	1999 05 17	704	0.2−	0.3+	1999 06 10	704	0.3−	0.2+
1995 06 06	327	0.1+	0.4−	1999 05 17	704	0.7−	0.0	1999 06 10	704	0.2+	0.3+
1995 06 06	327	0.1+	0.6−	1999 05 17	704	1.1−	0.1−	1999 06 10	704	0.4−	0.0
1995 06 06	327	0.2+	0.3−	1999 05 19	703	0.1−	1.3+	1999 06 11	704	0.0	0.3−
1995 06 06	327	0.3+	0.4−	1999 05 19	703	0.3+	0.6+	1999 06 11	704	0.2−	0.3+
1998 02 01	327	0.3−	0.3−	1999 05 19	703	0.1−	0.7+	1999 06 11	704	0.1+	0.5+

1998 02 01	327	0.3−	0.7−	1999 05 19	703	0.3−	0.3+	1999 06 11	704	0.1+	0.5−
1998 02 01	327	0.3+	0.3−	1999 06 07	703	0.1+	0.5−	1999 06 11	704	0.3+	0.8−
1999 05 12	704	0.4+	0.7+	1999 06 07	703	0.4+	0.4−	1999 06 14	704	0.1−	0.5−
1999 05 12	704	1.1+	1.8−	1999 06 07	703	0.2+	0.4−	1999 06 14	704	0.2−	0.9+
1999 05 12	704	0.6−	0.4−	1999 06 07	703	0.5+	1.4−	1999 06 14	704	0.4+	0.0
1999 05 12	704	0.7+	1.3+	1999 06 10	704	0.5+	0.1+	1999 06 14	704	0.2+	0.1+
1999 05 16	703	0.0	0.1+	1999 06 10	704	0.6−	0.1+	1999 06 14	704	0.7−	0.1−
1999 05 16	703	1.4+	0.4+	1999 06 10	704	0.3+	0.1+				

1999 KJ₁ = 1996 CO

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams					
<i>M</i>	341.43301		(2000.0)	P		Q		
<i>n</i>	0.21006167	ω	226.64411	+0.54599948		+0.82139411		
<i>a</i>	2.8026671	Ω	77.15028	−0.71140335		+0.55852721		
<i>e</i>	0.2493043	<i>i</i>	9.73834	−0.44248146		+0.11558141		
<i>P</i>	4.69	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	3	

Residuals in seconds of arc

1996 02 01	327	0.3−	0.8+	1999 05 13	704	0.8−	0.9+	1999 05 19	704	0.6+	0.3+
1996 02 01	327	0.5−	0.6+	1999 05 14	704	0.8−	0.2+	1999 05 19	120	0.3−	0.6−
1996 02 01	327	0.5−	0.3+	1999 05 14	704	0.0	0.2−	1999 05 19	120	0.7+	0.4−
1996 02 05	327	1.0+	0.3+	1999 05 14	704	0.4+	0.3+	1999 05 19	120	1.1−	0.2−
1996 02 05	327	0.5−	0.1+	1999 05 14	704	1.0−	0.4−	1999 06 09	704	0.6+	0.6+
1996 02 05	327	0.7−	1.0+	1999 05 14	704	1.1−	0.2+	1999 06 09	704	0.4+	0.1−
1998 03 24	566	0.3+	0.4+	1999 05 18	704	0.1−	0.5−	1999 06 09	704	0.6+	0.5+
1998 03 24	566	0.1+	0.4+	1999 05 18	704	0.2+	0.6−	1999 06 09	704	0.9+	0.4+
1998 03 24	566	0.0	0.4+	1999 05 18	704	0.2+	0.1−	1999 06 09	704	0.0	0.0
1999 05 10	704	0.9+	1.1−	1999 05 18	704	0.3−	0.6−	1999 06 09	120	0.4+	0.0
1999 05 10	704	0.5+	0.0	1999 05 18	704	(0.1−	2.3−)	1999 06 09	120	0.6+	0.5+
1999 05 10	704	0.9+	0.6−	1999 05 18	120	1.4−	0.5+	1999 06 15	704	0.0	0.3+
1999 05 10	704	1.3+	0.3−	1999 05 18	120	0.1−	0.4+	1999 06 15	704	0.1+	0.2+
1999 05 10	704	0.5−	1.7+	1999 05 18	120	1.5−	0.2−	1999 06 15	704	0.0	0.1−
1999 05 13	704	0.1−	0.2+	1999 05 19	704	0.8−	0.1−	1999 06 15	704	0.3+	0.3−
1999 05 13	704	1.8+	0.5+	1999 05 19	704	0.0	0.3−	1999 06 15	704	0.1+	0.1−
1999 05 13	704	0.3−	0.9+	1999 05 19	704	0.7−	0.5−				

1999 KS₂ = 1994 LQ₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams					
<i>M</i>	165.46725		(2000.0)	P		Q		
<i>n</i>	0.18764273	ω	16.03805	+0.18742372		−0.96642632		
<i>a</i>	3.0216783	Ω	63.44037	+0.87825154		+0.08473025		
<i>e</i>	0.0814453	<i>i</i>	11.33232	+0.43993928		+0.24257154		
<i>P</i>	5.25	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	5	

Residuals in seconds of arc

1994 06 03	809	(2.6−	0.3+)	1999 05 16	691	0.1−	0.2+	1999 06 09	704	0.1−	0.6−
1994 06 03	809	0.2−	1.3+	1999 05 16	691	0.3−	0.1+	1999 06 09	704	1.0−	0.1+
1994 06 03	809	1.0+	0.5+	1999 05 18	704	0.4+	0.1−	1999 06 09	704	0.4+	0.3+
1994 06 04	809	0.2−	0.6−	1999 05 18	704	0.3−	0.6−	1999 06 09	704	0.7−	0.5−
1994 06 04	809	0.6−	0.5−	1999 05 18	704	0.6−	0.6−	1999 06 09	704	(0.3−	2.5−)
1994 06 04	809	0.1+	0.7−	1999 05 18	704	(2.6−	2.0−)	1999 06 15	704	0.1−	0.4−
1999 05 13	704	0.1−	0.1+	1999 05 19	691	0.1+	0.4+	1999 06 15	704	0.0	0.3−
1999 05 13	704	0.0	0.2−	1999 05 19	691	0.2−	0.4+	1999 06 15	704	0.2−	0.3+

Residuals in seconds of arc

1991 09 30	691	0.4+	0.1-	1999 05 17	703	0.1+	0.0	1999 05 23	691	0.2-	0.3-
1991 09 30	691	0.2-	0.2+	1999 05 17	703	(0.6+	2.6-)	1999 05 23	691	0.1-	0.0
1991 09 30	691	0.2-	0.2-	1999 05 17	691	0.4-	0.3-	1999 06 05	703	0.6-	0.4-
1996 10 08	566	0.1-	0.0	1999 05 17	703	0.1+	0.3+	1999 06 05	703	0.4+	0.9+
1996 10 08	566	0.2-	0.1-	1999 05 17	691	0.1+	0.2-	1999 06 05	703	0.4+	0.3-
1996 10 08	566	0.1-	0.2+	1999 05 17	691	0.1-	0.4-	1999 06 05	703	0.7+	0.8+
1996 10 09	566	0.2+	0.0	1999 05 20	691	1.1-	0.7+	1999 06 14	704	0.1-	0.4+
1996 10 09	566	0.1+	0.0	1999 05 20	691	0.0	0.4-	1999 06 14	704	0.2+	0.6-
1996 10 09	566	0.1+	0.1-	1999 05 20	691	0.1-	0.4-	1999 06 14	704	0.5+	0.2-
1999 05 17	703	0.2+	0.1-	1999 05 23	691	0.3-	0.1+	1999 06 14	704	0.3+	0.3+

1999 KA₄ = 3228 T-2

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	75.55420		(2000.0)		P		Q
<i>n</i>	0.29179403	ω	111.27561		-0.97678464		-0.21069917
<i>a</i>	2.2512226	Ω	56.58016		+0.17532135		-0.89006047
<i>e</i>	0.0914588	<i>i</i>	2.65749		+0.12310237		-0.40422546
<i>P</i>	3.38	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1973 09 19	675	1.5+	0.4+	1973 10 05	675	0.7+	1.1-	1999 05 19	704	0.2+	0.4+
1973 09 19	675	3.4+	3.1-	1999 05 10	704	1.7+	0.3+	1999 05 19	704	0.1+	0.7+
1973 09 20	675	0.7+	1.8+	1999 05 10	704	0.5+	0.9+	1999 05 19	704	1.0-	0.5-
1973 09 20	675	0.5-	1.0+	1999 05 10	704	1.5+	0.7+	1999 05 19	704	0.9-	1.3-
1973 09 24	675	0.3+	2.5+	1999 05 10	704	0.3+	1.1+	1999 05 21	691	0.1-	0.4-
1973 09 24	675	0.8+	1.1+	1999 05 10	704	0.3-	0.1+	1999 05 21	691	0.0	0.1-
1973 09 24	675	2.1-	1.4+	1999 05 13	704	0.5+	0.4-	1999 05 21	691	0.2-	0.1-
1973 09 24	675	1.1+	1.4+	1999 05 13	704	0.2-	0.6-	1999 05 23	426	0.0	0.1-
1973 09 25	675	0.7-	0.2+	1999 05 13	704	0.3+	0.3-	1999 05 23	426	0.2-	0.1+
1973 09 25	675	1.2+	1.2+	1999 05 13	704	0.2+	0.5+	1999 05 23	426	0.1+	0.4+
1973 09 25	675	1.5-	0.9-	1999 05 13	704	0.1-	0.8+	1999 05 25	426	0.3+	0.5+
1973 09 25	675	1.2-	2.0+	1999 05 18	704	1.1-	1.6-	1999 05 25	426	0.8-	0.2+
1973 09 29	675	0.7-	1.7-	1999 05 18	704	0.4+	0.9-	1999 05 25	426	0.1-	0.5-
1973 09 29	675	0.9-	1.5-	1999 05 18	704	1.0-	0.6-	1999 06 07	703	0.3-	1.0-
1973 09 30	675	1.6-	0.1-	1999 05 18	704	0.2+	1.5+	1999 06 07	703	0.2-	0.1-
1973 09 30	675	2.1-	0.1+	1999 05 18	691	0.3-	0.2-	1999 06 07	703	0.1+	0.3+
1973 10 04	675	2.4+	2.7-	1999 05 18	691	0.4-	0.0	1999 06 07	703	0.2-	0.1+
1973 10 04	675	0.6-	1.4-	1999 05 18	691	0.2-	0.2-				
1973 10 05	675	0.2-	0.4-	1999 05 19	704	0.7+	0.0				

1999 KG₄ = 1981 PN = 1998 EH₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	10.38651		(2000.0)		P		Q
<i>n</i>	0.27331624	ω	152.37551		+0.48178263		+0.87295538
<i>a</i>	2.3515764	Ω	146.26649		-0.82721772		+0.48183174
<i>e</i>	0.2330220	<i>i</i>	7.90584		-0.28913032		+0.07607290
<i>P</i>	3.61	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1981 08 05	046	0.5+	0.1+	1998 03 03	704	0.3+	1.3-	1999 05 21	704	0.7-	0.6+
1981 08 05	046	2.0-	1.7-	1998 03 03	704	0.1+	0.7-	1999 05 21	704	0.2-	0.3-
1981 08 06	046	(4.4-	2.2-)	1998 03 03	704	0.4+	0.3+	1999 05 21	704	0.2+	0.3+
1981 08 06	046	0.6-	1.1-	1998 03 04	704	0.3+	0.3+	1999 05 21	704	0.6-	0.7-
1981 08 10	046	0.0	1.1+	1998 03 04	704	0.5-	1.0+	1999 05 21	704	1.2-	0.9-
1981 08 11	046	(0.6-	3.5+)	1998 03 04	704	0.2+	1.0-	1999 05 21	704	0.1+	0.1-
1981 08 12	046	1.1+	0.9+	1998 03 04	704	0.7+	0.0	1999 05 21	704	1.0+	0.8+
1981 08 12	046	1.2+	0.3-	1998 03 04	704	1.0-	0.0	1999 06 13	120	0.1+	0.3-
1998 02 23	566	0.3-	0.5+	1999 05 20	704	0.2+	0.9+	1999 06 14	120	0.1-	0.6-
1998 02 23	566	0.4-	0.0	1999 05 20	704	0.5+	0.3+	1999 06 14	120	0.3+	0.5-
1998 02 23	566	0.3+	0.1+	1999 05 20	704	0.0	0.4+	1999 06 14	120	0.1+	0.6-
1998 03 03	704	0.4+	0.8-	1999 05 20	704	1.0+	1.1+	1999 06 14	120	0.2+	0.6-
1998 03 03	704	0.8-	0.2-	1999 05 21	704	0.8-	0.7+				

1999 KK₄ = 1995 UD₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	23.50347		(2000.0)		P		Q
<i>n</i>	0.17383740	ω	43.55554		-0.68755042		+0.72608338
<i>a</i>	3.1796103	Ω	183.04776		-0.70329799		-0.66889036
<i>e</i>	0.0784329	<i>i</i>	9.52151		-0.18068303		-0.15933806
<i>P</i>	5.67	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1995 08 25	327	0.2-	0.7+	1999 05 12	704	1.0-	0.7+	1999 05 24	732	0.9+	1.5-
1995 08 25	327	0.1-	0.6+	1999 05 12	704	0.2-	1.3+	1999 05 24	732	0.2-	0.6-
1995 08 25	327	0.6-	0.8+	1999 05 17	704	0.4-	0.3-	1999 05 24	732	0.3+	0.8+
1995 10 20	691	0.2+	0.1-	1999 05 17	704	1.2+	0.5+	1999 06 06	703	1.8+	0.1-
1995 10 20	691	0.3+	0.1-	1999 05 17	704	1.1+	0.3-	1999 06 06	703	0.9+	0.2+
1995 10 20	691	0.1+	0.0	1999 05 17	704	0.7-	0.5-	1999 06 06	703	0.7+	0.9+
1995 10 25	691	0.3+	0.1-	1999 05 17	704	0.1-	0.2+	1999 06 06	703	0.0	1.3+
1995 10 25	691	0.0	0.3-	1999 05 20	732	0.6-	0.8+	1999 06 08	704	0.4+	0.7-
1995 10 25	691	0.4-	0.1-	1999 05 20	732	1.0-	0.9-	1999 06 08	704	0.3+	0.1-
1998 02 02	691	0.1-	0.3-	1999 05 20	732	0.7-	0.7+	1999 06 08	704	0.9+	0.3-
1998 02 02	691	0.1+	0.1-	1999 05 20	732	1.0-	0.1-	1999 06 08	704	0.9+	0.4-
1998 02 02	691	0.1+	0.0	1999 05 20	732	0.3-	0.1-	1999 06 14	704	0.9+	0.2+
1998 02 24	566	0.2+	0.4+	1999 05 20	732	0.4-	0.4+	1999 06 14	704	1.6+	1.7+
1998 02 24	566	0.1-	0.5+	1999 05 21	732	1.0-	0.0	1999 06 14	704	0.2+	0.6-
1998 02 24	566	0.0	0.6+	1999 05 21	732	0.3-	0.4-	1999 06 14	704	0.1-	0.5-
1999 05 12	704	1.1-	0.4-	1999 05 22	732	0.3+	0.6-	1999 06 14	704	0.7+	0.3+
1999 05 12	704	1.0-	0.7-	1999 05 22	732	0.1-	0.9-				
1999 05 12	704	1.1-	0.2-	1999 05 22	732	1.4-	0.8+				

1999 KO₄ = 1987 GA₁ = 1995 HF₃ = 1996 TS₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	3.06569		(2000.0)		P		Q
<i>n</i>	0.25814390	ω	104.62076		+0.00938841		+0.99986355
<i>a</i>	2.4428388	Ω	165.89613		-0.93757316		+0.01352776
<i>e</i>	0.1498348	<i>i</i>	3.19752		-0.34766136		-0.00948088
<i>P</i>	3.82	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1987 04 01	675	1.7+	0.5+	1999 05 13	704	0.3-	0.6+	1999 06 09	704	0.6-	0.1-
1987 04 01	675	(3.2+	0.2+)	1999 05 13	704	1.0+	0.8+	1999 06 10	684	0.3-	0.2+
1987 04 03	675	0.2-	1.1+	1999 05 13	704	1.0+	0.1+	1999 06 10	684	0.2-	0.0
1987 04 03	675	1.8+	0.2+	1999 05 18	704	1.4+	0.1-	1999 06 11	703	0.1-	0.5+
1995 04 26	691	0.5-	0.1-	1999 05 18	704	0.0	1.6-	1999 06 11	703	0.2-	0.3-
1995 04 26	691	0.4-	0.2-	1999 05 18	704	0.8+	0.5-	1999 06 11	703	0.1-	0.1+
1995 04 26	691	0.5-	0.2-	1999 05 18	704	0.2-	0.4-	1999 06 11	703	0.2+	1.7+
1995 05 04	691	1.2-	0.8-	1999 05 18	704	0.3+	0.2+	1999 06 11	703	0.0	1.6+
1995 05 04	691	1.6-	0.7-	1999 05 20	684	0.0	0.3-	1999 06 11	703	0.7-	0.4+
1995 05 04	691	1.3-	0.3-	1999 05 20	684	0.2+	0.1-	1999 06 11	703	(0.5+	2.2+)
1996 10 11	566	1.1+	0.1-	1999 05 21	684	0.2+	0.0	1999 06 11	703	0.4+	0.2+
1996 10 11	566	0.6-	0.7-	1999 05 21	684	0.2+	0.2-	1999 06 15	704	0.0	0.3+
1996 10 11	566	0.7-	0.3-	1999 06 09	684	0.2-	0.1+	1999 06 15	704	0.6+	0.1+
1996 10 12	566	0.2+	0.2+	1999 06 09	684	0.1-	0.2+	1999 06 15	704	0.6-	1.1+
1996 10 12	566	0.1-	0.4+	1999 06 09	704	0.6-	0.1+	1999 06 15	704	0.3+	0.4+
1996 10 12	566	0.7-	0.0	1999 06 09	704	0.3+	0.4+	1999 06 15	704	0.3+	0.1-
1999 05 13	704	0.4+	0.3+	1999 06 09	704	0.1+	1.1-				
1999 05 13	704	0.3+	1.4-	1999 06 09	704	0.2-	1.3-				

1999 KY₄ = 1995 ON₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	325.81076		(20

Residuals in seconds of arc

1994 03 07	691	0.1−	0.6−	1999 05 13	704	0.1+	0.9+	1999 05 20	732	1.8+	0.0
1994 03 07	691	0.1−	0.5−	1999 05 13	704	0.6−	0.9−	1999 05 20	732	0.4+	0.1−
1994 03 07	691	0.3−	0.2−	1999 05 13	704	0.0	0.8+	1999 05 20	732	0.3+	0.3−
1995 07 21	033	0.4+	0.1−	1999 05 13	704	0.3+	0.4+	1999 05 20	732	0.1+	0.9−
1995 07 23	033	0.4−	0.1−	1999 05 13	704	0.6+	0.9+	1999 05 20	732	1.4+	0.4−
1995 07 23	033	0.1+	0.1−	1999 05 18	704	0.6+	0.0	1999 05 20	732	0.7+	1.0−
1998 03 20	691	0.8−	0.5+	1999 05 18	704	0.9−	0.9+	1999 05 22	732	0.7+	0.3+
1998 03 20	691	0.9+	0.1+	1999 05 18	704	0.8+	0.4−	1999 05 22	732	0.2−	1.3+
1998 03 20	691	0.0	0.0	1999 05 18	704	0.4−	0.4+	1999 05 22	732	0.4+	0.3+
1999 05 10	704	0.8−	0.4+	1999 05 19	704	0.3−	1.6−	1999 06 07	703	0.5−	0.1+
1999 05 10	704	0.0	1.0+	1999 05 19	704	1.2+	0.2−	1999 06 07	703	0.9−	0.4−
1999 05 10	704	0.0	0.3+	1999 05 19	704	1.8−	0.3−	1999 06 07	703	1.6−	0.7−
1999 05 10	704	1.2+	0.2−	1999 05 19	704	0.2−	0.4+	1999 06 07	703	0.9−	0.1−
1999 05 10	704	1.5−	0.2−	1999 05 19	704	(3.3−	1.6+)				

1999 KT₅ = 1988 VO₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	230.57702		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.23917681	<i>ω</i>	181.46624	+0.82256837	−0.55134504
<i>a</i>	2.5703366	<i>Ω</i>	213.23739	+0.52429343	+0.83013564
<i>e</i>	0.1030750	<i>i</i>	14.72124	+0.22022188	+0.08302683
<i>P</i>	4.12	<i>H</i>	14.2	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1988 11 03	033	0.5−	0.9−	1999 05 18	704	0.2+	0.4−	1999 05 23	691	0.1+	0.4−
1988 11 03	033	0.1+	0.1−	1999 05 18	704	0.5+	0.0	1999 05 23	691	0.2−	0.1−
1988 11 05	033	0.7+	1.5+	1999 05 18	704	(2.6+	0.8−)	1999 06 08	704	0.2−	0.3−
1988 11 06	033	0.2−	0.3−	1999 05 18	704	(0.3+	2.3+)	1999 06 08	704	0.1+	0.2−
1999 05 10	704	0.6−	1.7+	1999 05 18	704	0.7−	0.7+	1999 06 08	704	0.2−	0.4−
1999 05 10	704	1.0−	0.7+	1999 05 19	704	1.4+	0.6+	1999 06 08	704	1.2−	0.1−
1999 05 10	704	1.1+	0.5−	1999 05 19	704	0.6+	0.0	1999 06 14	704	0.1+	0.2+
1999 05 10	704	(2.0−	1.4−)	1999 05 19	704	1.2−	1.6−	1999 06 14	704	0.0	0.2+
1999 05 16	691	0.1−	0.5+	1999 05 19	704	0.5−	1.4−	1999 06 14	704	0.2+	0.1+
1999 05 16	691	0.2+	0.4+	1999 05 19	704	0.8+	0.2−	1999 06 14	704	0.2−	0.1+
1999 05 16	691	0.2+	0.2+	1999 05 23	691	0.1+	0.4−	1999 06 14	704	0.6+	0.8+

1999 KL₆ = 1992 SS

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	4.93317		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.27022119	<i>ω</i>	92.30843	+0.37525070	+0.91771417
<i>a</i>	2.3694986	<i>Ω</i>	201.23795	−0.92686942	+0.36998399
<i>e</i>	0.2854041	<i>i</i>	21.08823	−0.00999952	+0.14461170
<i>P</i>	3.65	<i>H</i>	13.7	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1992 09 23	675	0.8+	0.4−	1999 04 22	704	0.6+	0.8−	1999 06 11	704	0.5−	0.5+
1992 09 23	675	0.8+	0.1+	1999 05 24	704	0.3−	0.2−	1999 06 11	704	0.3−	0.5+
1992 09 26	675	0.1−	0.4+	1999 05 24	704	0.1+	0.4−	1999 06 11	704	0.2−	0.6+
1992 09 26	675	0.9−	0.1+	1999 05 24	704	0.7+	0.3+	1999 06 11	704	0.3−	0.2+
1992 10 02	675	0.2−	0.5−	1999 05 24	704	0.3−	1.4−	1999 06 11	704	1.0−	0.4+
1992 10 02	675	0.4−	0.4−	1999 05 24	704	0.9+	0.9−	1999 06 12	704	0.2+	0.3−
1999 04 22	704	(0.2+	2.5−)	1999 05 25	704	0.9−	0.6+	1999 06 12	704	0.6+	0.3+
1999 04 22	704	0.6−	0.1+	1999 05 25	704	0.7+	0.5+	1999 06 12	704	0.2−	0.7+
1999 04 22	704	1.3+	0.0	1999 05 25	704	0.2+	1.5−	1999 06 12	704	0.1−	0.3+

1999 KO₆ = 1981 UY₅ = 1996 TX₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	304.79573		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.25984986	<i>ω</i>	270.99569	+0.84446855	+0.53391877
<i>a</i>	2.4321352	<i>Ω</i>	56.73497	−0.46899356	+0.77541240
<i>e</i>	0.2053560	<i>i</i>	2.91139	−0.25868494	+0.33714442
<i>P</i>	3.79	<i>H</i>	14.3	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1981 10 30	381	0.7+	0.2−	1999 05 13	704	0.3+	0.4+	1999 05 18	691	0.6−	0.2+
1981 10 30	381	0.7−	0.0	1999 05 13	704	0.3+	0.5−	1999 05 19	704	1.1+	1.5−
1994 01 19	691	0.7−	0.0	1999 05 13	704	1.1+	1.0−	1999 05 19	704	0.1−	0.3+
1994 01 19	691	0.9+	0.2+	1999 05 13	704	0.3+	0.3−	1999 05 19	704	1.4−	1.4+
1994 01 19	691	0.1−	0.1+	1999 05 13	704	0.2+	0.1−	1999 05 19	704	0.2−	0.4+
1996 10 09	399	0.8+	0.5+	1999 05 14	704	0.0	0.1+	1999 05 19	704	0.8−	2.0−
1996 10 09	399	0.9+	0.6−	1999 05 14	704	0.1−	0.1−	1999 05 23	426	0.2−	0.4+
1996 10 10	566	1.1+	0.4+	1999 05 14	704	0.4−	0.2−	1999 05 23	426	0.6−	0.4+
1996 10 10	566	1.1+	0.4+	1999 05 14	704	0.8−	0.4−	1999 05 23	426	0.3−	0.4+
1996 10 10	566	0.7+	0.7+	1999 05 14	704	0.1−	0.5+	1999 05 25	426	0.1+	0.6+
1996 10 10	399	1.3−	0.4+	1999 05 18	704	0.7+	0.2−	1999 05 25	426	0.1+	0.4+
1996 10 10	399	1.6−	0.4−	1999 05 18	704	(0.9−	2.3−)	1999 05 25	426	0.0	0.8+
1996 10 16	399	0.8−	0.3−	1999 05 18	704	0.4+	1.1−	1999 06 07	703	0.0	0.6−
1996 10 16	399	0.9−	1.2−	1999 05 18	704	0.5+	0.7−	1999 06 07	703	0.4−	0.9+
1999 04 14	699	0.7+	0.1−	1999 05 18	704	0.7+	1.1−	1999 06 07	703	0.2+	1.4+
1999 04 14	699	0.1+	0.2+	1999 05 18	691	0.5−	0.1+	1999 06 07	703	0.0	0.7+
1999 04 14	699	(1.5+	2.9+)	1999 05 18	691	0.3−	0.1+				

1999 KJ₁₁ = 1998 AR₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	153.79012		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.27665079	<i>ω</i>	8.05985	−0.25601142	−0.95775059
<i>a</i>	2.3326421	<i>Ω</i>	96.84587	+0.87938246	−0.28703711
<i>e</i>	0.0697739	<i>i</i>	7.58419	+0.40142826	+0.01798655
<i>P</i>	3.56	<i>H</i>	13.9	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 01 06	704	0.1+	0.0	1999 04 19	699	0.7−	0.8−	1999 05 19	704	0.1+	0.7+
1998 01 06	704	0.6−	0.1−	1999 05 10	704	0.8+	0.2+	1999 05 19	704	0.3−	0.5+
1998 01 06	704	0.2−	0.4−	1999 05 10	704	0.8+	0.5−	1999 06 09	704	0.3+	1.1−
1998 01 07	704	0.8+	0.4−	1999 05 10	704	0.3+	0.6−	1999 06 09	704	0.5+	0.4−
1998 01 07	704	0.1−	0.1+	1999 05 10	704	0.9+	0.2+	1999 06 09	704	0.6+	0.0
1998 01 07	704	0.2−	0.9+	1999 05 10	704	0.2−	0.2+	1999 06 09	704	0.4+	0.4+
1998 01 07	704	0.6−	0.7+	1999 05 18	704	0.2−	0.2+	1999 06 09	704	0.7+	0.1−
1998 01 08	704	0.4+	0.0	1999 05 18	704	0.1+	0.2+	1999 06 14	704	0.0	0.7−
1998 01 08	704	0.6+	0.5−	1999 05 18	704	1.4−	0.0	1999 06 14	704	0.1−	0.1−
1998 01 08	704	0.4+	0.2+	1999 05 18	704	0.4−	0.4+	1999 06 14	704	0.3−	0.5−
1998 01 08	704	0.3+	0.5−	1999 05 18	704	0.3−	0.4+	1999 06 14	704	0.8−	0.1+
1998 01 08	704	1.0−	0.1+	1999 05 19	704	0.2+	0.8+	1999 06 14	704	0.3−	0.4+
1999 04 19	699	0.3−	1.7−	1999 05 19	704	0.6−	0.3+				
1999 04 19	699	0.8+	0.2+	1999 05 19	704	0.7−	1.3+				

1999 KX₁₁ = 1998 BH₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	349.38618		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.28296317	<i>ω</i>	332.75030	+0.38489512	+0.92247639
<i>a</i>	2.2978205	<i>Ω</i>	319.86723	−0.83813133	+0.33577697
<i>e</i>	0.1993045	<i>i</i>	2.65739	−0.38651211	+0.19050235
<i>P</i>	3.48	<i>H</i>	15.7	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1996 10 11	566	0.0	0.3−	1999 05 18	704	1.6+	0.6−	1999 06 09	704	0.6−	0.7−
1996 10 11	566	0.2+	0.4+	1999 05 18	704	0.7−	0.2−	1999 06 09	704	0.3−	0.3+
1996 10 11	566	0.3−	0.1+	1999 05 18	704	0.2+	0.3+	1999 06 09	704	0.1−	1.1+
1998 01 23	691	0.3+	0.2−	1999 05 18	704	0.8−	1.8+	1999 06 15	704	0.1+	0.1−
1998 01 23	691	0.5+	0.3−	1999 05 18	704	0.4−	0.2+	1999 06 15	704	0.3+	0.4−
1998 01 23	691	0.4+	0.3−	1999 05 19	704	(1.0−	2.4+)	1999 06 15	704	0.7−	0.7−
1998 01 30	691	0.6−	0.1−	1999 05 19	704	0.0	1.2+	1999 06 15	704	0.4−	1.1−
1998 01 30	691	0.4−	0.6+	1999 05 19	704	0.9+	1.6−	1999 06 15	704	0.1−	0.2−
1998 01 30	691	0.3−	0.1+	1999 06 09	704	0.7+	0.9+				

1999 KL₁₃ = 1997 XO₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	320.20872		(2000.0)	P		Q		Williams	
<i>n</i>	0.22471590	ω	71.30813	+0.70229399	+0.70927817				
<i>a</i>	2.6794573	Ω	243.46159	-0.67610490	+0.63777333				
<i>e</i>	0.0964907	<i>i</i>	3.90265	-0.22285715	+0.30028262				
<i>P</i>	4.39	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	5		

Residuals in seconds of arc

1997 12 04	691	0.0	0.3-	1997 12 06	691	0.4-	0.1-	1999 05 19	704	0.2-	0.0
1997 12 04	691	0.3+	0.1-	1997 12 06	691	0.1-	0.0	1999 05 19	704	0.2-	1.4+
1997 12 04	691	0.3+	0.1+	1999 05 18	704	0.6+	1.1-	1999 06 15	704	1.0-	0.6+
1997 12 05	691	0.1+	0.1+	1999 05 18	704	0.8-	0.0	1999 06 15	704	0.5+	0.8-
1997 12 05	691	0.9+	0.8+	1999 05 18	704	0.1+	1.8+	1999 06 15	704	0.1-	0.3-
1997 12 05	691	0.1-	0.2+	1999 05 19	704	0.3-	1.4-	1999 06 15	704	0.1+	0.4-
1997 12 06	691	1.1-	0.9-	1999 05 19	704	0.9+	0.5-	1999 06 15	704	0.4+	0.6+

1999 KN₁₄ = 1991 LT₅ = 1995 LC₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	357.92096		(2000.0)	P		Q		Williams	
<i>n</i>	0.24619884	ω	116.77013	+0.16040577	+0.98684134				
<i>a</i>	2.5212276	Ω	162.42474	-0.92785254	+0.15778615				
<i>e</i>	0.1630476	<i>i</i>	3.86441	-0.33668927	+0.03532268				
<i>P</i>	4.00	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	4		

Residuals in seconds of arc

1991 06 06	809	0.5+	0.1+	1998 03 31	910	0.1+	0.1-	1999 06 09	704	0.6-	0.4+
1991 06 06	809	0.7+	0.7+	1998 03 31	910	0.0	0.1+	1999 06 09	704	0.1-	0.9+
1991 06 06	809	1.1-	0.3-	1999 05 13	704	0.6+	0.5-	1999 06 11	703	0.4+	0.3+
1991 06 08	809	(1.3-	2.6-)	1999 05 13	704	0.6-	1.3+	1999 06 11	703	0.0	0.2-
1991 06 08	809	(2.9-	2.6-)	1999 05 13	704	(2.7+	1.0-)	1999 06 11	703	0.3-	0.3-
1991 06 08	809	(2.5-	3.1-)	1999 05 13	704	(3.4-	1.5+)	1999 06 11	703	0.3+	0.5+
1995 06 05	327	(3.2+	0.1+)	1999 05 18	704	0.1-	0.9-	1999 06 11	703	0.7+	0.2+
1995 06 05	327	0.5+	0.7-	1999 05 18	704	0.1+	0.2+	1999 06 11	703	0.7+	1.0+
1995 06 05	327	1.2+	0.3-	1999 05 18	704	0.2-	0.5-	1999 06 11	703	1.3-	1.0-
1995 06 06	327	0.1+	0.7-	1999 05 18	704	0.5-	0.3+	1999 06 11	703	0.1+	0.2-
1995 06 06	327	0.4-	0.9-	1999 05 18	704	(1.1-	2.4+)	1999 06 15	704	0.3-	0.1+
1995 06 06	327	0.6-	0.6-	1999 05 19	704	0.7-	0.1+	1999 06 15	704	0.1+	0.3+
1995 06 06	327	0.4-	0.7-	1999 05 19	704	0.2+	0.3+	1999 06 15	704	0.3-	0.2+
1995 06 06	327	0.6-	0.4-	1999 05 19	704	0.8+	0.3-	1999 06 15	704	0.1-	0.0
1995 06 06	327	0.4-	0.8-	1999 06 09	704	0.3+	0.9+	1999 06 15	704	0.1-	0.1-
1998 03 31	910	0.1-	0.1+	1999 06 09	704	1.4+	1.5+				

1999 KP₁₄ = 1995 FH₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	338.45479		(2000.0)	P		Q		Williams	
<i>n</i>	0.27598815	ω	128.60321	+0.73630088	+0.67660982				
<i>a</i>	2.3363743	Ω	188.82703	-0.63547296	+0.68750584				
<i>e</i>	0.2539544	<i>i</i>	2.89751	-0.23245459	+0.26369464				
<i>P</i>	3.57	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	4		

Residuals in seconds of arc

1992 07 05	675	0.9+	0.7-	1999 05 18	704	0.0	1.3-	1999 06 09	704	0.7+	0.7+
1992 07 05	675	0.9-	0.7+	1999 05 18	704	0.3-	0.4+	1999 06 09	704	0.1+	0.3+
1995 03 28	691	0.2+	0.5+	1999 05 18	704	0.8-	0.6+	1999 06 09	704	0.4+	0.4-
1995 03 28	691	0.2-	0.1-	1999 05 19	704	1.6-	0.2+	1999 06 15	704	0.1-	0.2-
1995 03 28	691	0.6+	0.2-	1999 05 19	704	(2.1-	0.9-)	1999 06 15	704	0.1-	0.3+
1995 04 05	691	0.3-	0.0	1999 05 19	704	0.6+	0.8+	1999 06 15	704	0.1-	0.2-
1995 04 05	691	0.2-	0.2-	1999 05 19	704	1.1+	2.0-	1999 06 15	704	0.0	0.5-
1995 04 05	691	0.1-	0.0	1999 06 09	704	0.4-	0.9+	1999 06 15	704	0.0	0.6-
1999 05 18	704	0.6+	1.5+	1999 06 09	704	0.1-	0.6-				

1999 KQ₁₄ = 1990 UT₁ = 1998 GJ₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	114.96355		(2000.0)	P		Q		Williams	
<i>n</i>	0.17413860	ω	60.16486	-0.71375349	-0.63296802				
<i>a</i>	3.1759429	Ω	78.81497	+0.48931109	-0.75694519				
<i>e</i>	0.0993172	<i>i</i>	17.79735	+0.50112935	-0.16243603				
<i>P</i>	5.66	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	4		

Residuals in seconds of arc

1990 10 20	413	(2.9-	0.9+)	1999 05 13	704	0.5+	0.4-	1999 06 10	704	0.3+	0.1-
1990 10 20	413	(2.4+	1.5+)	1999 05 18	704	1.8-	1.3-	1999 06 10	704	0.0	0.7-
1990 10 27	413	0.8-	1.4+	1999 05 18	704	0.3-	0.9+	1999 06 10	704	0.2+	0.8-
1998 04 02	704	0.3+	0.0	1999 05 18	704	0.8+	1.9+	1999 06 10	704	1.1-	0.5+
1998 04 02	704	0.1+	0.8-	1999 05 18	704	0.8+	0.5-	1999 06 10	704	0.8-	0.5-
1998 04 02	704	0.3-	0.2-	1999 05 18	704	(0.0	3.5+)	1999 06 10	704	0.1+	0.5-
1998 04 02	704	0.4-	0.4-	1999 05 19	704	1.3+	1.5-	1999 06 10	704	0.1-	0.3-
1998 04 02	704	0.2-	1.1+	1999 05 19	704	0.0	0.5-	1999 06 10	704	0.1-	0.3-
1998 04 03	704	1.0+	0.8-	1999 05 19	704	(0.4-	2.6-)	1999 06 10	704	0.1+	0.7-
1998 04 03	704	0.3+	0.3-	1999 05 19	704	0.3+	0.4-	1999 06 15	704	0.3-	0.1-
1998 04 03	704	0.2-	0.2+	1999 06 09	704	0.5+	0.5+	1999 06 15	704	0.4-	0.6+
1998 04 03	704	0.2+	0.5+	1999 06 09	704	0.3+	0.2+	1999 06 15	704	0.1+	0.7+
1998 04 03	704	0.4-	1.3+	1999 06 09	704	0.1-	0.6+	1999 06 15	704	0.7-	0.5+
1999 05 13	704	0.1-	1.3+	1999 06 09	704	0.2+	0.0	1999 06 15	704	0.7+	0.6+
1999 05 13	704	0.5+	0.7-	1999 06 09	704	0.1+	0.7+				
1999 05 13	704	0.2+	1.7+	1999 06 10	704	0.6-	0.0				

1999 KT₁₄ = 1995 GJ₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	351.13357		(2000.0)	P		Q		Williams	
<i>n</i>	0.27173405	ω	189.10539	+0.31532505	+0.94736647				
<i>a</i>	2.3606957	Ω	99.28991	-0.86710504	+0.31134058				
<i>e</i>	0.1181707	<i>i</i>	3.21687	-0.38561505	+0.07459094				
<i>P</i>	3.63	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	5		

Residuals in seconds of arc

1995 04 06	691	0.1-	0.0	1999 05 18	704	0.3+	0.3+	1999 06 09	704	0.4+	0.2+
1995 04 06	691	0.5-	0.1-	1999 05 18	704	0.4+	0.6+	1999 06 09	704	0.1-	0.4-
1995 04 06	691	0.1-	0.0	1999 05 18	704	0.4-	0.8+	1999 06 09	704	0.9+	0.8-
1995 04 08	691	0.0	0.2+	1999 05 18	704	0.6+	1.0+	1999 06 15	704	0.6-	0.2-
1995 04 08	691	0.2-	0.0	1999 05 19	704	1.7+	0.0	1999 06 15	704	0.2-	0.4-
1995 04 08	691	0.3-	0.1+	1999 05 19	704	0.2-	0.4-	1999 06 15	704	0.3-	0.3-
1995 04 22	691	0.0	0.2-	1999 05 19	704	1.5-	0.7+	1999 06 15	704	0.3-	0.1-
1995 04 22	691	0.4+	0.2-	1999 05 19	704	(3.3-	1.1+)	1999 06 15	704	0.3-	0.1+
1995 04 22	691	0.5+	0.4-	1999 06 09	704	0.4-	0.5-				

1999 KU₁₄ = 1992 SW₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	328.64500		(2000.0)	P		Q		Williams	
<i>n</i>	0.26212431	ω	157.84544	+0.76253318	+0.64672090				
<i>a</i>	2.4180458	Ω	161.82677	-0.60152189	+0.71851639				
<i>e</i>	0.1678839	<i>i</i>	3.15805	-0.23814820	+0.25590285				
<i>P</i>	3.76	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	5		

Residuals in seconds of arc

1992 09 21	033	1.3-	0.5-	1999 05 18	704	0.3-	0.1-	1999 06 11	703	0.2-	1.3+
1992 09 22	033	(0.2-	4.4-)	1999 05 19	704	0.1+	0.9+	1999 06 11	703	0.0	0.4-
1992 09 23	033	0.4-	2.0-	1999 05 19	704	(4.3-	1.5+)	1999 06 11	703	0.6+	1.1-
1992 09 24	033	0.3+	1.1-	1999 05 19	704	0.5+	0.5-	1999 06 11	703	(2.5-	0.9-)
1992 09 26	033	0.1-	0.8+	1999 06 09	704	0.3-	0.0	1999 06 11	703	(1.0-	2.8-)
1992 09 26	033	0.1+	0.7+	1999 06 09	704	0.4-	1.3+	1999 06 11	703	0.6+	0.6-
1992 09 26	033	0.6+	1.0+	1999 06 09	704	0.2+	0.5+	1999 06 15	704	0.4-	0.3-
1992 09 27	033	0.8+	0.6+	1999 06 09	704	0.5-	1.4-	1999 06 15	704	0.4+	0.3-
1992 09 28	033	0.0	0.8+	1999 06 09	704	0.8+	0.1-	1999 06 15	704	0.0	0.1-
1999 05 18	704	0.2-	1.0-	1999 06 11	703	0.4-	0.9+	1999 06 15	704	0.9-	0.3-
1999 05 18	704	0.2-	1.3+	1999 06 11	703	0.7+	0.1+				

1999 JUNE 22

M.P.C. 35045

1999 KX₁₄ = 1988 SO₃ = 1992 UD₁₀ = 1995 JS₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	332.06859		(2000.0)	P	Q
<i>n</i>	0.25876828	ω	227.22764	+0.77407506	+0.63037762
<i>a</i>	2.4389077	Ω	93.60806	-0.56236598	+0.72714725
<i>e</i>	0.2060875	<i>i</i>	3.36510	-0.29077881	+0.27181048
<i>P</i>	3.81	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1988 09 16	095	0.5-	0.3+	1995 05 05	010	0.7-	0.2+	1999 05 19	704	0.7+	0.0
1988 09 16	095	1.2-	0.8-	1995 05 08	010	1.5+	1.9-	1999 06 09	704	0.1+	0.6-
1992 10 31	033	0.7+	0.4-	1995 05 08	010	1.0+	1.4-	1999 06 09	704	0.0	0.3+
1992 10 31	033	0.7+	0.2+	1995 05 08	010	0.8+	1.3-	1999 06 09	704	0.1+	0.1+
1992 11 01	033	0.5+	0.4+	1999 05 18	704	0.9+	0.4-	1999 06 09	704	0.3-	0.3+
1992 11 23	033	0.5+	0.5-	1999 05 18	704	0.0	0.1+	1999 06 09	704	0.4-	1.3-
1992 11 23	033	1.3+	0.2-	1999 05 18	704	0.8-	0.6+	1999 06 15	704	0.4+	0.3-
1994 01 12	691	1.4-	0.2+	1999 05 18	704	1.4-	0.8+	1999 06 15	704	0.7+	0.0
1994 01 12	691	0.1-	0.6+	1999 05 18	704	1.8-	1.3+	1999 06 15	704	0.2-	0.6-
1994 01 12	691	1.4-	0.5+	1999 05 19	704	0.0	0.9+	1999 06 15	704	0.4-	0.3+
1995 05 05	010	(2.5-	1.1+)	1999 05 19	704	0.9-	1.5+	1999 06 15	704	0.0	0.3-
1995 05 05	010	(2.5-	1.7+)	1999 05 19	704	1.1+	0.6-				

1999 KY₁₄ = 1985 JO = 1988 CM₁ = 1995 DK₃

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	18.33277		(2000.0)	P	Q
<i>n</i>	0.28473822	ω	315.84311	-0.22212325	+0.97340084
<i>a</i>	2.2882609	Ω	301.24756	-0.87537968	-0.22445142
<i>e</i>	0.1611572	<i>i</i>	3.76531	-0.42938523	-0.04596046
<i>P</i>	3.46	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1985 05 13	675	0.6-	0.1+	1995 02 27	098	0.1-	0.8+	1999 06 09	888	0.0	0.3-
1985 05 15	675	0.3+	0.6-	1999 05 18	704	0.5-	0.3+	1999 06 11	888	0.7-	0.2+
1988 02 11	809	0.4-	0.3-	1999 05 18	704	1.3-	0.1-	1999 06 11	888	0.2-	0.6+
1988 02 11	809	0.5-	0.9-	1999 05 18	704	0.5+	0.6-	1999 06 11	888	0.5+	0.4+
1988 02 11	809	0.4+	0.6-	1999 05 18	704	0.5-	0.7+	1999 06 15	704	0.1-	0.1-
1995 02 24	098	(1.0-	2.5+)	1999 05 19	704	1.4+	1.6-	1999 06 15	704	0.1-	0.1-
1995 02 24	098	0.3-	1.6+	1999 05 19	704	0.0	0.5+	1999 06 15	704	(2.4+	0.5-)
1995 02 25	098	1.5-	0.3-	1999 05 19	704	0.9+	1.1+	1999 06 15	704	1.5-	0.0
1995 02 26	098	0.9+	0.1-	1999 05 19	704	1.8+	0.4+	1999 06 15	704	0.5-	0.3-
1995 02 27	098	1.6+	0.0	1999 06 09	888	0.6+	0.8-				

**1999 KE₁₅ = 1978 EU₂ = 1978 GG₁ = 1988 VH₁₁ = 1990 FB₅
= 1992 UM₁**

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	78.49665		(2000.0)	P	Q
<i>n</i>	0.24113888	ω	8.88666	-0.98755035	+0.15730308
<i>a</i>	2.5563750	Ω	180.16417	-0.14841924	-0.93221428
<i>e</i>	0.0428056	<i>i</i>	4.16609	-0.05211556	-0.32593292
<i>P</i>	4.09	<i>H</i>	13.4	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1978 03 05	095	0.6+	1.2+	1994 03 07	691	0.3-	0.6-	1999 05 19	704	1.3+	0.8-
1978 04 07	095	(9.0-	1.1+)	1994 03 07	691	0.2-	0.1+	1999 05 19	704	1.0+	1.5-
1988 11 03	327	0.6-	0.2-	1994 03 07	691	0.3-	0.0	1999 06 09	704	0.1-	0.2+
1988 11 03	327	1.9+	0.2-	1998 02 24	566	0.5+	0.4+	1999 06 09	704	0.7-	0.7-
1990 03 17	095	0.4-	0.5-	1998 02 24	566	0.8+	0.6+	1999 06 09	704	1.6-	0.1-
1990 03 17	095	0.2-	1.2-	1998 02 24	566	0.5+	0.6+	1999 06 09	704	0.9-	0.0
1992 10 19	399	(2.3+	2.9+)	1999 05 18	704	0.5+	0.2+	1999 06 09	704	0.2-	0.3+
1992 10 19	399	(2.1+	2.8+)	1999 05 18	704	0.6+	1.9+	1999 06 15	704	0.4-	0.1-
1992 10 22	399	1.5-	0.9+	1999 05 18	704	0.7+	0.8+	1999 06 15	704	0.5-	0.1+
1992 10 22	399	(2.5-	0.2+)	1999 05 18	704	(0.5+	3.3+)	1999 06 15	704	0.8-	0.1-
1994 02 10	691	0.1-	0.1+	1999 05 19	704	(2.4+	0.2-)	1999 06 15	704	0.4-	0.1-

1994 02 10	691	0.3-	0.1+	1999 05 19	704	1.4+	0.4+	1999 06 15	704	0.4-	0.0
1994 02 10	691	0.6-	0.0	1999 05 19	704	0.8+	0.2+				

1999 KG₁₅ = 1996 XP₃₂ = 1998 FT₈₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	114.21877		(2000.0)	P	Q
<i>n</i>	0.19109683	ω	47.32584	-0.83576521	-0.52272262
<i>a</i>	2.9851562	Ω	100.49728	+0.44040213	-0.82099155
<i>e</i>	0.0351676	<i>i</i>	9.84371	+0.32793669	-0.22963870
<i>P</i>	5.16	<i>H</i>	13.4	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1996 12 06	399	0.8+	0.7-	1998 03 25	704	0.4+	0.4+	1999 06 09	704	1.1+	0.3+
1996 12 06	399	1.5+	0.1+	1998 03 25	704	0.8-	0.4+	1999 06 09	704	0.4+	0.5-
1996 12 07	399	1.3-	0.5+	1998 03 25	704	0.7-	0.6+	1999 06 09	704	0.1+	0.0
1996 12 07	399	1.2-	0.5+	1998 03 25	704	0.4-	0.1-	1999 06 09	704	0.8-	1.1-
1998 02 27	566	0.2+	0.2-	1999 05 18	704	(0.1-	2.8-)	1999 06 09	704	(0.4+	2.2-)
1998 02 27	566	0.3+	0.3-	1999 05 18	704	0.2-	1.4-	1999 06 15	704	0.1-	0.1-
1998 02 27	566	0.1+	0.3-	1999 05 18	704	0.0	0.6+	1999 06 15	704	0.1-	0.3+
1998 03 24	704	0.1+	0.5+	1999 05 19	704	0.4-	1.0-	1999 06 15	704	0.1+	0.7+
1998 03 24	704	0.5+	0.2-	1999 05 19	704	0.6-	0.5-	1999 06 15	704	0.1-	0.7+
1998 03 24	704	0.2-	0.6-	1999 05 19	704	0.3+	0.1+	1999 06 15	704	0.1-	0.8+
1998 03 24	704	0.2+	0.4-	1999 05 19	704	0.6+	0.5+				
1998 03 25	704	0.3+	0.4+	1999 05 19	704	0.3-	1.0+				

1999 LU₄ = 1994 AK₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	280.62534		(2000.0)	P	Q
<i>n</i>	0.27764672	ω	242.60691	+0.93184454	-0.17281328
<i>a</i>	2.3270606	Ω	125.60337	+0.23157456	+0.96018436
<i>e</i>	0.2493925	<i>i</i>	23.10513	-0.27935457	+0.21950298
<i>P</i>	3.55	<i>H</i>	13.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1994 01 11	675	0.8-	0.7-	1999 06 07	704	0.3-	0.2-	1999 06 12	704	0.2+	0.0
1994 01 11	675	1.6-	0.1+	1999 06 07	704	2.7-	0.2+	1999 06 12	704	1.0+	0.8+
1994 01 16	675	0.8+	0.4-	1999 06 07	704	0.5-	0.1-	1999 06 12	704	0.4+	0.1+
1994 01 16	675	1.6+	0.8+	1999 06 07	704	0.0	0.1+	1999 06 12	704	0.3+	0.4-
1999 05 14	704	0.5-	0.1+	1999 06 10	691	0.3-	0.5-	1999 06 12	704	0.2+	0.6+
1999 05 14	704	0.9-	0.2+	1999 06 10	691	0.2-	0.5-	1999 06 12	704	0.6+	0.3-
1999 05 14	704	0.9+	0.9+	1999 06 10	691	0.2-	0.6-	1999 06 12	704	0.2+	0.6+
1999 05 14	704	2.3+	0.4-	1999 06 12	704	0.7+	0.1+	1999 06 13	691	0.6-	0.2+
1999 05 14	704	0.3+	0.2+	1999 06 12	704	0.0	0.0	1999 06 13	691	0.7-	0.4-
1999 06 07	704	0.0	0.2-	1999 06 12	704	0.6+	0.1+	1999 06 13	691	0.6-	0.7-

1999 LE₁₉ = 1998 HZ₁₃₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	332.17331		(2000.0)	P	Q
<i>n</i>	0.18063544	ω	276.82063	+0.82915956	+0.53963665
<i>a</i>	3.0993271	Ω	50.63268	-0.40867223	+0.76323727
<i>e</i>	0.1061583	<i>i</i>	10.87818	-0.38142028	+0.35533247
<i>P</i>	5.46	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 03 25	704	0.7+	0.6+	1998 04 20	704	1.3+	1.1+	1999 06 10	426	0.5-	0.1+
1998 03 25	704	0.6-	0.7+	1998 04 22	704	1.4+	0.7-	1999 06 18	426	0.1+	0.0
1998 03 25	704	0.2-	1.2-	1998 04 22	704	0.4-	0.4-	1999 06 18	426	0.2+	0.1-
1998 03 25	704	0.3+	0.1-	1998 04 22	704	2.2-	0.2-	1999 06 18	426	0.2+	0.3-
1998 03 25	704	0.0	1.0+	1998 04 22	704	1.8-	0.1+	1999 06 20	426	0.5+	0.2-
1998 04 20	704	2.5+	1.5-	1998 04 22	704	2.0-	0.6+	1999 06 20	426	0.3+	0.1-
1998 04 20	704	0.2-	0.9+	1999 06 10	426	0.5-	0.0	1999 06 20	426	0.4+	0.1-
1998 04 20	704	1.1+	1.0-	1999 06 10	426	0.8-	0.9+				

2044 P-L = 1999 JY₅₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	32.71012			(2000.0)	P		Q				
<i>n</i>	0.29733754		ω	242.66295	−0.60489389		+0.79622085				
<i>a</i>	2.2231540		Ω	350.09060	−0.70458639		−0.54198140				
<i>e</i>	0.0656921		<i>i</i>	3.88211	−0.37102750		−0.26886526				
<i>P</i>	3.31		<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	2			
Residuals in seconds of arc											
1960 09 24	675	0.8−	0.2−	1993 09 14	691	0.2+	0.9−	1999 05 18	704	0.3+	0.8−
1960 09 26	675	0.2−	0.3−	1997 12 06	704	0.0	1.4+	1999 05 18	704	0.1+	1.1−
1960 09 28	675	0.4−	0.0	1997 12 06	704	(2.2−	1.8+)	1999 05 18	704	1.6−	1.6−
1960 09 29	675	0.5+	0.7+	1997 12 06	704	(0.6+	2.1+)	1999 06 09	704	0.3−	0.5+
1960 10 17	675	0.4+	0.4−	1997 12 06	704	0.0	0.7−	1999 06 09	704	1.3+	1.7+
1960 10 22	675	0.1+	0.4+	1999 05 10	704	1.4+	1.0−	1999 06 09	704	0.2−	0.3+
1960 10 25	675	0.0	0.8−	1999 05 10	704	0.6+	0.8−	1999 06 09	704	0.5−	0.7+
1960 10 26	675	0.3+	0.7+	1999 05 10	704	1.2+	0.7−	1999 06 09	704	0.3−	1.8+
1992 02 28	691	0.3+	0.2−	1999 05 13	704	0.7+	0.7+	1999 06 15	704	0.0	0.4+
1992 02 28	691	0.5−	0.1−	1999 05 13	704	0.1−	0.6+	1999 06 15	704	0.1−	0.9+
1992 02 28	691	0.2−	0.3−	1999 05 13	704	0.8−	0.7−	1999 06 15	704	0.1−	0.3+
1993 09 14	691	0.6+	0.6−	1999 05 13	704	0.7+	0.3−	1999 06 15	704	0.2−	0.3+
1993 09 14	691	(2.6+	1.3+)	1999 05 18	704	1.2−	1.5−	1999 06 15	704	0.4−	0.7+

2083 P-L = 1981 UG₇

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	83.49634		(2000.0)	P			Q				
<i>n</i>	0.23674505	ω	199.49910	+0.31112780			−0.94938014				
<i>a</i>	2.5879076	Ω	232.39754	+0.87904524			+0.30480536				
<i>e</i>	0.2293472	<i>i</i>	3.13461	+0.36121870			+0.07596743				
<i>P</i>	4.16	<i>H</i>	15.6	<i>G</i>	0.15		<i>U</i>	2			
Residuals in seconds of arc											
1953 01 09	675	1.7+	2.0−	1960 10 17	675	0.3−	0.8+	1999 01 10	699	0.9−	0.0
1953 01 09	675	1.7−	0.0	1960 10 22	675	0.4−	0.0	1999 01 10	699	0.1+	0.4+
1960 09 24	675	0.2−	1.0−	1960 10 25	675	0.9+	1.1+	1999 01 10	699	1.6+	0.2−
1960 09 26	675	0.0	1.0+	1960 10 26	675	0.7−	0.0	1999 02 11	699	0.2+	0.0
1960 09 28	675	0.4−	0.0	1981 10 30	381	0.1−	0.6−	1999 02 11	699	0.0	1.9+
1960 09 29	675	0.1+	1.0+	1981 10 30	381	0.2+	0.8−	1999 02 11	699	0.1−	1.0+

2627 P-L = 1999 FU₅₂

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	121.69582		(2000.0)	P		Q					
n	0.21438053	ω	42.85317	+0.42351749	-0.90504785						
a	2.7648983	Ω	22.17685	+0.80067597	+0.35384213						
e	0.1338798	i	5.93106	+0.42373450	+0.23597488						
P	4.60	H	14.6	G	0.15	U	1				
Residuals in seconds of arc											
1960 09 24	675	0.4+	0.7-	1997 10 31	704	0.5+	0.3-	1997 11 23	691	0.0	0.1+
1960 09 26	675	0.7-	0.2-	1997 10 31	704	1.3+	0.0	1997 11 23	691	0.3-	0.2+
1960 09 28	675	0.7-	0.4-	1997 10 31	704	1.0+	0.2+	1997 11 23	691	0.2-	0.0
1960 09 29	675	0.6+	0.5+	1997 10 31	704	0.3-	0.7+	1999 03 20	704	1.5-	1.7-
1960 10 17	675	0.3+	0.2+	1997 11 06	704	0.6-	0.6-	1999 03 20	704	0.9-	0.5-
1960 10 22	675	0.4+	0.1-	1997 11 06	704	0.1+	0.1-	1999 03 20	704	0.2-	0.7+
1960 10 25	675	0.6+	0.9-	1997 11 06	704	0.6-	0.3+	1999 03 20	704	0.2+	1.5-
1960 10 26	675	0.6-	0.8+	1997 11 06	704	0.6-	0.8-	1999 03 20	704	0.9+	1.1-
1992 09 23	809	0.2+	0.2-	1997 11 06	704	0.7-	0.2+	1999 03 23	704	0.2+	0.7+
1992 09 23	809	0.5+	0.6-	1997 11 08	910	(2.6+	0.2-)	1999 03 23	704	0.3-	0.1+
1992 09 23	809	0.3+	1.0-	1997 11 08	910	(2.6+	0.2-)	1999 03 23	704	0.3+	0.9+
1997 10 31	704	0.2+	0.6+	1997 11 08	910	(2.5+	0.2-)	1999 03 23	704	(2.2+	0.4+)

2646 P-L = 1992 DR₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	4.81648		(2000.0)	P		Q					
<i>n</i>	0.23006495	ω	21.66706	+0.76130838	-0.64770358						
<i>a</i>	2.6377628	Ω	18.79837	+0.58046547	+0.66033601						
<i>e</i>	0.1599067	<i>i</i>	5.31092	+0.28891069	+0.38004793						
<i>P</i>	4.28	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	4				
Residuals in seconds of arc											
1960 09 24	675	0.2-	0.4-	1960 10 25	675	0.7+	0.7-	1992 02 27	691	0.2-	0.2-
1960 09 26	675	0.0	0.6+	1960 10 26	675	0.5-	0.0	1992 02 27	691	0.4-	0.3+
1960 09 28	675	0.3-	0.1-	1976 05 30	413	1.2-	1.4+	1992 03 01	809	(4.0+	1.5-)
1960 09 29	675	0.6+	0.2-	1976 05 30	413	1.2+	1.5-				
1960 10 22	675	0.1+	0.9+	1992 02 27	691	0.5+	0.1-				

2668 P-L = 1993 FE₃₅ = 1997 PK₅

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	260.29511		(2000.0)	P		Q					
<i>n</i>	0.28943069	ω	137.50010	-0.35525713	+0.93450661						
<i>a</i>	2.2634609	Ω	111.67978	-0.86390642	-0.31919185						
<i>e</i>	0.0577850	<i>i</i>	1.36466	-0.35701270	-0.15752448						
<i>P</i>	3.41	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	3				
Residuals in seconds of arc											
1960 09 24	675	0.7+	0.0	1960 09 29	675	0.6+	0.6+	1997 08 07	608	0.1-	0.6+
1960 09 24	675	0.6+	0.0	1960 09 29	675	1.1+	0.2+	1997 08 08	608	0.2+	0.6-
1960 09 26	675	1.1-	0.7+	1993 03 19	809	0.1-	0.4-	1997 08 08	608	0.3+	0.9-
1960 09 26	675	0.5-	1.0-	1993 03 20	809	1.0+	0.5-	1997 08 09	608	0.3-	0.1+
1960 09 28	675	0.1+	0.6-	1993 03 24	809	0.8-	1.0+				
1960 09 28	675	1.5-	0.2+	1997 08 07	608	0.0	0.7+				

2760 P-L = 1999 JG₁₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	177.51935		(2000.0)	P		Q					
n	0.19347543	ω	313.31719	+0.44816632	-0.89381965						
a	2.9606393	Ω	110.05092	+0.82481799	+0.40685812						
e	0.0346208	i	0.93182	+0.34470601	+0.18855480						
P	5.09	H	13.7	G	0.15	U	6				
Residuals in seconds of arc											
1960 09 24	675	0.3-	0.5-	1960 10 26	675	0.5-	0.3-	1999 05 13	704	1.4-	0.5-
1960 09 26	675	0.3-	0.2+	1999 05 13	704	1.2+	0.5-	1999 05 19	704	0.6-	1.8+
1960 09 28	675	0.9+	0.3-	1999 05 13	704	0.6-	0.4-	1999 05 19	704	0.4-	0.8-
1960 09 29	675	0.6+	0.5+	1999 05 13	704	0.1+	1.1+	1999 05 19	704	0.2-	1.2+
1960 10 25	675	0.4-	0.5+	1999 05 13	704	1.8+	0.3-	1999 05 19	704	0.0	1.4-

2837 P-L = 1999 JY₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	73.01678		(2000.0)	P		Q					
<i>n</i>	0.24400725	ω	326.54092	-0.96179929	-0.27328294						
<i>a</i>	2.5363016	Ω	197.62060	+0.26137403	-0.89924782						
<i>e</i>	0.0913886	<i>i</i>	3.04494	+0.08139867	-0.34156960						
<i>P</i>	4.04	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4				
Residuals in seconds of arc											
1960 09 24	675	0.5-	0.3+	1999 04 12	704	0.1-	0.1-	1999 05 13	704	0.2+	0.0
1960 09 24	675	0.0	0.5-	1999 04 12	704	0.9+	0.1-	1999 05 13	704	0.2+	0.0
1960 09 26	675	0.5-	0.4-	1999 04 12	704	1.0-	0.6-	1999 05 13	704	0.6-	0.2+
1960 09 26	675	0.2-	0.2-	1999 04 12	704	0.6+	1.2+	1999 05 13	704	0.8+	0.0
1960 09 28	675	0.8+	0.1-	1999 04 21	691	0.2+	0.4+	1999 05 18	704	0.3+	0.1+
1960 09 28	675	0.9+	0.8-	1999 04 21	691	0.1+	0.3+	1999 05 18	704	1.1+	0.8+
1960 09 29	675	1.6+	0.3-	1999 04 21	691	0.3+	0.3+	1999 05 18	704	0.6-	1.7-
1960 09 29	675	2.3-	0.5+	1999 05 10	704	0.3+	1.7-	1999 05 18	704	0.9-	1.9-

1999 JUNE 22

M.P.C. 35047

1960 10 17	675	1.8−	0.2−	1999 05 10	704	0.9+	1.0−	1999 05 18	704	1.7−	1.2−
1960 10 22	675	2.2+	1.7+	1999 05 10	704	0.4−	0.2−	1999 05 19	704	0.3+	0.9+
1995 05 30	691	1.4+	0.5+	1999 05 10	704	1.2−	0.5+	1999 05 19	704	0.4+	0.3+
1995 05 30	691	0.3−	0.6+	1999 05 10	704	1.3−	1.3+	1999 05 19	704	0.9−	0.2−
1995 05 30	691	0.4−	1.7+	1999 05 13	704	0.1+	0.5+	1999 05 19	704	0.9+	0.8−

3010 P-L = 1999 JA₄

Id. B. G. Marsden

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	275.48718		(2000.0)	P	Q
<i>n</i>	0.19545198	ω	112.69105	+0.92729171	+0.34406952
<i>a</i>	2.9406455	Ω	227.53406	−0.37223516	+0.88922901
<i>e</i>	0.1134431	<i>i</i>	11.53143	+0.03963660	+0.30147625
<i>P</i>	5.04	<i>H</i>	13.4	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1960 09 24	675	0.4+	0.9+	1999 05 10	704	0.4+	0.8−	1999 05 14	704	0.4+	0.5+
1960 09 24	675	0.1+	0.8+	1999 05 10	704	1.4+	0.4−	1999 05 18	704	0.4−	0.3+
1960 09 25	675	0.9−	0.9−	1999 05 10	704	0.7+	0.1+	1999 05 18	704	1.9−	0.7−
1960 09 25	675	0.0	0.6+	1999 05 10	704	0.4−	0.8−	1999 05 18	704	0.5−	0.5+
1960 09 26	675	0.4+	0.8+	1999 05 12	684	0.2+	0.1+	1999 05 18	704	0.5−	0.6+
1960 09 26	675	0.1−	0.7−	1999 05 12	684	0.1+	0.1+	1999 05 18	704	(1.8−	3.1−)
1960 09 27	675	0.7−	0.2−	1999 05 13	704	1.0−	1.1+	1999 05 19	704	0.3−	0.4−
1960 09 27	675	0.7+	0.2−	1999 05 13	704	0.1−	0.6−	1999 05 19	704	0.2−	0.2−
1960 09 28	675	0.3+	0.6−	1999 05 13	704	(1.8+	2.3−)	1999 05 19	704	0.1−	0.1+
1960 09 29	675	0.3−	0.6−	1999 05 13	704	0.3+	0.6+	1999 05 19	704	0.0	0.6−
1999 04 15	704	0.6−	0.5+	1999 05 13	704	0.6−	0.0	1999 05 19	704	0.1−	1.4−
1999 04 15	704	0.1−	0.4−	1999 05 13	684	0.1−	0.2+	1999 06 07	703	0.7−	0.9−
1999 04 15	704	(0.3+	2.9+)	1999 05 13	684	0.3+	0.1−	1999 06 07	703	0.2−	0.3−
1999 04 15	704	0.8−	0.5+	1999 05 14	704	1.9+	0.1−	1999 06 07	703	1.0+	0.9+
1999 05 10	704	0.1−	0.4−	1999 05 14	704	1.4+	0.9+	1999 06 07	703	0.7+	0.9+

4129 P-L = 1993 SZ₃ = 1999 JJ₁₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	283.22868		(2000.0)	P	Q
<i>n</i>	0.29892664	ω	175.86767	+0.99547365	−0.09344698
<i>a</i>	2.2152681	Ω	189.54630	+0.08392892	+0.94988306
<i>e</i>	0.1961301	<i>i</i>	5.99362	+0.04458874	+0.29831163
<i>P</i>	3.30	<i>H</i>	15.3	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1960 09 24	675	0.8−	0.5−	1960 10 25	675	0.7−	0.2+	1993 09 18	400	(3.0−	0.2−)
1960 09 25	675	0.0	0.2+	1960 10 25	675	0.1−	0.5+	1999 05 10	704	0.8+	1.3−
1960 09 26	675	0.5+	0.8−	1960 10 26	675	1.2−	0.5+	1999 05 10	704	0.3−	0.5−
1960 09 26	675	1.2+	1.2−	1960 10 26	675	0.7+	0.7−	1999 05 10	704	0.1+	0.4+
1960 09 27	675	1.2+	1.4+	1992 04 05	691	0.5−	0.6−	1999 05 10	704	1.0−	1.1−
1960 09 28	675	0.9+	0.6−	1992 04 05	691	0.1+	0.7−	1999 05 13	704	(2.3+	1.0+)
1960 09 28	675	0.8+	0.1+	1992 04 05	691	0.2+	0.4−	1999 05 13	704	1.2+	0.1−
1960 10 17	675	0.6−	0.1−	1993 09 16	400	1.1+	1.3+	1999 05 13	704	0.3+	2.0+
1960 10 22	675	0.8−	0.2+	1993 09 16	400	0.8−	1.6+	1999 05 13	704	1.6−	1.2+
1960 10 22	675	0.8−	1.2−	1993 09 18	400	0.5−	1.7−				

4141 P-L = 1954 GQ = 1999 JR₇₉

Id. G. V. Williams, E. Bowell, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	156.70081		(2000.0)	P	Q
<i>n</i>	0.24402913	ω	231.65866	+0.03789113	−0.99826104
<i>a</i>	2.5361500	Ω	216.24747	+0.93900182	+0.05102675
<i>e</i>	0.1788375	<i>i</i>	4.38009	+0.34181844	−0.02951561
<i>P</i>	4.04	<i>H</i>	13.6	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1954 04 02	675	1.3+	1.3−	1994 01 17	010	1.3−	0.8−	1999 05 13	704	0.5−	0.5−
1954 04 02	675	1.3−	0.9+	1998 02 01	327	0.2+	0.4−	1999 05 14	704	0.6−	0.7+
1960 09 24	675	0.0	0.4−	1998 02 01	327	0.3+	0.3−	1999 05 14	704	0.3+	0.5−

1960 09 24	675	0.1+	1.3−	1998 02 01	327	0.0	0.1−	1999 05 14	704	1.5+	1.2−
1960 09 25	675	0.3+	0.2−	1998 04 14	704	(1.6−	2.2−)	1999 05 14	704	0.6+	0.1+
1960 09 26	675	0.3−	0.8−	1998 04 14	704	(2.4+	1.7−)	1999 05 14	704	0.0	0.2+
1960 09 28	675	0.3−	0.3−	1998 04 14	704	(2.3−	0.3−)	1999 06 15	704	0.5+	0.2+
1960 10 17	675	0.2−	0.5+	1998 04 14	704	1.2+	0.1+	1999 06 15	704	0.0	0.6+
1960 10 22	675	1.0−	0.2−	1998 04 14	704	(2.8−	0.1+)	1999 06 15	704	0.6−	0.2−
1960 10 24	675	1.4+	0.7+	1999 05 13	704	0.6+	0.0	1999 06 15	704	0.6−	0.9−
1960 10 26	675	1.1+	0.5−	1999 05 13	704	0.6−	0.7−	1999 06 15	704	0.7−	0.4−
1994 01 17	010	0.2−	0.2−	1999 05 13	704	0.6+	0.1−				
1994 01 17	010	0.1−	0.2−	1999 05 13	704	1.3−	0.0				

4175 P-L = 1999 JC₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	115.31171		(2000.0)	P	Q
<i>n</i>	0.29461640	ω	282.53337	−0.54591861	−0.83741205
<i>a</i>	2.2368220	Ω	200.62187	+0.79515076	−0.50779124
<i>e</i>	0.1101995	<i>i</i>	4.35089	+0.26402298	−0.20221057
<i>P</i>	3.35	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1960 09 24	675	1.3−	0.1+	1997 10 29	566	0.7+	0.1+	1999 05 13	704	0.8+	0.1+
1960 09 25	675	0.0	0.3+	1997 11 03	704	0.7+	0.7+	1999 05 13	704	0.1+	1.2−
1960 09 26	675	0.2−	0.2−	1997 11 03	704	0.5−	1.2+	1999 05 15	703	0.4−	0.7+
1960 09 26	675	0.2+	0.6+	1997 11 03	704	0.6−	0.0	1999 05 15	703	0.1+	0.5+
1960 09 26	675	0.1−	1.1−	1997 11 03	704	0.1+	0.3−	1999 05 15	703	0.6−	0.3+
1960 09 27	675	0.5+	0.1+	1997 11 03	704	1.7−	1.7−	1999 05 15	703	0.9−	0.5−
1960 09 28	675	0.5−	0.4−	1999 04 12	704	0.2−	1.1−	1999 05 18	704	0.1−	1.0−
1960 09 28	675	0.7+	0.5−	1999 04 12	704	1.1−	1.9+	1999 05 18	704	0.1−	0.3+
1960 10 17	675	1.0+	0.1+	1999 04 12	704	0.5+	0.3−	1999 05 18	704	1.6−	0.2+
1960 10 22	675	0.5+	1.1+	1999 04 12	704	(2.1−	1.3+)	1999 05 18	704	1.5−	0.9−
1990 08 29	675	1.8−	0.3+	1999 05 10	704	1.2+	0.5+	1999 05 18	704	0.6−	0.1+
1990 08 29	675	0.7−	0.4+	1999 05 10	704	1.0+	0.8+	1999 05 19	704	0.1+	0.6−
1992 04 07	809	0.7−	1.8+	1999 05 10	704	1.5+	0.7+	1999 05 19	704	1.3+	0.4−
1997 09 09	910	0.2+	0.4+	1999 05 10	704	1.1+	0.7+	1999 05 19	704	0.1−	0.2−
1997 09 09	910	0.1+	0.4+	1999 05 10	704	1.7+	0.1−	1999 05 19	704	0.6−	0.2−
1997 09 09	910	0.4+	0.2+	1999 05 13	704	0.1+	0.3+	1999 05 19	704	0.0	0.0
1997 10 29	566	0.9+	0.3+	1999 05 13	704	0.4−	0.5−				
1997 10 29	566	0.8+	0.3+	1999 05 13	704	(2.2+	0.0)				

4214 P-L

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	241.44647		(2000.0)	P	Q
<i>n</i>	0.17653005	ω	255.50490	−0.60671911	−0.79237746
<i>a</i>	3.1471947	Ω	232.02662	+0.75681823	−0.55136925
<i>e</i>	0.0759568	<i>i</i>	4.61902	+0.24314211	−0.26101707
<i>P</i>	5.58	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1960 09 24	675	0.2−	0.5+	1960 10 22	675	0.6−	0.2−	1982 11 04	413	0.7−	0.5−
1960 09 25	675	0.2+	0.5+	1960 10 26	675	0.4+	0.7+	1998 07 29	910	0.0	0.1+
1960 09 26	675	0.5+	0.0	1982 10 17	413	1.2−	1.6−	1998 07 29	910	0.0	0.0
1960 09 28	675	0.3+	0.3−	1982 10 18	413	0.1+	0.1−	1998 07 30	910	0.1−	0.2+
1960 10 17	675	1.0−	0.1−	1982 10 18	413	2.3+	0.8+				

4259 P-L

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	102.92120		(2000.0)	P	Q
<i>n</i>	0.18470393	ω	134.44820	+0.99805652	−0.03597927
<i>a</i>	3.0536456	Ω	227.68407	+0.01564241	+0.93498783
<i>e</i>	0.1276759	<i>i</i>	3.94547	+0.06031989	+0.35285017
<i>P</i>	5.34	<i>H</i>	15.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1955 10 25	675	1.5−	0.0	1960 09 26	675	0.6+	0.6−	1997 08 30	910	0.0	0.1+
1955 10 25	675	1.4+	0.5+	1960 09 28	675	0.2+	0.5+	1997 08 30	910	0.2−	0.2+

M.P.C. 35048

1960 09 24	675	0.0	0.7−	1960 10 17	675	0.0	0.8+	1997 08 30	910	0.0	0.2+
1960 09 25	675	0.2−	0.0	1960 10 26	675	0.4−	0.6−				

4591 P-L = 1999 JA₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 150.24837 (2000.0)				Williams			
		P		Q			
<i>n</i>	0.24247154	ω	60.57257	+0.24865481	−0.96797820		
<i>a</i>	2.5469996	Ω	15.14721	+0.83666792	+0.19671474		
<i>e</i>	0.2025843	<i>i</i>	7.58302	+0.48801392	+0.15595358		
<i>P</i>	4.06	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1960 09 24	675	0.3−	0.3+	1997 12 06	704	1.1+	0.4+	1999 05 13	704	0.4−	0.1−
1960 09 26	675	0.4−	0.0	1999 04 15	704	0.1+	0.6−	1999 05 13	704	0.2−	0.3+
1960 09 27	675	0.2−	0.6+	1999 04 15	704	1.0+	2.0+	1999 05 18	704	0.4+	0.2−
1960 09 28	675	0.3−	0.8+	1999 04 15	704	0.9+	0.2+	1999 05 18	704	0.6+	0.2−
1960 10 17	675	0.2+	0.6−	1999 04 15	704	0.1+	0.6+	1999 05 18	704	0.8+	0.3−
1960 10 22	675	0.1−	0.2+	1999 04 15	704	0.5+	0.9+	1999 05 18	704	1.0−	1.0−
1960 10 25	675	0.1+	0.0	1999 05 10	704	0.8−	0.6+	1999 05 19	704	0.5−	0.6+
1960 10 26	675	0.3+	0.1−	1999 05 10	704	0.2−	1.3−	1999 05 19	704	0.6−	1.7−
1997 12 06	704	0.3−	0.2−	1999 05 10	704	0.5+	1.3−	1999 05 19	704	0.6−	0.5+
1997 12 06	704	0.4+	0.3+	1999 05 10	704	1.0+	1.0+	1999 05 19	704	1.2−	1.7−
1997 12 06	704	0.6−	1.0+	1999 05 13	704	0.6−	1.8+	1999 05 19	704	0.6−	0.5+
1997 12 06	704	0.7−	0.8−	1999 05 13	704	1.4+	1.0+				

4597 P-L = 1988 VJ_s

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 10.01526 (2000.0)				Williams			
		P		Q			
<i>n</i>	0.28246756	ω	252.92160	+0.48978652	−0.87173266		
<i>a</i>	2.3005076	Ω	167.72355	+0.82259840	+0.45680723		
<i>e</i>	0.1999458	<i>i</i>	3.72996	+0.28886162	+0.17722677		
<i>P</i>	3.49	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1960 09 24	675	0.2−	0.2−	1960 10 17	675	0.2+	0.1+	1988 08 19	675	1.0+	0.7−
1960 09 26	675	0.2−	0.3−	1960 10 22	675	0.3−	0.8+	1988 08 19	675	0.8−	0.5−
1960 09 27	675	0.3−	0.6+	1960 10 25	675	0.3+	0.7+	1988 11 04	033	0.2+	0.8−
1960 09 28	675	0.3+	0.4−	1960 10 26	675	0.3−	0.6+	1988 11 04	033	0.2+	0.1−

4610 P-L = 1991 KW = 1999 JZ₄₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 106.90414 (2000.0)				Williams			
		P		Q			
<i>n</i>	0.24449459	ω	311.61019	−0.72410446	−0.68965566		
<i>a</i>	2.5329301	Ω	184.80198	+0.65480083	−0.68429141		
<i>e</i>	0.1029576	<i>i</i>	4.73761	+0.21658394	−0.23689731		
<i>P</i>	4.03	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1960 09 24	675	0.3+	0.1+	1999 05 10	704	0.8−	0.4+	1999 05 19	704	0.4+	0.6−
1960 09 26	675	0.3−	0.2−	1999 05 13	704	0.4+	0.3+	1999 05 19	704	1.8+	0.8−
1960 09 27	675	0.3−	0.1+	1999 05 13	704	0.9+	0.1−	1999 05 19	704	(4.5−	2.1−)
1960 09 28	675	0.5−	0.6−	1999 05 13	704	0.5+	0.6+	1999 06 05	703	1.3−	0.2+
1960 10 17	675	0.5−	0.1−	1999 05 13	704	0.4−	0.4+	1999 06 05	703	0.7+	0.3+
1960 10 22	675	0.5+	0.4+	1999 05 13	704	0.0	0.3−	1999 06 05	703	0.8+	0.6+
1960 10 25	675	1.0+	0.2+	1999 05 14	704	0.9+	1.0+	1999 06 05	703	0.5+	1.4+
1960 10 26	675	0.0	0.3+	1999 05 14	704	(2.3+	0.8−)	1999 06 09	704	0.2−	0.2−
1983 07 10	413	1.0+	0.6+	1999 05 14	704	0.3−	1.0+	1999 06 09	704	0.4+	0.2+
1983 07 10	413	0.7+	0.5−	1999 05 14	704	0.3−	0.3+	1999 06 09	704	(2.3−	1.1+)
1991 05 17	809	1.3−	1.0−	1999 05 18	704	0.6−	1.3−	1999 06 09	704	0.7−	0.0
1991 05 17	809	1.7−	1.2−	1999 05 18	704	0.0	0.6−	1999 06 09	704	0.1−	0.1−
1991 05 17	809	(1.9−	2.0−)	1999 05 18	704	0.1−	0.1+	1999 06 14	704	0.2−	0.2−
1999 05 10	704	0.4+	0.3−	1999 05 18	704	0.5−	0.3−	1999 06 14	704	0.6−	0.2+
1999 05 10	704	0.7+	0.0	1999 05 18	704	0.0	0.4+	1999 06 14	704	0.6−	0.4−

1999 JUNE 22

1999 05 10	704	0.3−	0.2+	1999 05 19	704	0.6+	0.6−	1999 06 14	704	0.3−	0.6+
1999 05 10	704	0.0	0.7+	1999 05 19	704	0.9+	0.7−	1999 06 14	704	1.2−	0.0

4615 P-L = 1989 TK₁₃

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 257.40762 (2000.0)				Williams			
		P		Q			
<i>n</i>	0.17239888	ω	278.26284	+0.91509413	−0.40098037		
<i>a</i>	3.1972732	Ω	105.38512	+0.38518673	+0.83794516		
<i>e</i>	0.1678603	<i>i</i>	2.53424	+0.11930597	+0.37021974		
<i>P</i>	5.72	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1960 09 24	675	0.3−	0.1+	1960 10 25	675	0.9−	0.0	1989 10 03	809	0.9+	0.5−
1960 09 26	675	0.1+	0.1−	1960 10 26	675	0.6−	0.1+	1995 12 16	691	0.1+	0.4+
1960 09 27	675	0.1−	0.3+	1983 10 26	413	1.0+	0.8+	1995 12 16	691	0.2+	0.5+
1960 09 28	675	0.4+	0.2+	1983 10 26	413	1.5−	0.4+	1995 12 16	691	0.6−	0.1+
1960 10 17	675	0.7+	0.8+	1989 10 03	809	0.0	1.1−				
1960 10 22	675	0.2+	0.2−	1989 10 03	809	0.3+	1.4−				

4706 P-L = 1999 JL₃₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 20.89972 (2000.0)				Williams			
		P		Q			
<i>n</i>	0.29701091	ω	223.42500	−0.57064055	+0.82097892		
<i>a</i>	2.2247836	Ω	11.82266	−0.72572430	−0.49330296		
<i>e</i>	0.0391888	<i>i</i>	5.33552	−0.38430925	−0.28748181		
<i>P</i>	3.32	<i>H</i>	16.1	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1960 09 24	675	0.4−	0.5+	1960 09 28	675	1.3−	0.4−	1999 05 13	704	2.3−	0.5+
1960 09 24	675	0.1+	0.0	1960 09 28	675	0.7−	0.2−	1999 05 13	704	0.0	1.4−
1960 09 26	675	0.3+	0.4+	1999 05 10	704	1.2−	0.3+	1999 05 13	704	0.8−	1.1+
1960 09 26	675	0.0	0.8+	1999 05 10	704	1.5+	0.9−	1999 05 13	704	0.3+	0.8−
1960 09 27	675	1.1+	0.9−	1999 05 10	704	0.1−	0.2+				
1960 09 27	675	0.8+	0.1−	1999 05 10	704	2.6+	1.0+				

4789 P-L = 1999 GZ₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 325.14685 (2000.0)				Doppler			
		P		Q			
<i>n</i>	0.29874725	ω	268.47211	+0.40399635	+0.91472594		
<i>a</i>	2.2161548	Ω	25.36077	−0.83171147	+0.37092826		
<i>e</i>	0.2844727	<i>i</i>	1.06515	−0.38084508	+0.16027685		
<i>P</i>	3.30	<i>H</i>	17.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1960 09 24	675	0.5+	0.9−	1960 09 28	675	0.2−	1.1+	1999 04 11	691	0.2−	0.2−
1960 09 24	675	0.6−	0.0	1999 04 07	691	0.2+	0.2−	1999 04 11	691	0.2−	0.2−
1960 09 26	675	0.2+	0.0	1999 04 07	691	0.1−	0.1+	1999 04 11	691	0.1+	0.0
1960 09 26	675	0.9−	1.0−	1999 04 07	691	0.1+	0.7+	1999 04 14	691	0.0	0.0
1960 09 27	675	0.4−	0.8+	1999 04 09	691	0.1+	0.6+	1999 04 14	691	0.1−	0.1+
1960 09 27	675	1.1+	0.5+	1999 04 09	691	0.3+	0.2−				
1960 09 28	675	0.4−	0.2−	1999 04 09	691	0.2+	0.3−				

4839 P-L = 1999 JK₁₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 344.82377 (2000.0)				Williams			
		P		Q			
<i>n</i>	0.27418670	ω	127.52776	+0.39705875	+0.91774612		
<i>a</i>	2.3465967	Ω	165.85791	−0.85360544	+0.37299176		
<i>e</i>	0.2030773	<i>i</i>	2.18036	−0.33719742	+0.13645221		
<i>P</i>	3.59	<i>H</i>	16.2	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1960 09 24	675	0.3+	0.4−	1996 10 18	566	0.7+	0.1−	1999 05 18	704	0

1999 JUNE 22

1960 09 27	675	0.6−	0.3+	1999 05 13	704	0.2+	1.3+	1999 05 18	704	1.1+	0.4−
1960 09 28	675	0.1−	0.0	1999 05 13	704	0.0	0.6−	1999 06 14	704	0.4−	0.0
1960 10 17	675	0.5+	0.1−	1999 05 13	704	0.2−	0.3−	1999 06 14	704	0.4+	0.4+
1960 10 22	675	0.1+	0.8−	1999 05 13	704	0.1+	0.8+	1999 06 14	704	0.1+	0.3+
1960 10 25	675	0.3+	0.1−	1999 05 13	704	0.1−	0.3+	1999 06 14	704	0.0	1.1−
1960 10 26	675	0.2+	0.4+	1999 05 18	704	0.4−	0.3−				
1996 10 18	566	0.8−	0.7+	1999 05 18	704	0.2−	0.8−				

5553 P-L = 1999 HB₂

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 135.19255 (2000.0)				<i>P</i>				<i>Q</i>			
<i>n</i>	0.26872064	ω	66.87170	−0.11149451	−0.99127571						
<i>a</i>	2.3783113	Ω	29.79481	+0.85216415	−0.13175976						
<i>e</i>	0.0827363	<i>i</i>	8.13288	+0.51125848	+0.00344081						
<i>P</i>	3.67	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	6				

Residuals in seconds of arc

1960 10 17	675	0.3−	0.7−	1999 04 17	429	0.1−	0.3+	1999 05 09	429	0.6−	0.8+
1960 10 22	675	0.2−	0.7+	1999 04 17	429	0.2−	1.3−	1999 05 09	429	(2.2+	2.7+)
1960 10 25	675	0.0	1.3+	1999 04 18	704	0.6−	0.0	1999 05 10	704	0.0	0.4+
1960 10 26	675	0.3+	1.0−	1999 04 18	704	0.7−	0.5−	1999 05 10	704	0.1−	0.9+
1999 04 15	704	(2.4+	0.8+)	1999 04 18	704	(2.4−	1.2−)	1999 05 10	704	0.3+	1.6+
1999 04 15	704	0.4+	0.7−	1999 04 18	704	0.3−	0.8+	1999 05 10	704	1.4−	0.8−
1999 04 15	704	1.8+	0.1−	1999 04 18	429	0.1+	0.2−	1999 05 13	704	1.0−	0.9+
1999 04 15	704	1.0+	1.6−	1999 04 18	429	0.7−	0.7−	1999 05 13	704	0.5+	0.0
1999 04 17	704	0.4+	0.3+	1999 04 21	429	0.4−	0.1+	1999 05 13	704	1.0−	1.6−
1999 04 17	704	0.2+	0.3−	1999 04 21	429	0.1−	0.5+	1999 05 14	429	1.1+	0.4−
1999 04 17	704	0.3+	0.4+	1999 04 21	429	0.1−	0.4+	1999 05 14	429	1.2+	0.7−
1999 04 17	704	1.2+	0.2+	1999 04 23	429	0.8−	0.6+	1999 05 14	429	0.7−	1.5−
1999 04 17	704	0.5+	1.1+	1999 04 23	429	0.6+	0.4−	1999 05 14	429	0.2−	0.2−
1999 04 17	429	0.4−	0.4+	1999 05 09	429	0.1−	1.2+				

6115 P-L = 1991 TC₁₂

Id. A. Gnädig, G. V. Williams, T. Kobayashi

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 39.07191 (2000.0)				<i>P</i>				<i>Q</i>			
<i>n</i>	0.28782604	ω	119.49560	−0.13643288	−0.99007225						
<i>a</i>	2.2718657	Ω	338.26803	+0.87436043	−0.10430409						
<i>e</i>	0.0752291	<i>i</i>	5.23888	+0.46570367	−0.09422096						
<i>P</i>	3.42	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	3				

Residuals in seconds of arc

1960 09 24	675	0.5+	0.4−	1960 10 26	675	0.9+	0.3−	1991 10 14	691	1.3+	0.2+
1960 09 25	675	0.4−	0.4−	1988 12 07	675	0.7−	0.6−	1991 10 14	691	1.0+	0.6+
1960 09 26	675	0.1−	0.1−	1988 12 07	675	0.9+	0.9+	1998 11 14	704	0.8−	0.2−
1960 09 28	675	0.6−	0.8−	1991 10 11	691	1.3−	0.2+	1998 11 14	704	1.9−	0.7−
1960 10 17	675	0.9+	0.7+	1991 10 11	691	1.5−	0.5+	1998 11 14	704	1.3+	1.1−
1960 10 22	675	0.0	0.1+	1991 10 11	691	2.0−	0.8+	1998 11 14	704	1.6+	0.1+
1960 10 24	675	0.2−	0.7−	1991 10 14	691	1.2+	0.9+				

6232 P-L

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 14.45041 (2000.0)				<i>P</i>				<i>Q</i>			
<i>n</i>	0.18328991	ω	229.77936	−0.12831820	−0.98979633						
<i>a</i>	3.0693307	Ω	227.70770	+0.93343996	−0.09943967						
<i>e</i>	0.1675042	<i>i</i>	4.80393	+0.33499893	−0.10205380						
<i>P</i>	5.38	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	1				

Residuals in seconds of arc

1960 09 24	675	0.2+	0.2+	1997 09 08	910	0.0	0.1−	1998 11 11	699	0.2+	0.3+
1960 09 25	675	(0.8+	2.9−)	1997 09 08	910	0.0	0.3+	1998 11 11	699	1.0+	0.6+
1960 09 26	675	0.1+	0.3−	1997 09 08	910	0.1−	0.2+	1998 11 15	691	0.0	0.1+
1960 09 28	675	0.0	0.2−	1998 11 11	704	0.3−	0.6−	1998 11 15	691	0.2+	0.0
1960 10 22	675	0.2+	0.1+	1998 11 11	704	1.5−	0.1−	1998 11 15	691	0.3+	0.1−

M.P.C. 35049

1960 10 26	675	0.3−	0.5−	1998 11 11	704	(1.5−	2.5+)	1998 11 21	691	0.5+	0.2−
1984 03 05	413	0.1+	0.7+	1998 11 11	699	0.3−	0.2+	1998 11 21	691	0.2+	0.0
1984 03 05	413	0.1−	0.8−	1998 11 11	704	0.7−	0.0	1998 11 21	691	0.3+	0.1+

6255 P-L = 1999 LK₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 295.85115 (2000.0)				<i>P</i>				<i>Q</i>			
<i>n</i>	0.37405789	ω	146.61262	+0.88917594	+0.45535055						
<i>a</i>	1.9077004	Ω	186.77727	−0.45654032	+0.88946398						
<i>e</i>	0.0686855	<i>i</i>	22.39836	+0.03061193	+0.03885484						
<i>P</i>	2.63	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	4				

Residuals in seconds of arc

1960 09 24	675	0.5−	0.3−	1999 05 14	704	0.6−	0.5−	1999 06 12	704	0.1+	0.3+
1960 09 26	675	0.4−	0.1+	1999 06 11	704	0.4+	0.1+	1999 06 12	704	0.3−	0.3−
1960 09 28	675	0.3+	0.2+	1999 06 11	704	0.5+	0.1+	1999 06 12	704	0.8+	1.7−
1960 10 17	675	0.7+	0.2+	1999 06 11	704	0.4+	0.0	1999 06 12	704	0.6−	0.4−
1999 05 14	704	1.2−	0.4+	1999 06 11	704	0.3+	0.7+	1999 06 12	704	0.1+	0.7−
1999 05 14	704	1.1+	0.1−	1999 06 11	704	0.4−	0.5+	1999 06 12	704	0.6−	0.5+
1999 05 14	704	0.4+	1.0+	1999 06 12	704	0.7+	0.3+	1999 06 12	704	1.4−	0.2−
1999 05 14	704	0.1−	0.2−	1999 06 12	704	1.1+	0.4−	1999 06 12	704	0.4−	0.6+

6528 P-L = 1999 LJ₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 354.54812 (2000.0)				<i>P</i>				<i>Q</i>			
<i>n</i>	0.19705386	ω	135.64369	+0.11125014	+0.99331907						
<i>a</i>	2.9246872	Ω	140.71374	−0.92472707	+0.11477325						
<i>e</i>	0.0665294	<i>i</i>	2.77628	−0.36400997	+0.01201327						
<i>P</i>	5.00	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	4				

Residuals in seconds of arc

1960 09 24	675	0.2−	0.1−	1998 03 20	704	(1.1+	2.3+)	1999 05 18	704	(2.3−	1.2−)
1960 09 26	675	0.2+	0.3−	1998 03 22	704	0.3+	0.4+	1999 05 18	704	0.7−	0.2+
1960 09 27	675	0.6+	1.0+	1998 03 22	704	0.3−	1.2+	1999 05 18	704	0.8+	1.4+
1960 09 28	675	0.6+	0.1+	1998 03 22	704	0.8−	0.5+	1999 05 18	704	1.6−	0.1+
1960 10 17	675	0.0	0.3+	1998 03 22	704	0.3+	0.2−	1999 06 09	704	0.3−	0.5−
1960 10 22	675	0.9−	0.6−	1998 03 22	704	(4.3−	1.1+)	1999 06 09	704	0.3+	0.6+
1960 10 25	675	0.0	0.3−	1998 03 24	691	0.3+	0.2−	1999 06 09	704	0.0	0.3−
1960 10 26	675	0.3−	0.3−	1998 03 24	691	0.1−	0.1−	1999 06 09	704	0.1+	1.3−
1998 03 20	704	0.2+	0.3−	1998 03 24	691	0.0	0.0	1999 06 15	704	0.7+	0.1−
1998 03 20	704	0.6+	0.1−	1998 04 03	691	0.0	0.2−	1999 06 15	704	0.3+	0.1−
1998 03 20	704	0.0	1.0−	1998 04 03	691	0.2−	0.3−	1999 06 15	704	0.0	0.2−
1998 03 20	704	0.3−	0.4+	1998 04 03	691	0.0	0.2−	1999 06 15	704	0.2+	0.3+

6574 P-L = 1999 JR₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 244.01826 (2000.0)				<i>P</i>				<i>Q</i>			
<i>n</i>	0.27129361	ω	359.95984	+0.98184977	−0.18825380						
<i>a</i>	2.3632501	Ω	10.97282	+0.17404366	+0.84601924						
<i>e</i>	0.1143484	<i>i</i>	6.95690	+0.07536462	+0.49881054						
<i>P</i>	3.63	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	2				

Residuals in seconds of arc

1960 09 24	675	0.4−	0.4−	1997 12 28	566	0.9+	0.5+	1999 05 13	704	0.8+	1.1−
1960 09 26	675	0.1+	0.6+	1997 12 28	566	0.5+	0.6+	1999 05 13	704	0.1+	0.8+
1960 09 27	675	0.7+	0.0	1998 01 24	566	0.4−	1.1−	1999 05 13	704	0.8−	0.3−
1960 09 28	675	0.6+	0.0	1998 01 24	566	0.4−	1.1−	1999 05 18	704	0.2−	0.7−
1960 10 17	675	0.1+	1.7−	1998 01 24	566	1.0−	0.8−	1999 05 18	704	0.9+	0.2+
1960 10 22	675	0.6−	0.1+	1999 05 10	704	0.0	0.1+	1999 05 18	704	1.5−	1.5−
1960 10 24	675	0.3+	0.2+	1999 05 10	704	0.9−	0.7+	1999 05 18	704	(3.6+ 0.3+)	
1960 10 26	675	0.2−	0.1−	1999 05 10	704	0.6+	0.6+	1999 05 19	704	0.0	1.0−
1993 11 09	691	0.0	0.3+	1999 05 10	704	1.0−	1.2−	1999 05 19	704	0.3+	0.9+
1993 11 09	691	0.7−	0.3+	1999 05 10	704	0.7+	0.7+	1999 05 19	704	0.5+	0.2+
1993 11 09	691	0.4+	0.3+	1999 05 13	704	1.2−	0.3−				
1997 12 28	566	0.3+	0.6+	1999 05 13	704	1.7+	1.5+				

M.P.C. 35050

1999 JUNE 22

6593 P-L = 1999 GX₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	332.26923		(2000.0)	P		Q	
<i>n</i>	0.29751777	ω	114.94675	+0.01393829	+0.99964780		
<i>a</i>	2.222561	Ω	155.81951	-0.93613018	+0.02098271		
<i>e</i>	0.1853437	<i>i</i>	3.16047	-0.35137730	-0.01624795		
<i>P</i>	3.31	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1960 09 24	675	0.9-	0.0	1999 04 06	704	0.4-	0.5-	1999 04 12	704	0.6-	0.8+
1960 09 26	675	0.4-	0.3-	1999 04 06	704	1.1-	0.0	1999 04 12	704	0.4-	0.4+
1960 09 27	675	0.8+	0.4-	1999 04 06	704	0.3+	1.7-	1999 04 17	703	0.3+	0.0
1960 09 28	675	0.1-	0.4-	1999 04 06	704	(0.9-	3.2-)	1999 04 17	703	0.3+	0.2-
1960 10 17	675	0.4+	1.2+	1999 04 07	699	0.5+	0.3-	1999 04 17	703	0.7+	0.3-
1960 10 22	675	0.6-	0.7-	1999 04 07	699	0.4+	0.9+	1999 04 17	703	1.3+	0.7+
1960 10 24	675	0.8+	0.5+	1999 04 07	699	1.2-	0.4+				
1960 10 26	675	0.2+	0.4+	1999 04 12	704	(3.0-	0.6+)				

6619 P-L = 1999 JV₁₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	312.06417		(2000.0)	P		Q	
<i>n</i>	0.29977384	ω	169.33789	+0.91087523	+0.41243783		
<i>a</i>	2.2110924	Ω	166.27778	-0.38289449	+0.85745513		
<i>e</i>	0.2065470	<i>i</i>	3.42947	-0.15394199	+0.30767798		
<i>P</i>	3.29	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1960 09 24	675	0.0	0.9+	1999 05 13	704	0.1+	1.0+	1999 05 19	704	0.3-	0.6+
1960 09 26	675	0.7-	0.4-	1999 05 13	704	0.1+	0.7-	1999 05 19	704	0.5-	0.3-
1960 09 27	675	0.2-	1.2-	1999 05 13	704	0.2+	1.3-	1999 06 14	704	0.2+	0.1+
1960 09 28	675	1.2+	0.6+	1999 05 13	704	1.3+	1.1+	1999 06 14	704	0.6+	0.1-
1960 10 17	675	0.4-	0.2-	1999 05 13	704	0.1-	0.2-	1999 06 14	704	0.1+	0.1+
1960 10 22	675	0.3-	0.0	1999 05 19	704	0.9-	0.7-	1999 06 14	704	0.4-	0.3+
1960 10 26	675	0.5+	0.0	1999 05 19	704	0.9-	0.7-	1999 06 14	704	0.4+	0.5+

6653 P-L

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	274.52573		(2000.0)	P		Q	
<i>n</i>	0.22568308	ω	285.43361	+0.53881054	-0.84112513		
<i>a</i>	2.6717965	Ω	131.86707	+0.79501411	+0.48931928		
<i>e</i>	0.0879477	<i>i</i>	3.60431	+0.27863195	+0.23038044		
<i>P</i>	4.37	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1960 09 24	675	0.4-	0.3+	1977 09 08	413	1.5+	0.8-	1997 02 08	566	0.6-	0.4-
1960 09 26	675	0.4+	0.2+	1977 09 08	413	1.3-	1.3-	1997 02 08	566	1.6-	0.3-
1960 09 27	675	0.0	1.2-	1991 11 09	691	0.0	0.2-	1997 02 08	566	0.7-	0.4-
1960 09 28	675	0.0	0.5-	1991 11 09	691	0.0	0.1-	1998 05 24	704	0.3-	1.3-
1960 10 17	675	0.1+	0.4+	1991 11 09	691	0.2+	0.4-	1998 05 24	704	0.8+	0.4+
1960 10 22	675	0.2-	0.0	1997 02 06	910	0.9+	0.3-	1998 05 24	704	(1.6+	2.4-)
1960 10 25	675	0.2+	0.1-	1997 02 06	910	0.6+	0.3-	1998 05 24	704	0.3+	0.8-
1960 10 26	675	0.0	0.7+	1997 02 07	910	0.7+	0.3-	1998 05 24	704	0.9-	0.8+

1122 T-1 = 1999 JX₃₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	228.45417		(2000.0)	P		Q	
<i>n</i>	0.21508332	ω	180.35591	+0.93114149	-0.36334678		
<i>a</i>	2.7588721	Ω	201.03194	+0.33477963	+0.88536338		
<i>e</i>	0.0723781	<i>i</i>	4.93883	+0.14456186	+0.29001863		
<i>P</i>	4.58	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1971 03 24	675	(1.3-	2.8-)	1998 01 28	566	0.5-	0.1-	1999 05 13	704	(2.7+	0.4+)
1971 03 25	675	0.6-	0.0	1998 01 28	566	0.0	0.4+	1999 05 13	704	0.6+	0.7+

1971 03 25	675	1.2-	2.0+	1999 05 10	704	0.1-	0.2-	1999 05 13	704	0.3+	1.0+
1971 03 26	675	1.3+	1.2-	1999 05 10	704	0.2+	0.7+	1999 06 07	703	(0.5+	4.4-)
1971 03 27	675	0.6-	0.3-	1999 05 10	704	0.3+	1.6+	1999 06 07	703	(0.3-	2.5-)
1971 04 02	675	1.7-	1.0+	1999 05 10	704	0.6+	1.9-	1999 06 07	703	1.4+	0.5-
1971 04 16	675	2.2+	1.2-	1999 05 10	704	1.3-	1.0-	1999 06 07	703	0.9-	0.2-
1971 04 16	675	0.4+	1.0-	1999 05 13	704	1.6-	0.0				
1998 01 28	566	0.6+	0.0	1999 05 13	704	0.7+	0.2+				

1258 T-1 = 1999 GK₁₉

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	18.30897		(2000.0)	P		Q	
<i>n</i>	0.28231818	ω	34.51894	-0.67233717	+0.73982822		
<i>a</i>	2.3013190	Ω	193.29235	-0.70118641	-0.64725845		
<i>e</i>	0.2338000	<i>i</i>	6.20180	-0.23727695	-0.18360477		
<i>P</i>	3.49	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1971 03 24	675	(4.4+	0.2-)	1993 09 19	691	0.6+	0.6-	1999 04 12	704	0.4+	0.4-
1971 03 25	675	0.3+	0.1+	1993 09 19	691	0.2+	0.5-	1999 04 12	704	0.2-	0.6-
1971 03 25	675	0.2-	0.5+	1999 03 19	704	0.2+	0.9+	1999 04 12	704	0.1+	0.5+
1971 03 26	675	0.9+	1.1-	1999 03 19	704	0.5+	0.5+	1999 04 12	704	0.0	0.2+
1971 03 27	675	2.2+	2.1-	1999 03 19	704	0.6+	0.2+	1999 04 15	704	0.6-	0.7+
1971 04 02	675	2.0-	1.5+	1999 03 19	704	0.5+	0.0	1999 04 15	704	1.2+	0.9-
1971 04 16	675	1.0-	1.3-	1999 03 21	691	0.4-	0.9+	1999 04 15	704	0.2+	1.9-
1971 04 16	675	0.7-	2.4-	1999 03 21	691	0.3-	1.2+	1999 04 15	704	0.8+	0.8+
1971 05 13	675	0.6+	0.3+	1999 03 21	691	0.6-	1.2+	1999 04 15	704	0.8+	0.1+
1971 05 14	675	0.4+	0.0	1999 04 07	704	0.6+	0.0	1999 04 16	704	0.4+	0.2+
1971 05 16	675	0.9-	1.0+	1999 04 07	704	0.3+	0.1-	1999 04 16	704	0.1-	0.3-
1992 04 07	691	1.3-	0.7-	1999 04 07	704	0.0	0.4+	1999 04 16	704	0.0	0.6-
1992 04 07	691	1.0-	0.8+	1999 04 07	704	0.3-	0.3+	1999 04 16	704	0.4+	0.0
1992 04 07	691	0.8-	0.0	1999 04 07	704	0.2-	0.5+	1999 04 16	704	0.7-	0.1+
1993 09 19	691	0.6-	0.3+	1999 04 12	704	0.3-	0.3-				

2085 T-1 = 1987 DA₃ = 1993 FL₄₀

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	141.25906		(2000.0)	P		Q	
<i>n</i>	0.18091289	ω	323.81032	+0.00801373	-0.99959771		
<i>a</i>	3.0961574	Ω	125.71510	+0.92514317	-0.00291509		
<i>e</i>	0.1682533	<i>i</i>	1.92025	+0.37953380	+0.02821193		
<i>P</i>	5.45	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1971 03 24	675	1.0-	1.9-	1993 03 19	809	0.9+	0.4+	1999 05 10	704	0.7-	0.2+
1971 03 25	675	0.8-	0.8+	1993 03 20	809	1.1+	0.3-	1999 05 10	704	1.0-	1.2-
1971 03 25	675	0.6-	0.8+	1993 03 24	809	1.4+	0.9+	1999 05 10	704	(3.1+	0.2+)
1971 03 26	675	0.6+	0.4-	1998 01 28	566	0.9-	0.7-	1999 05 10	704	0.4+	0.2+
1971 03 27	675	0.8+	1.3-	1998 01 28	566	1.4-	1.2-	1999 05 10	704	(2.2-	0.2+)
1971 04 02	675	0.2-	1.4+	1998 01 28	566	0.5-	0.7-	1999 05 13	704	0.9+	1.3-
1987 02 23	010	1.8+	0.0	1999 04 17	691	0.1-	0.0	1999 05 13	704	1.4+	0.1+
1987 02 23	010	0.4-	0.7+	1999 04 17	691	0.1-	0.0	1999 05 13	704	1.3-	2.0+
1987 02 23	010	0.2+	1.6+	1999 04 17	691	0.1-	0.0	1999 05 13	704	0.6-	0.5-

2157 T-1 = 4623 T-1 = 1987 SQ₂₈ = 1999 FE₃₅Id. M. E. Sansaturio, G. V. Williams (d); 4623 T-1 = 1998 FH₁₈ (*MPC* 31575) is invalid

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	162.86534		(2000.0)	P		Q	
<i>n</i>	0.21240170	ω	247.72918	+0.62826478	-0.77778033		
<i>a</i>	2.7820444	Ω	163.30808	+0.73538000	+0.58593090		
<i>e</i>	0.1167578	<i>i</i>	3.68685	+0.25396776	+0.22747031		
<i>P</i>	4.64	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	4

1999 JUNE 22

M.P.C. 35051

Residuals in seconds of arc

1971 03 24	675	1.4+	0.4-	1999 03 19	704	0.4+	1.3-	1999 04 07	699	0.2-	0.7-
1971 03 25	675	1.4-	0.2-	1999 03 19	704	1.1-	0.8+	1999 04 07	699	0.6+	1.0-
1971 03 25	675	1.0-	0.9+	1999 03 19	704	0.8+	0.1+	1999 04 07	699	0.9+	0.3-
1971 03 26	675	0.9-	0.9+	1999 03 19	704	0.6-	0.5+	1999 04 10	699	1.3+	0.5+
1971 03 27	675	1.3-	2.0+	1999 03 20	704	0.2+	0.2-	1999 04 10	699	0.6+	0.3-
1971 04 02	675	1.2+	0.1-	1999 03 20	704	0.8-	0.2-	1999 04 10	699	1.1+	1.3+
1971 04 16	675	1.0+	0.7-	1999 03 20	704	1.0-	1.1+	1999 04 12	704	0.9-	0.5+
1971 04 16	675	1.3+	0.5-	1999 03 20	704	0.9-	0.1+	1999 04 12	704	0.8-	0.9+
1971 05 13	675	0.3-	1.7-	1999 03 20	704	(2.7-	0.9-)	1999 04 12	704	0.4+	0.0
1971 05 14	675	0.0	0.9-	1999 03 23	703	0.8-	0.2-	1999 04 12	704	0.6+	0.3-
1971 05 16	675	(0.8-	2.9-)	1999 03 23	703	0.6-	0.1-	1999 04 12	704	0.8+	0.1+
1987 09 24	095	0.3-	1.9+	1999 03 23	703	0.3+	0.2-				
1987 09 27	095	0.1+	1.3-	1999 03 23	703	(7.4-	1.0+)				

2174 T-1 = 1999 GK₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	130.84232		(2000.0)	P		Q	
<i>n</i>	0.28378043	ω	276.95404	-0.04034152	-0.99917764		
<i>a</i>	2.2934068	Ω	175.35214	+0.93544966	-0.03920137		
<i>e</i>	0.1915401	<i>i</i>	2.88299	+0.35115024	-0.01035863		
<i>P</i>	3.47	<i>H</i>	16.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1971 03 24	675	0.2+	0.0	1971 04 02	675	0.5+	0.2+	1999 04 17	557	0.0	0.2+
1971 03 25	675	0.1+	0.3+	1999 04 14	557	0.3-	0.4-	1999 04 17	557	0.0	0.1+
1971 03 25	675	0.3+	0.6+	1999 04 14	557	0.1-	0.1+	1999 04 23	557	0.0	0.1-
1971 03 26	675	0.6+	1.5-	1999 04 17	557	0.1-	1.0+	1999 04 23	557	0.3-	0.6-
1971 03 27	675	1.8-	0.4+	1999 04 17	557	0.7+	0.2-				

3148 T-1 = 1999 FQ₃₀

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	347.04226		(2000.0)	P		Q	
<i>n</i>	0.17600637	ω	263.80377	-0.00818427	+0.99901396		
<i>a</i>	3.1534343	Ω	6.24747	-0.68282452	+0.02629681		
<i>e</i>	0.3607313	<i>i</i>	23.63975	-0.73053658	-0.03577140		
<i>P</i>	5.60	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1971 03 24	675	0.3+	0.2-	1999 03 20	704	1.1+	0.1+	1999 04 17	704	0.7-	0.2+
1971 03 25	675	1.2+	1.3-	1999 03 20	704	2.0-	1.1-	1999 04 17	704	0.8-	0.6+
1971 03 26	675	0.9+	0.6+	1999 03 20	704	(3.7-	0.1+)	1999 04 17	704	0.1-	0.4+
1971 03 26	675	0.6+	0.1+	1999 04 14	704	0.3-	0.3-	1999 04 20	704	0.3+	0.3+
1971 03 27	675	1.2-	0.5-	1999 04 14	704	0.5+	0.1-	1999 04 20	704	0.4+	0.6-
1971 04 02	675	1.9-	0.2-	1999 04 14	704	0.5+	0.4-	1999 04 20	704	0.7+	0.1-
1971 04 16	675	0.0	0.3+	1999 04 14	704	0.4-	0.3-	1999 04 20	704	0.4+	0.5-
1971 04 16	675	0.3+	1.2+	1999 04 15	704	0.3+	0.6-	1999 04 20	704	0.6-	0.8-
1999 03 19	704	0.7+	1.1+	1999 04 15	704	0.1-	0.1+	1999 05 06	704	1.1+	0.5+
1999 03 19	704	0.2+	0.1+	1999 04 15	704	0.3+	0.1-	1999 05 06	704	0.3+	0.1-
1999 03 19	704	0.7+	1.7+	1999 04 15	704	0.3+	0.1-	1999 05 06	704	0.5-	0.6-
1999 03 19	704	0.8+	1.3-	1999 04 15	704	0.0	0.3+	1999 05 06	704	0.1-	1.1+
1999 03 19	704	1.2-	0.2+	1999 04 17	704	0.7-	0.1-				
1999 03 20	704	0.5-	0.6+	1999 04 17	704	0.6-	0.0				

3166 T-1 = 1999 FQ₄₀

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	303.21098		(2000.0)	P		Q	
<i>n</i>	0.24430921	ω	77.47801	-0.02111645	+0.99844672		
<i>a</i>	2.5342113	Ω	191.68528	-0.98734005	-0.02893487		
<i>e</i>	0.1028514	<i>i</i>	14.74769	-0.15720599	+0.04761211		
<i>P</i>	4.03	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1971 03 24	675	0.3+	0.1-	1971 04 16	675	0.4+	2.0-	1999 03 20	704	1.4-	0.9+
1971 03 25	675	1.1+	0.7-	1971 04 16	675	0.0	1.0+	1999 03 20	704	0.6+	0.1+
1971 03 26	675	0.4-	0.4+	1971 04 16	675	1.5-	0.3+	1999 03 20	704	0.3-	0.1+
1971 03 26	675	0.3-	0.9-	1971 05 13	675	0.9+	0.6+	1999 03 23	704	0.5+	0.7+
1971 03 27	675	0.0	2.3+	1971 05 13	675	0.3+	1.0-	1999 03 23	704	0.0	1.2-
1971 04 02	675	0.5-	0.7+	1971 05 14	675	1.8+	1.5+	1999 03 23	704	0.8-	0.1-
1971 04 16	675	0.2+	1.9-	1971 05 16	675	2.2-	0.0	1999 03 23	704	1.4+	0.6-

3248 T-1 = 1981 EK₃₇ = 1998 HH₂₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	161.10200		(2000.0)	P		Q	
<i>n</i>	0.29377906	ω	4.56336	-0.96980121	+0.24339154		
<i>a</i>	2.2410704	Ω	189.56715	-0.22665238	-0.92312559		
<i>e</i>	0.1255788	<i>i</i>	5.41693	-0.09007951	-0.29765702		
<i>P</i>	3.35	<i>H</i>	17.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1971 03 25	675	1.8+	1.2-	1981 03 03	413	(4.3-	3.8+)	1998 04 29	691	0.5-	0.2+
1971 03 26	675	0.9-	0.8+	1981 03 07	413	1.2+	1.2-	1998 05 01	704	0.5-	1.0-
1971 03 26	675	0.7+	2.0-	1981 03 11	413	(4.1+	2.7+)	1998 05 01	704	0.6-	0.5-
1971 03 27	675	2.0-	0.4-	1998 04 20	691	0.8+	0.7+	1998 05 01	704	1.1-	0.0
1971 04 02	675	0.4-	0.3+	1998 04 20	691	0.8+	0.8+	1998 05 01	704	0.1+	0.6+
1981 03 01	413	0.1-	1.1+	1998 04 20	691	0.6+	0.9+	1998 05 01	704	0.9+	0.2-
1981 03 02	413	(3.4-	4.1+)	1998 04 29	691	0.1+	0.7-				
1981 03 02	413	0.7-	1.9+	1998 04 29	691	0.2-	0.4+				

4058 T-1 = 1999 LZ_s

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	324.47514		(2000.0)	P		Q	
<i>n</i>	0.28588428	ω	141.86465	+0.67452677	+0.73799731		
<i>a</i>	2.2821413	Ω	170.49836	-0.70283669	+0.64996155		
<i>e</i>	0.0932524	<i>i</i>	6.72425	-0.22590755	+0.18141101		
<i>P</i>	3.45	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1971 03 24	675	0.7+	0.7-	1992 04 28	691	0.3-	0.2+	1999 06 08	704	0.5-	0.8+
1971 03 26	675	0.2-	1.4-	1992 04 28	691	0.4-	0.5+	1999 06 08	704	0.8-	0.1-
1971 03 26	675	1.0-	0.6-	1995 03 09	691	0.1-	0.5+	1999 06 08	704	0.9-	0.4-
1971 03 27	675	1.2-	0.2-	1995 03 09	691	0.2+	1.2+	1999 06 08	704	0.4-	0.5-
1971 04 02	675	0.2-	0.8+	1995 03 09	691	0.5+	0.6+	1999 06 14	704	0.3-	0.5-
1971 04 16	675	0.4+	0.7-	1999 05 10	704	1.8+	0.7+	1999 06 14	704	0.0	0.3+
1971 04 16	675	1.5+	2.1-	1999 05 10	704	0.9+	0.9+	1999 06 14	704	0.2+	0.4+
1971 05 13	675	1.2-	0.1+	1999 05 10	704	0.2+	1.7-	1999 06 14	704	0.1-	0.3+
1971 05 14	675	0.6-	0.9+	1999 05 10	704	0.5-	1.0-	1999 06 14	704	0.2+	0.4+
1971 05 16	675	0.7+	1.5+	1999 05 10	704	1.4-	0.4-				
1992 04 28	691	1.3+	0.4+	1999 06 08	704	1.1+	0.4+				

4256 T-1 = 1999 JG₁₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	82.21942		(2000.0)	P		Q	
<i>n</i>	0.17787851	ω	118.74558	-0.79261903	-0.60845576		
<i>a</i>	3.1312691	Ω	23.84262	+0.52011758	-0.70829264		
<i>e</i>	0.0694269	<i>i</i>	5.56508	+0.31817098	-0.35791497		
<i>P</i>	5.54	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1971 03 24	675	0.3-	1.0+	1971 05 14	675	0.1-	0.0	1999 05 10	704	1.1-	0.4-
1971 03 26	675	1.6-	1.3-	1971 05 16	675	1.2+	0.1+	1999 05 13	704	0.1-	0.1+
1971 03 26	675	0.5-	0.2+	1998 01 24	566	0.0	0.0	1999 05 13	704	0.1-	0.3-
1971 03 27	675	0.1+	0.3-	1998 01 24	566	0.0	0.0	1999 05 13	704	1.0+	0.8+
1971 04 02	675	0.7+	1.1+	1998 01 24	566	0.1-	0.0	1999 05 13	704	0.8+	1.0-
1971 04 16	675	0.7+	0.4+	1999 05 10	704	0.5-	0.1+	1999 05 13	704	(0.9-	2.4-)

M.P.C. 35052

1971 04 16	675	1.8+	0.8-	1999 05 10	704	0.7+	1.0+
1971 05 13	675	2.0-	0.1+	1999 05 10	704	0.8-	0.6-

4357 T-1 = 1999 GA₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	45.55670		(2000.0)	P	Q		
<i>n</i>	0.17596757	ω	31.56270	-0.93011781	-0.36609523		
<i>a</i>	3.1538978	Ω	126.93423	+0.32888008	-0.86570861		
<i>e</i>	0.1223824	<i>i</i>	2.09661	+0.16345875	-0.34135448		
<i>P</i>	5.60	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1971 03 24	675	1.0-	0.9+	1999 04 06	704	0.0	0.3-	1999 04 07	699	0.8+	1.3+
1971 03 26	675	0.4+	1.0-	1999 04 06	704	1.2+	0.3-	1999 04 12	704	0.5-	0.7-
1971 03 26	675	1.2-	0.1-	1999 04 06	704	1.3-	0.9+	1999 04 12	704	2.0-	0.6-
1971 04 16	675	0.3-	1.2-	1999 04 06	704	1.9+	0.4+	1999 04 12	704	0.2+	0.0
1971 04 16	675	2.1+	1.0+	1999 04 06	704	0.3-	0.3+	1999 04 12	704	0.3+	0.7-
1971 05 13	675	0.2-	0.7+	1999 04 07	699	0.3-	0.6+	1999 04 12	704	0.3-	1.0-
1971 05 14	675	0.3+	0.5-	1999 04 07	699	0.4+	0.3+				

1016 T-2 = 1999 JS₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	56.67010		(2000.0)	P	Q		
<i>n</i>	0.21631589	ω	188.74881	-0.98945437	+0.14484350		
<i>a</i>	2.7483820	Ω	359.57777	-0.12700562	-0.86973354		
<i>e</i>	0.0121657	<i>i</i>	5.04395	-0.06963929	-0.47178802		
<i>P</i>	4.56	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1973 09 19	675	0.8+	0.2+	1999 04 15	704	1.0+	0.9-	1999 05 18	704	0.8+	0.5-
1973 09 19	675	0.6+	0.1+	1999 04 15	704	0.6-	0.3+	1999 05 18	704	0.5+	1.5+
1973 09 20	675	1.5-	0.3+	1999 04 15	704	0.3-	0.5-	1999 05 18	704	1.7-	1.2-
1973 09 24	675	0.2-	0.4-	1999 05 10	704	0.2+	0.1+	1999 05 19	704	0.4-	0.1-
1973 09 24	675	0.3+	1.7-	1999 05 10	704	0.1-	0.4-	1999 05 19	704	0.4+	1.7+
1973 09 25	675	1.4-	0.5+	1999 05 10	704	0.4-	0.4+	1999 05 19	704	1.2+	0.7-
1973 09 25	675	0.7-	0.7+	1999 05 10	704	0.0	0.1-	1999 05 19	704	0.1-	1.2+
1973 09 29	675	2.2+	0.0	1999 05 10	704	0.3+	0.6+	1999 05 19	704	1.5-	1.4-
1973 09 29	675	0.3+	0.2+	1999 05 13	704	0.1+	0.1-	1999 06 09	704	0.1-	0.9-
1973 09 30	675	0.8-	0.4+	1999 05 13	704	0.6-	0.6-	1999 06 09	704	0.0	0.7-
1973 09 30	675	0.8-	0.3+	1999 05 13	704	0.2+	0.1+	1999 06 09	704	0.0	0.2+
1973 10 04	675	1.2+	0.7-	1999 05 13	704	0.9+	1.8+	1999 06 09	704	0.7-	1.3-
1973 10 04	675	0.0	0.1+	1999 05 13	704	1.2+	1.3+				
1999 04 15	704	0.1-	0.3-	1999 05 18	704	(2.7-	0.0)				

1351 T-2 = 1999 JD₁₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	358.43393		(2000.0)	P	Q		
<i>n</i>	0.21724136	ω	273.25190	-0.41396563	+0.91016737		
<i>a</i>	2.7405709	Ω	332.27851	-0.82176178	-0.38078683		
<i>e</i>	0.1342137	<i>i</i>	1.85945	-0.39158657	-0.16308512		
<i>P</i>	4.54	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1973 09 19	675	0.7-	1.7+	1973 10 04	675	0.1+	0.7+	1999 05 13	704	1.6+	0.2+
1973 09 19	675	0.6-	0.5+	1973 10 05	675	0.2+	0.0	1999 05 13	704	0.5+	0.8+
1973 09 20	675	1.8+	2.1-	1973 10 05	675	0.1+	1.1-	1999 05 13	704	0.9+	0.6+
1973 09 24	675	0.8+	0.1+	1999 04 11	699	0.1-	0.0	1999 05 13	704	0.3-	0.1+
1973 09 24	675	0.6+	0.1-	1999 04 11	699	0.1-	0.1+	1999 05 13	704	0.6+	1.1+
1973 09 25	675	0.4-	0.8-	1999 04 11	699	0.0	0.2+	1999 05 14	704	0.3-	1.2-
1973 09 25	675	1.2-	1.1-	1999 04 15	704	0.4-	0.5-	1999 05 14	704	0.2+	0.5+
1973 09 29	675	0.2-	0.6+	1999 04 15	704	0.1+	0.2-	1999 05 14	704	(2.2+	0.5+)
1973 09 29	675	0.6+	1.7+	1999 04 15	704	0.2-	0.6-	1999 05 14	704	0.2-	0.5+
1973 09 29	675	0.4+	0.4+	1999 04 15	704	0.9+	0.5+	1999 05 18	704	0.7-	0.0
1973 09 29	675	1.1+	1.3+	1999 04 15	704	1.9-	0.5-	1999 05 18	704	0.4+	1.9+
1973 09 30	675	(1.6-	2.7+)	1999 05 10	704	1.4+	0.9-	1999 05 18	704	1.8-	0.7-

1999 JUNE 22

1973 09 30	675	1.7-	0.5+	1999 05 10	704	0.3+	0.7-	1999 05 18	704	0.7+	1.1+
1973 10 04	675	0.1+	2.1-	1999 05 10	704	0.8-	1.1-	1999 05 18	704	1.5-	0.2-
1973 10 04	675	0.0	0.4-	1999 05 10	704	0.6-	0.0				
1973 10 04	675	0.7-	0.3-	1999 05 10	704	1.1+	1.6-				

2058 T-2

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	56.74302		(2000.0)	P	Q		
<i>n</i>	0.28030361	ω	266.17815	+0.15655876	-0.98766400		
<i>a</i>	2.3123324	Ω	174.81170	+0.91894980	+0.14454069		
<i>e</i>	0.0357979	<i>i</i>	1.92051	+0.36196772	+0.06023137		
<i>P</i>	3.52	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1973 09 19	675	0.4+	1.3-	1973 10 05	675	0.9-	1.3-	1998 11 24	704	0.9+	0.2-
1973 09 19	675	0.3+	1.0-	1973 10 05	675	2.1-	0.4+	1998 11 24	704	1.6+	0.4-
1973 09 20	675	0.9-	1.3+	1973 10 05	675	0.1+	0.6+	1998 11 24	704	0.8+	0.2+
1973 09 24	675	0.5+	0.8-	1973 10 05	675	(3.2-	1.1+)	1998 11 24	704	1.0+	0.9-
1973 09 24	675	0.6+	0.6-	1987 09 24	675	1.3-	0.2+	1998 12 16	704	1.0-	0.3+
1973 09 25	675	0.1+	1.1-	1987 09 24	675	1.2+	0.7+	1998 12 16	704	0.1-	0.8+
1973 09 25	675	0.2-	1.4-	1994 09 11	691	0.3-	1.2+	1998 12 16	704	1.5-	1.6-
1973 09 29	675	0.2+	1.3+	1994 09 11	691	0.7-	0.9+	1998 12 16	704	0.8-	1.1-
1973 09 29	675	2.3+	1.3-	1994 09 11	691	0.5-	1.0+	1998 12 16	704	0.5+	0.1-
1973 09 29	675	0.9-	1.2-	1997 06 28	704	1.5+	0.4+	1998 12 17	704	0.8-	0.0
1973 09 29	675	0.2+	0.9-	1997 06 28	704	0.4-	1.3+	1998 12 17	704	(2.3-	1.1-)
1973 09 30	675	0.5+	1.3-	1997 06 28	704	1.2-	0.0	1998 12 17	704	1.4-	1.0+
1973 09 30	675	0.1-	0.6+	1998 11 11	910	0.2-	0.3+	1998 12 17	704	0.9-	0.7-
1973 09 30	675	0.1+	0.1-	1998 11 11	910	0.4+	0.3+	1998 12 17	704	(5.1-	0.4+)
1973 09 30	675	0.7-	1.7+	1998 11 11	910	0.2-	0.6+	1998 12 17	704	0.2+	0.8+
1973 10 04	675	2.0+	0.6+	1998 11 20	699	0.3+	0.2+	1998 12 17	704	1.7-	0.7-
1973 10 04	675	(4.0-	2.4+)	1998 11 20	699	0.3+	1.4+	1998 12 17	704	1.5+	1.9+
1973 10 04	675	0.6+	0.5+	1998 11 20	699	(0.4+	2.4+)	1998 12 17	704	0.7-	0.6+
1973 10 04	675	(2.8-	1.2+)	1998 11 24	704	0.9+	0.2+	1998 12 17	704	(5.6-	0.0)

2312 T-2 = 1999 FR₃

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	33.80407		(2000.0)	P	Q		
<i>n</i>	0.24330156	ω	305.29951	-0.63809885	-0.76993930		
<i>a</i>	2.5412035	Ω	184.36002	+0.72544074	-0.59909435		
<i>e</i>	0.1633222	<i>i</i>	3.64253	+0.25800308	-0.21972579		
<i>P</i>	4.05	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1973 09 29	675	0.8+	0.5+	1999 03 18	557	0.1-	0.7+	1999 04 05	732	0.3+	1.1+
1973 09 29	675	0.1-	2.9+	1999 03 18	557	0.2+	0.1-	1999 04 05	732	0.5-	0.7-
1973 09 30	675	1.2+	0.3-	1999 03 19	557	0.3+	0.7+	1999 04 14	557	0.0	0.7+
1973 09 30	675	0.6-	1.6-	1999 03 19	557	0.2+	0.2+	1999 04 14	557	0.1+	0.4+
1973 10 04	675	0.6-	0.2+	1999 04 04	732	1.3+	0.9-	1999 04 18	557	0.2+	0.1-
1973 10 04	675	1.1-	0.2-	1999 04 04	732	1.7-	1.0-	1999 04 18	557	0.3+	0.7+
1973 10 05	675	1.0+	0.4-	1999 04 04	732	1.0-	1.5-	1999 04 18	557	0.6-	0.1+
1973 10 05	675	0.6-	1.2-	1999 04 05	732	0.2+	0.7-	1999 04 18	557	0.7+	0.4+

3143 T-2 = 1999 JK₃₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	265.60139		(2000.0)	P	Q		
<i>n</i>	0.29412887	ω	321.81358	+0.99588004	+0.08759036		
<i>a</i>	2.2392931	Ω	33.18419	-0.06901750	+0.90002520		
<i>e</i>	0.0842881	<i>i</i>	2.45772	-0.05881778	+0.42694562		
<i>P</i>	3.35	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1973 09 19	675	0.2+	1.0+	1973 10 04	675	(3.1+	0.8-)	1999 05 14	704	0.8-	0.5-
1973 09 19	675	0.4-	2.1+	1973 10 05	675	1.6+	1.0-	1999 05 14	704	1.4+	0.4-
1973 09 19	675	1.4-	0.2+	1973 10 05	675	2.3+	0.0	1999 05 14	704	0.4-	1.1+

1999 JUNE 22

1973 09 19	675	(1.1− 2.6+)	1999 04 20	704	0.5+ 1.2−	1999 05 14	704	0.8− 0.8+
1973 09 20	675	2.2− 0.1−	1999 04 20	704	0.6− 0.4+	1999 05 19	704	0.6+ 1.1−
1973 09 20	675	0.5+ 1.0+	1999 04 20	704	(5.5− 1.6−)	1999 05 19	704	0.7+ 0.8+
1973 09 24	675	1.4− 0.6−	1999 05 10	704	0.5+ 0.4+	1999 05 19	704	0.7− 0.8+
1973 09 24	675	1.5− 0.8+	1999 05 10	704	0.5+ 0.4−	1999 05 19	704	0.3− 0.1−
1973 09 25	675	0.3+ 0.5+	1999 05 10	704	0.1+ 0.5+	1999 05 19	704	(0.2+ 2.9−)
1973 09 25	675	1.1+ 2.3−	1999 05 10	704	1.3+ 0.2−	1999 06 07	703	0.3− 0.6−
1973 09 29	675	0.1+ 0.5−	1999 05 10	704	0.7− 0.1−	1999 06 07	703	0.3+ 0.3−
1973 09 29	675	0.1− 0.4+	1999 05 13	704	0.1− 1.7−	1999 06 07	703	0.1− 0.6−
1973 09 30	675	1.1+ 0.3−	1999 05 13	704	0.4+ 1.1−	1999 06 07	703	0.5+ 0.5+
1973 09 30	675	0.1+ 1.6−	1999 05 13	704	0.7− 0.3+			
1973 10 04	675	(3.3+ 0.8−)	1999 05 13	704	1.5− 1.7+			

3152 T-2 = 1999 JY₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	75.78620	(2000.0)	P	Q
<i>n</i>	0.29240471	ω	147.26814	−0.98566546
<i>a</i>	2.2480871	Ω	23.48012	+0.12087814
<i>e</i>	0.0659844	<i>i</i>	6.36036	+0.11769486
<i>P</i>	3.37	<i>H</i>	15.5	<i>G</i> 0.15 <i>U</i> 6

Residuals in seconds of arc

1973 09 19	675	0.6+ 0.7+	1973 09 30	675	1.8− 0.6+	1999 05 13	704	0.7+ 0.3+
1973 09 19	675	0.3− 2.3+	1973 10 04	675	(3.1+ 0.8+)	1999 05 13	704	(3.5+ 1.4−)
1973 09 20	675	0.5+ 0.2−	1973 10 04	675	(3.1+ 0.1+)	1999 05 13	704	(0.5+ 4.2−)
1973 09 24	675	2.0− 0.0	1973 10 05	675	2.4+ 0.5+	1999 05 18	704	1.1− 1.4+
1973 09 24	675	1.0− 1.4−	1973 10 05	675	1.0+ 0.4+	1999 05 18	704	1.3+ 0.1+
1973 09 25	675	0.5− 0.9−	1999 05 10	704	1.1+ 0.4+	1999 05 18	704	0.2− 1.0−
1973 09 25	675	1.2+ 1.6−	1999 05 10	704	0.6− 1.7−	1999 05 19	704	0.2− 0.4−
1973 09 29	675	0.1− 0.7−	1999 05 10	704	0.6+ 0.7+	1999 05 19	704	(2.1− 1.0−)
1973 09 29	675	0.4− 0.2+	1999 05 10	704	1.2− 0.2−	1999 05 19	704	1.7− 0.4+
1973 09 30	675	0.4+ 0.0	1999 05 13	704	1.2+ 0.2−			

4195 T-2 = 1999 JW₁₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	303.61130	(2000.0)	P	Q
<i>n</i>	0.21876986	ω	192.24948	+0.80149444
<i>a</i>	2.7277908	Ω	131.05104	−0.54348283
<i>e</i>	0.0780442	<i>i</i>	3.43035	−0.24946558
<i>P</i>	4.51	<i>H</i>	14.8	<i>G</i> 0.15 <i>U</i> 1

Residuals in seconds of arc

1973 09 19	675	0.5+ 2.3−	1973 10 05	675	0.0 0.2−	1999 05 18	704	0.9− 0.1+
1973 09 19	675	1.7+ 1.1−	1973 10 05	675	0.4+ 1.2+	1999 05 18	704	0.6+ 0.0
1973 09 20	675	1.2− 0.8−	1996 12 01	691	0.3+ 0.0	1999 05 18	704	1.9− 1.1+
1973 09 24	675	1.0+ 0.1−	1996 12 01	691	0.3− 0.3+	1999 06 11	703	0.9+ 0.2−
1973 09 24	675	0.3+ 0.2−	1996 12 01	691	0.1− 0.1+	1999 06 11	703	0.4+ 0.3−
1973 09 25	675	1.4− 0.7+	1998 01 28	691	0.1− 0.7−	1999 06 11	703	1.1+ 0.4+
1973 09 25	675	0.4+ 0.8−	1998 01 28	691	0.2− 0.6−	1999 06 11	703	1.4+ 0.6+
1973 09 29	675	0.2+ 0.6+	1998 01 28	691	0.2− 0.6−	1999 06 14	704	0.3+ 1.0−
1973 09 29	675	0.5− 0.6−	1999 05 13	704	(1.7+ 2.7+)	1999 06 14	704	0.2− 0.7−
1973 09 30	675	0.1+ 0.0	1999 05 13	704	0.5− 0.6+	1999 06 14	704	0.0 1.1−
1973 09 30	675	0.2− 1.3+	1999 05 13	704	0.5− 0.8+	1999 06 14	704	0.3+ 0.1−
1973 10 04	675	0.6− 0.1+	1999 05 18	704	1.1− 0.2+	1999 06 14	704	0.1+ 0.8−
1973 10 04	675	0.0 0.5+	1999 05 18	704	0.2− 0.6−			

4227 T-2 = 1999 JL₃₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	114.42997	(2000.0)	P	Q
<i>n</i>	0.17497423	ω	54.43840	−0.41572878
<i>a</i>	3.1658232	Ω	60.37426	+0.79669556
<i>e</i>	0.1259913	<i>i</i>	6.03872	+0.43868642
<i>P</i>	5.63	<i>H</i>	13.8	<i>G</i> 0.15 <i>U</i> 6

M.P.C. 35053

Residuals in seconds of arc

1973 09 20	675	2.4− 0.9−	1973 09 30	675	0.5+ 1.2+	1999 05 10	704	0.8+ 0.9−
1973 09 24	675	0.2+ 2.1+	1973 10 04	675	1.8+ 1.0−	1999 05 10	704	0.2− 1.6−
1973 09 24	675	1.5− 1.2+	1973 10 04	675	0.8+ 2.1−	1999 05 10	704	0.5+ 1.0+
1973 09 25	675	0.9− 0.5+	1973 10 05	675	0.1+ 0.1+	1999 05 10	704	0.6+ 0.2−
1973 09 25	675	0.4+ 0.3−	1973 10 05	675	0.3− 1.4+	1999 05 13	704	0.5− 0.7−
1973 09 29	675	0.3− 1.7−	1999 04 21	691	0.9− 0.1+	1999 05 13	704	1.3+ 1.7+
1973 09 29	675	1.3+ 1.0−	1999 04 21	691	0.1− 0.1+	1999 05 13	704	1.4− 0.6+
1973 09 30	675	0.3+ 0.4+	1999 04 21	691	0.4− 0.1−	1999 05 13	704	0.3+ 0.1−

1051 T-3 = 1999 JW₁₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	269.54586	(2000.0)	P	Q
<i>n</i>	0.25894980	ω	143.60258	+0.96855527
<i>a</i>	2.4377677	Ω	227.41555	+0.12914523
<i>e</i>	0.1829730	<i>i</i>	14.01831	+0.21265511
<i>P</i>	3.81	<i>H</i>	14.8	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1977 10 11	675	1.4+ 0.5+	1977 10 22	675	2.1− 1.0−	1999 05 18	704	1.0+ 1.3−
1977 10 11	675	1.7+ 0.3+	1977 10 22	675	0.5− 1.8−	1999 05 18	704	0.6− 0.2+
1977 10 12	675	0.7− 1.8+	1999 05 13	704	0.3+ 0.8−	1999 05 18	704	(2.2− 0.8−)
1977 10 12	675	0.2+ 0.8+	1999 05 13	704	1.1− 1.2+	1999 06 14	704	1.0− 0.0
1977 10 16	675	1.0− 0.2−	1999 05 13	704	(2.6− 1.1−)	1999 06 14	704	0.2− 0.2+
1977 10 16	675	0.3− 1.0−	1999 05 13	704	0.5+ 0.7+	1999 06 14	704	0.6+ 0.9+
1977 10 17	675	0.4+ 0.1+	1999 05 18	704	0.2− 0.1+	1999 06 14	704	0.7+ 0.4+
1977 10 17	675	0.8+ 0.3+	1999 05 18	704	0.3− 0.7−	1999 06 14	704	0.5+ 1.3−

2008 T-3 = 1999 JJ₁₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	335.93142	(2000.0)	P	Q
<i>n</i>	0.25834181	ω	22.83134	+0.24660419
<i>a</i>	2.4415910	Ω	261.49724	−0.89925619
<i>e</i>	0.1725129	<i>i</i>	3.87670	−0.36128199
<i>P</i>	3.82	<i>H</i>	15.3	<i>G</i> 0.15 <i>U</i> 6

Residuals in seconds of arc

1977 10 11	675	0.1+ 2.3+	1977 10 17	675	0.9− 0.9+	1999 05 10	704	0.0 0.7+
1977 10 11	675	1.5− 1.1+	1977 10 17	675	0.7− 1.1+	1999 05 10	704	0.1− 0.4+
1977 10 12	675	0.9− 0.6+	1977 10 21	675	1.0+ 0.6+	1999 05 10	704	0.3− 0.2+
1977 10 12	675	0.8− 0.6+	1977 10 21	675	0.4+ 3.1−	1999 05 19	704	0.1− 2.5−
1977 10 16	675	1.4+ 1.4−	1977 10 22	675	0.6+ 0.9−	1999 05 19	704	1.0+ 0.5+
1977 10 16	675	0.5− 0.6−	1977 10 22	675	2.0+ 1.8−	1999 05 19	704	0.7− 0.0

2027 T-3 = 1999 GA₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	11.64165	(2000.0)	P	Q
<i>n</i>	0.30007920	ω	251.08023	−0.59468093
<i>a</i>	2.2095922	Ω	342.35352	−0.70131562
<i>e</i>	0.1115933	<i>i</i>	4.95309	−0.39307887
<i>P</i>	3.28	<i>H</i>	15.2	<i>G</i> 0.15 <i>U</i> 5

Residuals in seconds of arc

1977 10 07	675	0.0 0.2−	1977 10 22	675	1.5+ 0.8−	1999 04 14	704	1.7− 0.5−
1977 10 11	675	1.0− 0.7+	1999 04 07	704	1.1+ 0.3+	1999 04 15	704	0.6− 0.4+
1977 10 11	675	1.2− 0.5+	1999 04 07	704	0.7+ 1.0−	1999 04 15	704	0.2− 0.0
1977 10 12	675	0.1+ 0.3−	1999 04 07	704	1.9+ 1.1−	1999 04 15	704	0.1+ 0.1−
1977 10 12	675	0.9+ 0.7−	1999 04 07	704	1.1+ 0.8−	1999 04 15	704	0.1− 0.2+
1977 10 16	675	0.6+ 2.3−	1999 04 11	699	0.5+ 0.4+	1999 04 15	704	1.8− 0.5+
1977 10 16	675	(0.4+ 3.0−)	1999 04 11	699	0.3+ 0.1+	1999 06 09	704	0.1+ 0.3+
1977 10 17	675	0.7+ 1.9+	1999 04 11	699	0.7+ 0.6+	1999 06 09	704	0.9− 0.6−
1977 10 17	675	1.3− 0.4+	1999 04 14	704	0.7− 0.0	1999 06 09	704	0.0 0.3−
1977 10 21	675	(3.0+ 0.5−)	1999 04 14	704	1.4− 0.1−	1999 06 09	704	0.9+ 0.6+
1977 10 21	675	(3.4+ 2.1−)	1999 04 14	704	0.1− 0.5+			

2031 T-3 = 1999 JH₃₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	130.60140		(2000.0)	P		Q					
<i>n</i>	0.29997518	ω	162.70348	-0.55576902		-0.82996828					
<i>a</i>	2.2101030	Ω	321.02314	+0.75349129		-0.47866582					
<i>e</i>	0.0221331	<i>i</i>	4.34737	+0.35124304		-0.28641174					
<i>P</i>	3.29	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	6				
Residuals in seconds of arc											
1977 10 07	675	1.3+	0.7-	1977 10 17	675	0.0	1.8-	1999 05 10	704	0.9-	1.6+
1977 10 11	675	0.1-	1.0+	1977 10 17	675	0.5-	1.3+	1999 05 10	704	0.5-	0.4-
1977 10 11	675	0.1+	0.7+	1977 10 17	675	0.0	2.3-	1999 05 10	704	0.7-	1.0+
1977 10 12	675	0.8-	0.9+	1977 10 17	675	0.6-	1.3+	1999 05 13	704	0.8-	1.4-
1977 10 12	675	0.0	0.1-	1977 10 21	675	0.6+	0.4+	1999 05 13	704	0.4+	0.5-
1977 10 16	675	0.8+	0.4-	1977 10 21	675	0.5-	0.4-	1999 05 13	704	0.1+	0.5-
1977 10 16	675	0.6+	0.0	1977 10 22	675	1.3-	0.3+	1999 05 13	704	0.7+	0.1+
1977 10 16	675	0.7+	0.9+	1977 10 22	675	0.0	0.3+	1999 05 13	704	0.9+	0.5+
1977 10 16	675	0.2-	1.2-	1999 05 10	704	0.8+	0.2-				

2137 T-3 = 1987 DT₃ = 1999 CZ₁₀₂

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	38.43301		(2000.0)	P		Q					
<i>n</i>	0.24400753	ω	288.90759	-0.76687459		-0.63843586					
<i>a</i>	2.5362997	Ω	211.51673	+0.62589812		-0.72135157					
<i>e</i>	0.1712970	<i>i</i>	7.20881	+0.14196801		-0.26842423					
<i>P</i>	4.04	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	3				
Residuals in seconds of arc											
1977 10 07	675	0.3+	1.8-	1999 01 18	704	0.8+	0.2+	1999 02 16	704	0.8-	0.4+
1977 10 11	675	1.0+	0.3-	1999 01 18	704	(0.4+	2.6+)	1999 02 16	704	0.4-	0.2-
1977 10 11	675	0.2+	0.8+	1999 01 18	704	0.1-	0.0	1999 02 16	704	0.3-	0.1+
1977 10 12	675	0.2+	1.2+	1999 01 18	704	0.3-	0.7+	1999 02 16	704	0.8+	0.8-
1977 10 12	675	0.3-	0.1+	1999 01 18	704	0.3+	1.1+	1999 04 07	704	0.2-	0.2+
1977 10 16	675	0.0	1.8-	1999 02 12	704	0.2-	0.4+	1999 04 07	704	1.6-	1.2-
1977 10 16	675	0.6-	1.4-	1999 02 12	704	0.3+	0.6-	1999 04 07	704	0.1+	1.0-
1987 02 23	010	0.6-	0.2-	1999 02 12	704	0.6-	0.3-	1999 04 07	704	(0.5-	2.0-
1987 02 24	010	0.3+	1.0-	1999 02 12	704	0.2+	0.3+	1999 04 07	704	1.6-	0.7-
1987 02 24	010	(3.9+	3.3-)	1999 02 12	704	0.3+	0.2+	1999 05 08	704	0.8+	0.6-
1999 01 14	699	0.1+	0.3+	1999 02 14	699	0.6+	0.3+	1999 05 08	704	0.5+	1.4-
1999 01 14	699	0.2+	0.2+	1999 02 14	699	0.4+	1.0+	1999 05 08	704	(0.5+	2.2+
1999 01 14	699	0.4-	0.2+	1999 02 14	699	0.9+	0.3+	1999 05 08	704	0.3-	1.5-

2162 T-3 = 1999 JB₁₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	322.85305		(2000.0)	P		Q					
<i>n</i>	0.25978825	ω	69.92875	+0.68512932	+0.72323432						
<i>a</i>	2.4325198	Ω	243.62902	-0.69926772	+0.61965948						
<i>e</i>	0.1334490	<i>i</i>	5.55805	-0.20401584	+0.30488400						
<i>P</i>	3.79	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	5				
Residuals in seconds of arc											
1977 10 07	675	(1.9+	3.2-)	1977 10 21	675	(2.7+	1.4-)	1999 05 19	704	0.0	1.2-
1977 10 11	675	0.5+	0.8-	1977 10 22	675	0.0	1.8+	1999 05 19	704	0.5-	1.4-
1977 10 11	675	1.1-	0.1-	1977 10 22	675	(2.6-	2.0+)	1999 06 15	691	0.1+	0.3+
1977 10 12	675	0.1+	1.7+	1999 05 13	704	1.1-	1.5+	1999 06 15	704	0.4-	0.1+
1977 10 12	675	0.1-	1.0+	1999 05 13	704	0.6-	1.2+	1999 06 15	691	0.4+	0.3+
1977 10 16	675	0.8+	2.0-	1999 05 13	704	0.7+	0.4+	1999 06 15	704	0.0	0.1-
1977 10 16	675	0.1-	2.0-	1999 05 13	704	0.1-	0.1+	1999 06 15	704	0.2-	0.1+
1977 10 17	675	1.4-	0.0	1999 05 19	704	1.5+	0.7-	1999 06 15	691	0.2-	0.0
1977 10 17	675	0.1-	0.3+	1999 05 19	704	0.9+	0.8-	1999 06 15	704	0.6+	0.2-
1977 10 21	675	1.2+	0.1+	1999 05 19	704	1.0-	0.7+				

2312 T-3 = 1999 JB₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	287.88051		(2000.0)	P		Q					
<i>n</i>	0.30103923	ω	329.79413	+0.84253531	+0.53863763						
<i>a</i>	2.2048920	Ω	357.61227	-0.48440629	+0.75612185						
<i>e</i>	0.0517249	<i>i</i>	2.66915	-0.23555212	+0.37168435						
<i>P</i>	3.27	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	5				
Residuals in seconds of arc											
1977 10 07	675	0.8+	0.5+	1977 10 21	675	0.6+	1.0-	1999 05 13	704	0.7-	0.6+
1977 10 11	675	0.7+	0.6+	1977 10 22	675	0.1-	1.9+	1999 05 13	704	1.9-	0.3-
1977 10 11	675	0.0	0.6+	1977 10 22	675	1.0+	1.3-	1999 05 14	704	1.3-	0.9+
1977 10 12	675	0.6+	0.5-	1977 10 22	675	1.0+	0.7+	1999 05 14	704	0.2-	0.4+
1977 10 12	675	0.1-	0.7-	1977 10 22	675	0.3-	0.6-	1999 05 14	704	1.6-	0.6-
1977 10 16	675	2.2+	1.5-	1992 04 06	809	0.7-	1.8-	1999 05 14	704	0.7-	1.1+
1977 10 16	675	0.5-	0.2-	1999 04 15	704	(0.8-	2.2+)	1999 05 15	703	0.5+	0.9-
1977 10 16	675	0.2-	1.9-	1999 04 15	704	1.6+	0.5-	1999 05 15	703	0.3-	0.2-
1977 10 16	675	0.7-	0.7+	1999 04 15	704	1.9+	0.8+	1999 05 15	703	0.0	1.0+
1977 10 17	675	1.1-	0.2-	1999 05 10	704	0.7+	0.7-	1999 05 15	703	(0.4-	2.2+)
1977 10 17	675	0.4+	0.1-	1999 05 10	704	0.4-	0.5+	1999 05 18	704	1.4+	1.7-
1977 10 17	675	0.5-	0.2+	1999 05 10	704	1.2+	1.3-	1999 05 18	704	0.7-	0.3+
1977 10 17	675	1.3-	0.7-	1999 05 10	704	1.6-	0.8-	1999 05 18	704	0.1-	1.1+
1977 10 21	675	1.7-	1.4+	1999 05 13	704	1.5-	0.4-	1999 05 18	704	1.4+	0.4+
1977 10 21	675	2.3+	1.6-	1999 05 13	704	1.2+	1.1-				
1977 10 21	675	1.6-	0.9+	1999 05 13	704	0.4+	0.3-				

3280 T-3 = 1981 WO₂

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	190.17110		(2000.0)		P		Q				
<i>n</i>	0.25626451	ω	257.17245		+0.06579370		-0.99777898				
<i>a</i>	2.4547678	Ω	189.07436		+0.93917971		+0.06544571				
<i>e</i>	0.1538164	<i>i</i>	3.78313		+0.33706477		+0.01240798				
<i>P</i>	3.85	<i>H</i>	15.8		<i>G</i>	0.15	<i>U</i>	2			
Residuals in seconds of arc											
1954 11 24	675	1.4-	1.3+	1977 10 17	675	1.1+	1.1+	1983 05 08	413	0.5+	0.5-
1954 11 24	675	0.6+	0.5+	1977 10 17	675	0.6+	0.9-	1996 09 06	691	0.6-	0.4+
1977 10 07	675	0.4+	1.6-	1977 10 21	675	0.5-	0.5+	1996 09 06	691	0.0	0.4+
1977 10 11	675	2.2-	0.1-	1977 10 21	675	0.9-	0.2+	1996 09 06	691	0.0	0.6+
1977 10 11	675	1.9-	0.7+	1977 10 22	675	(2.9+	0.8-)	1997 12 04	691	0.8-	0.3-
1977 10 12	675	0.9+	1.5-	1977 10 22	675	0.9+	2.5-	1997 12 04	691	0.4-	0.3-
1977 10 12	675	0.7+	1.9-	1981 11 24	033	0.3+	0.6+	1997 12 04	691	0.1-	0.4-
1977 10 16	675	0.8+	0.7+	1981 11 24	033	0.4+	1.0+				
1977 10 16	675	1.4+	0.0	1983 05 08	413	0.3-	0.8-				

4166 T-3 = 1999 JH₁₀₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	167.94768		(2000.0)			P			Q		
<i>n</i>	0.25343184	ω	350.41368			+0.25819058		-0.96102346			
<i>a</i>	2.4730255	Ω	84.57500			+0.89282173		+0.19826821			
<i>e</i>	0.0380273	<i>i</i>	5.69862			+0.36906229		+0.19267491			
<i>P</i>	3.89	<i>H</i>	14.8			<i>G</i>	0.15	<i>U</i>	3		
Residuals in seconds of arc											
1977 10 07	675	0.1+	0.6-	1977 10 22	675	0.3-	0.1+	1999 05 13	704	0.4+	0.6-
1977 10 11	675	0.6-	0.5-	1996 09 13	566	0.1-	0.2-	1999 05 14	703	0.9+	0.5+
1977 10 11	675	0.3+	0.2+	1996 09 13	566	0.4-	0.3-	1999 05 14	703	0.7+	0.1-
1977 10 12	675	1.3-	1.8-	1996 09 13	566	0.6+	0.1+	1999 05 14	703	0.9-	0.4+
1977 10 12	675	0.9-	0.6-	1999 04 12	704	1.6+	0.1-	1999 05 14	703	0.3-	0.9+
1977 10 16	675	0.7+	1.1+	1999 04 12	704	0.7+	0.1-	1999 05 17	704	1.3+	0.8+
1977 10 16	675	0.3+	1.0+	1999 04 12	704	0.3-	0.4-	1999 05 17	704	2.1+	0.0
1977 10 17	675	1.0+	0.5-	1999 04 12	704	0.5-	0.3+	1999 05 17	704	0.8+	0.8-
1977 10 17	675	0.2+	0.3-	1999 04 12	704	6.1-	0.0	1999 05 17	704	1.3+	1.8-
1977 10 21	675	0.4+	0.6+	1999 05 13	704	0.3+	0.8+	1999 05 17	704	0.8-	0.8+

1977 10 21 675 0.5+ 0.5+ 1999 05 13 704 1.3- 0.9+
 1977 10 22 675 0.7- 1.4+ 1999 05 13 704 0.4+ 1.1-

5048 T-3 = 1984 WZ₃ = 1999 HS₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	82.77320		(2000.0)	P	Q
<i>n</i>	0.15823451	ω	75.07776	-0.61770997	-0.75729754
<i>a</i>	3.3853370	Ω	55.06174	+0.58473661	-0.62254422
<i>e</i>	0.1279347	<i>i</i>	14.98599	+0.52584930	-0.19733001
<i>P</i>	6.23	<i>H</i>	12.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1977 10 11	675	0.5-	0.5-	1999 04 18	120	0.9-	0.8-	1999 05 17	704	1.1-	0.8-
1977 10 11	675	0.4+	0.2+	1999 04 19	120	0.2+	0.2+	1999 05 17	704	1.2-	0.9-
1977 10 12	675	1.6+	1.9-	1999 04 19	120	0.0	0.5-	1999 05 17	704	1.1-	0.2+
1977 10 12	675	1.8+	2.1-	1999 04 19	120	0.0	0.3-	1999 05 17	704	0.7-	1.5+
1977 10 16	675	1.4+	0.9-	1999 04 23	120	0.7-	0.2-	1999 05 17	704	1.2-	0.2+
1977 10 16	675	1.1+	0.6-	1999 04 23	120	0.4+	0.4-	1999 05 18	704	1.4-	0.4+
1977 10 17	675	0.4+	1.3-	1999 04 23	120	0.3+	0.3+	1999 05 18	704	0.9+	0.3+
1977 10 17	675	1.4+	1.9-	1999 04 23	120	0.3-	0.5-	1999 05 18	704	0.3+	1.1-
1977 10 21	675	0.6-	1.6+	1999 04 23	120	0.1-	0.9-	1999 05 18	704	0.1-	0.4+
1977 10 21	675	0.5-	0.2+	1999 04 24	120	0.1+	0.6+	1999 05 18	704	0.3+	0.1+
1977 10 22	675	2.0-	1.8+	1999 04 24	120	0.1-	0.3+	1999 05 19	704	(1.1- 2.6-)	
1977 10 22	675	0.3-	0.4-	1999 04 25	120	0.6-	0.9-	1999 05 19	704	0.1+	1.0-
1984 11 27	010	0.1-	0.9-	1999 04 25	120	1.1-	1.8+	1999 05 19	704	0.6-	0.2-
1984 11 28	010	1.1+	2.2-	1999 04 25	120	(1.6- 3.0-)		1999 05 19	704	(0.6- 2.3-)	

1999 04 12 704 0.7+ 0.2+ 1999 05 07 120 0.1+ 0.3- 1999 05 19 704 0.2- 0.7-
 1999 04 12 704 1.0+ 0.8+ 1999 05 07 120 0.4+ 0.1+ 1999 05 19 704 1.0- 0.6+
 1999 04 12 704 0.8+ 0.1- 1999 05 07 120 0.6- 0.4- 1999 05 19 704 0.3+ 0.9-
 1999 04 12 704 0.2- 1.9+ 1999 05 13 704 0.4+ 0.7- 1999 05 19 704 0.7+ 1.4-
 1999 04 12 704 0.2- 0.4+ 1999 05 13 704 0.4+ 0.1- 1999 05 21 691 0.3+ 0.7-
 1999 04 18 120 0.5- 0.4- 1999 05 13 704 0.6+ 0.3+ 1999 05 21 691 0.1+ 0.7-
 1999 04 18 120 0.0 0.6- 1999 05 13 704 0.5+ 1.9- 1999 05 21 691 0.1+ 1.0-

5165 T-3 = 1999 JC₄₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	288.78473		(2000.0)	P	Q
<i>n</i>	0.25844108	ω	253.53074	+0.94188053	+0.31223597
<i>a</i>	2.4409658	Ω	88.14320	-0.24094249	+0.88500283
<i>e</i>	0.1637570	<i>i</i>	7.12532	-0.23411063	+0.34536747
<i>P</i>	3.81	<i>H</i>	14.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1977 10 12	675	1.0-	0.1+	1977 10 22	675	(0.2+ 3.7+)	1999 05 13	704	0.4-	0.0
1977 10 12	675	0.3-	0.3-	1977 10 22	675	0.1-	1.0+	1999 05 13	704	0.1+ 0.8+
1977 10 16	675	0.9+	0.9-	1999 05 10	704	1.1+	0.5-	1999 05 13	704	0.5+ 1.0+
1977 10 16	675	1.2+	1.1-	1999 05 10	704	(0.2+ 2.6+)	1999 06 14	704	0.8-	0.6+
1977 10 17	675	0.1+	0.7+	1999 05 10	704	0.5+	0.1-	1999 06 14	704	0.4+ 0.3-
1977 10 17	675	0.8-	0.6+	1999 05 10	704	1.2-	0.5+	1999 06 14	704	0.0 0.5-
1977 10 21	675	(0.4- 3.5+)	1999 05 13	704	0.1+	1.6-	1999 06 14	704	0.5+ 0.1+	
1977 10 21	675	(1.4- 3.6+)	1999 05 13	704	0.8-	0.1+				

Object	<i>H</i>	<i>G</i>	Epoch	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	<i>a</i>	Obs.	Opp. & Arc	rms Perts	<i>U</i>	Computer	<i>MPC</i>	Object
(10)	5.43	0.15	19990810	313.54324	314.42527	283.67302	3.84264	0.1194744	3.1381727	2261	104 1849-1999	0.53	M-v 0	Goffin	34280	(10)
(16)	5.90	0.20	19990810	307.03506	229.12699	150.46613	3.09345	0.1380754	2.9201111	1831	96 1852-1998	0.53	M-v 0	Goffin	34480	(16)
(58)	8.86	0.15	19990810	139.30929	30.54098	161.48523	5.06028	0.0448445	2.6990926	423	81 1860-1998	0.57	M-v 0	Goffin	33538	(58)
(99)	9.43	0.15	19990810	53.64183	194.75621	41.86867	13.90421	0.1989804	2.6610208	98	27 1915-1998	0.55	M-v 0	Goffin	33539	(99)
(126)	9.27	0.15	19990810	139.38017	327.05409	23.55592	2.92435	0.1055997	2.4384917	380	56 1872-1999	0.55	M-v 0	Goffin	34572	(126)
(167)	9.24	0.15	19990810	216.98564	126.10293	166.47816	2.20802	0.0368955	2.8528481	218	41 1876-1999	0.56	M-v 0	Goffin	33921	(167)
(186)	8.91	0.15	19990810	31.95484	315.38566	14.91515	13.17876	0.1509500	2.3624316	153	34 1878-1991	0.55	M-v 0	Goffin	34280	(186)
(232)	10.25	0.15	19990810	156.51786	50.05918	152.79733	6.07752	0.1777079	2.5525318	170	33 1883-1998	0.56	M-v 0	Goffin	33218	(232)
(248)	10.21	0.15	19990810	130.11025	11.52067	247.12162	4.04597	0.0638849	2.4729678	155	38 1885-1998	0.56	M-v 0	Goffin	33218	(248)
(435)	10.23	0.15	19990810	113.08475	332.51232	23.34068	1.81811	0.1545684	2.4489040	237	45 1898-1999	0.55	M-v 0	Goffin	34573	(435)
(492)	9.8	0.15	19990810	244.61258	291.05363	46.93721	1.62673	0.1722406	3.1186407	187	38 1902-1999	0.55	M-v 0	Goffin	26914	(492)
(543)	9.4	0.15	19990810	226.62995	111.55745	295.18883	8.47079	0.1507975	3.0608786	121	43 1904-1998	0.56	M-v 0	Goffin	34573	(543)
(587)	12.7	0.15	19990810	62.12273	188.74952	324.74966	24.99364	0.1676200	2.3349703	29	11 1949-1993	0.98	M-v 2	Williams	26915	(587)
(621)	10.49	0.15	19990810	272.98335	31.30289	67.47165	2.32089	0.1512781	3.1175282	148	25 1906-1998	0.54	M-v 0	Goffin	31223	(621)
(749)	11.82	0.15	19990810	220.42301	128.55479	109.90768	5.39000	0.1741373	2.2426662	154	27 1913-1999	0.55	M-v 0	Goffin	29297	(749)
(944)	10.77	0.15	19990810	217.88331	56.33721	21.70724	42.56643	0.6598973	5.7568273	221	16 1920-1999	1.11	M-v 0	Williams	22271	(944)
(1048)	9.75	0.15	19990810	35.58399	183.30080	53.06348	15.84816	0.1830012	2.7294322	76	27 1924-1999	0.89	M-v 1	Williams	32918	(1048)
(1166)	8.8	0.15	19990810	8.24318	189.05595	106.90523	18.85399	0.2041901	2.5379802	37	15 1938-1999	0.77	M-v 1	Williams	34003	(1166)
(1282)	10.0	0.15	19990810	277.49043	82.50352	324.60115	18.04806	0.1249272	3.1146884	59	15 1933-1999	1.10	M-v 1	Williams	32043	(1282)
(1810)	12.3	0.15	19990810	177.19622	203.81178	254.36158	4.03034	0.0925333	2.2236613	78	16 1953-1999	0.80	M-v 1	Williams	29941	(1810)
(2000)	11.25	0.15	19990810	162.80477	129.74528	292.24150	22.74305	0.2974518	2.3818597	65	10 1934-1999	0.70	M-v 1	Williams	34575	(2000)
(2382)	11.4	0.15	19990810	266.44854	66.35345	246.35974	31.04531	0.3297605	2.7594453	58	7 1977-1996	0.96	M-v 1	Williams	29611	(2382)
(2428)	11.0	0.15	19990810	320.71566	356.21883	8.83006	9.34141	0.0868187	3.1673961	38	8 1966-1999	0.91	M-v 1	Williams	32742	(2428)
(2518)	13.4	0.15	19990810	42.15659	37.94665	205.78577	5.92249	0.1718220	2.3086644	59	6 1954-1999	0.77	M-v 1	Williams	27308	(2518)
(2521)	11.7	0.15	19990810	134.36449	246.70760	281.55933	7.72795	0.0919665	2.7917770	62	9 1960-1999	0.83	M-v 1	Williams	32302	(2521)
(2964)	12.2	0.15	19990810	282.75814	59.46554	330.94900	13.56271	0.2003780	2.5926325	54	9 1974-1999	0.86	M-v 1	Williams	29659	(2964)
(3613)	12.7	0.15	19990810	118.67929	79.92628	72.55637	7.41893	0.0770759	2.3693084	30	7 1949-1999	0.65	M-v 1	Williams	32049	(3613)
(3703)	14.3	0.15	19990810	322.48532	152.19623	173.10412	6.74122	0.1334172	2.3315561	52	9 1953-1999	0.80	M-v 1	Williams	32305	(3703)
(3871)	12.0	0.15	19990810	73.34928	207.58871	274.03967	15.61971	0.0865363	3.1945414	29	8 1958-1999	0.78	M-v 1	Williams	34501	(3871)

(4279)	14.4	0.15	19990810	212.16588	161.02691	265.92803	4.26715	0.2066120	2.3647017	53	9	1955–1999	0.89	M-v	1	Williams	34581	(4279)
(4388)	13.6	0.15	19990810	244.65782	194.53680	213.93912	24.56647	0.2773894	2.3402905	49	6	1964–1999	0.81	M-v	2	Williams	28616	(4388)
(4429)	14.5	0.15	19990810	225.32992	66.74372	327.63377	1.46478	0.2133320	2.3805028	44	8	1954–1999	0.94	M-v	2	Williams	34010	(4429)
(4566)	12.3	0.15	19990810	277.31230	121.01619	252.90160	10.77507	0.2131682	2.8347519	66	7	1981–1999	0.68	M-v	1	Williams	33940	(4566)
(4878)	14.9	0.15	19990810	318.01078	120.08924	224.26190	6.17362	0.1536896	2.2892058	63	8	1968–1999	0.70	M-v	1	Williams	32747	(4878)
(4950)	11.5	0.15	19990810	126.65197	251.26192	190.11445	12.69469	0.1825380	2.7480045	73	8	1986–1999	0.73	M-v	1	Sicoli	24233	(4950)
(4976)	11.3	0.15	19990810	195.78073	60.45314	261.41389	8.63694	0.1043533	3.0201340	55	11	1950–1999	0.92	M-v	1	Sicoli	30080	(4976)
(4979)	14.3	0.15	19990810	276.76926	206.47864	69.74994	0.91276	0.1448395	2.1678012	59	13	1949–1999	0.84	M-v	1	Sicoli	29621	(4979)
(4985)	13.1	0.15	19990810	110.43587	16.83699	14.27955	0.83530	0.1546149	3.2358955	49	8	1971–1999	0.85	M-v	1	Sicoli	33488	(4985)
(5010)	12.2	0.15	19990810	21.62594	43.57532	173.57120	14.62960	0.2024927	2.7162943	82	8	1955–1999	0.80	M-v	1	Sicoli	33245	(5010)
(5112)	13.6	0.15	19990810	224.03874	341.63296	62.82069	5.76638	0.1297971	2.1746895	63	6	1971–1999	0.68	M-v	1	Williams	30900	(5112)
(5308)	13.3	0.15	19990810	323.66280	98.95756	225.26628	11.87913	0.2027359	2.6599376	96	6	1978–1999	0.69	M-v	1	Williams	33749	(5308)
(5585)	13.7	0.15	19990810	354.11327	76.08986	265.16650	28.63796	0.3960990	2.7137973	51	5	1981–1999	0.70	M-v	1	Williams	33750	(5585)
(6087)	14.6	0.15	19990810	64.42287	53.52902	152.66542	22.61717	0.0763192	1.9297972	44	5	1988–1999	0.79	M-v	2	Williams	30784	(6087)
(7664)	12.9	0.15	19990810	356.93059	182.48280	187.82874	1.67233	0.1204385	2.9432336	49	6	1989–1999	0.64	M-v	2	Williams	31280	(7664)
(8340)	12.2	0.15	19990810	354.51733	351.10210	279.15296	8.28674	0.0084059	2.9690740	40	5	1985–1999	0.70	M-v	1	Williams	32314	(8340)
(8419)	12.8	0.15	19990810	7.53031	93.16669	169.52648	7.53098	0.1014139	2.7437486	36	5	1977–1999	0.59	M-v	1	Williams	31256	(8419)
(8571)	13.0	0.15	19990810	184.73787	172.57026	262.44983	0.98615	0.0709208	2.8527010	57	4	1994–1999	0.75	M-v	1	Williams	31592	(8571)
(10198)	13.6	0.15	19990810	334.43140	227.63114	64.83849	2.95445	0.0482806	2.8663799	46	6	1986–1999	0.85	M-v	1	Williams	33081	(10198)
1931 UB	14.2	0.15	19990810	357.55527	116.67530	234.93638	1.36199	0.2176992	2.4258897	38	4	1931–1998	0.84	M-v	2	Williams	34480	1931 UB
1951 SX	16.5	0.15	19990810	216.93027	212.16152	194.53655	39.11352	0.2534904	1.8748095	21	3	1951–1999	0.92	M-v	3	Williams	30972	1951 SX
1967 US	13.4	0.15	19990810	206.23640	327.36758	73.82708	7.39214	0.1677933	2.4053217	78	3	1967–1999	0.58	M-v	3	Williams	34480	1967 US
1968 OL	14.4	0.15	19990810	46.40291	126.96581	117.84143	24.02115	0.2589130	2.2796135	31	5	1968–1999	0.65	M-v	2	Williams	31414	1968 OL
1970 PU	14.7	0.15	19990810	304.96398	344.18143	331.16714	4.28208	0.2509550	2.2096660	23	3	1970–1999	0.70	M-v	3	Williams	34480	1970 PU
1971 US	15.0	0.15	19990810	221.86433	345.73528	50.69726	2.75776	0.2444620	2.3691124	17	3	1971–1999	0.45	M-v	4	Williams	31271	1971 US
1971 UT ₁	13.2	0.15	19990810	7.23090	184.05570	171.88955	2.33781	0.2178694	3.1543976	32	10	1954–1999	0.88	M-v	1	Williams	32437	1971 UT ₁
1973 SF ₆	14.4	0.15	19990810	330.20985	146.53314	180.54352	6.19402	0.1983905	2.2139446	61	6	1973–1999	0.79	M-v	1	Williams	31414	1973 SF ₆
1973 UK ₅	14.6	0.15	19990810	257.51674	44.40768	46.89123	3.01680	0.1573552	2.4187486	18	4	1973–1998	0.83	M-v	2	Williams	32207	1973 UK ₅
1973 UR ₅	14.8	0.15	19990810	4.43525	14.77683	30.08742	2.82633	0.1959721	2.3754782	31	4	1973–1997	0.71	M-v	2	Williams	30684	1973 UR ₅
1974 OU ₁	12.5	0.15	19990810	323.90851	234.94202	0.74550	10.20394	0.0623994	3.0241072	40	3	1974–1999	0.57	M-v	3	Williams	34480	1974 OU ₁
1974 RX ₁	14.4	0.15	19990810	306.54560	138.58507	235.78099	2.11233	0.2431022	2.3549519	32	3	1974–1999	0.93	M-v	4	Williams	32437	1974 RX ₁
1974 RY ₁	14.4	0.15	19990810	342.55694	135.04075	183.67752	2.73396	0.2275755	2.3539124	47	8	1949–1999	0.96	M-v	2	Williams	31578	1974 RY ₁
1974 SF	14.8	0.15	19990810	303.01005	175.56039	187.57721	4.95949	0.2434224	2.3620631	24	6	1974–1999	0.85	M-v	2	Williams	31779	1974 SF
1975 XF	14.8	0.15	19990810	300.71510	199.92546	157.31455	6.42433	0.1999842	2.3168033	41	5	1975–1999	0.83	M-v	2	Williams	31779	1975 XF
1976 DA ₁	14.9	0.15	19990810	231.93959	59.81755	134.58992	4.86928	0.1168890	2.2891898	48	6	1976–1998	0.81	M-v	2	Williams	32738	1976 DA ₁
1976 DB ₁	15.4	0.15	19990810	8.33272	83.25506	321.64810	18.72145	0.1153837	1.9225090	17	3	1976–1996	0.83	M-v	3	Williams	28293	1976 DB ₁
1976 GV ₂	12.9	0.15	19990810	79.37919	41.59006	143.37814	2.77390	0.1314498	3.1443603	33	6	1976–1999	0.70	M-v	1	Williams	34572	1976 GV ₂
1976 QS	14.5	0.15	19990810	294.63290	3.76711	331.80566	6.05117	0.2545033	2.2457217	26	3	1976–1999	0.77	M-v	3	Williams	34572	1976 QS
1976 UB ₁₆	13.7	0.15	19990810	335.57107	299.16892	37.70839	12.20247	0.1791536	2.8126066	40	4	1976–1999	0.69	M-v	1	Williams	32297	1976 UB ₁₆
1977 EU ₁	14.2	0.15	19990810	113.26904	15.12946	155.21393	2.01619	0.1044398	2.6201572	46	4	1977–1999	0.61	M-v	1	Williams	32297	1977 EU ₁
1978 EU ₉	13.1	0.15	19990810	54.82865	78.56750	157.21700	2.43580	0.0038208	2.9034798	80	6	1978–1999	0.68	M-v	1	Williams	32041	1978 EU ₉
1978 NS	14.3	0.15	19990810	324.73251	276.66189	71.35748	0.44948	0.2068389	3.0227721	29	6	1978–1999	0.57	M-v	1	Williams	31779	1978 NS
1978 NX ₇	13.0	0.15	19990810	200.96905	241.68799	103.50551	5.38663	0.1248532	3.2076711	41	4	1978–1999	0.76	M-v	2	Williams	34280	1978 NX ₇
1978 QF ₁	14.8	0.15	19990810	317.44633	199.89202	187.19500	4.97534	0.2141746	2.3102241	15	3	1978–1999	0.82	M-v	6	Williams	32207	1978 QF ₁
1978 RX ₇	13.8	0.15	19990810	51.45724	281.83997	321.84419	5.85076	0.2099239	2.6164152	31	4	1978–1999	0.71	M-v	1	Williams	31579	1978 RX ₇
1978 SU ₄	14.4	0.15	19990810	282.59126	127.51748	213.73736	6.08768	0.1276701	2.3726453	57	3	1978–1999	0.59	M-v	3	Williams	34572	1978 SU ₄
1978 TQ ₅	12.9	0.15	19990810	245.04494	59.30844	322.95630	4.83608	0.3222175	3.1646617	29	5	1955–1999	0.76	M-v	1	Williams	32738	1978 TQ ₅
1978 TR ₇	13.1	0.15	19990810	140.00744	339.30029	88.44963	9.32304	0.2088534	2.7950497	27	3	1978–1999	0.81	M-v	5	Williams	34480	1978 TR ₇
1978 TT ₇	13.1	0.15	19990810	310.44659	257.09273	85.21146	10.42390	0.2605800	2.6651960	50	3	1978–1999	0.53	M-v	3	Williams	34280	1978 TT ₇
1978 UN ₄	12.8	0.15	19990810	62.93181	25.46872	213.43471	13.99653	0.0882093	3.1024851	36	4	1978–1999	0.62	M-v	1	Williams	32041	1978 UN ₄
1978 VO ₄	14.6	0.15	19990810	320.65722	196.48485	89.46032	3.63933	0.1540173	2.4114944	66	4	1978–1999	0.79	M-v	2	Williams	34572	1978 VO ₄
1978 VC ₆	14.1	0.15	19990810	357.06516	89.93481	243.87295	9.56292	0.3374711	2.6360404	40	6	1978–1999	0.71	M-v	1	Williams	31780	1978 VC ₆
1978 VE ₇	14.6	0.15	19990810	339.05488	172.10659	176.47621	0.75569	0.2202787	2.3384599	28	5	1978–1999	0.73	M-v	2	Williams	32738	1978 VE ₇

1978 VR ₁₀	13.8	0.15	19990810	77.07967	109.73777	68.98253	10.35884	0.1360635	2.7771150	24	4	1978–1999	0.78	M-v	1	Williams	31223	1978 VR ₁₀
1979 KD	13.2	0.15	19990810	310.18614	101.41143	150.18723	7.84265	0.1534393	2.5929235	66	7	1979–1999	0.57	M-v	2	Williams	34281	1979 KD
1979 KJ	12.8	0.15	19990810	25.20759	56.51853	132.94294	11.33801	0.0497360	3.0082152	61	3	1979–1999	0.59	M-v	3	Williams	34572	1979 KJ
1979 MF	14.4	0.15	19990810	44.49142	70.65586	161.05308	6.05928	0.2112064	2.2267032	25	6	1949–1999	0.67	M-v	1	Williams	27930	1979 MF
1979 MP ₃	15.0	0.15	19990810	211.63626	182.70615	222.63490	2.96527	0.1486313	2.2763566	31	5	1979–1999	0.80	M-v	2	Williams	28610	1979 MP ₃
1979 MT ₄	13.6	0.15	19990810	200.71685	154.51537	276.59317	12.36755	0.1636508	2.5639964	19	5	1951–1999	0.72	M-v	2	Williams	22948	1979 MT ₄
1979 MA ₅	13.0	0.15	19990810	240.90291	135.38588	260.05268	8.54730	0.1046498	2.9772025	27	4	1979–1999	0.73	M-v	1	Williams	31707	1979 MA ₅
1979 MK ₅	14.6	0.15	19990810	42.18547	321.09336	221.42292	2.63906	0.0872863	2.5876625	58	4	1979–1999	0.79	M-v	3	Williams	34572	1979 MK ₅
1979 MR ₆	16.0	0.15	19990810	38.59072	72.00960	165.04221	4.06812	0.1308614	2.2433546	22	7	1979–1999	0.65	M-v	1	Williams	27725	1979 MR ₆
1979 ME ₇	13.6	0.15	19990810	214.76261	140.57104	273.14165	12.38247	0.1601644	2.5682307	15	3	1979–1999	1.08	M-v	4	Williams	21100	1979 ME ₇
1979 PA	14.3	0.15	19990810	335.92820	65.55224	227.96866	12.11055	0.2621130	2.5579727	73	4	1979–1999	0.63	M-v	3	Williams	34573	1979 PA
1979 TT ₂	13.4	0.15	19990810	306.80939	315.20221	42.30952	3.72731	0.2646752	2.5723437	39	4	1978–1999	0.62	M-v	2	Williams	32042	1979 TT ₂
1979 UR	13.8	0.15	19990810	246.54437	345.53873	13.94849	6.14196	0.1501535	2.6439418	22	3	1979–1999	0.80	M-v	5	Williams	23969	1979 UR
1979 WY ₃	13.0	0.15	19990810	84.54150	342.48116	89.51525	10.30742	0.1358360	2.7896182	38	2	1979–1999	0.78	M-v	4	Williams	34573	1979 WY ₃
1979 XL	13.2	0.15	19990810	62.50853	7.97582	95.47546	10.06167	0.1085097	2.7882814	72	2	1979–1999	0.70	M-v	3	Williams	34573	1979 XL
1980 PU	14.7	0.15	19990810	333.66566	56.27177	223.07941	4.26400	0.2052834	2.1913746	42	3	1980–1999	0.67	M-v	2	Williams	34481	1980 PU
1980 TZ ₃	13.8	0.15	19990810	336.36694	101.74930	239.00384	1.55410	0.1463267	2.1757723	37	5	1980–1999	0.54	M-v	2	Williams	34573	1980 TZ ₃
1980 VA ₃	14.1	0.15	19990810	228.07889	41.45798	349.66298	3.20208	0.1365427	2.2350782	47	5	1953–1999	0.80	M-v	2	Williams	34573	1980 VA ₃
1981 CH	14.1	0.15	19990810	40.56326	186.47684	316.39291	24.66885	0.1896702	2.3531092	75	3	1981–1999	0.64	M-v	2	Williams	34573	1981 CH
1981 DJ	13.8	0.15	19990810	57.87386	333.83025	231.31898	8.88046	0.0648250	3.1977697	41	3	1981–1999	0.94	M-v	3	Williams	31780	1981 DJ
1981 DA ₁	13.6	0.15	19990810	339.93719	11.26370	234.91356	11.47030	0.0944278	2.7227702	49	4	1954–1999	0.98	M-v	3	Williams	34573	1981 DA ₁
1981 DQ ₃	13.4	0.15	19990810	35.73272	260.80499	321.39103	10.48889	0.1491835	2.6865531	17	3	1981–1999	0.75	M-v	4	Williams	31707	1981 DQ ₃
1981 EJ ₄	13.4	0.15	19990810	279.05824	167.31033	215.55353	10.05916	0.0343010	3.1132866	35	3	1981–1999	0.81	M-v	3	Williams	32298	1981 EJ ₄
1981 EO ₇	13.5	0.15	19990810	257.07931	210.75424	200.01091	13.32370	0.1066453	2.5962907	71	5	1954–1999	0.89	M-v	2	Williams	32042	1981 EO ₇
1981 ED ₈	14.8	0.15	19990810	133.63652	177.42247	306.99434	4.24024	0.0664929	2.3085607	34	3	1981–1999	0.89	M-v	4	Williams	31223	1981 ED ₈
1981 EF ₈	13.1	0.15	19990810	184.27657	211.61479	214.41881	7.44115	0.1606551	3.1710308	77	4	1981–1999	0.77	M-v	1	Williams	32042	1981 EF ₈
1981 EQ ₈	14.7	0.15	19990810	169.15290	190.25926	235.68371	3.56345	0.2227606	2.6630438	30	3	1981–1999	0.97	M-v	4	Williams	31579	1981 EQ ₈
1981 ER ₁₀	14.9	0.15	19990810	307.50255	97.84410	255.90468	2.23269	0.1510820	2.2811880	32	5	1978–1999	0.89	M-v	2	Williams	31709	1981 ER ₁₀
1981 EC ₁₁	14.9	0.15	19990810	343.38652	0.70230	286.41463	4.40687	0.1161919	2.6695598	25	5	1979–1999	0.83	M-v	1	Williams	21966	1981 EC ₁₁
1981 EE ₁₂	14.6	0.15	19990810	198.26967	147.23311	281.84688	5.29697	0.0988785	2.3003128	30	4	1981–1999	0.69	M-v	2	Williams	31271	1981 EE ₁₂
1981 EZ ₁₂	14.9	0.15	19990810	273.18583	133.52750	278.30146	4.52401	0.1215414	2.2545926	34	3	1981–1999	0.75	M-v	4	Williams	32042	1981 EZ ₁₂
1981 EU ₁₃	15.2	0.15	19990810	133.31467	274.24727	199.12423	8.49272	0.1872455	2.3107003	36	4	1981–1999	0.82	M-v	3	Williams	30685	1981 EU ₁₃
1981 EV ₁₃	13.4	0.15	19990810	15.33153	70.00530	207.36111	9.97214	0.1675204	3.1771383	65	3	1981–1999	0.69	M-v	3	Williams	32298	1981 EV ₁₃
1981 EU ₁₉	14.8	0.15	19990810	358.74473	288.35016	346.07113	5.40329	0.1382317	2.3141854	54	6	1981–1999	0.85	M-v	1	Williams	28882	1981 EU ₁₉
1981 EN ₂₃	16.8	0.15	19990810	31.10445	245.49179	343.09172	1.79428	0.1900353	2.3254768	19	3	1981–1999	0.76	M-v	4	Williams	24894	1981 EN ₂₃
1981 ET ₂₄	15.0	0.15	19990810	77.57035	18.88097	180.31509	6.60970	0.0435601	2.3013406	34	5	1953–1999	0.87	M-v	2	Williams	22492	1981 ET ₂₄
1981 EZ ₂₄	14.4	0.15	19990810	38.94124	58.62744	181.17484	12.83858	0.1203144	2.6570410	24	4	1981–1999	0.98	M-v	2	Williams	32211	1981 EZ ₂₄
1981 EO ₂₈	14.1	0.15	19990810	220.22533	7.72994	357.78777	5.86267	0.0467179	2.7107268	23	2	1981–1999	0.86	M-v	5	Williams	34482	1981 EO ₂₈
1981 ET ₂₉	14.1	0.15	19990810	109.57160	278.27053	226.40006	4.58890	0.1016587	3.2002145	32	4	1978–1999	0.77	M-v	1	Williams	32043	1981 ET ₂₉
1981 EN ₃₀	13.1	0.15	19990810	331.80670	279.85744	59.12943	1.94541	0.1716585	3.1095066	28	3	1981–1999	0.65	M-v	5	Williams	32299	1981 EN ₃₀
1981 EV ₃₁	15.5	0.15	19990810	246.60328	231.17018	169.90019	5.09092	0.1548563	2.2835828	19	3	1981–1999	0.85	M-v	4	Williams	31710	1981 EV ₃₁
1981 EL ₃₃	15.7	0.15	19990810	1.95245	29.90336	294.29193	5.88503	0.3147750	2.2791950	19	4	1978–1999	0.54	M-v	3	Williams	22599	1981 EL ₃₃
1981 ET ₃₄	15.0	0.15	19990810	280.23159	129.52442	214.44662	11.61898	0.02918013	2.6725222	18	3	1981–1999	0.61	M-v	4	Williams	34573	1981 ET ₃₄
1981 EB ₃₇	14.0	0.15	19990810	298.91680	302.28790	358.25712	8.21252	0.0298583	2.6884182	49	4	1981–1999	0.81	M-v	3	Williams	34573	1981 EB ₃₇
1981 ED ₃₇	14.4	0.15	19990810	310.81143	291.36239	28.95822	4.07901	0.2152628	2.3173414	60	7	1975–1999	0.86	M-v	2	Williams	34573	1981 ED ₃₇
1981 EJ ₃₈	14.1	0.15	19990810	75.53727	15.70916	195.41408	9.02876	0.0875089	2.6412599	29	3	1981–1999	0.80	M-v	3	Williams	32213	1981 EJ ₃₈
1981 EY ₄₀	15.0	0.15	19990810	316.99609	82.13557	218.34441	1.36497	0.0696384	2.6774460	12	3	1978–1999	0.94	M-v	4	Williams	22271	1981 EY ₄₀
1981 EP ₄₂	14.3	0.15	19990810	226.93289	205.88917	191.13416	3.30708	0.1020326	2.6563413	28	6	1977–1999	0.98	M-v	2	Williams	31580	1981 EP ₄₂
1981 EC ₄₃	14.5	0.15	19990810	349.38971	132.62754	188.81413	5.09017	0.1907577	2.2885141	28	3	1981–1999	0.83	M-v	4	Williams	31781	1981 EC ₄₃
1981 QS	14.4	0.15	19990810	228.83210	227.14407	161.30774	5.00746	0.1953733	2.4297949	53	4	1981–1999	0.71	M-v	2	Williams	34573	1981 QS
1981 QS ₂	14.8	0.15	19990810	250.46588	270.48082	130.39874	2.80608	0.1885110	2.3986996	54	4	1981–1999	0.82	M-v	2	Williams	32739	1981 QS ₂
1981 SG ₃	14.6	0.15	19990810	282.96551	74.47470	280.23018	3.76433	0.2321743	2.4155374	28	4	1981–1999	0.67	M-v	2	Williams	31781	1981 SG ₃
1981 UK ₁₁	14.5	0.15	19990810	308.14808	216.00740	141.99225	3.00722	0.2067399	2.3971725	34	5	1981–1999	0.76	M-v	1	Williams	32043	1981 UK ₁₁

1981 US ₁₄	13.9	0.15	19990810	255.42461	283.68561	78.73761	2.64178	0.1415652	2.4512207	50	5	1981–1999	0.76	M-v	3	Williams	34573	1981 US ₁₄
1982 JH ₂	14.7	0.15	19990810	27.70790	150.05758	108.83775	3.69423	0.1272485	2.5902980	28	5	1982–1999	0.73	M-v	2	Williams	34573	1982 JH ₂
1982 QY ₁	12.8	0.15	19990810	309.76453	135.77933	244.30429	7.01899	0.1247382	2.6509739	48	4	1982–1999	0.64	M-v	2	Williams	32043	1982 QY ₁
1982 SN ₃	14.4	0.15	19990810	275.86268	196.45105	140.81979	3.48545	0.2471576	2.3357664	29	3	1982–1999	0.90	M-v	4	Williams	34484	1982 SN ₃
1982 SJ ₇	13.4	0.15	19990810	338.30870	153.85216	177.30621	6.77120	0.2789089	2.6600471	29	4	1982–1999	0.80	M-v	2	Williams	32043	1982 SJ ₇
1982 SG ₁₂	14.2	0.15	19990810	243.89929	236.39907	184.20040	6.43041	0.1171846	2.3058498	55	6	1977–1999	0.65	M-v	1	Williams	32043	1982 SG ₁₂
1982 UD ₄	14.9	0.15	19990810	55.41091	2.03461	4.93138	1.99393	0.2356746	2.5400212	29	5	1978–1998	0.86	M-v	3	Williams	32739	1982 UD ₄
1983 BD	12.2	0.15	19990810	297.35125	258.93792	115.40824	15.19110	0.1559274	2.7620774	81	6	1974–1999	0.71	M-v	1	Williams	32299	1983 BD
1983 GU	12.1	0.15	19990810	242.91600	176.59947	115.98349	14.43703	0.1781492	2.5988158	47	4	1983–1999	0.63	M-v	3	Williams	34003	1983 GU
1983 RF ₂	14.3	0.15	19990810	247.90035	298.18703	78.83874	7.35499	0.2635910	2.6345007	26	5	1949–1999	1.05	M-v	2	Williams	31580	1983 RF ₂
1984 HR	13.8	0.15	19990810	37.93034	217.46887	16.47843	2.46600	0.1578884	2.3853006	68	5	1980–1999	0.60	M-v	1	Marsden	31581	1984 HR
1984 JR	15.3	0.15	19990810	16.67186	172.91382	102.98587	3.11788	0.1696042	2.3850355	15	3	1984–1999	0.39	M-v	4	Williams	25636	1984 JR
1984 OG	12.3	0.15	19990810	300.53402	131.35546	154.57451	2.98160	0.1562614	3.0931876	53	2	1984–1999	0.68	M-v	4	Williams	34484	1984 OG
1984 SS ₁	14.5	0.15	19990810	192.70550	196.41949	230.17199	3.04594	0.0705510	2.1627913	83	5	1981–1999	0.68	M-v	2	Williams	34574	1984 SS ₁
1984 SN ₆	13.4	0.15	19990810	34.53827	129.06393	61.94231	3.29890	0.0880310	2.5620616	93	5	1984–1999	0.70	M-v	2	Williams	34574	1984 SN ₆
1985 CM ₁	13.9	0.15	19990810	17.22796	69.59868	132.99810	4.87441	0.0966272	2.2969552	72	4	1954–1999	0.82	M-v	3	Williams	34574	1985 CM ₁
1985 CX ₁	15.3	0.15	19990810	83.13930	330.32533	220.23684	2.56733	0.0791173	2.2298538	50	7	1972–1999	0.72	M-v	1	Williams	31004	1985 CX ₁
1985 DA ₂	14.1	0.15	19990810	336.25747	297.51520	303.10223	6.58469	0.2367287	2.3154685	55	3	1978–1999	0.77	M-v	4	Marsden	34282	1985 DA ₂
1985 PL ₁	14.1	0.15	19990810	298.41495	143.67187	192.49474	11.89373	0.0572994	2.8834916	29	4	1985–1999	0.87	M-v	2	Williams	31712	1985 PL ₁
1985 RV ₂	15.5	0.15	19990810	314.97566	210.25383	141.59323	5.89691	0.2417415	2.3363285	41	4	1985–1999	0.70	M-v	1	Williams	29655	1985 RV ₂
1985 RP ₃	14.6	0.15	19990810	331.47766	282.33171	3.85772	2.11925	0.2018415	2.3747572	87	3	1985–1999	0.76	M-v	3	Williams	34574	1985 RP ₃
1985 RN ₄	16.3	0.15	19990810	290.74102	288.79116	53.32260	2.39848	0.3121417	2.3801721	32	4	1985–1999	0.56	M-v	2	Williams	31272	1985 RN ₄
1985 RJ ₅	15.0	0.15	19990810	218.29927	337.69214	52.66629	2.83316	0.2487673	2.4277074	35	4	1985–1999	0.73	M-v	3	Williams	34574	1985 RJ ₅
1985 SV ₂	13.9	0.15	19990810	279.76494	71.96037	281.97201	5.90277	0.1171969	2.3960709	34	4	1985–1999	0.69	M-v	2	Williams	28295	1985 SV ₂
1985 UF	14.0	0.15	19990810	271.09560	305.22361	25.68187	8.93864	0.1649221	2.4290626	52	4	1985–1999	0.73	M-v	3	Williams	34574	1985 UF
1985 UF ₅	14.1	0.15	19990810	223.84894	224.69880	205.26225	4.11683	0.1991835	2.4161431	71	6	1981–1999	0.78	M-v	2	Williams	32044	1985 UF ₅
1986 AT ₂	12.3	0.15	19990810	187.04747	291.09977	147.96926	19.19349	0.1506130	3.1667984	61	5	1986–1999	0.64	M-v	1	Williams	32299	1986 AT ₂
1986 CZ ₁	14.0	0.15	19990810	334.41047	319.58048	289.71114	4.94361	0.1140309	2.1787620	49	2	1986–1999	0.54	M-v	5	Williams	34282	1986 CZ ₁
1986 EJ ₁	13.4	0.15	19990810	22.65532	229.95610	11.77074	15.59378	0.1537466	2.6080208	30	5	1969–1999	0.75	M-v	2	Williams	31135	1986 EJ ₁
1986 PB	14.4	0.15	19990810	321.25726	179.65676	151.59762	26.77089	0.0493561	1.9115352	20	3	1986–1999	0.69	M-v	3	Williams	24385	1986 PB
1986 PY	14.7	0.15	19990810	353.52797	195.44590	146.20047	7.97699	0.2470861	2.1886920	49	3	1986–1999	0.75	M-v	3	Williams	31712	1986 PY
1986 QZ	14.1	0.15	19990810	335.18105	230.56839	119.12424	3.97768	0.1896777	2.2039850	67	5	1986–1999	0.65	M-v	2	Williams	32300	1986 QZ
1986 QC ₁	13.7	0.15	19990810	354.84348	176.85735	103.96853	4.27065	0.0774445	2.7435298	73	4	1954–1999	0.75	M-v	1	Williams	32740	1986 QC ₁
1986 QO ₁	13.1	0.15	19990810	259.58986	193.87972	113.36031	4.27743	0.1419246	2.8743124	42	3	1986–1999	0.66	M-v	3	Williams	34574	1986 QO ₁
1986 QU ₂	13.6	0.15	19990810	65.00090	197.84420	21.61546	3.62791	0.0338201	2.7253640	73	4	1986–1999	0.57	M-v	1	Williams	32300	1986 QU ₂
1986 QY ₂	13.0	0.15	19990810	352.93148	190.91790	147.92165	15.42814	0.2258181	2.6577556	64	3	1986–1999	0.59	M-v	3	Williams	31948	1986 QY ₂
1986 RE ₁	14.6	0.15	19990810	325.73342	153.63262	199.52633	3.20624	0.2434232	2.2130816	90	7	1973–1999	0.64	M-v	1	Marsden	31581	1986 RE ₁
1986 RY ₄	14.5	0.15	19990810	286.02038	338.46437	358.40421	4.36822	0.1860898	2.2609767	64	5	1986–1999	0.51	M-v	1	Williams	34574	1986 RY ₄
1986 RV ₅	14.9	0.15	19990810	257.55547	130.51602	243.30475	4.52916	0.1790625	2.2834480	18	3	1986–1999	0.75	M-v	4	Williams	31226	1986 RV ₅
1986 TZ ₃	14.2	0.15	19990810	314.20936	227.87861	60.52845	3.76560	0.2143265	2.2948743	54	3	1986–1999	0.66	M-v	2	Williams	34574	1986 TZ ₃
1986 VZ	14.2	0.15	19990810	212.85352	342.06194	13.98806	5.59470	0.2085439	2.3684672	19	2	1986–1999	0.80	M-v	5	Williams	34486	1986 VZ
1986 VQ ₂	14.5	0.15	19990810	286.29862	75.38278	278.90152	5.36253	0.2006018	2.2753923	32	5	1986–1999	0.87	M-v	2	Williams	34574	1986 VQ ₂
1987 BA ₂	12.4	0.15	19990810	144.07546	265.48214	258.86696	12.11675	0.0921143	2.9596722	41	5	1980–1999	0.77	M-v	3	Williams	32511	1987 BA ₂
1987 DQ ₆	12.2	0.15	19990810	247.10609	15.14301	352.87042	16.02706	0.0744993	3.1090578	76	4	1932–1999	0.69	M-v	2	Williams	31782	1987 DQ ₆
1987 ON	14.0	0.15	19990810	318.19053	153.23331	158.62597	13.88743	0.1958270	2.5997853	41	4	1987–1999	0.68	M-v	3	Williams	34574	1987 ON
1987 PM	12.6	0.15	19990810	246.64769	22.62861	278.40472	7.50327	0.0646833	2.7757071	26	3	1987–1999	0.71	M-v	3	Williams	34283	1987 PM
1987 QE ₇	13.6	0.15	19990810	272.11132	180.58692	191.37850	11.84231	0.1866029	2.6234858	56	3	1987–1999	0.78	M-v	3	Williams	32300	1987 QE ₇
1987 RA ₃	14.0	0.15	19990810	347.00631	166.90824	139.97355	4.35480	0.2404235	2.5706115	30	4	1987–1999	0.68	M-v	4	Williams	31782	1987 RA ₃
1987 RN ₃	13.3	0.15	19990810	192.57780	115.08632	288.44028	7.96207	0.1368653	2.7365682	35	3	1987–1999	0.60	M-v	4	Williams	34574	1987 RN ₃
1987 SC ₁	14.1	0.15	19990810	283.42599	262.03755	139.69840	5.35364	0.2552369	2.5872191	41	5	1987–1999	0.77	M-v	1	Williams	32300	1987 SC ₁
1987 SM ₃	14.0	0.15	19990810	315.32933	309.07423	307.43546	5.94438	0.1043894	2.1956962	40	2	1987–1999	0.69	M-v	4	Williams	34283	1987 SM ₃
1987 SD ₁₀	14.6	0.15	19990810	32.02714	339.35390	164.28964	8.09844	0.0557162	2.2759939	19	3	1987–1999	0.68	M-v	5	Williams	33926	1987 SD ₁₀
1987 SN ₁₂	14.0	0.15	19990810	335.59451	183.87494	145.03488	1.54372	0.2118421	2.5667717	53	6	1979–1999	0.64	M-v	3	Williams	32044	1987 SN ₁₂

1987 UW	13.9	0.15	19990810	297.77057	159.28383	206.24346	32.25717	0.1645906	2.6285597	51	5	1979–1999	0.79	M-v	2	Williams	31581	1987 UW
1987 UN ₁	13.7	0.15	19990810	240.29764	170.57297	228.34012	12.80323	0.1631317	2.6852085	28	3	1987–1999	0.83	M-v	3	Williams	31581	1987 UN ₁
1987 UZ ₁	14.5	0.15	19990810	167.75822	214.00048	224.26352	25.68849	0.1069239	1.8831808	54	3	1987–1999	0.77	M-v	3	Williams	34574	1987 UZ ₁
1988 BY ₂	13.1	0.15	19990810	202.34672	207.39019	329.67436	10.23660	0.0646754	2.6757445	25	6	1951–1998	0.93	M-v	2	Williams	32511	1988 BY ₂
1988 BT ₃	14.5	0.15	19990810	155.37901	282.20462	152.63145	5.54963	0.1186988	2.3028850	32	3	1988–1999	0.63	M-v	3	Williams	22079	1988 BT ₃
1988 BZ ₃	13.7	0.15	19990810	312.23666	43.08460	258.30913	5.28628	0.1705401	2.2873080	51	4	1972–1999	0.71	M-v	2	Williams	34575	1988 BZ ₃
1988 CD ₂	15.1	0.15	19990810	147.06137	287.18170	143.04397	1.99355	0.1283919	2.3055971	22	3	1988–1999	0.82	M-v	5	Williams	34575	1988 CD ₂
1988 CQ ₂	13.7	0.15	19990810	59.78108	349.49978	133.88186	3.22217	0.2423164	3.0422781	54	2	1988–1999	0.87	M-v	4	Williams	34486	1988 CQ ₂
1988 CY ₃	13.8	0.15	19990810	280.27532	168.66533	224.50097	8.67888	0.1607979	2.7623391	32	4	1981–1999	0.66	M-v	2	Williams	32300	1988 CY ₃
1988 DK	13.6	0.15	19990810	56.29231	277.82321	218.11860	9.30503	0.1730517	3.0798947	30	4	1988–1999	0.89	M-v	1	Williams	34575	1988 DK
1988 EC	14.3	0.15	19990810	224.92833	33.15779	340.30989	19.29731	0.0996195	1.9336450	84	5	1988–1999	0.96	M-v	2	Williams	34575	1988 EC
1988 EP	14.4	0.15	19990810	33.05638	37.41177	163.66217	10.53062	0.2426727	2.3669737	48	2	1988–1999	0.88	M-v	3	Williams	34487	1988 EP
1988 FB	14.3	0.15	19990810	56.67073	89.91172	44.74971	2.61576	0.1521189	2.4010448	49	3	1977–1999	0.78	M-v	3	Williams	34004	1988 FB
1988 FE	14.4	0.15	19990810	6.67980	139.46636	47.68912	10.28711	0.1807985	2.4145572	62	3	1988–1999	0.78	M-v	2	Williams	34575	1988 FE
1988 FN	14.2	0.15	19990810	16.54940	204.10537	334.05745	23.61402	0.2432529	2.3999752	50	4	1978–1999	0.67	M-v	2	Williams	34575	1988 FN
1988 FM ₁	11.8	0.15	19990810	163.83936	83.42300	327.45019	9.95224	0.1015182	3.0347656	70	4	1981–1999	0.62	M-v	2	Williams	34575	1988 FM ₁
1988 GG	14.0	0.15	19990810	31.37348	166.06078	26.66268	25.60301	0.2187452	2.3873841	69	2	1988–1999	0.81	M-v	3	Williams	34487	1988 GG
1988 PK	14.9	0.15	19990810	324.44405	175.57651	163.80398	4.10616	0.2390341	2.4172983	48	5	1988–1999	0.69	M-v	1	Williams	31581	1988 PK
1988 PN ₁	14.5	0.15	19990810	319.06589	200.09159	155.81412	3.01387	0.1994425	2.4129632	32	3	1988–1999	0.80	M-v	3	Williams	32044	1988 PN ₁
1988 PG ₂	15.5	0.15	19990810	346.61543	255.41648	133.40568	3.03778	0.2201732	2.3483217	34	6	1977–1997	0.75	M-v	1	Williams	34487	1988 PG ₂
1988 PQ ₂	15.4	0.15	19990810	36.14614	244.35763	89.89475	1.69797	0.2314347	2.3285369	24	3	1988–1998	0.99	M-v	4	Williams	32300	1988 PQ ₂
1988 RK	13.9	0.15	19990810	306.55082	193.39610	176.46119	12.67287	0.1862433	2.4260448	49	5	1954–1999	0.77	M-v	2	Williams	32044	1988 RK
1988 RV ₁	14.6	0.15	19990810	284.00646	91.00466	11.22234	4.55619	0.0806132	2.3275442	30	5	1983–1997	0.66	M-v	2	Williams	30780	1988 RV ₁
1988 RY ₂	13.8	0.15	19990810	22.75859	167.65450	189.25284	9.00280	0.1075032	2.0784404	23	4	1988–1998	0.58	M-v	2	Williams	32511	1988 RY ₂
1988 RZ ₂	14.4	0.15	19990810	247.47870	264.01991	12.69527	4.97716	0.2338356	2.6751504	29	7	1978–1998	0.70	M-v	1	Williams	33542	1988 RZ ₂
1988 RM ₃	14.2	0.15	19990810	352.05285	354.37776	356.18528	8.58702	0.1453882	2.3833045	38	3	1988–1998	0.72	M-v	4	Williams	32300	1988 RM ₃
1988 RE ₅	14.5	0.15	19990810	0.47265	179.35035	121.62075	3.41596	0.1884698	2.4027026	28	3	1988–1999	0.75	M-v	4	Williams	32218	1988 RE ₅
1988 RT ₁₁	15.4	0.15	19990810	171.19190	46.51860	16.67388	1.37872	0.1307682	2.5677435	17	3	1978–1999	0.71	M-v	4	Williams	34575	1988 RT ₁₁
1988 SE ₂	14.2	0.15	19990810	337.27747	256.20828	45.18289	8.78897	0.1121016	2.4592668	22	3	1988–1999	0.82	M-v	4	Williams	31526	1988 SE ₂
1988 TE	14.1	0.15	19990810	337.45627	97.71628	261.67870	1.17467	0.2244940	2.4028013	62	5	1976–1999	0.94	M-v	2	Williams	32045	1988 TE
1988 TG	14.1	0.15	19990810	286.86515	197.21454	204.37144	25.11793	0.2766301	2.4444439	54	4	1988–1999	0.82	M-v	2	Williams	32045	1988 TG
1988 TK	13.4	0.15	19990810	181.37440	308.27148	2.84974	9.57349	0.2009265	2.7509569	25	5	1988–1998	0.74	M-v	1	Williams	34488	1988 TK
1988 TM ₁	14.3	0.15	19990810	297.61422	193.53457	213.40748	1.79782	0.1881324	2.4199902	37	5	1982–1999	0.78	M-v	1	Williams	34488	1988 TM ₁
1988 TW ₂	13.2	0.15	19990810	22.83161	43.83681	254.77358	22.74501	0.2369354	2.4044507	30	4	1988–1999	0.73	M-v	2	Williams	28884	1988 TW ₂
1988 VH ₁	14.0	0.15	19990810	218.21336	182.08390	239.16218	4.52953	0.2956719	2.5566095	79	6	1984–1999	0.69	M-v	2	Williams	32045	1988 VH ₁
1988 VQ ₃	13.5	0.15	19990810	83.35729	269.58610	230.35018	11.71561	0.1174091	2.6994502	57	3	1988–1999	0.61	M-v	2	Williams	34575	1988 VQ ₃
1988 VS ₆	13.2	0.15	19990810	111.87027	211.83339	209.44627	4.90473	0.2390859	3.9544461	72	6	1951–1999	0.75	M-v	1	Williams	34284	1988 VS ₆
1988 VE ₇	13.8	0.15	19990810	240.57563	292.24932	138.68862	6.69512	0.2188667	2.5242690	48	6	1976–1999	0.68	M-v	2	Williams	32045	1988 VE ₇
1988 XE	13.3	0.15	19990810	177.23935	169.49725	252.73118	12.74839	0.2954719	2.6494554	31	4	1962–1999	0.72	M-v	2	Williams	31783	1988 XE
1988 XX ₁	13.4	0.15	19990810	258.12689	350.09072	25.47988	14.43297	0.1864866	2.5833846	60	6	1988–1999	0.65	M-v	2	Williams	31582	1988 XX ₁
1989 AW ₅	14.0	0.15	19990810	211.25413	354.09857	95.64040	3.11470	0.1085163	2.6068719	47	4	1989–1999	0.81	M-v	2	Williams	32045	1989 AW ₅
1989 AU ₆	13.9	0.15	19990810	173.69646	117.85219	311.07248	4.60493	0.0551294	2.7344116	33	3	1989–1999	0.65	M-v	5	Williams	34488	1989 AU ₆
1989 AV ₆	13.7	0.15	19990810	258.42267	172.43520	116.44112	6.99616	0.1877270	2.2424030	68	4	1983–1999	0.68	M-v	2	Williams	34575	1989 AV ₆
1989 AD ₇	13.0	0.15	19990810	89.74861	263.34568	140.36473	10.96552	0.1193287	3.0018250	25	2	1988–1999	0.79	M-v	4	Williams	34005	1989 AD ₇
1989 AG ₇	13.9	0.15	19990810	73.29702	122.00357	134.78571	12.67992	0.1363542	2.6143392	47	3	1988–1998	0.67	M-v	3	Williams	32301	1989 AG ₇
1989 CH	12.8	0.15	19990810	54.76071	18.88770	136.85803	16.12578	0.2054392	2.8466406	106	3	1989–1999	0.76	M-v	3	Williams	34575	1989 CH
1989 CX ₁	14.0	0.15	19990810	72.67270	359.80665	124.06798	6.04248	0.2418112	2.8584761	39	2	1989–1999	0.74	M-v	4	Williams	34488	1989 CX ₁
1989 CD ₆	13.7	0.15	19990810	89.40462	330.51644	130.47754	2.95392	0.0349590	2.8840711	52	4	1988–1999	0.79	M-v	3	Williams	34575	1989 CD ₆
1989 EE ₁	14.0	0.15	19990810	352.74000	195.15791	10.04566	6.64612	0.1390692	2.2675377	43	3	1989–1999	0.74	M-v	3	Williams	34575	1989 EE ₁
1989 EJ ₁	14.9	0.15	19990810	32.15284	76.46250	166.99588	4.16178	0.1169014	2.1688809	39	4	1989–1999	0.91	M-v	2	Williams	28613	1989 EJ ₁
1989 EJ ₆	14.0	0.15	19990810	295.15873	348.73673	136.04294	0.47505	0.0918210	3.2550345	37	4	1984–1998	0.88	M-v	2	Williams	33067	1989 EJ ₆
1989 JB	15.0	0.15	19990810	1.01319	138.22085	82.92536	25.82437	0.2336421	2.2724853	31	2	1989–1999	0.68	M-v	3	Williams	34284	1989 JB
1989 KF	12.5	0.15	19990810	42.68912	153.21961	83.30732	16.28099	0.0952671	2.8530556	36	4	1989–1999	0.78	M-v	1	Williams	31783	1989 KF

1989 MH	12.5	0.15	19990810	352.12737	156.94904	86.08796	11.45808	0.2266612	2.9937844	59	3	1989–1999	0.83	M-v	3	Williams	34575	1989 MH
1989 RT	13.9	0.15	19990810	310.46905	339.68650	323.40866	6.73946	0.1248271	2.3469459	52	3	1989–1999	0.73	M-v	3	Williams	34575	1989 RT
1989 RV ₂	14.4	0.15	19990810	324.72638	305.50172	44.73869	5.59994	0.1835132	2.2700538	53	4	1989–1999	0.70	M-v	1	Williams	31582	1989 RV ₂
1989 SY ₂	13.0	0.15	19990810	5.49778	132.63330	127.44218	5.87118	0.1067003	3.2021842	65	3	1989–1999	0.66	M-v	4	Williams	32301	1989 SY ₂
1989 SR ₃	13.1	0.15	19990810	149.72575	335.60070	103.36272	3.56336	0.0529961	3.4056710	39	3	1989–1999	0.95	M-v	5	Williams	31582	1989 SR ₃
1989 SV ₅	14.6	0.15	19990810	57.70463	47.48958	71.94722	6.28150	0.1835597	2.5690959	40	4	1981–1999	0.81	M-v	3	Williams	34284	1989 SV ₅
1989 SE ₈	13.7	0.15	19990810	108.34714	170.75806	333.80064	6.28544	0.0778636	2.4128408	28	5	1983–1999	0.64	M-v	2	Williams	28085	1989 SE ₈
1989 TC	14.3	0.15	19990810	287.82016	11.89537	2.31543	23.85481	0.0449851	1.8828209	27	4	1989–1999	0.80	M-v	2	Williams	31136	1989 TC
1989 TD	14.8	0.15	19990810	289.95195	50.62571	306.82728	3.01924	0.2560390	2.3216822	23	4	1982–1999	1.19	M-v	2	Williams	31783	1989 TD
1989 TL ₁₈	15.5	0.15	19891001	15.03543	316.59933	21.55254	10.02630	0.2669103	2.1383637	5	1	4 days	0.49			Williams		1989 TL ₁₈
1989 UA	12.9	0.15	19990810	135.75742	7.35819	45.59007	10.77232	0.0981265	2.5466122	78	6	1954–1999	0.72	M-v	2	Williams	34575	1989 UA
1989 UE	14.9	0.15	19990810	254.09384	324.52762	68.28986	3.23106	0.2261411	2.3586255	34	4	1989–1999	0.70	M-v	2	Williams	31783	1989 UE
1989 UO	14.4	0.15	19990810	235.79673	334.48589	72.88996	3.27022	0.2041038	2.3728889	31	5	1989–1999	0.77	M-v	2	Williams	31783	1989 UO
1989 VD ₁	15.1	0.15	19990810	213.36322	351.87728	101.54976	7.53189	0.0669067	2.3439676	29	3	1989–1999	0.44	M-v	3	Williams	31582	1989 VD ₁
1989 VQ ₁	14.5	0.15	19990810	87.50735	23.22387	145.24814	7.35464	0.1027740	2.4404056	27	3	1989–1999	0.76	M-v	3	Williams	21572	1989 VQ ₁
1989 WJ	13.6	0.15	19990810	106.75931	8.04411	67.09894	15.06581	0.1333961	2.6009580	30	2	1989–1999	0.68	M-v	4	Williams	34576	1989 WJ
1989 WN ₂	13.3	0.15	19990810	100.02474	164.24495	252.70444	11.90101	0.1399015	2.6528041	37	2	1989–1999	0.80	M-v	4	Williams	34576	1989 WN ₂
1989 WE ₄	14.9	0.15	19990810	244.54698	225.35524	151.46594	2.69275	0.2167676	2.4133758	23	4	1985–1999	0.86	M-v	2	Williams	32220	1989 WE ₄
1989 YF ₁	14.2	0.15	19990810	133.75920	197.59652	284.90352	8.95865	0.0841552	2.5317828	34	5	1988–1999	0.62	M-v	2	Williams	31273	1989 YF ₁
1989 YC ₅	12.6	0.15	19990810	317.29809	48.10317	312.02350	15.13273	0.2574995	3.1722423	20	4	1977–1999	0.81	M-v	3	Williams	33928	1989 YC ₅
1989 YX ₆	14.1	0.15	19990810	233.90167	326.09592	113.11224	5.17932	0.2055172	2.3808826	58	6	1977–1999	0.76	M-v	1	Williams	32045	1989 YX ₆
1990 BT	14.2	0.15	19990810	313.21860	98.83276	328.89520	7.24109	0.1616658	2.2929360	18	6	1978–1999	0.73	M-v	2	Williams	34285	1990 BT
1990 BL ₁	13.4	0.15	19990810	123.53243	258.64256	177.34827	12.89322	0.1596477	2.6201955	47	5	1983–1999	0.61	M-v	2	Williams	34489	1990 BL ₁
1990 BB ₂	13.3	0.15	19990810	103.93753	189.18217	305.28327	11.13317	0.1092172	2.5933854	22	5	1954–1999	0.85	M-v	2	Williams	34576	1990 BB ₂
1990 DV	13.4	0.15	19990810	37.32658	270.46487	248.19357	7.05107	0.2185925	2.7298312	57	3	1990–1999	0.69	M-v	2	Williams	34576	1990 DV
1990 EK	13.6	0.15	19990810	177.67469	248.94112	184.40675	7.40346	0.3015444	2.5403377	39	3	1990–1999	0.64	M-v	3	Williams	32046	1990 EK
1990 ET ₂	13.7	0.15	19990810	355.96358	64.38857	190.47389	12.82318	0.1570360	2.6596653	58	2	1990–1999	0.64	M-v	3	Williams	34490	1990 ET ₂
1990 FM	12.9	0.15	19990810	353.63258	150.62822	82.74267	17.95906	0.2850302	2.7341628	41	2	1990–1999	0.42	M-v	3	Williams	34576	1990 FM
1990 FQ	13.9	0.15	19990810	134.41962	58.43932	85.65957	13.42729	0.2295905	2.5454272	18	3	1990–1999	0.81	M-v	3	Williams	31951	1990 FQ
1990 HH ₁	13.2	0.15	19990810	15.16550	112.11095	162.00618	12.75143	0.1751529	2.6549371	47	5	1990–1999	0.58	M-v	1	Williams	31582	1990 HH ₁
1990 HU ₁	14.0	0.15	19990810	17.17335	119.08895	141.83055	14.32770	0.0297889	2.5876104	30	5	1954–1999	0.82	M-v	2	Williams	31582	1990 HU ₁
1990 OE ₄	13.7	0.15	19990810	340.47146	113.82341	210.96674	7.36513	0.3026414	2.7743674	27	5	1953–1999	0.74	M-v	1	Williams	32046	1990 OE ₄
1990 OE ₅	13.7	0.15	19990810	7.19000	22.13140	245.30665	7.18911	0.1802963	2.7758034	35	5	1989–1999	0.71	M-v	1	Williams	31273	1990 OE ₅
1990 QL ₁	13.2	0.15	19990810	176.18497	241.68558	162.06704	10.08070	0.2171320	3.1419934	51	3	1990–1999	0.80	M-v	4	Williams	34490	1990 QL ₁
1990 QV ₂	13.0	0.15	19990810	289.84091	133.81855	177.82605	10.37424	0.1007913	3.0041235	60	3	1990–1999	0.70	M-v	3	Williams	34576	1990 QV ₂
1990 QW ₃	15.6	0.15	19990810	338.56387	341.28876	317.98697	1.78385	0.1529409	2.1417526	50	5	1987–1999	0.72	M-v	3	Williams	29657	1990 QW ₃
1990 QS ₄	14.0	0.15	19990810	271.51573	211.43621	107.80548	5.52070	0.1165467	2.2172858	32	3	1990–1999	0.73	M-v	2	Williams	34490	1990 QS ₄
1990 QW ₄	14.4	0.15	19990810	129.53731	306.65530	123.34477	8.66019	0.1504054	2.3050506	30	3	1990–1999	0.56	M-v	2	Williams	34576	1990 QW ₄
1990 QZ ₅	12.9	0.15	19990810	254.08149	246.12660	159.88329	12.96030	0.1581163	2.8571618	86	4	1988–1999	0.77	M-v	2	Williams	32301	1990 QZ ₅
1990 QK ₇	13.4	0.15	19990810	192.54733	272.93614	156.44279	10.38969	0.1033737	2.9803469	53	4	1990–1999	0.63	M-v	1	Williams	32046	1990 QK ₇
1990 QK ₈	13.5	0.15	19990810	327.67562	139.56758	122.99040	2.21923	0.0765332	2.9988374	48	3	1990–1999	0.80	M-v	4	Williams	34576	1990 QK ₈
1990 QX ₈	13.6	0.15	19990810	275.85639	341.11239	17.87075	2.11579	0.0710896	2.8937745	57	4	1990–1999	0.78	M-v	1	Williams	32301	1990 QX ₈
1990 QN ₉	14.3	0.15	19990810	122.33959	324.30429	129.25414	4.33355	0.1107584	2.2649969	59	4	1990–1999	0.78	M-v	2	Williams	34576	1990 QN ₉
1990 RK ₂	14.9	0.15	19990810	326.79858	162.46200	176.88548	2.35928	0.0686275	2.1293973	29	6	1990–1999	0.64	M-v	2	Williams	32046	1990 RK ₂
1990 RM ₃	14.7	0.15	19990810	304.33002	268.82698	354.89409	6.41325	0.1474643	2.2510711	39	3	1990–1999	0.64	M-v	2	Williams	34576	1990 RM ₃
1990 RK ₅	13.7	0.15	19990810	316.25205	119.61940	208.24651	4.69041	0.2645991	2.8661012	60	3	1990–1999	0.66	M-v	3	Williams	26579	1990 RK ₅
1990 RH ₇	13.8	0.15	19990810	189.98070	309.68484	78.35288	2.28822	0.1919557	3.1261464	22	3	1990–1999	0.67	M-v	5	Williams	23671	1990 RH ₇
1990 SR ₂	14.4	0.15	19990810	305.37156	279.66794	32.65702	4.74150	0.1955638	2.1882447	39	3	1990–1999	0.77	M-v	4	Williams	34491	1990 SR ₂
1990 SA ₃	14.7	0.15	19990810	314.79626	118.65534	143.72178	6.73192	0.1495929	2.2539757	48	2	1990–1999	0.54	M-v	5	Williams	34006	1990 SA ₃
1990 SS ₆	15.1	0.15	19990810	276.17598	227.22866	144.60398	3.37315	0.1495851	2.1666247	50	3	1990–1999	0.64	M-v	3	Williams	31583	1990 SS ₆
1990 SA ₇	15.3	0.15	19990810	1.02375	195.23145	41.16690	7.33160	0.0736601	2.2300219	36	3	1990–1999	0.70	M-v	4	Williams	34491	1990 SA ₇
1990 SH ₇	13.9	0.15	19990810	292.52762	253.71544	92.56341	3.07828	0.0760070	2.9148582	44	4	1990–1999	0.75	M-v	2	Williams	32046	1990 SH ₇
1990 SH ₈	14.8	0.15	19990810	152.29753	322.77659	137.41397	6.05487	0.0780526	2.2240915	24	3	1990–1999	0.69	M-v	3	Williams	31228	1990 SH ₈

1990 SP ₈	13.2	0.15	19990810	73.22965	16.38524	150.60131	10.36651	0.0408372	3.0556204	50	3	1990–1999	0.61	M-v	3	Williams	34576	1990 SP ₈
1990 SR ₈	15.2	0.15	19990810	170.01812	4.39550	79.59044	4.89026	0.0690814	2.2201569	37	4	1976–1999	0.92	M-v	2	Williams	32923	1990 SR ₈
1990 SS ₈	13.6	0.15	19990810	293.79402	160.21000	163.83969	10.47220	0.0920370	2.9752023	38	4	1990–1999	0.87	M-v	2	Williams	34576	1990 SS ₈
1990 SU ₈	14.5	0.15	19990810	299.65051	141.87446	154.23429	6.40301	0.2079480	2.2071575	30	4	1980–1999	0.64	M-v	2	Williams	34285	1990 SU ₈
1990 SX ₁₀	13.7	0.15	19990810	202.43025	33.78347	311.00931	5.81076	0.0794944	2.3162763	57	4	1978–1999	0.64	M-v	2	Williams	34285	1990 SX ₁₀
1990 SB ₁₁	14.7	0.15	19990810	258.03047	82.10274	284.95937	4.45839	0.1745297	2.1955144	44	4	1990–1999	0.83	M-v	2	Williams	34576	1990 SB ₁₁
1990 SB ₁₄	13.8	0.15	19990810	257.21502	52.22436	318.16511	1.17474	0.0965647	2.9539273	37	4	1990–1999	1.00	M-v	2	Williams	32221	1990 SB ₁₄
1990 TC ₁	14.7	0.15	19990810	236.75286	166.10677	208.00489	4.09409	0.1972501	2.2385237	21	2	1990–1999	0.80	M-v	4	Williams	34491	1990 TC ₁
1990 TS ₁	13.4	0.15	19990810	225.34830	52.32086	346.31842	5.64285	0.1915153	3.0368706	37	3	1990–1998	0.69	M-v	3	Williams	32046	1990 TS ₁
1990 TZ ₁	13.4	0.15	19990810	350.92985	95.58494	279.28928	2.27803	0.0884719	2.7219697	20	2	1990–1995	0.56	M-v	4	Williams	26757	1990 TZ ₁
1990 TT ₄	13.1	0.15	19990810	203.13943	235.05094	163.46093	10.82461	0.2261062	3.1514898	48	3	1990–1999	0.80	M-v	3	Williams	34576	1990 TT ₄
1990 TX ₄	13.0	0.15	19990810	298.35920	88.26707	213.18372	8.22348	0.1446127	2.9781771	36	3	1990–1999	0.60	M-v	4	Williams	34577	1990 TX ₄
1990 TE ₇	13.6	0.15	19990810	271.96351	167.00749	211.38255	9.09058	0.0929979	2.9722748	55	8	1954–1999	0.74	M-v	1	Williams	32046	1990 TE ₇
1990 TH ₇	13.8	0.15	19990810	223.84744	314.81231	6.19770	1.00488	0.2325145	3.2856055	29	6	1954–1999	0.51	M-v	2	Williams	34286	1990 TH ₇
1990 TL ₇	14.4	0.15	19990810	230.83713	233.34630	214.10427	1.17797	0.0972373	2.9229779	22	4	1984–1998	0.66	M-v	2	Williams	32742	1990 TL ₇
1990 TP ₇	13.6	0.15	19990810	219.10907	63.15305	9.97413	1.43229	0.1045651	3.0024337	45	8	1987–1998	0.66	M-v	1	Williams	32742	1990 TP ₇
1990 TY ₇	14.4	0.15	19990810	35.11969	116.65602	26.62245	2.97670	0.1116912	2.4058834	43	3	1990–1999	0.55	M-v	2	Williams	34577	1990 TY ₇
1990 TF ₈	14.0	0.15	19990810	6.99492	247.85228	217.01969	13.90085	0.1371596	2.5441832	34	3	1953–1998	0.76	M-v	4	Williams	33335	1990 TF ₈
1990 TG ₈	13.0	0.15	19990810	180.29420	61.55264	38.52964	17.38228	0.2240178	3.0931342	50	3	1990–1998	0.74	M-v	2	Williams	32302	1990 TG ₈
1990 TE ₉	14.0	0.15	19990810	244.48462	344.44544	326.05614	4.36277	0.1474548	2.3034307	68	3	1990–1999	0.74	M-v	3	Williams	34577	1990 TE ₉
1990 TO ₉	15.1	0.15	19990810	183.94456	126.54524	277.20209	3.32178	0.1366135	2.2834759	37	3	1990–1999	0.60	M-v	4	Williams	34577	1990 TO ₉
1990 TT ₁₀	14.8	0.15	19990810	5.18602	345.10325	353.34657	4.08408	0.1623871	2.7579272	18	3	1990–1993	0.63	M-v	5	Williams	24389	1990 TT ₁₀
1990 TG ₁₁	14.8	0.15	19990810	283.04720	350.08219	277.88390	2.49051	0.0824502	2.3084548	41	3	1990–1999	0.82	M-v	4	Williams	34006	1990 TG ₁₁
1990 TU ₁₁	15.0	0.15	19990810	45.41740	126.50336	336.92075	2.29503	0.1283883	2.4285209	74	4	1990–1999	0.65	M-v	3	Williams	33743	1990 TU ₁₁
1990 TD ₁₂	14.8	0.15	19990810	329.81872	172.02682	252.28993	2.89943	0.1999337	2.6846426	14	3	1985–1995	0.54	M-v	5	Williams	27711	1990 TD ₁₂
1990 TB ₁₃	13.3	0.15	19990810	303.63906	187.15720	132.99282	10.64015	0.0747406	2.9918538	59	4	1954–1999	0.54	M-v	1	Williams	34577	1990 TB ₁₃
1990 TG ₁₃	14.7	0.15	19990810	70.67281	23.38075	65.08737	11.49949	0.2005738	2.4268020	60	5	1949–1999	0.71	M-v	1	Williams	34577	1990 TG ₁₃
1990 UM ₂	13.0	0.15	19990810	289.22804	277.21269	63.12671	11.20458	0.1133119	3.0210199	43	3	1990–1999	0.67	M-v	3	Williams	31716	1990 UM ₂
1990 UW ₂	13.0	0.15	19990810	268.75053	231.97087	83.36085	7.13592	0.1217391	3.1848505	28	4	1990–1999	0.85	M-v	2	Williams	34491	1990 UW ₂
1990 UB ₃	14.7	0.15	19990810	165.13725	99.67550	353.78573	2.39780	0.1655697	2.2710514	37	4	1990–1999	0.63	M-v	1	Williams	34286	1990 UB ₃
1990 US ₃	13.0	0.15	19990810	220.59910	283.36006	90.18381	7.30511	0.1478904	3.1650066	31	4	1990–1999	1.02	M-v	2	Williams	34577	1990 US ₃
1990 UY ₃	12.5	0.15	19990810	235.50797	294.46899	68.04328	9.97977	0.2240386	3.1250946	40	4	1990–1999	0.83	M-v	2	Williams	34577	1990 UY ₃
1990 UE ₄	13.7	0.15	19990810	180.90184	303.22641	132.03461	6.18519	0.1494589	3.1503904	32	6	1979–1999	0.71	M-v	1	Williams	34577	1990 UE ₄
1990 UO ₄	14.2	0.15	19990810	24.46524	133.84651	188.80484	12.09035	0.1420739	2.7744956	24	2	1990–1998	0.94	M-v	5	Williams	34577	1990 UO ₄
1990 UY ₄	14.9	0.15	19990810	203.48143	276.66195	88.33652	6.24606	0.1888761	2.3092256	16	3	1990–1999	0.70	M-v	3	Williams	33225	1990 UY ₄
1990 UZ ₄	13.5	0.15	19990810	159.00512	0.56191	86.31973	8.44735	0.1645299	3.1921392	23	4	1990–1999	0.79	M-v	1	Williams	31716	1990 UZ ₄
1990 VM	13.1	0.15	19990810	203.59536	277.55596	115.31028	8.71794	0.1637814	3.1685989	33	3	1990–1999	0.89	M-v	3	Williams	34577	1990 VM
1990 VL ₄	14.6	0.15	19990810	101.53200	48.98113	113.45347	7.51226	0.1014288	2.2764026	22	3	1990–1999	0.59	M-v	5	Williams	24739	1990 VL ₄
1990 VX ₄	13.7	0.15	19990810	133.62005	323.92292	81.22666	12.85087	0.2295739	2.3992108	39	3	1979–1999	0.67	M-v	3	Williams	34286	1990 VX ₄
1990 VE ₆	13.3	0.15	19990810	254.18830	202.65294	202.21034	10.50370	0.0895644	3.0172724	25	3	1990–1999	0.58	M-v	4	Williams	32302	1990 VE ₆
1990 VV ₈	12.4	0.15	19990810	161.80977	355.18268	180.12387	15.28358	0.0756597	2.8545375	25	4	1978–1999	0.76	M-v	2	Williams	33226	1990 VV ₈
1990 VH ₁₂	13.3	0.15	19990810	277.33488	172.33436	199.83269	9.42631	0.0587081	3.0325828	73	5	1979–1999	0.67	M-v	1	Williams	32302	1990 VH ₁₂
1990 VN ₁₄	13.0	0.15	19990810	180.95727	301.46072	127.57578	2.23364	0.1658182	3.1733221	53	4	1986–1999	0.68	M-v	1	Williams	32046	1990 VN ₁₄
1990 VR ₁₄	13.9	0.15	19990810	191.87873	354.01582	52.12591	3.41213	0.1532265	2.2880647	15	3	1990–1999	0.66	M-v	4	Williams	30976	1990 VR ₁₄
1990 WF	13.6	0.15	19990810	231.32529	255.42722	130.93242	4.52740	0.1441999	2.2537745	62	3	1990–1999	0.56	M-v	3	Williams	34577	1990 WF
1990 WM	12.5	0.15	19990810	16.04747	159.95189	98.53434	12.27006	0.0772977	3.0004726	34	4	1982–1999	0.59	M-v	1	Williams	31785	1990 WM
1990 WV	15.5	0.15	19990810	232.71181	280.11438	106.86225	5.68480	0.1577486	2.2475616	25	3	1990–1999	0.80	M-v	4	Williams	31380	1990 WV
1990 WD ₁	13.6	0.15	19990810	82.87209	103.72316	85.44763	14.47681	0.1692226	3.1482151	34	4	1990–1999	0.69	M-v	1	Williams	34577	1990 WD ₁
1990 WV ₁	14.7	0.15	19990810	79.19308	4.04506	131.79953	5.27831	0.0440181	2.3466628	45	4	1990–1999	0.75	M-v	2	Williams	34577	1990 WV ₁
1990 WO ₃	14.2	0.15	19990810	224.47715	208.58815	166.01509	4.91113	0.1606231	2.2749819	41	2	1990–1999	0.77	M-v	4	Williams	34492	1990 WO ₃
1990 WH ₄	14.5	0.15	19990810	43.74277	84.21434	80.07858	11.22165	0.1548809	2.3969467	34	2	1990–1999	0.70	M-v	3	Williams	34577	1990 WH ₄
1990 WC ₉	12.6	0.15	19990810	236.29075	339.54143	65.94388	12.33322	0.0620261	3.0411216	49	5	1990–1999	0.58	M-v	1	Williams	32046	1990 WC ₉
1990 XN	13.6	0.15	19990810	62.44992	17.44687	86.47209	6.33780	0.1585647	2.4661230	88	3	1990–1999	0.68	M-v	2	Williams	34577	1990 XN

1991 AL	13.7	0.15	19990810	113.67922	339.19101	106.03629	5.51896	0.1878261	2.4370919	53	5	1982–1999	0.81	M-v	1	Williams	34577	1991 AL
1991 AQ ₂	15.2	0.15	19990810	90.98947	179.72708	286.72937	0.06761	0.1750706	2.4599069	48	4	1991–1999	0.75	M-v	2	Williams	34577	1991 AQ ₂
1991 AJ ₃	12.6	0.15	19990810	349.43762	6.73329	288.90125	14.64256	0.0515764	3.1816188	28	7	1976–1996	0.93	M-v	1	Williams	29658	1991 AJ ₃
1991 CO ₁	12.3	0.15	19990810	211.02629	337.04820	180.20370	9.83680	0.0283727	3.0231582	31	5	1981–1999	0.87	M-v	1	Williams	33069	1991 CO ₁
1991 DC	14.3	0.15	19990810	175.78601	54.01692	17.93467	3.58965	0.1708843	2.3617345	23	4	1975–1999	1.01	M-v	2	Williams	17972	1991 DC
1991 EG ₁	13.4	0.15	19990810	53.86051	313.63859	177.19636	14.89810	0.1287421	2.5804047	38	3	1991–1999	0.77	M-v	2	Williams	34577	1991 EG ₁
1991 EO ₂	14.3	0.15	19990810	76.63399	219.54470	316.84966	1.71941	0.1595100	2.4169999	53	4	1991–1999	0.68	M-v	1	Williams	32223	1991 EO ₂
1991 FK	14.4	0.15	19990810	47.48275	174.66362	358.95893	19.70186	0.0538871	1.9387682	46	2	1991–1999	0.82	M-v	3	Williams	34577	1991 FK
1991 FY	14.2	0.15	19990810	175.79331	341.76129	137.91251	8.36411	0.0572407	2.3352690	39	4	1987–1999	0.46	M-v	2	Williams	31785	1991 FY
1991 FZ	12.8	0.15	19990810	197.78000	346.48834	4.93237	13.64476	0.0509507	2.5500050	38	3	1952–1999	0.74	M-v	3	Williams	34286	1991 FZ
1991 FS ₁	14.5	0.15	19990810	37.50468	178.43425	51.57176	0.41558	0.1519709	2.4210783	43	7	1954–1999	0.62	M-v	1	Williams	31137	1991 FS ₁
1991 FX ₂	13.1	0.15	19990810	173.66153	1.98793	18.28284	13.26306	0.1703906	2.5888130	44	4	1991–1999	0.72	M-v	4	Marsden	34577	1991 FX ₂
1991 GO	19.8	0.15	19990810	63.14537	88.81210	24.78523	9.55863	0.6532025	1.9265735	54	2	1991–1999	0.63	M-v	4	Williams	34492	1991 GO
1991 GV	12.7	0.15	19990810	307.03667	232.56226	64.10000	9.18103	0.2079555	2.5330205	62	6	1979–1999	0.64	M-v	2	Williams	34577	1991 GV
1991 GZ ₁	14.7	0.15	19990810	78.26236	106.20006	48.35085	23.79754	0.0547750	1.9276783	29	4	1991–1999	0.79	M-v	2	Williams	34577	1991 GZ ₁
1991 GE ₂	13.3	0.15	19990810	25.66418	182.45009	101.22035	14.18712	0.1939500	2.4276417	29	4	1991–1999	0.77	M-v	2	Williams	29658	1991 GE ₂
1991 GT ₂	13.4	0.15	19990810	20.78742	79.37168	199.75457	11.38992	0.2249487	2.4193539	45	5	1976–1999	0.64	M-v	1	Williams	31785	1991 GT ₂
1991 GQ ₃	13.6	0.15	19990810	102.82077	236.88770	200.11408	12.07908	0.1486014	2.6000065	41	3	1991–1999	0.90	M-v	3	Williams	34286	1991 GQ ₃
1991 GU ₃	14.2	0.15	19990810	358.58850	122.22423	196.63008	6.88454	0.0933251	2.3582664	36	5	1981–1999	0.80	M-v	2	Williams	32302	1991 GU ₃
1991 GS ₅	14.9	0.15	19990810	339.21218	38.22044	222.06779	5.87863	0.1551787	2.5366145	26	3	1991–1999	0.83	M-v	4	Williams	32924	1991 GS ₅
1991 GJ ₁₀	13.4	0.15	19990810	210.70654	113.32732	41.64627	9.78077	0.0311784	3.1765293	29	3	1989–1997	0.72	M-v	3	Williams	30077	1991 GJ ₁₀
1991 GS ₁₀	14.9	0.15	19990810	42.08377	69.81608	64.94297	4.46592	0.1435963	2.6060253	29	3	1989–1999	0.68	M-v	3	Williams	34007	1991 GS ₁₀
1991 LM	13.1	0.15	19990810	324.68279	191.17170	103.50208	16.54646	0.0869107	2.5689024	60	3	1991–1999	0.52	M-v	3	Williams	34286	1991 LM
1991 LQ	13.8	0.15	19990810	318.84236	204.37258	94.27846	15.23067	0.1497333	2.5785998	42	4	1991–1999	0.73	M-v	3	Williams	34577	1991 LQ
1991 LY	12.9	0.15	19990810	296.77830	182.77400	117.63587	15.74637	0.1810988	2.6305169	30	5	1986–1999	0.71	M-v	2	Williams	34577	1991 LY
1991 LA ₁	13.8	0.15	19990810	8.91557	99.98040	133.00726	14.50097	0.1326873	2.5822136	41	4	1991–1999	0.58	M-v	2	Williams	34577	1991 LA ₁
1991 LE ₂	14.1	0.15	19990810	315.56312	269.74476	90.43560	7.34363	0.1617058	2.4518050	29	5	1988–1999	0.88	M-v	1	Williams	31785	1991 LE ₂
1991 NL	13.7	0.15	19990810	336.95853	53.56367	259.98450	15.15579	0.1928477	2.5567647	27	4	1987–1999	0.81	M-v	3	Williams	31229	1991 NL
1991 NS ₂	13.6	0.15	19990810	15.48384	97.28226	185.59396	7.67105	0.1706062	2.5515172	24	7	1979–1999	0.95	M-v	2	Williams	31785	1991 NS ₂
1991 NF ₃	13.3	0.15	19990810	258.88726	102.98076	272.53034	11.80285	0.2051128	2.6442498	39	6	1989–1999	0.75	M-v	1	Williams	31274	1991 NF ₃
1991 PU	13.5	0.15	19990810	242.77648	81.01804	289.98881	4.16273	0.1296615	2.7099017	57	4	1991–1999	0.87	M-v	2	Williams	34577	1991 PU
1991 PV ₉	13.4	0.15	19990810	348.78324	107.09047	169.79340	14.11185	0.1783169	2.5939579	50	3	1991–1999	0.81	M-v	3	Williams	34578	1991 PV ₉
1991 PH ₁₀	13.7	0.15	19990810	276.72024	276.02877	116.19031	1.67320	0.1503482	2.6176612	59	4	1991–1999	0.74	M-v	1	Williams	32047	1991 PH ₁₀
1991 PN ₁₀	14.1	0.15	19990810	37.92011	96.90086	167.23239	22.50257	0.0697340	1.9538443	49	4	1991–1999	0.76	M-v	2	Williams	27935	1991 PN ₁₀
1991 PF ₁₁	13.3	0.15	19990810	321.17531	346.25603	288.43539	8.39934	0.1334114	2.7528990	53	3	1991–1999	0.60	M-v	4	Williams	34578	1991 PF ₁₁
1991 PJ ₁₁	13.7	0.15	19990810	339.62209	87.16882	241.77626	2.88561	0.2005530	2.5893809	38	4	1991–1999	0.86	M-v	3	Williams	32303	1991 PJ ₁₁
1991 RS	13.7	0.15	19990810	349.33903	136.20387	174.02802	14.36883	0.1949133	2.5740367	41	5	1954–1999	0.58	M-v	2	Williams	32513	1991 RS
1991 RF ₂	12.2	0.15	19990810	93.36534	102.42848	329.22299	10.03361	0.0609509	3.0980381	45	4	1986–1999	0.76	M-v	2	Williams	34287	1991 RF ₂
1991 RS ₂	14.0	0.15	19990810	8.00560	242.65707	210.29682	6.48389	0.0636202	2.3056083	104	3	1991–1998	0.60	M-v	3	Williams	33743	1991 RS ₂
1991 RA ₄	14.8	0.15	19990810	125.10519	28.10687	214.12247	7.71886	0.1152803	2.4733745	30	3	1991–1998	0.66	M-v	4	Williams	32303	1991 RA ₄
1991 RE ₄	16.1	0.15	19990810	105.59699	333.86063	345.32952	4.94439	0.2283988	2.3336685	51	3	1991–1998	0.62	M-v	3	Williams	32743	1991 RE ₄
1991 RG ₄	15.8	0.15	19990810	53.68302	57.81328	279.50556	1.51392	0.2253242	2.4159460	29	4	1987–1998	0.80	M-v	2	Williams	32047	1991 RG ₄
1991 RJ ₄	14.2	0.15	19990810	128.01139	72.77028	353.75795	8.68182	0.0892932	3.0326051	31	2	1991–1999	0.73	M-v	4	Williams	34287	1991 RJ ₄
1991 RY ₄	15.1	0.15	19990810	282.87181	147.32701	215.49258	2.20365	0.1691402	2.7021426	26	3	1978–1991	0.59	M-v	3	Williams	22084	1991 RY ₄
1991 RG ₇	14.4	0.15	19990810	357.54921	149.22645	262.30937	3.73796	0.1793785	2.4538176	28	5	1983–1995	0.77	M-v	2	Williams	28316	1991 RG ₇
1991 RS ₇	14.1	0.15	19990810	319.08439	180.24662	108.41876	8.51548	0.1124112	2.7561324	56	3	1991–1999	0.68	M-v	3	Williams	34578	1991 RS ₇
1991 RA ₁₁	12.2	0.15	19990810	42.98476	104.13556	20.06028	17.17968	0.1221896	3.1906618	35	2	1991–1999	0.73	M-v	3	Williams	34578	1991 RA ₁₁
1991 RT ₁₄	13.1	0.15	19990810	194.19806	260.60658	170.00007	15.26277	0.1050761	2.7694984	76	3	1991–1999	0.67	M-v	3	Williams	34494	1991 RT ₁₄
1991 RZ ₁₄	13.0	0.15	19990810	159.20287	218.11670	196.13803	1.48874	0.0624749	2.9089133	56	2	1991–1999	0.69	M-v	4	Williams	34578	1991 RZ ₁₄
1991 RY ₁₅	12.6	0.15	19990810	240.21189	203.18079	130.17126	2.98688	0.0638995	2.8862094	23	3	1991–1999	0.57	M-v	3	Williams	31101	1991 RY ₁₅
1991 RQ ₁₆	14.9	0.15	19990810	307.13005	259.06585	72.20931	4.10215	0.1535600	2.6817009	21	3	1991–1999	0.75	M-v	4	Williams	28585	1991 RQ ₁₆
1991 RA ₁₈	14.3	0.15	19990810	271.07458	154.31781	215.87488	3.04961	0.1330629	2.6883288	22	3	1991–1999	0.70	M-v	4	Williams	32225	1991 RA ₁₈
1991 RS ₂₀	13.0	0.15	19990810	132.33161	24.74606	52.30727	3.10631	0.0968183	2.9333692	36	2	1991–1999	0.70	M-v	5	Williams	34495	1991 RS ₂₀

1991 RG ₂₅	13.0	0.15	19990810	286.35538	223.05858	92.09819	9.12928	0.2166320	2.8001470	30	3	1991–1999	0.56	M-v	4	Williams	34578	1991 RG ₂₅
1991 RC ₂₇	13.4	0.15	19990810	302.12471	343.83992	28.24072	13.63722	0.1771852	2.6355913	57	3	1991–1999	0.74	M-v	3	Williams	32303	1991 RC ₂₇
1991 RS ₄₀	13.9	0.15	19990810	254.45734	327.45998	31.04000	2.10604	0.0810671	2.7802937	56	3	1991–1999	0.64	M-v	4	Williams	34578	1991 RS ₄₀
1991 RX ₄₀	16.2	0.15	19990810	66.77884	239.77326	153.21444	2.71250	0.1828045	2.3090579	41	2	1991–1998	0.93	M-v	5	Williams	33069	1991 RX ₄₀
1991 RJ ₄₁	14.9	0.15	19990810	87.33784	8.71737	12.90165	7.68076	0.1273662	2.2829042	71	2	1991–1998	0.62	M-v	3	Williams	34287	1991 RJ ₄₁
1991 SN	12.5	0.15	19990810	215.10077	198.18623	107.48860	11.00393	0.0849348	3.0226079	61	5	1990–1999	0.70	M-v	1	Williams	34578	1991 SN
1991 SR	13.4	0.15	19990810	267.64972	266.93932	134.77453	15.22459	0.1086911	2.6123924	31	3	1991–1999	0.70	M-v	3	Williams	32048	1991 SR
1991 SR ₃	12.3	0.15	19990810	80.25831	62.74792	19.81534	21.76908	0.1161956	3.1501225	43	5	1983–1999	0.76	M-v	1	Williams	34287	1991 SR ₃
1991 TD ₄	13.8	0.15	19990810	335.61446	160.52785	174.89562	17.91462	0.2666198	2.6128765	38	3	1991–1999	0.88	M-v	4	Williams	32303	1991 TD ₄
1991 TQ ₆	13.9	0.15	19990810	109.33675	241.86734	285.07946	3.94075	0.0989276	2.7334948	48	8	1976–1999	0.77	M-v	1	Williams	31786	1991 TQ ₆
1991 TS ₆	14.0	0.15	19990810	180.51035	272.38125	206.25724	11.22786	0.1253581	2.7055604	32	3	1982–1998	0.65	M-v	3	Williams	32450	1991 TS ₆
1991 TL ₁₃	14.3	0.15	19990810	324.52502	337.20441	13.22843	9.56579	0.1385631	2.6013039	35	2	1991–1998	0.84	M-v	4	Williams	32303	1991 TL ₁₃
1991 UD ₂	12.9	0.15	19990810	70.64620	106.09023	34.49573	11.35337	0.0544851	3.0471002	33	3	1991–1999	0.73	M-v	4	Williams	34495	1991 UD ₂
1991 UC ₃	14.3	0.15	19990810	276.28857	182.27837	190.51169	3.10195	0.1917338	2.7352275	35	7	1955–1999	0.82	M-v	1	Williams	32048	1991 UC ₃
1991 UN ₃	13.6	0.15	19990810	101.93415	304.72831	84.33743	4.56420	0.0969642	2.2942238	82	3	1991–1999	0.84	M-v	3	Williams	34578	1991 UN ₃
1991 VN	14.8	0.15	19990810	300.22057	208.86387	153.73446	2.18670	0.3355863	2.6737760	26	5	1978–1999	0.77	M-v	2	Williams	31584	1991 VN
1991 VU ₂	13.5	0.15	19990810	296.88037	297.12218	79.23784	12.50612	0.2019105	2.6746845	24	3	1991–1999	0.77	M-v	3	Williams	32225	1991 VU ₂
1991 VN ₄	12.2	0.15	19990810	203.47567	279.10396	93.35467	11.64671	0.1039971	3.0084332	48	3	1991–1999	0.73	M-v	3	Williams	34578	1991 VN ₄
1991 VX ₅	12.9	0.15	19990810	71.54058	82.02448	87.09821	10.86180	0.0496684	2.9846923	82	3	1991–1999	0.73	M-v	2	Williams	34578	1991 VX ₅
1991 VC ₆	13.1	0.15	19990810	2.81960	203.64523	102.05853	8.61077	0.2476323	2.6615915	33	4	1991–1999	0.66	M-v	2	Williams	32048	1991 VC ₆
1991 VD ₆	14.2	0.15	19990810	202.00791	278.64370	118.75543	7.94465	0.1373012	2.9527315	25	4	1991–1999	0.81	M-v	2	Williams	31584	1991 VD ₆
1991 VJ ₆	13.9	0.15	19990810	268.64232	181.78578	194.26798	10.40579	0.1384083	2.7911567	40	3	1991–1999	0.91	M-v	4	Williams	32304	1991 VJ ₆
1991 VZ ₈	14.3	0.15	19990810	293.68718	316.07629	59.89343	6.84626	0.1526884	2.6861919	29	3	1991–1999	0.66	M-v	4	Williams	32304	1991 VZ ₈
1991 WB	12.9	0.15	19990810	271.21634	315.12461	79.16351	35.99644	0.3299803	2.7467745	48	4	1977–1999	0.76	M-v	2	Williams	32304	1991 WB
1991 YY	14.8	0.15	19990810	133.78741	224.93882	207.47623	3.49108	0.1601336	2.2168790	19	3	1991–1999	0.78	M-v	5	Williams	27308	1991 YY
1991 YE ₁	13.1	0.15	19990810	312.00600	294.44571	97.83286	14.25677	0.1929457	2.6748703	16	2	1991–1998	0.63	M-v	5	Williams	33480	1991 YE ₁
1991 YK ₁	13.8	0.15	19990810	117.73387	8.78934	94.82807	8.45306	0.1587289	3.1859249	41	3	1991–1999	0.43	M-v	3	Williams	31584	1991 YK ₁
1992 AY	12.9	0.15	19990810	139.41440	18.00106	100.88540	15.38474	0.1520902	3.1262750	35	4	1992–1999	0.75	M-v	2	Williams	32304	1992 AY
1992 AU ₁	14.0	0.15	19990810	64.17563	45.97840	87.74337	24.66911	0.2536399	2.2714314	60	3	1991–1999	0.69	M-v	2	Williams	34578	1992 AU ₁
1992 AM ₃	13.6	0.15	19990810	251.67983	137.95060	294.09789	14.79511	0.2093622	2.7992477	26	3	1992–1999	0.71	M-v	4	Williams	28886	1992 AM ₃
1992 BF ₂	12.9	0.15	19990810	140.11556	321.80324	143.88891	12.49367	0.0921158	3.1316054	65	3	1992–1999	0.75	M-v	3	Williams	31786	1992 BF ₂
1992 BK ₂	13.0	0.15	19990810	294.98743	185.35228	158.55392	10.30974	0.0779250	2.9802664	37	5	1992–1999	0.79	M-v	1	Williams	31786	1992 BK ₂
1992 CZ ₁	12.5	0.15	19990810	117.45943	198.47856	322.30944	3.55001	0.1367525	3.1344282	56	4	1986–1999	0.73	M-v	4	Williams	32304	1992 CZ ₁
1992 CR ₂	14.5	0.15	19990810	350.88304	54.97521	201.94312	4.08012	0.1065477	2.1911267	78	3	1992–1999	0.65	M-v	3	Williams	34578	1992 CR ₂
1992 CQ ₃	14.8	0.15	19990810	339.19861	336.09923	262.25194	4.02466	0.1080815	2.2575433	32	2	1992–1999	0.82	M-v	5	Williams	34183	1992 CQ ₃
1992 DY	13.8	0.15	19990810	44.22167	110.28650	112.57839	5.90059	0.1055649	2.2106963	61	3	1992–1999	0.61	M-v	2	Williams	34578	1992 DY
1992 DS ₅	14.0	0.15	19990810	111.07054	80.37120	96.29465	2.01912	0.1249641	3.1378038	20	5	1992–1999	0.59	M-v	1	Williams	32514	1992 DS ₅
1992 DX ₅	13.3	0.15	19990810	320.18792	207.96880	100.22858	2.61782	0.1064942	3.2464034	48	3	1992–1999	0.63	M-v	4	Williams	32304	1992 DX ₅
1992 DO ₆	13.7	0.15	19990810	320.38859	214.38179	123.13825	3.08257	0.0734149	3.0896633	48	5	1992–1999	0.70	M-v	1	Williams	32048	1992 DO ₆
1992 DA ₁₀	13.5	0.15	19990810	260.89338	125.31415	234.05116	4.20454	0.1691175	3.1810072	18	3	1992–1999	0.63	M-v	5	Williams	31786	1992 DA ₁₀
1992 DD ₁₀	13.1	0.15	19990810	300.24891	104.78240	215.74475	4.39337	0.1063964	3.2409856	32	3	1992–1999	0.69	M-v	4	Williams	32304	1992 DD ₁₀
1992 DG ₁₀	15.3	0.15	19990810	240.59249	117.94176	278.41115	2.70801	0.1500175	2.1433516	29	3	1992–1999	0.50	M-v	4	Williams	31786	1992 DG ₁₀
1992 EA	14.7	0.15	19990810	36.50639	260.41069	338.36130	1.07611	0.1126454	2.2040626	44	4	1992–1999	0.69	M-v	2	Williams	28615	1992 EA
1992 EP	13.8	0.15	19990810	313.15566	178.67797	70.20918	5.85185	0.1953488	2.3777813	27	2	1992–1999	0.79	M-v	5	Williams	34008	1992 EP
1992 EE ₁	13.7	0.15	19990810	8.96643	160.29574	28.45303	26.80277	0.1841948	2.3621363	68	2	1992–1999	0.74	M-v	2	Williams	34496	1992 EE ₁
1992 EP ₄	14.6	0.15	19990810	20.76399	167.29922	101.60571	2.60713	0.0224903	2.1482647	29	3	1992–1999	0.66	M-v	4	Williams	31231	1992 EP ₄
1992 EV ₄	12.9	0.15	19990810	320.74163	202.43249	138.66292	9.72870	0.0685232	3.0357762	57	4	1992–1999	0.63	M-v	1	Williams	32304	1992 EV ₄
1992 EY ₈	13.8	0.15	19990810	146.45304	37.96643	111.55400	6.85477	0.1103946	3.0671911	14	3	1992–1999	0.63	M-v	5	Williams	33230	1992 EY ₈
1992 EL ₉	13.4	0.15	19990810	170.91625	338.02989	112.85647	5.67186	0.1388593	3.1652351	17	4	1990–1999	0.68	M-v	1	Williams	33681	1992 EL ₉
1992 EC ₁₀	12.9	0.15	19990810	274.54677	223.45664	152.34980	12.58893	0.1362573	3.0457926	22	3	1992–1999	0.64	M-v	4	Williams	33481	1992 EC ₁₀
1992 EU ₁₄	13.4	0.15	19990810	4.96693	351.60749	303.38894	3.97659	0.1191716	3.1284433	25	4	1992–1999	0.68	M-v	1	Williams	34008	1992 EU ₁₄
1992 EM ₁₇	14.1	0.15	19990810	350.26715	85.21150	128.42955	5.05766	0.1157523	2.3256792	52	2	1992–1999	0.66	M-v	4	Williams	34288	1992 EM ₁₇
1992 ER ₁₇	14.0	0.15	19990810	88.83953	100.68288	325.50823	1.77646	0.1885188	2.3710604	28	2	1992–1999	0.72	M-v	4	Williams	34579	1992 ER ₁₇

1992 EG ₂₂	14.8	0.15	19990810	324.22702	225.53947	96.84341	5.15865	0.1748747	2.1697090	61	4	1974–1999	0.66	M-v	2	Williams	34497	1992 EG ₂₂
1992 ET ₂₃	15.0	0.15	19990810	305.51932	126.20681	161.97523	2.87173	0.1220653	2.2664233	26	3	1992–1999	0.66	M-v	4	Williams	34497	1992 ET ₂₃
1992 EU ₂₈	13.0	0.15	19990810	345.12080	250.51618	48.97028	1.70339	0.1805440	3.2039844	44	3	1992–1999	0.63	M-v	5	Williams	32304	1992 EU ₂₈
1992 EL ₃₅	14.9	0.15	19990810	312.25313	114.41816	175.90761	5.48029	0.1596637	2.2680185	44	3	1992–1999	0.65	M-v	4	Williams	34579	1992 EL ₃₅
1992 FG	14.3	0.15	19990810	0.48018	244.70586	15.39540	6.16437	0.1524285	2.2643158	40	3	1992–1999	0.71	M-v	3	Williams	34579	1992 FG
1992 FD ₁	14.5	0.15	19990810	41.42027	174.99906	25.93992	4.21347	0.1199542	2.2776543	53	3	1992–1999	0.67	M-v	3	Williams	34579	1992 FD ₁
1992 FK ₁	14.7	0.15	19990810	60.93447	238.43999	274.12152	22.14545	0.2487797	2.2817899	19	3	1975–1999	0.68	M-v	3	Williams	34579	1992 FK ₁
1992 GP	13.5	0.15	19990810	322.89660	65.46553	183.48248	12.07805	0.1152430	2.3871384	36	3	1955–1999	0.63	M-v	3	Williams	33934	1992 GP
1992 GB ₂	15.0	0.15	19990810	83.45338	311.92938	209.71310	3.68862	0.0850965	2.2800167	64	3	1992–1999	0.68	M-v	3	Williams	31138	1992 GB ₂
1992 GF ₂	14.9	0.15	19990810	324.17712	300.49271	36.52134	2.13364	0.1173596	2.2061260	30	4	1992–1999	0.81	M-v	3	Williams	31584	1992 GF ₂
1992 GW ₄	14.9	0.15	19990810	28.08905	171.08579	38.90030	7.23541	0.1030222	2.3186206	61	3	1992–1999	0.80	M-v	3	Williams	34579	1992 GW ₄
1992 GX ₄	14.7	0.15	19990810	46.25777	173.37849	38.88767	4.15361	0.0974035	2.2782505	43	4	1992–1999	0.81	M-v	2	Williams	31006	1992 GX ₄
1992 HA	14.3	0.15	19990810	352.28596	212.92661	41.87561	7.06479	0.0774967	2.3090736	42	2	1992–1999	0.66	M-v	5	Williams	34497	1992 HA
1992 HN	15.0	0.15	19990810	110.17043	111.77871	66.83397	5.06103	0.1254522	2.2075220	16	3	1992–1999	0.43	M-v	4	Williams	30978	1992 HN
1992 HS ₄	13.2	0.15	19990810	161.44927	179.43436	100.23863	9.44866	0.1912817	2.7996326	43	4	1989–1998	0.67	M-v	2	Williams	33547	1992 HS ₄
1992 HD ₇	13.5	0.15	19990810	154.12728	69.18530	138.21880	12.24812	0.2078583	3.0046306	26	3	1983–1998	0.73	M-v	3	Williams	32745	1992 HD ₇
1992 JR	14.4	0.15	19990810	32.13549	94.71920	116.18929	8.11821	0.2550410	2.3183268	54	2	1992–1999	0.67	M-v	3	Williams	34498	1992 JR
1992 JD ₃	14.2	0.15	19990810	61.36687	158.78095	48.20002	6.63336	0.1123841	2.2676539	30	8	1971–1999	0.81	M-v	2	Williams	31138	1992 JD ₃
1992 JF ₃	14.3	0.15	19990810	344.83970	265.56952	352.07964	2.09340	0.1960956	2.3541932	60	4	1992–1999	0.71	M-v	1	Williams	34579	1992 JF ₃
1992 ME	14.2	0.15	19990810	14.54795	134.10235	120.57245	24.20480	0.2519621	2.2994539	73	3	1992–1999	0.66	M-v	2	Williams	34579	1992 ME
1992 OO	12.9	0.15	19990810	347.79214	195.28716	122.86671	25.76512	0.1791195	2.3412628	39	3	1992–1999	0.55	M-v	2	Williams	25441	1992 OO
1992 PM	14.7	0.15	19990810	229.55411	190.62599	219.48035	2.32501	0.1690583	2.4374680	38	6	1977–1999	0.75	M-v	1	Williams	34579	1992 PM
1992 PT	15.4	0.15	19990810	297.78301	125.14001	211.82865	0.80497	0.2027776	2.4184381	46	4	1992–1999	0.81	M-v	1	Williams	28317	1992 PT
1992 PU	14.8	0.15	19990810	313.64232	129.47811	219.51249	2.64090	0.1092233	2.3530119	32	4	1992–1999	0.82	M-v	2	Williams	34579	1992 PU
1992 PD ₆	14.3	0.15	19990810	314.00506	238.92097	80.54555	3.49486	0.0705979	2.3901435	31	3	1978–1999	0.57	M-v	6	Williams	22407	1992 PD ₆
1992 QB	14.2	0.15	19990810	332.86514	243.50998	55.75363	24.11655	0.2238947	2.3711901	67	3	1974–1999	0.61	M-v	2	Williams	34579	1992 QB
1992 RX	14.0	0.15	19990810	146.13155	216.27734	22.69877	4.19476	0.1530906	2.2012383	44	9	1953–1998	0.72	M-v	2	Williams	32305	1992 RX
1992 RU ₁	14.5	0.15	19990810	16.51921	44.11118	188.28104	4.28612	0.1018318	2.4817999	40	3	1992–1999	0.73	M-v	4	Williams	28299	1992 RU ₁
1992 RA ₄	15.1	0.15	19990810	30.85340	270.54466	333.10017	1.65867	0.1719666	2.4000099	26	6	1978–1999	0.69	M-v	1	Williams	31139	1992 RA ₄
1992 SE	14.1	0.15	19990810	217.74665	220.72374	184.77260	12.86267	0.2806212	2.5678747	46	3	1992–1999	0.75	M-v	3	Williams	32305	1992 SE
1992 SH	13.0	0.15	19990810	252.07691	106.76587	188.72893	12.29936	0.1743540	2.6942802	28	3	1987–1999	0.86	M-v	3	Williams	34288	1992 SH
1992 SC ₁	13.9	0.15	19990810	268.95672	209.92214	145.12841	5.09153	0.2074182	2.5205031	61	3	1992–1999	0.91	M-v	4	Williams	34579	1992 SC ₁
1992 SC ₂	14.4	0.15	19990810	125.37364	258.36124	134.63992	2.71628	0.0968939	2.8654406	21	3	1992–1999	0.63	M-v	4	Williams	34288	1992 SC ₂
1992 SF ₂	13.9	0.15	19990810	53.49210	26.49033	172.10240	14.20965	0.0939552	2.5378396	56	3	1992–1999	0.57	M-v	3	Williams	31139	1992 SF ₂
1992 SG ₂	13.1	0.15	19990810	285.58527	119.39855	170.53371	13.09565	0.1622904	2.6028460	23	2	1992–1999	0.64	M-v	4	Williams	34499	1992 SG ₂
1992 SM ₁₆	13.4	0.15	19990810	102.18068	307.98577	182.58944	10.47772	0.0576941	2.6098278	65	8	1955–1999	0.72	M-v	1	Williams	34579	1992 SM ₁₆
1992 SQ ₂₃	15.0	0.15	19990810	21.02731	101.50795	219.98908	7.82370	0.3102894	2.3073146	10	3	1981–1992	0.60	M-v	4	Williams	21798	1992 SQ ₂₃
1992 TM ₁	12.7	0.15	19990810	91.50195	244.02131	269.35284	12.22490	0.1000765	2.6166029	32	3	1992–1999	0.61	M-v	3	Williams	31382	1992 TM ₁
1992 UW	13.5	0.15	19990810	247.36098	19.28825	2.30231	2.88072	0.2359633	2.5502293	59	3	1992–1999	0.67	M-v	3	Williams	34579	1992 UW
1992 UT ₁	13.9	0.15	19990810	333.48247	211.55953	83.09839	4.59583	0.1456624	2.5200470	73	6	1988–1999	0.73	M-v	1	Williams	34579	1992 UT ₁
1992 UB ₃	13.0	0.15	19990810	243.98185	312.43624	43.92323	13.18684	0.1205806	2.6544947	54	4	1979–1999	0.79	M-v	2	Williams	34499	1992 UB ₃
1992 UL ₄	12.7	0.15	19990810	329.28803	197.90717	87.16755	10.69488	0.0358669	2.6062841	63	2	1992–1999	0.65	M-v	4	Williams	34499	1992 UL ₄
1992 UW ₄	15.1	0.15	19990810	281.17227	95.29196	228.76960	22.54429	0.1203845	1.8840487	14	3	1992–1999	0.51	M-v	2	Williams	31232	1992 UW ₄
1992 UO ₅	13.3	0.15	19990810	154.67943	353.47926	77.05875	9.73990	0.0737590	2.7296675	29	3	1992–1999	0.81	M-v	4	Williams	34579	1992 UO ₅
1992 UP ₆	12.4	0.15	19990810	138.87692	154.40786	218.65395	12.80687	0.1607815	2.9740935	45	3	1992–1999	0.86	M-v	3	Williams	34289	1992 UP ₆
1992 UU ₆	13.5	0.15	19990810	203.58150	269.62444	158.18875	13.20592	0.1596627	2.5645129	27	3	1992–1999	0.46	M-v	3	Williams	32305	1992 UU ₆
1992 UZ ₆	14.0	0.15	19990810	249.39420	120.98220	273.06539	3.77880	0.1796082	2.5364202	29	3	1992–1999	0.78	M-v	4	Williams	32049	1992 UZ ₆
1992 VR	14.5	0.15	19990810	274.14133	218.65969	179.62525	1.74696	0.1609605	2.4655914	35	4	1988–1999	0.77	M-v	3	Williams	29943	1992 VR
1992 WB	13.0	0.15	19990810	216.36493	342.32248	22.23938	9.83715	0.1013773	2.6825349	41	3	1977–1999	0.74	M-v	4	Williams	34579	1992 WB
1992 WF ₁	12.2	0.15	19990810	139.00268	262.61227	101.77337	11.06586	0.1009349	3.0294105	58	3	1992–1999	0.64	M-v	2	Williams	34579	1992 WF ₁
1992 WK ₁	12.4	0.15	19990810	84.44218	324.59724	76.37752	18.17975	0.2072343	3.1535495	55	3	1990–1999	0.71	M-v	3	Williams	34579	1992 WK ₁
1992 WP ₁	12.8	0.15	19990810	92.83929	322.01911	96.04490	12.89624	0.1120335	3.0562435	53	2	1992–1999	0.72	M-v	4	Williams	34009	1992 WP ₁
1992 WS ₁	13.2	0.15	19990810	48.84175	25.34605	76.48628	6.27258	0.1752697	3.1240120	38	2	1992–1999	0.74	M-v	4	Williams	34579	1992 WS ₁

1992 WB ₂	13.4	0.15	19990810	285.49003	5.72137	335.15504	1.64350	0.1695270	2.5690952	77	5	1975–1999	0.70	M-v	1	Williams	34579	1992 WB ₂
1992 WH ₂	12.4	0.15	19990810	328.23478	326.86525	240.56878	12.42413	0.1015568	2.9775697	48	3	1992–1999	0.66	M-v	3	Williams	34579	1992 WH ₂
1992 WY ₃	14.6	0.15	19990810	321.93696	224.22822	91.32683	10.26445	0.0960356	2.5659726	32	3	1992–1999	0.58	M-v	4	Williams	32228	1992 WY ₃
1992 WZ ₃	14.1	0.15	19990810	190.36830	240.33957	224.93529	12.27026	0.1175004	2.5673005	33	3	1992–1999	0.77	M-v	3	Williams	31722	1992 WZ ₃
1992 YD	13.2	0.15	19990810	179.76999	17.32016	95.90630	16.42565	0.0766276	2.6269591	37	3	1992–1999	0.55	M-v	3	Williams	31959	1992 YD
1992 YU ₁	13.4	0.15	19990810	243.09104	85.60779	286.55105	5.12296	0.0831132	2.7234292	54	4	1987–1999	0.80	M-v	2	Williams	34580	1992 YU ₁
1992 YE ₄	14.3	0.15	19990810	268.05070	240.31385	150.65546	4.08280	0.2364400	2.5784538	44	4	1979–1999	0.85	M-v	2	Williams	32049	1992 YE ₄
1993 AJ	12.8	0.15	19990810	250.83315	287.06639	116.90836	13.89991	0.2020965	2.6256536	45	4	1991–1999	0.60	M-v	1	Williams	32049	1993 AJ
1993 BR ₂	13.8	0.15	19990810	129.31653	125.02660	355.19407	4.66940	0.1984751	2.8646539	37	4	1991–1999	0.70	M-v	2	Williams	32049	1993 BR ₂
1993 BY ₂	13.3	0.15	19990810	70.12338	204.52534	306.29284	5.47881	0.1248803	3.0283566	29	4	1979–1999	0.84	M-v	1	Williams	31103	1993 BY ₂
1993 BR ₄	14.2	0.15	19990810	327.54283	328.11874	338.88709	0.96564	0.0583242	2.8131250	31	3	1993–1999	0.79	M-v	5	Williams	31722	1993 BR ₄
1993 BM ₅	13.3	0.15	19990810	358.59943	186.58675	96.34739	1.83853	0.0631678	2.8004559	39	3	1993–1999	0.58	M-v	4	Williams	32305	1993 BM ₅
1993 BB ₇	12.7	0.15	19990810	77.11037	340.19973	152.39616	10.36915	0.0498588	3.0720377	27	3	1977–1999	0.53	M-v	4	Williams	34500	1993 BB ₇
1993 DJ	14.2	0.15	19990810	84.68639	74.50913	141.61885	23.56893	0.0467418	1.9289208	35	4	1993–1999	0.71	M-v	2	Williams	31007	1993 DJ
1993 FO	13.3	0.15	19990810	314.27056	128.32152	192.87435	1.17525	0.1706346	3.0417872	51	5	1979–1999	0.82	M-v	1	Williams	32049	1993 FO
1993 FR ₁	12.5	0.15	19990810	308.27292	214.24573	75.47818	5.93693	0.1040333	3.1872676	36	2	1993–1999	0.66	M-v	4	Williams	34500	1993 FR ₁
1993 FF ₄	14.1	0.15	19990810	135.84497	58.47902	41.87701	2.34942	0.1420705	3.0591473	38	4	1982–1999	0.67	M-v	2	Williams	31585	1993 FF ₄
1993 FG ₆	13.3	0.15	19990810	270.89993	320.21302	38.84243	2.06734	0.2061916	2.9843980	39	5	1990–1999	0.81	M-v	2	Williams	31787	1993 FG ₆
1993 FN ₇	13.0	0.15	19990810	253.46085	218.13340	141.83314	6.32031	0.1510338	3.0593378	41	3	1993–1999	0.78	M-v	4	Williams	34580	1993 FN ₇
1993 FN ₈	14.1	0.15	19990810	69.53377	27.24082	140.08737	6.49172	0.1068155	3.1248972	18	3	1993–1999	0.67	M-v	3	Williams	31419	1993 FN ₈
1993 FG ₁₂	13.3	0.15	19990810	113.28264	295.97327	174.45881	14.53213	0.1494611	3.1462260	32	4	1993–1999	0.66	M-v	1	Williams	34580	1993 FG ₁₂
1993 FY ₁₂	12.9	0.15	19990810	80.34724	66.90363	164.74032	9.45758	0.0747334	2.8468713	45	3	1993–1999	0.63	M-v	3	Williams	32306	1993 FY ₁₂
1993 FX ₁₄	13.8	0.15	19990810	289.65522	188.06639	156.04842	11.09029	0.0918982	3.0013751	17	3	1979–1999	0.68	M-v	4	Williams	23783	1993 FX ₁₄
1993 FF ₁₈	13.4	0.15	19990810	5.04494	153.36424	114.37738	5.84388	0.1395586	3.0659856	33	3	1993–1999	0.68	M-v	5	Williams	31787	1993 FF ₁₈
1993 FR ₁₈	13.3	0.15	19990810	292.96435	283.99874	41.03590	10.16313	0.1394018	3.1276687	12	3	1993–1999	0.51	M-v	4	Williams	31234	1993 FR ₁₈
1993 FA ₂₀	13.0	0.15	19990810	219.86908	339.73404	56.02458	10.63320	0.1502709	3.0404707	31	3	1993–1999	0.76	M-v	4	Williams	34580	1993 FA ₂₀
1993 FD ₂₂	14.6	0.15	19990810	134.37990	243.67562	211.25660	1.10125	0.2505068	3.0821933	35	5	1991–1999	0.77	M-v	1	Williams	31787	1993 FD ₂₂
1993 FA ₂₃	13.1	0.15	19990810	228.75122	188.59476	211.08958	5.50190	0.0400540	3.0201608	43	4	1977–1999	0.78	M-v	2	Williams	32050	1993 FA ₂₃
1993 FB ₂₃	13.7	0.15	19990810	322.33781	71.16315	206.60077	5.86009	0.0876026	3.2228753	33	3	1993–1999	0.56	M-v	3	Williams	34580	1993 FB ₂₃
1993 FJ ₂₃	13.8	0.15	19990810	282.70240	178.59912	201.14066	12.92457	0.0871148	2.8774761	48	5	1993–1999	0.73	M-v	1	Williams	32745	1993 FJ ₂₃
1993 FK ₃₃	13.7	0.15	19990810	99.07298	353.26036	125.43304	3.53265	0.2409288	3.1494890	50	4	1976–1999	0.76	M-v	2	Williams	31234	1993 FK ₃₃
1993 FS ₃₄	13.1	0.15	19990810	266.40384	287.04420	55.08752	2.19369	0.1768317	3.1760515	32	5	1992–1999	0.81	M-v	1	Williams	34580	1993 FS ₃₄
1993 FW ₃₄	13.1	0.15	19990810	303.75793	166.96437	136.14396	2.69024	0.1492306	3.2108363	44	4	1989–1999	0.75	M-v	1	Williams	34580	1993 FW ₃₄
1993 FS ₃₅	13.4	0.15	19990810	79.50328	136.74910	43.78559	3.56796	0.0523512	3.0588205	29	3	1993–1999	0.56	M-v	4	Williams	32746	1993 FS ₃₅
1993 FR ₃₆	13.7	0.15	19990810	329.10912	191.21768	106.43482	2.29067	0.1375276	3.0967982	37	4	1993–1999	0.80	M-v	2	Williams	33684	1993 FR ₃₆
1993 FJ ₃₈	13.6	0.15	19990810	93.24409	323.96826	173.56534	9.36405	0.0526927	3.1666447	40	3	1993–1999	0.70	M-v	4	Williams	34580	1993 FJ ₃₈
1993 FK ₃₈	13.2	0.15	19990810	344.75753	106.43027	152.62780	4.36538	0.0496567	3.1501407	43	4	1990–1999	0.61	M-v	1	Williams	32515	1993 FK ₃₈
1993 FF ₄₀	13.5	0.15	19990810	295.84993	161.39605	176.84481	10.72407	0.0458489	2.9921870	40	4	1993–1999	0.68	M-v	1	Williams	32306	1993 FF ₄₀
1993 FM ₄₀	14.9	0.15	19990810	349.76244	144.80464	137.15821	2.27308	0.1685070	3.0839231	30	4	1973–1999	0.78	M-v	2	Williams	31585	1993 FM ₄₀
1993 FN ₄₀	13.3	0.15	19990810	334.52069	270.20451	48.37529	2.75914	0.0832586	2.9324418	48	6	1975–1999	0.64	M-v	1	Williams	32306	1993 FN ₄₀
1993 FR ₄₁	13.8	0.15	19990810	6.85417	108.15102	172.03249	1.08224	0.1613026	3.0030371	20	3	1993–1999	0.59	M-v	6	Williams	32050	1993 FR ₄₁
1993 FD ₄₂	13.7	0.15	19990810	193.92543	351.14201	41.60198	0.93453	0.1511468	3.1808859	11	3	1993–1999	0.26	M-v	5	Williams	32230	1993 FD ₄₂
1993 FB ₄₄	13.5	0.15	19990810	240.24279	203.86506	213.27326	1.51254	0.0514371	2.8626408	49	3	1993–1999	0.79	M-v	4	Williams	32306	1993 FB ₄₄
1993 FV ₄₄	13.3	0.15	19990810	266.07170	279.14715	43.41956	0.99504	0.1374445	3.2407721	33	3	1993–1999	0.69	M-v	6	Williams	34501	1993 FV ₄₄
1993 FR ₅₈	13.6	0.15	19990810	228.15074	190.53392	237.01130	1.01318	0.0906715	2.8313763	79	6	1986–1999	0.71	M-v	1	Williams	32050	1993 FR ₅₈
1993 FE ₇₈	14.2	0.15	19990810	308.21327	90.52793	207.72624	1.25211	0.1522650	3.2196850	20	4	1993–1999	0.45	M-v	1	Williams	32664	1993 FE ₇₈
1993 FX ₈₁	12.8	0.15	19990810	125.08795	69.52360	83.62110	6.62461	0.1256589	2.9383703	44	6	1982–1999	0.79	M-v	1	Williams	32050	1993 FX ₈₁
1993 GG ₁	13.0	0.15	19990810	35.30631	153.84614	69.26909	6.34845	0.0998847	3.1345115	81	4	1993–1999	0.47	M-v	1	Williams	31788	1993 GG ₁
1993 GM ₁	12.9	0.15	19990810	83.15738	282.86467	229.72253	4.24115	0.1448077	3.1601463	41	3	1993–1999	0.56	M-v	3	Williams	28616	1993 GM ₁
1993 HG ₁	14.5	0.15	19990810	336.93218	73.62140	164.45105	3.13477	0.0839890	2.1489356	48	3	1993–1999	0.66	M-v	3	Williams	34289	1993 HG ₁
1993 HS ₁	14.0	0.15	19990810	300.32012	199.88627	29.72310	8.22993	0.1147597	2.2462654	32	4	1993–1999	0.58	M-v	2	Williams	33746	1993 HS ₁
1993 HJ ₃	13.5	0.15	19990810	189.30179	359.12352	104.67643	3.20273	0.0329234	2.8975943	52	5	1981–1999	0.77	M-v	2	Williams	34502	1993 HJ ₃
1993 HA ₆	13.7	0.15	19990810	180.60933	181.58511	43.10071	6.30250	0.1580584	2.5498941	50	5	1982–1998	0.72	M-v	2	Williams	33071	1993 HA ₆

1993 JK	14.0	0.15	19990810	305.01644	49.09821	201.04046	4.49041	0.1395873	2.2202610	39	4	1964–1999	0.60	M-v	2	Williams	34580	1993 JK
1993 JW	12.7	0.15	19990810	41.22780	159.20201	68.92347	12.64774	0.0728127	3.2196484	37	4	1978–1999	0.52	M-v	1	Williams	34580	1993 JW
1993 KF	12.3	0.15	19990810	249.16882	331.45309	82.74261	11.03653	0.0708555	3.0084027	32	3	1993–1999	0.63	M-v	3	Williams	33235	1993 KF
1993 KO	13.8	0.15	19990810	329.07285	25.31099	198.75848	5.73498	0.1189003	2.2215906	47	4	1993–1999	0.84	M-v	3	Williams	34580	1993 KO
1993 NB	12.8	0.15	19990810	186.59521	204.82098	130.17334	14.19133	0.2259782	2.4413149	42	4	1955–1999	0.74	M-v	3	Williams	34289	1993 NB
1993 QS ₁	15.2	0.15	19990810	351.23376	315.80549	323.26342	1.80336	0.1994495	2.1711676	59	4	1990–1999	0.67	M-v	3	Williams	34580	1993 QS ₁
1993 QB ₃	14.3	0.15	19990810	243.81808	250.33768	146.71286	20.13614	0.2993836	2.2302752	32	3	1993–1999	0.90	M-v	3	Williams	32050	1993 QB ₃
1993 QE ₃	16.7	0.15	19990810	323.81743	197.32904	139.94404	3.18140	0.2379860	2.1438624	25	3	1993–1999	0.74	M-v	4	Williams	31384	1993 QE ₃
1993 QD ₄	14.2	0.15	19990810	245.47471	8.03255	348.33893	2.69872	0.1176942	2.2956250	35	5	1971–1999	0.90	M-v	2	Williams	34503	1993 QD ₄
1993 QY ₉	15.7	0.15	19990810	313.38207	156.18997	139.70612	5.08281	0.1438680	2.2443519	24	3	1993–1999	0.70	M-v	4	Williams	29944	1993 QY ₉
1993 RK ₅	16.1	0.15	19990810	143.21944	301.09671	215.16561	2.14681	0.0074610	2.1837344	28	4	1992–1999	0.73	M-v	3	Williams	33236	1993 RK ₅
1993 RZ ₆	14.3	0.15	19990810	179.54659	65.44943	354.58737	4.73579	0.1033731	2.3539884	49	4	1986–1999	0.86	M-v	2	Williams	34580	1993 RZ ₆
1993 SH ₁	13.9	0.15	19990810	265.16011	163.23907	174.93844	6.74449	0.1476896	2.3052245	72	3	1993–1999	0.79	M-v	2	Williams	34581	1993 SH ₁
1993 SG ₃	15.2	0.15	19990810	106.35043	331.83235	168.56666	3.75503	0.1257679	2.3225256	60	3	1993–1999	0.82	M-v	3	Williams	31276	1993 SG ₃
1993 SJ ₅	13.6	0.15	19990810	135.52103	106.81696	348.20945	6.56143	0.0786844	2.3458911	40	4	1986–1999	0.72	M-v	2	Williams	34581	1993 SJ ₅
1993 SS ₆	14.0	0.15	19990810	65.25453	260.14932	259.52455	1.40894	0.1546178	2.4017292	34	3	1993–1999	0.72	M-v	4	Williams	34581	1993 SS ₆
1993 SX ₆	14.5	0.15	19990810	132.04066	118.12567	8.42220	4.98019	0.0526460	2.2985015	32	3	1993–1999	0.73	M-v	4	Williams	30899	1993 SX ₆
1993 SH ₇	14.6	0.15	19990810	342.87679	82.51445	170.74981	4.29660	0.1063948	2.3136558	37	4	1990–1999	0.83	M-v	2	Williams	34503	1993 SH ₇
1993 TD	14.8	0.15	19990810	163.78508	32.63311	4.45861	10.95519	0.1839744	2.4825688	50	5	1989–1999	0.81	M-v	3	Williams	34290	1993 TD
1993 TA ₃	14.4	0.15	19990810	297.45160	159.67723	147.12463	3.96888	0.1564776	2.3063321	40	2	1993–1999	0.75	M-v	4	Williams	34581	1993 TA ₃
1993 TE ₃	13.5	0.15	19990810	266.43485	335.52488	11.87812	8.22181	0.1184421	2.3064829	46	5	1979–1999	0.77	M-v	2	Williams	34581	1993 TE ₃
1993 TL ₅	15.1	0.15	19990810	78.39368	244.38146	321.14484	3.28621	0.1111193	2.2532693	26	5	1989–1999	0.56	M-v	1	Williams	32746	1993 TL ₅
1993 TS ₁₁	14.0	0.15	19990810	233.00538	32.02862	8.14073	6.19630	0.1114608	2.2893550	38	3	1993–1999	0.71	M-v	3	Williams	31384	1993 TS ₁₁
1993 TJ ₁₅	15.6	0.15	19990810	338.89644	256.05538	22.43412	6.64248	0.1915537	2.2505653	27	3	1992–1999	0.82	M-v	3	Williams	34581	1993 TJ ₁₅
1993 TC ₂₀	14.6	0.15	19990810	155.61114	267.29597	39.35685	4.25619	0.0848677	2.7835491	32	4	1993–1998	0.77	M-v	1	Williams	34581	1993 TC ₂₀
1993 TS ₂₀	15.0	0.15	19990810	350.26452	118.19944	147.07940	2.23385	0.1113525	2.2844880	55	4	1992–1999	0.78	M-v	1	Williams	34581	1993 TS ₂₀
1993 TM ₂₅	15.0	0.15	19990810	67.00830	309.59996	143.27846	3.86435	0.2700424	2.7036161	49	5	1959–1999	0.60	M-v	1	Marsden	34504	1993 TM ₂₅
1993 TZ ₃₁	15.0	0.15	19990810	358.84684	201.80909	48.95212	9.18464	0.1187763	2.3130680	58	3	1993–1999	0.70	M-v	4	Williams	34581	1993 TZ ₃₁
1993 TJ ₃₂	13.7	0.15	19930930	294.80509	79.68150	32.63965	17.88080	0.2212731	2.7340971	7	1	6 days	0.29		D	Williams		1993 TJ ₃₂
1993 TS ₃₃	14.7	0.15	19990810	170.37020	312.73580	116.94262	4.32078	0.1170774	2.3921703	42	5	1993–1999	0.91	M-v	2	Williams	31007	1993 TS ₃₃
1993 TE ₃₄	15.2	0.15	19990810	324.36299	177.54713	151.17760	3.98639	0.1640978	2.1987855	32	3	1993–1999	0.66	M-v	4	Williams	31419	1993 TE ₃₄
1993 TZ ₃₆	14.9	0.15	19990810	263.76431	193.28748	167.21258	5.43114	0.1487087	2.2887890	22	3	1993–1999	0.80	M-v	4	Williams	25332	1993 TZ ₃₆
1993 TP ₃₇	14.4	0.15	19990810	135.50407	17.94844	78.10473	6.33195	0.0802443	2.4181226	54	3	1993–1999	0.95	M-v	3	Williams	34581	1993 TP ₃₇
1993 TZ ₃₈	14.3	0.15	19990810	270.19668	149.28744	144.95061	6.85923	0.1257128	2.4374531	41	3	1993–1999	0.70	M-v	2	Williams	34290	1993 TZ ₃₈
1993 TB ₃₉	13.8	0.15	19990810	33.61256	2.40745	144.59000	6.28114	0.1236987	2.6030613	37	3	1993–1999	0.74	M-v	3	Williams	34010	1993 TB ₃₉
1993 UN	15.0	0.15	19990810	352.96689	188.08544	120.43995	0.57354	0.1577429	2.1644199	71	5	1993–1999	0.60	M-v	2	Williams	31276	1993 UN
1993 UT	13.6	0.15	19990810	156.66216	244.23460	63.46776	32.32236	0.3365637	2.7189821	40	4	1984–1998	0.61	M-v	3	Williams	33550	1993 UT
1993 UD ₁	15.0	0.15	19990810	287.19398	238.44234	70.47444	6.10305	0.1719731	2.3349695	36	3	1993–1999	0.83	M-v	3	Williams	34581	1993 UD ₁
1993 UH ₁	14.3	0.15	19990810	288.92697	105.12080	195.39751	22.91265	0.2340407	2.3268082	41	4	1993–1999	0.79	M-v	2	Williams	34290	1993 UH ₁
1993 UQ ₅	15.3	0.15	19990810	226.02797	335.84945	69.55502	6.77173	0.1170869	2.3037000	36	3	1993–1999	0.79	M-v	3	Williams	31586	1993 UQ ₅
1993 UF ₇	14.7	0.15	19990810	251.36757	267.11597	145.71462	4.53001	0.1103374	2.2278440	48	5	1986–1999	0.86	M-v	1	Williams	31788	1993 UF ₇
1993 VS	14.8	0.15	19990810	164.22241	271.60518	126.08031	1.51832	0.1740942	2.5369164	58	3	1993–1999	0.64	M-v	2	Williams	34581	1993 VS
1993 VS ₁	14.0	0.15	19990810	196.95869	130.91435	279.82634	2.43370	0.2052891	2.3938100	27	4	1982–1999	0.60	M-v	2	Williams	31276	1993 VS ₁
1993 VF ₂	15.8	0.15	19990810	282.64703	325.20391	74.35093	3.86718	0.1664189	2.1943201	20	3	1993–1999	0.56	M-v	4	Williams	31539	1993 VF ₂
1993 VO ₄	14.1	0.15	19990810	221.10039	309.62165	82.29463	5.88592	0.2239255	2.3768514	22	3	1993–1999	0.73	M-v	3	Williams	31539	1993 VO ₄
1993 VZ ₄	14.1	0.15	19990810	216.88516	347.63190	29.76973	1.74713	0.1978574	2.4237652	43	3	1989–1999	0.66	M-v	4	Williams	34581	1993 VZ ₄
1993 WQ	13.6	0.15	19990810	156.83849	359.73485	47.57681	5.06098	0.2233639	2.5542109	78	5	1985–1999	0.75	M-v	2	Williams	34581	1993 WQ
1993 XK	14.5	0.15	19990810	243.89563	258.89059	110.84474	5.40817	0.1125968	2.4004947	80	3	1993–1999	0.69	M-v	3	Williams	34581	1993 XK
1993 XL	14.6	0.15	19990810	317.53382	228.55023	100.92446	7.15916	0.2170749	2.2725243	57	3	1993–1999	0.50	M-v	3	Williams	31788	1993 XL
1993 XN	13.0	0.15	19990810	33.72607	280.39384	268.49268	12.16577	0.1250943	2.6479654	62	3	1993–1999	0.71	M-v	2	Williams	34581	1993 XN
1993 XP	13.0	0.15	19990810	126.31713	206.43765	267.80733	12.28316	0.1143649	2.5450993	42	5	1986–1999	0.65	M-v	3	Williams	34581	1993 XP
1993 XN ₁	12.7	0.15	19990810	314.60759	181.79449	95.02305	16.46326	0.1499911	2.5858780	68	5	1991–1999	0.68	M-v	2	Williams	34581	1993 XN ₁
1993 XN ₂	16.6	0.15	19990810	323.86979	312.92834	59.71629	25.39150	0.5355371	2.1178402	105	4	1993–1999	0.54	M-v	1	Williams	29662	1993 XN ₂

1993 YG	14.9	0.15	19990810	244.26568	138.63453	286.43689	2.80235	0.1408491	2.3100265	38	3	1993–1999	0.75	M-v	3	Williams	32051	1993 YG
1994 AF	14.6	0.15	19990810	204.27718	165.49207	240.55947	3.46747	0.1873162	2.4550950	37	3	1994–1999	0.80	M-v	4	Williams	31586	1994 AF
1994 AS ₂	14.8	0.15	19990810	234.39004	35.64526	355.01655	1.85573	0.2127267	2.4292447	47	4	1994–1999	0.66	M-v	1	Williams	32051	1994 AS ₂
1994 AE ₁₁	14.5	0.15	19990810	200.24221	347.39177	77.75187	4.73442	0.1491022	2.4813420	35	7	1951–1999	0.73	M-v	1	Williams	31586	1994 AE ₁₁
1994 BP ₃	13.8	0.15	19990810	343.80982	195.71332	137.64474	11.79478	0.2492260	2.2927807	29	4	1977–1999	0.73	M-v	2	Williams	31963	1994 BP ₃
1994 BP ₄	12.9	0.15	19990810	340.41045	63.33724	139.21139	10.21234	0.1655494	2.9925066	40	3	1994–1999	0.61	M-v	3	Williams	34291	1994 BP ₄
1994 CR	14.0	0.15	19990810	117.83627	326.20060	127.86532	5.03241	0.0897625	2.7000265	35	3	1994–1999	0.75	M-v	4	Williams	34505	1994 CR
1994 CW	13.0	0.15	19990810	200.08516	218.54943	158.64535	14.39547	0.1844541	2.5903529	34	3	1992–1999	0.61	M-v	4	Williams	34581	1994 CW
1994 CB ₁	14.0	0.15	19990810	149.62593	197.37781	248.01972	3.17755	0.2981079	2.5686297	28	5	1988–1999	0.71	M-v	2	Williams	31789	1994 CB ₁
1994 CJ ₂	14.7	0.15	19990810	65.32659	84.57059	130.97794	7.67036	0.1368767	2.5645174	33	4	1991–1999	0.50	M-v	1	Williams	32051	1994 CJ ₂
1994 CL ₂	14.3	0.15	19990810	143.06088	337.15299	118.25353	4.30269	0.1618575	2.6172246	41	4	1992–1999	0.68	M-v	1	Williams	31276	1994 CL ₂
1994 CS ₈	10.3	0.15	19990810	159.64780	18.15010	120.10535	6.91367	0.0206813	5.2526997	31	8	1988–1999	0.59	M-v	0	Williams	32051	1994 CS ₈
1994 CT ₁₁	14.2	0.15	19990810	230.35672	278.90961	92.02920	3.09700	0.0872837	2.6720652	42	3	1994–1999	0.78	M-v	4	Williams	34582	1994 CT ₁₁
1994 CT ₁₂	14.0	0.15	19990810	206.09315	292.63692	125.84863	7.63478	0.1310711	2.5513099	64	4	1994–1999	0.64	M-v	1	Williams	31789	1994 CT ₁₂
1994 DF	13.2	0.15	19990810	148.42519	275.72264	160.21137	12.85407	0.1641900	2.6522031	35	2	1994–1999	0.72	M-v	4	Williams	34505	1994 DF
1994 DP	14.1	0.15	19990810	242.68363	241.93516	148.90800	1.15947	0.1536221	2.4888245	33	4	1988–1999	0.93	M-v	2	Williams	32666	1994 DP
1994 ED	14.2	0.15	19990810	19.01763	109.57136	118.41083	1.40837	0.0443143	2.7357254	58	3	1994–1999	0.68	M-v	3	Williams	34582	1994 ED
1994 EY ₅	13.3	0.15	19990810	175.43109	296.89623	116.84361	6.27659	0.0499424	2.7397930	57	3	1994–1999	0.93	M-v	4	Williams	34582	1994 EY ₅
1994 GP	12.8	0.15	19990810	52.96171	160.04502	44.74117	8.73016	0.1546723	2.7826785	46	4	1994–1999	0.66	M-v	1	Williams	31789	1994 GP
1994 GD ₁	13.7	0.15	19990810	23.25376	139.51606	68.07528	10.86974	0.2306961	2.9310607	78	3	1979–1999	0.72	M-v	3	Williams	34582	1994 GD ₁
1994 GN ₁	12.6	0.15	19990810	36.39996	45.12702	129.19449	10.32340	0.1222750	3.0158129	36	3	1983–1999	0.75	M-v	3	Williams	34506	1994 GN ₁
1994 GT ₈	13.3	0.15	19990810	94.67158	346.17257	191.62288	27.91630	0.0809287	2.6858663	30	3	1994–1999	0.70	M-v	3	Williams	31725	1994 GT ₈
1994 GE ₁₀	14.1	0.15	19990810	252.75395	334.04718	100.53834	1.15828	0.0425192	2.4236415	39	5	1976–1998	0.59	M-v	2	Williams	32747	1994 GE ₁₀
1994 HD	13.3	0.15	19990810	107.84701	320.83748	195.38699	27.05196	0.2370704	2.6887920	32	4	1994–1999	0.40	M-v	1	Williams	31420	1994 HD
1994 NR ₁	12.3	0.15	19990810	232.46224	302.69004	133.03328	11.45402	0.1909268	2.9918938	53	5	1981–1999	0.64	M-v	1	Williams	34506	1994 NR ₁
1994 NV ₁	15.0	0.15	19990810	350.32381	158.78245	129.06384	6.45339	0.2792718	3.0360549	22	3	1994–1999	0.46	M-v	4	Williams	34193	1994 NV ₁
1994 PV	13.1	0.15	19990810	330.58695	182.52815	148.58072	6.19551	0.1502720	3.1334241	43	4	1994–1999	0.60	M-v	2	Williams	32051	1994 PV
1994 PQ ₁₄	13.8	0.15	19990810	47.49740	50.32630	194.58751	4.00564	0.1048355	3.1046235	81	3	1994–1999	0.76	M-v	3	Williams	32308	1994 PQ ₁₄
1994 PG ₁₇	13.6	0.15	19990810	4.06509	29.08348	261.92862	2.16959	0.1865749	3.0753209	58	4	1994–1999	0.67	M-v	2	Williams	32052	1994 PG ₁₇
1994 PW ₁₇	14.1	0.15	19990810	346.43441	175.01077	136.73970	0.79728	0.1818495	3.0900888	29	4	1992–1999	0.87	M-v	3	Williams	32052	1994 PW ₁₇
1994 PG ₁₉	14.9	0.15	19990810	44.53999	53.93341	335.24616	4.61041	0.1479185	2.5323516	32	3	1994–1998	0.86	M-v	4	Williams	32747	1994 PG ₁₉
1994 PT ₁₉	13.5	0.15	19990810	350.52860	119.74325	183.41271	1.83411	0.1676466	3.1161545	53	4	1992–1999	0.71	M-v	3	Williams	32308	1994 PT ₁₉
1994 PJ ₂₂	13.4	0.15	19990810	106.60522	158.66935	26.07425	1.95660	0.1372010	3.1708581	46	6	1992–1999	0.79	M-v	1	Williams	32747	1994 PJ ₂₂
1994 RU ₁	12.7	0.15	19990810	305.43476	194.68547	172.38544	16.98946	0.2379059	3.1563026	44	5	1977–1999	0.77	M-v	2	Williams	34507	1994 RU ₁
1994 RP ₁₁	15.4	0.15	19990810	114.00784	108.44438	251.80336	5.73526	0.1460158	2.3870680	25	3	1989–1999	0.75	M-v	4	Williams	34011	1994 RP ₁₁
1994 RR ₁₁	14.0	0.15	19990810	359.79667	157.60087	238.79209	7.62563	0.1662444	2.7382621	16	4	1983–1998	0.83	M-v	2	Williams	33244	1994 RR ₁₁
1994 SE ₂	15.1	0.15	19990810	155.12666	12.58892	38.71480	4.00248	0.1124873	2.1676484	35	4	1975–1999	0.83	M-v	2	Williams	34507	1994 SE ₂
1994 TM ₂	14.3	0.15	19990810	142.35207	312.61901	120.43178	3.28637	0.0381373	2.1422570	45	5	1981–1999	0.68	M-v	2	Williams	34582	1994 TM ₂
1994 TN ₁₆	15.6	0.15	19990810	85.65272	67.73990	27.48080	4.41044	0.1153427	2.2809721	31	4	1976–1999	0.63	M-v	1	Williams	34291	1994 TN ₁₆
1994 TS ₁₆	13.6	0.15	19990810	147.00840	147.13302	189.60036	5.96579	0.1360852	2.3915295	26	5	1982–1999	0.86	M-v	2	Williams	33748	1994 TS ₁₆
1994 UD ₁	13.5	0.15	19990810	301.38156	331.85274	47.49587	2.12046	0.2362643	3.2849989	48	6	1976–1999	0.71	M-v	1	Williams	29663	1994 UD ₁
1994 UR ₆	14.8	0.15	19990810	19.97627	262.24777	285.61689	2.30833	0.1533108	2.2027906	54	3	1989–1999	0.75	M-v	3	Williams	34582	1994 UR ₆
1994 UY ₁₁	14.5	0.15	19990810	79.07367	73.80862	17.11036	21.87463	0.3018028	2.3857342	26	2	1994–1999	0.76	M-v	3	Williams	34582	1994 UY ₁₁
1994 UZ ₁₂	12.8	0.15	19990810	335.84775	244.72268	129.17989	5.97216	0.1593046	3.1880756	18	5	1988–1996	0.68	M-v	1	Williams	27731	1994 UZ ₁₂
1994 VW ₁	15.3	0.15	19990810	251.65166	320.00331	109.37115	15.54059	0.2602530	1.9622027	42	4	1994–1999	0.52	M-v	2	Williams	31420	1994 VW ₁
1994 VB ₂	13.8	0.15	19990810	108.54297	204.16940	198.17489	4.62215	0.2761546	2.3800477	42	3	1994–1999	0.61	M-v	3	Williams	34292	1994 VB ₂
1994 VH ₇	14.9	0.15	19990810	100.51196	67.67543	45.37490	7.13126	0.1207943	2.2592771	30	3	1994–1999	0.75	M-v	3	Williams	34508	1994 VH ₇
1994 WH ₃	12.2	0.15	19990810	338.63224	262.91148	111.47110	1.96707	0.1752652	3.1567225	21	5	1982–1996	0.78	M-v	2	Williams	29945	1994 WH ₃
1994 XJ	13.8	0.15	19990810	41.85913	100.86799	64.89382	6.97465	0.0590776	2.3306683	37	4	1988–1999	0.72	M-v	2	Williams	34292	1994 XJ
1994 XL	14.8	0.15	19990810	39.99394	161.01419	356.07768	3.75976	0.1889438	2.4110849	44	3	1984–1999	0.74	M-v	3	Williams	34292	1994 XL
1994 XF ₁	13.7	0.15	19990810	351.36017	111.91626	82.85986	8.45126	0.1582526	2.4686309	34	2	1994–1999	0.72	M-v	4	Williams	34582	1994 XF ₁
1994 XX ₄	13.5	0.15	19990810	172.67172	106.48920	275.66965	5.97633	0.1294379	2.3250119	22	3	1990–1999	0.60	M-v	4	Williams	34509	1994 XX ₄
1995 AE ₁	13.9	0.15	19990810	356.87341	42.17196	161.43841	6.25601	0.1619632	2.4648486	33	2	1995–1999	0.75	M-v	4	Williams	33943	1995 AE ₁

1995 AT ₂	14.9	0.15	19990810	130.94745	90.62050	34.49744	2.78872	0.0366321	2.1973700	31	4	1992–1999	0.65	M-v	2	Williams	31140	1995 AT ₂
1995 AV ₂	14.7	0.15	19990810	48.28917	79.34927	54.67286	4.19922	0.1549589	2.4740820	57	4	1968–1999	0.79	M-v	2	Williams	34582	1995 AV ₂
1995 BF ₁	14.2	0.15	19990810	60.13404	274.21105	296.61939	4.01401	0.0771106	2.2014657	26	5	1982–1999	0.77	M-v	2	Williams	31140	1995 BF ₁
1995 BN ₁	15.4	0.15	19990810	100.55314	60.73638	77.84729	2.39841	0.1248893	2.3031743	50	3	1995–1999	0.84	M-v	3	Williams	34509	1995 BN ₁
1995 BH ₂	15.2	0.15	19990810	70.98993	76.37722	109.35068	2.09772	0.1883022	2.3204400	30	4	1993–1999	0.68	M-v	2	Williams	31277	1995 BH ₂
1995 BP ₂	14.8	0.15	19990810	96.31117	293.43063	187.53755	21.15323	0.2792189	2.3163620	46	3	1995–1999	0.59	M-v	2	Williams	34582	1995 BP ₂
1995 BC ₄	14.2	0.15	19990810	96.70916	289.74845	142.45351	5.54960	0.1976448	2.4839951	34	2	1995–1999	0.57	M-v	4	Williams	34194	1995 BC ₄
1995 BL ₄	13.6	0.15	19990810	81.69449	121.29115	313.93003	12.23035	0.1701117	2.5773975	62	4	1991–1999	0.61	M-v	2	Williams	34583	1995 BL ₄
1995 CQ	14.4	0.15	19990810	106.16827	152.64153	331.39781	4.29894	0.1807492	2.3176281	85	3	1995–1999	0.75	M-v	2	Williams	34583	1995 CQ
1995 CF ₁	14.0	0.15	19990810	51.71002	8.45221	104.52661	8.36884	0.1889197	2.5338824	53	3	1990–1999	0.72	M-v	3	Williams	34583	1995 CF ₁
1995 CJ ₁	14.1	0.15	19990810	74.79409	280.99153	260.36190	4.23353	0.1901580	2.3227057	25	3	1995–1999	0.87	M-v	4	Williams	31240	1995 CJ ₁
1995 CH ₂	15.9	0.15	19990810	64.04210	326.46581	209.96576	1.47438	0.1564927	2.3383069	45	3	1995–1999	0.65	M-v	4	Williams	34583	1995 CH ₂
1995 DE	13.5	0.15	19990810	228.75203	174.08506	151.36859	15.68267	0.1307296	2.5850499	44	4	1988–1999	0.68	M-v	2	Williams	34292	1995 DE
1995 DF	15.2	0.15	19990810	110.90619	55.60271	117.08231	4.51024	0.1470575	2.2348822	32	4	1979–1999	0.53	M-v	1	Williams	31277	1995 DF
1995 DR	14.8	0.15	19990810	357.07308	84.72775	156.16215	6.94653	0.1424200	2.4386349	54	4	1991–1999	0.69	M-v	3	Williams	34583	1995 DR
1995 DV	14.7	0.15	19990810	350.02112	244.43217	5.32918	4.90384	0.1524378	2.4401535	37	2	1995–1999	0.73	M-v	5	Williams	34510	1995 DV
1995 DZ	14.5	0.15	19990810	177.25355	42.86807	42.12606	3.82746	0.0678064	2.2726111	44	5	1981–1999	0.73	M-v	2	Williams	29623	1995 DZ
1995 DH ₄	14.2	0.15	19990810	317.74033	318.54367	313.63354	6.25451	0.1383724	2.3979689	23	2	1995–1999	0.61	M-v	5	Williams	34510	1995 DH ₄
1995 DH ₅	16.4	0.15	19990810	330.26910	43.88523	238.58426	1.35705	0.1145597	2.3031047	19	2	1995–1999	0.59	M-v	5	Williams	34510	1995 DH ₅
1995 EO	15.1	0.15	19990810	128.01246	261.55460	236.00563	3.21420	0.1007195	2.2888564	83	4	1995–1999	0.57	M-v	1	Williams	31420	1995 EO
1995 EF ₈	13.8	0.15	19990810	337.32344	350.74320	111.06677	3.09030	0.1382111	3.1302399	34	4	1982–1998	0.73	M-v	1	Williams	33074	1995 EF ₈
1995 EL ₈	13.8	0.15	19990810	57.25732	0.75436	130.77626	5.11825	0.0395751	2.5830526	32	2	1995–1999	0.63	M-v	4	Williams	34292	1995 EL ₈
1995 EY ₈	15.0	0.15	19990810	64.99061	219.40177	353.98634	5.88522	0.1382715	2.2990193	12	3	1992–1995	0.29	M-v	4	Williams	25433	1995 EY ₈
1995 ED ₉	12.9	0.15	19990810	18.74122	263.25187	161.77635	6.55218	0.1322736	3.1409301	47	4	1984–1998	0.63	M-v	2	Williams	33342	1995 ED ₉
1995 GA	15.9	0.15	19990810	62.61809	109.22276	137.04538	8.13441	0.1154016	2.2303879	31	3	1994–1999	0.57	M-v	3	Williams	32308	1995 GA
1995 GB	14.9	0.15	19990810	39.67069	120.05846	121.00576	2.92457	0.1708682	2.3766198	37	4	1995–1999	0.55	M-v	1	Williams	31587	1995 GB
1995 GC ₂	13.7	0.15	19990810	139.91057	342.28006	57.74140	3.89470	0.0365343	2.7153816	33	2	1995–1999	0.46	M-v	5	Williams	33944	1995 GC ₂
1995 GV ₂	14.3	0.15	19990810	127.42661	267.49468	140.18542	4.85945	0.0362590	2.7553805	48	5	1991–1999	0.77	M-v	2	Marsden	34510	1995 GV ₂
1995 GH ₇	14.2	0.15	19990810	24.67608	79.13942	143.57129	7.63098	0.1435759	2.4828465	62	2	1995–1999	0.70	M-v	3	Williams	34583	1995 GH ₇
1995 KC	15.0	0.15	19990810	51.93670	24.78488	193.62246	10.20696	0.1740224	2.4261878	52	4	1995–1999	0.69	M-v	1	Williams	31277	1995 KC
1995 KF	14.6	0.15	19990810	35.42225	118.96421	127.44642	22.76192	0.2794215	2.4242457	46	4	1991–1999	0.73	M-v	2	Williams	32052	1995 KF
1995 KN	14.4	0.15	19990810	88.04331	84.12644	76.30053	4.99374	0.0743225	2.2578131	81	3	1995–1999	0.67	M-v	2	Williams	34583	1995 KN
1995 KH ₁	13.4	0.15	19990810	275.87006	186.32860	124.37641	10.26645	0.1451807	2.7882492	34	3	1991–1999	0.71	M-v	4	Williams	34511	1995 KH ₁
1995 KF ₄	12.9	0.15	19990810	134.67480	220.05366	222.08305	11.57455	0.1276842	2.6179098	39	4	1991–1999	0.75	M-v	3	Williams	34511	1995 KF ₄
1995 OH ₁₀	14.5	0.15	19990810	316.09589	42.52563	291.54921	2.87817	0.2218877	2.6703240	28	4	1982–1999	0.77	M-v	2	Williams	31790	1995 OH ₁₀
1995 QP ₁₀	13.5	0.15	19990810	127.82376	327.19584	162.76147	13.37673	0.1178905	3.0973933	47	4	1987–1999	0.53	M-v	1	Williams	32308	1995 QP ₁₀
1995 SH	14.0	0.15	19990810	130.17278	9.07216	188.96022	13.53793	0.0928407	2.6202915	82	4	1995–1999	0.50	M-v	1	Williams	32052	1995 SH
1995 SZ ₄	14.1	0.15	19990810	301.09856	167.66985	203.32111	2.73164	0.1163082	2.5848482	93	4	1995–1999	0.72	M-v	1	Marsden	32053	1995 SZ ₄
1995 SX ₁₉	13.1	0.15	19990810	305.80668	165.27810	184.62513	1.89797	0.0801771	2.8891563	60	4	1993–1999	0.57	M-v	1	Williams	32053	1995 SX ₁₉
1995 SO ₂₆	13.5	0.15	19990810	177.46682	276.93699	197.15829	9.90813	0.0588386	2.9939771	44	3	1995–1999	0.57	M-v	3	Williams	32053	1995 SO ₂₆
1995 SR ₂₆	13.7	0.15	19990810	310.43465	145.18222	201.28104	1.70624	0.0712961	2.8778915	54	5	1985–1999	0.83	M-v	1	Williams	32309	1995 SR ₂₆
1995 SM ₂₉	13.2	0.15	19990810	232.80515	338.58656	55.28732	2.80794	0.1674997	3.1936014	42	5	1978–1999	0.95	M-v	2	Williams	32053	1995 SM ₂₉
1995 SY ₂₉	13.2	0.15	19990810	292.42958	55.89855	253.90139	0.61076	0.1729053	3.1732913	34	2	1995–1999	0.77	M-v	5	Williams	34512	1995 SY ₂₉
1995 SK ₅₁	13.8	0.15	19990810	67.74077	208.72946	2.60121	2.16515	0.1106281	3.0328844	50	4	1991–1999	0.62	M-v	1	Williams	32518	1995 SK ₅₁
1995 SV ₅₂	12.8	0.15	19990810	217.76821	258.97368	141.76438	7.09312	0.1459011	3.1552385	45	4	1992–1999	0.58	M-v	1	Williams	31790	1995 SV ₅₂
1995 SM ₅₄	13.6	0.15	19990810	319.46119	232.05124	102.27908	3.25935	0.0778322	2.8604203	68	5	1992–1999	0.75	M-v	1	Williams	32053	1995 SM ₅₄
1995 SO ₅₄	14.7	0.15	19990810	22.65770	268.93712	127.65098	3.43678	0.1751204	2.2924807	14	3	1988–1995	0.64	M-v	4	Williams	29624	1995 SO ₅₄
1995 SM ₅₅	5.3	0.15	19951010	27.35389	331.60457	21.01642	26.92630	0.0537868	41.7659350	18	1	69 days	0.51		E	Marsden		1995 SM ₅₅
1995 SN ₅₅	6.0	0.15	19950920	180.21705	49.32750	144.61090	4.97274	0.6631306	23.5637755	14	1	36 days	1.27		E	Marsden		1995 SN ₅₅
1995 TQ	12.9	0.15	19990810	306.37450	110.90436	242.02535	11.50728	0.1094696	2.9398457	43	5	1990–1999	0.56	M-v	1	Williams	31587	1995 TQ
1995 TL ₈	5.2	0.15	19951030	0.00000	102.56113	279.86448	0.21325	0.0000000	42.5509786	18	1	41 days	0.90		E	Marsden		1995 TL ₈
1995 UJ ₁	12.9	0.15	19990810	272.78501	175.04190	196.35752	10.10125	0.0954227	2.9821893	64	3	1995–1999	0.45	M-v	2	Williams	32053	1995 UJ ₁
1995 UK ₃	12.9	0.15	19990810	229.91658	212.48467	248.61920	14.35913	0.0987256	2.8634805	51	4	1995–1999	0.50	M-v	1	Williams	32309	1995 UK ₃

1995 UU ₄	12.7	0.15	19990810	298.24625	138.24490	230.43754	9.64872	0.1112034	2.9980881	64	4	1989–1999	0.64	M-v	1	Williams	32053	1995 UU ₄
1995 UG ₅	15.5	0.15	19990810	76.83362	326.95622	30.51033	4.19094	0.1689143	2.2107174	29	4	1994–1998	0.77	M-v	2	Williams	34583	1995 UG ₅
1995 UQ ₅	12.6	0.15	19990810	308.88506	333.94617	318.60350	10.63016	0.1754366	3.0503344	50	5	1979–1999	0.72	M-v	1	Williams	34583	1995 UQ ₅
1995 UJ ₆	13.2	0.15	19990810	304.00336	110.58160	239.47729	9.47079	0.1116593	3.0185077	35	4	1989–1999	0.63	M-v	1	Williams	31790	1995 UJ ₆
1995 UX ₆	14.9	0.15	19990810	268.38429	315.38939	42.53196	2.02188	0.1760734	3.1083676	33	3	1995–1999	0.55	M-v	4	Williams	28889	1995 UX ₆
1995 UG ₈	13.6	0.15	19990810	353.46542	5.85422	317.30687	1.10550	0.0611843	2.8747334	40	4	1995–1999	0.54	M-v	1	Williams	32053	1995 UG ₈
1995 UA ₉	13.3	0.15	19990810	306.00453	322.25736	12.45946	4.37785	0.0804308	3.0670755	52	5	1984–1999	0.70	M-v	1	Williams	32309	1995 UA ₉
1995 VT ₁	12.5	0.15	19990810	251.89657	151.19147	242.89732	8.80882	0.1180979	3.1730186	35	4	1978–1999	0.59	M-v	1	Williams	32309	1995 VT ₁
1995 VN ₁₈	15.6	0.15	19951119	210.51859	330.95820	238.68143	5.65761	0.0418190	2.4305391	15	1	38 days	0.29			Nakano		1995 VN ₁₈
1995 WT	12.4	0.15	19990810	246.74351	164.35955	256.34697	7.38978	0.2334336	3.1177573	33	7	1950–1999	0.71	M-v	2	Williams	32054	1995 WT
1995 WM ₂	13.6	0.15	19990810	257.77673	170.50515	228.65712	15.25012	0.2302463	2.9314119	43	4	1995–1999	0.64	M-v	2	Williams	32310	1995 WM ₂
1995 WW ₃	13.1	0.15	19990810	307.85022	106.70792	286.66883	15.98140	0.1848794	2.8052786	24	4	1994–1999	0.78	M-v	1	Williams	29319	1995 WW ₃
1995 WV ₅	13.3	0.15	19990810	0.19232	62.70956	239.17267	9.89039	0.0288618	3.0880902	49	4	1995–1999	0.53	M-v	1	Williams	31791	1995 WV ₅
1995 WC ₇	14.1	0.15	19990810	237.63296	30.04711	39.36958	6.07067	0.1507202	3.0935122	31	4	1995–1999	0.40	M-v	1	Williams	31791	1995 WC ₇
1995 WG ₇	12.8	0.15	19990810	270.43445	118.12933	246.29540	17.79786	0.2181263	3.1401675	45	3	1995–1999	0.68	M-v	3	Williams	29112	1995 WG ₇
1995 WR ₇	13.1	0.15	19990810	281.27851	118.89538	263.20845	8.13884	0.0899394	3.1624042	16	4	1983–1999	0.70	M-v	1	Williams	32671	1995 WR ₇
1995 WX ₈	13.7	0.15	19990810	280.49202	279.67425	78.36538	2.22905	0.1809268	3.1745117	32	4	1983–1999	0.63	M-v	1	Williams	32310	1995 WX ₈
1995 WC ₃₁	12.1	0.15	19951209	90.30367	258.78571	61.48904	12.04045	0.0987768	3.0469161	22	1	33 days	0.52			Nakano		1995 WC ₃₁
1995 YH	12.7	0.15	19990810	338.74947	94.63506	252.58930	8.82763	0.1268500	2.9851761	44	3	1995–1999	0.52	M-v	4	Williams	31972	1995 YH
1995 YY ₂	12.7	0.15	19990810	306.20430	269.47633	100.28353	10.79224	0.2386320	3.1414429	30	5	1955–1999	0.77	M-v	1	Williams	32054	1995 YY ₂
1995 YK ₂₀	14.7	0.15	19990810	137.16845	352.12486	283.20370	5.56214	0.0719169	2.7071910	25	2	1995–1998	0.51	M-v	5	Williams	34293	1995 YK ₂₀
1995 YG ₂₃	14.4	0.15	19951229	5.07606	353.12929	107.25991	12.49599	0.2680479	2.7844543	14	1	32 days	0.79			Nakano		1995 YG ₂₃
1996 AG ₂	12.1	0.15	19990810	280.12539	104.49206	311.78704	12.89300	0.0918881	3.1598413	16	3	1985–1999	0.75	M-v	4	Williams	26928	1996 AG ₂
1996 AQ ₂₀	13.8	0.15	19960118	7.25484	183.69425	282.70090	10.57277	0.2863974	3.1115919	6	1	8 days	0.53			Nakano		1996 AQ ₂₀
1996 CM ₉	11.6	0.15	19960227	280.56859	266.04956	328.39260	14.13384	0.0635463	3.3964710	10	1	27 days	0.71			Nakano		1996 CM ₉
1996 FF	14.9	0.15	19990810	171.81763	273.38378	203.72275	20.62812	0.0887203	1.9429737	39	5	1985–1999	0.43	M-v	1	Williams	30902	1996 FF
1996 FR ₃	16.6	0.15	19990810	51.79943	34.93458	28.72837	8.31283	0.7955255	2.1653712	136	2	1996–1999	0.58	M-v	3	Williams	34513	1996 FR ₃
1996 GF ₁	14.8	0.15	19990810	50.00715	30.58832	118.25365	2.92218	0.0522238	2.2338989	42	2	1996–1999	0.60	M-v	3	Williams	34293	1996 GF ₁
1996 GB ₁₈	14.8	0.15	19990810	181.83982	359.90439	38.29572	5.29904	0.0535679	2.1870138	53	4	1981–1999	0.82	M-v	2	Williams	34584	1996 GB ₁₈
1996 GQ ₂₁	5.2	0.15	19960407	359.98301	6.80867	196.30114	17.44339	0.0797502	44.0209965	9	1	12 days	0.20			E Marsden		1996 GQ ₂₁
1996 HZ ₂₂	14.6	0.15	19990810	91.71502	285.91311	204.49323	6.15472	0.0710403	2.1814894	46	3	1996–1999	0.74	M-v	3	Williams	34514	1996 HZ ₂₂
1996 HH ₂₄	14.9	0.15	19990810	287.37526	257.43234	71.12505	4.27928	0.2079085	2.1768711	63	3	1990–1999	0.88	M-v	3	Williams	34584	1996 HH ₂₄
1996 HN ₂₄	14.4	0.15	19990810	21.15041	114.57341	73.38281	5.60562	0.1085047	2.2408999	43	2	1996–1999	0.66	M-v	4	Williams	34294	1996 HN ₂₄
1996 HU ₂₄	14.8	0.15	19990810	135.76500	14.63984	56.15333	7.39235	0.0777017	2.2698385	23	4	1994–1999	0.65	M-v	2	Williams	34584	1996 HU ₂₄
1996 JJ	14.4	0.15	19990810	343.65109	122.35025	108.60169	6.74916	0.2224095	2.2555131	37	4	1979–1999	0.61	M-v	2	Williams	34584	1996 JJ
1996 JN	14.3	0.15	19990810	20.60595	93.90347	90.54913	5.16181	0.0976646	2.2808067	72	2	1995–1999	0.62	M-v	2	Williams	34294	1996 JN
1996 LP ₁	15.4	0.15	19990810	254.33843	246.71855	138.00757	7.13991	0.1826828	2.1929281	49	3	1996–1999	0.59	M-v	2	Williams	31588	1996 LP ₁
1996 MN	15.5	0.15	19990810	306.79469	49.10431	263.70169	5.93591	0.1458835	2.2699715	67	3	1996–1999	0.65	M-v	3	Williams	34584	1996 MN
1996 NX ₃	14.6	0.15	19990810	106.50518	207.69403	311.51882	4.72591	0.0476951	2.3129786	34	4	1986–1999	0.73	M-v	1	Williams	31108	1996 NX ₃
1996 NZ ₃	14.7	0.15	19990810	219.20117	116.99343	276.82053	2.91373	0.0902771	2.4479283	31	4	1976–1999	0.61	M-v	1	Williams	31278	1996 NZ ₃
1996 OB	14.9	0.15	19990810	313.99914	62.68720	240.55640	3.05456	0.0377651	2.2860116	49	3	1996–1999	0.70	M-v	3	Williams	31242	1996 OB
1996 OF	16.1	0.15	19990810	247.70868	287.54688	106.04332	6.91730	0.1105020	2.2690052	45	3	1996–1999	0.39	M-v	2	Marsden	31588	1996 OF
1996 OK	16.0	0.15	19990810	318.54479	210.03527	126.29781	7.39449	0.2239057	2.1979107	96	3	1996–1999	0.51	M-v	2	Williams	31242	1996 OK
1996 OL	15.1	0.15	19990810	321.14995	230.28005	96.89543	4.53334	0.1644878	2.2541308	61	3	1996–1999	0.64	M-v	3	Williams	31421	1996 OL
1996 OC ₁	14.3	0.15	19990810	182.69656	319.70848	114.93636	6.46495	0.1140064	2.4025678	64	3	1996–1999	0.57	M-v	4	Williams	31242	1996 OC ₁
1996 PF	14.9	0.15	19990810	132.90060	213.45941	272.06125	5.90774	0.1039161	2.4034946	27	3	1996–1999	0.57	M-v	4	Williams	32953	1996 PF
1996 PQ	14.9	0.15	19990810	216.50234	273.24489	147.83219	7.15702	0.1071310	2.3294748	47	3	1996–1999	0.58	M-v	3	Williams	31791	1996 PQ
1996 PA ₁	14.4	0.15	19990810	269.50655	213.53650	313.68070	7.40931	0.1343108	2.3778243	81	3	1996–1999	0.54	M-v	3	Williams	34584	1996 PA ₁
1996 PG ₁	14.9	0.15	19990810	332.30513	297.02341	356.69170	3.35443	0.1500332	2.2839256	67	3	1996–1999	0.98	M-v	3	Williams	34584	1996 PG ₁
1996 PM ₃	13.8	0.15	19990810	111.07023	333.00356	149.45580	13.13070	0.1321969	2.6093919	48	3	1990–1999	0.70	M-v	3	Williams	34584	1996 PM ₃
1996 PX ₄	14.9	0.15	19990810	62.59502	18.43556	156.26114	4.90280	0.0542553	2.5215393	54	3	1987–1999	0.84	M-v	4	Williams	34515	1996 PX ₄
1996 PY ₄	14.8	0.15	19990810	16.71223	68.77999	151.70002	23.90088	0.2649343	2.3595914	44	3	1988–1999	0.56	M-v	2	Williams	34584	1996 PY ₄
1996 PB ₅	15.1	0.15	19990810	269.06273	85.43949	305.69474	3.32905	0.1712327	2.2571139	45	4	1986–1999	0.80	M-v	2	Williams	31791	1996 PB ₅

1996 PY ₆	14.6	0.15	19990810	315.03879	283.61796	30.21109	23.21320	0.2324738	2.3102709	70	3	1992–1999	0.74	M-v	2	Williams	34584	1996 PY ₆
1996 PA ₇	13.8	0.15	19990810	279.52908	303.50262	85.94904	25.40322	0.3522552	2.3240615	66	3	1996–1999	0.66	M-v	2	Williams	32054	1996 PA ₇
1996 PK ₈	15.3	0.15	19990810	33.83530	342.25495	228.45586	1.55627	0.1715298	2.3424855	53	2	1996–1999	0.58	M-v	4	Williams	34515	1996 PK ₈
1996 QE	14.1	0.15	19990810	261.78390	167.93971	174.91340	14.40275	0.1477578	2.5767930	60	3	1996–1999	0.70	M-v	3	Williams	34584	1996 QE
1996 QD ₁	14.8	0.15	19990810	59.40370	321.45815	238.51432	3.09964	0.0855389	2.2926345	60	3	1996–1999	0.63	M-v	3	Williams	34584	1996 QD ₁
1996 RW	14.8	0.15	19990810	175.14405	182.44662	260.84407	2.10291	0.2029341	2.5921701	35	3	1996–1999	0.61	M-v	3	Williams	32054	1996 RW
1996 RC ₁	15.8	0.15	19990810	346.01508	173.59612	138.13302	2.46074	0.1264908	2.2248135	40	4	1995–1999	0.42	M-v	1	Williams	31421	1996 RC ₁
1996 RD ₁	15.4	0.15	19990810	349.74470	131.35161	179.12770	3.44003	0.1485256	2.2049765	58	4	1960–1999	0.52	M-v	1	Williams	31142	1996 RD ₁
1996 RE ₁	15.0	0.15	19990810	195.33358	330.43750	76.70779	4.64843	0.2680562	2.5898562	51	3	1996–1999	0.60	M-v	3	Williams	34584	1996 RE ₁
1996 RQ ₂	14.2	0.15	19990810	89.28260	239.97173	314.21864	1.55928	0.1500484	2.4077294	62	5	1991–1999	0.47	M-v	1	Williams	31791	1996 RQ ₂
1996 RK ₃	15.3	0.15	19990810	328.01404	183.70741	100.93399	5.12173	0.2071754	2.2969767	50	2	1996–1999	0.65	M-v	4	Marsden	34584	1996 RK ₃
1996 RD ₄	13.5	0.15	19990810	315.56468	252.55712	48.90895	13.36191	0.1614557	2.7165598	115	3	1996–1999	0.65	M-v	3	Williams	34585	1996 RD ₄
1996 RO ₄	15.5	0.15	19990810	213.10856	343.49970	114.38321	1.63374	0.2090256	2.3366048	37	3	1996–1999	0.96	M-v	4	Williams	32310	1996 RO ₄
1996 RQ ₁₆	14.8	0.15	19990810	300.60639	170.46100	176.16930	6.66412	0.2047191	2.3202094	35	3	1996–1999	0.47	M-v	3	Williams	32675	1996 RQ ₁₆
1996 SN	15.6	0.15	19990810	13.83307	169.95461	44.80502	2.79052	0.1391237	2.6615573	37	3	1977–1999	0.62	M-v	3	Williams	34516	1996 SN
1996 SH ₄	14.6	0.15	19990810	181.54901	72.83137	39.36395	28.85620	0.0441410	2.6288950	25	3	1996–1999	0.43	M-v	2	Williams	31973	1996 SH ₄
1996 SW ₇	15.3	0.15	19990810	320.74565	128.03590	185.09726	6.21154	0.1102958	2.4203626	43	3	1996–1999	0.53	M-v	4	Williams	32675	1996 SW ₇
1996 SG ₈	16.3	0.15	19990810	328.97482	295.36764	28.13166	0.45331	0.2519395	2.2989935	29	3	1996–1999	0.38	M-v	4	Williams	31388	1996 SG ₈
1996 TD	14.9	0.15	19990810	269.48593	112.71579	288.97031	4.01868	0.1705083	2.2890804	37	3	1996–1999	0.73	M-v	3	Williams	31730	1996 TD
1996 TQ ₁	15.0	0.15	19990810	276.50807	193.73838	186.64150	2.10908	0.2136636	2.3739459	33	4	1995–1999	0.78	M-v	2	Williams	32054	1996 TQ ₁
1996 TR ₁	13.6	0.15	19990810	135.28836	302.30947	164.54861	5.07152	0.0524316	2.7470159	60	3	1996–1999	0.54	M-v	3	Williams	31278	1996 TR ₁
1996 TF ₅	16.3	0.15	19990810	272.68281	211.37666	195.23161	4.12066	0.1419747	2.2844744	37	3	1996–1999	0.44	M-v	3	Marsden	31588	1996 TF ₅
1996 TH ₇	14.0	0.15	19990810	212.11718	7.09365	21.48464	2.75373	0.0808267	2.7178840	54	3	1996–1999	0.66	M-v	3	Williams	34585	1996 TH ₇
1996 TE ₈	14.4	0.15	19990810	238.01195	193.11271	171.89439	12.22654	0.1797256	2.6652313	27	3	1995–1999	0.72	M-v	3	Williams	34585	1996 TE ₈
1996 TR ₉	14.8	0.15	19990810	333.64750	188.68220	136.08713	4.33168	0.1957199	2.2773980	72	4	1971–1999	0.48	M-v	1	Marsden	31588	1996 TR ₉
1996 TL ₁₀	14.8	0.15	19990810	311.98810	44.97472	320.79527	4.77271	0.1820317	2.2551499	51	5	1971–1999	0.81	M-v	2	Williams	32310	1996 TL ₁₀
1996 TS ₁₁	16.0	0.15	19990810	321.21137	307.08236	9.66876	2.22555	0.2342371	2.3528481	35	3	1996–1999	0.53	M-v	4	Williams	34585	1996 TS ₁₁
1996 TS ₁₄	13.7	0.15	19990810	219.45671	19.16591	354.28842	1.55549	0.0786653	2.8738572	35	4	1991–1999	0.79	M-v	2	Williams	34516	1996 TS ₁₄
1996 TV ₁₄	13.7	0.15	19990810	271.43931	334.76038	341.19779	1.49585	0.0658498	2.8698640	30	3	1996–1999	0.64	M-v	4	Williams	34585	1996 TV ₁₄
1996 TC ₁₅	14.0	0.15	19990810	318.07046	268.54052	85.03306	9.87343	0.1407926	2.6979906	56	4	1994–1999	0.61	M-v	1	Williams	32055	1996 TC ₁₅
1996 TL ₁₅	12.3	0.15	19990810	353.67445	2.65832	207.84588	21.20038	0.0255237	3.2001001	22	3	1976–1999	0.84	M-v	3	Williams	34585	1996 TL ₁₅
1996 TL ₂₉	14.4	0.15	19990810	262.45417	196.20474	214.33783	4.18027	0.1942808	2.3913009	54	5	1985–1999	0.71	M-v	2	Williams	32311	1996 TL ₂₉
1996 TS ₃₂	13.8	0.15	19990810	8.46143	9.85321	209.18249	12.78003	0.1162218	2.6599173	42	2	1996–1999	0.61	M-v	3	Williams	34585	1996 TS ₃₂
1996 TM ₃₆	14.3	0.15	19990810	329.12763	292.94118	346.18252	12.49464	0.2132547	2.4447922	47	3	1995–1999	0.61	M-v	2	Williams	34585	1996 TM ₃₆
1996 TN ₄₁	13.8	0.15	19990810	209.79434	284.43081	86.26362	3.15177	0.0830622	2.8319105	28	3	1996–1999	0.68	M-v	4	Williams	34585	1996 TN ₄₁
1996 TR ₄₁	14.3	0.15	19990810	156.81654	344.82747	124.03841	3.72636	0.1121219	2.5714281	33	5	1980–1999	0.77	M-v	1	Williams	31589	1996 TR ₄₁
1996 TC ₆₈	6.2	0.15	19961004	359.97114	17.28566	342.15016	21.76804	0.0723515	41.9702524	6	1	6 days	0.17		E	Marsden		1996 TC ₆₈
1996 TD ₆₈	15.1	0.15	19961004	335.51708	171.06615	248.52594	2.26922	0.3209859	2.5238376	6	1	7 days	0.28			Nakano		1996 TD ₆₈
1996 TE ₆₈	14.7	0.15	19961004	20.34805	148.80919	192.59306	11.25509	0.2894257	2.5340054	6	1	7 days	0.67			Nakano		1996 TE ₆₈
1996 UA	13.8	0.15	19990810	276.39285	313.08182	18.16203	12.25384	0.1090841	2.6253974	80	3	1996–1999	0.52	M-v	3	Williams	34585	1996 UA
1996 UU	14.0	0.15	19990810	235.84367	200.02001	210.04890	12.77531	0.1532321	2.5577395	59	4	1992–1999	0.66	M-v	1	Williams	31792	1996 UU
1996 UK ₁	14.4	0.15	19990810	303.50323	301.44414	50.29409	3.23734	0.1824876	2.3717456	26	4	1985–1999	0.66	M-v	1	Williams	31792	1996 UK ₁
1996 UN ₁	13.8	0.15	19990810	283.67633	65.67883	261.09611	13.40246	0.1323894	2.6049642	30	2	1996–1999	0.70	M-v	4	Williams	34517	1996 UN ₁
1996 UP ₁	13.9	0.15	19990810	318.74766	67.32393	215.78770	15.52377	0.1806313	2.6100395	44	3	1991–1999	0.77	M-v	2	Williams	34585	1996 UP ₁
1996 UD ₃	13.8	0.15	19990810	341.70632	290.88593	348.21784	4.80783	0.0063593	2.7487291	70	3	1996–1999	0.74	M-v	4	Williams	34585	1996 UD ₃
1996 UQ ₃	13.3	0.15	19990810	342.94580	248.52106	14.40179	11.41277	0.1728878	2.6733525	54	3	1977–1999	0.70	M-v	2	Williams	34585	1996 UQ ₃
1996 UC ₄	14.7	0.15	19990810	240.68543	335.14837	39.16825	3.71252	0.0805998	2.6757394	43	5	1983–1999	0.58	M-v	1	Williams	31279	1996 UC ₄
1996 UH ₅	14.0	0.15	19990810	232.12147	199.35501	214.76904	13.99678	0.1710676	2.5257009	30	3	1996–1999	0.57	M-v	3	Williams	32311	1996 UH ₅
1996 VP	14.4	0.15	19990810	33.79864	196.49281	51.79737	2.99086	0.1672434	2.4158237	73	5	1988–1999	0.50	M-v	1	Williams	31421	1996 VP
1996 VP ₁	12.9	0.15	19990810	269.03894	83.05951	269.19593	13.37012	0.2880202	2.6487088	39	3	1996–1999	0.64	M-v	3	Williams	34585	1996 VP ₁
1996 VR ₁	14.5	0.15	19990810	289.67325	271.52981	58.62313	15.38569	0.0526027	2.6727665	40	3	1996–1999	0.46	M-v	3	Marsden	31422	1996 VR ₁
1996 VG ₂	14.4	0.15	19990810	273.62799	209.58975	192.44547	1.90041	0.2053244	2.4070015	47	5	1981–1999	0.74	M-v	2	Williams	32055	1996 VG ₂
1996 VJ ₂	15.2	0.15	19990810	23.87484	83.96361	202.38382	4.88965	0.1508149	2.2448290	52	3	1996–1999	0.48	M-v	3	Williams	31422	1996 VJ ₂

1996 VM ₂	14.2	0.15	19990810	274.51069	274.66086	69.10702	12.29476	0.2156610	2.6686107	65	3	1996–1999	0.60	M-v	3	Williams	34585	1996 VM ₂
1996 VG ₃	15.0	0.15	19990810	281.07101	140.54187	228.36489	3.79414	0.2024350	2.4530780	28	3	1992–1999	0.39	M-v	3	Williams	28600	1996 VG ₃
1996 VL ₃	14.0	0.15	19990810	258.72725	135.07897	246.43747	2.61263	0.1005900	2.6501784	43	4	1987–1999	0.76	M-v	1	Williams	32311	1996 VL ₃
1996 VP ₄	13.8	0.15	19990810	185.40293	189.95942	218.61216	2.32764	0.1528625	3.0847972	23	4	1993–1999	0.59	M-v	2	Williams	31792	1996 VP ₄
1996 VS ₄	13.4	0.15	19990810	34.95323	195.55826	59.24158	4.11856	0.0500515	2.6910928	51	5	1982–1999	0.76	M-v	1	Williams	31792	1996 VS ₄
1996 VX ₄	14.4	0.15	19990810	325.18148	16.55537	331.31297	1.88000	0.2290890	2.3618385	29	3	1996–1999	0.77	M-v	5	Williams	32055	1996 VX ₄
1996 VJ ₅	12.3	0.15	19990810	192.62483	8.17529	40.91706	20.77521	0.2645732	2.9835391	39	4	1934–1999	0.86	M-v	2	Williams	34585	1996 VJ ₅
1996 VS ₅	12.9	0.15	19990810	74.03847	358.69075	235.66777	14.04192	0.0571779	2.5600482	22	4	1982–1999	0.55	M-v	1	Williams	31792	1996 VS ₅
1996 VV ₅	13.9	0.15	19990810	304.74289	147.86774	207.55975	5.69777	0.0997303	2.5313404	50	4	1979–1999	0.81	M-v	1	Williams	32055	1996 VV ₅
1996 VA ₆	13.6	0.15	19990810	252.81484	327.86145	84.75909	14.38494	0.1406157	2.5611240	37	4	1992–1999	0.83	M-v	2	Williams	32055	1996 VA ₆
1996 VB ₆	13.5	0.15	19990810	209.57709	296.25532	126.19263	3.07899	0.0575222	2.8872753	79	5	1981–1999	0.62	M-v	1	Williams	32055	1996 VB ₆
1996 VD ₆	13.3	0.15	19990810	184.86937	207.51443	208.10807	3.90836	0.1314620	3.2146653	43	3	1996–1999	0.77	M-v	3	Williams	31589	1996 VD ₆
1996 VP ₆	14.0	0.15	19990810	251.44073	65.36080	326.35142	4.96869	0.1941230	2.5169712	56	5	1984–1999	0.79	M-v	2	Williams	32055	1996 VP ₆
1996 VE ₈	13.7	0.15	19990810	253.08932	153.12788	255.23538	5.49284	0.0698721	2.4843415	52	5	1980–1999	0.76	M-v	1	Williams	31792	1996 VE ₈
1996 VT ₈	13.5	0.15	19990810	268.32091	281.45269	62.87578	13.47675	0.1881371	2.6898147	58	3	1996–1999	0.72	M-v	3	Williams	34585	1996 VT ₈
1996 VA ₃₀	14.1	0.15	19990810	287.14485	161.98131	216.27557	12.85030	0.1570159	2.4031457	20	4	1981–1999	0.81	M-v	2	Williams	34200	1996 VA ₃₀
1996 VB ₃₀	15.2	0.15	19990810	300.89120	195.58325	150.46165	2.61413	0.2355461	2.4307817	34	4	1995–1999	0.74	M-v	2	Williams	31793	1996 VB ₃₀
1996 VJ ₃₀	13.8	0.15	19990810	319.24119	104.53498	243.69538	5.43930	0.1441153	2.3986503	39	4	1992–1999	0.72	M-v	1	Williams	31793	1996 VJ ₃₀
1996 VO ₃₀	13.8	0.15	19990810	314.96111	129.42984	248.34193	3.42861	0.1922269	2.2630559	76	5	1962–1999	0.68	M-v	2	Williams	32055	1996 VO ₃₀
1996 VP ₃₀	13.8	0.15	19990810	252.65947	154.84911	233.42274	11.89760	0.2473076	2.5886647	48	3	1996–1999	0.79	M-v	4	Williams	32055	1996 VP ₃₀
1996 VO ₃₈	13.8	0.15	19990810	297.69239	174.27175	134.77440	2.85720	0.0608080	2.8507179	50	3	1996–1999	0.82	M-v	4	Williams	34585	1996 VO ₃₈
1996 WD	13.2	0.15	19990810	267.21363	308.46435	61.72245	11.18454	0.1981994	2.6759861	47	3	1996–1999	0.59	M-v	3	Williams	31793	1996 WD
1996 WU ₁	13.5	0.15	19990810	153.73571	13.65895	90.54320	10.42126	0.0526708	3.0833637	44	3	1996–1999	0.71	M-v	3	Williams	32311	1996 WU ₁
1996 WZ ₁	12.1	0.15	19990810	115.40933	347.14346	99.33523	10.60288	0.0893315	3.2269706	27	4	1993–1999	0.67	M-v	1	Williams	34585	1996 WZ ₁
1996 XR	14.5	0.15	19990810	317.23424	270.79758	51.96798	1.66777	0.1092151	2.6357747	50	3	1996–1999	0.60	M-v	4	Williams	31589	1996 XR
1996 XY	13.6	0.15	19990810	45.83354	158.45407	83.35019	10.70263	0.0563058	2.7756493	42	4	1989–1999	0.70	M-v	1	Williams	32311	1996 XY
1996 XO ₂	13.8	0.15	19990810	301.94857	127.52659	180.19005	1.87375	0.0202234	2.9122774	49	3	1996–1999	0.56	M-v	4	Williams	34586	1996 XO ₂
1996 XX ₂	14.1	0.15	19990810	262.55392	27.73442	23.03946	2.34566	0.1423247	2.5283893	43	3	1996–1999	0.70	M-v	4	Williams	32311	1996 XX ₂
1996 XW ₅	13.1	0.15	19990810	55.70003	285.05902	299.86683	9.23772	0.0498482	3.0658912	33	4	1992–1999	0.51	M-v	1	Williams	31793	1996 XW ₅
1996 XA ₆	12.7	0.15	19990810	285.92926	44.56938	299.48079	6.65663	0.1383905	2.9679379	17	4	1990–1999	0.33	M-v	1	Williams	32311	1996 XA ₆
1996 XH ₆	13.6	0.15	19990810	263.18336	244.67117	109.83500	3.20553	0.1073385	2.9006568	63	3	1996–1999	0.68	M-v	3	Williams	34586	1996 XH ₆
1996 XR ₆	15.0	0.15	19990810	343.49886	296.30643	350.24018	5.92273	0.1505545	2.6233733	24	4	1991–1999	0.61	M-v	1	Williams	28606	1996 XR ₆
1996 XW ₁₂	14.2	0.15	19990810	318.67222	266.44118	88.20602	7.52449	0.1514410	2.3725634	36	4	1994–1999	0.61	M-v	2	Williams	31590	1996 XW ₁₂
1996 XM ₁₃	14.2	0.15	19990810	24.46748	193.82469	79.30039	3.47086	0.0612746	2.6513498	42	3	1996–1999	0.71	M-v	3	Williams	32311	1996 XM ₁₃
1996 XQ ₁₃	13.8	0.15	19990810	316.91834	90.77742	241.17743	11.54249	0.1162176	2.6304779	63	3	1996–1999	0.34	M-v	3	Williams	31590	1996 XQ ₁₃
1996 XH ₁₈	13.5	0.15	19990810	242.32890	300.06634	122.97403	10.27992	0.1599263	2.7740923	42	4	1993–1999	0.65	M-v	2	Williams	32056	1996 XH ₁₈
1996 XE ₁₉	12.9	0.15	19990810	276.02349	159.97164	179.33348	3.82351	0.2237855	2.9908049	57	4	1949–1999	0.77	M-v	1	Williams	34586	1996 XE ₁₉
1996 XS ₁₉	13.7	0.15	19990810	121.21652	239.51995	282.23087	10.06706	0.0835089	2.8831945	29	3	1996–1999	0.66	M-v	4	Williams	31735	1996 XS ₁₉
1996 XS ₂₅	13.0	0.15	19990810	23.10261	155.82550	101.71861	20.27556	0.1856738	3.1117772	43	3	1996–1999	0.51	M-v	2	Williams	32056	1996 XS ₂₅
1996 XC ₃₁	14.4	0.15	19990810	329.54561	67.97435	280.09418	7.90893	0.1652804	2.5769830	25	4	1987–1999	0.72	M-v	1	Williams	31736	1996 XC ₃₁
1996 YA ₁	14.0	0.15	19990810	229.87530	326.66418	101.65490	3.45249	0.0213763	2.9144650	34	3	1996–1999	0.81	M-v	4	Williams	32312	1996 YA ₁
1996 YC ₂	14.5	0.15	19990810	289.47964	86.84790	301.79548	6.38621	0.1661922	2.2823390	40	4	1994–1999	0.81	M-v	2	Williams	32312	1996 YC ₂
1996 YF ₂	13.3	0.15	19990810	311.93970	83.88768	288.17767	4.71394	0.2258442	2.5201513	53	4	1991–1999	0.67	M-v	1	Williams	32057	1996 YF ₂
1997 AF	13.9	0.15	19990810	284.41282	281.31485	99.15592	7.51732	0.1301191	2.5544558	35	3	1997–1999	0.55	M-v	4	Williams	32312	1997 AF
1997 AT	13.2	0.15	19990810	335.93942	250.07552	110.06691	8.56161	0.2358746	2.4533135	38	3	1997–1999	0.57	M-v	4	Williams	32312	1997 AT
1997 AO ₂	13.0	0.15	19990810	191.83995	13.37960	92.60435	11.80794	0.0724987	2.9764395	44	4	1980–1999	0.61	M-v	1	Williams	32312	1997 AO ₂
1997 AR ₂	12.9	0.15	19990810	168.55405	4.74563	116.56961	2.36576	0.1396913	3.1698648	45	5	1980–1999	0.63	M-v	1	Williams	32057	1997 AR ₂
1997 AR ₅	12.7	0.15	19990810	241.99762	297.83830	111.97547	14.29817	0.2013968	2.9281061	42	3	1997–1999	0.66	M-v	4	Williams	32057	1997 AR ₅
1997 AA ₇	15.4	0.15	19990810	277.16074	282.55369	136.26872	2.78188	0.2305153	2.5345116	17	1	60 days	0.60	M-v	5	Williams		1997 AA ₇
1997 AN ₁₂	14.4	0.15	19990810	134.54651	324.95453	205.79448	7.38748	0.0410923	2.5754209	61	3	1997–1999	0.44	M-v	3	Marsden	32057	1997 AN ₁₂
1997 AX ₁₄	14.1	0.15	19990810	343.77902	210.66244	113.81477	13.01165	0.3223986	2.6019767	49	4	1982–1999	0.48	M-v	1	Marsden	31590	1997 AX ₁₄
1997 AS ₁₆	13.3	0.15	19990810	154.16029	87.12175	47.96444	2.45111	0.0347398	3.0436475	55	4	1992–1999	0.67	M-v	1	Williams	32312	1997 AS ₁₆
1997 AN ₁₇	13.3	0.15	19990810	319.81475	88.05220	285.74743	22.25187	0.2883105	2.3378412	53	3	1985–1999	0.32	M-v	1	Williams	29926	1997 AN ₁₇

1997 AP ₁₇	13.8	0.15	19990810	10.00796	194.15000	95.34493	10.74521	0.0534680	2.9896417	55	4	1989–1999	0.69	M-v	1	Williams	32057	1997 AP ₁₇
1997 AQ ₁₇	13.6	0.15	19990810	315.14154	47.16305	294.22857	5.45680	0.1958673	2.8017891	47	3	1996–1999	0.63	M-v	4	Williams	31794	1997 AQ ₁₇
1997 AJ ₁₉	14.0	0.15	19990810	266.93854	156.94057	244.38925	1.92989	0.0455374	2.7994142	26	4	1986–1999	0.74	M-v	1	Williams	33343	1997 AJ ₁₉
1997 AH ₂₁	12.6	0.15	19990810	193.94925	321.97416	115.98760	18.53656	0.2026229	3.1184856	20	3	1997–1999	0.57	M-v	4	Williams	34586	1997 AH ₂₁
1997 AF ₂₂	13.0	0.15	19990810	208.40222	73.54018	334.95986	16.10618	0.2513719	3.2057488	30	3	1997–1999	0.63	M-v	4	Williams	31794	1997 AF ₂₂
1997 BO ₁	13.1	0.15	19990810	287.59538	313.99957	59.63075	2.40230	0.0823803	2.9693977	38	4	1989–1999	0.70	M-v	1	Williams	32751	1997 BO ₁
1997 BC ₂	12.7	0.15	19990810	272.72580	263.68444	119.62562	11.62355	0.1175039	2.9952888	47	4	1989–1999	0.66	M-v	1	Williams	32751	1997 BC ₂
1997 BF ₇	13.4	0.15	19990810	205.03245	119.93895	336.48568	0.72130	0.0709271	3.0280946	36	4	1992–1999	0.63	M-v	1	Williams	32313	1997 BF ₇
1997 CQ ₁	13.4	0.15	19990810	221.60958	269.23260	142.73531	19.14711	0.1600801	3.2231812	56	3	1997–1999	0.37	M-v	3	Williams	32057	1997 CQ ₁
1997 CR ₁	14.1	0.15	19990810	257.83191	270.11373	137.01217	3.25176	0.0721422	2.9220794	57	4	1992–1999	0.52	M-v	1	Williams	32313	1997 CR ₁
1997 CV ₂₉	7.2	0.15	19990810	353.38744	26.82904	121.21872	8.02770	0.0432802	42.0777013	33	3	1997–1999	0.38	M-v	5	Marsden	34296	1997 CV ₂₉
1997 EN ₇	14.6	0.15	19990810	16.24170	159.55612	182.62865	2.54385	0.1920965	2.2892950	46	4	1985–1999	0.67	M-v	2	Williams	32956	1997 EN ₇
1997 EY ₃₄	15.1	0.15	19970221	96.76114	282.43082	110.71932	3.19877	0.1089019	2.9028266	11	1	34 days	0.37			Williams		1997 EY ₃₄
1997 ET ₄₀	14.1	0.15	19970221	333.43293	284.63964	256.11641	4.00953	0.0363631	2.5799111	7	1	3 days	0.20		E	Williams		1997 ET ₄₀
1997 EY ₄₅	14.1	0.15	19990810	281.28103	43.40899	81.82733	3.24498	0.1522475	2.3891103	23	2	1995–1997	0.45	M-v	4	Williams	30094	1997 EY ₄₅
1997 KW	14.6	0.15	19990810	165.94746	215.97880	127.28959	6.35350	0.2195193	2.1920022	31	4	1991–1999	0.40	M-v	1	Williams	33752	1997 KW
1997 QH ₁	14.0	0.15	19990810	275.80354	349.65682	277.28662	5.11834	0.1411715	2.2054003	51	4	1974–1999	0.68	M-v	2	Williams	34586	1997 QH ₁
1997 QZ ₂	14.0	0.15	19990810	12.40297	208.68855	321.08145	4.02305	0.0671275	2.3216308	59	4	1985–1999	0.79	M-v	2	Williams	34296	1997 QZ ₂
1997 RC	13.9	0.15	19990810	71.01221	51.77348	63.33234	3.01340	0.0278963	2.8560854	87	2	1997–1999	0.51	M-v	3	Williams	34296	1997 RC
1997 RZ ₇	13.0	0.15	19990810	144.91712	42.37244	339.70716	14.81673	0.1766958	2.5977331	56	3	1982–1999	0.61	M-v	2	Williams	34296	1997 RZ ₇
1997 SU	13.9	0.15	19990810	183.05651	178.79390	211.65961	5.48106	0.1273817	2.4031562	60	3	1993–1999	0.62	M-v	3	Williams	34586	1997 SU
1997 SV	14.2	0.15	19990810	202.40583	343.49937	32.84109	7.15018	0.1201124	2.3673074	40	2	1997–1999	0.51	M-v	3	Williams	34586	1997 SV
1997 SD ₁₁	14.2	0.15	19990810	56.88284	269.51516	242.33478	3.04436	0.0261894	2.1631544	81	4	1980–1999	0.65	M-v	2	Williams	34586	1997 SD ₁₁
1997 SX ₁₅	13.3	0.15	19990810	8.12065	181.08982	23.98252	10.42964	0.1806110	2.4267676	70	4	1984–1999	0.77	M-v	2	Williams	34518	1997 SX ₁₅
1997 SS ₁₇	16.1	0.15	19990810	198.86257	316.87450	71.44974	4.56625	0.1401072	2.1917348	30	2	1997–1999	0.74	M-v	4	Williams	34518	1997 SS ₁₇
1997 SH ₂₅	14.7	0.15	19990810	132.59625	343.82536	85.45096	2.52134	0.1583307	2.4159950	24	3	1980–1999	0.65	M-v	3	Williams	34586	1997 SH ₂₅
1997 SO ₂₅	15.4	0.15	19990810	108.23024	208.21713	276.25550	2.78616	0.0962737	2.2340297	41	2	1997–1999	0.60	M-v	4	Williams	34587	1997 SO ₂₅
1997 SO ₃₃	14.9	0.15	19990810	188.78403	12.71368	32.09051	3.56805	0.1159605	2.3078571	34	2	1997–1999	0.64	M-v	3	Williams	34519	1997 SO ₃₃
1997 TD ₁₇	14.7	0.15	19990810	171.51013	276.62283	126.63472	5.57009	0.1678903	2.3034480	35	2	1997–1999	0.86	M-v	4	Williams	34587	1997 TD ₁₇
1997 TM ₂₆	14.3	0.15	19990810	140.91173	13.78762	53.15594	4.62407	0.1062374	2.2913760	36	2	1997–1999	0.76	M-v	4	Williams	34519	1997 TM ₂₆
1997 UM ₃	13.7	0.15	19990810	169.47228	62.81849	349.09216	2.02598	0.1999899	2.3805474	43	4	1980–1999	0.67	M-v	1	Williams	34587	1997 UM ₃
1997 UQ ₃	14.2	0.15	19990810	122.50969	61.58896	44.66899	1.54935	0.1376167	2.4224086	48	3	1993–1999	0.67	M-v	4	Williams	34587	1997 UQ ₃
1997 UA ₄	14.4	0.15	19990810	16.33023	315.75264	254.06044	3.59269	0.0577860	2.3111404	119	2	1997–1999	0.73	M-v	3	Williams	34587	1997 UA ₄
1997 UX ₄	15.2	0.15	19990810	128.94087	110.05223	5.20268	2.80829	0.1896991	2.3498538	25	3	1993–1999	0.63	M-v	4	Williams	31147	1997 UX ₄
1997 UT ₆	14.7	0.15	19990810	52.55789	341.02154	208.64780	3.07048	0.1339410	2.1830130	50	4	1981–1999	0.63	M-v	2	Williams	34587	1997 UT ₆
1997 UC ₇	12.6	0.15	19990810	314.79959	193.99771	57.48660	13.74213	0.1421780	2.5914000	46	3	1984–1999	0.84	M-v	3	Williams	34520	1997 UC ₇
1997 UP ₇	14.7	0.15	19990810	125.47175	104.62187	338.39858	2.49396	0.2320315	2.5711528	42	2	1997–1999	0.56	M-v	4	Williams	34520	1997 UP ₇
1997 UB ₈	14.9	0.15	19990810	162.04460	221.45633	202.86433	22.75684	0.3118368	2.3328311	37	3	1990–1999	0.61	M-v	2	Williams	34587	1997 UB ₈
1997 UO ₈	13.1	0.15	19990810	115.53541	39.39648	39.87925	15.33580	0.0817081	2.5592166	38	2	1997–1999	0.54	M-v	3	Williams	34207	1997 UO ₈
1997 UA ₉	12.6	0.15	19990810	21.51122	131.04180	59.00739	11.07046	0.0226984	2.5594486	89	4	1970–1999	0.64	M-v	3	Williams	34587	1997 UA ₉
1997 UO ₉	16.0	0.15	19990810	155.63330	153.81500	294.22077	1.10579	0.0908396	2.1813264	31	2	1997–1999	0.57	M-v	4	Williams	34521	1997 UO ₉
1997 UU ₁₀	14.8	0.15	19990810	88.19647	112.82963	22.09878	4.02992	0.1473423	2.4311113	56	2	1997–1999	0.69	M-v	4	Williams	34587	1997 UU ₁₀
1997 UJ ₁₁	13.3	0.15	19990810	122.26154	76.28100	49.37678	23.00117	0.1965810	2.3280547	28	3	1990–1999	0.56	M-v	3	Williams	31015	1997 UJ ₁₁
1997 UV ₁₄	13.2	0.15	19990810	197.45535	138.24298	201.60289	8.10261	0.0280240	2.8815629	52	3	1992–1999	0.53	M-v	3	Williams	34018	1997 UV ₁₄
1997 US ₁₇	14.6	0.15	19990810	341.82145	172.78363	70.93039	5.19233	0.0600427	2.3124663	27	2	1997–1999	0.58	M-v	4	Williams	34521	1997 US ₁₇
1997 UW ₁₇	14.3	0.15	19990810	317.80421	187.61141	55.36944	8.61264	0.0243065	2.5559210	38	2	1997–1999	0.79	M-v	4	Williams	34298	1997 UW ₁₇
1997 UM ₂₁	15.5	0.15	19990810	52.21762	141.73297	27.26784	5.26457	0.0742113	2.2186615	43	2	1997–1999	0.53	M-v	4	Williams	34587	1997 UM ₂₁
1997 UV ₂₁	14.1	0.15	19990810	105.69618	67.26701	53.36061	13.15638	0.2127080	2.5389266	75	3	1993–1999	0.68	M-v	2	Williams	34587	1997 UV ₂₁
1997 UD ₂₅	13.1	0.15	19990810	126.42083	306.00824	93.63022	3.50503	0.0575301	2.8895795	49	4	1987–1999	0.74	M-v	1	Williams	34298	1997 UD ₂₅
1997 VQ	13.0	0.15	19990810	152.44301	160.06529	207.77792	9.19924	0.0978630	3.0704691	42	4	1991–1999	0.74	M-v	2	Williams	34298	1997 VQ
1997 VZ	13.2	0.15	19990810	114.88824	18.47930	45.54990	7.02681	0.1808019	3.0261286	44	3	1981–1999	0.69	M-v	3	Williams	34522	1997 VZ
1997 VJ ₁	13.8	0.15	19990810	346.31051	250.64291	312.26724	14.37809	0.0656293	2.6222836	54	3	1996–1999	0.44	M-v	3	Williams	34298	1997 VJ ₁
1997 VN ₁	12.9	0.15	19990810	118.00711	221.96151	169.06240	1.32419	0.1457482	3.2114442	45	4	1985–1999	0.74	M-v	3	Williams	34018	1997 VN ₁

1997 VJ ₃	14.0	0.15	19990810	156.06111	174.29343	228.51587	3.42666	0.0800656	2.6834633	56	3	1996–1999	0.72	M-v	3	Williams	34522	1997 VJ ₃
1997 VK ₃	14.3	0.15	19990810	84.91145	293.35801	180.94876	2.47870	0.1965410	3.0064209	56	2	1997–1999	0.69	M-v	4	Williams	34522	1997 VK ₃
1997 VM ₃	13.5	0.15	19990810	33.25913	90.50630	79.22567	7.20290	0.0539803	2.7430587	40	2	1997–1999	0.69	M-v	4	Williams	34522	1997 VM ₃
1997 VW ₄	13.6	0.15	19990810	28.34612	129.79278	49.70669	14.14105	0.1140092	2.5722237	75	2	1997–1999	0.68	M-v	3	Williams	34587	1997 VW ₄
1997 VA ₅	15.1	0.15	19990810	185.16381	351.55055	56.76241	6.70391	0.1701078	2.2951542	40	4	1976–1999	0.53	M-v	3	Williams	31281	1997 VA ₅
1997 VF ₅	14.3	0.15	19990810	177.67900	8.26610	27.52949	11.80370	0.1475264	2.3887097	50	2	1997–1999	0.84	M-v	4	Williams	34522	1997 VF ₅
1997 VD ₆	12.4	0.15	19990810	23.99123	91.09501	80.46538	10.62543	0.0482996	3.0474191	25	2	1997–1999	0.52	M-v	3	Williams	34587	1997 VD ₆
1997 VF ₆	13.5	0.15	19990810	72.51502	272.38357	251.56504	11.57374	0.1286194	2.5803798	45	2	1997–1999	0.74	M-v	3	Williams	34523	1997 VF ₆
1997 VJ ₆	14.1	0.15	19990810	131.05048	83.92635	6.32723	4.36774	0.1125596	2.5589952	61	2	1997–1999	0.53	M-v	3	Williams	34588	1997 VJ ₆
1997 VE ₇	14.3	0.15	19990810	57.24983	259.08757	255.83648	4.93609	0.1500335	2.4284994	41	3	1978–1999	0.55	M-v	3	Williams	34588	1997 VE ₇
1997 VX ₈	12.6	0.15	19990810	172.65792	303.56829	67.01372	13.94674	0.1866768	2.6386837	43	3	1991–1999	0.70	M-v	3	Williams	34210	1997 VX ₈
1997 VA ₉	15.3	0.15	19990810	131.92451	264.11166	203.34682	4.09167	0.1855647	2.3589983	19	3	1993–1999	0.71	M-v	4	Williams	31281	1997 VA ₉
1997 WD	14.3	0.15	19990810	137.44655	16.72139	59.50905	15.03156	0.0620028	2.6054642	30	2	1997–1999	0.71	M-v	4	Williams	34523	1997 WD
1997 WA ₂	14.9	0.15	19990810	311.60674	137.26674	122.64023	3.58081	0.1231806	2.2866890	55	4	1992–1999	0.74	M-v	1	Williams	34018	1997 WA ₂
1997 WF ₂	13.4	0.15	19990810	103.54174	227.43180	230.40262	4.93201	0.1792649	2.9184255	39	2	1997–1999	0.61	M-v	4	Williams	34523	1997 WF ₂
1997 WP ₂	13.2	0.15	19990810	109.75961	28.83636	82.26738	11.18146	0.0959574	2.6270234	55	3	1977–1999	0.64	M-v	3	Williams	34588	1997 WP ₂
1997 WQ ₂	14.9	0.15	19990810	197.50824	309.72281	85.66124	6.69823	0.0881282	2.3625367	44	2	1997–1999	0.77	M-v	4	Williams	34588	1997 WQ ₂
1997 WU ₂	12.9	0.15	19990810	42.10730	65.38350	78.96165	22.83430	0.0686020	3.1772437	34	2	1997–1999	0.86	M-v	3	Williams	34588	1997 WU ₂
1997 WV ₂	13.3	0.15	19990810	182.92190	144.77876	268.54028	5.18602	0.0844044	2.3960109	45	3	1993–1999	0.61	M-v	4	Williams	34588	1997 WV ₂
1997 WC ₃	14.3	0.15	19990810	238.68194	251.99249	91.45806	7.71549	0.1190738	2.4033480	45	4	1992–1999	0.80	M-v	1	Williams	34524	1997 WC ₃
1997 WD ₃	13.0	0.15	19990810	322.22402	160.81305	82.50762	3.19638	0.0159889	2.8364938	50	3	1991–1999	0.62	M-v	3	Williams	34588	1997 WD ₃
1997 WB ₆	14.3	0.15	19990810	83.76007	74.25423	79.72937	4.38396	0.0597912	2.3185977	59	2	1997–1999	0.60	M-v	3	Williams	34524	1997 WB ₆
1997 WA ₇	12.7	0.15	19990810	329.42493	190.34140	96.16727	15.22371	0.1958377	2.5884969	69	4	1991–1999	0.64	M-v	3	Williams	34588	1997 WA ₇
1997 WK ₇	14.1	0.15	19990810	96.65097	108.46134	43.08498	4.38145	0.0903764	2.2688848	73	3	1985–1999	0.69	M-v	2	Williams	34588	1997 WK ₇
1997 WQ ₇	14.6	0.15	19990810	256.47490	80.27838	259.40784	1.59893	0.1242270	2.1899702	34	3	1996–1999	0.66	M-v	4	Williams	34588	1997 WQ ₇
1997 WU ₇	13.3	0.15	19990810	146.37031	34.40449	32.88225	13.47849	0.2442540	2.5432525	66	3	1989–1999	0.60	M-v	3	Williams	34588	1997 WU ₇
1997 WL ₈	14.4	0.15	19990810	35.36341	74.32970	85.41234	4.93128	0.0346701	2.7248538	27	2	1997–1999	0.77	M-v	4	Williams	34524	1997 WL ₈
1997 WO ₁₂	15.0	0.15	19990810	352.44251	354.55613	233.30752	6.83671	0.1929138	2.2975665	21	2	1997–1999	0.43	M-v	4	Williams	33963	1997 WO ₁₂
1997 WD ₁₅	13.2	0.15	19990810	6.63362	141.84438	42.04903	5.98148	0.1180655	2.7537589	51	3	1990–1999	0.61	M-v	2	Williams	34299	1997 WD ₁₅
1997 WM ₂₁	14.1	0.15	19990810	132.85367	264.26025	232.70015	5.64232	0.1477534	2.2434003	37	4	1990–1999	0.77	M-v	1	Williams	31152	1997 WM ₂₁
1997 WP ₂₁	12.2	0.15	19990810	77.12404	37.57706	91.67441	17.95648	0.0960004	3.1832774	24	2	1997–1999	0.38	M-v	3	Williams	34524	1997 WP ₂₁
1997 WR ₂₁	14.9	0.15	19990810	222.03730	112.46901	276.38725	4.62616	0.1664265	2.2658952	35	3	1993–1999	0.65	M-v	3	Williams	31424	1997 WR ₂₁
1997 WX ₂₁	12.9	0.15	19990810	359.58184	241.22343	354.15925	12.79696	0.1314173	2.7015250	65	3	1990–1999	0.66	M-v	3	Williams	34588	1997 WX ₂₁
1997 WQ ₂₂	15.5	0.15	19990810	256.99353	67.16942	310.50431	1.82759	0.1769382	2.2616920	33	3	1993–1999	0.62	M-v	2	Williams	31796	1997 WQ ₂₂
1997 WQ ₂₈	13.3	0.15	19990810	105.73862	89.28357	8.78747	11.26905	0.1587875	2.6466749	62	2	1997–1999	0.68	M-v	3	Williams	34588	1997 WQ ₂₈
1997 WM ₃₅	14.2	0.15	19990810	13.81146	143.77026	78.73582	3.19751	0.1573141	2.3832996	51	2	1997–1999	0.66	M-v	4	Williams	34524	1997 WM ₃₅
1997 WB ₃₇	11.9	0.15	19990810	298.43847	144.43049	86.67778	11.86826	0.0980897	3.2167232	85	2	1997–1999	0.50	M-v	3	Williams	34299	1997 WB ₃₇
1997 WM ₃₉	15.2	0.15	19990810	131.98935	351.74177	116.20846	3.11494	0.1401909	2.3983448	40	4	1993–1999	0.95	M-v	1	Williams	31395	1997 WM ₃₉
1997 WF ₄₃	14.1	0.15	19990810	333.62327	191.01501	78.78462	6.98420	0.0776935	2.3041228	72	2	1997–1999	0.65	M-v	4	Williams	34525	1997 WF ₄₃
1997 WS ₄₄	14.2	0.15	19990810	114.21410	12.16584	87.15318	4.39683	0.0845446	2.7242182	48	2	1997–1999	0.73	M-v	4	Williams	34525	1997 WS ₄₄
1997 XB	15.1	0.15	19990810	113.35030	18.08749	99.21788	9.04567	0.1047887	2.5617082	36	3	1995–1999	0.69	M-v	3	Williams	34588	1997 XB
1997 XL	14.3	0.15	19990810	141.04387	74.17861	44.30618	5.83584	0.1102454	2.2921519	31	4	1983–1999	0.63	M-v	3	Williams	31154	1997 XL
1997 XM	14.1	0.15	19990810	157.59386	49.83954	24.10570	2.46083	0.1807468	2.5808847	36	4	1984–1999	0.68	M-v	2	Williams	31796	1997 XM
1997 XZ	15.1	0.15	19990810	80.02021	209.35600	338.44159	2.23930	0.1094176	2.4109915	23	4	1991–1999	0.45	M-v	1	Williams	31283	1997 XZ
1997 XF ₁	15.1	0.15	19990810	283.63527	106.59722	250.14975	20.39603	0.1041506	1.9301366	62	2	1997–1999	0.67	M-v	4	Williams	34526	1997 XF ₁
1997 XV ₁	14.8	0.15	19990810	134.18968	357.31801	119.01078	7.06593	0.0670920	2.3161230	40	3	1996–1999	0.51	M-v	3	Williams	31283	1997 XV ₁
1997 XX ₃	12.2	0.15	19990810	326.11934	137.87667	159.08135	5.36970	0.1884649	3.9448452	80	3	1997–1999	0.77	M-v	3	Williams	34213	1997 XX ₃
1997 XT ₅	12.6	0.15	19990810	168.42417	255.18284	102.23290	7.41330	0.1464454	3.1198057	53	4	1989–1999	0.80	M-v	3	Williams	34019	1997 XT ₅
1997 XO ₈	14.9	0.15	19990810	105.95310	81.19505	97.57457	3.87451	0.1195688	2.4457238	28	4	1981–1999	0.65	M-v	1	Williams	31252	1997 XO ₈
1997 XV ₈	14.0	0.15	19990810	113.16976	224.53531	309.66228	6.69409	0.0479156	2.3549999	28	4	1991–1999	0.37	M-v	1	Williams	31253	1997 XV ₈
1997 XZ ₉	13.7	0.15	19990810	127.82467	211.79630	259.01160	5.04467	0.0565146	2.4423137	39	3	1983–1999	0.69	M-v	4	Williams	34588	1997 XZ ₉
1997 XH ₁₀	15.1	0.15	19990810	139.45491	56.40439	61.33835	6.06072	0.1257037	2.2851061	36	3	1976–1999	0.66	M-v	3	Williams	31424	1997 XH ₁₀
1997 XN ₁₀	15.4	0.15	19990810	143.88374	29.10365	67.09462	3.08666	0.1748112	2.4264420	22	3	1996–1999	0.75	M-v	3	Williams	31283	1997 XN ₁₀

1997 XR ₁₀	14.2	0.15	19990810	99.66544	84.10467	32.86222	2.68635	0.1506094	2.6122649	56	2	1997–1999	0.61	M-v	4	Williams	34526	1997 XR ₁₀
1997 XT ₁₀	13.3	0.15	19990810	103.26127	216.58745	304.60893	13.31881	0.2685793	3.0577883	23	3	1987–1999	0.73	M-v	3	Williams	31253	1997 XT ₁₀
1997 YD	14.6	0.15	19990810	170.67227	16.92100	54.64533	1.42969	0.1994314	2.3641486	23	3	1980–1999	0.70	M-v	4	Williams	31424	1997 YD
1997 YO	11.9	0.15	19990810	81.63422	28.84126	107.14825	17.62994	0.1697844	3.1395383	68	2	1997–1999	0.64	M-v	3	Williams	34588	1997 YO
1997 YG ₁	14.5	0.15	19990810	100.12860	53.29739	62.21397	2.94847	0.1444844	2.4490092	81	3	1978–1999	0.54	M-v	1	Williams	34589	1997 YG ₁
1997 YS ₁	14.7	0.15	19990810	225.33324	292.93265	99.50955	7.18644	0.1209997	2.4144212	62	3	1989–1999	0.69	M-v	3	Williams	34589	1997 YS ₁
1997 YX ₁	14.7	0.15	19990810	131.51924	0.89646	111.40148	3.84781	0.2278948	2.5451474	22	3	1990–1999	0.43	M-v	4	Williams	31127	1997 YX ₁
1997 YB ₂	15.2	0.15	19990810	11.98624	349.87922	281.37563	1.84907	0.1072879	2.2311057	47	4	1992–1999	0.65	M-v	1	Williams	31254	1997 YB ₂
1997 YK ₂	15.2	0.15	19990810	8.01364	343.91787	299.45052	3.98729	0.1030254	2.1419493	23	4	1989–1999	0.72	M-v	2	Williams	31254	1997 YK ₂
1997 YP ₂	14.0	0.15	19990810	237.11066	168.36688	207.95090	4.12599	0.1866956	2.2590409	61	3	1995–1999	0.75	M-v	3	Williams	34589	1997 YP ₂
1997 YX ₂	14.4	0.15	19990810	99.12362	126.98568	355.81362	1.22928	0.0617957	2.9744681	30	3	1960–1999	0.74	M-v	5	Williams	34589	1997 YX ₂
1997 YZ ₂	12.5	0.15	19990810	161.95638	164.72209	270.25368	12.18647	0.1206239	2.6029187	38	4	1983–1999	0.74	M-v	3	Williams	34589	1997 YZ ₂
1997 YD ₃	14.2	0.15	19990810	105.92045	33.59992	131.37861	6.48145	0.1765417	2.4721435	19	3	1991–1999	0.54	M-v	3	Williams	31255	1997 YD ₃
1997 YL ₃	14.2	0.15	19990810	326.48548	195.06371	91.06347	8.38113	0.1640340	2.5624489	41	3	1994–1999	0.58	M-v	4	Williams	34526	1997 YL ₃
1997 YR ₃	12.8	0.15	19990810	84.97114	213.99837	250.08209	17.32834	0.2245001	2.9944592	31	3	1992–1999	0.55	M-v	2	Williams	34300	1997 YR ₃
1997 YA ₄	14.8	0.15	19990810	281.58936	38.92333	314.08416	5.38744	0.1876896	2.2043944	30	3	1993–1999	0.66	M-v	3	Williams	32314	1997 YA ₄
1997 YL ₄	14.3	0.15	19990810	137.00466	305.48433	105.73663	3.92319	0.1299554	2.5871607	35	2	1997–1999	0.57	M-v	4	Williams	34526	1997 YL ₄
1997 YA ₅	13.3	0.15	19990810	120.64000	180.23703	267.95425	16.48926	0.1499252	2.7601569	49	2	1997–1999	0.40	M-v	3	Williams	34589	1997 YA ₅
1997 YH ₅	14.1	0.15	19990810	234.47186	60.67797	323.57722	3.58948	0.2396216	2.1887113	40	4	1974–1999	0.78	M-v	2	Williams	34589	1997 YH ₅
1997 YR ₅	14.7	0.15	19990810	308.47827	220.12608	110.02604	3.69062	0.0635842	2.2460897	71	4	1993–1999	0.64	M-v	2	Williams	31256	1997 YR ₅
1997 YS ₅	13.2	0.15	19990810	119.79040	143.25619	307.38815	9.47261	0.2434110	3.0294323	31	3	1991–1999	0.66	M-v	2	Williams	34589	1997 YS ₅
1997 YL ₇	12.9	0.15	19990810	133.73903	17.24696	88.02883	15.10998	0.2329377	2.6569240	52	3	1975–1999	0.55	M-v	3	Williams	34300	1997 YL ₇
1997 YN ₇	13.3	0.15	19990810	228.11408	275.00090	110.65497	15.57562	0.1256459	2.6023136	41	3	1981–1999	0.64	M-v	3	Williams	34527	1997 YN ₇
1997 YO ₇	13.7	0.15	19990810	100.03668	41.27861	103.72510	11.67000	0.0635672	2.9813538	41	3	1991–1999	0.67	M-v	3	Williams	31425	1997 YO ₇
1997 YQ ₇	13.0	0.15	19990810	179.14268	86.77566	336.59868	11.47487	0.1661355	2.6902016	25	5	1974–1999	0.95	M-v	2	Williams	34589	1997 YQ ₇
1997 YZ ₇	14.9	0.15	19990810	166.78863	149.00891	280.96850	10.48498	0.1940782	2.5340996	31	2	1997–1999	0.49	M-v	3	Marsden	34527	1997 YZ ₇
1997 YA ₈	13.7	0.15	19990810	75.51609	317.11686	251.51830	11.92115	0.2141559	2.4502330	45	3	1991–1999	0.42	M-v	2	Marsden	31425	1997 YA ₈
1997 YN ₈	14.3	0.15	19990810	328.15756	262.62548	14.22548	2.77468	0.1580125	2.2491414	92	2	1997–1999	0.68	M-v	4	Williams	34589	1997 YN ₈
1997 YY ₈	12.5	0.15	19990810	144.80299	332.10772	90.04491	15.45776	0.1657433	2.6508866	44	3	1994–1999	0.73	M-v	3	Williams	34589	1997 YY ₈
1997 YZ ₈	15.1	0.15	19990810	135.70456	358.58991	103.06079	5.64127	0.1521323	2.4339214	27	3	1993–1999	0.83	M-v	3	Williams	31257	1997 YZ ₈
1997 YO ₉	14.8	0.15	19990810	68.85613	27.19830	177.98529	6.44372	0.0913544	2.4374159	26	3	1996–1999	0.38	M-v	2	Williams	31257	1997 YO ₉
1997 YB ₁₀	13.4	0.15	19990810	150.46181	118.41878	313.29104	6.85265	0.2083910	2.7715336	38	4	1987–1999	0.78	M-v	2	Williams	34589	1997 YB ₁₀
1997 YD ₁₀	13.9	0.15	19990810	348.58821	318.58229	329.80251	5.15214	0.1076744	2.3167801	29	4	1984–1999	0.52	M-v	2	Williams	34019	1997 YD ₁₀
1997 YG ₁₀	14.1	0.15	19990810	138.47500	78.61780	34.35509	3.64378	0.1366258	2.5777970	38	4	1976–1999	0.67	M-v	2	Williams	31591	1997 YG ₁₀
1997 YQ ₁₀	13.1	0.15	19990810	114.87866	36.87028	78.06325	9.69327	0.0857985	2.9304093	55	2	1997–1999	0.57	M-v	4	Williams	34527	1997 YQ ₁₀
1997 YS ₁₀	14.0	0.15	19990810	250.54626	166.12850	209.23279	2.88228	0.1263163	2.4079326	68	3	1989–1999	0.68	M-v	2	Williams	34589	1997 YS ₁₀
1997 YT ₁₀	13.4	0.15	19990810	20.29892	136.20702	105.85277	8.56241	0.0486446	2.7785239	68	3	1976–1999	0.54	M-v	3	Williams	34300	1997 YT ₁₀
1997 YT ₁₁	13.7	0.15	19990810	147.97390	7.38341	121.25902	14.54961	0.0817940	2.6218285	20	3	1994–1999	0.66	M-v	3	Williams	31591	1997 YT ₁₁
1997 YV ₁₁	12.3	0.15	19990810	158.25820	315.09600	125.40781	17.61820	0.0962016	3.1913493	51	2	1997–1999	0.62	M-v	3	Williams	34527	1997 YV ₁₁
1997 YW ₁₁	13.5	0.15	19990810	245.45657	248.81406	93.31979	4.72468	0.0990043	2.7999150	45	2	1997–1999	0.77	M-v	4	Williams	34589	1997 YW ₁₁
1997 YH ₁₃	14.4	0.15	19990810	61.10325	287.16273	252.01910	5.80285	0.1474489	3.1655215	23	2	1997–1999	0.48	M-v	3	Williams	34528	1997 YH ₁₃
1997 YW ₁₃	13.8	0.15	19990810	126.87531	265.86183	258.80257	5.42589	0.1161308	2.2887202	31	5	1967–1999	0.50	M-v	1	Williams	31797	1997 YW ₁₃
1997 YM ₁₄	14.8	0.15	19990810	146.45855	355.24285	127.75440	8.20930	0.1017128	2.4334713	28	3	1995–1999	0.73	M-v	3	Williams	31797	1997 YM ₁₄
1997 YP ₁₄	14.0	0.15	19990810	213.46370	48.12656	331.11608	1.14097	0.0736670	2.8959781	39	2	1997–1999	0.55	M-v	4	Williams	34589	1997 YP ₁₄
1997 YJ ₁₆	13.7	0.15	19990810	167.65304	63.67935	17.84895	8.91922	0.1799474	2.3040007	46	4	1988–1999	0.66	M-v	2	Williams	34589	1997 YJ ₁₆
1997 YZ ₁₆	14.1	0.15	19990810	191.40493	260.72753	149.99829	5.46745	0.1163338	2.4335968	47	6	1985–1999	0.80	M-v	2	Williams	34589	1997 YZ ₁₆
1997 YG ₁₇	15.1	0.15	19990810	359.23832	165.22915	107.77215	8.46243	0.0972619	2.3752061	28	3	1989–1999	0.55	M-v	3	Williams	31130	1997 YG ₁₇
1997 YL ₁₈	14.4	0.15	19990810	110.51448	303.99179	184.35396	1.12029	0.1487338	2.6250400	21	3	1992–1999	0.70	M-v	4	Williams	31130	1997 YL ₁₈
1997 YS ₁₉	14.6	0.15	19990810	154.53402	355.63710	78.48967	7.47927	0.0923780	2.4252210	36	2	1997–1999	0.84	M-v	4	Williams	34528	1997 YS ₁₉
1998 AJ	13.0	0.15	19990810	138.27457	305.89908	118.66297	4.10824	0.1721382	3.1137004	97	4	1969–1999	0.72	M-v	3	Williams	34589	1998 AJ
1998 AQ	13.3	0.15	19990810	39.04310	79.09720	130.68457	22.78522	0.1410831	3.1697406	43	3	1966–1999	0.61	M-v	2	Williams	31426	1998 AQ
1998 AV	13.3	0.15	19990810	346.06800	130.12135	114.89269	22.40385	0.0074512	3.1495948	36	2	1997–1999	0.60	M-v	3	Williams	34528	1998 AV
1998 AL ₄	14.1	0.15	19990810	91.66574	156.24846	343.47188	1.31972	0.0572307	2.9182539	26	3	1996–1999	0.63	M-v	4	Williams	31260	1998 AL ₄

1998 AZ ₅	13.4	0.15	19990810	245.83670	15.26516	340.53843	4.82636	0.1272302	3.1601358	19	3	1993–1999	0.61	M-v	3	Williams	32314	1998 AZ ₅
1998 AV ₈	14.8	0.15	19990810	216.02866	208.35738	202.81647	4.23977	0.1150678	2.2232410	58	4	1990–1999	0.49	M-v	1	Williams	31592	1998 AV ₈
1998 AL ₁₀	14.6	0.15	19990810	192.96709	264.87921	141.79517	4.92263	0.1594053	2.5230210	34	3	1990–1999	0.66	M-v	4	Williams	34528	1998 AL ₁₀
1998 AM ₁₀	14.0	0.15	19990810	308.42188	174.42660	145.93979	7.88911	0.0897490	2.4531933	70	2	1997–1999	0.61	M-v	3	Williams	34589	1998 AM ₁₀
1998 AQ ₁₀	14.8	0.15	19990810	81.99836	56.90325	112.27930	5.24982	0.0581592	2.6258875	51	3	1977–1999	0.62	M-v	2	Williams	34300	1998 AQ ₁₀
1998 AG ₁₁	14.9	0.15	19990810	5.46600	182.26168	76.78137	2.87859	0.0797060	2.4395356	46	3	1996–1999	0.49	M-v	4	Williams	32970	1998 AG ₁₁
1998 BE	13.3	0.15	19990810	273.94726	286.33652	39.91335	6.53408	0.0674651	2.7117540	60	4	1983–1999	0.61	M-v	2	Williams	34589	1998 BE
1998 BL	14.4	0.15	19990810	60.17451	130.59455	74.49073	6.03708	0.0998482	2.7335446	23	3	1991–1999	0.46	M-v	2	Williams	31426	1998 BL
1998 BQ	14.0	0.15	19990810	127.95035	356.86109	106.16246	7.41167	0.1403210	2.2847056	56	4	1987–1999	0.78	M-v	3	Williams	34589	1998 BQ
1998 BH ₁	15.0	0.15	19990810	258.39199	286.92910	69.18285	5.45325	0.2300423	2.3345698	25	3	1975–1999	0.77	M-v	3	Williams	34589	1998 BH ₁
1998 BO ₁	14.2	0.15	19990810	197.40932	84.42155	347.38985	5.30447	0.0970320	2.3423845	50	6	1950–1999	0.59	M-v	1	Williams	32059	1998 BO ₁
1998 BR ₁	13.3	0.15	19990810	252.38748	312.07964	43.97380	5.83658	0.2567527	2.3682186	42	2	1998–1999	0.66	M-v	4	Williams	34528	1998 BR ₁
1998 BU ₁	13.9	0.15	19990810	176.55896	324.66551	102.63600	14.34641	0.1395566	2.5958233	40	3	1995–1999	0.62	M-v	4	Williams	31427	1998 BU ₁
1998 BY ₁	15.8	0.15	19990810	149.32486	333.05809	121.35624	8.07216	0.2129410	2.6166697	19	3	1994–1999	0.49	M-v	4	Williams	31263	1998 BY ₁
1998 BA ₂	14.2	0.15	19990810	241.65493	303.90956	48.17127	4.18488	0.1846799	2.5619115	45	4	1955–1999	0.81	M-v	2	Marsden	34589	1998 BA ₂
1998 BB ₂	12.3	0.15	19990810	328.56895	157.53327	102.37848	17.76407	0.1377791	3.1202289	86	4	1988–1999	0.71	M-v	2	Williams	34589	1998 BB ₂
1998 BK ₂	15.1	0.15	19990810	238.89148	255.74600	140.57171	3.18108	0.0379208	2.2873233	32	3	1996–1999	0.59	M-v	3	Williams	34589	1998 BK ₂
1998 BW ₃	15.7	0.15	19990810	179.30320	218.75493	222.43488	2.10242	0.1001136	2.4089556	27	3	1978–1999	0.47	M-v	3	Williams	31592	1998 BW ₃
1998 BV ₆	13.6	0.15	19990810	338.06748	132.64719	126.99014	10.38858	0.0482868	3.1689348	39	3	1993–1999	0.70	M-v	4	Williams	34589	1998 BV ₆
1998 BW ₆	13.7	0.15	19990810	78.27975	134.22878	32.24664	1.30868	0.1231450	3.0546928	45	3	1996–1999	0.81	M-v	3	Williams	31398	1998 BW ₆
1998 BH ₇	14.3	0.15	19990810	59.03829	61.93642	183.45103	1.36874	0.0842380	2.2314294	40	5	1949–1999	0.71	M-v	2	Williams	32753	1998 BH ₇
1998 BA ₈	14.4	0.15	19990810	135.49538	76.96454	78.55232	3.03339	0.0135339	2.3409448	37	5	1982–1999	0.76	M-v	2	Williams	31592	1998 BA ₈
1998 BD ₈	13.0	0.15	19990810	233.20857	48.45255	327.37247	12.89413	0.1880954	2.6247721	51	3	1983–1999	0.68	M-v	3	Williams	34589	1998 BD ₈
1998 BG ₈	13.7	0.15	19990810	226.61135	306.62850	84.86981	3.53637	0.1539051	2.5246719	72	4	1988–1999	0.68	M-v	1	Williams	34589	1998 BG ₈
1998 BH ₈	13.6	0.15	19990810	347.77190	163.68718	122.59121	11.02767	0.1271780	2.6731945	65	3	1982–1999	0.67	M-v	3	Williams	34589	1998 BH ₈
1998 BW ₈	13.8	0.15	19990810	23.48382	207.04642	15.67078	5.07770	0.0979784	3.1802478	50	2	1998–1999	0.69	M-v	4	Williams	34528	1998 BW ₈
1998 BL ₉	13.0	0.15	19990810	202.05369	273.13489	141.01939	11.94840	0.1913725	2.6794661	59	3	1989–1999	0.64	M-v	3	Williams	32059	1998 BL ₉
1998 BH ₁₀	13.6	0.15	19990810	324.95822	232.45884	47.64905	7.12394	0.0236506	2.7587342	68	2	1997–1999	0.78	M-v	4	Williams	34529	1998 BH ₁₀
1998 BJ ₁₀	15.0	0.15	19990810	8.12634	103.66717	143.80904	12.66903	0.1255064	2.6706262	43	2	1998–1999	0.62	M-v	4	Williams	34529	1998 BJ ₁₀
1998 BG ₁₁	13.4	0.15	19990810	310.01484	177.25607	106.98597	6.43622	0.0311146	2.7290424	70	4	1987–1999	0.72	M-v	2	Williams	34590	1998 BG ₁₁
1998 BH ₁₂	14.4	0.15	19990810	200.21283	289.30942	115.63275	15.55701	0.1044792	2.5752209	35	3	1995–1999	0.39	M-v	3	Williams	31798	1998 BH ₁₂
1998 BS ₁₃	13.6	0.15	19990810	92.19510	254.24491	257.43490	3.07986	0.0456330	2.7854818	94	2	1998–1999	0.59	M-v	3	Williams	34590	1998 BS ₁₃
1998 BT ₁₄	12.8	0.15	19990810	352.12789	316.24832	288.03258	8.89533	0.0604905	3.0335368	33	2	1997–1999	0.59	M-v	4	Williams	34529	1998 BT ₁₄
1998 BB ₁₉	13.7	0.15	19990810	234.70780	331.72564	6.41679	9.39840	0.1768696	3.1409706	34	2	1998–1999	0.78	M-v	4	Williams	34590	1998 BB ₁₉
1998 BV ₂₄	13.2	0.15	19990810	297.29641	231.93023	76.89466	6.14453	0.1649702	3.1755445	27	2	1998–1999	0.79	M-v	4	Williams	34529	1998 BV ₂₄
1998 BY ₂₄	13.7	0.15	19990810	334.23415	2.71294	279.01898	1.21603	0.0152140	2.8433287	62	4	1994–1999	0.52	M-v	1	Williams	32314	1998 BY ₂₄
1998 BZ ₂₄	13.8	0.15	19990810	100.58179	354.18652	146.21439	2.72347	0.1532132	3.0907736	24	3	1993–1999	0.68	M-v	4	Williams	31593	1998 BZ ₂₄
1998 BH ₂₅	14.6	0.15	19990810	83.61770	140.68824	69.46364	2.88412	0.0746596	2.4426413	40	5	1983–1999	0.69	M-v	1	Williams	32314	1998 BH ₂₅
1998 BL ₂₅	13.9	0.15	19990810	142.47079	322.49957	151.28050	4.24817	0.0504209	2.7924576	43	3	1991–1999	0.70	M-v	4	Williams	31798	1998 BL ₂₅
1998 BN ₂₅	14.4	0.15	19990810	4.45148	348.20554	321.77958	1.00416	0.0371456	2.1529881	47	4	1992–1999	0.55	M-v	2	Williams	31798	1998 BN ₂₅
1998 BP ₂₅	13.7	0.15	19990810	58.78257	61.73723	131.91735	2.96891	0.1483085	3.1497270	45	3	1982–1999	0.66	M-v	3	Williams	32059	1998 BP ₂₅
1998 BX ₂₅	13.4	0.15	19990810	141.79349	158.82589	294.55349	11.61582	0.0773309	2.8905476	22	3	1990–1999	0.57	M-v	3	Williams	31429	1998 BX ₂₅
1998 BC ₂₆	13.4	0.15	19990810	245.31168	319.40318	64.53304	8.70120	0.1808429	2.4141048	59	4	1974–1999	0.58	M-v	2	Williams	34590	1998 BC ₂₆
1998 BE ₂₆	13.9	0.15	19990810	214.01260	243.93282	173.19024	10.54325	0.1085861	2.9781010	45	4	1975–1999	0.65	M-v	2	Williams	32314	1998 BE ₂₆
1998 BB ₂₇	14.0	0.15	19990810	253.92614	28.30840	311.53925	1.11443	0.1042677	2.9330799	33	3	1981–1999	0.69	M-v	4	Williams	34529	1998 BB ₂₇
1998 BT ₃₃	14.3	0.15	19990810	252.78120	309.58426	81.80381	6.06881	0.1552659	2.3350795	51	3	1978–1999	0.59	M-v	3	Williams	31798	1998 BT ₃₃
1998 BA ₃₄	13.4	0.15	19990810	192.39381	320.77052	71.09068	11.60757	0.0663458	3.0602688	42	4	1988–1999	0.72	M-v	2	Williams	34590	1998 BA ₃₄
1998 BG ₃₄	14.7	0.15	19990810	325.44098	230.37064	62.77330	1.11296	0.1811232	3.1319149	29	4	1993–1999	0.59	M-v	2	Williams	31402	1998 BG ₃₄
1998 BQ ₄₀	13.7	0.15	19990810	259.29129	3.32483	340.47738	4.28772	0.0850963	2.7920720	33	3	1991–1999	0.76	M-v	4	Williams	34590	1998 BQ ₄₀
1998 BD ₄₁	15.1	0.15	19990810	130.73789	36.85331	36.77495	5.36770	0.3156501	2.5779553	39	4	1990–1999	0.75	M-v	2	Williams	34529	1998 BD ₄₁
1998 BJ ₄₂	15.2	0.15	19990810	128.80570	318.35177	155.95043	2.27299	0.1708761	2.3177731	47	3	1995–1999	0.75	M-v	2	Williams	31402	1998 BJ ₄₂
1998 BU ₄₅	15.3	0.15	19990810	133.62550	191.57088	320.89785	1.65433	0.1540000	2.3785130	37	3	1996–1999	0.51	M-v	3	Williams	31594	1998 BU ₄₅
1998 BN ₄₈	13.8	0.15	19990810	264.94566	238.65811	133.32345	5.71040	0.1398905	2.2887159	43	4	1988–1999	0.69	M-v	2	Williams	33346	1998 BN ₄₈

1998 CB	14.4	0.15	19990810	317.29675	195.17192	108.99715	8.78481	0.1422067	2.8327159	76	2	1998-1999	0.56	M-v	4	Williams	34530	1998 CB
1998 CH	12.9	0.15	19990810	186.90560	293.69956	106.47940	22.76256	0.0686990	2.6910986	106	3	1997-1999	0.44	M-v	2	Williams	34590	1998 CH
1998 CR	12.8	0.15	19990810	205.29720	228.72806	162.99157	10.64505	0.1407724	3.0491655	84	3	1990-1999	0.62	M-v	3	Williams	34590	1998 CR
1998 CA ₁	14.2	0.15	19990810	302.41988	28.46237	327.56843	7.48580	0.2283438	2.2011903	39	3	1983-1999	0.57	M-v	3	Williams	32059	1998 CA ₁
1998 CC ₁	13.8	0.15	19990810	284.94691	180.16990	140.94338	9.94855	0.1461444	2.7835704	45	3	1990-1999	0.64	M-v	3	Williams	34590	1998 CC ₁
1998 CB ₃	14.2	0.15	19990810	268.63663	42.41300	327.55243	2.43936	0.1945688	2.4450792	21	3	1992-1999	0.90	M-v	5	Williams	31739	1998 CB ₃
1998 DP	12.1	0.15	19990810	257.63199	217.11734	112.89217	13.94688	0.1197988	3.1618767	67	2	1998-1999	0.38	M-v	3	Williams	34590	1998 DP
1998 DX	14.2	0.15	19990810	303.62871	229.43069	89.83731	7.33279	0.1279565	2.3261741	96	2	1997-1999	0.63	M-v	3	Williams	34530	1998 DX
1998 DZ	14.9	0.15	19990810	10.62056	280.21813	336.65345	2.91912	0.0550319	2.5637319	26	3	1996-1999	0.28	M-v	4	Williams	31406	1998 DZ
1998 DN ₁	13.1	0.15	19990810	337.53153	195.09898	85.22059	2.30178	0.1487032	3.1070776	70	3	1995-1999	0.70	M-v	4	Williams	34590	1998 DN ₁
1998 DZ ₁	14.9	0.15	19990810	48.23915	250.40470	332.61051	12.36551	0.1627679	2.5694214	26	4	1982-1999	0.39	M-v	2	Williams	31406	1998 DZ ₁
1998 DR ₂	13.2	0.15	19990810	139.39557	119.92879	347.47284	9.24553	0.0498624	2.9973028	35	3	1990-1999	0.51	M-v	4	Williams	31800	1998 DR ₂
1998 DW ₂	13.5	0.15	19990810	236.37243	135.37424	253.17353	3.36345	0.0819566	2.7968179	59	4	1990-1999	0.59	M-v	1	Williams	31800	1998 DW ₂
1998 DZ ₂	12.3	0.15	19990810	190.40104	275.77895	86.01104	15.89085	0.1423247	2.5711662	62	3	1982-1999	0.51	M-v	2	Williams	34590	1998 DZ ₂
1998 DS ₃	12.9	0.15	19990810	133.79716	311.33144	148.99622	10.68844	0.0781590	3.0169448	58	3	1988-1999	0.68	M-v	4	Williams	31800	1998 DS ₃
1998 DV ₃	13.9	0.15	19990810	119.43900	287.47314	181.16337	1.17005	0.1595016	3.0956944	27	3	1993-1999	0.55	M-v	5	Williams	31407	1998 DV ₃
1998 DS ₄	13.6	0.15	19990810	217.08236	229.39272	151.37033	15.96684	0.0943947	3.0277847	42	5	1977-1999	0.74	M-v	1	Williams	34590	1998 DS ₄
1998 DE ₅	14.1	0.15	19990810	291.31364	327.87576	12.80574	4.76494	0.1836155	2.5214709	53	4	1980-1999	0.67	M-v	2	Williams	34590	1998 DE ₅
1998 DZ ₅	14.5	0.15	19990810	129.33178	348.49361	165.18257	4.53404	0.1745358	2.5519839	41	5	1990-1999	0.65	M-v	2	Williams	32060	1998 DZ ₅
1998 DU ₇	12.7	0.15	19990810	163.20865	347.17151	90.86966	12.23134	0.0856276	2.9970233	82	2	1998-1999	0.62	M-v	3	Williams	34590	1998 DU ₇
1998 DL ₈	14.3	0.15	19990810	327.62058	95.02289	211.76532	4.15716	0.0541951	2.8152038	31	3	1994-1999	0.59	M-v	4	Williams	32060	1998 DL ₈
1998 DP ₉	13.6	0.15	19990810	120.33633	69.96820	79.37199	11.43655	0.0557907	2.9785063	34	4	1993-1999	0.51	M-v	1	Williams	32315	1998 DP ₉
1998 DQ ₉	12.7	0.15	19990810	162.24557	26.66066	73.19693	11.13048	0.0801820	3.0118223	42	4	1991-1999	0.61	M-v	1	Williams	31741	1998 DQ ₉
1998 DW ₉	12.4	0.15	19990810	190.79132	163.13897	247.36952	7.47690	0.1003278	3.4319736	68	3	1993-1999	0.65	M-v	4	Williams	34590	1998 DW ₉
1998 DY ₉	14.4	0.15	19990810	156.04940	210.86165	303.62263	3.08523	0.0651598	2.1399721	38	3	1996-1999	0.47	M-v	3	Williams	31801	1998 DY ₉
1998 DH ₁₀	13.3	0.15	19990810	237.50060	196.11794	178.59490	9.41894	0.1401666	3.0517333	47	3	1993-1999	0.71	M-v	3	Williams	34590	1998 DH ₁₀
1998 DJ ₁₀	13.5	0.15	19990810	159.59538	106.41240	348.73972	2.02303	0.1936536	2.8974373	59	5	1986-1999	0.58	M-v	1	Williams	32315	1998 DJ ₁₀
1998 DU ₁₀	13.1	0.15	19990810	190.66032	324.73495	45.08945	8.89417	0.1138211	3.1056490	36	2	1998-1999	0.64	M-v	4	Williams	34530	1998 DU ₁₀
1998 DU ₁₁	13.1	0.15	19990810	21.31523	169.56152	88.52832	2.25532	0.1617343	3.0894918	47	3	1993-1999	0.60	M-v	4	Williams	32060	1998 DU ₁₁
1998 DW ₁₂	13.9	0.15	19990810	131.85504	300.09623	132.49855	4.14256	0.3110201	3.0717588	35	3	1996-1999	0.44	M-v	3	Williams	34530	1998 DW ₁₂
1998 DL ₁₃	12.8	0.15	19990810	173.46497	296.21823	133.39716	7.40935	0.1347683	3.1459974	49	4	1988-1999	0.65	M-v	2	Williams	34590	1998 DL ₁₃
1998 DQ ₁₃	13.6	0.15	19990810	109.46850	56.68780	107.86332	2.48390	0.1135526	3.0359963	60	4	1980-1999	0.51	M-v	1	Williams	32315	1998 DQ ₁₃
1998 DJ ₁₄	14.4	0.15	19990810	209.02372	259.51925	138.43575	14.32455	0.1030775	2.6442012	42	3	1994-1999	0.58	M-v	3	Williams	31596	1998 DJ ₁₄
1998 DT ₁₄	14.0	0.15	19990810	164.11174	311.83265	163.72812	10.89127	0.0412659	2.5570102	30	3	1990-1999	0.62	M-v	4	Williams	31742	1998 DT ₁₄
1998 DD ₁₅	14.5	0.15	19990810	171.15536	267.60606	180.18562	11.37026	0.2552740	2.6075134	39	3	1977-1999	0.69	M-v	3	Williams	31801	1998 DD ₁₅
1998 DG ₁₅	13.7	0.15	19990810	321.19170	158.31001	163.24878	12.78049	0.0623092	2.7028307	38	4	1991-1999	0.68	M-v	4	Williams	31801	1998 DG ₁₅
1998 DQ ₁₅	13.6	0.15	19990810	124.34463	288.31086	205.30395	9.31395	0.0882379	3.1367990	35	4	1982-1999	0.76	M-v	1	Williams	31742	1998 DQ ₁₅
1998 DF ₂₀	14.1	0.15	19990810	224.84682	240.44833	169.23141	13.10018	0.1732860	2.6645019	94	2	1998-1999	0.66	M-v	4	Williams	34530	1998 DF ₂₀
1998 DT ₂₁	13.9	0.15	19990810	261.63757	295.84026	52.09143	2.02609	0.2095421	3.0449976	21	2	1998-1999	0.64	M-v	4	Williams	34531	1998 DT ₂₁
1998 DY ₂₃	14.5	0.15	19990810	48.58676	52.62120	144.93863	11.16379	0.0484698	2.9828006	31	3	1995-1999	0.61	M-v	3	Williams	34590	1998 DY ₂₃
1998 DD ₂₆	16.3	0.15	19980216	173.50896	229.35898	111.82389	3.26127	0.0774332	2.8664813	9	1	9 days	0.17			Williams		1998 DD ₂₆
1998 DD ₃₃	14.2	0.15	19990810	184.60493	271.73337	167.99790	6.58874	0.2424656	2.3836892	37	4	1982-1999	0.76	M-v	2	Williams	31563	1998 DD ₃₃
1998 DX ₃₃	13.2	0.15	19990810	20.99366	214.46394	41.78557	2.55339	0.0179863	2.8551271	47	4	1994-1999	0.49	M-v	1	Williams	32315	1998 DX ₃₃
1998 DF ₃₄	13.6	0.15	19990810	322.63793	199.99884	148.80867	6.37688	0.1697094	2.3552799	37	4	1992-1999	0.65	M-v	1	Williams	32315	1998 DF ₃₄
1998 DV ₃₄	14.4	0.15	19990810	58.66872	73.48983	155.14447	3.62045	0.0385157	2.7473567	50	5	1992-1999	0.70	M-v	1	Williams	32315	1998 DV ₃₄
1998 EG	14.9	0.15	19990810	23.96837	103.45848	137.99678	6.79991	0.0460161	2.6261959	31	3	1994-1999	0.54	M-v	4	Williams	31743	1998 EG
1998 EX ₁	14.5	0.15	19990810	294.68421	325.93837	56.23190	0.77105	0.1810119	2.5400312	30	4	1979-1999	0.76	M-v	3	Williams	32753	1998 EX ₁
1998 ED ₆	11.7	0.15	19990810	254.65244	53.41793	293.60804	13.43635	0.2013021	3.1094370	28	3	1992-1999	0.55	M-v	4	Williams	31803	1998 ED ₆
1998 EJ ₆	14.3	0.15	19990810	205.76459	265.80543	184.76204	4.46575	0.1268236	2.3396657	36	5	1980-1999	0.64	M-v	2	Williams	31565	1998 EJ ₆
1998 EO ₈	13.5	0.15	19990810	175.31734	249.74346	179.61037	8.84830	0.0822881	2.9963215	42	3	1996-1999	0.56	M-v	3	Williams	31804	1998 EO ₈
1998 EE ₉	13.3	0.15	19990810	125.32355	100.10209	2.29619	8.99455	0.0400045	3.0733898	41	3	1990-1999	0.74	M-v	3	Williams	34590	1998 EE ₉
1998 EK ₉	13.0	0.15	19990810	191.84682	297.31760	125.56312	25.86455	0.1310135	2.3856767	59	3	1987-1999	0.63	M-v	3	Williams	34590	1998 EK ₉
1998 EW ₁₁	12.4	0.15	19990810	280.37749	209.69820	132.58133	8.61583	0.0650303	3.1605494	58	3	1993-1999	0.79	M-v	4	Williams	32316	1998 EW ₁₁

1998 EA ₁₃	13.5	0.15	19990810	332.40924	214.06149	88.65660	2.29021	0.1390654	3.2383831	42	5	1992–1999	0.83	M-v	1	Williams	32316	1998 EA ₁₃
1998 ER ₁₃	13.5	0.15	19990810	263.88490	205.20495	159.86453	10.62970	0.0848209	3.0521012	49	3	1990–1999	0.76	M-v	4	Williams	32316	1998 ER ₁₃
1998 EX ₁₃	13.1	0.15	19990810	305.49659	199.75694	128.07374	4.50843	0.0689940	3.0760151	49	3	1994–1999	0.76	M-v	4	Williams	32062	1998 EX ₁₃
1998 EX ₁₄	13.9	0.15	19990810	60.68442	46.23456	187.00400	5.71726	0.0706422	2.4438465	26	3	1991–1999	0.81	M-v	3	Williams	31745	1998 EX ₁₄
1998 FH	14.8	0.15	19990810	251.58264	178.39724	199.67636	12.41989	0.1025077	2.7346695	41	3	1991–1999	0.61	M-v	3	Williams	31567	1998 FH
1998 FX ₂	18.3	0.15	19990810	152.66293	17.16359	181.25293	9.99119	0.4935567	2.1515869	525	1	120 days	0.54	M-v	3	Williams	33346	1998 FX ₂
1998 FD ₃	14.9	0.15	19990810	275.41459	273.04186	148.94185	5.00009	0.1332211	2.2981373	51	5	1989–1999	0.72	M-v	1	Williams	32316	1998 FD ₃
1998 FM ₅	16.0	0.15	19990810	156.58616	311.41774	177.07838	11.50548	0.5547036	2.2646049	384	1	83 days	0.56	M-v	4	Williams	32316	1998 FM ₅
1998 FT ₁₁	13.5	0.15	19990810	261.78795	48.16050	339.40031	17.13796	0.1024015	2.6096146	42	3	1987–1998	0.68	M-v	3	Williams	34531	1998 FT ₁₁
1998 FT ₁₃	13.0	0.15	19990810	219.92061	347.54460	42.09849	10.35584	0.1057460	3.0125965	43	3	1990–1999	0.71	M-v	2	Williams	32317	1998 FT ₁₃
1998 FY ₁₃	13.1	0.15	19990810	85.40945	6.10131	181.92348	10.55253	0.0477402	2.9958878	49	3	1993–1999	0.70	M-v	3	Williams	32317	1998 FY ₁₃
1998 FB ₁₄	14.0	0.15	19990810	16.51866	127.78595	167.74567	12.21761	0.2068191	2.7103418	42	3	1990–1999	0.74	M-v	4	Williams	33267	1998 FB ₁₄
1998 FM ₁₅	13.9	0.15	19990810	259.37330	187.67214	188.42234	1.65757	0.0599121	2.7500469	52	4	1984–1999	0.41	M-v	1	Williams	32684	1998 FM ₁₅
1998 FH ₂₃	14.2	0.15	19990810	323.52337	223.91128	114.18357	3.08307	0.0600949	2.4335863	41	3	1996–1999	0.57	M-v	4	Williams	32521	1998 FH ₂₃
1998 FM ₂₇	13.1	0.15	19990810	169.76879	205.04089	236.78984	3.12967	0.1199342	3.0522049	55	4	1980–1999	0.74	M-v	2	Williams	32317	1998 FM ₂₇
1998 FW ₂₉	14.3	0.15	19990810	236.69366	97.73424	327.95751	6.50957	0.0867150	2.3650611	39	4	1978–1999	0.73	M-v	3	Williams	32318	1998 FW ₂₉
1998 FP ₃₂	14.0	0.15	19990810	312.24806	28.07035	332.40468	2.83984	0.2295988	2.3457800	41	5	1949–1999	0.64	M-v	1	Williams	32064	1998 FP ₃₂
1998 FW ₃₃	14.2	0.15	19990810	350.15405	138.79202	189.69026	3.77687	0.1908604	2.4565166	29	4	1980–1999	0.97	M-v	2	Williams	32483	1998 FW ₃₃
1998 FU ₃₈	13.6	0.15	19990810	143.00634	281.28160	185.55847	5.56566	0.1505645	3.0903473	38	4	1985–1999	0.74	M-v	2	Williams	32754	1998 FU ₃₈
1998 FR ₄₁	14.1	0.15	19990810	303.24185	175.11034	186.29233	11.48237	0.2237290	2.4786683	25	3	1980–1999	0.65	M-v	4	Williams	32483	1998 FR ₄₁
1998 FT ₄₁	13.1	0.15	19990810	66.36040	20.95383	189.66110	10.13222	0.0523883	3.0185075	53	3	1977–1999	0.61	M-v	3	Williams	32064	1998 FT ₄₁
1998 FB ₄₂	13.4	0.15	19990810	351.33414	138.32338	187.59863	15.78103	0.2826221	2.6366792	49	3	1982–1999	0.74	M-v	3	Williams	32483	1998 FB ₄₂
1998 FV ₄₂	13.8	0.15	19990810	349.84650	54.50304	242.74083	1.26657	0.0226600	2.8354349	48	3	1994–1999	0.67	M-v	5	Williams	32064	1998 FV ₄₂
1998 FA ₄₃	14.3	0.15	19990810	32.61085	24.66985	233.40476	1.11228	0.1172755	2.9716497	22	3	1993–1999	0.87	M-v	6	Marsden	32319	1998 FA ₄₃
1998 FZ ₅₂	13.3	0.15	19990810	292.40040	148.39114	197.46158	3.76662	0.0631328	3.0972332	39	3	1995–1999	0.70	M-v	4	Williams	32065	1998 FZ ₅₂
1998 FA ₅₃	13.5	0.15	19990810	167.73434	82.22788	4.90376	5.27063	0.1475433	3.2020801	65	4	1992–1999	0.67	M-v	1	Williams	32320	1998 FA ₅₃
1998 FR ₅₆	13.9	0.15	19990810	257.57147	216.99201	180.21614	18.50741	0.1683866	2.5897731	41	3	1977–1999	0.71	M-v	3	Williams	32321	1998 FR ₅₆
1998 FR ₅₇	13.2	0.15	19990810	266.42068	44.10667	322.91487	3.89108	0.1159748	3.2368194	54	5	1989–1999	0.67	M-v	1	Williams	32321	1998 FR ₅₇
1998 FL ₅₈	15.5	0.15	19990810	258.36866	203.31476	218.58652	0.23493	0.1575353	2.2315479	40	3	1979–1999	0.70	M-v	4	Williams	32321	1998 FL ₅₈
1998 FO ₅₈	14.2	0.15	19990810	219.86074	242.21037	182.75341	11.94078	0.1649807	2.6651182	48	4	1987–1999	0.71	M-v	1	Williams	32066	1998 FO ₅₈
1998 FA ₅₉	15.1	0.15	19990810	323.08972	281.76377	74.81821	2.48116	0.1449382	2.4460445	49	4	1984–1999	0.66	M-v	2	Williams	32321	1998 FA ₅₉
1998 FB ₆₁	13.2	0.15	19990810	297.94269	12.88762	333.14256	0.58350	0.1538838	3.2037935	47	4	1977–1999	0.75	M-v	3	Williams	32754	1998 FB ₆₁
1998 FO ₆₂	13.6	0.15	19990810	273.52660	169.89823	211.25431	5.04412	0.1202699	2.8016723	53	4	1979–1999	0.66	M-v	1	Williams	32322	1998 FO ₆₂
1998 FZ ₆₂	13.4	0.15	19990810	259.20114	207.72474	188.16793	14.11714	0.1867866	2.6404936	57	4	1974–1999	0.77	M-v	2	Williams	32322	1998 FZ ₆₂
1998 FC ₆₃	13.5	0.15	19990810	69.35278	37.33236	172.36201	1.29348	0.0996388	3.2173653	70	5	1978–1999	0.72	M-v	2	Williams	32322	1998 FC ₆₃
1998 FY ₆₆	14.1	0.15	19990810	293.21665	216.71493	169.45107	7.93898	0.0614760	2.4458052	48	3	1994–1999	0.66	M-v	4	Williams	32322	1998 FY ₆₆
1998 FY ₆₇	12.9	0.15	19990810	1.38364	85.50967	180.99276	8.76468	0.1011277	3.9642361	50	5	1989–1999	0.76	M-v	1	Williams	32322	1998 FY ₆₇
1998 FD ₆₈	14.1	0.15	19990810	67.14701	111.42644	114.39724	0.81453	0.0754218	3.0035459	42	5	1992–1999	0.74	M-v	1	Williams	32754	1998 FD ₆₈
1998 FJ ₇₀	13.8	0.15	19990810	254.19857	292.38338	116.77107	2.65511	0.0985556	2.6377436	72	4	1987–1999	0.75	M-v	3	Williams	32323	1998 FJ ₇₀
1998 FP ₇₀	14.0	0.15	19990810	87.58062	106.17213	79.73825	1.71304	0.2454571	3.2996790	62	3	1996–1999	0.55	M-v	3	Williams	32323	1998 FP ₇₀
1998 FT ₇₄	13.2	0.15	19990810	94.76563	352.62530	182.76073	18.41449	0.1281629	2.7232943	21	3	1994–1999	0.47	M-v	2	Williams	31762	1998 FT ₇₄
1998 FO ₇₅	12.9	0.15	19990810	231.87579	217.05497	191.49101	13.58167	0.1342096	3.1518883	49	3	1995–1999	0.68	M-v	3	Williams	32324	1998 FO ₇₅
1998 FH ₇₇	13.2	0.15	19990810	205.77404	298.71927	139.06298	10.84635	0.0398073	3.0535052	41	4	1992–1999	0.75	M-v	2	Williams	32521	1998 FH ₇₇
1998 FF ₈₃	14.2	0.15	19990810	300.69945	245.75402	121.19133	4.78708	0.0578601	2.2983871	20	3	1977–1999	0.61	M-v	4	Williams	31764	1998 FF ₈₃
1998 FG ₈₈	13.3	0.15	19990810	265.15635	220.04280	156.06463	14.21827	0.2150513	2.5698186	57	4	1975–1999	0.60	M-v	3	Williams	34590	1998 FG ₈₈
1998 FA ₉₁	13.5	0.15	19990810	166.21013	6.30499	89.34520	6.54429	0.0830588	2.9764233	40	3	1993–1999	0.71	M-v	4	Williams	32324	1998 FA ₉₁
1998 FQ ₉₁	14.0	0.15	19980308	123.19254	275.95861	106.54959	12.08306	0.3254391	2.9746948	12	1	27 days	1.38			Williams		1998 FQ ₉₁
1998 FM ₁₀₀	14.3	0.15	19990810	143.95006	280.49190	222.92599	12.31595	0.1404414	2.6615726	35	3	1994–1999	0.67	M-v	3	Williams	32071	1998 FM ₁₀₀
1998 FR ₁₀₁	13.8	0.15	19990810	31.38762	69.08865	205.27550	12.12959	0.1421771	2.7726587	29	4	1990–1999	0.63	M-v	1	Williams	32686	1998 FR ₁₀₁
1998 FH ₁₀₅	13.4	0.15	19990810	147.83382	244.51036	249.79553	6.07075	0.1507006	2.7762981	34	5	1970–1999	0.64	M-v	1	Williams	31765	1998 FH ₁₀₅
1998 FW ₁₀₈	13.1	0.15	19990810	220.57098	133.10925	272.88848	5.20361	0.1374729	3.2099136	32	3	1978–1999	0.87	M-v	4	Williams	31766	1998 FW ₁₀₈
1998 FB ₁₀₉	13.8	0.15	19990810	197.49137	133.57147	331.23804	5.47452	0.0826623	2.5485652	48	4	1979–1999	0.52	M-v	1	Williams	32324	1998 FB ₁₀₉
1998 FL ₁₀₉	13.5	0.15	19990810	64.95007	4.28245	219.99434	10.09679	0.0425282	2.9929967	44	4	1990–1999	0.51	M-v	1	Williams	31767	1998 FL ₁₀₉

1998 FC ₁₁₁	12.4	0.15	19990810	7.89787	25.25768	272.51613	9.01618	0.0849796	3.0112682	28	4	1979–1999	0.47	M-v	1	Williams	32002	1998 FC ₁₁₁
1998 FX ₁₁₁	12.5	0.15	19990810	167.62944	232.68720	248.29818	9.33191	0.0603233	2.9929140	41	4	1990–1999	0.59	M-v	1	Williams	32324	1998 FX ₁₁₁
1998 FJ ₁₁₂	12.4	0.15	19990810	229.35305	161.57381	249.67321	9.07146	0.0991555	3.0129878	42	3	1990–1999	0.60	M-v	3	Williams	32324	1998 FJ ₁₁₂
1998 FY ₁₁₃	12.9	0.15	19990810	277.44754	117.89987	251.35530	6.41547	0.0967731	3.0753243	36	4	1992–1999	0.66	M-v	3	Williams	32324	1998 FY ₁₁₃
1998 FR ₁₁₇	12.6	0.15	19990810	197.25919	219.15267	237.44249	9.02721	0.0740770	3.0013865	59	5	1982–1999	0.58	M-v	1	Williams	32324	1998 FR ₁₁₇
1998 FC ₁₁₈	14.5	0.15	19990810	332.54302	136.53916	240.33000	6.13031	0.1751921	2.2547343	36	4	1986–1999	0.94	M-v	3	Williams	32324	1998 FC ₁₁₈
1998 FZ ₁₁₉	13.3	0.15	19990810	9.43451	348.60838	291.22874	3.61363	0.0777238	2.8128891	37	3	1995–1999	0.54	M-v	4	Williams	32324	1998 FZ ₁₁₉
1998 FA ₁₂₀	13.6	0.15	19990810	331.00318	113.34777	193.91876	9.90058	0.0926294	3.0142798	27	3	1993–1999	0.68	M-v	5	Williams	32325	1998 FA ₁₂₀
1998 FK ₁₂₆	14.4	0.15	19990810	296.29881	177.70428	231.73151	2.85700	0.1421737	2.1834168	81	5	1988–1999	0.64	M-v	2	Williams	32521	1998 FK ₁₂₆
1998 FM ₁₃₅	13.4	0.15	19990810	301.25384	117.91980	222.61046	4.22306	0.1188165	3.1840893	30	3	1978–1999	0.67	M-v	4	Williams	32686	1998 FM ₁₃₅
1998 GM ₆	13.6	0.15	19990810	173.98592	24.37041	101.89774	12.34451	0.0057603	2.7111414	37	5	1980–1999	0.77	M-v	2	Williams	32325	1998 GM ₆
1998 GB ₇	12.6	0.15	19990810	335.86407	233.16721	104.86747	15.12521	0.0977385	2.6208990	41	4	1986–1999	0.71	M-v	2	Williams	32263	1998 GB ₇
1998 GN ₇	12.5	0.15	19990810	323.95834	222.67362	131.23889	13.85530	0.1903213	2.6404386	48	5	1950–1999	0.66	M-v	2	Williams	32325	1998 GN ₇
1998 GQ ₈	13.5	0.15	19990810	2.49018	189.95537	108.21767	15.19730	0.1088707	3.1123871	30	3	1997–1999	0.53	M-v	3	Williams	32007	1998 GQ ₈
1998 HK ₈	14.5	0.15	19990810	301.17207	5.08861	3.96845	0.61771	0.0886408	2.9664140	31	3	1997–1999	0.64	M-v	4	Williams	32076	1998 HK ₈
1998 HL ₁₄	12.4	0.15	19990810	126.62418	49.05630	50.77032	22.88898	0.1051253	3.1950999	46	3	1992–1999	0.55	M-v	3	Williams	32264	1998 HL ₁₄
1998 HX ₃₂	12.9	0.15	19990810	276.90677	168.24881	200.46459	5.29221	0.1027696	3.1666297	52	4	1978–1999	0.69	M-v	1	Williams	32327	1998 HX ₃₂
1998 HA ₃₄	12.3	0.15	19990810	250.39473	188.21037	203.29797	16.10644	0.1044484	3.1996514	39	3	1989–1999	0.64	M-v	3	Williams	32687	1998 HA ₃₄
1998 HV ₃₉	13.7	0.15	19990810	169.40732	74.93510	50.58105	3.01576	0.0352809	2.9058205	48	4	1993–1999	0.61	M-v	1	Williams	32328	1998 HV ₃₉
1998 HN ₉₅	12.5	0.15	19990810	300.54673	149.18913	224.82503	15.17495	0.1522987	3.0571289	36	3	1989–1999	0.75	M-v	3	Williams	32018	1998 HN ₉₅
1998 HV ₉₅	15.2	0.15	19980417	244.93725	270.03040	82.76493	5.75142	0.2444598	2.3443214	15	1	10 days	0.50			Williams		1998 HV ₉₅
1998 HS ₁₀₀	13.3	0.15	19990810	195.49437	301.41639	162.71972	2.88761	0.0839885	3.0541939	42	5	1976–1999	0.65	M-v	1	Williams	34532	1998 HS ₁₀₀
1998 HE ₁₂₁	12.9	0.15	19990810	260.72129	320.90430	85.17454	11.73991	0.0828582	3.0025817	43	4	1990–1999	0.65	M-v	1	Williams	32330	1998 HE ₁₂₁
1998 HA ₁₃₃	13.1	0.15	19990810	232.85536	197.88358	206.31506	16.23197	0.0925530	3.1265374	55	3	1995–1999	0.66	M-v	3	Williams	32331	1998 HA ₁₃₃
1998 HR ₁₅₁	8.6	0.15	19980527	0.09287	359.68252	194.70538	6.62497	0.1224506	45.5062439	11	1	63 days	0.27			E Marsden		1998 HR ₁₅₁
1998 KJ	12.9	0.15	19990810	23.06472	183.21748	76.49444	11.10609	0.0516441	2.9909470	26	3	1980–1999	0.44	M-v	3	Williams	32275	1998 KJ
1998 KK	12.6	0.15	19990810	180.23167	227.81073	245.35692	5.19449	0.1484132	3.0935371	34	3	1990–1999	0.64	M-v	4	Williams	32332	1998 KK
1998 KZ ₄₇	14.4	0.15	19990810	100.69287	176.21592	107.51872	7.62274	0.1178887	2.2886477	27	3	1995–1998	0.75	M-v	4	Williams	32282	1998 KZ ₄₇
1998 MK ₃₀	15.8	0.15	19990810	81.18706	154.49718	203.74086	5.41271	0.4345822	2.4669838	340	1	201 days	0.55	M-v	3	Williams	34020	1998 MK ₃₀
1998 OX ₄	21.3	0.15	19980726	306.46455	116.54715	300.26495	4.53962	0.4867565	1.5834043	22	1	9 days	0.52			Williams		1998 OX ₄
1998 QO ₂₉	15.1	0.15	19980815	107.38686	258.85318	307.57307	11.20953	0.1749434	2.9361285	9	1	4 days	0.58			E Williams		1998 QO ₂₉
1998 QR ₅₂	18.5	0.15	19990810	145.13244	204.18673	316.32543	17.63633	0.2879270	1.0437809	98	2	1998–1999	0.56	M-v	4	Williams	33348	1998 QR ₅₂
1998 QS ₅₂	14.3	0.15	19990810	51.54918	242.10575	261.33105	17.70116	0.8587836	2.1994923	300	3	1983–1999	0.58	M-v	2	Williams	34219	1998 QS ₅₂
1998 QT ₆₀	13.4	0.15	19990810	73.08357	127.09214	298.91713	21.89612	0.3496231	2.4471221	158	3	1984–1999	0.61	M-v	1	Williams	34591	1998 QT ₆₀
1998 QQ ₆₂	16.5	0.15	19980904	64.85004	60.20780	196.50639	4.91350	0.1284462	2.1373555	20	1	23 days	0.67			Williams		1998 QQ ₆₂
1998 RP ₇₂	13.9	0.15	19990810	51.18061	172.28792	179.03366	9.03828	0.1882007	3.9580007	29	2	1996–1998	0.69	M-v	4	Williams	33274	1998 RP ₇₂
1998 RN ₇₆	14.9	0.15	19980904	19.02166	284.54574	37.20281	4.34717	0.2760400	2.5767957	43	1	29 days	0.87			Williams		1998 RN ₇₆
1998 ST ₄	16.6	0.15	19990810	37.53533	206.99556	239.39237	9.28988	0.5970583	2.8188929	73	1	264 days	0.61	M-v	4	Williams	33757	1998 ST ₄
1998 SV ₂₆	13.5	0.15	19990810	347.05095	294.19699	265.13922	12.23100	0.1474228	2.6334306	61	1	225 days	0.69	M-v	4	Williams	34592	1998 SV ₂₆
1998 SS ₄₉	15.8	0.15	19990810	82.06340	102.24211	41.72962	10.76070	0.6393588	1.9240301	99	2	1998–1999	0.44	M-v	3	Williams	34592	1998 SS ₄₉
1998 SN ₈₁	14.9	0.15	19980904	28.88765	312.51267	8.88977	2.69384	0.0890921	2.7993362	18	1	13 days	0.50			D Williams		1998 SN ₈₁
1998 SB ₁₆₅	17.3	0.15	19980904	0.15089	235.04506	115.52409	7.18091	0.2222135	2.3492382	12	1	26 days	0.67			Williams		1998 SB ₁₆₅
1998 TC	14.3	0.15	19990810	61.16489	198.47603	284.11653	11.87871	0.1233955	2.4024421	45	1	217 days	0.79	M-v	3	Williams	34593	1998 TC
1998 TU ₃	15.0	0.15	19990810	208.68360	84.50775	102.39635	5.40914	0.4838451	0.7872679	176	4	1982–1999	0.56	M-v	5	Williams	34593	1998 TU ₃
1998 TL ₃₂	13.7	0.15	19990810	281.14498	167.20893	17.42360	7.41890	0.1575108	2.6783927	39	3	1976–1998	0.55	M-v	5	Williams	34593	1998 TL ₃₂
1998 TF ₃₅	9.5	0.15	19981014	0.01131	354.53313	52.34731	11.62207	0.3519806	27.5890805	9	1	16 days	0.50			E Marsden		1998 TF ₃₅
1998 UL ₆	12.9	0.15	19990810	26.32666	30.24730	111.56782	12.19784	0.0534790	2.9982614	49	1	198 days	0.53	M-v	3	Williams	34306	1998 UL ₆
1998 UT ₁₈	19.0	0.15	19990810	127.60818	49.82312	64.77562	13.59290	0.3296807	1.4054923	131	1	203 days	0.68	M-v	3	Williams	34594	1998 UT ₁₈
1998 UQ ₃₂	14.0	0.15	19990810	97.86696	343.06771	85.42661	5.63333	0.1066551	2.2996345	58	2	1996–1999	0.56	M-v	4	Williams	34594	1998 UQ ₃₂
1998 VN	20.5	0.15	19990810	129.01435	245.71068	228.09591	12.03896	0.3448842	1.3876893	92	1	189 days	0.59	M-v	4	Williams	34595	1998 VN
1998 VQ ₂₇	14.2	0.15	19990810	120.90195	340.85379	350.01376	1.60143	0.0916038	2.9023409	34	2	1971–1999	0.62	M-v	5	Williams	34596	1998 VQ ₂₇
1998 VV ₃₂	12.7	0.15	19990810	316.05474	124.62824	95.43339	19.79264	0.0446070	3.1544862	36	2	1997–1999	0.72	M-v	3	Williams	34225	1998 VV ₃₂
1998 VO ₃₃	17.0	0.15	19990810	229.28238	209.69870	64.47361	14.96218	0.8093736	1.2479621	143	1	68 days	0.56	M-v	6	Williams	34029	1998 VO ₃₃

1999 JUNE 22

M.P.C. 35079

1998 VD ₃₅	20.4	0.15	19990810	80.19060	295.87441	227.62477	6.98081	0.4766081	1.5648736	29	2	1998–1999	0.42	M-v	5	Williams	33577	1998 VD ₃₅
1998 VU ₄₄	14.1	0.15	19981123	19.35387	92.87918	291.78016	5.46803	0.1302456	2.3703644	8	1	10 days	0.65			Nakano		1998 VU ₄₄
1998 VV ₄₄			19981103	43.93319	249.46583	45.51237	27.88842	0.2325891	2.9420368	6	1	5 days	1.76			Williams		1998 VV ₄₄
1998 VW ₄₄			19981103	83.66558	148.18588	96.83651	19.20515	0.3019478	3.0913158	6	1	5 days	1.04			Williams		1998 VW ₄₄
1998 VX ₄₄			19981103	42.49120	184.96734	129.78146	24.40511	0.1107480	3.0006118	6	1	5 days	0.68			Williams		1998 VX ₄₄
1998 WM	16.6	0.15	19990810	59.89021	172.42343	45.71444	22.51781	0.3154537	1.2246240	109	1	175 days	0.53	M-v	3	Marsden	34596	1998 WM
1998 WS	12.5	0.15	19990810	49.32133	94.90220	9.14511	27.49906	0.3955868	2.6541696	193	4	1976–1999	0.56	M-v	1	Williams	34596	1998 WS
1998 WZ ₁	19.9	0.15	19990810	65.38502	137.13754	345.15314	4.30799	0.5563594	2.1627474	45	1	188 days	0.49	M-v	4	Williams	34596	1998 WZ ₁
1998 WB ₃	14.1	0.15	19990810	45.47116	23.31435	104.04126	2.84201	0.1584124	3.2146892	22	1	199 days	0.52	M-v	4	Williams	34029	1998 WB ₃
1998 WB ₆	13.9	0.15	19990810	3.94686	251.46378	243.86297	5.93876	0.0881189	2.2702263	25	1	79 days	0.60	M-v	5	Williams		1998 WB ₆
1998 WS ₆	16.6	0.15	19981213	28.89484	230.40555	158.47006	0.46423	0.1445048	2.3867808	41	1	57 days	0.82			Williams		1998 WS ₆
1998 WX ₆	13.8	0.15	19990810	41.48966	37.10862	72.99102	8.90329	0.1577880	2.7145291	30	1	176 days	0.71	M-v	3	Williams	34596	1998 WX ₆
1998 WZ ₆	17.3	0.15	19990810	84.77619	110.57535	68.85930	24.74822	0.4082912	1.4521455	224	1	173 days	0.49	M-v	3	Williams	34596	1998 WZ ₆
1998 WM ₇	13.3	0.15	19990810	32.09757	66.18202	94.65379	9.08174	0.2185646	2.5682265	58	1	247 days	0.63	M-v	3	Williams	34310	1998 WM ₇
1998 WT ₇	18.5	0.15	19990810	165.63510	235.93748	248.31673	40.69852	0.1098464	1.1519157	46	1	201 days	0.70	M-v	3	Williams		1998 WT ₇
1998 WL ₁₂	15.4	0.15	19981103	32.21247	88.60208	265.33259	2.95411	0.2820415	2.2200580	19	1	6 days	0.78			Williams		1998 WL ₁₂
1998 WP ₁₉	13.1	0.15	19990810	340.97230	301.30051	256.69756	13.56396	0.0445244	2.6127448	23	2	1988–1999	0.79	M-v	5	Williams	33972	1998 WP ₁₉
1998 WT ₁₉	12.6	0.15	19990810	74.00358	185.06215	290.92972	13.29870	0.1125939	2.5765707	37	2	1992–1999	0.62	M-v	4	Williams	34597	1998 WT ₁₉
1998 WV ₁₉	12.8	0.15	19990810	77.16197	201.68850	271.10545	13.45071	0.1316450	2.6019079	30	1	170 days	0.71	M-v	4	Williams	34597	1998 WV ₁₉
1998 WT ₂₃	12.4	0.15	19990810	77.17778	33.55978	62.72942	11.65124	0.1153116	2.9180093	50	4	1990–1999	0.64	M-v	1	Williams	34311	1998 WT ₂₃
1998 WU ₂₃	12.8	0.15	19990810	38.67703	129.59367	18.94748	9.42546	0.0752994	2.7791041	45	3	1953–1999	0.58	M-v	2	Williams	34311	1998 WU ₂₃
1998 WV ₂₃	13.4	0.15	19990810	5.12497	198.03763	352.53713	13.36328	0.1063498	2.6992867	64	3	1986–1999	0.73	M-v	2	Williams	34597	1998 WV ₂₃
1998 WW ₂₃	12.6	0.15	19990810	8.83156	105.22987	91.62442	15.22159	0.2583133	2.9140274	47	1	195 days	0.59	M-v	3	Williams	34597	1998 WW ₂₃
1998 WY ₂₃	13.0	0.15	19990810	11.86696	102.03716	85.81588	14.07892	0.1226938	2.6870757	39	1	195 days	0.63	M-v	4	Williams	34597	1998 WY ₂₃
1998 WC ₂₄	12.9	0.15	19990810	340.87197	235.02768	350.40934	13.11293	0.1210510	2.6057812	74	2	1995–1999	0.70	M-v	4	Williams	34597	1998 WC ₂₄
1998 WD ₂₄	12.8	0.15	19990810	348.84693	236.77934	347.80928	8.05447	0.2086764	2.8705448	54	1	195 days	0.70	M-v	4	Williams	34311	1998 WD ₂₄
1998 WE ₂₄	12.7	0.15	19990810	80.57167	169.74321	282.33510	12.37417	0.1681726	3.0532365	24	2	1976–1999	0.81	M-v	4	Williams	33973	1998 WE ₂₄
1998 XF	13.0	0.15	19990810	317.41057	222.26323	23.98961	11.45538	0.1302518	2.7819356	38	2	1992–1999	0.57	M-v	4	Williams	34311	1998 XF
1998 XM ₄	14.9	0.15	19990810	13.80704	301.35304	235.70447	62.70565	0.4174288	1.6565797	96	1	181 days	0.66	M-v	4	Williams	34031	1998 XM ₄
1998 XZ ₈	12.4	0.15	19990810	76.73389	78.38177	310.84428	16.96749	0.3207550	3.1031127	77	1	96 days	0.61	M-v	4	Williams	34311	1998 XZ ₈
1998 XN ₁₂	13.1	0.15	19990810	40.07326	85.44421	73.57723	14.79489	0.1013820	2.6217917	43	1	175 days	0.52	M-v	3	Williams	34598	1998 XN ₁₂
1998 XR ₁₆	18.6	0.15	19990810	48.91181	67.96165	92.12400	20.56720	0.5800687	2.2737073	140	1	160 days	0.57	M-v	3	Williams	34598	1998 XR ₁₆
1998 XU ₁₆	13.1	0.15	19990810	351.65764	88.24337	84.89456	10.80616	0.0623492	3.1563519	35	1	152 days	0.60	M-v	4	Williams	34312	1998 XU ₁₆
1998 XW ₁₆	12.5	0.15	19990810	272.28145	217.65337	38.82403	2.16690	0.0781508	2.8899327	49	4	1980–1999	0.66	M-v	2	Williams	34032	1998 XW ₁₆
1998 XX ₄₉	13.2	0.15	19990810	46.91276	127.42248	339.05029	8.20233	0.1265157	2.6044590	43	4	1991–1999	0.70	M-v	2	Williams	34598	1998 XX ₄₉
1998 XW ₆₂	13.5	0.15	19990810	61.13910	55.10286	26.63194	18.27584	0.0797446	3.0058018	40	4	1974–1999	0.65	M-v	1	Williams	34312	1998 XW ₆₂
1998 XG ₇₉	12.7	0.15	19990810	77.89438	262.92270	115.67698	12.91179	0.2375277	3.1529811	30	3	1980–1999	0.57	M-v	2	Williams	34598	1998 XG ₇₉
1998 XF ₉₆	13.7	0.15	19990810	268.16834	154.44036	123.37695	14.54238	0.1422970	2.5555664	20	1	64 days	0.50	M-v	6	Williams	34034	1998 XF ₉₆
1998 XN ₉₆	12.2	0.15	19990810	51.65395	346.33653	115.79050	2.41726	0.1417480	3.2056925	52	3	1982–1999	0.77	M-v	2	Williams	34598	1998 XN ₉₆
1998 YE	13.7	0.15	19990810	8.48110	323.59490	240.73067	4.31252	0.0739813	2.2651324	69	4	1990–1999	0.64	M-v	2	Williams	34312	1998 YE
1998 YH	14.1	0.15	19990810	36.42171	218.04208	305.29092	4.25510	0.2153513	2.6103033	45	2	1982–1999	0.75	M-v	3	Williams	34312	1998 YH
1998 YN	14.2	0.15	19990810	10.11891	213.18933	8.78954	7.71356	0.1608898	2.8027563	38	1	174 days	0.63	M-v	4	Williams		1998 YN
1998 YW ₃	17.8	0.15	19990810	350.04263	194.75895	94.34237	28.79552	0.4625053	1.1000256	49	1	158 days	0.60	M-v	4	Williams	34313	1998 YW ₃
1998 YZ ₃	12.2	0.15	19990102	9.72559	191.85176	265.74222	10.53247	0.0996783	3.0516385	27	1	53 days	0.55			Williams		1998 YZ ₃
1998 YL ₄	14.6	0.15	19990810	344.64385	268.43458	312.63826	6.53792	0.0662966	2.3223715	59	1	140 days	0.60	M-v	4	Williams	34599	1998 YL ₄
1998 YD ₅	13.3	0.15	19990810	65.53511	328.18807	123.28678	19.12548	0.1275438	3.2166757	31	1	173 days	0.55	M-v	4	Williams	34599	1998 YD ₅
1998 YJ ₅	13.6	0.15	19990810	359.75107	169.22040	53.18642	15.55862	0.0616915	2.5869043	44	3	1991–1999	0.56	M-v	3	Williams	34538	1998 YJ ₅
1998 YS ₇	14.1	0.15	19990810	96.22492	80.95668	330.17876	23.20366	0.2651944	2.2995579	33	2	1994–1999	0.60	M-v	4	Williams	34599	1998 YS ₇
1998 YH ₈	13.9	0.15	19990810	29.74410	243.34632	262.16477	3.90558	0.1298897	2.6062136	40	1	103 days	0.61	M-v	4	Williams		1998 YH ₈
1998 YL ₈	13.1	0.15	19990810	118.19966	277.10345	94.97222	12.17435	0.2524057	2.5181655	77	2	1991–1999	0.65	M-v	4	Williams	34599	1998 YL ₈
1998 YO ₈	14.1	0.15	19990810	353.23652	46.28266	143.73202	5.05117	0.0618934	2.2695609	32	4	1979–1999	0.65	M-v	2	Williams	34599	1998 YO ₈
1998 YN ₉	13.7	0.15	19990810	14.32311	218.90131	341.04392	8.26929	0.1384878	2.5597693	51	1	166 days	0.58	M-v	4	Williams	34599	1998 YN ₉
1998 YQ ₁₁	18.0	0.15	19990810	78.35063	245.48839	256.83706	11.94147	0.3961298	1.8737423	59	1	171 days	0.63	M-v	4	Williams	34599	1998 YQ ₁₁

1998 YC ₁₂	14.3	0.15	19990810	312.75623	290.07050	314.45060	7.26789	0.1705371	2.2998041	31	1	145 days	0.53	M-v	4	Williams	34313	1998 YC ₁₂
1998 YM ₂₂	14.9	0.15	19990810	17.77095	31.50372	135.95464	8.05526	0.1821753	2.4091021	29	1	111 days	0.61	M-v	4	Williams		1998 YM ₂₂
1998 YN ₂₂	13.5	0.15	19990810	36.53571	348.92566	136.60325	9.93263	0.0384704	2.7237383	37	3	1992–1999	0.79	M-v	3	Williams	34599	1998 YN ₂₂
1998 YL ₂₇	13.5	0.15	19990810	196.71021	119.65827	202.54896	2.31098	0.0740454	2.7596485	28	4	1983–1999	0.80	M-v	2	Williams	34599	1998 YL ₂₇
1998 YR ₂₇	13.8	0.15	19990810	51.27345	339.76877	126.02673	10.02505	0.2487212	2.7210122	36	2	1990–1999	0.50	M-v	3	Williams	34599	1998 YR ₂₇
1998 YS ₂₉	14.9	0.15	19990122	25.66324	82.89952	8.50262	9.11479	0.2052466	2.4523750	28	1	55 days	0.58			Williams		1998 YS ₂₉
1998 YX ₂₉	13.7	0.15	19990810	333.37061	228.58480	8.62853	10.72774	0.2207957	2.3903797	43	2	1989–1999	0.68	M-v	4	Williams	34599	1998 YX ₂₉
1999 AK	13.4	0.15	19990810	349.52429	303.66783	250.14660	7.59426	0.1365536	2.6695754	51	3	1991–1999	0.61	M-v	3	Williams	34599	1999 AK
1999 AR	12.5	0.15	19990810	281.70770	313.22404	305.93763	16.49892	0.1811563	2.5339213	20	1	90 days	0.54	M-v	5	Williams	34599	1999 AR
1999 AU	13.6	0.15	19990810	317.51385	280.58657	310.72068	12.79230	0.1487182	2.3548749	27	1	90 days	0.62	M-v	5	Williams		1999 AU
1999 AV	14.9	0.15	19990810	32.43397	147.29052	4.62543	3.25977	0.1916684	2.3454202	29	1	86 days	0.51	M-v	4	Williams		1999 AV
1999 AW	15.1	0.15	19990810	56.86140	32.03428	83.54749	6.14453	0.1573183	2.3585509	40	1	142 days	0.62	M-v	3	Williams	34599	1999 AW
1999 AX	13.7	0.15	19990810	329.80887	106.25432	101.25574	13.58121	0.1175458	2.6881000	33	1	128 days	0.69	M-v	4	Williams		1999 AX
1999 AY	12.9	0.15	19990122	185.82754	326.26089	326.75170	8.57791	0.0655141	3.0446642	19	1	35 days	0.68			Williams		1999 AY
1999 AE ₂	13.8	0.15	19990810	35.66216	76.93676	53.45502	5.12524	0.1501851	2.8044046	35	2	1990–1999	0.76	M-v	5	Williams	34037	1999 AE ₂
1999 AF ₂	14.2	0.15	19990810	30.92050	129.98153	16.95518	2.54764	0.1528018	2.3872570	48	3	1977–1999	0.54	M-v	2	Williams	34599	1999 AF ₂
1999 AN ₂	14.4	0.15	19990810	36.40592	63.60716	79.04786	4.73523	0.0718636	2.2757535	34	1	111 days	0.70	M-v	4	Williams		1999 AN ₂
1999 AQ ₂	14.6	0.15	19990810	21.69479	163.36159	18.64842	5.76024	0.0889214	2.2678121	48	3	1982–1999	0.72	M-v	2	Williams	34314	1999 AQ ₂
1999 AE ₃	15.5	0.15	19990122	67.37155	273.81085	137.23978	14.83923	0.0959168	2.5688483	34	1	34 days	0.60			Williams		1999 AE ₃
1999 AK ₃	13.5	0.15	19990810	32.66403	175.99185	243.71463	13.50641	0.1640902	2.7517757	18	2	1991–1999	0.68	M-v	4	Williams	34599	1999 AK ₃
1999 AM ₃	14.9	0.15	19990810	223.53046	20.20085	302.83007	22.33286	0.0373226	1.9485122	31	1	95 days	0.56	M-v	4	Williams	34599	1999 AM ₃
1999 AS ₃	14.1	0.15	19990810	17.30619	72.35140	100.15494	7.82268	0.0676059	2.3849047	53	1	204 days	0.62	M-v	4	Williams	34599	1999 AS ₃
1999 AN ₄	14.0	0.15	19990810	338.89943	276.11204	316.34352	22.24157	0.2380352	2.3401550	35	1	145 days	0.69	M-v	4	Williams	34314	1999 AN ₄
1999 AO ₄	13.9	0.15	19990810	323.43226	122.52934	117.01128	11.97984	0.2300032	2.6726347	45	3	1982–1999	0.67	M-v	3	Williams	34038	1999 AO ₄
1999 AV ₄	15.0	0.15	19990810	46.00946	62.98217	78.17952	3.07378	0.1507815	2.3610658	36	1	139 days	0.77	M-v	4	Williams		1999 AV ₄
1999 AX ₄	15.1	0.15	19990810	292.45853	155.17412	120.41155	28.63639	0.0476606	1.9060373	29	1	143 days	0.75	M-v	5	Williams		1999 AX ₄
1999 AB ₅	14.0	0.15	19990810	345.12195	120.48148	95.56473	6.49696	0.1317962	2.3226249	44	1	195 days	0.63	M-v	4	Williams		1999 AB ₅
1999 AH ₅	13.9	0.15	19990810	22.04257	191.52227	333.40894	12.99963	0.1069156	2.3530837	53	3	1981–1999	0.65	M-v	3	Williams	34599	1999 AH ₅
1999 AJ ₅	13.3	0.15	19990810	97.53082	345.80868	67.88897	10.07114	0.2124885	2.6144821	58	5	1968–1999	0.69	M-v	2	Williams	34599	1999 AJ ₅
1999 AK ₅	13.0	0.15	19990810	86.04193	51.75677	17.76896	11.03157	0.1071098	2.9936476	32	1	119 days	0.75	M-v	4	Williams	34599	1999 AK ₅
1999 AL ₅	13.7	0.15	19990810	45.60096	160.07645	327.93693	21.92251	0.0322125	2.5840227	28	1	119 days	0.62	M-v	3	Williams	34599	1999 AL ₅
1999 AP ₅	14.6	0.15	19990810	335.59925	203.13714	26.50352	4.85498	0.1152031	2.2284971	47	3	1986–1999	0.59	M-v	3	Williams	34314	1999 AP ₅
1999 AR ₅	13.3	0.15	19990810	124.15901	311.87188	89.68273	10.45393	0.0665480	2.9722293	31	1	67 days	0.54	M-v	5	Williams	34038	1999 AR ₅
1999 AR ₇	16.6	0.15	19990810	55.71204	58.22230	85.51212	40.62866	0.2141255	1.6445747	74	1	131 days	0.56	M-v	5	Williams	34315	1999 AR ₇
1999 AY ₇	14.7	0.15	19990810	84.05950	1.90438	91.29197	10.08911	0.1224289	2.2631584	26	1	83 days	0.49	M-v	5	Williams		1999 AY ₇
1999 AZ ₇	12.1	0.15	19990810	218.17717	339.84653	325.59318	23.58587	0.0280510	3.1447113	37	2	1996–1999	0.75	M-v	4	Williams	34039	1999 AZ ₇
1999 AA ₈	14.8	0.15	19990810	31.23382	110.74239	52.03861	6.73273	0.2014121	2.3347485	38	1	115 days	0.68	M-v	4	Williams		1999 AA ₈
1999 AB ₈	13.1	0.15	19990102	349.17482	40.85377	99.45137	15.94939	0.1864654	3.0910609	32	1	54 days	0.70			Williams		1999 AB ₈
1999 AE ₈	13.5	0.15	19990810	355.99205	214.91506	338.84554	11.52618	0.0355134	2.5140170	30	1	115 days	0.48	M-v	4	Williams	34599	1999 AE ₈
1999 AN ₁₀	18.1	0.15	19990810	70.04885	268.25222	314.55293	39.93219	0.5621461	1.4587599	102	1	134 days	0.48	M-v	3	Williams	34039	1999 AN ₁₀
1999 AP ₁₀	16.5	0.15	19990810	72.80776	46.75174	357.66156	7.64650	0.5754723	2.3752691	164	1	130 days	0.49	M-v	4	Williams	34315	1999 AP ₁₀
1999 AH ₁₈	13.8	0.15	19990810	23.64383	34.65607	127.93259	13.93628	0.1839642	2.6573982	49	1	150 days	0.68	M-v	3	Williams		1999 AH ₁₈
1999 AF ₁₉	12.8	0.15	19990810	205.35009	11.34135	315.53596	11.49480	0.0270322	3.1548274	49	3	1982–1999	0.63	M-v	3	Williams	34315	1999 AF ₁₉
1999 AP ₂₀	15.3	0.15	19990122	88.70701	241.09365	141.49181	3.83200	0.1911195	2.1522090	39	1	39 days	0.93			Marsden		1999 AP ₂₀
1999 AQ ₂₂	15.1	0.15	19990810	27.89209	90.44248	82.57285	15.76528	0.3052894	2.6893735	46	1	114 days	0.50	M-v	3	Williams	34600	1999 AQ ₂₂
1999 AZ ₂₂	14.0	0.15	19990810	61.70832	87.23957	47.94286	7.28255	0.0406696	2.3094296	52	2	1996–1999	0.68	M-v	3	Williams	34315	1999 AZ ₂₂
1999 AA ₂₃	14.8	0.15	19990810	56.79826	89.95468	49.26646	6.57068	0.1332395	2.3131871	39	3	1987–1999	0.68	M-v	2	Williams	34315	1999 AA ₂₃
1999 AR ₂₃	13.3	0.15	19990810	99.23899	310.59139	131.81335	13.73292	0.1437622	2.5505581	46	1	165 days	0.59	M-v	4	Williams	34315	1999 AR ₂₃
1999 AB ₂₄	15.3	0.15	19990810	61.79224	128.52403	348.24455	24.12624	0.2864746	2.3476570	39	1	113 days	0.60	M-v	4	Williams	34600	1999 AB ₂₄
1999 AR ₃₄	14.6	0.15	19990810	16.16429	24.16572	169.17208	2.20714	0.1600001	2.3024328	52	3	1978–1999	0.63	M-v	3	Williams	34600	1999 AR ₃₄
1999 AH ₃₅	16.6	0.15	19990102	177.44220	42.97235	267.29098	2.35376	0.1044262	2.4232018	8	1	2 days	0.47		E	Marsden		1999 AH ₃₅
1999 AJ ₃₅	16.3	0.15	19990102	208.19538	0.32261	279.83594	3.43994	0.0173379	2.4915702	9	1	2 days	0.98		E	Marsden		1999 AJ ₃₅
1999 AK ₃₅	16.6	0.15	19990102	203.14097	93.39054	191.59325	1.85886	0.0426197	2.3240302	8	1	2 days	0.32		E	Marsden		1999 AK ₃₅

1999 AM ₃₅	16.2	0.15	19990102	21.20633	229.49199	224.75514	0.82907	0.1959956	2.5505233	9	1	2 days	0.37		Marsden		1999 AM ₃₅
1999 BN	13.8	0.15	19990810	29.83184	138.97136	5.25570	23.65271	0.1941440	2.7117848	58	1	111 days	0.43	M-v 3	Williams	34600	1999 BN
1999 BZ	13.4	0.15	19990810	49.31089	85.89330	73.25483	22.92009	0.0409358	2.6336308	27	3	1980–1999	0.55	M-v 3	Williams	34600	1999 BZ
1999 BY ₁	14.1	0.15	19990810	39.23801	21.16012	121.72600	25.33673	0.1967489	2.3858938	31	1	109 days	0.59	M-v 4	Williams		1999 BY ₁
1999 BB ₂	13.4	0.15	19990810	61.90898	116.78718	334.96894	12.15018	0.2688412	2.6504991	61	1	203 days	0.56	M-v 3	Williams	34600	1999 BB ₂
1999 BE ₂	13.9	0.15	19990810	44.11059	246.39152	265.91976	21.73414	0.2779863	2.3723034	29	1	165 days	0.50	M-v 3	Williams	34042	1999 BE ₂
1999 BQ ₂	13.2	0.15	19990810	19.50444	47.83943	115.75910	19.03941	0.1761685	3.1447249	22	1	110 days	0.81	M-v 5	Williams		1999 BQ ₂
1999 BT ₂	15.8	0.15	19990810	65.14862	143.89642	322.73211	23.73941	0.3382692	2.4103712	41	1	79 days	0.60	M-v 4	Williams		1999 BT ₂
1999 BW ₂	14.2	0.15	19990810	22.46732	180.91032	354.74835	11.56949	0.0694889	2.3138523	27	1	138 days	0.54	M-v 4	Williams		1999 BW ₂
1999 BX ₂	13.2	0.15	19990810	51.04651	2.48265	120.09224	10.71753	0.1278827	3.1773022	41	3	1988–1999	0.71	M-v 3	Williams	34316	1999 BX ₂
1999 BZ ₂	14.2	0.15	19990810	30.03835	158.47704	5.93385	5.63441	0.0609047	2.4802351	33	2	1995–1999	0.71	M-v 4	Williams	34316	1999 BZ ₂
1999 BA ₃	15.0	0.15	19990810	48.58345	27.04830	111.58099	7.72847	0.2220544	2.5667014	34	1	159 days	0.52	M-v 3	Williams	34316	1999 BA ₃
1999 BF ₃	13.9	0.15	19990810	4.59642	77.95866	113.66076	8.80875	0.1958538	2.4601140	54	1	199 days	0.73	M-v 4	Williams		1999 BF ₃
1999 BH ₃	15.0	0.15	19990810	58.69178	87.21586	16.75236	7.78162	0.1570260	2.6142482	33	1	76 days	0.54	M-v 4	Williams		1999 BH ₃
1999 BR ₃	13.4	0.15	19990810	89.02384	127.62471	309.60247	11.70315	0.1985487	2.4250848	38	2	1975–1999	0.57	M-v 4	Williams	34600	1999 BR ₃
1999 BE ₅	13.9	0.15	19990810	343.41296	78.10280	115.16407	12.75759	0.0775539	2.5850889	38	1	172 days	0.60	M-v 4	Williams	34600	1999 BE ₅
1999 BG ₅	14.0	0.15	19990810	55.68557	230.73957	245.49380	25.00018	0.2359292	2.7673121	14	1	109 days	0.67	M-v 6	Williams		1999 BG ₅
1999 BK ₅	15.8	0.15	19990122	16.10066	240.48058	232.52706	1.53979	0.0460856	2.1693655	41	1	48 days	0.41		Marsden		1999 BK ₅
1999 BO ₅	13.2	0.15	19990810	7.38255	202.00001	327.65485	7.72030	0.0099630	2.4129638	36	2	1986–1999	0.81	M-v 4	Williams	34600	1999 BO ₅
1999 BD ₆	14.7	0.15	19990810	356.79518	41.98955	164.45761	13.22440	0.0184514	3.0222872	21	1	82 days	0.66	M-v 5	Williams	34600	1999 BD ₆
1999 BH ₆	15.4	0.15	19990810	319.12357	113.87954	156.97705	6.96885	0.1087367	2.3024862	25	1	82 days	0.62	M-v 5	Williams	34600	1999 BH ₆
1999 BR ₆	13.9	0.15	19990810	106.14197	68.10118	41.46294	7.10571	0.0722179	2.8074888	31	1	118 days	0.67	M-v 5	Williams	34600	1999 BR ₆
1999 BT ₆	14.9	0.15	19990810	305.87080	221.43738	73.95439	4.69135	0.0491084	2.2575205	37	2	1997–1999	0.76	M-v 4	Williams	34600	1999 BT ₆
1999 BU ₆	14.9	0.15	19990810	61.03637	134.69280	10.57516	16.28808	0.2797720	2.6630429	26	1	86 days	0.70	M-v 5	Williams		1999 BU ₆
1999 BW ₆	13.8	0.15	19990810	3.18120	151.12116	74.84216	5.70933	0.0271962	2.7244228	54	1	116 days	0.57	M-v 4	Williams	34600	1999 BW ₆
1999 BF ₇	13.9	0.15	19990810	1.60561	118.58464	92.13439	6.53912	0.0694650	2.3201064	32	1	138 days	0.66	M-v 4	Williams		1999 BF ₇
1999 BP ₇	14.1	0.15	19990810	1.40566	68.98767	114.06901	30.54591	0.2558232	2.5997111	34	1	145 days	0.68	M-v 4	Williams		1999 BP ₇
1999 BJ ₈	18.0	0.15	19990810	50.26934	221.29141	339.99706	9.03471	0.5499836	1.8993599	239	1	121 days	0.44	M-v 5	Williams	34317	1999 BJ ₈
1999 BG ₉	16.4	0.15	19990810	36.71585	358.27517	172.57431	1.32497	0.2838539	2.2362816	29	1	83 days	0.59	M-v 5	Williams		1999 BG ₉
1999 BL ₉	13.0	0.15	19990810	126.94540	266.78100	186.03015	14.97154	0.1401655	2.5620686	48	4	1976–1999	0.63	M-v 2	Williams	34539	1999 BL ₉
1999 BO ₉	13.1	0.15	19990810	161.43647	147.11844	232.00324	4.57401	0.0728641	2.7500948	59	5	1972–1999	0.55	M-v 1	Williams	34317	1999 BO ₉
1999 BQ ₉	14.6	0.15	19990810	41.20843	85.46416	63.80184	20.88455	0.3327765	2.4079105	43	1	195 days	0.72	M-v 3	Williams	34600	1999 BQ ₉
1999 BY ₉	17.5	0.15	19990810	42.18413	286.89606	254.83929	0.94220	0.3024874	1.8301464	49	1	121 days	0.59	M-v 4	Williams	34600	1999 BY ₉
1999 BG ₁₀	14.0	0.15	19990122	248.88248	125.28678	140.26045	8.34553	0.1834575	2.7654813	37	1	39 days	0.67		Marsden		1999 BG ₁₀
1999 BC ₁₁	13.8	0.15	19990810	312.89828	291.83378	325.56676	7.56384	0.0960748	2.3140438	44	3	1985–1999	0.72	M-v 2	Williams	34601	1999 BC ₁₁
1999 BF ₁₂	13.6	0.15	19990810	320.00174	215.96394	14.69843	12.48424	0.1073048	2.6465264	30	1	138 days	0.62	M-v 4	Williams		1999 BF ₁₂
1999 BL ₁₂	14.1	0.15	19990810	166.75965	268.21124	76.61900	6.80838	0.1738584	2.2594972	31	1	86 days	0.46	M-v 4	Williams	34317	1999 BL ₁₂
1999 BM ₁₂	13.5	0.15	19990810	52.92065	141.10588	328.10058	16.63539	0.1419657	2.7307400	30	1	142 days	0.58	M-v 3	Williams		1999 BM ₁₂
1999 BN ₁₂	13.0	0.15	19990810	74.74632	49.46416	35.72963	6.26821	0.1803463	2.5288733	45	1	236 days	0.63	M-v 4	Williams	34601	1999 BN ₁₂
1999 BQ ₁₂	12.9	0.15	19990810	183.14199	238.36951	100.79654	16.09809	0.1639129	2.5656618	41	1	138 days	0.76	M-v 4	Williams		1999 BQ ₁₂
1999 BN ₁₃	14.9	0.15	19990810	27.16520	24.33132	166.23429	1.99717	0.1402866	2.3626811	64	4	1992–1999	0.66	M-v 2	Williams	34601	1999 BN ₁₃
1999 BP ₁₃	13.2	0.15	19990810	66.35213	141.54488	338.78603	6.65182	0.2359718	2.6884541	43	1	110 days	0.54	M-v 4	Williams	34601	1999 BP ₁₃
1999 BA ₁₄	15.0	0.15	19990810	47.18434	133.67171	52.39566	4.73132	0.1123004	2.2838849	55	2	1992–1999	0.75	M-v 4	Williams	34601	1999 BA ₁₄
1999 BB ₁₄	14.4	0.15	19990810	11.31372	218.11511	12.04912	16.02352	0.2434203	2.6584153	44	1	138 days	0.57	M-v 3	Williams	34601	1999 BB ₁₄
1999 BH ₁₄	14.9	0.15	19990810	78.32489	99.31797	50.98010	4.75334	0.1037701	2.2339571	47	1	136 days	0.62	M-v 4	Williams	34601	1999 BH ₁₄
1999 BJ ₁₄	13.7	0.15	19990810	178.54234	237.64642	166.27449	14.97960	0.1037670	2.6015140	20	2	1991–1999	0.56	M-v 4	Williams	34539	1999 BJ ₁₄
1999 BK ₁₄	13.8	0.15	19990810	325.21374	207.09738	64.15209	5.61421	0.1365865	3.1335498	24	1	114 days	0.38	M-v 5	Williams		1999 BK ₁₄
1999 BP ₁₅	13.9	0.15	19990810	49.37976	15.33013	107.77150	12.82195	0.1342565	2.6601231	43	1	193 days	0.68	M-v 3	Williams	34601	1999 BP ₁₅
1999 BQ ₁₅	12.2	0.15	19990810	88.35184	65.64085	0.56981	24.92460	0.1817162	3.2424238	27	2	1985–1999	0.67	M-v 4	Williams	34601	1999 BQ ₁₅
1999 BT ₂₄	13.6	0.15	19990810	348.79366	307.06149	244.12155	8.23672	0.1298187	2.6408181	21	2	1987–1999	0.64	M-v 4	Williams	34540	1999 BT ₂₄
1999 BM ₂₅	14.3	0.15	19990810	55.41557	315.53863	162.30588	8.28574	0.1414132	2.4389621	36	2	1997–1999	0.62	M-v 3	Williams	34601	1999 BM ₂₅
1999 BP ₂₅	13.5	0.15	19990810	228.73763	134.68022	165.25499	3.65564	0.0813428	2.6663886	17	3	1982–1999	0.74	M-v 4	Williams	34601	1999 BP ₂₅
1999 BT ₂₅	15.0	0.15	19990810	93.77798	195.05287	231.31934	3.63387	0.2069258	2.3427892	22	1	87 days	0.65	M-v 5	Williams		1999 BT ₂₅

1999 BY ₂₅	12.6	0.15	19990810	179.39479	7.65029	333.03267	15.90906	0.0606250	3.1419735	32	4	1977–1999	0.70	M-v	2	Williams	34601	1999 BY ₂₅
1999 CO	14.4	0.15	19990810	316.65768	122.57729	118.95349	5.73568	0.0676601	2.4524320	32	1	142 days	0.65	M-v	4	Williams	34318	1999 CO
1999 CP	14.0	0.15	19990810	354.66853	95.49367	135.89003	23.30099	0.3491147	2.5554534	57	1	146 days	0.59	M-v	4	Williams	34601	1999 CP
1999 CW	12.6	0.15	19990810	42.14480	11.04310	121.08567	7.92257	0.1050465	3.1598364	52	4	1982–1999	0.64	M-v	2	Williams	34318	1999 CW
1999 CL ₁	15.9	0.15	19990810	65.10725	127.72862	7.98916	5.79827	0.1401621	2.3191314	23	1	64 days	0.54	M-v	4	Williams	34601	1999 CL ₁
1999 CS ₁	14.0	0.15	19990810	338.27439	147.81491	89.87405	6.61996	0.1325034	2.2773633	36	1	194 days	0.79	M-v	4	Williams		1999 CS ₁
1999 CY ₁	14.4	0.15	19990303	329.96006	229.90579	304.27164	1.83387	0.1270598	2.4343629	35	1	59 days	1.01			Williams		1999 CY ₁
1999 CZ ₁	15.0	0.15	19990810	59.95766	177.03537	320.12730	17.02516	0.0855028	1.9530846	55	1	163 days	0.73	M-v	3	Williams	34601	1999 CZ ₁
1999 CO ₂	13.3	0.15	19990810	48.18447	43.91284	104.67633	22.60919	0.0310518	2.6861953	32	1	168 days	0.66	M-v	4	Williams		1999 CO ₂
1999 CZ ₂	13.8	0.15	19990810	38.05036	309.06695	186.87953	0.80761	0.1737277	3.1534698	50	2	1982–1999	0.60	M-v	4	Williams	34319	1999 CZ ₂
1999 CA ₃	13.8	0.15	19990810	112.44269	335.67290	103.29262	7.15940	0.0718726	2.4287561	63	3	1982–1999	0.65	M-v	1	Williams	34601	1999 CA ₃
1999 CU ₃	16.6	0.15	19990810	356.40383	305.46803	339.28138	11.40027	0.5240902	1.5765310	63	1	90 days	0.56	M-v	4	Williams	34601	1999 CU ₃
1999 CV ₃	15.0	0.15	19990810	51.44388	96.16606	141.44759	22.85576	0.3938832	1.4595208	555	2	1992–1999	0.46	M-v	1	Williams	34601	1999 CV ₃
1999 CR ₄	13.6	0.15	19990810	332.85682	279.73945	295.21412	8.89675	0.0488028	2.5959747	29	1	172 days	0.55	M-v	4	Williams	34319	1999 CR ₄
1999 CC ₅	12.6	0.15	19990810	252.24009	180.30079	108.99677	15.98247	0.1736785	2.5801935	40	1	171 days	0.56	M-v	4	Williams	34602	1999 CC ₅
1999 CH ₅	13.5	0.15	19990810	78.53950	99.91950	331.69958	8.24819	0.2027607	2.7969212	39	1	218 days	0.53	M-v	4	Williams	34602	1999 CH ₅
1999 CO ₅	14.4	0.15	19990810	45.38190	103.67805	23.15092	11.60988	0.2097980	2.6475244	40	1	105 days	0.62	M-v	4	Williams	34602	1999 CO ₅
1999 CU ₅	13.8	0.15	19990810	43.12089	16.78185	143.67232	15.63152	0.1369149	2.5524239	24	1	114 days	0.60	M-v	4	Williams	34602	1999 CU ₅
1999 CZ ₅	14.1	0.15	19990810	98.03559	95.41051	328.76125	19.08770	0.1279555	2.4378495	22	1	73 days	0.71	M-v	5	Williams		1999 CZ ₅
1999 CA ₆	14.3	0.15	19990810	21.86993	50.76796	124.71239	24.53980	0.2227742	2.3731464	36	1	145 days	0.46	M-v	3	Williams		1999 CA ₆
1999 CN ₇	14.4	0.15	19990810	67.19658	323.09711	146.78345	30.02026	0.1817185	2.6550244	27	1	81 days	0.61	M-v	5	Williams		1999 CN ₇
1999 CW ₇	16.4	0.15	19990810	91.43007	125.03178	345.04552	14.60068	0.2871076	1.8259248	73	1	87 days	0.63	M-v	4	Williams	34602	1999 CW ₇
1999 CY ₇	14.7	0.15	19990810	24.85300	205.23546	345.33291	26.91831	0.1970796	2.2918900	54	1	86 days	0.63	M-v	4	Williams		1999 CY ₇
1999 CH ₈	13.1	0.15	19990810	340.76989	132.00246	101.04676	12.58667	0.1357877	2.6312387	33	1	114 days	0.59	M-v	4	Williams		1999 CH ₈
1999 CM ₈	11.9	0.15	19990810	191.56428	326.82836	38.45219	16.01854	0.1551657	2.5368063	42	4	1954–1999	0.67	M-v	3	Williams	34602	1999 CM ₈
1999 CN ₈	13.3	0.15	19990810	89.29512	6.94573	99.90894	15.22949	0.1083251	2.5911812	48	3	1982–1999	0.74	M-v	2	Williams	34602	1999 CN ₈
1999 CO ₈	15.1	0.15	19990810	2.88508	117.44749	95.57361	3.67172	0.0796121	2.1890445	40	2	1978–1999	0.59	M-v	4	Williams	34236	1999 CO ₈
1999 CQ ₈	15.2	0.15	19990810	335.79101	92.51468	140.27425	8.00185	0.1985945	2.2615267	23	1	71 days	0.71	M-v	5	Williams		1999 CQ ₈
1999 CZ ₈	15.0	0.15	19990810	7.92644	89.34038	98.30050	6.27692	0.1205026	2.2144160	44	1	86 days	0.63	M-v	5	Williams	34602	1999 CZ ₈
1999 CC ₉	14.9	0.15	19990810	275.47895	98.15868	208.83655	12.97234	0.1802119	2.5773303	17	1	90 days	0.48	M-v	4	Williams	34602	1999 CC ₉
1999 CQ ₉	14.0	0.15	19990810	33.79785	74.36409	97.94295	8.28004	0.1991713	2.5818973	21	1	138 days	0.69	M-v	4	Williams		1999 CQ ₉
1999 CU ₉	13.8	0.15	19990810	238.56249	18.62016	324.24293	10.73296	0.2654084	2.3950042	34	2	1967–1999	0.59	M-v	4	Williams	34540	1999 CU ₉
1999 CV ₉	14.9	0.15	19990810	329.24140	296.52901	329.03680	14.82335	0.2146984	2.5558504	31	1	86 days	0.60	M-v	5	Williams	34602	1999 CV ₉
1999 CX ₉	13.1	0.15	19990810	13.68180	41.62276	143.95506	11.24313	0.0388731	2.9912904	57	1	143 days	0.42	M-v	3	Williams	34602	1999 CX ₉
1999 CC ₁₀	14.0	0.15	19990810	52.18428	34.28453	134.33314	9.62078	0.1508380	2.2878910	72	4	1978–1999	0.74	M-v	2	Williams	34602	1999 CC ₁₀
1999 CD ₁₀	13.2	0.15	19990810	56.96680	51.03049	113.30942	10.71620	0.0640875	2.7626810	22	1	112 days	0.55	M-v	4	Williams	34602	1999 CD ₁₀
1999 CG ₁₀	13.7	0.15	19990303	314.70805	187.40376	37.01238	7.04283	0.0827346	2.6138962	32	1	59 days	0.67			Williams		1999 CG ₁₀
1999 CJ ₁₀	13.5	0.15	19990303	257.86562	274.47867	11.86032	14.62335	0.1148323	2.5682485	26	1	55 days	0.60			Williams		1999 CJ ₁₀
1999 CG ₁₂	14.5	0.15	19990810	61.11622	334.05086	158.76190	26.01697	0.2020622	2.4258957	26	1	85 days	0.71	M-v	4	Williams		1999 CG ₁₂
1999 CJ ₁₂	14.8	0.15	19990810	155.65705	254.31453	160.31458	22.86445	0.1202568	1.9173595	25	1	85 days	0.62	M-v	5	Williams		1999 CJ ₁₂
1999 CZ ₁₃	13.1	0.15	19990810	6.59460	115.61276	59.83480	9.37925	0.2622162	3.7529838	93	1	163 days	0.48	M-v	3	Williams		1999 CZ ₁₃
1999 CE ₁₄	14.9	0.15	19990810	90.00900	257.25885	211.09290	5.07773	0.0767243	2.2213072	37	3	1989–1999	0.69	M-v	3	Williams	34602	1999 CE ₁₄
1999 CF ₁₄	14.7	0.15	19990810	7.38347	50.75928	175.78953	18.94161	0.2041285	2.5825878	40	1	114 days	0.76	M-v	4	Williams		1999 CF ₁₄
1999 CJ ₁₄	13.1	0.15	19990810	7.00703	37.45060	180.15674	17.60516	0.1555157	2.8995781	52	1	114 days	0.60	M-v	4	Williams	34602	1999 CJ ₁₄
1999 CQ ₁₄	13.5	0.15	19990810	63.98800	322.19284	164.11108	13.42611	0.1132554	2.5917107	37	1	164 days	0.80	M-v	4	Williams		1999 CQ ₁₄
1999 CT ₁₄	14.0	0.15	19990810	76.82059	322.33056	165.88650	13.23695	0.1142738	2.4212450	47	1	166 days	0.70	M-v	4	Williams	34603	1999 CT ₁₄
1999 CU ₁₄	13.6	0.15	19990810	201.39470	199.21785	165.81307	4.65425	0.0665888	2.7622258	15	1	61 days	0.66	M-v	5	Williams		1999 CU ₁₄
1999 CW ₁₄	15.3	0.15	19990303	331.90566	38.60428	171.85801	2.59481	0.1638039	2.4165151	31	1	55 days	0.60			Williams		1999 CW ₁₄
1999 CP ₁₅	14.1	0.15	19990303	250.20169	270.15894	354.08558	22.32818	0.1026207	1.9255845	20	1	54 days	0.58			Williams		1999 CP ₁₅
1999 CZ ₁₅	14.4	0.15	19990810	7.50628	111.14790	111.09715	21.70161	0.2683978	2.3018551	47	1	169 days	0.62	M-v	4	Williams	34603	1999 CZ ₁₅
1999 CG ₁₇	12.6	0.15	19990810	322.35962	87.12909	116.04519	11.46738	0.0487656	3.0169490	38	3	1995–1999	0.65	M-v	3	Williams	34603	1999 CG ₁₇
1999 CU ₁₇	13.4	0.15	19990810	98.63384	113.09709	302.58360	1.09825	0.0778133	2.9104615	28	2	1977–1999	0.69	M-v	5	Williams	34540	1999 CU ₁₇
1999 CD ₁₈	12.9	0.15	19990810	26.71542	98.61975	32.32256	11.01157	0.1190612	3.2221051	30	1	227 days	0.72	M-v	3	Williams	34603	1999 CD ₁₈

1999 CH ₁₈	14.2	0.15	19990810	52.98357	139.01113	344.07904	13.81704	0.0760206	2.3844836	25	1	90 days	0.69	M-v	4	Williams	34603	1999 CH ₁₈
1999 CS ₁₈	12.6	0.15	19990810	259.63371	160.42963	101.04883	10.95808	0.0425894	2.9967010	43	4	1979–1999	0.67	M-v	1	Williams	34540	1999 CS ₁₈
1999 CC ₁₉	15.0	0.15	19990810	49.99564	14.63447	114.39222	13.22489	0.1246021	2.3989871	27	1	86 days	0.77	M-v	4 D	Williams		1999 CC ₁₉
1999 CF ₂₀	13.9	0.15	19990810	62.87926	100.34845	2.85620	12.68683	0.1273857	2.6094758	20	1	73 days	0.52	M-v	4	Williams		1999 CF ₂₀
1999 CM ₂₂	13.7	0.15	19990211	56.24391	332.77063	96.58207	10.89648	0.0779419	3.0593180	11	1	19 days	0.69			Nakano		1999 CM ₂₂
1999 CK ₂₃	15.9	0.15	19990122	317.90274	38.75238	139.66065	7.48857	0.0655915	2.3668626	13	1	36 days	0.59			Marsden		1999 CK ₂₃
1999 CO ₂₄	13.5	0.15	19990810	332.89846	131.07812	82.28898	7.25633	0.1081153	2.7137057	30	2	1995–1999	0.81	M-v	4	Williams	34603	1999 CO ₂₄
1999 CY ₂₅	14.5	0.15	19990810	284.61070	172.36522	101.83586	3.09615	0.1571590	2.4497145	36	4	1978–1999	0.68	M-v	2	Williams	34240	1999 CY ₂₅
1999 CZ ₂₇	13.1	0.15	19990810	21.79036	70.56314	84.32215	14.03909	0.0686020	2.8334432	43	1	204 days	0.74	M-v	3	Williams		1999 CZ ₂₇
1999 CT ₂₉	12.8	0.15	19990810	241.08599	343.14346	326.05030	12.89935	0.1836973	2.6609554	38	1	194 days	0.54	M-v	4	Williams		1999 CT ₂₉
1999 CT ₃₀	12.5	0.15	19990810	254.45312	299.52203	339.64601	9.09487	0.0030763	3.1530352	35	5	1979–1999	0.73	M-v	1	Williams	34240	1999 CT ₃₀
1999 CC ₃₂	14.3	0.15	19990810	333.82925	225.27910	23.31778	9.30604	0.2773962	2.3098520	43	1	136 days	0.59	M-v	4	Williams		1999 CC ₃₂
1999 CR ₃₅	13.5	0.15	19990810	15.13182	96.27065	65.28862	10.55631	0.0469277	2.9795028	41	2	1997–1999	0.66	M-v	3	Williams	34542	1999 CR ₃₅
1999 CH ₃₇	14.3	0.15	19990810	72.96932	324.95406	134.07617	14.44364	0.1679061	2.7401559	28	1	164 days	0.65	M-v	4	Williams	34603	1999 CH ₃₇
1999 CX ₃₇	15.2	0.15	19990122	320.23405	215.40072	328.78595	3.43722	0.0512187	2.5990548	23	1	7 days	0.67			E Williams		1999 CX ₃₇
1999 CY ₃₇	14.5	0.15	19990122	265.77535	295.80838	327.18106	15.85932	0.2372650	3.1463939	16	1	6 days	0.84			Williams		1999 CY ₃₇
1999 CA ₃₈	15.3	0.15	19990810	39.91757	357.04471	137.60996	2.79063	0.2119451	3.0774529	29	2	1988–1999	0.82	M-v	5	Williams	34242	1999 CA ₃₈
1999 CX ₃₈	14.4	0.15	19990810	28.63860	137.80699	33.99387	2.30260	0.0661595	2.2932056	58	4	1992–1999	0.69	M-v	2	Williams	34542	1999 CX ₃₈
1999 CP ₃₉	13.8	0.15	19990810	80.44083	63.43365	27.72132	4.23320	0.1726636	2.6499246	32	1	120 days	0.63	M-v	5	Williams		1999 CP ₃₉
1999 CT ₄₀	15.4	0.15	19990303	331.93800	159.65897	19.56825	12.24063	0.0699946	2.5887830	17	1	55 days	0.58			Williams		1999 CT ₄₀
1999 CE ₄₇	14.3	0.15	19990810	338.22426	220.01411	18.61561	3.06386	0.1689740	2.4201450	47	3	1989–1999	0.58	M-v	3	Williams	34245	1999 CE ₄₇
1999 CV ₄₈	14.2	0.15	19990810	324.83814	248.65746	6.85612	5.35874	0.1365362	2.2039028	68	3	1996–1999	0.70	M-v	2	Williams	34603	1999 CV ₄₈
1999 CJ ₅₀	15.2	0.15	19990810	80.53921	107.33474	348.97053	6.14847	0.3194634	2.2496214	32	2	1994–1999	0.59	M-v	4	Williams	34543	1999 CJ ₅₀
1999 CY ₅₁	13.2	0.15	19990810	339.07247	208.96745	10.13072	9.19473	0.0814099	2.8020766	30	1	187 days	0.55	M-v	4	Williams		1999 CY ₅₁
1999 CT ₅₄	13.8	0.15	19990810	4.15907	208.36221	354.34910	6.08191	0.0707251	2.4726625	34	2	1997–1999	0.51	M-v	4	Williams	34604	1999 CT ₅₄
1999 CX ₅₄	12.9	0.15	19990810	179.95551	6.61719	7.35169	9.30713	0.0242145	2.7101794	41	3	1977–1999	0.61	M-v	3	Williams	34604	1999 CX ₅₄
1999 CX ₅₉	13.2	0.15	19990810	68.40715	257.95725	181.85763	15.56119	0.2038026	3.1043523	22	1	105 days	0.75	M-v	4	Williams	34604	1999 CX ₅₉
1999 CP ₆₁	12.9	0.15	19990810	49.64215	309.93294	163.26383	9.94940	0.0992480	3.3887670	26	2	1990–1999	0.59	M-v	4	Williams	34546	1999 CP ₆₁
1999 CG ₆₂	12.2	0.15	19990810	232.17905	122.65566	177.59942	16.63500	0.0191361	2.9436148	22	2	1986–1999	0.65	M-v	4	Williams	34604	1999 CG ₆₂
1999 CJ ₆₂	13.1	0.15	19990810	7.88315	239.74687	286.05727	9.93698	0.0510976	3.0058045	38	4	1960–1999	0.73	M-v	2	Williams	34248	1999 CJ ₆₂
1999 CN ₆₂	14.6	0.15	19990122	67.03663	273.82771	145.24213	5.42826	0.0456342	2.3727550	21	1	38 days	0.48			Marsden		1999 CN ₆₂
1999 CD ₆₃	13.2	0.15	19990810	212.58919	143.39948	177.49826	9.24306	0.1548983	2.7968901	23	2	1987–1999	0.58	M-v	4	Williams	34604	1999 CD ₆₃
1999 CR ₆₃	14.3	0.15	19990810	352.34801	327.48783	224.70179	7.90128	0.1137927	2.9323528	25	2	1997–1999	0.62	M-v	4	Williams	34605	1999 CR ₆₃
1999 CR ₆₄	12.9	0.15	19990810	206.92216	133.41127	198.46457	12.75827	0.1645917	2.5900652	29	3	1992–1999	0.66	M-v	4	Williams	34546	1999 CR ₆₄
1999 CS ₆₄	12.8	0.15	19990810	45.63287	203.90875	281.76411	15.84132	0.0861121	3.1518915	31	1	163 days	0.76	M-v	4	Williams	34605	1999 CS ₆₄
1999 CB ₆₇	12.7	0.15	19990810	192.18929	85.20906	258.22534	11.31520	0.2256378	2.5921150	35	5	1955–1999	0.83	M-v	2	Williams	34546	1999 CB ₆₇
1999 CE ₆₇	13.0	0.15	19990810	91.90721	165.43599	275.83659	12.69199	0.1389519	2.5920881	23	3	1981–1999	0.88	M-v	3	Williams	34546	1999 CE ₆₇
1999 CJ ₆₇	12.7	0.15	19990810	194.92746	73.84707	278.05430	12.42488	0.0367293	2.5424945	30	5	1957–1999	0.86	M-v	3	Williams	34605	1999 CJ ₆₇
1999 CW ₆₇	13.9	0.15	19990810	18.13638	254.57818	276.41849	6.35356	0.1626111	2.7948991	32	4	1976–1999	0.64	M-v	2	Williams	34605	1999 CW ₆₇
1999 CL ₆₉	14.0	0.15	19990810	275.77507	9.38088	277.58119	6.52889	0.1376920	2.3846606	29	5	1988–1999	0.64	M-v	2	Williams	34605	1999 CL ₆₉
1999 CW ₆₉	14.3	0.15	19990810	136.85636	157.11634	237.36914	11.74819	0.1526534	2.6827271	21	2	1997–1999	0.69	M-v	4	Williams	34546	1999 CW ₆₉
1999 CR ₇₀	13.7	0.15	19990810	75.26749	288.05952	165.69695	13.01093	0.1863326	2.7058485	37	1	144 days	0.46	M-v	4	Williams	34605	1999 CR ₇₀
1999 CH ₇₂	15.1	0.15	19990810	63.52062	247.79997	228.68642	5.65683	0.1901090	2.5389000	22	1	132 days	0.75	M-v	4	Williams	34605	1999 CH ₇₂
1999 CY ₇₂	13.9	0.15	19990810	322.39403	314.45869	280.27604	11.01524	0.0552497	2.5831562	19	1	132 days	0.59	M-v	5	Williams		1999 CY ₇₂
1999 CZ ₇₄	12.8	0.15	19990810	42.39185	292.19821	207.22032	10.48520	0.0645160	3.0178850	25	2	1991–1999	0.77	M-v	3	Williams	34250	1999 CZ ₇₄
1999 CE ₇₅	14.6	0.15	19990810	17.82563	326.53938	209.66211	11.28413	0.2179134	2.9404254	17	1	84 days	0.72	M-v	5	Williams		1999 CE ₇₅
1999 CW ₇₇	13.7	0.15	19990810	51.03267	300.93294	208.13721	7.87491	0.0755278	2.3439333	31	1	171 days	0.73	M-v	4	Williams		1999 CW ₇₇
1999 CP ₇₉	13.5	0.15	19990810	314.55209	86.35940	167.07175	12.67251	0.1367938	2.6712422	45	1	115 days	0.66	M-v	4	Williams	34605	1999 CP ₇₉
1999 CT ₇₉	15.1	0.15	19990810	73.97516	233.34862	249.68784	4.00236	0.0968346	2.2849424	24	1	84 days	0.65	M-v	5	Williams		1999 CT ₇₉
1999 CX ₈₀	14.2	0.15	19990810	50.37515	263.25595	251.71209	4.66801	0.0949470	2.2264037	46	1	169 days	0.73	M-v	4	Williams	34605	1999 CX ₈₀
1999 CB ₈₁	14.2	0.15	19990810	59.36291	295.47219	201.50439	4.78337	0.1401375	2.3888427	34	3	1977–1999	0.69	M-v	3	Williams	34251	1999 CB ₈₁
1999 CG ₈₁	14.6	0.15	19990810	48.82565	217.20110	298.26032	5.81459	0.0602361	2.3352525	27	1	135 days	0.73	M-v	4	Williams		1999 CG ₈₁
1999 CV ₈₁	14.3	0.15	19990810	357.08225	255.01776	330.68355	2.93828	0.1179936	2.1913607	47	1	197 days	0.70	M-v	4	Williams	34605	1999 CV ₈₁

1999 CK ₈₄	14.4	0.15	19990211	278.38338	231.60296	345.92088	1.66211	0.0653621	2.3892439	11	1	8 days	0.69		Nakano		1999 CK ₈₄
1999 CO ₈₄	14.2	0.15	19990810	26.64476	138.28232	15.15467	5.96319	0.1849922	2.5455668	28	3	1993–1999	0.62	M-v	3	Williams	34605 1999 CO ₈₄
1999 CX ₈₄	14.0	0.15	19990810	348.65586	120.21900	86.20327	9.56206	0.1777466	2.4243825	36	1	141 days	0.62	M-v	4	Williams	34605 1999 CX ₈₄
1999 CB ₉₀	15.1	0.15	19990810	8.85319	120.27755	67.80371	8.43160	0.1147075	2.2934185	32	2	1996–1999	0.69	M-v	4	Williams	34253 1999 CB ₉₀
1999 CN ₉₅	15.2	0.15	19990211	268.32080	107.81872	141.93468	2.30978	0.1046285	3.0824613	21	1	32 days	0.70			Williams	1999 CN ₉₅
1999 CO ₉₉	13.2	0.15	19990810	339.96296	250.56021	339.20197	12.82256	0.1514940	2.6986088	49	1	191 days	0.54	M-v	4	Williams	34606 1999 CO ₉₉
1999 CX ₁₀₁	14.3	0.15	19990810	0.37852	184.36539	33.07071	5.50904	0.1489551	2.4254616	32	1	110 days	0.80	M-v	5	Williams	1999 CX ₁₀₁
1999 CW ₁₀₅	16.2	0.15	19990122	48.60293	128.82237	300.16079	8.43755	0.1565798	2.7220593	17	1	39 days	0.67			Marsden	1999 CW ₁₀₅
1999 CA ₁₀₆	16.0	0.15	19990122	75.05399	169.47201	238.95459	1.64760	0.0827966	2.6563301	19	1	39 days	0.71			Marsden	1999 CA ₁₀₆
1999 CO ₁₁₆	14.6	0.15	19990810	351.99165	350.25438	231.88838	6.13264	0.1325615	2.3856342	28	2	1997–1999	0.57	M-v	4	Williams	34550 1999 CO ₁₁₆
1999 CM ₁₁₇	14.8	0.15	19990810	74.69417	269.47933	213.64184	6.67588	0.1611029	2.2740501	34	1	135 days	0.75	M-v	4	Williams	34606 1999 CM ₁₁₇
1999 CN ₁₁₇	14.2	0.15	19990810	333.95384	60.08906	187.69694	3.57771	0.1106133	2.2156029	48	4	1990–1999	0.70	M-v	2	Williams	34606 1999 CN ₁₁₇
1999 CK ₁₁₈	13.8	0.15	19990810	10.80147	233.68377	325.80915	12.92546	0.1138315	2.6534586	36	2	1996–1999	0.71	M-v	3	Williams	34550 1999 CK ₁₁₈
1999 CV ₁₁₈	7.4	0.15	19990323	22.46851	126.61873	305.59951	5.52016	0.3873359	56.5321133	8	1	85 days	0.09			Marsden	1999 CV ₁₁₈
1999 CW ₁₁₈	7.8	0.15	19990323	198.70543	173.48081	154.47072	0.81874	0.0000000	43.4547462	7	1	86 days	0.14		E	Marsden	1999 CW ₁₁₈
1999 CY ₁₁₈	8.6	0.15	19990323	356.43487	21.44551	163.12562	25.55774	0.6420798	95.2819339	12	1	86 days	0.13			Marsden	1999 CY ₁₁₈
1999 CZ ₁₁₈	7.7	0.15	19990323	180.13977	359.54634	345.01952	39.07111	0.0941170	44.6962749	6	1	86 days	0.10		E	Marsden	1999 CZ ₁₁₈
1999 CA ₁₁₉	7.7	0.15	19990323	181.75783	319.88150	24.85762	0.28319	0.0000000	45.1531448	6	1	86 days	0.28		E	Marsden	1999 CA ₁₁₉
1999 CF ₁₁₉	7.4	0.15	19990323	354.33013	218.08346	303.44131	19.65988	0.6866841	114.9502106	8	1	84 days	0.09			Marsden	1999 CF ₁₁₉
1999 CN ₁₂₅	13.7	0.15	19990810	54.78411	52.39840	72.68562	12.37133	0.1528790	2.6739641	28	1	164 days	0.91	M-v	4	Williams	34606 1999 CN ₁₂₅
1999 CR ₁₂₅	13.5	0.15	19990810	49.72949	63.86042	73.52797	14.21637	0.0921576	2.5525810	31	1	195 days	0.84	M-v	4	Williams	1999 CR ₁₂₅
1999 CM ₁₂₆	13.2	0.15	19990810	26.78554	102.19119	68.10219	15.68524	0.1996772	2.6449909	38	1	195 days	0.67	M-v	3	Williams	1999 CM ₁₂₆
1999 CO ₁₂₇	13.2	0.15	19990810	29.81257	59.70299	99.09956	18.89333	0.1425602	3.1456564	19	1	116 days	0.56	M-v	4	Williams	1999 CO ₁₂₇
1999 CR ₁₂₈	15.5	0.15	19990810	41.03515	111.96804	23.74382	14.10506	0.4461910	3.0138841	96	1	77 days	0.64	M-v	4 D	Williams	1999 CR ₁₂₈
1999 CX ₁₃₁	6.9	0.15	19990303	182.65261	179.50991	128.00981	9.90781	0.0932368	39.5276433	9	1	60 days	0.46		E	Marsden	1999 CX ₁₃₁
1999 CG ₁₃₃	16.3	0.15	19990122	60.37720	283.70871	142.17340	5.02300	0.1227146	2.3117424	10	1	5 days	0.59		E	Williams	1999 CG ₁₃₃
1999 CE ₁₅₀	14.9	0.15	19990303	274.32683	102.24830	165.13098	9.61680	0.0810490	2.6290198	29	1	58 days	0.83			Williams	1999 CE ₁₅₀
1999 CY ₁₅₃	14.3	0.15	19990810	43.94961	139.88514	10.48700	13.63065	0.1904718	2.6920487	15	1	69 days	0.40	M-v	4	Williams	34607 1999 CY ₁₅₃
1999 DV	14.6	0.15	19990810	144.75702	337.27136	71.13676	4.03612	0.1391339	2.3151957	22	2	1971–1999	0.63	M-v	5	Williams	34552 1999 DV
1999 DY	15.1	0.15	19990303	340.79248	210.80961	351.83088	6.54186	0.0624140	2.2948559	20	1	56 days	1.19			Williams	1999 DY
1999 DZ	15.2	0.15	19990303	27.64014	142.87981	0.51915	7.31599	0.1389655	2.2174826	36	1	56 days	0.82			Williams	1999 DZ
1999 DM ₁	14.8	0.15	19990810	44.25299	340.07147	178.63041	25.06783	0.2624680	2.3755219	51	1	111 days	0.65	M-v	3	Williams	1999 DM ₁
1999 DP ₁	13.3	0.15	19990810	338.65273	172.62776	58.28585	14.62436	0.1285948	2.5797881	58	2	1997–1999	0.63	M-v	3	Williams	34607 1999 DP ₁
1999 DC ₂	14.4	0.15	19990810	17.38111	41.45181	160.34668	23.49847	0.2080865	2.4135739	57	1	167 days	0.53	M-v	3	Williams	34607 1999 DC ₂
1999 DE ₂	14.0	0.15	19990810	145.48823	75.25453	329.35481	11.65241	0.1835426	2.6466764	36	1	83 days	0.67	M-v	5	Williams	34607 1999 DE ₂
1999 DF ₂	13.8	0.15	19990810	129.10489	207.59931	214.91505	4.51930	0.1380454	2.7552059	50	3	1995–1999	0.62	M-v	4	Williams	34607 1999 DF ₂
1999 DK ₂	12.9	0.15	19990810	64.48325	87.89289	43.94112	15.67934	0.0757398	2.5782111	39	3	1993–1999	0.64	M-v	2	Williams	34607 1999 DK ₂
1999 DO ₂	12.5	0.15	19990810	54.09525	87.46741	46.43551	17.66402	0.0969966	3.2239059	35	1	116 days	0.67	M-v	4	Williams	1999 DO ₂
1999 DS ₂	13.9	0.15	19990810	30.79485	182.00054	344.11845	9.33191	0.1544858	2.7678277	73	1	173 days	0.54	M-v	3	Williams	34607 1999 DS ₂
1999 DZ ₂	15.4	0.15	19990303	71.41356	37.05601	57.63688	6.55139	0.1057611	2.2973389	19	1	50 days	0.65			Williams	1999 DZ ₂
1999 DA ₃	13.9	0.15	19990303	287.21485	143.74522	114.05200	8.44229	0.0393154	2.8554365	22	1	50 days	0.56			Williams	1999 DA ₃
1999 DB ₃	13.4	0.15	19990810	320.36479	129.19260	147.99238	14.09916	0.1632806	2.5619273	44	2	1987–1999	0.57	M-v	4	Williams	34607 1999 DB ₃
1999 DC ₃	14.6	0.15	19990810	18.22534	150.31266	62.79575	7.68455	0.1396894	2.2663631	33	1	106 days	0.61	M-v	4	Williams	1999 DC ₃
1999 DH ₃	14.0	0.15	19990810	42.56919	56.28004	161.37577	4.64762	0.1079596	2.4057051	41	1	114 days	0.68	M-v	4	Williams	1999 DH ₃
1999 DM ₃	15.2	0.15	19990303	16.30937	358.07624	159.18506	2.81336	0.1622049	2.3325490	34	1	55 days	0.66			Williams	1999 DM ₃
1999 DQ ₃	13.3	0.15	19990810	44.43070	64.57001	97.91143	13.09109	0.1022100	2.6016847	49	5	1978–1999	0.61	M-v	1	Williams	34608 1999 DQ ₃
1999 DR ₃	12.3	0.15	19990810	341.62145	150.03837	76.34593	12.18180	0.0561898	3.0061572	55	2	1998–1999	0.70	M-v	3	Williams	34552 1999 DR ₃
1999 DS ₃	13.5	0.15	19990810	19.53765	123.73231	70.72769	11.20516	0.1572462	2.6586389	60	3	1982–1999	0.80	M-v	3	Williams	34608 1999 DS ₃
1999 DV ₃	13.1	0.15	19990810	300.48992	211.59908	54.51297	15.03302	0.1495691	2.5818471	49	2	1997–1999	0.79	M-v	4	Williams	34608 1999 DV ₃
1999 DH ₄	13.4	0.15	19990810	318.21133	164.73803	132.43917	10.34424	0.1245120	2.7551119	80	3	1990–1999	0.65	M-v	3	Williams	34608 1999 DH ₄
1999 DL ₄	13.2	0.15	19990303	341.84508	198.64231	355.67216	10.90041	0.0438327	3.2130961	38	1	54 days	1.16			Williams	1999 DL ₄
1999 DN ₆	13.8	0.15	19990810	57.43818	26.27016	144.37342	9.86237	0.1976512	2.5961671	48	1	108 days	0.80	M-v	4	Williams	1999 DN ₆
1999 DP ₆	13.0	0.15	19990810	63.58447	64.81176	109.13600	15.81707	0.1248202	2.6162956	42	1	112 days	0.60	M-v	4	Williams	1999 DP ₆

1999 DQ ₆	12.6	0.15	19990810	70.66498	348.15272	175.77496	15.13871	0.1711664	3.1400361	55	1	112 days	0.65	M-v	4	Williams	1999 DQ ₆
1999 DS ₆	13.4	0.15	19990810	95.53109	47.45957	99.25002	13.41970	0.1044573	2.7175056	40	1	114 days	0.70	M-v	5	Williams	1999 DS ₆
1999 DV ₆	13.1	0.15	19990810	156.76946	36.43687	68.74812	16.21350	0.0390135	2.5803385	35	1	115 days	0.69	M-v	5	Williams	1999 DV ₆
1999 DY ₆	13.7	0.15	19990810	2.73123	196.14142	60.51721	14.27401	0.1395854	2.5483536	43	1	112 days	0.67	M-v	4	Williams	1999 DY ₆
1999 DB ₇	19.9	0.15	19990810	103.66041	29.73731	157.69802	10.83859	0.1952969	1.2064737	58	1	114 days	0.71	M-v	4	Williams	34333 1999 DB ₇
1999 DV ₇	14.9	0.15	19990810	45.85989	161.62009	4.18352	8.04300	0.1476859	2.3109112	42	1	171 days	0.64	M-v	3	Williams	34608 1999 DV ₇
1999 DB ₈	10.0	0.15	19990303	0.05319	6.77087	133.76319	22.28083	0.1016226	42.5107320	7	1	35 days	0.20			E Marsden	1999 DB ₈
1999 DC ₈	10.0	0.15	19990211	0.00000	31.36334	108.68287	4.76465	0.0000000	45.8838472	4	1	1 days	0.05			E Marsden	1999 DC ₈
1999 DD ₈	11.1	0.15	19990211	67.05756	59.76465	346.54291	5.49176	0.2304741	39.4047434	5	1	1 days	0.12			E Marsden	1999 DD ₈
1999 DE ₈	9.6	0.15	19990211	0.00000	44.18275	95.74685	3.52809	0.0000000	45.6044321	4	1	1 days	0.15			E Marsden	1999 DE ₈
1999 DF ₈	9.9	0.15	19990211	0.00000	108.45635	31.43744	2.52614	0.0000000	44.1623120	4	1	1 days	0.10			E Marsden	1999 DF ₈
1999 EA	14.5	0.15	19990810	312.15157	285.85841	352.84295	11.85102	0.2592401	2.5484813	29	3	1991–1999	0.69	M-v	3	Williams	34608 1999 EA
1999 EE	16.0	0.15	19990323	90.48717	7.00335	59.07411	3.21986	0.1707140	2.2212678	20	1	58 days	0.35			Marsden	1999 EE
1999 EH	15.5	0.15	19990810	98.67712	158.04266	319.28728	2.71262	0.0918235	2.3331677	29	1	65 days	0.73	M-v	5	Williams	1999 EH
1999 EJ	14.3	0.15	19990810	339.08113	286.14987	323.42338	2.81626	0.1227490	2.7720884	41	1	96 days	0.66	M-v	5	Williams	1999 EJ
1999 EK	14.9	0.15	19990323	72.72610	196.77981	253.20674	1.41362	0.1576210	2.3903552	32	1	37 days	0.86			Williams	1999 EK
1999 EL	12.5	0.15	19990810	346.75208	50.03361	183.74817	17.06673	0.1728212	3.1102409	71	1	167 days	0.52	M-v	4	Williams	34608 1999 EL
1999 EJ ₂	13.4	0.15	19990810	346.80062	55.31962	192.36796	14.84652	0.0822210	2.5851080	48	1	93 days	0.64	M-v	5	Williams	1999 EJ ₂
1999 EC ₃	13.7	0.15	19990810	255.15582	332.75863	355.23545	10.57063	0.0947744	2.9906556	28	1	93 days	0.51	M-v	5	Williams	1999 EC ₃
1999 EE ₃	14.5	0.15	19990323	61.92202	267.95530	225.26074	9.74218	0.0564190	2.9776004	24	1	58 days	0.78			Williams	1999 EE ₃
1999 EF ₃	14.3	0.15	19990323	339.42918	41.62930	178.39564	14.19540	0.1256869	3.1149515	45	1	41 days	0.60			Williams	1999 EF ₃
1999 EK ₃	13.8	0.15	19990810	58.55538	335.57611	173.18240	12.37125	0.1889925	2.5788697	90	2	1991–1999	0.70	M-v	4	Williams	34552 1999 EK ₃
1999 EM ₃	15.2	0.15	19990810	55.94951	140.99608	13.55743	15.17541	0.2434692	2.5669054	64	1	65 days	0.47	M-v	4	Williams	1999 EM ₃
1999 EP ₃	15.3	0.15	19990810	1.54007	251.68987	353.82134	7.73995	0.1076509	2.2017639	45	1	92 days	0.54	M-v	4	Williams	1999 EP ₃
1999 EQ ₃	15.5	0.15	19990323	259.78690	208.04480	90.11637	3.17010	0.2152837	2.3658403	19	1	53 days	0.42			Marsden	1999 EQ ₃
1999 ET ₃	14.0	0.15	19990412	97.67949	66.65198	31.28734	9.55266	0.0751362	3.0404165	41	1	58 days	0.66			Williams	1999 ET ₃
1999 EP ₄	14.5	0.15	19990810	339.17784	105.91750	179.96454	16.30161	0.2076070	2.5460767	21	1	66 days	0.55	M-v	4	Williams	1999 EP ₄
1999 EQ ₄	12.5	0.15	19990810	114.51805	262.27298	190.96142	9.67529	0.0653017	3.0160030	46	2	1994–1999	0.67	M-v	5	Williams	34553 1999 EQ ₄
1999 ET ₄	15.6	0.15	19990323	261.37513	273.77779	24.35522	6.20523	0.1286086	2.3409623	31	1	29 days	0.76			Williams	1999 ET ₄
1999 EV ₄	13.9	0.15	19990810	315.87517	84.73566	181.90233	12.10366	0.0387351	2.6903174	48	1	95 days	0.64	M-v	5	Williams	1999 EV ₄
1999 EY ₄	15.0	0.15	19990323	290.75858	139.31632	128.72651	9.88868	0.2074899	2.7689113	14	1	29 days	1.01			Williams	1999 EY ₄
1999 EZ ₄	14.3	0.15	19990810	194.63484	286.95242	95.86061	9.47042	0.1758141	2.3575254	32	2	1998–1999	0.66	M-v	5	Williams	34553 1999 EZ ₄
1999 EG ₅	12.3	0.15	19990323	174.62463	283.71593	81.21014	11.83888	0.1453832	3.0168887	28	1	59 days	0.72			Nakano	1999 EG ₅
1999 EH ₅	12.5	0.15	19990810	85.31627	136.35878	356.37312	9.69920	0.0305142	3.0100778	58	5	1975–1999	0.76	M-v	1	Williams	34553 1999 EH ₅
1999 EK ₅	15.8	0.15	19990323	87.86348	65.92167	20.41666	5.23256	0.0534071	2.4226602	25	1	33 days	0.64			Williams	1999 EK ₅
1999 EO ₅	16.7	0.15	19990412	351.10508	243.33448	324.87261	3.84243	0.0793957	2.2456627	15	1	57 days	0.38			Williams	1999 EO ₅
1999 EX ₅	13.7	0.15	19990323	250.50912	287.67349	12.28745	8.87250	0.1481880	2.7779870	23	1	30 days	0.81			Williams	1999 EX ₅
1999 EZ ₅	16.5	0.15	19990323	316.76404	234.09070	11.27195	5.52947	0.1028856	2.3616284	13	1	26 days	0.54			Williams	1999 EZ ₅
1999 EB ₆	14.7	0.15	19990323	153.70257	21.68955	16.12604	14.79663	0.0941315	2.5246005	28	1	36 days	0.72			Williams	1999 EB ₆
1999 ED ₆	14.2	0.15	19990323	188.09920	353.38532	17.90488	28.76337	0.1256696	2.6865931	28	1	34 days	0.71			Williams	1999 ED ₆
1999 EE ₆	15.6	0.15	19990810	109.36274	94.89115	18.67250	6.34145	0.0962303	2.3458935	47	3	1952–1999	0.69	M-v	2	Williams	34553 1999 EE ₆
1999 EG ₆	15.6	0.15	19990810	64.28936	137.47042	15.31469	13.27089	0.1634771	2.5550636	23	1	79 days	0.59	M-v	5	Williams	34609 1999 EG ₆
1999 EB ₈	15.8	0.15	19990323	220.04155	327.72734	21.49455	9.18142	0.1908304	2.4517667	10	1	37 days	0.30			Williams	1999 EB ₈
1999 FA	20.6	0.15	19990810	186.90011	296.78523	166.22924	12.02303	0.1326565	1.0784447	161	1	69 days	0.45	M-v	5	Williams	34609 1999 FA
1999 FB	17.8	0.15	19990810	179.40259	2.90317	37.20596	12.90499	0.6069474	1.1800683	92	1	59 days	0.54	M-v	5	Williams	34609 1999 FB
1999 FD	14.4	0.15	19990810	345.72272	100.00527	151.50855	5.55160	0.1931343	2.5678154	65	1	85 days	0.64	M-v	5	Williams	1999 FD
1999 FF	14.7	0.15	19990810	185.29575	343.75402	39.93593	2.31432	0.1041056	2.9387048	28	2	1996–1999	0.69	M-v	4	Williams	34554 1999 FF
1999 FH	14.1	0.15	19990810	310.55215	108.05970	193.55155	11.87752	0.2916954	2.3440984	47	1	85 days	0.70	M-v	5	Williams	1999 FH
1999 FK	14.3	0.15	19990810	231.54338	291.38690	58.84788	6.99971	0.1593987	2.3825902	25	3	1993–1999	0.75	M-v	4	Williams	34554 1999 FK
1999 FN	14.2	0.15	19990810	18.62947	12.73513	198.62319	13.34046	0.1190524	2.6786996	46	1	83 days	0.67	M-v	4	Williams	1999 FN
1999 FO	14.9	0.15	19990323	267.97937	303.51867	2.07210	4.98725	0.1649830	2.2731462	38	1	30 days	0.84			Williams	1999 FO
1999 FP	14.0	0.15	19990323	205.10241	353.34488	2.46347	5.19248	0.0809083	2.7545323	31	1	29 days	0.93			Williams	1999 FP
1999 FU	14.0	0.15	19990810	102.97161	140.04532	334.60547	1.31075	0.0669375	2.9322306	48	3	1989–1999	0.87	M-v	5	Williams	34554 1999 FU

1999 FX	13.8	0.15	19990323	29.45871	150.93883	10.69848	5.10727	0.1160183	3.1920131	25	1	32 days	0.86		Williams	1999 FX
1999 FB ₁	16.8	0.15	19990810	341.65363	75.48254	197.09020	5.89945	0.1517875	2.2241993	21	1	60 days	0.67	M-v 5	Williams	1999 FB ₁
1999 FE ₁	13.9	0.15	19990810	138.11438	66.35121	18.80274	2.02661	0.0447083	2.9071940	49	5	1981–1999	0.83	M-v 1	Williams	34554 1999 FE ₁
1999 FF ₁	15.1	0.15	19990323	292.84098	283.67241	18.68141	12.61742	0.3116722	2.5737753	27	1	31 days	1.09		Williams	1999 FF ₁
1999 FH ₁	15.0	0.15	19990323	356.97789	179.07242	25.67591	5.07386	0.1099520	3.1811190	29	1	32 days	0.74		Williams	1999 FH ₁
1999 FZ ₂	15.6	0.15	19990323	0.76557	359.82469	192.91218	6.69177	0.0726007	2.3059705	35	1	26 days	0.72		Williams	1999 FZ ₂
1999 FB ₃	16.6	0.15	19990323	288.58236	272.68161	13.32703	1.34835	0.1717081	2.3905485	17	1	32 days	0.56		Williams	1999 FB ₃
1999 FG ₃	16.2	0.15	19990810	20.31322	36.06332	183.36641	2.82093	0.1671405	2.3811177	37	2	1995–1999	0.68	M-v 4	Williams	34554 1999 FG ₃
1999 FH ₃	16.2	0.15	19990810	91.34301	308.60240	175.37685	2.42298	0.1451313	2.5676717	20	2	1997–1999	0.45	M-v 5	Williams	34554 1999 FH ₃
1999 FV ₃	14.2	0.15	19990323	104.68450	250.56560	177.62722	2.22248	0.0757569	2.9227877	39	1	30 days	0.53		Williams	1999 FV ₃
1999 FP ₄	16.7	0.15	19990323	67.13017	271.67140	192.49344	7.70602	0.2031756	2.3711035	14	1	26 days	0.36		Williams	1999 FP ₄
1999 FS ₄	13.9	0.15	19990323	205.73939	159.53489	195.56707	9.56877	0.0876901	3.0718941	27	1	33 days	0.49		Williams	1999 FS ₄
1999 FW ₄	14.9	0.15	19990810	24.27677	197.49627	16.60341	3.32060	0.0891981	2.2394197	42	2	1997–1999	0.68	M-v 4	Williams	34554 1999 FW ₄
1999 FZ ₄	15.1	0.15	19990323	87.97025	272.34247	192.52118	9.62798	0.0476190	3.0774539	15	1	26 days	0.52		Williams	1999 FZ ₄
1999 FS ₅	15.3	0.15	19990412	339.41772	331.34111	248.03871	2.27764	0.0344919	2.6306456	19	1	58 days	1.13		Williams	1999 FS ₅
1999 FT ₅	15.1	0.15	19990412	342.44519	203.30102	9.13365	6.93788	0.0407074	2.3921619	37	1	50 days	0.86		Williams	1999 FT ₅
1999 FN ₆	15.9	0.15	19990323	7.24967	351.31054	197.18919	13.79563	0.1382194	2.7639527	14	1	26 days	0.63		Williams	1999 FN ₆
1999 FZ ₆	14.2	0.15	19990810	328.25216	79.82142	197.47627	8.91109	0.1486645	2.7486138	42	1	60 days	0.65	M-v 5	Williams	1999 FZ ₆
1999 FC ₇	13.9	0.15	19990810	243.47683	335.85905	23.49735	14.28841	0.1967271	2.6980029	25	1	60 days	0.64	M-v 6	Williams	34610 1999 FC ₇
1999 FD ₇	14.4	0.15	19990412	199.32804	177.86820	191.29137	3.98064	0.1040310	2.6856145	23	1	54 days	0.96		Williams	1999 FD ₇
1999 FE ₇	16.3	0.15	19990323	296.65995	89.81139	173.69938	5.17252	0.1775001	2.4253484	18	1	29 days	0.84		Williams	1999 FE ₇
1999 FG ₇	14.5	0.15	19990810	81.50445	107.78905	1.98480	0.99984	0.1317050	3.1188453	23	2	1997–1999	0.76	M-v 5	Williams	34555 1999 FG ₇
1999 FL ₈	14.3	0.15	19990323	4.02416	5.87078	172.11566	15.91831	0.1254119	2.5794092	24	1	23 days	0.62		Williams	1999 FL ₈
1999 FS ₈	15.5	0.15	19990810	98.57099	293.74958	205.20757	20.88581	0.0727189	1.9579997	52	1	80 days	0.71	M-v 4	Williams	1999 FS ₈
1999 FY ₈	12.9	0.15	19990810	113.86886	285.92727	152.98804	10.68184	0.0869136	3.0083327	24	3	1980–1999	0.56	M-v 4	Williams	34555 1999 FY ₈
1999 FA ₉	14.1	0.15	19990810	346.88472	168.63123	59.56639	2.30456	0.1567445	3.0912701	37	3	1977–1999	0.59	M-v 4	Williams	34555 1999 FA ₉
1999 FB ₉	13.3	0.15	19990810	76.90546	70.29367	51.81662	2.85686	0.0589684	2.9324956	50	2	1997–1999	0.82	M-v 4	Williams	34556 1999 FB ₉
1999 FF ₉	13.9	0.15	19990810	77.20689	58.21515	80.55016	5.93693	0.1250920	2.3043674	35	3	1979–1999	0.67	M-v 3	Williams	34556 1999 FF ₉
1999 FG ₉	12.2	0.15	19990810	288.15493	270.57790	36.53610	16.48308	0.2334019	3.1153428	37	3	1988–1999	0.67	M-v 4	Williams	34556 1999 FG ₉
1999 FJ ₉	15.6	0.15	19990323	42.06020	2.88695	140.14569	5.53838	0.0193423	2.1681342	30	1	28 days	0.63		Williams	1999 FJ ₉
1999 FK ₉	15.1	0.15	19990810	22.39398	157.58225	44.56561	3.48316	0.1359880	2.4103453	41	2	1997–1999	0.68	M-v 4	Williams	34556 1999 FK ₉
1999 FM ₉	13.9	0.15	19990810	30.05120	92.60737	90.80655	2.33078	0.2333509	2.7829296	58	3	1996–1999	0.66	M-v 2	Williams	34556 1999 FM ₉
1999 FN ₉	15.2	0.15	19990810	348.99944	168.70335	77.99311	3.96882	0.1184403	2.2608459	42	2	1997–1999	0.82	M-v 4	Williams	34557 1999 FN ₉
1999 FP ₉	15.5	0.15	19990323	35.39646	326.94448	169.45384	12.39774	0.1594971	2.4490451	23	1	23 days	0.73		Williams	1999 FP ₉
1999 FQ ₉	16.1	0.15	19990323	18.82953	77.05538	79.81232	2.59972	0.1371876	2.2197192	18	1	21 days	0.54		Williams	1999 FQ ₉
1999 FX ₉	15.3	0.15	19990323	353.72478	180.49518	8.92954	12.63562	0.0825888	2.5599096	18	1	21 days	0.66		Williams	1999 FX ₉
1999 FY ₉	15.9	0.15	19990323	323.50093	207.36141	25.18214	2.53147	0.1621508	2.4382132	35	1	30 days	0.74		Williams	1999 FY ₉
1999 FE ₁₀	15.5	0.15	19990810	66.35535	125.17288	18.46806	0.67567	0.1491632	2.3081307	23	1	82 days	0.73	M-v 5	Williams	1999 FE ₁₀
1999 FG ₁₀	15.8	0.15	19990323	27.61461	342.72460	168.98134	4.37634	0.1127557	2.6025874	24	1	25 days	0.77		Williams	1999 FG ₁₀
1999 FJ ₁₀	13.3	0.15	19990810	266.34841	213.18089	100.31129	2.23381	0.1700266	3.1966210	27	4	1978–1999	0.61	M-v 1	Williams	34557 1999 FJ ₁₀
1999 FL ₁₀	14.8	0.15	19990323	309.31377	71.92942	192.66990	7.66304	0.2605785	2.7291608	28	1	29 days	1.10		Williams	1999 FL ₁₀
1999 FM ₁₀	13.2	0.15	19990810	97.95576	268.47075	191.10611	12.04387	0.1429424	2.6483388	54	3	1982–1999	0.58	M-v 4	Williams	34557 1999 FM ₁₀
1999 FO ₁₀	14.6	0.15	19990412	25.52766	157.40389	359.42410	10.75711	0.1145551	3.1838793	18	1	47 days	0.71		Williams	1999 FO ₁₀
1999 FP ₁₀	15.0	0.15	19990412	60.66789	344.59979	145.55636	4.39624	0.0905717	2.3323800	60	1	58 days	0.88		Williams	1999 FP ₁₀
1999 FW ₁₂	16.2	0.15	19990412	317.79443	82.28328	183.86732	4.00751	0.2189018	2.6000216	23	1	51 days	0.70		Williams	1999 FW ₁₂
1999 FB ₁₅	15.2	0.15	19990412	308.44150	73.06906	193.80487	15.58472	0.1174113	3.1142620	13	1	58 days	0.58		Williams	1999 FB ₁₅
1999 FK ₁₆	14.2	0.15	19990810	14.97754	1.52088	197.70905	16.93453	0.3092383	4.1564344	43	1	62 days	0.65	M-v 4	Williams	1999 FK ₁₆
1999 FJ ₁₇	15.1	0.15	19990412	356.95240	14.92172	192.81930	17.83858	0.2443886	2.7016059	54	1	58 days	0.73		Williams	1999 FJ ₁₇
1999 FK ₁₇	15.7	0.15	19990323	128.41913	236.99917	184.57545	5.59548	0.1009709	2.3053515	15	1	20 days	1.00		Williams	1999 FK ₁₇
1999 FP ₁₇	13.9	0.15	19990810	279.30163	140.54968	176.17321	1.32237	0.0730608	2.6464115	38	1	62 days	0.67	M-v 6	Williams	1999 FP ₁₇
1999 FS ₁₇	15.2	0.15	19990323	167.51361	4.30268	22.39647	8.19391	0.1463870	2.5760942	10	1	26 days	0.33		Williams	1999 FS ₁₇
1999 FU ₁₇	12.9	0.15	19990810	121.97854	261.13978	195.53625	17.24706	0.0439453	3.1503720	46	1	69 days	0.56	M-v 5	Williams	1999 FU ₁₇
1999 FZ ₁₇	15.9	0.15	19990323	349.61863	153.40058	55.79172	1.73857	0.1442260	2.2737339	23	1	24 days	0.56		Williams	1999 FZ ₁₇

1999 JUNE 22

M.P.C. 35087

1999 FA ₁₈	17.0	0.15	19990412	335.14388	103.83951	134.12323	1.31872	0.1688227	2.3297885	32	1	58 days	0.71		Williams	1999 FA ₁₈
1999 FE ₁₈	14.0	0.15	19990412	353.36791	56.93533	165.10656	12.74314	0.1847307	2.8690301	35	1	59 days	0.89		Williams	1999 FE ₁₈
1999 FL ₁₈	14.7	0.15	19990323	148.16233	56.99419	330.84333	6.37272	0.1190220	2.3141744	18	1	24 days	0.66		Williams	1999 FL ₁₈
1999 FM ₁₈	13.8	0.15	19990810	12.16611	319.10633	240.89983	4.21024	0.1627588	3.1610167	22	2	1993–1999	0.66	M-v 5	Williams	34557 1999 FM ₁₈
1999 FN ₁₈	13.4	0.15	19990810	96.62174	128.01572	330.48992	7.92340	0.1077312	3.2094345	28	2	1996–1999	0.79	M-v 4	Williams	34557 1999 FN ₁₈
1999 FO ₁₈	16.3	0.15	19990323	14.56421	155.18159	7.02721	8.60191	0.2160959	2.3574751	22	1	24 days	0.92		Williams	1999 FO ₁₈
1999 FQ ₁₈	14.3	0.15	19990810	45.61938	150.66736	11.61343	8.82632	0.2111573	2.7618706	31	1	50 days	0.73	M-v 5	Williams	1999 FQ ₁₈
1999 FR ₁₈	15.1	0.15	19990810	349.29237	228.34748	15.15307	6.50937	0.1126272	2.4576644	26	2	1995–1999	0.68	M-v 5	Williams	34557 1999 FR ₁₈
1999 FV ₁₈	16.6	0.15	19990323	357.12206	175.89793	13.05273	3.87162	0.2183012	2.2364327	18	1	24 days	0.56		Williams	1999 FV ₁₈
1999 FY ₁₈	15.2	0.15	19990810	31.62581	345.87410	197.01984	4.26578	0.2293585	2.6712348	37	2	1997–1999	0.75	M-v 4	Williams	34558 1999 FY ₁₈
1999 FB ₁₉	14.7	0.15	19990810	298.92963	39.19026	256.90718	2.84542	0.0540709	2.1413373	22	2	1981–1999	0.60	M-v 5	Williams	34558 1999 FB ₁₉
1999 FF ₁₉	15.5	0.15	19990810	15.12617	350.31795	229.85996	2.92295	0.1764326	2.2308865	36	1	107 days	0.62	M-v 4	Williams	1999 FF ₁₉
1999 FJ ₁₉	13.4	0.15	19990412	309.23367	92.80049	180.16100	13.26489	0.1829899	3.1838825	40	1	55 days	0.76		Williams	1999 FJ ₁₉
1999 FK ₁₉	15.1	0.15	19990810	27.09715	125.50138	85.07889	2.63362	0.0557011	2.1386147	50	3	1993–1999	0.74	M-v 3	Williams	34558 1999 FK ₁₉
1999 FM ₁₉	13.7	0.15	19990323	328.64106	87.82637	141.16162	3.17071	0.0675680	2.7922478	38	1	28 days	0.65		Williams	1999 FM ₁₉
1999 FO ₁₉	15.5	0.15	19990810	330.98543	344.09269	312.82433	3.66194	0.3503087	2.1096080	53	3	1978–1999	0.71	M-v 4	Williams	34558 1999 FO ₁₉
1999 FQ ₁₉	17.5	0.15	19990810	27.04244	251.21468	296.48490	8.38199	0.4638185	3.0083338	49	1	52 days	0.54	M-v 4	Williams	1999 FQ ₁₉
1999 FU ₁₉	15.4	0.15	19990412	312.25008	203.12154	47.33187	4.14870	0.1206278	2.3967739	46	1	57 days	0.97		Williams	1999 FU ₁₉
1999 FV ₁₉	13.7	0.15	19990810	6.33437	209.08931	2.08946	9.17926	0.1265033	2.7442071	35	1	111 days	0.50	M-v 4	Williams	1999 FV ₁₉
1999 FX ₂₀	16.3	0.15	19990323	10.56001	96.98701	79.14761	3.10876	0.1553490	2.3698324	38	1	29 days	0.66		Williams	1999 FX ₂₀
1999 FY ₂₀	15.2	0.15	19990323	302.24152	158.77850	94.91759	3.44893	0.0380913	2.5772082	40	1	32 days	0.60		Williams	1999 FY ₂₀
1999 FE ₂₁	14.8	0.15	19990412	47.26438	125.11218	24.28002	13.87867	0.1558799	2.4081645	81	1	58 days	0.76		Williams	1999 FE ₂₁
1999 FJ ₂₁	20.6	0.15	19990810	168.80889	67.55250	19.56595	21.96157	0.2744081	1.2741743	34	1	62 days	0.66	M-v 5	Williams	1999 FJ ₂₁
1999 FN ₂₁	15.4	0.15	19990810	9.64596	296.38542	306.61959	3.31501	0.1211024	2.1687187	41	1	111 days	0.57	M-v 4	Williams	1999 FN ₂₁
1999 FO ₂₁	14.6	0.15	19990810	321.12460	37.45155	247.68847	5.94281	0.0850905	2.6202539	28	1	78 days	0.67	M-v 5	Williams	1999 FO ₂₁
1999 FP ₂₁	15.6	0.15	19990323	354.94777	24.91041	161.11177	6.21814	0.1084227	2.2893356	28	1	22 days	0.60		Williams	1999 FP ₂₁
1999 FQ ₂₁	15.5	0.15	19990810	68.42548	328.14892	177.14546	14.16399	0.0678301	2.5922246	9	1	77 days	0.85	M-v 6	Williams	1999 FQ ₂₁
1999 FR ₂₁	14.2	0.15	19990412	179.70616	341.04870	28.05535	6.41126	0.0979483	2.9387305	22	1	57 days	1.21		Williams	1999 FR ₂₁
1999 FT ₂₁	15.0	0.15	19990323	313.87904	134.78402	107.73390	2.45059	0.1177280	3.1885745	16	1	26 days	0.83		Williams	1999 FT ₂₁
1999 FH ₂₄	13.5	0.15	19990323	34.03990	276.57076	233.77523	5.45737	0.0816203	3.1659255	27	1	27 days	0.88		Williams	1999 FH ₂₄
1999 FL ₂₄	13.5	0.15	19990323	353.19253	264.32500	294.90736	3.96223	0.1099406	3.1299489	33	1	37 days	0.77		D Williams	1999 FL ₂₄
1999 FM ₂₄	14.0	0.15	19990810	22.30956	248.69068	323.01041	4.27643	0.1210681	2.2809463	41	2	1985–1999	0.57	M-v 4	Williams	34558 1999 FM ₂₄
1999 FZ ₂₄	12.9	0.15	19990323	268.89759	123.16304	164.37445	10.80370	0.0683042	3.0024805	23	1	28 days	0.73		Williams	1999 FZ ₂₄
1999 FH ₂₅	14.7	0.15	19990412	304.83622	137.97781	120.11472	6.04135	0.0952643	2.5263004	35	1	49 days	1.01		Williams	1999 FH ₂₅
1999 FL ₂₅	14.7	0.15	19990810	357.44057	125.02952	116.55861	4.55565	0.2102958	2.5521415	37	1	82 days	0.75	M-v 5	Williams	1999 FL ₂₅
1999 FN ₂₅	12.5	0.15	19990810	95.89906	298.08876	164.78455	11.32413	0.1397206	3.1542291	34	2	1996–1999	0.47	M-v 4	Williams	34558 1999 FN ₂₅
1999 FO ₂₅	15.1	0.15	19990323	77.96631	41.60417	51.42531	5.87755	0.1498858	2.2929378	27	1	28 days	0.71		Williams	1999 FO ₂₅
1999 FP ₂₅	14.0	0.15	19990323	9.29809	351.72425	187.31000	5.23951	0.0994661	3.2030905	19	1	24 days	0.56		Williams	1999 FP ₂₅
1999 FY ₂₅	15.0	0.15	19990323	282.42302	72.39344	216.56183	4.86707	0.1793923	2.2673851	21	1	27 days	0.87		Williams	1999 FY ₂₅
1999 FA ₂₆	15.1	0.15	19990323	18.52809	188.03994	340.43232	6.29473	0.0707475	2.2928729	23	1	27 days	1.01		Williams	1999 FA ₂₆
1999 FM ₂₆	15.1	0.15	19990810	7.62459	32.39110	196.88418	7.64518	0.1050905	2.3207446	44	3	1990–1999	0.70	M-v 2	Williams	34559 1999 FM ₂₆
1999 FQ ₂₆	14.8	0.15	19990810	333.92394	236.01548	33.66636	5.78449	0.2106205	2.7221523	27	2	1996–1999	0.68	M-v 4	Williams	34559 1999 FQ ₂₆
1999 FU ₂₆	14.0	0.15	19990323	287.19692	215.70447	59.32236	4.63192	0.1074171	2.6330802	24	1	28 days	0.83		Williams	1999 FU ₂₆
1999 FV ₂₆	14.5	0.15	19990810	306.31675	222.21037	75.37360	4.26493	0.1338492	2.3059617	45	4	1971–1999	0.61	M-v 2	Williams	34559 1999 FV ₂₆
1999 FZ ₂₆	13.1	0.15	19990810	6.67447	74.36747	137.88752	7.19246	0.0560059	3.0175890	36	4	1992–1999	0.67	M-v 1	Williams	34559 1999 FZ ₂₆
1999 FG ₂₇	15.7	0.15	19990323	345.91282	159.43488	47.45736	5.34935	0.1007552	2.2991841	24	1	28 days	0.55		Williams	1999 FG ₂₇
1999 FM ₂₇	16.4	0.15	19990323	19.85281	100.26336	62.50681	2.82404	0.1564762	2.3524782	24	1	24 days	0.80		Williams	1999 FM ₂₇
1999 FN ₂₇	14.0	0.15	19990323	22.31098	5.10861	160.45723	5.94825	0.0805318	2.7234217	24	1	28 days	0.54		Williams	1999 FN ₂₇
1999 FS ₂₇	13.9	0.15	19990323	227.57533	158.69882	173.56201	4.55442	0.0966142	2.7516297	21	1	24 days	0.69		Williams	1999 FS ₂₇
1999 FT ₂₇	14.4	0.15	19990810	131.23607	277.65144	178.39933	4.30874	0.0270194	2.3160652	51	4	1992–1999	0.68	M-v 1	Williams	34559 1999 FT ₂₇
1999 FU ₂₇	12.9	0.15	19990323	182.42179	356.32671	14.75700	27.22704	0.0570870	3.2560781	28	1	27 days	0.59		Williams	1999 FU ₂₇
1999 FV ₂₇	15.3	0.15	19990323	87.43183	272.80080	183.58110	6.58716	0.0673993	2.2858710	19	1	24 days	0.65		Williams	1999 FV ₂₇
1999 FX ₂₇	15.5	0.15	19990323	339.48149	198.68845	16.43416	2.80996	0.0645337	2.4437750	28	1	27 days	0.88		Williams	1999 FX ₂₇

1999 FS ₂₈	13.8	0.15	19990810	340.32215	74.33197	169.88094	2.09199	0.0222311	2.8567454	38	4	1982–1999	0.79	M-v	3	Williams	34560	1999 FS ₂₈
1999 FU ₂₈	14.0	0.15	19990810	313.62694	122.10008	186.06713	8.35020	0.2574150	2.2881216	51	2	1972–1999	0.61	M-v	4	Williams	34560	1999 FU ₂₈
1999 FV ₂₈	15.0	0.15	19990810	323.79238	112.84506	177.72991	5.36438	0.1806877	2.2034450	27	1	81 days	0.71	M-v	6	Williams		1999 FV ₂₈
1999 FW ₂₈	16.5	0.15	19990323	329.83962	198.70214	35.07575	2.72887	0.1812825	2.2992889	31	1	28 days	1.01			Williams		1999 FW ₂₈
1999 FX ₂₈	13.8	0.15	19990323	57.85177	52.16677	69.19478	1.92041	0.1384287	3.1136576	16	1	24 days	0.95			Williams		1999 FX ₂₈
1999 FA ₂₉	15.4	0.15	19990323	309.15462	238.89941	24.76072	9.46271	0.2098469	2.4032800	21	1	24 days	0.56			Williams		1999 FA ₂₉
1999 FB ₂₉	14.1	0.15	19990810	19.84941	15.20540	185.19212	19.92408	0.1297980	3.1323714	39	1	70 days	0.80	M-v	4	Williams	34612	1999 FB ₂₉
1999 FE ₂₉	16.1	0.15	19990323	359.74606	62.73290	128.31648	3.39558	0.0860488	2.3203914	26	1	28 days	0.71			Williams		1999 FE ₂₉
1999 FF ₂₉	15.9	0.15	19990323	299.57163	126.35556	145.52487	3.66107	0.1851597	2.2343426	28	1	24 days	0.66			Williams		1999 FF ₂₉
1999 FK ₂₉	16.0	0.15	19990412	74.80508	28.64758	83.31601	3.62591	0.0917389	2.2951489	29	1	59 days	0.97			Williams		1999 FK ₂₉
1999 FL ₂₉	14.7	0.15	19990323	2.07686	11.92873	177.27393	18.14598	0.1675548	3.1344117	18	1	24 days	0.67			Williams		1999 FL ₂₉
1999 FO ₂₉	13.6	0.15	19990810	238.81605	302.51451	40.05194	10.92826	0.0431944	3.0678015	29	1	61 days	1.01	M-v	5	Williams		1999 FO ₂₉
1999 FW ₂₉	14.6	0.15	19990810	109.85889	12.67807	97.11327	5.30523	0.1152392	2.2413752	29	1	81 days	0.70	M-v	5	Williams		1999 FW ₂₉
1999 FZ ₂₉	15.6	0.15	19990323	316.45489	189.92821	57.11363	3.92184	0.1337302	2.2678699	22	1	24 days	0.87			Williams		1999 FZ ₂₉
1999 FA ₃₀	14.6	0.15	19990323	47.46064	110.26251	25.18007	14.37220	0.1062061	2.5980340	26	1	24 days	0.64			Williams		1999 FA ₃₀
1999 FC ₃₀	15.5	0.15	19990810	15.02411	66.32791	157.69277	6.08450	0.1410406	2.3150986	23	1	81 days	0.64	M-v	5	Williams		1999 FC ₃₀
1999 FD ₃₀	14.1	0.15	19990323	4.75519	129.10628	57.62026	3.81932	0.1663305	3.0391384	18	1	24 days	0.76			Williams		1999 FD ₃₀
1999 FF ₃₀	14.8	0.15	19990323	83.36097	60.97247	35.55308	7.48090	0.1121707	2.2133070	23	1	28 days	0.58			Williams		1999 FF ₃₀
1999 FH ₃₀	14.9	0.15	19990323	47.19446	95.25544	36.20371	4.41271	0.1461661	2.4347538	26	1	28 days	0.74			Williams		1999 FH ₃₀
1999 FJ ₃₀	14.4	0.15	19990810	112.04407	81.09376	38.22181	2.85139	0.0372482	2.1663093	46	1	81 days	0.54	M-v	5	Williams		1999 FJ ₃₀
1999 FK ₃₀	14.1	0.15	19990412	188.13915	347.48486	24.43510	4.29497	0.0945066	2.4675654	50	1	26 days	0.76			Nakano		1999 FK ₃₀
1999 FN ₃₀	14.0	0.15	19990323	238.46444	312.29509	15.05177	7.63387	0.1211055	2.4397684	33	1	34 days	0.57			Williams		1999 FN ₃₀
1999 FO ₃₀	15.4	0.15	19990323	348.60184	21.61654	186.80484	3.18896	0.1075621	2.6203612	27	1	31 days	0.74			Williams		1999 FO ₃₀
1999 FP ₃₀	14.0	0.15	19990323	19.86611	272.90274	259.05730	4.15765	0.0910461	3.1467155	25	1	27 days	0.98			Williams		1999 FP ₃₀
1999 FS ₃₀	15.0	0.15	19990323	56.78908	226.83360	265.91534	4.12189	0.0479536	2.2345111	21	1	27 days	1.02			Williams		1999 FS ₃₀
1999 FV ₃₀	13.9	0.15	19990323	57.75898	264.04612	221.10522	4.67394	0.1313413	3.1051548	32	1	30 days	1.16			Williams		1999 FV ₃₀
1999 FW ₃₀	14.8	0.15	19990323	89.50559	283.44651	169.64287	4.50907	0.0983381	2.2841949	21	1	24 days	0.62			Williams		1999 FW ₃₀
1999 FY ₃₀	15.1	0.15	19990323	321.19637	214.80865	29.37278	5.79001	0.1439546	2.3299905	34	1	28 days	0.78			Williams		1999 FY ₃₀
1999 FB ₃₁	14.6	0.15	19990323	295.54780	107.47470	162.73511	4.66373	0.1154293	2.2173350	20	1	24 days	0.63			Williams		1999 FB ₃₁
1999 FC ₃₁	14.2	0.15	19990323	345.45842	69.99721	140.63317	4.30170	0.0329511	2.7939612	30	1	28 days	0.63			Williams		1999 FC ₃₁
1999 FD ₃₁	16.2	0.15	19990323	340.71028	171.12979	45.37631	7.01629	0.0908109	2.4418010	23	1	24 days	0.81			Williams		1999 FD ₃₁
1999 FE ₃₁	14.3	0.15	19990323	255.54227	269.70574	45.04485	10.08306	0.1534759	2.6797407	21	1	24 days	0.93			Williams		1999 FE ₃₁
1999 FF ₃₁	12.8	0.15	19990412	96.88969	285.17148	168.71054	10.92238	0.0780623	3.0208025	32	1	58 days	0.64			Williams		1999 FF ₃₁
1999 FG ₃₁	14.7	0.15	19990412	69.02599	70.26187	52.43423	7.51024	0.0560931	2.3848182	31	1	59 days	0.85			Williams		1999 FG ₃₁
1999 FL ₃₁	14.3	0.15	19990810	353.40576	195.78445	58.24618	3.15752	0.1771916	2.3947151	45	2	1992–1999	0.67	M-v	5	Williams	34560	1999 FL ₃₁
1999 FM ₃₁	15.1	0.15	19990810	8.22647	74.45200	157.36665	2.70011	0.1459374	2.4386937	41	3	1995–1999	0.75	M-v	3	Williams	34560	1999 FM ₃₁
1999 FN ₃₁	13.8	0.15	19990323	248.98468	274.97641	40.40041	6.67574	0.0692740	2.8625925	23	1	26 days	0.78			Williams		1999 FN ₃₁
1999 FP ₃₁	15.1	0.15	19990323	10.07668	7.13245	170.98684	2.62326	0.2046244	2.4000949	20	1	24 days	0.66			Williams		1999 FP ₃₁
1999 FU ₃₁	13.3	0.15	19990323	50.07543	281.63350	208.19192	21.46187	0.1777738	3.1481435	23	1	30 days	0.80			Williams		1999 FU ₃₁
1999 FW ₃₁	13.8	0.15	19990810	60.24215	296.93905	215.54072	11.42833	0.2091405	2.6812033	35	1	81 days	0.68	M-v	4	Williams		1999 FW ₃₁
1999 FA ₃₂	13.6	0.15	19990412	309.27578	87.05845	188.37945	6.73240	0.2006001	3.0679941	43	1	58 days	0.68			Williams		1999 FA ₃₂
1999 FC ₃₂	14.8	0.15	19990323	31.06325	93.78477	53.17697	4.81126	0.1400918	2.4430495	24	1	28 days	0.65			Williams		1999 FC ₃₂
1999 FD ₃₂	15.1	0.15	19990810	6.94904	103.07804	125.96297	3.01810	0.1618339	2.4642156	27	1	81 days	0.74	M-v	5	Williams		1999 FD ₃₂
1999 FF ₃₂	15.4	0.15	19990323	27.51419	132.66012	16.44176	13.01149	0.2343922	2.7862649	24	1	27 days	0.84			Williams		1999 FF ₃₂
1999 FH ₃₂	14.3	0.15	19990412	275.38357	90.52336	217.73346	3.46796	0.1875512	2.2440228	48	1	57 days	0.91			Williams		1999 FH ₃₂
1999 FJ ₃₂	13.9	0.15	19990323	329.58418	211.21026	21.18326	9.97851	0.0369826	3.0462423	29	1	29 days	0.79			Williams		1999 FJ ₃₂
1999 FK ₃₂	14.9	0.15	19990412	303.09165	262.58205	26.85155	12.16770	0.2774261	2.4213436	47	1	57 days	0.94			Williams		1999 FK ₃₂
1999 FL ₃₂	15.6	0.15	19990323	56.66950	38.21847	88.26037	3.94711	0.1180022	2.3141201	15	1	22 days	0.88			Williams		1999 FL ₃₂
1999 FN ₃₂	15.0	0.15	19990323	88.69546	98.55775	348.52966	3.68296	0.1487459	2.2561379	17	1	27 days	0.73			Williams		1999 FN ₃₂
1999 FO ₃₂	15.7	0.15	19990323	34.15132	91.65089	34.27663	5.65895	0.3506360	3.0241602	15	1	19 days	0.96			Williams		1999 FO ₃₂
1999 FP ₃₂	15.4	0.15	19990412	325.84839	253.21717	353.51944	1.33378	0.1504731	2.4001224	37	1	40 days	0.77			Williams		1999 FP ₃₂
1999 FQ ₃₂	15.3	0.15	19990810	65.33528	104.22248	53.35584	2.97208	0.1349093	2.4164564	37	2	1997–1999	0.57	M-v	4	Williams	34560	1999 FQ ₃₂
1999 FR ₃₂	13.7	0.15	19990412	246.63406	305.42691	34.07655	8.42394	0.2714141	2.3954403	39	1	59 days	0.83			Williams		1999 FR ₃₂

1999 JUNE 22

M.P.C. 35089

1999 FS ₃₂	13.7	0.15	19990810	37.65139	37.52985	142.00808	1.97535	0.1526269	3.1972361	45	1	64 days	0.65	M-v	5	Williams		1999 FS ₃₂
1999 FT ₃₂	13.0	0.15	19990810	262.38849	180.76499	167.21806	2.28058	0.0974350	2.9071587	57	4	1971–1999	0.69	M-v	2	Williams	34560	1999 FT ₃₂
1999 FU ₃₂	13.6	0.15	19990412	76.17017	305.56566	192.01129	8.20911	0.0241374	2.5712452	52	1	56 days	0.58			Williams		1999 FU ₃₂
1999 FV ₃₂	13.9	0.15	19990412	214.20978	279.90472	73.12670	14.00602	0.2498836	2.4318253	26	1	48 days	0.55			Marsden		1999 FV ₃₂
1999 FL ₃₃	15.8	0.15	19990323	338.04797	33.79731	188.61403	11.01274	0.2071535	2.6412665	24	1	35 days	0.75			Williams		1999 FL ₃₃
1999 FU ₃₃	15.9	0.15	19990323	319.03413	158.31993	90.01261	4.17265	0.2113534	2.3240939	26	1	38 days	0.70			Williams		1999 FU ₃₃
1999 FA ₃₄	13.6	0.15	19990323	60.97457	111.51778	19.19191	23.25064	0.0126296	3.1334109	35	1	28 days	0.64			Williams		1999 FA ₃₄
1999 FD ₃₄	14.6	0.15	19990810	264.80087	169.59844	172.26914	1.31804	0.1658339	2.1826508	33	2	1996–1999	0.67	M-v	6	Williams	34561	1999 FD ₃₄
1999 FE ₃₄	16.1	0.15	19990323	303.77877	69.33792	186.18079	6.35555	0.0710955	2.3081586	23	1	24 days	0.79			Williams		1999 FE ₃₄
1999 FF ₃₄	14.1	0.15	19990323	83.92763	305.69865	140.67146	3.71904	0.2041835	2.5929940	18	1	24 days	0.81			Williams		1999 FF ₃₄
1999 FG ₃₄	16.4	0.15	19990323	28.05245	65.13081	86.56027	3.27303	0.1642239	2.3550180	26	1	24 days	0.83			Williams		1999 FG ₃₄
1999 FK ₃₄	14.8	0.15	19990323	337.89140	188.39134	30.26695	15.79082	0.0942514	3.0412969	19	1	24 days	0.83			Williams		1999 FK ₃₄
1999 FL ₃₄	15.3	0.15	19990810	30.96426	45.62731	156.17802	6.55258	0.1689619	2.3352928	41	3	1992–1999	0.67	M-v	3	Williams	34561	1999 FL ₃₄
1999 FN ₃₄	15.3	0.15	19990323	295.83384	220.76064	51.44146	6.39745	0.1480422	2.2717528	17	1	24 days	0.82			Williams		1999 FN ₃₄
1999 FT ₃₄	15.0	0.15	19990323	51.02586	173.39659	314.08569	1.51631	0.1619794	2.6043823	27	1	29 days	0.82			Williams		1999 FT ₃₄
1999 FU ₃₄	12.0	0.15	19990323	267.85872	268.78551	39.86342	5.78000	0.1715983	3.9617324	22	1	24 days	0.87			Williams		1999 FU ₃₄
1999 FV ₃₄	14.3	0.15	19990323	325.07186	209.07385	29.36855	13.05519	0.1355099	2.6553671	18	1	24 days	0.71			Williams		1999 FV ₃₄
1999 FZ ₃₄	14.4	0.15	19990412	2.75464	209.80514	348.85270	5.85390	0.0479833	2.3074678	28	1	48 days	0.87			Williams		1999 FZ ₃₄
1999 FA ₃₅	14.1	0.15	19990323	46.48886	297.14346	208.42931	14.30252	0.0507523	2.6060235	32	1	30 days	0.82			Williams		1999 FA ₃₅
1999 FB ₃₅	14.6	0.15	19990323	291.55566	104.99704	168.95374	14.96810	0.1316565	2.7273704	16	1	24 days	0.71			Williams		1999 FB ₃₅
1999 FF ₃₅	14.0	0.15	19990323	20.44638	133.38098	39.42111	10.09785	0.0472022	3.0755072	21	1	24 days	0.93			Williams		1999 FF ₃₅
1999 FG ₃₅	15.2	0.15	19990412	302.93167	111.37320	165.54770	3.44373	0.1619971	2.5526711	32	1	59 days	0.84			Williams		1999 FG ₃₅
1999 FJ ₃₅	14.2	0.15	19990810	332.76931	231.73548	37.23064	14.82430	0.1365306	2.5899606	32	1	61 days	0.82	M-v	5	Williams		1999 FJ ₃₅
1999 FM ₃₆	15.9	0.15	19990303	358.31256	143.86593	28.54655	3.44264	0.1700623	2.3199243	39	1	51 days	0.56			Williams		1999 FM ₃₆
1999 FT ₄₂	14.7	0.15	19990323	135.39484	24.50050	357.03175	4.81148	0.1840739	2.2125893	17	1	17 days	0.77			Williams		1999 FT ₄₂
1999 FU ₄₆	14.5	0.15	19990810	39.70490	136.01882	17.12508	8.35107	0.2652604	3.0355151	29	1	79 days	0.57	M-v	5	Williams		1999 FU ₄₆
1999 FP ₄₇	15.0	0.15	19990412	8.38998	335.32487	194.07507	5.99401	0.0811693	2.4328984	22	1	51 days	0.60			Williams		1999 FP ₄₇
1999 FB ₅₁	14.6	0.15	19990412	48.74366	250.31604	238.90553	2.57300	0.0373904	2.1710770	30	1	56 days	0.66			Williams		1999 FB ₅₁
1999 FG ₅₁	15.7	0.15	19990303	287.45778	314.06110	312.83181	4.47168	0.2203215	2.3479494	11	1	10 days	0.92			Williams		1999 FG ₅₁
1999 FM ₅₃	15.0	0.15	19990323	326.60155	308.70635	287.34521	2.71063	0.1242332	2.9183093	20	1	21 days	0.60			Williams		1999 FM ₅₃
1999 FN ₅₃	18.4	0.15	19990810	34.70195	191.44380	50.70109	20.17000	0.4547188	1.7353165	100	1	81 days	0.54	M-v	5	Williams	34613	1999 FN ₅₃
1999 FX ₅₄	14.1	0.15	19990303	307.71507	296.49270	306.83828	3.96917	0.2034449	2.5518660	24	1	50 days	0.55			Williams		1999 FX ₅₄
1999 FP ₅₉	18.4	0.15	19990810	316.73793	303.57990	19.81806	1.77629	0.2593031	1.6994406	30	1	87 days	0.54	M-v	4	Williams	34613	1999 FP ₅₉
1999 FQ ₅₉	15.1	0.15	19990323	306.65440	140.25920	121.87483	5.78433	0.1647346	2.5769117	25	1	28 days	0.85			Williams		1999 FQ ₅₉
1999 FR ₅₉	15.9	0.15	19990323	294.10366	80.92436	177.87205	6.59330	0.0876208	2.3276539	22	1	22 days	0.73			Williams		1999 FR ₅₉
1999 GB	15.4	0.15	19990810	4.51119	292.53533	298.75223	3.73970	0.0976046	2.2959103	25	2	1994–1999	0.51	M-v	5	Williams	34561	1999 GB
1999 GC	16.9	0.15	19990323	37.66566	161.10120	338.94459	6.28791	0.1397890	2.2660728	13	1	12 days	1.33			Williams		1999 GC
1999 GD	16.4	0.15	19990323	304.72377	278.17703	338.74593	6.39565	0.1200652	2.2699435	14	1	13 days	0.94			Williams		1999 GD
1999 GF	13.4	0.15	19990323	263.64173	296.00746	358.52843	14.02827	0.1516902	2.6304743	31	1	11 days	0.81			Williams		1999 GF
1999 GG	13.4	0.15	19990412	276.59315	128.84813	163.57557	0.36695	0.1419600	3.1032197	20	1	16 days	0.79			Williams		1999 GG
1999 GJ	15.3	0.15	19990323	285.88520	264.01359	9.04842	2.44254	0.1528006	2.4448652	25	1	13 days	0.66			Williams		1999 GJ
1999 GK	15.5	0.15	19990412	21.99464	336.40293	184.65992	13.19036	0.0819021	2.5550306	30	1	13 days	0.69			Williams		1999 GK
1999 GL	15.8	0.15	19990810	17.18113	161.56741	41.50195	3.19483	0.1390628	2.3907573	16	1	60 days	0.41	M-v	5	Williams		1999 GL
1999 GM	16.1	0.15	19990323	0.12042	202.54845	338.48013	1.94369	0.1638801	2.4066598	23	1	11 days	0.99		E	Williams		1999 GM
1999 GO	13.7	0.15	19990810	281.36566	273.49901	30.08772	0.84794	0.1597203	3.0931823	34	2	1997–1999	0.72	M-v	6	Williams	34561	1999 GO
1999 GS	15.5	0.15	19990412	47.37002	120.12554	15.79899	3.56960	0.1193707	2.3871576	19	1	14 days	0.95			Williams		1999 GS
1999 GT	16.2	0.15	19990323	23.20607	318.35883	202.71706	3.66186	0.1818634	2.5534927	23	1	28 days	0.79			Williams		1999 GT
1999 GU	15.5	0.15	19990810	51.54729	173.26084	10.60765	0.89427	0.0437664	2.2307782	30	1	66 days	0.60	M-v	5	Williams	34613	1999 GU
1999 GV	14.7	0.15	19990810	72.02146	114.95346	62.46883	7.46205	0.0167709	2.2033106	68	3	1989–1999	0.56	M-v	3	Williams	34562	1999 GV
1999 GW	15.2	0.15	19990412	5.91982	70.74387	136.17158	3.57855	0.0959050	2.2058969	59	1	45 days	0.78			Williams		1999 GW
1999 GZ	14.8	0.15	19990412	4.49136	163.74179	16.33369	12.20845	0.1227381	2.6051204	28	1	14 days	0.74			Williams		1999 GZ
1999 GA ₁	15.1	0.15	19990412	347.39625	173.88171	35.70192	4.65389	0.1409487	2.4704347	38	1	47 days	0.77			Williams		1999 GA ₁
1999 GC ₁	13.4	0.15	19990323	253.43901	282.94694	15.05687	15.49475	0.0397378	3.0812363	32	1	27 days	0.65			Williams		1999 GC ₁

1999 GD ₁	15.2	0.15	19990810	332.89810	83.34526	183.79631	7.14924	0.0982448	2.3940663	39	1	94 days	0.70	M-v	4	Williams	34613	1999 GD ₁
1999 GE ₁	14.6	0.15	19990303	284.27396	267.40904	7.59977	13.39505	0.2072513	2.6680159	34	1	58 days	0.81			Williams		1999 GE ₁
1999 GF ₁	16.1	0.15	19990323	20.21039	359.98102	161.23117	2.65660	0.1096541	2.3606125	16	1	7 days	0.78		E	Williams		1999 GF ₁
1999 GG ₁	14.6	0.15	19990323	306.58109	239.02523	16.19434	8.79504	0.1422411	3.0914704	15	1	9 days	0.85			Williams		1999 GG ₁
1999 GH ₁	15.3	0.15	19990810	43.92522	131.32867	68.22505	6.69628	0.0899917	2.2411490	66	2	1995–1999	0.74	M-v	4	Williams	34562	1999 GH ₁
1999 GJ ₁	14.4	0.15	19990412	3.03630	127.36705	80.11865	6.89755	0.0692626	2.5237736	43	1	42 days	0.91			Williams		1999 GJ ₁
1999 GK ₁	14.4	0.15	19990412	18.58088	140.55883	50.36366	14.97413	0.0473824	2.6248176	57	1	42 days	0.77			Williams		1999 GK ₁
1999 GL ₁	15.0	0.15	19990412	339.58430	131.94726	113.63195	4.14668	0.2582026	2.5591014	48	1	42 days	0.63			Williams		1999 GL ₁
1999 GN ₁	14.1	0.15	19990412	349.42073	44.21007	181.73364	12.64334	0.1196469	2.6904719	30	1	40 days	0.82			Williams		1999 GN ₁
1999 GO ₁	14.2	0.15	19990810	296.87881	298.10286	340.08597	1.21862	0.0338371	2.8347998	21	2	1989–1999	0.68	M-v	6	Williams	34562	1999 GO ₁
1999 GZ ₁	16.1	0.15	19990412	89.77654	51.00500	48.06970	7.42405	0.1116708	2.1801953	74	1	40 days	0.96			Williams		1999 GZ ₁
1999 GA ₂	15.0	0.15	19990323	244.62332	205.70130	108.19131	6.68152	0.1832318	2.1879150	25	1	6 days	1.10		E	Williams		1999 GA ₂
1999 GB ₂	14.8	0.15	19990412	202.87252	301.58824	57.38327	7.51331	0.0812240	2.4889706	23	1	29 days	1.02			Williams		1999 GB ₂
1999 GD ₂	13.5	0.15	19990412	157.26077	16.70332	5.38033	10.18498	0.1168362	2.9702122	24	1	11 days	0.82			Williams		1999 GD ₂
1999 GE ₂	15.7	0.15	19990412	338.06884	183.64307	45.67695	9.35835	0.1125886	2.5783351	56	1	39 days	0.78			Williams		1999 GE ₂
1999 GF ₂	15.5	0.15	19990810	350.29406	186.02465	57.39562	7.60316	0.0726077	2.3472322	25	1	74 days	0.49	M-v	5	Williams		1999 GF ₂
1999 GG ₂	15.7	0.15	19990323	296.42979	160.05956	118.76745	3.57217	0.2826788	2.2696494	38	1	6 days	1.02		E	Williams		1999 GG ₂
1999 GJ ₂	16.7	0.15	19990810	299.61235	142.30957	196.34592	11.27705	0.1979424	1.5354178	124	1	69 days	0.64	M-v	4	Williams	34614	1999 GJ ₂
1999 GM ₂	14.5	0.15	19990412	286.15563	161.07938	146.44553	4.50383	0.1960682	2.3958297	58	1	42 days	0.77			Williams		1999 GM ₂
1999 GO ₂	16.8	0.15	19990412	341.49848	159.92879	68.56660	5.34935	0.1992217	2.2998371	22	1	14 days	0.54			Williams		1999 GO ₂
1999 GP ₂	15.1	0.15	19990412	249.49663	176.94816	148.11962	5.76734	0.1427795	3.1128283	34	1	40 days	0.35			Williams		1999 GP ₂
1999 GQ ₂	15.1	0.15	19990412	4.80405	255.85533	293.77589	9.19440	0.0460389	2.9943822	19	1	28 days	1.26			Williams		1999 GQ ₂
1999 GR ₂	15.2	0.15	19990412	59.29723	57.00673	60.28765	3.49432	0.1235512	2.4060039	30	1	46 days	0.72			Williams		1999 GR ₂
1999 GS ₂	16.8	0.15	19990412	313.25674	79.41996	182.26744	2.21694	0.2438349	2.4066516	13	1	10 days	0.74			Williams		1999 GS ₂
1999 GO ₃	13.2	0.15	19990412	247.31515	107.09818	205.94988	8.61889	0.0848751	3.1905603	19	1	10 days	1.24		E	Williams		1999 GO ₃
1999 GP ₃	13.7	0.15	19990810	348.28988	54.19268	178.48052	14.75808	0.0873592	2.6027787	52	3	1978–1999	0.56	M-v	3	Williams	34562	1999 GP ₃
1999 GQ ₃	13.9	0.15	19990412	250.06441	130.07174	201.90335	7.41850	0.1415040	2.6150023	46	1	34 days	0.76			Williams		1999 GQ ₃
1999 GS ₃	16.2	0.15	19990810	39.85541	106.68759	45.21917	28.05508	0.4235075	2.6158710	81	1	31 days	0.61	M-v	5	Williams		1999 GS ₃
1999 GT ₃	17.9	0.15	19990412	41.17039	260.53193	157.94914	19.53517	0.8379923	1.3346805	65	1	26 days	0.81			Williams		1999 GT ₃
1999 GU ₃	19.6	0.15	19990810	38.67466	8.66208	195.72610	12.74982	0.5070492	2.0818601	240	1	38 days	0.57	M-v	5	Williams	34614	1999 GU ₃
1999 GV ₃	16.3	0.15	19990323	341.30322	68.85225	148.12667	1.71304	0.2375318	2.7723221	11	1	6 days	0.99		E	Williams		1999 GV ₃
1999 GY ₃	15.1	0.15	19990810	359.02192	255.58678	8.86847	28.52533	0.3477411	2.6238548	30	1	66 days	0.75	M-v	5	Williams		1999 GY ₃
1999 GZ ₃	15.8	0.15	19990810	125.97784	231.81081	246.53929	4.87635	0.0877892	2.2568198	24	2	1998–1999	0.56	M-v	4	Williams	34562	1999 GZ ₃
1999 GC ₄	15.7	0.15	19990810	61.03792	318.49552	198.79763	11.86403	0.1998582	2.5936422	33	1	61 days	0.77	M-v	5	Williams		1999 GC ₄
1999 GD ₄	14.4	0.15	19990810	356.73779	32.33684	228.70298	13.85343	0.1077692	2.4429543	46	1	63 days	0.49	M-v	5	Williams		1999 GD ₄
1999 GE ₄	14.4	0.15	19990810	154.27438	211.87695	233.88636	12.44984	0.1103193	2.6478985	32	1	62 days	0.64	M-v	5	Williams		1999 GE ₄
1999 GF ₄	15.0	0.15	19990412	353.97250	168.77338	28.27133	11.67106	0.1104692	2.6939244	39	1	46 days	0.60			Williams		1999 GF ₄
1999 GG ₄	12.7	0.15	19990412	213.66514	206.63469	124.42393	2.57371	0.0203487	3.0085562	16	1	3 days	0.83		E	Williams		1999 GG ₄
1999 GH ₄	14.9	0.15	19990502	0.40812	330.47307	243.53679	5.94274	0.0710742	2.3678476	58	1	56 days	0.72			Williams		1999 GH ₄
1999 GJ ₄	14.9	0.15	19990810	302.55800	211.78671	148.39401	34.59596	0.8080505	1.3385588	47	1	65 days	0.71	M-v	6	Williams		1999 GJ ₄
1999 GK ₄	16.1	0.15	19990810	352.04047	146.60970	168.46813	5.28145	0.4920596	1.9610474	239	1	115 days	0.56	M-v	4	Williams	34614	1999 GK ₄
1999 GL ₄	19.5	0.15	19990810	63.85948	293.59473	178.76248	7.24287	0.6025886	2.1167482	45	1	40 days	0.65	M-v	6	Williams		1999 GL ₄
1999 GM ₄	13.9	0.15	19990810	264.80844	294.09207	28.79259	7.05004	0.1143149	2.6876610	35	2	1996–1999	0.88	M-v	5	Williams	34562	1999 GM ₄
1999 GP ₄	14.5	0.15	19990412	321.10643	198.23572	56.54846	9.82800	0.1071268	2.6021371	41	1	36 days	0.72			Williams		1999 GP ₄
1999 GQ ₄	12.6	0.15	19990412	346.04316	47.70759	175.66409	10.71603	0.0142003	3.1191347	58	1	39 days	0.68			Williams		1999 GQ ₄
1999 GR ₄	15.1	0.15	19990412	313.79712	195.19318	68.42755	7.25299	0.1108885	2.3965789	28	1	36 days	0.65			Williams		1999 GR ₄
1999 GS ₄	14.2	0.15	19990810	333.04133	111.40205	175.81716	5.20892	0.1401787	2.3886394	67	2	1995–1999	0.55	M-v	4	Williams	34562	1999 GS ₄
1999 GT ₄	14.4	0.15	19990412	321.99188	209.50242	48.86878	1.85380	0.1521155	3.0903517	22	1	36 days	0.83			Williams		1999 GT ₄
1999 GW ₄	17.1	0.15	19990412	24.87347	131.14908	42.45251	7.13823	0.1659640	2.3853636	15	1	8 days	1.07		E	Williams		1999 GW ₄
1999 GX ₄	15.4	0.15	19990810	81.79583	337.07090	154.37969	2.60356	0.1643613	2.5579792	29	1	67 days	0.65	M-v	6	Williams		1999 GX ₄
1999 GZ ₄	14.7	0.15	19990810	27.49813	24.88368	207.86743	5.33780	0.1441698	2.3306878	58	2	1998–1999	0.60	M-v	3	Williams	34563	1999 GZ ₄
1999 GA ₅	14.2	0.15	19990810	143.22726	67.69750	26.03633	14.95875	0.0705438	2.5757788	40	1	79 days	0.76	M-v	5	Williams		1999 GA ₅
1999 GB ₅	13.3	0.15	19990810	55.03037	25.56212	111.67792	12.66420	0.1711831	3.0494932	33	2	1997–1999	0.62	M-v	3	Williams	34563	1999 GB ₅

1999 GC ₅	12.8	0.15	19990502	70.12387	331.50950	126.13731	15.34809	0.1588888	3.1982335	25	1	43 days	0.68		Nakano	1999 GC ₅	
1999 GD ₅	14.2	0.15	19990810	71.19672	4.82586	133.92565	7.09832	0.1859839	2.5540080	34	1	61 days	0.61	M-v	5	Nakano	1999 GD ₅
1999 GE ₅	13.0	0.15	19990810	187.67628	262.97370	127.20143	9.80846	0.1726329	2.7625949	25	2	1994–1999	0.73	M-v	6	Williams	34563 1999 GE ₅
1999 GF ₅	14.4	0.15	19990810	58.73201	50.13401	99.79955	23.31144	0.2174090	2.3047601	24	1	64 days	0.29	M-v	4	Williams	1999 GF ₅
1999 GH ₅	16.1	0.15	19990323	98.69086	46.09326	23.63857	3.17906	0.1418205	2.2317160	14	1	8 days	0.75			Williams	1999 GH ₅
1999 GK ₅	14.6	0.15	19990323	74.13287	278.10315	167.98074	4.55915	0.2029313	2.8128936	20	1	6 days	0.66		E	Williams	1999 GK ₅
1999 GR ₅	14.3	0.15	19990810	124.03645	236.82772	235.86897	8.84343	0.0529812	2.9747315	21	1	66 days	0.81	M-v	6	Williams	1999 GR ₅
1999 GT ₅	13.8	0.15	19990412	118.93739	318.89269	108.50758	0.53331	0.1908201	3.0499182	10	1	23 days	1.07			Williams	1999 GT ₅
1999 GV ₅	15.6	0.15	19990502	33.21253	311.13162	229.79466	10.60108	0.0848161	2.7225280	42	1	35 days	1.10			Williams	1999 GV ₅
1999 GX ₅	13.9	0.15	19990810	227.34908	109.16567	272.58961	3.50231	0.0820327	2.4187388	47	3	1978–1999	0.66	M-v	4	Williams	34563 1999 GX ₅
1999 GY ₅	19.9	0.15	19990810	148.21072	232.05364	203.53162	24.45071	0.6143118	1.1460625	79	1	31 days	0.54	M-v	7	Williams	1999 GY ₅
1999 GB ₆	13.7	0.15	19990323	242.33011	171.19267	145.11534	1.52463	0.1705956	3.1053977	21	1	8 days	0.77		E	Williams	1999 GB ₆
1999 GC ₆	13.1	0.15	19990810	342.16012	201.78524	61.06979	15.97775	0.0826603	2.5378346	53	1	76 days	0.66	M-v	4	Williams	1999 GC ₆
1999 GF ₆	14.1	0.15	19990412	137.71543	278.92788	141.76593	6.48906	0.1129190	2.4355759	33	1	31 days	0.86			Williams	1999 GF ₆
1999 GG ₆	14.2	0.15	19990412	36.78311	353.41990	171.54973	9.16011	0.0850668	2.7942681	29	1	35 days	0.88			Williams	1999 GG ₆
1999 GH ₆	15.9	0.15	19990412	1.51064	44.70930	159.84565	5.20182	0.1830056	2.3850004	39	1	38 days	1.00			Williams	1999 GH ₆
1999 GL ₆	15.2	0.15	19990810	347.21088	105.78604	193.24616	10.81631	0.2347314	2.2987841	51	1	61 days	0.44	M-v	4	Williams	1999 GL ₆
1999 GM ₆	15.3	0.15	19990412	68.05149	34.51573	87.71649	5.84017	0.1009437	2.4039097	35	1	34 days	0.56			Williams	1999 GM ₆
1999 GN ₆	14.2	0.15	19990810	223.44862	86.07415	293.98611	0.96135	0.0848807	2.9345740	35	1	65 days	0.83	M-v	5	Williams	1999 GN ₆
1999 GO ₆	14.2	0.15	19990810	102.69505	117.85718	7.10343	3.93943	0.1477162	2.6710452	37	1	69 days	0.64	M-v	6	Williams	1999 GO ₆
1999 GP ₆	16.3	0.15	19990412	356.93215	68.28925	124.04576	24.31280	0.0432576	1.9643588	8	1	8 days	0.16			Williams	1999 GP ₆
1999 GQ ₆	16.4	0.15	19990412	3.95074	64.76400	136.83244	7.36296	0.1768917	2.3969116	20	1	30 days	0.78			Williams	1999 GQ ₆
1999 GS ₆	19.7	0.15	19990810	147.08676	134.63169	314.81219	2.02286	0.4972226	1.1907038	93	1	49 days	0.58	M-v	6	Williams	1999 GS ₆
1999 GT ₆	16.9	0.15	19990810	358.68277	66.15524	217.72818	4.28401	0.5754333	2.8234756	103	1	42 days	0.72	M-v	5	Williams	1999 GT ₆
1999 GA ₇	15.6	0.15	19990412	359.35830	14.05020	194.45233	21.20170	0.1429222	2.3156526	38	1	35 days	0.81			Williams	1999 GA ₇
1999 GB ₇	14.8	0.15	19990810	18.98979	21.25335	206.43790	23.26986	0.1784278	2.4006596	42	1	75 days	0.73	M-v	4	Williams	1999 GB ₇
1999 GF ₇	14.4	0.15	19990412	275.10172	105.38821	181.73992	5.58986	0.1154275	2.4374806	21	1	17 days	0.57			Williams	1999 GF ₇
1999 GG ₇	15.5	0.15	19990323	327.61137	143.69115	80.05425	7.26964	0.1110200	2.3378574	11	1	6 days	0.60		E	Williams	1999 GG ₇
1999 GJ ₇	15.2	0.15	19990323	329.23354	75.13711	160.70802	13.38103	0.2733305	2.6560709	18	1	26 days	0.84			Williams	1999 GJ ₇
1999 GK ₇	16.0	0.15	19990323	354.88621	335.48016	222.12442	2.36510	0.1469117	2.4200747	15	1	8 days	0.80			Williams	1999 GK ₇
1999 GL ₇	13.8	0.15	19990323	137.58609	202.21823	200.29615	11.68543	0.2132937	3.0918206	11	1	8 days	1.07			Williams	1999 GL ₇
1999 GM ₇	16.1	0.15	19990323	277.63847	135.57400	155.79291	0.87300	0.1564846	2.1970018	15	1	20 days	0.91			Williams	1999 GM ₇
1999 GN ₇	16.0	0.15	19990323	332.20342	48.54280	190.61366	4.73689	0.2682796	3.0403756	11	1	5 days	0.72		E	Williams	1999 GN ₇
1999 GQ ₇	15.7	0.15	19990323	67.29736	309.48611	162.45970	1.65114	0.1001581	2.2361853	17	1	23 days	0.66		D	Williams	1999 GQ ₇
1999 GR ₇	13.9	0.15	19990323	113.35519	241.17899	175.50026	3.29002	0.2417871	2.5338493	11	1	5 days	1.00		E	Williams	1999 GR ₇
1999 GS ₇	15.0	0.15	19990323	286.69736	119.84356	165.06315	2.40975	0.1732137	2.5995599	19	1	20 days	0.82			Williams	1999 GS ₇
1999 GX ₇	13.4	0.15	19990810	329.08206	279.49923	341.13960	12.20543	0.1538003	2.5462566	28	1	146 days	0.60	M-v	4	Williams	1999 GX ₇
1999 GB ₈	15.8	0.15	19990323	17.22916	221.66981	298.25368	3.02006	0.0945505	2.3251211	16	1	9 days	0.81		E	Williams	1999 GB ₈
1999 GD ₈	14.2	0.15	19990412	254.84222	59.51054	248.13585	1.93582	0.0475997	2.7769673	11	1	6 days	0.64		E	Williams	1999 GD ₈
1999 GE ₈	15.3	0.15	19990412	81.71528	246.72343	221.03928	6.08501	0.0760629	2.3177007	11	1	6 days	0.52			Williams	1999 GE ₈
1999 GF ₈	14.1	0.15	19990412	158.31509	179.86879	211.63142	6.87197	0.2252997	2.7242364	14	1	6 days	1.15		E	Williams	1999 GF ₈
1999 GH ₈	16.5	0.15	19990323	24.82599	241.00536	278.58300	1.44978	0.1390279	2.3723365	15	1	8 days	0.93			Williams	1999 GH ₈
1999 GJ ₈	15.7	0.15	19990412	352.16089	211.90165	0.29778	5.16104	0.2212274	2.5582156	15	1	6 days	0.65			Williams	1999 GJ ₈
1999 GK ₈	15.8	0.15	19990412	318.84016	355.77551	259.73960	2.10295	0.1678997	2.5494246	10	1	6 days	0.68			Williams	1999 GK ₈
1999 GL ₈	14.8	0.15	19990323	80.06865	237.68791	214.28192	5.48241	0.1931040	2.3325366	19	1	8 days	0.77			Williams	1999 GL ₈
1999 GM ₈	15.4	0.15	19990323	167.64249	14.39625	11.71049	14.00332	0.0516263	2.3224254	10	1	4 days	0.40			Williams	1999 GM ₈
1999 GN ₈	14.4	0.15	19990412	5.40370	21.45750	178.93577	7.83449	0.0722903	2.4405092	43	1	37 days	0.81			Williams	1999 GN ₈
1999 GP ₈	15.9	0.15	19990412	39.52716	92.67186	64.19014	5.32459	0.1382267	2.2418475	24	1	37 days	1.18			Williams	1999 GP ₈
1999 GS ₈	15.5	0.15	19990323	159.31781	325.48238	77.43508	4.93744	0.0230616	2.1964184	11	1	2 days	0.95		E	Williams	1999 GS ₈
1999 GU ₈	15.9	0.15	19990412	278.41396	248.22865	66.03523	6.52751	0.2076586	2.2037403	34	1	39 days	1.13			Williams	1999 GU ₈
1999 GY ₈	14.7	0.15	19990412	329.57455	110.84855	134.61146	4.73550	0.0579123	2.8772670	29	1	39 days	1.15			Williams	1999 GY ₈
1999 GZ ₈	15.8	0.15	19990810	37.62475	50.25636	154.93673	4.48545	0.1179033	2.2945706	32	1	67 days	0.74	M-v	5	Williams	1999 GZ ₈
1999 GB ₉	14.4	0.15	19990412	337.18974	47.94718	197.07759	12.61434	0.1398747	2.6919035	49	1	39 days	0.68			Williams	1999 GB ₉

1999 GD ₉	14.5	0.15	19990412	36.03308	126.90812	45.38095	12.12068	0.0501340	2.5417452	31	1	39 days	0.80	Williams	1999 GD ₉
1999 GF ₉	13.7	0.15	19990412	252.78356	133.90947	201.49594	14.39193	0.1374692	2.5475671	30	1	37 days	0.82	Williams	1999 GF ₉
1999 GH ₉	15.8	0.15	19990412	323.28835	295.35491	306.61509	4.11528	0.1092698	2.1887925	16	1	4 days	0.74	E Williams	1999 GH ₉
1999 GJ ₉	15.5	0.15	19990412	328.33206	332.82064	280.93900	4.66395	0.2925171	2.4177481	15	1	4 days	0.95	Williams	1999 GJ ₉
1999 GL ₉	12.0	0.15	19990412	88.73017	147.57714	298.49034	7.19233	0.1769279	3.1535195	15	1	4 days	0.88	E Williams	1999 GL ₉
1999 GM ₉	14.3	0.15	19990412	74.34280	140.07407	319.56699	6.74711	0.1800732	2.4094343	15	1	4 days	1.14	E Williams	1999 GM ₉
1999 GN ₉	12.8	0.15	19990412	269.74081	300.02022	349.59964	21.84418	0.0551345	3.1705028	16	1	4 days	0.88	E Williams	1999 GN ₉
1999 GT ₉	16.1	0.15	19990412	319.21168	103.78415	153.62542	6.00008	0.1588317	2.3376606	22	1	34 days	0.61	Williams	1999 GT ₉
1999 GU ₉	14.5	0.15	19990412	122.70846	247.61964	181.77763	15.32873	0.1416124	2.5399202	22	1	46 days	0.83	Williams	1999 GU ₉
1999 GJ ₁₀	15.0	0.15	19990412	266.58993	235.44730	49.92932	1.12951	0.0333258	2.8356387	10	1	6 days	0.82	E Williams	1999 GJ ₁₀
1999 GQ ₁₀	15.2	0.15	19990412	4.21721	73.06237	116.72536	0.27259	0.1712341	3.0981735	17	1	9 days	0.42	Williams	1999 GQ ₁₀
1999 GR ₁₀	13.4	0.15	19990412	73.21272	87.24340	17.30659	12.12073	0.1558966	2.8735858	23	1	9 days	0.74	E Williams	1999 GR ₁₀
1999 GS ₁₀	14.1	0.15	19990412	210.03627	332.52422	18.88456	9.11580	0.1211513	3.0806802	11	1	5 days	1.07	E Williams	1999 GS ₁₀
1999 GV ₁₀	13.5	0.15	19990412	202.26642	192.81560	169.16057	2.19762	0.2333455	3.0474297	11	1	5 days	0.76	E Williams	1999 GV ₁₀
1999 GZ ₁₀	15.5	0.15	19990412	173.96591	355.03936	25.86473	7.86530	0.2654274	2.2955459	9	1	5 days	1.01	E Williams	1999 GZ ₁₀
1999 GA ₁₁	17.9	0.15	19990412	345.97960	168.06016	52.16663	1.48678	0.1996338	2.2166729	10	1	5 days	1.07	E Williams	1999 GA ₁₁
1999 GG ₁₁	15.0	0.15	19990412	279.21251	103.45311	187.23155	13.52130	0.1845851	2.6093081	30	1	28 days	0.63	Williams	1999 GG ₁₁
1999 GX ₁₁	16.0	0.15	19990412	271.45989	146.04373	182.01575	2.01245	0.2350429	2.2622177	14	1	38 days	0.59	Williams	1999 GX ₁₁
1999 GT ₁₂	14.8	0.15	19990323	38.46604	315.40240	201.11433	7.49596	0.0798001	3.1806193	10	1	7 days	0.28	Williams	1999 GT ₁₂
1999 GY ₁₂	16.2	0.15	19990412	24.83138	323.03069	213.80460	11.70258	0.1009157	2.7578848	12	1	34 days	0.97	Williams	1999 GY ₁₂
1999 GG ₁₃	16.8	0.15	19990412	3.96238	341.88689	219.08196	3.30546	0.2007413	2.3247292	11	1	4 days	0.68	E Williams	1999 GG ₁₃
1999 GA ₁₄	14.7	0.15	19990412	62.99236	295.64532	168.97931	1.57453	0.1867187	3.1191736	27	1	13 days	1.25	E Williams	1999 GA ₁₄
1999 GD ₁₄	15.1	0.15	19990412	116.22398	283.21750	146.60216	1.05813	0.0359938	2.5371771	11	1	5 days	0.60	E Williams	1999 GD ₁₄
1999 GS ₁₄	17.0	0.15	19990412	323.81292	45.55586	201.82033	3.16233	0.1086947	2.1719142	15	1	2 days	0.93	Williams	1999 GS ₁₄
1999 GY ₁₄	14.6	0.15	19990412	80.58502	328.70059	137.24944	0.57513	0.1553115	3.1299526	14	1	26 days	0.74	Williams	1999 GY ₁₄
1999 GE ₁₅	14.8	0.15	19990810	27.69013	108.48364	103.09864	9.08737	0.1675729	2.4209880	34	1	72 days	0.69	M-v 4 Williams	1999 GE ₁₅
1999 GZ ₁₅	14.8	0.15	19990323	165.51964	215.08515	174.13402	8.48380	0.1686218	2.3239844	24	1	5 days	1.07	Williams	1999 GZ ₁₅
1999 GA ₁₆	14.4	0.15	19990323	107.90448	300.37332	138.86116	5.17332	0.1068775	2.6225698	26	1	5 days	1.20	E Williams	1999 GA ₁₆
1999 GB ₁₆	15.3	0.15	19990323	48.80929	287.88779	196.43635	16.72856	0.1994451	2.7594543	15	1	5 days	1.56	E Williams	1999 GB ₁₆
1999 GC ₁₆	16.2	0.15	19990323	337.68549	203.69964	19.83527	8.88128	0.1702263	2.5576759	30	1	20 days	1.31	Williams	1999 GC ₁₆
1999 GD ₁₆	16.7	0.15	19990323	326.67661	207.43338	25.19341	4.69167	0.1033091	2.3103226	31	1	20 days	1.11	Williams	1999 GD ₁₆
1999 GE ₁₆	16.2	0.15	19990323	322.30522	218.46957	26.50367	3.31278	0.1835152	2.3688132	27	1	20 days	0.57	Williams	1999 GE ₁₆
1999 GG ₁₆	14.5	0.15	19990323	31.70248	111.39121	41.99202	1.12612	0.1309133	3.1697137	34	1	22 days	0.88	Williams	1999 GG ₁₆
1999 GL ₁₆	14.4	0.15	19990412	59.46815	332.64064	157.87759	6.72567	0.1216787	3.1979781	38	1	39 days	1.14	Williams	1999 GL ₁₆
1999 GM ₁₆	16.9	0.15	19990323	5.85214	138.84827	44.02314	1.22480	0.1594365	2.1862682	13	1	3 days	1.11	E Williams	1999 GM ₁₆
1999 GN ₁₆	14.6	0.15	19990323	119.57225	43.94629	24.11370	10.25557	0.0781272	3.0388483	24	1	20 days	1.15	Williams	1999 GN ₁₆
1999 GR ₁₆	13.0	0.15	19990412	89.34292	254.65146	183.72437	10.27997	0.1529097	2.9471634	13	1	4 days	1.08	E Williams	1999 GR ₁₆
1999 GU ₁₆	13.8	0.15	19990502	12.11556	134.55283	42.61506	13.65780	0.1196109	2.6804853	35	1	59 days	0.74	Williams	1999 GU ₁₆
1999 GV ₁₆	12.5	0.15	19990502	263.78704	208.50168	83.39895	10.99757	0.0592531	3.0009567	23	1	58 days	0.69	Williams	1999 GV ₁₆
1999 GW ₁₆	13.2	0.15	19990412	306.34864	123.52879	140.96733	11.38532	0.2146730	2.5749461	15	1	4 days	0.62	E Williams	1999 GW ₁₆
1999 GX ₁₆	13.7	0.15	19990323	354.98675	50.92411	138.04295	6.98036	0.0737500	2.3266171	26	1	49 days	0.76	Williams	1999 GX ₁₆
1999 GY ₁₆	14.0	0.15	19990323	21.54243	22.92878	135.60163	6.96902	0.0728706	2.4274883	25	1	49 days	0.71	Williams	1999 GY ₁₆
1999 GZ ₁₆	14.1	0.15	19990412	134.38476	279.56390	119.62411	4.37423	0.2313508	2.1425520	13	1	4 days	1.04	E Williams	1999 GZ ₁₆
1999 GB ₁₇	13.2	0.15	19990810	28.88082	166.83385	21.24348	13.46337	0.1131407	2.6771807	43	1	108 days	0.79	M-v 4 Williams	1999 GB ₁₇
1999 GC ₁₇	11.5	0.15	19990502	116.17730	298.38504	132.49905	15.44563	0.0260715	3.2207778	22	1	58 days	0.73	Williams	1999 GC ₁₇
1999 GD ₁₇	15.0	0.15	19990412	312.85184	199.31754	55.69554	11.87606	0.1887195	2.4384111	18	1	6 days	0.78	Williams	1999 GD ₁₇
1999 GE ₁₇	12.8	0.15	19990412	191.51417	346.62564	17.17442	12.43253	0.2786731	2.4453809	15	1	4 days	0.74	E Williams	1999 GE ₁₇
1999 GF ₁₇	14.1	0.15	19990412	344.42217	59.09709	153.73145	0.94498	0.1243167	3.2252495	16	1	6 days	0.92	E Marsden	1999 GF ₁₇
1999 GH ₁₇	15.8	0.15	19990412	307.62895	96.14389	178.01735	5.80022	0.2553580	2.2720038	13	1	4 days	0.88	E Williams	1999 GH ₁₇
1999 GJ ₁₇	15.0	0.15	19990412	2.60558	68.67899	120.70492	3.25944	0.1834069	2.6645151	22	1	7 days	0.63	Williams	1999 GJ ₁₇
1999 GK ₁₇	14.0	0.15	19990810	56.20777	25.40045	134.47164	6.90663	0.1646397	2.3721893	28	1	108 days	0.60	M-v 4 Williams	1999 GK ₁₇
1999 GL ₁₇	12.4	0.15	19990502	178.33666	262.22089	112.06989	13.19488	0.1210269	2.6244772	20	1	58 days	0.51	Williams	1999 GL ₁₇
1999 GM ₁₇	12.2	0.15	19990412	95.15772	11.95422	75.24099	10.83502	0.0775565	3.0113647	15	1	4 days	0.83	E Williams	1999 GM ₁₇

1999 JUNE 22

M.P.C. 35093

1999 GN ₁₇	13.1	0.15	19990412	243.40190	278.59164	44.62879	13.85597	0.1659552	2.3285115	15	1	4 days	0.91	E	Williams	1999 GN ₁₇
1999 GQ ₁₇	15.9	0.15	19990412	334.30699	150.73748	85.92312	2.96233	0.2315938	2.2584723	14	1	4 days	0.86	E	Williams	1999 GQ ₁₇
1999 GT ₁₇	14.9	0.15	19990323	320.50664	171.28013	62.89532	6.87562	0.0822151	2.3445750	19	1	24 days	0.68		Williams	1999 GT ₁₇
1999 GU ₁₇	14.7	0.15	19990412	347.87273	179.05691	35.53290	16.59298	0.2554771	2.9421818	15	1	4 days	1.30	E	Williams	1999 GU ₁₇
1999 GV ₁₇	15.0	0.15	19990412	1.37308	102.95579	89.28544	6.97054	0.1543558	2.3798386	13	1	4 days	0.72	E	Williams	1999 GV ₁₇
1999 GX ₁₇	13.2	0.15	19990412	144.83642	305.87826	98.86622	9.52512	0.0365875	2.6802062	14	1	4 days	0.87	E	Williams	1999 GX ₁₇
1999 GY ₁₇	14.2	0.15	19990502	341.65226	162.14417	59.33992	14.71287	0.1277376	2.7098791	26	1	59 days	0.78		Williams	1999 GY ₁₇
1999 GA ₁₈	14.6	0.15	19990810	345.85094	229.89500	17.00168	4.32636	0.1003271	2.2003075	35	1	146 days	0.76	M-v	5 Williams	1999 GA ₁₈
1999 GE ₁₈	15.2	0.15	19990412	333.03331	145.33840	73.60379	7.14825	0.0774408	2.2685316	18	1	6 days	0.95		Williams	1999 GE ₁₈
1999 GF ₁₈	15.8	0.15	19990412	338.48954	151.84815	70.90710	3.18578	0.1807113	2.3856077	17	1	5 days	0.81	E	Williams	1999 GF ₁₈
1999 GG ₁₈	14.5	0.15	19990412	350.49117	36.29152	165.37720	5.61731	0.0819883	2.6287038	17	1	5 days	0.94	E	Williams	1999 GG ₁₈
1999 GH ₁₈	14.5	0.15	19990323	329.44346	178.31417	49.07062	1.79190	0.1394473	3.2029511	22	1	23 days	0.78		Williams	1999 GH ₁₈
1999 GJ ₁₈	13.8	0.15	19990412	78.21662	272.86193	181.40169	19.61057	0.1772059	2.7883191	18	1	5 days	0.73	E	Williams	1999 GJ ₁₈
1999 GK ₁₈	14.3	0.15	19990412	348.45341	150.55922	57.15986	8.83827	0.1460129	2.9374989	12	1	4 days	1.45	E	Williams	1999 GK ₁₈
1999 GL ₁₈	15.2	0.15	19990412	279.00903	238.83534	51.31082	4.50815	0.1257347	2.2227907	25	1	45 days	0.75		Williams	1999 GL ₁₈
1999 GO ₁₈	15.5	0.15	19990412	359.62093	80.00767	117.25965	7.00048	0.2037935	2.4109012	13	1	4 days	0.53	E	Williams	1999 GO ₁₈
1999 GR ₁₈	14.8	0.15	19990412	30.11734	82.35682	67.98421	12.46609	0.2090496	2.5871902	17	1	7 days	0.56		Williams	1999 GR ₁₈
1999 GT ₁₈	14.9	0.15	19990412	326.75080	167.58457	76.50429	1.83288	0.1547826	2.4034656	17	1	9 days	0.61	E	Williams	1999 GT ₁₈
1999 GU ₁₈	15.3	0.15	19990412	33.46184	79.60444	74.07694	5.79537	0.1502378	2.2591583	15	1	4 days	0.71	E	Williams	1999 GU ₁₈
1999 GV ₁₈	12.3	0.15	19990412	350.60149	46.77541	164.23793	18.31290	0.1180989	3.1379731	15	1	4 days	0.65	E	Williams	1999 GV ₁₈
1999 GY ₁₈	14.8	0.15	19990412	27.03117	119.38635	44.00334	10.47609	0.1510114	2.4309248	15	1	4 days	1.26	E	Williams	1999 GY ₁₈
1999 GZ ₁₈	12.6	0.15	19990412	134.83109	336.88523	75.65815	12.86199	0.1428054	2.7135966	14	1	4 days	0.87	E	Williams	1999 GZ ₁₈
1999 GA ₁₉	13.6	0.15	19990412	312.25241	195.98301	62.12784	14.42787	0.1318551	2.5690524	15	1	4 days	0.74	E	Williams	1999 GA ₁₉
1999 GD ₁₉	14.1	0.15	19990412	282.50389	139.92172	149.69008	13.34160	0.1039558	2.6505972	13	1	4 days	1.02	E	Williams	1999 GD ₁₉
1999 GE ₁₉	15.4	0.15	19990412	356.86387	72.24858	133.32573	9.02285	0.2190013	2.3009209	14	1	4 days	0.70	E	Williams	1999 GE ₁₉
1999 GG ₁₉	14.8	0.15	19990412	328.58795	118.05856	123.10521	7.77421	0.1354915	2.3755033	14	1	4 days	0.84	E	Williams	1999 GG ₁₉
1999 GH ₁₉	14.1	0.15	19990412	303.94627	102.18497	176.48915	11.39590	0.1965916	3.0511403	42	1	39 days	0.85		Williams	1999 GH ₁₉
1999 GL ₁₉	14.3	0.15	19990412	15.57513	353.68451	192.55039	6.38968	0.0451214	2.3609395	28	1	32 days	0.45		Williams	1999 GL ₁₉
1999 GM ₁₉	13.0	0.15	19990412	23.62731	138.01189	35.91595	6.56249	0.1240710	3.1193253	22	1	9 days	0.89		Williams	1999 GM ₁₉
1999 GN ₁₉	15.6	0.15	19990412	34.52315	126.83133	34.86115	3.56180	0.1057464	2.2413507	33	1	37 days	0.87		Williams	1999 GN ₁₉
1999 GO ₁₉	13.5	0.15	19990323	81.40346	86.54433	29.11248	5.40163	0.0309299	2.7879311	29	1	18 days	1.22		Williams	1999 GO ₁₉
1999 GP ₁₉	14.6	0.15	19990412	27.02651	142.96549	27.98908	14.47134	0.1123067	2.6114062	33	1	37 days	0.68		Williams	1999 GP ₁₉
1999 GT ₁₉	13.0	0.15	19990412	352.70432	82.37915	128.37100	12.86691	0.0587004	3.1101660	15	1	4 days	0.83	E	Williams	1999 GT ₁₉
1999 GU ₁₉	12.6	0.15	19990412	202.08348	255.20597	110.84516	10.36539	0.1720486	2.7435016	14	1	4 days	0.81	E	Williams	1999 GU ₁₉
1999 GV ₁₉	14.6	0.15	19990412	359.33332	35.24993	168.57292	12.93934	0.1030720	2.5224526	14	1	4 days	0.65	E	Williams	1999 GV ₁₉
1999 GX ₁₉	15.5	0.15	19990412	301.14179	112.60353	181.14473	4.73705	0.2653625	2.2199666	49	1	39 days	0.67		Williams	1999 GX ₁₉
1999 GZ ₁₉	15.2	0.15	19990412	309.65519	230.65037	42.23540	4.47086	0.1663103	2.2827736	34	1	38 days	0.71		Williams	1999 GZ ₁₉
1999 GE ₂₀	15.1	0.15	19990412	313.80656	195.00646	70.18101	8.72968	0.1690077	2.5837893	31	1	34 days	0.88		Williams	1999 GE ₂₀
1999 GF ₂₀	13.5	0.15	19990412	13.11376	116.79570	69.72132	12.29678	0.1022013	3.0778049	26	1	45 days	0.85		Williams	1999 GF ₂₀
1999 GK ₂₀	13.3	0.15	19990412	231.18057	222.16347	122.23422	4.68180	0.1145763	2.6573321	24	1	31 days	0.66		Williams	1999 GK ₂₀
1999 GM ₂₀	15.4	0.15	19990412	327.06312	150.70423	99.27450	3.24370	0.1533582	2.4268199	26	1	33 days	0.85		Williams	1999 GM ₂₀
1999 GO ₂₀	15.2	0.15	19990412	295.43503	235.18107	52.23616	5.01186	0.1440394	2.2872765	31	1	34 days	0.68		Williams	1999 GO ₂₀
1999 GP ₂₀	13.5	0.15	19990412	54.47755	100.69169	39.03053	12.68581	0.1267329	2.5989190	36	1	41 days	0.70		Williams	1999 GP ₂₀
1999 GR ₂₀	14.3	0.15	19990412	298.72208	240.49792	40.58440	10.82197	0.1033811	2.5581717	27	1	38 days	1.01		Williams	1999 GR ₂₀
1999 GT ₂₀	15.2	0.15	19990412	344.57494	106.18553	122.49632	3.02403	0.1719964	2.3734419	32	1	37 days	0.80		Williams	1999 GT ₂₀
1999 GU ₂₀	13.9	0.15	19990412	291.32920	235.41555	46.69162	16.00695	0.0692772	2.6150657	15	1	4 days	0.54	E	Williams	1999 GU ₂₀
1999 GV ₂₀	13.2	0.15	19990412	197.49872	305.07788	65.22380	11.70892	0.0610884	3.0902467	33	1	35 days	0.77		Williams	1999 GV ₂₀
1999 GX ₂₀	14.0	0.15	19990502	318.98232	196.80481	67.31961	16.14728	0.1566177	2.5378146	40	1	59 days	0.70		Williams	1999 GX ₂₀
1999 GY ₂₀	15.4	0.15	19990412	315.64412	205.87608	63.79409	14.17040	0.2185124	2.3898135	15	1	4 days	1.20	E	Williams	1999 GY ₂₀
1999 GE ₂₁	14.7	0.15	19990412	291.16507	245.11888	50.17944	15.41240	0.1800827	2.4703775	22	1	28 days	0.78		Williams	1999 GE ₂₁
1999 GF ₂₁	14.7	0.15	19990412	306.85100	86.80102	196.26160	9.61467	0.2248825	2.5243134	23	1	31 days	0.72		Williams	1999 GF ₂₁
1999 GG ₂₁	13.1	0.15	19990412	101.48698	329.64217	116.80912	10.28605	0.1372492	2.7684615	19	1	30 days	0.72		Williams	1999 GG ₂₁
1999 GJ ₂₁	14.7	0.15	19990412	41.23291	130.54032	35.99037	4.87690	0.0140390	2.4150257	12	1	4 days	0.77	E	Williams	1999 GJ ₂₁

1999 GL ₂₁	13.9	0.15	19990412	312.07409	224.16538	39.99576	6.53720	0.0820343	2.3542223	23	1	7 days	0.86	E	Williams	1999 GL ₂₁
1999 GN ₂₁	13.5	0.15	19990412	339.30934	42.29371	202.77541	6.18751	0.2553037	3.0630792	36	1	51 days	0.61		Williams	1999 GN ₂₁
1999 GR ₂₁	15.3	0.15	19990412	295.81694	127.02602	156.67151	7.95455	0.1111542	2.2427574	31	1	35 days	0.88		Williams	1999 GR ₂₁
1999 GT ₂₁	13.8	0.15	19990412	351.08415	142.16269	77.16695	11.20963	0.1346997	3.0464166	26	1	35 days	0.97		Williams	1999 GT ₂₁
1999 GY ₂₁	15.2	0.15	19990412	40.27278	104.15911	55.53796	8.20982	0.0252773	2.7506282	18	1	39 days	0.68		Williams	1999 GY ₂₁
1999 GA ₂₂	15.7	0.15	19990412	38.97833	110.89323	42.44006	9.71533	0.1158287	2.5955449	27	1	39 days	1.44		Williams	1999 GA ₂₂
1999 GM ₂₃	15.5	0.15	19990303	332.52708	212.62498	3.32398	7.94433	0.2146896	2.3952495	33	1	54 days	0.62		Williams	1999 GM ₂₃
1999 GN ₂₃	15.1	0.15	19990323	9.88441	269.26838	258.49568	3.69866	0.1753065	2.6846292	23	1	22 days	0.98		Williams	1999 GN ₂₃
1999 GP ₂₃	14.4	0.15	19990810	105.05923	261.02488	206.65365	6.59925	0.1004350	2.2664502	33	1	167 days	0.83	M-v 5	Williams	1999 GP ₂₃
1999 GX ₂₄	15.5	0.15	19990412	191.65297	351.09262	11.92188	3.61492	0.1568995	2.2682732	19	1	29 days	1.04		Williams	1999 GX ₂₄
1999 GX ₂₅	15.9	0.15	19990323	327.61938	213.61801	18.87497	8.66139	0.1121652	2.5653592	25	1	23 days	1.07		Williams	1999 GX ₂₅
1999 GL ₂₈	14.7	0.15	19990412	162.33136	222.10411	171.77437	6.71799	0.1618510	2.4807799	18	1	40 days	1.05		Williams	1999 GL ₂₈
1999 GH ₃₀	14.9	0.15	19990412	339.46759	85.96227	143.98847	1.66705	0.1516418	3.1570774	13	1	39 days	0.46		Williams	1999 GH ₃₀
1999 GV ₃₀	15.4	0.15	19990412	299.70590	235.10764	42.70336	12.83980	0.1467986	2.6807690	18	1	40 days	1.31		Williams	1999 GV ₃₀
1999 GY ₃₀	16.3	0.15	19990412	324.81317	84.86562	162.24630	4.79079	0.1258692	2.2191815	22	1	39 days	0.81		Williams	1999 GY ₃₀
1999 GA ₃₁	16.2	0.15	19990412	276.89275	215.65122	87.60629	3.41743	0.1512729	2.2305369	17	1	40 days	1.02		Williams	1999 GA ₃₁
1999 GB ₃₁	13.5	0.15	19990412	93.27345	288.32411	181.31342	10.99424	0.0062023	3.0634569	31	1	39 days	0.79		Williams	1999 GB ₃₁
1999 GF ₃₁	14.0	0.15	19990412	202.84095	174.83718	190.18280	6.34370	0.1136693	2.5139909	29	1	55 days	0.95		Williams	1999 GF ₃₁
1999 GK ₃₁	15.0	0.15	19990412	287.08279	95.84496	202.20345	11.95813	0.1836265	2.5837273	34	1	39 days	0.93		Williams	1999 GK ₃₁
1999 GM ₃₁	16.5	0.15	19990412	46.77298	343.04674	163.39228	2.60747	0.1146132	2.2888674	20	1	58 days	0.70		Williams	1999 GM ₃₁
1999 GN ₃₁	14.4	0.15	19990412	351.23664	148.69499	65.30712	2.23961	0.0222624	2.9936352	24	1	40 days	0.78		Williams	1999 GN ₃₁
1999 GO ₃₁	16.9	0.15	19990412	324.93528	88.66135	164.88882	2.08260	0.1789396	2.3743793	16	1	39 days	0.97		Williams	1999 GO ₃₁
1999 GP ₃₁	16.1	0.15	19990412	322.57714	93.27998	164.11716	1.99197	0.1861153	2.3311712	16	1	39 days	0.70		Williams	1999 GP ₃₁
1999 GX ₃₁	15.3	0.15	19990412	264.18234	246.45340	70.47031	5.16766	0.1552558	2.9176005	28	1	39 days	0.93		Williams	1999 GX ₃₁
1999 GB ₃₂	14.2	0.15	19990412	301.48995	199.32603	79.66530	5.10610	0.1441516	2.9729787	26	1	36 days	0.89		Williams	1999 GB ₃₂
1999 GE ₃₂	15.1	0.15	19990412	283.58678	189.28697	118.13191	3.73300	0.2280696	2.6294259	20	1	39 days	0.96		Williams	1999 GE ₃₂
1999 GJ ₃₂	16.1	0.15	19990412	354.16805	16.50398	196.56825	10.80602	0.1786445	2.6458502	19	1	36 days	1.06		Williams	1999 GJ ₃₂
1999 GK ₃₂	15.2	0.15	19990412	27.11837	341.51778	192.97345	6.62867	0.0662521	2.4094111	18	1	35 days	0.51		Williams	1999 GK ₃₂
1999 GL ₃₂	13.7	0.15	19990412	237.45291	316.63743	29.32460	16.68566	0.2075851	2.6643270	23	1	37 days	0.97		Williams	1999 GL ₃₂
1999 GQ ₃₂	15.5	0.15	19990412	71.77437	321.43480	150.61187	26.97601	0.0613566	1.7927626	14	1	4 days	0.72		Williams	1999 GQ ₃₂
1999 GV ₃₂	15.3	0.15	19990412	39.39662	5.41414	157.58659	14.25494	0.1218130	2.4469615	16	1	37 days	0.90		Williams	1999 GV ₃₂
1999 GC ₃₃	15.1	0.15	19990412	211.40104	294.94160	62.90419	7.64978	0.1289899	2.4282198	17	1	34 days	1.51		Williams	1999 GC ₃₃
1999 GE ₃₃	16.3	0.15	19990502	338.03054	194.13618	47.08853	14.71892	0.2054436	2.6793018	19	1	40 days	1.24		Williams	1999 GE ₃₃
1999 GH ₃₃	15.0	0.15	19990412	272.00766	115.19601	202.91628	13.44940	0.2037208	2.6010162	22	1	34 days	1.08		Williams	1999 GH ₃₃
1999 GL ₃₃	16.2	0.15	19990412	325.48727	64.10919	196.92709	11.37813	0.2347468	2.4208572	29	1	35 days	0.92		Williams	1999 GL ₃₃
1999 GM ₃₃	14.4	0.15	19990412	171.85976	1.12300	33.43133	7.85840	0.1189240	2.3076259	38	1	32 days	0.79		Williams	1999 GM ₃₃
1999 GQ ₃₃	15.0	0.15	19990412	273.07455	201.32607	105.24592	6.51098	0.1242690	2.2211443	19	1	33 days	1.02		Williams	1999 GQ ₃₃
1999 GV ₃₃	16.0	0.15	19990412	36.02889	333.81037	183.27655	12.41720	0.1824157	2.5334618	20	1	35 days	1.24		Williams	1999 GV ₃₃
1999 GW ₃₃	16.4	0.15	19990412	48.75499	62.36231	85.31705	4.31941	0.1225461	2.2914145	26	1	37 days	1.33		Williams	1999 GW ₃₃
1999 GA ₃₄	14.5	0.15	19990412	261.50313	276.82365	50.08573	6.54334	0.1683824	2.2787532	28	1	32 days	1.10		Williams	1999 GA ₃₄
1999 GC ₃₄	15.1	0.15	19990323	22.82380	183.74203	328.42695	4.00818	0.1070973	2.3276927	19	1	24 days	0.82		Williams	1999 GC ₃₄
1999 GE ₃₄	14.4	0.15	19990323	212.78942	85.91691	253.19063	4.24148	0.1910049	2.4620885	17	1	22 days	0.89		Williams	1999 GE ₃₄
1999 GF ₃₄	14.4	0.15	19990323	121.44206	41.23161	3.22791	9.68108	0.2165999	2.2623375	14	1	9 days	1.19	E	Williams	1999 GF ₃₄
1999 GJ ₃₄	15.6	0.15	19990323	312.22369	19.94385	225.35497	5.47557	0.1421062	2.1785831	12	1	9 days	1.11		Williams	1999 GJ ₃₄
1999 GL ₃₄	15.2	0.15	19990323	314.79552	306.49622	306.28792	3.46638	0.2139078	2.5809622	17	1	9 days	0.96		Williams	1999 GL ₃₄
1999 GN ₃₄	13.5	0.15	19990323	285.98857	29.93542	256.23767	1.18451	0.2258337	3.0882024	14	1	9 days	0.87	E	Williams	1999 GN ₃₄
1999 GO ₃₄	15.0	0.15	19990323	8.95476	319.26873	216.09699	5.07307	0.1103439	2.2993116	18	1	9 days	0.66		Williams	1999 GO ₃₄
1999 GP ₃₄	15.3	0.15	19990323	345.13943	240.96380	322.37590	3.51680	0.0349642	2.3576344	15	1	9 days	0.95		Williams	1999 GP ₃₄
1999 GQ ₃₄	15.3	0.15	19990323	295.48412	31.22308	245.23640	4.25288	0.2164783	2.3897151	16	1	9 days	0.72		Williams	1999 GQ ₃₄
1999 GS ₃₄	13.6	0.15	19990323	25.68159	194.15849	322.24825	4.57701	0.1191829	3.1743300	16	1	9 days	0.74		Williams	1999 GS ₃₄
1999 GT ₃₄	15.2	0.15	19990323	288.35704	295.25041	347.82638	7.09563	0.1897736	2.7897952	15	1	9 days	1.33		Williams	1999 GT ₃₄
1999 GU ₃₄	15.2	0.15	19990323	313.03715	302.58076	313.39043	3.22947	0.2020368	2.6274228	16	1	9 days	0.90		Williams	1999 GU ₃₄
1999 GV ₃₄	13.6	0.15	19990323	325.60242	28.97596	204.58074	11.01559	0.1376471	3.2397569	14	1	9 days	1.15		Williams	1999 GV ₃₄

1999 GW ₃₄	14.9	0.15	19990323	43.84456	213.21432	278.66322	1.21883	0.1289557	2.4464140	23	1	24 days	0.72		Williams	1999 GW ₃₄
1999 GX ₃₄	13.2	0.15	19990323	91.09820	223.85983	209.11729	2.32438	0.2150091	2.8673354	15	1	9 days	1.07		Williams	1999 GX ₃₄
1999 GY ₃₄	15.2	0.15	19990323	269.96880	101.89674	193.87274	5.37590	0.1684164	2.1731812	14	1	9 days	0.74		Williams	1999 GY ₃₄
1999 GZ ₃₄	14.1	0.15	19990810	350.74620	225.25646	11.39633	15.20793	0.0830487	2.5977192	29	1	78 days	0.72	M-v 5	Williams	1999 GZ ₃₄
1999 GA ₃₅	14.9	0.15	19990323	210.24788	347.56042	355.45956	2.45972	0.0962871	2.3567688	14	1	9 days	0.95	E	Williams	1999 GA ₃₅
1999 GB ₃₅	15.7	0.15	19990323	340.23822	251.13119	324.55121	1.33819	0.1714306	2.3292251	14	1	9 days	0.90		Williams	1999 GB ₃₅
1999 GE ₃₅	14.4	0.15	19990323	7.90706	329.60293	206.25706	9.79575	0.2098998	2.7405721	17	1	9 days	0.55		Williams	1999 GE ₃₅
1999 GF ₃₅	12.8	0.15	19990323	105.69245	223.36497	205.80600	11.86770	0.1439622	3.0564099	16	1	9 days	0.77		Williams	1999 GF ₃₅
1999 GG ₃₅	14.6	0.15	19990323	48.54746	147.29596	329.65479	2.92239	0.2310833	2.6035711	13	1	9 days	0.91		Williams	1999 GG ₃₅
1999 GH ₃₅	14.8	0.15	19990323	96.76299	124.12851	325.47115	2.60982	0.0279934	2.2259861	17	1	9 days	0.78		Williams	1999 GH ₃₅
1999 GJ ₃₅	13.7	0.15	19990412	6.03202	340.39522	205.86698	16.31351	0.1212238	3.1644160	20	1	31 days	0.87		Williams	1999 GJ ₃₅
1999 GK ₃₅	14.2	0.15	19990323	217.11594	12.85686	319.92829	2.95305	0.0110580	2.5576660	12	1	9 days	0.97	E	Williams	1999 GK ₃₅
1999 GL ₃₅	14.4	0.15	19990323	99.01754	113.10713	322.50597	4.84049	0.1416358	2.1998362	14	1	9 days	0.74		Williams	1999 GL ₃₅
1999 GM ₃₅	14.9	0.15	19990323	284.08720	58.77998	230.23776	2.98022	0.1730170	2.2134612	17	1	8 days	0.64		Williams	1999 GM ₃₅
1999 GN ₃₅	15.3	0.15	19990323	359.68600	172.84983	21.16701	4.37532	0.1003252	2.5377894	22	1	23 days	0.83		Williams	1999 GN ₃₅
1999 GO ₃₅	15.5	0.15	19990323	21.52255	320.64271	204.60415	9.13993	0.1273976	2.4337342	17	1	8 days	0.87		Williams	1999 GO ₃₅
1999 GP ₃₅	15.3	0.15	19990323	326.70483	346.98197	251.69018	1.94677	0.1528213	2.4327766	17	1	8 days	0.89		Williams	1999 GP ₃₅
1999 GR ₃₅	14.9	0.15	19990323	291.71937	7.59060	271.84441	2.02335	0.1355303	2.4104569	14	1	8 days	0.94		Williams	1999 GR ₃₅
1999 GS ₃₅	14.9	0.15	19990412	54.70028	197.86523	296.20980	1.28599	0.1221151	2.4204846	21	1	10 days	0.58		Williams	1999 GS ₃₅
1999 GT ₃₅	15.0	0.15	19990323	25.77436	142.79780	15.47538	3.89855	0.2027147	2.9373271	20	1	8 days	1.12		Williams	1999 GT ₃₅
1999 GU ₃₅	13.6	0.15	19990323	208.38438	124.06206	229.68106	5.58496	0.0930804	2.5914202	14	1	8 days	0.83		Williams	1999 GU ₃₅
1999 GV ₃₅	15.4	0.15	19990323	12.84296	297.89865	241.64412	3.92045	0.0791049	2.1471993	13	1	8 days	0.57		Williams	1999 GV ₃₅
1999 GX ₃₅	16.0	0.15	19990323	331.42518	8.72654	218.85024	4.33236	0.1033042	2.2655141	11	1	8 days	0.82		Williams	1999 GX ₃₅
1999 GY ₃₅	13.3	0.15	19990323	267.47607	306.79623	354.74807	9.23355	0.1050424	3.0268073	15	1	8 days	1.08		Williams	1999 GY ₃₅
1999 GZ ₃₅	14.6	0.15	19990323	117.70112	145.47700	285.14700	3.63023	0.0891983	2.2124599	13	1	8 days	0.69		Williams	1999 GZ ₃₅
1999 GE ₃₆	15.7	0.15	19990412	109.38636	59.63054	26.36277	5.78605	0.0758519	2.2340769	19	1	9 days	0.61		Williams	1999 GE ₃₆
1999 GG ₃₆	15.9	0.15	19990323	338.54032	221.23018	4.22549	5.36717	0.1551214	2.3041120	13	1	8 days	1.12		Williams	1999 GG ₃₆
1999 GH ₃₆	13.7	0.15	19990323	248.79414	113.56081	217.06244	7.17492	0.1916320	2.8147816	11	1	8 days	1.01	E	Williams	1999 GH ₃₆
1999 GJ ₃₆	14.4	0.15	19990323	16.70728	301.38262	232.61322	5.39604	0.1766895	3.0008809	13	1	8 days	0.71		Williams	1999 GJ ₃₆
1999 GK ₃₆	15.6	0.15	19990323	40.07577	129.72055	11.00146	1.72061	0.1854716	2.3131569	13	1	8 days	0.66	E	Williams	1999 GK ₃₆
1999 GL ₃₆	13.5	0.15	19990412	338.99532	295.23752	282.65018	7.74053	0.1546734	2.8418673	13	1	3 days	0.58	E	Williams	1999 GL ₃₆
1999 GN ₃₆	13.7	0.15	19990412	32.78612	288.92412	223.94632	11.55221	0.0536791	2.5005587	12	1	3 days	0.80	E	Williams	1999 GN ₃₆
1999 GP ₃₆	13.9	0.15	19990412	334.41361	294.36288	298.85356	10.00936	0.2294509	2.7330869	11	1	3 days	0.83		Williams	1999 GP ₃₆
1999 GQ ₃₆	13.8	0.15	19990810	48.92420	309.69752	214.53230	15.08939	0.1263862	2.5769703	22	1	135 days	0.65	M-v 5	Williams	1999 GQ ₃₆
1999 GR ₃₆	13.4	0.15	19990412	27.88149	171.92592	343.76797	12.88060	0.1333963	2.6499873	13	1	3 days	0.85	E	Williams	1999 GR ₃₆
1999 GV ₃₆	15.3	0.15	19990412	259.44681	61.45374	256.17289	0.85677	0.1294198	2.5372999	20	1	11 days	1.03		Williams	1999 GV ₃₆
1999 GW ₃₆	14.8	0.15	19990412	18.72023	246.56802	291.85166	1.37328	0.1469733	2.3689441	28	1	46 days	0.93		Williams	1999 GW ₃₆
1999 GY ₃₆	18.8	0.15	19990323	354.93841	358.93831	176.59081	1.83549	0.1788183	2.8357358	6	1	2 days	0.57	E	Marsden	1999 GY ₃₆
1999 HA	16.5	0.15	19990502	16.29912	182.81847	11.85910	6.74921	0.0945097	2.2728005	19	1	53 days	0.31		Williams	1999 HA
1999 HE	15.9	0.15	19990502	310.99688	156.42531	133.88124	2.53178	0.1563936	2.4766939	36	1	59 days	0.61		Williams	1999 HE
1999 HH	14.4	0.15	19990502	314.83559	256.60734	36.02814	15.60548	0.2339352	2.6445015	49	1	56 days	0.43		Williams	1999 HH
1999 HM	16.2	0.15	19990412	358.60193	218.09942	348.15781	2.89602	0.0977134	2.5149927	9	1	4 days	0.62		Williams	1999 HM
1999 HO	14.8	0.15	19990810	71.04944	109.31826	48.74859	7.06157	0.0853717	2.4247803	44	1	113 days	0.69	M-v 5	Williams	1999 HO
1999 HR	15.7	0.15	19990810	338.40653	50.33519	236.61101	6.45118	0.1753146	2.2856083	32	1	62 days	0.82	M-v 5	Williams	1999 HR
1999 HT	14.6	0.15	19990502	287.77844	108.15528	210.04042	1.76944	0.2026474	2.4494010	51	1	55 days	0.77		Williams	1999 HT
1999 HV	15.5	0.15	19990502	299.33496	243.05622	66.09654	22.77427	0.2248556	2.3316454	42	1	53 days	0.52		Williams	1999 HV
1999 HX	14.6	0.15	19990810	339.67088	79.15096	227.52125	29.21224	0.3740339	2.7634280	72	1	66 days	0.53	M-v 4	Williams	1999 HX
1999 HA ₁	14.9	0.15	19990323	320.43730	47.18301	186.97130	4.97946	0.1664430	2.4146221	29	1	29 days	0.88		Williams	1999 HA ₁
1999 HD ₁	20.4	0.15	19990810	342.81741	147.88224	209.93800	18.07098	0.4160499	1.1301540	31	1	31 days	0.61	M-v 8	Williams	1999 HD ₁
1999 HE ₁	16.8	0.15	19990810	2.30782	221.74095	66.08619	8.18456	0.5688316	2.3698167	64	1	47 days	0.55	M-v 5	Nakano	1999 HE ₁
1999 HF ₁	14.5	0.15	19990810	257.00836	253.33824	155.96971	25.65621	0.4624592	0.8190769	434	1	61 days	0.43	M-v 6	Williams	1999 HF ₁
1999 HH ₁	16.7	0.15	19990502	20.43901	284.92610	268.43553	3.21247	0.2177343	2.3142186	29	1	56 days	0.45		Williams	1999 HH ₁
1999 HJ ₁	14.0	0.15	19990810	327.40430	87.87731	201.71564	22.35103	0.2451475	2.2769722	47	1	77 days	0.60	M-v 4	Williams	1999 HJ ₁

1999 HK ₁	15.1	0.15	19990412	280.11638	81.87888	197.81772	20.72204	0.0689989	1.8425372	42	1	54 days	0.83	Williams	1999 HK ₁
1999 HL ₁	16.0	0.15	19990412	20.78755	309.80543	206.91380	27.02312	0.3682144	3.1192560	38	1	55 days	0.94	Williams	1999 HL ₁
1999 HN ₁	16.1	0.15	19990412	272.83691	305.41820	7.52917	3.74868	0.1880640	2.1695701	17	1	9 days	1.20	Williams	1999 HN ₁
1999 HQ ₁	16.4	0.15	19990412	306.11997	245.52652	28.92065	8.14582	0.1320636	2.2376568	19	1	6 days	1.15	Williams	1999 HQ ₁
1999 HT ₁	13.8	0.15	19990502	230.63448	267.17455	95.53700	5.57222	0.1418492	2.6547073	25	1	28 days	0.86	Williams	1999 HT ₁
1999 HU ₁	14.4	0.15	19990412	157.26535	263.24607	136.42766	4.76855	0.0878244	2.7240007	33	1	44 days	0.53	Williams	1999 HU ₁
1999 HV ₁	17.8	0.15	19990810	335.41019	113.69672	207.35385	6.47546	0.5367235	2.5715355	23	1	61 days	0.45	M-v Williams	1999 HV ₁
1999 HW ₁	19.8	0.15	19990810	40.83133	136.48138	37.95465	23.71736	0.4564907	2.3777911	37	1	35 days	0.43	M-v Williams	1999 HW ₁
1999 HX ₁	19.6	0.15	19990810	11.05464	98.35428	171.29933	8.16803	0.5624688	2.5634865	79	1	53 days	0.55	M-v Williams	1999 HX ₁
1999 HY ₁	18.6	0.15	19990502	281.85267	89.81593	216.18124	34.23079	0.1306489	1.3864822	56	1	30 days	0.91	Williams	1999 HY ₁
1999 HZ ₁	18.4	0.15	19990412	46.33418	200.27997	252.29971	8.69642	0.5763072	1.6067180	29	1	22 days	0.67	Williams	1999 HZ ₁
1999 HA ₂	17.6	0.15	19990810	37.83092	344.10794	147.42459	15.07719	0.6995923	2.7894843	137	1	55 days	0.53	M-v Marsden	1999 HA ₂
1999 HC ₂	15.3	0.15	19990412	284.99216	139.24111	165.68897	8.28532	0.2721918	2.3932518	25	1	30 days	0.51	Marsden	1999 HC ₂
1999 HH ₂	14.5	0.15	19990810	24.98958	148.21500	58.56189	8.51230	0.0872701	2.3463703	44	2	1997–1999	0.60	M-v Williams	1999 HH ₂
1999 HJ ₂	14.5	0.15	19990412	304.22869	214.53491	55.39427	9.82281	0.1630945	2.5980624	20	1	31 days	0.52	Williams	1999 HJ ₂
1999 HK ₂	15.1	0.15	19990502	359.13873	185.35456	52.21621	15.08018	0.2173476	2.5588927	31	1	50 days	1.01	Williams	1999 HK ₂
1999 HL ₂	15.2	0.15	19990412	191.60886	178.33275	200.74558	22.96263	0.0952884	1.8669747	45	1	37 days	0.83	Williams	1999 HL ₂
1999 HM ₂	15.3	0.15	19990412	82.57855	55.19814	47.17485	6.84546	0.1079212	2.2959597	22	1	33 days	0.72	Marsden	1999 HM ₂
1999 HN ₂	14.0	0.15	19990412	223.98386	282.75021	64.56818	9.32940	0.0515251	2.4636380	38	1	35 days	0.79	Williams	1999 HN ₂
1999 HP ₂	16.0	0.15	19990412	5.32901	168.96481	27.26723	5.72500	0.2609650	2.9892591	10	1	3 days	1.27	E Williams	1999 HP ₂
1999 HQ ₂	16.0	0.15	19990412	310.05691	56.23083	212.58827	4.32537	0.1156258	2.2122851	27	1	29 days	0.87	Williams	1999 HQ ₂
1999 HS ₂	14.9	0.15	19990323	12.59937	339.68155	185.85983	2.20438	0.1469765	2.4385737	37	1	32 days	0.73	Williams	1999 HS ₂
1999 HV ₂	15.0	0.15	19990810	342.20636	214.70132	54.35461	6.41879	0.1111578	2.3203731	46	1	68 days	0.71	M-v Williams	1999 HV ₂
1999 HW ₂	15.8	0.15	19990810	9.75998	85.20549	180.75019	27.16339	0.4063089	2.6100971	82	1	46 days	0.64	M-v Williams	1999 HW ₂
1999 HX ₂	14.8	0.15	19990810	3.40150	148.90900	141.81575	16.45980	0.5543583	3.1770236	127	1	59 days	0.52	M-v Williams	1999 HX ₂
1999 HA ₃	14.8	0.15	19990502	63.66252	119.93314	45.98412	11.24719	0.0583647	2.9767231	24	1	53 days	0.62	Williams	1999 HA ₃
1999 HB ₃	16.2	0.15	19990502	297.42272	68.07968	232.21820	19.50682	0.0580680	1.9002576	60	1	51 days	0.64	Williams	1999 HB ₃
1999 HF ₃	15.2	0.15	19990502	295.90744	11.69451	307.17334	2.35554	0.1841769	2.6114942	42	1	51 days	0.47	Williams	1999 HF ₃
1999 HG ₃	14.6	0.15	19990522	31.82941	64.70932	115.13771	8.55103	0.1375082	2.5938886	28	1	58 days	0.76	Nakano	1999 HG ₃
1999 HH ₃	14.1	0.15	19990412	51.30786	337.33306	173.24150	13.21141	0.0981301	2.5556062	35	1	57 days	0.89	Williams	1999 HH ₃
1999 HJ ₃	16.8	0.15	19990502	333.48278	169.07829	71.69347	23.27950	0.0274396	1.8835832	9	1	28 days	0.60	Williams	1999 HJ ₃
1999 HL ₃	12.5	0.15	19990412	132.83597	303.29953	101.58346	11.55141	0.1794511	3.1764592	16	1	9 days	0.49	Williams	1999 HL ₃
1999 HN ₃	14.5	0.15	19990412	150.65593	341.51033	54.87727	15.47408	0.0965035	2.5294613	16	1	9 days	0.89	Williams	1999 HN ₃
1999 HP ₃	13.8	0.15	19990412	54.96248	18.43289	101.65947	10.30047	0.1385215	3.0200445	13	1	7 days	0.66	E Williams	1999 HP ₃
1999 HU ₃	16.5	0.15	19990412	334.16864	134.72124	97.84995	9.43458	0.2181485	2.6913543	13	1	7 days	0.89	E Williams	1999 HU ₃
1999 HV ₃	15.4	0.15	19990810	65.30373	121.70841	38.38126	6.91679	0.1447310	2.2849024	32	1	71 days	0.44	M-v Williams	1999 HV ₃
1999 HW ₃	17.6	0.15	19990502	18.99584	293.93384	262.30589	2.40802	0.1986643	2.3685020	21	1	57 days	0.40	Williams	1999 HW ₃
1999 HD ₄	16.5	0.15	19990412	183.05124	354.37842	37.03766	12.24658	0.0783563	2.6202045	12	1	39 days	0.69	Williams	1999 HD ₄
1999 HH ₄	14.8	0.15	19990412	68.24352	317.32555	173.61614	1.03434	0.1441897	3.1440326	20	1	42 days	1.15	Williams	1999 HH ₄
1999 HP ₄	14.5	0.15	19990810	329.46935	226.20502	36.21075	10.61143	0.0220632	2.5744456	31	1	72 days	0.53	M-v Williams	1999 HP ₄
1999 HR ₄	15.0	0.15	19990412	269.91420	279.80498	50.66389	4.38699	0.2212641	2.6652697	16	1	40 days	0.75	Williams	1999 HR ₄
1999 HX ₄	16.3	0.15	19990412	41.69956	118.57421	20.17311	6.53628	0.1288397	2.2944876	13	1	35 days	0.91	Williams	1999 HX ₄
1999 HE ₅	15.2	0.15	19990502	300.26102	81.66716	211.53646	11.25571	0.1292047	2.7493776	14	1	31 days	0.79	Williams	1999 HE ₅
1999 HG ₅	15.7	0.15	19990412	179.98676	348.42071	48.20710	5.81777	0.2121960	2.6552938	10	1	28 days	0.68	Williams	1999 HG ₅
1999 HR ₅	14.4	0.15	19990412	198.72086	336.78249	32.55547	8.55249	0.0225153	3.0308203	31	1	37 days	0.89	D Williams	1999 HR ₅
1999 HX ₅	15.1	0.15	19990502	138.07728	309.04332	138.24163	14.00899	0.1098184	2.6416918	18	1	56 days	0.93	Williams	1999 HX ₅
1999 HP ₆	14.4	0.15	19990412	151.78225	180.74689	206.06675	2.46975	0.1738794	2.4897816	14	1	8 days	0.65	Williams	1999 HP ₆
1999 HJ ₇	13.7	0.15	19990502	104.17813	64.95504	44.33685	10.55185	0.0703573	2.9723287	27	1	34 days	0.78	Williams	1999 HJ ₇
1999 HO ₇	15.5	0.15	19990412	167.09294	7.74680	37.54898	11.29697	0.1094199	3.0888819	14	1	39 days	0.54	Williams	1999 HO ₇
1999 HX ₇	15.8	0.15	19990502	298.11749	103.18350	212.74514	9.81279	0.2920458	2.6202868	24	1	30 days	1.09	Williams	1999 HX ₇
1999 HC ₈	14.5	0.15	19990412	98.03012	32.50955	48.74018	1.62799	0.1011614	2.5679800	15	1	18 days	0.60	Williams	1999 HC ₈
1999 HD ₈	17.5	0.15	19990502	338.48589	211.99735	49.18648	14.40911	0.2367832	2.6124573	19	1	27 days	1.21	Williams	1999 HD ₈
1999 HG ₈	12.6	0.15	19990412	313.76395	7.46519	245.72771	10.41555	0.2034411	3.3713773	17	1	3 days	0.89	Williams	1999 HG ₈

1999 HJ ₈	13.6	0.15	19990412	9.21017	215.36515	324.08204	6.93542	0.0676417	2.5166200	22	1	5 days	1.19	E	Williams	1999 HJ ₈
1999 HL ₈	12.3	0.15	19990412	42.98243	302.62211	202.94467	9.70693	0.0404197	3.0593439	27	1	11 days	0.73		Williams	1999 HL ₈
1999 HN ₈	13.7	0.15	19990412	3.63732	303.47694	249.52805	7.08238	0.0582615	2.3291901	19	1	3 days	0.50	E	Williams	1999 HN ₈
1999 HO ₈	13.6	0.15	19990412	43.43585	155.35926	345.41321	13.11282	0.1624311	2.6695520	17	1	3 days	0.57	E	Williams	1999 HO ₈
1999 HQ ₈	17.4	0.15	19990323	340.17439	210.41722	10.71069	4.21556	0.1513080	2.2708212	21	1	40 days	2.19		Williams	1999 HQ ₈
1999 HR ₈	15.0	0.15	19990412	317.14848	343.62546	279.80142	1.35891	0.1981680	2.3375209	18	1	9 days	0.57		Williams	1999 HR ₈
1999 HS ₈	16.0	0.15	19990412	32.35364	268.38347	251.61546	1.46064	0.1293478	2.6401059	15	1	9 days	0.99		Williams	1999 HS ₈
1999 HT ₈	14.7	0.15	19990412	2.64522	350.98992	207.87360	11.68246	0.0290742	2.8908923	22	1	9 days	0.88		Williams	1999 HT ₈
1999 HV ₈	15.2	0.15	19990412	87.41041	78.74105	20.90486	13.97426	0.1302471	2.5961841	26	1	11 days	1.11		Williams	1999 HV ₈
1999 HW ₈	14.9	0.15	19990412	307.56886	55.09792	209.12999	7.93305	0.0967412	3.0206857	16	1	7 days	0.87		Williams	1999 HW ₈
1999 HX ₈	15.5	0.15	19990412	338.11516	343.22480	242.56748	1.08058	0.0303620	2.5283870	29	1	11 days	0.85		Williams	1999 HX ₈
1999 HY ₈	14.2	0.15	19990412	171.81848	6.23420	21.24386	11.18685	0.2881896	2.2483249	22	1	11 days	1.16		Williams	1999 HY ₈
1999 HZ ₈	15.9	0.15	19990412	1.75212	319.38346	240.67233	1.25654	0.1297871	2.3990950	22	1	11 days	1.03		Williams	1999 HZ ₈
1999 HB ₉	15.2	0.15	19990412	100.44683	232.36816	219.73993	3.62425	0.0959541	2.3457555	24	1	11 days	1.36		Williams	1999 HB ₉
1999 HC ₉	14.5	0.15	19990412	227.19286	46.05293	304.60032	2.01035	0.2114914	2.1295231	24	1	11 days	0.75		Williams	1999 HC ₉
1999 HG ₉	14.7	0.15	19990810	0.66363	33.10255	210.13158	5.77581	0.1187592	2.3748281	44	1	66 days	0.67	M-v 5	Williams	1999 HG ₉
1999 HH ₉	17.0	0.15	19990412	343.72731	340.96007	244.47798	0.67901	0.1427890	2.2961695	17	1	3 days	1.11	E	Williams	1999 HH ₉
1999 HJ ₉	15.4	0.15	19990412	334.17581	217.15127	21.34653	5.26324	0.1425268	2.9774163	17	1	11 days	1.18		Williams	1999 HJ ₉
1999 HK ₉	13.8	0.15	19990412	77.21559	266.13818	210.43638	9.12008	0.0942603	3.0387714	29	1	35 days	0.88		Williams	1999 HK ₉
1999 HL ₉	15.1	0.15	19990412	11.47383	329.06106	219.69633	1.54410	0.1406885	2.4074033	39	1	35 days	0.86		Williams	1999 HL ₉
1999 HM ₉	16.8	0.15	19990412	18.43330	155.98124	21.76045	6.56811	0.1760172	2.3579110	12	1	3 days	0.79		Williams	1999 HM ₉
1999 HN ₉	17.2	0.15	19990412	317.86550	60.63740	207.21554	3.87313	0.2250286	2.3907301	15	1	3 days	1.28	E	Williams	1999 HN ₉
1999 HP ₉	13.0	0.15	19990323	127.43044	209.73147	213.67553	8.64004	0.1204050	2.8417100	29	1	24 days	0.97		Williams	1999 HP ₉
1999 HQ ₉	15.1	0.15	19990412	329.01116	22.56453	220.58059	5.53713	0.1117526	2.2930036	26	1	48 days	0.67		Williams	1999 HQ ₉
1999 HR ₉	15.4	0.15	19990412	308.54154	338.93989	306.19450	1.29580	0.2654977	2.6378002	12	1	3 days	0.88	E	Williams	1999 HR ₉
1999 HS ₉	14.7	0.15	19990412	84.50799	145.74113	320.81657	1.27812	0.1263928	2.4414197	26	1	33 days	1.13		Williams	1999 HS ₉
1999 HT ₉	16.7	0.15	19990412	359.03324	345.96412	220.20125	4.50923	0.1475019	2.1948318	25	1	35 days	0.70		Williams	1999 HT ₉
1999 HU ₉	15.8	0.15	19990412	70.32694	120.02880	5.29340	3.28385	0.0905427	2.3983094	16	1	9 days	0.78		Williams	1999 HU ₉
1999 HV ₉	16.2	0.15	19990412	8.47387	331.00984	219.23535	3.54640	0.2360327	2.5629894	13	1	3 days	1.09		Williams	1999 HV ₉
1999 HW ₉	16.3	0.15	19990412	12.73088	302.02375	246.65662	1.73611	0.1191109	2.4757810	16	1	9 days	0.83		Williams	1999 HW ₉
1999 HX ₉	16.6	0.15	19990502	353.22931	6.62050	214.19503	7.40015	0.1307515	2.3857720	30	1	35 days	0.95		Williams	1999 HX ₉
1999 HY ₉	13.6	0.15	19990412	256.27611	294.82818	19.11793	8.07596	0.0390435	3.0042271	11	1	3 days	0.82	E	Williams	1999 HY ₉
1999 HZ ₉	15.9	0.15	19990412	337.45850	17.50010	213.63000	6.18533	0.0701266	2.3252109	32	1	40 days	0.91		Williams	1999 HZ ₉
1999 HA ₁₀	14.6	0.15	19990412	31.19204	315.70441	213.96881	3.56436	0.0684490	2.7925777	12	1	11 days	0.74		Williams	1999 HA ₁₀
1999 HB ₁₀	16.0	0.15	19990412	345.87960	344.78758	239.56595	0.59834	0.1550960	2.5793351	12	1	3 days	0.89		Williams	1999 HB ₁₀
1999 HC ₁₀	15.0	0.15	19990412	283.24346	272.55070	29.29398	5.08848	0.1730649	2.5711976	23	1	9 days	0.68		Williams	1999 HC ₁₀
1999 HE ₁₀	15.2	0.15	19990412	223.28871	135.00315	210.33730	2.11238	0.0392927	2.2598488	13	1	11 days	0.52		Williams	1999 HE ₁₀
1999 HJ ₁₀	14.1	0.15	19990412	60.34830	211.26827	288.47808	0.81495	0.0606802	2.7218646	23	1	28 days	1.07		Williams	1999 HJ ₁₀
1999 HO ₁₀	16.0	0.15	19990412	353.76534	186.34319	30.23947	2.74325	0.2675049	2.9569814	16	1	7 days	1.05	E	Williams	1999 HO ₁₀
1999 HP ₁₀	15.4	0.15	19990412	25.68838	326.74476	204.29170	7.25608	0.1555348	2.8023053	29	1	31 days	0.99		Williams	1999 HP ₁₀
1999 HT ₁₀	13.4	0.15	19990412	26.89006	145.88825	28.10620	6.00603	0.1159081	3.2050846	32	1	29 days	0.92		Williams	1999 HT ₁₀
1999 HU ₁₀	16.2	0.15	19990412	45.31489	286.91802	219.97466	4.29922	0.1475910	2.2742602	13	1	3 days	1.11	E	Williams	1999 HU ₁₀
1999 HV ₁₀	14.6	0.15	19990502	334.95155	16.78255	239.20881	14.29971	0.2555708	2.9167384	28	1	55 days	0.83		Williams	1999 HV ₁₀
1999 HW ₁₀	14.2	0.15	19990412	183.67875	125.47400	260.97792	10.16027	0.1295072	2.4156678	13	1	3 days	1.22	E	Williams	1999 HW ₁₀
1999 HZ ₁₀	15.8	0.15	19990412	316.71193	248.40483	24.30483	3.43797	0.2316355	2.2813252	22	1	28 days	0.88		Williams	1999 HZ ₁₀
1999 HA ₁₁	16.1	0.15	19990412	25.62554	326.35975	203.34399	1.05458	0.1890430	2.4830166	17	1	6 days	0.92		Williams	1999 HA ₁₁
1999 HC ₁₁	13.4	0.15	19990810	290.58765	281.65318	29.69507	9.87657	0.0890340	2.9990102	27	1	62 days	0.80	M-v 6	Williams	1999 HC ₁₁
1999 HF ₁₁	16.4	0.15	19990412	326.16056	43.33222	216.79572	1.33748	0.2318962	2.4052357	13	1	3 days	1.46	E	Williams	1999 HF ₁₁
1999 HG ₁₁	16.3	0.15	19990412	310.89582	261.66588	25.92596	1.54616	0.2850449	2.2820940	16	1	3 days	1.66	E	Williams	1999 HG ₁₁
1999 HH ₁₁	14.6	0.15	19990412	158.24898	200.40197	210.88203	1.87308	0.0017908	2.6893965	11	1	3 days	1.03	E	Williams	1999 HH ₁₁
1999 HJ ₁₁	14.6	0.15	19990412	124.81090	224.32337	211.81221	4.58375	0.1027399	2.4324410	12	1	3 days	0.77	E	Williams	1999 HJ ₁₁
1999 HL ₁₁	14.5	0.15	19990412	358.92152	247.26056	324.48519	0.12083	0.1440167	3.2199506	15	1	3 days	0.94	E	Williams	1999 HL ₁₁
1999 HN ₁₁	15.3	0.15	19990412	288.87918	91.96517	210.06053	10.63593	0.2576217	2.6149372	16	1	11 days	0.89		Williams	1999 HN ₁₁

1999 HO ₁₁	16.6	0.15	19990323	298.84917	250.96038	14.90351	2.67207	0.0987581	2.1863419	22	1	39 days	1.06		Williams	1999 HO ₁₁	
1999 HP ₁₁	19.4	0.15	19990502	298.31522	311.76819	14.17280	18.80146	0.5478631	1.5969886	20	1	27 days	0.54		Williams	1999 HP ₁₁	
1999 HR ₁₁	7.0	0.15	19990412	0.00000	108.00459	82.35275	3.32099	0.0000000	42.3976453	6	1	19 days	0.25	E	Marsden	1999 HR ₁₁	
1999 HS ₁₁	6.2	0.15	19990412	0.00000	99.10951	105.32724	2.60287	0.0000000	43.7672535	6	1	19 days	0.19	E	Marsden	1999 HS ₁₁	
1999 HT ₁₁	7.3	0.15	19990412	0.00000	118.00172	87.62071	5.06808	0.0000000	41.7582182	5	1	20 days	0.25	E	Marsden	1999 HT ₁₁	
1999 HU ₁₁	6.4	0.15	19990412	0.00000	152.28868	51.88277	0.36148	0.0000000	43.8104957	5	1	18 days	0.18	E	Marsden	1999 HU ₁₁	
1999 HV ₁₁	7.1	0.15	19990412	0.00000	42.95149	161.88685	3.21445	0.0000000	43.4777725	9	1	19 days	0.24	E	Marsden	1999 HV ₁₁	
1999 HW ₁₁	7.5	0.15	19990412	0.00000	6.19105	199.17318	19.25382	0.0000000	42.2170522	6	1	19 days	0.20	E	Marsden	1999 HW ₁₁	
1999 HX ₁₁	6.9	0.15	19990412	70.36184	73.23957	9.80817	13.07080	0.2500130	39.3532681	9	1	20 days	0.43	E	Marsden	1999 HX ₁₁	
1999 HY ₁₁	8.3	0.15	19990412	359.98226	151.93644	35.85796	6.18580	0.0597979	42.1581348	6	1	20 days	0.21	E	Marsden	1999 HY ₁₁	
1999 HZ ₁₁	8.4	0.15	19990412	359.98208	20.01114	170.05764	10.05700	0.0786938	42.3819767	5	1	20 days	0.46	E	Marsden	1999 HZ ₁₁	
1999 HA ₁₂	7.7	0.15	19990412	359.98274	97.71643	105.40428	3.57747	0.0595442	43.1506312	6	1	20 days	0.14	E	Marsden	1999 HA ₁₂	
1999 HB ₁₂	6.7	0.15	19990412	359.97616	21.06850	168.83844	14.57675	0.0759724	39.3030942	6	1	18 days	0.18	E	Marsden	1999 HB ₁₂	
1999 HC ₁₂	6.9	0.15	19990412	359.97923	161.78063	57.15246	15.24785	0.1091101	43.8626319	6	1	18 days	0.34	E	Marsden	1999 HC ₁₂	
1999 HD ₁₂	12.1	0.15	19990412	0.07380	12.23820	176.89304	9.48005	0.1673151	15.5552919	7	1	19 days	0.39	E	Marsden	1999 HD ₁₂	
1999 JA	13.6	0.15	19990810	124.35153	56.19765	37.35081	9.39789	0.0406021	3.0890714	30	1	72 days	0.54	M-v	5	Williams	1999 JA
1999 JB	16.6	0.15	19990810	359.63412	178.82400	165.40681	23.66462	0.5663679	1.4203934	64	1	37 days	0.47	M-v	6	Williams	1999 JB
1999 JC	13.0	0.15	19990502	35.30864	320.27328	205.77615	0.12593	0.0584436	3.1633648	9	1	5 days	0.58	E	Williams	1999 JC	
1999 JD	14.2	0.15	19990810	348.54102	183.52552	43.78109	13.59129	0.1041345	2.5460729	47	1	114 days	0.77	M-v	4	Williams	1999 JD
1999 JK	13.7	0.15	19990810	52.82325	312.40347	230.01220	12.32042	0.1207410	3.0562077	47	1	60 days	0.53	M-v	4	Williams	1999 JK
1999 JM	14.3	0.15	19990522	313.40901	97.43896	197.26618	13.08218	0.0911609	2.4891132	35	1	39 days	0.53		Williams	1999 JM	
1999 JN	15.6	0.15	19990412	6.05680	101.13732	109.39480	2.66355	0.1022443	2.2895742	31	1	34 days	0.55		Williams	1999 JN	
1999 JR	15.0	0.15	19990522	2.64947	87.12460	139.20029	13.70640	0.1559205	2.6409448	28	1	39 days	0.54		Williams	1999 JR	
1999 JS	16.3	0.15	19990502	327.97448	186.66730	72.12771	24.07861	0.0679638	1.9288816	50	1	59 days	0.52		Williams	1999 JS	
1999 JV	15.2	0.15	19990522	18.54887	88.93537	118.26843	14.87780	0.0648019	2.5987073	26	1	38 days	1.14		Williams	1999 JV	
1999 JW	15.0	0.15	19990522	334.98688	110.64291	163.11545	13.83368	0.2554219	2.6927025	30	1	38 days	0.40		Williams	1999 JW	
1999 JX	15.1	0.15	19990522	14.75498	80.69540	128.95315	14.37646	0.2019911	2.7444509	29	1	37 days	0.63		Williams	1999 JX	
1999 JZ	13.4	0.15	19990810	52.09284	34.60551	63.29889	26.74698	0.3425215	2.7645239	42	1	178 days	0.69	M-v	3	Williams	1999 JZ
1999 JC ₁	14.9	0.15	19990502	5.23465	116.15689	102.01365	10.50546	0.0356518	3.1707040	12	1	9 days	0.51		Williams	1999 JC ₁	
1999 JE ₁	19.5	0.15	19990502	312.79852	302.50439	53.30380	20.95282	0.7035050	1.3268124	97	1	13 days	0.68		Nakano	1999 JE ₁	
1999 JJ ₁	16.8	0.15	19990810	355.67080	58.28159	197.45606	6.05644	0.1812393	2.3276590	21	1	60 days	0.84	M-v	5	Williams	1999 JJ ₁
1999 JM ₁	15.9	0.15	19990810	4.25445	185.63723	57.37792	3.00228	0.1730353	2.3593403	25	1	62 days	0.56	M-v	5	Williams	1999 JM ₁
1999 JR ₁	14.7	0.15	19990412	282.18111	199.39869	88.36826	3.43976	0.0541725	2.9124445	20	1	39 days	0.54		Williams	1999 JR ₁	
1999 JS ₁	15.5	0.15	19990412	274.61215	112.04075	198.64135	9.41059	0.1802042	2.3072371	27	1	39 days	0.75		Williams	1999 JS ₁	
1999 JT ₁	14.3	0.15	19990412	214.00150	206.98328	153.94153	6.40853	0.2139777	2.3164096	34	1	39 days	0.87		Williams	1999 JT ₁	
1999 JU ₁	15.7	0.15	19990412	280.45556	214.48696	97.38939	6.24517	0.2513129	2.1592287	18	1	26 days	0.95		Williams	1999 JU ₁	
1999 JV ₁	14.2	0.15	19990412	219.47099	302.23465	53.16277	14.34546	0.1975971	2.5556363	21	1	34 days	0.72		Williams	1999 JV ₁	
1999 JX ₁	15.5	0.15	19990412	266.36230	167.95777	144.35959	7.26977	0.1348441	2.3734722	16	1	34 days	0.56		Williams	1999 JX ₁	
1999 JZ ₁	14.9	0.15	19990412	151.00800	253.96734	152.59656	7.22293	0.1394060	2.5342127	17	1	31 days	0.77		Williams	1999 JZ ₁	
1999 JA ₂	14.8	0.15	19990502	84.22426	20.52639	71.75983	9.70861	0.2788938	2.5178315	12	1	4 days	0.78		Williams	1999 JA ₂	
1999 JC ₂	13.3	0.15	19990502	119.66636	314.10676	119.57452	7.22303	0.1484248	3.2392564	13	1	4 days	0.77	E	Williams	1999 JC ₂	
1999 JD ₂	16.1	0.15	19990502	298.86396	185.48671	104.31040	5.49604	0.1666872	2.3891440	13	1	5 days	1.02		Williams	1999 JD ₂	
1999 JE ₂	14.6	0.15	19990502	155.27835	216.99777	189.25018	20.94503	0.2095984	2.3506923	12	1	4 days	0.77	E	Williams	1999 JE ₂	
1999 JG ₂	15.3	0.15	19990502	127.48343	347.80674	90.27563	7.89000	0.0428320	2.3726413	12	1	4 days	0.77	E	Williams	1999 JG ₂	
1999 JH ₂	16.0	0.15	19990412	209.27623	212.32191	145.44893	5.40770	0.0998056	2.2001753	17	1	39 days	0.59		Williams	1999 JH ₂	
1999 JJ ₂	16.5	0.15	19990412	348.65348	77.80397	139.83121	4.22207	0.1652183	2.3025829	25	1	39 days	0.98		Williams	1999 JJ ₂	
1999 JO ₂	16.3	0.15	19990412	3.53473	91.47578	105.16947	4.85637	0.1797509	2.3638416	17	1	34 days	0.54		Williams	1999 JO ₂	
1999 JQ ₂	14.3	0.15	19990412	177.83232	301.98431	82.31259	7.36293	0.1435520	2.3994019	17	1	34 days	0.57		Williams	1999 JQ ₂	
1999 JR ₂	13.9	0.15	19990522	349.04084	14.14031	237.05933	13.69347	0.0554666	2.5853392	64	1	38 days	0.81		Williams	1999 JR ₂	
1999 JT ₂	14.4	0.15	19990522	350.84292	122.44134	121.35659	13.78299	0.1650668	2.7236679	25	1	36 days	0.58		Williams	1999 JT ₂	
1999 JU ₂	16.1	0.15	19990502	355.82359	114.94179	116.68329	13.71145	0.2243410	2.6796601	15	1	9 days	0.76		Williams	1999 JU ₂	
1999 JV ₂	14.3	0.15	19990810	22.84455	68.54913	169.26864	12.91934	0.1407942	2.5424167	61	1	115 days	0.63	M-v	3	Williams	1999 JV ₂
1999 JZ ₂	14.7	0.15	19990502	350.00590	91.56867	142.82297	2.31505	0.0998594	3.0443825	31	1	56 days	0.67		Williams	1999 JZ ₂	

1999 JF ₃	16.9	0.15	19990522	3.44722	300.58215	284.81128	1.55900	0.1374083	2.4093019	22	1	40 days	1.12		Williams	1999 JF ₃
1999 JJ ₃	14.6	0.15	19990522	243.36741	265.05622	94.56983	7.45112	0.1374741	2.3015588	81	1	38 days	0.67		Williams	1999 JJ ₃
1999 JL ₃	14.2	0.15	19990810	70.69083	320.81621	210.86162	22.82709	0.2288931	2.3190722	45	1	80 days	0.48	M-v 4	Williams	1999 JL ₃
1999 JS ₃	16.4	0.15	19990522	315.96644	103.20853	196.64604	7.55501	0.2205405	2.2886479	32	1	35 days	0.90		Williams	1999 JS ₃
1999 JT ₃	16.1	0.15	19990810	350.34560	224.49076	65.12991	9.36084	0.3991425	2.1709622	60	1	59 days	0.66	M-v 4	Williams	1999 JT ₃
1999 JU ₃	19.1	0.15	19990810	178.81693	211.27130	251.73480	5.88188	0.1898891	1.1889800	47	1	39 days	0.63	M-v 6	Williams	1999 JU ₃
1999 JV ₃	19.0	0.15	19990810	0.17185	101.32117	229.24517	15.24720	0.4155194	1.4524017	161	1	41 days	0.68	M-v 6	Williams	1999 JV ₃
1999 JY ₃	14.6	0.15	19990522	331.35740	173.84254	103.12859	3.26552	0.0932540	2.8807608	49	1	37 days	0.94		Williams	1999 JY ₃
1999 JE ₄	16.2	0.15	19990502	303.67906	254.74798	44.12746	14.29401	0.2005614	2.4219306	18	1	5 days	0.78		Williams	1999 JE ₄
1999 JF ₄	18.4	0.15	19990502	319.08538	231.67430	55.13653	0.45587	0.2498841	1.9224679	10	1	7 days	1.04		Williams	1999 JF ₄
1999 JG ₄	16.4	0.15	19990502	323.23514	33.79155	252.85190	7.84622	0.2860832	2.2297314	19	1	9 days	0.70		Williams	1999 JG ₄
1999 JH ₄	14.6	0.15	19990502	326.43587	235.87767	35.52545	17.82208	0.1800872	2.7111532	13	1	9 days	0.96	E	Williams	1999 JH ₄
1999 JJ ₄	16.4	0.15	19990502	9.98716	344.44803	227.49302	19.28337	0.0529443	1.9638482	34	1	49 days	0.70		Williams	1999 JJ ₄
1999 JO ₄	15.1	0.15	19990522	317.10928	60.55377	238.85883	11.71824	0.2588307	2.3065923	28	1	30 days	0.52		Williams	1999 JO ₄
1999 JQ ₄	16.2	0.15	19990412	38.07074	112.70587	45.55369	23.97436	0.2379739	2.3413133	15	1	34 days	0.69		Williams	1999 JQ ₄
1999 JS ₄	15.6	0.15	19990502	348.79801	182.97337	60.70934	13.93563	0.2563762	2.7637359	13	1	9 days	0.96		Williams	1999 JS ₄
1999 JV ₄	15.9	0.15	19990522	70.89191	258.71186	229.54478	21.94323	0.2811559	2.3310939	26	1	35 days	0.85		Williams	1999 JV ₄
1999 JA ₅	17.0	0.15	19990522	334.03140	56.02130	232.21210	18.63670	0.3581857	2.5493648	34	1	35 days	0.70		Williams	1999 JA ₅
1999 JB ₅	17.2	0.15	19990502	328.81958	216.90300	49.72663	5.56334	0.1316430	2.2932255	13	1	9 days	0.72		Williams	1999 JB ₅
1999 JG ₅	15.1	0.15	19990502	149.72334	205.57868	228.29365	24.86201	0.0940877	2.0040426	27	1	9 days	0.75		Williams	1999 JG ₅
1999 JH ₅	15.8	0.15	19990502	36.94248	115.21834	52.15437	29.18401	0.2603585	2.4973893	17	1	8 days	0.62		Williams	1999 JH ₅
1999 JJ ₅	15.0	0.15	19990522	52.13169	273.01547	232.53663	26.42723	0.3384854	2.5815618	42	1	35 days	0.56		Williams	1999 JJ ₅
1999 JK ₅	16.3	0.15	19990502	21.39228	134.86615	59.52914	22.80681	0.2186807	2.2832070	23	1	9 days	0.94		Williams	1999 JK ₅
1999 JN ₅	15.0	0.15	19990502	307.93812	232.59628	67.24667	17.37770	0.1594049	2.4670742	23	1	9 days	0.81		Williams	1999 JN ₅
1999 JO ₅	15.8	0.15	19990522	352.57862	189.01672	57.55628	23.36025	0.0419363	1.9497159	37	1	36 days	0.70		Williams	1999 JO ₅
1999 JQ ₅	17.0	0.15	19990502	28.11910	144.29281	51.84787	23.10826	0.0559115	1.9532911	13	1	7 days	0.77	E	Williams	1999 JQ ₅
1999 JS ₅	15.1	0.15	19990522	72.99032	278.08759	247.75468	20.49621	0.0730991	1.9301767	35	1	36 days	0.86		Williams	1999 JS ₅
1999 JT ₅	15.6	0.15	19990412	228.12815	296.83165	48.55561	23.51241	0.0665553	1.9110795	36	1	55 days	0.72		Williams	1999 JT ₅
1999 JU ₅	17.0	0.15	19990412	60.02431	92.77129	47.51287	22.35113	0.0737104	1.8992046	31	1	37 days	0.96		Williams	1999 JU ₅
1999 JV ₅	15.9	0.15	19990502	59.75018	71.15045	62.69449	21.63428	0.2851114	2.3286061	15	1	6 days	1.30		Williams	1999 JV ₅
1999 JW ₅	16.2	0.15	19990502	85.72345	275.07090	218.67810	19.67788	0.0768957	1.9151904	26	1	55 days	1.31		Williams	1999 JW ₅
1999 JX ₅	14.2	0.15	19990522	44.50565	334.19824	204.98052	27.70372	0.1460216	2.7914612	25	1	31 days	0.69		Williams	1999 JX ₅
1999 JY ₅	15.2	0.15	19990522	1.08983	156.17566	85.94300	25.67249	0.1729899	2.3529663	48	1	33 days	0.42		Williams	1999 JY ₅
1999 JZ ₅	13.8	0.15	19990522	354.13966	132.10004	104.27984	5.59211	0.0162632	2.7944396	47	1	38 days	0.60		Williams	1999 JZ ₅
1999 JA ₆	13.8	0.15	19990522	0.79608	118.74128	117.86941	26.32192	0.1724015	3.2191579	30	1	35 days	0.36		Williams	1999 JA ₆
1999 JB ₆	14.4	0.15	19990810	18.07013	146.81017	58.19981	8.98229	0.0969309	2.8150056	20	1	62 days	0.58	M-v 5	Williams	1999 JB ₆
1999 JC ₆	15.8	0.15	19990502	225.23897	350.58950	8.94178	6.89886	0.0152001	2.2476839	29	1	9 days	0.97	E	Williams	1999 JC ₆
1999 JD ₆	16.7	0.15	19990810	206.85495	309.11716	130.32608	17.04239	0.6329245	0.8825948	169	1	32 days	0.56	M-v 7	Williams	1999 JD ₆
1999 JF ₆	14.9	0.15	19990522	323.36040	188.22823	95.76959	7.67490	0.1629587	2.5540069	75	1	34 days	0.70		Williams	1999 JF ₆
1999 JH ₆	15.8	0.15	19990522	269.26784	141.97189	199.68158	22.35840	0.1247304	1.9246797	26	1	31 days	0.87		Williams	1999 JH ₆
1999 JM ₆	15.7	0.15	19990502	332.26067	23.89612	236.76983	11.95988	0.1720536	2.3496831	36	1	55 days	0.72		Williams	1999 JM ₆
1999 JO ₆	16.9	0.15	19990810	350.59355	250.83968	64.70158	27.88337	0.4907254	2.5821460	53	1	33 days	0.63	M-v 5	Williams	1999 JO ₆
1999 JQ ₆	15.0	0.15	19990522	19.13833	95.07861	21.69116	22.21150	0.3128572	2.3392752	23	1	26 days	0.40		Williams	1999 JQ ₆
1999 JR ₆	18.6	0.15	19990502	80.74000	27.59908	53.09368	17.90559	0.6370972	1.3264035	19	1	5 days	0.99		Williams	1999 JR ₆
1999 JS ₆	18.5	0.15	19990502	333.34425	44.82246	225.44384	57.13356	0.2927569	1.8594051	44	1	5 days	1.06		Williams	1999 JS ₆
1999 JT ₆	16.2	0.15	19990810	72.84543	38.87233	79.06655	9.56512	0.5784384	2.1350274	138	1	117 days	0.60	M-v 4	Williams	1999 JT ₆
1999 JU ₆	19.4	0.15	19990522	326.27277	68.80628	220.28054	22.52030	0.2011649	1.4713086	74	1	29 days	0.93		Williams	1999 JU ₆
1999 JW ₆	19.7	0.15	19990810	349.19327	235.63614	124.75403	5.31186	0.3112084	1.0072231	84	1	22 days	0.62	M-v 8	Williams	1999 JW ₆
1999 JX ₆	16.7	0.15	19990810	124.32483	68.54569	66.44000	51.31533	0.1431402	1.5075585	95	1	39 days	0.56	M-v 6	Williams	1999 JX ₆
1999 JY ₆	15.7	0.15	19990502	333.11631	108.68277	146.68428	6.05941	0.0927338	2.4607080	21	1	8 days	0.74		Williams	1999 JY ₆
1999 JZ ₆	15.1	0.15	19990522	158.95168	324.58895	101.20004	7.74280	0.0819755	2.3527084	35	1	33 days	0.95		Williams	1999 JZ ₆
1999 JD ₇	15.5	0.15	19990502	48.39557	85.22933	81.03351	13.13886	0.0786146	2.6594088	12	1	6 days	1.08		Williams	1999 JD ₇
1999 JE ₇	15.4	0.15	19990502	45.06379	91.37405	75.95331	13.89342	0.1075608	2.6439529	21	1	9 days	0.81		Williams	1999 JE ₇

1999 JJ ₇	15.4	0.15	19990502	133.98557	283.57038	160.72555	10.19333	0.0617656	2.6863207	12	1	6 days	0.91		Williams	1999 JJ ₇
1999 JK ₇	14.4	0.15	19990412	280.28795	215.07456	90.33179	11.77646	0.0842111	2.9795016	22	1	35 days	1.01		Williams	1999 JK ₇
1999 JL ₇	14.5	0.15	19990412	241.71164	168.23518	168.17771	10.64193	0.0055665	3.0318874	23	1	55 days	0.93		Williams	1999 JL ₇
1999 JM ₇	14.9	0.15	19990412	283.43166	182.93722	123.40991	7.98388	0.1221223	2.3688521	33	1	59 days	0.66		Williams	1999 JM ₇
1999 JN ₇	16.1	0.15	19990502	352.76970	79.20817	153.32383	8.44237	0.1922342	2.7418763	13	1	9 days	0.77		Williams	1999 JN ₇
1999 JO ₇	16.1	0.15	19990502	267.45690	204.58866	135.45060	8.91531	0.2366524	2.3474621	12	1	9 days	1.13		Williams	1999 JO ₇
1999 JQ ₇	16.6	0.15	19990502	354.82279	157.28209	70.34490	16.62061	0.2295689	2.7160660	16	1	27 days	0.62		Williams	1999 JQ ₇
1999 JR ₇	15.0	0.15	19990412	9.65507	125.86181	74.71334	17.53531	0.1664755	3.1286288	25	1	36 days	0.95		Williams	1999 JR ₇
1999 JT ₇	17.3	0.15	19990522	15.31747	336.04250	244.21425	1.85737	0.2154906	2.2996331	49	1	40 days	0.65		Williams	1999 JT ₇
1999 JU ₇	17.2	0.15	19990522	314.18169	51.62320	262.63677	1.09854	0.2359758	2.3304314	36	1	33 days	0.86		Williams	1999 JU ₇
1999 JV ₇	15.3	0.15	19990522	54.00024	292.72640	246.89941	11.62386	0.1139449	2.6933252	37	1	40 days	0.79		Williams	1999 JV ₇
1999 JW ₇	16.6	0.15	19990502	14.48766	323.95313	231.02184	19.73153	0.0615403	1.9072402	11	1	3 days	0.34		Williams	1999 JW ₇
1999 JX ₇	17.2	0.15	19990502	240.80576	312.10777	47.86419	22.07267	0.0974569	1.9290155	19	1	8 days	1.08		Williams	1999 JX ₇
1999 JY ₇	14.8	0.15	19990522	346.05725	288.27814	330.41475	2.07364	0.1931531	3.0034845	34	1	36 days	0.56		Williams	1999 JY ₇
1999 JA ₈	14.4	0.15	19990502	44.23808	94.12875	58.49899	23.43747	0.1950080	2.3769424	24	1	59 days	0.55		Williams	1999 JA ₈
1999 JE ₈	14.2	0.15	19990810	90.13271	292.72586	203.77807	22.78526	0.2553414	2.3907018	31	1	109 days	0.66	M-v 4	Williams	1999 JE ₈
1999 JG ₈	13.9	0.15	19990810	80.54458	332.24478	201.37633	24.42397	0.1006356	2.4695518	39	1	80 days	0.66	M-v 4	Williams	1999 JG ₈
1999 JH ₈	15.2	0.15	19990522	95.68275	290.54802	207.11694	23.13063	0.0971675	1.9176457	23	1	31 days	0.78		Williams	1999 JH ₈
1999 JK ₈	15.0	0.15	19990502	330.31654	84.00315	217.86125	27.68046	0.3495642	2.6525552	14	1	5 days	0.82		Williams	1999 JK ₈
1999 JM ₈	15.0	0.15	19990810	3.72307	165.96911	134.13558	13.69460	0.6437715	2.7243225	131	1	71 days	0.52	M-v 4	Williams	1999 JM ₈
1999 JN ₈	16.0	0.15	19990502	331.07166	202.79601	51.22085	35.16771	0.2369224	2.5570768	27	1	3 days	1.01		Williams	1999 JN ₈
1999 JO ₈	16.9	0.15	19990810	6.49460	204.74459	80.74170	24.67322	0.5702703	2.6547556	257	1	39 days	0.56	M-v 5	Williams	1999 JO ₈
1999 JP ₈	15.0	0.15	19990412	291.32711	238.75576	59.48792	12.90494	0.1323384	2.6272954	44	1	39 days	0.97		Williams	1999 JP ₈
1999 JR ₈	15.3	0.15	19990522	58.61136	129.47636	46.98768	4.17386	0.1120813	2.8594693	22	1	33 days	1.09		Williams	1999 JR ₈
1999 JS ₈	16.1	0.15	19990522	45.86490	286.43903	250.43619	10.21551	0.2325792	2.5618034	40	1	37 days	0.74		Williams	1999 JS ₈
1999 JT ₈	16.7	0.15	19990522	332.53234	39.71460	245.14038	15.29865	0.1940768	2.5608666	27	1	37 days	0.84		Williams	1999 JT ₈
1999 JW ₈	13.9	0.15	19990522	298.27142	222.22933	85.92866	10.72777	0.1177351	3.0803109	80	1	30 days	1.01		Williams	1999 JW ₈
1999 JX ₈	16.5	0.15	19990522	309.48653	259.20187	49.36129	1.58041	0.2375804	2.3008547	23	1	28 days	0.93		Williams	1999 JX ₈
1999 JY ₈	14.5	0.15	19990502	298.53650	255.70141	50.46191	13.46570	0.1662041	2.5419159	40	1	53 days	0.60		Williams	1999 JY ₈
1999 JZ ₈	14.3	0.15	19990522	114.51073	3.49297	94.71699	9.64021	0.1686618	2.4007254	41	1	38 days	0.95		Williams	1999 JZ ₈
1999 JB ₉	14.7	0.15	19990522	280.89212	143.13530	179.48696	11.63789	0.1205486	2.7196339	31	1	38 days	0.89		Williams	1999 JB ₉
1999 JD ₉	13.8	0.15	19990522	246.76909	268.13956	80.45744	14.31894	0.0694671	2.8469041	48	1	38 days	0.54		Williams	1999 JD ₉
1999 JE ₉	16.2	0.15	19990502	69.04494	40.22039	92.18307	12.07982	0.1876703	2.4435343	12	1	11 days	0.57		Williams	1999 JE ₉
1999 JF ₉	14.8	0.15	19990502	137.95368	300.89364	143.22453	10.36648	0.0291006	2.9977506	16	1	11 days	0.83		Williams	1999 JF ₉
1999 JG ₉	16.2	0.15	19990522	328.20377	140.50244	135.64139	7.57182	0.1828838	2.3585656	22	1	38 days	0.66		Williams	1999 JG ₉
1999 JL ₉	14.3	0.15	19990522	46.07010	85.49558	86.40172	15.65752	0.1141460	2.6017248	28	1	38 days	0.67		Williams	1999 JL ₉
1999 JN ₉	15.3	0.15	19990412	243.37765	285.17629	49.67228	8.24094	0.1445485	2.3347797	19	1	36 days	0.82		Williams	1999 JN ₉
1999 JQ ₉	14.3	0.15	19990412	98.66781	317.97246	140.76482	5.61422	0.0504129	2.7147842	18	1	34 days	0.77		Williams	1999 JQ ₉
1999 JR ₉	15.5	0.15	19990412	321.81638	200.86747	58.51286	7.81398	0.2040693	2.5367906	23	1	34 days	0.79		Williams	1999 JR ₉
1999 JU ₉	15.0	0.15	19990522	127.79104	282.50622	173.46774	8.93097	0.0722549	2.5229552	23	1	37 days	0.82		Williams	1999 JU ₉
1999 JV ₉	15.3	0.15	19990502	216.86909	168.75557	199.49013	15.17887	0.0201356	2.7566515	16	1	9 days	0.82	E	Williams	1999 JV ₉
1999 JW ₉	15.3	0.15	19990502	234.27177	166.95126	193.71449	13.04803	0.1344020	2.5510587	20	1	9 days	1.04		Williams	1999 JW ₉
1999 JY ₉	14.2	0.15	19990522	322.94779	165.64903	102.25625	10.58239	0.0573240	3.0996356	23	1	37 days	0.80		Williams	1999 JY ₉
1999 JB ₁₀	16.4	0.15	19990522	49.48063	1.22248	168.13254	7.22889	0.1156256	2.3374601	17	1	33 days	0.63		Williams	1999 JB ₁₀
1999 JC ₁₀	16.9	0.15	19990502	354.16187	61.16576	170.03217	6.76613	0.1339559	2.2628154	18	1	9 days	1.00		Williams	1999 JC ₁₀
1999 JD ₁₀	15.7	0.15	19990522	312.49376	197.98508	99.58498	7.53588	0.1971415	2.1975025	32	1	37 days	0.69		Williams	1999 JD ₁₀
1999 JE ₁₀	14.3	0.15	19990502	294.59229	154.30862	139.31606	10.50947	0.0594322	3.0461115	24	1	43 days	1.10		Williams	1999 JE ₁₀
1999 JF ₁₀	15.9	0.15	19990522	11.55655	126.05714	87.61036	11.89328	0.1388145	2.6069531	28	1	33 days	0.91		Williams	1999 JF ₁₀
1999 JM ₁₀	13.5	0.15	19990522	234.96434	263.55963	101.95050	14.75618	0.2150462	2.9858122	19	1	35 days	1.08		Williams	1999 JM ₁₀
1999 JO ₁₀	14.6	0.15	19990502	221.32078	245.78460	115.95024	13.15595	0.0181984	2.8818345	17	1	9 days	0.90	E	Williams	1999 JO ₁₀
1999 JP ₁₀	15.3	0.15	19990502	5.46236	50.15239	166.21907	12.24661	0.0988191	2.7272886	18	1	9 days	0.64		Williams	1999 JP ₁₀
1999 JQ ₁₀	13.8	0.15	19990522	82.93018	320.23233	172.09129	13.38820	0.1131403	2.6812722	28	1	35 days	0.80		Williams	1999 JQ ₁₀
1999 JV ₁₀	14.7	0.15	19990502	53.00861	297.02629	189.52433	5.75755	0.2773284	2.5954895	18	1	7 days	0.91	E	Williams	1999 JV ₁₀

1999 JY ₁₀	15.5	0.15	19990502	296.79434	234.66653	72.53012	23.98845	0.3230482	2.4625127	39	1	3 days	0.92		Williams	1999 JY ₁₀
1999 JZ ₁₀	21.8	0.15	19990810	99.97139	79.94422	54.66717	25.92308	0.4732237	1.3068648	51	1	20 days	0.73	M-v 7	Williams	1999 JZ ₁₀
1999 JA ₁₁	18.8	0.15	19990502	104.28754	328.20730	116.31428	16.44035	0.3409890	1.2612035	36	1	10 days	0.69		Williams	1999 JA ₁₁
1999 JB ₁₁	18.3	0.15	19990502	348.79544	31.30861	216.44821	36.62938	0.2443119	1.8101493	51	1	3 days	0.60		Williams	1999 JB ₁₁
1999 JC ₁₁	15.2	0.15	19990522	306.55767	179.21354	134.76300	3.14381	0.2026659	2.4037408	38	1	35 days	0.96		Williams	1999 JC ₁₁
1999 JD ₁₁	14.7	0.15	19990522	55.75032	350.84830	185.92903	3.47128	0.0681215	2.5213800	37	1	35 days	0.74		Williams	1999 JD ₁₁
1999 JE ₁₁	15.7	0.15	19990522	307.40333	158.63298	152.47522	1.67894	0.1799721	2.3983641	32	1	27 days	0.98		Williams	1999 JE ₁₁
1999 JG ₁₁	14.5	0.15	19990522	326.00608	67.69074	218.66201	11.33346	0.1614138	2.7542972	44	1	35 days	0.64		Williams	1999 JG ₁₁
1999 JJ ₁₁	17.2	0.15	19990522	264.48742	67.34226	272.79275	2.12014	0.1200531	2.2142825	12	1	22 days	0.39		Williams	1999 JJ ₁₁
1999 JK ₁₁	15.7	0.15	19990522	208.72564	161.34929	223.87858	5.10702	0.1298442	2.1880443	30	1	24 days	0.87		Williams	1999 JK ₁₁
1999 JL ₁₁	16.5	0.15	19990522	335.50811	40.83440	224.28982	3.38384	0.1904966	2.5638837	34	1	24 days	0.91		Williams	1999 JL ₁₁
1999 JN ₁₁	15.8	0.15	19990522	322.43121	88.20507	229.36905	27.32151	0.3464521	2.6298512	33	1	35 days	0.70		Williams	1999 JN ₁₁
1999 JP ₁₁	14.3	0.15	19990522	28.39194	122.47546	71.39490	29.23037	0.0969762	2.6152055	23	1	33 days	0.73		Williams	1999 JP ₁₁
1999 JQ ₁₁	16.3	0.15	19990522	119.20135	40.38457	65.68673	24.22202	0.0686653	1.9181883	26	1	33 days	0.64		Williams	1999 JQ ₁₁
1999 JS ₁₁	15.8	0.15	19990522	48.85870	310.81025	219.50353	24.22976	0.1930248	2.1817061	19	1	31 days	0.41		Williams	1999 JS ₁₁
1999 JT ₁₁	15.8	0.15	19990522	122.04893	15.10092	92.47973	24.09813	0.0676723	1.9287846	37	1	33 days	0.48		Williams	1999 JT ₁₁
1999 JV ₁₁	16.8	0.15	19990522	236.76528	286.60056	83.43678	23.91800	0.1042190	1.9122124	28	1	33 days	0.90		Williams	1999 JV ₁₁
1999 JX ₁₁	16.4	0.15	19990522	342.29091	199.05566	74.03300	25.50772	0.2472944	2.2181968	18	1	34 days	0.74		Williams	1999 JX ₁₁
1999 JZ ₁₁	16.3	0.15	19990502	283.14890	205.12554	124.41066	4.39197	0.2628227	2.1833960	11	1	6 days	0.59		Williams	1999 JZ ₁₁
1999 JA ₁₂	13.7	0.15	19990810	0.91931	154.38605	105.94745	24.78524	0.1797015	2.3327203	44	1	108 days	0.53	M-v 4	Williams	1999 JA ₁₂
1999 JB ₁₂	15.8	0.15	19990522	61.62050	308.99631	221.68805	19.83782	0.0645270	1.9626913	28	1	35 days	0.73		Williams	1999 JB ₁₂
1999 JE ₁₂	14.0	0.15	19990502	337.03329	96.93821	190.57293	29.40558	0.2745916	2.5828995	30	1	49 days	0.66		Williams	1999 JE ₁₂
1999 JF ₁₂	15.4	0.15	19990502	320.28354	128.34973	174.54989	23.70915	0.2817795	2.3235008	28	1	50 days	0.71		Williams	1999 JF ₁₂
1999 JK ₁₂	15.8	0.15	19990810	33.57429	112.91703	87.83379	7.81856	0.2507528	2.7505704	34	1	86 days	0.78	M-v 4	Williams	1999 JK ₁₂
1999 JL ₁₂	15.0	0.15	19990522	52.72935	18.39051	145.05621	9.80844	0.1245920	2.7614778	22	1	37 days	0.91		Williams	1999 JL ₁₂
1999 JM ₁₂	15.4	0.15	19990502	257.59567	162.96700	185.36549	13.44303	0.2353898	2.3344379	18	1	10 days	0.95		Williams	1999 JM ₁₂
1999 JN ₁₂	14.6	0.15	19990412	81.19815	334.75595	138.73877	9.58396	0.1935545	2.7763744	21	1	36 days	0.87		Williams	1999 JN ₁₂
1999 JO ₁₂	13.8	0.15	19990412	197.72657	272.49301	110.12428	11.47886	0.1313011	3.0108670	22	1	36 days	0.72		Williams	1999 JO ₁₂
1999 JP ₁₂	14.9	0.15	19990502	94.76505	351.58737	116.56533	10.57403	0.1617443	2.7260549	16	1	10 days	0.72		Williams	1999 JP ₁₂
1999 JQ ₁₂	14.3	0.15	19990502	259.28611	176.08423	169.10222	10.08961	0.2164324	2.5988675	18	1	6 days	0.92		Williams	1999 JQ ₁₂
1999 JR ₁₂	14.4	0.15	19990502	129.41735	275.12534	164.62997	9.94552	0.1305836	2.5541867	41	1	6 days	0.99	E	Williams	1999 JR ₁₂
1999 JS ₁₂	13.1	0.15	19990502	259.34098	264.63474	63.72976	20.41097	0.0885687	3.1924410	57	1	57 days	0.72		Williams	1999 JS ₁₂
1999 JT ₁₂	14.9	0.15	19990502	329.42920	177.35685	81.43764	11.78157	0.1332655	2.3731499	51	1	57 days	0.68		Williams	1999 JT ₁₂
1999 JU ₁₂	15.2	0.15	19990502	202.56485	223.40194	159.17379	8.37134	0.1244010	2.3846073	13	1	4 days	1.09	E	Williams	1999 JU ₁₂
1999 JV ₁₂	16.2	0.15	19990502	292.77766	194.23510	103.94292	8.19782	0.0998779	2.3961725	12	1	4 days	0.93		Williams	1999 JV ₁₂
1999 JW ₁₂	14.7	0.15	19990412	223.32214	177.04991	185.81375	15.31842	0.1292905	2.6357249	19	1	36 days	1.14		Williams	1999 JW ₁₂
1999 JX ₁₂	15.0	0.15	19990502	334.07378	97.51872	161.59088	8.55817	0.1962653	3.0388225	12	1	4 days	0.94	E	Williams	1999 JX ₁₂
1999 JY ₁₂	15.7	0.15	19990502	336.56032	161.77312	91.54129	8.44641	0.1660727	2.3409028	37	1	57 days	0.89		Williams	1999 JY ₁₂
1999 JA ₁₃	15.6	0.15	19990522	343.73027	70.62475	197.50764	2.99721	0.2066122	2.3507011	55	1	37 days	0.75		Williams	1999 JA ₁₃
1999 JB ₁₃	14.5	0.15	19990522	323.74740	181.53046	121.17883	10.34943	0.2601814	2.7349096	31	1	35 days	0.53		Williams	1999 JB ₁₃
1999 JC ₁₃	14.3	0.15	19990522	322.68067	94.46481	195.85671	13.23360	0.1085771	2.5905665	32	1	35 days	0.43		Williams	1999 JC ₁₃
1999 JD ₁₃	16.8	0.15	19990502	5.25837	57.47667	221.68283	5.73553	0.3189712	2.4123461	19	1	8 days	0.26		Williams	1999 JD ₁₃
1999 JK ₁₃	13.4	0.15	19990810	43.74004	71.70935	77.11980	23.64755	0.2332120	2.7752998	30	1	118 days	0.64	M-v 4	Williams	1999 JK ₁₃
1999 JL ₁₃	14.7	0.15	19990502	308.22719	60.02735	233.36626	23.30090	0.2239016	2.3739785	31	1	55 days	1.06		Williams	1999 JL ₁₃
1999 JO ₁₃	14.8	0.15	19990522	228.78325	278.09814	100.90183	5.04042	0.1829133	2.3504380	16	1	35 days	1.06		Williams	1999 JO ₁₃
1999 JP ₁₃	15.4	0.15	19990522	184.77737	335.77926	75.63091	9.53138	0.1145349	2.3041967	16	1	35 days	0.68		Williams	1999 JP ₁₃
1999 JQ ₁₃	15.3	0.15	19990502	244.91487	164.78863	188.87500	4.92473	0.0761447	2.3314754	10	1	8 days	0.88		Williams	1999 JQ ₁₃
1999 JR ₁₃	15.1	0.15	19990522	347.15943	205.49075	49.14118	14.16005	0.1154234	2.6043385	19	1	36 days	0.89		Williams	1999 JR ₁₃
1999 JS ₁₃	14.7	0.15	19990522	281.16168	77.90758	242.80508	15.78621	0.0294356	2.6390999	25	1	36 days	0.62		Williams	1999 JS ₁₃
1999 JT ₁₃	16.2	0.15	19990522	48.13553	81.30951	101.52509	6.09315	0.0727542	2.1853119	21	1	35 days	0.97		Williams	1999 JT ₁₃
1999 JU ₁₃	15.0	0.15	19990502	335.95308	234.71075	37.54875	10.29143	0.2486436	2.3372889	15	1	8 days	0.90		Williams	1999 JU ₁₃
1999 JW ₁₃	16.0	0.15	19990522	44.85881	113.24896	75.74723	5.90732	0.0659102	2.4443836	23	1	34 days	0.90		Williams	1999 JW ₁₃
1999 JY ₁₃	15.2	0.15	19990522	277.20272	106.97237	237.56760	28.54142	0.1284523	2.5841289	20	1	35 days	0.81		Williams	1999 JY ₁₃

1999 JA ₁₄	16.4	0.15	19990502	305.47554	216.46467	80.78961	8.26825	0.1744431	2.2771060	15	1	7 days	0.95		Williams	1999 JA ₁₄
1999 JC ₁₄	16.1	0.15	19990502	136.79450	22.85873	68.42075	24.73686	0.0625602	1.9610812	13	1	6 days	0.84	E	Williams	1999 JC ₁₄
1999 JG ₁₄	15.5	0.15	19990502	314.67410	225.34673	68.03755	25.11870	0.1352207	2.3498442	15	1	6 days	0.90		Williams	1999 JG ₁₄
1999 JH ₁₄	16.5	0.15	19990502	47.29807	90.17018	64.22022	19.70782	0.3162187	2.3019448	15	1	6 days	0.89		Williams	1999 JH ₁₄
1999 JJ ₁₄	15.7	0.15	19990522	48.99515	304.31185	247.46036	18.88751	0.0543698	1.9502988	23	1	33 days	0.73		Williams	1999 JJ ₁₄
1999 JM ₁₄	15.6	0.15	19990502	281.12363	154.19772	172.56325	5.76451	0.1658569	2.3009701	30	1	6 days	1.04		Williams	1999 JM ₁₄
1999 JN ₁₄	16.5	0.15	19990502	339.56752	242.83654	12.77766	9.49507	0.2211828	2.3720047	16	1	9 days	0.78		Williams	1999 JN ₁₄
1999 JO ₁₄	15.4	0.15	19990522	334.68755	127.74438	139.37340	6.84305	0.1811397	2.3281632	56	1	38 days	0.94		Williams	1999 JO ₁₄
1999 JP ₁₄	13.0	0.15	19990412	227.11823	147.63955	215.61751	32.57222	0.2241165	2.6148671	47	1	55 days	0.89		Williams	1999 JP ₁₄
1999 JQ ₁₄	14.1	0.15	19990502	217.77435	286.62875	81.24040	5.04547	0.0745719	2.6135020	32	1	9 days	0.90		Williams	1999 JQ ₁₄
1999 JR ₁₄	15.3	0.15	19990502	16.23070	9.97486	193.27474	5.72888	0.0734340	2.3995817	34	1	9 days	0.81	E	Williams	1999 JR ₁₄
1999 JU ₁₄	13.5	0.15	19990502	281.68063	139.62884	196.18678	9.79890	0.2645021	3.1540778	12	1	3 days	1.31	E	Williams	1999 JU ₁₄
1999 JV ₁₄	13.5	0.15	19990502	298.96049	104.29965	193.25178	8.70156	0.0854690	3.0386730	14	1	3 days	0.58	E	Williams	1999 JV ₁₄
1999 JW ₁₄	15.2	0.15	19990522	108.20818	267.60244	209.96073	14.55844	0.0613235	2.6459939	30	1	26 days	0.95		Williams	1999 JW ₁₄
1999 JX ₁₄	14.3	0.15	19990522	275.57544	202.28250	125.19716	6.99541	0.0474311	2.7367677	18	1	35 days	0.79		Williams	1999 JX ₁₄
1999 JY ₁₄	15.7	0.15	19990522	269.62733	189.24059	153.45846	5.14249	0.2061671	2.1267869	32	1	31 days	0.85		Williams	1999 JY ₁₄
1999 JA ₁₅	15.5	0.15	19990502	328.49356	198.30408	79.80831	12.00928	0.2239939	2.7942042	22	1	6 days	1.18		Williams	1999 JA ₁₅
1999 JC ₁₅	15.2	0.15	19990502	142.46715	356.49856	86.04988	29.60458	0.0603456	2.6195177	11	1	7 days	0.81		Williams	1999 JC ₁₅
1999 JD ₁₅	14.9	0.15	19990522	301.38815	246.97106	86.55523	22.57886	0.2924406	2.3515702	24	1	33 days	0.52		Williams	1999 JD ₁₅
1999 JG ₁₅	15.6	0.15	19990502	259.89039	106.11299	226.94577	6.12583	0.1306142	2.3539121	19	1	9 days	0.76		Williams	1999 JG ₁₅
1999 JH ₁₅	13.4	0.15	19990522	21.60040	90.63095	116.16840	18.12697	0.1282687	3.1478086	36	1	31 days	0.63		Williams	1999 JH ₁₅
1999 JJ ₁₅	14.6	0.15	19990522	351.91003	57.45872	192.56374	21.65419	0.1661956	3.1603985	23	1	28 days	0.69		Williams	1999 JJ ₁₅
1999 JK ₁₅	14.4	0.15	19990810	19.61362	72.56052	162.75870	11.69908	0.2746214	2.6655362	42	1	118 days	0.70	M-v 3	Williams	1999 JK ₁₅
1999 JN ₁₅	14.6	0.15	19990522	357.57591	145.68118	92.41365	16.68575	0.1891189	2.7968109	33	1	33 days	0.79		Williams	1999 JN ₁₅
1999 JP ₁₅	15.1	0.15	19990522	304.60038	142.93022	160.20479	11.89426	0.1165787	2.7119729	28	1	31 days	0.73		Williams	1999 JP ₁₅
1999 JR ₁₅	13.8	0.15	19990810	91.49804	107.62176	41.81172	18.03759	0.1118368	2.5709117	30	1	61 days	0.65	M-v 5	Williams	1999 JR ₁₅
1999 JS ₁₅	16.1	0.15	19990502	291.07064	45.25576	267.40759	1.01721	0.1384563	2.2330203	15	1	9 days	1.05		Williams	1999 JS ₁₅
1999 JT ₁₅	17.2	0.15	19990522	324.69503	137.04357	144.39094	1.42948	0.1455506	2.1556452	23	1	25 days	0.59		Williams	1999 JT ₁₅
1999 JU ₁₅	14.2	0.15	19990522	253.81330	290.68148	70.30823	6.26839	0.1870219	2.2648667	33	1	36 days	0.58		Williams	1999 JU ₁₅
1999 JV ₁₅	16.4	0.15	19990522	303.37240	225.90907	82.34376	7.44711	0.1289138	2.3086910	14	1	39 days	0.78		Williams	1999 JV ₁₅
1999 JX ₁₅	14.5	0.15	19990522	340.29145	220.89030	47.89548	14.86648	0.1245433	2.6239755	23	1	36 days	1.09		Williams	1999 JX ₁₅
1999 JA ₁₆	14.6	0.15	19990522	0.75951	181.60076	52.81889	5.68274	0.1177191	2.5300283	42	1	36 days	0.62		Williams	1999 JA ₁₆
1999 JL ₁₆	15.9	0.15	19990522	50.91808	306.27717	232.72916	5.93688	0.0730761	2.3336987	38	1	36 days	0.80		Williams	1999 JL ₁₆
1999 JM ₁₆	15.1	0.15	19990522	219.82487	154.85181	230.99580	5.70935	0.1363398	2.3503286	26	1	30 days	0.65		Williams	1999 JM ₁₆
1999 JQ ₁₆	15.8	0.15	19990522	190.02765	349.41984	59.49983	12.34605	0.0614769	3.0855609	8	1	21 days	0.18		Williams	1999 JQ ₁₆
1999 JV ₁₆	14.3	0.15	19990522	300.19213	243.50308	56.79861	10.48245	0.0460185	2.9856277	33	1	36 days	0.65		Williams	1999 JV ₁₆
1999 JK ₁₇	18.0	0.15	19990522	14.32664	90.00971	132.65089	5.38683	0.1346552	2.2826641	8	1	26 days	0.49		Williams	1999 JK ₁₇
1999 JQ ₁₇	14.8	0.15	19990611	2.40453	120.81262	125.94855	6.82837	0.0827678	2.5628838	29	1	35 days	0.80		Nakano	1999 JQ ₁₇
1999 JY ₁₈	15.1	0.15	19990502	295.33037	24.96736	269.70464	4.89190	0.1219028	2.3291534	18	1	8 days	0.81		Williams	1999 JY ₁₈
1999 JA ₁₉	14.9	0.15	19990502	319.46222	24.10316	243.04487	6.94202	0.1190800	2.2828437	24	1	34 days	0.77		Williams	1999 JA ₁₉
1999 JH ₁₉	13.5	0.15	19990502	331.16539	244.96288	10.37867	3.59590	0.1689862	3.1548273	19	1	8 days	0.70	E	Williams	1999 JH ₁₉
1999 JJ ₁₉	14.2	0.15	19990502	336.21060	229.38081	17.94881	4.65836	0.1329294	2.5737309	20	1	9 days	0.72	E	Williams	1999 JJ ₁₉
1999 JK ₁₉	15.0	0.15	19990502	44.32370	294.93477	227.82584	8.40431	0.1045370	2.5878166	32	1	34 days	0.85		Williams	1999 JK ₁₉
1999 JL ₁₉	15.0	0.15	19990502	337.05911	247.82426	12.07504	4.72053	0.3057771	2.7487599	18	1	8 days	0.92		Williams	1999 JL ₁₉
1999 JM ₁₉	14.5	0.15	19990502	279.07730	325.74157	345.25542	3.10489	0.1187705	2.2928263	19	1	9 days	0.87		Williams	1999 JM ₁₉
1999 JN ₁₉	15.2	0.15	19990502	317.58221	258.62847	22.72356	6.80592	0.2285562	2.4385783	20	1	8 days	0.85		Williams	1999 JN ₁₉
1999 JP ₁₉	12.9	0.15	19990502	297.49092	291.83624	12.59086	8.31458	0.2226364	3.3361687	17	1	9 days	0.94		Williams	1999 JP ₁₉
1999 JQ ₁₉	14.0	0.15	19990502	336.78279	346.85938	256.70236	7.29900	0.0861757	3.0456467	18	1	33 days	5.11		Williams	1999 JQ ₁₉
1999 JR ₁₉	14.1	0.15	19990502	314.08208	275.42554	3.42020	6.29853	0.1602791	2.3215510	31	1	35 days	0.49		Williams	1999 JR ₁₉
1999 JT ₁₉	15.0	0.15	19990502	345.54891	326.49602	268.90301	5.86151	0.0979140	2.3217036	25	1	34 days	0.95		Williams	1999 JT ₁₉
1999 JV ₁₉	15.2	0.15	19990502	24.86608	276.41260	271.03218	5.20709	0.1127178	2.2711048	27	1	34 days	0.71		Williams	1999 JV ₁₉
1999 JW ₁₉	15.1	0.15	19990502	52.62310	233.36074	283.11715	4.97491	0.0963425	2.2852525	24	1	34 days	0.96		Williams	1999 JW ₁₉
1999 JY ₁₉	13.8	0.15	19990502	315.26919	284.53012	342.90588	5.06524	0.0588447	2.7933026	19	1	9 days	0.87		Williams	1999 JY ₁₉

1999 JZ ₁₉	13.1	0.15	19990502	128.86710	48.56169	24.39936	14.49516	0.2206403	2.6229226	18	1	9 days	0.98	E	Williams	1999 JZ ₁₉
1999 JB ₂₀	13.8	0.15	19990810	5.41141	10.96666	234.42781	10.58517	0.3196270	3.0046490	42	1	106 days	0.57	M-v	4 Williams	1999 JB ₂₀
1999 JE ₂₀	14.5	0.15	19990502	290.38040	49.11792	258.72692	3.35605	0.1854325	2.3429240	19	1	8 days	0.60		Williams	1999 JE ₂₀
1999 JF ₂₀	14.9	0.15	19990502	333.09467	239.83273	24.26559	7.64503	0.2741918	2.9898122	16	1	9 days	0.72		Williams	1999 JF ₂₀
1999 JJ ₂₀	13.1	0.15	19990502	318.40917	228.17263	34.08456	11.87662	0.0531866	3.3487249	37	1	34 days	0.73		Williams	1999 JJ ₂₀
1999 JL ₂₀	15.5	0.15	19990502	333.11729	17.50871	235.23108	1.61476	0.1457670	2.2961792	16	1	9 days	1.06		Williams	1999 JL ₂₀
1999 JP ₂₀	14.6	0.15	19990412	20.21359	146.04097	38.97118	3.06573	0.1022284	2.2701717	26	1	37 days	0.85		Williams	1999 JP ₂₀
1999 JR ₂₀	14.4	0.15	19990502	125.84979	50.53532	38.59852	3.53718	0.0179193	2.2710340	19	1	9 days	0.86	E	Williams	1999 JR ₂₀
1999 JT ₂₀	13.5	0.15	19990502	63.36544	284.32666	205.66025	5.27451	0.1991162	3.1605365	19	1	8 days	0.90	E	Williams	1999 JT ₂₀
1999 JU ₂₀	14.6	0.15	19990502	305.00643	240.04200	54.16457	3.38439	0.2042968	2.2527838	20	1	8 days	0.37		Williams	1999 JU ₂₀
1999 JZ ₂₀	15.6	0.15	19990502	78.45324	74.18681	45.86272	2.99065	0.1647694	2.3136809	26	1	35 days	0.74		Williams	1999 JZ ₂₀
1999 JB ₂₁	15.3	0.15	19990502	333.98279	28.21720	223.41100	4.97979	0.1400228	2.2803064	32	1	35 days	0.76		Williams	1999 JB ₂₁
1999 JD ₂₁	16.4	0.15	19990502	353.27850	189.51243	36.61518	2.48039	0.1042570	2.1840964	23	1	9 days	0.78		Williams	1999 JD ₂₁
1999 JE ₂₁	14.8	0.15	19990502	104.66063	200.49181	255.10008	1.40303	0.1644915	2.3694230	27	1	9 days	0.75		Williams	1999 JE ₂₁
1999 JF ₂₁	13.5	0.15	19990502	224.95557	138.23547	229.24606	6.35258	0.2310336	2.6524165	38	1	35 days	0.82		Williams	1999 JF ₂₁
1999 JG ₂₁	14.6	0.15	19990502	184.88306	1.98981	32.02491	3.76542	0.1475187	2.3153732	29	1	35 days	0.84		Williams	1999 JG ₂₁
1999 JM ₂₁	13.2	0.15	19990502	198.81012	35.10976	347.37467	1.91183	0.1240946	2.7738002	19	1	9 days	0.88		Williams	1999 JM ₂₁
1999 JN ₂₁	14.1	0.15	19990502	294.68297	64.31597	231.10793	8.32311	0.1154411	3.0235319	32	1	35 days	1.01		Williams	1999 JN ₂₁
1999 JO ₂₁	15.2	0.15	19990502	343.07130	257.66968	343.29586	1.68091	0.1388826	2.4553622	18	1	9 days	0.87		Williams	1999 JO ₂₁
1999 JQ ₂₁	13.3	0.15	19990502	286.15843	81.99958	229.30709	21.60416	0.1739022	3.1057195	35	1	55 days	0.93		Williams	1999 JQ ₂₁
1999 JR ₂₁	13.9	0.15	19990502	266.81304	68.87224	258.70888	5.57104	0.1384331	2.3908960	35	1	55 days	0.87		Williams	1999 JR ₂₁
1999 JS ₂₁	14.6	0.15	19990502	278.84505	17.16863	306.32174	3.43613	0.2002253	2.4009511	15	1	9 days	0.74		Williams	1999 JS ₂₁
1999 JV ₂₁	13.6	0.15	19990502	326.16741	14.83401	251.45130	9.72852	0.1732698	3.1498526	28	1	55 days	1.00		Williams	1999 JV ₂₁
1999 JY ₂₁	14.7	0.15	19990502	333.60057	338.47518	270.81200	2.51123	0.0779742	2.2138019	18	1	8 days	0.48		Williams	1999 JY ₂₁
1999 JZ ₂₁	14.4	0.15	19990502	58.33348	102.68340	43.56232	9.11261	0.1107674	2.7580638	16	1	9 days	0.78		Williams	1999 JZ ₂₁
1999 JC ₂₂	13.1	0.15	19990502	220.33058	135.96689	234.66907	12.59992	0.2042375	2.6566545	15	1	8 days	0.84		Williams	1999 JC ₂₂
1999 JE ₂₂	15.1	0.15	19990502	351.78783	256.18868	335.24645	4.50569	0.1390974	2.3189025	19	1	9 days	0.66		Williams	1999 JE ₂₂
1999 JG ₂₂	15.9	0.15	19990502	307.54509	322.15595	339.57435	3.81017	0.2654150	2.3052857	16	1	9 days	1.11		Williams	1999 JG ₂₂
1999 JJ ₂₂	14.9	0.15	19990502	246.39527	53.60470	284.45203	4.84542	0.0390395	2.6771814	27	1	34 days	0.82		Williams	1999 JJ ₂₂
1999 JL ₂₂	15.2	0.15	19990502	45.50946	177.65945	351.53280	3.46169	0.0660558	2.3043391	16	1	9 days	1.11	E	Williams	1999 JL ₂₂
1999 JM ₂₂	14.5	0.15	19990502	281.30685	75.93953	231.55740	12.92512	0.0859724	2.6081656	36	1	34 days	0.93		Williams	1999 JM ₂₂
1999 JN ₂₂	14.4	0.15	19990502	73.28857	92.69299	25.01611	7.49464	0.2549351	2.3445964	19	1	8 days	0.87	E	Williams	1999 JN ₂₂
1999 JO ₂₂	13.1	0.15	19990502	112.52914	212.12807	238.28364	9.78563	0.1731513	2.9752717	16	1	9 days	0.82		Williams	1999 JO ₂₂
1999 JP ₂₂	14.9	0.15	19990502	311.81521	10.93210	276.41851	2.48008	0.1888756	2.2315674	19	1	8 days	0.35		Williams	1999 JP ₂₂
1999 JS ₂₂	14.8	0.15	19990502	340.90011	0.18264	241.70968	3.75803	0.0972438	2.7699091	28	1	9 days	0.86		Williams	1999 JS ₂₂
1999 JU ₂₂	14.8	0.15	19990502	4.29135	350.40161	223.56806	12.74547	0.0363893	2.5611753	32	1	35 days	0.86		Williams	1999 JU ₂₂
1999 JW ₂₂	15.4	0.15	19990502	348.07188	200.17668	34.53610	3.98013	0.1261763	2.3373876	26	1	33 days	0.88		Williams	1999 JW ₂₂
1999 JX ₂₂	16.3	0.15	19990502	311.26885	68.01429	218.21916	0.47449	0.1939529	2.3682295	26	1	30 days	0.80		Williams	1999 JX ₂₂
1999 JY ₂₂	14.9	0.15	19990502	110.62340	53.40689	39.39277	3.76837	0.1391197	2.5618005	27	1	9 days	1.18	E	Williams	1999 JY ₂₂
1999 JB ₂₃	18.3	0.15	19990502	41.91713	314.46256	204.20166	2.27340	0.1956130	2.4721840	21	1	33 days	2.13		Williams	1999 JB ₂₃
1999 JD ₂₃	13.1	0.15	19990502	277.90723	258.53334	43.93205	11.18793	0.0341076	2.9661029	20	1	9 days	0.59		Williams	1999 JD ₂₃
1999 JE ₂₃	13.5	0.15	19990502	45.29646	294.93600	215.19792	23.31190	0.2188586	3.1279335	20	1	7 days	0.88		Williams	1999 JE ₂₃
1999 JF ₂₃	15.4	0.15	19990412	296.98680	189.93725	102.53055	1.23667	0.1660885	2.1468955	28	1	37 days	0.89		Williams	1999 JF ₂₃
1999 JH ₂₃	15.7	0.15	19990502	324.13415	202.15336	61.82430	3.72221	0.1317179	2.3955090	17	1	9 days	1.06		Williams	1999 JH ₂₃
1999 JJ ₂₃	16.5	0.15	19990502	331.03602	54.96647	209.38219	5.62847	0.2288310	2.2214416	38	1	35 days	0.89		Williams	1999 JJ ₂₃
1999 JL ₂₃	14.3	0.15	19990502	345.75810	24.22023	218.23532	11.18897	0.2402716	2.7699190	38	1	55 days	0.67		Williams	1999 JL ₂₃
1999 JM ₂₃	15.3	0.15	19990412	307.63560	226.12742	49.17478	7.02256	0.1078766	2.2671087	30	1	37 days	0.86		Williams	1999 JM ₂₃
1999 JN ₂₃	14.9	0.15	19990412	304.40758	228.06852	50.71772	7.14241	0.1048321	2.3359599	34	1	37 days	0.81		Williams	1999 JN ₂₃
1999 JR ₂₃	14.5	0.15	19990502	227.91630	152.87737	210.30988	5.46705	0.1554725	2.2598520	32	1	34 days	0.81		Williams	1999 JR ₂₃
1999 JS ₂₃	14.6	0.15	19990502	283.04819	100.91075	218.34366	8.39730	0.2031171	2.6721286	31	1	35 days	0.68		Williams	1999 JS ₂₃
1999 JT ₂₃	14.2	0.15	19990502	123.53697	218.52808	220.76156	5.48665	0.1925077	2.7319755	19	1	9 days	0.77		Williams	1999 JT ₂₃
1999 JU ₂₃	12.8	0.15	19990502	69.14630	90.33204	39.36340	1.11693	0.1817493	3.0785126	20	1	9 days	1.11	E	Williams	1999 JU ₂₃
1999 JX ₂₃	15.2	0.15	19990502	252.70784	110.18970	231.71380	4.06218	0.1479568	2.2333607	25	1	9 days	0.72		Williams	1999 JX ₂₃

1999 JY ₂₃	14.3	0.15	19990412	73.54367	97.14830	36.62038	12.81561	0.0689451	2.8038885	27	1	43 days	0.76		Williams	1999 JY ₂₃
1999 JZ ₂₃	15.5	0.15	19990502	221.11194	331.78537	33.66518	7.41258	0.0926397	2.2311878	18	1	9 days	1.13	E	Williams	1999 JZ ₂₃
1999 JA ₂₄	15.5	0.15	19990502	8.07606	172.38515	36.24506	3.74868	0.1767320	2.3854891	34	1	34 days	0.65		Williams	1999 JA ₂₄
1999 JB ₂₄	14.8	0.15	19990502	186.87662	151.05298	243.19713	2.59879	0.0398055	2.2008522	20	1	8 days	0.93	E	Williams	1999 JB ₂₄
1999 JC ₂₄	13.8	0.15	19990502	97.64913	243.29491	224.01853	11.95099	0.1386633	2.6801875	40	1	56 days	0.79		Williams	1999 JC ₂₄
1999 JE ₂₄	13.4	0.15	19990502	180.79205	359.44193	40.64769	14.20197	0.1767032	2.6933538	19	1	8 days	1.01		Williams	1999 JE ₂₄
1999 JG ₂₄	15.1	0.15	19990502	312.38410	269.05914	25.31768	4.89843	0.2552191	2.6515042	17	1	8 days	0.94	E	Williams	1999 JG ₂₄
1999 JH ₂₄	15.0	0.15	19990502	285.47905	281.36544	30.55580	6.86233	0.1482195	2.3373000	33	1	34 days	0.72		Williams	1999 JH ₂₄
1999 JK ₂₄	13.6	0.15	19990502	264.24541	297.22827	34.21879	9.93412	0.1399262	2.7308207	16	1	9 days	0.79		Williams	1999 JK ₂₄
1999 JN ₂₄	13.3	0.15	19990502	302.22637	257.43565	28.75897	10.96237	0.0781103	2.9898681	33	1	56 days	0.90		Williams	1999 JN ₂₄
1999 JO ₂₄	14.3	0.15	19990502	281.34975	289.83763	24.17613	5.86439	0.1243119	2.3494476	18	1	8 days	0.70	E	Williams	1999 JO ₂₄
1999 JP ₂₄	15.5	0.15	19990502	13.91231	309.35263	254.23508	5.31134	0.1010657	2.4661586	31	1	55 days	0.94		Williams	1999 JP ₂₄
1999 JQ ₂₄	14.8	0.15	19990502	302.23662	287.10767	23.45857	7.75174	0.2785423	2.3199121	20	1	9 days	0.55		Williams	1999 JQ ₂₄
1999 JS ₂₄	12.3	0.15	19990502	80.22884	93.75717	31.11146	18.76131	0.1388276	3.0018308	19	1	9 days	0.87	E	Williams	1999 JS ₂₄
1999 JU ₂₄	13.1	0.15	19990502	40.14472	152.38634	25.71516	11.88493	0.0412877	3.1346707	27	1	35 days	0.64		Williams	1999 JU ₂₄
1999 JV ₂₄	14.0	0.15	19990502	87.56394	95.23272	28.01482	16.29248	0.0987673	2.5882654	17	1	9 days	1.31	E	Williams	1999 JV ₂₄
1999 JC ₂₅	15.2	0.15	19990502	338.83371	330.94660	285.19669	4.47836	0.2258762	2.5449489	28	1	9 days	0.80		Williams	1999 JC ₂₅
1999 JE ₂₅	13.6	0.15	19990502	303.74989	281.23874	8.27064	7.02749	0.1091739	2.7767943	20	1	9 days	0.69		Williams	1999 JE ₂₅
1999 JG ₂₅	14.3	0.15	19990502	331.68112	332.07324	287.00739	4.00163	0.1338527	2.3069233	20	1	9 days	0.43		Williams	1999 JG ₂₅
1999 JH ₂₅	14.1	0.15	19990502	258.10112	333.47557	8.07170	6.46443	0.1597080	2.3475784	15	1	9 days	0.96		Williams	1999 JH ₂₅
1999 JO ₂₅	14.8	0.15	19990502	300.01576	61.02166	235.86910	7.01521	0.1453439	2.4513234	18	1	9 days	1.00		Williams	1999 JO ₂₅
1999 JP ₂₅	14.6	0.15	19990502	317.80132	238.47439	32.47514	5.38153	0.0860606	2.4707711	28	1	9 days	0.56		Williams	1999 JP ₂₅
1999 JS ₂₅	13.3	0.15	19990502	123.39840	46.79121	38.73385	10.36092	0.1403765	3.1209930	24	1	9 days	1.07	E	Williams	1999 JS ₂₅
1999 JV ₂₅	13.9	0.15	19990502	278.21409	87.26515	224.01305	4.09828	0.0716309	2.9672143	31	1	34 days	0.65		Williams	1999 JV ₂₅
1999 JW ₂₅	14.6	0.15	19990502	286.59738	278.27060	40.69889	8.16922	0.2074208	2.5762326	28	1	34 days	0.97		Williams	1999 JW ₂₅
1999 JX ₂₅	13.7	0.15	19990412	93.19641	69.09173	43.84648	14.84978	0.0953611	3.1190439	26	1	37 days	1.00		Williams	1999 JX ₂₅
1999 JY ₂₅	14.9	0.15	19990502	310.78587	238.12293	43.44144	2.54667	0.1194822	2.5405155	31	1	35 days	0.75		Williams	1999 JY ₂₅
1999 JB ₂₆	13.7	0.15	19990502	127.13331	228.85362	217.06336	10.89993	0.0731160	2.9830982	24	1	8 days	0.89	E	Williams	1999 JB ₂₆
1999 JH ₂₆	14.5	0.15	19990502	42.47547	95.34716	75.03664	2.88361	0.0698804	2.6930063	16	1	9 days	0.84	E	Williams	1999 JH ₂₆
1999 JJ ₂₆	16.6	0.15	19990502	343.03148	176.03215	71.90219	2.96046	0.2472858	2.6822554	19	1	9 days	1.00		Williams	1999 JJ ₂₆
1999 JK ₂₆	13.7	0.15	19990412	29.55870	131.18176	50.81470	12.18123	0.0577347	3.1971785	29	1	37 days	0.86		Williams	1999 JK ₂₆
1999 JN ₂₆	13.8	0.15	19990502	67.20107	277.03342	205.33900	5.85489	0.2693981	2.5968029	29	1	9 days	0.86	E	Williams	1999 JN ₂₆
1999 JP ₂₆	13.5	0.15	19990502	111.77859	291.24076	169.37669	2.50003	0.0845980	2.9173338	19	1	8 days	0.75		Williams	1999 JP ₂₆
1999 JQ ₂₆	15.6	0.15	19990502	310.92445	77.67387	215.28024	3.28075	0.2245377	2.2883997	37	1	35 days	1.01		Williams	1999 JQ ₂₆
1999 JR ₂₆	15.2	0.15	19990502	297.06759	84.62423	210.47408	2.83248	0.1044280	2.4005554	16	1	9 days	1.05	E	Williams	1999 JR ₂₆
1999 JT ₂₆	15.6	0.15	19990502	5.16612	154.59453	60.78871	1.59594	0.0615811	2.5570086	23	1	9 days	0.96	E	Williams	1999 JT ₂₆
1999 JU ₂₆	14.3	0.15	19990502	149.19295	18.22567	51.11041	1.20802	0.0558399	2.3324668	20	1	9 days	0.71	E	Williams	1999 JU ₂₆
1999 JW ₂₆	15.8	0.15	19990502	30.46165	314.09185	222.25505	10.71948	0.2042532	2.4282154	17	1	8 days	0.84		Williams	1999 JW ₂₆
1999 JZ ₂₆	15.5	0.15	19990522	354.53790	159.73856	74.05140	3.06833	0.1417607	3.1076152	17	1	28 days	0.83		Williams	1999 JZ ₂₆
1999 JA ₂₇	15.3	0.15	19990502	276.23260	161.99289	170.47226	2.37828	0.2414669	2.3493495	25	1	9 days	0.88		Williams	1999 JA ₂₇
1999 JH ₂₇	15.4	0.15	19990502	284.78259	223.78087	89.17860	2.53512	0.1382732	2.3771124	16	1	9 days	1.09		Williams	1999 JH ₂₇
1999 JJ ₂₇	16.2	0.15	19990502	337.74039	188.48054	61.43307	6.01109	0.1152991	2.3302879	25	1	56 days	1.10		Williams	1999 JJ ₂₇
1999 JK ₂₇	14.6	0.15	19990502	288.29125	201.72195	92.99909	3.60432	0.0192036	2.9014055	23	1	9 days	0.72	E	Williams	1999 JK ₂₇
1999 JM ₂₇	15.4	0.15	19990502	44.44466	316.64010	213.14097	14.84004	0.0876878	2.6094889	28	1	9 days	1.05	E	Williams	1999 JM ₂₇
1999 JP ₂₇	14.8	0.15	19990522	328.37713	205.79634	73.81440	6.00181	0.2565651	3.0453031	33	1	28 days	0.96		Williams	1999 JP ₂₇
1999 JQ ₂₇	14.9	0.15	19990502	325.45041	42.92979	218.34417	13.12029	0.0659843	2.5951914	38	1	54 days	0.73		Williams	1999 JQ ₂₇
1999 JS ₂₇	15.2	0.15	19990502	315.02517	163.68504	133.64753	1.22801	0.2922921	2.4569975	20	1	8 days	0.84	E	Williams	1999 JS ₂₇
1999 JT ₂₇	13.7	0.15	19990502	111.83836	271.07754	189.87555	2.46930	0.0930581	2.7284065	17	1	9 days	0.57	E	Williams	1999 JT ₂₇
1999 JU ₂₇	15.8	0.15	19990522	346.67673	190.47595	55.80128	6.54115	0.1117034	2.1869209	29	1	28 days	0.77		Williams	1999 JU ₂₇
1999 JV ₂₇	14.3	0.15	19990502	315.03289	201.54109	83.38423	2.61089	0.1873995	3.1373631	14	1	9 days	0.57		Williams	1999 JV ₂₇
1999 JW ₂₇	14.5	0.15	19990522	334.34358	175.89084	84.34575	2.08411	0.1342145	3.0969193	24	1	28 days	0.84		Williams	1999 JW ₂₇
1999 JY ₂₇	15.5	0.15	19990502	350.43096	116.95700	120.95253	1.31924	0.2320827	2.7616563	33	1	56 days	0.81		Williams	1999 JY ₂₇
1999 JB ₂₈	16.0	0.15	19990502	276.54407	104.39081	212.46744	5.80264	0.0919520	2.1750058	15	1	9 days	0.86	E	Williams	1999 JB ₂₈

1999 JH ₂₈	14.7	0.15	19990502	342.18295	30.07180	219.21779	9.43432	0.1956902	3.1491333	15	1	9 days	0.92	Williams	1999 JH ₂₈
1999 JJ ₂₈	15.6	0.15	19990412	341.14294	203.29094	42.43653	3.30758	0.2444050	2.6481818	32	1	37 days	0.85	Williams	1999 JJ ₂₈
1999 JL ₂₈	14.9	0.15	19990502	344.74700	12.20366	228.18857	5.96089	0.0887340	2.3347441	20	1	9 days	0.67	Williams	1999 JL ₂₈
1999 JM ₂₈	13.6	0.15	19990502	156.68159	179.76420	239.48018	1.34209	0.1720439	2.4035320	19	1	9 days	0.85	E Williams	1999 JM ₂₈
1999 JT ₂₈	15.4	0.15	19990502	7.13050	210.70043	2.42301	2.92442	0.1155424	2.2989176	18	1	9 days	0.94	Williams	1999 JT ₂₈
1999 JU ₂₈	14.9	0.15	19990502	319.85554	322.15072	314.40956	2.48576	0.1611917	2.7282512	14	1	9 days	0.91	Williams	1999 JU ₂₈
1999 JV ₂₈	12.8	0.15	19990522	202.47521	355.18518	32.38271	11.20828	0.0945259	3.0063105	28	1	30 days	0.77	Williams	1999 JV ₂₈
1999 JC ₂₉	14.7	0.15	19990522	316.91681	33.58492	251.36827	8.05842	0.1413183	2.3053705	23	1	30 days	0.65	Williams	1999 JC ₂₉
1999 JG ₂₉	15.1	0.15	19990810	28.88886	327.51341	221.59698	19.67720	0.4065356	3.5040894	90	1	60 days	0.57	M-v 4 Williams	1999 JG ₂₉
1999 JN ₂₉	14.3	0.15	19990502	343.63510	335.91036	260.54729	4.22613	0.0284746	2.7621151	15	1	9 days	1.05	E Williams	1999 JN ₂₉
1999 JQ ₂₉	15.6	0.15	19990502	330.19015	241.95312	19.48475	4.25103	0.1528851	2.2666402	17	1	9 days	1.16	E Williams	1999 JQ ₂₉
1999 JU ₂₉	16.2	0.15	19990502	337.63929	55.59701	195.37307	5.60359	0.1370157	2.4633025	26	1	9 days	0.91	Williams	1999 JU ₂₉
1999 JA ₃₀	14.3	0.15	19990502	317.86021	57.30198	223.14271	25.26804	0.1850761	3.0972469	15	1	9 days	0.84	Williams	1999 JA ₃₀
1999 JB ₃₀	16.0	0.15	19990502	286.75411	88.86377	219.69033	6.41303	0.1310467	2.3348794	19	1	9 days	1.01	Williams	1999 JB ₃₀
1999 JD ₃₀	12.9	0.15	19990502	28.13176	143.77348	47.79366	31.89943	0.1368752	3.3402036	18	1	9 days	0.47	E Williams	1999 JD ₃₀
1999 JJ ₃₀	15.1	0.15	19990522	18.26542	345.53121	230.14988	9.33574	0.0951584	2.2979771	32	1	35 days	0.71	Williams	1999 JJ ₃₀
1999 JL ₃₀	15.0	0.15	19990502	22.44376	165.37376	28.15117	13.83642	0.1463318	2.6164135	36	1	33 days	0.76	Williams	1999 JL ₃₀
1999 JM ₃₀	14.8	0.15	19990502	5.74015	270.77144	305.03404	3.84503	0.1111880	2.3233635	30	1	8 days	0.49	Williams	1999 JM ₃₀
1999 JP ₃₀	14.5	0.15	19990502	322.48201	343.28235	285.81532	5.28963	0.0959500	2.4144390	28	1	55 days	0.69	Williams	1999 JP ₃₀
1999 JR ₃₀	14.5	0.15	19990502	245.74053	346.58562	8.88607	5.80420	0.1831866	2.2441364	18	1	9 days	0.89	Williams	1999 JR ₃₀
1999 JU ₃₀	15.4	0.15	19990502	345.79065	298.19229	308.17449	3.02157	0.2210959	2.6050112	16	1	9 days	0.59	Williams	1999 JU ₃₀
1999 JZ ₃₀	13.7	0.15	19990502	105.95228	228.62961	240.32825	7.57006	0.0833373	2.6692329	19	1	9 days	0.84	Williams	1999 JZ ₃₀
1999 JA ₃₁	14.5	0.15	19990502	172.81524	35.09012	14.23356	3.21303	0.1571647	2.2161872	17	1	9 days	0.89	E Williams	1999 JA ₃₁
1999 JC ₃₁	13.5	0.15	19990502	96.86442	85.88147	16.91126	2.21598	0.2238303	2.5238702	18	1	8 days	1.31	E Williams	1999 JC ₃₁
1999 JD ₃₁	14.2	0.15	19990522	72.33187	125.78088	5.15188	1.83359	0.2079726	3.2159307	20	1	28 days	1.04	Williams	1999 JD ₃₁
1999 JF ₃₁	15.7	0.15	19990502	353.61779	191.73897	38.99751	5.07522	0.1013829	2.2503958	15	1	9 days	0.84	Williams	1999 JF ₃₁
1999 JG ₃₁	14.9	0.15	19990522	289.33587	102.87496	226.11830	9.75826	0.2651494	2.6428540	30	1	30 days	0.79	Williams	1999 JG ₃₁
1999 JH ₃₁	14.2	0.15	19990522	106.30546	242.98038	226.79924	10.08234	0.1018524	3.0461915	22	1	28 days	1.08	Williams	1999 JH ₃₁
1999 JM ₃₁	14.5	0.15	19990502	241.16912	314.36971	45.88729	3.55532	0.2078189	2.1644689	18	1	9 days	0.85	E Williams	1999 JM ₃₁
1999 JO ₃₁	14.5	0.15	19990522	249.64951	170.47661	186.01559	0.85618	0.1906025	2.4303559	36	1	30 days	0.68	Williams	1999 JO ₃₁
1999 JS ₃₁	16.4	0.15	19990502	355.45912	54.09974	174.84513	1.43173	0.1405471	2.3964346	24	1	47 days	0.89	Williams	1999 JS ₃₁
1999 JU ₃₁	15.4	0.15	19990502	348.20467	172.82509	64.81661	3.39191	0.1041022	2.5636667	31	1	56 days	0.93	Williams	1999 JU ₃₁
1999 JV ₃₁	14.7	0.15	19990502	27.21065	127.20661	52.71227	7.35251	0.2318915	2.8980314	37	1	56 days	0.66	Williams	1999 JV ₃₁
1999 JX ₃₁	14.5	0.15	19990522	339.00461	68.53771	187.25697	1.69186	0.1379499	3.1114949	28	1	28 days	0.78	Williams	1999 JX ₃₁
1999 JC ₃₂	14.0	0.15	19990502	349.74879	179.86896	56.12046	14.24869	0.1268115	2.6879397	50	1	58 days	0.92	Williams	1999 JC ₃₂
1999 JE ₃₂	16.2	0.15	19990502	345.48338	81.75416	160.88972	2.52453	0.1667719	2.3735246	17	1	9 days	0.77	Williams	1999 JE ₃₂
1999 JG ₃₂	15.6	0.15	19990502	338.19260	176.42673	74.09960	5.17057	0.1267158	2.3444874	36	1	58 days	0.68	Williams	1999 JG ₃₂
1999 JJ ₃₂	15.8	0.15	19990502	292.46815	166.58287	151.08322	2.83688	0.2348843	2.3811612	23	1	9 days	0.74	Williams	1999 JJ ₃₂
1999 JQ ₃₂	13.6	0.15	19990810	51.17302	128.29955	56.85521	14.38576	0.1486837	2.7177996	45	1	106 days	0.65	M-v 4 Williams	1999 JQ ₃₂
1999 JT ₃₂	15.2	0.15	19990502	106.85370	50.77727	57.93368	8.23117	0.0787376	2.2767172	17	1	9 days	0.74	Williams	1999 JT ₃₂
1999 JW ₃₂	13.4	0.15	19990522	242.41626	293.51942	59.40832	10.15513	0.0785071	3.0199912	28	1	30 days	0.69	Williams	1999 JW ₃₂
1999 JZ ₃₂	15.4	0.15	19990502	316.97247	219.17526	64.07321	3.12841	0.1807546	2.5756759	31	1	39 days	1.05	Williams	1999 JZ ₃₂
1999 JB ₃₃	16.5	0.15	19990522	20.67997	134.54733	67.11779	3.23981	0.1644290	2.4144194	24	1	28 days	0.94	Williams	1999 JB ₃₃
1999 JC ₃₃	15.9	0.15	19990502	340.42341	192.46583	59.17494	6.17702	0.1749036	2.5390036	17	1	9 days	0.97	Williams	1999 JC ₃₃
1999 JF ₃₃	13.0	0.15	19990502	126.40264	226.64569	212.74233	3.93991	0.2347735	2.7221473	19	1	9 days	0.97	Williams	1999 JF ₃₃
1999 JQ ₃₃	15.1	0.15	19990502	346.89950	1.27808	240.44776	5.93794	0.1463372	2.3481745	33	1	55 days	0.47	Williams	1999 JQ ₃₃
1999 JR ₃₃	14.1	0.15	19990502	328.10116	353.43490	266.69177	2.49276	0.0540785	2.7376760	19	1	8 days	0.92	Williams	1999 JR ₃₃
1999 JW ₃₃	13.3	0.15	19990502	9.45392	179.38639	35.56970	16.42435	0.0352196	2.7360352	19	1	9 days	0.70	E Williams	1999 JW ₃₃
1999 JX ₃₃	13.6	0.15	19990502	273.08375	307.21798	24.95416	10.88747	0.1745303	2.5520497	17	1	9 days	0.83	Williams	1999 JX ₃₃
1999 JA ₃₄	12.6	0.15	19990502	70.54002	247.92797	260.38613	8.85999	0.0608209	3.2176429	20	1	9 days	0.67	Williams	1999 JA ₃₄
1999 JC ₃₄	15.2	0.15	19990502	268.38803	2.06468	337.56063	4.99520	0.2029473	2.2373476	15	1	9 days	0.90	Williams	1999 JC ₃₄
1999 JW ₃₄	13.2	0.15	19990502	0.33940	187.92828	37.02466	10.50818	0.0610787	2.9930617	20	1	8 days	0.60	E Williams	1999 JW ₃₄
1999 JC ₃₅	13.0	0.15	19990522	96.57629	247.11329	229.82696	10.70529	0.1416515	3.1838352	22	1	30 days	0.66	Williams	1999 JC ₃₅

1999 JE ₃₅	14.4	0.15	19990502	338.89619	21.10580	231.47589	1.59665	0.1374614	2.7378141	20	1	8 days	0.79		Williams	1999 JE ₃₅
1999 JK ₃₅	15.3	0.15	19990502	232.67296	199.36597	157.44891	0.80480	0.0532459	2.2564710	16	1	9 days	1.24	E	Williams	1999 JK ₃₅
1999 JQ ₃₅	14.8	0.15	19990522	125.43720	10.55606	81.48215	4.90698	0.1467043	2.3143446	17	1	35 days	0.74		Williams	1999 JQ ₃₅
1999 JS ₃₅	15.4	0.15	19990522	57.24233	318.25677	200.94370	7.32878	0.1367626	2.5876499	23	1	25 days	0.71		Williams	1999 JS ₃₅
1999 JU ₃₅	14.6	0.15	19990502	283.85910	256.09653	59.14151	15.61503	0.1206567	2.5940725	19	1	9 days	0.83		Williams	1999 JU ₃₅
1999 JX ₃₅	13.6	0.15	19990522	122.38745	256.90836	202.02755	10.55617	0.0903034	2.9924113	32	1	35 days	0.64		Williams	1999 JX ₃₅
1999 JY ₃₅	16.6	0.15	19990522	347.50135	160.18675	90.80586	4.60066	0.1882204	2.3330790	27	1	35 days	0.70		Williams	1999 JY ₃₅
1999 JA ₃₆	14.1	0.15	19990522	22.34720	93.25501	109.20384	4.88039	0.1052479	3.1398119	28	1	35 days	0.66		Williams	1999 JA ₃₆
1999 JH ₃₆	14.9	0.15	19990522	296.41950	101.54248	211.92224	10.42960	0.1707917	2.6037588	35	1	35 days	0.83		Williams	1999 JH ₃₆
1999 JP ₃₆	14.1	0.15	19990502	357.34971	17.50976	211.41634	4.75861	0.0985051	3.0727152	16	1	9 days	0.71	E	Williams	1999 JP ₃₆
1999 JS ₃₆	15.4	0.15	19990502	331.21825	44.46421	218.66990	5.15934	0.1401188	2.3517254	18	1	9 days	0.73		Williams	1999 JS ₃₆
1999 JT ₃₆	15.5	0.15	19990502	321.39279	64.40516	219.26006	4.54885	0.2260932	2.1724814	40	1	56 days	0.67		Williams	1999 JT ₃₆
1999 JU ₃₆	15.2	0.15	19990502	315.03369	73.73613	207.15659	2.17770	0.1103579	2.5627699	20	1	8 days	1.29	E	Williams	1999 JU ₃₆
1999 JX ₃₆	14.1	0.15	19990502	285.42141	93.06866	225.94539	7.28225	0.1578053	2.7922910	18	1	8 days	1.11	E	Williams	1999 JX ₃₆
1999 JB ₃₇	14.8	0.15	19990502	275.40071	273.97163	50.94398	5.36890	0.1220838	2.3276290	19	1	8 days	0.80	E	Williams	1999 JB ₃₇
1999 JD ₃₇	15.4	0.15	19990502	64.22919	281.32940	229.18200	5.45812	0.1038497	2.2620970	31	1	50 days	0.70		Williams	1999 JD ₃₇
1999 JG ₃₇	14.1	0.15	19990502	221.84292	329.10553	41.24773	8.68385	0.0857589	2.3866938	18	1	8 days	1.07	E	Williams	1999 JG ₃₇
1999 JL ₃₇	14.4	0.15	19990522	304.77382	71.32567	232.44481	12.51212	0.1630019	2.5631996	36	1	35 days	0.57		Williams	1999 JL ₃₇
1999 JT ₃₇	13.3	0.15	19990522	93.01125	111.71463	20.05877	5.61512	0.0595019	2.7877358	24	1	36 days	0.58		Williams	1999 JT ₃₇
1999 JY ₃₇	14.9	0.15	19990502	73.76523	232.04315	271.06794	5.54366	0.0910396	2.4292976	18	1	9 days	0.82		Williams	1999 JY ₃₇
1999 JB ₃₈	14.7	0.15	19990502	348.06520	236.96735	2.89076	5.23956	0.0168344	2.3092423	16	1	9 days	0.88	E	Williams	1999 JB ₃₈
1999 JD ₃₈	15.0	0.15	19990502	325.27806	254.27468	26.23380	8.27157	0.2258932	2.3727603	28	1	55 days	0.61		Williams	1999 JD ₃₈
1999 JT ₃₈	15.0	0.15	19990502	4.35350	203.03329	16.91609	2.80697	0.1194550	2.4046701	25	1	35 days	0.64		Williams	1999 JT ₃₈
1999 JV ₃₈	15.8	0.15	19990502	305.94091	285.02872	16.28496	4.22518	0.1971829	2.2381617	17	1	9 days	0.68		Williams	1999 JV ₃₈
1999 JC ₃₉	13.7	0.15	19990502	34.56525	276.32514	272.45844	4.96496	0.0680721	2.7515673	20	1	9 days	0.74		Williams	1999 JC ₃₉
1999 JD ₃₉	14.4	0.15	19990810	313.22985	24.06240	288.12262	3.05739	0.0948886	2.3420675	28	1	61 days	0.60	M-v 5	Williams	1999 JD ₃₉
1999 JG ₃₉	15.2	0.15	19990810	325.56605	296.08357	20.36837	4.33308	0.2215256	2.2418444	27	1	61 days	0.66	M-v 5	Williams	1999 JG ₃₉
1999 JH ₃₉	14.1	0.15	19990502	352.33259	204.18437	32.78396	7.07432	0.0879753	2.5797616	19	1	9 days	0.40		Williams	1999 JH ₃₉
1999 JN ₃₉	15.9	0.15	19990522	305.64153	283.61855	25.35061	2.84381	0.2005332	2.4111191	28	1	36 days	0.67		Williams	1999 JN ₃₉
1999 JP ₃₉	14.6	0.15	19990502	229.66250	35.68091	333.83941	1.04325	0.1572909	2.2435919	20	1	8 days	0.67		Williams	1999 JP ₃₉
1999 JQ ₃₉	12.6	0.15	19990810	180.89391	18.83922	44.32726	11.25132	0.1000787	2.9836550	36	1	61 days	0.58	M-v 5	Williams	1999 JQ ₃₉
1999 JR ₃₉	13.2	0.15	19990502	217.99879	336.61840	43.86040	7.87863	0.1704656	3.0843888	26	1	9 days	0.95		Williams	1999 JR ₃₉
1999 JV ₃₉	16.3	0.15	19990502	331.82297	222.23841	44.32521	8.04347	0.1738377	2.4720365	20	1	9 days	0.66		Williams	1999 JV ₃₉
1999 JX ₃₉	13.1	0.15	19990502	96.36226	232.09197	233.92600	5.75625	0.2403177	3.1219366	24	1	9 days	0.76	E	Williams	1999 JX ₃₉
1999 JE ₄₀	15.8	0.15	19990522	357.57448	15.92995	221.16514	5.87957	0.1820063	2.5350239	30	1	25 days	0.50		Williams	1999 JE ₄₀
1999 JG ₄₀	15.3	0.15	19990502	8.70537	61.40900	151.30605	1.71465	0.2216914	3.0760325	20	1	48 days	0.59		Williams	1999 JG ₄₀
1999 JL ₄₀	15.2	0.15	19990502	273.05687	209.31284	126.50020	2.11508	0.1981224	2.4056437	27	1	54 days	0.67		Williams	1999 JL ₄₀
1999 JV ₄₀	15.2	0.15	19990522	335.32968	71.07788	199.70675	6.41953	0.2017872	2.3334414	46	1	30 days	0.78		Williams	1999 JV ₄₀
1999 JW ₄₀	15.5	0.15	19990522	338.58321	198.03003	61.53370	14.46120	0.1192211	2.5437621	31	1	36 days	0.80		Williams	1999 JW ₄₀
1999 JX ₄₀	15.6	0.15	19990522	269.28355	146.61036	187.17491	4.92417	0.0894459	2.2128491	26	1	35 days	0.84		Williams	1999 JX ₄₀
1999 JD ₄₁	13.7	0.15	19990810	334.24678	206.89496	71.41835	11.36022	0.0227902	2.5745171	45	1	61 days	0.55	M-v 5	Williams	1999 JD ₄₁
1999 JH ₄₁	15.9	0.15	19990522	345.55255	178.98970	73.75634	10.75448	0.1617884	2.6964135	33	1	35 days	0.73		Williams	1999 JH ₄₁
1999 JJ ₄₁	14.5	0.15	19990522	54.22890	329.20433	214.48983	10.08422	0.0366833	3.0712411	11	1	32 days	0.93		Williams	1999 JJ ₄₁
1999 JL ₄₁	14.2	0.15	19990522	25.02838	358.84573	204.06971	11.15091	0.0887370	3.0721791	43	1	35 days	0.67		Williams	1999 JL ₄₁
1999 JO ₄₁	15.6	0.15	19990522	18.92431	121.63135	90.55519	5.12335	0.0595876	2.3035508	32	1	35 days	0.65		Williams	1999 JO ₄₁
1999 JR ₄₁	14.5	0.15	19990522	294.60982	117.53024	209.90406	10.95723	0.2485613	2.6355112	28	1	35 days	0.72		Williams	1999 JR ₄₁
1999 JT ₄₁	14.1	0.15	19990522	138.61747	278.23909	169.15730	4.03622	0.0894608	2.6334378	39	1	35 days	0.61		Williams	1999 JT ₄₁
1999 JV ₄₁	15.4	0.15	19990502	6.84029	116.62998	101.05923	4.06510	0.1763892	2.8555756	21	1	9 days	0.66		Williams	1999 JV ₄₁
1999 JW ₄₁	14.9	0.15	19990502	341.10337	180.90038	70.33766	9.61244	0.0959810	3.1854388	20	1	9 days	0.70		Williams	1999 JW ₄₁
1999 JX ₄₁	15.5	0.15	19990502	327.90470	82.62043	193.39703	4.50238	0.2188809	2.3536030	33	1	56 days	0.58		Williams	1999 JX ₄₁
1999 JZ ₄₁	16.3	0.15	19990522	2.66120	36.57003	193.89249	2.83046	0.1155019	2.2845418	18	1	26 days	0.61		Williams	1999 JZ ₄₁
1999 JA ₄₂	15.7	0.15	19990522	351.16131	162.92717	82.60164	4.20376	0.1426318	2.4227263	32	1	35 days	0.55		Williams	1999 JA ₄₂
1999 JJ ₄₂	16.3	0.15	19990502	310.56256	238.50884	61.22581	4.87740	0.2254754	2.3025524	17	1	9 days	0.87		Williams	1999 JJ ₄₂

1999 JL ₄₂	14.8	0.15	19990522	291.44677	233.62949	68.95303	3.11736	0.0123480	2.8346264	29	1	36 days	1.01		Williams	1999 JL ₄₂
1999 JN ₄₂	14.5	0.15	19990502	80.94589	81.02510	47.16641	1.63993	0.1684672	3.1171734	22	1	9 days	0.80	E	Williams	1999 JN ₄₂
1999 JP ₄₂	13.5	0.15	19990522	327.26261	49.76716	227.82130	12.66760	0.1577697	3.0368441	46	1	35 days	0.69		Williams	1999 JP ₄₂
1999 JR ₄₂	16.1	0.15	19990502	22.85121	298.33474	257.26266	1.26799	0.1549456	2.3134414	19	1	9 days	0.78		Williams	1999 JR ₄₂
1999 JV ₄₂	16.3	0.15	19990502	340.37596	209.65514	47.52225	10.38722	0.2087017	2.4080642	18	1	8 days	0.89	E	Williams	1999 JV ₄₂
1999 JW ₄₂	16.1	0.15	19990522	327.49896	45.68431	238.24291	5.85129	0.2098820	2.2012607	37	1	36 days	0.51		Williams	1999 JW ₄₂
1999 JY ₄₂	14.6	0.15	19990502	95.87458	234.55738	232.52171	2.60393	0.2238530	2.4921454	16	1	9 days	1.10	E	Williams	1999 JY ₄₂
1999 JE ₄₃	16.1	0.15	19990502	335.18480	247.23088	25.59053	5.50261	0.3043306	2.7177207	16	1	9 days	0.81		Williams	1999 JE ₄₃
1999 JG ₄₃	15.4	0.15	19990502	349.00973	198.31003	42.91174	6.64516	0.0967415	2.3443054	16	1	9 days	0.61		Williams	1999 JG ₄₃
1999 JJ ₄₃	15.4	0.15	19990810	357.25961	234.02291	39.07431	7.06973	0.2020923	2.3091790	26	1	61 days	0.77	M-v 5	Williams	1999 JJ ₄₃
1999 JK ₄₃	14.5	0.15	19990522	341.86281	20.57361	242.09635	11.60713	0.2159563	2.6469326	28	1	36 days	0.50		Williams	1999 JK ₄₃
1999 JQ ₄₃	14.8	0.15	19990810	357.81514	5.03580	258.88978	5.94799	0.0979840	2.3667376	25	1	61 days	0.49	M-v 5	Williams	1999 JQ ₄₃
1999 JW ₄₃	12.7	0.15	19990810	298.90918	52.56191	270.08908	9.48787	0.1011862	3.0056282	27	1	61 days	0.66	M-v 5	Williams	1999 JW ₄₃
1999 JX ₄₃	14.1	0.15	19990522	329.08589	248.15917	32.79995	13.80901	0.1860559	2.6583547	24	1	36 days	0.63		Williams	1999 JX ₄₃
1999 JY ₄₃	14.0	0.15	19990522	185.11703	95.84841	315.63002	5.29776	0.0566150	2.3449880	29	1	36 days	0.60		Williams	1999 JY ₄₃
1999 JG ₄₄	14.1	0.15	19990810	317.63225	273.42726	38.94038	8.63877	0.1321269	2.4544007	31	1	61 days	0.64	M-v 5	Williams	1999 JG ₄₄
1999 JJ ₄₄	15.9	0.15	19990522	349.20944	208.76117	42.66685	10.64168	0.1881397	2.4689291	23	1	36 days	0.81		Williams	1999 JJ ₄₄
1999 JN ₄₄	14.1	0.15	19990810	107.93749	104.54303	37.65568	7.31348	0.0631351	2.3214921	29	1	109 days	0.54	M-v 5	Williams	1999 JN ₄₄
1999 JP ₄₄	15.0	0.15	19990502	65.09196	282.92161	235.47122	13.55827	0.0520710	2.7393595	21	1	9 days	0.93	E	Williams	1999 JP ₄₄
1999 JT ₄₄	14.8	0.15	19990522	263.79784	306.38408	41.11911	6.10266	0.1500225	2.2396920	28	1	36 days	0.79		Williams	1999 JT ₄₄
1999 JV ₄₄	16.5	0.15	19990502	21.68546	286.16344	280.80427	0.66497	0.0046662	2.2055126	21	1	9 days	0.87	E	Williams	1999 JV ₄₄
1999 JX ₄₄	16.9	0.15	19990502	347.08940	192.46454	50.80324	7.05762	0.0747204	2.4080518	20	1	9 days	0.58		Williams	1999 JX ₄₄
1999 JY ₄₄	15.5	0.15	19990502	268.70357	282.28105	47.75578	3.43628	0.0887434	2.1923249	19	1	8 days	0.88	E	Williams	1999 JY ₄₄
1999 JB ₄₅	15.0	0.15	19990522	114.05917	260.25639	215.13188	2.66085	0.0365587	2.7457291	30	1	36 days	0.81		Williams	1999 JB ₄₅
1999 JC ₄₅	15.1	0.15	19990502	275.46788	276.22886	54.75625	7.97153	0.1570135	2.3375387	20	1	9 days	0.65		Williams	1999 JC ₄₅
1999 JD ₄₅	16.7	0.15	19990502	335.05536	217.27018	53.18668	7.13593	0.2677569	2.5705533	22	1	9 days	0.68		Williams	1999 JD ₄₅
1999 JF ₄₅	16.1	0.15	19990502	350.53875	187.58081	55.84668	7.04100	0.2398193	2.6864260	30	1	30 days	0.93		Williams	1999 JF ₄₅
1999 JL ₄₅	15.6	0.15	19990522	175.51641	201.11892	216.07824	5.12085	0.0926865	2.2636385	24	1	35 days	0.81		Williams	1999 JL ₄₅
1999 JN ₄₅	15.5	0.15	19990810	3.25670	39.87138	221.93995	5.10603	0.1381067	2.2495178	39	1	60 days	0.67	M-v 5	Williams	1999 JN ₄₅
1999 JO ₄₅	15.8	0.15	19990522	317.48894	215.28825	67.93568	6.47121	0.0842324	2.5140620	29	1	26 days	0.93		Williams	1999 JO ₄₅
1999 JP ₄₅	16.9	0.15	19990522	353.96411	62.62288	181.56942	1.98401	0.1808651	2.3566637	35	1	35 days	0.90		Williams	1999 JP ₄₅
1999 JQ ₄₅	15.5	0.15	19990522	304.22408	146.47327	161.76248	2.70835	0.1744656	2.3766463	23	1	35 days	0.93		Williams	1999 JQ ₄₅
1999 JT ₄₅	15.0	0.15	19990522	107.90321	2.49248	109.09996	3.05793	0.1388904	2.2924357	32	1	25 days	0.75		Williams	1999 JT ₄₅
1999 JZ ₄₅	14.1	0.15	19990502	251.47000	264.74279	88.82010	8.02590	0.1642076	2.8273788	19	1	5 days	1.00		Williams	1999 JZ ₄₅
1999 JA ₄₆	15.0	0.15	19990810	24.85015	98.56793	127.40891	4.36950	0.1604365	2.5836111	45	1	61 days	0.65	M-v 4	Williams	1999 JA ₄₆
1999 JB ₄₆	13.3	0.15	19990522	15.20014	2.02947	214.26588	15.08076	0.0989380	3.1574230	34	1	35 days	0.75		Williams	1999 JB ₄₆
1999 JC ₄₆	15.1	0.15	19990522	282.36286	137.98077	191.89263	6.37620	0.1507310	2.3043965	38	1	35 days	0.54		Williams	1999 JC ₄₆
1999 JE ₄₆	15.6	0.15	19990522	326.98306	184.20055	101.20023	4.58178	0.2117809	2.3258547	30	1	35 days	0.56		Williams	1999 JE ₄₆
1999 JG ₄₆	14.2	0.15	19990522	235.22954	157.86218	204.31386	10.85109	0.0240069	2.9825454	27	1	35 days	0.72		Williams	1999 JG ₄₆
1999 JH ₄₆	14.7	0.15	19990522	356.98783	19.72689	220.70117	17.59279	0.2359112	3.1622370	41	1	35 days	0.96		Williams	1999 JH ₄₆
1999 JJ ₄₆	15.5	0.15	19990522	308.20242	138.64601	161.11391	3.84413	0.1314703	2.3995867	37	1	35 days	0.74		Williams	1999 JJ ₄₆
1999 JL ₄₆	13.7	0.15	19990502	84.99255	272.01368	201.74724	7.80176	0.2938304	2.9068213	36	1	56 days	0.69		Williams	1999 JL ₄₆
1999 JO ₄₆	14.8	0.15	19990522	258.64888	247.55712	94.96076	3.51200	0.0663531	2.9512943	31	1	35 days	0.78		Williams	1999 JO ₄₆
1999 JR ₄₆	15.2	0.15	19990522	80.19590	75.77473	71.12775	6.52638	0.0687628	2.4545189	35	1	36 days	0.76		Williams	1999 JR ₄₆
1999 JS ₄₆	15.0	0.15	19990502	295.58242	241.26567	65.18434	7.63082	0.1160990	2.3288932	44	1	57 days	0.96		Williams	1999 JS ₄₆
1999 JT ₄₆	14.4	0.15	19990522	69.15692	81.40699	74.66017	5.23079	0.0881159	2.5997806	40	1	36 days	0.67		Williams	1999 JT ₄₆
1999 JV ₄₆	14.4	0.15	19990502	9.70352	80.94014	136.04091	2.14958	0.1558575	3.1945343	46	1	56 days	0.57		Williams	1999 JV ₄₆
1999 JY ₄₆	14.5	0.15	19990522	266.59539	147.62879	187.13607	2.02785	0.0586865	2.8427576	36	1	39 days	0.86		Williams	1999 JY ₄₆
1999 JZ ₄₆	16.0	0.15	19990502	23.34457	349.60028	213.29872	5.05091	0.0587241	2.3919777	20	1	13 days	0.63		Williams	1999 JZ ₄₆
1999 JA ₄₇	14.3	0.15	19990502	318.36557	199.52745	77.98033	3.09534	0.0701361	2.9396613	39	1	57 days	0.74		Williams	1999 JA ₄₇
1999 JB ₄₇	14.6	0.15	19990502	169.26665	297.24071	122.69582	1.46667	0.0712580	2.5760954	21	1	9 days	0.79		Williams	1999 JB ₄₇
1999 JL ₄₇	14.6	0.15	19990502	283.55185	67.11546	259.57348	1.05116	0.1749565	2.6153929	19	1	9 days	0.81	E	Williams	1999 JL ₄₇
1999 JN ₄₇	16.1	0.15	19990502	317.53928	44.60330	235.53088	11.86106	0.0924000	2.5651958	21	1	9 days	1.14		Williams	1999 JN ₄₇

1999 JY ₄₇	13.7	0.15	19990810	33.60189	175.67735	44.05995	16.03967	0.0332369	2.6606299	27	1	78 days	0.55	M-v	4	Williams	1999 JY ₄₇
1999 JE ₄₈	14.0	0.15	19990522	298.49671	67.36537	257.13871	9.97583	0.2369852	2.7944093	25	1	36 days	0.68			Williams	1999 JE ₄₈
1999 JJ ₄₈	14.5	0.15	19990522	333.93161	359.61491	269.29961	6.03177	0.0904938	2.3267895	25	1	36 days	0.34			Williams	1999 JJ ₄₈
1999 JN ₄₈	15.4	0.15	19990522	342.32239	227.86048	35.75451	7.81702	0.1871402	2.4872953	23	1	36 days	0.75			Williams	1999 JN ₄₈
1999 JQ ₄₈	14.9	0.15	19990522	306.85591	317.90980	349.00298	2.32384	0.1669098	2.4153923	24	1	36 days	0.72			Williams	1999 JQ ₄₈
1999 JT ₄₈	13.4	0.15	19990502	189.07725	5.03472	40.43698	4.02614	0.1185820	2.7771313	18	1	9 days	0.76	E		Williams	1999 JT ₄₈
1999 JU ₄₈	16.8	0.15	19990502	36.02125	138.08644	49.50063	7.26212	0.0843523	2.3324968	21	1	9 days	1.12			Williams	1999 JU ₄₈
1999 JX ₄₈	14.9	0.15	19990522	307.35487	63.48319	237.40289	4.86809	0.1221999	2.5206004	33	1	36 days	0.62			Williams	1999 JX ₄₈
1999 JY ₄₈	14.1	0.15	19990502	276.32635	299.87794	42.53268	2.86900	0.2377100	2.7730646	15	1	9 days	0.89	E		Williams	1999 JY ₄₈
1999 JA ₄₉	15.3	0.15	19990522	306.01421	73.87699	236.01611	6.62617	0.1867347	2.5732383	33	1	36 days	0.71			Williams	1999 JA ₄₉
1999 JD ₄₉	13.1	0.15	19990522	109.19013	247.01487	236.21516	20.74945	0.0346676	3.2137376	36	1	36 days	0.69			Williams	1999 JD ₄₉
1999 JF ₄₉	15.1	0.15	19990502	359.63617	177.55790	53.35060	10.27187	0.1432837	2.6526212	17	1	9 days	0.81			Williams	1999 JF ₄₉
1999 JH ₄₉	14.3	0.15	19990502	264.83978	283.05521	59.76121	7.85079	0.1451980	3.1564165	30	1	9 days	0.87			Williams	1999 JH ₄₉
1999 JL ₄₉	14.9	0.15	19990522	6.66566	1.34112	224.92010	5.99183	0.2207907	2.6773340	34	1	35 days	0.66			Williams	1999 JL ₄₉
1999 JM ₄₉	14.4	0.15	19990522	318.22995	119.80898	158.81117	1.80746	0.0236976	2.7083614	31	1	37 days	1.12			Williams	1999 JM ₄₉
1999 JO ₄₉	15.6	0.15	19990502	3.72049	155.81074	67.39359	5.56095	0.1814050	2.3974509	34	1	51 days	0.60			Williams	1999 JO ₄₉
1999 JR ₄₉	14.4	0.15	19990522	321.83535	58.05493	220.68187	10.24539	0.0700290	3.0878026	25	1	26 days	0.96			Williams	1999 JR ₄₉
1999 JS ₄₉	15.7	0.15	19990502	346.70896	186.30602	63.51665	10.67450	0.1946620	2.7376369	31	1	57 days	0.60			Williams	1999 JS ₄₉
1999 JT ₄₉	15.7	0.15	19990522	315.57817	225.12013	68.50747	6.73036	0.1396600	2.2309417	27	1	36 days	0.58			Williams	1999 JT ₄₉
1999 JA ₅₀	14.6	0.15	19990502	327.30951	83.14077	190.55550	5.63397	0.1501944	2.5987738	41	1	56 days	0.53			Williams	1999 JA ₅₀
1999 JG ₅₀	15.6	0.15	19990502	28.11269	65.69896	131.11004	4.29070	0.0668719	2.2302187	40	1	56 days	0.89			Williams	1999 JG ₅₀
1999 JH ₅₀	15.5	0.15	19990522	261.91042	232.83584	119.72286	5.25447	0.1831950	2.2868955	28	1	35 days	0.78			Williams	1999 JH ₅₀
1999 JL ₅₀	15.6	0.15	19990522	86.58288	340.61120	160.93098	4.94938	0.0672974	2.3118684	28	1	35 days	0.72			Williams	1999 JL ₅₀
1999 JM ₅₀	15.3	0.15	19990810	143.12989	297.20062	173.58316	6.21205	0.0558072	2.2913120	30	1	82 days	0.81	M-v	5	Williams	1999 JM ₅₀
1999 JO ₅₀	14.2	0.15	19990522	272.21977	135.35864	213.40780	13.69953	0.2157743	2.5713026	33	1	35 days	0.58			Williams	1999 JO ₅₀
1999 JP ₅₀	14.8	0.15	19990810	7.68873	160.24195	96.47745	5.89339	0.1188903	2.2560964	39	1	82 days	0.58	M-v	4	Williams	1999 JP ₅₀
1999 JW ₅₀	14.1	0.15	19990522	213.52453	199.22578	191.27855	5.95908	0.1265884	2.4821025	24	1	35 days	0.88			Williams	1999 JW ₅₀
1999 JA ₅₁	14.7	0.15	19990502	77.31325	61.76633	82.77907	6.94360	0.0833036	2.4598952	17	1	9 days	0.86			Williams	1999 JA ₅₁
1999 JB ₅₁	14.8	0.15	19990522	280.37219	118.05900	214.99677	11.54610	0.1420452	2.6522747	27	1	35 days	0.72			Williams	1999 JB ₅₁
1999 JC ₅₁	14.9	0.15	19990522	291.65063	136.09903	184.12067	4.03006	0.1307584	2.3468578	33	1	35 days	0.89			Williams	1999 JC ₅₁
1999 JD ₅₁	14.2	0.15	19990522	320.42057	60.47655	222.34558	11.73267	0.0874958	2.8593543	37	1	35 days	0.70			Williams	1999 JD ₅₁
1999 JL ₅₁	14.5	0.15	19990522	341.84591	89.14805	166.79075	2.24078	0.0331930	2.8924550	36	1	39 days	0.90			Williams	1999 JL ₅₁
1999 JQ ₅₁	15.3	0.15	19990522	53.05206	311.31508	227.11791	6.69406	0.0554647	2.3304513	26	1	35 days	0.71			Williams	1999 JQ ₅₁
1999 JS ₅₁	14.7	0.15	19990522	153.20634	238.05934	205.04950	2.19582	0.0156898	2.2524901	25	1	36 days	0.71			Williams	1999 JS ₅₁
1999 JT ₅₁	15.9	0.15	19990522	337.56492	39.97820	228.21725	6.15318	0.1597395	2.3161730	32	1	35 days	0.67			Williams	1999 JT ₅₁
1999 JV ₅₁	14.4	0.15	19990522	336.65124	33.39515	233.46798	13.07664	0.1155502	2.6423213	36	1	35 days	0.63			Williams	1999 JV ₅₁
1999 JW ₅₁	15.5	0.15	19990522	10.54186	182.72718	40.13957	3.08899	0.1632739	2.3333539	28	1	36 days	0.68			Williams	1999 JW ₅₁
1999 JX ₅₁	14.4	0.15	19990502	24.24623	302.06220	262.98611	2.10663	0.0679980	2.8331751	16	1	9 days	1.19	E		Williams	1999 JX ₅₁
1999 JG ₅₂	12.5	0.15	19990522	267.28228	69.80438	272.74757	8.48348	0.0920360	3.0207247	26	1	36 days	0.74			Williams	1999 JG ₅₂
1999 JM ₅₂	13.2	0.15	19990522	263.76160	103.19895	249.13229	7.94110	0.1633363	2.7776637	29	1	36 days	0.64			Williams	1999 JM ₅₂
1999 JQ ₅₂	14.5	0.15	19990502	303.41442	259.23911	56.81885	4.42857	0.2423316	2.5676575	19	1	9 days	0.79	E		Williams	1999 JQ ₅₂
1999 JS ₅₂	14.0	0.15	19990522	35.27535	334.20107	224.91416	8.64840	0.0525429	3.1555989	32	1	39 days	0.77			Williams	1999 JS ₅₂
1999 JU ₅₂	13.9	0.15	19990502	306.66878	67.63703	222.81858	8.87249	0.0331285	3.1899665	15	1	9 days	0.80	E		Williams	1999 JU ₅₂
1999 JV ₅₂	15.9	0.15	19990522	322.76624	148.74932	151.89364	1.73027	0.2751418	2.3526466	36	1	35 days	0.63			Williams	1999 JV ₅₂
1999 JZ ₅₂	13.7	0.15	19990522	7.17494	146.33298	82.23863	6.46021	0.1124749	3.2022826	21	1	36 days	0.91			Williams	1999 JZ ₅₂
1999 JA ₅₃	14.4	0.15	19990522	56.74623	300.71970	224.28351	15.42597	0.1549918	3.1206632	28	1	35 days	0.81			Williams	1999 JA ₅₃
1999 JC ₅₃	15.3	0.15	19990522	327.05204	68.23187	216.66103	10.92494	0.1812328	2.6596894	25	1	35 days	0.79			Williams	1999 JC ₅₃
1999 JF ₅₃	14.9	0.15	19990522	30.43737	108.24505	96.04522	7.33095	0.0527056	2.3489363	38	1	35 days	0.75			Williams	1999 JF ₅₃
1999 JG ₅₃	13.9	0.15	19990810	22.33520	60.85409	173.60198	5.04454	0.1511940	2.5543334	47	1	111 days	0.65	M-v	3	Williams	1999 JG ₅₃
1999 JH ₅₃	14.6	0.15	19990522	316.83714	99.02204	192.11219	7.08047	0.1222157	2.2761637	38	1	35 days	0.45			Williams	1999 JH ₅₃
1999 JL ₅₃	15.6	0.15	19990522	324.71283	146.04687	135.98664	6.00536	0.1131486	2.6433795	29	1	35 days	0.87			Williams	1999 JL ₅₃
1999 JN ₅₃	15.9	0.15	19990522	319.41878	181.33112	109.82036	4.83460	0.1404952	2.1974917	27	1	35 days	0.64			Williams	1999 JN ₅₃
1999 JO ₅₃	14.7	0.15	19990522	273.54539	268.84236	77.67770	12.79114	0.1912161	2.6064658	29	1	35 days	0.66			Williams	1999 JO ₅₃

1999 JR ₅₃	15.9	0.15	19990522	351.96203	170.83486	76.88198	6.60018	0.0862129	2.4570310	32	1	36 days	0.71	Williams	1999 JR ₅₃
1999 JS ₅₃	14.5	0.15	19990502	118.08189	269.16610	194.47534	4.75080	0.1306462	2.5193431	31	1	56 days	0.84	Williams	1999 JS ₅₃
1999 JU ₅₃	14.3	0.15	19990522	7.08315	164.57184	64.90746	15.65552	0.0984057	2.5590284	41	1	36 days	0.61	Williams	1999 JU ₅₃
1999 JW ₅₃	15.2	0.15	19990502	342.17347	183.98685	69.35709	8.25641	0.0780224	2.4909442	33	1	57 days	0.85	Williams	1999 JW ₅₃
1999 JZ ₅₃	15.9	0.15	19990522	9.18923	130.41093	95.88826	3.11004	0.1481510	2.3068046	32	1	30 days	0.71	Williams	1999 JZ ₅₃
1999 JB ₅₄	15.6	0.15	19990502	354.51988	178.18544	61.16552	4.27882	0.1531161	2.4349013	18	1	9 days	1.38	E Williams	1999 JB ₅₄
1999 JC ₅₄	14.1	0.15	19990502	292.94096	266.06065	66.20769	5.42342	0.2666788	2.8672037	18	1	9 days	1.28	E Williams	1999 JC ₅₄
1999 JD ₅₄	14.7	0.15	19990522	354.82683	13.68549	232.25067	12.71313	0.1271092	2.6159496	38	1	35 days	0.67	Williams	1999 JD ₅₄
1999 JF ₅₄	13.4	0.15	19990502	17.50326	122.98558	88.94612	2.43386	0.1272903	3.1940523	18	1	9 days	0.77	E Williams	1999 JF ₅₄
1999 JG ₅₄	14.5	0.15	19990522	353.91093	193.46730	54.22936	10.47927	0.1796919	3.1440720	22	1	36 days	0.87	Williams	1999 JG ₅₄
1999 JH ₅₄	15.2	0.15	19990522	321.29967	237.65854	54.73854	11.25347	0.1733744	2.5668167	21	1	36 days	0.87	Williams	1999 JH ₅₄
1999 JI ₅₄	14.7	0.15	19990522	29.99468	148.17177	52.74575	6.08650	0.1220890	2.6754167	26	1	36 days	1.13	Williams	1999 JI ₅₄
1999 JL ₅₄	15.0	0.15	19990502	69.63613	108.82524	46.42746	3.52242	0.0749357	2.2617331	20	1	9 days	0.62	Williams	1999 JL ₅₄
1999 JN ₅₄	15.3	0.15	19990522	345.94416	240.24512	22.24642	4.81332	0.2093899	2.3377167	27	1	36 days	0.72	Williams	1999 JN ₅₄
1999 JO ₅₄	13.6	0.15	19990522	348.25040	3.01898	253.30126	11.80628	0.1323990	2.6412229	30	1	36 days	0.46	Williams	1999 JO ₅₄
1999 JP ₅₄	13.3	0.15	19990502	220.10302	118.85240	266.62722	9.07050	0.1400192	2.5526370	16	1	9 days	0.75	E Williams	1999 JP ₅₄
1999 JT ₅₄	14.0	0.15	19990522	269.78163	348.29157	349.99543	1.60265	0.0609733	2.9034356	15	1	36 days	0.73	Williams	1999 JT ₅₄
1999 JU ₅₄	14.5	0.15	19990502	316.04463	26.58382	256.51347	2.37698	0.0490969	2.5532222	17	1	9 days	1.08	E Williams	1999 JU ₅₄
1999 JV ₅₄	14.5	0.15	19990522	344.84353	214.05729	50.93989	1.51777	0.2381417	3.0844882	27	1	36 days	0.82	Williams	1999 JV ₅₄
1999 JX ₅₄	14.2	0.15	19990522	28.75540	326.44899	237.56830	12.04323	0.1158415	2.6894297	29	1	36 days	0.77	Williams	1999 JX ₅₄
1999 JY ₅₄	15.1	0.15	19990522	325.47802	232.66975	51.98138	6.43773	0.1310836	2.2912680	24	1	36 days	0.56	Williams	1999 JY ₅₄
1999 JZ ₅₄	14.6	0.15	19990522	55.93369	282.00864	244.64112	4.86455	0.1693328	2.7407586	26	1	36 days	0.63	Williams	1999 JZ ₅₄
1999 JA ₅₅	15.7	0.15	19990502	261.29570	85.94120	253.52060	0.50511	0.0594650	2.1525004	17	1	9 days	1.20	E Williams	1999 JA ₅₅
1999 JB ₅₅	15.6	0.15	19990502	298.09368	80.91290	228.73771	2.07398	0.1364485	2.2350477	18	1	9 days	0.70	E Williams	1999 JB ₅₅
1999 JC ₅₅	15.3	0.15	19990522	343.54553	32.48817	228.56742	4.44677	0.1260260	2.3502882	33	1	36 days	0.77	Williams	1999 JC ₅₅
1999 JE ₅₅	14.6	0.15	19990522	18.19120	0.84623	217.68935	12.35105	0.0837016	2.7365773	29	1	35 days	0.76	Williams	1999 JE ₅₅
1999 JF ₅₅	15.5	0.15	19990522	330.14281	192.73687	92.41502	6.27372	0.2193300	2.3521938	43	1	35 days	0.59	Williams	1999 JF ₅₅
1999 JG ₅₅	16.4	0.15	19990522	322.27146	123.51205	169.65192	4.49144	0.1901009	2.4093585	25	1	29 days	0.73	Williams	1999 JG ₅₅
1999 JH ₅₅	15.3	0.15	19990522	305.05207	93.88713	216.24759	12.70284	0.1495134	2.6430906	26	1	29 days	0.72	Williams	1999 JH ₅₅
1999 JJ ₅₅	15.9	0.15	19990522	318.10505	200.89680	96.58461	6.31399	0.1785442	2.2045689	24	1	35 days	1.21	Williams	1999 JJ ₅₅
1999 JL ₅₅	15.7	0.15	19990522	299.42094	209.15314	102.01265	7.14962	0.1067036	2.4238022	27	1	35 days	0.88	Williams	1999 JL ₅₅
1999 JM ₅₅	15.9	0.15	19990522	49.55863	83.93723	80.71469	12.55464	0.2320772	2.5497363	29	1	35 days	0.78	Williams	1999 JM ₅₅
1999 JN ₅₅	15.1	0.15	19990522	241.88151	253.05807	118.76832	7.03536	0.1641505	2.4803377	30	1	35 days	0.87	Williams	1999 JN ₅₅
1999 JO ₅₅	14.7	0.15	19990810	338.92057	98.60084	194.69108	9.69427	0.2109393	3.0426980	35	1	82 days	0.67	M-v 4 Williams	1999 JO ₅₅
1999 JR ₅₅	15.9	0.15	19990522	292.56253	142.61365	183.16811	5.44774	0.1586186	2.3117009	26	1	35 days	0.72	Williams	1999 JR ₅₅
1999 JS ₅₅	13.9	0.15	19990810	328.72844	214.36916	86.99754	10.23275	0.1355025	2.7840537	40	1	111 days	0.64	M-v 5 Williams	1999 JS ₅₅
1999 JT ₅₅	15.5	0.15	19990522	324.62285	110.53750	175.49524	5.74528	0.1293297	2.6196210	30	1	35 days	0.81	Williams	1999 JT ₅₅
1999 JW ₅₅	15.3	0.15	19990502	336.05884	109.99866	146.74194	2.15950	0.0683463	3.0263781	15	1	13 days	0.74	Williams	1999 JW ₅₅
1999 JZ ₅₅	15.1	0.15	19990502	332.15941	229.26806	42.63730	4.35543	0.2149163	2.7225730	18	1	9 days	0.56	Williams	1999 JZ ₅₅
1999 JD ₅₆	15.8	0.15	19990522	80.08259	69.79754	76.72968	6.25458	0.0814966	2.3562068	32	1	36 days	0.73	Williams	1999 JD ₅₆
1999 JF ₅₆	15.5	0.15	19990522	349.36533	44.11033	207.31593	7.32292	0.1622631	2.8064836	23	1	35 days	0.63	Williams	1999 JF ₅₆
1999 JJ ₅₆	14.1	0.15	19990522	296.29069	112.07587	211.20906	12.31675	0.2027085	2.7734779	27	1	35 days	0.61	Williams	1999 JJ ₅₆
1999 JK ₅₆	16.2	0.15	19990522	347.04483	95.21585	160.80929	3.48092	0.1721953	2.2970431	22	1	35 days	0.80	Williams	1999 JK ₅₆
1999 JL ₅₆	15.1	0.15	19990522	319.24650	125.23373	164.56814	3.93904	0.1409559	2.7683361	27	1	35 days	0.78	Williams	1999 JL ₅₆
1999 JM ₅₆	16.0	0.15	19990522	314.54725	192.73942	106.37765	2.41851	0.1762768	2.3980188	23	1	36 days	0.89	Williams	1999 JM ₅₆
1999 JQ ₅₆	13.6	0.15	19990522	101.63340	224.36956	261.20970	8.08898	0.1033030	2.7711208	22	1	36 days	0.93	Williams	1999 JQ ₅₆
1999 JS ₅₆	13.5	0.15	19990502	239.14749	329.99994	48.87946	5.62671	0.2863306	2.4573430	17	1	9 days	0.88	Williams	1999 JS ₅₆
1999 JU ₅₆	14.9	0.15	19990502	3.36429	151.56273	75.86099	7.85928	0.0992315	2.5915610	18	1	9 days	0.80	Williams	1999 JU ₅₆
1999 JX ₅₆	14.5	0.15	19990522	330.62517	191.02701	80.67342	11.96225	0.0732948	3.1847232	21	1	35 days	0.67	Williams	1999 JX ₅₆
1999 JY ₅₆	15.9	0.15	19990522	324.12678	88.58579	199.02126	4.10793	0.1654195	2.3276033	21	1	35 days	0.60	Williams	1999 JY ₅₆
1999 JZ ₅₆	12.4	0.15	19990502	201.28525	355.62594	45.70408	1.90552	0.2020603	3.0599160	17	1	9 days	0.75	E Williams	1999 JZ ₅₆
1999 JA ₅₇	16.1	0.15	19990522	44.42607	308.72441	237.60257	3.42962	0.0949141	2.4481645	24	1	36 days	0.78	Williams	1999 JA ₅₇
1999 JB ₅₇	16.1	0.15	19990522	327.32139	240.31985	47.79916	5.07178	0.2046932	2.2566541	22	1	36 days	0.65	Williams	1999 JB ₅₇

1999 JD ₅₇	16.2	0.15	19990522	326.48477	170.53731	113.31168	5.94455	0.1559730	2.2848632	35	1	35 days	0.62		Williams	1999 JD ₅₇
1999 JF ₅₇	14.2	0.15	19990522	6.00306	200.85997	30.32822	8.49924	0.1184247	2.6091043	22	1	36 days	0.66		Williams	1999 JF ₅₇
1999 JH ₅₇	15.1	0.15	19990522	306.16707	192.53418	124.60958	3.43742	0.2185222	2.4269663	34	1	35 days	0.78		Williams	1999 JH ₅₇
1999 JJ ₅₇	14.5	0.15	19990522	355.05534	84.12024	163.35154	3.44683	0.1578411	3.0305342	22	1	35 days	0.45		Williams	1999 JJ ₅₇
1999 JK ₅₇	15.0	0.15	19990502	326.04518	179.35858	97.73059	4.67142	0.1345435	2.3110596	36	1	57 days	0.67		Williams	1999 JK ₅₇
1999 JL ₅₇	15.1	0.15	19990522	326.78699	210.29004	83.87374	6.64571	0.2501125	2.5555368	34	1	36 days	0.80		Williams	1999 JL ₅₇
1999 JT ₅₇	14.1	0.15	19990810	317.23511	259.65995	51.62474	8.71722	0.0554729	2.3798532	28	1	78 days	0.50	M-v 5	Williams	1999 JT ₅₇
1999 JA ₅₈	13.2	0.15	19990522	30.65892	145.37507	62.33865	10.55757	0.0430263	3.0599496	27	1	36 days	0.63		Williams	1999 JA ₅₈
1999 JB ₅₈	14.8	0.15	19990502	15.85687	177.51829	35.09258	1.85006	0.1792243	2.9183601	16	1	9 days	0.89	E	Williams	1999 JB ₅₈
1999 JC ₅₈	15.7	0.15	19990522	47.62824	144.90224	35.10680	2.34750	0.1450147	2.4413211	20	1	36 days	0.95		Williams	1999 JC ₅₈
1999 JD ₅₈	14.5	0.15	19990522	327.10864	26.86709	267.02753	4.61107	0.2245188	2.5448305	24	1	36 days	0.65		Williams	1999 JD ₅₈
1999 JE ₅₈	13.4	0.15	19990522	27.76718	309.92205	253.16419	12.97381	0.1948321	3.1526242	29	1	36 days	0.63		Williams	1999 JE ₅₈
1999 JJ ₅₈	13.2	0.15	19990810	165.01210	39.83889	54.20498	14.64728	0.0382973	2.5892629	33	1	109 days	0.62	M-v 4	Williams	1999 JJ ₅₈
1999 JK ₅₈	15.6	0.15	19990522	322.87264	34.70518	256.28115	4.34276	0.1469831	2.2845729	24	1	36 days	0.79		Williams	1999 JK ₅₈
1999 JN ₅₈	15.4	0.15	19990522	307.65878	243.81367	61.74099	7.29352	0.1214597	2.3395703	27	1	36 days	0.77		Williams	1999 JN ₅₈
1999 JO ₅₈	14.2	0.15	19990522	79.60643	269.39654	237.27847	12.72553	0.1321065	2.6306091	33	1	36 days	0.62		Williams	1999 JO ₅₈
1999 JP ₅₈	15.6	0.15	19990522	39.25914	327.54608	229.40944	5.56091	0.0714631	2.2997604	26	1	36 days	0.69		Williams	1999 JP ₅₈
1999 JR ₅₈	14.9	0.15	19990522	334.90751	53.44043	226.14583	7.02411	0.2098449	2.7721706	40	1	36 days	0.60		Williams	1999 JR ₅₈
1999 JT ₅₈	14.0	0.15	19990502	237.38204	316.44088	65.06559	15.08741	0.2576431	2.6046153	17	1	9 days	0.88	E	Williams	1999 JT ₅₈
1999 JU ₅₈	14.5	0.15	19990522	38.11880	354.30124	197.55966	2.42944	0.1446930	2.6718384	47	1	36 days	0.65		Williams	1999 JU ₅₈
1999 JW ₅₈	14.5	0.15	19990522	75.67312	286.61195	225.62503	12.75061	0.1184598	2.6822485	21	1	35 days	0.68		Williams	1999 JW ₅₈
1999 JX ₅₈	15.3	0.15	19990522	293.85167	247.56830	75.89590	7.36188	0.1449750	2.2764211	30	1	36 days	0.62		Williams	1999 JX ₅₈
1999 JY ₅₈	15.6	0.15	19990502	345.91369	157.66155	96.12336	3.82777	0.1362729	2.5628895	16	1	9 days	0.98		Williams	1999 JY ₅₈
1999 JA ₅₉	14.6	0.15	19990502	132.83840	264.96832	191.59091	5.06701	0.0975095	2.4501803	19	1	9 days	0.79		Williams	1999 JA ₅₉
1999 JC ₅₉	14.2	0.15	19990522	63.39759	90.64283	76.34039	14.40793	0.0946522	2.6196191	37	1	36 days	0.66		Williams	1999 JC ₅₉
1999 JG ₅₉	15.1	0.15	19990502	324.28705	191.66632	88.83662	9.74977	0.1177457	2.7218745	18	1	8 days	1.05		Williams	1999 JG ₅₉
1999 JH ₅₉	15.0	0.15	19990522	10.44533	16.49575	211.67010	10.67045	0.1403478	2.7695259	36	1	35 days	0.81		Williams	1999 JH ₅₉
1999 JJ ₅₉	16.1	0.15	19990522	327.49682	110.58809	174.50575	5.15214	0.1525345	2.3068993	27	1	35 days	0.78		Williams	1999 JJ ₅₉
1999 JK ₅₉	15.4	0.15	19990522	342.61333	84.09951	187.56638	5.42642	0.2564968	2.5551290	37	1	35 days	0.63		Williams	1999 JK ₅₉
1999 JN ₅₉	15.3	0.15	19990810	354.74829	128.74690	149.71667	5.05625	0.1397325	2.3096928	38	1	82 days	0.55	M-v 4	Williams	1999 JN ₅₉
1999 JP ₅₉	14.5	0.15	19990522	300.29250	147.74226	161.02038	6.32455	0.0583753	2.6379017	34	1	39 days	0.62		Williams	1999 JP ₅₉
1999 JQ ₅₉	15.2	0.15	19990522	329.48932	172.11002	110.42524	5.83036	0.1454253	2.2819823	33	1	35 days	0.61		Williams	1999 JQ ₅₉
1999 JS ₅₉	15.4	0.15	19990522	16.79238	63.76686	156.03676	4.36036	0.1388353	2.5272522	25	1	35 days	0.80		Williams	1999 JS ₅₉
1999 JT ₅₉	16.0	0.15	19990502	345.54659	182.00883	76.08650	9.37810	0.2649263	2.4044728	33	1	57 days	0.61		Williams	1999 JT ₅₉
1999 JU ₅₉	15.9	0.15	19990522	309.48412	104.01921	207.59649	5.82497	0.1873971	2.2374092	22	1	35 days	0.69		Williams	1999 JU ₅₉
1999 JV ₅₉	14.8	0.15	19990522	290.68121	180.23074	153.20668	3.72988	0.1930987	2.4460918	25	1	35 days	0.67		Williams	1999 JV ₅₉
1999 JW ₅₉	14.1	0.15	19990522	329.62707	64.33946	218.82302	10.53142	0.1402116	3.0838169	23	1	35 days	0.60		Williams	1999 JW ₅₉
1999 JX ₅₉	14.9	0.15	19990522	340.79587	93.97394	172.26842	3.98953	0.1030730	2.6021900	27	1	35 days	0.71		Williams	1999 JX ₅₉
1999 JY ₅₉	15.3	0.15	19990522	327.99243	148.45695	141.13652	2.75638	0.2051791	2.3879846	30	1	36 days	0.51		Williams	1999 JY ₅₉
1999 JZ ₅₉	15.7	0.15	19990522	352.34625	110.38312	142.55954	1.71335	0.1540457	2.4027588	37	1	36 days	0.67		Williams	1999 JZ ₅₉
1999 JA ₆₀	17.0	0.15	19990502	348.70775	148.06592	100.47691	1.79657	0.1376813	2.1256638	14	1	9 days	0.93	E	Williams	1999 JA ₆₀
1999 JB ₆₀	14.4	0.15	19990522	20.05800	335.48787	235.54046	14.27160	0.2191370	2.8562351	43	1	35 days	0.64		Williams	1999 JB ₆₀
1999 JF ₆₀	15.4	0.15	19990522	63.41882	95.39577	63.16367	8.10438	0.1833042	2.3276824	23	1	36 days	1.02		Williams	1999 JF ₆₀
1999 JJ ₆₀	14.2	0.15	19990522	300.26794	277.35010	50.15350	11.12208	0.2168043	2.3304975	30	1	36 days	0.65		Williams	1999 JJ ₆₀
1999 JK ₆₀	13.9	0.15	19990522	344.10715	286.29972	337.35251	4.18946	0.1358704	2.2337357	29	1	36 days	0.76		Williams	1999 JK ₆₀
1999 JL ₆₀	13.9	0.15	19990522	18.39476	314.83734	265.54305	11.49311	0.1300820	2.6837199	28	1	36 days	0.66		Williams	1999 JL ₆₀
1999 JN ₆₀	15.6	0.15	19990502	91.16735	90.60372	52.17622	4.91110	0.0409373	2.2425774	16	1	9 days	1.02	E	Williams	1999 JN ₆₀
1999 JO ₆₀	15.0	0.15	19990522	7.55693	350.74088	242.77199	5.40645	0.1464632	2.2942555	29	1	36 days	0.55		Williams	1999 JO ₆₀
1999 JQ ₆₀	15.9	0.15	19990522	336.76558	199.27208	82.74506	5.52871	0.2517602	2.5418425	29	1	36 days	0.92		Williams	1999 JQ ₆₀
1999 JR ₆₀	15.2	0.15	19990522	3.18029	33.58795	204.30672	4.34622	0.2076235	2.6002111	40	1	35 days	0.57		Williams	1999 JR ₆₀
1999 JS ₆₀	15.5	0.15	19990522	33.21694	40.35021	161.90322	2.74633	0.1063962	2.3712655	28	1	36 days	0.89		Williams	1999 JS ₆₀
1999 JU ₆₀	14.3	0.15	19990810	20.87430	60.87117	178.47826	3.13749	0.1449718	2.6940016	51	1	109 days	0.58	M-v 4	Williams	1999 JU ₆₀
1999 JV ₆₀	15.5	0.15	19990522	310.65671	162.88296	143.95404	2.98735	0.1469106	2.2671798	34	1	36 days	0.84		Williams	1999 JV ₆₀

1999 JY ₆₀	15.7	0.15	19990522	335.21183	184.77025	90.99368	6.78695	0.1520111	2.2199825	46	1	36 days	0.63	Williams	1999 JY ₆₀
1999 JZ ₆₀	14.0	0.15	19990522	74.85067	72.03882	85.38083	13.18574	0.0973140	3.2171170	26	1	36 days	1.02	Williams	1999 JZ ₆₀
1999 JB ₆₁	14.3	0.15	19990522	73.76128	78.15624	83.15404	15.17288	0.0689754	2.6213918	27	1	35 days	0.79	Williams	1999 JB ₆₁
1999 JC ₆₁	15.1	0.15	19990522	55.44133	70.18862	113.21339	6.86461	0.0485157	2.3486545	23	1	35 days	0.76	Williams	1999 JC ₆₁
1999 JD ₆₁	15.2	0.15	19990522	301.58261	175.86864	152.37410	5.23823	0.2312698	2.5593579	25	1	35 days	0.89	Williams	1999 JD ₆₁
1999 JE ₆₁	15.5	0.15	19990522	340.42201	168.99062	100.11587	7.46393	0.1279788	2.2526514	39	1	35 days	0.60	Williams	1999 JE ₆₁
1999 JG ₆₁	13.9	0.15	19990522	351.75054	168.05559	86.24670	9.92867	0.0928918	3.2010474	41	1	36 days	0.64	Williams	1999 JG ₆₁
1999 JH ₆₁	13.4	0.15	19990522	23.07983	347.52741	225.86989	14.79236	0.1585887	3.1470653	35	1	35 days	0.50	Williams	1999 JH ₆₁
1999 JJ ₆₁	14.4	0.15	19990522	295.80829	261.15527	75.23819	12.64478	0.2519558	2.4348342	40	1	36 days	0.73	Williams	1999 JJ ₆₁
1999 JK ₆₁	15.6	0.15	19990522	302.67296	105.93120	210.37215	6.53365	0.1428301	2.3120323	23	1	35 days	0.79	Williams	1999 JK ₆₁
1999 JM ₆₁	14.0	0.15	19990522	23.86987	134.85204	79.01465	10.72990	0.1255552	3.0822016	33	1	36 days	0.85	Williams	1999 JM ₆₁
1999 JN ₆₁	15.4	0.15	19990522	326.79472	68.59185	220.30035	3.90487	0.1611959	2.2488662	46	1	36 days	0.58	Williams	1999 JN ₆₁
1999 JP ₆₁	14.9	0.15	19990810	4.47549	59.37748	210.95678	3.42509	0.1771486	2.2852615	47	1	83 days	0.56	M-v 4 Williams	1999 JP ₆₁
1999 JU ₆₁	16.1	0.15	19990522	337.71584	53.21065	238.28852	7.77514	0.3553668	2.4417279	28	1	36 days	0.73	Williams	1999 JU ₆₁
1999 JY ₆₁	14.6	0.15	19990502	336.60718	225.82813	51.48933	13.25407	0.2425476	2.5435750	18	1	9 days	0.77	Williams	1999 JY ₆₁
1999 JZ ₆₁	14.3	0.15	19990522	347.27266	10.52233	254.86832	10.55050	0.1979803	2.4636737	30	1	36 days	0.77	Williams	1999 JZ ₆₁
1999 JA ₆₂	12.9	0.15	19990502	305.08172	283.70956	26.82123	1.10618	0.1208650	3.1637385	19	1	9 days	0.72	E Williams	1999 JA ₆₂
1999 JB ₆₂	15.0	0.15	19990502	305.46627	42.50003	279.46745	0.84964	0.2565974	2.3442524	16	1	9 days	1.14	E Williams	1999 JB ₆₂
1999 JG ₆₂	15.3	0.15	19990522	5.76056	113.40682	125.70498	2.07695	0.0415235	2.3836376	29	1	36 days	0.86	Williams	1999 JG ₆₂
1999 JH ₆₂	14.7	0.15	19990522	33.99966	103.73100	94.86276	4.68555	0.1577045	2.5674611	34	1	36 days	0.72	Williams	1999 JH ₆₂
1999 JM ₆₂	14.5	0.15	19990522	108.69164	267.60466	223.38706	13.73954	0.0548080	2.5681815	28	1	35 days	0.81	Williams	1999 JM ₆₂
1999 JP ₆₂	13.4	0.15	19990522	348.01822	50.06760	210.17221	10.24944	0.0635871	3.0782257	30	1	35 days	0.86	Williams	1999 JP ₆₂
1999 JR ₆₂	14.9	0.15	19990522	16.52910	44.25078	181.19721	6.02059	0.0745197	2.3784666	42	1	35 days	0.85	Nakano	1999 JR ₆₂
1999 JS ₆₂	15.1	0.15	19990522	340.02966	139.72840	136.51526	5.14023	0.2168027	2.5542120	34	1	35 days	0.61	Williams	1999 JS ₆₂
1999 JU ₆₂	15.5	0.15	19990522	4.15046	79.76228	160.53370	4.09311	0.0834443	2.2874427	26	1	35 days	0.77	Williams	1999 JU ₆₂
1999 JV ₆₂	14.6	0.15	19990522	331.31269	61.49177	227.99963	16.04363	0.1986852	3.1236823	38	1	39 days	0.68	Williams	1999 JV ₆₂
1999 JZ ₆₂	14.9	0.15	19990522	318.60102	219.76728	76.29193	12.51161	0.1059271	2.5257553	23	1	36 days	0.95	Williams	1999 JZ ₆₂
1999 JB ₆₃	14.3	0.15	19990810	55.86966	129.95189	69.04470	13.41498	0.1484567	2.4324053	31	1	83 days	0.63	M-v 5 Williams	1999 JB ₆₃
1999 JC ₆₃	16.2	0.15	19990522	350.77150	38.88574	219.03146	3.23305	0.1616515	2.2285277	27	1	36 days	0.73	Williams	1999 JC ₆₃
1999 JE ₆₃	16.0	0.15	19990522	19.87756	342.75315	234.74210	4.88613	0.1701470	2.3586047	25	1	36 days	0.80	Williams	1999 JE ₆₃
1999 JH ₆₃	12.8	0.15	19990502	272.59390	294.39216	56.54049	3.16832	0.1626373	2.8845106	18	1	9 days	0.57	E Williams	1999 JH ₆₃
1999 JM ₆₃	14.2	0.15	19990502	33.62909	75.91934	116.07891	3.05011	0.2122416	3.0888616	16	1	9 days	0.78	Williams	1999 JM ₆₃
1999 JN ₆₃	15.6	0.15	19990502	23.00587	97.99084	95.04521	4.27125	0.3427789	3.0295361	15	1	9 days	1.02	Williams	1999 JN ₆₃
1999 JP ₆₃	15.6	0.15	19990522	309.79880	98.55169	218.82718	7.11231	0.2006010	2.2849868	31	1	35 days	0.82	Williams	1999 JP ₆₃
1999 JQ ₆₃	13.3	0.15	19990502	284.60230	259.29775	83.50239	13.44389	0.2042694	3.0699542	19	1	9 days	0.89	E Williams	1999 JQ ₆₃
1999 JS ₆₃	14.4	0.15	19990502	298.25809	199.79427	109.13448	6.21183	0.0455311	2.7131225	21	1	9 days	0.99	Williams	1999 JS ₆₃
1999 JT ₆₃	15.0	0.15	19990810	23.66841	109.85529	136.56835	4.67829	0.1001083	2.1803840	32	1	111 days	0.66	M-v 4 Williams	1999 JT ₆₃
1999 JV ₆₃	15.8	0.15	19990502	338.01418	103.33732	165.75608	5.02498	0.1475544	2.3868214	19	1	9 days	0.82	Williams	1999 JV ₆₃
1999 JW ₆₃	14.1	0.15	19990522	327.00151	75.57064	216.12120	12.08199	0.1465358	2.7275173	25	1	35 days	0.65	Williams	1999 JW ₆₃
1999 JY ₆₃	14.7	0.15	19990522	315.63915	179.36453	131.37839	5.73341	0.1979857	2.6232032	29	1	35 days	0.65	Williams	1999 JY ₆₃
1999 JA ₆₄	16.0	0.15	19990522	359.73514	59.53270	187.03847	4.94376	0.1995064	2.1960944	34	1	35 days	0.74	Williams	1999 JA ₆₄
1999 JB ₆₄	14.8	0.15	19990810	18.04719	179.73465	72.15205	10.63949	0.1825667	2.3597465	32	1	83 days	0.63	M-v 4 Williams	1999 JB ₆₄
1999 JC ₆₄	14.7	0.15	19990522	309.43352	114.76175	204.56534	2.45712	0.1978842	2.6143388	28	1	36 days	0.87	Williams	1999 JC ₆₄
1999 JM ₆₄	14.0	0.15	19990522	64.68367	259.92754	239.29639	21.14222	0.3278214	3.1290779	28	1	36 days	0.88	Williams	1999 JM ₆₄
1999 JO ₆₄	15.6	0.15	19990522	2.99604	23.88004	215.45757	0.48521	0.1489322	2.4255721	22	1	36 days	0.90	Williams	1999 JO ₆₄
1999 JP ₆₄	16.4	0.15	19990522	297.89177	209.57410	121.03699	3.07699	0.2236850	2.3559365	26	1	36 days	0.83	Williams	1999 JP ₆₄
1999 JQ ₆₄	15.6	0.15	19990502	15.39705	126.10299	91.37256	11.03243	0.1421938	2.4967064	15	1	9 days	1.20	E Williams	1999 JQ ₆₄
1999 JR ₆₄	14.2	0.15	19990502	64.98401	76.34583	85.68766	13.01871	0.1208259	2.4518036	22	1	9 days	0.77	Williams	1999 JR ₆₄
1999 JS ₆₄	14.3	0.15	19990522	274.75501	146.22428	202.63632	7.09934	0.1453467	2.7475628	18	1	35 days	0.63	Williams	1999 JS ₆₄
1999 JU ₆₄	16.4	0.15	19990522	350.70032	34.21834	224.87519	5.17214	0.1788451	2.2674562	31	1	36 days	0.87	Williams	1999 JU ₆₄
1999 JW ₆₄	15.2	0.15	19990522	2.11600	347.78570	256.07806	3.91112	0.1574882	2.4092599	27	1	36 days	0.74	Williams	1999 JW ₆₄
1999 JX ₆₄	15.7	0.15	19990522	66.41474	337.84219	191.63101	6.29830	0.1037966	2.2640386	24	1	35 days	0.90	Williams	1999 JX ₆₄
1999 JY ₆₄	14.1	0.15	19990522	11.68848	158.59402	74.49741	19.81130	0.1362452	3.1563143	28	1	36 days	1.03	Williams	1999 JY ₆₄

1999 JZ ₆₄	15.2	0.15	19990522	348.63854	183.98103	77.19700	6.06073	0.0938729	2.2757462	28	1	36 days	0.83	Williams	1999 JZ ₆₄
1999 JA ₆₅	14.9	0.15	19990502	45.67533	116.13567	64.81318	14.79124	0.1101446	2.6789514	18	1	9 days	1.03	Williams	1999 JA ₆₅
1999 JY ₆₅	13.0	0.15	19990502	210.05704	166.93203	207.07277	15.81734	0.2540670	2.4818414	15	1	5 days	0.66	E Williams	1999 JY ₆₅
1999 JF ₆₆	14.4	0.15	19990412	5.27261	37.63387	162.35505	7.45806	0.1243485	3.1678730	22	1	35 days	0.83	Williams	1999 JF ₆₆
1999 JK ₆₆	14.5	0.15	19990502	227.14861	290.11522	67.81975	7.39508	0.1640911	2.1769056	14	1	5 days	0.98	E Williams	1999 JK ₆₆
1999 JN ₆₆	15.0	0.15	19990502	287.95730	198.83878	119.39125	1.48651	0.2647612	2.3919317	16	1	6 days	1.19	E Williams	1999 JN ₆₆
1999 JO ₆₆	15.4	0.15	19990502	67.94876	301.71786	183.80249	3.67899	0.1932681	2.2447453	14	1	7 days	1.11	E Williams	1999 JO ₆₆
1999 JP ₆₆	14.2	0.15	19990502	132.72772	229.51294	195.27298	6.17482	0.2541408	2.3021668	17	1	6 days	0.91	E Williams	1999 JP ₆₆
1999 JQ ₆₆	14.5	0.15	19990412	320.91224	65.57731	191.38680	3.97566	0.0994230	2.5453313	34	1	37 days	0.90	Williams	1999 JQ ₆₆
1999 JR ₆₆	12.3	0.15	19990502	303.02010	222.05060	58.04259	9.93227	0.1102605	3.5359273	15	1	5 days	0.82	E Williams	1999 JR ₆₆
1999 JT ₆₆	15.9	0.15	19990412	359.33250	74.08491	134.62247	2.88690	0.1518312	2.3789769	30	1	38 days	1.03	Williams	1999 JT ₆₆
1999 JX ₆₆	16.0	0.15	19990412	330.72604	68.34090	180.48295	8.06398	0.1767000	2.7304977	21	1	35 days	1.04	Williams	1999 JX ₆₆
1999 JY ₆₆	14.6	0.15	19990412	271.40373	217.13615	99.65419	5.47927	0.1752825	2.2936376	25	1	37 days	0.93	Williams	1999 JY ₆₆
1999 JZ ₆₆	14.7	0.15	19990502	283.66762	226.92008	77.67421	7.51907	0.1263511	2.3610687	33	1	40 days	0.90	Williams	1999 JZ ₆₆
1999 JA ₆₇	13.4	0.15	19990502	333.63397	150.57029	105.35486	6.29127	0.2421095	3.3898849	24	1	7 days	0.93	Williams	1999 JA ₆₇
1999 JH ₆₇	13.3	0.15	19990502	175.51240	189.30635	210.14075	17.17065	0.1558203	2.4165791	15	1	5 days	0.66	E Williams	1999 JH ₆₇
1999 JK ₆₇	16.2	0.15	19990502	338.00217	54.18471	201.52834	2.88126	0.2768374	2.6063094	15	1	5 days	0.80	E Williams	1999 JK ₆₇
1999 JL ₆₇	14.6	0.15	19990412	338.58717	186.75872	48.34231	9.60790	0.0720578	2.7271050	31	1	38 days	0.85	Williams	1999 JL ₆₇
1999 JM ₆₇	13.9	0.15	19990502	49.63788	108.94368	46.75861	12.90561	0.1012190	3.1659918	12	1	5 days	0.64	E Williams	1999 JM ₆₇
1999 JO ₆₇	15.0	0.15	19990502	327.19848	195.04869	79.07456	2.69015	0.2841204	2.8456919	14	1	5 days	0.68	E Williams	1999 JO ₆₇
1999 JR ₆₇	15.2	0.15	19990502	240.98869	286.92093	57.96740	8.68823	0.0982456	2.5878601	20	1	7 days	1.03	Williams	1999 JR ₆₇
1999 JT ₆₇	15.9	0.15	19990502	11.11777	119.05709	81.17372	4.54292	0.1919912	2.4054974	14	1	5 days	0.90	Williams	1999 JT ₆₇
1999 JW ₆₇	14.8	0.15	19990412	299.99411	218.35926	72.11035	6.08821	0.1847182	2.2311797	36	1	37 days	1.02	Williams	1999 JW ₆₇
1999 JX ₆₇	14.8	0.15	19990412	304.25309	183.21607	112.41129	3.96704	0.2693118	2.5348556	33	1	39 days	0.79	Williams	1999 JX ₆₇
1999 JY ₆₇	15.0	0.15	19990412	300.68671	90.13011	198.13596	12.79645	0.1680759	2.6134458	35	1	40 days	0.96	Williams	1999 JY ₆₇
1999 JZ ₆₇	15.6	0.15	19990412	31.03334	60.66930	108.33822	4.58061	0.1341950	2.3244397	33	1	38 days	0.78	Williams	1999 JZ ₆₇
1999 JA ₆₈	16.1	0.15	19990502	326.37683	189.96581	73.94142	8.16027	0.1873159	2.3032722	36	1	39 days	0.80	Williams	1999 JA ₆₈
1999 JC ₆₈	14.9	0.15	19990502	294.20339	132.12363	180.04760	10.62999	0.2611266	2.5294990	13	1	5 days	0.83	E Williams	1999 JC ₆₈
1999 JD ₆₈	15.2	0.15	19990502	311.49011	186.48112	85.26610	7.22795	0.0801882	2.2559804	20	1	7 days	0.84	Williams	1999 JD ₆₈
1999 JG ₆₈	14.8	0.15	19990502	248.60380	226.30571	121.86035	5.88907	0.2203795	2.5869379	18	1	39 days	0.83	Williams	1999 JG ₆₈
1999 JJ ₆₈	14.6	0.15	19990412	188.91622	247.86235	140.10435	3.68558	0.2137085	2.2737905	29	1	37 days	1.50	Williams	1999 JJ ₆₈
1999 JL ₆₈	15.0	0.15	19990412	300.99531	164.39289	123.26622	3.46773	0.1548770	2.3740711	42	1	38 days	0.72	Williams	1999 JL ₆₈
1999 JN ₆₈	14.2	0.15	19990502	295.41234	89.22555	203.76897	11.84046	0.0973763	3.1107190	25	1	7 days	0.83	E Williams	1999 JN ₆₈
1999 JO ₆₈	14.8	0.15	19990412	333.30773	183.94374	61.58974	6.05304	0.1292063	2.2759570	34	1	37 days	0.77	Williams	1999 JO ₆₈
1999 JR ₆₈	15.8	0.15	19990412	293.74039	221.35571	79.54449	4.14464	0.1897330	2.4216657	28	1	38 days	0.89	Williams	1999 JR ₆₈
1999 JS ₆₈	14.4	0.15	19990412	167.82711	214.90889	189.83606	5.58159	0.0815730	2.4236875	26	1	37 days	1.18	Williams	1999 JS ₆₈
1999 JT ₆₈	15.8	0.15	19990412	68.12861	321.63446	174.02055	3.15940	0.0872320	2.3127853	31	1	37 days	0.84	Williams	1999 JT ₆₈
1999 JU ₆₈	16.2	0.15	19990502	212.26060	300.98443	69.03457	5.17953	0.0531923	2.2534145	23	1	7 days	1.08	E Williams	1999 JU ₆₈
1999 JW ₆₈	15.6	0.15	19990502	313.81922	68.62278	207.45522	13.16143	0.1132394	2.5415921	24	1	7 days	1.00	Williams	1999 JW ₆₈
1999 JY ₆₈	15.5	0.15	19990502	68.07354	352.80166	134.19808	3.03072	0.2140585	2.3928108	19	1	5 days	0.95	Williams	1999 JY ₆₈
1999 JB ₆₉	14.4	0.15	19990502	337.15731	165.98006	74.64469	7.95058	0.0155777	2.7539333	16	1	6 days	0.84	E Williams	1999 JB ₆₉
1999 JD ₆₉	16.1	0.15	19990502	11.31017	124.79590	76.87341	6.79574	0.1842899	2.3986622	17	1	7 days	0.97	Williams	1999 JD ₆₉
1999 JG ₆₉	15.2	0.15	19990502	280.83120	191.26493	132.11269	4.80639	0.2332457	2.2746977	22	1	7 days	0.94	Williams	1999 JG ₆₉
1999 JH ₆₉	15.0	0.15	19990412	309.94520	98.05135	192.09658	11.97503	0.2608155	2.6788387	19	1	35 days	1.12	Williams	1999 JH ₆₉
1999 JJ ₆₉	15.3	0.15	19990412	288.49355	176.23928	132.23706	5.95085	0.2238811	2.2725923	23	1	35 days	0.79	Williams	1999 JJ ₆₉
1999 JK ₆₉	15.3	0.15	19990412	337.88929	135.06217	107.82397	6.42562	0.2027250	2.4051425	34	1	35 days	0.71	Williams	1999 JK ₆₉
1999 JQ ₆₉	16.1	0.15	19990502	238.36072	259.55021	83.01269	4.05034	0.0303804	2.2390323	24	1	7 days	1.05	E Williams	1999 JQ ₆₉
1999 JR ₆₉	16.0	0.15	19990412	357.86944	82.50641	129.48003	3.83059	0.1254578	2.6172662	27	1	38 days	0.91	Williams	1999 JR ₆₉
1999 JT ₆₉	14.5	0.15	19990502	333.27713	130.93124	122.42988	6.25352	0.1491777	2.5829351	35	1	55 days	0.70	Williams	1999 JT ₆₉
1999 JV ₆₉	15.6	0.15	19990412	338.28743	110.67631	126.12718	5.24408	0.0797763	2.2124041	29	1	37 days	0.84	Williams	1999 JV ₆₉
1999 JY ₆₉	14.0	0.15	19990502	97.96997	284.10228	190.45401	11.46139	0.0525139	2.5987230	19	1	7 days	0.63	Williams	1999 JY ₆₉
1999 JZ ₆₉	15.0	0.15	19990412	7.80319	130.70501	72.97018	9.98028	0.0832779	2.7196929	32	1	39 days	0.83	Williams	1999 JZ ₆₉
1999 JB ₇₀	14.9	0.15	19990502	332.89606	200.27784	56.97112	17.95741	0.1861042	3.1631671	23	1	7 days	0.70	Williams	1999 JB ₇₀

1999 JC ₇₀	14.0	0.15	19990412	335.07787	186.82731	58.90542	14.40295	0.1216572	2.9434015	44	1	39 days	0.74		Williams	1999 JC ₇₀
1999 JG ₇₀	13.7	0.15	19990502	229.10131	289.12995	68.85141	7.02459	0.1099095	3.0090121	16	1	5 days	0.73	E	Williams	1999 JG ₇₀
1999 JH ₇₀	16.2	0.15	19990502	305.25527	227.86157	69.22488	6.34209	0.2051859	2.3402721	28	1	7 days	1.05		Williams	1999 JH ₇₀
1999 JJ ₇₀	15.7	0.15	19990502	296.27834	218.66788	73.93280	6.46864	0.0825453	2.7333164	18	1	7 days	0.88		Williams	1999 JJ ₇₀
1999 JM ₇₀	15.6	0.15	19990502	321.74034	106.08671	177.56377	3.92961	0.2670102	2.6183794	23	1	7 days	1.11	E	Williams	1999 JM ₇₀
1999 JN ₇₀	15.2	0.15	19990502	87.09944	54.80751	63.12211	10.09895	0.1350148	2.7908044	24	1	7 days	0.87		Williams	1999 JN ₇₀
1999 JO ₇₀	16.3	0.15	19990502	331.72847	179.41362	76.58700	6.33290	0.1107025	2.2026171	28	1	7 days	0.75		Williams	1999 JO ₇₀
1999 JP ₇₀	15.8	0.15	19990502	7.21386	83.18331	129.62975	3.85811	0.0652282	2.3352371	19	1	5 days	0.67		Williams	1999 JP ₇₀
1999 JQ ₇₀	16.4	0.15	19990412	304.86845	131.00251	155.95353	4.19515	0.1751905	2.2314348	30	1	37 days	0.96		Williams	1999 JQ ₇₀
1999 JR ₇₀	15.8	0.15	19990412	297.07607	172.18364	121.97040	4.73707	0.1476099	2.5927007	29	1	38 days	1.18		Williams	1999 JR ₇₀
1999 JS ₇₀	15.6	0.15	19990412	308.91883	196.52127	78.19519	7.78133	0.1010786	2.3326256	37	1	37 days	0.64		Williams	1999 JS ₇₀
1999 JT ₇₀	15.5	0.15	19990412	25.41397	111.89959	61.99970	13.38218	0.2173158	2.6681388	32	1	37 days	0.75		Williams	1999 JT ₇₀
1999 JV ₇₀	14.6	0.15	19990502	186.75951	197.23256	196.07786	13.46361	0.0377176	2.9394494	22	1	7 days	0.95	E	Williams	1999 JV ₇₀
1999 JX ₇₀	14.6	0.15	19990412	72.92348	321.41576	171.36835	7.23918	0.0818224	2.5621800	28	1	37 days	0.96		Williams	1999 JX ₇₀
1999 JY ₇₀	15.9	0.15	19990502	52.95990	354.54032	165.99131	6.76345	0.0593137	2.4465059	23	1	7 days	1.63	E	Williams	1999 JY ₇₀
1999 JZ ₇₀	14.3	0.15	19990502	320.91190	184.57824	73.53875	11.66867	0.0070461	2.6904794	21	1	7 days	1.01	E	Williams	1999 JZ ₇₀
1999 JB ₇₁	13.7	0.15	19990810	358.68091	188.77067	63.68093	15.75338	0.1459053	2.5680469	67	1	105 days	0.62	M-v 4	Williams	1999 JB ₇₁
1999 JC ₇₁	16.4	0.15	19990502	35.71591	70.61378	107.59425	7.70642	0.0580527	2.3746932	16	1	31 days	0.78		Williams	1999 JC ₇₁
1999 JD ₇₁	13.6	0.15	19990412	45.63700	78.99657	84.88373	11.08975	0.0568105	3.0131440	23	1	35 days	0.53		Williams	1999 JD ₇₁
1999 JG ₇₁	16.0	0.15	19990502	307.90421	143.87656	151.58482	5.95612	0.2184967	2.5258870	33	1	7 days	1.05		Williams	1999 JG ₇₁
1999 JH ₇₁	15.2	0.15	19990412	24.46133	82.67663	99.03023	7.31085	0.1389867	2.5399253	37	1	37 days	0.99		Williams	1999 JH ₇₁
1999 JK ₇₁	16.2	0.15	19990412	316.25475	161.55879	106.42573	5.52709	0.1194022	2.2758002	31	1	37 days	1.21		Williams	1999 JK ₇₁
1999 JM ₇₁	14.7	0.15	19990412	317.91783	211.28046	69.46181	10.70853	0.2440647	3.0646489	28	1	37 days	1.01		Williams	1999 JM ₇₁
1999 JN ₇₁	15.9	0.15	19990412	322.79027	62.51160	203.97983	12.99780	0.1651791	2.7164864	29	1	37 days	1.05		Williams	1999 JN ₇₁
1999 JP ₇₁	13.2	0.15	19990412	255.92725	245.72880	88.18755	8.10063	0.1178783	3.1881369	38	1	37 days	0.61		Williams	1999 JP ₇₁
1999 JQ ₇₁	15.3	0.15	19990502	269.91631	237.23756	95.95738	5.94576	0.1964906	2.3231110	39	1	57 days	0.82		Williams	1999 JQ ₇₁
1999 JR ₇₁	16.8	0.15	19990502	351.10250	149.28340	83.48996	6.34667	0.1284004	2.2268138	25	1	7 days	1.02		Williams	1999 JR ₇₁
1999 JS ₇₁	13.1	0.15	19990502	279.60784	256.61373	72.89436	11.13063	0.2477166	3.2787776	24	1	7 days	0.97		Williams	1999 JS ₇₁
1999 JT ₇₁	13.9	0.15	19990502	103.03685	275.79109	190.31980	9.59476	0.1143169	3.0588388	26	1	7 days	1.14		Williams	1999 JT ₇₁
1999 JU ₇₁	14.9	0.15	19990412	286.97206	123.15462	191.32259	6.73818	0.2187269	2.2296966	43	1	37 days	0.67		Williams	1999 JU ₇₁
1999 JV ₇₁	13.8	0.15	19990502	4.12674	151.42426	64.74603	10.61227	0.0394424	3.0686020	37	1	58 days	0.66		Williams	1999 JV ₇₁
1999 JW ₇₁	15.8	0.15	19990412	11.53792	124.52787	75.23720	6.24874	0.1087800	2.3206933	41	1	37 days	0.89		Williams	1999 JW ₇₁
1999 JX ₇₁	15.9	0.15	19990522	327.52936	196.04909	80.84236	5.47713	0.2033006	2.5373381	31	1	26 days	0.69		Williams	1999 JX ₇₁
1999 JY ₇₁	16.6	0.15	19990502	8.00249	121.21339	90.15453	5.02788	0.1487764	2.4423911	15	1	5 days	0.79		Williams	1999 JY ₇₁
1999 JB ₇₂	16.1	0.15	19990522	46.21448	351.09830	181.84000	6.20722	0.1051297	2.2788158	26	1	26 days	0.94		Williams	1999 JB ₇₂
1999 JC ₇₂	14.8	0.15	19990502	260.21198	216.73502	124.98232	5.21978	0.1838296	2.2349089	23	1	7 days	1.03		Williams	1999 JC ₇₂
1999 JD ₇₂	15.2	0.15	19990502	278.05315	219.90184	111.72791	5.74508	0.2406986	2.3334028	14	1	7 days	1.05		Williams	1999 JD ₇₂
1999 JE ₇₂	14.0	0.15	19990502	310.77979	82.73698	211.92339	23.64106	0.2153336	3.0623872	13	1	5 days	0.83	E	Williams	1999 JE ₇₂
1999 JF ₇₂	16.4	0.15	19990412	355.40187	89.16616	130.14631	4.52644	0.0952321	2.1664475	32	1	37 days	0.82		Williams	1999 JF ₇₂
1999 JL ₇₂	16.5	0.15	19990502	347.43175	89.34353	148.98079	4.32522	0.1125752	2.2045323	14	1	5 days	0.91	E	Williams	1999 JL ₇₂
1999 JM ₇₂	16.1	0.15	19990502	328.65357	126.29766	137.67627	5.20889	0.1449359	2.5773868	17	1	9 days	0.92		Williams	1999 JM ₇₂
1999 JN ₇₂	15.0	0.15	19990412	269.77111	134.65081	197.98530	12.93698	0.2024242	2.7319967	21	1	35 days	0.98		Williams	1999 JN ₇₂
1999 JP ₇₂	14.9	0.15	19990502	341.57629	180.94919	65.77909	10.33450	0.1406969	2.3561138	59	1	57 days	0.69		Williams	1999 JP ₇₂
1999 JQ ₇₂	16.4	0.15	19990502	355.85816	102.71663	125.43755	3.24983	0.1457475	2.3564338	17	1	5 days	1.01		Williams	1999 JQ ₇₂
1999 JS ₇₂	16.1	0.15	19990502	332.17240	130.64326	129.61882	3.83171	0.1455521	2.4541179	34	1	59 days	1.10		Williams	1999 JS ₇₂
1999 JU ₇₂	15.6	0.15	19990502	333.81441	164.14453	90.76134	5.41180	0.0954781	2.2345038	40	1	54 days	0.56		Williams	1999 JU ₇₂
1999 JV ₇₂	15.0	0.15	19990522	318.71888	154.16328	142.48662	3.93338	0.2598466	2.4571079	29	1	29 days	0.73		Williams	1999 JV ₇₂
1999 JW ₇₂	15.6	0.15	19990502	295.47339	227.28378	75.77585	7.73120	0.1347090	2.2752541	32	1	7 days	0.64		Williams	1999 JW ₇₂
1999 JX ₇₂	14.4	0.15	19990522	278.08516	270.87850	62.90071	15.80045	0.2123825	2.7773794	30	1	26 days	0.82		Williams	1999 JX ₇₂
1999 JY ₇₂	16.0	0.15	19990502	232.84688	181.93644	175.74278	5.71175	0.0705358	2.3535539	17	1	5 days	1.01		Williams	1999 JY ₇₂
1999 JZ ₇₂	16.0	0.15	19990502	35.71733	76.45370	96.51111	4.84001	0.1876688	2.5489490	15	1	5 days	0.82		Williams	1999 JZ ₇₂
1999 JA ₇₃	15.8	0.15	19990502	297.17195	208.86461	91.86184	5.91945	0.1274448	2.4493017	13	1	5 days	0.70		Williams	1999 JA ₇₃
1999 JB ₇₃	16.0	0.15	19990502	331.17733	69.51663	190.04681	6.20335	0.1060908	2.2481534	22	1	5 days	0.82		Williams	1999 JB ₇₃

1999 JC ₇₃	15.5	0.15	19990522	45.37214	340.53133	191.40534	7.45860	0.1463651	2.4232812	35	1	26 days	0.66	Williams	1999 JC ₇₃
1999 JE ₇₃	15.3	0.15	19990522	295.72115	240.29773	73.57909	12.64743	0.1959055	2.7352260	29	1	33 days	0.77	Williams	1999 JE ₇₃
1999 JF ₇₃	16.5	0.15	19990502	352.24672	162.96478	73.55218	10.50075	0.2747084	2.6651690	13	1	5 days	0.87	Williams	1999 JF ₇₃
1999 JG ₇₃	15.1	0.15	19990522	264.97258	208.02979	138.93024	5.73581	0.2118938	2.3195228	31	1	33 days	0.98	Williams	1999 JG ₇₃
1999 JH ₇₃	15.4	0.15	19990522	353.74879	137.35255	99.11406	6.48509	0.0431673	2.3687064	39	1	33 days	0.90	Williams	1999 JH ₇₃
1999 JJ ₇₃	16.8	0.15	19990522	333.93128	172.01795	96.72182	6.22673	0.1699508	2.2029041	55	1	37 days	0.80	Williams	1999 JJ ₇₃
1999 JK ₇₃	13.9	0.15	19990522	21.62324	14.53603	192.10631	10.26248	0.0468191	2.9751492	42	1	37 days	0.71	Williams	1999 JK ₇₃
1999 JM ₇₃	14.6	0.15	19990522	96.15963	279.28989	201.31579	11.59284	0.1144300	2.7186514	39	1	26 days	1.02	Williams	1999 JM ₇₃
1999 JP ₇₃	14.6	0.15	19990522	270.63688	238.08695	99.22435	6.97522	0.1472103	2.3415559	50	1	33 days	0.64	Williams	1999 JP ₇₃
1999 JS ₇₃	14.6	0.15	19990522	16.29765	4.26784	208.24577	13.10642	0.1049063	2.6380282	23	1	33 days	0.56	Williams	1999 JS ₇₃
1999 JT ₇₃	15.5	0.15	19990522	297.42384	210.95231	109.07093	5.16511	0.2188760	2.3060320	32	1	33 days	0.84	Williams	1999 JT ₇₃
1999 JU ₇₃	15.0	0.15	19990522	282.03808	127.84965	201.18058	11.78560	0.1593063	2.7455439	30	1	33 days	0.85	Williams	1999 JU ₇₃
1999 JV ₇₃	16.1	0.15	19990502	2.84164	128.28043	94.84411	6.30662	0.1103204	2.2974979	13	1	5 days	0.76	Williams	1999 JV ₇₃
1999 JW ₇₃	14.5	0.15	19990522	172.13633	224.49018	194.53661	9.76359	0.1310964	2.3837490	37	1	33 days	0.66	Williams	1999 JW ₇₃
1999 JX ₇₃	15.9	0.15	19990522	288.05748	210.83448	107.14908	5.51344	0.1085701	2.1732419	27	1	33 days	0.78	Williams	1999 JX ₇₃
1999 JY ₇₃	14.4	0.15	19990502	221.35642	235.07023	143.69304	5.79457	0.1767148	2.4582039	12	1	5 days	0.92	Williams	1999 JY ₇₃
1999 JC ₇₄	15.3	0.15	19990412	332.38222	71.49451	187.36992	9.57287	0.1957234	3.1482549	21	1	35 days	0.76	Williams	1999 JC ₇₄
1999 JE ₇₄	15.8	0.15	19990502	277.89067	168.10576	156.24207	5.41998	0.1643788	2.2684356	21	1	9 days	0.88	Williams	1999 JE ₇₄
1999 JG ₇₄	15.8	0.15	19990522	245.60927	229.02549	127.50271	4.81910	0.1057347	2.2460326	26	1	33 days	0.82	Williams	1999 JG ₇₄
1999 JL ₇₄	15.6	0.15	19990502	42.92661	103.20316	67.53476	14.58617	0.1013308	2.6780852	17	1	9 days	1.21	Williams	1999 JL ₇₄
1999 JM ₇₄	14.1	0.15	19990522	145.03528	3.62213	73.67913	11.55593	0.0723278	3.0132631	27	1	33 days	0.79	Williams	1999 JM ₇₄
1999 JQ ₇₄	15.2	0.15	19990522	26.40862	83.17028	109.52406	5.97965	0.2417281	2.5665041	63	1	33 days	0.84	Williams	1999 JQ ₇₄
1999 JR ₇₄	14.4	0.15	19990502	199.92853	229.01158	164.20573	6.61757	0.0530089	2.3213108	15	1	5 days	0.62	E Williams	1999 JR ₇₄
1999 JS ₇₄	13.9	0.15	19990810	15.45375	86.67389	153.56262	11.45851	0.2054621	2.6352417	44	1	112 days	0.75	M-v 4 Williams	1999 JS ₇₄
1999 JV ₇₄	13.3	0.15	19990522	39.31113	92.83339	92.83366	23.46480	0.0837739	3.1554908	51	1	31 days	0.67	Williams	1999 JV ₇₄
1999 JW ₇₄	13.6	0.15	19990502	250.48696	145.36625	216.84374	23.34833	0.2026700	3.2347456	16	1	5 days	1.32	E Williams	1999 JW ₇₄
1999 JY ₇₄	15.4	0.15	19990522	329.40887	171.12852	125.34342	14.40467	0.2626653	2.5767018	35	1	34 days	0.87	Williams	1999 JY ₇₄
1999 JA ₇₅	13.8	0.15	19990810	327.66691	212.55073	109.80466	17.66863	0.2239614	2.4416513	51	1	114 days	0.56	M-v 5 Williams	1999 JA ₇₅
1999 JK ₇₅	16.8	0.15	19990502	310.31745	55.02152	241.67593	6.42803	0.1650005	2.2495970	48	1	11 days	0.75	Williams	1999 JK ₇₅
1999 JL ₇₅	16.8	0.15	19990502	58.49940	163.07237	349.52280	2.13671	0.1379660	2.2860565	14	1	9 days	0.67	Williams	1999 JL ₇₅
1999 JM ₇₅	14.3	0.15	19990522	16.10016	97.20056	124.09749	17.01911	0.1900127	3.1123720	35	1	38 days	0.72	Williams	1999 JM ₇₅
1999 JB ₇₆	14.1	0.15	19990502	330.14302	245.60673	18.55404	1.32882	0.2321241	3.3100862	23	1	9 days	0.82	Williams	1999 JB ₇₆
1999 JC ₇₆	15.1	0.15	19990502	314.29183	55.07364	222.20592	5.63644	0.1277227	2.2808561	33	1	34 days	0.57	Williams	1999 JC ₇₆
1999 JD ₇₆	13.8	0.15	19990502	316.65938	148.78933	132.98901	2.67136	0.1867115	3.2755879	21	1	9 days	0.78	Williams	1999 JD ₇₆
1999 JE ₇₆	14.3	0.15	19990502	15.77959	295.58765	270.23541	6.90342	0.0430069	2.6086479	27	1	8 days	1.02	E Williams	1999 JE ₇₆
1999 JF ₇₆	14.6	0.15	19990522	64.42228	260.74668	251.98171	2.62757	0.1266999	2.7561155	21	1	28 days	0.96	Williams	1999 JF ₇₆
1999 JJ ₇₆	15.1	0.15	19990522	331.76642	204.06356	67.92458	7.12170	0.1039942	2.4547714	27	1	36 days	0.78	Williams	1999 JJ ₇₆
1999 JK ₇₆	14.1	0.15	19990810	23.26601	155.35221	67.82449	16.06051	0.2674377	3.0099648	33	1	112 days	0.51	M-v 3 Williams	1999 JK ₇₆
1999 JL ₇₆	14.6	0.15	19990522	278.22055	237.83859	93.80521	5.16997	0.1024234	2.6917551	29	1	35 days	0.61	Williams	1999 JL ₇₆
1999 JN ₇₆	15.5	0.15	19990522	353.64879	142.03660	108.86643	7.15210	0.1746199	2.3205485	29	1	35 days	0.57	Williams	1999 JN ₇₆
1999 JP ₇₆	14.5	0.15	19990522	269.68069	139.35156	207.15471	10.93575	0.1007497	2.5351945	18	1	35 days	0.64	Williams	1999 JP ₇₆
1999 JS ₇₆	14.9	0.15	19990522	10.64718	8.05980	224.63548	7.70326	0.1000459	2.3795756	27	1	35 days	0.67	Williams	1999 JS ₇₆
1999 JT ₇₆	13.8	0.15	19990522	265.05051	216.44962	141.14094	6.97072	0.1382991	2.4266555	19	1	35 days	0.66	Williams	1999 JT ₇₆
1999 JV ₇₆	14.3	0.15	19990522	299.18012	224.84323	95.35393	15.38137	0.1166045	2.6034994	19	1	35 days	0.87	Williams	1999 JV ₇₆
1999 JZ ₇₆	16.6	0.15	19990412	340.95143	113.12490	126.46964	6.03677	0.1931906	2.3838809	22	1	35 days	1.27	Williams	1999 JZ ₇₆
1999 JB ₇₇	15.6	0.15	19990412	237.35942	214.77680	129.74296	8.91937	0.0922189	2.2562208	36	1	36 days	1.01	Williams	1999 JB ₇₇
1999 JE ₇₇	14.1	0.15	19990412	291.80065	133.24499	158.64328	10.42085	0.0823856	2.9928976	34	1	36 days	1.23	Williams	1999 JE ₇₇
1999 JG ₇₇	14.9	0.15	19990502	266.52717	233.29165	96.24196	10.34355	0.1626400	2.7615220	23	1	32 days	0.78	Williams	1999 JG ₇₇
1999 JJ ₇₇	13.3	0.15	19990522	316.48082	96.11162	186.74557	9.82143	0.0455879	2.9923867	34	1	33 days	0.58	Williams	1999 JJ ₇₇
1999 JK ₇₇	14.5	0.15	19990522	324.26608	141.63108	145.78210	13.89637	0.2095663	2.6468367	64	1	31 days	0.75	Williams	1999 JK ₇₇
1999 JL ₇₇	13.4	0.15	19990522	327.89309	85.89011	184.97688	9.64573	0.0458247	2.9986597	23	1	33 days	0.61	Williams	1999 JL ₇₇
1999 JM ₇₇	14.1	0.15	19990522	280.55972	151.50952	187.22429	9.07337	0.2000089	2.5646758	18	1	33 days	0.66	Williams	1999 JM ₇₇
1999 JQ ₇₇	16.8	0.15	19990522	337.54304	180.10238	102.42513	5.91657	0.3161560	2.2825795	24	1	33 days	0.69	Williams	1999 JQ ₇₇

1999 JR ₇₇	13.9	0.15	19990522	276.90814	230.29471	106.78560	10.25747	0.1394830	2.5845224	29	1	33 days	0.54		Williams	1999 JR ₇₇
1999 JS ₇₇	13.7	0.15	19990810	299.59787	220.10948	114.20014	7.49261	0.1149963	2.3600243	33	1	108 days	0.63	M-v 5	Williams	1999 JS ₇₇
1999 JU ₇₇	15.9	0.15	19990522	353.24987	123.05381	125.39725	7.67978	0.0809737	2.2954176	28	1	33 days	0.62		Williams	1999 JU ₇₇
1999 JW ₇₇	13.8	0.15	19990810	37.51226	20.22884	188.34493	10.34636	0.0679220	3.0681110	24	1	61 days	0.76	M-v 5	Williams	1999 JW ₇₇
1999 JY ₇₇	15.0	0.15	19990522	41.19729	58.15485	136.36981	6.92957	0.0702487	2.4100628	28	1	33 days	0.86		Williams	1999 JY ₇₇
1999 JZ ₇₇	14.3	0.15	19990522	322.45111	190.59682	110.22204	10.91294	0.2262375	2.7855889	29	1	33 days	0.63		Williams	1999 JZ ₇₇
1999 JB ₇₈	16.0	0.15	19990810	37.03380	81.41836	139.88874	6.32181	0.2327542	2.2521278	32	1	82 days	0.76	M-v 5	Williams	1999 JB ₇₈
1999 JC ₇₈	14.0	0.15	19990522	13.21120	21.26998	207.56607	12.94702	0.1190360	2.5594827	30	1	33 days	0.46		Williams	1999 JC ₇₈
1999 JG ₇₈	13.9	0.15	19990502	297.90755	271.72705	30.56322	14.54180	0.2007208	2.5832503	48	1	57 days	1.04		Williams	1999 JG ₇₈
1999 JH ₇₈	14.1	0.15	19990502	292.68540	67.13900	235.45616	5.55250	0.1576450	2.2871249	28	1	35 days	0.52		Williams	1999 JH ₇₈
1999 JK ₇₈	14.2	0.15	19990502	67.16940	98.77693	25.73307	8.93620	0.2342796	2.4015223	18	1	6 days	0.96	E	Williams	1999 JK ₇₈
1999 JL ₇₈	16.6	0.15	19990502	328.30115	258.36577	24.07094	3.78108	0.3390997	2.4013234	21	1	6 days	0.60		Williams	1999 JL ₇₈
1999 JN ₇₈	14.6	0.15	19990810	49.38960	55.83602	128.87257	11.58095	0.1560924	2.3341693	28	1	104 days	0.69	M-v 4	Williams	1999 JN ₇₈
1999 JO ₇₈	13.3	0.15	19990412	134.33722	319.00665	113.88575	15.10897	0.0127457	2.5204269	19	1	37 days	0.61		Williams	1999 JO ₇₈
1999 JP ₇₈	14.1	0.15	19990502	315.45796	161.76756	108.24271	14.38581	0.1240717	2.3651240	25	1	58 days	0.73		Williams	1999 JP ₇₈
1999 JS ₇₈	16.0	0.15	19990522	28.84238	17.36730	185.96481	3.65255	0.0844393	2.3399604	38	1	35 days	0.89		Williams	1999 JS ₇₈
1999 JT ₇₈	15.6	0.15	19990522	337.61659	94.26033	167.20056	14.71771	0.0888862	2.5887459	41	1	30 days	0.82		Williams	1999 JT ₇₈
1999 JU ₇₈	14.2	0.15	19990502	264.50367	245.58378	79.19404	7.48064	0.0600227	2.7189327	19	1	4 days	0.57	E	Williams	1999 JU ₇₈
1999 JY ₇₈	14.8	0.15	19990810	14.84158	164.76576	73.30530	8.44932	0.0373021	2.4018475	30	1	61 days	0.63	M-v 5	Williams	1999 JY ₇₈
1999 JZ ₇₈	11.6	0.15	19990502	76.02228	28.43764	90.92899	19.65159	0.1515519	3.1248285	24	1	58 days	0.63		Williams	1999 JZ ₇₈
1999 JA ₇₉	13.9	0.15	19990810	16.64278	102.82233	121.17710	14.95951	0.1495576	2.6437792	36	1	111 days	0.64	M-v 4	Williams	1999 JA ₇₉
1999 JB ₇₉	12.7	0.15	19990502	70.29471	329.62221	162.65241	22.95625	0.1392811	3.1611303	15	1	4 days	1.11	E	Williams	1999 JB ₇₉
1999 JD ₇₉	13.3	0.15	19990522	239.38485	164.01983	192.52439	9.75816	0.0596115	3.0439641	32	1	32 days	0.76		Williams	1999 JD ₇₉
1999 JE ₇₉	12.9	0.15	19990810	76.83677	23.27010	119.34689	17.43194	0.1627279	3.1059283	26	1	63 days	0.54	M-v 5	Williams	1999 JE ₇₉
1999 JG ₇₉	15.1	0.15	19990522	18.41451	21.91439	185.79095	25.63117	0.1629414	2.3745805	19	1	30 days	0.52		Williams	1999 JG ₇₉
1999 JK ₇₉	12.6	0.15	19990522	187.22587	326.94113	79.33161	10.44744	0.0770557	3.1664080	32	1	35 days	0.89		Williams	1999 JK ₇₉
1999 JM ₇₉	15.8	0.15	19990522	30.50454	336.51099	219.96225	4.57472	0.1157334	2.3769990	32	1	35 days	0.92		Williams	1999 JM ₇₉
1999 JN ₇₉	15.0	0.15	19990502	48.52275	321.46961	212.25248	8.59481	0.0896005	2.7578341	27	1	56 days	0.74		Williams	1999 JN ₇₉
1999 JP ₇₉	15.6	0.15	19990502	350.64684	169.18841	72.83457	3.38758	0.1578535	2.3935631	31	1	57 days	0.76		Williams	1999 JP ₇₉
1999 JS ₇₉	15.1	0.15	19990522	339.14392	70.38514	194.38769	6.65549	0.0886366	2.5945782	38	1	35 days	0.94		Williams	1999 JS ₇₉
1999 JU ₇₉	12.9	0.15	19990810	37.33063	80.73885	120.39277	26.38641	0.2171302	3.1535424	51	1	108 days	0.61	M-v 4	Williams	1999 JU ₇₉
1999 JX ₇₉	14.2	0.15	19990522	1.24442	83.12946	161.02181	4.96964	0.1086264	2.7473182	29	1	32 days	0.58		Williams	1999 JX ₇₉
1999 JZ ₇₉	14.3	0.15	19990502	59.99954	50.67934	103.79105	6.05095	0.2543159	2.5221344	17	1	6 days	1.16	E	Williams	1999 JZ ₇₉
1999 JA ₈₀	14.9	0.15	19990502	238.92609	280.23357	88.38878	9.70939	0.1087917	2.3699269	15	1	6 days	1.21	E	Williams	1999 JA ₈₀
1999 JC ₈₀	14.1	0.15	19990502	316.78811	184.15913	80.93024	10.63076	0.0399771	2.5944175	44	1	39 days	0.85		Williams	1999 JC ₈₀
1999 JD ₈₀	13.8	0.15	19990810	337.48491	107.23843	181.55378	12.67794	0.1624206	2.5360396	40	1	109 days	0.81	M-v 4	Williams	1999 JD ₈₀
1999 JE ₈₀	14.0	0.15	19990522	338.92406	51.94199	212.31550	21.93025	0.1584192	3.1881540	33	1	36 days	0.67		Williams	1999 JE ₈₀
1999 JC ₈₀	14.5	0.15	19990522	270.17105	224.50516	116.45874	7.89785	0.1361843	2.3160590	34	1	33 days	0.51		Williams	1999 JC ₈₀
1999 JH ₈₀	14.7	0.15	19990522	316.89656	178.24373	117.58645	8.67144	0.1860881	2.5927676	27	1	33 days	0.69		Williams	1999 JH ₈₀
1999 JK ₈₀	13.6	0.15	19990810	114.60142	23.16967	105.56318	12.17616	0.1175843	2.4073598	33	1	114 days	0.63	M-v 5	Williams	1999 JK ₈₀
1999 JN ₈₀	13.7	0.15	19990522	3.87840	73.90584	158.37817	9.88616	0.1228591	3.0583587	43	1	33 days	0.55		Williams	1999 JN ₈₀
1999 JO ₈₀	14.4	0.15	19990810	4.73829	72.46989	184.26052	13.64915	0.1420021	2.5641729	42	1	108 days	0.61	M-v 4	Williams	1999 JO ₈₀
1999 JR ₈₀	14.2	0.15	19990522	351.56438	160.23310	92.37126	17.03742	0.2280071	3.0956821	36	1	33 days	0.64		Williams	1999 JR ₈₀
1999 JU ₈₀	13.9	0.15	19990522	43.77502	73.40048	101.92029	15.32865	0.2314996	3.0997317	23	1	33 days	0.61		Williams	1999 JU ₈₀
1999 JX ₈₀	13.6	0.15	19990522	75.38230	327.45835	190.48749	13.49134	0.0942765	2.6295143	28	1	33 days	0.63		Williams	1999 JX ₈₀
1999 JY ₈₀	13.7	0.15	19990522	273.10525	213.99814	135.85227	13.63252	0.1817012	2.6918499	24	1	33 days	0.72		Williams	1999 JY ₈₀
1999 JZ ₈₀	13.9	0.15	19990810	346.34910	166.13125	116.96652	16.01547	0.0969929	2.5442615	35	1	82 days	0.62	M-v 5	Williams	1999 JZ ₈₀
1999 JB ₈₁	13.0	0.15	19990522	325.49405	149.48302	136.05032	14.18997	0.0287367	2.8882541	25	1	33 days	0.72		Williams	1999 JB ₈₁
1999 JD ₈₁	15.4	0.15	19990522	306.49859	205.51894	107.24171	6.25160	0.2222731	2.2554034	56	1	33 days	0.77		Williams	1999 JD ₈₁
1999 JF ₈₁	13.9	0.15	19990522	359.92375	47.40001	211.31880	12.93833	0.1579942	2.7126698	20	1	32 days	0.39		Williams	1999 JF ₈₁
1999 JH ₈₁	13.2	0.15	19990522	352.47905	47.56084	238.69473	12.92978	0.1385012	2.5970781	23	1	31 days	0.88		Williams	1999 JH ₈₁
1999 JK ₈₁	13.2	0.15	19990502	333.47725	152.61611	157.50929	8.96635	0.1621850	2.4481568	14	1	7 days	0.89	E	Williams	1999 JK ₈₁
1999 JQ ₈₁	15.2	0.15	19990502	341.82497	130.99991	109.96120	7.32549	0.2108901	2.3292162	33	1	57 days	0.68		Williams	1999 JQ ₈₁

1999 JR ₈₁	15.3	0.15	19990412	327.08737	104.99685	143.58540	7.66579	0.1367198	2.3064198	20	1	35 days	0.72		Williams	1999 JR ₈₁
1999 JT ₈₁	13.8	0.15	19990502	307.69282	184.87565	94.40943	13.27224	0.1735503	2.6651996	34	1	59 days	0.60		Williams	1999 JT ₈₁
1999 JV ₈₁	14.2	0.15	19990502	325.67304	185.79048	81.89160	9.49202	0.2332947	2.8780276	14	1	5 days	0.99		Williams	1999 JV ₈₁
1999 JW ₈₁	14.1	0.15	19990502	208.67670	296.91599	70.35866	12.10040	0.0283433	2.4441647	14	1	5 days	0.61	E	Williams	1999 JW ₈₁
1999 JY ₈₁	14.2	0.15	19990502	348.16861	148.62559	83.17403	14.07664	0.1709209	2.7473375	24	1	59 days	0.60		Williams	1999 JY ₈₁
1999 JZ ₈₁	13.5	0.15	19990810	339.02191	168.70034	100.99035	13.94142	0.1327772	2.6881514	28	1	72 days	0.56	M-v 4	Williams	1999 JZ ₈₁
1999 JB ₈₂	13.9	0.15	19990502	280.02752	203.81379	100.54560	12.45267	0.0742592	2.3010772	15	1	5 days	0.51		Williams	1999 JB ₈₂
1999 JF ₈₂	14.0	0.15	19990412	92.27387	304.27832	171.63553	12.85863	0.0566098	3.2204410	25	1	36 days	1.16		Williams	1999 JF ₈₂
1999 JG ₈₂	14.6	0.15	19990412	23.93846	81.35857	103.28685	10.11952	0.0854509	3.0505377	27	1	36 days	0.93		Williams	1999 JG ₈₂
1999 JH ₈₂	14.5	0.15	19990412	307.46299	104.85095	179.84955	13.30461	0.1842325	2.5721756	40	1	36 days	0.74		Williams	1999 JH ₈₂
1999 JJ ₈₂	13.0	0.15	19990502	210.62578	289.93244	85.50875	15.38960	0.2245094	2.5226086	13	1	5 days	0.67		Williams	1999 JJ ₈₂
1999 JL ₈₂	14.0	0.15	19990412	248.52724	251.56003	93.92684	13.85628	0.2175953	2.5841869	24	1	36 days	0.69		Williams	1999 JL ₈₂
1999 JN ₈₂	14.1	0.15	19990412	312.29068	112.17851	155.56295	10.60597	0.0626198	3.0735344	32	1	36 days	0.70		Williams	1999 JN ₈₂
1999 JO ₈₂	14.5	0.15	19990412	346.15138	58.67263	171.88226	10.74372	0.0999198	2.6316665	29	1	36 days	0.54		Williams	1999 JO ₈₂
1999 JP ₈₂	14.1	0.15	19990412	257.77080	232.29649	94.34614	12.11271	0.0892944	2.9930200	27	1	36 days	0.73		Williams	1999 JP ₈₂
1999 JQ ₈₂	14.9	0.15	19990412	266.30115	172.70112	151.50199	6.74111	0.1269628	2.3553452	22	1	35 days	0.81		Williams	1999 JQ ₈₂
1999 JT ₈₂	13.8	0.15	19990502	10.11329	93.77523	113.12140	15.49213	0.0571854	2.6104610	23	1	58 days	0.74		Williams	1999 JT ₈₂
1999 JU ₈₂	15.3	0.15	19990810	353.79250	164.84791	109.48233	10.89927	0.2401221	2.3444477	29	1	63 days	0.54	M-v 4	Williams	1999 JU ₈₂
1999 JV ₈₂	13.7	0.15	19990522	294.34147	159.09155	151.78467	13.23503	0.1687817	2.6773223	29	1	31 days	0.61		Williams	1999 JV ₈₂
1999 JW ₈₂	13.5	0.15	19990810	317.31658	181.43014	120.62805	13.58843	0.1539185	2.7078129	32	1	76 days	0.58	M-v 4	Williams	1999 JW ₈₂
1999 JX ₈₂	13.8	0.15	19990502	307.15452	149.83754	136.20337	14.24939	0.1279092	2.6362757	15	1	5 days	0.67		Williams	1999 JX ₈₂
1999 JY ₈₂	15.0	0.15	19990810	5.07906	132.70600	120.73512	11.73071	0.2613467	2.5514274	28	1	63 days	0.67	M-v 4	Williams	1999 JY ₈₂
1999 JZ ₈₂	14.4	0.15	19990810	23.09333	60.07822	159.52616	14.48847	0.2085782	2.6937376	25	1	80 days	0.57	M-v 4	Williams	1999 JZ ₈₂
1999 JA ₈₃	13.8	0.15	19990522	54.99006	39.05612	120.94312	14.36629	0.1151502	2.6925779	24	1	31 days	0.77		Williams	1999 JA ₈₃
1999 JB ₈₃	14.5	0.15	19990522	358.76008	127.00556	104.81895	13.69864	0.2018728	2.7818526	23	1	31 days	0.72		Williams	1999 JB ₈₃
1999 JC ₈₃	15.4	0.15	19990810	26.31633	52.77593	176.52054	7.02480	0.0885345	2.3200593	23	1	61 days	0.62	M-v 5	Williams	1999 JC ₈₃
1999 JD ₈₃	14.1	0.15	19990522	19.56916	51.11627	152.41836	9.14992	0.1765277	3.0842063	18	1	33 days	0.64		Williams	1999 JD ₈₃
1999 JE ₈₃	14.7	0.15	19990522	354.48560	49.29190	189.73569	13.67713	0.1193840	2.6426782	22	1	31 days	0.71		Williams	1999 JE ₈₃
1999 JH ₈₃	14.3	0.15	19990522	349.49587	87.01000	159.95704	12.22347	0.1428158	2.5848497	24	1	31 days	0.82		Williams	1999 JH ₈₃
1999 JM ₈₃	14.3	0.15	19990522	344.04507	119.88325	129.59634	14.01856	0.0210996	2.3543682	33	1	33 days	0.62		Williams	1999 JM ₈₃
1999 JP ₈₃	15.0	0.15	19990810	58.26097	340.13846	198.58407	12.13620	0.2051430	2.6779141	21	1	82 days	0.51	M-v 4	Williams	1999 JP ₈₃
1999 JR ₈₃	14.4	0.15	19990522	285.31777	199.29047	127.16478	13.49279	0.1579445	2.6490220	28	1	31 days	0.66		Williams	1999 JR ₈₃
1999 JS ₈₃	14.9	0.15	19990522	358.12364	74.18580	163.75294	12.63996	0.1178932	2.5607743	33	1	31 days	0.67		Williams	1999 JS ₈₃
1999 JT ₈₃	14.1	0.15	19990522	328.13927	160.11131	123.90931	16.44543	0.2305400	3.0803079	24	1	31 days	0.89		Williams	1999 JT ₈₃
1999 JX ₈₃	15.0	0.15	19990810	10.21342	111.43141	146.77891	6.86419	0.2294832	2.2881428	35	1	82 days	0.61	M-v 4	Williams	1999 JX ₈₃
1999 JY ₈₃	13.3	0.15	19990522	311.15363	114.92836	178.57321	9.86739	0.0700790	2.7898720	24	1	33 days	0.68		Williams	1999 JY ₈₃
1999 JZ ₈₃	13.2	0.15	19990522	320.89889	169.67360	111.50222	10.61509	0.0554746	3.1708169	24	1	33 days	0.71		Williams	1999 JZ ₈₃
1999 JC ₈₄	14.4	0.15	19990522	80.83842	36.75976	105.88072	14.25786	0.1088149	2.7962711	28	1	33 days	0.84		Williams	1999 JC ₈₄
1999 JD ₈₄	12.9	0.15	19990810	87.62844	30.60385	120.73258	18.12257	0.1306621	2.6377644	28	1	108 days	0.61	M-v 5	Williams	1999 JD ₈₄
1999 JF ₈₄	14.4	0.15	19990522	307.11193	204.40866	101.86506	15.85675	0.1436471	2.6256176	33	1	33 days	0.68		Williams	1999 JF ₈₄
1999 JG ₈₄	14.3	0.15	19990522	255.67274	257.83262	102.52602	15.89994	0.1520586	2.5424924	32	1	33 days	0.62		Williams	1999 JG ₈₄
1999 JH ₈₄	14.8	0.15	19990502	321.93810	165.88813	114.59218	16.10045	0.1165877	2.6244802	39	1	47 days	0.58		Williams	1999 JH ₈₄
1999 JL ₈₄	14.8	0.15	19990810	347.01809	111.89014	181.65052	13.93674	0.2420871	2.5497593	31	1	80 days	0.56	M-v 4	Williams	1999 JL ₈₄
1999 JM ₈₄	13.7	0.15	19990810	129.48497	326.55732	153.08224	14.50566	0.1049969	2.6592137	40	1	82 days	0.70	M-v 5	Williams	1999 JM ₈₄
1999 JO ₈₄	14.0	0.15	19990522	270.83728	161.82348	181.89843	13.10048	0.0754753	2.5221147	24	1	33 days	0.54		Williams	1999 JO ₈₄
1999 JR ₈₄	13.9	0.15	19990502	57.07129	343.62098	185.47850	13.63451	0.1648135	2.6120382	14	1	5 days	0.61		Williams	1999 JR ₈₄
1999 JT ₈₄	15.2	0.15	19990502	347.27661	154.82440	108.06945	17.16317	0.3401004	2.6650384	14	1	5 days	0.71	E	Williams	1999 JT ₈₄
1999 JE ₈₅	14.7	0.15	19990502	353.77492	118.08924	97.26541	17.71651	0.1508250	2.9065794	11	1	3 days	0.85		Williams	1999 JE ₈₅
1999 JN ₈₅	15.3	0.15	19990522	346.87298	105.08735	155.69410	8.72695	0.2065169	2.4535764	23	1	30 days	0.57		Williams	1999 JN ₈₅
1999 JO ₈₅	14.0	0.15	19990522	315.39435	184.25059	109.98226	15.47196	0.0851361	2.6389166	23	1	30 days	0.87		Williams	1999 JO ₈₅
1999 JP ₈₅	14.2	0.15	19990522	34.56459	38.68855	173.60178	10.32759	0.0631394	2.5418306	20	1	30 days	0.57		Williams	1999 JP ₈₅
1999 JS ₈₅	15.1	0.15	19990502	256.67698	181.41660	170.07314	5.31453	0.2035383	2.2437232	17	1	8 days	0.95		Williams	1999 JS ₈₅
1999 JT ₈₅	16.5	0.15	19990522	21.41027	40.59086	167.24147	4.66150	0.0951077	2.2877926	21	1	25 days	1.12		Williams	1999 JT ₈₅

1999 JC ₈₆	15.2	0.15	19990412	83.94020	27.61486	89.95394	6.50803	0.0530715	2.2082022	21	1	37 days	1.34	Williams	1999 JC ₈₆
1999 JQ ₈₆	14.4	0.15	19990412	292.33367	162.07826	122.93963	3.00578	0.0406834	2.8486267	30	1	38 days	0.97	Williams	1999 JQ ₈₆
1999 JT ₈₆	15.0	0.15	19990412	347.42600	161.54943	62.50980	14.11204	0.1138875	2.6680152	29	1	37 days	0.82	Williams	1999 JT ₈₆
1999 JX ₈₇	14.2	0.15	19990502	296.50112	117.88987	172.34850	3.58674	0.0799095	2.8527291	15	1	7 days	1.23	E Williams	1999 JX ₈₇
1999 JP ₈₈	16.1	0.15	19990502	273.84087	238.59120	89.30027	7.29297	0.2003138	2.2828935	17	1	6 days	0.89	Williams	1999 JP ₈₈
1999 JB ₈₉	15.4	0.15	19990502	350.04418	120.45995	110.19181	12.88285	0.1636475	2.6452266	17	1	58 days	0.74	Williams	1999 JB ₈₉
1999 JE ₈₉	14.1	0.15	19990522	277.54150	226.60285	100.36744	15.24763	0.2081219	2.6799803	13	1	26 days	0.55	Williams	1999 JE ₈₉
1999 JH ₈₉	14.8	0.15	19990502	333.18032	72.37377	184.76424	8.32027	0.1564703	2.7860256	18	1	7 days	0.87	Williams	1999 JH ₈₉
1999 JK ₈₉	13.1	0.15	19990412	247.06407	156.78190	180.17204	8.99525	0.0541848	3.0881455	24	1	37 days	0.93	Williams	1999 JK ₈₉
1999 JX ₈₉	14.3	0.15	19990810	316.46977	205.80722	99.72194	15.36187	0.1724226	2.6043446	24	1	65 days	0.78	M-v Williams	1999 JX ₈₉
1999 JH ₉₀	15.9	0.15	19990522	340.88342	120.76089	135.55350	10.20892	0.1740375	2.4149157	22	1	31 days	0.63	Williams	1999 JH ₉₀
1999 JJ ₉₀	14.9	0.15	19990810	15.82760	134.53443	92.26386	16.88068	0.1005985	2.7620103	18	1	63 days	0.86	M-v Williams	1999 JJ ₉₀
1999 JK ₉₀	13.9	0.15	19990810	2.38913	123.48759	121.83391	12.88465	0.1391978	2.7594054	23	1	63 days	0.50	M-v Williams	1999 JK ₉₀
1999 JO ₉₀	14.4	0.15	19990522	335.86928	143.68830	117.76808	14.27262	0.1716900	2.6676712	20	1	31 days	0.76	Williams	1999 JO ₉₀
1999 JA ₉₁	14.0	0.15	19990522	317.29800	197.71038	82.27493	13.00409	0.1002188	3.1904472	32	1	33 days	0.63	Williams	1999 JA ₉₁
1999 JJ ₉₁	13.9	0.15	19990522	345.00444	117.24904	132.86986	14.31325	0.1882636	3.0693574	20	1	31 days	0.71	Williams	1999 JJ ₉₁
1999 JM ₉₁	13.0	0.15	19990810	164.79801	255.13757	179.01016	16.42923	0.1862917	2.5695121	29	1	80 days	0.62	M-v Williams	1999 JM ₉₁
1999 JQ ₉₁	15.6	0.15	19990522	325.49697	155.28380	128.08509	8.29653	0.2202088	2.6877874	32	1	38 days	0.83	Williams	1999 JQ ₉₁
1999 JR ₉₁	12.9	0.15	19990522	154.33109	279.57995	150.60970	10.58617	0.1011767	3.0151109	23	1	33 days	0.71	Williams	1999 JR ₉₁
1999 JS ₉₁	15.0	0.15	19990522	65.65939	11.25360	147.80864	8.22816	0.0578470	2.4064258	23	1	38 days	0.56	Williams	1999 JS ₉₁
1999 JW ₉₁	14.9	0.15	19990522	313.37587	142.53768	144.79620	7.02821	0.1029052	2.4544297	34	1	38 days	0.48	Williams	1999 JW ₉₁
1999 JZ ₉₁	15.2	0.15	19990522	261.89383	240.28449	111.56031	7.20210	0.2081483	2.2383279	26	1	33 days	0.59	Williams	1999 JZ ₉₁
1999 JA ₉₂	15.7	0.15	19990522	52.10256	349.46091	183.78665	6.78195	0.0817933	2.3762657	32	1	33 days	0.60	Williams	1999 JA ₉₂
1999 JH ₉₂	14.8	0.15	19990522	182.76633	338.87691	65.84393	22.96994	0.0622920	2.5654046	21	1	29 days	0.77	Williams	1999 JH ₉₂
1999 JL ₉₂	15.1	0.15	19990522	286.26602	201.58057	119.87978	14.27906	0.1757995	2.5350351	19	1	31 days	0.83	Williams	1999 JL ₉₂
1999 JO ₉₂	16.1	0.15	19990522	321.23821	128.37359	156.10703	6.56922	0.1498496	2.3670767	22	1	36 days	0.57	Williams	1999 JO ₉₂
1999 JP ₉₂	14.4	0.15	19990522	304.49560	161.61990	141.64140	7.70040	0.1519138	2.4501303	19	1	33 days	0.48	Williams	1999 JP ₉₂
1999 JV ₉₂	16.5	0.15	19990522	312.89980	142.56964	158.32232	8.46722	0.2088115	2.2718547	23	1	38 days	0.59	Williams	1999 JV ₉₂
1999 JK ₉₃	13.5	0.15	19990522	261.96955	151.63407	193.73187	15.19932	0.1259622	2.6832893	20	1	33 days	0.47	Williams	1999 JK ₉₃
1999 JN ₉₃	15.0	0.15	19990522	279.75390	169.44054	168.82722	8.45653	0.2096663	2.2095790	20	1	33 days	0.69	Williams	1999 JN ₉₃
1999 JP ₉₃	15.1	0.15	19990522	174.84162	261.75667	156.30695	7.61135	0.0871836	2.3210452	23	1	36 days	0.67	Williams	1999 JP ₉₃
1999 JQ ₉₃	15.1	0.15	19990522	15.92018	21.90767	188.18883	9.85754	0.2060533	3.1027752	22	1	36 days	0.59	Williams	1999 JQ ₉₃
1999 JT ₉₃	15.6	0.15	19990522	256.21038	237.54393	115.94654	6.98408	0.1375800	2.2596326	22	1	33 days	0.90	Williams	1999 JT ₉₃
1999 JW ₉₃	14.4	0.15	19990522	310.74471	139.73570	175.44358	8.58329	0.2898946	2.7803441	19	1	33 days	0.57	Williams	1999 JW ₉₃
1999 JY ₉₃	14.2	0.15	19990522	184.95403	280.73842	129.57537	7.35172	0.0938125	2.3059068	14	1	33 days	0.55	Williams	1999 JY ₉₃
1999 JZ ₉₃	16.1	0.15	19990522	26.63923	70.27417	133.42228	6.52370	0.0885413	2.3180912	23	1	33 days	0.55	Williams	1999 JZ ₉₃
1999 JA ₉₄	15.8	0.15	19990522	339.16245	169.15701	109.38075	7.21918	0.3443842	2.6742916	23	1	33 days	0.59	Williams	1999 JA ₉₄
1999 JB ₉₄	14.4	0.15	19990522	271.38088	204.58287	141.37760	8.68579	0.2078021	2.5712405	20	1	33 days	1.05	Williams	1999 JB ₉₄
1999 JC ₉₄	14.0	0.15	19990522	73.61988	9.95689	130.25211	9.16995	0.1643997	2.8018196	20	1	33 days	0.60	Williams	1999 JC ₉₄
1999 JD ₉₄	14.0	0.15	19990522	266.54991	164.53338	180.04100	13.35652	0.1559517	2.7460165	24	1	33 days	0.86	Williams	1999 JD ₉₄
1999 JE ₉₄	13.7	0.15	19990522	301.31086	141.74815	157.02668	10.96322	0.0741363	3.0266563	24	1	33 days	0.67	Williams	1999 JE ₉₄
1999 JM ₉₄	13.7	0.15	19990522	356.43122	65.63430	173.02701	16.66309	0.1801380	3.0990823	20	1	31 days	0.57	Williams	1999 JM ₉₄
1999 JO ₉₄	13.4	0.15	19990522	300.71219	184.00488	114.22722	17.91291	0.0834566	3.1323133	23	1	31 days	0.64	Williams	1999 JO ₉₄
1999 JS ₉₄	14.4	0.15	19990522	320.18273	139.06241	145.43561	14.93411	0.1396400	2.7130897	16	1	31 days	0.72	Williams	1999 JS ₉₄
1999 JT ₉₄	14.6	0.15	19990522	291.16563	165.82792	159.20157	12.94848	0.1978557	2.4432296	24	1	33 days	0.68	Williams	1999 JT ₉₄
1999 JV ₉₄	14.3	0.15	19990522	155.07650	334.92408	97.61419	16.11564	0.0866006	2.5363185	23	1	33 days	0.60	Williams	1999 JV ₉₄
1999 JY ₉₄	15.4	0.15	19990522	323.09959	103.17581	189.44977	12.93118	0.2289353	2.6074856	18	1	31 days	0.73	Williams	1999 JY ₉₄
1999 JB ₉₅	14.6	0.15	19990522	280.98861	149.05733	183.48341	11.53565	0.1595323	2.5276310	23	1	33 days	0.53	Williams	1999 JB ₉₅
1999 JE ₉₅	15.0	0.15	19990522	286.39888	241.32939	91.75770	13.18609	0.2184744	2.5789459	24	1	33 days	0.62	Williams	1999 JE ₉₅
1999 JM ₉₅	14.8	0.15	19990522	250.68256	226.28892	129.00616	7.55480	0.0862228	2.5597493	24	1	33 days	0.77	Williams	1999 JM ₉₅
1999 JN ₉₅	13.1	0.15	19990522	157.14367	259.73705	177.47073	9.45467	0.0739618	3.0086423	18	1	33 days	0.73	Williams	1999 JN ₉₅
1999 JY ₉₅	15.3	0.15	19990522	302.12806	175.24462	127.93732	11.65176	0.1022494	2.5710184	23	1	33 days	0.79	Williams	1999 JY ₉₅
1999 JZ ₉₅	14.5	0.15	19990522	198.30128	285.50231	114.58282	14.05486	0.1548890	2.6922840	22	1	33 days	0.99	Williams	1999 JZ ₉₅

1999 JB ₉₆	14.2	0.15	19990522	341.47621	138.87303	127.10650	15.51491	0.2555697	3.1698354	20	1	31 days	0.69	Williams	1999 JB ₉₆
1999 JE ₉₆	14.8	0.15	19990522	314.98001	190.32851	104.67501	15.77561	0.1686317	2.5263520	20	1	31 days	0.65	Williams	1999 JE ₉₆
1999 JG ₉₆	13.8	0.15	19990522	253.91638	249.57304	116.14200	14.78355	0.2680064	2.5810977	20	1	31 days	0.46	Williams	1999 JG ₉₆
1999 JH ₉₆	16.4	0.15	19990522	333.08524	158.79560	114.75961	11.80059	0.1767449	2.4141232	27	1	33 days	0.87	Williams	1999 JH ₉₆
1999 JN ₉₆	14.6	0.15	19990522	306.09000	113.54891	194.96659	12.70749	0.1663563	2.6225066	24	1	33 days	0.74	Williams	1999 JN ₉₆
1999 JO ₉₆	16.3	0.15	19990522	7.88790	33.51627	192.66438	10.20287	0.1950683	2.6123912	22	1	33 days	0.81	Williams	1999 JO ₉₆
1999 JP ₉₆	16.4	0.15	19990522	328.51507	198.36890	90.66650	8.99277	0.2462015	2.2124689	19	1	33 days	0.70	Williams	1999 JP ₉₆
1999 JU ₉₆	14.6	0.15	19990522	344.27965	167.44243	89.99735	12.45210	0.1077914	3.0436117	16	1	33 days	0.90	Williams	1999 JU ₉₆
1999 JV ₉₆	14.2	0.15	19990522	357.57543	142.06932	100.22830	10.47289	0.1898049	3.0884850	20	1	33 days	0.60	Williams	1999 JV ₉₆
1999 JW ₉₆	14.6	0.15	19990522	3.82650	69.41238	164.16160	9.34415	0.0908338	3.0586338	23	1	33 days	0.71	Williams	1999 JW ₉₆
1999 JX ₉₆	15.7	0.15	19990522	28.40866	15.35409	186.96443	10.07570	0.1282536	2.5317647	17	1	33 days	0.63	Williams	1999 JX ₉₆
1999 JB ₉₇	14.6	0.15	19990522	288.85471	174.01582	151.82079	12.90677	0.1582035	2.6497073	18	1	31 days	0.95	Williams	1999 JB ₉₇
1999 JH ₉₇	14.7	0.15	19990522	277.67133	175.06305	173.08192	13.21788	0.2433530	2.7530837	22	1	33 days	0.82	Williams	1999 JH ₉₇
1999 JJ ₉₇	14.5	0.15	19990522	309.83378	167.30066	126.81342	12.10710	0.0723653	3.0464992	25	1	33 days	1.06	Williams	1999 JJ ₉₇
1999 JP ₉₇	15.5	0.15	19990522	19.65990	80.84938	133.12125	10.36364	0.1185559	2.5348858	22	1	33 days	0.70	Williams	1999 JP ₉₇
1999 JQ ₉₇	14.9	0.15	19990522	290.01071	215.16144	112.70753	13.54060	0.1718544	2.6800673	23	1	33 days	0.64	Williams	1999 JQ ₉₇
1999 JW ₉₇	14.8	0.15	19990522	312.77499	167.42872	138.99446	16.55277	0.2144258	3.0998097	21	1	31 days	0.91	Williams	1999 JW ₉₇
1999 JY ₉₇	15.8	0.15	19990522	347.13019	111.37210	143.00736	14.58448	0.0866651	2.5415702	29	1	40 days	0.72	Marsden	1999 JY ₉₇
1999 JG ₉₈	13.7	0.15	19990522	244.64961	265.92656	99.16164	11.21612	0.1419480	3.0173071	17	1	33 days	0.76	Williams	1999 JG ₉₈
1999 JN ₉₈	15.1	0.15	19990522	21.68024	40.50890	173.00194	14.04748	0.1012116	2.6951329	30	1	33 days	0.64	Williams	1999 JN ₉₈
1999 JO ₉₈	14.4	0.15	19990522	331.96428	91.87458	179.20108	15.94790	0.0503236	3.0324640	32	1	33 days	0.74	Williams	1999 JO ₉₈
1999 JP ₉₈	15.5	0.15	19990522	330.03273	162.25575	122.40866	11.26649	0.2109355	2.3404863	23	1	33 days	0.67	Williams	1999 JP ₉₈
1999 JR ₉₈	13.9	0.15	19990522	297.31779	165.22692	161.09121	8.66144	0.1984996	2.7665435	24	1	33 days	0.67	Williams	1999 JR ₉₈
1999 JS ₉₈	14.3	0.15	19990522	74.40568	65.01580	90.58004	15.97378	0.0943557	2.6296506	16	1	33 days	0.86	Williams	1999 JS ₉₈
1999 JT ₉₈	14.4	0.15	19990522	355.82992	49.68873	197.90369	11.71878	0.1564421	3.0714225	24	1	33 days	0.68	Williams	1999 JT ₉₈
1999 JU ₉₈	16.5	0.15	19990522	323.16088	158.99272	131.22179	7.19909	0.1417797	2.2341835	18	1	33 days	0.78	Williams	1999 JU ₉₈
1999 JX ₉₈	14.4	0.15	19990522	344.09523	84.87712	175.48147	11.92080	0.0792418	2.6145519	20	1	33 days	0.68	Williams	1999 JX ₉₈
1999 JY ₉₈	14.9	0.15	19990502	0.59885	78.38333	156.68540	14.27073	0.1289835	3.1549724	34	1	53 days	0.79	Williams	1999 JY ₉₈
1999 JA ₉₉	13.3	0.15	19990522	15.89468	110.11036	106.62353	23.30806	0.1414235	3.1275318	20	1	31 days	0.45	Williams	1999 JA ₉₉
1999 JC ₉₉	16.1	0.15	19990522	18.87581	39.59315	170.55046	12.55771	0.2458564	2.5621117	48	1	34 days	0.53	Williams	1999 JC ₉₉
1999 JD ₉₉	14.7	0.15	19990522	49.40331	2.28612	184.80478	13.82494	0.0609294	2.3583137	36	1	33 days	0.54	Williams	1999 JD ₉₉
1999 JH ₉₉	13.9	0.15	19990522	80.55404	24.64163	113.20612	10.95357	0.2161497	3.0449195	20	1	33 days	0.58	Williams	1999 JH ₉₉
1999 JK ₉₉	15.0	0.15	19990522	16.21286	161.87486	59.89636	8.28448	0.1031805	2.6838517	12	1	33 days	0.84	Williams	1999 JK ₉₉
1999 JL ₉₉	13.7	0.15	19990522	258.28628	275.68857	96.75372	18.47360	0.2691735	2.7857534	20	1	33 days	0.49	Williams	1999 JL ₉₉
1999 JN ₉₉	15.6	0.15	19990522	318.86183	117.61852	184.97156	12.14127	0.1957961	2.6939573	22	1	33 days	0.74	Williams	1999 JN ₉₉
1999 JR ₉₉	15.0	0.15	19990522	356.80659	78.59560	170.66303	16.07234	0.2168770	2.6771277	17	1	33 days	0.61	Williams	1999 JR ₉₉
1999 JS ₉₉	14.2	0.15	19990810	8.14203	96.30535	155.96752	15.71762	0.1995507	3.1547920	31	1	64 days	0.62	M-v 4 Williams	1999 JS ₉₉
1999 JU ₉₉	13.8	0.15	19990522	177.11177	263.02069	163.57351	14.80745	0.1076257	2.5604068	44	1	31 days	0.65	Williams	1999 JU ₉₉
1999 JX ₉₉	15.6	0.15	19990522	0.21400	123.89191	119.33534	10.39701	0.1667980	2.5811289	17	1	33 days	0.76	Williams	1999 JX ₉₉
1999 JZ ₉₉	13.3	0.15	19990522	148.00881	348.51761	99.30719	17.90027	0.1603231	2.7732990	19	1	33 days	0.75	Williams	1999 JZ ₉₉
1999 JD ₁₀₀	14.1	0.15	19990522	296.41307	188.80683	132.19394	11.83682	0.1039107	3.0367042	18	1	33 days	0.72	Williams	1999 JD ₁₀₀
1999 JE ₁₀₀	13.0	0.15	19990522	199.70612	225.96458	188.15218	17.11636	0.2191712	2.9319284	17	1	33 days	0.72	Williams	1999 JE ₁₀₀
1999 JG ₁₀₀	14.9	0.15	19990502	345.62064	108.95603	148.86027	13.66916	0.1799323	2.6541193	27	1	55 days	0.59	Williams	1999 JG ₁₀₀
1999 JJ ₁₀₀	14.7	0.15	19990522	13.44093	125.94088	95.93857	29.00574	0.1221167	2.5833540	32	1	33 days	0.43	Williams	1999 JJ ₁₀₀
1999 JK ₁₀₀	15.4	0.15	19990522	334.94324	110.46070	164.48224	14.64611	0.0863934	2.6798391	23	1	31 days	0.58	Williams	1999 JK ₁₀₀
1999 JL ₁₀₀	16.1	0.15	19990522	351.04124	84.15269	176.27720	12.80771	0.2418246	2.6737334	22	1	31 days	0.74	Williams	1999 JL ₁₀₀
1999 JM ₁₀₀	14.2	0.15	19990522	54.98455	33.33374	146.28885	13.09766	0.1075602	2.6937773	19	1	33 days	0.56	Williams	1999 JM ₁₀₀
1999 JO ₁₀₀	13.6	0.15	19990522	70.50783	39.95919	121.51779	12.18658	0.1405176	3.1121408	20	1	33 days	0.61	Williams	1999 JO ₁₀₀
1999 JR ₁₀₀	14.9	0.15	19990522	330.35035	191.90855	92.96563	16.06909	0.1388273	2.5487956	18	1	33 days	0.86	Williams	1999 JR ₁₀₀
1999 JT ₁₀₀	13.8	0.15	19990522	135.14982	322.14385	142.41953	12.09561	0.1094250	2.6300022	24	1	33 days	0.60	Williams	1999 JT ₁₀₀
1999 JU ₁₀₀	14.7	0.15	19990522	334.90388	83.08784	195.65366	13.90901	0.0968731	2.6589408	18	1	33 days	0.63	Williams	1999 JU ₁₀₀
1999 JY ₁₀₀	14.3	0.15	19990522	272.69805	206.34818	140.99641	14.57149	0.1163584	2.5967086	36	1	34 days	0.91	Williams	1999 JY ₁₀₀
1999 JA ₁₀₁	13.9	0.15	19990522	142.63249	6.84007	94.31349	22.89436	0.0559751	2.6490639	18	1	33 days	0.99	Williams	1999 JA ₁₀₁

1999 JF ₁₀₁	15.8	0.15	19990522	335.62354	170.56860	119.18007	12.60505	0.3101065	2.7380683	19	1	33 days	0.81	Williams	1999 JF ₁₀₁
1999 JH ₁₀₁	15.0	0.15	19990522	15.64681	76.45591	154.13064	10.80595	0.0453022	2.6730631	17	1	33 days	0.52	Williams	1999 JH ₁₀₁
1999 JR ₁₀₁	14.3	0.15	19990502	297.51971	124.02958	179.19797	1.63775	0.2264449	2.9176422	18	1	6 days	1.05	E Williams	1999 JR ₁₀₁
1999 JS ₁₀₁	16.2	0.15	19990502	329.76571	215.60982	48.03617	11.99810	0.2259982	2.4560397	15	1	6 days	0.75	Williams	1999 JS ₁₀₁
1999 JZ ₁₀₁	13.1	0.15	19990412	236.03995	249.18207	96.61391	4.32801	0.1026024	2.7387313	32	1	38 days	0.59	Williams	1999 JZ ₁₀₁
1999 JA ₁₀₂	15.2	0.15	19990502	344.77892	100.47083	137.97868	5.10090	0.2032405	2.7299175	31	1	40 days	0.81	Williams	1999 JA ₁₀₂
1999 JK ₁₀₂	15.4	0.15	19990412	209.17355	198.99166	174.79086	6.81251	0.1530600	2.2959509	27	1	37 days	0.88	Williams	1999 JK ₁₀₂
1999 JL ₁₀₂	16.6	0.15	19990502	324.07377	106.47711	163.33017	4.89117	0.1646718	2.3653470	22	1	7 days	1.26	Williams	1999 JL ₁₀₂
1999 JU ₁₀₂	15.7	0.15	19990502	304.44359	217.60782	87.91301	5.80703	0.2504166	2.4542716	15	1	6 days	1.13	E Williams	1999 JU ₁₀₂
1999 JF ₁₀₃	14.8	0.15	19990502	176.37264	313.42527	92.46372	6.16125	0.0655891	2.6957710	25	1	7 days	1.17	E Williams	1999 JF ₁₀₃
1999 JH ₁₀₄	15.7	0.15	19990502	329.39176	87.41763	170.87604	5.39996	0.0652908	2.3495223	16	1	5 days	0.78	Williams	1999 JH ₁₀₄
1999 JP ₁₀₄	14.3	0.15	19990502	14.95024	40.14074	164.86881	11.46321	0.1124813	2.4362252	28	1	58 days	0.66	Williams	1999 JP ₁₀₄
1999 JU ₁₀₈	15.7	0.15	19990502	34.20472	62.81808	116.59515	3.51851	0.1533955	2.5375835	20	1	52 days	0.84	Williams	1999 JU ₁₀₈
1999 JG ₁₁₁	16.5	0.15	19990522	348.39889	83.15432	175.42103	5.57979	0.1632189	2.4061330	27	1	32 days	0.73	Williams	1999 JG ₁₁₁
1999 JS ₁₁₁	14.8	0.15	19990522	213.73854	219.60176	166.83865	4.87193	0.0937667	2.3559777	19	1	32 days	0.94	Williams	1999 JS ₁₁₁
1999 JK ₁₁₂	15.1	0.15	19990522	258.11407	127.02696	221.91109	13.78387	0.1226694	2.6148350	25	1	35 days	1.02	Williams	1999 JK ₁₁₂
1999 JN ₁₁₂	15.3	0.15	19990522	185.98571	316.82587	92.86264	5.38993	0.1151843	2.2024981	13	1	32 days	0.83	Williams	1999 JN ₁₁₂
1999 JW ₁₁₂	15.3	0.15	19990522	25.92955	176.68836	27.96257	3.21865	0.0953464	2.3001821	15	1	33 days	0.52	Williams	1999 JW ₁₁₂
1999 JA ₁₁₃	14.4	0.15	19990522	275.32782	10.63132	337.22881	5.27148	0.2545102	2.5524132	18	1	33 days	1.02	Williams	1999 JA ₁₁₃
1999 JP ₁₁₃	16.4	0.15	19990522	48.82304	114.26626	63.75580	4.49606	0.1045505	2.3327704	20	1	33 days	0.66	Williams	1999 JP ₁₁₃
1999 JY ₁₁₃	15.1	0.15	19990522	292.45738	252.10103	78.70752	8.59930	0.2344595	2.8072422	31	1	32 days	0.61	Williams	1999 JY ₁₁₃
1999 JC ₁₁₄	15.6	0.15	19990522	249.58621	261.39897	105.01928	3.10112	0.1965410	2.4442709	14	1	34 days	0.73	Williams	1999 JC ₁₁₄
1999 JG ₁₁₄	14.0	0.15	19990522	173.13359	193.62164	228.51004	11.11026	0.1723242	2.6760014	17	1	36 days	0.76	Williams	1999 JG ₁₁₄
1999 JT ₁₁₄	14.3	0.15	19990522	63.45326	88.94006	42.19283	7.96707	0.3656922	3.0231585	13	1	33 days	1.11	Williams	1999 JT ₁₁₄
1999 JV ₁₁₄	15.0	0.15	19990522	16.20382	280.43091	294.35031	2.75935	0.1576346	2.3763570	24	1	33 days	0.74	Williams	1999 JV ₁₁₄
1999 JG ₁₁₅	15.9	0.15	19990522	309.86386	352.60868	313.77947	1.52928	0.1764464	2.1650558	19	1	33 days	0.59	Williams	1999 JG ₁₁₅
1999 JH ₁₁₅	14.8	0.15	19990522	157.16034	30.27535	48.24767	7.95012	0.0646450	2.3949062	19	1	36 days	1.11	Williams	1999 JH ₁₁₅
1999 JL ₁₁₅	15.6	0.15	19990522	339.09486	203.48965	64.31536	1.10217	0.1704462	2.9702239	17	1	30 days	0.63	Williams	1999 JL ₁₁₅
1999 JO ₁₁₅	16.5	0.15	19990522	325.58152	56.73468	224.84177	3.46537	0.1162781	2.1391778	17	1	33 days	0.70	Williams	1999 JO ₁₁₅
1999 JQ ₁₁₅	15.1	0.15	19990522	203.98415	178.43437	218.58592	3.71454	0.0788685	2.2531869	13	1	33 days	0.85	Williams	1999 JQ ₁₁₅
1999 JT ₁₁₅	13.9	0.15	19990522	283.68688	88.72892	229.66420	14.87106	0.0327820	3.0542808	23	1	32 days	0.92	Williams	1999 JT ₁₁₅
1999 JU ₁₁₅	14.9	0.15	19990522	79.04991	61.73690	79.20281	3.17196	0.1599487	3.0556723	14	1	31 days	0.75	Williams	1999 JU ₁₁₅
1999 JA ₁₁₆	16.1	0.15	19990522	341.45881	48.44797	215.04632	11.93051	0.1470418	2.6243263	38	1	35 days	0.80	Williams	1999 JA ₁₁₆
1999 JD ₁₁₆	14.3	0.15	19990522	231.78347	273.91949	99.66062	10.44006	0.0737416	3.0493315	19	1	32 days	0.90	Williams	1999 JD ₁₁₆
1999 JF ₁₁₆	15.3	0.15	19990522	281.34735	259.35362	85.01442	6.45439	0.2396948	2.4064021	15	1	36 days	1.01	Williams	1999 JF ₁₁₆
1999 JR ₁₁₆	15.7	0.15	19990522	51.64356	292.47838	242.96870	5.32964	0.1257461	2.4400572	27	1	36 days	0.86	Williams	1999 JR ₁₁₆
1999 JY ₁₁₆	15.1	0.15	19990522	346.94811	207.09275	51.28124	15.05268	0.1503066	2.6937741	11	1	33 days	0.83	Williams	1999 JY ₁₁₆
1999 JB ₁₁₇	15.8	0.15	19990522	6.77355	224.96333	7.72121	2.70363	0.1255114	2.3704205	13	1	33 days	0.96	Williams	1999 JB ₁₁₇
1999 JD ₁₁₇	14.5	0.15	19990522	301.79738	70.96708	251.92306	3.38774	0.2169700	2.5381483	23	1	33 days	0.76	Williams	1999 JD ₁₁₇
1999 JK ₁₁₇	15.1	0.15	19990522	326.69051	99.70124	185.44562	1.72595	0.1540667	3.0391626	16	1	23 days	0.85	Williams	1999 JK ₁₁₇
1999 JW ₁₁₇	15.8	0.15	19990522	291.56266	245.01980	66.80730	5.18728	0.0880669	2.7513101	12	1	22 days	1.00	Williams	1999 JW ₁₁₇
1999 JY ₁₁₇	17.9	0.15	19990522	356.04939	138.05915	104.64351	2.65284	0.1186664	2.2163579	10	1	30 days	1.04	Williams	1999 JY ₁₁₇
1999 JC ₁₁₈	13.7	0.15	19990522	51.07440	117.04365	52.07955	16.12105	0.1758229	3.1064315	12	1	33 days	0.62	Williams	1999 JC ₁₁₈
1999 JG ₁₁₈	16.1	0.15	19990522	356.24487	155.81020	88.70020	3.48013	0.1375786	2.3790378	20	1	36 days	0.77	Williams	1999 JG ₁₁₈
1999 JK ₁₁₈	14.8	0.15	19990522	304.02362	181.83040	112.11543	3.20048	0.0425635	2.8535621	24	1	35 days	0.83	Williams	1999 JK ₁₁₈
1999 JN ₁₁₈	13.7	0.15	19990522	172.92552	227.47932	199.73374	5.03149	0.0432978	2.7053751	24	1	32 days	0.52	Williams	1999 JN ₁₁₈
1999 JG ₁₁₉	13.0	0.15	19990522	269.26336	291.52203	57.26357	14.34323	0.1350633	3.1516641	23	1	33 days	0.56	Williams	1999 JG ₁₁₉
1999 JO ₁₁₉	14.6	0.15	19990522	245.37056	148.39288	222.04483	2.42500	0.1475061	2.3408049	22	1	33 days	0.94	Williams	1999 JO ₁₁₉
1999 JP ₁₁₉	14.6	0.15	19990522	95.87559	75.84101	64.45868	10.32942	0.0509600	2.6454608	15	1	33 days	0.81	Williams	1999 JP ₁₁₉
1999 JS ₁₁₉	14.4	0.15	19990522	302.82766	117.24527	202.82008	9.48349	0.1924094	3.1114052	22	1	32 days	0.73	Williams	1999 JS ₁₁₉
1999 JT ₁₁₉	15.1	0.15	19990522	59.89189	340.84683	194.26259	6.61146	0.0645259	2.4236630	24	1	32 days	0.70	Williams	1999 JT ₁₁₉
1999 JZ ₁₁₉	15.9	0.15	19990522	297.40835	101.17056	222.82618	14.37081	0.1572694	2.5869229	15	1	32 days	0.69	Williams	1999 JZ ₁₁₉
1999 JB ₁₂₀	15.9	0.15	19990522	6.08980	44.38870	190.09214	3.27521	0.1706835	2.5428778	32	1	33 days	0.69	Williams	1999 JB ₁₂₀

1999 JH ₁₂₀	15.9	0.15	19990522	7.30509	180.40967	54.09081	6.67638	0.0887081	2.2741182	17	1	33 days	1.56	Williams	1999 JH ₁₂₀
1999 JO ₁₂₀	15.7	0.15	19990522	344.97136	202.81845	60.16544	7.83358	0.1299115	2.3447246	24	1	33 days	0.85	Williams	1999 JO ₁₂₀
1999 JT ₁₂₀	14.8	0.15	19990522	75.34916	287.20953	226.92918	6.33270	0.1375558	2.5916910	27	1	33 days	0.81	Williams	1999 JT ₁₂₀
1999 JU ₁₂₀	16.5	0.15	19990522	316.71754	196.08962	109.28873	3.53323	0.1921516	2.4549249	31	1	33 days	0.91	Williams	1999 JU ₁₂₀
1999 JV ₁₂₀	15.0	0.15	19990522	227.42402	303.25102	82.55340	7.59380	0.1140553	2.2754031	23	1	33 days	0.71	Williams	1999 JV ₁₂₀
1999 JZ ₁₂₀	15.6	0.15	19990522	354.83244	163.32241	86.23941	7.65181	0.0656959	2.2899317	33	1	33 days	0.65	Williams	1999 JZ ₁₂₀
1999 JA ₁₂₁	15.0	0.15	19990522	335.76566	195.71652	82.52040	12.80873	0.1704669	3.1023217	30	1	36 days	1.02	Williams	1999 JA ₁₂₁
1999 JU ₁₂₁	14.6	0.15	19990522	50.43845	299.69451	253.08281	9.51962	0.0273179	2.2877700	34	1	33 days	0.48	Williams	1999 JU ₁₂₁
1999 JW ₁₂₁	14.8	0.15	19990522	6.06938	93.94700	145.27507	2.60036	0.1236917	3.0413766	12	1	33 days	0.55	Williams	1999 JW ₁₂₁
1999 JD ₁₂₂	15.6	0.15	19990522	358.43235	166.13838	82.08785	5.18922	0.1246500	2.2845974	21	1	33 days	0.75	Williams	1999 JD ₁₂₂
1999 JG ₁₂₂	14.6	0.15	19990522	341.77454	205.77785	65.31709	8.27364	0.1201413	2.8967247	12	1	33 days	0.86	Williams	1999 JG ₁₂₂
1999 JN ₁₂₂	14.0	0.15	19990522	329.53971	8.00469	279.45092	7.62968	0.1713106	2.3299791	24	1	33 days	0.69	Williams	1999 JN ₁₂₂
1999 JP ₁₂₂	14.9	0.15	19990522	341.12458	200.89671	74.91576	8.38456	0.1939352	2.5759778	24	1	33 days	0.67	Williams	1999 JP ₁₂₂
1999 JT ₁₂₂	15.5	0.15	19990522	314.19740	198.48552	114.32442	2.62126	0.2005832	2.1613828	23	1	33 days	0.74	Williams	1999 JT ₁₂₂
1999 JV ₁₂₂	15.9	0.15	19990522	357.08981	183.05194	69.04175	3.42812	0.1413531	2.2891031	17	1	33 days	0.55	Williams	1999 JV ₁₂₂
1999 JA ₁₂₃	16.6	0.15	19990522	344.69918	165.21450	96.83905	3.05534	0.1584764	3.0830893	14	1	31 days	1.59	Williams	1999 JA ₁₂₃
1999 JB ₁₂₃	16.9	0.15	19990522	350.35039	200.36930	54.79832	5.43614	0.1498388	2.2377507	11	1	33 days	1.26	Williams	1999 JB ₁₂₃
1999 JC ₁₂₃	15.3	0.15	19990522	299.63774	231.33440	88.03558	7.57247	0.1484829	2.3371653	22	1	33 days	0.94	Williams	1999 JC ₁₂₃
1999 JL ₁₂₃	14.8	0.15	19990522	302.10787	81.76587	228.78608	12.28219	0.0362271	2.5894925	21	1	32 days	0.95	Williams	1999 JL ₁₂₃
1999 JV ₁₂₃	15.9	0.15	19990522	21.93001	1.25167	214.09603	4.14036	0.1677390	2.5485948	26	1	32 days	0.72	Williams	1999 JV ₁₂₃
1999 JX ₁₂₃	15.0	0.15	19990522	338.48539	183.12805	93.39317	4.05180	0.1474920	2.2553700	24	1	32 days	0.58	Williams	1999 JX ₁₂₃
1999 JY ₁₂₃	14.6	0.15	19990522	16.77226	71.08736	156.52759	3.42413	0.1237263	2.6567457	33	1	32 days	0.66	Williams	1999 JY ₁₂₃
1999 JZ ₁₂₃	15.2	0.15	19990522	3.19003	36.24823	206.98710	6.93977	0.2019098	2.4121083	25	1	31 days	0.65	Williams	1999 JZ ₁₂₃
1999 JA ₁₂₄	14.4	0.15	19990522	263.61872	251.18599	111.44418	7.23755	0.1469891	2.4002746	23	1	32 days	0.81	Williams	1999 JA ₁₂₄
1999 JE ₁₂₄	13.3	0.15	19990522	177.80937	344.17718	90.33300	16.52177	0.1055987	2.5489494	22	1	32 days	0.85	Williams	1999 JE ₁₂₄
1999 JF ₁₂₄	15.0	0.15	19990522	335.95679	141.62146	123.06762	24.33487	0.0665259	1.9336015	32	1	30 days	0.63	Williams	1999 JF ₁₂₄
1999 JM ₁₂₅	15.2	0.15	19990522	302.65785	29.12829	289.22774	1.86455	0.1780053	2.3537045	22	1	36 days	0.75	Williams	1999 JM ₁₂₅
1999 JO ₁₂₅	14.4	0.15	19990522	305.75973	183.34894	118.57935	3.12114	0.0524107	2.9017772	27	1	36 days	0.81	Williams	1999 JO ₁₂₅
1999 JQ ₁₂₅	15.3	0.15	19990522	36.25707	84.86581	116.72164	5.63771	0.1048062	2.3225484	19	1	35 days	0.58	Williams	1999 JQ ₁₂₅
1999 JP ₁₂₆	15.5	0.15	19990522	249.85156	175.93834	188.12212	7.31695	0.1384125	2.3158085	20	1	32 days	0.83	Williams	1999 JP ₁₂₆
1999 JS ₁₂₆	15.5	0.15	19990522	25.14332	123.89093	73.00245	14.97776	0.2360837	3.1694767	15	1	34 days	0.86	Williams	1999 JS ₁₂₆
1999 JZ ₁₂₆	15.8	0.15	19990522	318.39686	77.11953	225.56060	4.90951	0.2154440	2.3902596	16	1	33 days	1.04	Williams	1999 JZ ₁₂₆
1999 JG ₁₂₇	14.7	0.15	19990522	159.97988	224.97167	216.32328	5.42146	0.1054180	2.4164672	21	1	33 days	0.83	Williams	1999 JG ₁₂₇
1999 JL ₁₂₇	15.6	0.15	19990522	6.34558	78.06706	159.43862	5.22595	0.1836188	2.6255808	23	1	32 days	1.12	Williams	1999 JL ₁₂₇
1999 JV ₁₂₇	10.4	0.15	19990502	179.42203	0.09465	3.09130	25.51127	0.3590596	16.7238276	44	1	8 days	0.25	E Williams	1999 JV ₁₂₇
1999 JP ₁₂₉	15.3	0.15	19990522	355.72368	58.99604	187.02442	11.47535	0.1546780	2.6519023	26	1	33 days	0.82	Williams	1999 JP ₁₂₉
1999 JS ₁₂₉	15.4	0.15	19990522	56.58342	54.02292	108.88199	10.25465	0.2067771	2.7773152	17	1	33 days	1.09	Williams	1999 JS ₁₂₉
1999 JU ₁₂₉	15.5	0.15	19990522	35.28259	349.71925	200.15048	11.58032	0.2239681	2.8025511	15	1	33 days	0.92	Williams	1999 JU ₁₂₉
1999 JO ₁₃₁	16.1	0.15	19990522	8.24115	342.01450	248.69202	1.98490	0.1209851	2.3403658	10	1	33 days	0.72	Williams	1999 JO ₁₃₁
1999 JP ₁₃₁	14.4	0.15	19990522	290.33770	281.58865	47.57081	14.95363	0.1316851	2.5790233	19	1	33 days	0.93	Williams	1999 JP ₁₃₁
1999 JT ₁₃₁	14.5	0.15	19990522	7.51140	357.34350	238.41461	8.37026	0.0474476	3.0600111	12	1	33 days	0.86	Williams	1999 JT ₁₃₁
1999 KB	14.3	0.15	19990522	274.80752	165.47576	164.70622	11.44740	0.1323275	2.9983327	29	1	38 days	0.86	Williams	1999 KB
1999 KG	15.5	0.15	19990502	51.59865	303.96597	226.40108	14.31695	0.0791933	2.6960898	14	1	7 days	0.60	Williams	1999 KG
1999 KL	15.4	0.15	19990522	296.33937	178.22112	163.57709	6.84291	0.3115404	2.5770521	15	1	29 days	0.84	Williams	1999 KL
1999 KN	15.3	0.15	19990502	90.57842	24.31448	90.19670	13.00096	0.1348082	2.3125205	20	1	6 days	1.03	Williams	1999 KN
1999 KP	18.2	0.15	19990502	92.70137	252.78842	227.55493	20.23493	0.0903641	1.9737283	8	1	5 days	0.16	Williams	1999 KP
1999 KQ	14.5	0.15	19990502	26.65742	11.63792	183.05397	10.83247	0.0537275	2.6977398	18	1	7 days	1.17	E Williams	1999 KQ
1999 KS	17.3	0.15	19990502	324.91309	127.05944	157.15737	5.55870	0.2812035	2.4746707	12	1	3 days	1.04	Williams	1999 KS
1999 KV	15.6	0.15	19990502	264.26708	109.30328	244.23424	1.27237	0.2757344	2.4137429	16	1	9 days	0.90	Williams	1999 KV
1999 KX	14.4	0.15	19990810	18.18113	172.16339	63.18085	9.14493	0.1888763	2.5310416	52	1	112 days	0.62	M-v 4 Williams	1999 KX
1999 KA ₁	17.7	0.15	19990502	338.12275	95.85656	159.88674	2.50135	0.1551969	2.1303692	17	1	9 days	0.91	Williams	1999 KA ₁
1999 KB ₁	17.4	0.15	19990522	348.80669	157.07470	94.60617	3.18092	0.1979691	2.3430322	20	1	25 days	0.70	Williams	1999 KB ₁
1999 KD ₁	15.4	0.15	19990502	5.68859	7.47904	212.76107	8.24555	0.1517620	2.7337107	17	1	6 days	0.62	E Williams	1999 KD ₁

1999 KF ₁	15.2	0.15	19990522	325.02193	245.89631	53.65844	15.03089	0.2407324	2.5715131	16	1	28 days	0.72	Williams	1999 KF ₁
1999 KG ₁	14.2	0.15	19990522	12.65267	355.52003	239.09400	25.22106	0.1191066	2.7576735	19	1	27 days	0.50	Williams	1999 KG ₁
1999 KK ₁	18.3	0.15	19990522	327.30014	229.88177	76.93863	7.10654	0.4600892	2.1178053	23	1	24 days	0.66	Williams	1999 KK ₁
1999 KL ₁	21.5	0.15	19990522	22.45166	116.84250	64.80406	9.65250	0.4280000	1.7180989	28	1	16 days	0.97	Williams	1999 KL ₁
1999 KR ₁	13.4	0.15	19990412	236.58812	302.83890	35.54614	19.21289	0.0685541	3.1334916	20	1	40 days	0.70	Williams	1999 KR ₁
1999 KZ ₁	15.0	0.15	19990522	247.95826	249.76707	100.18806	1.51830	0.0639243	3.0140895	17	1	25 days	0.95	Williams	1999 KZ ₁
1999 KA ₂	16.6	0.15	19990502	46.51851	325.08115	203.86467	2.12222	0.1236806	2.3354404	20	1	10 days	0.71	Williams	1999 KA ₂
1999 KD ₂	15.4	0.15	19990502	357.96559	166.48990	64.53633	5.80499	0.1672261	3.0780331	19	1	9 days	0.99	Williams	1999 KD ₂
1999 KJ ₂	17.5	0.15	19990522	32.34044	341.78918	213.66994	3.75567	0.0973345	2.5482960	9	1	21 days	0.30	Williams	1999 KJ ₂
1999 KN ₂	18.4	0.15	19990502	13.86728	343.45719	222.87644	6.17949	0.1983602	2.2450539	9	1	7 days	0.33	Williams	1999 KN ₂
1999 KQ ₂	17.8	0.15	19990522	31.98710	28.13189	165.12232	1.40011	0.1418714	2.4452616	12	1	33 days	0.33	Williams	1999 KQ ₂
1999 KR ₂	17.0	0.15	19990502	343.10089	83.44514	168.64979	1.59553	0.1629789	2.3711408	18	1	10 days	0.65	Williams	1999 KR ₂
1999 KU ₂	16.1	0.15	19990522	308.97102	97.68466	204.52523	3.27733	0.1576890	2.6643123	30	1	35 days	0.67	Williams	1999 KU ₂
1999 KB ₃	15.9	0.15	19990502	121.00344	26.35340	69.88506	5.62845	0.1306907	2.7159930	9	1	6 days	0.24	Williams	1999 KB ₃
1999 KC ₃	12.8	0.15	19990502	72.49271	86.70173	58.24920	16.80299	0.1020913	3.2185586	50	1	57 days	0.55	Williams	1999 KC ₃
1999 KF ₃	16.0	0.15	19990522	45.18715	344.49806	175.82973	2.19298	0.2779828	3.1241795	9	1	20 days	0.45	Williams	1999 KF ₃
1999 KH ₃	15.2	0.15	19990522	320.07478	134.48719	154.13894	2.00988	0.1684060	3.1513978	26	1	32 days	0.75	Williams	1999 KH ₃
1999 KK ₃	17.3	0.15	19990502	42.66767	330.73557	202.96467	3.30140	0.1433044	2.4887104	9	1	6 days	0.29	Williams	1999 KK ₃
1999 KN ₃	15.4	0.15	19990502	343.57072	101.34481	152.84184	1.56207	0.2155123	2.5273985	50	1	56 days	0.68	Williams	1999 KN ₃
1999 KO ₃	16.4	0.15	19990502	328.26339	169.39383	97.82506	3.04566	0.0781905	2.8686007	9	1	6 days	1.26	Williams	1999 KO ₃
1999 KP ₃	17.4	0.15	19990502	323.66247	51.08102	228.58893	13.54116	0.1951719	2.5811146	9	1	4 days	0.20	Williams	1999 KP ₃
1999 KS ₃	13.0	0.15	19990522	138.77778	224.14140	230.16561	25.43431	0.0344822	3.2042128	40	1	35 days	0.46	Williams	1999 KS ₃
1999 KH ₄	16.6	0.15	19990502	3.16408	154.27372	63.92920	7.66480	0.1775015	2.2978116	32	1	11 days	0.76	Williams	1999 KH ₄
1999 KT ₄	17.6	0.15	19990810	20.16562	127.30525	111.61683	2.28756	0.3687593	2.2130800	52	1	59 days	0.61	M-v 5 Williams	1999 KT ₄
1999 KU ₄	16.8	0.15	19990810	1.02330	222.92831	76.61650	8.44562	0.4038391	2.1947382	97	1	42 days	0.58	M-v 5 Williams	1999 KU ₄
1999 KV ₄	15.9	0.15	19990502	15.18317	86.03853	50.67157	14.34779	0.3729155	1.5475698	26	1	18 days	0.73	Nakano	1999 KV ₄
1999 KW ₄	16.6	0.15	19990810	321.82263	192.59054	244.94983	38.90071	0.6883233	0.6423243	177	1	31 days	0.58	M-v 7 Williams	1999 KW ₄
1999 KX ₄	17.0	0.15	19990522	53.02803	76.28147	105.05848	16.56723	0.2930851	1.4578879	34	1	21 days	0.88	Williams	1999 KX ₄
1999 KF ₅	14.4	0.15	19990522	210.89232	327.56391	65.73000	3.99785	0.1757010	2.5156943	37	1	36 days	0.78	Williams	1999 KF ₅
1999 KL ₅	13.9	0.15	19990502	217.47119	161.99464	206.85526	26.28719	0.1590201	2.5502924	35	1	40 days	0.74	Williams	1999 KL ₅
1999 KM ₅	15.1	0.15	19990522	207.03492	163.13128	222.85827	10.86235	0.1165536	2.4012498	22	1	28 days	0.98	Williams	1999 KM ₅
1999 KP ₅	17.9	0.15	19990522	357.66640	31.56331	218.38407	7.36909	0.2423831	2.3100034	22	1	29 days	0.71	Williams	1999 KP ₅
1999 KQ ₅	16.0	0.15	19990502	142.24996	10.00153	86.32393	13.07689	0.0688474	2.4961567	11	1	7 days	0.65	E Williams	1999 KQ ₅
1999 KS ₅	14.6	0.15	19990522	299.76793	131.56976	202.13587	9.11472	0.1912182	2.5584962	18	1	23 days	0.62	Williams	1999 KS ₅
1999 KD ₆	15.6	0.15	19990522	238.83047	289.34590	77.85882	5.87520	0.1241735	2.7494774	16	1	32 days	0.63	Williams	1999 KD ₆
1999 KH ₆	15.8	0.15	19990502	274.85347	229.83686	85.86041	7.64045	0.1286835	2.3795423	14	1	11 days	0.77	Williams	1999 KH ₆
1999 KM ₆	13.9	0.15	19990810	66.34118	58.72160	115.46680	16.86822	0.2765826	2.7955929	34	1	83 days	0.56	M-v 5 Williams	1999 KM ₆
1999 KN ₆	15.1	0.15	19990522	46.75052	313.25234	225.00777	3.06047	0.0564068	3.0528247	15	1	26 days	0.36	Williams	1999 KN ₆
1999 KP ₆	13.4	0.15	19990810	323.08749	135.91113	157.83787	14.96402	0.1210891	2.5944097	36	1	109 days	0.72	M-v 4 Williams	1999 KP ₆
1999 KQ ₆	16.7	0.15	19990522	358.65945	111.44042	132.48421	10.80935	0.4128339	2.6600828	79	1	25 days	0.82	Marsden	1999 KQ ₆
1999 KS ₆	14.0	0.15	19990522	326.26173	84.12666	215.03070	15.33625	0.2185008	3.1525222	25	1	35 days	0.70	Williams	1999 KS ₆
1999 KD ₇	14.5	0.15	19990502	216.29846	183.30321	188.17155	11.84148	0.1072916	2.6435977	21	1	6 days	0.94	Williams	1999 KD ₇
1999 KE ₇	16.8	0.15	19990522	11.63318	38.34858	177.03841	4.99193	0.1233593	2.2388221	14	1	21 days	0.84	Williams	1999 KE ₇
1999 KG ₇	16.4	0.15	19990522	342.68680	116.94205	136.64849	4.86820	0.1219251	2.4133345	23	1	37 days	0.98	Williams	1999 KG ₇
1999 KL ₇	15.0	0.15	19990522	305.50767	244.33664	75.09267	17.91999	0.2424390	2.6462700	24	1	30 days	0.79	Williams	1999 KL ₇
1999 KM ₇	13.0	0.15	19990502	284.04057	134.46571	175.30194	9.81462	0.1309424	3.0331836	19	1	2 days	0.62	E Williams	1999 KM ₇
1999 KQ ₇	14.5	0.15	19990522	340.13764	198.80257	38.64896	14.03106	0.1715753	2.7456444	14	1	21 days	0.74	Williams	1999 KQ ₇
1999 KF ₁₀	15.7	0.15	19990522	38.94285	301.12748	249.46350	2.09097	0.1064166	2.5922697	15	1	28 days	0.55	Williams	1999 KF ₁₀
1999 KH ₁₀	16.2	0.15	19990522	295.95129	235.27440	87.44895	6.04682	0.1821791	2.2837644	24	1	35 days	0.65	Williams	1999 KH ₁₀
1999 KQ ₁₀	14.6	0.15	19990522	319.18587	55.07279	241.57103	1.72764	0.1796238	2.4251582	25	1	36 days	0.50	Williams	1999 KQ ₁₀
1999 KR ₁₀	16.8	0.15	19990522	329.02862	58.96973	229.16868	1.68203	0.2224066	2.3343141	23	1	33 days	0.91	Williams	1999 KR ₁₀
1999 KU ₁₀	15.6	0.15	19990522	322.18945	69.19305	218.18708	6.00410	0.1124566	2.2840287	21	1	35 days	0.53	Williams	1999 KU ₁₀
1999 KB ₁₁	14.0	0.15	19990522	116.29346	203.89302	268.57447	3.49052	0.1355539	2.4101788	24	1	36 days	0.61	Williams	1999 KB ₁₁

1999 KO ₁₁	13.8	0.15	19990522	73.06409	301.17515	222.93204	8.09981	0.0499023	3.1178186	14	1	28 days	0.81	Williams	1999 KO ₁₁
1999 KS ₁₁	15.5	0.15	19990522	358.71738	188.03167	56.31355	4.70289	0.1318941	2.2958364	19	1	28 days	0.46	Williams	1999 KS ₁₁
1999 KU ₁₁	15.6	0.15	19990522	44.00107	241.25470	303.08959	1.74237	0.1526008	2.3817072	18	1	28 days	0.81	Williams	1999 KU ₁₁
1999 KP ₁₂	14.2	0.15	19990522	301.04142	277.10537	46.57877	12.34696	0.1749729	2.7156305	18	1	28 days	0.73	Williams	1999 KP ₁₂
1999 KS ₁₂	16.0	0.15	19990522	355.78942	15.25411	235.67243	2.00730	0.1907788	2.4157503	29	1	36 days	0.95	Williams	1999 KS ₁₂
1999 KT ₁₂	14.3	0.15	19990522	347.77096	159.66817	99.09657	1.74838	0.0276857	2.7879248	15	1	28 days	0.63	Williams	1999 KT ₁₂
1999 KX ₁₂	16.1	0.15	19990522	1.30952	108.71149	133.84509	3.78034	0.1643415	2.6138600	23	1	28 days	0.82	Williams	1999 KX ₁₂
1999 KE ₁₃	15.4	0.15	19990522	357.01926	173.79267	73.53560	14.48763	0.1342467	2.7366819	11	1	28 days	0.87	Williams	1999 KE ₁₃
1999 KF ₁₃	17.2	0.15	19990522	338.43485	148.62662	132.54280	3.75640	0.2616014	2.1829457	24	1	32 days	1.00	Williams	1999 KF ₁₃
1999 KH ₁₃	15.2	0.15	19990522	260.48164	269.79630	98.26470	4.11075	0.2157650	2.1726615	20	1	36 days	0.81	Williams	1999 KH ₁₃
1999 KO ₁₃	13.2	0.15	19990522	294.71458	55.88838	264.76514	10.89501	0.0736435	2.6632908	24	1	36 days	0.93	Williams	1999 KO ₁₃
1999 KX ₁₃	15.3	0.15	19990522	357.21472	154.32124	96.65935	11.10644	0.1820398	2.6851372	17	1	27 days	0.78	Williams	1999 KX ₁₃
1999 KH ₁₄	14.4	0.15	19990522	49.86844	102.31492	86.70401	7.14746	0.1140341	2.7759870	30	1	28 days	0.62	Williams	1999 KH ₁₄
1999 KJ ₁₄	14.6	0.15	19990522	298.00396	113.59235	223.40026	8.00071	0.2226743	2.9821619	23	1	28 days	0.70	Williams	1999 KJ ₁₄
1999 KO ₁₄	15.0	0.15	19990522	252.11732	208.51276	163.94520	3.57515	0.1484548	2.3028192	17	1	28 days	0.86	Williams	1999 KO ₁₄
1999 KR ₁₄	14.1	0.15	19990522	240.00015	306.54619	78.68013	5.95501	0.1614705	2.1822223	19	1	28 days	0.75	Williams	1999 KR ₁₄
1999 KS ₁₄	15.2	0.15	19990522	334.58863	215.53116	78.43617	6.08614	0.2771328	2.3782994	19	1	28 days	0.40	Williams	1999 KS ₁₄
1999 KW ₁₄	14.1	0.15	19990522	33.72289	123.18177	85.01251	20.23298	0.1291375	3.1472308	17	1	28 days	0.75	Williams	1999 KW ₁₄
1999 KD ₁₅	15.4	0.15	19990522	22.21292	317.81957	260.99569	4.39307	0.1476906	2.3317589	17	1	28 days	0.85	Williams	1999 KD ₁₅
1999 KF ₁₅	15.8	0.15	19990522	15.61076	114.13639	115.34866	4.03497	0.0767740	2.1998821	20	1	33 days	0.75	Williams	1999 KF ₁₅
1999 KN ₁₅	19.5	0.15	19990522	7.45422	94.49337	116.99452	3.66743	0.3644022	2.4166592	12	1	12 days	0.58	Williams	1999 KN ₁₅
1999 KW ₁₅	14.7	0.15	19990522	36.84551	333.59509	231.37468	13.19553	0.0854451	2.5960658	18	1	27 days	0.55	Williams	1999 KW ₁₅
1999 KY ₁₅	14.9	0.15	19990522	10.28144	10.27871	225.95911	4.07539	0.1325153	2.2913819	19	1	28 days	0.69	Williams	1999 KY ₁₅
1999 LA	17.3	0.15	19990611	182.48681	168.96344	244.64542	7.22736	0.0855788	2.2278088	12	1	16 days	0.55	Williams	1999 LA
1999 LC	17.6	0.15	19990522	2.95268	125.96580	101.75732	6.68480	0.3428419	2.7164573	13	1	10 days	0.56	Williams	1999 LC
1999 LE	16.3	0.15	19990522	325.20220	127.06945	160.28115	8.74348	0.1465332	2.5247173	12	1	10 days	0.46	Williams	1999 LE
1999 LF	17.2	0.15	19990522	14.17135	130.21480	94.87718	24.94467	0.0575033	1.9458720	27	1	28 days	0.72	Williams	1999 LF
1999 LH	16.1	0.15	19990522	323.03528	191.02772	111.23067	3.45606	0.2177097	2.3290204	28	1	28 days	0.58	Williams	1999 LH
1999 LJ	14.1	0.15	19990522	9.18428	59.91753	200.85155	6.26346	0.1280399	2.4979847	17	1	8 days	0.41	Williams	1999 LJ
1999 LK	16.4	0.15	19990522	348.90332	184.49281	107.51073	13.16019	0.2950543	2.3807517	17	1	7 days	0.25	Williams	1999 LK
1999 LN	14.3	0.15	19990611	339.73733	64.12573	249.05273	14.40089	0.2097943	2.7961106	14	1	7 days	0.48	Williams	1999 LN
1999 LO	12.3	0.15	19990522	286.77851	177.82022	55.94578	24.33857	0.1511528	2.9427460	23	1	6 days	1.11	E Williams	1999 LO
1999 LR	15.2	0.15	19990810	356.73390	151.64238	103.61478	28.60672	0.0401731	1.8809762	36	1	63 days	0.58	M-v 4 Williams	1999 LR
1999 LS	14.9	0.15	19990522	316.01011	184.30557	119.75916	27.25292	0.3046224	2.1455976	24	1	27 days	0.40	Williams	1999 LS
1999 LT	16.4	0.15	19990522	311.34026	118.43526	198.18029	24.09742	0.2099619	1.8211923	25	1	30 days	0.74	Williams	1999 LT
1999 LW	16.4	0.15	19990522	238.27302	164.02397	211.85396	4.13285	0.0668005	2.3752453	8	1	2 days	0.42	E Williams	1999 LW
1999 LX	16.6	0.15	19990522	270.76668	228.76140	128.45021	4.06961	0.1628407	2.1625684	9	1	5 days	0.27	Marsden	1999 LX
1999 LA ₁	13.0	0.15	19990810	8.48603	135.14321	42.31301	13.88250	0.0988618	2.5968059	40	1	197 days	0.67	M-v 4 Williams	1999 LA ₁
1999 LJ ₁	22.2	0.15	19990611	10.71030	351.10216	243.94125	4.55225	0.3080507	1.6194510	42	1	14 days	0.89	Williams	1999 LJ ₁
1999 LK ₁	22.1	0.15	19990611	131.53453	223.52206	240.15339	11.92714	0.3330038	0.9070598	48	1	14 days	0.68	Williams	1999 LK ₁
1999 LM ₁	15.7	0.15	19990522	6.86574	350.54065	249.59283	10.57094	0.1353883	2.6321929	28	1	10 days	0.64	Williams	1999 LM ₁
1999 LO ₁	17.8	0.15	19990611	276.56088	296.18901	69.24544	3.67414	0.3383506	2.2248187	12	1	8 days	0.31	Williams	1999 LO ₁
1999 LT ₁	17.6	0.15	19990522	358.65032	158.33675	67.71740	42.36414	0.6443283	2.8561834	40	1	8 days	0.75	Williams	1999 LT ₁
1999 LU ₁	13.9	0.15	19990522	11.45461	44.56542	87.28774	24.34946	0.2259411	2.4160645	35	1	27 days	0.64	Williams	1999 LU ₁
1999 LV ₁	14.3	0.15	19990522	352.15940	99.87461	79.91704	25.67054	0.4124323	3.2862723	41	1	6 days	0.80	Williams	1999 LV ₁
1999 LW ₁	20.4	0.15	19990522	314.25320	168.33871	204.76886	6.65934	0.6822881	1.4379409	42	1	4 days	0.57	Williams	1999 LW ₁
1999 LX ₁	20.6	0.15	19990810	8.16014	133.35424	251.99420	19.78987	0.7265457	1.1640727	42	1	6 days	1.00	M-v 9 Williams	1999 LX ₁
1999 LA ₂	14.0	0.15	19990611	346.55347	99.69734	178.87690	8.19298	0.1430724	2.7755414	16	1	9 days	0.53	Nakano	1999 LA ₂
1999 LF ₂	14.8	0.15	19990522	12.31831	119.61110	86.22964	27.21759	0.3028363	3.1628625	25	1	31 days	0.55	Williams	1999 LF ₂
1999 LJ ₂	15.7	0.15	19990611	352.28271	98.07679	160.85591	12.13476	0.2935592	2.9600910	19	1	6 days	0.57	E Williams	1999 LJ ₂
1999 LL ₂	15.4	0.15	19990611	329.36972	95.90610	198.79995	10.52475	0.2209695	2.6860221	15	1	6 days	0.60	Williams	1999 LL ₂
1999 LN ₂	16.8	0.15	19990522	337.24123	55.85730	213.59305	21.19122	0.0628134	1.9453406	36	1	33 days	0.72	Williams	1999 LN ₂
1999 LQ ₂	16.1	0.15	19990522	239.48933	146.62081	228.13171	19.00844	0.0727815	1.8936457	19	1	32 days	0.58	Williams	1999 LQ ₂

1999 LR ₂	15.2	0.15	19990522	318.55921	131.88274	166.68006	9.44975	0.1239230	2.5610973	24	1	33 days	0.87	Williams	1999 LR ₂
1999 LS ₂	15.9	0.15	19990611	344.23282	93.53945	181.96104	11.81295	0.1587747	2.6206804	13	1	6 days	0.55	Williams	1999 LS ₂
1999 LT ₂	15.6	0.15	19990611	68.55817	83.04179	88.44975	5.03926	0.1316945	2.2928605	17	1	6 days	0.54	Williams	1999 LT ₂
1999 LW ₂	12.8	0.15	19990611	130.73801	19.42275	125.76501	3.12018	0.1649875	3.2291638	8	1	7 days	0.20	E Marsden	1999 LW ₂
1999 LX ₂	15.2	0.15	19990522	255.46090	240.31742	112.63354	9.39337	0.0531100	3.1693045	9	1	10 days	0.32	Williams	1999 LX ₂
1999 LY ₂	17.3	0.15	19990522	341.14645	149.06362	117.86331	7.38699	0.1086166	2.4190980	9	1	10 days	0.62	Williams	1999 LY ₂
1999 LF ₃	16.0	0.15	19990522	141.20288	258.22870	186.89453	2.42296	0.1339323	2.3558787	10	1	8 days	0.44	Williams	1999 LF ₃
1999 LP ₃	17.1	0.15	19990611	345.87897	51.27810	222.35985	12.54856	0.2461151	2.6804295	10	1	5 days	0.57	Williams	1999 LP ₃
1999 LX ₃	15.8	0.15	19990611	60.58963	274.33074	255.58806	25.95583	0.1294798	1.8017580	12	1	6 days	0.67	Williams	1999 LX ₃
1999 LY ₃	15.3	0.15	19990522	323.14515	158.77512	152.11861	4.72028	0.2734741	2.6429762	19	1	32 days	0.63	Williams	1999 LY ₃
1999 LZ ₃	15.5	0.15	19990611	343.56416	141.92521	139.09309	6.86608	0.1459627	2.3769375	14	1	5 days	0.27	Williams	1999 LZ ₃
1999 LA ₄	16.7	0.15	19990611	26.57992	346.92374	244.74744	21.30147	0.0337026	1.9517946	13	1	5 days	0.46	Williams	1999 LA ₄
1999 LB ₄	15.1	0.15	19990611	322.75873	176.78087	137.73025	6.68823	0.2101107	2.2878493	15	1	5 days	0.32	Williams	1999 LB ₄
1999 LC ₄	14.8	0.15	19990611	203.58489	252.60082	167.52954	6.94972	0.0832339	2.3048445	14	1	5 days	0.50	Williams	1999 LC ₄
1999 LD ₄	15.3	0.15	19990611	290.60851	189.16442	157.48301	6.90493	0.1505538	2.4642445	12	1	5 days	0.44	Williams	1999 LD ₄
1999 LE ₄	15.2	0.15	19990611	346.42997	140.33920	137.40312	6.68470	0.1280384	2.3113716	15	1	5 days	0.37	Williams	1999 LE ₄
1999 LF ₄	14.1	0.15	19990611	7.50461	34.05466	218.01841	6.13606	0.0917860	2.3014011	13	1	6 days	0.48	Williams	1999 LF ₄
1999 LG ₄	16.5	0.15	19990611	319.04373	79.71995	248.38032	24.24959	0.2568537	2.1846690	14	1	5 days	0.39	Williams	1999 LG ₄
1999 LV ₄	13.0	0.15	19990522	65.52983	34.50537	102.69055	17.55632	0.1922544	3.1595609	19	1	28 days	0.71	Williams	1999 LV ₄
1999 LX ₄	14.9	0.15	19990522	297.39102	195.83341	124.20084	13.50861	0.2256877	2.7352379	13	1	4 days	0.46	Williams	1999 LX ₄
1999 LC ₅	14.8	0.15	19990611	357.25011	149.35633	102.76266	24.61980	0.1702215	3.1512094	14	1	6 days	0.70	Williams	1999 LC ₅
1999 LD ₅	13.8	0.15	19990522	157.42338	302.49292	127.30964	15.81760	0.1028474	2.6380830	22	1	33 days	0.70	Williams	1999 LD ₅
1999 LE ₅	14.1	0.15	19990611	239.57737	222.86509	159.11682	15.11805	0.1924843	2.7001719	14	1	4 days	0.58	Williams	1999 LE ₅
1999 LF ₅	15.4	0.15	19990522	73.84907	356.32230	167.74573	15.49894	0.0450644	2.5855298	27	1	33 days	0.75	Williams	1999 LF ₅
1999 LG ₅	16.2	0.15	19990611	251.50123	269.96618	94.67356	24.76284	0.0920582	1.9208777	18	1	4 days	0.44	E Williams	1999 LG ₅
1999 LN ₅	16.7	0.15	19990611	8.67624	114.88247	110.99310	21.99998	0.2357585	2.2608905	13	1	4 days	0.34	Williams	1999 LN ₅
1999 LP ₅	16.9	0.15	19990611	306.12942	103.90973	216.71083	18.01983	0.1355201	1.9096583	14	1	3 days	0.47	Williams	1999 LP ₅
1999 LD ₆	22.4	0.15	19990611	344.22413	71.72287	237.16691	11.36523	0.4923473	1.8269634	12	1	3 days	0.49	Williams	1999 LD ₆
1999 LE ₆	20.7	0.15	19990611	350.53044	185.12984	92.40507	27.07412	0.3280527	1.6382416	42	1	11 days	0.41	Marsden	1999 LE ₆
1999 LF ₆	18.0	0.15	19990611	305.42177	140.34615	208.79500	19.03921	0.2816997	1.4125746	42	1	11 days	0.57	Marsden	1999 LF ₆
1999 LG ₆	15.4	0.15	19990611	19.21872	150.67002	103.07845	6.26598	0.1053852	2.1718364	14	1	3 days	0.88	Williams	1999 LG ₆
1999 LH ₆	13.5	0.15	19990611	34.47349	331.48858	269.39321	4.93566	0.1135271	2.4446847	7	1	4 days	0.05	Marsden	1999 LH ₆
1999 LN ₆	14.7	0.15	19990522	259.99518	238.03604	137.29029	23.83160	0.3399864	3.2742650	8	1	8 days	0.29	Williams	1999 LN ₆
1999 LP ₆	15.5	0.15	19990611	207.45292	285.58593	110.62607	2.79564	0.0809352	2.8096537	12	1	11 days	0.23	Williams	1999 LP ₆
1999 LT ₆	16.2	0.15	19990611	189.95511	325.32515	92.73741	2.02334	0.1548972	2.3138723	8	1	7 days	0.23	Williams	1999 LT ₆
1999 LU ₆	14.9	0.15	19990611	203.55091	265.79412	140.04986	23.34033	0.0534576	3.0916853	9	1	10 days	0.13	Williams	1999 LU ₆
1999 LD ₇	14.3	0.15	19990611	327.21027	46.64152	236.73164	3.37838	0.0617345	2.5051733	15	1	6 days	0.28	E Williams	1999 LD ₇
1999 LG ₇	16.9	0.15	19990611	333.39453	235.64089	103.56087	7.53226	0.3553272	2.6281797	9	1	4 days	0.16	Williams	1999 LG ₇
1999 LH ₇	13.6	0.15	19990611	50.24156	97.17401	107.23647	24.42269	0.2546392	2.8060422	13	1	2 days	0.55	Williams	1999 LH ₇
1999 LK ₇	15.1	0.15	19990611	83.14942	37.47489	115.73978	4.13628	0.1093008	2.6936040	16	1	4 days	0.71	E Williams	1999 LK ₇
1999 LL ₇	15.8	0.15	19990611	311.68024	241.00006	105.79601	2.79008	0.2027357	2.1610230	16	1	4 days	0.58	Williams	1999 LL ₇
1999 LS ₇	20.6	0.15	19990611	273.73828	123.79179	252.54384	13.01343	0.3000393	1.0092207	89	1	7 days	0.51	Nakano	1999 LS ₇
1999 LT ₇	19.9	0.15	19990611	228.35936	341.22167	80.00095	9.12326	0.5742319	0.8548215	80	1	11 days	0.57	Williams	1999 LT ₇
1999 LU ₇	17.8	0.15	19990611	329.20091	146.96520	206.79051	10.49908	0.6217067	2.0793567	27	1	5 days	0.59	Nakano	1999 LU ₇
1999 LV ₇	19.1	0.15	19990611	1.68617	158.42212	87.60673	30.40883	0.4714345	2.2062702	62	1	10 days	0.56	Marsden	1999 LV ₇
1999 LB ₉	15.7	0.15	19990611	7.63246	142.05539	93.53120	15.03577	0.2902934	3.1049036	13	1	7 days	0.57	Williams	1999 LB ₉
1999 LL ₉	13.9	0.15	19990611	200.20498	289.58773	124.56839	8.96227	0.1753078	2.7624871	13	1	10 days	0.58	Williams	1999 LL ₉
1999 LB ₁₂	16.2	0.15	19990611	22.56642	146.26826	84.43842	24.31782	0.0243721	1.9567944	15	1	6 days	0.43	Williams	1999 LB ₁₂
1999 LW ₁₂	16.2	0.15	19990611	341.15872	198.43034	91.41943	15.49508	0.2857415	2.7290151	13	1	6 days	0.68	Williams	1999 LW ₁₂
1999 LM ₂₈	16.3	0.15	19990522	293.60716	125.83910	226.00499	6.33123	0.3505283	2.1834591	39	1	38 days	0.63	Williams	1999 LM ₂₈
1999 LN ₂₈	18.8	0.15	19990611	346.62113	186.47185	115.79031	9.20273	0.4675443	2.1500685	50	1	9 days	0.65	Marsden	1999 LN ₂₈
1999 LO ₂₈	15.6	0.15	19990611	34.11747	283.36197	280.19580	33.75359	0.4108547	1.8674799	34	1	7 days	0.66	Williams	1999 LO ₂₈
1999 LP ₂₈	19.7	0.15	19990611	222.96928	307.73987	88.05219	16.28428	0.0910051	1.2178767	28	1	3 days	0.81	Williams	1999 LP ₂₈

1999 LQ ₂₈	18.8	0.15	19990611	211.80193	320.40239	95.08172	21.75341	0.1201705	1.1983736	43	1	7 days	0.61		Marsden	1999 LQ ₂₈	
1999 LE ₂₉	17.2	0.15	19990611	27.15684	91.95054	119.98489	7.66567	0.1438240	2.6365755	9	1	9 days	0.24		Williams	1999 LE ₂₉	
1999 LG ₂₉	16.3	0.15	19990611	332.42414	175.28276	117.69559	7.80946	0.2213909	2.5339465	9	1	9 days	0.15		Williams	1999 LG ₂₉	
1999 LA ₃₀	16.6	0.15	19990611	314.31783	201.32212	88.54628	3.32791	0.0326783	2.3670159	9	1	6 days	0.21		Williams	1999 LA ₃₀	
1999 LB ₃₀	17.4	0.15	19990611	339.95403	181.01806	94.51391	3.26078	0.2099863	2.4262549	9	1	6 days	0.22		Williams	1999 LB ₃₀	
1999 LC ₃₀	16.6	0.15	19990611	3.60552	110.12978	143.06182	13.10770	0.1286191	2.7408596	12	1	10 days	0.21		Williams	1999 LC ₃₀	
1999 LD ₃₀	20.6	0.15	19990611	354.64793	203.12249	87.96834	8.73322	0.6071400	2.9308120	33	1	5 days	0.66		Williams	1999 LD ₃₀	
1999 MB	16.5	0.15	19990611	319.00350	253.63906	69.52990	6.70887	0.0766052	2.2409245	7	1	2 days	0.35	E	Williams	1999 MB	
1999 MC	15.0	0.15	19990611	286.36034	334.18243	36.16437	4.49077	0.1498015	3.0532208	6	1	2 days	0.70	E	Williams	1999 MC	
1999 ME	14.5	0.15	19990611	46.35505	96.46794	97.56363	18.57825	0.2799941	3.2055339	6	1	2 days	0.26	E	Williams	1999 ME	
2022 P-L	13.7	0.15	19990810	241.15004	295.67538	352.21867	5.08551	0.0417705	2.7649110	24	3	1960–1999	0.66	M-v	4	Williams	34616 2022 P-L
2037 P-L	13.5	0.15	19990810	5.95556	250.88934	2.52511	18.34237	0.1457652	3.2216150	25	3	1960–1999	0.68	M-v	2	Williams	22086 2037 P-L
2053 P-L	14.3	0.15	19990810	83.97197	359.39110	223.80706	3.14385	0.1544763	2.6802969	54	3	1960–1999	0.71	M-v	3	Williams	32091 2053 P-L
2055 P-L	14.8	0.15	19990810	12.25208	245.69310	344.80541	8.81246	0.1379751	2.3662094	54	3	1960–1999	0.72	M-v	3	Williams	34616 2055 P-L
2056 P-L	13.8	0.15	19990810	88.74468	346.74884	205.86493	12.30350	0.1193380	2.9269687	32	3	1960–1999	0.71	M-v	3	Williams	32727 2056 P-L
2503 P-L	13.4	0.15	19990810	145.77953	59.12171	7.72483	14.96782	0.1087065	2.5516053	54	4	1960–1999	0.67	M-v	3	Williams	34616 2503 P-L
2547 P-L	14.2	0.15	19990810	295.70883	269.38194	74.76322	2.50718	0.1904547	3.1980232	17	3	1960–1999	0.51	M-v	4	Williams	22700 2547 P-L
2583 P-L	14.2	0.15	19990810	338.51861	244.99172	56.90457	2.94650	0.0759781	2.9231879	26	5	1960–1999	0.56	M-v	1	Williams	32091 2583 P-L
2610 P-L	15.0	0.15	19990810	234.03238	200.32978	178.44080	3.03178	0.1832744	2.5280434	22	4	1960–1999	0.58	M-v	4	Williams	34616 2610 P-L
2743 P-L	15.4	0.15	19990810	15.80020	59.29718	126.67545	0.78509	0.1605816	2.3881805	46	3	1960–1999	0.83	M-v	3	Williams	34337 2743 P-L
2757 P-L	14.0	0.15	19990810	305.93055	307.69400	38.72091	1.41909	0.2148308	3.1836056	38	5	1960–1999	0.84	M-v	2	Williams	32785 2757 P-L
2767 P-L	13.2	0.15	19990810	280.40195	228.87206	87.94823	2.43088	0.1366891	3.2475022	36	4	1960–1999	0.61	M-v	2	Williams	34616 2767 P-L
4070 P-L	14.2	0.15	19990810	65.54893	190.42907	300.65614	3.03523	0.1209897	2.5587571	46	4	1960–1999	0.77	M-v	2	Williams	34616 4070 P-L
4072 P-L	15.4	0.15	19990810	23.70579	18.68848	235.83099	2.59605	0.2250279	2.3455931	35	4	1960–1999	0.65	M-v	2	Williams	29668 4072 P-L
4792 P-L	14.7	0.15	19990810	359.47072	251.94776	14.93751	2.41080	0.0427704	2.9321218	31	4	1960–1999	0.55	M-v	1	Williams	34338 4792 P-L
4844 P-L	15.9	0.15	19990810	85.63928	21.76566	148.84255	3.14440	0.0916563	2.2277202	35	3	1960–1999	0.63	M-v	3	Williams	34265 4844 P-L
4917 P-L	14.8	0.15	19990810	59.61583	190.05273	19.19770	2.20889	0.0702792	2.5143368	27	4	1960–1999	0.75	M-v	1	Williams	31267 4917 P-L
6570 P-L	15.2	0.15	19990810	166.69414	242.30723	180.59413	2.41141	0.2082501	2.3815633	34	4	1960–1999	0.71	M-v	2	Williams	31161 6570 P-L
6584 P-L	13.7	0.15	19990810	92.73946	166.56185	29.97232	3.40279	0.0313083	2.6895946	58	4	1960–1999	0.58	M-v	1	Williams	32092 6584 P-L
6599 P-L	14.6	0.15	19990810	19.83946	14.60456	110.40054	1.67755	0.0787590	2.5790225	33	4	1960–1998	0.67	M-v	2	Williams	34617 6599 P-L
6755 P-L	15.2	0.15	19990810	191.43090	30.14389	15.50749	0.93080	0.1195119	2.9615159	19	3	1960–1999	0.54	M-v	5	Williams	29314 6755 P-L
6792 P-L	13.8	0.15	19990810	329.61818	209.28009	103.00525	3.31158	0.0527625	2.9181981	50	5	1960–1999	0.64	M-v	1	Williams	32092 6792 P-L
7069 P-L	14.5	0.15	19990810	222.22790	215.60276	207.55993	11.52808	0.1306200	2.5139688	17	3	1960–1999	0.84	M-v	4	Williams	31773 7069 P-L
7622 P-L	14.1	0.15	19990810	245.61016	323.07621	43.01690	6.84084	0.1803806	2.2283572	41	4	1952–1999	0.76	M-v	3	Williams	34617 7622 P-L
9516 P-L	16.0	0.15	19990810	322.20476	125.37430	171.24919	2.35311	0.0724622	2.2211137	19	4	1960–1999	0.63	M-v	2	Williams	34566 9516 P-L
9542 P-L	14.1	0.15	19990810	235.09054	304.05066	62.66597	3.01365	0.0311264	2.9487876	31	3	1960–1999	0.79	M-v	4	Williams	28607 9542 P-L
9549 P-L	13.7	0.15	19990810	127.18119	69.72426	15.96416	16.96581	0.1517986	2.5492793	47	3	1960–1999	0.61	M-v	3	Williams	34566 9549 P-L
1080 T-1	14.0	0.15	19990810	92.03528	241.24116	198.76035	8.98290	0.2315945	2.5328049	41	3	1971–1999	0.67	M-v	2	Williams	34617 1080 T-1
1143 T-1	15.2	0.15	19990810	220.18823	11.45868	304.61465	3.33845	0.1556041	2.1602991	18	3	1971–1999	0.53	M-v	4	Williams	34617 1143 T-1
1176 T-1	13.2	0.15	19990810	337.25547	23.85979	188.70570	6.08804	0.1040080	3.1824589	35	2	1971–1999	0.81	M-v	4	Williams	34338 1176 T-1
1182 T-1	13.2	0.15	19990810	319.10997	208.26461	188.63495	12.98389	0.1637163	2.6675191	40	3	1971–1999	0.72	M-v	4	Williams	32290 1182 T-1
2144 T-1	15.7	0.15	19990810	42.56938	73.53975	161.40358	6.44406	0.0581383	2.2781752	35	6	1971–1999	0.71	M-v	1	Williams	28319 2144 T-1
2149 T-1	13.1	0.15	19990810	128.71658	99.72102	4.18656	7.30112	0.1006604	3.1085986	62	4	1971–1999	0.81	M-v	3	Williams	34617 2149 T-1
2234 T-1	13.9	0.15	19990810	82.29954	94.43745	14.21123	12.93156	0.1104980	2.5285768	36	3	1971–1999	0.88	M-v	2	Williams	34338 2234 T-1
2289 T-1	13.3	0.15	19990810	97.89786	107.47751	20.66442	9.28061	0.1052557	2.7732352	49	4	1971–1999	0.83	M-v	2	Williams	34617 2289 T-1
3075 T-1	12.9	0.15	19990810	123.75838	96.81934	345.37714	0.90339	0.1557304	3.1320916	64	3	1971–1999	0.64	M-v	3	Williams	34617 3075 T-1
3078 T-1	15.2	0.15	19990810	161.84098	229.27228	204.11629	4.04653	0.2422227	2.2859271	53	3	1971–1999	0.73	M-v	3	Williams	34617 3078 T-1
3188 T-1	14.0	0.15	19990810	351.89114	56.96847	188.07567	27.04311	0.2150257	3.1511574	35	2	1971–1999	0.70	M-v	4	Williams	34617 3188 T-1
3274 T-1	13.5	0.15	19990810	285.40245	189.78004	182.29417	13.22168	0.1773725	2.7247093	54	3	1971–1999	0.74	M-v	4	Williams	32092 3274 T-1
4023 T-1	15.0	0.15	19990810	177.74237	262.54103	175.33130	6.71623	0.1870396	2.2774992	36	4	1971–1999	0.81	M-v	3	Williams	21952 4023 T-1
4104 T-1	13.9	0.15	19990810	205.70203	169.38159	168.29778	10.48660	0.0957179	2.5476129	37	3	1971–1999	0.78	M-v	3	Williams	34617 4104 T-1
4155 T-1	14.3	0.15	19990810	200.24497	20.03888	72.52976	3.04932	0.0403376	2.7230249	64	5	1971–1999	0.75	M-v	1	Williams	32092 4155 T-1
4194 T-1	15.3	0.15	19990810	322.45752	164.43356	160.43047	6.64649	0.1175688	2.2775127	29	4	1971–1999	0.65	M-v	1	Williams	31436 4194 T-1

4269 T-1	14.3	0.15	19990810	86.94181	70.22196	82.54365	3.12774	0.1132905	3.1113649	28	4	1971–1999	0.74	M-v	2	Williams	32291	4269 T-1
4409 T-1	14.8	0.15	19990810	75.80827	351.62119	141.05684	4.80688	0.0498792	2.3117787	23	3	1971–1999	0.77	M-v	3	Williams	34617	4409 T-1
4835 T-1	13.8	0.15	19990810	287.76590	324.23764	26.76235	18.60452	0.1010493	1.8543131	58	6	1953–1999	0.78	M-v	2	Williams	34617	4835 T-1
4843 T-1	14.1	0.15	19990810	18.90226	170.22856	36.01208	5.87181	0.1282456	3.1464547	23	3	1971–1999	0.86	M-v	4	Williams	21124	4843 T-1
1052 T-2	14.3	0.15	19990810	310.95829	279.05324	2.62891	0.71912	0.1501962	3.1268827	35	3	1973–1999	0.93	M-v	3	Williams	34617	1052 T-2
1104 T-2	15.0	0.15	19990810	121.28666	60.75022	13.33526	3.27820	0.1213277	2.2831190	48	3	1973–1999	0.95	M-v	3	Williams	34617	1104 T-2
1166 T-2	15.4	0.15	19990810	338.09957	283.18645	356.35474	7.12558	0.1882220	2.4460349	38	4	1973–1999	0.82	M-v	1	Williams	28088	1166 T-2
1279 T-2	15.7	0.15	19990810	247.61758	213.86886	173.54185	1.32666	0.1668253	2.2364290	41	4	1973–1999	0.97	M-v	2	Williams	31436	1279 T-2
1283 T-2	14.3	0.15	19990810	75.51625	298.69829	190.86022	0.93621	0.1600683	3.1975842	76	3	1973–1999	0.70	M-v	4	Williams	34617	1283 T-2
1325 T-2	13.9	0.15	19990810	257.55504	357.51006	18.10220	5.19285	0.0665308	2.7268452	43	4	1973–1999	0.65	M-v	1	Williams	31825	1325 T-2
1346 T-2	13.9	0.15	19990810	48.19515	101.49612	56.28168	1.75538	0.1717636	3.1917727	60	2	1973–1999	0.82	M-v	5	Williams	34617	1346 T-2
1510 T-2	14.4	0.15	19990810	6.83161	33.52464	181.23147	4.69818	0.1281887	3.1493835	42	3	1971–1999	0.90	M-v	4	Williams	34567	1510 T-2
2024 T-2	13.8	0.15	19990810	174.70142	77.35234	353.76767	8.61217	0.1465964	2.7648486	46	3	1973–1999	0.68	M-v	4	Williams	32092	2024 T-2
2042 T-2	14.6	0.15	19990810	214.00028	200.19036	175.89630	2.91853	0.1567637	2.7691591	46	4	1973–1999	0.98	M-v	2	Williams	34567	2042 T-2
2074 T-2	15.7	0.15	19990810	276.35512	162.86071	190.67022	0.47963	0.1527342	3.0969440	23	3	1973–1999	0.92	M-v	5	Williams	26416	2074 T-2
2087 T-2	13.5	0.15	19990810	276.75347	359.24217	342.58992	4.17977	0.1052714	2.7370803	31	3	1973–1999	0.74	M-v	4	Williams	21978	2087 T-2
2200 T-2	15.1	0.15	19990810	6.21418	308.60108	336.32770	0.31553	0.1218210	2.4304210	35	5	1973–1999	0.68	M-v	1	Williams	31436	2200 T-2
3088 T-2	15.9	0.15	19990810	267.31682	295.60541	65.15911	3.23287	0.1144194	2.7274572	20	3	1973–1999	0.80	M-v	5	Williams	15083	3088 T-2
3122 T-2	15.4	0.15	19990810	30.58761	204.30828	17.59268	6.14097	0.1672889	2.4534686	30	3	1973–1999	0.86	M-v	5	Williams	31269	3122 T-2
3151 T-2	15.0	0.15	19990810	176.34314	55.59841	33.00093	3.75215	0.0835015	2.2423835	25	4	1973–1999	0.91	M-v	2	Williams	24909	3151 T-2
3207 T-2	14.8	0.15	19990810	96.79368	114.98330	38.43658	7.07536	0.0942125	2.2481159	41	3	1973–1999	0.78	M-v	2	Williams	31132	3207 T-2
3295 T-2	14.8	0.15	19990810	294.43668	179.82848	160.23669	6.80745	0.1402578	2.4442487	60	4	1973–1999	0.83	M-v	2	Williams	29142	3295 T-2
4060 T-2	15.4	0.15	19990810	156.33544	303.37318	151.78544	2.49820	0.0400375	2.7500219	22	3	1973–1999	0.70	M-v	4	Williams	28609	4060 T-2
4117 T-2	13.2	0.15	19990810	291.90203	166.90931	130.64797	2.16156	0.1428633	3.1387267	41	4	1973–1999	0.73	M-v	3	Williams	34569	4117 T-2
4122 T-2	13.5	0.15	19990810	113.15885	37.37520	83.20313	2.88573	0.0504574	2.7672890	43	3	1973–1999	0.77	M-v	4	Williams	31132	4122 T-2
4188 T-2	14.7	0.15	19990810	171.62401	333.05804	125.01896	3.15160	0.0317847	2.7334560	40	4	1973–1999	0.79	M-v	2	Williams	31825	4188 T-2
4232 T-2	14.5	0.15	19990810	249.41274	328.33507	69.85297	3.97661	0.1735207	2.4467691	31	3	1973–1999	0.94	M-v	3	Williams	32344	4232 T-2
4314 T-2	14.4	0.15	19990810	262.75149	323.50736	96.07744	3.64190	0.1708547	2.4266169	31	7	1962–1999	0.89	M-v	1	Williams	31826	4314 T-2
5061 T-2	14.9	0.15	19990810	338.45581	27.61832	303.86575	6.10006	0.2367075	2.2081148	36	4	1973–1999	0.94	M-v	3	Williams	31826	5061 T-2
5065 T-2	14.9	0.15	19990810	113.65277	244.79631	243.48196	9.80428	0.0740542	2.4768173	34	4	1973–1999	0.93	M-v	3	Williams	31295	5065 T-2
5087 T-2	13.1	0.15	19990810	211.44681	174.26513	242.16125	10.28911	0.0849675	3.1097287	42	3	1973–1999	0.86	M-v	3	Williams	32344	5087 T-2
5112 T-2	13.9	0.15	19990810	100.07380	230.25064	260.23204	9.72645	0.1794129	3.1727894	27	3	1973–1999	0.81	M-v	4	Williams	33059	5112 T-2
5155 T-2	14.0	0.15	19990810	53.95580	240.71476	267.53196	5.10309	0.1275112	2.2798147	33	2	1973–1999	0.77	M-v	3	Williams	34618	5155 T-2
1047 T-3	14.5	0.15	19990810	332.75587	39.86324	272.55131	6.34685	0.1237527	2.7534050	22	3	1977–1999	0.70	M-v	4	Williams	25646	1047 T-3
2216 T-3	14.7	0.15	19990810	329.71452	297.65867	324.35270	2.98923	0.1140086	2.2145248	31	4	1977–1999	0.88	M-v	4	Williams	34569	2216 T-3
2332 T-3	14.2	0.15	19990810	48.68013	349.56172	216.04428	5.53860	0.0814592	2.4610133	54	4	1977–1999	0.70	M-v	4	Williams	31411	2332 T-3
2416 T-3	13.7	0.15	19990810	270.54410	197.04609	274.43355	1.40168	0.1656904	2.3792411	21	3	1977–1999	0.79	M-v	6	Williams	29949	2416 T-3
3046 T-3	15.5	0.15	19990810	56.37825	111.35338	59.30700	4.31185	0.1012907	2.2298305	34	2	1977–1999	0.81	M-v	5	Williams	34569	3046 T-3
3100 T-3	15.1	0.15	19990810	53.88485	80.75894	151.38079	2.96232	0.1224195	2.4309757	27	5	1973–1999	0.95	M-v	2	Williams	31295	3100 T-3
3140 T-3	15.3	0.15	19990810	305.98898	45.30933	268.62457	0.25033	0.0401606	2.2030832	24	3	1977–1999	0.79	M-v	6	Williams	33737	3140 T-3
3157 T-3	15.1	0.15	19990810	71.84620	139.54832	59.84261	3.78286	0.1116701	2.1980572	24	3	1977–1999	0.93	M-v	4	Williams	32537	3157 T-3
3320 T-3	14.7	0.15	19990810	101.07160	293.55448	77.84924	2.05536	0.1268416	2.5803103	37	2	1977–1998	0.84	M-v	5	Williams	34618	3320 T-3
3355 T-3	14.5	0.15	19990810	343.11502	67.79861	202.67145	8.63704	0.0762699	2.7939724	30	3	1977–1999	0.83	M-v	5	Williams	20518	3355 T-3
3446 T-3	14.4	0.15	19990810	45.40856	55.79873	174.97266	4.07364	0.0317025	2.7740818	45	3	1977–1999	0.82	M-v	4	Williams	31577	3446 T-3
3460 T-3	13.5	0.15	19990810	310.99769	75.36419	285.62596	0.44146	0.1704541	3.1807113	23	3	1977–1999	0.91	M-v	5	Williams	33061	3460 T-3
4207 T-3	14.1	0.15	19990810	102.10972	357.11302	135.32297	4.80473	0.1806087	2.8490829	39	4	1977–1999	0.89	M-v	1	Williams	31826	4207 T-3
4250 T-3	14.6	0.15	19990810	250.60786	229.79982	143.52838	3.56455	0.1876451	2.4526982	40	4	1977–1999	0.87	M-v	3	Williams	31826	4250 T-3
4280 T-3	13.2	0.15	19990810	296.28808	190.08153	151.54050	4.96298	0.1522581	3.2321891	47	3	1977–1999	0.84	M-v	4	Williams	32505	4280 T-3
4354 T-3	15.2	0.15	19990810	272.99462	251.27911	132.70737	4.01951	0.0721790	2.1831315	34	7	1954–1999	0.81	M-v	2	Williams	29669	4354 T-3
5034 T-3	13.0	0.15	19990810	105.20080	308.86659	170.72750	15.30850	0.0957011	2.8497099	36	2	1977–1999	0.69	M-v	5	Williams	34570	5034 T-3

1993 TJ₃₂ = 1993 TO₄₈ (G. V. Williams)1998 SN₈₁ = 1998 SZ₇₅ (S. Nakano, *MPC* 33590)1999 BP₃₂ = 1999 CR₁₃₀ (A. Doppler)1999 CC₁₉ = 1999 BE₃ (G. V. Williams, *MPC* 34339)

1999 CR₁₂₈ = 1999 GH₂ (A. Doppler)
 1999 FL₂₄ = 1999 EM₉ (G. V. Williams, *MPC* 34618)
 1999 FO₅₁ = 1999 GZ₉ (A. Doppler)
 1999 FF₅₂ = 1999 HD (A. Doppler)
 1999 GX₆ = 1999 HM₁ (A. Doppler)
 1999 GQ₇ = 1999 FT₅₉ (G. V. Williams)
 1999 HR₅ = 1999 HS₁₀ (G. V. Williams)

EPHEMERIDES

P/1986 W1 (Lovas 2)		Elements <i>MPC</i> 29881							
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 06 21		15 26.68	-20 10.7	1.979	2.872	145.1	11.7	21.4	
1999 07 01		15 20.39	-19 41.3	2.005	2.808	134.1	15.1	21.2	
1999 07 11		15 16.59	-19 20.1	2.048	2.744	123.6	18.0	21.0	
1999 07 21		15 15.50	-19 08.8	2.103	2.679	113.7	20.3	20.8	
1999 07 31		15 17.16	-19 08.1	2.166	2.614	104.6	22.1	20.6	
1999 08 10		15 21.46	-19 17.4	2.233	2.548	96.0	23.3	20.4	
1999 08 20		15 28.27	-19 35.7	2.300	2.481	88.0	24.1	20.2	
1999 08 30		15 37.41	-20 01.2	2.364	2.414	80.6	24.4	19.9	
1999 09 09		15 48.74	-20 32.0	2.424	2.347	73.6	24.3	19.7	
1999 09 19		16 02.13	-21 05.9	2.476	2.280	67.0	23.9	19.4	
1999 09 29		16 17.46	-21 40.7	2.521	2.214	60.9	23.3	19.1	
1999 10 09		16 34.65	-22 14.1	2.557	2.147	55.1	22.4	18.8	
1999 10 19		16 53.63	-22 43.5	2.584	2.081	49.6	21.4	18.5	
1999 10 29		17 14.31	-23 06.3	2.602	2.015	44.4	20.2	18.2	
1999 11 08		17 36.64	-23 19.9	2.611	1.951	39.5	18.8	17.8	
1999 11 18		18 00.51	-23 21.8	2.612	1.888	34.9	17.4	17.5	
1999 11 28		18 25.82	-23 09.1	2.606	1.827	30.6	16.0	17.1	

P/1998 U4 (Spahr)		Elements <i>MPC</i> 33857							
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 07 21		06 38.26	-02 20.4	4.749	3.907	30.4	7.6	17.3	
1999 07 31		06 50.52	-02 49.3	4.714	3.916	34.2	8.4	17.3	
1999 08 10		07 02.41	-03 25.5	4.667	3.925	38.6	9.3	17.3	
1999 08 20		07 13.83	-04 08.8	4.608	3.935	43.5	10.2	17.3	
1999 08 30		07 24.70	-04 58.6	4.538	3.946	48.8	11.1	17.2	
1999 09 09		07 34.91	-05 54.2	4.457	3.957	54.4	12.0	17.2	
1999 09 19		07 44.34	-06 54.9	4.367	3.968	60.4	12.7	17.2	
1999 09 29		07 52.88	-07 59.7	4.269	3.980	66.7	13.4	17.2	
1999 10 09		08 00.41	-09 07.5	4.164	3.993	73.3	13.9	17.1	
1999 10 19		08 06.78	-10 16.9	4.055	4.006	80.1	14.2	17.1	
1999 10 29		08 11.87	-11 26.1	3.942	4.020	87.3	14.3	17.0	
1999 11 08		08 15.54	-12 33.3	3.830	4.034	94.7	14.2	17.0	
1999 11 18		08 17.69	-13 35.9	3.720	4.048	102.3	13.8	16.9	
1999 11 28		08 18.23	-14 31.2	3.616	4.063	110.2	13.2	16.9	
1999 12 08		08 17.17	-15 16.2	3.522	4.078	118.0	12.3	16.8	
1999 12 18		08 14.57	-15 47.5	3.441	4.094	125.7	11.2	16.8	
1999 12 28		08 10.64	-16 02.3	3.377	4.110	133.0	10.1	16.8	
2000 01 07		08 05.71	-15 58.5	3.333	4.127	139.1	9.0	16.8	
2000 01 17		08 00.19	-15 34.8	3.312	4.144	143.5	8.1	16.8	
2000 01 27		07 54.62	-14 52.0	3.316	4.161	145.0	7.8	16.8	
2000 02 06		07 49.50	-13 52.2	3.346	4.179	143.4	8.1	16.8	
2000 02 16		07 45.28	-12 39.0	3.401	4.197	139.0	8.9	16.9	

2000 02 26	07 42.32	-11 16.8	3.480	4.215	132.8	9.9	17.0	
2000 03 07	07 40.83	-09 50.2	3.580	4.234	125.5	11.0	17.0	
2000 03 17	07 40.91	-08 23.4	3.698	4.253	117.7	12.0	17.1	
2000 03 27	07 42.54	-06 59.9	3.831	4.272	109.7	12.7	17.2	
2000 04 06	07 45.65	-05 42.2	3.975	4.292	101.7	13.2	17.3	
2000 04 16	07 50.10	-04 32.3	4.126	4.311	93.9	13.4	17.4	
2000 04 26	07 55.75	-03 31.2	4.281	4.332	86.2	13.4	17.5	
2000 05 06	08 02.43	-02 39.6	4.437	4.352	78.6	13.1	17.6	
2000 05 16	08 09.99	-01 57.6	4.591	4.372	71.3	12.7	17.7	
2000 05 26	08 18.28	-01 25.2	4.740	4.393	64.1	12.0	17.8	
2000 06 05	08 27.17	-01 02.1	4.882	4.414	57.1	11.1	17.9	
2000 06 15	08 36.54	-00 47.7	5.015	4.436	50.3	10.1	18.0	
2000 06 25	08 46.26	-00 41.7	5.137	4.457	43.7	9.1	18.0	
2000 07 05	08 56.24	-00 43.3	5.246	4.479	37.2	7.9	18.1	
2000 07 15	09 06.39	-00 52.0	5.341	4.501	31.0	6.7	18.2	

P/1998 VS ₂₄ (LINEAR)		Elements <i>MPC</i> 33651							
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 07 31		06 30.75	+19 24.4	4.456	3.616	30.3	8.2	19.6	
1999 08 10		06 43.61	+19 10.7	4.391	3.631	36.8	9.6	19.6	
1999 08 20		06 55.90	+18 53.1	4.313	3.646	43.5	11.0	19.7	
1999 08 30		07 07.52	+18 32.2	4.223	3.661	50.3	12.3	19.7	
1999 09 09		07 18.36	+18 08.9	4.121	3.677	57.4	13.3	19.7	
1999 09 19		07 28.28	+17 43.9	4.009	3.693	64.7	14.2	19.7	
1999 09 29		07 37.16	+17 18.5	3.889	3.709	72.3	14.9	19.6	
1999 10 09		07 44.84	+16 53.5	3.763	3.726	80.2	15.3	19.6	
1999 10 19		07 51.17	+16 30.3	3.634	3.743	88.5	15.4	19.5	
1999 10 29		07 56.00	+16 10.1	3.503	3.760	97.3	15.2	19.4	
1999 11 08		07 59.17	+15 54.0	3.376	3.778	106.4	14.6	19.3	
1999 11 18		08 00.54	+15 43.2	3.255	3.796	116.1	13.5	19.2	
1999 11 28		08 00.06	+15 38.6	3.146	3.814	126.2	12.0	19.1	
1999 12 08		07 57.75	+15 40.7	3.053	3.832	136.9	10.1	19.0	
1999 12 18		07 53.73	+15 49.4	2.981	3.850	147.9	7.8	18.9	
1999 12 28		07 48.32	+16 04.1	2.934	3.869	159.2	5.2	18.7	
2000 01 07		07 41.97	+16 23.6	2.915	3.888	170.2	2.5	18.5	
2000 01 17		07 35.25	+16 46.2	2.927	3.907	174.1	1.5	18.5	
2000 01 27		07 28.82	+17 10.2	2.969	3.926	164.2	3.9	18.7	
2000 02 06		07 23.22	+17 33.9	3.041	3.945	153.0	6.5	18.9	
2000 02 16		07 18.95	+17 56.1	3.140	3.965	142.0	8.8	19.1	
2000 02 26		07 16.32	+18 15.7	3.261	3.984	131.3	10.8	19.2	
2000 03 07		07 15.44	+18 32.2	3.400	4.004	121.1	12.3	19.4	
2000 03 17		07 16.36	+18 45.1	3.554	4.024	111.3	13.3	19.5	
2000 03 27		07 18.98	+18 54.2	3.716	4.044	102.0	14.0	19.7	
2000 04 06		07 23.13	+18 59.1	3.884	4.064	93.1	14.2	19.8	
2000 04 16		07 28.67	+18 59.8	4.054	4.084	84.6	14.2	19.9	
2000 04 26		07 35.39	+18 56.1	4.221	4.104	76.5	13.8	20.0	
2000 05 06		07 43.12	+18 47.8	4.384	4.124	68.6	13.2	20.1	
2000 05 16		07 51.68	+18 35.0	4.540	4.144	61.0	12.3	20.1	
2000 05 26		08 00.92	+18 17.7	4.686	4.164	53.6	11.3	20.1	
2000 06 05		08 10.71	+17 56.0	4.821	4.185	46.3	10.1	20.2	
2000 06 15		08 20.90	+17 30.0	4.943	4.205	39.2	8.8	20.2	
2000 06 25		08 31.40	+17 00.0	5.050	4.225	32.3	7.4	20.2	

C/1998 W3 (LINEAR)

Elements MPC 33857

Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 07 21		06 49.09	+49 25.3	6.224	5.390	32.1	5.7	17.3	
1999 07 31		06 54.36	+50 17.5	6.184	5.422	38.1	6.6	17.3	
1999 08 10		06 59.22	+51 17.0	6.124	5.454	45.0	7.6	17.3	
1999 08 20		07 03.46	+52 24.4	6.045	5.487	52.5	8.4	17.3	
1999 08 30		07 06.82	+53 40.5	5.951	5.521	60.3	9.1	17.3	
1999 09 09		07 09.02	+55 05.8	5.845	5.556	68.5	9.7	17.3	
1999 09 19		07 09.67	+56 40.4	5.732	5.591	76.9	10.1	17.3	
1999 09 29		07 08.29	+58 23.9	5.616	5.627	85.5	10.2	17.2	
1999 10 09		07 04.31	+60 15.2	5.502	5.664	94.2	10.1	17.2	
1999 10 19		06 56.99	+62 11.5	5.397	5.702	102.8	9.8	17.2	
1999 10 29		06 45.51	+64 08.6	5.306	5.740	111.2	9.3	17.2	
1999 11 08		06 29.02	+65 59.9	5.234	5.779	118.9	8.6	17.2	
1999 11 18		06 06.97	+67 36.7	5.187	5.818	125.6	7.9	17.2	
1999 11 28		05 39.62	+68 49.4	5.168	5.858	130.6	7.4	17.2	
1999 12 08		05 08.51	+69 29.7	5.182	5.899	133.1	7.0	17.3	
1999 12 18		04 36.52	+69 33.4	5.227	5.940	132.8	7.0	17.3	
1999 12 28		04 06.86	+69 03.2	5.305	5.982	129.8	7.3	17.4	
2000 01 07		03 41.83	+68 06.9	5.411	6.024	124.6	7.7	17.5	
2000 01 17		03 22.35	+66 54.7	5.544	6.067	117.9	8.2	17.5	
2000 01 27		03 08.21	+65 36.3	5.697	6.110	110.4	8.7	17.6	
2000 02 06		02 58.68	+64 18.8	5.866	6.154	102.5	9.0	17.7	
2000 02 16		02 52.92	+63 07.4	6.044	6.198	94.4	9.1	17.8	
2000 02 26		02 50.12	+62 05.3	6.227	6.243	86.4	9.1	17.9	
2000 03 07		02 49.61	+61 13.9	6.408	6.288	78.6	8.9	18.0	
2000 03 17		02 50.88	+60 33.8	6.585	6.334	71.2	8.6	18.1	
2000 03 27		02 53.48	+60 05.0	6.751	6.380	64.1	8.1	18.2	
2000 04 06		02 57.08	+59 47.1	6.905	6.426	57.7	7.6	18.3	
2000 04 16		03 01.41	+59 39.4	7.043	6.473	51.9	7.0	18.3	
2000 04 26		03 06.22	+59 41.2	7.163	6.520	47.1	6.5	18.4	
2000 05 06		03 11.30	+59 51.9	7.263	6.567	43.4	6.1	18.5	
2000 05 16		03 16.48	+60 10.9	7.343	6.615	41.2	5.8	18.5	
2000 05 26		03 21.55	+60 37.6	7.401	6.663	40.5	5.7	18.6	
2000 06 05		03 26.35	+61 11.4	7.438	6.711	41.5	5.7	18.6	
2000 06 15		03 30.66	+61 51.8	7.455	6.760	43.9	6.0	18.7	
2000 06 25		03 34.27	+62 38.4	7.452	6.809	47.7	6.3	18.7	
2000 07 05		03 36.93	+63 30.7	7.431	6.859	52.4	6.7	18.7	
2000 07 15		03 38.33	+64 27.9	7.394	6.908	57.9	7.2	18.7	
2000 07 25		03 38.13	+65 29.3	7.344	6.958	64.0	7.5	18.8	
2000 08 04		03 35.91	+66 33.6	7.282	7.008	70.4	7.8	18.8	
2000 08 14		03 31.19	+67 39.2	7.214	7.058	77.2	8.0	18.8	
2000 08 24		03 23.46	+68 43.5	7.142	7.109	84.1	8.1	18.8	
2000 09 03		03 12.22	+69 43.5	7.070	7.160	91.0	8.1	18.8	
2000 09 13		02 57.1	+70 34.8	7.003	7.211	97.9	7.9	18.8	
2000 09 23		02 38.2	+71 12.5	6.945	7.262	104.5	7.7	18.8	
2000 10 03		02 16.1	+71 31.6	6.900	7.313	110.7	7.4	18.8	
2000 10 13		01 52.2	+71 28.0	6.872	7.365	116.1	7.0	18.9	
2000 10 23		01 28.3	+70 59.9	6.865	7.417	120.3	6.6	18.9	
2000 11 02		01 06.3	+70 08.3	6.880	7.469	123.1	6.4	18.9	
2000 11 12		00 47.39	+68 57.1	6.920	7.521	124.2	6.2	19.0	
2000 11 22		00 32.31	+67 31.6	6.985	7.573	123.4	6.3	19.0	

C/1999 H3 (LINEAR)

Elements MPC 34734

Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 06 21		16 29.13	+57 56.8	3.277	3.541	96.6	16.6	13.1	
1999 07 01		15 53.83	+56 51.8	3.328	3.528	92.8	16.7	13.1	
1999 07 11		15 24.42	+54 55.8	3.401	3.518	88.1	16.8	13.1	
1999 07 21		15 01.68	+52 27.9	3.490	3.510	82.7	16.7	13.2	
1999 07 31		14 45.02	+49 44.8	3.591	3.504	77.0	16.4	13.2	
1999 08 10		14 33.39	+46 58.7	3.696	3.501	71.1	15.9	13.3	
1999 08 20		14 25.71	+44 17.5	3.801	3.500	65.2	15.2	13.3	
1999 08 30		14 21.05	+41 46.1	3.901	3.502	59.7	14.4	13.4	
1999 09 09		14 18.68	+39 27.2	3.992	3.506	54.6	13.5	13.5	
1999 09 19		14 18.03	+37 22.5	4.069	3.512	50.2	12.7	13.5	
1999 09 29		14 18.65	+35 32.6	4.130	3.521	46.8	12.0	13.5	
1999 10 09		14 20.16	+33 58.1	4.172	3.532	44.6	11.5	13.6	
1999 10 19		14 22.27	+32 39.3	4.194	3.545	44.0	11.3	13.6	
1999 10 29		14 24.70	+31 36.6	4.194	3.561	45.0	11.4	13.6	
1999 11 08		14 27.21	+30 50.3	4.173	3.579	47.6	11.8	13.6	
1999 11 18		14 29.54	+30 21.0	4.129	3.600	51.6	12.4	13.6	
1999 11 28		14 31.41	+30 09.4	4.065	3.622	56.9	13.2	13.6	
1999 12 08		14 32.57	+30 16.1	3.982	3.646	63.2	14.0	13.6	
1999 12 18		14 32.68	+30 41.8	3.884	3.673	70.4	14.6	13.6	
1999 12 28		14 31.35	+31 26.9	3.774	3.701	78.3	15.1	13.6	
2000 01 07		14 28.19	+32 31.2	3.657	3.732	86.7	15.3	13.5	
2000 01 17		14 22.67	+33 53.5	3.538	3.764	95.6	15.1	13.5	
2000 01 27		14 14.30	+35 30.6	3.426	3.798	104.8	14.5	13.5	
2000 02 06		14 02.56	+37 17.3	3.326	3.834	114.0	13.6	13.4	
2000 02 16		13 47.09	+39 04.9	3.248	3.872	122.7	12.4	13.4	
2000 02 26		13 27.88	+40 41.8	3.198	3.911	130.2	11.1	13.4	
2000 03 07		13 05.46	+41 55.5	3.183	3.951	135.4	10.2	13.5	
2000 03 17		12 41.06	+42 34.8	3.207	3.993	137.0	9.8	13.5	
2000 03 27		12 16.45	+42 33.8	3.272	4.037	134.8	10.1	13.6	
2000 04 06		11 53.40	+41 53.7	3.375	4.082	129.2	10.9	13.8	
2000 04 16		11 33.28	+40 41.1	3.512	4.128	121.6	11.9	13.9	
2000 04 26		11 16.77	+39 05.8	3.679	4.175	112.9	12.8	14.0	
2000 05 06		11 03.93	+37 16.8	3.867	4.224	103.8	13.4	14.2	
2000 05 16		10 54.50	+35 21.5	4.071	4.273	94.6	13.6	14.4	

C/1999 J2 (Skiff)

Elements MPC 34734

Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 06 21		16 06.70	+61 18.8	7.240	7.353	92.4	7.9	15.0	
1999 07 01		15 56.13	+60 00.0	7.257	7.337	90.5	8.0	15.0	
1999 07 11		15 47.51	+58 28.2	7.282	7.322	88.3	8.0	15.0	
1999 07 21		15 40.90	+56 46.3	7.313	7.307	85.7	8.0	15.0	
1999 07 31		15 36.26	+54 57.5	7.349	7.293	82.8	7.9	15.0	
1999 08 10		15 33.42	+53 04.3	7.390	7.279	79.8	7.9	15.0	
1999 08 20		15 32.20	+51 09.4	7.433	7.266	76.6	7.8	15.0	
1999 08 30		15 32.41	+49 15.1	7.478	7.253	73.3	7.7	15.0	
1999 09 09		15 33.83	+47 23.2	7.522	7.241	70.1	7.5	15.0	
1999 09 19		15 36.30	+45 35.5	7.563	7.229	67.0	7.3	15.0	
1999 09 29		15 39.62	+43 53.3	7.600	7.218	64.1	7.2	15.0	
1999 10 09		15 43.65	+42 17.7	7.631	7.208	61.5	7.0	15.0	
1999 10 19		15 48.23	+40 49.9	7.654	7.198	59.4	6.8	15.0	
1999 10 29		15 53.23	+39 30.7	7.668	7.188	57.8	6.7	15.0	

1999 11 08	15 58.52	+38 20.5	7.671	7.180	57.0	6.6	15.0
1999 11 18	16 03.98	+37 20.1	7.663	7.171	56.9	6.6	15.0
1999 11 28	16 09.46	+36 29.6	7.642	7.164	57.7	6.7	15.0
1999 12 08	16 14.87	+35 49.5	7.609	7.157	59.3	6.8	15.0
1999 12 18	16 20.06	+35 19.6	7.563	7.150	61.7	7.0	14.9
1999 12 28	16 24.90	+35 00.0	7.505	7.144	64.9	7.2	14.9
2000 01 07	16 29.28	+34 50.4	7.436	7.139	68.8	7.4	14.9
2000 01 17	16 33.05	+34 50.3	7.356	7.134	73.2	7.6	14.9
2000 01 27	16 36.07	+34 59.0	7.269	7.129	78.0	7.8	14.8
2000 02 06	16 38.22	+35 15.5	7.175	7.126	83.2	7.9	14.8
2000 02 16	16 39.36	+35 38.5	7.077	7.123	88.6	8.0	14.8
2000 02 26	16 39.36	+36 06.4	6.979	7.120	94.2	8.0	14.7
2000 03 07	16 38.14	+36 37.2	6.883	7.118	99.7	7.9	14.7
2000 03 17	16 35.62	+37 08.5	6.792	7.117	105.1	7.8	14.7
2000 03 27	16 31.78	+37 37.7	6.710	7.116	110.2	7.6	14.7
2000 04 06	16 26.67	+38 02.0	6.639	7.116	114.7	7.3	14.6
2000 04 16	16 20.39	+38 18.5	6.583	7.116	118.4	7.1	14.6
2000 04 26	16 13.15	+38 24.5	6.545	7.117	121.2	6.9	14.6
2000 05 06	16 05.22	+38 17.9	6.525	7.119	122.6	6.9	14.6
2000 05 16	15 56.94	+37 57.1	6.525	7.121	122.6	6.9	14.6
2000 05 26	15 48.66	+37 21.6	6.546	7.124	121.2	7.0	14.6
2000 06 05	15 40.73	+36 31.7	6.587	7.127	118.5	7.2	14.6
2000 06 15	15 33.46	+35 28.4	6.649	7.131	114.6	7.4	14.6
2000 06 25	15 27.08	+34 13.6	6.728	7.136	109.8	7.7	14.7
2000 07 05	15 21.77	+32 49.5	6.823	7.141	104.2	7.9	14.7
2000 07 15	15 17.60	+31 18.5	6.930	7.146	98.2	8.1	14.7
2000 07 25	15 14.59	+29 42.8	7.048	7.153	91.8	8.2	14.8

C/1999 J3 (LINEAR)

Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 06 21		10 28.8	+74 29.6	2.015	1.774	61.6	30.3	16.0	
1999 06 26		10 09.1	+72 55.8	2.009	1.713	58.5	30.4	15.9	
1999 07 01		09 54.1	+71 19.2	1.999	1.652	55.6	30.5	15.7	
1999 07 06		09 42.54	+69 42.1	1.985	1.592	52.8	30.6	15.5	
1999 07 11		09 33.45	+68 05.8	1.967	1.533	50.3	30.7	15.3	
1999 07 16		09 26.13	+66 31.2	1.943	1.474	48.2	30.9	15.1	
1999 07 21		09 20.07	+64 58.1	1.913	1.417	46.3	31.2	14.9	
1999 07 26		09 14.86	+63 26.3	1.876	1.360	44.9	31.8	14.7	
1999 07 31		09 10.23	+61 55.1	1.833	1.306	43.8	32.6	14.5	
1999 08 05		09 05.94	+60 23.5	1.782	1.254	43.3	33.7	14.2	
1999 08 10		09 01.83	+58 50.1	1.724	1.204	43.2	35.2	14.0	
1999 08 15		08 57.76	+57 13.4	1.657	1.158	43.6	37.1	13.7	
1999 08 20		08 53.59	+55 31.0	1.583	1.116	44.5	39.5	13.5	
1999 08 25		08 49.26	+53 40.0	1.500	1.077	45.9	42.3	13.2	
1999 08 30		08 44.72	+51 36.6	1.410	1.045	47.7	45.7	12.9	
1999 09 04		08 39.93	+49 15.9	1.312	1.018	49.9	49.3	12.7	
1999 09 09		08 34.86	+46 31.1	1.208	0.997	52.6	53.3	12.4	
1999 09 14		08 29.48	+43 13.0	1.098	0.984	55.6	57.5	12.1	
1999 09 19		08 23.71	+39 08.2	0.986	0.978	58.9	61.5	11.9	
1999 09 24		08 17.47	+33 57.6	0.872	0.980	62.6	65.3	11.6	
1999 09 29		08 10.58	+27 13.0	0.762	0.990	66.7	68.3	11.4	
1999 10 04		08 02.73	+18 15.8	0.660	1.007	71.3	70.3	11.1	
1999 10 09		07 53.39	+06 22.5	0.577	1.031	76.6	70.5	10.9	

Elements MPC 34734

1999 10 14	07 41.74	-08 43.8	0.522	1.061	82.2	68.6	10.8
1999 10 19	07 26.52	-25 51.5	0.509	1.097	87.3	65.1	10.9
1999 10 24	07 05.79	-42 14.5	0.540	1.137	90.7	61.0	11.2
1999 10 29	06 36.68	-55 30.6	0.609	1.182	91.9	57.1	11.6
1999 11 03	05 55.34	-64 59.8	0.703	1.230	91.4	53.7	12.1
1999 11 08	04 58.8	-71 02.3	0.814	1.281	89.9	50.7	12.6
1999 11 13	03 50.6	-74 11.8	0.934	1.334	87.8	47.8	13.1
1999 11 18	02 43.3	-75 10.5	1.058	1.390	85.5	45.2	13.6
1999 11 23	01 49.2	-74 48.4	1.184	1.446	83.0	42.7	14.0
1999 11 28	01 10.9	-73 47.0	1.310	1.505	80.5	40.3	14.4
1999 12 03	00 45.3	-72 30.7	1.435	1.564	78.0	38.1	14.7
1999 12 08	00 28.7	-71 11.5	1.558	1.624	75.6	36.0	15.1
1999 12 13	00 18.33	-69 54.8	1.678	1.684	73.3	34.1	15.4
1999 12 18	00 12.24	-68 42.7	1.795	1.745	71.1	32.2	15.7
1999 12 23	00 09.21	-67 35.9	1.908	1.806	69.0	30.6	16.0
1999 12 28	00 08.41	-66 34.5	2.016	1.867	67.1	29.0	16.2
2000 01 02	00 09.31	-65 38.3	2.121	1.929	65.3	27.6	16.5
2000 01 07	00 11.54	-64 46.8	2.222	1.990	63.6	26.3	16.7

C/1999 J4 (LINEAR)

Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 06 21		14 37.96	+48 58.7	3.782	4.003	95.1	14.6		18.2
1999 07 01		14 21.99	+48 42.8	3.874	3.975	88.3	14.8		18.3
1999 07 11		14 09.03	+48 07.3	3.970	3.949	81.5	14.7		18.3
1999 07 21		13 59.13	+47 19.7	4.065	3.925	74.9	14.5		18.3
1999 07 31		13 52.07	+46 26.4	4.154	3.902	68.8	14.0		18.3
1999 08 10		13 47.53	+45 32.4	4.233	3.881	63.1	13.5		18.4
1999 08 20		13 45.17	+44 41.4	4.299	3.862	58.2	12.9		18.4
1999 08 30		13 44.63	+43 56.4	4.348	3.845	54.2	12.3		18.4
1999 09 09		13 45.61	+43 19.9	4.379	3.830	51.2	11.8		18.3
1999 09 19		13 47.86	+42 53.8	4.391	3.817	49.6	11.6		18.3
1999 09 29		13 51.13	+42 40.2	4.382	3.806	49.3	11.5		18.3
1999 10 09		13 55.21	+42 40.8	4.353	3.797	50.5	11.7		18.3
1999 10 19		13 59.93	+42 57.8	4.304	3.789	53.1	12.1		18.3
1999 10 29		14 05.09	+43 33.1	4.236	3.784	56.8	12.7		18.3
1999 11 08		14 10.53	+44 29.1	4.152	3.781	61.5	13.3		18.3
1999 11 18		14 16.03	+45 48.4	4.054	3.780	67.1	13.9		18.2
1999 11 28		14 21.36	+47 33.1	3.947	3.782	73.2	14.5		18.2
1999 12 08		14 26.24	+49 45.7	3.834	3.785	79.7	14.8		18.1
1999 12 18		14 30.27	+52 28.0	3.722	3.790	86.4	15.0		18.1
1999 12 28		14 32.87	+55 40.5	3.616	3.797	93.0	15.0		18.0
2000 01 07		14 33.19	+59 22.1	3.523	3.807	99.2	14.8		18.0
2000 01 17		14 29.75	+63 28.7	3.449	3.818	104.6	14.4		17.9
2000 01 27		14 19.99	+67 51.7	3.401	3.831	108.7	14.1		17.9
2000 02 06		13 59.1	+72 16.6	3.383	3.847	110.9	13.9		17.9
2000 02 16		13 17.9	+76 17.5	3.397	3.864	111.1	13.8		17.9
2000 02 26		12 03.7	+79 08.7	3.445	3.883	109.0	13.9		17.9
2000 03 07		10 21.7	+79 50.7	3.525	3.904	105.2	14.2		18.0
2000 03 17		08 54.9	+78 16.7	3.633	3.927	99.8	14.5		18.1
2000 03 27		08 03.5	+75 29.1	3.763	3.951	93.5	14.6		18.2

Elements MPC 34734

P/1999 J5 (LINEAR)

Date	TT	α_{2000}	δ_{2000}	Δ	r	Elements <i>MPC</i> 34734				
						ϵ	ϕ	m_1	m_2	
1999 06 21		16 18.09	−08 59.9	2.786	3.716	152.4	7.3	16.9		
1999 07 01		16 13.44	−09 27.3	2.856	3.718	142.8	9.5	17.0		
1999 07 11		16 10.22	−10 01.7	2.949	3.720	133.2	11.5	17.1		
1999 07 21		16 08.67	−10 42.0	3.060	3.722	123.8	13.1	17.1		
1999 07 31		16 08.85	−11 26.9	3.185	3.725	114.7	14.3	17.2		
1999 08 10		16 10.75	−12 15.2	3.321	3.728	105.9	15.2	17.3		
1999 08 20		16 14.30	−13 05.6	3.463	3.731	97.4	15.6	17.4		
1999 08 30		16 19.39	−13 57.0	3.610	3.735	89.2	15.7	17.5		
1999 09 09		16 25.88	−14 48.2	3.757	3.739	81.3	15.4	17.6		
1999 09 19		16 33.64	−15 38.3	3.901	3.744	73.6	14.9	17.7		
1999 09 29		16 42.53	−16 26.5	4.041	3.748	66.1	14.1	17.8		
1999 10 09		16 52.41	−17 11.9	4.174	3.753	58.7	13.1	17.8		
1999 10 19		17 03.16	−17 53.8	4.298	3.759	51.4	12.0	17.9		
1999 10 29		17 14.66	−18 31.7	4.411	3.765	44.3	10.6	18.0		
1999 11 08		17 26.79	−19 05.1	4.512	3.771	37.2	9.1	18.0		
1999 11 18		17 39.45	−19 33.6	4.599	3.777	30.2	7.6	18.1		

C/1999 K2 (Ferris)

Date	TT	α_{2000}	δ_{2000}	Δ	r	Elements <i>MPC</i> 34735				
						ϵ	ϕ	m_1	m_2	
1999 06 21		20 31.44	−03 37.9	4.518	5.313	137.7	7.4	16.5		
1999 07 01		20 23.72	−02 26.0	4.439	5.322	147.1	6.0	16.5		
1999 07 11		20 15.19	−01 19.7	4.391	5.331	155.1	4.6	16.5		
1999 07 21		20 06.20	−00 20.4	4.376	5.341	159.7	3.8	16.5		
1999 07 31		19 57.19	+00 31.2	4.395	5.352	158.4	4.0	16.5		
1999 08 10		19 48.57	+01 14.9	4.446	5.364	152.2	5.1	16.5		
1999 08 20		19 40.72	+01 50.8	4.528	5.377	143.6	6.4	16.6		
1999 08 30		19 33.97	+02 19.9	4.638	5.390	134.2	7.7	16.6		
1999 09 09		19 28.50	+02 43.6	4.770	5.405	124.6	8.8	16.7		
1999 09 19		19 24.45	+03 03.3	4.920	5.421	115.0	9.7	16.8		
1999 09 29		19 21.83	+03 20.8	5.082	5.438	105.6	10.2	16.9		
1999 10 09		19 20.61	+03 37.5	5.252	5.455	96.4	10.5	17.0		
1999 10 19		19 20.69	+03 55.0	5.425	5.474	87.6	10.5	17.1		
1999 10 29		19 21.97	+04 14.6	5.595	5.493	79.0	10.2	17.1		
1999 11 08		19 24.29	+04 37.3	5.760	5.513	70.8	9.8	17.2		
1999 11 18		19 27.54	+05 04.1	5.915	5.535	62.9	9.1	17.3		
1999 11 28		19 31.55	+05 35.9	6.056	5.556	55.4	8.4	17.4		
1999 12 08		19 36.19	+06 13.1	6.183	5.579	48.5	7.6	17.4		
1999 12 18		19 41.33	+06 56.4	6.292	5.603	42.2	6.8	17.5		
1999 12 28		19 46.83	+07 46.1	6.382	5.627	36.9	6.0	17.5		
2000 01 07		19 52.57	+08 42.5	6.452	5.652	32.9	5.4	17.6		
2000 01 17		19 58.42	+09 45.9	6.502	5.678	30.7	5.1	17.6		
2000 01 27		20 04.26	+10 56.2	6.531	5.705	30.6	5.0	17.6		
2000 02 06		20 09.98	+12 13.6	6.540	5.733	32.5	5.3	17.7		
2000 02 16		20 15.46	+13 38.0	6.529	5.761	36.1	5.8	17.7		
2000 02 26		20 20.59	+15 09.1	6.501	5.790	40.9	6.4	17.7		
2000 03 07		20 25.26	+16 46.7	6.457	5.819	46.5	7.1	17.7		
2000 03 17		20 29.34	+18 30.4	6.399	5.850	52.7	7.8	17.7		
2000 03 27		20 32.72	+20 19.5	6.330	5.880	59.1	8.4	17.7		
2000 04 06		20 35.27	+22 13.3	6.253	5.912	65.7	8.9	17.7		
2000 04 16		20 36.88	+24 10.7	6.170	5.944	72.4	9.3	17.7		
2000 04 26		20 37.41	+26 10.4	6.085	5.977	79.1	9.5	17.7		

2000 05 06	20 36.77	+28 10.6	6.000	6.011	85.8	9.6	17.7
2000 05 16	20 34.84	+30 09.4	5.921	6.045	92.2	9.6	17.7
2000 05 26	20 31.58	+32 04.2	5.849	6.079	98.4	9.5	17.7
2000 06 05	20 26.94	+33 52.4	5.788	6.115	104.1	9.3	17.7
2000 06 15	20 20.98	+35 31.1	5.740	6.150	109.2	9.0	17.7
2000 06 25	20 13.84	+36 57.5	5.709	6.187	113.6	8.7	17.7
2000 07 05	20 05.72	+38 09.0	5.695	6.223	117.0	8.4	17.7
2000 07 15	19 56.97	+39 03.7	5.701	6.261	119.3	8.1	17.7
2000 07 25	19 47.96	+39 40.8	5.725	6.299	120.3	8.0	17.8
2000 08 04	19 39.11	+40 00.4	5.769	6.337	119.9	8.0	17.8
2000 08 14	19 30.86	+40 03.7	5.832	6.376	118.4	8.0	17.9
2000 08 24	19 23.54	+39 52.9	5.911	6.415	115.7	8.2	17.9
2000 09 03	19 17.43	+39 31.0	6.006	6.455	112.2	8.3	18.0
2000 09 13	19 12.70	+39 01.0	6.113	6.495	108.0	8.5	18.1
2000 09 23	19 09.42	+38 26.2	6.230	6.535	103.4	8.6	18.1
2000 10 03	19 07.60	+37 49.6	6.354	6.576	98.5	8.7	18.2
2000 10 13	19 07.16	+37 14.0	6.483	6.618	93.4	8.7	18.3

C/1999 K3 (LINEAR)

Date	TT	α_{2000}	δ_{2000}	Δ	r	Elements <i>MPC</i> 34735				
						ϵ	ϕ	m_1	m_2	
1999 06 21		17 36.51	+28 35.9	1.607	2.370	127.7	19.8	16.8		
1999 07 01		17 10.70	+31 33.7	1.750	2.439	121.4	20.8	17.1		
1999 07 11		16 49.33	+33 10.6	1.919	2.512	114.1	21.7	17.4		
1999 07 21		16 33.08	+33 50.0	2.105	2.587	106.7	22.1	17.7		
1999 07 31		16 21.80	+33 53.0	2.301	2.664	99.5	22.1	18.1		
1999 08 10		16 14.88	+33 34.9	2.501	2.743	92.7	21.7	18.4		
1999 08 20		16 11.61	+33 06.2	2.699	2.824	86.5	21.0	18.7		
1999 08 30		16 11.33	+32 34.1	2.892	2.906	80.7	20.1	18.9		
1999 09 09		16 13.48	+32 03.1	3.077	2.989	75.5	19.0	19.2		
1999 09 19		16 17.61	+31 36.5	3.253	3.073	70.8	18.0	19.4		
1999 09 29		16 23.36	+31 16.7	3.418	3.158	66.7	16.9	19.7		
1999 10 09		16 30.43	+31 05.1	3.570	3.243	63.1	15.9	19.9		
1999 10 19		16 38.59	+31 03.4	3.709	3.329	60.3	15.1	20.1		
1999 10 29		16 47.64	+31 12.7	3.835	3.416	58.1	14.3	20.3		
1999 11 08		16 57.40	+31 33.7	3.947	3.503	56.8	13.7	20.4		
1999 11 18		17 07.75	+32 07.5	4.046	3.590	56.1	13.2	20.6		
1999 11 28		17 18.52	+32 54.7	4.132	3.677	56.3	12.9	20.7		
1999 12 08		17 29.61	+33 55.7	4.208	3.765	57.1	12.7	20.9		
1999 12 18		17 40.88	+35 10.9	4.273	3.852	58.5	12.6	21.0		

C/1999 K4 (LINEAR)

Date	TT	α_{2000}	δ_{2000}	Δ	r	Elements <i>MPC</i> 34735				
						ϵ	ϕ	m_1	m_2	
1999 06 21		12 38.92	+37 33.1	1.266	1.535	83.7	41.2	20.9		
1999 07 01		12 25.75	+38 13.2	1.538	1.586	73.6	37.9	21.4		
1999 07 11		12 19.48	+38 27.6	1.795	1.648	65.0	34.0	21.9		
1999 07 21		12 17.55	+38 32.5	2.031	1.718	57.7	30.0	22.4		

C/1999 K5 (LINEAR)

Date	TT	α_{2000}	δ_{2000}	Δ	r	Elements <i>MPC</i> 34735				
						ϵ	ϕ	m_1	m_2	
1999 06 21		19 24.72	−13 09.7	3.816	4.767	156.7	4.8	15.7		
1999 07 01		19 15.58	−14 46.1	3.706	4.704	167.8	2.6	15.6		
1999 07 11		19 05.54	−16 29.9	3.631	4.642	173.5	1.4	15.5		
1999 07 21		18 55.10	−18 17.7	3.593	4.581	164.6	3.4	15.4		
1999 07 31		18 44.82	−20 06.0	3.592	4.520	153.0	5.9	15.3		

M.P.C. 35130

1999 JUNE 22

1999 08 10	18 35.28	-21 51.6	3.625	4.460	141.2	8.2	15.3
1999 08 20	18 26.96	-23 32.2	3.686	4.401	129.6	10.2	15.3
1999 08 30	18 20.24	-25 06.5	3.770	4.342	118.4	11.8	15.3
1999 09 09	18 15.33	-26 34.3	3.872	4.284	107.5	13.0	15.3
1999 09 19	18 12.36	-27 55.9	3.984	4.227	97.1	13.6	15.3
1999 09 29	18 11.32	-29 12.1	4.100	4.171	87.1	13.9	15.3
1999 10 09	18 12.14	-30 23.7	4.215	4.116	77.5	13.7	15.3
1999 10 19	18 14.70	-31 31.7	4.324	4.062	68.2	13.2	15.3
1999 10 29	18 18.87	-32 36.8	4.423	4.009	59.3	12.3	15.3
1999 11 08	18 24.52	-33 39.8	4.507	3.957	50.8	11.2	15.2
1999 11 18	18 31.50	-34 41.3	4.575	3.906	42.7	9.9	15.2
1999 11 28	18 39.69	-35 41.9	4.623	3.856	35.0	8.4	15.2

C/1999 K6 (LINEAR)

Elements MPC 34735

Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 06 21		18 50.37	+25 54.2	1.499	2.280	129.0	20.3	15.5	
1999 07 01		18 42.76	+30 00.7	1.502	2.263	126.8	21.1	15.4	
1999 07 11		18 34.63	+33 14.4	1.525	2.252	123.6	22.1	15.4	
1999 07 21		18 27.13	+35 32.2	1.563	2.247	119.7	23.1	15.5	
1999 07 31		18 21.43	+36 57.7	1.612	2.248	115.8	24.0	15.6	
1999 08 10		18 18.35	+37 38.5	1.670	2.255	112.0	24.6	15.6	
1999 08 20		18 18.43	+37 43.4	1.733	2.267	108.5	25.0	15.7	
1999 08 30		18 21.83	+37 21.7	1.800	2.285	105.3	25.2	15.9	
1999 09 09		18 28.47	+36 41.0	1.870	2.308	102.5	25.2	16.0	
1999 09 19		18 38.12	+35 47.9	1.944	2.337	99.9	25.1	16.1	
1999 09 29		18 50.46	+34 47.8	2.022	2.371	97.5	24.8	16.3	
1999 10 09		19 05.11	+33 44.7	2.104	2.409	95.2	24.4	16.4	
1999 10 19		19 21.71	+32 42.2	2.191	2.451	92.8	23.9	16.6	
1999 10 29		19 39.86	+31 43.1	2.285	2.498	90.4	23.4	16.8	
1999 11 08		19 59.21	+30 49.6	2.387	2.549	87.8	22.9	17.0	
1999 11 18		20 19.44	+30 03.5	2.497	2.602	84.9	22.2	17.1	
1999 11 28		20 40.22	+29 26.2	2.616	2.659	81.7	21.5	17.3	
1999 12 08		21 01.29	+28 58.3	2.743	2.719	78.3	20.8	17.5	
1999 12 18		21 22.43	+28 40.3	2.878	2.782	74.5	19.9	17.7	
1999 12 28		21 43.44	+28 32.2	3.020	2.847	70.5	19.0	17.9	
2000 01 07		22 04.20	+28 33.5	3.168	2.914	66.2	18.0	18.1	
2000 01 17		22 24.60	+28 43.5	3.320	2.982	61.7	16.9	18.4	
2000 01 27		22 44.55	+29 01.3	3.475	3.053	57.0	15.7	18.6	
2000 02 06		23 04.01	+29 25.8	3.629	3.125	52.3	14.5	18.7	
2000 02 16		23 22.96	+29 56.2	3.781	3.198	47.5	13.2	18.9	
2000 02 26		23 41.38	+30 31.2	3.929	3.273	42.8	11.9	19.1	
2000 03 07		23 59.25	+31 09.8	4.072	3.348	38.2	10.6	19.3	
2000 03 17		00 16.58	+31 51.2	4.206	3.424	33.8	9.3	19.5	
2000 03 27		00 33.35	+32 34.3	4.330	3.501	30.0	8.2	19.6	

C/1999 K7 (LINEAR)

Elements MPC 34735

Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 06 21		16 40.99	+13 15.8	1.808	2.659	138.9	14.5	18.5	
1999 07 01		16 09.17	+09 53.2	1.938	2.714	130.8	16.5	18.8	
1999 07 11		15 44.23	+06 29.6	2.119	2.771	120.1	18.5	19.1	
1999 07 21		15 25.81	+03 20.0	2.335	2.831	108.8	19.9	19.4	
1999 07 31		15 12.89	+00 29.6	2.575	2.894	97.8	20.3	19.7	
1999 08 10		15 04.31	-02 01.7	2.826	2.958	87.3	20.0	20.0	
1999 08 20		14 59.10	-04 16.5	3.081	3.025	77.3	19.1	20.3	

1999 08 30	14 56.47	-06 17.6	3.331	3.093	67.7	17.6	20.5
1999 09 09	14 55.82	-08 07.5	3.572	3.162	58.4	15.7	20.8
1999 09 19	14 56.68	-09 48.3	3.797	3.234	49.3	13.6	21.0
1999 09 29	14 58.69	-11 21.6	4.004	3.306	40.4	11.3	21.2
1999 10 09	15 01.56	-12 48.8	4.189	3.379	31.6	8.9	21.4

C/1999 K8 (LINEAR)

Elements MPC 34735

Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 06 21		21 41.61	+36 53.9	4.628	4.903	99.7	11.8	15.2	
1999 07 01		21 41.55	+37 34.3	4.489	4.861	105.5	11.6	15.1	
1999 07 11		21 40.23	+38 01.7	4.356	4.819	111.3	11.3	15.0	
1999 07 21		21 37.77	+38 12.9	4.234	4.779	116.8	10.9	14.9	
1999 07 31		21 34.40	+38 05.6	4.123	4.740	122.0	10.5	14.8	
1999 08 10		21 30.42	+37 37.7	4.027	4.702	126.5	10.0	14.7	
1999 08 20		21 26.22	+36 48.1	3.948	4.665	130.1	9.6	14.7	
1999 08 30		21 22.24	+35 37.2	3.889	4.628	132.2	9.3	14.6	
1999 09 09		21 18.91	+34 06.7	3.850	4.593	132.7	9.3	14.5	
1999 09 19		21 16.58	+32 19.7	3.834	4.559	131.3	9.5	14.5	
1999 09 29		21 15.54	+30 20.6	3.839	4.527	128.1	10.0	14.5	
1999 10 09		21 15.96	+28 14.3	3.867	4.495	123.5	10.7	14.5	
1999 10 19		21 17.92	+26 05.8	3.914	4.465	117.7	11.4	14.5	
1999 10 29		21 21.39	+23 59.8	3.980	4.436	111.1	12.1	14.5	
1999 11 08		21 26.29	+22 00.1	4.061	4.408	104.1	12.6	14.5	
1999 11 18		21 32.53	+20 09.9	4.155	4.382	96.7	12.9	14.5	
1999 11 28		21 39.94	+18 31.1	4.258	4.357	89.2	13.1	14.5	
1999 12 08		21 48.39	+17 05.0	4.367	4.334	81.6	13.0	14.6	
1999 12 18		21 57.72	+15 52.1	4.478	4.312	74.0	12.7	14.6	
1999 12 28		22 07.78	+14 52.1	4.588	4.291	66.5	12.1	14.6	
2000 01 07		22 18.46	+14 04.6	4.695	4.272	59.0	11.4	14.7	
2000 01 17		22 29.62	+13 28.7	4.795	4.255	51.6	10.4	14.7	
2000 01 27		22 41.15	+13 03.2	4.885	4.239	44.4	9.4	14.7	
2000 02 06		22 52.96	+12 47.0	4.965	4.225	37.4	8.2	14.7	
2000 02 16		23 04.97	+12 38.7	5.032	4.212	30.6	6.9	14.8	

C/1999 L2 (LINEAR)

Elements MPC 34735

Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 06 21		16 23.95	+10 04.2	1.100	1.986	139.5	19.4	16.2	
1999 07 01		16 14.35	+03 38.6	1.093	1.955	135.9	21.2	16.1	
1999 07 11		16 07.72	-03 15.6	1.115	1.932	129.9	23.8	16.1	
1999 07 21		16 04.76	-10 08.8	1.165	1.915	122.7	26.5	16.2	
1999 07 31		16 05.76	-16 37.9	1.239	1.907	115.2	28.8	16.3	
1999 08 10		16 10.66	-22 30.2	1.334	1.907	107.9	30.4	16.4	
1999 08 20		16 19.32	-27 41.2	1.443	1.916	101.1	31.2	16.6	
1999 08 30		16 31.53	-32 11.5	1.564	1.932	94.8	31.4	16.8	
1999 09 09		16 47.01	-36 03.3	1.693	1.956	89.0	31.0	17.1	
1999 09 19		17 05.57	-39 19.4	1.828	1.987	83.7	30.2	17.3	
1999 09 29		17 26.90	-42 02.1	1.966	2.025	78.7	29.0	17.5	
1999 10 09		17 50.71	-44 12.8	2.107	2.069	74.1	27.7	17.8	
1999 10 19		18 16.62	-45 53.0	2.248	2.120	69.7	26.2	18.0	
1999 10 29		18 44.15	-47 03.7	2.389	2.175	65.6	24.6	18.3	
1999 11 08		19 12.79	-47 46.1	2.530	2.235	61.6	22.9	18.5	
1999 11 18		19 42.01	-48 01.8	2.670	2.300	57.8	21.3	18.7	
1999 11 28		20 11.24	-47 53.1	2.807	2.368	54.1	19.7	19.0	
1999 12 08		20 40.02	-47 22.6	2.942	2.439	50.6	18.2	19.2	

1999 12 18	21 08.02	−46 33.4	3.075	2.513	47.3	16.7	19.4
1999 12 28	21 34.95	−45 28.9	3.204	2.590	44.1	15.3	19.7
2000 01 07	22 00.69	−44 12.4	3.329	2.669	41.2	14.0	19.9

C/1999 L3 (LINEAR)					Elements MPC 34735				
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 06 21		12 46.47	−22 49.7	2.552	3.048	109.7	18.3	16.9	
1999 07 01		12 33.64	−20 04.1	2.674	2.971	96.8	19.9	16.9	
1999 07 11		12 24.51	−17 43.7	2.808	2.895	84.6	20.5	16.9	
1999 07 21		12 18.42	−15 48.7	2.942	2.821	73.2	20.2	16.8	
1999 07 31		12 14.71	−14 16.8	3.069	2.749	62.4	19.1	16.8	
1999 08 10		12 12.86	−13 04.6	3.181	2.679	52.0	17.4	16.8	
1999 08 20		12 12.44	−12 09.0	3.272	2.612	42.1	15.1	16.7	
1999 08 30		12 13.09	−11 26.7	3.339	2.547	32.6	12.3	16.7	

30P/Reinmuth 1					Elements MPC 34424				
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 07 21		21 38.79	−17 11.0	4.696	5.641	156.3	4.1		22.5
1999 07 31		21 33.59	−17 43.8	4.643	5.637	167.1	2.3		22.3
1999 08 10		21 27.93	−18 16.9	4.620	5.632	176.5	0.6		22.2
1999 08 20		21 22.15	−18 48.6	4.628	5.627	170.0	1.8		22.3
1999 08 30		21 16.61	−19 17.2	4.667	5.622	159.2	3.7		22.4

65P/Gunn				Elements <i>MPC</i> 29285					
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 07 11		05 08.55	+23 27.7	5.528	4.676	30.1	6.3	18.8	21.5
1999 07 21		05 17.77	+23 46.1	5.448	4.683	37.5	7.6	18.7	21.6
1999 07 31		05 26.53	+24 02.4	5.351	4.689	45.0	8.8	18.7	21.6
1999 08 10		05 34.72	+24 17.0	5.238	4.694	52.7	9.9	18.7	21.6
1999 08 20		05 42.20	+24 30.3	5.112	4.700	60.6	10.8	18.6	21.6
1999 08 30		05 48.84	+24 42.6	4.975	4.704	68.7	11.5	18.6	21.6
1999 09 09		05 54.50	+24 54.5	4.829	4.709	77.1	12.0	18.5	21.5
1999 09 19		05 59.02	+25 06.4	4.678	4.713	85.9	12.3	18.4	21.5
1999 09 29		06 02.24	+25 18.7	4.524	4.716	94.9	12.2	18.4	21.4
1999 10 09		06 04.01	+25 31.7	4.372	4.719	104.4	11.8	18.3	21.3
1999 10 19		06 04.20	+25 45.5	4.226	4.722	114.2	11.1	18.2	21.2
1999 10 29		06 02.74	+26 00.0	4.091	4.725	124.5	10.0	18.2	21.1
1999 11 08		05 59.60	+26 14.8	3.972	4.726	135.2	8.5	18.1	21.0
1999 11 18		05 54.88	+26 28.9	3.874	4.728	146.2	6.7	18.1	20.8
1999 11 28		05 48.83	+26 41.7	3.802	4.729	157.6	4.6	18.0	20.7
1999 12 08		05 41.79	+26 52.0	3.759	4.730	169.0	2.3	18.0	20.5
1999 12 18		05 34.25	+26 59.2	3.748	4.730	176.1	0.8	18.0	20.4
1999 12 28		05 26.78	+27 03.1	3.768	4.729	166.3	2.8	18.0	20.5
2000 01 07		05 19.91	+27 04.3	3.821	4.729	154.8	5.1	18.0	20.7
2000 01 17		05 14.13	+27 03.5	3.901	4.728	143.4	7.1	18.1	20.9
2000 01 27		05 09.78	+27 01.8	4.007	4.726	132.3	8.9	18.1	21.0
2000 02 06		05 07.06	+27 00.2	4.132	4.724	121.6	10.2	18.2	21.1
2000 02 16		05 06.05	+26 59.7	4.273	4.722	111.3	11.2	18.3	21.2
2000 02 26		05 06.72	+27 00.5	4.423	4.719	101.4	11.9	18.3	21.3
2000 03 07		05 08.99	+27 02.9	4.578	4.716	91.9	12.1	18.4	21.4
2000 03 17		05 12.73	+27 06.8	4.733	4.713	82.8	12.1	18.5	21.5
2000 03 27		05 17.76	+27 11.8	4.885	4.709	74.0	11.8	18.5	21.5
2000 04 06		05 23.96	+27 17.5	5.029	4.704	65.5	11.2	18.6	21.6
2000 04 16		05 31.15	+27 23.3	5.164	4.699	57.4	10.4	18.6	21.6

2000 04 26	05 39.19	+27 28.9	5.286	4.694	49.4	9.4	18.7	21.6
2000 05 06	05 47.95	+27 33.8	5.393	4.688	41.7	8.2	18.7	21.6
2000 05 16	05 57.31	+27 37.5	5.484	4.682	34.2	7.0	18.8	21.6

74P/Smirnova-Chernykh					Elements MPC 31662				
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 07 31		06 16.20	+24 11.6	4.755	3.951	33.7	8.2	17.3	22.4
1999 08 10		06 28.10	+24 13.6	4.653	3.939	40.6	9.6	17.3	22.4
1999 08 20		06 39.56	+24 13.4	4.538	3.927	47.6	11.0	17.2	22.4
1999 08 30		06 50.46	+24 11.3	4.410	3.914	54.7	12.2	17.1	22.4
1999 09 09		07 00.67	+24 08.2	4.271	3.902	62.1	13.2	17.0	22.4
1999 09 19		07 10.05	+24 04.9	4.123	3.890	69.7	14.0	16.9	22.3
1999 09 29		07 18.45	+24 02.4	3.969	3.878	77.6	14.6	16.8	22.3
1999 10 09		07 25.69	+24 01.7	3.810	3.867	85.8	14.9	16.7	22.2
1999 10 19		07 31.60	+24 03.8	3.649	3.855	94.3	14.9	16.6	22.1
1999 10 29		07 35.98	+24 09.8	3.491	3.843	103.3	14.6	16.5	22.0
1999 11 08		07 38.65	+24 20.5	3.338	3.832	112.7	13.8	16.4	21.8
1999 11 18		07 39.45	+24 36.4	3.195	3.820	122.6	12.6	16.3	21.7
1999 11 28		07 38.29	+24 57.3	3.067	3.809	133.0	10.9	16.1	21.5
1999 12 08		07 35.17	+25 22.7	2.958	3.798	143.9	8.8	16.0	21.4
1999 12 18		07 30.24	+25 50.8	2.872	3.787	155.1	6.3	16.0	21.2
1999 12 28		07 23.89	+26 19.6	2.813	3.776	166.4	3.5	15.9	21.0
2000 01 07		07 16.63	+26 46.6	2.785	3.766	175.4	1.2	15.9	20.8
2000 01 17		07 09.17	+27 09.6	2.787	3.755	168.3	3.1	15.8	20.9
2000 01 27		07 02.24	+27 27.4	2.819	3.745	157.0	5.9	15.9	21.1
2000 02 06		06 56.50	+27 39.3	2.878	3.735	145.7	8.5	15.9	21.2
2000 02 16		06 52.46	+27 45.7	2.962	3.725	134.8	10.8	15.9	21.4
2000 02 26		06 50.41	+27 47.4	3.066	3.715	124.3	12.7	16.0	21.5
2000 03 07		06 50.46	+27 45.0	3.184	3.706	114.4	14.1	16.0	21.7
2000 03 17		06 52.59	+27 39.3	3.313	3.696	104.9	15.1	16.1	21.8
2000 03 27		06 56.66	+27 30.6	3.448	3.687	95.9	15.6	16.2	21.9
2000 04 06		07 02.46	+27 19.0	3.585	3.678	87.4	15.8	16.3	22.0
2000 04 16		07 09.81	+27 04.3	3.722	3.670	79.3	15.6	16.3	22.0
2000 04 26		07 18.48	+26 46.3	3.854	3.661	71.5	15.1	16.4	22.1
2000 05 06		07 28.27	+26 24.8	3.981	3.653	64.0	14.4	16.4	22.1
2000 05 16		07 39.00	+25 59.5	4.099	3.645	56.8	13.4	16.5	22.1
2000 05 26		07 50.49	+25 30.2	4.207	3.638	49.9	12.3	16.5	22.2
2000 06 05		08 02.59	+24 56.7	4.304	3.630	43.2	11.0	16.6	22.2
2000 06 15		08 15.18	+24 19.1	4.388	3.623	36.6	9.6	16.6	22.1
2000 06 25		08 28.13	+23 37.3	4.459	3.616	30.1	8.1	16.6	22.1

82P/Gehrels 3				Elements MPC 31664					
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 07 11		00 58.35	+07 16.5	4.098	4.257	92.1	13.8	20.6	22.5
1999 07 21		01 01.62	+07 38.3	3.939	4.247	100.7	13.6	20.5	22.4
1999 07 31		01 03.61	+07 52.2	3.784	4.236	109.7	13.0	20.4	22.3
1999 08 10		01 04.20	+07 57.4	3.638	4.225	119.1	12.1	20.3	22.2
1999 08 20		01 03.34	+07 53.5	3.504	4.214	128.9	10.8	20.2	22.0
1999 08 30		01 01.03	+07 40.4	3.387	4.203	139.2	9.0	20.1	21.9
1999 09 09		00 57.38	+07 18.5	3.291	4.193	149.9	6.9	20.0	21.7
1999 09 19		00 52.60	+06 49.0	3.219	4.181	160.9	4.5	20.0	21.5
1999 09 29		00 47.05	+06 13.7	3.176	4.170	172.1	1.9	19.9	21.3
1999 10 09		00 41.15	+05 35.3	3.162	4.159	176.2	0.9	19.9	21.2
1999 10 19		00 35.42	+04 56.9	3.178	4.148	164.9	3.6	19.9	21.4

1999 10 29	00 30.33	+04 21.9	3.224	4.137	153.5	6.1	19.9	21.6
1999 11 08	00 26.27	+03 52.9	3.296	4.126	142.4	8.4	19.9	21.7
1999 11 18	00 23.56	+03 32.2	3.391	4.115	131.6	10.4	19.9	21.9
1999 11 28	00 22.36	+03 21.1	3.505	4.103	121.2	11.9	20.0	22.0
1999 12 08	00 22.73	+03 20.1	3.633	4.092	111.1	13.0	20.0	22.1
1999 12 18	00 24.64	+03 29.2	3.770	4.081	101.4	13.7	20.1	22.2
1999 12 28	00 28.01	+03 47.7	3.912	4.070	92.1	14.0	20.2	22.3
2000 01 07	00 32.71	+04 14.9	4.055	4.058	83.2	13.9	20.2	22.4
2000 01 17	00 38.61	+04 49.9	4.196	4.047	74.6	13.6	20.3	22.4
2000 01 27	00 45.55	+05 31.5	4.330	4.036	66.3	12.9	20.3	22.5
2000 02 06	00 53.42	+06 18.6	4.455	4.025	58.2	12.0	20.3	22.5
2000 02 16	01 02.09	+07 10.4	4.570	4.013	50.4	10.9	20.4	22.5
2000 02 26	01 11.43	+08 05.7	4.671	4.002	42.9	9.7	20.4	22.5
2000 03 07	01 21.35	+09 03.6	4.758	3.991	35.5	8.3	20.4	22.5

OPPOSITION DATA

Planet	Opposition	α_{2000}	δ_{2000}	V	$\dot{\alpha}$	$\dot{\delta}$	ϕ_{MIN}	MPC
1999 GS ₁₃	1999 05 22.0	15 53.41	+04 38.0	17.6	-0.90	+ 2.5	11.2/17.1	34961
1999 JS ₇₇	1999 05 22.0	15 53.41	-09 16.0	16.6	-1.02	+ 1.2	4.6/20.3	35115
(10869)	1999 05 22.0	15 53.62	-30 09.1	16.7	-1.19	+ 1.6	4.7/23.5	34788
1993 XL	1999 05 22.0	15 53.64	-11 11.0	17.0	-1.10	+ 0.7	4.2/20.7	35066
1999 JL ₁₁₇	1999 05 22.0	15 53.79	-19 27.8	17.9	-0.92	- 0.4	0.3/22.0	35037
1991 SY	1999 05 22.0	15 53.83	-33 47.7	16.2	-1.16	- 3.4	5.8/23.5	34578
1993 SX ₆	1999 05 22.0	15 53.84	-27 25.8	17.3	-1.14	+ 1.6	3.0/23.2	35066
1986 QE ₁	1999 05 22.1	15 53.89	-18 52.9	17.5	-1.11	+ 1.9	0.6/21.9	34826
(10819)	1999 05 22.1	15 53.90	-21 00.3	17.0	-0.84	+ 2.0	0.3/22.3	34775
1999 JK ₉₇	1999 05 22.1	15 53.99	-04 23.6	17.8	-0.94	+ 1.0	5.4/19.5	35032
(8773)	1999 05 22.1	15 54.11	-31 33.7	18.3	-0.85	+ 2.8	2.9/24.3	31704
6619 P-L	1999 05 22.1	15 54.18	-13 58.5	17.9	-1.08	+ 4.3	2.9/21.0	35050
1999 JD ₃	1999 05 22.1	15 54.20	+01 48.1	17.0	-0.84	+ 1.7	9.5/17.9	34978
1981 ES ₄₂	1999 05 22.2	15 54.32	-22 22.9	18.5	-0.95	+ 2.4	0.7/22.6	31781
(10707)	1999 05 22.2	15 54.36	-20 41.3	16.9	-1.08	+ 0.9	0.1/22.3	34746
1998 DN ₁₀	1999 05 22.2	15 54.39	+02 53.9	17.0	-0.87	+ 3.6	9.1/17.1	34902
1999 DQ ₆	1999 05 22.2	15 54.51	+00 31.6	16.9	-0.75	+ 3.9	6.9/18.0	35085
1999 JO ₅₅	1999 05 22.2	15 54.59	-08 51.6	18.2	-0.78	+ 5.7	4.3/19.7	35109
1981 DB ₂	1999 05 22.3	15 54.69	-27 45.5	18.3	-0.99	+ 4.3	2.6/23.8	26914
1999 JT ₅₇	1999 05 22.3	15 54.76	-22 56.7	16.7	-1.13	- 1.3	1.1/22.7	35110
1999 JK ₅₅	1999 05 22.3	15 55.01	-12 30.1	18.1	-1.01	+ 2.2	3.3/21.1	35007
1998 BJ ₄	1999 05 22.4	15 55.01	-35 04.2	18.3	-1.02	+ 3.3	4.4/25.2	31592
1996 XY ₁₂	1999 05 22.4	15 55.03	-14 01.2	19.9	-0.88	- 0.2	2.0/21.5	30786
(10964)	1999 05 22.4	15 55.10	-18 25.2	17.8	-0.89	+ 3.4	0.7/22.1	34813
1998 DM ₁₄	1999 05 22.4	15 55.21	-04 55.2	17.4	-0.78	+ 3.6	5.3/19.4	34903
1999 JS ₅₇	1999 05 22.4	15 55.32	-20 00.3	17.0	-1.05	+ 6.0	0.1/22.4	35009
1978 QH ₃	1999 05 22.4	15 55.36	+01 42.1	17.9	-0.93	+ 0.9	7.9/18.5	34820
1997 UX ₄	1999 05 22.4	15 55.38	-24 18.6	18.4	-1.10	+ 2.6	1.5/23.1	35072
(8434)	1999 05 22.5	15 55.51	-16 33.3	18.5	-0.83	+ 2.1	1.1/21.9	31373
1997 WV ₇	1999 05 22.5	15 55.63	-20 47.9	17.9	-1.05	+ 2.8	0.2/22.6	31394
1981 DJ ₁	1999 05 22.5	15 55.81	-26 17.9	18.4	-1.04	+ 5.9	2.6/23.8	26914
(10781)	1999 05 22.6	15 55.99	-12 58.3	17.4	-0.90	+ 4.1	2.8/21.2	34765
1999 JM ₉₇	1999 05 22.6	15 56.06	-08 21.1	17.6	-0.91	+ 3.4	5.3/20.4	35032
1999 JQ ₁₂₉	1999 05 22.6	15 56.11	-01 53.2	18.1	-0.85	+ 4.8	6.2/18.7	35040

1999 JT ₇₇	1999 05 22.6	15 56.17	-08 34.4	17.7	-0.88	+ 3.4	5.9/20.4	35023
1996 WU	1999 05 22.7	15 56.36	-19 57.6	16.8	-0.81	+ 3.8	0.1/22.7	34870
(10868)	1999 05 22.7	15 56.56	-08 54.1	16.8	-1.02	+ 1.0	5.3/21.0	34788
1996 OC ₁	1999 05 22.7	15 56.59	-11 43.1	17.9	-1.00	+ 1.6	3.2/21.4	35069
1993 YT	1999 05 22.8	15 56.63	+06 25.5	17.3	-1.21	-11.3	11.8/23.3	34852
1981 EP ₄₂	1999 05 22.8	15 56.93	-16 28.5	18.2	-0.90	+ 3.4	1.3/22.2	35057
(8164)	1999 05 22.9	15 57.03	-15 12.1	17.1	-1.07	+ 1.1	2.3/22.2	31078
1999 JP ₅₅	1999 05 22.9	15 57.07	-10 04.4	17.6	-0.80	+ 1.0	3.1/21.2	35007
1999 KT ₅	1999 05 22.9	15 57.27	-09 41.3	18.1	-0.88	+ 7.0	3.7/20.6	35043
(9412)	1999 05 22.9	15 57.35	-13 17.0	17.2	-0.98	+ 3.6	2.8/21.7	32633
(8081)	1999 05 22.9	15 57.47	+01 41.8	16.9	-0.99	- 0.5	10.0/20.1	30962
4023 T-1	1999 05 23.0	15 57.57	-10 29.3	18.6	-1.01	+ 3.9	3.7/21.3	35124
(8461)	1999 05 23.0	15 57.57	-26 15.0	19.0	-0.99	+ 1.9	1.9/24.0	31487
(8497)	1999 05 23.0	15 57.73	-34 25.5	17.8	-0.97	+ 1.2	4.2/25.3	31495
4195 T-2	1999 05 23.0	15 57.87	-15 11.4	18.3	-0.90	+ 2.3	2.0/22.2	35053
1999 JG ₅₇	1999 05 23.1	15 57.87	-13 31.0	17.6	-0.92	+ 2.6	2.7/21.9	35008
1999 JO ₅₇	1999 05 23.1	15 57.90	-16 29.7	16.9	-0.88	+ 1.9	1.4/22.5	35008
1998 BJ ₁	1999 05 23.1	15 58.14	-06 46.0	18.1	-0.82	+ 0.8	4.7/21.0	34892
1996 TY ₇	1999 05 23.1	15 58.21	-23 55.4	19.3	-1.00	+ 1.2	1.1/23.7	31389
1999 JU ₉₇	1999 05 23.2	15 58.25	+04 14.9	17.5	-0.75	+ 2.2	9.1/18.2	35033
1992 SF ₂	1999 05 23.2	15 58.33	+02 38.0	17.1	-0.84	+ 4.6	9.5/18.4	35064
1999 JO ₁₁₈	1999 05 23.2	15 58.36	-16 10.6	17.7	-0.93	+ 0.6	2.2/22.6	35037
4031 P-L	1999 05 23.2	15 58.43	-28 32.1	18.3	-1.10	+ 2.6	2.8/24.6	31294
1998 AG ₁₁	1999 05 23.2	15 58.50	-19 06.2	17.2	-1.00	+ 1.3	0.6/23.1	35075
1998 AV ₈	1999 05 23.2	15 58.61	-15 57.9	17.8	-1.05	+ 4.6	1.8/22.5	35075
1998 FP ₁₂₃	1999 05 23.3	15 58.70	-25 14.0	19.7	-0.84	+ 2.1	1.3/24.1	32686
1997 WN ₂	1999 05 23.3	15 58.80	-23 21.4	18.9	-1.06	+ 3.1	1.1/23.8	31151
1992 UQ ₂	1999 05 23.3	15 58.84	-34 36.8	16.1	-1.43	- 5.4	5.3/24.2	31383
1999 JS ₅₅	1999 05 23.3	15 58.94	-12 52.4	17.2	-0.95	- 1.0	3.0/22.4	35109
1999 JS ₅₈	1999 05 23.3	15 59.03	-18 22.1	16.7	-1.15	- 0.3	1.0/23.1	35010
1997 WV ₁	1999 05 23.4	15 59.11	-25 17.8	17.4	-1.07	+ 4.4	2.1/24.3	34879
1999 JE ₅₇	1999 05 23.4	15 59.16	-10 38.5	18.3	-0.82	+ 4.3	3.3/21.5	35008
1999 JN ₆	1999 05 23.4	15 59.32	-05 38.6	18.6	-1.03	+11.7	5.5/19.5	34981
1999 JV ₅₇	1999 05 23.4	15 59.36	-26 36.8	16.2	-1.23	+ 0.3	2.6/24.2	35009
1990 UM ₂	1999 05 23.4	15 59.38	-20 09.9	17.0	-0.92	- 0.7	0.1/23.4	35061
1981 ET ₁₇	1999 05 23.4	15 59.47	-21 35.7	18.9	-0.93	+ 2.9	0.3/23.7	31780
(10771)	1999 05 23.5	15 59.55	-06 54.5	17.3	-0.79	+ 5.0	4.4/20.6	34763
2162 T-3	1999 05 23.5	15 59.56	-20 50.9	17.8	-0.98	+ 5.9	0.1/23.6	35054
(8721)	1999 05 23.5	15 59.61	-23 33.2	16.6	-0.69	+ 2.8	0.8/24.1	31692
1981 EY ₂₃	1999 05 23.5	15 59.74	-00 52.9	18.3	-0.79	+ 4.8	8.5/19.2	34823
1998 EM ₈	1999 05 23.6	15 59.97	-15 51.2	18.0	-1.09	+ 2.3	1.8/22.9	34906
1998 ES ₁₄	1999 05 23.6	16 00.05	-32 47.8	17.6	-0.97	+ 0.5	3.8/25.4	32062
1995 SX ₅₁	1999 05 23.6	16 00.16	-30 05.2	20.8	-0.92	+ 0.9	2.8/25.1	26405
1993 UN ₆	1999 05 23.6	16 00.20	-14 46.7	20.0	-1.05	+ 1.1	2.2/22.8	31236
1999 JJ ₅₈	1999 05 23.7	16 00.22	-24 10.3	16.6	-1.11	- 2.4	1.3/24.1	35110
1981 EN ₂₃	1999 05 23.7	16 00.37	-24 27.9	18.2	-0.95	+ 2.3	2.0/24.4	35057
1996 VU ₂₉	1999 05 23.7	16 00.37	-15 21.9	17.7	-1.00	+ 4.9	2.2/22.7	34869
(10773)	1999 05 23.7	16 00.37	-08 02.5	18.4	-0.74	+ 6.4	3.6/20.9	34763
2763 P-L	1999 05 23.7	16 00.50	-18 45.1	18.7	-0.85	+ 2.0	0.6/23.5	31824
1981 ED ₈	1999 05 23.7	16 00.63	-27 23.0	17.7	-1.10	+ 3.8	2.8/25.0	35057
1978 VA ₅	1999 05 23.7	16 00.64	-18 24.8	19.3	-0.79	+ 1.9	0.6/23.4	31223

6700 P-L	1999 05 23.7	16 00.67	-24 21.2	18.5	-0.95	+	2.0	1.3/24.4	28319	2044 P-L	1999 05 24.6	16 04.29	-28 10.0	16.8	-1.12	+	2.0	3.5/25.8	35046
1998 FM ₂₇	1999 05 23.8	16 00.63	-20 10.9	17.7	-0.82	+	3.0	0.1/23.7	35077	(8717)	1999 05 24.7	16 04.33	-18 24.5	18.1	-0.78	+	2.1	0.6/24.3	31691
(8482)	1999 05 23.8	16 00.66	-16 39.7	17.7	-0.77	+	1.9	1.2/23.1	31492	1998 EK ₉	1999 05 24.7	16 04.41	+17 11.8	17.2	-1.00	-	1.7	13.2/19.2	35076
1996 PG ₅	1999 05 23.8	16 00.73	-13 45.9	17.1	-0.94	+	5.0	3.4/22.5	34862	1981 EU ₁₉	1999 05 24.7	16 04.53	-31 30.5	16.8	-1.10	+	1.3	5.3/26.3	35057
1999 JQ ₅₅	1999 05 23.8	16 00.83	-11 06.4	17.9	-0.92	+	1.9	3.7/22.3	35007	1990 SB ₁₄	1999 05 24.7	16 04.55	-22 30.3	18.0	-0.87	+	2.4	0.5/25.0	35061
1990 EK	1999 05 23.8	16 00.88	-11 29.5	18.3	-0.90	+	3.5	2.8/22.2	35060	1999 JV ₇₇	1999 05 24.8	16 04.74	-07 58.2	16.8	-1.07	-	2.6	5.8/23.4	35024
1998 FV ₉	1999 05 23.8	16 01.05	-29 24.9	17.1	-1.18	+	2.6	3.9/25.2	34908	(10968)	1999 05 24.8	16 05.12	-18 27.3	17.9	-0.83	+	1.6	0.8/24.5	34814
1998 AB ₂	1999 05 23.9	16 01.10	-11 45.0	18.2	-0.96	+	0.8	3.3/22.6	34889	1982 QP ₃	1999 05 24.9	16 05.11	-18 34.2	16.6	-1.04	+	6.5	1.0/24.5	34825
1995 FD ₄	1999 05 23.9	16 01.33	-23 34.3	17.9	-0.97	+	0.1	1.6/24.4	34857	1996 RQ ₁₆	1999 05 24.9	16 05.22	-09 55.8	17.7	-1.01	+	4.7	4.6/22.9	35070
1998 AK ₅	1999 05 23.9	16 01.37	-35 22.5	18.0	-0.97	+	2.7	5.1/26.6	31797	1993 TW ₁₂	1999 05 24.9	16 05.27	-23 53.5	17.9	-1.13	+	0.4	1.2/25.3	34849
1993 TQ ₃₂	1999 05 23.9	16 01.48	-27 16.3	17.4	-1.22	-	1.4	2.8/24.7	34850	1996 SG ₈	1999 05 25.0	16 05.52	-21 21.6	18.0	-1.09	+	2.7	0.3/25.1	35070
(8680)	1999 05 24.0	16 01.44	-24 20.0	18.1	-0.84	+	1.2	1.0/24.6	31682	1999 JM ₇₆	1999 05 25.0	16 05.83	-12 25.4	17.2	-0.99	+	4.5	3.5/23.6	35021
(8866)	1999 05 24.0	16 01.45	-36 14.7	17.8	-0.91	+	2.6	4.2/26.8	31915	1999 JL ₅₈	1999 05 25.1	16 05.89	-23 59.6	16.7	-0.89	+	0.4	1.1/25.5	35009
1990 UZ ₄	1999 05 24.0	16 01.46	-15 39.4	18.6	-0.79	+	0.8	1.4/23.2	35061	1999 JX ₇₇	1999 05 25.1	16 05.93	-06 51.6	17.2	-0.98	+	3.6	6.4/22.7	35024
1981 EN ₃₁	1999 05 24.0	16 01.47	-13 01.3	17.9	-1.01	+	3.5	3.3/22.7	34824	1999 JL ₉₈	1999 05 25.1	16 06.10	+05 20.4	18.1	-0.73	+	0.9	6.6/20.7	35033
(10675)	1999 05 24.0	16 01.56	-19 36.7	18.0	-1.05	+	2.0	0.4/23.9	34738	1998 EW ₁₁	1999 05 25.1	16 06.32	-08 45.8	17.0	-0.78	+	1.5	3.8/23.2	35076
1993 FO	1999 05 24.1	16 01.88	-19 15.4	17.0	-0.85	+	2.7	0.5/23.9	35065	(10671)	1999 05 25.2	16 06.36	-28 12.0	17.2	-1.10	+	1.9	2.8/26.3	34737
1993 VC ₁	1999 05 24.1	16 01.93	-15 22.8	17.6	-1.08	+13.1		2.0/22.8	34852	1981 EX ₇	1999 05 25.2	16 06.45	-04 29.8	19.3	-0.86	+	5.8	5.9/21.8	26916
(10885)	1999 05 24.1	16 01.99	-15 42.6	16.0	-0.89	-	0.8	1.7/23.5	34792	(10751)	1999 05 25.2	16 06.45	-21 39.2	17.4	-0.87	+	2.1	0.3/25.4	34757
1992 BF ₂	1999 05 24.1	16 02.04	-02 33.4	17.8	-0.76	+	1.7	5.3/21.1	35063	(10687)	1999 05 25.2	16 06.62	-17 13.3	17.9	-1.11	+	1.2	1.5/24.8	34741
1996 UD ₃	1999 05 24.1	16 02.05	-28 11.8	17.5	-0.97	+	2.0	2.7/25.4	35070	1999 JJ ₁₁₁	1999 05 25.3	16 06.78	-11 30.9	18.0	-1.03	+	2.0	4.2/23.9	35036
1999 JU ₈₅	1999 05 24.1	16 02.11	-09 06.9	18.7	-0.97	+	3.2	4.3/22.2	35030	1978 UT ₇	1999 05 25.3	16 06.81	-14 26.4	17.2	-0.82	+	5.2	2.4/24.0	34821
1999 JV ₇₉	1999 05 24.1	16 02.20	-15 42.5	17.4	-1.08	+	1.2	1.9/23.5	35025	1999 JJ ₈₄	1999 05 25.3	16 07.07	+02 29.3	17.6	-0.91	-	0.6	8.5/22.3	35028
1997 YF ₇	1999 05 24.1	16 02.22	-15 24.1	20.1	-1.03	+	1.9	1.9/23.4	31425	1992 DG ₁₀	1999 05 25.3	16 07.14	-23 35.4	18.1	-1.16	+	4.0	1.1/25.8	35063
1995 DZ	1999 05 24.1	16 02.29	-23 04.2	17.3	-1.12	+	1.4	1.0/24.5	35068	(10698)	1999 05 25.4	16 07.13	-24 56.4	17.7	-1.08	+	3.4	1.8/26.1	34743
1979 MS ₁	1999 05 24.2	16 02.40	-17 22.2	17.8	-0.84	+	2.6	1.1/23.7	34821	1996 VP ₃₀	1999 05 25.4	16 07.16	-17 43.5	17.9	-0.93	+	5.7	1.0/24.8	35071
(10689)	1999 05 24.2	16 02.43	-02 04.0	17.8	-0.73	+	6.5	5.6/20.0	34741	1999 JN ₆₄	1999 05 25.4	16 07.24	-28 56.2	17.0	-1.04	+	3.5	3.8/26.8	35016
1999 DU ₆	1999 05 24.2	16 02.43	-02 51.0	16.5	-0.95	-	0.4	6.3/21.8	34942	1996 US ₃	1999 05 25.4	16 07.39	-24 18.8	21.5	-0.95	+	1.6	1.0/26.0	30785
1998 BY ₁	1999 05 24.2	16 02.67	-10 01.0	20.1	-0.92	+	1.4	3.5/22.7	35075	1999 JH ₅₈	1999 05 25.4	16 07.47	-24 59.0	17.3	-1.02	+	1.8	1.5/26.1	35009
1981 ET ₁₂	1999 05 24.3	16 02.68	-15 14.6	19.6	-0.95	+	6.5	2.5/23.2	26917	1998 EE ₆	1999 05 25.5	16 07.59	-20 20.9	18.3	-0.90	+	3.7	0.2/25.4	31803
1992 YC ₂	1999 05 24.3	16 02.72	-22 25.8	18.6	-0.96	+	2.9	0.6/24.6	32049	(8246)	1999 05 25.5	16 07.61	-25 41.5	16.7	-1.13	+	2.6	2.1/26.2	31207
1995 SM ₂₉	1999 05 24.3	16 02.87	-21 14.1	18.1	-0.80	+	1.7	0.1/24.4	35068	(8360)	1999 05 25.5	16 07.62	-04 16.7	15.7	-0.96	-	2.5	6.7/23.9	31357
(8697)	1999 05 24.3	16 02.90	-21 51.1	17.0	-0.85	+	2.6	0.4/24.6	31686	1989 EF ₆	1999 05 25.5	16 07.69	-35 06.3	17.9	-1.04	+	2.4	5.0/27.9	31582
1996 SW ₇	1999 05 24.4	16 03.02	-11 18.7	18.1	-0.94	+	4.7	4.0/22.6	35070	(10808)	1999 05 25.5	16 07.72	-06 33.7	17.4	-0.78	+	2.8	4.6/23.1	34772
1999 JB ₅₉	1999 05 24.4	16 03.11	-14 22.7	17.5	-0.99	+	4.5	3.3/23.2	35010	(10956)	1999 05 25.5	16 07.74	-16 04.8	18.2	-0.96	+	6.6	2.2/24.6	34811
(8107)	1999 05 24.4	16 03.22	-07 51.6	16.2	-1.02	+	2.3	5.5/22.4	30968	(10888)	1999 05 25.5	16 07.90	-11 55.6	16.6	-0.91	-	3.3	3.1/24.8	34793
1999 JV ₅₈	1999 05 24.4	16 03.27	-16 48.5	16.1	-0.94	+	6.3	2.0/23.7	35010	1991 RQ ₁₆	1999 05 25.6	16 07.92	-19 56.9	18.1	-0.97	+	1.0	0.4/25.5	35062
1998 BB ₄₄	1999 05 24.4	16 03.27	-13 29.4	18.3	-0.92	-	0.2	2.5/23.5	34898	1994 DP	1999 05 25.6	16 08.07	-19 06.2	17.7	-0.99	+	2.7	0.7/25.4	35067
1992 DO ₈	1999 05 24.4	16 03.41	-06 43.6	19.1	-0.73	+	3.1	3.9/21.9	32048	1998 BW ₆	1999 05 25.6	16 08.08	-22 01.5	17.5	-0.87	+	1.9	0.4/25.8	35075
1998 DW ₂	1999 05 24.4	16 03.44	-21 39.6	17.4	-0.89	+	3.4	0.3/24.6	35076	(10679)	1999 05 25.6	16 08.24	-06 23.6	18.4	-0.82	+	0.5	4.7/23.6	34739
1999 JN ₉₇	1999 05 24.4	16 03.44	-06 13.5	18.0	-0.78	+	2.9	4.8/21.8	35032	4844 P-L	1999 05 25.6	16 08.33	-14 56.4	18.1	-1.04	+	2.6	2.8/24.8	35124
1051 T-3	1999 05 24.4	16 03.46	-14 45.7	18.3	-0.97	+	7.8	2.2/23.2	35053	1981 EU ₁₃	1999 05 25.7	16 08.47	-10 59.0	18.5	-1.00	+	5.0	3.9/24.0	35057
1999 JF ₅₈	1999 05 24.4	16 03.50	-24 58.0	17.5	-1.12	+	0.7	1.7/25.1	35009	(10857)	1999 05 25.7	16 08.49	-15 50.9	16.1	-0.91	+	2.9	2.5/24.9	34785
1996 VO ₁	1999 05 24.5	16 03.54	-32 12.2	16.3	-1.17	-	1.7	4.2/25.7	31792	1998 BJ ₃₃	1999 05 25.7	16 08.67	-41 33.9	16.8	-1.14	+	4.7	7.9/29.8	34898
1998 BN ₄₈	1999 05 24.5	16 03.54	-11 24.2	16.9	-1.04	+	2.4	3.8/23.0	35075	1999 JJ ₁₇	1999 05 25.7	16 08.69	-10 39.9	18.7	-0.81	-	0.3	2.9/24.4	34985
(8291)	1999 05 24.5	16 03.74	-26 35.4	18.0	-1.01	+	3.0	1.9/25.5	31216	(8272)	1999 05 25.8	16 08.77	-30 58.8	16.7	-1.13	+	1.8	3.6/27.3	31213
1996 LP ₁	1999 05 24.6	16 03.84	-08 51.6	18.6	-1.07	+	2.6	4.7/22.7	35069	1998 BW ₃	1999 05 25.8	16 08.82	-19 42.3	19.0	-1.01	+	3.4	0.5/25.6	35075
1999 JF ₅₉	1999 05 24.6	16 03.93	-13 11.0	16.8	-1.04	+	2.1	2.9/23.5	35011	(10974)	1999 05 25.8	16 08.83	-24 04.7	16.7	-1.00	+	1.6	1.4/26.3	34816
1990 TB ₁₃	1999 05 24.6	16 03.96	-05 05.4	17.5	-0.81	+	1.3	5.3/22.1	35061	1999 KJ ₁₁	1999 05 25.8	16 08.83	-13 42.4	16.9	-1.06		0.0	3.0/24.9	35043
1999 JM ₅₈	1999 05 24.6	16 04.07	-21 04.6	17.1	-0.83	+	2.5	0.1/24.7	35010	1998 AH ₅	1999 05 25.8	16 08.89	-17 09.6	17.6	-0.82	+	2.0	1.2/25.2	34890
1992 UK ₂	1999 05 24.6	16 04.23	-33 31.5	18.0	-1.14	-	0.8	4.1/26.2	31585	1993 FD ₂₈	1999 05 25.8	16 09.05	-32 20.9	18.3	-0.93	+	1.7	3.7/27.6	34580

1999 JE ₁₀₁	1999 05 25.8	16 09.13	-00 40.2	18.2	-0.84	+	2.1	7.2/22.5	35035
(8478)	1999 05 25.9	16 09.22	-32 33.4	16.9	-0.92	+	2.2	3.5/27.8	31491
1987 TG	1999 05 25.9	16 09.32	-28 22.4	18.0	-1.04	+	0.5	2.3/26.9	34827
1993 FT ₂₂	1999 05 25.9	16 09.38	-22 31.1	17.6	-0.84	+	2.8	0.5/26.2	34845
1994 RD ₁₁	1999 05 25.9	16 09.39	+27 46.1	17.8	-1.05	+	1.3	22.4/12.5	34855
1997 XC	1999 05 26.0	16 09.57	-20 27.6	17.4	-0.85	+	5.6	0.2/25.9	34882
(8598)	1999 05 26.0	16 09.59	-21 39.0	18.0	-0.83	+	2.2	0.2/26.1	31519
1981 ES ₄₇	1999 05 26.0	16 09.68	-21 46.9	18.9	-1.10	+	1.8	0.3/26.1	22697
1999 JN ₅₉	1999 05 26.0	16 09.76	-10 49.8	17.3	-0.95	+	2.6	5.0/24.4	35110
1996 RP ₁₅	1999 05 26.0	16 09.78	-07 20.3	18.1	-0.88	+	4.9	6.6/23.4	27925
1999 JS ₈₀	1999 05 26.0	16 09.85	-04 44.7	17.8	-0.88	+	5.8	6.1/22.7	35026
1997 YL ₇	1999 05 26.0	16 09.86	-11 09.7	17.2	-0.98	-	1.2	3.3/25.0	35074
1996 QD ₁	1999 05 26.0	16 09.86	-20 25.3	16.8	-1.01	+	4.7	0.3/26.0	35070
1991 FM ₃	1999 05 26.0	16 09.98	-22 22.7	17.7	-1.05	+	2.6	0.5/26.3	34835
(10977)	1999 05 26.1	16 09.93	-20 22.4	17.6	-1.08	+	2.0	0.3/26.0	34817
1990 VV ₁₁	1999 05 26.1	16 09.97	-21 05.3	18.7	-0.79	+	1.7	0.0/26.1	29098
1998 FH ₈₂	1999 05 26.1	16 10.18	-31 38.0	18.4	-1.06	-	0.3	3.4/27.5	32324
1999 JL ₈₅	1999 05 26.1	16 10.29	+17 48.2	18.4	-0.93	+	4.6	13.1/16.5	35030
1993 TS ₁₁	1999 05 26.1	16 10.38	-29 55.8	17.2	-1.17	+	1.2	3.5/27.4	35066
1981 EC ₁₁	1999 05 26.1	16 10.38	-26 08.4	17.8	-0.95	+	3.9	2.1/27.0	35057
(10849)	1999 05 26.2	16 10.34	-22 27.0	16.0	-1.06	+	4.9	0.6/26.5	34783
1999 JV ₉₈	1999 05 26.2	16 10.39	-05 41.5	17.8	-0.86	+	2.3	5.0/23.7	35033
(10872)	1999 05 26.2	16 10.67	-18 05.4	17.9	-0.93	+	3.8	1.3/25.8	34789
1997 YF ₁₄	1999 05 26.3	16 11.07	-27 06.1	18.9	-1.01	+	3.5	2.1/27.4	31425
(8490)	1999 05 26.3	16 11.12	-12 34.1	18.1	-0.97	+	3.4	2.9/25.0	31493
1978 VF ₃	1999 05 26.3	16 11.19	-21 38.8	19.3	-1.03	+	2.3	0.2/26.5	31780
1997 VE ₂	1999 05 26.4	16 11.16	-15 00.5	18.0	-0.97	+	3.7	2.3/25.4	34877
(10754)	1999 05 26.4	16 11.45	-17 48.2	16.7	-1.10	+	3.5	1.5/26.0	34758
1999 JR ₅₉	1999 05 26.4	16 11.49	-11 32.4	18.1	-0.94	+	4.4	4.3/24.8	35011
1999 JW ₆₀	1999 05 26.5	16 11.61	-14 51.5	17.5	-0.91	-	0.5	2.0/25.7	35012
1999 JO ₅₉	1999 05 26.5	16 11.62	-11 03.4	18.3	-0.81	+	2.7	3.5/24.8	35011
1999 JL ₈₄	1999 05 26.5	16 11.95	+02 39.9	17.3	-0.81	+	7.5	10.9/20.4	35116
(8629)	1999 05 26.6	16 11.97	-13 53.0	18.5	-0.78	+	2.6	2.1/25.4	31670
1999 JK ₈₄	1999 05 26.6	16 12.09	+02 34.0	17.9	-0.74	+	1.1	6.7/22.9	35029
1997 UJ ₁₁	1999 05 26.6	16 12.13	-33 05.4	16.6	-1.46	-	5.5	4.8/27.3	35072
1999 JO ₇₆	1999 05 26.6	16 12.33	-09 23.2	16.4	-0.97	+	0.7	5.5/25.1	35021
1999 JK ₁₁₉	1999 05 26.6	16 12.36	-24 09.5	17.4	-0.82	+	2.6	1.0/27.2	35038
1992 EG ₂₂	1999 05 26.6	16 12.37	-15 31.6	16.7	-1.12	+	0.1	2.8/26.0	35064
1998 CJ ₄	1999 05 26.7	16 12.44	-37 44.6	18.0	-1.09	+	2.7	5.3/29.4	31799
2547 P-L	1999 05 26.7	16 12.49	-20 30.3	18.4	-0.84	+	1.5	0.2/26.6	35124
1999 JT ₆₀	1999 05 26.7	16 12.75	-15 27.6	17.1	-0.97	+	2.5	2.5/25.9	35012
(9452)	1999 05 26.7	16 12.80	-15 50.0	18.9	-0.91	+	2.0	1.6/26.0	32642
1981 EK ₃₈	1999 05 26.7	16 12.82	-26 04.9	19.5	-1.08	+	3.8	2.2/27.6	26922
1999 JX ₆₀	1999 05 26.8	16 12.88	-14 24.9	17.8	-0.95	+	0.9	2.5/25.9	35012
1981 EY ₅	1999 05 26.8	16 13.11	-36 58.2	19.1	-0.94	+	2.5	4.5/29.4	30779
(8511)	1999 05 26.8	16 13.15	-09 55.2	17.6	-0.84	+	3.5	3.5/25.0	31499
1996 XV ₃₀	1999 05 26.8	16 13.15	-07 42.4	19.7	-0.93	+	0.2	4.3/25.1	29926
1981 EL ₂₆	1999 05 26.9	16 13.17	-38 27.4	17.9	-1.14	-	0.6	8.9/29.0	28611
1993 QB ₃	1999 05 26.9	16 13.24	+10 05.3	18.6	-1.01	+	2.0	10.6/21.3	35066
1999 JE ₉₉	1999 05 26.9	16 13.25	-00 39.6	17.7	-0.83	+	1.1	9.2/23.4	35033
(9503)	1999 05 26.9	16 13.30	-32 03.7	17.7	-0.92	+	0.9	3.4/28.5	32654

1999 KX ₁₁	1999 05 26.9	16 13.33	-26 36.2	17.3	-1.03	+	2.7	2.8/27.7	35043
1998 FH	1999 05 26.9	16 13.35	-07 41.1	18.9	-0.84	+	5.0	4.5/24.4	35077
1999 JM ₈₄	1999 05 26.9	16 13.43	+01 40.6	17.8	-0.86	+	1.7	8.0/23.4	35116
1999 JL ₈	1999 05 26.9	16 13.43	-01 36.5	16.9	-1.55	-	12.3	9.5/27.0	34983
1999 JK ₃	1999 05 26.9	16 13.56	-06 40.4	17.0	-1.00	-	3.2	6.2/25.6	34979
1998 BZ ₂₄	1999 05 27.0	16 13.56	-17 08.9	18.1	-0.83	+	2.0	1.3/26.4	35075
(10823)	1999 05 27.0	16 13.71	-13 55.9	18.0	-1.03	+	2.5	2.7/26.0	34776
1999 JG ₉₉	1999 05 27.0	16 14.00	-01 55.9	18.2	-0.83	+	4.3	5.9/23.5	35033
2542 P-L	1999 05 27.0	16 14.02	-22 48.1	18.4	-1.10	+	1.4	0.6/27.3	32035
1998 FD	1999 05 27.1	16 13.94	-24 27.5	18.4	-0.87	+	2.2	0.9/27.6	32256
1986 EJ ₁	1999 05 27.1	16 14.02	-45 12.0	16.3	-1.30	-	3.5	10.7/29.3	35058
1999 HF	1999 05 27.1	16 14.05	+18 57.3	16.9	-0.85	+	6.2	18.3/17.1	34970
1999 JL ₃	1999 05 27.1	16 14.21	+03 29.6	16.7	-0.94	+12.9		11.3/20.7	35099
1978 UF ₇	1999 05 27.1	16 14.23	-11 01.1	17.7	-0.79	+	7.2	3.7/24.9	34820
1999 JP ₆₀	1999 05 27.1	16 14.25	-17 39.6	17.5	-0.88	+	1.5	1.2/26.7	35011
1981 EM ₂	1999 05 27.1	16 14.26	-18 43.7	18.8	-1.01	+	6.9	1.1/26.7	26914
1993 UQ ₅	1999 05 27.1	16 14.30	-20 22.9	18.3	-1.11	+	0.1	0.3/27.1	35066
1995 WX ₈	1999 05 27.2	16 14.38	-20 29.4	18.1	-0.83	+	1.6	0.2/27.1	35069
(10983)	1999 05 27.2	16 14.39	-20 01.9	17.0	-1.02	+	1.1	0.6/27.1	34818
1999 JU ₆₀	1999 05 27.2	16 14.47	-16 00.8	16.9	-0.87	+	3.0	2.2/26.4	35110
1997 YG ₁₀	1999 05 27.2	16 14.55	-24 16.2	17.7	-1.01	+	1.5	1.1/27.7	35074
1999 JW ₉₈	1999 05 27.2	16 14.58	-04 44.8	18.3	-0.76	+	3.5	5.0/24.3	35033
1998 AG ₆	1999 05 27.2	16 14.58	-05 19.7	18.2	-0.81	+	2.6	4.9/24.6	34890
1992 FM ₁	1999 05 27.2	16 14.78	-65 50.3	17.2	-2.16	-	0.6	19.2/05.6	22700
(10723)	1999 05 27.3	16 14.80	-29 13.2	17.7	-1.15	+	3.3	3.2/28.5	34750
1989 YF ₁	1999 05 27.3	16 14.93	-30 25.5	17.7	-1.04	+	5.0	3.4/29.0	35060
(8676)	1999 05 27.3	16 14.97	-19 56.0	17.8	-0.81	+	2.8	0.4/27.1	31681
1992 DX ₅	1999 05 27.3	16 14.97	-18 58.4	17.4	-0.81	+	1.4	0.7/27.0	35063
1999 JS ₁₂₁	1999 05 27.3	16 15.12	-25 15.4	16.3	-0.87	+	5.1	1.4/28.1	35038
1979 ME ₇	1999 05 27.3	16 15.18	-29 51.9	17.7	-1.02	+	5.3	2.9/28.9	35057
1998 BL ₂₅	1999 05 27.4	16 15.32	-14 37.6	17.8	-0.87	+	2.1	2.3/26.4	35075
1999 JW ₁₁	1999 05 27.4	16 15.37	+05 32.2	17.3	-1.23	-11.8		13.0/28.6	34984
1998 FG ₈₈	1999 05 27.4	16 15.42	+00 46.4	17.5	-0.90	+	2.7	7.5/23.6	35077
1997 VM ₆	1999 05 27.4	16 15.43	-33 07.0	17.1	-1.04	+	5.2	4.0/29.6	31423
1999 JM ₆₀	1999 05 27.4	16 15.53	-21 39.3	17.4	-0.96	+	7.6	0.1/27.6	35011
1999 JU ₇₉	1999 05 27.4	16 15.56	+15 59.4	16.9	-0.86	-	5.0	13.8/25.0	35115
(10583)	1999 05 27.5	16 15.67	-22 44.7	15.8	-0.97	-	2.2	0.5/27.7	34458
1999 JS ₆₁	1999 05 27.5	16 15.79	-20 45.3	17.6	-1.12	+	2.9	0.2/27.5	35013
1992 UA ₁	1999 05 27.5	16 15.80	-40 12.0	18.0	-1.18		0.0	6.1/29.9	31787
(8571)	1999 05 27.5	16 15.83	-21 42.6	17.0	-0.89	+	2.5	0.1/27.6	35056
1993 TG ₃₉	1999 05 27.5	16 15.92	-15 52.0	18.9	-1.04	+	1.9	2.0/26.8	28616
4310 T-1	1999 05 27.5	16 16.05	-36 54.6	18.6	-1.10	-	0.1	4.9/29.5	32291
1994 CE ₁	1999 05 27.5	16 16.07	-41 01.5	18.3	-1.17	+	3.0	6.6/30.8	31586
1999 JR ₆₁	1999 05 27.6	16 16.00	-19 34.9	17.6	-1.01	+	5.2	0.9/27.3	35012
1998 BA ₃₁	1999 05 27.6	16 16.08	-13 32.3	18.6	-1.00	+	3.1	2.9/26.4	31401
1996 QP	1999 05 27.7	16 16.66	-07 51.9	18.1	-0.99	+	3.6	6.2/25.5	34863
1997 BJ ₅	1999 05 27.7	16 16.77	-34 26.4	18.5	-0.90	+	2.7	3.7/29.9	31986
1999 JV ₂	1999 05 27.8	16 17.03	+01 50.5	17.1	-0.82	+	3.6	10.3/23.5	35098
1993 VY	1999 05 27.8	16 17.03	-49 37.6	18.0	-1.69	-	4.0	10.3/29.7	31788
1989 SU ₄	1999 05 27.8	16 17.22	-15 37.7	18.5	-1.06	+	2.1	2.4/27.1	34830
1999 JR ₁₂₅	1999 05 27.9	16 17.22	-30 25.3	16.8	-1.21	+	0.7	3.9/29.0	35040

4135 T-2	1999 05 27.9	16 17.40	-30 06.2	17.6	-1.04	-	0.3	3.2/28.9	19690	1998 FS ₁₂₀	1999 05 28.9	16 21.57	-03 15.1	19.1	-0.77	+	2.4	5.2/26.1	32261
(10476)	1999 05 27.9	16 17.41	-22 47.5	15.4	-0.86	+	+11.8	0.8/28.3	34430	1981 DF	1999 05 28.9	16 21.61	-39 58.8	17.9	-0.98	+	2.1	5.4/31.8	31780
1994 CT ₁₂	1999 05 27.9	16 17.42	-10 55.6	18.0	-0.94	+	1.2	3.6/26.5	35067	(10829)	1999 05 28.9	16 21.67	-23 26.2	17.0	-1.18	-	0.5	0.8/29.2	34778
1995 HS ₂	1999 05 27.9	16 17.49	-18 20.6	18.0	-0.97	+	0.1	1.4/27.6	34858	1999 JY ₁₂₀	1999 05 28.9	16 21.71	-15 19.0	18.1	-0.97	+	2.9	2.5/28.1	35038
1998 CL ₁	1999 05 27.9	16 17.50	-21 48.7	18.9	-0.84	+	2.6	0.1/28.0	32059	(10742)	1999 05 29.0	16 21.72	-19 43.0	17.0	-1.02	-	0.1	0.7/28.8	34755
(8285)	1999 05 27.9	16 17.65	-13 40.0	17.1	-0.81	+	4.9	2.3/26.6	31215	1999 DH ₃	1999 05 29.0	16 22.00	-12 45.1	16.4	-0.94	+	2.4	4.0/27.8	35084
1992 PD ₆	1999 05 28.0	16 17.68	-19 47.6	16.9	-1.04	+	0.8	0.7/27.8	35064	1998 DD ₆	1999 05 29.0	16 22.06	-16 58.0	19.2	-1.00	+	2.4	1.6/28.4	32684
1998 FH ₁₀	1999 05 28.0	16 17.76	-50 33.3	18.9	-1.17	-	0.2	8.0/01.1	32063	1999 JD ₁₂₁	1999 05 29.0	16 22.08	-12 12.7	17.6	-0.97	+	4.1	4.0/27.6	35038
4129 P-L	1999 05 28.0	16 17.97	-12 33.2	18.2	-1.07	+	4.6	3.7/26.6	35047	1997 YB ₁₄	1999 05 29.1	16 22.13	-04 14.3	18.4	-0.94	-	0.3	5.7/27.2	31425
(10797)	1999 05 28.1	16 18.01	-17 31.5	17.0	-1.01	+	3.7	1.8/27.5	34769	1999 JC ₁₂₁	1999 05 29.1	16 22.15	-14 32.5	18.1	-0.85	+	0.2	2.2/28.3	35038
(10976)	1999 05 28.1	16 18.19	-12 08.2	18.0	-0.87	+	2.9	3.3/26.7	34817	1990 UE ₄	1999 05 29.1	16 22.36	-13 36.6	18.8	-0.77	+	1.4	2.2/28.1	35061
(8573)	1999 05 28.1	16 18.19	-32 39.3	17.0	-1.01	-	0.7	3.5/29.4	31514	1998 FW ₁₀₈	1999 05 29.1	16 22.36	-24 40.0	18.1	-0.81	+	2.7	0.9/29.6	35077
1979 QV ₁	1999 05 28.1	16 18.23	-33 08.1	17.2	-1.13	+	4.2	5.6/30.1	34573	1981 EA ₂₃	1999 05 29.1	16 22.43	-35 28.3	17.9	-1.08	+	1.0	5.4/31.0	32739
1999 JV ₈₀	1999 05 28.1	16 18.29	-06 41.5	17.4	-0.89	+	0.8	5.3/26.1	35026	1993 FF ₄₉	1999 05 29.1	16 22.53	-29 49.1	19.1	-0.91	+	1.4	2.3/30.3	32050
1989 UG ₂	1999 05 28.1	16 18.37	-38 59.6	17.8	-1.55	-	5.8	6.6/28.7	25329	1997 YV ₆	1999 05 29.2	16 22.62	-39 00.1	17.3	-1.03	+	6.0	6.3/01.8	31796
1996 XW	1999 05 28.1	16 18.42	-21 23.7	17.8	-0.91	-	0.6	0.0/28.2	31734	1999 JV ₉₉	1999 05 29.2	16 22.76	-02 44.8	17.7	-0.85	-	0.3	5.9/27.0	35034
1990 UB ₃	1999 05 28.2	16 18.43	-25 12.5	18.0	-1.13	+	2.4	1.5/28.7	35061	1999 JK ₆₂	1999 05 29.2	16 22.80	-16 26.2	16.8	-0.98	-	1.7	2.8/28.8	35013
1998 CD ₄	1999 05 28.2	16 18.67	+01 03.0	17.5	-0.91	-	0.9	8.1/25.7	34900	1999 GL ₆	1999 05 29.2	16 22.86	-03 02.6	17.0	-0.86	+	8.9	9.4/24.7	35091
1999 JG ₈	1999 05 28.2	16 18.67	+07 49.9	17.3	-0.88	+	9.2	11.6/21.1	35100	(8593)	1999 05 29.3	16 22.89	-38 25.8	17.1	-1.02	+	0.3	5.3/31.5	31518
1998 AB ₅	1999 05 28.2	16 18.70	-08 39.4	17.2	-0.99	-	0.5	6.2/26.8	34890	1999 JL ₆₂	1999 05 29.3	16 22.90	-14 50.7	17.3	-1.05	+	5.6	2.8/28.1	35013
(8667)	1999 05 28.2	16 18.85	-24 20.2	17.7	-1.09	+	0.1	1.1/28.6	31679	(10762)	1999 05 29.3	16 22.91	-20 51.1	17.6	-0.84	+	2.3	0.2/29.2	34760
1981 EE ₁₂	1999 05 28.3	16 18.90	-26 31.7	17.8	-1.10	+	4.3	2.0/29.1	35057	(10726)	1999 05 29.3	16 22.95	-17 30.7	18.0	-1.02	+	2.2	1.5/28.8	34751
1994 AE ₁₁	1999 05 28.3	16 18.98	-19 56.6	18.2	-1.01	+	1.0	0.5/28.1	35067	1998 FA ₅₃	1999 05 29.3	16 22.97	-28 11.2	18.6	-0.84	+	1.4	1.8/30.2	35077
1991 CA ₁	1999 05 28.3	16 19.09	+21 27.4	17.4	-1.29	-	5.6	19.7/25.5	34834	1999 JQ ₁₅	1999 05 29.3	16 23.13	-11 49.7	16.8	-0.96	+	2.9	4.6/27.9	34985
(8744)	1999 05 28.3	16 19.11	-19 42.1	18.3	-0.80	+	1.5	0.5/28.1	31697	1999 DV ₆	1999 05 29.3	16 23.29	-20 59.6	16.4	-1.10	-	3.6	0.2/29.3	35085
(8618)	1999 05 28.3	16 19.17	-24 52.4	17.1	-0.82	+	3.6	1.1/29.0	31667	4058 T-1	1999 05 29.4	16 23.30	-09 16.5	17.8	-0.98	+	3.6	5.6/27.5	35051
3151 T-2	1999 05 28.3	16 19.29	-25 05.5	17.9	-1.15	+	1.2	1.5/28.8	35125	(10887)	1999 05 29.4	16 23.39	-20 16.1	17.5	-0.87	+	2.5	0.4/29.2	34793
1998 AL	1999 05 28.4	16 19.29	-14 09.0	18.6	-1.01	+	1.5	2.6/27.5	34889	1997 YX ₁	1999 05 29.4	16 23.42	-17 23.0	18.5	-0.99	+	1.4	1.5/28.9	35074
1978 RU ₈	1999 05 28.5	16 19.67	-06 15.1	18.7	-0.75	+	2.3	4.2/26.1	32041	1996 RK ₁₁	1999 05 29.4	16 23.54	-23 15.8	20.1	-1.04	+	1.9	0.6/29.7	31588
1993 FP ₃₀	1999 05 28.5	16 19.74	-17 16.9	17.7	-0.81	+	4.3	1.4/27.8	34845	1994 NV ₁	1999 05 29.4	16 23.56	-11 18.3	17.8	-0.82	+	0.6	4.4/28.1	35067
1999 JU ₈	1999 05 28.5	16 19.75	-22 57.4	17.0	-0.95	+	3.4	0.7/28.8	34983	1997 YJ ₁₀	1999 05 29.4	16 23.67	-16 03.0	17.3	-1.01	-	1.1	2.0/28.9	34887
1999 JF ₆₂	1999 05 28.5	16 19.81	-20 23.9	16.8	-1.12	-	4.1	0.4/28.5	35013	1996 UA ₁	1999 05 29.4	16 23.72	-15 07.6	17.7	-0.80	+	5.5	1.9/28.3	34867
(8222)	1999 05 28.5	16 19.97	-12 35.4	16.7	-0.99	+	3.2	4.4/27.2	31091	1998 DR ₁₄	1999 05 29.5	16 23.71	-35 07.4	19.0	-0.94	+	3.8	4.3/31.8	32060
1998 DT ₁₂	1999 05 28.5	16 20.04	-27 44.9	18.5	-1.13	+	2.3	2.8/29.4	31560	(8498)	1999 05 29.5	16 23.79	-36 35.8	17.0	-0.98	+	1.5	4.6/31.5	31496
1981 EU ₄₃	1999 05 28.6	16 20.07	-43 49.7	20.1	-1.18	+	2.5	7.1/32.0	26923	1999 JT ₉₉	1999 05 29.5	16 23.89	+02 25.6	18.3	-0.85	+	1.7	8.1/25.9	35034
1998 DE ₉	1999 05 28.6	16 20.10	-39 26.7	18.7	-1.01	-	0.4	5.5/30.8	33266	1998 FV ₈₈	1999 05 29.5	16 24.00	-27 48.2	17.6	-0.94	-	0.7	2.0/30.2	34913
1981 DQ ₃	1999 05 28.6	16 20.26	-39 21.9	16.4	-1.06	+	3.5	7.6/31.7	35057	1998 DV ₆	1999 05 29.5	16 24.02	-20 53.3	17.8	-0.98	+	5.4	0.3/29.4	34902
1998 BC ₁₉	1999 05 28.6	16 20.42	-21 15.0	16.8	-1.01	-	2.4	0.1/28.7	34896	1998 BE ₃₃	1999 05 29.5	16 24.03	-07 14.5	19.5	-0.84	+	2.4	4.1/27.4	32059
1999 JP ₆₁	1999 05 28.6	16 20.48	-17 08.9	16.3	-0.91	+	4.9	2.3/27.9	35111	1999 JN ₆₂	1999 05 29.5	16 24.08	-13 18.4	17.5	-0.93	+	4.6	3.8/28.2	35014
1999 JT ₆₁	1999 05 28.6	16 20.50	-21 35.9	17.6	-0.99	-	0.9	0.0/28.7	35013	(10827)	1999 05 29.6	16 24.24	-17 19.7	17.4	-1.12	+	3.0	1.9/29.0	34777
1999 JL ₆₁	1999 05 28.6	16 20.51	-14 11.3	17.8	-0.90	+	5.2	3.4/27.4	35012	(8487)	1999 05 29.6	16 24.32	-26 59.9	17.3	-1.08	+	3.0	1.9/30.4	31493
(10546)	1999 05 28.7	16 20.48	-11 51.8	15.3	-1.00	-	2.2	5.0/27.8	34448	(8341)	1999 05 29.6	16 24.47	-28 20.5	16.9	-1.15	+	1.9	2.6/30.5	31352
(10765)	1999 05 28.7	16 20.84	-15 38.1	15.9	-0.89	-	0.8	1.9/28.1	34761	1999 JS ₉₉	1999 05 29.6	16 24.49	+04 27.3	17.9	-0.74	+	1.5	10.0/25.5	35118
1978 TT ₇	1999 05 28.8	16 21.00	-15 48.9	16.3	-1.04	-	1.3	2.2/28.3	35056	1993 TC ₁	1999 05 29.7	16 24.52	-25 59.5	16.9	-1.17	+	0.5	1.7/30.2	34848
1996 PC ₃	1999 05 28.8	16 21.06	-56 48.4	21.0	-1.49	+	1.9	9.4/03.5	30902	1996 QM ₁	1999 05 29.7	16 24.93	-12 36.8	18.8	-1.00	+	4.1	3.5/28.4	34863
(8228)	1999 05 28.8	16 21.11	-03 40.3	16.7	-0.88	+	3.2	5.8/25.9	31093	1999 JQ ₆₂	1999 05 29.8	16 25.09	-12 15.6	17.9	-0.85	-	0.7	3.2/28.8	35014
(10688)	1999 05 28.8	16 21.16	-28 55.1	17.9	-0.84	+	3.3	2.0/30.1	34741	1994 AC ₁	1999 05 29.8	16 25.20	-31 47.6	18.3	-1.13	+	3.6	3.6/31.3	31788
1996 XJ ₂	1999 05 28.8	16 21.18	-12 27.8	19.5	-0.85	-	2.0	2.6/28.0	31391	(10670)	1999 05 29.8	16 25.39	-15 44.9	17.2	-0.89	+	3.2	2.1/29.0	34736
(10633)	1999 05 28.9	16 21.29	-11 29.3	17.7	-0.98	+	0.8	3.8/27.7	34471	1997 XH ₁₀	1999 05 29.9	16 25.45	-22 55.3	17.9	-1.14	-	0.1	0.5/30.1	35073
1992 UJ	1999 05 28.9	16 21.39	-24 40.4	19.0	-1.00	+	2.6	1.1/29.4	32049	(10581)	1999 05 29.9	16 25.54	-02 57.6	18.7	-0.79	+	1.5	6.2/27.4	34458
1990 UN ₅	1999 05 28.9	16 21.43	-15 44.5	20.3	-0.80	+	1.1	1.5/28.2	34577	1999 JB ₆₃	1999 05 29.9	16 25.75	-21 14.9	16.3	-1.16	-	6.0	0.2/30.0	35111

1998 CR ₃	1999 05 30.0	16 25.74 -21 00.7 18.4	-0.83 + 1.8	0.2/29.9	31799	1998 DO ₁	1999 05 31.2	16 30.67 -21 09.4 18.0	-1.01 - 0.1	0.3/31.1	34901
1994 TV ₁₅	1999 05 30.1	16 26.21 +14 46.8 16.6	-1.02 +10.6	17.2/19.3	34856	1996 OK	1999 05 31.2	16 30.70 -09 29.9 18.2	-1.10 + 0.7	5.9/29.7	35069
1999 JT ₆₄	1999 05 30.1	16 26.28 -17 10.5 18.0	-1.00 + 1.1	1.8/29.6	35016	1999 KL ₁₃	1999 05 31.2	16 30.81 -21 11.4 18.3	-0.93 + 3.7	0.3/31.1	35044
1999 LU ₄	1999 05 30.1	16 26.58 +11 34.1 17.8	-1.06 - 1.2	12.5/25.5	35045	(10828)	1999 05 31.2	16 30.81 -25 02.0 16.0	-1.13 + 4.0	1.6/31.7	34777
1999 JY ₉₉	1999 05 30.2	16 26.56 -06 06.9 18.1	-0.84 - 0.2	5.0/28.4	35034	1996 VK	1999 05 31.2	16 30.85 -23 58.8 17.7	-0.99 - 0.3	0.8/31.5	32245
1996 RW	1999 05 30.2	16 26.56 -22 23.0 18.9	-0.96 + 2.7	0.2/30.3	35070	1987 QE ₇	1999 05 31.2	16 30.98 -06 18.2 17.6	-0.89 + 4.3	5.4/28.7	35058
(8910)	1999 05 30.2	16 26.99 -06 43.5 16.7	-0.86 - 0.9	4.9/28.6	31925	1999 JJ ₈	1999 05 31.2	16 31.01 +08 35.3 16.8	-0.78 +20.8	15.2/18.9	34982
1998 ER ₁₃	1999 05 30.3	16 27.28 -05 58.8 18.1	-0.78 + 2.0	4.9/28.1	35077	1989 RJ ₂	1999 05 31.2	16 31.01 -22 19.6 17.2	-1.13 +10.1	0.2/31.4	34829
1998 FR ₅₇	1999 05 30.3	16 27.29 -27 08.0 17.9	-0.84 + 1.9	1.6/31.1	35077	1981 EZ ₃₅	1999 05 31.3	16 31.10 -21 36.1 19.7	-0.83 + 1.6	0.1/31.3	32739
1997 YJ ₁₄	1999 05 30.3	16 27.40 -25 43.2 19.7	-1.00 + 2.5	1.3/30.9	31591	1996 VP ₆	1999 05 31.3	16 31.25 -29 25.7 17.9	-1.06 + 2.3	2.6/01.3	35071
1994 CC ₁	1999 05 30.4	16 27.41 -30 22.2 16.8	-1.03 + 5.9	3.3/01.0	34853	1998 AL ₈	1999 05 31.4	16 31.48 -21 34.9 18.0	-0.97 + 1.4	0.1/31.4	31592
(10880)	1999 05 30.4	16 27.45 -20 48.9 17.6	-0.87 + 2.3	0.3/30.3	34791	1991 PM ₁₅	1999 05 31.4	16 31.61 -27 54.8 15.7	-0.94 + 3.1	2.9/32.0	34836
(8465)	1999 05 30.4	16 27.45 -12 57.8 20.2	-0.76 + 2.0	2.4/29.2	31488	1999 JH ₁₀₀	1999 05 31.4	16 31.74 +04 03.4 18.1	-0.72 + 4.4	7.9/26.7	35034
(10198)	1999 05 30.4	16 27.47 -22 02.9 17.1	-0.91 + 0.9	0.1/30.5	35056	1996 WU ₁	1999 05 31.5	16 31.88 -16 12.1 18.0	-0.85 - 0.7	1.8/30.9	35071
1991 VN	1999 05 30.4	16 27.74 -18 15.3 18.4	-1.01 + 2.4	1.3/30.0	35063	1993 FP ₁₉	1999 05 31.5	16 32.07 -10 24.5 19.3	-0.80 + 1.3	3.6/30.1	34500
1991 RE ₂₀	1999 05 30.5	16 27.88 -38 56.6 17.8	-1.08 + 1.5	5.7/01.8	31785	(8500)	1999 05 31.5	16 32.25 -10 26.2 17.3	-0.80 + 4.1	3.5/29.7	31496
1998 FL ₁₀₃	1999 05 30.5	16 28.24 -33 19.4 17.5	-0.92 + 1.9	3.3/01.2	31765	1975 UA ₁	1999 05 31.5	16 32.31 -03 17.9 18.9	-0.88 + 4.2	6.2/28.5	34820
(8580)	1999 05 30.6	16 28.24 -10 15.0 18.0	-0.80 - 0.1	3.3/29.3	31515	1998 DW ₃₄	1999 05 31.6	16 32.43 +03 29.1 18.3	-0.81 + 2.0	7.8/27.9	34905
1981 EM ₁₀	1999 05 30.6	16 28.29 -34 35.5 17.6	-0.92 + 1.7	4.0/01.3	32042	1999 JT ₆₃	1999 05 31.6	16 32.43 -12 53.9 16.8	-1.01 + 0.7	4.6/30.7	35111
1999 JB ₇₈	1999 05 30.6	16 28.38 -07 34.2 17.2	-0.84 - 1.1	8.1/29.3	35115	1996 XX	1999 05 31.6	16 32.67 -22 54.7 17.6	-1.11 - 4.5	0.4/31.7	34870
(10811)	1999 05 30.6	16 28.55 -13 40.9 17.6	-0.83 + 1.1	2.3/29.7	34773	(8371)	1999 05 31.6	16 32.74 -17 17.2 17.2	-0.92 + 1.0	1.8/31.2	31359
1993 TK ₁	1999 05 30.6	16 28.55 -25 52.7 16.9	-1.20 + 0.9	1.8/31.1	34848	1989 UE	1999 05 31.6	16 32.75 -22 03.8 18.3	-1.09 + 1.2	8.4/12.0	35060
1999 JN ₁₂₇	1999 05 30.6	16 28.59 -25 34.9 17.6	-0.95 + 1.6	1.4/31.2	35040	1992 WE ₄	1999 05 31.6	16 32.77 -22 42.4 17.2	-1.14 - 3.4	0.3/31.7	34844
1999 JZ ₈₀	1999 05 30.6	16 28.61 +00 04.7 17.0	-0.96 - 3.0	9.2/28.9	35115	1996 RN	1999 05 31.7	16 32.81 -32 09.2 17.4	-1.16 + 1.3	4.8/01.8	31244
1997 YT ₁₀	1999 05 30.6	16 28.64 -13 07.9 16.9	-0.91 - 0.6	3.3/29.8	35074	1996 PF	1999 05 31.7	16 32.88 -25 39.5 18.0	-1.06 + 4.4	1.5/01.3	35069
1997 XL	1999 05 30.7	16 28.60 -26 02.9 17.2	-1.16 + 0.1	1.8/31.1	35073	3827 T-3	1999 05 31.7	16 33.04 -23 19.4 20.9	-1.06 + 1.6	0.5/31.9	28313
1992 HG ₁	1999 05 30.7	16 28.66 -17 03.3 17.8	-0.96 + 4.8	2.3/30.0	34841	(10697)	1999 05 31.8	16 33.37 +01 28.8 17.6	-0.86 + 3.7	9.1/27.7	34743
1999 JY ₆₂	1999 05 30.7	16 28.75 -15 56.2 17.0	-0.91 + 6.0	3.0/29.7	35014	1994 CF ₁₄	1999 05 31.8	16 33.48 -37 38.0 16.8	-1.18 - 1.1	6.3/02.2	31385
1999 JC ₆₂	1999 05 30.7	16 28.95 -25 40.8 15.6	-1.14 - 3.4	2.1/31.0	35013	1993 FM ₄₀	1999 05 31.8	16 33.51 -18 29.5 18.2	-0.84 + 1.4	1.3/31.5	35065
1995 SR ₉	1999 05 30.8	16 29.06 -39 31.1 19.7	-0.98 + 0.9	5.0/02.1	32053	1999 JA ₁₀₀	1999 05 31.8	16 33.53 -08 47.9 18.0	-0.79 - 0.4	3.9/30.5	35034
1989 UD ₁	1999 05 30.8	16 29.25 -31 35.0 17.4	-1.16 + 1.1	3.8/32.0	31715	(10875)	1999 05 31.9	16 33.60 -04 23.3 17.4	-0.83 + 1.9	7.7/29.7	34790
1996 TY ₈	1999 05 30.8	16 29.38 -07 55.8 19.6	-1.00 + 9.0	4.7/28.0	28864	1989 GY ₁	1999 06 01.0	16 34.08 -35 00.8 18.7	-1.04 + 0.7	4.3/02.4	33543
1981 ET ₃₀	1999 05 30.9	16 29.55 -10 45.6 18.7	-0.98 + 3.0	4.9/29.4	26920	1998 CA ₁	1999 06 01.0	16 34.14 -35 26.7 16.8	-1.30 + 2.2	6.1/02.5	35076
(10818)	1999 05 30.9	16 29.71 -07 06.3 17.4	-0.78 + 2.4	4.9/28.8	34775	1998 AQ	1999 06 01.1	16 34.33 +09 59.1 17.6	-0.80 - 2.6	11.1/29.5	35074
1998 DN ₃	1999 05 30.9	16 29.73 -35 00.4 17.5	-1.06 + 1.5	4.7/01.7	31800	1999 KJ ₁	1999 06 01.1	16 34.38 -19 46.4 16.6	-0.99 - 3.4	1.0/32.0	35041
1998 DF ₁₀	1999 05 30.9	16 29.83 -00 05.4 17.9	-0.89 + 3.4	7.7/27.4	34902	1999 JO ₆₃	1999 06 01.1	16 34.59 -17 00.1 17.3	-1.02 + 5.8	2.2/31.4	35014
(10917)	1999 05 30.9	16 29.88 -28 54.7 16.7	-0.98 + 2.2	2.5/01.0	34801	1990 QK ₇	1999 06 01.1	16 34.68 -06 53.4 18.2	-0.79 + 1.5	4.6/30.2	35060
1995 OH ₁₀	1999 05 30.9	16 29.88 -25 07.3 17.5	-1.00 + 2.9	1.3/31.4	35068	1997 YG ₁₇	1999 06 01.2	16 34.85 -12 00.9 17.5	-1.01 - 2.0	4.6/31.5	35074
1992 EW ₅	1999 05 31.0	16 29.82 -15 58.1 16.9	-1.14 + 0.6	2.8/30.4	34840	(10933)	1999 06 01.2	16 34.85 -03 46.1 18.1	-0.85 + 2.8	5.5/29.7	34806
1999 JS ₇	1999 05 31.0	16 29.93 -23 17.7 17.5	-1.08 + 3.6	0.7/31.2	34982	1999 JB ₁₀₀	1999 06 01.2	16 34.88 -08 10.6 18.1	-0.84 + 1.7	5.5/30.5	35034
1998 BK ₂₅	1999 05 31.0	16 29.94 -18 06.8 17.0	-1.07 - 0.6	1.6/30.7	34896	(8463)	1999 06 01.2	16 35.06 -18 25.8 18.8	-0.81 + 1.4	1.1/31.8	31487
1997 YD ₁₀	1999 05 31.0	16 30.04 -31 39.9 16.1	-1.11 + 2.4	4.6/01.3	35074	1981 EH ₁₁	1999 06 01.3	16 35.20 -44 39.7 17.2	-1.25 + 0.5	8.7/03.5	32042
4280 T-3	1999 05 31.0	16 30.07 -14 31.5 17.7	-0.79 + 1.7	2.3/30.1	35125	4550 P-L	1999 06 01.3	16 35.25 -27 53.7 19.8	-1.18 + 1.3	2.3/02.0	17462
1999 JQ ₇₆	1999 05 31.0	16 30.27 -10 12.9 18.1	-0.97 + 2.8	5.4/29.5	35022	1996 VG ₃	1999 06 01.3	16 35.41 -19 40.6 18.2	-1.02 + 3.5	0.9/01.0	35071
1989 TO ₅	1999 05 31.0	16 30.29 -20 17.4 18.1	-1.11 + 0.5	0.7/30.9	34830	1997 XE ₂	1999 06 01.3	16 35.60 -20 31.2 17.5	-1.14 - 3.8	0.6/01.3	34882
1998 BO ₁	1999 05 31.1	16 30.24 -30 36.6 17.6	-1.14 + 1.9	3.4/01.2	35075	1998 DH ₁₅	1999 06 01.4	16 35.74 -24 29.5 17.5	-0.93 + 1.3	0.9/01.7	34903
1998 DZ	1999 05 31.1	16 30.42 -26 54.5 17.8	-1.01 + 2.1	2.1/31.8	35076	1999 JR ₇₆	1999 06 01.4	16 35.89 -09 25.0 17.0	-0.84 + 7.1	5.3/30.1	35022
1999 JK ₆₃	1999 05 31.1	16 30.49 -19 20.3 16.9	-1.10 - 1.8	1.2/31.0	35014	1979 MX ₃	1999 06 01.5	16 35.93 -21 58.7 19.0	-1.12 + 4.1	0.0/01.5	30778
(8459)	1999 05 31.1	16 30.50 -19 16.1 18.3	-0.80 + 1.7	0.7/30.8	31486	1991 BT	1999 06 01.5	16 36.25 -14 57.8 16.3	-0.97 + 4.6	3.1/31.5	34834
1998 FU ₃₈	1999 05 31.1	16 30.63 -14 43.7 18.4	-0.79 + 2.3	2.1/30.2	35077	1989 VQ ₁	1999 06 01.5	16 36.26 -09 32.7 17.5	-0.96 + 0.8	5.3/31.3	35060
1998 DZ ₄	1999 05 31.2	16 30.66 -25 12.7 18.9	-1.00 + 1.8	1.1/31.6	31740	1997 YO ₁₆	1999 06 01.5	16 36.39 -24 45.3 19.4	-1.02 + 2.8	0.9/01.9	31258

(10838)	1999 06 01.5	16 36.46	-42 33.8	16.7	-1.20	- 2.6	9.0/02.9	34780	1993 FX ₁₄	1999 06 02.8	16 41.65	-05 27.0	18.1	-0.80	+ 1.4	5.6/31.8	35065
1996 OL	1999 06 01.6	16 36.52	-18 07.4	17.2	-1.10	- 0.2	1.9/01.3	35069	1997 YG ₇	1999 06 02.9	16 41.78	-06 14.9	17.7	-0.93	- 2.9	6.6/02.0	34885
1999 JG ₁₀₁	1999 06 01.6	16 36.53	-09 34.7	18.4	-0.97	- 1.3	4.3/31.6	35035	1995 DH ₆	1999 06 02.9	16 41.86	-32 23.4	18.1	-1.11	+ 0.8	5.0/04.0	27918
1999 JV ₆₄	1999 06 01.6	16 36.62	-18 26.7	16.7	-0.91	+12.2	1.8/31.8	35016	3834 T-3	1999 06 02.9	16 41.93	-22 54.2	19.1	-1.04	+ 0.9	0.2/03.0	31269
(10768)	1999 06 01.6	16 36.71	-15 10.3	18.0	-1.09	+ 1.6	2.8/31.9	34762	1999 JR ₁₂₃	1999 06 02.9	16 41.97	-12 27.1	17.1	-0.97	- 1.4	5.2/02.2	35039
(10978)	1999 06 01.6	16 36.82	+01 04.2	17.9	-0.76	+ 3.5	8.3/28.8	34817	1998 DD ₃₃	1999 06 02.9	16 42.01	-12 11.8	18.3	-0.98	+ 2.1	3.4/01.8	35076
1999 JB ₆₄	1999 06 01.7	16 36.78	-21 29.8	16.1	-1.09	- 7.3	0.3/01.7	35111	1998 DL ₄	1999 06 02.9	16 42.15	-39 18.6	19.0	-1.06	+ 3.3	5.5/05.4	32059
1999 KO ₄	1999 06 01.7	16 36.90	-15 50.4	17.6	-0.93	+ 2.2	3.0/31.9	35042	1997 YR ₅	1999 06 02.9	16 42.15	-17 57.7	17.0	-1.08	+ 0.4	1.9/02.6	35074
1325 T-2	1999 06 01.7	16 36.91	-28 37.9	17.7	-1.00	+ 0.7	2.3/02.4	35125	1991 RT ₁₄	1999 06 03.0	16 42.19	+00 12.7	17.7	-0.82	+ 2.1	7.2/31.1	35062
(8340)	1999 06 01.7	16 36.92	-28 02.8	16.2	-0.90	+ 3.9	2.0/02.6	35056	(10667)	1999 06 03.0	16 42.37	-04 26.9	18.1	-1.15	+12.6	8.0/30.2	34736
1999 JT	1999 06 01.7	16 36.96	-01 09.4	17.5	-1.27	- 6.8	9.2/31.9	34977	1998 BE ₃₀	1999 06 03.0	16 42.39	-38 00.3	17.1	-1.03	+ 0.2	5.5/04.6	31798
1998 DN ₄	1999 06 01.7	16 36.99	-06 46.3	18.4	-0.85	+ 1.8	5.0/30.9	34901	1999 JH ₆₄	1999 06 03.0	16 42.45	-24 00.3	16.6	-1.07	- 2.8	0.9/03.2	35015
1997 WF ₃₉	1999 06 01.7	16 37.14	-22 03.8	17.6	-1.10	+ 0.4	0.0/01.8	34880	1993 FO ₁₉	1999 06 03.0	16 42.46	+02 48.4	17.8	-0.75	+ 1.8	9.3/30.7	34845
1977 DP ₂	1999 06 01.7	16 37.18	-22 44.6	18.3	-0.90	+ 1.5	0.2/01.9	31222	1999 JB ₁₀₂	1999 06 03.1	16 42.57	-00 12.4	17.5	-0.80	+ 0.3	7.4/31.7	35036
1998 BV ₂	1999 06 01.8	16 37.17	-23 23.0	18.5	-1.05	+ 1.5	0.5/01.9	31797	1996 XV	1999 06 03.1	16 42.71	-23 04.2	19.0	-0.86	+ 1.2	0.3/03.2	34586
1988 SE ₂	1999 06 01.8	16 37.25	-29 13.4	16.8	-1.13	- 2.6	3.2/02.3	35059	1999 JA ₇₅	1999 06 03.1	16 42.72	-01 05.2	16.5	-1.07	- 5.1	9.7/02.0	35114
1999 JE ₁₂₂	1999 06 01.8	16 37.36	-17 54.9	18.0	-0.87	+ 1.3	1.4/01.4	35038	1998 FQ ₆₀	1999 06 03.1	16 42.89	-23 23.6	18.7	-0.83	+ 1.5	0.3/03.3	34217
1996 TC ₅₄	1999 06 01.9	16 37.60	-26 46.9	19.5	-1.03	+ 1.2	1.6/02.4	31792	1999 JG ₆₄	1999 06 03.1	16 42.91	-23 22.4	16.1	-1.04	- 3.4	0.6/03.2	35015
(8800)	1999 06 01.9	16 37.62	-27 54.5	19.4	-0.85	+ 1.5	1.6/02.6	31899	(10837)	1999 06 03.2	16 42.91	+09 14.2	16.8	-0.84	+ 3.3	10.6/29.2	34780
1999 JW ₁₀₀	1999 06 01.9	16 37.66	+01 04.8	17.2	-0.85	- 0.9	9.6/30.7	35035	1991 EO ₂	1999 06 03.2	16 42.94	-25 05.3	16.7	-1.06	+ 2.4	1.3/03.5	35062
1998 DJ ₁₀	1999 06 01.9	16 37.66	-24 58.9	18.2	-0.89	+ 1.7	0.9/02.3	35076	1991 RA ₁₈	1999 06 03.2	16 43.05	-19 25.6	18.0	-0.93	+ 2.6	1.0/02.9	35062
(10874)	1999 06 01.9	16 37.82	-22 49.3	17.1	-1.05	+ 1.6	0.3/02.0	34790	1996 XQ ₁₉	1999 06 03.2	16 43.08	-22 26.7	17.8	-0.91	+ 2.4	0.1/03.3	32311
1997 WH ₁₃	1999 06 01.9	16 37.89	-28 51.7	20.0	-1.12	+ 3.2	2.5/02.8	31281	1998 EA ₁₃	1999 06 03.2	16 43.09	-21 15.4	17.3	-0.83	+ 0.8	0.3/03.1	35077
1999 JN ₁₀₀	1999 06 01.9	16 37.89	-01 31.3	18.1	-0.76	+ 3.9	7.5/29.5	35035	1999 JX ₁₀₃	1999 06 03.2	16 43.35	+02 12.4	18.0	-0.89	- 1.3	10.6/31.9	35036
1996 TG ₁₁	1999 06 01.9	16 38.02	-09 46.5	17.5	-0.95	+ 9.2	6.2/30.4	34865	1992 EY ₁₄	1999 06 03.3	16 43.39	-11 01.8	19.0	-0.79	+ 2.0	3.4/01.9	33681
1981 DW ₂	1999 06 02.0	16 38.20	-23 24.5	17.8	-1.04	+ 5.7	0.6/02.2	34822	1999 JB ₈₀	1999 06 03.3	16 43.41	-14 58.6	16.7	-1.39	- 8.0	3.2/03.3	35025
(10931)	1999 06 02.0	16 38.27	-17 21.2	16.6	-0.94	- 0.5	1.9/01.6	34805	1998 DU ₂	1999 06 03.3	16 43.42	-14 59.8	19.5	-0.96	- 0.2	2.3/02.7	32683
(8343)	1999 06 02.0	16 38.41	-19 32.8	17.3	-0.88	+ 2.0	0.9/01.8	31353	1999 JE ₆₄	1999 06 03.3	16 43.51	-21 04.8	15.8	-0.97	- 3.3	0.5/03.3	35015
1999 JX ₇₄	1999 06 02.1	16 38.51	+00 14.9	18.0	-0.90	- 0.1	8.5/30.9	35021	(10798)	1999 06 03.3	16 43.63	-21 29.1	15.5	-1.06	- 4.0	0.4/03.3	34769
1993 GG ₁	1999 06 02.1	16 38.65	-22 27.9	16.6	-0.88	- 0.5	0.1/02.2	35065	1981 DA ₂	1999 06 03.3	16 43.70	-28 53.3	18.3	-0.86	+ 2.5	1.9/04.2	32042
1999 JP ₈₄	1999 06 02.1	16 38.67	+01 45.8	18.1	-0.87	+ 2.0	8.6/30.1	35029	(10770)	1999 06 03.4	16 43.85	-09 08.5	17.9	-0.79	+ 2.5	4.2/01.7	34762
1994 CD ₇	1999 06 02.1	16 38.69	-09 54.2	18.9	-0.85	- 0.4	5.7/01.1	33240	1999 JP ₁₀₀	1999 06 03.4	16 43.86	-07 08.6	18.0	-0.85	+ 1.1	5.4/01.8	35035
4792 P-L	1999 06 02.2	16 39.06	-25 19.0	18.4	-0.91	+ 1.2	1.1/02.6	35124	1995 SC ₂₈	1999 06 03.4	16 43.88	-17 39.3	17.2	-0.89	+ 5.1	1.7/02.7	34859
1998 EG	1999 06 02.2	16 39.06	-11 30.3	18.2	-0.91	+ 0.7	4.2/01.1	35076	1998 BF ₁₈	1999 06 03.4	16 44.06	-25 02.7	19.6	-0.98	+ 1.4	0.9/03.8	31798
1998 FQ ₈₇	1999 06 02.3	16 39.28	-36 49.8	16.9	-1.00	- 1.4	5.0/03.5	34218	1992 WY ₃	1999 06 03.4	16 44.13	-16 22.9	17.6	-1.01	- 2.6	2.4/03.1	35065
1996 RS ₂₄	1999 06 02.3	16 39.34	-10 07.5	17.3	-0.95	+ 2.8	5.7/31.7	34864	1998 DF ₂₀	1999 06 03.5	16 44.29	-02 58.2	18.6	-0.86	+ 2.1	6.2/01.1	35076
(10690)	1999 06 02.3	16 39.52	-27 54.1	17.4	-0.86	+ 3.0	1.9/03.1	34741	1992 UZ ₆	1999 06 03.5	16 44.35	-24 21.6	17.7	-1.01	+ 2.8	0.7/03.8	35064
1990 OD ₅	1999 06 02.3	16 39.63	-18 48.4	16.4	-0.85	+ 5.8	1.4/01.8	34831	1996 XQ ₁	1999 06 03.5	16 44.51	-06 44.9	17.7	-0.89	- 3.7	5.0/02.8	34870
1996 NX ₃	1999 06 02.4	16 39.94	-29 28.4	17.3	-1.12	+ 3.2	3.2/03.4	35069	1994 AE ₉	1999 06 03.6	16 44.85	-23 51.0	18.0	-1.03	+ 2.5	0.7/03.8	23982
(8109)	1999 06 02.4	16 39.95	+08 35.4	17.6	-1.12	- 6.7	12.5/02.6	30968	1979 ME ₂	1999 06 03.6	16 44.96	-10 50.1	19.5	-1.02	+ 0.4	4.9/02.5	30778
(10805)	1999 06 02.4	16 40.04	-15 37.0	16.9	-0.97	- 2.2	2.3/02.0	34771	(10691)	1999 06 03.7	16 45.12	-21 23.7	18.3	-0.83	+ 1.4	0.3/03.6	34742
1979 QH ₄	1999 06 02.5	16 40.48	-34 48.3	18.1	-0.97	+ 1.9	3.8/04.1	34173	1998 FR ₅₅	1999 06 03.7	16 45.14	-04 13.4	19.2	-0.76	+ 1.7	5.1/01.5	32320
1999 JZ ₆₃	1999 06 02.6	16 40.48	-12 27.7	17.9	-0.94	+ 2.4	3.6/01.4	35015	1998 BH ₈	1999 06 03.7	16 45.26	-07 18.9	16.7	-0.91	- 1.6	6.3/02.6	35075
1993 FQ ₁₀	1999 06 02.6	16 40.84	-33 59.4	18.2	-0.98	0.0	3.6/03.8	32306	(10863)	1999 06 03.7	16 45.32	-04 23.5	18.1	-0.80	+ 3.2	5.8/01.2	34787
1992 ME	1999 06 02.7	16 40.88	+21 16.1	16.1	-0.97	-13.5	23.8/07.1	35064	1987 UN ₁	1999 06 03.7	16 45.35	-14 24.7	17.9	-0.90	+ 5.0	2.6/02.6	35059
(8673)	1999 06 02.7	16 40.92	-13 08.5	17.3	-0.89	+ 1.9	3.3/01.6	31680	1120 T-3	1999 06 03.8	16 45.50	-30 05.2	17.9	-0.97	+ 2.8	2.5/04.8	31826
1990 SS ₆	1999 06 02.7	16 41.05	-16 21.5	17.7	-1.12	+ 1.9	2.6/02.1	35060	1999 JO ₁₂₇	1999 06 03.8	16 45.51	-17 52.0	17.7	-1.05	- 2.5	1.6/03.6	35040
1999 JQ ₈₄	1999 06 02.8	16 41.26	+04 06.9	17.4	-0.90	- 0.8	10.6/31.9	35029	1998 CN ₁	1999 06 03.8	16 45.78	-28 50.6	16.4	-1.00	+ 0.3	2.5/04.5	31594
1991 RY ₄	1999 06 02.8	16 41.41	-20 09.0	18.7	-0.94	+ 2.4	0.7/02.6	35062	1996 TO ₆	1999 06 03.8	16 45.84	-29 26.3	19.1	-1.17	+ 6.2	2.8/04.9	31389
1997 XX	1999 06 02.8	16 41.54	-25 39.8	16.1	-1.21	- 5.5	1.6/02.9	34882	1993 FW ₁₅	1999 06 03.9	16 45.90	-33 12.8	17.2	-0.99	- 1.3	3.9/04.7	32228
1999 JQ ₁₀₀	1999 06 02.8	16 41.59	-07 15.2	18.3	-0.79	+ 3.3	5.0/31.8	35035	1998 BZ ₃₂	1999 06 03.9	16 46.12	-34 49.8	18.0	-1.21	+ 0.3	5.7/05.0	32970

(10777)	1999 06 03.9	16 46.13	-10 19.2	16.9	-0.95	+	0.7	5.6/02.8	34764	1981 ES ₃₂	1999 06 05.2	16 51.21	-31 28.6	19.7	-1.17	+	3.5	3.6/06.3	22271
(8457)	1999 06 03.9	16 46.18	-25 25.0	17.6	-0.97	+	2.5	1.0/04.3	31486	1988 VH ₁	1999 06 05.2	16 51.23	-20 48.2	18.5	-0.96	+	2.5	0.5/05.0	35059
5087 T-2	1999 06 03.9	16 46.19	-19 36.5	17.7	-0.81	+	3.8	0.8/03.6	35125	1999 KN ₁₄	1999 06 05.2	16 51.28	-15 06.9	17.9	-0.91	+	1.6	3.5/04.5	35044
1994 FC	1999 06 03.9	16 46.19	-36 19.9	18.1	-1.16	-	0.8	4.4/05.0	31964	1996 PC ₄	1999 06 05.2	16 51.46	-09 22.6	17.6	-0.95	-	0.8	6.8/04.3	34862
1998 BT ₃₃	1999 06 03.9	16 46.24	-20 46.7	17.4	-1.10	-	0.3	0.6/03.9	35075	1981 EZ ₄₀	1999 06 05.3	16 51.63	-31 45.9	18.3	-1.21	+	1.2	3.9/06.0	34482
1995 SG ₅	1999 06 04.0	16 46.29	-44 14.2	16.8	-1.28	-	3.1	8.2/04.8	32053	1999 KG ₁₅	1999 06 05.3	16 51.80	-15 44.1	17.6	-0.87	-	1.1	2.3/04.9	35045
1996 VY	1999 06 04.0	16 46.30	-09 50.0	17.7	-0.87	+	8.6	5.6/01.6	34868	1999 KP ₁₄	1999 06 05.3	16 51.92	-17 02.6	17.3	-0.99	+	3.2	2.8/04.7	35044
1993 FS ₃₅	1999 06 04.1	16 46.80	-25 03.2	17.4	-0.89	+	0.6	0.9/04.4	35065	(10952)	1999 06 05.3	16 51.95	-02 28.0	16.4	-0.78	+	4.8	8.4/02.1	34810
1996 XR	1999 06 04.1	16 46.97	-23 24.0	17.5	-0.98	+	1.0	0.4/04.3	35071	1996 OF	1999 06 05.3	16 51.97	-16 10.0	19.1	-1.09	-	0.6	2.6/04.9	35069
1995 ES	1999 06 04.1	16 47.08	-34 08.6	18.6	-1.23	+	0.9	4.8/05.3	30901	(8390)	1999 06 05.4	16 52.18	-20 27.3	16.4	-0.85	+	1.7	0.8/05.2	31363
1981 EG ₃₉	1999 06 04.2	16 47.10	-29 47.1	18.3	-0.91	+	1.2	2.4/05.0	31580	1981 ET ₂₉	1999 06 05.4	16 52.26	-19 24.6	18.6	-0.81	+	2.3	1.0/05.1	35057
1993 RP ₆	1999 06 04.2	16 47.19	-28 28.4	17.3	-1.15	+	1.8	2.8/04.8	34847	1998 EX ₁₃	1999 06 05.4	16 52.26	-16 58.3	17.2	-0.84	+	0.6	1.9/04.9	35077
1996 VQ ₁	1999 06 04.2	16 47.40	-38 53.3	16.9	-1.09	+	4.0	6.6/06.6	31792	1991 UC ₃	1999 06 05.5	16 52.85	-18 14.4	18.2	-0.93	+	2.0	1.5/05.1	35063
1999 JK ₆₄	1999 06 04.3	16 47.43	-23 15.8	16.3	-0.98	-	3.1	0.4/04.3	35015	(10932)	1999 06 05.6	16 52.94	-03 40.7	17.8	-0.93	+	2.7	6.6/03.4	34805
1981 EJ ₁₈	1999 06 04.3	16 47.44	-28 51.8	19.0	-0.86	+	1.4	1.8/05.0	32509	1998 BZ ₆	1999 06 05.7	16 53.58	-07 30.6	17.3	-0.90	-	1.5	5.2/04.9	34893
1998 FA ₉₁	1999 06 04.3	16 47.53	-19 40.5	17.9	-0.87	-	0.1	0.9/04.1	35077	1979 MT ₄	1999 06 05.8	16 53.83	-29 31.1	17.7	-1.04	+	4.7	2.3/06.8	35057
(8333)	1999 06 04.3	16 47.53	-34 59.5	16.3	-1.07	-	0.4	4.9/05.3	31350	(10963)	1999 06 05.8	16 53.92	-07 00.2	17.8	-0.78	+	2.1	5.4/04.1	34813
1999 JA ₈₁	1999 06 04.3	16 47.54	-07 10.6	17.0	-0.96	-	5.1	6.8/03.9	35026	1993 QE ₃	1999 06 05.8	16 54.04	-16 33.3	18.4	-1.13	+	1.4	3.1/05.3	35066
1990 QX ₈	1999 06 04.3	16 47.58	-25 05.1	17.5	-0.92	+	1.1	0.9/04.6	35060	1998 DK ₂	1999 06 06.0	16 54.44	-09 55.4	18.5	-0.84	-	1.6	4.1/05.2	34901
(8240)	1999 06 04.3	16 47.91	-18 13.9	17.3	-1.01	-	0.2	1.8/04.1	31095	1981 EZ ₃₃	1999 06 06.0	16 54.69	-23 18.8	18.8	-0.82	+	2.1	0.2/06.1	25972
1989 UO	1999 06 04.4	16 47.83	-22 26.8	17.9	-1.07	+	0.8	0.0/04.4	35060	1996 TH ₄₈	1999 06 06.0	16 54.90	-24 28.1	18.0	-1.08	+	2.1	0.7/06.3	34866
1981 EE ₁₈	1999 06 04.4	16 47.88	-28 55.6	19.6	-0.86	+	1.2	1.8/05.1	32042	1999 JC ₈₁	1999 06 06.1	16 54.93	+01 02.3	16.2	-0.82	+	3.9	10.5/02.7	35026
1992 DY	1999 06 04.4	16 47.90	-14 42.8	15.7	-1.05	-	1.8	3.9/03.9	35063	1983 PM ₁	1999 06 06.1	16 54.94	-25 47.0	16.4	-1.04	+	4.9	1.3/06.5	34826
1981 EY ₄₅	1999 06 04.4	16 47.99	-27 35.7	18.1	-0.85	+	1.7	1.4/05.0	22271	1995 UR ₅	1999 06 06.1	16 55.00	-07 53.5	17.1	-0.81	+	3.8	5.1/04.1	27731
1989 SY ₂	1999 06 04.4	16 48.04	-14 56.2	16.9	-0.81	+	0.3	2.6/03.7	35060	(8756)	1999 06 06.1	16 55.14	-22 22.2	18.2	-0.80	+	1.1	0.1/06.1	31700
1991 XE ₂	1999 06 04.5	16 48.26	-24 25.3	16.2	-1.00	-	1.6	0.7/04.6	34839	1998 BF ₄₄	1999 06 06.2	16 55.62	-16 43.0	20.0	-0.93	-	0.6	1.8/05.9	31430
1989 WG	1999 06 04.5	16 48.31	-20 19.9	17.6	-1.09	-	0.2	0.8/04.3	34830	1979 MO ₈	1999 06 06.2	16 55.62	-29 59.6	18.3	-0.93	+	4.1	2.6/07.2	30779
(8433)	1999 06 04.5	16 48.49	-39 01.8	16.9	-1.16	-	1.7	6.3/05.7	31372	1994 TV ₃	1999 06 06.3	16 55.70	+17 21.1	16.5	-0.98	+	9.7	19.9/26.0	34855
(10760)	1999 06 04.6	16 48.69	-20 01.4	17.0	-1.14	0.0	0.0	1.0/04.4	34760	1998 FB ₆₁	1999 06 06.3	16 55.78	-23 28.0	17.4	-0.85	+	1.3	0.3/06.4	35077
(8332)	1999 06 04.6	16 48.73	-23 03.3	17.4	-1.05	+	3.6	0.2/04.7	31350	1994 AD ₃	1999 06 06.3	16 55.79	-19 02.0	19.3	-1.04	+	0.8	1.3/06.0	31788
1999 KQ ₁₄	1999 06 04.6	16 48.73	-19 52.5	17.4	-0.90	-	2.8	0.8/04.5	35044	1999 KT ₁₄	1999 06 06.3	16 55.82	-20 04.1	16.8	-1.02	-	0.3	1.2/06.2	35044
(10725)	1999 06 04.6	16 48.80	-24 32.0	17.3	-1.14	-	1.0	0.8/04.8	34750	(8521)	1999 06 06.3	16 55.84	-29 41.3	17.5	-1.25	-	1.0	3.0/06.7	31501
1993 BR ₂	1999 06 04.6	16 49.00	-29 11.9	18.3	-0.96	+	1.3	2.1/05.4	35065	2733 P-L	1999 06 06.4	16 56.14	-20 05.2	18.7	-0.99	+	0.8	0.9/06.2	32728
(10881)	1999 06 04.7	16 49.13	-06 34.8	16.4	-0.84	+	6.6	7.2/02.0	34791	1999 KU ₁₄	1999 06 06.4	16 56.20	-16 43.9	17.8	-0.99	+	1.7	2.7/05.9	35044
1993 FA ₂₃	1999 06 04.7	16 49.34	-16 55.7	17.4	-0.83	+	2.6	1.8/04.1	35065	1997 AZ ₁	1999 06 06.4	16 56.26	-30 32.0	18.0	-0.87	+	0.8	2.3/07.1	32312
1999 JU ₁₂₂	1999 06 04.7	16 49.45	-17 56.8	16.5	-0.98	+	5.4	2.0/04.1	35039	1993 FC ₄₂	1999 06 06.4	16 56.38	-36 19.3	17.6	-1.00	-	0.2	4.8/07.5	32306
1998 DD ₁₅	1999 06 04.7	16 49.55	-06 37.5	19.2	-0.88	+	2.2	4.9/03.0	35076	1992 UU ₆	1999 06 06.5	16 56.52	-02 44.4	17.9	-0.89	+	1.0	6.6/04.6	35064
(8215)	1999 06 04.8	16 49.62	-23 22.6	16.2	-1.05	+	0.4	0.4/04.9	31090	1995 SO ₁	1999 06 06.5	16 56.64	-37 43.7	18.2	-0.96	+	4.5	4.2/08.6	29664
1997 AP ₁	1999 06 04.9	16 49.91	-10 42.6	17.4	-0.83	-	0.7	3.7/03.9	34871	1998 BT ₃₅	1999 06 06.5	16 56.66	-31 27.4	17.3	-1.20	+	1.3	3.5/07.3	31556
(10985)	1999 06 04.9	16 49.93	-27 21.4	16.3	-1.17	-	1.5	2.4/05.2	34819	1981 EQ ₁₅	1999 06 06.6	16 56.89	-18 35.3	19.2	-0.93	+	2.8	1.3/06.2	31780
1998 DQ ₉	1999 06 04.9	16 50.01	-22 39.6	17.0	-0.90	-	1.3	0.1/04.9	35076	1999 JS ₈₄	1999 06 06.6	16 56.91	-07 50.1	17.2	-0.84	-	2.7	4.7/05.9	35029
1981 EN ₁₁	1999 06 04.9	16 50.01	-32 06.7	21.8	-1.24	+	2.4	3.5/06.0	26917	1998 BP ₂₅	1999 06 06.6	16 57.34	-18 48.3	17.5	-0.84	+	0.7	1.4/06.4	35075
4615 P-L	1999 06 04.9	16 50.02	-20 34.4	19.0	-0.82	+	0.9	0.5/04.7	35048	1996 SD ₇	1999 06 06.7	16 57.34	-22 09.6	18.1	-1.03	+	3.7	0.2/06.7	29307
1992 PM	1999 06 04.9	16 50.28	-20 24.3	18.3	-1.01	+	2.4	0.7/04.8	35064	(8419)	1999 06 06.7	16 57.34	-09 53.9	16.0	-0.86	+	1.6	5.2/05.4	35056
1981 EV ₃₈	1999 06 04.9	16 50.35	-28 07.5	18.6	-0.87	+	1.9	1.9/05.6	26922	1996 SV ₇	1999 06 06.7	16 57.45	-27 47.3	17.5	-1.10	+	3.3	2.1/07.3	29307
1998 BT ₂	1999 06 05.0	16 50.74	-19 58.8	18.9	-1.06	+	0.1	0.9/04.9	31263	(8435)	1999 06 06.7	16 57.71	-28 18.6	17.7	-1.20	+	0.2	2.2/07.2	31373
1998 ES ₈	1999 06 05.1	16 50.83	-16 23.8	18.4	-0.88	+	2.1	2.0/04.5	34906	(8468)	1999 06 06.8	16 57.76	-18 55.6	17.7	-0.83	+	0.8	1.4/06.5	31488
1997 WD ₈	1999 06 05.1	16 50.86	-18 59.2	18.7	-1.07	+	1.7	1.4/04.8	31151	1998 AX	1999 06 06.8	16 57.97	-32 26.5	17.0	-1.14	+	1.5	3.7/07.7	31592
1981 ER ₉	1999 06 05.1	16 50.95	-27 47.3	18.8	-0.86	+	2.3	1.7/05.8	26916	1998 DG ₃₄	1999 06 06.8	16 57.97	-27 53.5	18.0	-1.12	+	0.8	2.0/07.2	32060
(8681)	1999 06 05.1	16 51.12	-18 53.7	17.4	-0.83	+	1.3	1.1/04.8	31682	1998 FM ₁₅	1999 06 06.8	16 57.99	-20 16.7	17.6	-0.92	+	1.6	0.9/06.6	35077
1998 BK ₂	1999 06 05.2	16 51.20	-17 19.7	17.9	-1.06	+	1.2	2.2/04.7	35075	1995 PQ	1999 06 06.8	16 58.01	-05 47.5	18.4	-0.96	-	0.6	5.6/05.4	29318

(8233)	1999 06 06.8	16 58.04	-29 06.8	17.1	-1.16	0.0	2.6/07.3	31094	1997 AA ₂₂	1999 06 08.2	17 03.87	-37 16.0	18.8	-0.99	+	1.3	4.4/09.5	32057
1999 JD ₁₂₄	1999 06 06.8	16 58.12	-15 37.5	16.4	-0.98	- 3.5	3.8/06.7	35039	1978 VR ₁₀	1999 06 08.3	17 04.00	-25 15.9	17.1	-1.02	- 2.6	0.9/08.4	35057	
1998 BE ₂₆	1999 06 06.8	16 58.13	-07 34.1	18.7	-0.80	+ 1.6	4.6/05.3	35075	1998 BS ₁₅	1999 06 08.3	17 04.11	-33 08.2	17.1	-1.21	+ 1.7	3.9/09.2	32059	
1108 T-1	1999 06 06.8	16 58.24	-32 03.0	18.7	-1.20	+ 1.5	3.8/07.7	27938	2849 P-L	1999 06 08.3	17 04.24	-25 18.6	19.7	-1.11	+ 1.1	1.2/08.5	34264	
1979 MA ₅	1999 06 06.9	16 58.24	-23 36.7	17.3	-0.87	+ 3.4	0.3/07.0	35057	1996 UK ₁	1999 06 08.4	17 04.54	-25 27.3	17.0	-1.12	- 0.2	1.1/08.6	35070	
(8537)	1999 06 06.9	16 58.30	-09 04.8	16.2	-0.80	+ 3.1	4.9/05.3	31504	(8516)	1999 06 08.4	17 04.73	-26 39.5	17.4	-0.98	- 0.2	1.3/08.7	31500	
1994 CY ₁₁	1999 06 06.9	16 58.49	-27 53.7	19.7	-1.04	+ 1.0	1.7/07.4	23864	1999 KE ₁₅	1999 06 08.5	17 04.97	-16 00.5	16.6	-0.95	+ 1.7	2.7/08.0	35045	
(10934)	1999 06 06.9	16 58.50	-20 21.0	17.2	-0.82	+ 0.4	0.7/06.8	34806	1996 VQ ₈	1999 06 08.5	17 05.21	-17 47.7	17.7	-1.03	+ 1.9	2.0/08.2	32055	
1992 EL ₉	1999 06 06.9	16 58.55	-17 50.8	18.4	-0.80	+ 0.3	1.4/06.6	35063	1998 BY ₈	1999 06 08.5	17 05.23	-41 18.4	18.9	-1.20	+ 2.3	6.7/10.4	31593	
1998 DQ ₁₅	1999 06 07.0	16 58.70	-12 17.6	18.3	-0.78	+ 2.6	3.2/05.9	35076	1982 UV ₆	1999 06 08.6	17 05.51	-16 54.6	18.3	-0.88	+ 2.5	1.7/08.1	32299	
1996 VL ₃	1999 06 07.0	16 58.71	-22 01.0	17.5	-0.96	+ 2.3	0.2/07.0	35071	1991 VJ ₆	1999 06 08.6	17 05.53	-08 44.2	18.1	-0.86	+ 2.8	4.8/07.2	35063	
1985 PL ₁	1999 06 07.0	16 58.75	-06 18.3	18.2	-0.82	+ 3.1	5.7/05.0	35058	1996 PQ	1999 06 08.7	17 05.71	-11 38.8	18.3	-1.02	+ 0.5	4.4/07.9	35069	
1998 FG ₂₈	1999 06 07.0	16 58.77	-23 09.9	17.9	-0.91	+ 1.6	0.2/07.1	32064	4232 T-2	1999 06 08.7	17 05.75	-23 42.3	17.9	-1.06	0.0	0.3/08.8	35125	
1981 EU ₁₁	1999 06 07.1	16 59.16	-43 02.5	18.3	-1.14	+ 0.5	9.1/08.7	26917	1994 EP ₃	1999 06 08.7	17 05.86	-41 06.8	17.2	-1.20	- 1.0	6.3/09.9	31725	
(10668)	1999 06 07.1	16 59.23	-01 03.8	16.5	-0.89	- 0.8	8.9/05.9	34736	1989 YA ₂	1999 06 08.7	17 05.92	-26 02.4	17.7	-1.04	+ 2.9	1.1/09.1	31784	
6528 P-L	1999 06 07.2	16 59.50	-18 41.9	17.4	-0.87	+ 0.9	1.5/06.9	35049	1998 BZ ₂₂	1999 06 08.7	17 05.99	-21 19.7	17.7	-0.98	- 0.2	0.6/08.7	34896	
1993 BR ₄	1999 06 07.2	16 59.64	-24 15.4	17.6	-0.93	+ 1.4	0.6/07.4	35065	1996 YX ₂	1999 06 08.7	17 06.03	-23 29.5	19.6	-0.81	+ 0.8	0.2/08.8	34871	
1998 BQ ₄₅	1999 06 07.2	16 59.69	-07 07.3	17.7	-0.88	+ 0.6	5.6/06.0	34899	1998 BL ₈	1999 06 08.7	17 06.04	-47 32.4	16.0	-1.37	+ 1.0	11.8/10.3	31798	
(8469)	1999 06 07.3	16 59.87	-37 04.4	17.5	-1.08	+ 0.2	5.3/08.3	31489	1993 TE ₃₄	1999 06 08.8	17 06.07	-15 11.7	17.1	-1.06	+ 1.1	3.8/08.2	35066	
(8297)	1999 06 07.3	17 00.05	-16 18.4	17.2	-1.07	+ 1.5	2.8/06.8	31218	1996 PA ₇	1999 06 08.8	17 06.10	-16 11.7	17.3	-1.28	- 6.0	2.5/08.8	35070	
1991 GV ₄	1999 06 07.3	17 00.07	-17 51.8	17.2	-0.94	+ 2.2	2.3/06.9	34835	1996 TN ₄₆	1999 06 08.9	17 06.39	-38 58.6	18.9	-1.12	+ 1.2	4.8/10.2	31974	
1981 EM ₁₁	1999 06 07.3	17 00.20	-30 28.8	19.5	-1.15	+ 3.4	3.2/08.2	26917	1991 GK ₅	1999 06 08.9	17 06.43	-26 18.1	18.2	-1.08	+ 0.8	1.2/09.2	31583	
1998 CC ₂	1999 06 07.4	17 00.53	-30 13.9	18.7	-1.05	+ 2.1	2.5/08.2	32059	4188 T-2	1999 06 08.9	17 06.77	-19 13.5	18.4	-0.92	+ 0.5	1.3/08.7	35125	
1997 YY ₂	1999 06 07.4	17 00.70	-21 50.6	16.8	-1.13	+ 1.2	0.4/07.4	34884	1997 CQ ₁	1999 06 09.0	17 07.06	+01 22.1	18.9	-0.74	- 0.4	6.5/07.3	35072	
1986 QG ₃	1999 06 07.5	17 00.66	-29 59.9	17.2	-1.02	+ 0.3	2.6/08.0	32044	1996 QU	1999 06 09.0	17 07.26	-54 58.0	18.8	-1.66	+ 2.6	11.1/11.9	31791	
(8581)	1999 06 07.5	17 00.77	-22 50.3	17.2	-0.92	+ 0.3	0.0/07.5	31515	1998 FX ₆₈	1999 06 09.0	17 07.27	-08 55.6	17.1	-0.67	+ 2.9	4.0/07.5	32323	
(8480)	1999 06 07.6	17 01.05	-25 18.7	17.6	-0.97	+ 1.1	0.8/07.8	31491	1997 XM ₅	1999 06 09.1	17 07.23	-28 32.7	17.1	-1.13	+ 6.2	2.4/09.8	34883	
(8542)	1999 06 07.6	17 01.08	-22 09.6	17.2	-1.08	+ 2.4	0.2/07.6	31505	1998 FM ₁₃₅	1999 06 09.1	17 07.25	-19 15.5	17.6	-0.82	+ 2.1	1.2/08.8	35078	
(9450)	1999 06 07.6	17 01.13	-30 01.0	17.8	-1.24	+ 1.1	3.1/08.2	32641	(8724)	1999 06 09.1	17 07.61	-25 58.0	17.7	-1.10	+ 0.9	1.2/09.4	31693	
2100 T-2	1999 06 07.6	17 01.18	-01 37.2	19.6	-0.75	+ 2.5	6.1/05.2	26186	1999 KY ₁₄	1999 06 09.1	17 07.69	-28 22.5	15.6	-1.01	+ 3.6	2.9/09.8	35045	
(10884)	1999 06 07.6	17 01.32	-18 42.0	17.0	-0.96	+ 0.4	1.5/07.4	34792	1993 FF ₄₀	1999 06 09.2	17 07.65	-06 51.1	17.8	-0.80	+ 1.6	5.4/07.7	35065	
1996 RR ₃	1999 06 07.6	17 01.37	-28 14.2	18.4	-1.08	+ 1.0	2.3/08.1	34863	(10909)	1999 06 09.2	17 07.66	-27 25.8	16.0	-1.22	- 5.3	2.0/09.2	34799	
6055 P-L	1999 06 07.7	17 01.67	-25 34.8	20.0	-1.10	+ 1.6	1.0/08.0	31436	1996 TQ ₁	1999 06 09.2	17 07.72	-19 34.5	18.2	-1.07	+ 1.7	1.3/09.0	35070	
1992 EP ₈	1999 06 07.8	17 01.87	-22 53.8	16.8	-1.10	- 1.6	0.1/07.8	34840	1990 SH ₇	1999 06 09.2	17 07.74	-21 41.4	17.7	-0.90	+ 0.2	0.4/09.1	35060	
1998 FV ₂₀	1999 06 07.8	17 01.91	-21 37.6	18.1	-1.04	+ 0.8	0.4/07.7	32317	1996 XL ₂₉	1999 06 09.2	17 08.12	-23 34.7	20.0	-1.03	+ 0.7	0.2/09.3	30786	
1994 GP	1999 06 07.8	17 02.33	-30 45.6	15.9	-1.04	- 2.0	3.3/08.3	35067	1996 VB ₆	1999 06 09.3	17 08.07	-19 26.3	17.6	-0.88	+ 0.6	1.1/09.1	35071	
1998 CP ₁	1999 06 07.9	17 02.27	-17 05.2	17.2	-1.10	+ 2.1	2.7/07.4	34900	1089 T-1	1999 06 09.3	17 08.28	-36 22.8	18.2	-0.97	+ 1.0	4.2/10.4	32092	
1997 AF	1999 06 07.9	17 02.56	-18 11.3	17.6	-1.05	- 0.5	1.7/07.7	35071	1993 TO ₂₉	1999 06 09.3	17 08.32	-12 25.6	19.5	-1.05	+ 2.4	4.4/08.4	34191	
1999 JG ₁₂₄	1999 06 07.9	17 02.71	-15 23.1	15.7	-0.80	+ 7.9	3.6/06.8	35039	(8168)	1999 06 09.3	17 08.50	-01 10.3	17.5	-1.01	+ 5.8	7.9/06.8	31079	
1975 SG ₁	1999 06 08.0	17 02.76	-35 11.3	19.0	-1.12	- 0.7	4.4/08.7	32297	1995 TW	1999 06 09.4	17 08.54	-15 19.8	20.4	-0.84	+ 5.7	2.2/08.4	26568	
1998 DL ₈	1999 06 08.0	17 02.82	-18 05.2	17.8	-0.89	+ 2.4	1.7/07.6	35076	2272 T-2	1999 06 09.4	17 08.60	-35 01.2	16.1	-1.25	+ 0.4	5.5/10.2	31825	
(9398)	1999 06 08.0	17 02.94	-21 27.5	18.0	-0.81	+ 1.4	0.4/07.9	32629	1981 DJ	1999 06 09.5	17 08.99	-16 55.3	18.0	-0.80	+ 3.3	2.0/08.9	35057	
(10965)	1999 06 08.1	17 03.08	-19 38.2	17.4	-0.84	+ 1.3	1.1/07.8	34813	1996 SC ₇	1999 06 09.5	17 09.00	-37 54.9	18.8	-1.17	- 1.4	5.1/10.1	31973	
1995 WO ₄₂	1999 06 08.1	17 03.09	-37 35.6	17.8	-1.05	- 2.6	4.5/08.6	32310	1996 XD ₆	1999 06 09.5	17 09.36	-20 18.2	18.3	-0.87	- 2.6	0.8/09.5	28871	
(8545)	1999 06 08.1	17 03.17	-25 34.4	17.9	-1.09	+ 3.6	1.1/08.4	31506	4194 T-1	1999 06 09.6	17 09.50	-10 27.2	17.7	-1.01	+ 1.1	5.8/08.7	35124	
3237 T-2	1999 06 08.1	17 03.22	-34 13.5	19.7	-0.93	+ 0.1	3.2/09.0	32344	1996 TR ₄₁	1999 06 09.6	17 09.56	-18 43.6	18.0	-0.97	+ 0.3	1.5/09.4	35070	
1994 BF ₁	1999 06 08.1	17 03.26	-28 28.0	17.8	-1.10	+ 1.1	2.0/08.6	32307	1975 XF	1999 06 09.6	17 09.68	-11 37.8	17.6	-1.05	+ 1.2	4.9/08.8	35056	
(10634)	1999 06 08.1	17 03.29	-15 42.4	16.9	-0.96	+ 2.5	2.9/07.5	34472	1993 FW ₂₆	1999 06 09.6	17 09.77	-37 32.3	17.7	-1.02	+ 0.3	5.0/10.6	32050	
2757 P-L	1999 06 08.1	17 03.41	-24 07.9	18.0	-0.88	+ 0.8	0.4/08.3	35124	1996 RB ₄	1999 06 09.7	17 099.							

(8538)	1999 06 09.7	17 09.76	-37 27.0	15.8	-1.01	+	0.7	5.1/10.7	31505	(10935)	1999 06 11.3	17 16.47	-13 54.6	15.9	-1.08	-	5.8	3.8/11.4	34806
1981 ET ₄₅	1999 06 09.7	17 09.84	-07 09.9	20.6	-0.75	+	1.7	4.1/08.4	32214	(8448)	1999 06 11.3	17 16.50	-18 40.6	17.4	-1.07	+	2.7	1.8/11.0	31484
1995 UE ₁₁	1999 06 09.7	17 10.00	-13 07.8	19.7	-0.80	+	2.1	3.0/08.9	30784	4917 P-L	1999 06 11.3	17 16.51	-26 25.4	17.6	-1.04	+	0.5	1.4/11.5	35124
1995 EO	1999 06 09.7	17 10.13	-20 48.4	17.8	-1.08	+	2.7	0.9/09.6	35068	1981 ED ₄₀	1999 06 11.3	17 16.67	-08 19.1	19.6	-0.75	+	1.0	3.8/10.4	32043
3150 T-3	1999 06 09.8	17 10.36	-21 25.0	18.3	-0.93	+	0.8	0.5/09.7	32787	1998 EN ₉	1999 06 11.4	17 16.82	-24 04.0	17.0	-0.99	-	0.2	0.4/11.5	34907
1994 QP	1999 06 09.8	17 10.44	-31 07.8	16.9	-1.08	-	6.4	2.9/09.7	32748	1998 FE ₇₃	1999 06 11.4	17 16.84	-23 21.2	18.6	-1.00	-	0.6	0.1/11.4	31813
1994 BN ₃	1999 06 09.8	17 10.47	-18 44.4	19.8	-1.01	+	1.2	1.5/09.6	32307	1998 EQ ₁₁	1999 06 11.4	17 16.87	-27 59.3	17.6	-0.92	-	0.3	1.7/11.7	31744
1996 TP ₃	1999 06 09.8	17 10.60	-59 36.8	19.7	-1.86	-	1.3	12.9/10.7	29926	1997 AL ₁	1999 06 11.4	17 16.91	-40 20.1	16.4	-1.01	+	3.8	5.1/13.2	31590
1995 SV ₅₃	1999 06 09.9	17 10.72	-21 25.5	18.6	-0.88	+	1.3	0.5/09.8	32309	1995 BH ₂	1999 06 11.4	17 16.94	-21 06.0	17.2	-1.08	-	0.2	0.9/11.3	35068
1990 VL ₄	1999 06 09.9	17 10.87	-15 06.4	17.2	-1.08	-	2.2	3.5/09.7	35061	1997 YM ₁₀	1999 06 11.4	17 16.98	-17 11.4	17.3	-1.08	-	2.0	2.3/11.3	31591
1995 BF ₁	1999 06 10.0	17 11.11	-27 46.3	16.2	-1.13	+	3.5	2.3/10.5	35068	1973 SF ₆	1999 06 11.5	17 17.15	-10 35.9	16.3	-1.01	+	2.8	6.3/10.3	35056
4095 P-L	1999 06 10.1	17 11.52	-20 00.3	19.7	-0.92	+	2.1	1.0/09.9	32091	1998 DZ ₂₃	1999 06 11.5	17 17.22	-13 38.0	18.4	-0.88	+	2.1	3.0/10.8	34904
(10972)	1999 06 10.1	17 11.55	-21 42.3	16.4	-1.00	+	2.4	0.6/10.0	34815	1996 TP ₁	1999 06 11.5	17 17.57	-28 31.8	18.1	-1.12	+	0.3	2.0/11.9	31791
1981 EV ₃₁	1999 06 10.1	17 11.68	-14 29.3	18.8	-1.05	+	1.5	3.4/09.5	35057	(8614)	1999 06 11.6	17 17.68	-21 58.7	16.8	-0.86		0.0	0.4/11.6	31666
1996 XC ₁₉	1999 06 10.2	17 11.98	-15 48.8	18.3	-0.86	-	1.3	2.3/09.9	34871	(8495)	1999 06 11.6	17 17.69	-20 12.1	17.8	-0.89	+	0.3	1.0/11.5	31495
1986 AT ₂	1999 06 10.2	17 12.03	+02 01.4	17.8	-0.74	-	0.4	6.7/08.7	35058	1991 AU ₁	1999 06 11.6	17 17.81	-65 04.6	16.1	-2.48	+	4.3	20.3/17.8	31005
(10772)	1999 06 10.2	17 12.12	-04 14.4	16.1	-1.17	-	8.2	7.5/11.2	34763	1993 FF ₁₈	1999 06 11.6	17 17.84	-17 42.5	16.8	-0.85	-	1.1	2.1/11.4	35065
1996 XF ₂	1999 06 10.2	17 12.12	-24 31.4	18.3	-0.99	-	2.5	0.5/10.3	32056	(8520)	1999 06 11.6	17 17.95	-05 05.0	17.4	-0.77	+	0.5	5.8/10.5	31501
1998 DX ₁	1999 06 10.3	17 12.19	-13 07.1	19.1	-1.01	-	1.9	3.8/10.0	31558	1995 CJ ₁	1999 06 11.6	17 18.01	-23 05.8	16.1	-1.09	+	3.7	0.0/11.7	35068
1979 TT ₂	1999 06 10.3	17 12.47	-26 47.3	16.4	-1.10	-	0.3	1.5/10.5	35057	1981 EY ₁₁	1999 06 11.7	17 18.10	-32 41.2	18.4	-1.19	+	2.0	3.8/12.4	31223
1990 OE ₅	1999 06 10.3	17 12.67	-19 54.9	16.2	-0.87	+	5.1	1.4/10.0	35060	1992 ED ₄	1999 06 11.7	17 18.11	-20 58.4	18.3	-0.82	+	0.3	0.6/11.6	32048
1998 FR ₁₀	1999 06 10.5	17 13.05	-33 59.4	17.1	-0.81	+	0.8	3.3/11.3	34908	(8438)	1999 06 11.7	17 18.23	-19 33.9	17.6	-1.10	+	0.2	1.4/11.6	31373
(8345)	1999 06 10.5	17 13.47	-34 31.8	17.1	-1.25	+	7.3	4.0/12.1	31353	(8163)	1999 06 11.8	17 18.45	-12 26.5	16.7	-1.02	+	3.2	5.0/11.0	31078
1996 SX ₆	1999 06 10.6	17 13.43	-21 21.5	19.1	-0.95	+	3.1	0.6/10.5	28864	1981 QS ₂	1999 06 11.8	17 18.70	-19 38.9	18.3	-1.05	+	0.5	1.3/11.7	35057
1998 BE ₈	1999 06 10.6	17 13.47	-29 51.4	17.6	-1.21	+	1.3	2.8/11.0	31797	1994 CQ ₁	1999 06 11.8	17 18.75	-17 35.2	18.3	-1.01	+	1.4	2.0/11.5	31789
1995 QP ₁₀	1999 06 10.6	17 13.57	-03 50.4	18.4	-0.77	+	0.4	5.8/09.4	35068	1999 KM ₆	1999 06 11.8	17 18.77	-06 21.5	17.3	-0.97	-	5.6	6.7/12.4	35121
1981 EM ₁₂	1999 06 10.6	17 13.58	-46 17.8	18.9	-1.08	+	1.4	7.8/12.5	31780	1998 FZ ₅₂	1999 06 11.9	17 19.05	-18 05.1	17.5	-0.83	+	1.4	1.7/11.6	35077
1981 EC ₁₉	1999 06 10.6	17 13.89	-32 40.9	17.5	-1.21	+	0.8	4.1/11.0	31580	1987 SH ₄	1999 06 12.0	17 19.24	-44 49.8	16.6	-1.29	-	3.3	9.2/11.8	31782
(8679)	1999 06 10.7	17 14.04	-21 55.3	17.7	-0.86	+	1.0	0.3/10.7	31682	1998 CA	1999 06 12.0	17 19.40	-19 19.1	18.6	-1.00	-	1.5	1.3/11.9	31799
1998 FY ₃₄	1999 06 10.7	17 14.05	-21 45.9	17.5	-0.90	+	1.3	0.4/10.7	34910	1997 AU ₁₉	1999 06 12.0	17 19.48	-25 29.3	20.5	-0.84	+	1.4	0.7/12.2	30786
1992 BK ₂	1999 06 10.7	17 14.31	-07 33.8	17.2	-0.82	+	0.5	5.3/09.7	35063	1981 EZ ₁₃	1999 06 12.1	17 19.64	-41 41.1	19.2	-1.19	+	2.5	7.1/13.8	28314
1998 FY ₆₇	1999 06 10.8	17 14.32	-11 02.2	18.0	-0.67	+	1.2	3.4/09.9	35077	(8683)	1999 06 12.1	17 19.73	-12 04.4	18.8	-0.77	+	1.1	3.1/11.4	31683
1998 FE ₄₈	1999 06 10.8	17 14.51	-50 28.3	17.8	-1.20	-	0.3	9.4/12.1	32065	1993 XF ₁	1999 06 12.2	17 20.23	-22 44.1	17.3	-1.15	-	1.2	0.2/12.2	29318
(10795)	1999 06 10.8	17 14.56	+08 16.0	16.9	-0.75	-	1.0	9.5/09.2	34769	1991 PD ₁₃	1999 06 12.2	17 20.29	-28 06.0	17.6	-1.04	+	0.8	2.2/12.5	24104
1998 DQ ₃	1999 06 10.8	17 14.57	+06 46.2	19.2	-0.97		0.0	9.5/09.2	31595	1994 RL ₂	1999 06 12.2	17 20.32	-38 33.3	17.3	-1.00	+	1.5	5.7/13.2	31727
(8746)	1999 06 10.8	17 14.66	-29 40.8	18.1	-0.86	+	0.8	1.8/11.3	31698	1998 FY ₂₇	1999 06 12.2	17 20.33	-25 25.0	18.3	-0.89	+	1.4	0.7/12.4	32318
1991 FS ₁	1999 06 10.8	17 14.73	-23 24.7	16.3	-0.99	+	0.8	11.0/31.0	35062	1992 AY	1999 06 12.2	17 20.53	-15 22.9	17.8	-0.84	-	2.2	2.3/12.1	35063
1997 WD ₇	1999 06 10.9	17 14.71	-29 11.3	17.7	-1.13	+	3.1	2.5/11.4	31281	1995 UA ₉	1999 06 12.3	17 20.59	-29 19.9	17.4	-0.92	+	0.2	2.1/12.6	35069
1981 EB ₆	1999 06 10.9	17 14.78	-38 42.6	18.9	-1.00	+	1.7	4.7/12.1	30779	1992 JD ₃	1999 06 12.3	17 20.69	-30 08.8	16.3	-1.17	-	2.6	3.4/12.5	35064
(8358)	1999 06 10.9	17 15.15	-24 57.8	18.3	-1.07	+	1.4	0.7/11.1	31356	1990 SB ₆	1999 06 12.3	17 20.96	-19 44.5	18.1	-0.87	+	0.2	1.1/12.2	34285
1991 NL	1999 06 11.0	17 15.09	-23 11.4	15.8	-1.02	+	10.3	0.1/11.0	35062	1995 HQ ₂	1999 06 12.4	17 20.89	-27 43.9	19.1	-1.09	-	3.5	2.2/12.4	28302
1998 HA ₁₃₃	1999 06 11.0	17 15.33	-04 29.2	18.1	-0.76	+	3.1	5.5/09.1	35078	1998 DJ ₅	1999 06 12.4	17 20.99	-09 49.3	16.3	-0.96	-	5.1	6.0/12.5	34901
(9457)	1999 06 11.0	17 15.57	-23 31.6	17.9	-0.81	+	0.8	0.1/11.1	32643	(8662)	1999 06 12.4	17 21.05	-21 32.2	17.6	-0.86	+	0.7	0.5/12.3	31678
1995 SH ₅	1999 06 11.1	17 15.51	-23 39.1	18.2	-0.88	+	1.1	0.2/11.1	32053	1998 BB ₃₇	1999 06 12.5	17 21.61	-28 09.1	16.2	-1.06	+	2.5	2.6/12.9	34898
1997 YQ ₁₈	1999 06 11.1	17 15.82	+00 25.9	19.2	-0.92	-	2.8	9.8/10.6	31425	(8787)	1999 06 12.5	17 21.77	-31 24.4	17.4	-0.91	-	1.1	2.4/12.9	31896
1986 QC ₁	1999 06 11.1	17 15.91	-20 07.1	16.8	-0.93	-	0.7	1.2/11.0	35058	1981 EY ₃	1999 06 12.5	17 21.78	-18 20.6	18.8	-0.79	+	2.0	1.3/12.2	31707
1991 PY ₃	1999 06 11.1	17 15.95	-23 50.9	17.7	-0.99	+	1.3	0.3/11.2	33227	1976 QH ₁	1999 06 12.6	17 21.98	-08 52.1	16.4	-0.95	+	2.1	7.5/11.5	34820
1998 FA ₁₂₀	1999 06 11.2	17 15.95	-08 59.2	17.6	-0.81	+	2.4	5.0/09.9	35078	(8560)	1999 06 12.6	17 21.98	-43 47.3	16.5	-1.11	+	0.5	7.2/13.7	31510
(10784)	1999 06 11.2	17 16.03	-01 21.1	17.1	-0.91	-	2.8	8.4/10.8	34766	1990 SA ₆	1999 06 12.6	17 21.99	-36 04.0	18.8	-0.92	-	0.1	3.2/13.3	32221
1991 WB	1999 06 11.2	17 16.39	-23 56.5	17.2	-1.21	-	6.7	0.3/11.3	35063	1998 DQ ₃₃	1999 06 12.6	17 22.05	-19 50.8	17.7	-0.95	+	0.2	1.2/12.5	34905
1998 BB ₂₆	1999 06 11.3	17 16.36	-27 02.4	17.1	-1.18	-	3.6	1.8/11.3	34897	(8193)	1999 06 12.6	17 22.10	-29 24.0	18.8	-1.17	+	2.1	2.5/13.1	31085

2151 T-2	1999 06 12.6	17 22.16	-28 39.8	18.9	-0.93	+	0.7	1.6/13.0	15082	1996 VX ₅	1999 06 14.7	17 30.51	-19 26.2	18.6	-0.95	+	1.9	1.3/14.5	32055
(8767)	1999 06 12.7	17 22.25	-22 14.6	18.7	-0.83	+	0.8	0.3/12.7	31703	1981 DP ₁	1999 06 14.7	17 30.57	-19 47.7	17.5	-1.01	+	5.6	1.7/14.4	34822
1996 UJ ₁	1999 06 12.7	17 22.59	-24 13.8	19.5	-1.16		0.0	0.4/12.8	29116	3280 T-3	1999 06 14.7	17 30.61	-17 35.6	19.6	-0.99	+	1.1	2.0/14.5	35054
1998 BS ₁	1999 06 12.8	17 22.65	-30 17.8	17.0	-1.11	+	0.9	2.7/13.2	31592	1992 EA	1999 06 14.7	17 30.66	-25 24.7	16.2	-1.08	+	1.0	1.1/14.8	35063
1998 FO ₇₅	1999 06 12.8	17 22.76	-05 17.7	18.0	-0.76	+	1.8	5.1/11.5	35077	(10686)	1999 06 14.7	17 30.86	+02 00.1	17.1	-0.95	+	7.8	9.5/11.4	34741
(8845)	1999 06 12.9	17 23.22	-11 37.0	17.3	-0.87	+	1.2	3.7/12.2	31910	1996 XD	1999 06 14.8	17 30.97	-22 50.8	17.5	-1.09	-	0.6	0.2/14.8	28605
1981 EO ₆	1999 06 12.9	17 23.24	-20 44.5	18.6	-0.95	+	2.9	0.8/12.8	32210	1997 YU ₁₁	1999 06 14.8	17 30.97	-34 06.9	17.5	-1.20	-	1.0	4.5/15.0	34887
1996 UH ₅	1999 06 12.9	17 23.27	-07 31.7	18.1	-0.93	+	3.8	5.4/11.5	35070	1996 VK ₃	1999 06 14.9	17 31.30	-20 56.6	17.9	-0.93	+	1.3	0.8/14.8	32055
(8512)	1999 06 13.0	17 23.47	-13 11.1	16.8	-0.92	+	0.1	3.4/12.5	31499	1998 GR ₇	1999 06 14.9	17 31.33	-20 10.5	17.3	-0.95	-	2.5	1.0/14.9	34914
1994 CZ ₁₁	1999 06 13.0	17 23.53	-23 15.5	18.1	-1.09	-	0.2	0.0/13.0	23982	1981 ER ₁₃	1999 06 14.9	17 31.41	-25 21.6	20.3	-0.99	+	1.9	0.7/15.0	26917
1998 EK ₁₂	1999 06 13.0	17 23.53	-36 59.0	17.1	-1.12	-	1.8	5.3/13.3	32316	1997 YM ₁₄	1999 06 14.9	17 31.53	-13 49.4	18.3	-1.00	-	1.6	3.7/14.8	35074
1996 UU	1999 06 13.1	17 23.83	-07 46.5	18.1	-0.92	+	3.4	5.4/11.7	35070	1998 FJ ₁₁₂	1999 06 15.0	17 31.73	-20 07.4	16.9	-0.85	+	2.8	1.0/14.8	35078
1998 BL	1999 06 13.1	17 24.05	-24 27.3	17.5	-0.98	-	1.7	0.5/13.2	35075	1992 ET ₁₀	1999 06 15.0	17 31.81	-23 04.3	18.6	-0.83	+	0.3	0.1/15.0	32927
(8310)	1999 06 13.2	17 24.22	-17 08.1	17.6	-1.05	-	0.6	2.5/13.0	31220	1992 YH	1999 06 15.0	17 31.99	-28 20.7	17.0	-1.08	-	3.1	1.7/15.0	32049
1981 ER ₇	1999 06 13.3	17 24.71	-19 35.0	18.5	-1.01	+	3.5	1.8/13.0	26916	1997 AQ ₁₇	1999 06 15.1	17 32.31	-27 51.3	16.9	-0.99	+	2.4	1.8/15.4	35072
1998 DA ₃	1999 06 13.3	17 24.82	-16 49.4	19.1	-1.02	-	0.3	2.4/13.1	31595	(8539)	1999 06 15.2	17 32.65	-22 47.6	16.9	-0.90	-	0.3	0.2/15.2	31505
1981 EN ₃₈	1999 06 13.3	17 24.89	-06 20.1	19.8	-0.77	+	2.3	5.7/12.1	30780	1998 DV ₁₅	1999 06 15.2	17 32.72	-19 57.8	18.1	-1.03	+	1.4	1.3/15.1	31742
1989 EJ ₁	1999 06 13.3	17 25.12	-14 25.8	16.5	-1.00	+	0.5	4.6/13.0	35059	1991 RE ₁₀	1999 06 15.3	17 33.00	-30 05.1	17.7	-0.97	+	1.6	2.1/15.7	31785
1995 OE ₁	1999 06 13.4	17 25.20	-19 37.1	18.6	-0.89	+	0.6	1.2/13.3	32052	1981 EC ₃₈	1999 06 15.3	17 33.10	-21 07.3	19.0	-1.08	+	1.9	1.0/15.2	28070
1995 SV ₄₃	1999 06 13.4	17 25.22	-13 54.0	18.1	-0.82	+	1.7	2.9/12.8	32309	1998 DN ₁₅	1999 06 15.3	17 33.24	-28 28.7	17.9	-1.10	-	2.1	2.0/15.4	31742
1993 YK	1999 06 13.4	17 25.28	-21 24.9	18.3	-1.04	-	1.5	0.6/13.4	31788	(8559)	1999 06 15.3	17 33.38	-20 04.9	16.4	-0.93	-	1.0	1.2/15.3	31509
(8599)	1999 06 13.5	17 25.45	-27 37.2	17.5	-1.00	-	0.1	1.7/13.7	31519	(8346)	1999 06 15.4	17 33.37	-25 25.2	16.5	-0.88	+	0.3	0.7/15.5	31353
(8532)	1999 06 13.5	17 25.45	-21 22.7	16.7	-0.94	-	2.0	0.6/13.5	31503	1996 XQ ₁₃	1999 06 15.4	17 33.47	-15 44.6	16.9	-0.95	+	5.6	3.1/14.7	35071
1998 HA ₃₄	1999 06 13.5	17 25.51	-03 40.7	17.3	-0.75	+	2.6	5.7/11.8	35078	1998 FP ₇₃	1999 06 15.4	17 33.68	-20 05.9	18.8	-0.84	-	0.1	0.9/15.4	32323
1998 AF	1999 06 13.5	17 25.54	-14 42.4	18.1	-1.05	+	0.4	3.5/13.1	31425	1993 TM ₆	1999 06 15.4	17 33.71	-29 49.5	17.6	-1.12	+	1.1	3.2/16.0	25216
(8334)	1999 06 13.5	17 25.57	-20 01.0	16.4	-0.95	-	2.4	1.1/13.5	31351	1997 XA ₉	1999 06 15.5	17 33.82	-20 09.1	18.2	-0.88		0.0	1.0/15.4	32314
1992 YE ₄	1999 06 13.5	17 25.76	-17 18.0	18.2	-0.98	+	0.5	2.1/13.3	35065	1996 TE ₄₇	1999 06 15.5	17 34.07	-32 15.3	17.6	-1.14	+	1.9	3.7/16.0	31732
1988 DF ₃	1999 06 13.7	17 26.55	-23 59.1	17.1	-1.14	+	4.0	0.3/13.8	32044	1998 BO ₄₆	1999 06 15.6	17 34.24	-29 44.6	18.4	-1.01	+	1.3	2.3/16.0	31403
1316 T-2	1999 06 13.8	17 26.72	-25 17.9	20.5	-1.07	+	0.5	0.8/13.9	28088	(8934)	1999 06 15.6	17 34.25	-13 59.9	17.3	-0.81	-	1.7	2.7/15.5	31931
1989 UP ₄	1999 06 13.9	17 27.23	-24 52.4	17.2	-0.86	+	0.6	0.5/14.0	26560	3182 T-1	1999 06 15.6	17 34.31	-23 06.7	18.1	-0.86	+	1.2	0.1/15.6	32092
1995 SP ₁	1999 06 13.9	17 27.38	-50 49.4	18.7	-1.18	+	3.0	7.2/16.3	29664	1996 PX ₈	1999 06 15.6	17 34.36	-14 40.7	19.1	-1.09	+	0.2	3.2/15.3	32054
1992 EG ₄	1999 06 13.9	17 27.51	-23 41.7	19.2	-0.84		0.0	0.1/14.0	32304	1995 CM	1999 06 15.6	17 34.41	-32 13.3	16.5	-1.14	-	0.9	4.5/16.0	31277
1997 AH ₂₁	1999 06 13.9	17 27.55	-08 40.1	18.0	-0.79	-	1.9	3.9/13.7	35072	1993 JW	1999 06 15.6	17 34.63	-28 26.2	16.8	-0.92	-	3.1	1.7/15.7	35066
(8414)	1999 06 14.0	17 27.60	-20 26.6	16.2	-1.03		0.0	1.3/13.9	31368	1995 WM ₂	1999 06 15.7	17 34.72	-10 28.5	18.4	-0.85	+	3.5	3.9/14.7	35069
1995 UP ₁₈	1999 06 14.0	17 27.76	-36 09.0	19.6	-0.97	+	0.1	4.1/14.6	32518	1981 EF ₉	1999 06 15.8	17 35.12	-25 47.5	17.3	-1.11	+	2.8	1.1/16.0	26916
1989 WZ ₁	1999 06 14.1	17 28.36	-25 25.6	17.5	-1.10	-	0.2	0.8/14.3	32301	1996 XU ₁₈	1999 06 15.8	17 35.31	-21 10.0	18.0	-0.81	+	0.1	0.6/15.8	32311
1047 T-3	1999 06 14.2	17 28.36	-25 03.4	17.5	-0.96	+	3.5	0.7/14.3	35125	1993 UZ ₅	1999 06 15.8	17 35.33	-16 52.6	17.1	-1.06	-	1.6	2.8/15.8	31140
1997 YE ₂	1999 06 14.2	17 28.49	-24 28.6	17.2	-1.18	-	1.6	0.5/14.2	34884	1981 EV ₄₇	1999 06 15.8	17 35.48	-00 51.0	17.8	-0.81	+	1.3	10.2/14.6	26923
(8765)	1999 06 14.2	17 28.63	-26 04.6	17.7	-0.97	+	0.5	1.0/14.4	31702	1998 FO ₇₃	1999 06 15.9	17 35.62	-22 28.0	18.1	-1.09	+	1.9	0.3/15.9	32069
2257 T-2	1999 06 14.3	17 28.83	-28 06.0	17.9	-1.09	+	0.2	1.9/14.5	31161	1996 XL ₃₂	1999 06 15.9	17 35.63	-17 40.9	17.5	-0.84	-	1.5	2.1/15.9	31793
1998 BZ ₁₂	1999 06 14.3	17 29.02	-24 32.2	18.4	-1.01	+	0.3	0.5/14.4	34590	1997 AT ₁₈	1999 06 15.9	17 35.67	-36 51.6	18.1	-0.97	+	0.5	4.3/16.4	32057
1974 SF	1999 06 14.3	17 29.05	-14 44.8	17.6	-1.06	+	2.0	3.7/13.8	35056	2583 P-L	1999 06 15.9	17 35.72	-25 29.4	17.7	-0.92	-	0.5	0.8/16.0	35124
1998 FH ₁₆	1999 06 14.3	17 29.07	-21 09.5	17.9	-0.84	+	0.4	0.7/14.3	32317	1050 T-2	1999 06 15.9	17 35.74	-08 30.3	19.1	-0.75	+	0.6	3.9/15.4	32092
1995 UJ ₁	1999 06 14.4	17 29.21	-09 25.1	17.3	-0.82	+	1.9	4.6/13.5	35068	1989 SV ₃	1999 06 15.9	17 35.76	-16 45.9	19.3	-1.03	+	0.4	2.4/15.7	32045
1997 CX ₂₇	1999 06 14.4	17 29.40	-16 41.7	18.0	-0.81		0.0	1.9/14.2	32313	(8515)	1999 06 15.9	17 35.92	-45 40.6	15.9	-1.23	+	1.8	9.7/17.0	31499
1995 BM ₂	1999 06 14.4	17 29.56	-13 37.5	18.3	-1.20	+	10.0	4.2/13.2	25431	1992 EU ₂₈	1999 06 16.0	17 35.88	-24 54.7	16.4	-0.86	-	0.1	0.6/16.1	35064
1996 FK ₁₂	1999 06 14.4	17 29.80	-65 23.7	17.0	-2.40	-	10.8	22.5/08.1	27328	(8503)	1999 06 16.0	17 35.98	-21 03.8	17.0	-1.16	-	2.1	0.9/16.0	31497
1981 EH ₃₀	1999 06 14.5	17 29.60	-10 51.0	19.6	-0.79	+	0.6	3.9/14.0	32212	1998 FD ₇	1999 06 16.0	17 36.02	-26 15.2	19.2	-0.91	+	0.3	1.0/16.1	31746
1981 EM ₂₉	1999 06 14.6	17 30.29	-28 57.1	18.6	-1.09	+	4.2	2.7/15.1	26920	1998 DE ₃₄	1999 06 16.0	17 36.05	-24 46.2	17.9	-0.88	+	0.5	0.5/16.1	32315
(8456)	1999 06 14.6	17 30.41	-31 21.5	16.9	-0.91	+	2.1	2.6/15.2	31486	1998 HX ₃₂	1999 06 16.0	17 36.05	-16 22.7	17.4	-0.81	+	1.2	2.2/15.7	35078
1978 UJ ₄	1999 06 14.6	17 30.45	-19 35.7	18.6	-1.10	+	3.2	1.6/14.4	28314	1997 ET ₁	1999 06 16.1	17 36.26	-23 18.0	17.3	-0.92	-	0.4	0.0/16.1	32058

1988 PK	1999 06 16.1	17 36.33	-15 40.4	17.2	-1.02	+	0.6	3.6/15.8	35059	1991 PY ₁₂	1999 06 17.5	17 42.12	-39 19.9	18.1	-1.12	+	1.7	5.1/18.2	31583
1998 BW ₁₂	1999 06 16.1	17 36.54	-37 41.4	18.2	-1.11	+	5.5	5.8/17.6	32970	(10922)	1999 06 17.5	17 42.19	-23 16.7	14.6	-0.98	-	0.8	0.1/17.5	34802
(8421)	1999 06 16.1	17 36.72	-19 57.1	18.0	-0.89	+	0.3	1.2/16.1	31370	1998 FY ₁₁₃	1999 06 17.5	17 42.33	-20 58.8	17.1	-0.86	+	2.1	0.8/17.4	35078
1981 EO ₃₁	1999 06 16.2	17 36.67	-17 37.2	19.0	-0.93	+	0.5	2.4/16.0	26921	(8471)	1999 06 17.5	17 42.34	-21 26.1	16.9	-1.15	+	3.7	0.9/17.4	31489
1974 WB	1999 06 16.2	17 36.77	-22 17.5	18.2	-0.97	+	3.4	0.3/16.1	31578	1995 TT	1999 06 17.5	17 42.46	-37 02.4	17.2	-1.03	-	1.7	4.7/17.5	32309
(8450)	1999 06 16.3	17 37.13	-30 47.3	16.6	-1.01	+	0.7	2.7/16.6	31484	(8656)	1999 06 17.5	17 42.56	-19 48.5	17.9	-0.87	-	0.4	1.1/17.5	31676
1987 RA ₃	1999 06 16.3	17 37.21	-16 15.5	16.0	-0.90	-	1.0	3.5/16.2	35058	(8389)	1999 06 17.6	17 42.50	-19 39.7	17.5	-0.86	+	0.1	1.2/17.5	31363
1998 FO ₁₁₉	1999 06 16.3	17 37.26	-23 50.6	19.1	-0.88	0.0		0.2/16.3	31817	1997 BV ₄	1999 06 17.6	17 42.78	-48 39.0	18.8	-1.14	+	0.6	7.1/18.7	32313
1990 VX ₆	1999 06 16.4	17 37.69	-18 13.3	18.0	-0.89	-	2.8	1.8/16.5	32046	1981 EG ₁₃	1999 06 17.6	17 42.89	-31 28.1	18.3	-1.17	+	2.8	3.5/18.1	26917
(10836)	1999 06 16.4	17 37.83	-05 47.5	17.0	-0.93	-	2.8	6.3/16.6	34779	1993 FD ₃₄	1999 06 17.7	17 43.03	-08 26.5	18.4	-0.82	+	0.2	5.2/17.3	34846
1994 AO ₃	1999 06 16.4	17 37.84	-22 46.7	18.0	-1.05	-	0.6	0.2/16.5	31724	1998 BU ₆	1999 06 17.7	17 43.16	-16 44.1	17.6	-1.08	-	1.7	2.7/17.7	31427
1998 DP ₉	1999 06 16.4	17 38.00	-25 02.2	17.7	-0.93	-	2.8	0.6/16.5	35076	1998 ES ₁	1999 06 17.8	17 43.46	-15 57.3	18.7	-0.95	+	0.8	2.5/17.6	32684
1981 EP ₁₁	1999 06 16.4	17 38.02	-32 39.8	17.2	-1.22	+	1.6	4.5/16.8	31579	1992 EC ₁₀	1999 06 17.8	17 43.50	-06 22.4	17.5	-0.80	-	0.8	5.4/17.5	35063
1985 RV ₂	1999 06 16.5	17 38.03	-14 05.4	17.9	-1.06	-	0.7	4.3/16.3	35058	1996 XT ₁	1999 06 17.8	17 43.61	-23 56.8	17.1	-0.92	-	0.7	0.2/17.9	32056
(8464)	1999 06 16.5	17 38.09	-40 41.2	16.4	-1.17	-	1.4	7.2/16.6	31487	1993 AJ	1999 06 17.9	17 43.79	-12 25.4	17.0	-0.95	-	2.7	3.7/18.0	35065
(9102)	1999 06 16.5	17 38.14	-23 39.8	18.6	-0.86	-	0.2	0.1/16.6	32197	1998 FC ₁₂₂	1999 06 18.1	17 44.71	-17 47.4	18.3	-0.94	-	0.4	1.8/18.0	32325
1998 FZ ₆₂	1999 06 16.5	17 38.34	-02 26.0	17.7	-0.89	+	1.8	7.2/15.3	35077	1990 WC ₉	1999 06 18.1	17 44.80	-29 52.6	17.0	-0.95	-	2.7	2.1/18.0	35061
1993 TX ₁₅	1999 06 16.5	17 38.38	-24 51.3	18.8	-1.12	-	0.3	0.6/16.6	32231	1979 TY ₁	1999 06 18.1	17 44.83	-34 36.0	18.0	-1.24	-	1.6	4.4/18.1	31579
1996 TR ₉	1999 06 16.6	17 38.40	-16 28.3	16.6	-1.02	-	1.1	3.5/16.5	35070	1984 HR	1999 06 18.1	17 44.86	-27 58.9	15.7	-1.04	-	0.2	2.3/18.2	35058
1996 YT ₂	1999 06 16.7	17 38.89	-19 23.8	19.0	-1.01	+	0.8	1.5/16.6	31794	1981 ET ₂₄	1999 06 18.1	17 45.03	-11 27.7	17.7	-1.00	+	0.5	5.3/17.9	35057
1989 SY ₁	1999 06 16.7	17 38.89	-21 49.2	18.3	-0.85	-	0.1	0.5/16.7	26167	1981 EX ₂₉	1999 06 18.1	17 45.09	-40 53.6	17.1	-1.11	+	5.9	8.1/19.8	26920
1993 FE ₁₉	1999 06 16.7	17 38.91	-18 15.3	18.7	-0.86	-	1.1	1.7/16.7	31723	1998 FK ₂₈	1999 06 18.2	17 45.11	-22 00.6	17.8	-0.85	+	0.6	0.5/18.2	32064
1995 UF ₄₅	1999 06 16.7	17 38.95	-24 09.1	17.3	-0.85	-	0.1	0.2/16.8	31790	1994 PL ₂₁	1999 06 18.2	17 45.15	-22 18.3	18.0	-0.84	+	0.1	0.4/18.2	32459
6214 P-L	1999 06 16.7	17 39.15	-18 32.3	18.4	-1.04	+	1.7	1.9/16.6	31294	1995 SX ₅₂	1999 06 18.2	17 45.15	-20 40.7	16.1	-0.92	+	1.7	1.1/18.1	32240
7607 P-L	1999 06 16.7	17 39.26	-22 02.9	19.2	-1.06	-	0.4	0.5/16.8	31824	3157 T-3	1999 06 18.2	17 45.24	-26 43.8	17.0	-1.15	-	1.8	1.6/18.2	35125
1996 TH ₄₂	1999 06 16.8	17 39.23	-25 19.1	16.8	-1.12	-	1.3	0.9/16.8	31589	(8325)	1999 06 18.2	17 45.33	-33 37.2	19.0	-0.93	-	0.1	3.4/18.4	31349
1998 FK ₅₄	1999 06 16.8	17 39.28	-39 31.5	18.6	-1.03	+	0.2	5.2/17.3	32065	(8277)	1999 06 18.2	17 45.36	-25 15.3	17.5	-1.06	+	1.2	0.8/18.3	31214
1995 VT ₁	1999 06 16.8	17 39.38	-18 33.3	17.2	-0.81	+	2.3	1.4/16.6	35069	(8953)	1999 06 18.2	17 45.48	-25 19.3	17.7	-0.90	+	0.4	0.6/18.3	31935
1997 WG ₇	1999 06 16.8	17 39.40	-28 55.3	18.3	-1.19	+	2.2	2.2/17.1	31796	(8303)	1999 06 18.3	17 45.73	-26 28.6	16.2	-1.17	-	0.9	1.3/18.4	31219
1997 WQ ₁	1999 06 16.9	17 39.76	-05 35.1	18.4	-1.23	+	10.5	8.5/14.5	34879	1998 BU ₁₄	1999 06 18.3	17 45.79	-14 21.8	17.5	-1.03	-	1.8	3.7/18.4	34895
1998 HT ₃₇	1999 06 16.9	17 40.07	-36 15.6	18.2	-0.92	+	0.2	3.6/17.4	32754	1998 FR ₅₆	1999 06 18.3	17 45.81	+04 52.4	18.2	-0.88	+	1.1	9.8/17.0	35077
1998 DT ₂₂	1999 06 16.9	17 40.10	-32 36.2	18.9	-1.11	+	2.6	4.3/17.5	32971	(8613)	1999 06 18.4	17 45.89	-24 43.6	17.1	-0.88	-	0.4	0.5/18.4	31666
1994 AY	1999 06 17.0	17 40.01	-22 14.5	18.5	-1.07	+	1.0	0.4/17.0	32232	1998 DX ₃₃	1999 06 18.4	17 46.17	-26 14.2	16.9	-0.94	-	0.3	1.0/18.5	35076
1998 BK ₉	1999 06 17.0	17 40.22	-20 16.0	18.0	-0.87	+	0.8	1.1/16.9	34589	1989 TW ₃	1999 06 18.4	17 46.18	-16 54.5	17.7	-0.99	-	1.7	3.3/18.5	28613
1998 FR ₄₁	1999 06 17.0	17 40.22	-04 06.1	17.4	-0.96	+	2.3	8.0/15.7	35077	1998 FA	1999 06 18.4	17 46.22	-21 51.8	16.8	-0.99	-	2.7	0.5/18.5	31805
1998 FO ₅₈	1999 06 17.0	17 40.26	-05 46.5	18.7	-0.87	+	1.0	5.7/16.3	35077	1997 YB ₂	1999 06 18.4	17 46.26	-24 21.1	16.7	-1.06	+	1.7	0.5/18.5	35074
(8388)	1999 06 17.0	17 40.26	-24 44.6	16.8	-0.91	-	0.4	0.5/17.1	31363	1991 PZ ₅	1999 06 18.5	17 46.29	-35 25.5	17.0	-1.09	+	2.0	5.1/19.0	31229
(10750)	1999 06 17.0	17 40.32	-12 26.7	16.4	-0.99	-	1.5	5.4/17.0	34757	1985 CX ₁	1999 06 18.5	17 46.31	-19 54.1	17.5	-1.08	+	1.4	1.6/18.4	35058
1998 DV ₄	1999 06 17.0	17 40.39	-22 33.3	19.1	-1.10	+	0.4	0.3/17.1	32683	1997 AR ₅	1999 06 18.5	17 46.40	-14 30.7	17.5	-0.87	-	2.4	2.7/18.6	35071
1991 SH ₁	1999 06 17.1	17 40.50	-28 52.4	15.3	-1.08	-	9.8	2.7/16.6	34838	(9453)	1999 06 18.5	17 46.55	-08 17.6	17.4	-0.82	-	0.6	5.2/18.3	32642
1991 PY ₁₄	1999 06 17.1	17 40.69	-33 19.1	16.8	-1.10	+	2.9	3.6/17.7	31583	(8367)	1999 06 18.6	17 46.69	-27 10.7	16.7	-1.19	-	1.9	1.6/18.6	31358
7069 P-L	1999 06 17.1	17 40.74	-08 07.8	18.5	-0.93	+	2.5	5.4/16.3	35124	1997 WO ₂₃	1999 06 18.6	17 47.09	-18 17.5	18.7	-0.94	-	2.1	1.9/18.7	32058
1997 XZ	1999 06 17.2	17 40.99	-27 09.7	17.7	-1.08	+	0.9	1.7/17.4	35073	1998 FT ₁₁	1999 06 18.6	17 47.15	-49 02.2	17.5	-1.34	+	1.6	9.3/19.5	35077
1978 VW ₄	1999 06 17.2	17 41.01	-25 19.9	19.5	-1.09	+	0.1	0.7/17.3	27930	1996 TK ₁₀	1999 06 18.7	17 47.48	-32 35.8	17.3	-1.18	+	1.1	4.0/19.0	31588
2144 T-1	1999 06 17.2	17 41.06	-11 37.3	18.1	-1.00	-	0.6	5.5/17.1	35124	1990 HU ₁	1999 06 18.8	17 47.52	-03 47.0	17.5	-0.91	-	3.2	7.8/19.3	35060
1331 T-2	1999 06 17.2	17 41.30	-23 25.9	17.7	-0.96	+	1.1	0.0/17.3	32343	1998 FE ₆₁	1999 06 18.8	17 47.78	-12 23.2	19.6	-0.78	+	0.5	3.2/18.6	32066
1990 WM	1999 06 17.3	17 41.47	-18 59.0	16.1	-0.90	-	3.9	1.6/17.5	35061	1998 AK	1999 06 18.8	17 47.84	-23 41.7	17.7	-1.07	+	0.8	0.1/18.9	31591
1998 DG ₁₅	1999 06 17.3	17 41.51	-03 04.7	17.4	-0.86	-	0.5	7.8/16.9	35076	3446 T-3	1999 06 18.9	17 48.21	-16 53.6	18.0	-0.90	+	0.2	2.4/18.9	35125
3274 T-1	1999 06 17.4	17 41.84	-02 53.2	17.5	-0.87	+	1.4	7.3/16.3	35124	1981 EK ₃₂	1999 06 18.9	17 48.25	-19 15.3	19.4	-1.05	+	3.3	1.9/18.8	26921
1998 HE ₆	1999 06 17.4	17 41.93	-12 24.2	18.5	-0.77	+	0.6	3.2/17.1	32754	2714 P-L	1999 06 18.9	17 48.31	-26 31.9	19.3	-1.11	+	0.2	1.1/19.0	27938
1995 YJ ₄	1999 06 17.5	17 42.11	+02 47.4	17.8	-0.77	-	2.1	6.6/17.3	34860	1991 GG ₇	1999 06 19.0	17 48.44	-29 39.7	17.6	-1.12	-	0.2	2.3/19.1	31583

1997 CH ₂₈	1999 06 19.0	17 48.75	-33 32.3	17.5	-0.90	+	1.4	2.8/19.4	32251	(9242)	1999 06 20.9	17 56.36	-16 07.3	18.5	-1.05	-	0.6	2.8/20.9	32433
1995 QB ₁	1999 06 19.1	17 48.76	-20 38.5	19.2	-0.85	+	0.3	0.8/19.1	32052	(8513)	1999 06 21.0	17 56.68	-30 23.9	17.1	-0.99	+	1.2	2.2/21.1	31499
(9454)	1999 06 19.1	17 49.03	-23 34.4	17.6	-0.88	-	0.1	0.1/19.2	32642	1981 EE ₄	1999 06 21.0	17 56.92	-21 28.0	18.8	-0.84	+	2.2	0.6/21.0	26915
1998 HT ₁₂₉	1999 06 19.2	17 49.20	-10 46.7	19.2	-0.80	+	0.8	3.9/18.9	32330	1994 GT ₈	1999 06 21.0	17 57.07	+18 38.7	17.6	-0.85	+	1.6	14.7/20.3	35067
1981 EA ₃₅	1999 06 19.2	17 49.22	-45 43.4	18.5	-1.13		0.0	6.7/19.2	26921	1998 FY ₁₃	1999 06 21.1	17 57.11	-07 30.0	17.4	-0.81	+	0.2	5.4/21.0	35077
1979 MR ₆	1999 06 19.2	17 49.32	-15 16.8	17.8	-0.99	-	0.6	4.2/19.2	35057	(8700)	1999 06 21.1	17 57.12	-22 02.1	17.9	-0.83		0.0	0.4/21.1	31687
6792 P-L	1999 06 19.2	17 49.49	-22 01.9	17.4	-0.90	-	0.9	0.5/19.3	35124	1987 UW	1999 06 21.1	17 57.27	+22 18.7	18.1	-0.92	+	5.9	16.3/13.9	35059
1998 DX ₂₅	1999 06 19.3	17 49.63	-21 26.3	20.1	-0.94	-	0.5	0.7/19.3	31802	1998 BU ₄₁	1999 06 21.1	17 57.43	-30 40.8	18.2	-1.15	+	2.2	2.7/21.4	32059
(8170)	1999 06 19.3	17 49.70	-35 49.1	15.7	-1.10	+	5.1	5.3/20.3	31080	1988 VP	1999 06 21.1	17 57.46	-36 57.9	16.1	-1.19	-	4.5	5.2/20.5	31783
1998 BF ₁₄	1999 06 19.3	17 49.75	-15 40.5	18.6	-1.00	-	1.3	2.9/19.4	31798	1996 RL ₅	1999 06 21.1	17 57.52	-35 20.9	18.2	-1.27	+	0.6	5.1/21.2	34585
1996 PB ₅	1999 06 19.3	17 49.82	-26 57.3	18.0	-1.17	+	1.3	1.5/19.4	35069	1993 BM ₅	1999 06 21.2	17 57.68	-23 04.7	16.5	-0.93	-	0.7	0.1/21.2	35065
1997 XG	1999 06 19.3	17 49.82	-23 24.3	18.2	-1.14		0.0	0.0/19.3	31424	1998 FB ₈₀	1999 06 21.2	17 57.75	-22 11.1	18.7	-0.93	-	1.0	0.4/21.3	32324
1994 PZ ₁₇	1999 06 19.3	17 49.88	-36 29.7	18.0	-0.94	+	1.4	4.2/19.8	31727	1981 EO ₄₄	1999 06 21.2	17 57.79	-26 06.2	19.7	-1.12	+	0.5	1.1/21.3	31580
1998 FY ₇₃	1999 06 19.3	17 50.02	-38 12.1	17.5	-1.02	-	0.3	4.8/19.5	32323	1996 TP ₃₆	1999 06 21.2	17 57.97	-31 19.6	17.1	-1.10	+	2.3	4.1/21.5	31246
1995 QO	1999 06 19.3	17 50.07	-36 19.8	20.0	-1.13	+	0.2	4.6/19.5	26176	1993 BL ₇	1999 06 21.3	17 58.31	-22 49.6	17.8	-0.94	+	0.9	0.2/21.4	32049
5105 T-2	1999 06 19.4	17 50.12	-28 59.2	16.7	-1.03	+	3.4	2.2/19.7	31826	1981 UK ₁₁	1999 06 21.3	17 58.38	-19 08.6	17.0	-1.05	-	0.7	1.9/21.4	35057
1995 SE ₁₇	1999 06 19.4	17 50.26	-23 44.5	19.5	-0.82	+	0.2	0.1/19.5	34293	(8264)	1999 06 21.4	17 58.57	-23 01.4	15.3	-1.03	-	1.3	0.2/21.5	31211
(8351)	1999 06 19.4	17 50.36	-16 53.5	17.0	-0.91	-	0.1	2.4/19.4	31355	1992 EQ ₁₀	1999 06 21.4	17 58.74	-16 18.0	19.3	-0.81	-	0.5	2.3/21.5	33481
(8841)	1999 06 19.4	17 50.48	-39 11.8	16.2	-1.16	+	0.6	6.5/19.8	31909	1990 OE ₄	1999 06 21.5	17 58.83	-11 31.5	16.1	-0.87	+	3.4	5.6/20.9	35060
1994 AU	1999 06 19.5	17 50.71	-26 31.8	18.6	-1.10	-	0.3	1.1/19.6	32051	1981 EZ ₁₁	1999 06 21.5	17 58.92	-29 18.6	18.0	-1.14	+	1.2	2.7/21.6	31134
1998 BO ₁₂	1999 06 19.5	17 50.75	-16 40.2	15.3	-0.96	-	5.6	3.5/20.0	34895	1992 EH ₁₁	1999 06 21.5	17 59.18	-20 41.0	17.9	-0.82	-	0.2	0.8/21.6	32048
(8626)	1999 06 19.5	17 50.76	-13 56.3	18.3	-0.80	+	0.2	3.3/19.4	31669	1991 UH ₃	1999 06 21.5	17 59.19	-34 19.9	18.8	-0.97	-	0.6	3.0/21.5	32303
1998 FU ₁₁₆	1999 06 19.6	17 51.10	-16 56.0	18.1	-0.83	+	2.2	2.0/19.4	33267	1981 EC ₃₉	1999 06 21.6	17 59.20	+15 32.5	18.5	-0.74	-	0.2	13.0/21.7	32043
1992 EY ₁₁	1999 06 19.6	17 51.17	-24 29.9	18.6	-0.84	-	0.4	0.3/19.7	32304	3061 T-2	1999 06 21.9	18 00.44	+00 56.6	18.6	-0.77	-	0.6	7.8/22.1	32786
1998 HO ₃₂	1999 06 19.7	17 51.38	-01 13.7	18.7	-0.75	+	1.1	6.3/19.2	32327	1995 UW ₆	1999 06 21.9	18 00.46	-34 16.8	18.4	-0.95	-	1.2	3.5/21.7	32309
1991 GO ₁	1999 06 19.7	17 51.44	+08 48.9	18.8	-0.95	+	1.5	10.2/18.5	32302	1978 SQ ₄	1999 06 21.9	18 00.79	-30 54.2	17.7	-1.19	-	0.1	3.0/21.9	32041
4607 P-L	1999 06 19.7	17 51.62	-31 51.7	17.3	-1.04	-	0.5	3.4/19.8	31294	1997 AT ₁	1999 06 21.9	18 00.80	-31 33.3	16.9	-0.91	+	2.4	2.4/22.2	31794
1998 FR ₁₁₅	1999 06 19.9	17 52.21	-38 02.3	18.5	-0.98	+	0.6	4.3/20.2	32261	1996 VF ₈	1999 06 22.0	18 00.85	-40 54.4	18.3	-1.19	-	2.2	5.9/21.4	32311
1992 RA ₄	1999 06 20.0	17 52.83	-26 27.4	16.8	-1.00	+	0.8	1.5/20.1	35064	1992 YE ₁	1999 06 22.0	18 00.92	-24 52.8	17.7	-1.01	-	1.6	0.5/22.0	32745
3260 T-2	1999 06 20.0	17 52.88	-21 59.4	18.2	-0.95	-	1.2	0.5/20.1	32344	1998 DT ₁₄	1999 06 22.0	18 01.08	-06 37.1	17.7	-0.91	-	1.2	6.4/22.3	35076
1990 QF ₂	1999 06 20.1	17 53.21	-20 05.3	16.9	-0.89	-	0.6	1.2/20.2	34832	1990 TE ₇	1999 06 22.0	18 01.17	-11 44.7	17.9	-0.83	+	1.4	3.9/21.8	35061
1997 WM ₂₁	1999 06 20.1	17 53.32	-17 46.3	17.1	-1.10	+	2.1	2.4/20.0	35073	1988 MA	1999 06 22.0	18 01.24	+04 36.0	16.6	-1.04	+	9.7	12.8/19.0	34828
1995 OB ₁	1999 06 20.1	17 53.38	-26 47.3	17.9	-0.99	+	3.6	1.5/20.4	31587	1981 ER ₁₀	1999 06 22.1	18 01.68	-22 24.0	17.1	-1.10	+	1.3	0.5/22.2	35057
1996 VR ₄	1999 06 20.2	17 53.45	-29 40.7	17.5	-1.07	-	2.2	2.2/20.1	32055	1986 EL ₅	1999 06 22.2	18 01.71	-31 44.9	17.3	-1.08	-	0.2	3.1/22.2	34574
1981 ER ₃₂	1999 06 20.2	17 53.65	-09 44.4	21.1	-0.76	-	0.1	3.5/20.1	26921	1993 FH ₄₉	1999 06 22.2	18 01.76	-21 01.4	18.1	-0.89	+	0.1	0.8/22.2	32050
1998 DF	1999 06 20.3	17 53.80	-18 03.3	17.8	-1.06	-	1.1	2.1/20.3	31799	1981 EV ₃₃	1999 06 22.2	18 02.10	+10 08.6	18.8	-0.86	+	0.1	11.6/22.3	32212
1996 VK ₃₀	1999 06 20.3	17 53.82	-19 01.6	18.5	-0.93	-	0.7	1.4/20.3	31793	1993 FP ₁₁	1999 06 22.3	18 02.24	-24 28.8	18.0	-0.90	-	1.0	0.4/22.3	32050
(8263)	1999 06 20.4	17 54.52	-20 01.1	15.5	-0.98	-	2.0	1.8/20.5	31210	1989 SO	1999 06 22.3	18 02.49	-21 30.3	16.8	-0.82	+	0.9	0.6/22.4	32045
1984 SV ₅	1999 06 20.5	17 54.76	-37 04.4	17.2	-1.00	-	0.2	4.6/20.6	32044	1996 SQ ₄	1999 06 22.4	18 02.68	+14 23.2	19.8	-0.86	+	2.0	11.9/21.6	31730
(8770)	1999 06 20.5	17 55.00	-24 12.1	17.2	-0.86	-	0.4	0.2/20.6	31703	1995 DZ ₂	1999 06 22.4	18 02.94	-29 46.7	17.9	-1.36	+16.4		3.1/23.6	25433
1997 XN ₈	1999 06 20.6	17 55.00	-27 40.4	17.3	-1.17	+	1.3	1.8/20.7	31796	1976 GV ₂	1999 06 22.5	18 02.88	-20 08.0	17.0	-0.84	-	0.6	1.1/22.5	35056
1988 RD ₆	1999 06 20.6	17 55.12	-25 45.7	17.2	-1.10	-	0.8	1.0/20.6	31783	4052 P-L	1999 06 22.5	18 02.89	-13 14.1	18.8	-0.85	+	1.3	3.4/22.3	32728
1998 DA ₁₆	1999 06 20.6	17 55.37	-07 01.1	19.7	-0.91	+	0.3	5.6/20.6	31802	1997 YO ₉	1999 06 22.5	18 03.28	-12 03.9	17.7	-0.96	-	0.4	4.9/22.7	35074
(8563)	1999 06 20.7	17 55.49	-52 21.1	16.0	-1.32	+	3.4	10.3/22.0	31510	(8718)	1999 06 22.6	18 03.56	-14 02.2	17.6	-0.83	+	0.8	3.0/22.6	31691
2599 P-L	1999 06 20.7	17 55.61	-12 52.6	18.9	-0.95	+	0.7	3.8/20.6	32785	1974 RY ₁	1999 06 22.6	18 03.58	-17 41.9	16.0	-0.95	+	0.4	3.0/22.6	35056
1992 BC ₂	1999 06 20.8	17 55.81	-23 37.7	18.1	-0.88	+	2.0	6.7/01.0	34578	1998 BE ₅	1999 06 22.6	18 03.63	-16 40.7	18.8	-1.04	+	1.1	2.8/22.6	34893
1993 FX ₂₃	1999 06 20.8	17 56.08	-25 49.4	18.0	-0.89	+	0.3	0.9/20.9	26400	1997 XE ₁₁	1999 06 22.7	18 03.83	-10 06.9	18.4	-1.01	-	0.1	4.8/22.8	32058
1997 YB ₃	1999 06 20.8	17 56.09	-21 29.0	17.4	-1.06	+	0.3	0.8/21.0	31255	1998 EP ₁₀	1999 06 22.8	18 04.45	-17 15.9	18.6	-0.96	-	2.4	2.3/23.1	32061
(8446)	1999 06 20.8	17 56.23	-20 54.6	17.4	-1.06	-	0.3	1.1/20.9	31483	4801 P-L	1999 06 22.9	18 04.62	-22 58.6	18.0	-0.84	-	0.9	0.2/22.9	32091
1998 BE ₁	1999 06 20.8	17 56.26	-22 59.3	17.1	-1.11	-	2.8	9.8/01.0	31592	1998 FO ₆₂	1999 06 22.9	18 04.91	-16 41.6	17.5	-0.90	+	0.8	2.4/22.9	35077
1992 DX ₇	1999 06 20.8	17 56.28	-29 26.3	19.3	-0.87	-	0.3	1.7/21.0	33547	1981 EQ ₆	1999 06 22.9	18 05.00	-42 37.5	19.1	-1.18	+	3.4	8.1/23.8	26915

1988 XQ	1999 06 23.0	18 05.01	-19 54.1	18.2	-1.00	+	2.3	1.2/22.9	31582	2612 P-L	1999 06 24.5	18 11.55	-20 02.0	18.8	-0.86	0.0	1.1/24.6	26761	
1997 YZ ₅	1999 06 23.0	18 05.11	-25 18.9	17.3	-1.07	-	2.2	0.7/23.0	34885	1998 CU	1999 06 24.5	18 11.65	-33 00.6	18.8	-1.11	+	3.6	3.5/24.9	31594
1964 VZ ₂	1999 06 23.0	18 05.18	-24 43.4	19.1	-0.85	-	0.6	0.3/23.0	31779	1993 TU ₂₀	1999 06 24.5	18 11.67	-37 57.9	17.5	-1.28	-	1.8	6.3/24.2	32050
(9124)	1999 06 23.0	18 05.23	-25 31.9	17.8	-0.93	-	0.2	0.7/23.0	32202	1998 FP ₂₆	1999 06 24.5	18 11.70	-37 26.5	17.3	-1.28	-	1.2	6.3/24.1	32317
1992 EO ₉	1999 06 23.0	18 05.25	-25 35.5	16.6	-0.87	-	0.1	0.8/23.0	32226	(8576)	1999 06 24.6	18 11.61	-27 17.1	18.0	-1.13	-	1.3	1.6/24.5	31514
1990 WR ₅	1999 06 23.0	18 05.46	-21 37.2	17.3	-0.89	-	3.4	0.6/23.2	32302	1995 UJ ₆	1999 06 24.6	18 11.62	-15 22.7	17.2	-0.86	+	2.4	2.8/24.5	35069
1998 ER ₈	1999 06 23.1	18 05.50	-22 09.8	17.8	-0.95	+	0.8	0.5/23.1	31566	1998 AN ₁₀	1999 06 24.6	18 11.69	-20 07.2	18.4	-1.10	+	0.7	1.4/24.6	31797
1998 HP ₄₂	1999 06 23.1	18 05.80	-31 36.7	17.0	-1.10	-	4.2	2.9/22.7	32521	1986 PB	1999 06 24.6	18 11.71	+23 14.1	16.9	-1.10	-	8.5	23.2/02.3	35058
1994 CM ₇	1999 06 23.1	18 05.84	-15 52.9	20.1	-1.00	-	1.7	3.0/23.4	33940	1997 AX ₁₄	1999 06 24.6	18 11.72	-13 31.5	15.8	-0.92	-	9.6	5.1/25.8	35071
1998 EG ₁₀	1999 06 23.1	18 05.86	-30 41.6	17.2	-1.16	+	2.1	2.9/23.3	31804	1111 T-3	1999 06 24.6	18 11.74	-37 34.4	18.2	-0.95	+	1.0	4.4/24.6	31776
2765 P-L	1999 06 23.2	18 05.81	-25 13.9	19.9	-0.98	-	0.2	0.6/23.2	22694	3193 T-2	1999 06 24.6	18 11.81	-12 08.0	18.0	-0.80	-	1.5	3.6/25.0	32344
1998 DJ ₇	1999 06 23.2	18 05.85	-20 40.4	18.3	-0.89	-	0.9	1.0/23.3	32315	1998 DN ₂	1999 06 24.6	18 12.00	-69 13.8	17.4	-2.20	-	2.0	17.4/20.4	31740
1977 DH ₄	1999 06 23.2	18 05.85	-40 25.2	18.3	-1.18	+	0.4	5.8/23.1	31706	1994 AC ₁₇	1999 06 24.7	18 12.03	-22 00.8	16.8	-1.03	-	1.7	0.5/24.8	31788
1996 SO	1999 06 23.2	18 05.88	-32 15.0	20.1	-1.18	-	0.8	3.3/23.0	31546	1998 DX ₁₇	1999 06 24.7	18 12.17	-24 56.1	17.5	-0.97	-	1.3	0.6/24.7	32315
1998 FS ₃₄	1999 06 23.2	18 05.97	-25 16.3	18.9	-0.87	+	0.6	0.6/23.2	32318	(8739)	1999 06 24.7	18 12.49	-27 12.5	15.6	-0.91	-	2.2	1.5/24.6	31696
1993 YN ₂	1999 06 23.2	18 06.12	-22 07.6	18.6	-1.06	+	0.7	0.5/23.3	31788	1991 GA ₇	1999 06 24.7	18 12.52	-17 16.9	18.3	-1.02	-	0.1	2.4/24.9	31229
1997 AC ₆	1999 06 23.2	18 06.14	-25 20.0	19.2	-0.93	-	1.1	0.7/23.2	32955	1998 FZ ₁₂₅	1999 06 24.8	18 12.89	-24 19.6	17.6	-0.85	+	1.6	0.3/24.9	32325
1981 ET ₂₁	1999 06 23.3	18 06.27	-16 19.4	19.9	-0.92	-	0.5	2.3/23.4	32043	(8536)	1999 06 24.9	18 13.03	-36 48.0	16.7	-1.00	-	0.4	4.9/24.6	31504
1995 CV	1999 06 23.3	18 06.47	-15 34.8	19.0	-0.55	-	0.5	1.7/23.5	31789	1989 UP ₁	1999 06 24.9	18 13.22	-25 38.0	16.3	-1.15	-	3.4	0.9/24.8	32045
1985 UF ₅	1999 06 23.3	18 06.47	-17 34.5	17.9	-1.01	+	0.4	2.1/23.4	35058	1998 FA ₂₈	1999 06 24.9	18 13.24	-26 40.2	17.3	-0.96	+	0.6	1.2/24.9	32482
1995 CY ₁	1999 06 23.3	18 06.50	-31 01.2	18.2	-1.39	+	11.6	3.3/24.3	25432	1995 GB ₇	1999 06 24.9	18 13.29	-18 06.5	18.2	-1.07	-	3.1	2.4/25.3	34511
1993 FX ₂₆	1999 06 23.4	18 06.68	-25 14.6	18.0	-0.90	+	0.6	0.6/23.4	32306	1998 DK ₂₀	1999 06 25.0	18 13.27	-26 45.2	19.2	-1.08	-	0.6	1.2/24.9	31802
1995 SH ₂	1999 06 23.4	18 06.74	-21 34.6	19.3	-0.90	+	0.1	0.6/23.4	30783	1998 FC ₆₄	1999 06 25.0	18 13.40	-30 18.6	18.1	-1.00	-	1.3	2.4/24.8	34912
1997 YZ ₆	1999 06 23.4	18 06.88	-22 10.4	17.7	-1.48	+	12.5	0.6/23.3	31425	1998 CH ₂	1999 06 25.0	18 13.49	-34 38.5	19.5	-1.12	+	0.4	3.9/24.9	31799
1998 AR	1999 06 23.4	18 06.93	-29 38.4	16.9	-1.12	+	0.4	2.4/23.4	31797	1995 KC	1999 06 25.0	18 13.75	-04 30.0	17.6	-0.92	+	0.2	8.9/26.0	35068
1995 UJ ₈	1999 06 23.4	18 06.95	-12 27.0	18.7	-0.77	+	1.5	3.0/23.3	32053	1997 AE ₂	1999 06 25.1	18 13.92	-30 06.6	17.8	-0.94	+	1.7	2.2/25.2	31551
4262 T-1	1999 06 23.5	18 07.07	-24 55.4	17.6	-0.96	-	1.2	0.5/23.5	31608	1998 FE ₆₂	1999 06 25.2	18 14.14	-45 49.3	17.7	-1.31	-	0.5	8.1/24.4	34911
1998 FA ₇₁	1999 06 23.5	18 07.21	-44 51.6	17.5	-1.07	-	1.3	6.5/22.9	34913	1989 TT ₂	1999 06 25.2	18 14.23	-18 19.7	17.1	-0.84	-	1.8	1.7/25.4	32045
(8411)	1999 06 23.5	18 07.22	-17 54.9	16.8	-0.97	-	1.7	2.8/23.7	31368	1998 FT ₄₁	1999 06 25.2	18 14.34	-08 04.8	17.3	-0.80	0.0	5.2/25.6	35077	
1998 FT ₃₉	1999 06 23.5	18 07.23	-31 06.6	18.1	-0.90	+	0.3	2.6/23.5	32318	(8877)	1999 06 25.3	18 14.54	-26 42.1	17.6	-0.96	+	0.1	1.1/25.3	31917
1998 CF ₂	1999 06 23.5	18 07.40	-29 36.0	18.2	-1.16	+	2.4	2.7/23.7	32315	1981 EZ ₂₈	1999 06 25.3	18 14.55	-67 35.3	18.0	-2.35	+	3.3	19.6/24.6	15409
1998 HB ₈₄	1999 06 23.6	18 07.45	-09 14.0	18.9	-0.75	0.0	3.8/23.7	32268	(8253)	1999 06 25.3	18 14.72	-18 16.4	18.7	-1.07	+	1.0	2.1/25.4	31208	
4072 P-L	1999 06 23.6	18 07.70	-20 00.5	16.5	-0.87	+	1.9	1.9/23.6	35124	1998 FL ₁₅	1999 06 25.3	18 14.76	-09 03.6	18.4	-0.92	-	2.6	4.9/26.1	34909
1981 EB ₄₀	1999 06 23.6	18 07.81	-24 10.6	19.4	-0.83	-	0.2	0.2/23.7	28611	1998 FZ ₁₂₁	1999 06 25.4	18 15.13	-08 10.9	17.6	-0.81	-	1.1	5.4/25.9	32325
1981 EQ ₃	1999 06 23.6	18 07.82	-36 49.3	17.2	-1.01	+	3.3	5.0/24.0	32739	1981 ER ₃₄	1999 06 25.4	18 15.39	-17 58.7	18.8	-0.83	+	1.7	1.8/25.5	30780
1990 HW ₁	1999 06 23.7	18 08.18	-06 26.4	17.3	-0.93	-	3.9	6.3/24.7	31582	1998 CW ₁	1999 06 25.4	18 15.44	-20 41.8	18.4	-1.08	-	3.2	1.1/25.6	31431
(8217)	1999 06 23.7	18 08.24	-18 26.8	16.2	-0.99	0.0	2.6/23.8	31090	1997 CA ₃	1999 06 25.5	18 15.43	-22 47.7	18.4	-0.82	-	1.0	0.2/25.5	32313	
1996 TY ₄	1999 06 23.8	18 08.39	-44 15.0	18.6	-1.24	-	1.1	7.3/23.4	31791	1998 HC ₁₉	1999 06 25.5	18 15.65	-24 58.2	17.6	-0.97	+	0.3	0.6/25.5	32264
1994 CG ₂	1999 06 23.8	18 08.45	-49 25.3	16.6	-1.29	0.0	11.2/23.5	31586	1996 XV ₂₈	1999 06 25.5	18 15.65	-22 57.3	18.5	-1.11	+	0.3	0.2/25.6	28874	
1978 VN ₃	1999 06 23.9	18 09.04	-19 07.0	19.9	-0.92	+	0.6	1.5/24.0	19856	1981 EE ₂₃	1999 06 25.5	18 15.73	-26 04.5	17.9	-0.96	+	1.1	1.2/25.6	31781
1992 EU ₅	1999 06 24.0	18 09.38	-22 51.3	17.4	-0.83	-	1.0	0.2/24.1	32304	(8624)	1999 06 25.5	18 15.75	-10 27.7	17.8	-0.79	+	0.5	4.2/25.8	31669
1988 RX ₁₀	1999 06 24.1	18 09.74	-26 57.9	17.7	-0.87	-	0.5	1.2/24.1	32300	1990 QJ ₃	1999 06 25.5	18 15.77	-41 05.8	17.8	-1.08	+	0.3	5.4/25.2	32301
1993 FW ₁₆	1999 06 24.1	18 09.77	-25 05.5	18.0	-0.91	-	1.3	0.6/24.1	32050	1998 FH ₆₃	1999 06 25.6	18 15.80	-20 32.4	17.5	-0.89	-	0.9	1.0/25.7	32322
(8499)	1999 06 24.1	18 09.99	-23 17.7	16.5	-0.90	+	0.1	0.0/24.2	31496	1996 TG ₁₅	1999 06 25.6	18 16.01	-25 56.3	18.2	-1.12	-	1.6	1.0/25.5	32055
1998 EG ₁₄	1999 06 24.2	18 10.18	-20 53.0	18.7	-1.11	-	1.1	0.9/24.3	32316	1996 XS ₁	1999 06 25.6	18 16.19	-25 22.3	16.7	-0.99	+	1.3	0.8/25.7	31734
1998 DA ₆	1999 06 24.2	18 10.20	-23 34.3	18.5	-1.05	+	0.1	0.1/24.2	32060	1992 ER ₂₈	1999 06 25.6	18 16.21	-22 21.1	17.6	-0.86	-	1.2	0.4/25.7	32048
1998 FN ₁₂	1999 06 24.2	18 10.30	-26 26.7	18.4	-0.94	-	0.3												

1998 FN ₅₄	1999 06 25.8	18 16.97	-13 49.9	19.1	-0.98	- 0.1	3.3/26.0	32259	1993 FQ ₃₂	1999 06 27.4	18 23.39	-26 20.0	17.3	-0.92	- 1.1	1.1/27.3	32306
(8192)	1999 06 25.8	18 17.03	-36 41.7	18.2	-1.28	+ 1.5	5.8/25.9	31085	1993 FM ₇	1999 06 27.4	18 23.50	-22 05.0	17.9	-0.89	- 1.5	0.4/27.5	32050
1998 FT ₅₄	1999 06 25.9	18 17.02	+00 05.3	18.6	-0.83	- 0.4	7.3/26.6	34911	1997 AG ₃	1999 06 27.4	18 23.51	-21 48.2	17.2	-0.85	- 1.6	0.5/27.5	32751
1990 VH ₁₂	1999 06 25.9	18 17.05	-09 48.1	17.7	-0.81	+ 0.5	4.5/26.0	35061	1981 ET ₁₄	1999 06 27.4	18 23.69	-22 50.6	19.5	-0.82	0.0	0.1/27.5	31780
(8350)	1999 06 25.9	18 17.21	-22 58.8	16.5	-0.99	- 4.2	7.8/16.0	31354	1995 SW ₂₉	1999 06 27.5	18 23.95	-47 58.8	18.6	-1.16	+ 2.6	6.5/27.5	29946
4159 T-2	1999 06 25.9	18 17.39	-24 35.1	18.8	-0.85	- 0.7	0.4/26.0	32344	1990 SS ₇	1999 06 27.5	18 24.03	-23 58.4	17.8	-0.89	- 1.3	0.2/27.5	32302
1996 XE ₁₂	1999 06 26.1	18 17.95	-26 34.5	17.6	-0.93	- 1.0	1.2/26.0	32056	1994 CM ₁₃	1999 06 27.5	18 24.04	-34 41.2	16.9	-1.13	- 2.0	4.9/26.9	32051
1996 RG ₅	1999 06 26.2	18 18.36	-16 03.9	17.6	-1.09	- 3.4	3.0/26.6	32310	1993 GF ₁	1999 06 27.5	18 24.12	-39 12.8	16.9	-1.02	- 2.7	5.7/26.5	33235
1990 TG ₈	1999 06 26.2	18 18.41	-42 58.2	18.6	-1.02	- 1.9	5.2/25.2	35061	1993 TU	1999 06 27.6	18 24.42	-31 14.2	15.7	-1.13	+ 1.1	4.1/27.5	31276
1981 ES ₂	1999 06 26.2	18 18.45	-23 56.6	18.5	-1.12	+ 3.2	0.2/26.2	26915	3042 T-2	1999 06 27.6	18 24.50	-17 36.9	18.2	-1.08	- 2.0	2.5/28.0	31294
1997 CA ₁₇	1999 06 26.2	18 18.54	-25 13.2	18.5	-0.83	+ 1.1	0.5/26.2	32058	1998 BY ₂	1999 06 27.6	18 24.58	-28 15.6	17.7	-1.16	- 0.6	2.0/27.5	31555
1998 FH ₇₇	1999 06 26.2	18 18.57	-12 07.3	17.7	-0.81	- 2.3	3.6/26.9	35077	1998 FR ₅₄	1999 06 27.7	18 24.66	-17 05.2	20.7	-0.94	- 0.6	2.0/28.0	34590
1998 DN ₂₇	1999 06 26.2	18 18.68	-16 06.9	17.8	-1.01	- 1.3	3.1/26.5	32315	5184 T-2	1999 06 27.7	18 24.73	-13 24.1	18.7	-0.81	+ 1.0	3.0/27.9	31826
(10746)	1999 06 26.3	18 18.89	-40 32.9	16.2	-1.13	+ 3.7	7.6/26.7	34756	3198 T-2	1999 06 27.8	18 25.19	-30 11.2	19.0	-0.88	- 1.0	1.9/27.6	32093
1998 FY ₁₅	1999 06 26.3	18 18.94	-20 26.3	17.1	-0.96	+ 0.2	1.1/26.4	31807	4354 T-3	1999 06 27.8	18 25.23	-18 51.8	17.6	-1.10	- 2.4	2.0/28.1	35125
1996 TF ₁₀	1999 06 26.3	18 19.18	-30 51.3	17.9	-1.15	0.0	3.2/26.2	33255	(8798)	1999 06 27.8	18 25.34	-31 27.7	17.4	-0.91	- 1.2	3.1/27.5	31898
(8615)	1999 06 26.4	18 19.46	-17 14.5	17.9	-0.95	- 1.3	1.9/26.7	31667	1997 YN ₁₆	1999 06 27.8	18 25.38	-20 26.5	17.8	-1.03	- 1.7	1.1/28.0	31425
1996 TH ₅	1999 06 26.4	18 19.61	-27 25.3	19.7	-1.09	- 0.7	1.5/26.4	31588	1981 EB ₁₂	1999 06 27.9	18 25.46	-21 04.5	17.5	-0.84	+ 1.2	0.8/28.0	31709
1998 FC ₂₈	1999 06 26.5	18 19.56	-12 37.2	18.6	-1.00	- 0.3	4.5/26.7	32684	1994 PJ ₁₃	1999 06 27.9	18 25.49	-21 39.2	17.5	-0.83	- 0.6	0.5/28.0	32052
1997 YP ₁₁	1999 06 26.5	18 19.58	-17 53.4	16.6	-1.08	- 0.1	2.4/26.6	31591	1998 FN ₆₂	1999 06 28.0	18 26.05	-36 34.6	18.1	-0.99	0.0	4.2/27.6	32066
1997 YF ₁₈	1999 06 26.5	18 19.70	-36 03.7	16.8	-0.98	- 3.5	4.6/25.7	31797	1996 VJ ₈	1999 06 28.1	18 26.33	-29 41.4	18.4	-1.07	- 0.2	2.3/27.9	32055
1998 FT ₇₄	1999 06 26.5	18 19.91	+05 18.8	17.3	-0.85	- 0.9	10.2/28.1	35077	1992 EB ₂	1999 06 28.1	18 26.39	-15 27.8	18.6	-0.80	- 1.5	2.7/28.6	32048
(8657)	1999 06 26.5	18 19.97	-25 55.0	17.5	-0.93	- 0.3	0.9/26.5	31677	1998 KJ	1999 06 28.1	18 26.49	-29 06.3	16.7	-0.94	- 4.1	2.1/27.7	35078
1995 TN	1999 06 26.5	18 20.00	-38 40.4	18.0	-1.00	- 0.3	4.9/26.1	32053	3249 T-1	1999 06 28.1	18 26.53	-31 06.9	17.4	-1.11	- 0.3	3.1/27.9	32343
(8682)	1999 06 26.6	18 20.15	-22 14.0	16.4	-0.84	- 0.7	0.4/26.7	31682	1992 YU ₂	1999 06 28.2	18 26.69	-18 50.1	18.8	-0.97	+ 0.1	1.5/28.4	31787
(8760)	1999 06 26.6	18 20.16	-23 06.3	17.0	-0.86	+ 0.1	0.1/26.7	31701	1981 DP	1999 06 28.2	18 26.76	-13 11.9	17.8	-1.02	+ 2.8	4.8/28.3	26914
1996 FE	1999 06 26.7	18 20.39	+15 38.7	18.5	-1.13	+ 4.2	17.6/25.3	30876	(8522)	1999 06 28.2	18 26.78	-26 26.7	15.8	-1.07	0.0	1.6/28.1	31501
1996 VA ₃₀	1999 06 26.7	18 20.52	-04 32.5	17.4	-0.98	+ 3.1	7.8/26.3	35071	4529 P-L	1999 06 28.2	18 27.00	-30 29.4	18.5	-0.90	- 0.4	2.5/28.0	22694
(8835)	1999 06 26.7	18 20.55	-29 29.9	17.4	-0.87	- 1.8	1.8/26.4	31907	1998 DG ₁₀	1999 06 28.3	18 27.07	-15 09.0	16.8	-1.05	- 0.4	3.5/28.6	31559
1998 FF ₃₅	1999 06 26.8	18 20.80	-21 36.5	17.3	-0.86	- 0.3	0.6/26.9	32754	1996 TR	1999 06 28.3	18 27.38	-11 22.3	18.0	-1.00	- 1.0	5.0/28.8	32054
4535 P-L	1999 06 26.8	18 20.88	-23 35.4	18.6	-0.84	- 0.4	0.1/26.8	30681	1996 QH	1999 06 28.3	18 27.46	-29 58.1	18.1	-1.21	+ 0.6	2.7/28.2	32054
1996 FF	1999 06 26.8	18 20.98	+12 59.4	17.8	-1.12	+ 3.0	16.6/26.6	35069	1981 EZ ₂₄	1999 06 28.4	18 27.45	-01 21.0	17.7	-0.85	- 1.3	9.1/29.7	35057
1992 RP ₃	1999 06 26.8	18 21.00	-04 45.3	18.6	-0.93	- 1.9	6.5/27.8	32305	1991 AJ ₃	1999 06 28.4	18 27.49	-28 15.8	16.7	-0.93	+ 3.7	1.7/28.5	35062
1997 BC ₂	1999 06 26.8	18 21.08	-16 01.7	17.0	-0.85	- 3.3	2.4/27.3	35072	1989 OM	1999 06 28.4	18 27.70	-52 13.7	16.5	-1.22	- 4.9	12.7/24.3	31582
(8906)	1999 06 26.8	18 21.22	-21 50.0	17.6	-0.81	- 0.6	0.4/26.9	31924	(8734)	1999 06 28.5	18 27.83	-23 34.9	17.4	-0.91	- 1.7	0.1/28.5	31695
1998 FO ₅₄	1999 06 27.0	18 21.58	-25 34.9	19.0	-1.07	- 0.4	0.8/26.9	32754	1990 QZ ₅	1999 06 28.5	18 27.90	-06 08.4	17.4	-0.83	- 1.8	5.5/29.4	35060
1996 VY ₅	1999 06 27.0	18 21.61	-25 07.4	19.7	-1.07	- 1.4	0.7/26.9	31549	1989 AR	1999 06 28.5	18 28.08	-23 16.0	18.3	-0.97	- 2.4	0.0/28.6	31950
1998 FZ ₇₄	1999 06 27.0	18 21.69	-37 46.0	17.7	-1.01	- 1.0	4.5/26.4	32323	1998 FY ₄₃	1999 06 28.5	18 28.15	-39 03.5	19.9	-1.16	- 0.3	5.2/28.0	32258
1998 HR ₃₁	1999 06 27.0	18 21.86	-21 45.4	18.2	-0.86	- 3.1	0.5/27.2	32265	1997 YF ₃	1999 06 28.5	18 28.26	-21 21.2	17.1	-1.04	- 0.3	0.8/28.7	31796
1998 DE ₁₃	1999 06 27.0	18 21.94	-23 58.1	19.0	-0.96	- 3.0	0.2/27.0	31741	1995 TC	1999 06 28.6	18 28.34	-24 07.0	17.7	-0.91	- 0.4	0.3/28.6	32053
1996 VU ₇	1999 06 27.0	18 21.94	-26 06.5	17.5	-1.09	- 2.1	1.1/26.9	32055	1996 XS ₅	1999 06 28.6	18 28.40	-23 06.7	18.1	-0.84	- 1.9	0.0/28.6	32311
1998 FL ₆₁	1999 06 27.1	18 22.06	-39 59.1	16.0	-1.04	- 0.5	5.9/26.4	32066	1998 BZ ₁₈	1999 06 28.7	18 28.92	-24 36.9	18.9	-1.03	+ 0.2	0.5/28.7	31798
1981 DL ₁	1999 06 27.1	18 22.26	-38 59.8	18.4	-1.03	+ 2.0	5.2/27.0	28882	1995 UJ ₃₁	1999 06 28.7	18 29.05	-25 38.3	17.4	-0.89	- 0.7	0.7/28.7	31970
1995 UD ₄₅	1999 06 27.1	18 22.31	-36 50.9	16.9	-1.02	- 3.1	4.5/26.2	32053	1998 FD ₄₉	1999 06 28.8	18 29.37	-43 31.1	18.7	-1.23	- 0.1	7.0/28.0	32065
(8766)	1999 06 27.2	18 22.49	-22 09.3	17.1	-0.87	- 0.2	0.4/27.3	31702	1996 YP ₃	1999 06 28.9	18 29.56	-37 15.7	17.2	-1.15	- 6.4	5.7/27.3	31794
1996 VE ₁	1999 06 27.2	18 22.75	-17 08.0	18.0	-0.97	- 2.8	2.4/27.6	31792	1993 FG ₅	1999 06 28.9	18 29.65	-25 42.2	18.0	-0.91	- 1.3	0.8/28.8	32049
6286 P-L	1999 06 27.2	18 22.76	-26 25.4	18.2	-0.86	+ 0.1	1.0/27.2	32091	1982 SJ ₇	1999 06 28.9	18 29.80	-10 26.1	15.7	-0.87	- 0.5	6.1/29.4	35058
1998 FP ₃₂	1999 06 27.2	18 22.80	-27 48.7	16.3	-1.15	0.0	2.1/27.1	35077	(8338)	1999 06 28.9	18 29.80	-24 41.4	14.7	-1.04	- 7.6	0.8/28.8	31351
2395 T-3	1999 06 27.3	18 23.30	-23 54.4	17.9	-0.83	+ 0.2	0.2/27.4	32093	1992 EP ₄	1999 06 29.0	18 29.94	-22 50.6	16.4	-1.12	- 2.5	0.2/29.0	35063
1998 DZ ₁	1999 06 27.3	18 23.30	-42 08.8	17.8	-1.22	+ 3.7	8.3/27.9	35076	5125 T-2	1999 06 29.0	18 30.01	-28 48.4	16.4	-0.93	+ 4.0	2.3/29.1	31826
2258 T-1	1999 06 27.4	18 23.28	-37 04.7	16.2	-1.21	- 3.1	6.1/26.3	32092	1992 DQ ₇	1999 06 29.0	18 30.04	-25 37.5	17.3	-0.88	- 1.5	0.8/28.9	32304

4094 T-2	1999 06 29.0	18 30.24 -21 34.2 19.2	-0.86 - 1.0	0.5/29.2	29130	1994 RU ₁	1999 06 30.3	18 35.51 +01 20.8 17.1	-0.78 - 1.4	8.2/01.6	35067
1994 AX ₁₀	1999 06 29.1	18 30.53 -28 57.5 19.7	-1.14 - 0.7	2.3/28.9	28074	(8562)	1999 06 30.3	18 35.60 -38 45.6 17.0	-1.05 - 2.4	5.7/29.1	31510
(10311)	1999 06 29.1	18 30.69 -26 14.3 17.5	-0.93 - 1.3	1.1/29.0	34139	1998 HN ₁₉	1999 06 30.3	18 35.69 -08 32.1 17.7	-0.94 + 1.0	6.0/30.7	32264
1991 VY ₁₂	1999 06 29.2	18 30.85 -19 12.1 17.2	-0.94 + 0.5	1.5/29.3	32304	1997 YR	1999 06 30.3	18 35.76 -20 11.6 17.5	-1.06 - 2.7	1.2/30.6	31283
1997 AU ₂	1999 06 29.2	18 31.09 -21 28.8 18.8	-0.85 - 3.8	0.5/29.4	31982	1996 RC ₁	1999 06 30.4	18 35.95 -19 56.3 17.4	-1.02 - 2.3	1.7/30.7	35070
1989 KF	1999 06 29.2	18 31.13 -29 38.2 15.9	-1.00 - 7.0	2.4/28.5	35059	1997 AK ₄	1999 06 30.5	18 36.19 -23 16.1 17.8	-0.85 - 0.3	0.0/30.5	32312
(8381)	1999 06 29.3	18 31.15 -13 11.3 17.8	-0.98 + 0.6	3.9/29.6	31361	1991 TQ ₆	1999 06 30.5	18 36.38 -23 54.5 17.5	-0.96 + 0.5	0.3/30.5	35063
1993 FX ₂	1999 06 29.3	18 31.15 -21 39.9 17.6	-0.90 - 1.7	0.6/29.4	32306	1995 UH ₄	1999 06 30.5	18 36.39 -28 45.9 18.3	-0.90 + 0.9	1.7/30.4	29319
1990 VZ ₆	1999 06 29.3	18 31.17 -34 21.0 18.4	-0.90 - 1.0	3.0/28.7	32302	1996 SJ ₆	1999 06 30.5	18 36.41 -36 11.5 17.8	-1.22 - 2.0	5.7/29.6	31973
1996 RC	1999 06 29.3	18 31.35 -18 12.7 18.6	-1.05 - 1.5	2.2/29.6	28596	1995 TF ₁	1999 06 30.5	18 36.42 -07 07.2 16.9	-0.91 + 6.6	7.6/29.8	26569
1997 YK ₂	1999 06 29.3	18 31.63 -26 27.8 16.6	-1.12 + 2.3	1.7/29.4	35074	1995 UZ ₃	1999 06 30.5	18 36.47 -53 05.2 17.8	-1.25 - 3.0	9.4/27.6	32053
1993 WB	1999 06 29.4	18 31.56 -25 39.1 18.5	-1.10 - 0.5	0.9/29.3	32307	1995 SM ₅₄	1999 06 30.6	18 36.65 -22 49.2 17.0	-0.91 - 2.0	0.1/30.7	35068
1997 AX ₆	1999 06 29.4	18 31.64 -08 48.2 18.3	-0.78 - 3.0	4.4/30.6	32312	1997 CB ₅	1999 06 30.6	18 36.67 -25 34.5 19.4	-1.00 - 1.9	0.8/30.5	29927
1987 SN ₁₂	1999 06 29.4	18 31.74 -21 05.0 16.1	-0.95 - 1.3	1.0/29.6	35058	1991 TD ₄	1999 06 30.6	18 36.69 +09 05.5 16.6	-0.82 - 1.2	14.9/31.0	35063
1994 CD ₉	1999 06 29.4	18 31.88 -59 33.1 17.8	-1.85 - 1.0	12.5/26.5	32051	1998 FO	1999 06 30.6	18 36.70 -35 06.3 18.4	-1.05 - 1.1	3.9/29.9	32316
(8394)	1999 06 29.4	18 31.93 -20 42.8 17.5	-1.10 - 1.7	1.0/29.6	31364	1993 FF ₄₁	1999 06 30.6	18 36.85 -07 03.6 19.5	-0.81 - 1.6	5.5/01.8	33685
1401 T-2	1999 06 29.4	18 31.93 -25 30.4 17.5	-0.97 + 0.5	1.2/29.4	24237	1996 TX ₂₈	1999 06 30.7	18 36.91 -26 34.9 18.9	-1.05 - 3.1	1.3/30.4	32055
1998 FR	1999 06 29.4	18 32.02 -20 57.5 20.0	-0.90 - 1.7	0.8/29.6	32684	1996 YD ₂	1999 06 30.7	18 37.02 -40 38.2 17.4	-1.02 - 0.5	5.2/29.8	32312
(8445)	1999 06 29.5	18 32.00 -26 30.1 17.3	-0.91 - 1.3	1.1/29.3	31483	1998 FF ₇₀	1999 06 30.7	18 37.19 -18 42.8 17.8	-0.82 - 1.8	1.4/01.1	32323
1998 DU ₁₁	1999 06 29.5	18 32.10 -23 48.1 16.3	-0.86 - 1.6	0.2/29.5	35076	(8684)	1999 06 30.9	18 37.99 -20 51.3 17.3	-1.12 - 1.0	1.1/31.0	31683
1994 HD	1999 06 29.5	18 32.36 +16 36.8 18.0	-0.88 - 0.2	12.8/03.1	35067	1995 TQ	1999 06 30.9	18 38.15 -12 11.0 16.8	-0.87 + 2.5	3.9/31.0	35068
1998 AD ₃	1999 06 29.6	18 32.56 -26 38.0 17.4	-1.07 - 0.1	1.5/29.5	31287	1996 TT ₅	1999 07 01.0	18 38.24 -23 30.4 17.5	-1.26 + 7.7	0.2/31.0	28864
1998 FO ₇₄	1999 06 29.6	18 32.80 -09 40.4 18.1	-0.87 - 2.5	5.1/30.7	32323	5061 T-2	1999 07 01.0	18 38.46 -29 02.6 16.1	-1.11 + 4.0	3.3/31.0	35125
1979 MC ₃	1999 06 29.6	18 32.81 -19 28.0 18.4	-0.95 - 1.1	1.7/29.9	30778	1998 DQ ₁₃	1999 07 01.0	18 38.48 -22 34.0 17.8	-0.86 - 1.5	0.2/01.1	35076
1993 FF ₃₅	1999 06 29.6	18 32.82 -21 11.9 17.8	-0.87 - 1.2	0.6/29.8	32306	1997 YL ₁₄	1999 07 01.0	18 38.64 -20 15.4 17.9	-1.06 - 0.1	1.2/01.2	34888
4096 T-2	1999 06 29.7	18 32.96 -08 31.6 18.3	-0.80 - 1.3	5.0/30.5	32093	(8813)	1999 07 01.1	18 38.73 -24 38.2 15.7	-0.98 - 7.6	0.5/30.9	31902
(8493)	1999 06 29.8	18 33.26 -20 35.4 17.6	-1.01 0.0	0.9/29.9	31494	1998 FV ₄₃	1999 07 01.1	18 38.82 -37 58.2 18.0	-1.02 - 0.2	5.3/30.4	32319
(8368)	1999 06 29.8	18 33.36 -21 53.6 16.9	-1.07 - 1.4	0.5/29.9	31358	1998 DD ₁₃	1999 07 01.2	18 39.09 -41 27.2 17.8	-1.06 - 1.5	6.2/30.1	31801
1981 EL ₈	1999 06 29.8	18 33.54 -42 50.4 21.0	-1.03 + 0.6	5.3/29.1	26916	1996 XL ₅	1999 07 01.2	18 39.09 -25 18.1 17.1	-1.02 - 5.5	0.8/31.0	32311
1998 FV ₄₂	1999 06 29.8	18 33.60 -22 04.0 17.3	-0.91 - 0.4	0.4/29.9	35077	1998 HS ₂₄	1999 07 01.2	18 39.18 -12 01.3 18.9	-0.82 - 3.4	3.6/02.3	32327
1981 EG ₁₇	1999 06 29.9	18 33.70 +06 06.0 19.6	-0.73 - 1.0	7.8/02.0	32210	4584 P-L	1999 07 01.2	18 39.34 -13 38.6 17.9	-1.04 - 1.6	4.0/01.8	32343
1998 FG ₁₁₄	1999 06 29.9	18 33.76 -32 26.2 18.6	-0.94 + 0.7	2.9/29.6	32003	1998 FW ₆₁	1999 07 01.2	18 39.44 -15 44.9 18.0	-0.99 - 0.1	2.7/01.6	34911
(8594)	1999 06 29.9	18 33.77 -25 49.0 18.3	-1.05 - 1.8	0.9/29.8	31518	1998 FF ₂₈	1999 07 01.3	18 39.44 -11 31.2 16.7	-1.05 - 0.7	5.7/01.8	32318
(8758)	1999 06 29.9	18 33.88 -17 06.3 18.5	-0.79 - 1.4	1.8/30.3	31700	(8728)	1999 07 01.3	18 39.48 -21 48.0 17.1	-1.09 - 2.4	0.6/01.4	31694
1981 ES ₃₇	1999 06 29.9	18 33.91 -18 08.5 20.1	-1.07 + 0.3	2.3/30.1	26922	1996 XT ₅	1999 07 01.3	18 39.59 -25 39.3 17.3	-0.92 + 1.4	0.8/01.3	31590
2275 T-2	1999 06 30.0	18 34.26 -19 12.2 18.5	-0.82 - 0.9	1.1/30.3	32092	1998 ED ₂₁	1999 07 01.3	18 39.75 -10 47.2 19.0	-0.99 - 2.7	4.8/02.3	32754
1990 QU ₇	1999 06 30.0	18 34.40 -20 36.9 18.3	-0.86 - 1.0	0.8/30.2	32301	1995 SX ₁₉	1999 07 01.3	18 39.88 -20 08.6 16.7	-0.89 - 0.9	1.1/01.6	35068
1994 PG ₃₉	1999 06 30.0	18 34.45 -22 21.3 17.3	-0.85 - 0.6	0.3/30.1	32308	1996 XT ₁₀	1999 07 01.3	18 39.90 -35 15.9 19.3	-1.14 - 1.6	5.8/30.5	28606
3089 T-2	1999 06 30.1	18 34.44 -22 48.9 18.0	-0.86 - 1.5	0.1/30.1	32344	1996 VV ₅	1999 07 01.4	18 39.89 -13 51.0 17.0	-0.95 + 0.1	3.8/01.8	35071
1995 WW ₂	1999 06 30.1	18 34.62 -12 49.6 17.4	-0.83 + 0.6	3.3/30.5	32310	1990 TP ₇	1999 07 01.4	18 40.10 -25 12.0 18.1	-0.88 - 0.8	0.6/01.3	35061
1996 VW ₇	1999 06 30.1	18 34.63 -13 00.9 18.5	-0.91 - 0.7	3.2/30.6	34517	1998 AB ₆	1999 07 01.4	18 40.20 -27 29.8 16.5	-0.99 - 0.9	2.3/01.2	31797
1989 SN ₃	1999 06 30.1	18 34.70 -15 14.5 17.5	-0.83 - 1.0	2.8/30.6	32045	1993 FR ₄₁	1999 07 01.4	18 40.25 -21 22.8 16.8	-0.85 - 1.0	0.7/01.6	35065
(9511)	1999 06 30.1	18 34.76 -31 23.1 17.2	-1.00 - 3.2	2.7/29.5	32656	1998 HJ ₉₄	1999 07 01.4	18 40.29 -04 08.7 18.1	-0.77 + 1.2	5.5/02.2	32755
1992 GF ₂	1999 06 30.1	18 34.87 -26 54.7 16.8	-1.12 - 1.8	1.8/30.0	35064	(8701)	1999 07 01.5	18 40.70 -12 47.6 16.6	-0.80 - 0.2	3.7/02.1	31687
(9126)	1999 06 30.1	18 34.93 -20 20.6 18.5	-0.98 - 0.9	1.0/30.3	32203	1986 QU ₂	1999 07 01.6	18 40.78 -28 49.7 17.1	-0.99 - 1.2	2.2/01.3	35058
(8607)	1999 06 30.2	18 35.08 -16 11.3 17.3	-1.05 + 0.8	2.9/30.4	31665	1998 BA ₃	1999 07 01.6	18 40.84 -21 09.0 16.7	-1.02 - 0.1	1.0/01.7	31397
1996 XW ₅	1999 06 30.2	18 35.14 -28 30.6 17.1	-0.93 + 1.9	1.8/30.2	35071	(8747)	1999 07 01.6	18 41.03 -04 14.1 16.2	-0.79 - 0.1	6.6/02.6	31698
1996 XQ ₄	1999 06 30.2	18 35.23 -33 48.6 18.4	-1.13 - 0.2	4.9/29.8	32246	1166 T-1	1999 07 01.7	18 41.08 -38 38.9 18.7	-1.00 - 0.3	4.9/30.9	32343
(8963)	1999 06 30.2	18 35.26 -22 39.1 17.0	-0.84 - 0.7	0.2/30.3	31937	1981 EV ₁₀	1999 07 01.7	18 41.18 -17 37.0 19.5	-1.07 + 0.5	2.3/01.9	22270
1998 FK ₅₈	1999 06 30.2	18 35.28 -36 46.0 17.8	-1.00 - 0.6	4.5/29.6	32321	(8762)	1999 07 01.7	18 41.32 -21 18.0 16.7	-0.95 - 0.4	0.7/01.9	31701
(8514)	1999 06 30.2	18 35.29 -28 08.6 16.1	-1.04 + 0.6	2.3/30.1	31499	1995 VV ₁₃	1999 07 01.8	18 41.66 -18 09.8 19.2	-0.85 - 1.8	1.8/02.2	31544

1981 EL ₄₄	1999 07 01.8	18 41.73	-27 21.8	20.3	-1.18	+	1.5	1.8/01.7	26923	(8730)	1999 07 03.3	18 48.11	-22 01.5	16.6	-1.10	-	0.7	0.4/03.4	31694
1994 JJ ₅	1999 07 01.8	18 41.85	-32 25.6	17.1	-1.02	-	3.0	3.8/31.0	32234	1981 EK ₃₁	1999 07 03.4	18 48.15	-38 41.7	19.1	-1.15	+	0.1	6.0/02.4	26921
1989 VJ ₁	1999 07 01.9	18 41.91	-09 13.6	19.0	-1.00	-	1.4	6.0/02.7	28297	1996 TY ₆₄	1999 07 03.4	18 48.55	-23 00.9	19.7	-1.00	-	1.1	0.0/03.5	32055
1995 QK ₁	1999 07 01.9	18 42.24	-14 08.0	18.3	-0.88	-	1.9	3.5/02.6	26403	(8633)	1999 07 03.5	18 48.48	-35 12.6	18.1	-0.93	-	0.5	3.5/02.7	31671
3286 T-1	1999 07 01.9	18 42.35	-42 57.3	18.9	-1.16	-	0.5	6.6/30.8	32092	1996 RD ₁	1999 07 03.5	18 48.55	-15 46.1	16.9	-0.97	-	1.6	3.8/04.0	35070
1998 FY ₅₄	1999 07 01.9	18 42.35	-23 30.7	18.3	-0.89	-	1.1	0.1/02.0	32320	1977 DR ₂	1999 07 03.5	18 48.89	-34 20.3	17.0	-1.18	+	0.8	5.3/03.1	31134
1989 SJ ₃	1999 07 02.0	18 42.70	-22 45.8	18.1	-0.84	-	1.4	0.1/02.1	30447	1998 FQ ₇₀	1999 07 03.5	18 48.95	-31 25.0	18.1	-1.00	-	1.8	2.9/02.9	32068
1994 PT ₁₉	1999 07 02.0	18 42.77	-20 05.6	16.8	-0.83	-	0.9	1.2/02.3	35067	1981 EF ₅	1999 07 03.6	18 48.98	-09 49.1	18.5	-0.91	+	0.4	4.2/04.3	32042
1998 FG ₇₄	1999 07 02.1	18 42.81	-17 22.3	19.0	-0.84	+	1.6	1.9/02.3	34913	(10737)	1999 07 03.7	18 49.36	+20 30.4	16.9	-0.85	-	5.0	24.5/13.8	34754
1998 FU ₆₂	1999 07 02.1	18 42.96	-24 13.4	17.6	-0.95	-	0.5	0.4/02.1	32322	(9066)	1999 07 03.8	18 49.94	-18 04.7	17.4	-0.87	-	1.6	1.5/04.2	32189
2728 P-L	1999 07 02.1	18 42.98	-39 19.1	18.9	-1.04	-	1.0	5.4/01.1	32343	1998 FX ₁₄	1999 07 03.9	18 50.29	-30 40.3	18.9	-0.93	-	0.3	2.5/03.4	32317
(8502)	1999 07 02.1	18 43.10	-13 23.6	16.4	-0.86	+	1.9	3.5/02.5	31496	1988 RA ₁₂	1999 07 03.9	18 50.57	-17 17.2	18.2	-1.02	-	1.6	2.2/04.4	32741
(8983)	1999 07 02.2	18 43.11	-07 51.2	16.8	-0.80	-	1.0	4.7/03.2	32170	1996 VN	1999 07 04.0	18 50.55	-30 39.6	19.0	-1.01	-	0.8	2.4/03.5	32055
(8658)	1999 07 02.2	18 43.17	-20 18.9	16.7	-0.89	-	1.0	1.0/02.4	31677	1995 QP	1999 07 04.0	18 50.55	-33 54.2	17.8	-1.08	-	0.5	4.0/03.2	29664
1993 FN ₄₀	1999 07 02.2	18 43.18	-26 30.6	16.8	-0.91	-	1.6	1.3/02.0	35065	1999 KL ₆	1999 07 04.0	18 50.64	+24 00.1	15.6	-0.62	+	4.7	25.9/02.3	35043
1990 WN ₅	1999 07 02.2	18 43.30	-34 25.9	16.1	-0.97	-	3.4	3.9/01.1	31785	1995 SW ₁₉	1999 07 04.0	18 50.69	-24 11.8	18.7	-0.83	-	1.1	0.4/03.9	34512
1990 BJ	1999 07 02.2	18 43.33	-30 27.9	16.1	-1.40	+	7.2	3.0/02.4	29657	(9372)	1999 07 04.0	18 50.69	-26 17.5	17.7	-0.93	-	1.5	1.2/03.8	32623
1996 VX ₄	1999 07 02.2	18 43.37	-25 58.5	16.3	-1.08	-	0.5	1.4/02.1	35071	1998 EM ₉	1999 07 04.0	18 50.71	-35 08.6	17.8	-1.17	-	2.1	4.8/03.0	34906
1994 PA ₃₁	1999 07 02.2	18 43.49	-04 28.0	17.9	-0.74	-	1.7	5.6/03.7	32747	1991 VU ₂	1999 07 04.0	18 50.73	-30 43.6	16.9	-1.06	-	6.0	3.0/03.0	35063
2200 T-2	1999 07 02.2	18 43.52	-23 33.9	17.1	-0.99	-	0.9	0.2/02.2	35125	1998 FY ₆₁	1999 07 04.0	18 50.88	-19 18.5	18.4	-0.92	-	0.3	1.3/04.3	32066
1991 RS	1999 07 02.3	18 43.53	+02 51.1	16.4	-0.81	-	2.5	12.1/04.6	35062	1979 MQ ₆	1999 07 04.0	18 51.02	-21 34.3	16.9	-1.10	+	1.6	0.7/04.1	30779
1981 DV	1999 07 02.3	18 43.76	-02 00.4	18.0	-0.88	+	0.7	7.6/03.4	31780	1996 XS ₂₅	1999 07 04.1	18 51.05	-22 55.7	16.0	-0.91	-	10.0	0.0/04.1	35071
1998 FD ₃₃	1999 07 02.3	18 43.87	-20 58.5	17.3	-0.92	-	1.7	0.8/02.5	32318	1981 EZ ₃₇	1999 07 04.1	18 51.29	-12 10.7	18.6	-0.79	-	1.0	3.4/05.0	31781
1981 DL	1999 07 02.4	18 44.21	-13 14.1	18.3	-0.80	+	0.5	2.9/02.9	31944	(8534)	1999 07 04.1	18 51.31	-25 26.2	16.7	-0.91	-	1.8	0.9/04.0	31504
2282 T-3	1999 07 02.4	18 44.42	-11 54.7	19.9	-0.97	-	0.4	4.0/03.2	32093	1993 FR ₅₈	1999 07 04.1	18 51.43	-21 50.1	17.6	-0.90	-	0.9	0.4/04.3	35065
(8605)	1999 07 02.5	18 44.50	-18 28.8	15.9	-0.98	+	5.0	2.0/02.5	31665	1979 MF	1999 07 04.2	18 51.38	-11 36.0	15.9	-0.94	-	4.8	6.0/06.0	35057
(8455)	1999 07 02.5	18 44.78	-21 52.3	18.1	-0.98	+	0.4	0.4/02.6	31485	(8695)	1999 07 04.3	18 52.08	-25 59.4	18.0	-0.92	-	1.8	1.1/04.1	31686
1995 WZ ₁₇	1999 07 02.5	18 44.80	-14 29.3	19.6	-0.81	+	0.6	2.7/03.0	32946	1986 QC ₃	1999 07 04.3	18 52.08	-35 48.0	17.5	-1.26	-	0.5	5.5/03.5	31782
(8609)	1999 07 02.6	18 44.97	-16 15.5	16.8	-1.05	-	3.8	2.6/03.2	31665	4125 T-3	1999 07 04.3	18 52.15	-38 58.7	18.0	-1.16	-	4.0	6.8/02.3	27124
1997 YD ₃	1999 07 02.6	18 45.12	-17 32.8	17.5	-1.00	-	3.4	2.1/03.2	35074	1998 FZ ₁₁₉	1999 07 04.3	18 52.27	-23 51.7	16.4	-0.94	+	0.3	0.4/04.3	35078
(8716)	1999 07 02.6	18 45.18	-06 08.2	18.2	-0.77	+	0.2	4.9/03.7	31691	1995 JK	1999 07 04.4	18 52.22	-16 15.9	17.3	-0.96	-	5.2	3.1/05.2	25335
1995 WT	1999 07 02.7	18 45.22	-18 45.7	17.4	-0.83	+	0.4	1.2/02.9	35069	1990 VE ₆	1999 07 04.4	18 52.35	-07 34.5	17.9	-0.80	-	0.4	4.9/05.5	35061
1998 FG ₆₃	1999 07 02.7	18 45.37	-20 51.7	18.1	-0.84	-	1.4	0.7/02.9	32322	(8501)	1999 07 04.4	18 52.52	-37 01.9	16.7	-0.99	-	2.7	4.8/03.1	31496
1998 HO ₄₂	1999 07 02.7	18 45.45	-23 18.9	17.9	-0.92	-	3.7	0.1/02.7	34917	1998 HQ ₁₁₅	1999 07 04.4	18 52.65	-15 40.8	17.9	-0.91	-	3.4	2.3/05.2	32271
(8586)	1999 07 02.7	18 45.47	-20 56.3	16.3	-0.82	-	1.3	0.8/02.9	31516	1996 UA ₃	1999 07 04.5	18 53.08	-32 00.9	18.3	-1.12	-	6.0	4.3/03.4	31390
1998 FG ₁₀	1999 07 02.7	18 45.67	-23 45.0	18.3	-0.93	-	0.3	0.3/02.8	32317	1995 SR ₂₆	1999 07 04.6	18 53.14	-20 12.4	17.3	-0.89	-	1.0	1.0/04.8	35068
1993 FJ ₄₈	1999 07 02.9	18 46.06	-20 51.7	18.3	-0.88	-	1.0	0.8/03.1	32050	1994 BM	1999 07 04.6	18 53.20	-28 31.8	17.4	-1.12	+	0.5	2.2/04.3	31788
5077 T-2	1999 07 02.9	18 46.28	-25 53.5	18.4	-1.08	+	1.8	1.3/02.9	28881	4068 T-2	1999 07 04.6	18 53.29	-27 12.8	19.3	-0.97	-	2.0	1.5/04.3	32093
1992 EX ₂₅	1999 07 02.9	18 46.31	-23 01.5	18.0	-0.83	-	1.5	0.0/03.0	32304	1997 XY ₃	1999 07 04.7	18 53.61	-18 20.6	17.4	-0.89	-	2.5	1.6/05.2	32314
4320 T-1	1999 07 03.1	18 46.84	-28 07.1	17.8	-1.15	-	2.0	2.2/02.7	25341	4209 T-2	1999 07 04.7	18 53.68	-30 37.5	18.4	-0.92	-	2.0	2.7/04.0	32734
1981 DB ₃	1999 07 03.1	18 46.88	-12 20.4	17.1	-0.96	+	1.8	4.4/03.4	31780	1998 BA ₈	1999 07 04.7	18 53.93	-25 00.8	17.1	-1.07	-	2.7	0.9/04.6	35075
1997 CF ₁₇	1999 07 03.1	18 47.04	-23 22.9	18.4	-0.82	-	0.2	0.1/03.1	32058	1992 SY ₉	1999 07 04.7	18 53.93	-21 35.6	19.9	-1.01	-	1.5	0.5/04.9	34579
1996 XF ₆	1999 07 03.1	18 47.17	-25 36.8	18.4	-0.84	-	1.1	0.7/03.0	32056	(8971)	1999 07 04.8	18 53.87	-22 16.0	18.2	-0.82	-	1.2	0.2/04.9	31939
1993 FZ ₄₄	1999 07 03.1	18 47.21	-20 28.6	18.3	-0.88	-	1.3	0.8/03.4	32306	1993 FN ₁₀	1999 07 04.8	18 53.92	-24 49.8	17.0	-0.92	-	2.3	0.7/04.6	32306
1998 AH ₆	1999 07 03.1	18 47.33	-24 58.3	17.6	-0.91	-	0.9	0.7/03.1	32059	1995 SH ₄	1999 07 04.8	18 54.03	-45 09.2	19.7	-1.41	+	2.6	7.7/03.6	26746
1992 PU	1999 07 03.2	18 47.27	-18 43.2	17.2	-1.03	-	0.3	1.9/03.4	35064	(8399)	1999 07 04.8	18 54.04	-24 47.9	18.2	-1.06	-	1.3	0.7/04.7	31365
(8548)	1999 07 03.2	18 47.56	-15 36.6	17.7	-0.94	-	2.6	2.4/03.9	31507	1992 EW ₁₅	1999 07 04.8	18 54.10	-20 10.6	18.2	-0.82	-	1.0	0.8/05.1	34184
2202 T-1	1999 07 03.2	18 47.59	-16 51.0	16.6	-0.82	-	2.6	2.7/03.9	31294	1995 ST ₄₈	1999 07 04.8	18 54.13	-23 09.1	17.9	-0.89	-	2.1	0.1/04.8	32053
(8245)	1999 07 03.2	18 47.63	-24 40.5	16.5	-1.05	-	0.5	0.8/03.2	31206	1991 UL ₄	1999 07 04.8	18 54.20	-26 20.4	18.1	-1.01	-	2.9	1.3/04.5	29135
1997 VB ₄	1999 07 03.3	18 47.76	-31 53.5	17.9	-1.16	-	3.9	3.8/02.4	34877	1996 VP	1999 07 04.8	18 54.27	-27 25.1	16.3	-1.01	-	2.5	2.2/04.5	35070
1988 CW ₁	1999 07 03.3	18 47.85	-28 12.6	18.7	-0.98	+	1.1	1.7/03.1	31713	1981 EU ₃₉	1999 07 04.9	18 54.65	-38 13.6	18.8	-1.13	-	0.7	5.7/03.8	32739

1994 PL ₉	1999 07 04.9	18 54.68	-34 27.4	17.1	-0.95	+	0.5	3.7/04.2	31789	1978 EU ₉	1999 07 06.3	19 00.22	-19 41.8	16.9	-0.87	-	1.7	1.1/06.6	35056
1994 PW ₁₇	1999 07 04.9	18 54.73	-22 06.1	17.2	-0.85	-	1.4	0.3/05.1	35067	(8252)	1999 07 06.3	19 00.43	-22 05.8	17.2	-1.11	-	0.1	0.2/06.4	31208
1992 UR	1999 07 05.0	18 54.71	-47 12.5	16.3	-1.34	-	6.1	10.9/30.8	31585	(8370)	1999 07 06.4	19 00.45	-12 54.3	16.6	-0.93	-	6.1	4.0/07.8	31359
1998 EJ ₆	1999 07 05.0	18 54.71	-15 36.7	17.7	-1.02	-	1.6	2.8/05.6	35076	1993 FJ ₂₃	1999 07 06.4	19 00.67	-02 53.2	18.0	-0.82	-	0.4	6.9/08.0	35065
1998 BC ₄₁	1999 07 05.0	18 54.74	-28 28.4	14.5	-1.09	+	6.0	2.5/05.1	31798	1991 PH ₁₀	1999 07 06.4	19 00.72	-22 08.0	17.0	-0.98	-	2.0	0.2/06.5	35062
(8802)	1999 07 05.0	18 54.78	-09 21.9	18.0	-0.79	-	2.0	4.3/06.3	31899	1981 EJ ₄₂	1999 07 06.5	19 00.97	-06 30.0	19.3	-0.77	-	1.7	5.0/08.3	32043
2301 T-1	1999 07 05.0	18 54.86	-34 00.2	17.1	-1.24	-	2.5	5.0/03.9	32343	1986 RE ₁	1999 07 06.5	19 01.22	-15 51.3	16.1	-1.04	-	0.6	3.6/07.1	35058
1993 FH ₅	1999 07 05.0	18 54.95	-26 29.4	18.0	-0.92	-	1.7	1.2/04.7	32049	1996 VG ₂	1999 07 06.5	19 01.29	-19 30.9	17.5	-1.05	-	1.5	1.3/06.9	35070
1274 T-1	1999 07 05.1	18 55.19	-31 14.2	17.2	-1.01	-	1.1	3.4/04.4	32092	1993 UN	1999 07 06.5	19 01.31	-22 19.8	16.0	-1.00	-	2.0	0.2/06.6	35066
1989 SJ ₅	1999 07 05.1	18 55.19	-33 29.9	16.1	-1.14	-	3.5	4.8/04.0	31582	(8491)	1999 07 06.6	19 01.57	-24 05.0	17.7	-1.05	-	1.0	0.5/06.5	31494
1998 HY ₁₈	1999 07 05.1	18 55.21	-31 47.7	18.9	-1.03	-	1.0	2.9/04.4	32077	1982 JH ₂	1999 07 06.7	19 01.73	-22 08.6	17.1	-0.94	-	3.5	0.2/06.8	35058
(8899)	1999 07 05.1	18 55.47	-27 53.4	16.5	-1.06	-	6.4	2.0/04.5	31923	1981 EP ₃₇	1999 07 06.7	19 01.82	-21 08.3	18.9	-0.99	-	0.5	0.6/06.9	21562
(8976)	1999 07 05.1	18 55.52	-22 22.7	17.9	-0.82	-	1.5	0.1/05.2	31941	1992 SP ₂₆	1999 07 06.7	19 01.88	-25 13.4	16.8	-1.06	-	3.9	1.2/06.4	31787
1992 ER ₂₅	1999 07 05.2	18 55.92	-25 14.6	17.4	-0.91	-	2.0	0.9/05.1	34184	1990 HH ₁	1999 07 06.7	19 01.94	-02 53.9	15.9	-0.81	-	5.4	8.9/09.8	35060
1981 EH ₃₇	1999 07 05.2	18 55.94	-14 37.4	20.6	-0.97	-	0.7	2.8/05.9	26922	1992 EG ₁₆	1999 07 06.7	19 01.95	-20 23.6	18.1	-0.81	-	1.3	0.6/07.0	28847
1995 YY ₂	1999 07 05.2	18 55.96	-23 33.1	16.5	-0.88	-	4.6	0.3/05.2	35069	1982 SG ₁₂	1999 07 06.7	19 02.01	-11 56.8	17.4	-1.02	-	1.8	4.3/07.7	35058
1995 WQ ₂	1999 07 05.3	18 55.93	-35 57.0	18.9	-0.95	-	4.5	3.9/03.6	30784	1981 EP ₄₀	1999 07 06.7	19 02.02	-07 09.5	16.1	-0.87	-	0.5	8.4/07.9	31781
1998 DV ₃₄	1999 07 05.3	18 56.06	-18 12.0	17.9	-0.90	-	2.1	1.7/05.8	35076	1994 AA ₁	1999 07 06.8	19 02.27	-17 40.8	17.8	-1.01	-	2.7	1.9/07.4	34581
1979 MN ₇	1999 07 05.3	18 56.07	-14 56.2	18.5	-0.98	-	2.7	3.0/06.0	30779	1996 XS ₁₉	1999 07 06.8	19 02.36	-22 05.2	17.6	-0.94	+	1.6	0.2/06.9	35071
1996 TD	1999 07 05.3	18 56.21	-23 33.1	17.6	-1.14	+	0.3	0.3/05.3	35070	1981 EO ₁₀	1999 07 06.8	19 02.52	+00 34.4	18.3	-0.88	-	0.7	8.7/08.9	32042
5721 T-3	1999 07 05.4	18 56.40	-20 14.0	17.9	-0.91	-	4.1	1.0/05.7	31777	1981 ET ₁₈	1999 07 06.9	19 02.55	-27 49.5	19.7	-1.01	-	0.8	1.7/06.5	32298
6526 P-L	1999 07 05.4	18 56.44	+03 10.0	19.6	-0.75	-	1.8	8.3/07.9	32730	1998 FK ₁₁₃	1999 07 06.9	19 02.60	-18 47.0	18.9	-0.85	+	0.2	1.2/07.2	32261
1998 FL ₆₄	1999 07 05.4	18 56.68	-26 55.2	17.7	-0.92	-	2.0	1.5/05.1	32067	6514 P-L	1999 07 06.9	19 02.75	-45 45.1	17.7	-1.24	-	0.7	9.0/04.6	34267
(8577)	1999 07 05.4	18 56.73	-09 23.6	15.2	-0.89	+	0.4	7.1/06.0	31514	1998 HX ₃₈	1999 07 07.0	19 02.91	-25 46.7	19.5	-0.91	-	1.3	1.0/06.7	33267
1995 GB	1999 07 05.5	18 56.75	-21 00.4	16.7	-0.97	-	3.5	0.9/06.0	35068	(8406)	1999 07 07.0	19 03.03	-21 14.4	16.2	-1.01	-	2.5	0.7/07.2	31367
1978 VG ₄	1999 07 05.5	18 56.77	-26 39.2	18.0	-0.97	-	2.1	1.4/05.1	32738	4155 T-1	1999 07 07.0	19 03.13	-25 10.3	18.0	-0.95	-	2.3	0.9/06.8	35124
1981 EP ₁	1999 07 05.5	18 56.84	-38 56.8	17.9	-0.99	-	0.2	4.8/04.4	32298	(8402)	1999 07 07.0	19 03.22	-05 08.4	17.6	-0.91	-	1.0	6.0/08.8	31366
1998 FX ₁₁₁	1999 07 05.5	18 56.86	-14 46.5	16.9	-0.85	+	0.8	2.6/06.0	35078	1981 DL ₃	1999 07 07.1	19 03.38	-22 28.8	16.7	-1.13	+	1.6	0.1/07.1	26914
1998 FE ₃₀	1999 07 05.5	18 56.96	-23 23.1	16.7	-0.94	-	0.1	0.2/05.5	32318	1996 YD ₃	1999 07 07.2	19 03.77	-36 24.2	17.4	-1.00	+	0.1	4.9/06.1	32057
1993 FX ₈₁	1999 07 05.5	18 57.14	-26 03.0	17.1	-0.90	-	2.8	1.0/05.2	35065	1993 FX ₂₀	1999 07 07.2	19 03.87	-19 41.7	17.0	-0.87	-	1.5	1.1/07.5	32306
1998 FK ₇₄	1999 07 05.6	18 57.32	-25 23.7	19.4	-1.17	-	1.6	1.2/05.4	33267	1996 XH ₁₈	1999 07 07.2	19 03.96	-17 49.5	17.7	-0.89	-	4.0	1.6/07.8	35071
1993 UF ₇	1999 07 05.6	18 57.51	-17 25.0	17.5	-1.08	-	3.0	2.3/06.0	35066	1996 XB ₂₅	1999 07 07.2	19 04.15	-26 11.7	18.4	-1.04	-	3.5	1.4/06.9	31735
3286 T-3	1999 07 05.6	18 57.64	-41 03.7	18.4	-1.11	-	2.4	6.7/03.8	31777	(8882)	1999 07 07.2	19 04.21	+01 59.0	16.9	-0.96	-	6.0	8.6/10.9	31918
1981 ET ₄₀	1999 07 05.7	18 57.59	-25 16.6	18.2	-0.99	-	0.3	1.0/05.5	31947	1996 XY	1999 07 07.3	19 04.38	-28 55.8	17.1	-0.97	-	5.3	2.4/06.5	35071
1997 XH ₁₁	1999 07 05.7	18 57.80	-32 46.5	17.3	-1.05	-	4.2	3.6/04.6	34883	1994 PN ₁₃	1999 07 07.3	19 04.53	-23 33.3	18.0	-0.85	-	1.1	0.3/07.3	29302
1995 EY ₈	1999 07 05.7	18 58.01	-33 21.5	17.4	-1.18	+	0.2	5.0/05.2	35068	1988 TG	1999 07 07.3	19 04.54	+17 31.0	18.1	-0.97	+	2.1	15.0/08.0	35059
(8342)	1999 07 05.7	18 58.07	-24 48.3	16.5	-1.13	-	3.4	0.9/05.6	31352	1998 FC ₆₉	1999 07 07.3	19 04.54	-27 14.1	18.5	-1.00	-	1.2	1.6/07.0	32323
1989 TR ₃	1999 07 05.8	18 58.18	-09 53.3	17.9	-0.77	-	2.2	4.2/07.2	31783	1978 VM ₉	1999 07 07.4	19 04.58	-26 17.0	19.1	-1.07	-	3.4	1.4/07.0	34481
1994 PV	1999 07 05.9	18 58.41	-15 51.0	16.8	-0.81	-	2.7	2.5/06.6	35067	1995 SK ₅₁	1999 07 07.4	19 04.65	-25 53.1	17.7	-0.90	-	1.2	1.1/07.1	35068
1988 CG ₇	1999 07 05.9	18 58.47	-11 34.6	18.2	-0.89	+	0.1	3.8/06.7	32300	1998 DK ₁₅	1999 07 07.4	19 04.72	-26 19.8	19.0	-1.09	-	2.2	1.4/07.1	31801
1997 XV ₈	1999 07 06.0	18 58.83	-27 59.0	16.8	-1.14	+	1.4	2.2/05.7	35073	(8917)	1999 07 07.4	19 04.74	-14 33.4	16.6	-0.78	+	1.5	2.2/07.9	31927
1996 VJ ₃₀	1999 07 06.0	18 58.87	-16 12.7	16.2	-1.01	+	1.3	3.0/06.3	35071	1998 FR ₁₁₇	1999 07 07.4	19 04.77	-12 41.4	17.2	-0.83	+	0.2	3.1/08.2	35078
1974 RX ₁	1999 07 06.0	18 58.95	-19 50.5	16.7	-1.09	-	0.6	1.3/06.2	35056	1998 FD ₃₈	1999 07 07.5	19 04.99	-34 03.6	18.1	-1.21	-	0.3	4.7/06.6	32064
1996 VA ₆	1999 07 06.0	18 58.95	-30 05.0	17.3	-1.07	-	6.1	2.7/05.0	35071	1994 RN	1999 07 07.5	19 05.25	-09 48.8	18.4	-0.77	-	2.5	4.2/09.1	31727
1980 FJ ₁	1999 07 06.1	18 59.37	-46 45.1	16.4	-1.12	+	0.6	8.1/04.1	31579	(8941)	1999 07 07.5	19 05.29	-12 37.0	16.4	-0.76	-	3.5	3.1/08.8	31932
1998 FP ₁₂₆	1999 07 06.1	18 59.41	-12 32.4	19.3	-0.79	-	2.5	3.4/07.3	32754	1995 SO ₂₆	1999 07 07.5	19 05.32	-07 58.6	18.1	-0.80	-	1.2	4.6/09.0	35068
1996 WC	1999 07 06.1	18 59.49	-29 03.1	18.9	-1.01	-	1.8	2.0/05.6	32311	(8863)	1999 07 07.5	19 05.40	-38 17.4	16.5	-1.18	-	6.3	6.3/05.0	31914
1998 FC ₆₃	1999 07 06.2	18 59.67	-20 55.8	17.7	-0.82	-	1.3	0.6/06.4	35077	1991 VZ ₈	1999 07 07.5	19 05.41	-30 28.4	17.8	-1.02	-	3.5	3.0/06.6	35063
1996 TL ₂₉	1999 07 06.2	18 59.73	-16 15.6	17.8	-1.03	-	0.8	2.5/06.7	35070	1998 FD ₁₁₃	1999 07 07.6	19 05.44	+09 08.4	17.5	-0.79	+	2.3	11.0/09.5	34914
1998 FH ₁₀₅	1999 07 06.2	18 59.97	-17 36.4	17.7	-0.90	-	0.1	1.7/06.7	35077	(8523)	1999 07 07.6	19 05.55	-15 46.9	17.1	-1.01	-	2.8	3.0/08.3	31501
1997 XT ₁₁	1999 07 06.3	19 00.09	-21 54.3	16.9	-0.98	-	7.1	0.3/06.4	31796	(8344)	1999 07 07.7	19 05.95	-22 10.5	18.1	-1.06	-	1.8	0.2/07.8	31353

(8504)	1999 07 07.7	19 06.02	-24 26.2	16.8	-1.14	-	3.0	0.8/07.5	31497	1991 TE ₄	1999 07 09.1	19 11.62	-47 10.7	17.7	-1.29	-	2.9	9.5/05.4	32048
(9455)	1999 07 07.7	19 06.19	-28 37.0	17.3	-0.96	-	2.1	2.2/07.1	32642	1988 VE ₇	1999 07 09.1	19 11.87	-16 57.5	17.8	-0.96	-	3.2	1.9/09.8	35059
2125 T-1	1999 07 07.8	19 06.42	-37 21.7	17.6	-1.15	-	1.8	6.3/06.3	33998	1993 HJ ₃	1999 07 09.1	19 11.93	-22 34.1	17.4	-0.88	-	2.5	0.1/09.2	35065
1097 T-3	1999 07 07.8	19 06.46	-14 03.9	17.5	-0.92	+	0.6	3.0/08.4	32344	1992 RG ₄	1999 07 09.2	19 11.99	-11 18.0	17.9	-0.98	-	3.4	5.1/10.5	31585
(8619)	1999 07 07.8	19 06.51	-15 23.1	17.4	-0.79	-	2.3	2.1/08.7	31668	1992 YD	1999 07 09.2	19 12.31	-27 10.2	17.0	-1.01	-	6.9	1.7/08.5	35065
4619 P-L	1999 07 07.8	19 06.62	-25 41.7	18.4	-1.15	-	1.6	1.3/07.6	30914	1989 YC ₅	1999 07 09.2	19 12.38	-33 11.8	16.4	-1.05	+	3.0	3.9/08.7	35060
1997 AS ₁₆	1999 07 07.9	19 06.62	-25 37.4	17.6	-0.87	-	1.7	1.0/07.6	35071	1992 DN ₈	1999 07 09.3	19 12.62	-10 21.0	18.1	-0.78	-	2.4	3.8/10.8	32304
1998 FT ₅₃	1999 07 07.9	19 06.86	-41 45.3	16.1	-1.21	+	0.7	8.1/06.3	32320	(9025)	1999 07 09.3	19 12.62	-20 40.9	17.3	-0.81	-	2.0	0.6/09.6	32180
1992 WZ ₃	1999 07 07.9	19 06.96	-05 45.2	18.2	-0.92	+	0.4	5.9/09.3	35065	1998 DW ₅	1999 07 09.3	19 12.72	-47 49.4	18.3	-1.30	+	5.7	9.6/09.2	32059
1992 DO ₆	1999 07 07.9	19 07.01	-21 06.5	17.6	-0.84	-	2.3	0.5/08.1	35063	(8357)	1999 07 09.3	19 12.76	-22 13.1	15.6	-1.04	-	0.6	0.1/09.4	31356
1998 BU	1999 07 08.0	19 07.14	-29 35.8	17.3	-1.07	-	0.8	2.8/07.4	31592	1995 UB ₄₇	1999 07 09.4	19 12.84	-08 13.8	17.8	-0.81	-	0.7	4.5/10.8	34583
1996 VS ₄	1999 07 08.0	19 07.19	-27 27.7	16.6	-0.97	-	2.7	1.9/07.5	35071	1364 T-2	1999 07 09.4	19 13.18	-12 42.1	18.0	-0.89	-	1.4	3.7/10.5	32092
1996 XQ ₁₁	1999 07 08.0	19 07.31	-25 16.7	18.8	-0.94	-	2.3	0.9/07.8	31793	1995 WR ₇	1999 07 09.5	19 13.39	-17 24.0	17.5	-0.83	+	0.6	1.6/10.0	35069
4014 P-L	1999 07 08.0	19 07.39	-31 33.1	17.9	-1.24	-	0.6	3.8/07.3	32091	1997 CY ₁₆	1999 07 09.5	19 13.47	-08 53.3	18.6	-0.75	-	2.1	3.8/11.2	32751
1997 AA ₁₈	1999 07 08.1	19 07.62	-21 23.0	16.8	-0.85	-	4.2	0.4/08.3	32312	(8641)	1999 07 09.7	19 14.02	-27 15.8	17.3	-0.89	-	4.8	1.5/09.0	31673
1998 DD ₁₂	1999 07 08.2	19 08.01	-14 08.5	18.7	-0.97	-	3.4	3.2/09.2	34530	1999 LE ₁₉	1999 07 09.7	19 14.43	-36 23.0	17.8	-0.96	-	3.6	4.9/07.8	35045
1997 BO ₁	1999 07 08.2	19 08.15	-25 10.1	17.0	-0.89	-	2.0	0.9/08.0	35072	(8824)	1999 07 09.8	19 14.42	-23 03.4	17.6	-0.93	0.0	0.2/09.7	31905	
(9105)	1999 07 08.2	19 08.22	-25 56.3	17.4	-0.93	-	1.6	1.2/07.9	32198	2056 P-L	1999 07 09.8	19 14.43	-03 37.0	18.1	-0.82	-	1.1	6.4/12.0	35124
1990 WD ₁	1999 07 08.2	19 08.29	-29 55.3	18.0	-0.91	-	5.0	2.4/07.2	35061	1988 CY ₃	1999 07 09.8	19 14.49	-10 03.8	17.7	-0.89	-	0.1	4.4/10.9	35059
1998 FV ₆₄	1999 07 08.3	19 08.47	-20 32.9	18.4	-0.88	-	1.4	0.7/08.5	32260	(8612)	1999 07 09.8	19 14.60	-29 13.0	18.5	-1.13	-	1.3	2.5/09.1	31666
1323 T-2	1999 07 08.3	19 08.59	-10 00.1	19.5	-0.91	-	2.9	5.8/09.8	32732	1977 EU ₁	1999 07 09.8	19 14.83	-19 55.2	17.7	-0.95	-	2.2	0.9/10.2	35056
1996 VE ₈	1999 07 08.4	19 08.66	-17 47.3	16.9	-1.00	+	0.3	1.9/08.8	35071	1995 UU ₄	1999 07 09.9	19 14.79	-09 40.0	16.8	-0.83	+	0.3	4.4/11.0	35069
1998 FL ₁₀₉	1999 07 08.4	19 08.95	-08 12.6	17.7	-0.82	-	0.1	4.9/09.8	35077	(8850)	1999 07 09.9	19 14.94	-19 07.6	16.8	-0.85	-	5.0	1.1/10.4	31911
1997 AC ₈	1999 07 08.4	19 09.08	-24 13.9	18.6	-0.92	+	0.8	0.6/08.4	30786	3449 T-3	1999 07 09.9	19 15.18	-32 21.4	17.0	-0.92	-	2.4	3.5/08.7	32787
1994 PG ₅	1999 07 08.4	19 09.12	-30 31.2	17.7	-0.94	+	0.8	2.9/07.9	32747	(8774)	1999 07 09.9	19 15.21	-29 07.1	16.5	-0.94	+	1.0	2.4/09.4	31704
1988 PN ₁	1999 07 08.5	19 09.17	-18 08.0	16.7	-1.00	-	2.7	2.0/09.0	35059	1991 PJ ₁₁	1999 07 10.0	19 15.39	-18 21.8	15.9	-0.93	-	0.2	1.8/10.4	35062
1994 BH ₄	1999 07 08.5	19 09.18	-19 09.4	20.0	-1.01	-	1.9	1.2/08.9	32666	1983 BD	1999 07 10.0	19 15.47	-18 53.6	15.6	-0.92	-	7.3	1.3/10.6	35058
1998 FV ₅₆	1999 07 08.5	19 09.32	-32 27.7	16.5	-1.08	-	2.4	4.5/07.4	32321	(8980)	1999 07 10.0	19 15.60	-31 43.5	18.2	-0.98	-	3.1	2.9/08.8	31942
6584 P-L	1999 07 08.5	19 09.41	-27 49.1	17.2	-0.99	-	1.8	2.0/08.0	35124	5112 T-3	1999 07 10.1	19 15.61	-21 27.0	17.5	-0.90	-	5.5	0.3/10.2	34000
1998 FJ ₇₀	1999 07 08.5	19 09.52	-21 41.3	17.3	-0.96	-	2.5	0.3/08.7	35077	(9341)	1999 07 10.1	19 15.62	-23 18.1	17.5	-0.98	-	2.4	0.4/10.0	32615
1993 FB ₄₄	1999 07 08.6	19 09.66	-20 15.2	17.4	-0.89	-	1.3	0.8/08.9	35065	1997 XV ₄	1999 07 10.1	19 15.65	-20 53.8	17.8	-1.09	-	2.9	0.6/10.3	32058
1981 ES ₇	1999 07 08.6	19 09.80	-14 17.1	18.4	-0.99	-	0.4	4.1/09.4	26916	1998 FK ₅₁	1999 07 10.1	19 15.77	-45 49.4	18.6	-1.12	-	0.6	7.6/07.8	32320
(8638)	1999 07 08.6	19 09.81	-30 06.4	17.2	-0.99	-	1.6	2.5/07.9	31672	(8962)	1999 07 10.1	19 15.84	-28 38.8	17.2	-0.86	-	1.9	1.9/09.4	31937
3358 T-3	1999 07 08.6	19 09.83	-27 00.8	18.7	-1.06	-	1.7	1.6/08.2	23989	1998 EN ₁₁	1999 07 10.1	19 15.84	+10 15.0	18.3	-0.76	-	6.9	11.1/17.6	32754
1998 DF ₃₄	1999 07 08.6	19 09.88	-14 10.6	15.8	-0.97	-	4.4	3.9/09.7	35076	1992 EH ₁₀	1999 07 10.1	19 15.84	-21 26.7	19.0	-0.83	-	1.6	0.3/10.2	32226
1998 DL ₁₅	1999 07 08.7	19 10.19	-34 27.3	17.8	-1.21	-	1.6	4.8/07.5	34903	1989 TO ₁₅	1999 07 10.1	19 16.04	-18 01.4	18.8	-1.08	-	1.8	1.7/10.6	32045
(8348)	1999 07 08.7	19 10.21	-26 07.4	15.2	-1.63	+	12.1	1.9/08.9	31354	4326 T-3	1999 07 10.1	19 16.07	-28 16.4	17.3	-1.09	-	4.3	2.5/09.4	31826
1992 VR	1999 07 08.7	19 10.28	-19 39.5	17.6	-1.02	-	1.9	1.1/09.1	35064	(9357)	1999 07 10.1	19 16.07	-21 11.8	17.2	-0.89	-	1.4	0.4/10.3	32619
1998 BR ₃₃	1999 07 08.7	19 10.37	-38 03.5	18.4	-1.19	-	1.1	6.2/07.3	31798	1993 LX	1999 07 10.3	19 16.65	-26 37.2	18.6	-0.95	+	1.6	1.4/10.0	34846
1990 WM ₁	1999 07 08.8	19 10.35	-16 53.2	18.5	-0.83	-	2.8	1.7/09.5	32302	1998 FG ₆₉	1999 07 10.3	19 16.67	-05 58.6	16.6	-0.80	-	1.4	5.9/12.2	34912
(8915)	1999 07 08.8	19 10.53	-19 11.0	17.2	-0.69	-	0.7	0.9/09.2	31926	1992 UF ₁	1999 07 10.3	19 16.84	-36 11.1	16.9	-1.20	-	3.5	5.9/08.4	32305
1996 WS ₂	1999 07 08.8	19 10.71	-19 32.7	18.2	-1.11	-	1.6	1.2/09.2	30786	1993 TL ₅	1999 07 10.3	19 16.91	-25 41.7	17.4	-1.14	-	0.3	1.6/10.1	35066
(8691)	1999 07 08.8	19 10.73	-26 06.5	16.8	-1.10	+	0.4	1.5/08.6	31685	1996 YU	1999 07 10.4	19 16.91	-19 37.6	17.9	-0.89	-	3.0	0.9/10.8	32312
4111 T-1	1999 07 08.9	19 10.74	-28 32.2	18.4	-0.89	-	2.1	2.1/08.2	32343	1981 EB ₂₁	1999 07 10.4	19 16.94	-22 50.5	19.4	-0.83	-	1.1	0.2/10.4	29653
1993 FC ₅₁	1999 07 08.9	19 10.80	-23 32.0	18.1	-0.92	-	1.2	0.4/08.8	32050	1994 CJ ₂	1999 07 10.4	19 17.24	-17 03.3	17.6	-0.94	-	5.3	2.1/11.3	35067
1988 RK	1999 07 09.0	19 11.24	-01 17.1	16.9	-0.93	-	2.8	9.2/11.0	35059	1981 EN ₁₈	1999 07 10.5	19 17.43	-14 22.2	19.8	-0.79	-	1.5	2.3/11.5	32298
1996 TD ₁₃	1999 07 09.0	19 11.28	-26 24.9	18.2	-1.04	-	1.7	1.3/08.6	32954	(9122)	1999 07 10.5	19 17.50	-20 55.4	18.0	-0.87	-	2.5	0.4/10.7	32202
1992 CZ ₁	1999 07 09.0	19 11.34	-25 27.7	17.1	-0.86	-	0.7	0.9/08.8	35063	1997 XT ₁₀	1999 07 10.5	19 17.51	-28 03.4	18.0	-0.96	+	1.2	1.7/10.1	35074
(8591)	1999 07 09.0	19 11.41	-23 47.3	16.3	-0.85	-	2.2	0.5/08.9	31517	(8742)	1999 07 10.5	19 17.55	-22 01.9						

(8811)	1999 07 10.5	19 17.73	-20 39.4	17.5	-0.94	- 0.6	0.5/10.8	31901	1998 DG ₆	1999 07 12.0	19 23.36	-41 20.9	17.6	-1.19	+ 2.0	8.9/10.4	31990
1989 WZ ₂	1999 07 10.6	19 17.85	-42 20.7	17.1	-1.03	- 2.0	6.4/07.9	33068	1998 DM ₂₃	1999 07 12.0	19 23.42	-23 33.5	18.1	-1.06	+ 0.8	0.6/11.9	33755
1981 EO ₇	1999 07 10.6	19 17.88	-00 59.7	17.4	-0.88	- 1.1	7.7/12.9	35057	1998 HW	1999 07 12.0	19 23.48	-01 43.2	18.1	-0.83	- 2.3	6.3/14.8	34915
1998 FW ₂₉	1999 07 10.6	19 18.10	-29 24.6	17.5	-1.15	+ 0.1	2.9/10.0	35077	1989 TP ₁₄	1999 07 12.0	19 23.58	-41 18.3	19.6	-0.99	- 1.4	5.0/09.5	33224
1981 ET ₂	1999 07 10.7	19 18.08	-14 24.9	20.6	-0.80	- 0.3	2.2/11.5	30779	1998 BX ₁₂	1999 07 12.0	19 23.86	-22 48.2	17.0	-1.02	- 3.9	0.3/12.0	32314
1998 FK ₃	1999 07 10.7	19 18.45	-06 57.6	18.7	-0.89	- 4.7	5.2/13.1	32062	1994 UD ₁	1999 07 12.1	19 23.83	-24 50.6	17.7	-0.86	- 2.0	0.9/11.8	35067
1995 UP ₁₁	1999 07 10.7	19 18.50	-11 12.1	19.0	-0.88	- 1.3	4.2/12.0	30784	1991 RC ₂₇	1999 07 12.1	19 23.94	-44 28.7	16.9	-1.22	- 3.1	8.8/08.5	35063
1998 FM ₁₀₀	1999 07 10.8	19 18.66	-04 52.9	18.6	-0.89	- 0.3	5.8/12.7	35077	1996 UB ₄	1999 07 12.1	19 24.11	-10 43.8	19.2	-1.01	- 2.3	5.0/13.5	28599
1991 FY	1999 07 10.8	19 18.86	-15 10.2	17.3	-1.00	- 5.2	2.8/11.9	35062	(9244)	1999 07 12.2	19 24.23	-20 49.1	16.8	-0.88	- 1.6	0.4/12.4	32433
1984 JR	1999 07 10.9	19 19.01	-22 46.9	16.8	-0.93	- 4.3	0.3/10.8	35058	(8621)	1999 07 12.2	19 24.38	-15 29.6	17.0	-0.81	- 1.0	2.4/13.0	31668
1981 EJ ₃₈	1999 07 10.9	19 19.16	-07 16.0	17.6	-0.88	- 2.1	5.8/12.9	35057	1998 HN ₉₅	1999 07 12.3	19 24.63	-00 33.3	16.8	-0.81	+ 0.8	7.3/14.3	35078
1978 NS	1999 07 10.9	19 19.21	-22 38.2	17.5	-0.88	- 1.8	8.5/21.0	35056	3100 T-3	1999 07 12.3	19 25.00	-18 22.8	17.5	-0.97	- 3.4	1.6/12.9	35125
1994 VW ₁	1999 07 11.0	19 19.44	-21 40.4	17.7	-1.30	- 9.8	0.2/11.1	35067	1998 BL ₁₁	1999 07 12.4	19 25.08	-23 07.8	16.9	-1.03	- 3.8	0.5/12.3	31798
1997 AT ₂₁	1999 07 11.0	19 19.49	-32 24.7	17.6	-1.02	- 6.3	3.6/09.3	34872	1998 BZ ₃	1999 07 12.4	19 25.14	-21 39.6	17.9	-1.00	- 0.4	0.1/12.5	34893
(8608)	1999 07 11.0	19 19.55	-32 29.4	17.6	-1.18	- 6.0	4.1/09.4	31665	(8967)	1999 07 12.4	19 25.21	-08 45.0	16.6	-0.79	- 3.1	4.6/14.4	31938
(8588)	1999 07 11.0	19 19.59	-08 46.5	17.2	-1.03	- 2.0	5.8/12.6	31517	1992 OO	1999 07 12.4	19 25.28	-09 41.8	14.7	-1.00	-21.9	5.8/16.0	35064
1998 FN ₁₀₇	1999 07 11.0	19 19.60	-21 03.1	19.2	-0.93	- 0.1	0.4/11.2	31766	(8801)	1999 07 12.4	19 25.32	-17 41.7	17.3	-0.82	- 0.8	1.4/13.0	31899
1994 PN ₁₇	1999 07 11.1	19 19.93	-27 14.9	18.2	-0.88	- 0.7	1.7/10.6	31966	1996 VQ ₄	1999 07 12.5	19 25.46	-01 09.0	16.5	-0.89	+ 3.2	10.6/14.0	34868
1998 FH ₅₈	1999 07 11.1	19 19.95	-22 51.6	18.5	-0.85	- 1.6	0.2/11.1	32321	(8865)	1999 07 12.5	19 25.54	-12 13.2	18.1	-0.80	- 1.0	2.7/13.7	31915
1996 SH ₄	1999 07 11.1	19 20.07	-63 01.5	19.0	-1.77	- 4.1	13.8/03.2	35070	1989 AW ₅	1999 07 12.6	19 25.85	-23 09.6	17.7	-0.96	- 2.9	0.4/12.5	35059
1997 YJ ₁₁	1999 07 11.2	19 20.27	-28 44.9	17.5	-1.04	- 1.1	2.8/10.5	34887	1981 ER ₈	1999 07 12.6	19 26.19	-25 27.4	18.9	-1.00	- 0.8	1.2/12.3	31708
1997 AR ₂	1999 07 11.2	19 20.45	-21 41.4	17.8	-0.80	- 2.0	0.1/11.3	35071	(8956)	1999 07 12.7	19 26.27	-13 39.8	18.4	-0.99	- 1.2	2.8/13.6	31936
(8443)	1999 07 11.2	19 20.56	-06 39.5	16.3	-0.87	- 3.5	5.7/13.7	31374	1998 FS ₁₃	1999 07 12.7	19 26.48	-30 10.4	18.6	-1.15	- 3.8	3.2/11.6	34590
1352 T-2	1999 07 11.3	19 20.62	-21 17.2	17.0	-1.03	- 1.9	0.3/11.4	15080	1996 XX ₃₀	1999 07 12.7	19 26.55	-17 40.0	17.9	-0.96	- 1.2	1.5/13.3	32056
1985 QW ₁	1999 07 11.3	19 20.66	-10 47.2	17.5	-1.02	- 0.3	4.8/12.4	31712	1996 TP ₃₄	1999 07 12.7	19 26.61	-43 26.7	16.9	-1.27	- 4.0	10.3/09.0	34199
1996 VD ₂	1999 07 11.3	19 20.86	-33 39.4	17.9	-1.08	- 3.9	4.1/09.7	32311	1998 DU ₃₃	1999 07 12.8	19 26.72	-24 58.9	18.0	-1.06	- 2.4	1.1/12.4	32315
1994 PE	1999 07 11.3	19 20.97	-24 47.6	17.7	-0.92	+ 1.7	0.9/11.2	32234	1998 EB ₉	1999 07 12.9	19 27.36	-24 17.3	16.9	-0.97	- 6.6	1.1/12.5	34906
(8584)	1999 07 11.4	19 20.99	-23 33.2	15.8	-0.92	+ 1.5	0.5/11.3	31516	1998 BK ₁₉	1999 07 13.0	19 27.55	-16 44.3	17.6	-1.01	- 5.5	2.3/13.9	31593
1998 KK	1999 07 11.4	19 21.03	-17 02.3	17.6	-0.80	- 0.8	1.4/12.0	35078	1981 EB ₃₃	1999 07 13.0	19 27.66	-36 42.4	17.0	-1.15	+ 4.0	6.8/12.2	31580
1991 GY ₃	1999 07 11.4	19 21.18	-26 54.6	18.6	-1.09	- 1.9	1.9/10.9	31274	(8771)	1999 07 13.0	19 27.89	-33 41.7	17.7	-1.14	- 2.1	4.7/11.6	31704
1994 NR ₁	1999 07 11.4	19 21.30	-15 27.9	17.1	-0.81	- 3.8	1.9/12.4	35067	1241 T-2	1999 07 13.1	19 27.84	-35 24.9	17.9	-0.97	- 0.9	4.8/11.5	32292
4603 P-L	1999 07 11.4	19 21.35	-24 01.4	18.1	-0.81	- 2.1	0.5/11.2	32343	1993 FC ₉	1999 07 13.1	19 28.03	-22 07.0	17.4	-0.88	- 3.1	0.1/13.1	32306
1978 UR ₄	1999 07 11.5	19 21.37	-23 41.2	19.1	-1.08	- 1.4	0.6/11.3	32041	(8453)	1999 07 13.1	19 28.07	-38 39.9	16.6	-0.98	- 0.9	5.9/11.1	31485
1995 OU	1999 07 11.5	19 21.39	-33 07.6	15.9	-0.97	- 0.2	5.6/10.4	31277	1995 SV ₁₆	1999 07 13.1	19 28.09	-21 32.3	18.5	-0.89	- 1.9	0.1/13.2	32309
1998 BJ ₂	1999 07 11.5	19 21.63	-18 52.4	17.1	-1.02	- 2.6	1.3/12.0	31263	1989 UC ₅	1999 07 13.1	19 28.23	-10 14.8	20.1	-0.52	- 0.9	2.3/14.8	18118
(8622)	1999 07 11.5	19 21.64	-18 37.2	16.5	-0.85	- 0.4	1.3/11.9	31669	1983 RT ₃	1999 07 13.2	19 28.31	-34 43.7	17.4	-1.19	+ 1.1	5.0/12.0	22076
1998 FH ₂₃	1999 07 11.6	19 21.90	-21 36.0	16.7	-1.00	- 3.6	0.2/11.7	35077	1981 EW ₂	1999 07 13.2	19 28.57	-33 51.2	17.5	-1.15	+ 3.9	5.1/12.6	31579
1994 PG ₁₇	1999 07 11.6	19 22.03	-20 25.1	16.6	-0.84	- 0.7	0.7/11.8	35067	1992 EV ₄	1999 07 13.2	19 28.68	-14 49.5	16.9	-0.81	- 4.6	2.4/14.4	35063
1981 EB ₁₄	1999 07 11.7	19 22.17	-16 56.2	18.7	-0.82	- 0.6	1.5/12.3	31224	1998 DS ₂₀	1999 07 13.3	19 28.95	-00 31.5	19.3	-0.74	- 3.9	7.1/17.2	32315
1993 YG	1999 07 11.7	19 22.34	-21 52.7	17.8	-1.10	- 1.0	0.1/11.8	35067	1995 WC ₇	1999 07 13.4	19 29.14	-30 05.2	18.9	-0.88	- 2.2	2.4/12.3	35069
1981 EA ₄₁	1999 07 11.7	19 22.35	-13 14.5	18.6	-0.78	- 2.0	2.7/12.9	31711	1996 VA ₇	1999 07 13.4	19 29.44	-15 33.1	17.5	-0.94	- 1.9	2.4/14.3	31589
1993 FB ₃₅	1999 07 11.7	19 22.57	-20 53.3	20.9	-0.87	- 2.1	0.3/11.9	32306	1981 EV ₁₃	1999 07 13.5	19 29.60	-05 40.8	17.1	-0.76	- 1.2	6.0/15.7	35057
1989 UU ₅	1999 07 11.8	19 22.61	-00 33.7	18.1	-0.74	- 1.3	6.3/14.6	32301	1994 PD ₃₈	1999 07 13.5	19 29.66	-13 53.1	17.4	-0.80	- 3.9	2.8/14.8	32308
1998 EX ₁	1999 07 11.8	19 22.65	-23 07.9	17.4	-1.02	- 2.2	0.4/11.7	35076	1989 RV ₂	1999 07 13.5	19 29.79	-32 12.2	16.4	-1.12	- 4.4	5.1/11.9	35060
1987 SC ₁	1999 07 11.8	19 22.79	-17 41.0	17.6	-0.98	- 3.5	1.6/12.4	35058	1998 DZ ₅	1999 07 13.6	19 29.92	-16 03.8	18.3	-0.95	- 3.0	2.0/14.4	35076
1998 FN ₈	1999 07 11.8	19 22.96	-30 54.2	21.4	-1.01	- 2.0	2.8/10.8	31568	1996 VG ₃₀	1999 07 13.6	19 29.98	-13 42.4	18.1	-0.89	- 0.7	2.5/14.6	32055
3460 T-3	1999 07 11.9	19 22.98	-22 01.7	17.3	-0.85	- 1.5	0.0/11.9	35125	1991 SR	1999 07 13.6	19 30.01	-11 57.3	17.0	-0.90	- 7.0	3.6/15.4	35063
1990 FQ	1999 07 11.9	19 23.00	-30 09.6	18.0	-1.05	- 5.2	2.7/10.7	35060	1988 RE ₅	1999 07 13.6	19 30.05	-20 29.1	15.9	-0.88	- 4.8	0.7/13.9	35059
1981 EX ₉	1999 07 11.9	19 23.07	-28 46.0	18.3	-0.92	+ 0.4	2.2/11.3	24557	1994 PL ₃₃	1999 07 13.6	19 30.30	-15 18.0	19.5	-0.78	- 2.3	1.8/14.6	32459
1994 PM ₁₃	1999 07 11.9	19 23.16	-07 49.8	19.2	-0.76	- 3.2	4.3/14.0	31965	1996 TL ₁₀	1999 07 13.6	19 30.31	-26 34.9	16.8	-1.16	+ 0.2	2.3/13.2	35070
5056 T-2	1999 07 11.9	19 23.23	-37 08.8	19.7	-1.21	+ 0.6	5.1/10.6	31609	(8529)	1999 07 13.7	19 30.37	-12 50.0	17.1	-0.99	- 1.0	3.7/14.7	31502

1999 JUNE 22

M.P.C. 35151

1996 XP ₁₃	1999 07 13.7	19 30.39	-28 04.1	19.6	-1.00	-	3.2	1.9/12.8	30690	1997 CR ₁	1999 07 14.8	19 34.84	-19 33.3	18.1	-0.86	-	2.8	0.7/15.1	35072
1997 XO ₈	1999 07 13.7	19 30.53	-23 18.6	17.9	-1.02	-	3.8	0.6/13.5	35073	1981 EB ₂₂	1999 07 14.8	19 34.91	-21 40.6	19.1	-0.82	-	2.3	0.0/14.8	32298
1998 HV ₃₉	1999 07 13.7	19 30.65	-25 47.8	17.8	-0.90	-	2.3	1.3/13.2	35078	1981 EF ₁₉	1999 07 14.8	19 34.91	-24 06.4	19.7	-0.99	-	1.6	0.8/14.5	22429
(8642)	1999 07 13.7	19 30.67	-30 37.8	15.9	-0.93	-	1.6	3.6/12.6	31673	1990 RK ₂	1999 07 14.8	19 34.95	-17 18.8	16.7	-1.06	-	3.1	2.1/15.4	35060
1003 T-2	1999 07 13.8	19 30.87	-20 50.3	18.4	-0.81	-	1.7	0.3/14.0	32092	1995 WT ₁₅	1999 07 14.8	19 35.06	-25 05.9	17.8	-0.91	-	2.1	1.2/14.4	32310
1981 ED ₇	1999 07 13.8	19 31.01	-01 10.5	19.2	-0.77	-	0.4	7.1/16.5	26916	(8889)	1999 07 14.9	19 35.42	-31 22.7	15.8	-0.99	+	0.9	3.2/13.9	31920
1996 CP	1999 07 13.8	19 31.03	-36 08.6	19.3	-0.94	-	3.8	4.3/11.5	32243	1996 RJ ₂	1999 07 14.9	19 35.59	-11 34.6	18.1	-1.00	-	3.2	4.1/16.4	31791
1981 EN ₂	1999 07 13.9	19 31.17	-14 40.6	20.0	-0.81	-	0.3	2.0/14.7	22429	1981 EM ₄₆	1999 07 14.9	19 35.60	-19 56.5	18.5	-1.08	-	1.9	0.7/15.2	26923
1995 UZ ₈	1999 07 13.9	19 31.33	-34 20.6	17.8	-0.91	-	1.5	3.4/12.2	32053	1997 YP ₁₀	1999 07 15.0	19 35.57	-30 25.5	17.7	-1.20	-	1.5	3.8/13.9	31285
1995 SO	1999 07 13.9	19 31.47	-07 19.4	19.3	-0.78	-	2.2	4.4/16.1	32309	1998 FQ ₂₃	1999 07 15.0	19 35.82	-23 39.4	19.5	-1.03	-	3.0	0.7/14.8	32317
1995 DF	1999 07 13.9	19 31.54	-20 56.8	17.8	-1.09	-	4.6	0.3/14.1	35068	1997 AO ₂	1999 07 15.0	19 35.97	-27 22.6	17.4	-0.88	-	4.8	1.8/14.1	35071
1996 YA ₁	1999 07 14.0	19 31.96	-22 38.2	17.9	-0.88	-	3.0	0.3/14.0	35071	1996 VF ₁	1999 07 15.0	19 36.00	-27 43.0	19.5	-1.09	-	2.6	2.3/14.2	32311
1998 FL ₆₃	1999 07 14.0	19 31.97	-19 10.6	18.4	-0.96	-	3.2	1.0/14.5	32322	(9047)	1999 07 15.1	19 35.95	-52 14.1	16.8	-1.36	-	7.8	14.1/06.0	32184
1998 FA ₁₀	1999 07 14.1	19 31.92	-44 35.6	18.6	-1.24	+	0.5	8.1/11.6	32316	1996 XE ₃₂	1999 07 15.1	19 36.09	-32 03.8	19.2	-0.87	-	1.6	2.8/13.7	29308
1998 FF ₃₀	1999 07 14.1	19 31.99	-10 00.5	18.7	-0.96	-	2.4	4.4/15.7	34910	1993 LD ₁	1999 07 15.1	19 36.45	-34 22.8	17.3	-1.00	+	1.0	4.7/13.8	31585
1995 SD ₂₄	1999 07 14.1	19 32.22	-14 53.3	17.7	-0.87	-	3.3	2.7/15.2	32309	(8395)	1999 07 15.2	19 36.48	-22 01.5	17.2	-1.09	-	3.3	0.2/15.2	31364
1998 FW ₄₂	1999 07 14.1	19 32.39	-12 19.3	18.1	-0.97	-	2.5	3.5/15.5	32064	1998 BQ ₄₂	1999 07 15.2	19 36.70	-19 01.2	19.3	-1.04	-	3.2	1.0/15.6	34590
1981 SD ₂	1999 07 14.2	19 32.37	-32 45.4	16.9	-1.14	-	3.2	4.7/12.6	32043	1996 XX ₂	1999 07 15.2	19 36.78	-25 25.4	17.5	-1.03	-	2.4	1.4/14.7	35071
1998 FX ₆₂	1999 07 14.2	19 32.45	-41 45.9	18.8	-1.17	-	0.9	6.7/11.7	32066	1998 FY ₆₂	1999 07 15.3	19 37.15	-00 00.2	17.8	-0.87	-	3.1	7.9/18.8	32322
1998 FH ₁₅	1999 07 14.2	19 32.57	-39 55.5	17.0	-1.14	+	0.3	7.1/12.1	32317	1998 FU ₅₈	1999 07 15.3	19 37.17	-11 53.5	18.1	-0.97	-	3.5	3.9/16.8	32754
1998 FV ₅₃	1999 07 14.2	19 32.58	-28 13.0	19.5	-1.06	-	0.9	2.4/13.5	32685	1989 TC	1999 07 15.3	19 37.19	-68 05.4	16.8	-2.79	+	4.1	23.0/09.5	35060
1995 UG ₁₁	1999 07 14.2	19 32.62	-12 54.1	19.4	-0.87	-	1.7	3.4/15.4	30784	1981 EP ₄₅	1999 07 15.3	19 37.23	-39 32.7	17.9	-1.04	+	1.4	6.5/13.6	31711
1995 SR	1999 07 14.2	19 32.72	+31 50.1	17.2	-0.69	+	5.5	26.9/30.6	34859	1981 EA ₁₀	1999 07 15.4	19 37.20	-41 44.8	18.9	-1.06	+	0.6	6.1/13.1	32509
1990 GS	1999 07 14.2	19 32.73	-40 28.3	17.2	-1.20	+	0.1	7.8/12.1	32046	1989 TP ₁₆	1999 07 15.4	19 37.21	-24 06.6	17.3	-0.84	-	2.2	0.8/15.0	26167
1981 EJ ₄	1999 07 14.2	19 32.76	-07 01.1	17.9	-0.78	-	1.0	4.7/16.2	35057	1998 EX ₈	1999 07 15.4	19 37.47	-37 45.1	19.1	-1.07	-	2.6	5.1/13.1	32316
1995 FV	1999 07 14.3	19 32.79	-15 41.3	16.9	-0.99	-	4.5	2.7/15.3	31277	(8489)	1999 07 15.4	19 37.60	-16 22.2	17.5	-0.80	-	3.6	1.8/16.3	31493
1996 AY ₁	1999 07 14.3	19 32.93	-17 28.2	18.5	-0.80	-	6.0	1.3/15.1	32054	1996 UG	1999 07 15.5	19 37.62	-35 51.8	17.3	-1.21	-	4.1	6.3/13.1	31792
1989 YX ₆	1999 07 14.3	19 33.12	-21 29.1	17.5	-1.03	-	4.0	0.1/14.4	35060	1991 TS ₆	1999 07 15.6	19 38.04	-04 33.1	18.4	-0.85	-	1.8	5.5/18.1	35063
1996 RZ ₂₀	1999 07 14.4	19 33.15	-34 23.7	18.5	-1.23	+	0.1	5.9/13.0	31791	(8396)	1999 07 15.6	19 38.46	-11 06.3	16.8	-1.01	-	4.5	4.4/17.4	31364
(8533)	1999 07 14.4	19 33.17	-29 24.2	16.9	-1.01	+	0.1	2.6/13.6	31503	(8913)	1999 07 15.7	19 38.51	-22 17.8	17.7	-0.70	-	1.3	0.2/15.6	31926
(8966)	1999 07 14.4	19 33.35	-20 44.2	18.5	-0.83	-	1.8	0.3/14.6	31938	1998 FA ₄₃	1999 07 15.7	19 38.60	-19 56.3	17.6	-0.86	-	1.8	0.6/16.0	35077
1998 FS ₅₁	1999 07 14.4	19 33.58	-14 38.7	18.4	-0.87	-	4.0	2.7/15.6	31752	1998 FN ₇₅	1999 07 15.7	19 38.71	-46 01.7	18.1	-1.25	-	2.1	8.6/11.8	32324
1993 RK ₅	1999 07 14.5	19 33.57	-17 45.5	18.4	-1.08	-	2.2	1.8/15.0	35066	1994 PZ ₂₆	1999 07 15.7	19 38.73	-13 44.5	18.0	-0.76	-	3.9	2.2/17.1	32236
(8678)	1999 07 14.5	19 33.59	-29 01.8	16.9	-0.87	-	3.0	2.6/13.4	31682	1995 GW	1999 07 15.7	19 38.74	-35 17.8	16.9	-1.20	-	2.9	5.4/13.8	31420
1994 PB ₂₆	1999 07 14.5	19 33.71	-21 30.2	18.7	-0.78	-	2.4	0.1/14.6	25219	2134 T-3	1999 07 15.7	19 38.76	-29 19.3	18.1	-0.98	-	1.0	2.4/14.7	23534
(8668)	1999 07 14.5	19 33.86	-38 03.9	16.5	-1.13	-	5.4	7.2/11.7	31679	1995 SZ ₄	1999 07 15.8	19 38.94	-16 48.7	17.2	-0.94	-	2.2	1.9/16.5	35068
1982 VF ₅	1999 07 14.5	19 33.87	-12 35.4	17.2	-0.90	-	1.6	3.7/15.7	32216	1981 EW ₂₂	1999 07 15.8	19 39.03	-17 27.1	20.9	-0.78	-	2.0	1.0/16.4	26919
1996 YC ₂	1999 07 14.5	19 33.92	-23 47.3	16.9	-1.16	+	0.8	0.9/14.4	35071	1981 EW ₂₈	1999 07 15.8	19 39.26	-20 56.2	18.6	-1.09	-	1.0	9.9/05.0	26920
1993 KF	1999 07 14.6	19 34.09	-29 34.8	16.7	-0.90	-	4.5	2.5/13.3	35066	1998 HS ₁₀₀	1999 07 15.9	19 39.46	-18 15.9	17.9	-0.81	-	2.4	1.0/16.4	35078
1998 BU ₄₅	1999 07 14.6	19 34.09	-23 00.9	18.5	-1.07	-	1.8	0.5/14.5	35075	1998 FN ₇₈	1999 07 15.9	19 39.65	-41 39.2	18.4	-1.14	-	2.6	6.6/12.8	32070
(8733)	1999 07 14.6	19 34.13	-24 37.5	17.2	-0.94	-	1.5	1.0/14.3	31695	1998 FR ₆₃	1999 07 15.9	19 39.67	-18 45.7	19.2	-0.99	-	3.3	1.0/16.4	32322
1997 AK ₂	1999 07 14.6	19 34.28	-23 19.4	19.0	-0.84	-	2.0	0.5/14.4	29667	1995 VR ₁₂	1999 07 16.0	19 39.61	-19 33.4	19.8	-0.87	-	3.0	0.7/16.3	28860
(8685)	1999 07 14.7	19 34.35	-20 52.6	16.7	-1.09	-	2.0	0.4/14.8	31683	(8891)	1999 07 16.0	19 39.83	-07 25.7	16.9	-0.79	-	2.1	4.6/18.1	31921
1998 FG ₁₁₈	1999 07 14.7	19 34.47	-22 11.9	16.9	-0.87	-	0.8	0.2/14.7	34914	1998 FP ₁₁₈	1999 07 16.1	19 40.02	-23 19.2	17.9	-0.92	-	1.0	0.6/15.9	32324
1997 BE ₇	1999 07 14.7	19 34.50	-13 27.9	17.9	-0.94	-	1.7	2.9/15.8	31392	1996 TC ₁₅	1999 07 16.1	19 40.09	-29 18.4	17.1	-0.97	-	6.3	3.1/14.6	35070
1996 XW ₁₂	1999 07 14.7	19 34.57	-27 19.5	16.5	-1.04	-	6.8	2.6/13.7	35071	5585 P-L	1999 07 16.1	19 40.30	-24 03.4	19.4	-0.89	-	2.1	0.9/15.8	31824
(8698)	1999 07 14.7	19 34.69	-24 01.0	17.0	-0.91	-	1.8	0.8/14.5	31686	1981 EP ₆	1999 07 16.1	19 40.44	-39 23.8	18.7	-1.06	+	1.6	5.6/14.4	25972
1998 FV ₄₈	1999 07 14.7	19 34.71	-10 13.2	19.2	-0.95	-	2.5	4.2/16.4	32258	1988 RC ₅	1999 07 16.3	19 40.93	-31 04.2	16.5	-1.06	-	4.0	4.4/14.7	31581
(8276)	1999 07 14.7	19 34.73	-20 28.6	16.3	-1.05	-	1.9	0.5/14.9	31213	1998 DK ₂₃	1999 07 16.3	19 40.93	-28 44.9	16.6	-1.06	+	1.8	3.0/15.7	34904
1998 FH ₆₄	1999 07 14.7	19 34.74	-19 50.9	18.3	-0.82	-	2.5	0.6/15.1	32067	1989 TR ₇	1999 07 16.3	19 41.03	-35 03.4	20.1	-0.93	-	3.2	4.2/14.0	33224
1991 PL ₁₆	1999 07 14.8	19 34.78	-41 49.8	16.6	-1.19	+	1.9	9.3/12.7	32047	3051 T-2	1999 07 16.4	19 41.24	-16 05.8	20.1	-0.98	-	3.8	1.9/17.2	32733

1981 EY ₄	1999 07 16.4	19 41.38 -26 40.1 17.4	-1.07 + 1.8	2.2/15.9	26915
1997 YO ₁₈	1999 07 16.4	19 41.40 -31 19.5 16.6	-1.11 + 0.6	4.5/15.4	31286
1992 DO ₇	1999 07 16.4	19 41.53 -22 11.2 18.5	-0.82 - 3.0	0.3/16.3	32304
1996 YF ₂	1999 07 16.5	19 41.70 -20 33.8 15.7	-1.04 + 0.1	0.4/16.6	35071
1991 LE ₂	1999 07 16.5	19 41.77 -26 38.5 16.6	-1.01 - 6.4	2.3/15.5	35062
(8653)	1999 07 16.5	19 41.77 +02 47.9 16.6	-0.85 - 3.0	9.4/20.5	31676
1981 EN ₂₀	1999 07 16.5	19 41.92 -18 51.5 19.3	-1.07 - 3.4	1.0/16.9	32043
(8449)	1999 07 16.5	19 41.93 -25 27.5 16.5	-0.88 - 2.5	1.5/15.9	31484
6114 P-L	1999 07 16.5	19 42.04 -39 19.0 17.6	-1.18 + 1.3	6.9/14.8	31608
1998 HE ₁₂₁	1999 07 16.6	19 42.27 -29 39.8 17.2	-0.90 - 4.9	2.7/15.1	35078
1998 EX ₁₄	1999 07 16.6	19 42.29 -11 38.6 16.8	-0.94 - 3.3	4.1/18.2	35077
(10902)	1999 07 16.6	19 42.31 -25 57.6 15.6	-1.04 - 7.8	2.1/15.7	34797
1998 FH ₆₉	1999 07 16.7	19 42.60 -22 28.6 17.7	-0.84 - 2.1	0.4/16.6	32323
1998 HE ₂	1999 07 16.8	19 43.31 -33 07.7 18.2	-0.91 - 3.6	3.6/14.9	32075
1979 UC ₄	1999 07 16.9	19 43.32 -26 42.4 18.0	-1.03 - 2.3	1.8/16.1	32042
1981 EN ₃₀	1999 07 16.9	19 43.36 -23 54.0 16.5	-0.85 - 2.5	1.0/16.5	35057
1996 VM	1999 07 16.9	19 43.44 -38 22.7 16.6	-1.09 - 7.3	7.0/13.4	31421
1997 WJ ₂₁	1999 07 16.9	19 43.66 -11 23.2 18.6	-1.06 - 2.8	4.1/18.5	34880
1997 CP ₂₈	1999 07 17.0	19 43.89 -28 18.4 17.0	-0.94 + 0.1	2.2/16.2	29667
1997 BH ₈	1999 07 17.1	19 44.23 -29 06.5 16.2	-1.10 + 2.7	3.4/16.4	31737
1998 FZ ₅₃	1999 07 17.1	19 44.23 -12 15.0 16.9	-1.04 - 1.1	4.2/18.3	32320
1993 FU ₂₅	1999 07 17.1	19 44.33 -19 19.8 16.8	-0.90 - 1.6	0.7/17.4	33234
1996 AY ₃	1999 07 17.1	19 44.36 -10 41.3 16.2	-0.80 - 6.1	3.3/19.2	34013
1105 T-1	1999 07 17.2	19 44.68 -11 28.3 18.1	-0.87 - 2.8	3.3/18.8	32092
(8970)	1999 07 17.3	19 44.92 -21 35.0 18.3	-0.83 - 2.1	0.1/17.3	31939
(8690)	1999 07 17.3	19 45.27 -24 14.6 18.4	-1.07 - 2.9	1.2/16.9	31684
1998 BB ₁₅	1999 07 17.4	19 45.26 -15 26.4 18.1	-1.06 - 3.5	2.3/18.3	31593
1996 VA ₃₁	1999 07 17.4	19 45.35 -30 33.6 19.0	-1.04 - 2.7	3.2/16.0	32056
(8839)	1999 07 17.4	19 45.70 -13 48.2 17.0	-0.81 - 1.8	2.4/18.6	31908
(9243)	1999 07 17.5	19 45.65 -21 12.8 17.8	-0.84 - 2.1	0.0/17.5	32433
1997 BF ₇	1999 07 17.5	19 45.69 -21 56.1 17.7	-0.85 - 2.0	0.2/17.4	35072
6705 P-L	1999 07 17.5	19 45.79 -32 52.0 19.5	-1.15 - 2.5	4.3/15.8	34617
1981 EF ₃	1999 07 17.5	19 45.85 -12 06.2 18.3	-1.04 - 0.7	3.9/18.7	31415
1996 RQ ₂	1999 07 17.6	19 46.10 -22 07.5 16.9	-1.05 - 1.9	0.4/17.5	35070
1996 RH ₂₅	1999 07 17.6	19 46.14 -27 32.5 19.2	-1.10 - 1.8	2.3/16.7	32054
(9396)	1999 07 17.6	19 46.27 -24 12.8 16.9	-0.87 - 2.0	1.1/17.2	32628
1998 FD ₆₉	1999 07 17.6	19 46.40 -23 46.3 18.1	-1.06 - 2.2	0.9/17.3	32323
1993 TJ ₂₄	1999 07 17.6	19 46.48 -20 32.3 18.0	-1.09 - 4.1	0.3/17.8	32307
1998 FF ₈₃	1999 07 17.7	19 46.96 -20 11.0 16.5	-1.02 - 5.3	0.4/18.0	35077
1998 HF ₈₇	1999 07 17.8	19 46.99 -13 22.1 18.3	-0.82 - 1.2	2.6/19.0	32329
1997 YW ₁₃	1999 07 17.9	19 47.32 -15 30.3 16.8	-1.07 - 0.9	2.3/18.6	35074
1990 EU	1999 07 17.9	19 47.36 -17 54.4 15.8	-0.97 + 3.2	1.6/18.2	19027
1996 RC ₁₂	1999 07 17.9	19 47.41 -17 18.2 18.4	-1.03 - 4.8	1.6/18.6	31729
1998 KY ₃₀	1999 07 17.9	19 47.56 -35 57.8 19.0	-0.88 - 3.4	3.8/15.3	32277
1998 FG	1999 07 17.9	19 47.62 -12 08.5 19.3	-1.00 - 0.5	3.6/19.1	32062
1989 TO	1999 07 17.9	19 47.70 -47 09.9 17.3	-1.53 + 1.2	8.9/14.7	28613
1997 XY ₈	1999 07 18.0	19 47.79 -22 33.1 18.8	-1.02 - 2.9	0.5/17.8	32058
1992 DM ₈	1999 07 18.0	19 48.06 -01 40.5 18.8	-0.74 - 4.2	5.9/22.0	32514
1998 AY	1999 07 18.0	19 48.07 -23 14.0 20.6	-1.04 - 3.9	0.8/17.7	32255
1989 SC ₄	1999 07 18.1	19 48.09 +08 44.7 18.1	-0.72 - 2.8	8.6/24.0	32301
(8834)	1999 07 18.1	19 48.15 -22 44.5 17.9	-0.79 - 3.3	0.4/17.8	31907

(9456)	1999 07 18.1	19 48.16 -22 20.2 16.6	-0.86 - 3.6	0.5/17.9	32643
1981 DY ₁	1999 07 18.1	19 48.22 -33 15.0 18.2	-1.01 + 2.4	4.5/17.0	26914
1994 BP ₃	1999 07 18.1	19 48.32 -10 48.4 15.0	-0.77 -12.9	5.5/21.0	35067
1998 GN ₇	1999 07 18.1	19 48.51 -14 18.5 15.2	-0.87 - 9.4	2.9/19.7	35078
1998 FN ₁₂₃	1999 07 18.1	19 48.55 -25 09.4 18.5	-1.10 - 1.6	1.7/17.6	32262
1996 XM ₁₃	1999 07 18.2	19 48.74 -24 32.9 17.2	-0.94 - 3.6	1.4/17.7	35071
1992 PY	1999 07 18.3	19 48.93 -33 28.9 16.8	-1.54 + 6.2	5.5/17.6	29660
1996 TG ₁₃	1999 07 18.3	19 49.00 -23 35.1 18.7	-1.02 - 2.1	0.9/18.0	32310
1981 EC ₄₃	1999 07 18.3	19 49.00 -10 22.7 16.0	-0.86 - 3.3	5.6/20.1	35057
1981 EK ₃₀	1999 07 18.3	19 49.04 -14 22.9 18.1	-1.03 + 0.7	3.2/19.1	32212
1981 EJ ₆	1999 07 18.4	19 49.46 +01 37.2 19.7	-0.76 - 1.6	6.4/22.0	26915
1981 EK ₁₅	1999 07 18.4	19 49.46 -32 33.2 18.9	-0.93 - 0.5	3.3/16.8	29297
1981 EL ₂	1999 07 18.5	19 50.00 -02 21.6 16.8	-0.87 + 0.6	8.3/20.9	31707
1992 EG ₃₁	1999 07 18.5	19 50.12 -09 07.7 17.6	-0.78 - 4.4	4.1/20.8	33682
(8665)	1999 07 18.6	19 50.18 -11 37.8 17.8	-0.99 - 2.6	3.7/20.1	31679
1994 PC ₁₂	1999 07 18.6	19 50.33 -30 14.7 17.4	-0.99 + 1.8	3.3/17.7	31726
(8441)	1999 07 18.6	19 50.34 -23 45.8 16.0	-1.12 - 5.4	1.2/18.2	31374
1997 AN ₁₇	1999 07 18.6	19 50.51 -12 07.3 15.2	-1.42 +13.4	4.5/18.3	35071
1991 SR ₁	1999 07 18.7	19 50.66 +01 17.9 16.8	-0.87 - 1.2	9.2/22.0	32048
1998 GM ₆	1999 07 18.7	19 50.80 -25 39.4 17.2	-0.93 - 6.7	1.7/17.8	35078
4062 T-2	1999 07 18.7	19 50.82 -03 01.5 18.8	-0.83 - 3.9	5.9/22.2	32344
4221 T-1	1999 07 18.8	19 51.01 -15 30.2 18.3	-0.80 - 3.0	1.8/19.8	32343
1995 UN ₂	1999 07 18.8	19 51.06 -19 34.9 19.4	-0.81 - 2.5	0.4/19.1	30472
(8727)	1999 07 18.9	19 51.30 -21 51.5 16.4	-1.03 - 5.2	0.4/18.7	31693
1995 WV ₅	1999 07 18.9	19 51.33 -08 02.4 17.6	-0.80 - 0.5	4.3/20.8	35069
1998 HZ ₂₀	1999 07 18.9	19 51.37 -27 46.6 16.7	-1.06 - 4.9	3.2/17.6	32264
1998 FB ₁₀₉	1999 07 18.9	19 51.54 -26 09.6 17.4	-1.03 - 1.1	1.9/18.2	35077
1997 YZ ₁₇	1999 07 19.0	19 51.71 -24 24.2 17.5	-1.15 - 0.5	1.7/18.6	31259
1995 HL	1999 07 19.0	19 51.97 -40 08.2 15.2	-0.96 - 6.4	10.0/14.5	31789
1998 FD ₇₁	1999 07 19.0	19 52.06 -23 24.3 18.4	-1.01 - 2.3	0.8/18.7	32323
1995 QF ₁	1999 07 19.1	19 52.35 -17 07.0 17.5	-0.85 - 3.2	1.8/19.8	30455
1991 RP ₁₇	1999 07 19.1	19 52.37 -42 26.3 15.9	-1.10 + 4.8	11.3/17.4	31584
1998 GK ₁₀	1999 07 19.1	19 52.39 -07 24.7 18.9	-0.78 - 1.4	3.9/21.3	32326
(9402)	1999 07 19.2	19 52.79 -06 24.0 17.0	-0.74 - 1.4	4.4/21.6	32630
1980 FK ₄	1999 07 19.2	19 52.81 -09 21.7 20.0	-0.85 - 3.5	3.7/21.3	32738
1996 RO ₄	1999 07 19.2	19 52.86 -20 59.4 19.0	-1.04 - 3.3	0.0/19.3	35070
1992 HN	1999 07 19.3	19 52.99 -27 49.4 17.7	-1.15 - 4.4	3.0/18.2	35064
1988 KB	1999 07 19.3	19 53.07 -44 01.7 15.3	-1.27 -16.8	10.7/12.3	25439
1995 UE ₁₅	1999 07 19.3	19 53.17 -15 47.2 17.9	-0.81 - 1.7	1.6/20.2	32309
1993 FQ ₇₃	1999 07 19.3	19 53.22 -21 04.5 18.1	-0.88 - 2.0	0.1/19.3	26743
1995 UR ₂	1999 07 19.3	19 53.22 -17 39.3 16.7	-0.97 - 0.2	1.4/19.8	32053
1997 EE ₇	1999 07 19.3	19 53.29 +00 00.7 18.3	-0.75 - 3.7	6.9/23.4	32058
1991 NS ₂	1999 07 19.4	19 53.42 -07 06.1 16.0	-0.82 - 4.3	6.4/22.1	35062
1998 MO ₄₄	1999 07 19.5	19 53.80 -23 00.7 17.7	-0.58 - 5.3	0.4/19.1	34921
1998 BC ₄₄	1999 07 19.5	19 54.02 -25 38.3 18.4	-1.06 - 4.5	1.8/18.7	31430
1997 AP ₁₇	1999 07 19.5	19 54.15 -26 51.5 17.6	-0.87 - 5.7	2.1/18.4	35072
1997 AY ₅	1999 07 19.6	19 54.41 -17 41.1 19.0	-0.97 - 1.0	1.1/20.1	34871
1996 TF ₅	1999 07 19.6	19 54.54 -13 36.6 19.1	-1.03 - 3.1	3.1/20.8	35070
1998 HX ₁₄₇	1999 07 19.7	19 54.49 -32 24.4 18.5	-0.74 - 2.5	3.0/17.6	32025
1998 HR ₃₅	1999 07 19.7	19 54.53 -19 49.3 17.0	-0.86 - 3.5	0.4/19.9	32327
1992 EU ₁₄	1999 07 19.7	19 54.54 -21 36.2 16.9	-0.85 - 0.8	0.3/19.6	35063

5149 T-2	1999 07 19.7	19 54.71 -08 27.0 18.4	-0.81 - 0.7	4.0/21.6	33059	1998 EZ ₁₂	1999 07 21.6	20 02.27 -35 55.9 17.4	-1.05 - 1.2	6.0/19.2	32316
1998 GQ ₈	1999 07 19.7	19 54.76 -24 18.1 17.1	-0.82 - 7.8	1.2/19.0	35078	1991 PK ₃	1999 07 21.6	20 02.35 -24 11.9 16.7	-0.97 - 3.4	1.6/21.0	32047
1993 FA ₁₃	1999 07 19.7	19 54.95 -18 18.1 16.7	-0.86 - 2.8	0.9/20.2	32306	(8458)	1999 07 21.6	20 02.60 -20 29.9 18.0	-1.09 - 1.8	0.0/21.7	31486
1998 HK ₈	1999 07 19.9	19 55.31 -21 41.8 18.2	-0.87 - 2.3	0.3/19.8	35078	1981 EA ₂₇	1999 07 21.8	20 02.92 -21 40.4 20.7	-0.80 - 2.6	0.3/21.6	34824
1994 CJ ₁₇	1999 07 20.0	19 55.77 -20 31.0 17.7	-1.00 - 6.2	0.1/20.1	31789	(8524)	1999 07 21.8	20 03.04 -30 31.7 16.9	-1.13 + 0.5	4.7/20.5	31501
1995 UX ₄₄	1999 07 20.0	19 56.18 -23 38.9 17.7	-0.87 - 2.3	0.9/19.6	32309	1998 DH ₃₅	1999 07 21.8	20 03.19 -39 47.8 18.4	-1.20 + 0.1	7.0/19.1	32315
1998 FR ₁₂₄	1999 07 20.1	19 56.13 -18 30.1 16.9	-0.87 - 3.3	0.8/20.5	32325	1990 SO ₇	1999 07 21.8	20 03.21 -12 56.0 17.7	-0.82 - 5.2	2.9/23.4	31784
1994 CS ₈	1999 07 20.1	19 56.25 -20 17.6 17.2	-0.52 - 2.2	0.1/20.2	35067	1976 UB ₁₆	1999 07 21.8	20 03.28 -41 21.7 17.0	-1.05 - 3.5	8.5/17.5	35056
1996 XJ ₁₁	1999 07 20.1	19 56.38 -17 48.3 18.2	-0.89 - 5.0	1.4/20.7	31391	1998 FE ₃	1999 07 21.8	20 03.34 -23 33.8 18.3	-0.94 - 4.1	1.1/21.3	32316
1994 PQ ₁₄	1999 07 20.1	19 56.45 -14 37.1 17.7	-0.80 - 2.6	2.1/21.2	35067	1992 DC ₃	1999 07 21.9	20 03.30 -17 58.4 16.9	-0.84 - 3.0	0.8/22.3	32048
1998 FD ₆₈	1999 07 20.1	19 56.54 -20 48.0 17.8	-0.85 - 2.6	0.0/20.2	35077	1997 AJ ₁₉	1999 07 21.9	20 03.75 -17 53.0 17.7	-0.88 - 2.2	0.9/22.4	35072
1998 HA ₁₅	1999 07 20.2	19 56.58 -22 11.1 19.4	-1.05 - 3.6	0.5/20.0	34915	1998 BM ₂₅	1999 07 22.0	20 03.76 -27 23.5 17.9	-1.14 - 1.4	2.7/21.0	31798
1998 FH ₇₁	1999 07 20.2	19 56.70 -04 55.3 16.9	-0.79 - 2.1	5.6/23.0	32323	1997 AN ₁₄	1999 07 22.0	20 03.77 -13 18.2 18.8	-0.83 - 1.1	2.3/23.2	32955
1992 DS ₅	1999 07 20.2	19 56.78 -21 46.9 18.5	-0.82 - 2.7	0.3/20.1	35063	1972 AU	1999 07 22.0	20 03.89 -36 40.6 15.9	-1.20 + 1.8	7.0/19.9	32297
1994 AK ₁₆	1999 07 20.2	19 56.79 -09 49.9 18.0	-0.97 - 2.5	4.1/22.0	32307	(8610)	1999 07 22.1	20 04.17 -25 43.4 17.4	-1.04 - 3.8	1.9/21.1	31666
(8623)	1999 07 20.3	19 56.96 -13 33.4 18.4	-0.79 - 2.3	2.2/21.5	31669	4283 T-1	1999 07 22.2	20 04.50 -34 01.5 18.1	-1.20 - 3.1	5.6/19.8	32092
1998 FD ₁₁₇	1999 07 20.3	19 57.01 +01 27.5 16.5	-0.97 + 0.4	10.6/22.9	31767	1998 FL ₃₆	1999 07 22.2	20 04.50 -11 59.9 16.6	-0.83 - 4.9	3.4/23.9	32318
(8596)	1999 07 20.3	19 57.18 -12 58.5 17.4	-1.02 - 4.5	3.2/21.7	31518	1993 FG ₃₃	1999 07 22.2	20 04.66 -21 58.7 17.8	-0.88 - 3.5	0.6/21.9	31961
1998 FX ₆₁	1999 07 20.3	19 57.21 -22 14.4 19.1	-0.94 - 1.8	0.5/20.1	34911	1149 T-1	1999 07 22.2	20 04.70 -12 45.8 19.0	-0.87 - 3.4	2.8/23.7	34338
(8634)	1999 07 20.3	19 57.26 -42 14.0 18.0	-1.16 - 2.6	7.3/16.7	31671	1993 DJ	1999 07 22.2	20 04.91 -01 30.0 16.1	-1.06 -20.6	8.9/28.5	35065
1993 FE ₄₃	1999 07 20.3	19 57.29 -17 46.2 18.6	-0.88 - 3.4	1.0/20.9	34580	1994 PV ₅	1999 07 22.2	20 04.94 -18 32.6 17.8	-0.83 - 2.3	0.6/22.6	29620
(8600)	1999 07 20.3	19 57.29 -24 03.5 18.0	-1.02 - 3.4	1.2/19.8	31519	1981 EZ ₂₃	1999 07 22.2	20 04.95 -15 24.4 18.7	-0.91 - 2.8	1.9/23.2	32043
1998 FE ₁₁₂	1999 07 20.3	19 57.30 +00 47.7 16.7	-0.91 - 0.1	8.1/23.5	32324	1998 HH ₃₃	1999 07 22.3	20 05.17 -26 58.7 18.7	-1.08 - 2.3	2.4/21.3	32265
1997 AT ₁₇	1999 07 20.3	19 57.30 -23 05.7 20.7	-0.81 - 2.4	0.6/20.0	32249	1995 GO ₂	1999 07 22.3	20 05.22 -21 19.9 17.8	-0.58 - 2.3	0.2/22.2	33248
3141 T-2	1999 07 20.3	19 57.32 -26 05.2 17.3	-0.95 - 2.2	2.7/19.5	24237	1981 ER ₃₃	1999 07 22.3	20 05.24 -11 11.1 19.2	-1.00 - 3.4	3.9/24.0	26921
5090 T-3	1999 07 20.4	19 57.31 -29 38.4 18.6	-0.94 - 4.7	3.0/18.7	32344	1998 DR ₁₅	1999 07 22.4	20 05.40 -29 52.3 17.9	-1.16 - 1.6	4.0/20.9	32060
(8890)	1999 07 20.4	19 57.55 -19 53.3 18.1	-0.79 - 2.4	0.2/20.6	31920	1991 RT ₂₆	1999 07 22.4	20 05.42 +02 16.8 16.1	-0.83 - 3.4	9.5/26.8	32048
1998 DD ₁₄	1999 07 20.5	19 57.71 -01 53.8 17.1	-0.74 - 2.6	7.2/23.9	32060	2261 T-2	1999 07 22.4	20 05.52 -23 04.3 17.7	-1.05 - 2.6	1.1/22.0	32344
1998 BH ₂₅	1999 07 20.5	19 57.77 -24 25.3 17.5	-1.02 - 3.6	1.5/19.9	35075	1990 BM ₁	1999 07 22.4	20 05.62 -19 25.9 16.9	-1.06 -11.6	0.3/22.7	34831
1993 VF ₂	1999 07 20.5	19 57.98 -25 36.1 18.2	-1.14 - 4.9	2.2/19.7	35066	1995 PF	1999 07 22.4	20 05.74 -12 05.5 18.0	-1.04 + 4.0	3.7/23.2	26176
1998 EF ₂	1999 07 20.6	19 58.12 -17 33.4 17.6	-0.84 - 3.0	1.1/21.2	32315	(8606)	1999 07 22.5	20 05.87 -01 36.1 15.8	-0.82 - 1.8	6.5/25.9	31665
1990 QN ₅	1999 07 20.6	19 58.42 -31 21.2 17.2	-1.04 - 0.7	3.9/19.0	29657	1994 PF ₉	1999 07 22.6	20 06.29 -19 23.3 18.5	-0.78 - 2.6	0.2/22.8	32308
1981 EM ₃₉	1999 07 20.7	19 58.62 -29 27.6 18.5	-1.14 - 1.2	4.0/19.5	26922	1998 FC ₁₀₇	1999 07 22.6	20 06.43 -12 03.0 19.3	-0.98 - 2.3	2.9/24.1	31766
(8912)	1999 07 20.9	19 59.33 -17 53.7 16.6	-0.82 - 2.6	1.0/21.4	31926	1998 BL ₂₆	1999 07 22.6	20 06.47 -18 17.5 18.4	-0.88 - 3.7	0.7/23.1	32059
1996 TA ₈	1999 07 20.9	19 59.79 -20 12.8 19.3	-1.07 - 3.0	10.2/01.0	33496	1990 VU ₃	1999 07 22.6	20 06.52 -19 26.8 17.5	-0.83 - 2.8	0.2/22.8	32302
1996 VO ₈	1999 07 21.0	20 00.02 -24 27.7 17.7	-1.07 - 3.9	1.5/20.4	32245	1997 AQ ₂	1999 07 22.7	20 06.51 -25 06.9 17.1	-1.03 0.0	1.8/22.0	30786
6833 P-L	1999 07 21.1	20 00.15 -22 59.3 18.3	-0.89 - 2.1	0.8/20.7	32343	1979 MB ₆	1999 07 22.7	20 06.56 -16 28.8 17.1	-0.98 - 5.3	1.9/23.5	32042
(8286)	1999 07 21.1	20 00.35 -28 14.3 15.2	-1.18 + 1.0	3.8/20.2	31215	(8583)	1999 07 22.7	20 06.76 -22 07.5 18.4	-0.82 - 2.6	0.6/22.4	31516
1989 SA ₁₀	1999 07 21.1	20 00.50 -32 56.2 18.2	-1.19 - 1.6	5.0/19.3	32301	1992 AM ₃	1999 07 22.7	20 06.94 -17 56.0 17.8	-0.97 + 0.9	0.7/23.1	35063
1991 PN ₁₀	1999 07 21.3	20 01.14 +15 04.2 16.2	-0.92 -13.9	17.3/03.3	35062	1998 CU ₃	1999 07 22.8	20 07.00 -22 59.3 18.3	-1.04 - 3.0	1.0/22.3	31799
1998 FP ₇₀	1999 07 21.3	20 01.29 -22 03.5 18.7	-0.81 - 2.6	0.4/21.1	35077	(9205)	1999 07 22.8	20 07.09 -20 20.0 17.3	-0.80 - 2.5	0.0/22.8	32425
(8420)	1999 07 21.3	20 01.30 -22 27.5 16.3	-1.08 + 2.2	0.8/21.2	31370	1988 RT ₁₂	1999 07 22.8	20 07.11 -11 52.8 18.7	-0.54 - 1.9	1.8/24.5	30090
4245 T-3	1999 07 21.4	20 01.43 -30 45.7 18.0	-1.08 - 4.5	3.9/19.5	32093	1992 EY ₈	1999 07 22.8	20 07.12 -21 36.6 18.4	-0.81 - 4.0	0.4/22.6	35063
(8587)	1999 07 21.4	20 01.71 -20 00.5 17.2	-1.08 - 0.7	0.2/21.6	31517	1995 KF	1999 07 22.8	20 07.22 -13 40.4 16.1	-0.87 -23.3	3.1/26.0	35068
1981 EW ₈	1999 07 21.4	20 01.72 -14 56.0 20.1	-0.93 - 2.6	1.8/22.4	21966	1998 FX ₁₁₃	1999 07 22.9	20 07.29 -19 58.6 19.5	-1.04 - 1.8	0.1/22.9	34914
1251 T-2	1999 07 21.5	20 01.93 -19 30.0 18.4	-0.80 - 2.5	0.3/21.7	32343	1996 XC ₃₁	1999 07 22.9	20 07.33 -15 07.5 16.9	-0.99 + 1.5	2.3/23.5	35071
1998 FT ₂₆	1999 07 21.5	20 01.98 -40 54.5 18.9	-1.16 + 0.4	7.5/18.7	32317	1995 SL ₂	1999 07 22.9	20 07.38 -05 54.9 17.2	-0.86 - 6.0	5.3/26.0	32052
1989 VD ₁	1999 07 21.6	20 02.11 -24 10.5 18.1	-1.03 - 6.1	1.5/20.9	35060	1981 EB ₃₅	1999 07 22.9	20 07.44 -11 16.1 17.9	-0.99 - 4.3	3.7/24.6	31781
1998 FL ₅₈	1999 07 21.6	20 02.19 -20 03.7 18.1	-1.10 - 3.2	0.2/21.7	35077	1981 ER ₂₉	1999 07 23.0	20 07.82 -00 44.4 18.8	-0.85 - 3.7	6.4/27.0	32299
1998 FX ₆₄	1999 07 21.6	20 02.21 -29 27.0 17.1	-1.08 - 2.3	3.6/20.1	32322	1979 YQ	1999 07 23.0	20 07.95 -28 53.0 16.9	-1.03 - 6.2	3.3/21.1	32042
1996 YG	1999 07 21.6	20 02.25 -24 12.9 18.5	-0.87 - 1.5	1.1/21.0	32312	1998 HC ₁₂₀	1999 07 23.0	20 08.11 -10 30.9 17.3	-0.89 - 6.7	3.4/25.2	32755

(8313)	1999 07 23.1	20 08.17	-23 08.9	15.6	-0.92	-10.4	1.2/22.3	31221	1994 CD ₁₄	1999 07 25.0	20 15.61	-22 22.4	18.9	-0.96	- 4.7	1.0/24.5	34582
(9134)	1999 07 23.1	20 08.25	-18 58.4	17.8	-0.85	- 3.5	0.4/23.4	32204	1981 EK ₄₇	1999 07 25.0	20 15.67	-17 25.2	19.8	-0.65	- 2.0	0.5/25.5	32215
(9460)	1999 07 23.1	20 08.28	-36 16.0	17.4	-1.04	- 5.7	5.5/19.5	32644	1991 BX	1999 07 25.0	20 15.81	-14 52.8	17.5	-0.77	- 2.1	1.4/26.0	32047
4314 T-2	1999 07 23.1	20 08.42	-22 37.3	17.6	-1.02	- 4.5	0.9/22.7	35125	1998 JC ₄	1999 07 25.0	20 15.86	-06 23.3	17.6	-0.77	- 2.4	4.1/27.7	32332
(8809)	1999 07 23.2	20 08.86	-02 17.6	16.6	-0.87	- 2.4	7.0/26.0	31901	1996 TO ₁₀	1999 07 25.0	20 15.89	-26 00.4	16.3	-1.09	- 6.7	2.8/23.7	32054
1997 YF ₁₁	1999 07 23.3	20 08.90	-23 25.9	17.4	-1.01	- 7.0	1.4/22.6	32059	1998 EZ ₂	1999 07 25.0	20 15.92	-31 54.2	16.8	-0.98	- 3.4	5.6/22.6	32971
1981 EN ₁₅	1999 07 23.3	20 08.93	-19 01.5	18.4	-1.07	- 2.3	0.4/23.5	32042	1981 DU ₂	1999 07 25.0	20 16.06	-24 38.3	17.1	-1.08	+ 5.1	2.3/24.7	26914
1997 GO ₂₄	1999 07 23.3	20 09.16	-01 35.1	17.4	-0.54	- 1.0	4.0/27.0	32314	1993 TV ₃₄	1999 07 25.1	20 16.33	-20 47.5	17.5	-1.09	- 3.9	0.4/25.0	31788
3024 T-1	1999 07 23.4	20 09.36	-19 28.4	17.6	-0.99	- 3.2	0.2/23.5	32786	(8754)	1999 07 25.1	20 16.37	-20 48.3	16.4	-0.87	- 2.4	0.4/25.0	31699
1998 FT ₁₀₉	1999 07 23.4	20 09.56	-17 49.3	17.9	-1.10	- 1.0	0.9/23.8	32686	(9463)	1999 07 25.1	20 16.38	-18 41.1	17.7	-0.85	- 2.6	0.4/25.4	32644
1998 FB ₄₂	1999 07 23.4	20 09.66	+09 43.7	15.6	-0.64	- 5.1	14.7/31.6	35077	1996 XJ ₆	1999 07 25.1	20 16.38	-27 01.2	18.2	-1.04	- 5.3	2.6/23.6	32246
1996 UE	1999 07 23.5	20 09.77	-30 24.7	15.9	-0.92	- 4.8	6.0/21.2	34867	(9142)	1999 07 25.1	20 16.43	-14 20.1	16.8	-0.53	- 3.5	1.2/26.4	32206
1998 KX ₃	1999 07 23.5	20 09.77	-18 21.7	18.1	-0.79	- 3.4	0.5/23.9	32755	1995 ED ₈	1999 07 25.1	20 16.52	-54 57.5	16.5	-1.88	+ 7.5	15.7/24.0	39091
1998 KT ₂₈	1999 07 23.5	20 09.82	-05 56.6	18.1	-0.77	- 2.4	4.4/26.2	32277	1998 HU ₁	1999 07 25.2	20 16.65	-26 08.1	18.3	-1.03	- 4.7	2.9/23.9	32687
(8205)	1999 07 23.5	20 09.85	-19 09.1	17.4	-0.77	- 2.7	0.3/23.7	32041	1994 PN ₃₆	1999 07 25.2	20 16.75	-11 41.9	19.1	-0.76	- 4.7	2.4/27.1	32308
1978 VL ₈	1999 07 23.5	20 10.06	-41 52.2	18.8	-1.01	- 6.2	7.2/18.0	32439	2176 T-2	1999 07 25.2	20 16.86	-41 18.0	17.7	-1.18	+ 0.3	8.6/21.6	34271
1998 KK ₃₁	1999 07 23.6	20 10.09	-27 00.7	19.3	-0.82	- 3.9	1.8/22.2	32277	1997 YA ₈	1999 07 25.3	20 16.79	-02 53.3	16.8	-1.01	- 0.4	6.9/28.2	35074
(8745)	1999 07 23.6	20 10.14	-20 16.3	16.6	-0.95	- 1.6	0.1/23.6	31697	(8806)	1999 07 25.3	20 16.99	-06 25.0	17.2	-0.83	- 3.2	4.5/28.0	31900
1998 HZ ₁₂₇	1999 07 23.6	20 10.34	-18 34.5	17.8	-0.80	- 2.6	0.5/23.9	32330	1986 QF ₁	1999 07 25.3	20 17.00	-29 16.2	16.8	-1.17	- 2.5	4.4/23.6	32300
1998 FY ₆₅	1999 07 23.7	20 10.63	-19 14.5	18.0	-0.95	- 2.5	0.3/23.9	32322	1998 FS ₁₀₃	1999 07 25.4	20 17.20	-09 28.4	18.7	-0.98	- 2.2	4.1/27.2	32686
1994 FP	1999 07 23.7	20 10.75	-52 18.1	19.7	-1.53	- 0.5	10.1/17.8	29944	(8957)	1999 07 25.4	20 17.29	-19 35.8	17.2	-1.08	- 2.3	0.0/25.4	31936
5491 T-2	1999 07 23.7	20 10.78	-29 36.2	17.8	-0.96	+ 0.5	3.1/22.4	25652	1997 AK ₁₃	1999 07 25.4	20 17.44	-28 50.8	17.7	-0.82	- 4.7	2.5/23.4	32312
(9022)	1999 07 23.8	20 10.85	+06 39.7	17.0	-0.83	+ 2.0	9.4/27.3	32179	(10672)	1999 07 25.5	20 17.59	-11 22.0	15.5	-0.92	+ 2.2	3.0/26.6	34737
1998 FP ₅₃	1999 07 23.8	20 10.99	-09 49.2	19.3	-1.01	- 3.7	3.7/25.7	32320	2725 P-L	1999 07 25.5	20 17.85	-17 47.5	19.6	-0.90	- 3.1	0.6/25.9	29668
1988 RH ₁₁	1999 07 23.9	20 11.51	-17 46.5	19.6	-0.55	- 1.8	0.5/24.4	15713	1995 UC ₉	1999 07 25.5	20 17.99	-23 17.5	18.7	-0.87	- 2.8	1.2/24.9	32309
1981 EK ₄₂	1999 07 24.1	20 12.47	-13 02.5	19.9	-0.77	- 2.8	2.0/25.5	26922	1991 TL ₁₃	1999 07 25.5	20 18.00	-36 07.0	17.3	-1.10	- 1.5	6.9/22.5	35063
1994 PL ₂₅	1999 07 24.2	20 12.66	-14 09.3	17.5	-0.77	- 5.8	1.9/25.6	32747	(8828)	1999 07 25.6	20 18.03	-03 11.4	15.7	-0.90	- 5.7	7.3/29.2	31906
1998 GA	1999 07 24.3	20 13.10	-26 32.5	18.2	-1.05	- 3.0	2.4/23.2	32325	1998 FX ₅₅	1999 07 25.6	20 18.09	-20 26.1	17.0	-1.04	- 5.8	0.4/25.5	32259
(9461)	1999 07 24.4	20 13.28	-19 43.2	17.0	-0.91	- 2.4	0.1/24.4	32644	1998 HA ₉₁	1999 07 25.6	20 18.19	-17 54.0	17.3	-0.99	- 5.2	0.7/26.0	32329
1987 DO	1999 07 24.4	20 13.37	-18 11.9	18.5	-1.00	- 4.1	0.6/24.8	32300	1993 SO ₇	1999 07 25.6	20 18.24	-18 57.1	19.2	-1.08	- 4.3	0.3/25.8	33237
1998 FD ₂	1999 07 24.4	20 13.41	-17 45.4	18.2	-0.93	- 4.4	0.8/24.9	32316	(8640)	1999 07 25.6	20 18.42	-21 16.9	16.3	-0.89	- 5.2	0.6/25.3	31673
1992 SC ₄	1999 07 24.4	20 13.47	-23 24.2	20.1	-1.06	- 3.6	1.4/23.8	29300	(8848)	1999 07 25.7	20 18.44	-24 34.1	16.5	-0.91	- 2.8	1.8/24.8	31910
4309 T-3	1999 07 24.4	20 13.58	-14 41.1	18.5	-0.86	- 4.9	2.1/25.6	32506	1998 FC ₁₁₁	1999 07 25.7	20 18.45	-12 04.5	16.1	-0.86	0.0	2.7/26.9	35078
1995 VV	1999 07 24.4	20 13.69	-37 12.3	17.8	-0.97	- 2.9	5.8/21.0	32309	1996 TY ₄₆	1999 07 25.7	20 18.53	-19 25.6	17.6	-1.00	- 3.1	9.6/06.0	32055
1998 HJ ₉	1999 07 24.5	20 13.82	-05 41.0	17.0	-0.76	- 5.3	4.9/27.7	32326	1997 XH ₅	1999 07 25.7	20 18.57	-23 56.0	18.6	-1.09	- 2.3	1.7/25.0	31796
(8821)	1999 07 24.5	20 13.88	-16 22.9	17.5	-0.80	- 4.0	1.1/25.3	31904	(8647)	1999 07 25.7	20 18.68	-20 59.2	16.5	-1.12	- 1.8	0.6/25.5	31674
1995 QQ	1999 07 24.5	20 13.97	-25 57.1	16.3	-1.12	+ 3.8	2.6/23.9	31543	1981 EP ₃₀	1999 07 25.7	20 18.70	+03 59.2	17.7	-0.72	- 5.6	7.2/31.8	32043
(8327)	1999 07 24.5	20 14.08	-17 27.0	16.9	-0.91	- 3.1	1.0/25.1	31349	1981 DT ₂	1999 07 25.8	20 18.79	-30 52.0	16.8	-1.14	+ 1.1	4.1/24.2	28882
1997 AP ₁₄	1999 07 24.6	20 14.33	-19 08.8	17.7	-0.93	- 3.3	0.3/24.8	32057	1989 SB ₄	1999 07 25.8	20 18.80	-19 43.4	18.3	-1.01	- 4.7	8.6/06.0	32045
4809 P-L	1999 07 24.7	20 14.44	-25 23.2	19.8	-1.09	- 3.7	2.3/23.7	34265	1996 VM ₃₀	1999 07 25.8	20 19.25	-37 32.3	16.3	-1.18	- 5.5	8.4/21.6	31793
1988 QY	1999 07 24.7	20 14.64	+18 15.8	17.4	-0.54	- 0.6	7.4/02.7	32300	1990 TV ₁₂	1999 07 25.9	20 19.18	+08 50.0	17.8	-0.54	- 0.1	5.6/31.8	32302
1981 EP ₃	1999 07 24.7	20 14.68	-07 10.4	20.5	-0.77	- 2.0	3.6/27.2	26915	1997 YF ₁₀	1999 07 25.9	20 19.21	-24 56.9	18.2	-1.09	- 3.7	1.9/24.9	32059
1998 DT ₃₃	1999 07 24.8	20 14.84	-14 04.5	18.7	-0.95	- 5.2	2.2/26.0	32315	(8946)	1999 07 25.9	20 19.21	-17 02.3	16.6	-0.85	- 3.3	0.9/26.4	31934
(8943)	1999 07 24.8	20 14.91	-11 15.2	19.1	-0.82	- 3.9	2.6/26.6	31933	1997 XD ₅	1999 07 25.9	20 19.35	-19 14.6	17.6	-0.94	- 6.3	9.8/15.0	31796
(8625)	1999 07 24.8	20 14.98	-22 30.4	17.6	-0.98	- 1.7	1.0/24.4	31669	1993 HQ ₁	1999 07 25.9	20 19.44	-55 31.4	18.0	-1.93	+ 4.4	17.5/22.0	23539
1997 YC ₁₄	1999 07 24.9	20 15.24	-22 26.7	15.3	-1.06	+ 2.5	1.4/24.6	31591	1981 EN ₄₅	1999 07 25.9	20 19.55	-19 48.8	17.9	-1.13	- 2.0	10.1/06.0	28882
1981 EQ ₄	1999 07 24.9	20 15.25	-08 00.2	19.1	-0.76	- 2.0	3.3/27.2	31945	1981 EM ₃	1999 07 25.9	20 19.57	-11 17.2	17.8	-1.04	- 1.5	3.5/27.4	31579
1992 DG ₇	1999 07 24.9	20 15.33	-14 54.5	18.7	-0.79	- 5.3	1.7/26.0	32927	1978 UL ₆	1999 07 25.9	20 19.65	-16 38.8	18.8	-1.03	- 2.9	1.3/26.5	28882
1991 RK ₁₆	1999 07 24.9	20 15.35	-24 17.3	16.6	-0.94	- 3.8	1.9/24.0	32047	1998 HR ₁₅₀	1999 07 26.0	20 19.75	-00 34.9	18.4	-0.83	- 3.0	6.1/29.9	32274
(8677)	1999 07 24.9	20 15.58	-15 11.9	16.7	-0.79	- 6.2	1.6/26.0	31681	6104 P-L	1999 07 26.0	20 19.89	-14 14.3	19.0	-0.77	- 2.8	1.6/27.1	24241
1988 XL	1999 07 24.9	20 15.69	-14 03.9	16.4	-0.92	- 2.6	2.6/26.0	34575	1998 FP ₆₃	1999 07 26.0	20 19.91	-19 26.8	17.5	-0.81	- 3.8	0.0/26.1	32067