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ERRATA

MPC	Line	
33385	– 1	<i>For</i> (b. 1945) <i>read</i> (b. 1953)
35401	29	The identification 1999 NO ₃₉ = 1998 FZ ₁₁₁ is invalid.
35619	–28	<i>Add</i> Id. A. Gnädig (1990 observations)
35620	–56	<i>Add</i> Id. A. Gnädig (1991, 1994 observations)
35639	–12	<i>Add</i> Id. A. Gnädig (1990 observations)
35640	48	<i>Add</i> Id. A. Gnädig (1984 observations)
35641	32	<i>Add</i> Id. A. Gnädig (1983 observations)
35642	–33	<i>Add</i> Id. A. Gnädig (1991 observations)
35645	–21	<i>Add</i> Id. A. Gnädig (1991 observations)
35649	–59	<i>Add</i> Id. A. Gnädig (1952, 1954 observations)
35651	–32	<i>Add</i> Id. A. Gnädig (1955, 1989, 1991 observations)
35653	25	<i>Add</i> Id. A. Gnädig (1984 observations)
35653	–32	<i>Add</i> Id. A. Gnädig (1993 observations)
35654	–18	<i>Add</i> Id. A. Gnädig (1956, 1991 observations)
35656	2	<i>Add</i> Id. A. Gnädig (1991 observations)
35656	–41	<i>For</i> 1980 FL ₁ <i>read</i> 1980 LF ₁ . The remark about 1980 DY ₄ = 1980 FL ₁ being invalid is erroneous.
35657	–45	<i>Add</i> Id. A. Gnädig (1996 observations)
35672	44	<i>Add</i> Id. A. Gnädig (1951, 1995 observations)
35673	16	<i>Add</i> Id. A. Gnädig (1981 observations)
35673	33	<i>Add</i> Id. A. Gnädig (1949 observations)
35670	–12	<i>Add</i> Id. A. Gnädig (1949, 1990 observations)
35671	2	<i>Add</i> Id. A. Gnädig (1981 observations)
35671	49	<i>Add</i> Id. A. Gnädig (1984, 1991 observations)
35671	–30	<i>Add</i> Id. A. Gnädig (1982 observations)
35671	–16	<i>Add</i> Id. A. Gnädig (1951, 1990, 1994 observations)

NEW OBSERVATORY CODES

The following listing is a continuation to that on MPC 35523. 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	$\rho \cos \phi'$	$\rho \sin \phi'$	
166	16.0117	0.63730	+0.76812	Upice
642	236.6850	0.6648	+0.7445	Oak Bay, Victoria

848	237.0219	0.72412	+0.68741	Tenagra Observatory, Cottage Grove
849	265.1694	0.77927	+0.62467	Everstar Observatory, Olathe
850	274.0783	0.81811	+0.57332	Cordell-Lorenz Observatory, Sewanee

CORRECTED OBSERVATIONS

The following observations correct those previously published.

Object	Date	UT	α_{2000}	δ_{2000}	Reference	Mag.	Obs.
1995 SY ₁₂	1995 09 19.20694	23 31 34.63	–02 40 01.9	MPS	5836	19.1	809
(16)	1999 08 23.248131	20 38 47.784	–17 10 50.72	MPS	5941		673
(16)	1999 08 23.250168	20 38 47.701	–17 10 51.13	MPS	5941		673
(16)	1999 08 23.251968	20 38 47.623	–17 10 51.62	MPS	5941		673
(16)	1999 08 23.253519	20 38 47.556	–17 10 51.92	MPS	5941		673
(47)	1999 08 20.378339	01 58 14.713	+13 02 45.73	MPS	5941		673
(47)	1999 08 20.411429	01 58 15.148	+13 02 52.50	MPS	5941		673
(47)	1999 08 20.435295	01 58 15.455	+13 02 57.26	MPS	5941		673
(47)	1999 08 20.438131	01 58 15.490	+13 02 57.89	MPS	5941		673
(48)	1999 08 23.169902	18 26 57.826	–15 18 50.20	MPS	5941		673
(48)	1999 08 23.171649	18 26 57.812	–15 18 50.43	MPS	5941		673
(48)	1999 08 23.186343	18 26 57.704	–15 18 52.70	MPS	5941		673
(105)	1999 08 23.191163	17 18 55.289	+06 10 29.73	MPS	5942		673
(105)	1999 08 23.202459	17 18 55.897	+06 10 20.17	MPS	5942		673
(105)	1999 08 23.211059	17 18 56.366	+06 10 12.96	MPS	5942		673
(105)	1999 08 23.219902	17 18 56.843	+06 10 05.47	MPS	5942		673
(141)	1999 08 20.348756	22 25 34.030	–04 23 55.24	MPS	5943		673
(141)	1999 08 20.370330	22 25 32.682	–04 23 51.99	MPS	5943		673
(141)	1999 08 20.373918	22 25 32.472	–04 23 51.44	MPS	5943		673
(194)	1999 08 22.420179	03 37 23.461	+03 00 17.94	MPS	5943		673
(194)	1999 08 22.429606	03 37 24.076	+03 00 14.07	MPS	5943		673
(194)	1999 08 23.424294	03 38 27.253	+02 53 22.74	MPS	5943		673
(194)	1999 08 23.425845	03 38 27.347	+02 53 22.10	MPS	5943		673
(194)	1999 08 23.427373	03 38 27.438	+02 53 21.47	MPS	5943		673
(194)	1999 08 23.428877	03 38 27.530	+02 53 20.85	MPS	5943		673
(194)	1999 08 23.435891	03 38 27.969	+02 53 17.85	MPS	5943		673
(198)	1999 08 23.239352	22 55 18.801	+12 27 13.97	MPS	5943		673
(198)	1999 08 23.243773	22 55 18.605	+12 27 14.71	MPS	5943		673
(337)	1999 08 23.382141	03 50 12.040	+25 36 18.71	MPS	5943		673
(337)	1999 08 23.383958	03 50 12.181	+25 36 19.67	MPS	5943		673
(337)	1999 08 23.399757	03 50 13.473	+25 36 27.61	MPS	5943		673

(346)	1999 08 20.424277 23 41 49.039−16 08 08.04 <i>MPS</i>	5943	673
(346)	1999 08 20.427691 23 41 48.927−16 08 09.52 <i>MPS</i>	5944	673
(346)	1999 08 23.349427 23 40 11.154−16 29 43.62 <i>MPS</i>	5944	673
(346)	1999 08 23.359728 23 40 10.778−16 29 48.03 <i>MPS</i>	5944	673
(568)	1999 08 20.454722 05 40 54.716+25 08 31.69 <i>MPS</i>	5944	673
(568)	1999 08 20.457060 05 40 54.965+25 08 31.32 <i>MPS</i>	5944	673
(568)	1999 08 20.473495 05 40 56.663+25 08 27.80 <i>MPS</i>	5944	673
(568)	1999 08 20.475851 05 40 56.909+25 08 27.28 <i>MPS</i>	5944	673
(568)	1999 08 22.458079 05 44 21.566+25 01 11.93 <i>MPS</i>	5944	673
(568)	1999 08 22.460417 05 44 21.831+25 01 11.41 <i>MPS</i>	5944	673
(568)	1999 08 22.462280 05 44 22.018+25 01 10.92 <i>MPS</i>	5944	673
(568)	1999 08 22.467836 05 44 22.582+25 01 09.74 <i>MPS</i>	5944	673
(568)	1999 08 22.470081 05 44 22.812+25 01 09.26 <i>MPS</i>	5944	673
(568)	1999 08 23.439508 05 46 02.030+24 57 26.88 <i>MPS</i>	5944	673
(568)	1999 08 23.471649 05 46 05.303+24 57 19.61 <i>MPS</i>	5944	673
(568)	1999 08 23.474479 05 46 05.601+24 57 18.96 <i>MPS</i>	5944	673
(690)	1999 08 22.432888 05 26 28.278+25 11 40.59 <i>MPS</i>	5945	673
(690)	1999 08 22.435179 05 26 28.471+25 11 40.52 <i>MPS</i>	5945	673
(690)	1999 08 22.437176 05 26 28.641+25 11 40.36 <i>MPS</i>	5945	673
(690)	1999 08 22.438866 05 26 28.778+25 11 40.26 <i>MPS</i>	5945	673
(747)	1999 08 23.330608 22 55 38.242−20 57 05.41 <i>MPS</i>	5945	673
(747)	1999 08 23.339392 22 55 37.900−20 57 13.04 <i>MPS</i>	5945	673
(804)	1999 08 20.444554 05 53 57.520+36 51 04.98 <i>MPS</i>	5945	673
(804)	1999 08 20.446968 05 53 57.744+36 51 05.53 <i>MPS</i>	5945	673
(5092)	1999 05 01.87204 11 14 06.52 +03 07 46.0 <i>MPS</i>	5953 16.7	947

IDENTIFICATION CHANGES

Continuation to *MPC* 35523.

Object	Date	UT	α_{2000}	δ_{2000}	Originally	Mag.	Obs.
1986 RA ₁₈	* 1986 09 09.93366	23 52 32.64	−03 52 23.2	1986 RA ₇	16.5 V	095	
1987 SV ₃₀	* 1987 09 24.90455	00 10 05.37	−02 12 16.2	1987 RY ₅	16.2 V	095	
1987 SV ₃₀	1987 09 27.88465	00 07 39.33	−02 35 34.9	1987 RY ₅	16.2 V	095	
1990 RQ ₁₈	* 1990 09 15.26840	22 11 22.94	−25 29 26.3	1990 OC ₂	17.0	675	
1990 RQ ₁₈	1990 09 15.30330	22 11 21.35	−25 29 23.6	1990 OC ₂		675	
1992 EO ₃₆	* 1992 03 04.16597	10 19 47.18	+17 37 58.6	1992 EC ₁₉	17.5	809	
1992 WA ₁₀	* 1992 11 25.32691	03 28 27.61	+21 48 03.2	1986 GD		675	
1992 WA ₁₀	1992 11 25.35885	03 28 25.30	+21 47 58.9	1986 GD		675	
1994 TO ₁₇	* 1994 10 13.26296	02 19 02.42	+11 38 37.6	1994 TE ₁₄		691	
1994 TO ₁₇	1994 10 13.27109	02 19 01.96	+11 38 35.5	1994 TE ₁₄	19.7 V	691	
1994 TO ₁₇	1994 10 13.27885	02 19 01.58	+11 38 32.9	1994 TE ₁₄		691	
1994 TO ₁₇	1994 10 13.36731	02 18 56.85	+11 38 08.0	1994 TE ₁₄		691	
1994 TO ₁₇	1994 10 13.37308	02 18 56.54	+11 38 06.2	1994 TE ₁₄	19.9 V	691	
1994 TO ₁₇	1994 10 13.37917	02 18 56.24	+11 38 04.7	1994 TE ₁₄		691	
1997 XQ ₁₃	* 1997 12 01.86922	09 24 26.06	+11 14 34.6	1997 WQ ₄₉	18.7	327	
1997 XQ ₁₃	1997 12 01.88237	09 24 26.38	+11 14 31.5	1997 WQ ₄₉		327	
1997 XQ ₁₃	1997 12 01.89506	09 24 26.72	+11 14 29.1	1997 WQ ₄₉		327	
1998 FV ₁₄₄	* 1998 03 26.13817	10 57 30.94	+06 24 02.3	1998 FF ₁₃₃	18.7	704	
1998 FV ₁₄₄	1998 03 26.15865	10 57 29.96	+06 24 04.9	1998 FF ₁₃₃	18.7	704	
1998 FV ₁₄₄	1998 03 26.17882	10 57 29.00	+06 24 07.1	1998 FF ₁₃₃	18.7	704	
1998 HT ₁₅₁	* 1998 04 29.44249	13 34 11.71	−22 45 08.1	1998 FA ₁₂₆	16.6 V	566	
1998 HT ₁₅₁	1998 04 29.48686	13 34 09.69	−22 44 39.4	1998 FA ₁₂₆	16.6 V	566	

1998 HT ₁₅₁	1998 04 29.50765	13 34 08.76	−22 44 25.8	1998 FA ₁₂₆	16.6 V	566
1999 DJ ₈	* 1999 02 16.30421	10 23 14.50	+09 07 45.9	1999 CE ₉₈	18.8	704
1999 DJ ₈	1999 02 16.32522	10 23 13.31	+09 07 51.1	1999 CE ₉₈	19.0	704
1999 DJ ₈	1999 02 16.34611	10 23 12.15	+09 07 55.9	1999 CE ₉₈	19.2	704
1999 DJ ₈	1999 02 16.36710	10 23 10.85	+09 08 03.1	1999 CE ₉₈	19.5	704
1999 DK ₈	* 1999 02 16.32522	10 23 30.38	+09 06 45.2	1999 CF ₉₈	19.0	704
1999 DK ₈	1999 02 16.34611	10 23 29.40	+09 06 49.0	1999 CF ₉₈	19.0	704
1999 DK ₈	1999 02 16.36710	10 23 28.28	+09 06 53.7	1999 CF ₉₈	18.8	704
1999 DK ₈	1999 02 16.38800	10 23 27.25	+09 06 58.0	1999 CF ₉₈	18.8	704
1999 KQ ₁₈	* 1999 05 19.22160	14 43 16.60	−14 18 00.5	1999 JZ ₁₂₄	19.0	704
1999 KQ ₁₈	1999 05 19.23555	14 43 15.87	−14 17 58.9	1999 JZ ₁₂₄	19.7	704
1999 KQ ₁₈	1999 05 19.24948	14 43 15.04	−14 17 59.2	1999 JZ ₁₂₄	19.7	704

NUMBERING OF PERIODIC COMETS

Continuation to the list on *MPC* 33414.

141P/1994 P1 = 1999 P1 (Machholz 2)

142P/1988 V1 = 1999 R2 (Ge-Wang)

OBSERVATIONS OF COMETS

Observations are published here for the following observatory codes:

- 017 Hoher List. 1-m reflector + CCD. Observers N. Bennert, A. Hovest, W. Hovest, T. Jürges, I. König, D. Münstermann, M. Nielbock, M. Pohlen, D. Reymann, K. Rösler, C. Tappert and R. Vanscheidt. Measured by R. Vanscheidt.
- 046 Kleť. 0.57-m $f/5.2$ reflector + CCD. Observers J. Tichá, M. Tichý and Z. Moravec.
- 057 Belgrade. 0.14-m $f/12$ Askania astrograph + CCD. Observers Vl. Benishek and V. Protitch-Benishek.
- 071 Rozhen. 0.5-m $f/1.4$ Schmidt + CCD. Observers V. Redeva, G. Borisov, R. Ralev, I. Darganov and G. Apostolovska.
- 097 Wise Observatory. 1-m $f/7$ reflector + CCD. Observer E. O. Ofek.
- 106 Črni vrh. 0.36-m $f/6.7$ Schmidt-Cassegrain + CCD. Observer H. Mikuž.
- 118 Modra. 0.6-m $f/5.5$ reflector + CCD. Observers A. Galád, P. Kolény, L. Kornoš and J. Tóth.
- 120 Višnjan. 0.41-m $f/4.3$ reflector + CCD. Observer K. Korlević.
- 130 Serafino Zani Observatory. 0.40-m $f/6.5$ reflector + CCD. Observers S. Foglia, M. Damiani, G. Pizzetti and M. Bignotti.
- 138 Village-Neuf. 0.20-m $f/6.3$ reflector + CCD. Observer C. Demeautis.
- 143 Gnosca. 0.20-m $f/6.3$ reflector + CCD. Observer S. Sposetti.
- 159 Monte Agiale. 0.51-m reflector + CCD. Observers S. Donati and E. Mazzoni.
- 249 SOHO. SOHO-LASCO coronagraph C3. Observers T. Lovejoy and J. D. Shanklin. Measured by D. A. Biesecker. Reduction by B. G. Marsden.
- 322 Perth Observatory, Bickley-MCT. 0.25-m $f/4.5$ reflector + CCD. Observers J. D. Biggs and C. Livingston. Measured by J. D. Biggs.
- 327 Xinglong. 0.60-m Schmidt + CCD. Observers J. Zhu and X. Y. Li.
- 349 Ageo. 0.18-m $f/5.5$ reflector + CCD. Observer K. Kadota. Measured by S. Yoshida and K. Kadota.
- 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.

	Object	Date	UT	α_{2000}	δ_{2000}	Mag.	N	Obs.
		C/1995 O1 (Hale-Bopp)						

C/1998 K5	1998 10 25.61389	03 02 20.05	+14 08 11.7	14.3 T	897
C/1998 K5	1998 10 25.62397	03 02 19.20	+14 08 03.5		897
C/1998 K5	1998 10 25.63706	03 02 18.04	+14 07 52.7		897
C/1998 K5	1998 11 09.70044	02 43 48.74	+11 12 04.7	13.9 T	897
C/1998 K5	1998 11 09.70962	02 43 48.19	+11 11 59.4		897
C/1998 K5	1998 11 23.58626	02 32 39.00	+09 30 52.8	14.5 T	897
C/1998 K5	1998 11 23.61991	02 32 37.79	+09 30 42.2		897
C/1998 K5	1998 11 23.63300	02 32 37.30	+09 30 38.1		897
C/1998 K5	1998 12 13.54366	02 27 10.45	+08 36 38.4	15.8 T	897
C/1998 K5	1999 01 01.49315	02 31 17.51	+08 54 15.1		897
C/1998 K5	1999 01 01.53368	02 31 18.49	+08 54 20.0	16.7 T	897
C/1998 K5	1999 01 11.49396	02 36 10.23	+09 20 22.2		897
C/1998 K5	1999 01 17.47233	02 39 46.99	+09 39 37.8		897
C/1998 K5	1999 01 17.48721	02 39 47.68	+09 39 40.9	17.0 T	897

C/1998 M1 (LINEAR)

C/1998 M1	1998 09 20.42430	16 26 15.70	-18 24 23.5	16.8 T	897
C/1998 M1	1999 09 04.54251	21 54 28.20	+15 12 16.8	18.3 T	402
C/1998 M1	1999 09 04.54411	21 54 28.14	+15 12 16.7		402
C/1998 M1	1999 09 04.54572	21 54 28.13	+15 12 16.0		402
C/1998 M1	1999 09 13.83141	21 50 51.22	+14 36 50.6		557
C/1998 M1	1999 09 13.83391	21 50 51.19	+14 36 49.4		557
C/1998 M1	1999 09 13.84914	21 50 50.88	+14 36 45.8	18.7 T	159
C/1998 M1	1999 09 13.86036	21 50 50.59	+14 36 42.7	18.5 T	159
C/1998 M1	1999 09 15.79900	21 50 11.59	+14 28 32.0	18.0 T	046
C/1998 M1	1999 09 15.80124	21 50 11.59	+14 28 31.6		046
C/1998 M1	1999 09 15.80331	21 50 11.57	+14 28 30.9		046

C/1998 M2 (LINEAR)

C/1998 M2	1998 09 08.48341	17 28 16.86	+19 31 46.3	14.6 T	897
C/1998 M2	1998 09 08.50809	17 28 17.40	+19 31 51.2		897
C/1998 M2	1998 09 08.51148	17 28 17.53	+19 31 50.7		897
C/1998 M2	1998 10 02.47184	17 44 45.52	+20 19 11.4	15.6 T	897
C/1998 M2	1998 10 02.48954	17 44 46.35	+20 19 12.8		897
C/1998 M2	1998 11 11.42654	18 33 05.74	+22 07 23.8		897
C/1998 M2	1998 11 11.43303	18 33 06.38	+22 07 24.6		897
C/1998 M2	1998 11 11.43657	18 33 06.27	+22 07 26.5	15.4 T	897
C/1998 M2	1998 11 11.43936	18 33 06.99	+22 07 28.3		897
C/1998 M2	1999 09 13.87102	01 14 16.25	+70 14 22.0		557

C/1998 M5 (LINEAR)

C/1998 M5	1998 09 08.51618	20 47 02.64	+40 01 10.1		897
C/1998 M5	1998 09 08.51810	20 47 02.24	+40 01 10.8	12.0 T	897
C/1998 M5	1998 09 08.52138	20 47 01.56	+40 01 12.2		897
C/1998 M5	1998 09 12.54288	20 33 40.06	+40 18 52.5		897
C/1998 M5	1998 09 12.55649	20 33 37.39	+40 18 55.1		897
C/1998 M5	1998 09 12.56272	20 33 36.11	+40 18 56.1	11.6 T	897
C/1998 M5	1998 10 02.50080	19 36 51.68	+39 39 32.3		897
C/1998 M5	1998 10 02.58066	19 36 40.58	+39 39 04.5		897
C/1998 M5	1998 11 11.44394	18 47 50.77	+36 08 32.8	11.5 T	897
C/1998 M5	1998 11 11.45299	18 47 50.60	+36 08 31.6		897
C/1998 M5	1998 11 28.36658	18 45 27.58	+36 14 29.3		897
C/1998 M5	1998 11 28.37501	18 45 27.61	+36 14 30.7		897

C/1998 M5	1998 12 30.36798	18 55 38.90	+40 52 05.3		897
C/1998 M5	1998 12 30.37215	18 55 39.00	+40 52 08.7		897

C/1998 P1 (Williams)

C/1998 P1	1998 11 23.82259	13 22 15.52	-19 05 43.4		897
C/1998 P1	1998 11 23.82671	13 22 15.43	-19 05 39.8		897
C/1998 P1	1998 11 23.84358	13 22 15.08	-19 05 25.0		897
C/1998 P1	1998 12 17.85320	13 07 36.23	-11 42 50.3		897
C/1998 P1	1998 12 17.85928	13 07 35.85	-11 42 41.6		897
C/1998 P1	1998 12 24.87332	12 59 16.46	-08 34 22.8		897
C/1998 P1	1998 12 24.87568	12 59 16.29	-08 34 18.3		897

C/1998 Q1 (LINEAR)

C/1998 Q1	1998 09 16.54574	22 18 29.66	-14 38 24.3	16.7 T	897
C/1998 Q1	1998 09 16.55595	22 18 29.95	-14 38 39.6		897

P/1998 QP₅₄ (LONEOS-Tucker)

P/1998 QP ₅₄	1998 09 16.56377	00 19 28.00	+16 04 02.9	15.3 T	897
P/1998 QP ₅₄	1998 09 16.58047	00 19 27.07	+16 04 17.6		897
P/1998 QP ₅₄	1998 09 20.71534	00 15 37.05	+17 04 46.6		897
P/1998 QP ₅₄	1998 09 20.72215	00 15 36.69	+17 04 51.3	15.9 T	897
P/1998 QP ₅₄	1998 10 02.62397	00 03 46.96	+19 33 37.3	15.0 T	897
P/1998 QP ₅₄	1998 10 02.63672	00 03 46.16	+19 33 46.4		897
P/1998 QP ₅₄	1998 11 12.55045	23 46 12.11	+23 40 49.8	14.9 T	897
P/1998 QP ₅₄	1998 11 12.56595	23 46 12.41	+23 40 53.6		897
P/1998 QP ₅₄	1998 11 12.57781	23 46 12.65	+23 40 55.8		897

P/1998 S1 (LINEAR-Mueller)

P/1998 S1	1998 10 24.63909	00 52 37.35	+13 04 04.8	15.2 T	897
P/1998 S1	1998 10 24.64537	00 52 37.12	+13 04 05.0		897
P/1998 S1	1998 11 12.58461	00 43 09.14	+13 07 04.3		897
P/1998 S1	1998 11 12.60266	00 43 08.74	+13 07 05.3	15.2 T	897

C/1998 T1 (LINEAR)

C/1998 T1	1998 10 10.44029	01 37 32.44	+21 51 21.4		897
C/1998 T1	1998 10 10.45145	01 37 30.96	+21 51 13.5		897
C/1998 T1	1998 10 10.46488	01 37 29.13	+21 51 06.5	16.2 T	897
C/1998 T1	1998 10 10.49058	01 37 25.84	+21 50 49.0		897
C/1998 T1	1998 10 24.60130	01 05 16.17	+18 40 07.6		897
C/1998 T1	1998 10 24.60792	01 05 15.23	+18 40 01.1	15.8 T	897
C/1998 T1	1998 10 24.61182	01 05 14.66	+18 39 57.0		897
C/1998 T1	1998 11 12.53561	00 23 03.40	+13 19 17.7	16.1 T	897
C/1998 T1	1998 11 12.54454	00 23 02.39	+13 19 09.5		897
C/1998 T1	1998 12 17.50103	23 32 05.28	+04 41 28.7	16.1 T	897
C/1998 T1	1998 12 17.52372	23 32 04.37	+04 41 13.8		897
C/1998 T1	1998 12 17.53436	23 32 03.70	+04 41 04.8		897
C/1998 T1	1999 01 01.40531	23 22 16.86	+02 22 39.8	16.6 T	897
C/1998 T1	1999 01 01.41227	23 22 16.63	+02 22 37.5		897
C/1998 T1	1999 01 01.41921	23 22 16.46	+02 22 33.5		897
C/1998 T1	1999 07 07.58750	17 16 53.63	-47 02 33.8	9.5 T	372
C/1998 T1	1999 07 08.53524	16 56 48.54	-46 17 25.9		372
C/1998 T1	1999 08 08.48788	13 55 15.81	-23 21 40.5		372
C/1998 T1	1999 08 08.49514	13 55 15.37	-23 21 33.4		372
C/1998 T1	1999 08 28.98167	13 46 32.88	-19 49 55.0		844

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C/1998 T1	1999 08 28.98655	13 46 32.76	-19 49 54.2		844
C/1998 T1	1999 08 28.99495	13 46 32.64	-19 49 49.9		844

P/1998 U2 (Mueller)

P/1998 U2	1998 10 24.61527	01 23 16.77	+12 21 36.1		897
P/1998 U2	1998 10 24.62446	01 23 16.52	+12 21 35.0	15.4 T	897
P/1998 U2	1998 10 24.63337	01 23 16.23	+12 21 33.4		897
P/1998 U2	1998 11 12.61620	01 16 56.84	+11 51 49.6	16.4 T	897
P/1998 U2	1998 11 12.62600	01 16 56.75	+11 51 48.5		897

P/1998 U3 (Jäger)

P/1998 U3	1998 11 09.73352	06 56 21.82	+41 35 45.1	11.6 T	897
P/1998 U3	1998 11 09.73910	06 56 22.00	+41 35 45.2		897
P/1998 U3	1998 11 09.74315	06 56 22.13	+41 35 44.9		897
P/1998 U3	1998 11 15.60403	06 58 51.95	+41 32 37.5	11.5 T	897
P/1998 U3	1998 11 15.61549	06 58 52.16	+41 32 37.0		897
P/1998 U3	1998 11 15.62325	06 58 52.29	+41 32 36.8	11.6 T	897
P/1998 U3	1998 11 28.53564	06 59 58.44	+41 13 06.8	11.4 T	897
P/1998 U3	1998 11 28.54991	06 59 58.31	+41 13 04.9		897
P/1998 U3	1998 12 17.53759	06 50 55.91	+39 52 27.1		897
P/1998 U3	1998 12 17.55032	06 50 55.30	+39 52 21.9		897
P/1998 U3	1998 12 26.58168	06 43 21.73	+38 42 41.9		897
P/1998 U3	1998 12 26.59453	06 43 21.00	+38 42 35.0		897
P/1998 U3	1999 03 11.81008	06 37 58.14	+22 27 15.2		017
P/1998 U3	1999 03 11.81429	06 37 58.41	+22 27 12.6		017
P/1998 U3	1999 03 11.81802	06 37 58.63	+22 27 10.0		017
P/1998 U3	1999 03 11.82456	06 37 59.05	+22 27 05.5		017
P/1998 U3	1999 03 11.82769	06 37 59.24	+22 27 03.5		017

P/1998 U4 (Spahr)

P/1998 U4	1998 11 11.60354	04 01 49.17	-13 51 08.1	17.0 T	897
P/1998 U4	1998 11 11.61436	04 01 48.84	-13 51 12.3		897
P/1998 U4	1998 11 11.62515	04 01 48.51	-13 51 16.8		897
P/1998 U4	1998 12 13.63403	03 44 53.35	-15 38 33.1		897
P/1998 U4	1998 12 13.64635	03 44 52.99	-15 38 33.4	17.6 T	897
P/1998 U4	1998 12 13.65252	03 44 52.74	-15 38 33.1		897

C/1998 U5 (LINEAR)

C/1998 U5	1998 11 09.71601	05 30 41.02	+48 47 40.1		897
C/1998 U5	1998 11 09.72235	05 30 34.87	+48 48 35.0		897
C/1998 U5	1998 11 12.83274	04 25 40.19	+55 57 06.8		897
C/1998 U5	1998 11 12.84116	04 25 26.88	+55 58 07.9		897
C/1998 U5	1998 11 23.64005	23 11 30.31	+50 33 03.4		897
C/1998 U5	1998 11 23.64332	23 11 27.23	+50 32 38.6		897
C/1998 U5	1998 11 23.64870	23 11 22.17	+50 31 57.9		897
C/1998 U5	1998 12 11.48461	21 29 14.91	+26 23 49.6		897
C/1998 U5	1998 12 11.49107	21 29 14.21	+26 23 32.8		897
C/1998 U5	1998 12 17.44792	21 20 56.29	+22 50 06.3	11.5 T	897
C/1998 U5	1998 12 17.45765	21 20 55.64	+22 49 48.9		897
C/1998 U5	1998 12 30.41663	21 12 04.46	+18 10 52.3	11.4 T	897
C/1998 U5	1998 12 30.42273	21 12 04.25	+18 10 46.4		897
C/1998 U5	1998 12 30.42552	21 12 04.20	+18 10 43.6		897
C/1998 U5	1999 01 11.39359	21 08 48.04	+15 50 52.0		897
C/1998 U5	1999 01 11.39670	21 08 47.99	+15 50 49.6		897

P/1998 W1 (Spahr)

P/1998 W1	1999 01 07.59179	04 00 20.94	+07 06 48.2	15.8 T	897
P/1998 W1	1999 01 07.60442	04 00 21.02	+07 07 08.2		897

C/1998 W3 (LINEAR)

C/1998 W3	1998 12 11.65244	08 32 01.46	+33 15 28.2	16.4 T	897
C/1998 W3	1998 12 11.66657	08 32 00.62	+33 15 38.7		897
C/1998 W3	1999 09 13.03010	07 09 31.05	+55 42 47.9		557
C/1998 W3	1999 09 13.03242	07 09 31.05	+55 42 48.3		557
C/1998 W3	1999 09 13.03475	07 09 31.01	+55 42 49.6		557
C/1998 W3	1999 09 13.03708	07 09 31.02	+55 42 51.3		557

P/1998 X1 (ODAS)

P/1998 X1	1998 12 19.68403	10 00 14.53	+13 49 05.4	18.0 T	897
P/1998 X1	1998 12 19.69444	10 00 14.47	+13 49 04.8		897
P/1998 X1	1998 12 20.60936	10 00 24.21	+13 48 23.1		897
P/1998 X1	1999 01 07.67110	09 58 14.61	+14 01 15.3		897
P/1998 X1	1999 01 07.67819	09 58 14.55	+14 01 15.9	18.0 T	897
P/1998 X1	1999 01 07.70450	09 58 13.84	+14 01 19.4		897

P/1998 Y2 (Li)

P/1998 Y2	1999 01 17.56198	02 48 12.19	+00 40 17.1	16.8 T	897
P/1998 Y2	1999 01 17.56889	02 48 12.62	+00 40 26.6		897
P/1998 Y2	1999 01 28.46860	02 56 01.30	+03 37 24.8	16.6 T	897
P/1998 Y2	1999 01 28.47980	02 56 01.95	+03 37 35.4		897

C/1999 A1 (Tilbrook)

C/1999 A1	1999 01 18.37808	23 41 40.57	-35 21 34.6		897
C/1999 A1	1999 01 18.38076	23 41 40.58	-35 21 44.6		897

C/1999 F2 (Dalcanton)

C/1999 F2	1999 08 31.47095	15 14 33.23	+12 04 07.6	16.7 T	402
C/1999 F2	1999 08 31.47221	15 14 33.26	+12 04 07.5		402
C/1999 F2	1999 08 31.47347	15 14 33.37	+12 04 07.6		402

C/1999 H1 (Lee)

C/1999 H1	1999 08 08.79132	07 17 21.37	+39 48 08.3	8.0 T	372
C/1999 H1	1999 08 08.79271	07 17 21.20	+39 48 10.4		372
C/1999 H1	1999 08 12.79436	07 10 31.67	+41 21 21.2		372
C/1999 H1	1999 08 21.72326	06 51 47.80	+45 09 46.7	8.0 T	372
C/1999 H1	1999 08 21.78942	06 51 37.85	+45 11 38.1		349
C/1999 H1	1999 08 22.74998	06 49 11.01	+45 38 25.4		349
C/1999 H1	1999 08 22.75376	06 49 10.40	+45 38 30.7		349
C/1999 H1	1999 08 28.76179	06 30 55.85	+48 37 50.9		352
C/1999 H1	1999 08 28.76932	06 30 54.10	+48 38 04.6		352
C/1999 H1	1999 08 29.68134	06 27 34.97	+49 07 04.0		402
C/1999 H1	1999 08 29.68260	06 27 34.70	+49 07 06.6		402
C/1999 H1	1999 08 29.68387	06 27 34.41	+49 07 09.0		402
C/1999 H1	1999 08 31.67458	06 19 40.73	+50 12 07.6		349
C/1999 H1	1999 08 31.68234	06 19 38.76	+50 12 23.0		349
C/1999 H1	1999 08 31.68425	06 19 38.21	+50 12 26.4		349
C/1999 H1	1999 09 04.06257	06 03 48.41	+52 06 57.2	11.6 T	138
C/1999 H1	1999 09 04.06484	06 03 47.68	+52 07 01.5	11.6 T	138
C/1999 H1	1999 09 04.06785	06 03 46.71	+52 07 07.9	11.6 T	138
C/1999 H1	1999 09 04.07093	06 03 45.79	+52 07 14.3	11.6 T	138
C/1999 H1	1999 09 04.07317	06 03 45.14	+52 07 18.6	11.6 T	138

C/1999 H1	1999 09 04.75508	06 00 06.86	+52 30 56.8		903	C/1999 H1	1999 09 14.94118	04 40 15.27	+58 00 57.5	11.6 T	057
C/1999 H1	1999 09 04.75563	06 00 06.77	+52 30 58.9		349	C/1999 H1	1999 09 14.94795	04 40 10.75	+58 01 08.4	11.6 T	057
C/1999 H1	1999 09 04.75749	06 00 06.18	+52 31 03.3	8.9 T	349	C/1999 H1	1999 09 14.95015	04 40 09.52	+58 01 12.0		057
C/1999 H1	1999 09 04.75968	06 00 05.44	+52 31 06.9		903	C/1999 H1	1999 09 14.95411	04 40 06.75	+58 01 17.2	11.7 T	057
C/1999 H1	1999 09 04.76056	06 00 05.14	+52 31 09.5		349	C/1999 H1	1999 09 14.95617	04 40 05.42	+58 01 20.6		057
C/1999 H1	1999 09 04.76755	06 00 02.85	+52 31 23.3		903	C/1999 H1	1999 09 14.95944	04 40 03.48	+58 01 24.6	11.7 T	057
C/1999 H1	1999 09 04.79136	05 59 54.95	+52 32 13.8	7.8 T	372	C/1999 H1	1999 09 14.96120	04 40 02.29	+58 01 27.9	11.8 T	057
C/1999 H1	1999 09 04.85567	05 59 33.66	+52 34 19.3	10.0 T	540	C/1999 H1	1999 09 14.96411	04 40 00.28	+58 01 33.1		057
C/1999 H1	1999 09 04.86169	05 59 31.62	+52 34 32.4		540	C/1999 H1	1999 09 14.96745	04 39 58.24	+58 01 36.2	11.8 T	057
C/1999 H1	1999 09 04.86285	05 59 31.40	+52 34 34.6		540	C/1999 H1	1999 09 15.12220	04 38 17.08	+58 05 32.4		106
C/1999 H1	1999 09 04.86400	05 59 30.90	+52 34 37.2		540	C/1999 H1	1999 09 15.14344	04 38 03.32	+58 06 03.7		046
C/1999 H1	1999 09 04.86516	05 59 30.51	+52 34 39.4		540	C/1999 H1	1999 09 15.14389	04 38 02.57	+58 06 05.0		106
C/1999 H1	1999 09 05.70358	05 54 46.80	+53 03 56.1		349	C/1999 H1	1999 09 15.14446	04 38 02.65	+58 06 05.1		046
C/1999 H1	1999 09 05.72351	05 54 39.77	+53 04 37.5		349	C/1999 H1	1999 09 15.14573	04 38 01.79	+58 06 06.7		046
C/1999 H1	1999 09 05.79956	05 54 12.86	+53 07 17.5	9.1 T	349	C/1999 H1	1999 09 15.14701	04 38 00.95	+58 06 08.6		046
C/1999 H1	1999 09 06.13234	05 52 14.93	+53 18 52.0		046	C/1999 H1	1999 09 19.64494	03 42 43.03	+59 17 55.5		903
C/1999 H1	1999 09 06.13591	05 52 13.63	+53 18 59.6		046	C/1999 H1	1999 09 19.65189	03 42 37.34	+59 17 57.2		903
C/1999 H1	1999 09 06.13845	05 52 12.71	+53 19 04.9		046	C/1999 H1	1999 09 19.65426	03 42 35.37	+59 17 59.3		903
C/1999 H1	1999 09 08.04321	05 40 03.34	+54 25 18.9		106	C/1999 H1	1999 09 20.87156	03 25 43.20	+59 20 10.3	12.5 T	057
C/1999 H1	1999 09 08.05062	05 40 00.24	+54 25 34.5		106	C/1999 H1	1999 09 20.87255	03 25 42.19	+59 20 16.1	12.4 T	057
C/1999 H1	1999 09 08.10355	05 39 38.53	+54 27 25.8		106	C/1999 H1	1999 09 20.87457	03 25 40.76	+59 20 15.9		057
C/1999 H1	1999 09 08.10579	05 39 37.53	+54 27 30.5		106	C/1999 H1	1999 09 20.88227	03 25 34.18	+59 20 11.2	12.4 T	057
C/1999 H1	1999 09 09.12861	05 32 23.10	+55 02 40.1	10.5 T	118	C/1999 H1	1999 09 20.88325	03 25 33.62	+59 20 13.6		057
C/1999 H1	1999 09 09.13170	05 32 21.71	+55 02 46.6		118	C/1999 H1	1999 09 20.88442	03 25 32.10	+59 20 15.5	12.3 T	057
C/1999 H1	1999 09 10.02656	05 25 36.15	+55 33 00.8	13.0 N	610	C/1999 H1	1999 09 20.88744	03 25 29.81	+59 20 14.8	12.5 T	057
C/1999 H1	1999 09 10.03003	05 25 34.51	+55 33 07.9		610	C/1999 H1	1999 09 20.88900	03 25 28.58	+59 20 16.7		057
C/1999 H1	1999 09 10.03351	05 25 32.87	+55 33 14.9		610	C/1999 H1	1999 09 20.89022	03 25 27.29	+59 20 13.6	12.7 T	057
C/1999 H1	1999 09 10.03698	05 25 31.24	+55 33 22.0		610	C/1999 H1	1999 09 20.89396	03 25 23.76	+59 20 14.0	12.1 T	057
C/1999 H1	1999 09 10.04045	05 25 29.60	+55 33 29.1		610	C/1999 H1	1999 09 20.89791	03 25 21.05	+59 20 12.9	12.2 T	057
C/1999 H1	1999 09 11.69498	05 11 49.79	+56 27 35.3		355	C/1999 H1	1999 09 21.92927	03 10 36.43	+59 14 57.4	13.0 N	610
C/1999 H1	1999 09 11.69697	05 11 48.68	+56 27 39.1		355	C/1999 H1	1999 09 21.93205	03 10 34.04	+59 14 55.8		610
C/1999 H1	1999 09 11.70387	05 11 45.06	+56 27 52.1		355	C/1999 H1	1999 09 21.93483	03 10 31.64	+59 14 54.3		610
C/1999 H1	1999 09 11.73851	05 11 26.61	+56 28 59.8		349	C/1999 H1	1999 09 21.93760	03 10 29.25	+59 14 52.7		610
C/1999 H1	1999 09 11.73973	05 11 25.97	+56 29 02.3		349	C/1999 H1	1999 09 21.94038	03 10 26.85	+59 14 51.2		610
C/1999 H1	1999 09 11.74471	05 11 23.40	+56 29 11.4		349	C/1999 H1	1999 09 21.94300	03 10 24.60	+59 14 49.7		610
C/1999 H1	1999 09 11.99730	05 09 09.72	+56 37 02.9		130	C/1999 H1	1999 09 23.04377	02 54 22.57	+59 01 20.3	12.2 T	118
C/1999 H1	1999 09 12.01536	05 08 59.95	+56 37 38.5		130	C/1999 H1	1999 09 23.05004	02 54 17.00	+59 01 13.8	12.3 T	118
C/1999 H1	1999 09 12.01987	05 08 57.51	+56 37 46.7		130	C/1999 H1	1999 09 23.61573	02 45 59.86	+58 50 57.6		903
C/1999 H1	1999 09 12.72708	05 02 30.02	+56 59 33.1		360	C/1999 H1	1999 09 23.62211	02 45 54.23	+58 50 49.4		903
C/1999 H1	1999 09 12.72830	05 02 29.36	+56 59 35.3		360	C/1999 H1	1999 09 23.62858	02 45 48.55	+58 50 41.0		903
C/1999 H1	1999 09 12.72951	05 02 28.66	+56 59 37.4		360	C/1999 H1	1999 09 24.89955	02 27 10.15	+58 19 07.9		046
C/1999 H1	1999 09 12.91834	05 00 42.06	+57 05 10.7		587	C/1999 H1	1999 09 24.90046	02 27 09.35	+58 19 06.3		046
C/1999 H1	1999 09 12.92193	05 00 40.03	+57 05 17.3		587	C/1999 H1	1999 09 24.90125	02 27 08.66	+58 19 04.8		046
C/1999 H1	1999 09 13.12942	04 58 40.76	+57 11 30.8	11.2 T	118	C/1999 H1	1999 09 24.90203	02 27 07.96	+58 19 03.6		046
C/1999 H1	1999 09 13.13270	04 58 38.85	+57 11 35.6		118	C/1999 H1	1999 09 24.90443	02 27 05.85	+58 18 59.4		046
C/1999 H1	1999 09 14.02722	04 49 48.99	+57 36 59.8	13.0 N	610	C/1999 H1	1999 09 25.17277	02 23 11.05	+58 10 49.4	14.4 T	750
C/1999 H1	1999 09 14.03071	04 49 46.83	+57 37 05.4		610	C/1999 H1	1999 09 25.17903	02 23 05.52	+58 10 37.8	14.3 T	750
C/1999 H1	1999 09 14.03418	04 49 44.68	+57 37 11.0		610	C/1999 H1	1999 09 25.18790	02 22 57.71	+58 10 21.3	14.3 T	750
C/1999 H1	1999 09 14.03765	04 49 42.53	+57 37 16.7		610	C/1999 H1	1999 09 26.90175	01 58 21.79	+57 05 48.5		470
C/1999 H1	1999 09 14.04112	04 49 40.37	+57 37 22.3		610	C/1999 H1	1999 09 26.90306	01 58 20.63	+57 05 45.3		470
C/1999 H1	1999 09 14.04571	04 49 37.53	+57 37 29.7		610	C/1999 H1	1999 09 26.90411	01 58 19.74	+57 05 42.2		470
C/1999 H1	1999 09 14.93723	04 40 17.70	+58 00 53.2	11.2 T	057	C/1999 H1	1999 09 26.91140	01 58 13.69	+57 05 22.6		470
C/1999 H1	1999 09 14.93994	04 40 16.11	+58 00 56.3		057	C/1999 H1	1999 09 26.91270	01 58 12.50	+57 05 19.4		470

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C/1999 H1	1999 09 27.54097	01 49 26.66	+56 36 28.3	11.1 T	355
C/1999 H1	1999 09 27.54291	01 49 25.07	+56 36 22.7		355
C/1999 H1	1999 09 27.54506	01 49 23.29	+56 36 16.3		355

C/1999 H3 (LINEAR)

C/1999 H3	1999 07 15.99089	15 12 14.39	+53 44 52.8	15.3 T	071
C/1999 H3	1999 07 15.99604	15 12 13.72	+53 44 47.6	15.1 T	071
C/1999 H3	1999 07 15.99884	15 12 13.34	+53 44 45.2	15.2 T	071
C/1999 H3	1999 07 16.00002	15 12 13.18	+53 44 44.5	15.2 T	071
C/1999 H3	1999 07 16.00120	15 12 12.97	+53 44 43.6	15.2 T	071
C/1999 H3	1999 08 31.47775	14 20 32.85	+41 24 52.8	14.5 T	402
C/1999 H3	1999 08 31.47902	14 20 32.86	+41 24 51.4		402
C/1999 H3	1999 08 31.48028	14 20 32.81	+41 24 50.5		402
C/1999 H3	1999 08 31.50207	14 20 32.30	+41 24 32.5		355
C/1999 H3	1999 08 31.51090	14 20 32.24	+41 24 24.0		355
C/1999 H3	1999 08 31.51697	14 20 32.10	+41 24 18.9		355
C/1999 H3	1999 09 05.49718	14 19 15.72	+40 14 27.9	15.4 T	349
C/1999 H3	1999 09 05.49939	14 19 15.71	+40 14 26.7		349
C/1999 H3	1999 09 08.80358	14 18 40.93	+39 29 58.7		557
C/1999 H3	1999 09 08.80590	14 18 40.89	+39 29 56.9		557
C/1999 H3	1999 09 08.80823	14 18 40.85	+39 29 55.0		557
C/1999 H3	1999 09 08.81056	14 18 40.85	+39 29 53.1		557
C/1999 H3	1999 09 09.44177	14 18 35.59	+39 21 34.2	14.1 T	402
C/1999 H3	1999 09 09.44338	14 18 35.58	+39 21 33.0		402
C/1999 H3	1999 09 09.44499	14 18 35.58	+39 21 31.3		402

C/1999 J2 (Skiff)

C/1999 J2	1999 06 01.58272	16 31 38.66	+63 05 35.5		897
C/1999 J2	1999 06 01.60646	16 31 36.73	+63 05 29.6	16.2 T	897
C/1999 J2	1999 08 31.48439	15 32 32.66	+48 58 03.1	16.2 T	402
C/1999 J2	1999 08 31.48565	15 32 32.66	+48 58 02.4		402
C/1999 J2	1999 08 31.48690	15 32 32.67	+48 58 01.3		402
C/1999 J2	1999 09 05.51262	15 33 12.44	+48 01 35.2		349
C/1999 J2	1999 09 05.51391	15 33 12.37	+48 01 33.1	15.1 T	349
C/1999 J2	1999 09 08.81355	15 33 47.69	+47 24 58.3		557
C/1999 J2	1999 09 08.81588	15 33 47.72	+47 24 56.7		557
C/1999 J2	1999 09 08.81821	15 33 47.75	+47 24 55.1		557
C/1999 J2	1999 09 08.82053	15 33 47.78	+47 24 53.7		557
C/1999 J2	1999 09 09.45113	15 33 55.31	+47 17 56.8	16.2 T	402
C/1999 J2	1999 09 09.45274	15 33 55.37	+47 17 56.2		402
C/1999 J2	1999 09 09.45435	15 33 55.37	+47 17 54.8		402

C/1999 J3 (LINEAR)

C/1999 J3	1999 08 28.77645	08 45 50.72	+52 06 48.1	11.8 T	352
C/1999 J3	1999 08 28.77992	08 45 50.53	+52 06 41.7		352
C/1999 J3	1999 08 28.78339	08 45 50.34	+52 06 36.7		352
C/1999 J3	1999 09 04.76968	08 39 09.91	+48 50 11.7		349
C/1999 J3	1999 09 04.77150	08 39 09.71	+48 50 07.4	12.1 T	349
C/1999 J3	1999 09 04.84525	08 39 04.60	+48 47 47.2	11.9 T	540
C/1999 J3	1999 09 04.84647	08 39 04.79	+48 47 44.9		540
C/1999 J3	1999 09 04.84757	08 39 04.57	+48 47 42.2		540
C/1999 J3	1999 09 04.84873	08 39 04.50	+48 47 39.9		540
C/1999 J3	1999 09 05.76734	08 38 10.18	+48 18 33.9		349
C/1999 J3	1999 09 05.77286	08 38 09.92	+48 18 23.7		349

C/1999 J3	1999 09 05.78275	08 38 09.33	+48 18 06.0		349
C/1999 J3	1999 09 11.77103	08 31 55.91	+44 43 02.2		355
C/1999 J3	1999 09 11.77365	08 31 55.74	+44 42 56.1		355
C/1999 J3	1999 09 11.77663	08 31 55.51	+44 42 48.9		355
C/1999 J3	1999 09 11.78439	08 31 55.11	+44 42 31.1	12.2 T	349
C/1999 J3	1999 09 13.04770	08 30 32.60	+43 50 24.7	13.9 T	106
C/1999 J3	1999 09 13.05041	08 30 32.42	+43 50 17.8	13.6 T	106
C/1999 J3	1999 09 13.07209	08 30 31.08	+43 49 23.9	13.8 T	106

C/1999 K2 (Ferris)

C/1999 K2	1999 07 16.00641	20 10 42.83	-00 49 00.8	17.5 T	071
C/1999 K2	1999 07 16.00793	20 10 42.79	-00 49 00.9	17.3 T	071
C/1999 K2	1999 07 16.01250	20 10 42.50	-00 48 58.5	17.2 T	071
C/1999 K2	1999 07 16.01490	20 10 42.35	-00 48 57.6	17.2 T	071
C/1999 K2	1999 08 29.59530	19 34 11.31	+02 19 13.6	18.4 T	402

C/1999 K6 (LINEAR)

C/1999 K6	1999 07 08.57431	18 36 35.15	+32 32 43.4		372
C/1999 K6	1999 09 08.82331	18 28 18.88	+36 42 11.0		557
C/1999 K6	1999 09 08.82562	18 28 18.99	+36 42 10.4		557
C/1999 K6	1999 09 08.82796	18 28 19.12	+36 42 09.8		557
C/1999 K6	1999 09 09.86037	18 29 10.44	+36 37 09.8		118
C/1999 K6	1999 09 09.86568	18 29 10.69	+36 37 08.4		118
C/1999 K6	1999 09 12.76547	18 31 45.46	+36 22 29.2	16.2 T	118
C/1999 K6	1999 09 12.77669	18 31 46.14	+36 22 25.7		118
C/1999 K6	1999 09 14.81144	18 33 43.35	+36 11 37.3	16.5 T	046
C/1999 K6	1999 09 14.81356	18 33 43.48	+36 11 36.5		046
C/1999 K6	1999 09 14.81543	18 33 43.61	+36 11 35.7		046
C/1999 K6	1999 09 22.81302	18 42 31.64	+35 25 55.0	16.8 T	118
C/1999 K6	1999 09 22.82355	18 42 32.43	+35 25 52.5		118

C/1999 K8 (LINEAR)

C/1999 K8	1999 08 29.63647	21 22 30.41	+35 41 29.9	15.0 T	402
C/1999 K8	1999 08 29.63773	21 22 30.38	+35 41 29.2		402
C/1999 K8	1999 08 29.64025	21 22 30.32	+35 41 27.9		402
C/1999 K8	1999 09 03.84188	21 20 39.98	+34 57 18.7		118
C/1999 K8	1999 09 03.84950	21 20 39.82	+34 57 14.6	15.2 T	118
C/1999 K8	1999 09 04.49215	21 20 26.99	+34 51 26.7	15.6 T	351
C/1999 K8	1999 09 04.49802	21 20 26.90	+34 51 24.4		351
C/1999 K8	1999 09 04.50942	21 20 26.66	+34 51 17.9		351
C/1999 K8	1999 09 04.60973	21 20 24.50	+34 50 23.0		349
C/1999 K8	1999 09 04.61227	21 20 24.33	+34 50 20.9	15.0 T	349
C/1999 K8	1999 09 05.58894	21 20 05.57	+34 41 22.0		349
C/1999 K8	1999 09 05.59925	21 20 05.26	+34 41 15.2		349
C/1999 K8	1999 09 08.88393	21 19 05.42	+34 09 48.9	14.9 T	118
C/1999 K8	1999 09 08.89103	21 19 05.29	+34 09 45.2		118
C/1999 K8	1999 09 10.81491	21 18 33.22	+33 50 29.3		557
C/1999 K8	1999 09 10.82016	21 18 33.15	+33 50 26.3		557
C/1999 K8	1999 09 10.82263	21 18 33.10	+33 50 24.8		557
C/1999 K8	1999 09 11.50299	21 18 22.42	+33 43 30.1		349
C/1999 K8	1999 09 11.50505	21 18 22.26	+33 43 26.4		349
C/1999 K8	1999 09 11.53073	21 18 21.88	+33 43 11.1	15.8 T	349
C/1999 K8	1999 09 14.83668	21 17 33.93	+33 08 22.2	16.3 T	046
C/1999 K8	1999 09 14.83825	21 17 33.91	+33 08 21.2		046

C/1999 K8	1999 09 14.83949	21 17 33.89	+33 08 20.4		046
C/1999 K8	1999 09 27.50289	21 15 47.28	+30 42 22.9	15.3 T	355
C/1999 K8	1999 09 27.50588	21 15 47.27	+30 42 20.8		355
C/1999 K8	1999 09 27.51142	21 15 47.25	+30 42 16.2		355

C/1999 L2 (LINEAR)

C/1999 L2	1999 07 08.51021	16 09 03.31	-01 31 37.4	18.0 T	372
C/1999 L2	1999 07 08.52014	16 09 02.92	-01 32 02.4	18.0 T	372

C/1999 N2 (Lynn)

C/1999 N2	1999 08 09.47634	12 22 52.84	+20 22 22.3	7.2 T	372
C/1999 N2	1999 08 17.78639	12 38 11.00	+24 37 42.1	10.2 T	071
C/1999 N2	1999 08 17.78977	12 38 11.42	+24 37 47.2	9.9 T	071
C/1999 N2	1999 08 17.79421	12 38 11.99	+24 37 53.8	10.0 T	071
C/1999 N2	1999 08 17.79542	12 38 11.88	+24 37 56.0	10.0 T	071
C/1999 N2	1999 08 17.79663	12 38 12.22	+24 37 57.4	10.0 T	071
C/1999 N2	1999 08 18.77691	12 39 40.89	+25 02 47.0	9.9 T	071
C/1999 N2	1999 08 18.77785	12 39 41.02	+25 02 47.9	10.0 T	071
C/1999 N2	1999 08 18.77912	12 39 41.38	+25 02 49.0	9.5 T	071
C/1999 N2	1999 08 18.78106	12 39 41.58	+25 02 51.3	9.5 T	071
C/1999 N2	1999 08 18.78228	12 39 41.68	+25 02 53.1	9.5 T	071
C/1999 N2	1999 08 18.78348	12 39 41.77	+25 02 54.9	9.5 T	071
C/1999 N2	1999 08 19.78395	12 41 09.13	+25 27 20.9	10.4 T	071
C/1999 N2	1999 08 19.78512	12 41 09.23	+25 27 22.4	10.4 T	071
C/1999 N2	1999 08 19.78672	12 41 09.44	+25 27 24.8	10.4 T	071
C/1999 N2	1999 08 19.78822	12 41 09.43	+25 27 26.4	10.8 T	071
C/1999 N2	1999 08 19.78882	12 41 09.41	+25 27 28.0	10.8 T	071
C/1999 N2	1999 08 20.78288	12 42 33.83	+25 50 51.7	10.6 T	071
C/1999 N2	1999 08 20.80989	12 42 36.01	+25 51 29.6	9.4 T	071
C/1999 N2	1999 08 31.46521	12 55 36.50	+29 21 15.8	11.3 T	402
C/1999 N2	1999 08 31.46646	12 55 36.60	+29 21 17.2		402
C/1999 N2	1999 08 31.46769	12 55 36.72	+29 21 18.2		349
C/1999 N2	1999 08 31.46772	12 55 36.65	+29 21 18.5		402
C/1999 N2	1999 08 31.47069	12 55 36.86	+29 21 21.1		349
C/1999 N2	1999 09 03.07558	12 58 26.47	+30 04 15.9	16.0 N	762
C/1999 N2	1999 09 03.07909	12 58 26.65	+30 04 20.7	16.1 N	762
C/1999 N2	1999 09 03.08984	12 58 27.39	+30 04 30.0	15.9 N	762
C/1999 N2	1999 09 03.09621	12 58 27.74	+30 04 36.8	16.0 N	762
C/1999 N2	1999 09 04.42793	12 59 52.56	+30 25 41.0	11.8 T	402
C/1999 N2	1999 09 04.42885	12 59 52.64	+30 25 42.2		402
C/1999 N2	1999 09 04.42977	12 59 52.68	+30 25 42.5		402
C/1999 N2	1999 09 07.06787	13 02 38.13	+31 05 53.6	16.2 N	762
C/1999 N2	1999 09 07.08992	13 02 39.59	+31 06 13.8	16.2 N	762
C/1999 N2	1999 09 07.09908	13 02 40.14	+31 06 21.9	15.9 N	762
C/1999 N2	1999 09 11.43189	13 07 06.58	+32 08 52.0	13.7 T	349
C/1999 N2	1999 09 11.43764	13 07 06.83	+32 08 57.6		349

C/1999 N4 (LINEAR)

C/1999 N4	1999 08 08.59347	18 42 09.30	+00 17 25.6		372
C/1999 N4	1999 08 13.61788	18 36 58.95	+00 03 27.8	17.0 T	372
C/1999 N4	1999 08 29.60011	18 22 40.24	-00 46 29.8	18.5 T	402
C/1999 N4	1999 08 29.60334	18 22 40.23	-00 46 29.4		402
C/1999 N4	1999 08 29.60656	18 22 40.14	-00 46 29.8		402

C/1999 R1 (SOHO)

C/1999 R1	1999 09 04.89595	10 48 46.9	+07 17 23		249
Geocentric position (AU)	-0.00920072	-0.00043601	+0.00031630		
C/1999 R1	1999 09 04.91256	10 48 37.0	+07 19 44		249
Geocentric position (AU)	-0.00920162	-0.00043980	+0.00031425		
C/1999 R1	1999 09 04.92090	10 48 32.3	+07 20 56		249
Geocentric position (AU)	-0.00920207	-0.00044170	+0.00031323		
C/1999 R1	1999 09 04.93756	10 48 22.8	+07 23 13		249
Geocentric position (AU)	-0.00920297	-0.00044549	+0.00031117		
C/1999 R1	1999 09 04.97923	10 48 00.0	+07 29 05		249
Geocentric position (AU)	-0.00920520	-0.00045498	+0.00030604		
C/1999 R1	1999 09 04.99590	10 47 50.8	+07 31 22		249
Geocentric position (AU)	-0.00920610	-0.00045880	+0.00030398		
C/1999 R1	1999 09 05.00423	10 47 46.1	+07 32 40		249
Geocentric position (AU)	-0.00920654	-0.00046068	+0.00030296		
C/1999 R1	1999 09 05.02090	10 47 37.9	+07 34 48		249
Geocentric position (AU)	-0.00920743	-0.00046447	+0.00030091		
C/1999 R1	1999 09 05.03756	10 47 28.7	+07 36 58		249
Geocentric position (AU)	-0.00920832	-0.00046827	+0.00029886		
C/1999 R1	1999 09 05.06344	10 47 15.2	+07 40 36		249
Geocentric position (AU)	-0.00920970	-0.00047416	+0.00029567		
C/1999 R1	1999 09 05.07924	10 47 08.1	+07 42 39		249
Geocentric position (AU)	-0.00921053	-0.00047775	+0.00029373		
C/1999 R1	1999 09 05.08756	10 47 03.3	+07 43 42		249
Geocentric position (AU)	-0.00921097	-0.00047965	+0.00029270		
C/1999 R1	1999 09 05.22100	10 45 59.6	+08 01 05		249
Geocentric position (AU)	-0.00921797	-0.00051000	+0.00027627		
C/1999 R1	1999 09 05.26261	10 45 44.2	+08 06 04		249
Geocentric position (AU)	-0.00922014	-0.00051946	+0.00027115		
C/1999 R1	1999 09 05.27923	10 45 38.6	+08 07 32		249
Geocentric position (AU)	-0.00922100	-0.00052324	+0.00026910		
C/1999 R1	1999 09 05.32090	10 45 24.5	+08 12 25		249
Geocentric position (AU)	-0.00922314	-0.00053271	+0.00026397		
C/1999 R1	1999 09 05.34590	10 45 13.9	+08 15 14		249
Geocentric position (AU)	-0.00922443	-0.00053839	+0.00026089		
C/1999 R1	1999 09 05.36256	10 45 10.5	+08 16 40		249
Geocentric position (AU)	-0.00922528	-0.00054218	+0.00025884		
C/1999 R1	1999 09 05.38756	10 45 02.4	+08 19 39		249
Geocentric position (AU)	-0.00922656	-0.00054786	+0.00025576		
C/1999 R1	1999 09 05.40423	10 44 58.6	+08 21 14		249
Geocentric position (AU)	-0.00922741	-0.00055165	+0.00025370		
C/1999 R1	1999 09 05.42927	10 44 53.1	+08 23 32		249
Geocentric position (AU)	-0.00922868	-0.00055733	+0.00025062		
C/1999 R1	1999 09 05.47098	10 44 42.5	+08 27 15		249
Geocentric position (AU)	-0.00923079	-0.00056681	+0.00024548		
C/1999 R1	1999 09 05.48789	10 44 39.8	+08 28 45		249
Geocentric position (AU)	-0.00923164	-0.00057064	+0.00024340		
C/1999 R1	1999 09 05.51257	10 44 36.4	+08 30 55		249
Geocentric position (AU)	-0.00923288	-0.00057625	+0.00024036		
C/1999 R1	1999 09 05.52923	10 44 33.0	+08 32 17		249
Geocentric position (AU)	-0.00923372	-0.00058003	+0.00023831		
C/1999 R1	1999 09 05.57090	10 44 29.6	+08 34 57		249
Geocentric position (AU)	-0.00923580	-0.00058949	+0.00023318		

C/1999 R1	1999 09 05.59591	10 44 27.3	+08 36 59	249
Geocentric position (AU)	-0.00923704	-0.00059516	+0.00023010	
C/1999 R1	1999 09 05.61256	10 44 25.5	+08 37 51	249
Geocentric position (AU)	-0.00923787	-0.00059894	+0.00022804	
C/1999 R1	1999 09 05.63756	10 44 25.1	+08 39 12	249
Geocentric position (AU)	-0.00923911	-0.00060462	+0.00022496	
C/1999 R1	1999 09 05.65423	10 44 24.2	+08 40 17	249
Geocentric position (AU)	-0.00923993	-0.00060840	+0.00022291	
C/1999 R1	1999 09 05.67924	10 44 25.1	+08 41 16	249
Geocentric position (AU)	-0.00924116	-0.00061407	+0.00021983	
C/1999 R1	1999 09 05.69590	10 44 26.4	+08 42 10	249
Geocentric position (AU)	-0.00924198	-0.00061785	+0.00021778	
C/1999 R1	1999 09 05.72090	10 44 26.7	+08 43 29	249
Geocentric position (AU)	-0.00924320	-0.00062352	+0.00021470	
C/1999 R1	1999 09 05.76261	10 44 30.3	+08 45 13	249
Geocentric position (AU)	-0.00924523	-0.00063297	+0.00020956	
C/1999 R1	1999 09 05.77923	10 44 32.8	+08 45 31	249
Geocentric position (AU)	-0.00924604	-0.00063674	+0.00020751	
C/1999 R1	1999 09 05.82090	10 44 37.8	+08 47 07	249
Geocentric position (AU)	-0.00924805	-0.00064618	+0.00020238	
C/1999 R1	1999 09 05.84590	10 44 42.8	+08 47 31	249
Geocentric position (AU)	-0.00924925	-0.00065185	+0.00019930	
C/1999 R1	1999 09 05.86256	10 44 46.0	+08 47 29	249
Geocentric position (AU)	-0.00925005	-0.00065562	+0.00019725	
C/1999 R1	1999 09 05.88757	10 44 51.6	+08 47 52	249
Geocentric position (AU)	-0.00925125	-0.00066128	+0.00019417	
C/1999 R1	1999 09 05.90424	10 44 54.6	+08 48 14	249
Geocentric position (AU)	-0.00925204	-0.00066506	+0.00019212	
C/1999 R1	1999 09 05.92923	10 45 00.8	+08 48 42	249
Geocentric position (AU)	-0.00925323	-0.00067072	+0.00018904	
C/1999 R1	1999 09 05.97099	10 45 10.5	+08 48 42	249
Geocentric position (AU)	-0.00925521	-0.00068017	+0.00018389	
C/1999 R1	1999 09 05.98756	10 45 15.3	+08 48 49	249
Geocentric position (AU)	-0.00925599	-0.00068393	+0.00018185	
C/1999 R1	1999 09 06.01257	10 45 23.8	+08 48 47	249
Geocentric position (AU)	-0.00925717	-0.00068959	+0.00017877	
C/1999 R1	1999 09 06.07091	10 45 42.2	+08 48 53	249
Geocentric position (AU)	-0.00925990	-0.00070278	+0.00017159	
C/1999 R1	1999 09 06.09591	10 45 50.0	+08 48 06	249
Geocentric position (AU)	-0.00926106	-0.00070844	+0.00016851	
C/1999 R1	1999 09 06.11256	10 45 57.2	+08 47 57	249
Geocentric position (AU)	-0.00926183	-0.00071220	+0.00016646	
C/1999 R1	1999 09 06.13758	10 46 05.5	+08 47 24	249
Geocentric position (AU)	-0.00926299	-0.00071786	+0.00016338	
C/1999 R1	1999 09 06.15423	10 46 11.5	+08 46 48	249
Geocentric position (AU)	-0.00926375	-0.00072163	+0.00016132	
C/1999 R1	1999 09 06.17923	10 46 20.3	+08 46 58	249
Geocentric position (AU)	-0.00926490	-0.00072728	+0.00015825	
C/1999 R1	1999 09 06.19590	10 46 28.0	+08 46 26	249
Geocentric position (AU)	-0.00926567	-0.00073104	+0.00015619	
C/1999 R1	1999 09 06.26262	10 46 54.3	+08 44 53	249
Geocentric position (AU)	-0.00926870	-0.00074612	+0.00014798	

P/1999 RO₂₈ (LONEOS)

P/1999 RO ₂₈	1999 09 07.32994	23 41 39.78	-14 32 00.5	18.4 N	699
P/1999 RO ₂₈	1999 09 07.36058	23 41 44.80	-14 32 43.3		699
P/1999 RO ₂₈	1999 09 07.39127	23 41 49.86	-14 33 27.3		699
P/1999 RO ₂₈	1999 09 07.94374	23 43 29.41	-14 46 47.9	18.8 N	106
P/1999 RO ₂₈	1999 09 07.96318	23 43 32.61	-14 47 16.4	18.2 N	106
P/1999 RO ₂₈	1999 09 07.98263	23 43 35.87	-14 47 43.8	18.1 N	106
P/1999 RO ₂₈	1999 09 07.98601	23 43 36.41	-14 47 50.0		557
P/1999 RO ₂₈	1999 09 07.98787	23 43 36.76	-14 47 52.3		557
P/1999 RO ₂₈	1999 09 07.98975	23 43 37.07	-14 47 55.0		557
P/1999 RO ₂₈	1999 09 08.04773	23 43 46.84	-14 49 18.5	19.1 N	595
P/1999 RO ₂₈	1999 09 08.05647	23 43 48.37	-14 49 29.8		595
P/1999 RO ₂₈	1999 09 08.06211	23 43 49.34	-14 49 38.8		595
P/1999 RO ₂₈	1999 09 08.92495	23 46 26.04	-15 10 20.5		046
P/1999 RO ₂₈	1999 09 08.92694	23 46 26.46	-15 10 22.8		046
P/1999 RO ₂₈	1999 09 08.92816	23 46 26.67	-15 10 24.8		046
P/1999 RO ₂₈	1999 09 08.93030	23 46 27.00	-15 10 28.1		046
P/1999 RO ₂₈	1999 09 08.93296	23 46 27.48	-15 10 31.3	17.3 N	046
P/1999 RO ₂₈	1999 09 09.53009	23 48 17.04	-15 24 09.0	17.9 N	426
P/1999 RO ₂₈	1999 09 09.53358	23 48 17.59	-15 24 15.0	17.7 N	426
P/1999 RO ₂₈	1999 09 09.53703	23 48 18.16	-15 24 19.7	17.7 N	426
P/1999 RO ₂₈	1999 09 09.58045	23 48 25.07	-15 25 26.8	18.7 N	428
P/1999 RO ₂₈	1999 09 09.63475	23 48 34.47	-15 26 43.6	18.7 N	428
P/1999 RO ₂₈	1999 09 09.99027	23 49 39.94	-15 35 51.4		557
P/1999 RO ₂₈	1999 09 09.99155	23 49 40.14	-15 35 53.1		557
P/1999 RO ₂₈	1999 09 09.99285	23 49 40.36	-15 35 55.0		557
P/1999 RO ₂₈	1999 09 09.99413	23 49 40.61	-15 35 56.8		557
P/1999 RO ₂₈	1999 09 10.02478	23 49 45.99	-15 36 38.7	17.0 N	046
P/1999 RO ₂₈	1999 09 10.02630	23 49 46.26	-15 36 42.1		046
P/1999 RO ₂₈	1999 09 10.02882	23 49 46.57	-15 36 45.1		046
P/1999 RO ₂₈	1999 09 10.03122	23 49 47.04	-15 36 47.8		046
P/1999 RO ₂₈	1999 09 10.55146	23 51 24.56	-15 48 33.2	17.5 N	426
P/1999 RO ₂₈	1999 09 10.55484	23 51 25.14	-15 48 38.4	17.9 N	426
P/1999 RO ₂₈	1999 09 10.55821	23 51 25.74	-15 48 42.9	17.7 N	426
P/1999 RO ₂₈	1999 09 11.40308	23 54 01.45	-16 09 25.7	19.1 N	848
P/1999 RO ₂₈	1999 09 11.40510	23 54 01.79	-16 09 28.6	19.0 N	848
P/1999 RO ₂₈	1999 09 11.40772	23 54 02.25	-16 09 32.1	19.2 N	848
P/1999 RO ₂₈	1999 09 12.93715	23 58 51.86	-16 45 27.3		587
P/1999 RO ₂₈	1999 09 12.94063	23 58 52.43	-16 45 31.9		587
P/1999 RO ₂₈	1999 09 13.28578	23 59 57.97	-16 53 28.5	18.7 N	704
P/1999 RO ₂₈	1999 09 13.28615	23 59 58.14	-16 53 30.4	18.8 N	704
P/1999 RO ₂₈	1999 09 13.29701	23 59 59.93	-16 53 44.5	18.5 N	704
P/1999 RO ₂₈	1999 09 13.29739	00 00 00.09	-16 53 44.8	19.2 N	704
P/1999 RO ₂₈	1999 09 13.30830	00 00 01.98	-16 53 59.9	18.7 N	704
P/1999 RO ₂₈	1999 09 13.30869	00 00 02.09	-16 54 01.3	19.1 N	704
P/1999 RO ₂₈	1999 09 13.31524	00 00 03.41	-16 54 08.3		695
P/1999 RO ₂₈	1999 09 13.31730	00 00 03.82	-16 54 11.9		695
P/1999 RO ₂₈	1999 09 13.31917	00 00 04.12	-16 54 14.3	18.0 T	695
P/1999 RO ₂₈	1999 09 13.31990	00 00 04.11	-16 54 16.4	18.9 N	704
P/1999 RO ₂₈	1999 09 13.32036	00 00 04.23	-16 54 15.9	19.2 N	704
P/1999 RO ₂₈	1999 09 13.92647	00 02 00.74	-17 08 18.5	16.8 N	046
P/1999 RO ₂₈	1999 09 13.92834	00 02 01.06	-17 08 21.5		046
P/1999 RO ₂₈	1999 09 13.93247	00 02 01.80	-17 08 27.3		046

P/1999 RO ₂₈	1999 09 13.93354	00 02 02.02	-17 08 28.8		046
P/1999 RO ₂₈	1999 09 13.93464	00 02 02.24	-17 08 31.1		046
P/1999 RO ₂₈	1999 09 15.34394	00 06 33.82	-17 40 20.1	21.0 N	691
P/1999 RO ₂₈	1999 09 15.34812	00 06 34.67	-17 40 25.7	18.7 T	691
P/1999 RO ₂₈	1999 09 15.35534	00 06 35.92	-17 40 35.4	20.6 N	691
P/1999 RO ₂₈	1999 09 15.36122	00 06 37.02	-17 40 43.4	18.6 T	691
P/1999 RO ₂₈	1999 09 15.36717	00 06 38.07	-17 40 51.0	18.6 T	691
P/1999 RO ₂₈	1999 09 15.94374	00 08 31.14	-17 53 46.3	17.0 T	118
P/1999 RO ₂₈	1999 09 15.94575	00 08 31.60	-17 53 49.1		118
P/1999 RO ₂₈	1999 09 15.98841	00 08 39.65	-17 54 43.1		595
P/1999 RO ₂₈	1999 09 15.99722	00 08 41.18	-17 54 55.5		595
P/1999 RO ₂₈	1999 09 16.00979	00 08 43.52	-17 55 11.6		595
P/1999 RO ₂₈	1999 09 16.01299	00 08 44.15	-17 55 15.9	18.7 T	595

C/1999 S1 (SOHO)

C/1999 S1	1999 09 16.67923	11 07 47.8	+01 17 49		249
Geocentric position (AU)	-0.00938941	-0.00292124	-0.00108916		
C/1999 S1	1999 09 16.69590	11 08 07.4	+01 18 18		249
Geocentric position (AU)	-0.00938912	-0.00292431	-0.00109101		
C/1999 S1	1999 09 16.72090	11 08 36.7	+01 19 09		249
Geocentric position (AU)	-0.00938867	-0.00292892	-0.00109377		
C/1999 S1	1999 09 16.73756	11 08 56.3	+01 19 56		249
Geocentric position (AU)	-0.00938838	-0.00293198	-0.00109561		
C/1999 S1	1999 09 16.76257	11 09 25.8	+01 20 33		249
Geocentric position (AU)	-0.00938793	-0.00293658	-0.00109838		
C/1999 S1	1999 09 16.77923	11 09 44.6	+01 21 07		249
Geocentric position (AU)	-0.00938763	-0.00293964	-0.00110022		
C/1999 S1	1999 09 16.84590	11 11 05.6	+01 23 18		249
Geocentric position (AU)	-0.00938643	-0.00295187	-0.00110757		
C/1999 S1	1999 09 16.86256	11 11 25.1	+01 23 53		249
Geocentric position (AU)	-0.00938612	-0.00295492	-0.00110941		
C/1999 S1	1999 09 16.88756	11 11 55.9	+01 24 39		249
Geocentric position (AU)	-0.00938566	-0.00295950	-0.00111217		
C/1999 S1	1999 09 16.90423	11 12 16.4	+01 25 15		249
Geocentric position (AU)	-0.00938536	-0.00296255	-0.00111401		
C/1999 S1	1999 09 16.92923	11 12 47.3	+01 26 10		249
Geocentric position (AU)	-0.00938489	-0.00296712	-0.00111676		
C/1999 S1	1999 09 16.97100	11 13 40.1	+01 27 42		249
Geocentric position (AU)	-0.00938412	-0.00297475	-0.00112136		
C/1999 S1	1999 09 16.98756	11 14 01.0	+01 28 13		249
Geocentric position (AU)	-0.00938381	-0.00297777	-0.00112318		
C/1999 S1	1999 09 17.01257	11 14 32.0	+01 29 15		249
Geocentric position (AU)	-0.00938333	-0.00298233	-0.00112593		
C/1999 S1	1999 09 17.02923	11 14 53.7	+01 29 50		249
Geocentric position (AU)	-0.00938302	-0.00298537	-0.00112776		
C/1999 S1	1999 09 17.07090	11 15 48.5	+01 31 25		249
Geocentric position (AU)	-0.00938222	-0.00299296	-0.00113234		
C/1999 S1	1999 09 17.09590	11 16 21.1	+01 32 20		249
Geocentric position (AU)	-0.00938174	-0.00299751	-0.00113508		
C/1999 S1	1999 09 17.11257	11 16 43.3	+01 33 02		249
Geocentric position (AU)	-0.00938142	-0.00300054	-0.00113691		
C/1999 S1	1999 09 17.13757	11 17 16.6	+01 34 04		249
Geocentric position (AU)	-0.00938094	-0.00300508	-0.00113965		

C/1999 S1	1999 09 17.15453	11 17 39.8	+01 34 40		249
Geocentric position (AU)	-0.00938061	-0.00300816	-0.00114151		
C/1999 S1	1999 09 17.17925	11 18 13.6	+01 35 39		249
Geocentric position (AU)	-0.00938013	-0.00301264	-0.00114422		
C/1999 S1	1999 09 17.19590	11 18 36.1	+01 36 27		249
Geocentric position (AU)	-0.00937980	-0.00301566	-0.00114604		
C/1999 S1	1999 09 17.22090	11 19 11.0	+01 37 26		249
Geocentric position (AU)	-0.00937931	-0.00302019	-0.00114878		
C/1999 S1	1999 09 17.23756	11 19 34.6	+01 38 10		249
Geocentric position (AU)	-0.00937898	-0.00302320	-0.00115061		
C/1999 S1	1999 09 17.26256	11 20 10.7	+01 39 16		249
Geocentric position (AU)	-0.00937849	-0.00302773	-0.00115334		
C/1999 S1	1999 09 17.27925	11 20 33.7	+01 40 04		249
Geocentric position (AU)	-0.00937815	-0.00303074	-0.00115517		
C/1999 S1	1999 09 17.32090	11 21 35.0	+01 41 59		249
Geocentric position (AU)	-0.00937732	-0.00303827	-0.00115972		
C/1999 S1	1999 09 17.34590	11 22 12.2	+01 43 10		249
Geocentric position (AU)	-0.00937682	-0.00304278	-0.00116245		
C/1999 S1	1999 09 17.36256	11 22 37.1	+01 43 56		249
Geocentric position (AU)	-0.00937648	-0.00304578	-0.00116427		
C/1999 S1	1999 09 17.38757	11 23 15.0	+01 45 06		249
Geocentric position (AU)	-0.00937597	-0.00305029	-0.00116700		
C/1999 S1	1999 09 17.40423	11 23 41.0	+01 46 01		249
Geocentric position (AU)	-0.00937563	-0.00305329	-0.00116881		
C/1999 S1	1999 09 17.43066	11 24 22.6	+01 47 18		249
Geocentric position (AU)	-0.00937509	-0.00305805	-0.00117170		
C/1999 S1	1999 09 17.44590	11 24 45.4	+01 48 05		249
Geocentric position (AU)	-0.00937478	-0.00306079	-0.00117336		
C/1999 S1	1999 09 17.47091	11 25 27.5	+01 49 30		249
Geocentric position (AU)	-0.00937426	-0.00306528	-0.00117608		
C/1999 S1	1999 09 17.48756	11 25 54.8	+01 50 23		249
Geocentric position (AU)	-0.00937392	-0.00306827	-0.00117790		
C/1999 S1	1999 09 17.51258	11 26 35.3	+01 51 46		249
Geocentric position (AU)	-0.00937340	-0.00307276	-0.00118062		
C/1999 S1	1999 09 17.52923	11 27 03.0	+01 52 41		249
Geocentric position (AU)	-0.00937305	-0.00307575	-0.00118243		
C/1999 S1	1999 09 17.57090	11 28 15.5	+01 55 09		249
Geocentric position (AU)	-0.00937217	-0.00308321	-0.00118696		
C/1999 S1	1999 09 17.59590	11 29 00.5	+01 56 55		249
Geocentric position (AU)	-0.00937165	-0.00308769	-0.00118968		
C/1999 S1	1999 09 17.61257	11 29 31.3	+01 57 48		249
Geocentric position (AU)	-0.00937129	-0.00309067	-0.00119149		
C/1999 S1	1999 09 17.62924	11 30 01.4	+01 59 12		249
Geocentric position (AU)	-0.00937094	-0.00309365	-0.00119330		
C/1999 S1	1999 09 17.63787	11 30 19.6	+01 59 40		249
Geocentric position (AU)	-0.00937076	-0.00309519	-0.00119424		
C/1999 S1	1999 09 17.64590	11 30 35.0	+02 00 06		249
Geocentric position (AU)	-0.00937059	-0.00309663	-0.00119511		
C/1999 S1	1999 09 17.65423	11 30 51.2	+02 00 33		249
Geocentric position (AU)	-0.00937041	-0.00309811	-0.00119601		
C/1999 S1	1999 09 17.68757	11 32 01.4	+02 02 37		249
Geocentric position (AU)	-0.00936969	-0.00310407	-0.00119963		

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C/1999 S1	1999 09 17.70423	11 32 34.8	+02 04 26	249
Geocentric position (AU)	-0.00936934	-0.00310704	-0.00120144	
C/1999 S1	1999 09 17.71256	11 32 53.5	+02 04 55	249
Geocentric position (AU)	-0.00936916	-0.00310853	-0.00120234	
C/1999 S1	1999 09 17.72923	11 33 29.4	+02 06 27	249
Geocentric position (AU)	-0.00936880	-0.00311150	-0.00120415	
C/1999 S1	1999 09 17.74591	11 34 07.4	+02 07 47	249
Geocentric position (AU)	-0.00936843	-0.00311446	-0.00120595	
C/1999 S1	1999 09 17.75423	11 34 28.0	+02 08 53	249
Geocentric position (AU)	-0.00936825	-0.00311595	-0.00120685	
C/1999 S1	1999 09 17.77091	11 35 05.6	+02 10 13	249
Geocentric position (AU)	-0.00936789	-0.00311891	-0.00120866	

C/1999 S2 (McNaught-Watson)

C/1999 S2	1999 09 19.72016	03 13 21.68	-63 48 28.8	17.5 T	413
C/1999 S2	1999 09 19.76183	03 13 20.56	-63 48 33.5		413
C/1999 S2	1999 09 21.55226	03 12 26.29	-63 53 46.0	20.1 N	413
C/1999 S2	1999 09 21.55392	03 12 26.24	-63 53 46.2	20.2 N	413
C/1999 S2	1999 09 21.55595	03 12 26.16	-63 53 46.6	20.1 N	413
C/1999 S2	1999 09 21.55789	03 12 26.09	-63 53 46.9	20.1 N	413
C/1999 S2	1999 09 21.56750	03 12 25.76	-63 53 48.2		428
C/1999 S2	1999 09 21.61564	03 12 24.27	-63 53 57.6	15.2 T	428
C/1999 S2	1999 09 22.44744	03 11 58.03	-63 56 15.8	16.1 T	467
C/1999 S2	1999 09 22.45176	03 11 57.59	-63 56 16.1	16.2 T	467
C/1999 S2	1999 09 22.46615	03 11 57.41	-63 56 19.1	16.1 T	467
C/1999 S2	1999 09 22.47189	03 11 57.11	-63 56 18.9		467
C/1999 S2	1999 09 23.47564	03 11 24.06	-63 58 59.9	15.9 N	467
C/1999 S2	1999 09 23.48841	03 11 23.86	-63 59 03.2	16.0 N	467
C/1999 S2	1999 09 23.49480	03 11 23.82	-63 59 04.1	15.8 N	467
C/1999 S2	1999 09 23.75835	03 11 14.57	-63 59 47.1	18.0 N	428
C/1999 S2	1999 09 23.77543	03 11 13.93	-63 59 49.9	16.7 T	428
C/1999 S2	1999 09 23.78141	03 11 13.76	-63 59 51.0	16.7 T	428
C/1999 S2	1999 09 24.75345	03 10 40.86	-64 02 20.7	17.3 T	428
C/1999 S2	1999 09 24.75948	03 10 40.71	-64 02 21.5	17.2 T	428
C/1999 S2	1999 09 24.76545	03 10 40.41	-64 02 22.9	17.2 T	428
C/1999 S2	1999 09 27.10103	03 09 17.54	-64 08 02.8		834
C/1999 S2	1999 09 27.21448	03 09 13.17	-64 08 17.3		834
C/1999 S2	1999 09 27.30773	03 09 09.78	-64 08 30.1		834
C/1999 S2	1999 09 27.33859	03 09 08.71	-64 08 32.6		834

C/1999 S3 (LINEAR)

C/1999 S3	1999 09 24.34373	01 21 56.90	+46 35 31.1	15.7 T	704
C/1999 S3	1999 09 24.35812	01 21 53.29	+46 36 10.2	15.6 T	704
C/1999 S3	1999 09 24.38689	01 21 46.26	+46 37 29.8	15.6 T	704
C/1999 S3	1999 09 24.78644	01 20 09.06	+46 55 47.5		557
C/1999 S3	1999 09 24.78924	01 20 08.37	+46 55 55.4		557
C/1999 S3	1999 09 24.79205	01 20 07.67	+46 56 03.1	14.8 N	557
C/1999 S3	1999 09 24.79428	01 20 07.15	+46 56 09.0	14.8 T	120
C/1999 S3	1999 09 24.79486	01 20 06.97	+46 56 10.8	13.5 T	557
C/1999 S3	1999 09 24.79786	01 20 06.29	+46 56 19.2		120
C/1999 S3	1999 09 24.80102	01 20 05.45	+46 56 28.1		120
C/1999 S3	1999 09 24.80641	01 20 04.13	+46 56 43.0		046
C/1999 S3	1999 09 24.80759	01 20 03.84	+46 56 46.2		046
C/1999 S3	1999 09 24.80863	01 20 03.58	+46 56 49.1	13.4 T	046

C/1999 S3	1999 09 24.80984	01 20 03.28	+46 56 52.5		046
C/1999 S3	1999 09 24.81089	01 20 03.02	+46 56 55.3	13.4 T	046
C/1999 S3	1999 09 24.81251	01 20 02.62	+46 56 59.7	14.5 N	046
C/1999 S3	1999 09 24.81433	01 20 02.17	+46 57 04.7		046
C/1999 S3	1999 09 24.81556	01 20 01.86	+46 57 08.3		046
C/1999 S3	1999 09 24.81648	01 20 01.70	+46 57 10.0	15.0 T	120
C/1999 S3	1999 09 24.81882	01 20 01.10	+46 57 16.8		120
C/1999 S3	1999 09 24.82126	01 20 00.52	+46 57 24.1		120
C/1999 S3	1999 09 24.82508	01 19 59.49	+46 57 34.4		120
C/1999 S3	1999 09 24.84366	01 19 54.91	+46 58 26.4	14.1 T	596
C/1999 S3	1999 09 24.84709	01 19 54.04	+46 58 35.0		596
C/1999 S3	1999 09 24.88765	01 19 43.83	+47 00 26.8	13.8 T	118
C/1999 S3	1999 09 24.88984	01 19 43.30	+47 00 31.5		946
C/1999 S3	1999 09 24.89017	01 19 43.18	+47 00 33.9	13.9 T	118
C/1999 S3	1999 09 24.89199	01 19 42.62	+47 00 37.9	14.0 T	946
C/1999 S3	1999 09 24.89359	01 19 42.32	+47 00 43.5	13.7 T	118
C/1999 S3	1999 09 24.89509	01 19 42.06	+47 00 46.8		946
C/1999 S3	1999 09 24.91413	01 19 37.49	+47 01 41.8	13.9 T	946
C/1999 S3	1999 09 24.97352	01 19 22.21	+47 04 22.5		595
C/1999 S3	1999 09 24.97625	01 19 21.55	+47 04 30.1		595
C/1999 S3	1999 09 24.97959	01 19 20.66	+47 04 39.5	14.6 N	595
C/1999 S3	1999 09 25.10466	01 18 49.82	+47 10 18.2	14.9 T	750
C/1999 S3	1999 09 25.16010	01 18 35.79	+47 12 49.4	13.7 T	734
C/1999 S3	1999 09 25.16088	01 18 35.58	+47 12 52.7	15.0 T	750
C/1999 S3	1999 09 25.16491	01 18 34.59	+47 13 02.9	13.8 T	734
C/1999 S3	1999 09 25.16824	01 18 33.73	+47 13 11.7	13.7 T	734
C/1999 S3	1999 09 25.19390	01 18 27.30	+47 14 23.6	14.5 T	713
C/1999 S3	1999 09 25.19673	01 18 26.49	+47 14 30.9	15.1 T	750
C/1999 S3	1999 09 25.22110	01 18 20.46	+47 15 37.7	14.4 T	713
C/1999 S3	1999 09 25.25042	01 18 12.94	+47 16 57.8	14.3 T	713
C/1999 S3	1999 09 25.26796	01 18 08.48	+47 17 46.4	14.4 T	713
C/1999 S3	1999 09 25.35558	01 17 45.78	+47 21 43.9	14.1 T	2 850
C/1999 S3	1999 09 25.41253	01 17 31.11	+47 24 17.6	13.9 T	2 850
C/1999 S3	1999 09 25.41609	01 17 31.25	+47 24 25.1		411
C/1999 S3	1999 09 25.42938	01 17 27.95	+47 25 01.9		411
C/1999 S3	1999 09 25.43194	01 17 26.15	+47 25 10.1	14.0 T	2 850
C/1999 S3	1999 09 25.44028	01 17 24.00	+47 25 32.4	14.0 T	2 850
C/1999 S3	1999 09 25.44873	01 17 22.98	+47 25 54.8		411
C/1999 S3	1999 09 25.59243	01 16 45.96	+47 32 26.6	14.0 T	349
C/1999 S3	1999 09 25.59306	01 16 45.87	+47 32 28.0		355
C/1999 S3	1999 09 25.59378	01 16 45.59	+47 32 30.9		349
C/1999 S3	1999 09 25.59414	01 16 45.54	+47 32 31.0		355
C/1999 S3	1999 09 25.59633	01 16 44.81	+47 32 37.5		349
C/1999 S3	1999 09 25.59876	01 16 44.30	+47 32 42.9	13.4 T	355
C/1999 S3	1999 09 25.59977	01 16 44.03	+47 32 45.9		355
C/1999 S3	1999 09 25.66617	01 16 26.78	+47 35 45.8		897
C/1999 S3	1999 09 25.67155	01 16 25.38	+47 36 01.0		897
C/1999 S3	1999 09 25.67737	01 16 23.84	+47 36 16.6		897
C/1999 S3	1999 09 25.77369	01 15 59.63	+47 40 32.1		046
C/1999 S3	1999 09 25.77720	01 15 58.76	+47 40 41.2		046
C/1999 S3	1999 09 25.77829	01 15 58.43	+47 40 44.2		046
C/1999 S3	1999 09 25.78041	01 15 57.88	+47 40 49.8		046
C/1999 S3	1999 09 25.78189	01 15 57.46	+47 40 54.5		046

C/1999 S3	1999 09 25.80426	01 15 50.97	+47 41 58.3	14.4 T	327	C/1999 S3	1999 09 28.20486	01 04 59.76	+49 27 25.6	14.1 T	2 850
C/1999 S3	1999 09 25.80735	01 15 50.08	+47 42 06.6	14.1 T	327	C/1999 S3	1999 09 28.27431	01 04 39.69	+49 30 24.3	14.3 T	2 850
C/1999 S3	1999 09 25.86477	01 15 35.99	+47 44 39.6		470	C/1999 S3	1999 09 28.28542	01 04 36.48	+49 30 53.1	14.4 T	2 850
C/1999 S3	1999 09 25.86729	01 15 35.29	+47 44 46.1		470	2P/Encke					
C/1999 S3	1999 09 25.87096	01 15 34.37	+47 44 56.3		470	2P	1999 09 09.36556	23 33 38.66	+02 39 05.9	19.7 T	704
C/1999 S3	1999 09 25.87306	01 15 33.79	+47 45 01.3	13.3 T	470	2P	1999 09 09.37981	23 33 37.75	+02 39 01.6	20.0 T	704
C/1999 S3	1999 09 25.87507	01 15 33.29	+47 45 07.6		470	2P	1999 09 09.39375	23 33 36.84	+02 38 56.2	20.0 T	704
C/1999 S3	1999 09 25.96894	01 15 08.56	+47 49 21.0		118	2P	1999 09 13.91685	23 28 42.71	+02 13 12.3		557
C/1999 S3	1999 09 25.97214	01 15 07.73	+47 49 29.8	13.4 T	118	2P	1999 09 13.91919	23 28 42.58	+02 13 11.4		557
C/1999 S3	1999 09 25.97493	01 15 06.99	+47 49 37.4		118	2P	1999 09 13.92152	23 28 42.44	+02 13 10.6	19.3 N	557
C/1999 S3	1999 09 26.03669	01 14 50.73	+47 52 23.2	13.8 T	561	4P/Faye					
C/1999 S3	1999 09 26.03794	01 14 50.42	+47 52 26.2		561	4P	1998 09 12.49516	19 28 12.88	-10 30 41.8		897
C/1999 S3	1999 09 26.03905	01 14 50.10	+47 52 29.6		561	4P	1998 09 12.52100	19 28 12.58	-10 30 48.3		897
C/1999 S3	1999 09 26.04015	01 14 49.80	+47 52 32.3		561	4P	1998 09 12.53744	19 28 12.52	-10 30 52.1	15.8 T	897
C/1999 S3	1999 09 26.04133	01 14 49.51	+47 52 35.5		561	4P	1998 09 16.53698	19 28 05.50	-10 48 47.4		897
C/1999 S3	1999 09 26.04525	01 14 48.45	+47 52 45.9		561	4P	1998 09 20.49234	19 28 24.64	-11 05 45.4	16.2 T	897
C/1999 S3	1999 09 26.08068	01 14 39.90	+47 54 18.4	15.2 T	750	4P	1998 09 20.50073	19 28 24.71	-11 05 48.4		897
C/1999 S3	1999 09 26.09489	01 14 36.18	+47 54 56.9	14.9 T	750	4P	1998 11 18.43744	20 19 16.63	-12 48 17.5		897
C/1999 S3	1999 09 26.10183	01 14 34.40	+47 55 15.3	15.0 T	750	4P	1998 11 18.45604	20 19 18.20	-12 48 17.3		897
C/1999 S3	1999 09 26.11572	01 14 30.72	+47 55 52.8	15.2 T	750	4P	1998 12 13.41635	21 00 45.52	-11 34 18.7	15.9 T	897
C/1999 S3	1999 09 26.14750	01 14 22.39	+47 57 19.4	14.0 T	734	4P	1998 12 13.42330	21 00 46.26	-11 34 18.4		897
C/1999 S3	1999 09 26.15354	01 14 20.77	+47 57 35.9		734	4P	1998 12 30.38894	21 33 27.24	-09 57 44.3	15.4 T	897
C/1999 S3	1999 09 26.17389	01 14 15.44	+47 58 30.2	13.9 T	734	4P	1998 12 30.41009	21 33 29.60	-09 57 35.7		897
C/1999 S3	1999 09 26.17521	01 14 15.03	+47 58 33.8	13.8 T	734	4P	1999 01 17.39161	22 11 16.06	-07 35 06.3		897
C/1999 S3	1999 09 26.17664	01 14 14.66	+47 58 38.1	13.9 T	734	4P	1999 01 17.39554	22 11 16.54	-07 35 04.3		897
C/1999 S3	1999 09 26.20903	01 14 06.03	+48 00 06.0	14.3 T	2 850	10P/Tempel 2					
C/1999 S3	1999 09 26.25000	01 13 55.08	+48 01 56.2	14.3 T	2 850	10P	1999 07 06.68229	17 02 45.28	-10 01 25.8	15.3 T	372
C/1999 S3	1999 09 26.29306	01 13 43.61	+48 03 50.9	14.2 T	2 850	10P	1999 07 15.94374	17 00 07.62	-12 44 51.6	13.1 T	071
C/1999 S3	1999 09 26.33611	01 13 32.06	+48 05 45.9	14.2 T	2 850	10P	1999 07 15.94849	17 00 07.57	-12 44 57.0	13.1 T	071
C/1999 S3	1999 09 26.49948	01 12 49.53	+48 12 59.6	13.5 T	367	10P	1999 07 15.94969	17 00 07.53	-12 44 57.6	13.1 T	071
C/1999 S3	1999 09 26.50226	01 12 48.77	+48 13 06.8		367	10P	1999 07 15.95088	17 00 07.54	-12 44 59.0	13.1 T	071
C/1999 S3	1999 09 26.50504	01 12 47.99	+48 13 15.0		367	10P	1999 08 29.00920	17 45 43.23	-26 33 22.0		844
C/1999 S3	1999 09 26.59016	01 12 25.04	+48 17 03.4		411	10P	1999 08 29.01410	17 45 43.79	-26 33 26.0		844
C/1999 S3	1999 09 26.59499	01 12 23.74	+48 17 16.0		411	10P	1999 08 29.13889	17 45 59.49	-26 35 18.6		844
C/1999 S3	1999 09 26.60376	01 12 21.39	+48 17 40.2	13.5 T	349	10P	1999 08 31.44896	17 51 04.84	-27 09 52.4	12.9 T	372
C/1999 S3	1999 09 26.63054	01 12 14.10	+48 18 51.2		349	10P	1999 09 01.01579	17 52 21.63	-27 17 50.9		844
C/1999 S3	1999 09 26.67641	01 12 01.64	+48 20 52.1		349	10P	1999 09 01.03096	17 52 23.64	-27 18 03.8		844
C/1999 S3	1999 09 26.69670	01 11 56.18	+48 21 46.3		897	10P	1999 09 01.04354	17 52 25.32	-27 18 14.4		844
C/1999 S3	1999 09 26.70053	01 11 55.10	+48 21 56.7		897	10P	1999 09 01.30127	17 53 00.88	-27 21 54.3	13.3 N	467
C/1999 S3	1999 09 26.70241	01 11 54.59	+48 22 01.3		897	10P	1999 09 01.30476	17 53 01.29	-27 21 56.4	12.9 N	467
C/1999 S3	1999 09 26.70591	01 11 53.65	+48 22 10.5	13.1 T	897	10P	1999 09 01.30753	17 53 01.65	-27 21 59.1	13.1 N	467
C/1999 S3	1999 09 26.72145	01 11 49.35	+48 22 51.8		349	10P	1999 09 05.45794	18 02 51.81	-28 18 20.7		349
C/1999 S3	1999 09 26.80472	01 11 27.86	+48 26 29.0		470	10P	1999 09 05.45992	18 02 52.00	-28 18 21.1		349
C/1999 S3	1999 09 26.81355	01 11 25.43	+48 26 53.0		470	10P	1999 09 05.46881	18 02 53.32	-28 18 28.4		349
C/1999 S3	1999 09 26.81495	01 11 25.09	+48 26 56.7		470	10P	1999 09 11.74508	18 19 01.23	-29 31 34.2	13.0 T	097
C/1999 S3	1999 09 27.52906	01 08 09.77	+48 58 14.7	13.8 T	355	10P	1999 09 11.76528	18 19 04.40	-29 31 46.5	13.0 T	097
C/1999 S3	1999 09 27.53122	01 08 09.20	+48 58 20.4		355	14P/Wolf					
C/1999 S3	1999 09 27.53566	01 08 07.93	+48 58 32.1		355	14P	1999 09 13.13734	16 36 31.90	+02 03 47.4		695
C/1999 S3	1999 09 27.90162	01 06 25.63	+49 14 22.1		046	14P	1999 09 13.14198	16 36 32.03	+02 03 45.6		695
C/1999 S3	1999 09 27.90256	01 06 25.37	+49 14 24.5		046	14P	1999 09 13.14568	16 36 32.16	+02 03 45.2	21.3 T	695
C/1999 S3	1999 09 27.90340	01 06 25.12	+49 14 26.7		046						
C/1999 S3	1999 09 27.90427	01 06 24.87	+49 14 29.1		046						
C/1999 S3	1999 09 28.18890	01 05 04.37	+49 26 44.4	14.1 T	2 850						

21P/Giacobini-Zinner							37P	1999 09 05.61779	00 33 20.26	+09 27 05.5		349
21P	1998 09 08.46869	16 39 31.60	+17 22 05.3	12.0 T	897		37P	1999 09 07.27131	00 31 43.21	+09 27 26.9	16.6 T	706
21P	1998 09 08.47176	16 39 31.83	+17 22 01.8		897		37P	1999 09 07.28509	00 31 42.40	+09 27 26.1	16.2 T	706
21P	1998 09 08.47909	16 39 32.45	+17 21 53.9		897		37P	1999 09 07.40185	00 31 35.20	+09 27 28.4	18.2 T	704
21P	1998 09 10.51653	16 42 22.01	+16 45 02.0		897		37P	1999 09 07.41327	00 31 34.35	+09 27 29.1	19.1 T	704
21P	1998 09 10.52058	16 42 22.33	+16 44 57.3	12.2 T	897		37P	1999 09 07.96443	00 31 01.54	+09 27 23.6		143
21P	1998 09 10.52381	16 42 22.63	+16 44 54.2		897		37P	1999 09 07.97267	00 31 01.00	+09 27 23.6		143
21P	1998 09 12.46133	16 45 13.87	+16 09 10.2		897		37P	1999 09 08.32419	00 30 39.67	+09 27 22.9	16.5 T	699
21P	1998 09 12.46785	16 45 14.49	+16 09 02.8	12.1 T	897		37P	1999 09 08.32698	00 30 39.59	+09 27 21.6	17.8 T	704
21P	1998 09 20.51157	16 58 48.97	+13 33 07.5		897		37P	1999 09 08.34098	00 30 38.62	+09 27 21.4	16.8 T	704
21P	1998 09 20.51505	16 58 49.31	+13 33 03.7		897		37P	1999 09 08.35460	00 30 37.72	+09 27 23.0	17.1 T	704
21P	1998 10 02.43586	17 24 15.70	+09 18 08.7	10.7 T	897		37P	1999 09 08.35484	00 30 37.72	+09 27 22.5		699
21P	1998 10 02.45647	17 24 18.64	+09 17 40.8		897		37P	1999 09 08.36818	00 30 36.85	+09 27 22.6	18.2 T	704
21P	1998 11 11.41635	19 42 44.62	-09 01 29.1		897		37P	1999 09 08.38551	00 30 35.80	+09 27 21.5		699
21P	1998 11 11.42128	19 42 45.98	-09 01 38.3		897		37P	1999 09 12.71094	00 26 04.05	+09 24 13.6	15.3 T	360
21P	1998 11 23.40602	20 41 44.55	-15 00 35.1		897		37P	1999 09 12.71441	00 26 03.82	+09 24 13.3		360
21P	1998 11 23.40851	20 41 45.32	-15 00 39.1		897		37P	1999 09 15.01860	00 23 34.01	+09 20 55.4		046
21P	1998 11 23.41595	20 41 47.66	-15 00 51.6		897		37P	1999 09 15.01987	00 23 33.92	+09 20 55.4		046
21P	1998 11 28.35723	21 08 01.76	-17 14 06.5		897		37P	1999 09 15.02120	00 23 33.84	+09 20 55.3		046
21P	1998 11 28.36263	21 08 03.47	-17 14 15.6		897		37P	1999 09 18.26088	00 20 00.36	+09 14 40.8	17.6 T	750
21P	1998 12 11.43013	22 20 09.54	-21 46 28.7		897		37P	1999 09 18.26292	00 20 00.42	+09 14 42.3	14.8 T	703
21P	1998 12 11.44087	22 20 13.09	-21 46 38.4		897		37P	1999 09 18.26796	00 19 59.91	+09 14 39.8	16.9 T	750
21P	1999 01 01.37206	00 11 13.94	-23 56 15.7	11.9 T	897		37P	1999 09 18.27549	00 19 59.53	+09 14 40.7	14.8 T	703
21P	1999 01 01.37713	00 11 15.46	-23 56 14.7		897		37P	1999 09 18.27997	00 19 59.07	+09 14 37.9	17.7 T	750
21P	1999 01 17.42868	01 23 31.24	-22 07 13.3	11.9 T	897		37P	1999 09 18.28807	00 19 58.62	+09 14 38.4	14.8 T	703
21P	1999 01 17.44257	01 23 34.62	-22 07 04.5		897		37P	1999 09 18.30072	00 19 57.76	+09 14 36.3	14.8 T	703
21P	1999 01 18.44578	01 27 40.54	-21 56 23.1		897		37P	1999 09 19.66463	00 18 27.58	+09 11 28.9		903
21P	1999 01 18.45208	01 27 42.08	-21 56 19.1	12.7 T	897		37P	1999 09 19.67260	00 18 27.13	+09 11 26.3		903
37P/Forbes							37P	1999 09 19.67611	00 18 26.86	+09 11 24.8	16.0 T	903
37P	1999 08 17.97394	00 46 10.27	+08 34 26.3	15.2 T	071		37P	1999 09 23.90079	00 13 50.29	+08 59 58.6		118
37P	1999 08 17.97514	00 46 10.26	+08 34 26.8	15.4 T	071		37P	1999 09 23.90557	00 13 49.97	+08 59 57.7		118
50P/Arend												
37P	1999 08 17.97634	00 46 10.23	+08 34 26.9	15.4 T	071		50P	1999 09 14.12420	06 19 14.19	+41 34 53.2		557
37P	1999 08 17.97777	00 46 10.18	+08 34 27.0	15.5 T	071		50P	1999 09 14.12653	06 19 14.55	+41 34 54.2		557
52P/Harrington-Abell												
37P	1999 08 17.97877	00 46 10.18	+08 34 27.6	15.4 T	071		52P	1998 10 02.69154	06 00 25.97	+36 08 07.7	13.1 T	897
37P	1999 08 19.00819	00 45 46.47	+08 39 44.2	15.1 T	071		52P	1998 10 02.70174	06 00 27.17	+36 08 11.1		897
37P	1999 08 19.01140	00 45 46.40	+08 39 45.3	15.2 T	071		52P	1998 11 12.63726	07 07 09.06	+39 21 52.9		897
37P	1999 08 19.01296	00 45 46.33	+08 39 45.8	15.1 T	071		52P	1998 11 23.65233	07 18 08.04	+40 06 47.7		897
37P	1999 08 19.01423	00 45 46.35	+08 39 46.0	15.2 T	071		52P	1998 11 23.65853	07 18 08.29	+40 06 49.0		897
37P	1999 08 19.01522	00 45 46.32	+08 39 46.4	15.2 T	071		52P	1998 11 23.66424	07 18 08.55	+40 06 50.5		897
37P	1999 08 19.97980	00 45 21.94	+08 44 29.2	15.3 T	071		52P	1998 11 28.56034	07 21 34.88	+40 24 50.3		897
37P	1999 08 19.98199	00 45 21.86	+08 44 29.6	15.4 T	071		52P	1998 11 28.57730	07 21 35.48	+40 24 54.3		897
37P	1999 08 20.99380	00 44 53.71	+08 49 06.9	15.0 T	071		52P	1998 12 20.57252	07 24 40.87	+41 09 59.2		897
37P	1999 08 21.00385	00 44 53.46	+08 49 10.6	14.8 T	071		52P	1998 12 20.58617	07 24 40.56	+41 09 59.2		897
37P	1999 08 22.59119	00 44 05.46	+08 55 58.0		352		59P/Kearns-Kwee					
37P	1999 08 22.59466	00 44 05.35	+08 55 58.2		352		59P	1999 09 14.09661	07 02 35.77	+29 36 28.5		557
37P	1999 08 22.59814	00 44 05.23	+08 55 59.9		352		59P	1999 09 14.09892	07 02 36.04	+29 36 28.3		557
37P	1999 09 03.92225	00 34 56.12	+09 25 59.5	14.5 T	118		59P	1999 09 14.10126	07 02 36.31	+29 36 27.8		557
37P	1999 09 03.92568	00 34 55.94	+09 25 59.8		118		59P	1999 09 18.46281	07 10 57.91	+29 23 16.2	16.9 T	703
37P	1999 09 04.54183	00 34 21.67	+09 26 31.5	15.8 T	351		59P	1999 09 18.47545	07 10 59.41	+29 23 13.3	17.0 T	703
37P	1999 09 04.54705	00 34 21.51	+09 26 30.8		351							
37P	1999 09 04.58681	00 34 19.34	+09 26 33.9		351							
37P	1999 09 04.68862	00 34 12.97	+09 26 37.6		349							

59P	1999 09 18.48811	07 11 00.72	+29 23 11.7	16.9 T	703	93P	1998 10 02.66748	05 23 37.56	+40 27 10.6		897
59P	1999 09 18.50081	07 11 02.22	+29 23 09.3	16.9 T	703	93P	1998 11 15.58478	06 36 02.05	+47 05 27.1	13.6 T	897
60P/Tsuchinshan 2						93P	1998 11 15.59390	06 36 02.35	+47 05 30.7		897
60P	1998 12 26.52840	06 35 46.41	+26 06 40.0	17.1 T	897	106P/Schuster					
60P	1998 12 26.54854	06 35 45.47	+26 06 32.2		897	106P	1999 09 01.54557	01 06 28.01	-31 29 49.0		413
60P	1998 12 26.57241	06 35 44.26	+26 06 25.4		897	106P	1999 09 01.54744	01 06 28.00	-31 29 49.7		413
74P/Smirnova-Chernykh						106P	1999 09 14.74191	01 01 29.28	-32 23 31.2		413
74P	1998 12 11.51508	03 21 43.26	+15 37 54.5		897	106P	1999 09 14.74307	01 01 29.24	-32 23 31.3	18.4 N	413
74P	1998 12 11.55257	03 21 42.02	+15 37 52.8		897	114P/Wiseman-Skiff					
74P	1998 12 11.55817	03 21 41.83	+15 37 53.1	16.4 T	897	114P	1999 09 13.48486	02 19 13.88	+42 58 30.9		695
74P	1998 12 19.60234	03 17 44.72	+15 33 35.5		897	114P	1999 09 13.48691	02 19 13.99	+42 58 32.4		695
74P	1998 12 19.61872	03 17 44.27	+15 33 34.5	16.7 T	897	114P	1999 09 13.48883	02 19 14.10	+42 58 33.6	18.6 T	695
74P	1999 09 14.10383	07 05 34.56	+24 06 27.8		557	114P	1999 09 13.99881	02 19 39.73	+43 04 49.0		557
74P	1999 09 14.10616	07 05 34.69	+24 06 27.8		557	114P	1999 09 14.00113	02 19 39.86	+43 04 51.0		557
74P	1999 09 14.10855	07 05 34.82	+24 06 27.6		557	114P	1999 09 14.00346	02 19 39.93	+43 04 52.5		557
84P/Giclas						114P	1999 09 14.01344	02 19 40.46	+43 05 00.7	18.4 T	159
84P	1999 09 12.74427	04 41 39.34	+12 53 29.9	17.4 T	360	114P	1999 09 14.01644	02 19 40.55	+43 05 02.8	18.1 T	159
84P	1999 09 12.74809	04 41 39.68	+12 53 30.0		360	114P	1999 09 24.12893	02 26 47.02	+45 00 24.0	17.6 T	118
84P	1999 09 13.07792	04 42 11.10	+12 53 50.7	17.3 T	143	114P	1999 09 24.13367	02 26 47.22	+45 00 26.8		118
84P	1999 09 13.08204	04 42 11.48	+12 53 51.2	16.6 T	143	114P	1999 09 24.13718	02 26 47.31	+45 00 28.7	17.5 T	118
84P	1999 09 13.08616	04 42 12.06	+12 53 51.8	17.5 T	143	114P	1999 09 25.98958	02 27 49.20	+45 19 16.6	17.6 T	118
84P	1999 09 14.05477	04 43 44.23	+12 54 52.8		557	114P	1999 09 25.99823	02 27 49.34	+45 19 22.8		118
84P	1999 09 14.05709	04 43 44.45	+12 54 52.9		557	136P/Mueller 3					
84P	1999 09 14.05943	04 43 44.67	+12 54 53.0		557	136P	1999 09 14.03988	03 50 52.62	+08 37 55.6		557
88P/Howell						136P	1999 09 14.04970	03 50 52.78	+08 37 54.4		557
88P	1998 09 08.42538	15 34 08.68	-22 17 15.6		897	136P	1999 09 14.05219	03 50 52.82	+08 37 54.0		557
88P	1998 09 08.42807	15 34 09.15	-22 17 18.5		897	136P	1999 09 17.47614	03 51 45.25	+08 28 47.6	21.0 N	691
88P	1998 09 12.41047	15 46 41.72	-23 05 51.3		897	136P	1999 09 17.48728	03 51 45.38	+08 28 45.5	18.9 T	691
88P	1998 09 12.42115	15 46 43.75	-23 05 58.8	13.9 T	897	136P	1999 09 17.49863	03 51 45.52	+08 28 43.8	18.7 T	691
88P	1998 09 20.40648	16 13 06.01	-24 33 41.5		897	137P/Shoemaker-Levy 2					
88P	1998 09 20.40921	16 13 06.50	-24 33 43.7		897	137P	1999 09 12.19307	19 41 17.09	-14 33 26.1		695
88P	1998 10 04.39293	17 02 38.67	-26 27 06.2		897	137P	1999 09 12.19764	19 41 17.12	-14 33 26.6	18.3 T	695
88P	1998 10 04.39674	17 02 39.68	-26 27 07.4		897	137P	1999 09 14.81826	19 41 36.57	-14 37 20.6	18.2 T	046
88P	1998 11 23.39214	20 08 01.99	-23 59 54.7	13.5 T	897	137P	1999 09 14.82221	19 41 36.62	-14 37 21.2		046
88P	1998 11 23.39816	20 08 03.17	-23 59 51.3		897	137P	1999 09 14.82582	19 41 36.65	-14 37 21.1		046
88P	1998 11 23.40179	20 08 03.88	-23 59 48.7		897	139P/Väisälä-Oterma					
88P	1998 11 28.34523	20 24 55.50	-23 02 41.1		897	139P	1998 12 20.53404	03 22 08.60	+18 29 53.4		897
88P	1998 11 28.34973	20 24 56.35	-23 02 40.0	13.4 T	897	139P	1998 12 20.54650	03 22 08.26	+18 29 52.6	17.3 T	897
88P	1998 12 20.37819	21 34 11.89	-17 55 40.2		897	139P	1998 12 20.56428	03 22 07.87	+18 29 50.6		897
88P	1998 12 20.38167	21 34 12.51	-17 55 37.2	14.3 T	897	140P/Bowell-Skiff					
88P	1998 12 20.38514	21 34 13.12	-17 55 34.2		897	140P	1999 01 07.61880	06 56 54.26	+28 29 00.2	16.6 T	897
88P	1998 12 30.38170	22 02 35.29	-15 18 52.7	14.0 T	897	140P	1999 01 07.62557	06 56 53.94	+28 28 59.9		897
88P	1998 12 30.38448	22 02 35.75	-15 18 49.1		897	140P	1999 01 07.63536	06 56 53.40	+28 29 00.1		897
93P/Lovas 1						141P/Machholz 2					
93P	1998 09 12.62992	04 34 09.86	+35 57 25.8		897	141P	1999 08 31.44716	16 42 25.80	-10 43 25.0	20.9 T	413
93P	1998 09 12.63418	04 34 10.24	+35 57 28.5	15.6 T	897	141P	1999 08 31.45219	16 42 25.84	-10 43 25.1	3	413
93P	1998 09 12.63829	04 34 11.13	+35 57 34.8		897	141P	1999 09 01.43341	16 42 46.79	-10 43 59.2	20.7 T	413
93P	1998 09 20.80370	04 54 43.42	+37 53 49.0		897	141P	1999 09 01.44422	16 42 46.99	-10 43 59.5	20.8 T	413
93P	1998 09 20.80722	04 54 43.87	+37 53 52.8	15.8 T	897						
93P	1998 09 20.81100	04 54 44.35	+37 53 55.3		897						
93P	1998 10 02.65970	05 23 36.58	+40 27 03.7	14.4 T	897						

142P/Ge-Wang

142P	1999 09 15.44370	02 21 17.24	+06 41 27.2	22.1 N	691
142P	1999 09 15.46496	02 21 17.25	+06 41 18.1	20.3 T	691
142P	1999 09 15.49196	02 21 17.37	+06 41 06.6	20.3 T	691
142P	1999 09 16.45333	02 21 18.30	+06 34 23.3	22.1 N	691
142P	1999 09 16.47169	02 21 18.28	+06 34 15.9	19.8 T	691
142P	1999 09 16.48999	02 21 18.24	+06 34 07.8	19.4 T	691

Note 1: bad seeing. 2: poor sky. 3: 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

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Observers C. Pollas, D. Albanese, M. Scardia

Measurers E. W. Elst, M. Scardia

0.9-m Schmidt telescope

{1} 1992 PK₆, 3, 1, 0; 1998 FW₁₄, 2, 1, 0; 1998 FZ₁₄, 3, 1, 0; 1998 FW₁₀₀, 5, 2, 13; 1998 HX₁₂₄, 3, 1, 0; [16, 5, 0*, 1992/07/27–1995/09/02]

{3} 1998 FC₇₄, 3, 1, 0; 1999 DV₁, 1, 1, 0; 3072 T-2, 3, 1, 0; [7, 3, 0*, 1994/01/17]

012 Uccle

E. W. Elst, Koninklijke Sterrenwacht van België, Ringlaan 3, B-1180 Brussels, Belgium [Thierry.Pauwels@oma.be] (1)

T. Pauwels, Koninklijke Sterrenwacht van België, Ringlaan 3, B-1180 Brussels, Belgium [Thierry.Pauwels@oma.be] (2)

Observers E. W. Elst, T. Pauwels, S. Ipatov

Measurers E. W. Elst, T. Pauwels

0.85-m $f/2.5$ Schmidt + CCD

GSC-1.2

{1} 1999 RU₃₅ *, 2, 1, 0; [2, 1, 1*, 1999/09/07]

{2} 1988 CF₇, 3, 1, 0; 1991 VT₅, 5, 1, 0; 1993 NZ₁, 5, 1, 0; 1993 OF₉, 10, 2, 7; 1994 PA₁₄, 15, 3, 12; 1994 PO₃₀, 5, 1, 0; 1998 SH₂₅, 5, 1, 0; 1999 RU₂, 5, 1, 0; 1999 RO₂₁, 5, 1, 0; 1999 RR₂₇, 3, 1, 0; 1999 RT₃₁, 5, 1, 0; 1999 RU₃₅ *, 10, 2, 7; 1999 RO₄₅ *, 12, 3, 12; 1999 RP₄₅ *, 10, 2, 7; 1999 RQ₄₅ *, 9, 2, 7; 1999 RR₄₅ *, 14, 3, 12; 1999 RS₄₅ *, 10, 2, 7; 1999 RT₄₅ *, 8, 2, 7; 1999 RU₄₅ *, 10, 2, 7; 1999 RV₄₅ *, 9, 2, 7; 1999 RF₈₅, 10, 1, 0; 1999 RF₈₇, 3, 1, 0; 1999 RO₁₀₆, 9, 2, 5; 1999 RU₁₈₂, 2, 1, 0; 1999 RV₁₈₂, 3, 1, 0; 1999 RW₁₈₂, 5, 1, 0; 1999 RX₁₈₂, 8, 2, 7; 1999 RL₁₈₉, 5, 1, 0; 1999 RD₂₁₄ *, 13, 3, 12; 1999 RE₂₁₄ *, 14, 3, 12; 1999 RF₂₁₄ *, 14, 3, 12; 1999 RG₂₁₄ *, 9, 2, 5; 1999 RH₂₁₄ *, 9, 2, 5; 1999 SM₂ *, 10, 2, 5; 1999 SN₂ *, 8, 2, 5; (963), 5, 1, 0; (2923), 1, 1, 0; (3073), 5, 1, 0; (3864), 4, 1, 0; [295, 39, 15*, 1999/09/06–1999/09/21]

033 Tautenburg

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

1.3-m Schmidt telescope

PPM

1998 FW₁₀₀, 2, 1, 0; 1998 HC₁₂₉, 2, 1, 0; [4, 2, 0*, 1992/09/07–1994/01/15]

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

1981 DS₁, 3, 1, 0; 1981 EG₁₈, 3, 1, 0; 1981 TK, 6, 2, 11; 1982 UW₁, 6, 2, 1; 1984 JE, 6, 2, 1; 1984 SY₁, 3, 1, 0; 1986 VW, 6, 2, 1; 1988 VN₅, 6, 2, 4; 1990 SS, 12, 2, 1; 1992 SY₁₂, 2, 1, 0; 1995 TF, 6, 2, 10; 1995 UW₂, 6, 2, 1; 1995 WS₃, 7, 2, 1; 1995 WE₆, 6, 2, 1; 1995 XJ, 6, 2, 11; 1996 AH₁, 6, 2, 4; 1996 TM₉, 7, 2, 1; 1996 UN, 6, 2, 1; 1996 VJ₂, 6, 2, 1; 1996 XM₂, 6, 2, 4; 1996 XE₉, 6, 2, 4; 1996 XV₁₈, 6, 2, 1; 1997 AK₁₈, 7, 2, 1; 1997 CT₅, 6, 2, 10; 1997 EK₆, 6, 2, 1; 1997 EL₆, 5, 2, 1; 1997 UF₉, 5, 2, 9; 1998 CY, 6, 2, 4; 1998 CK₁, 6, 2, 1; 1998 DW, 6, 2, 1; 1998 GO₁, 6, 2, 1; 1998 HH₅₅, 7, 1, 0; 1998 JU, 3, 1, 0; 1998 KC₅, 6, 2, 2; 1998 KO₃₁, 6, 2, 1; 1998 QW₂, 9, 2, 1; 1998 QH₅₁, 4, 1, 0; 1998 RO₁, 5, 1, 0; 1998 XB, 12, 2, 1; 1998 XS₁₆, 4, 1, 0; 1999 LF₆, 4, 1, 0; 1999 ML, 5, 1, 0; 1999 ND₄₃, 3, 1, 0; 1999 OX, 4, 1, 0; 1999 OQ₃, 4, 1, 0; 1999 OR₃, 4, 1, 0; 1999 PJ, 9, 3, 9; 1999 PV, 4, 1, 0; 1999 PW, 7, 2, 4; 1999 PX, 3, 1, 0; 1999 PY, 3, 1, 0; 1999 PL₄, 3, 1, 0; 1999 QJ, 4, 1, 0; 1999 QQ, 18, 6, 22; 1999 QR, 9, 3, 9; 1999 RC₂, 10, 2, 1; 1999 RU₂, 10, 3, 10; 1999 RV₂, 8, 2, 8; 1999 RL₃ *, 18, 5, 8; 1999 RR₁₅, 11, 2, 1; 1999 RV₁₈, 11, 2, 1; 1999 RB₁₉, 9, 2, 2; 1999 RD₁₉, 9, 2, 1; 1999 RS₂₂, 9, 2, 1; 1999 RH₂₇, 8, 2, 3; 1999 RJ₂₇, 7, 2, 5; 1999 RX₂₇ *, 20, 6, 5; 1999 RB₂₈ *, 30, 9, 10; 1999 RG₂₈, 10, 2, 1; 1999 RH₂₈ *, 9, 2, 1; 1999 RJ₂₈ *, 10, 2, 1; 1999 RK₂₈, 12, 3, 6; 1999 RL₂₈, 11, 2, 1; 1999 RN₂₈, 13, 3, 6; 1999 RP₂₈, 10, 3, 5; 1999 RQ₂₈, 10, 3, 5; 1999 RR₂₈, 16, 4, 5; 1999 RX₃₁ *, 25, 6, 5; 1999 RY₃₁, 13, 3, 2; 1999 RZ₃₁, 12, 2, 1; 1999 RA₃₂, 15, 4, 6; 1999 RB₃₂, 22, 5, 6; 1999 RC₃₂, 20, 5, 16; 1999 RD₃₂, 18, 5, 16; 1999 RE₃₃ *, 24, 6, 5; 1999 RG₃₃, 30, 6, 7; 1999 RJ₃₃, 12, 2, 3; 1999 RK₃₃, 11, 2, 3; 1999 RF₃₅ *, 10, 2, 1; 1999 RG₃₅ *, 10, 2, 1; 1999 RD₃₆ *, 23, 5, 6; 1999 RE₃₆ *, 9, 2, 1; 1999 RO₃₆, 12, 3, 2; 1999 RP₃₆, 13, 3, 2; 1999 RQ₃₆, 29, 6, 8; 1999 RC₃₉ *, 9, 2, 1; 1999 RD₃₉ *, 7, 2, 1; 1999 RF₄₀ *, 11, 3, 4; 1999 RG₄₀ *, 13, 3, 4; 1999 RN₄₁ *, 12, 2, 1; 1999 RO₄₁ *, 8, 2, 1; 1999 RP₄₁ *, 10, 2, 1; 1999 RQ₄₁ *, 10, 2, 1; 1999 RR₄₁ *, 8, 2, 1; 1999 RS₄₁ *, 19, 4, 7; 1999 RT₄₁ *, 8, 2, 1; 1999 RY₄₁, 8, 2, 1; 1999 RJ₄₅, 7, 2, 1; 1999 RK₄₅, 7, 2, 1; 1999 RL₄₅, 8, 2, 1; 1999 RM₄₅, 4, 1, 0; 1999 RN₄₅, 4, 1, 0; 1999 SQ₂ *, 15, 2, 2; 1999 SR₂ *, 13, 2, 2; 1999 SS₂ *, 16, 2, 2; 4074 T-3, 3, 1, 0; (2507), 3, 1, 0; (9080), 3, 1, 0; [1095, 118, 25*, 1992/09/27–1999/09/24]

071 Bulgarian National Observatory

V. Radeva, Astronomical Observatory and Planetarium, Varna, Bulgaria [astro@ms3.tu-varna.acad.bg]

Observers V. Ivanova, V. Radeva, R. Ralev, I. Darganov, N. Radeva, G. Apostolovska, L. Vasileva, V. Umlenski

0.50-m $f/1.4$ Schmidt + CCD

GSC

1998 RO₁, 8, 3, 2; 1999 HW₂, 3, 1, 0; 1999 JM₈, 9, 2, 2; 1999 LF₆, 2, 1, 0; 1999 LU₇, 3, 1, 0; 1999 LN₂₈, 4, 1, 0; 1999 ML, 16, 5, 53; 1999 NZ₄, 8, 3, 2; 1999 ND₄₃, 17, 4, 20; 1999 OQ₃, 2, 1, 0; 1999 OR₃, 9, 3, 2; 1999 PJ₁, 10, 3, 2; (923), 7, 2, 2; (11398), 4, 1, 0; [102, 14, 0*, 1999/07/15–1999/09/06]

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 astrograph

PPM

1998 QY₉₁, 2, 1, 0; 1999 RN₈₄, 2, 1, 0; [4, 2, 0*, 1991/11/05–1992/08/30]

097 Wise Observatory, Mitzpeh Ramon

A. Gal-Yam, Wise Observatory, Tel-Aviv University, IL-69978 Tel-Aviv, Israel
[Avishay@wise1.tau.ac.il]

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

Measurers I. Manulis, E. O. Ofek

1.0-m $f/7$ reflector + CCD

USNO-A2.0

1999 NG₆₄, 2, 1, 0; 1999 NH₆₄, 4, 2, 32; [6, 2, 0*, 1999/07/11–1999/08/11]

098 Asiago Observatory, Cima Ekar

U. Munari, Osservatorio Astronomico di Padova, Sede di Asiago, I-36012 Asiago
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Observers U. Munari, F. Castellani, M. Tombelli, P. Antolini

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

0.67-m $f/3.2$ Schmidt

1999 RD₁₀₂, 2, 1, 0; 2176 T-2, 2, 1, 0; [4, 2, 0*, 1994/09/05–1995/09/26]

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

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

0.40-m $f/5$ reflector + CCD

GSC

1997 XQ₁₃, 2, 1, 0; 1999 NZ₃, 6, 1, 0; [8, 2, 0*, 1994/02/19–1998/03/19]

106 Črni vrh

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

Observers H. Mikuž, S. Matičič, J. Skvarč

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

USNO-SA2.0, GSC-I.1

1931 UB, 3, 1, 0; 1942 TB, 3, 1, 0; 1971 SB, 3, 1, 0; 1973 QR₁, 3, 1, 0; 1975 TU₃, 3, 1, 0; 1975 YD, 3, 1, 0; 1976 QK₁, 3, 1, 0; 1978 PE, 3, 1, 0; 1978 QA₂, 6, 2, 5; 1978 SX₇, 3, 1, 0; 1978 TH₇, 2, 1, 0; 1978 VX₄, 3, 1, 0; 1979 QP, 3, 1, 0; 1980 DS₄, 2, 1, 0; 1980 FV₂, 3, 1, 0; 1980 KE, 3, 1, 0; 1981 DG₂, 3, 1, 0; 1981 EM₆, 3, 1, 0; 1981 ET₂₃, 3, 1, 0; 1981 EL₃₃, 3, 1, 0; 1981 EZ₄₂, 5, 2, 1; 1981 TK, 2, 1, 0; 1981 VF, 3, 1, 0; 1982 SM₂, 3, 1, 0; 1982 SO₅, 3, 1, 0; 1982 VL, 3, 1, 0; 1985 UJ₃, 3, 1, 0; 1986 EP₅, 2, 1, 0; 1987 WO₁, 3, 1, 0; 1988 DF₂, 3, 1, 0; 1988 EY₁, 3, 1, 0; 1988 PD₁, 2, 1, 0; 1988 RD, 6, 2, 3; 1988 RJ₃, 3, 1, 0; 1988 RS₃, 3, 1, 0; 1988 RZ₅, 3, 1, 0; 1988 RE₆, 3, 1, 0; 1988 SN, 2, 1, 0; 1988 TE, 3, 1, 0; 1988 UP, 3, 1, 0; 1988 VC₂, 3, 1, 0; 1988 VT₂, 3, 1, 0; 1988 VY₂, 3, 1, 0; 1988 VR₃, 3, 1, 0; 1988 VN₅, 2, 1, 0; 1988 XB₂, 3, 1, 0; 1989 AG₇, 2, 1, 0; 1989 NH₁, 3, 1, 0; 1989 RL, 3, 1, 0; 1989 SC, 3, 1, 0; 1989 WR, 3, 1, 0; 1989 WB₃, 2, 1, 0; 1989 YC₆, 3, 1, 0; 1990 BO, 3, 1, 0; 1990 EZ₂, 3, 1, 0; 1990 OG₄, 3, 1, 0; 1990 OB₅, 6, 2, 1; 1990 RT₂, 3, 1, 0; 1990 RD₅, 3, 1, 0; 1990 SU₁₅, 3, 1, 0; 1990 TZ₁, 3, 1, 0; 1990 VU₈, 3, 1, 0; 1991 CO₁, 3, 1, 0; 1991 ED, 2, 1, 0; 1991 PT₁₀, 3, 1, 0; 1991 PZ₁₄, 3, 1, 0; 1991 RP₁, 3, 1, 0; 1991 RE₂₅, 6, 1, 0; 1991 UD₃, 3, 1, 0; 1991 UL₃, 3, 1, 0; 1991 VD₁, 3, 1, 0; 1991 VJ₁, 3, 1, 0; 1991 VA₃, 3, 1, 0; 1991 VT₃, 3, 1, 0; 1991 XH, 3, 1, 0; 1992 ER₄, 3, 1, 0; 1992 JU₂, 3, 1, 0; 1992 OJ₁, 3, 1, 0; 1992 PO₂, 3, 1, 0; 1992 RD₃, 3, 1, 0; 1992 SJ₁, 3, 1, 0; 1992 SG₁₃, 3, 1, 0; 1992 UX, 3, 1, 0; 1992 UD₃, 3, 1, 0; 1992 UT₃, 3, 1, 0; 1992 WJ, 2, 1, 0; 1992 WD₁, 3, 1, 0; 1992 WY₁, 2, 1, 0; 1992 YA₁, 3, 1, 0; 1993 BA, 3, 1, 0; 1993 BT₂, 3, 1, 0; 1993 CJ₁, 3, 1, 0; 1993 CR₁, 3, 1, 0; 1993 DJ₁, 2, 1, 0; 1993 FL₄, 2, 1, 0; 1993 FM₅, 2, 1, 0; 1993 FY₁₂, 3, 1, 0; 1993 FH₃₆, 3, 1, 0; 1993 FO₃₆, 3, 1, 0; 1993 GL, 3, 1, 0; 1993 OR₈, 3, 1, 0; 1993 SD₂, 3, 1, 0; 1993 SK₃, 3, 1, 0; 1994 AM₃, 3, 1, 0; 1994 BY, 3, 1, 0; 1994 BN₄, 3, 1, 0; 1994 CL, 3, 1, 0; 1994 CN₈, 5, 2, 1; 1994 DS, 3, 1, 0; 1994 EC₅, 3, 1, 0; 1994 EJ₇, 3, 1, 0; 1994 HA, 3, 1, 0; 1994 JN, 3, 1, 0; 1994 WG, 3, 1, 0; 1994 WH₃, 3, 1, 0; 1995 HK, 3, 1, 0; 1995 HP, 3, 1, 0; 1995 KA₁, 3, 1, 0; 1995 UU₃, 3, 1, 0; 1995 UC₄₇, 3, 1, 0; 1995 WB, 3, 1, 0; 1995 WN₅, 3, 1, 0; 1995 WK₇, 3, 1, 0; 1995 XJ₁, 2, 1, 0; 1995 XU₁, 3, 1, 0; 1995 YJ₁, 3, 1, 0; 1995 YN₄, 3, 1, 0; 1996 BM₃, 3, 1, 0; 1996 EQ₂, 3, 1, 0; 1996 RG₁, 3, 1, 0; 1996 SH₆, 3, 1, 0; 1996 TD₁₅, 3, 1, 0; 1996 UF, 6, 1, 0; 1996 UZ, 3, 1, 0; 1996 VW₂, 3, 1, 0; 1996 VX₂₉, 3, 1, 0; 1996 XL₁, 2, 1, 0; 1996 XM₂, 3, 1, 0; 1996 XX₁₉, 3, 1, 0; 1996 YT₁, 2, 1, 0; 1997 AG, 3, 1, 0; 1997 AV, 3, 1, 0; 1997 AO₄, 3, 1, 0; 1997 AJ₁₃, 3, 1, 0; 1997 AB₁₈, 3, 1, 0; 1997 BX, 3, 1, 0; 1997 BF₃, 3, 1, 0; 1997 BT₃, 3, 1,

0; 1997 BR₆, 6, 2, 2; 1997 CR, 3, 1, 0; 1997 CB₂₂, 3, 1, 0; 1997 EL, 3, 1, 0; 1997 FC, 3, 1, 0; 1997 FL₂, 3, 1, 0; 1997 GW₂₉, 2, 1, 0; 1997 YS₁₁, 3, 1, 0; 1997 YC₁₄, 3, 1, 0; 1998 AR₄, 2, 1, 0; 1998 AU₉, 3, 1, 0; 1998 BN₂₅, 3, 1, 0; 1998 DY₄, 3, 1, 0; 1998 DR₅, 3, 1, 0; 1998 EP₃, 3, 1, 0; 1998 FC₉, 3, 1, 0; 1998 FN₄₃, 3, 1, 0; 1998 FG₅₆, 3, 1, 0; 1998 FC₅₉, 3, 1, 0; 1998 FQ₇₂, 3, 1, 0; 1998 FC₇₄, 3, 1, 0; 1998 FH₇₅, 3, 1, 0; 1998 FZ₉₇, 3, 1, 0; 1998 FH₁₁₅, 3, 1, 0; 1998 FN₁₁₆, 3, 1, 0; 1998 FC₁₁₇, 3, 1, 0; 1998 FG₁₁₇, 3, 1, 0; 1998 FC₁₁₈, 3, 1, 0; 1998 FS₁₁₈, 3, 1, 0; 1998 FM₁₂₁, 3, 1, 0; 1998 HW₁₇, 3, 1, 0; 1998 HQ₁₉, 3, 1, 0; 1998 HX₃₆, 3, 1, 0; 1998 HW₄₄, 5, 2, 1; 1998 HV₅₀, 3, 1, 0; 1998 HA₇₅, 3, 1, 0; 1998 HH₈₀, 3, 1, 0; 1998 HE₁₀₀, 3, 1, 0; 1998 HH₁₀₀, 3, 1, 0; 1998 JX₂, 2, 1, 0; 1998 KL, 3, 1, 0; 1998 KC₅, 3, 1, 0; 1998 KS₁₉, 3, 1, 0; 1998 KW₄₆, 3, 1, 0; 1998 KZ₄₆, 3, 1, 0; 1998 KV₄₇, 3, 1, 0; 1998 KD₅₁, 3, 1, 0; 1998 KA₅₅, 3, 1, 0; 1998 KB₅₅, 3, 1, 0; 1998 KM₅₅, 3, 1, 0; 1998 MK₄, 2, 1, 0; 1998 MQ₁₁, 3, 1, 0; 1998 MC₄₅, 3, 1, 0; 1999 JN₁₇, 3, 1, 0; 1999 JK₈₁, 3, 1, 0; 1999 JL₈₁, 3, 1, 0; 1999 LH₆, 3, 1, 0; 1999 LO₇, 3, 1, 0; 1999 ML₁, 3, 1, 0; 1999 MV₁, 6, 2, 1; 1999 NT, 3, 1, 0; 1999 NM₂, 3, 1, 0; 1999 NH₃, 3, 1, 0; 1999 NS₄, 3, 1, 0; 1999 NZ₅, 3, 1, 0; 1999 NJ₉, 3, 1, 0; 1999 NB₁₀, 3, 1, 0; 1999 NT₁₀, 3, 1, 0; 1999 NV₁₁, 3, 1, 0; 1999 NK₅₆, 3, 1, 0; 1999 NF₅₇, 3, 1, 0; 1999 OK₃, 3, 1, 0; 1999 PV, 6, 2, 1; 1999 QJ, 3, 1, 0; 1999 QB₂, 6, 2, 9; 1999 RC₁, 6, 2, 1; 1999 RU₃, 6, 2, 2; 1999 RA₁₁, 3, 1, 0; 1999 RP₁₇, 3, 1, 0; 1999 RY₂₇ *, 23, 7, 9; 1999 RZ₂₇ *, 9, 3, 4; 1999 RK₂₈, 6, 2, 2; 1999 RQ₂₈, 3, 1, 0; 1999 RD₃₂, 3, 1, 0; 1999 RG₃₂, 3, 1, 0; 1999 RX₃₂ *, 8, 3, 2; 1999 RA₃₅ *, 6, 2, 1; 1999 RM₃₆ *, 6, 2, 1; 1999 RN₃₆ *, 9, 3, 3; 1999 RQ₃₆, 2, 1, 0; 1999 RS₄₂ *, 6, 2, 2; 1999 RT₄₂ *, 9, 3, 4; 1999 RU₄₂ *, 6, 2, 2; 1999 RW₄₂ *, 9, 3, 3; 1999 RX₄₂ *, 9, 3, 3; 1999 RY₄₂ *, 8, 3, 3; 1999 RT₄₄ *, 6, 2, 2; 1999 RU₄₄ *, 6, 2, 2; 1999 RV₄₄ *, 6, 2, 2; 4035 P-L, 3, 1, 0; 4061 P-L, 3, 1, 0; 1182 T-1, 3, 1, 0; 4193 T-1, 3, 1, 0; 3535 T-3, 3, 1, 0; (7), 3, 1, 0; (224), 3, 1, 0; (331), 3, 1, 0; (378), 3, 1, 0; (420), 3, 1, 0; (452), 3, 1, 0; (468), 3, 1, 0; (586), 3, 1, 0; (604), 3, 1, 0; (629), 3, 1, 0; (644), 3, 1, 0; (673), 3, 1, 0; (774), 3, 1, 0; (822), 3, 1, 0; (893), 3, 1, 0; (954), 3, 1, 0; (1057), 3, 1, 0; (1559), 3, 1, 0; (1621), 3, 1, 0; (1632), 3, 1, 0; (1789), 3, 1, 0; (1793), 3, 1, 0; (1852), 3, 1, 0; (2030), 3, 1, 0; (2439), 3, 1, 0; (2458), 3, 1, 0; (2507), 3, 1, 0; (2717), 3, 1, 0; (3134), 3, 1, 0; (3305), 3, 1, 0; (3367), 3, 1, 0; (3378), 3, 1, 0; (3632), 3, 1, 0; (3814), 3, 1, 0; (4003), 6, 2, 1; (4174), 3, 1, 0; (4402), 3, 1, 0; (4698), 3, 1, 0; (5246), 3, 1, 0; (5591), 2, 1, 0; (5908), 2, 1, 0; (5965), 3, 1, 0; (6274), 3, 1, 0; (6497), 3, 1, 0; (6573), 3, 1, 0; (6596), 3, 1, 0; (7536), 3, 1, 0; (7766), 2, 1, 0; (7772), 2, 1, 0; (8506), 3, 1, 0; (8603), 3, 1, 0; (8688), 3, 1, 0; (8732), 3, 1, 0; (8818), 2, 1, 0; (9035), 3, 1, 0; (9346), 3, 1, 0; (11280), 3, 1, 0; (11281), 3, 1, 0; (11303), 3, 1, 0; (11365), 6, 2, 1; (11415), 2, 1, 0; [1048, 314, 16*, 1999/09/07–1999/09/17]

108 Montelupo

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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

1931 TC₂, 3, 1, 0; 1992 YA₁, 4, 1, 0; 1995 QR, 3, 1, 0; 1995 UP₆, 9, 2, 1; 1996 RG₁, 2, 1, 0; 1997 FU, 8, 2, 1; 1999 ML, 4, 1, 0; 1999 ND₄₃, 10, 3, 5; 1999 OP₃, 3, 1, 0; 1999 PJ₁, 3, 1, 0; 1999 QJ, 4, 1, 0; 1999 RH₂₇, 2, 1, 0; 1999 RK₂₈, 6, 2, 1; 1999 RB₃₂, 19, 4, 4; 1999 RD₃₂, 9, 3, 2; 1999 RK₃₃, 2, 1, 0; 1999 RQ₃₆, 4, 1, 0; (2439), 3, 1, 0; (4402), 4, 1, 0; (5843), 3, 1, 0; (8960), 4, 1, 0; [109, 21, 0*, 1999/08/31–1999/09/13]

113 Volkssternwarte Drebach, Schönbrunn

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[g.lehmann@abo.freiepresse.de]

Observers G. Lehmann, J. Kandler, A. Knoefel, W. Drews

Measurer G. Lehmann, J. Kandler, A. Knoefel

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

USNO-A2.0

1973 UK₅, 2, 1, 0; 1988 BY₂, 12, 6, 5; 1988 RV₁, 4, 2, 2; 1988 RJ₃, 6, 3, 7; 1988 RM₃, 3, 1, 0; 1988 RS₃, 4, 2, 1; 1989 AG₇, 2, 1, 0; 1990 TZ₁, 4, 2, 1; 1990 TF₁₃, 2, 1, 0; 1991 GJ₁₀, 4, 2, 1; 1991 TH₃, 4, 2, 1; 1992 SQ₂₃, 6, 3, 3; 1992 UP₈, 7, 3, 3; 1993 SK₃, 5, 2, 1; 1994 UZ₁₂, 6, 3, 6; 1998 FC₁₂₇, 10, 4, 8; 1999 RM, 4, 2, 1; 1999 RN₂₀, 7, 1, 0; 1999 RK₂₇ *, 21, 8, 9; 1999 RS₂₇, 4, 2, 1; 1999 RB₃₂, 10, 4, 1, 0; 1999 RU₃₂ *, 12, 4, 9; 1999 RV₃₂ *, 18, 6, 5; 1999 RW₃₂ *, 12, 6, 5; 1999 RB₃₆ *, 9, 4, 3; 1999 RC₃₆ *, 9, 4, 3; 1999 RR₃₈ *, 9, 4, 3; 1999 RK₄₀ *, 8, 2, 1; 1999 RJ₄₅, 3, 1, 0; (1383), 2, 1, 0; [209, 30, 8*, 1999/09/05–1999/09/15]

118 Modra

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Observers A. Galád, D. Kalmančok, P. Kolény, J. Tóth, Š. Gajdoš
0.57-m $f/5.2$ reflector + CCD
USNO-A2.0

1987 DM₆, 2, 1, 0; 1991 RV₂, 4, 2, 1; 1992 JG₂, 2, 1, 0; 1992 SY₁₄, 4, 2, 1; 1994 JG₄, 4, 2, 1; 1995 WN₃₃, 2, 1, 0; 1996 AD₂, 5, 2, 12; 1996 YG₁, 2, 1, 0; 1996 YH₁, 4, 2, 1; 1997 EN₇, 3, 1, 0; 1997 US₉, 4, 2, 12; 1998 FQ₅, 9, 4, 4; 1998 FB₁₀, 4, 2, 1; 1998 HF₃, 5, 2, 6; 1998 JA₂, 1, 0; 1998 RO₁, 5, 2, 6; 1998 XS₁₆, 3, 1, 0; 1999 ML₂, 2, 1, 0; 1999 NZ₁₀, 3, 1, 0; 1999 ND₄₃, 16, 6, 21; 1999 OW₉, 4, 2, 11; 1999 OP₃, 6, 3, 10; 1999 PM₃, 3, 1, 0; 1999 PJ₁, 15, 6, 14; 1999 QJ₁, 16, 6, 11; 1999 RD_{*}, 24, 10, 13; 1999 RU₂, 5, 2, 6; 1999 RV₂, 14, 6, 17; 1999 RP₁₁, 6, 2, 1; 1999 RB₁₉, 6, 2, 2; 1999 RH₂₇, 15, 6, 17; 1999 RK₂₈, 6, 2, 1; 1999 RQ₂₈, 3, 1, 0; 1999 RB₃₂, 17, 6, 15; 1999 RC₃₂, 12, 4, 13; 1999 RD₃₂, 13, 5, 13; 1999 RF₃₃ *, 17, 6, 6; 1999 RG₃₃, 12, 4, 7; 1999 RK₃₃, 10, 3, 2; 1999 RO₃₆, 8, 3, 3; 1999 RP₃₆, 5, 2, 7; 1999 RQ₃₆, 6, 2, 2; 1999 RY₄₁, 6, 2, 1; 1999 RO₄₃ *, 9, 3, 2; 1999 RK₄₄ *, 9, 3, 6; 1999 RJ₄₅, 3, 1, 0; 1999 RK₄₅, 6, 2, 1; 1999 RL₄₅, 3, 1, 0; 1999 RM₄₅, 3, 1, 0; 1999 RN₄₅, 6, 2, 1; 2799 P-L, 4, 2, 1; 3372 T-2, 4, 2, 1; (122), 6, 2, 1; (699), 4, 2, 1; (1362), 2, 1, 0; (1621), 2, 1, 0; (1846), 3, 1, 0; (1863), 6, 3, 18; (2439), 2, 1, 0; (2469), 4, 2, 1; (2507), 2, 1, 0; (3200), 6, 2, 11; (3581), 4, 2, 2; (3691), 7, 3, 19; (3939), 4, 2, 1; (4006), 3, 1, 0; (4747), 4, 2, 1; (4813), 4, 2, 1; (5653), 2, 1, 0; (6455), 3, 1, 0; (7562), 6, 2, 1; (8611), 2, 1, 0; (9336), 2, 1, 0; (10115), 5, 2, 19; (11118), 2, 1, 0; [451, 75, 4*, 1999/08/31–1999/09/24]

120 Višnjan

K. Korlević, Istarska 5, HR-51463 Višnjan, Croatia [korado@visnjan.hr]
Observers K. Korlević, M. Jurić, P. Radovan, A. Ritosa, V. Jelić, P. Korlević
Measurers K. Korlević, M. Jurić
0.41-m $f/4.3$ reflector + CCD
USNO-SA1.0

1931 TC₂, 7, 3, 6; 1969 TT₁, 3, 1, 0; 1971 SB₆, 3, 3, 2; 1973 AW₃, 3, 1, 0; 1981 EM₁₇, 4, 2, 7; 1981 EL₂₀, 7, 3, 6; 1981 ET₂₃, 5, 2, 1; 1985 PC₃, 3, 1, 0; 1988 BC₄, 6, 2, 1; 1988 SN₆, 6, 2, 4; 1988 VR₃, 7, 3, 3; 1990 HP₂, 2, 1, 0; 1990 SU₁₅, 3, 1, 0; 1990 TT₁₀, 8, 3, 11; 1991 FJ₂, 2, 1, 0; 1991 FT₂, 2, 1, 0; 1991 GR₂, 3, 1, 0; 1991 GB₃, 2, 1, 0; 1991 VE₃, 5, 2, 1; 1992 EM₈, 2, 1, 0; 1992 PZ₁, 3, 1, 0; 1992 UY₂, 4, 2, 1; 1992 WR₄, 4, 2, 11; 1992 WC₉, 5, 2, 1; 1993 FL₄, 5, 2, 1; 1993 FX₉, 2, 1, 0; 1993 FO₃₆, 2, 1, 0; 1993 FZ₄₁, 3, 1, 0; 1993 PB₇, 5, 2, 1; 1993 PK₇, 2, 1, 0; 1993 SN₃, 2, 1, 0; 1994 AC₄, 2, 1; 1994 PL₂₂, 2, 1, 0; 1994 PL₂₇, 2, 1, 0; 1994 PC₂₉, 2, 1, 0; 1994 TD₃, 3, 1, 0; 1994 VM₁, 6, 2, 1; 1995 FM₁₁, 5, 2, 2; 1995 SH₂₆, 8, 4, 3; 1995 UH₅, 4, 2, 1; 1995 XU₁, 2, 1, 0; 1996 DQ₁, 6, 2, 2; 1996 DO₆, 3, 1, 0; 1996 XC₁, 9, 4, 4; 1997 AZ₁₇, 2, 1, 0; 1997 BA₃, 3, 1, 0; 1997 CS₄, 2, 2; 1997 CR₁₉, 2, 1, 0; 1997 EK₈, 4, 2, 1; 1997 EU₁₆, 5, 2, 1; 1997 ER₂₆, 3, 1, 0; 1997 GQ₇, 2, 1, 0; 1998 AV₉, 3, 2, 1; 1998 DT₉, 4, 2, 1; 1998 DB₃₆, 2, 1, 0; 1998 FQ₂, 6, 2, 16; 1998 FM₅₄, 3, 1, 0; 1998 FL₇₅, 3, 1, 0; 1998 FZ₁₃₀, 2, 1, 0; 1998 HS₆₀, 2, 1, 0; 1998 HA₉₃, 3, 1, 0; 1998 HS₉₆, 7, 2, 4; 1998 HG₁₂₅, 5, 2, 2; 1998 HV₁₃₇, 4, 2, 1; 1998 KG₃₈, 5, 2, 4; 1998 KU₄₆, 3, 1, 0; 1998 KB₅₁, 5, 2, 2; 1998 KZ₅₄, 3, 1, 0; 1998 OH₆, 7, 3, 2; 1998 RM₁, 3, 1, 0; 1998 RO₂₀, 3, 1, 0; 1999 JG₂₉, 3, 1, 0; 1999 JJ₆₁, 2, 1, 0; 1999 JB₁₂₀, 3, 1, 0; 1999 NT₄, 6, 2, 1; 1999 OG₂, 4, 2, 1; 1999 PY₃, 3, 1, 0; 1999 PR₅, 6, 2, 2; 1999 PS₅, 6, 2, 1; 1999 QQ₂, 5, 2, 1; 1999 RS₁ *, 11, 4, 6; 1999 RT₁ *, 13, 5, 11; 1999 RU₁ *, 12, 5, 7; 1999 RV₁ *, 9, 4, 9; 1999 RW₁ *, 13, 5, 7; 1999 RX₁ *, 15, 6, 17; 1999 RY₁ *, 10, 4, 5; 1999 RZ₁ *, 12, 5, 7; 1999 RA₂ *, 18, 8, 8; 1999 RX₂, 7, 3, 2; 1999 RY₂ *, 9, 5, 11; 1999 RZ₂ *, 9, 4, 3; 1999 RA₃ *, 11, 5, 10; 1999 RB₃ *, 16, 7, 8; 1999 RC₃ *, 16, 7, 8; 1999 RD₃ *, 8, 3, 5; 1999 RE₃ *, 11, 5, 8; 1999 RF₃ *, 6, 3, 5; 1999 RG₃ *, 7, 3, 5; 1999 RS₄, 5, 2, 1; 1999 RL₆, 5, 2, 1; 1999 RK₇, 7, 3, 2; 1999 RE₉, 7, 3, 2; 1999 RK₉, 6, 3, 2; 1999 RT₁₄, 5, 2, 1; 1999 RX₁₄, 5, 2, 2; 1999 RA₁₅, 6, 2, 1; 1999 RO₁₅, 6, 2, 1; 1999 RJ₁₆, 4, 2, 1; 1999 RK₁₆, 4, 2, 1; 1999 RT₁₆, 5, 2, 1; 1999 RN₂₀, 2, 1, 0; 1999 RX₂₀, 2, 1, 0; 1999 RG₂₂, 4, 2, 2; 1999 RL₂₂, 4, 2, 1; 1999 RA₂₃, 5, 2, 1; 1999 RN₂₅, 8, 3, 3; 1999 RX₂₅, 7, 3, 3; 1999 RL₂₇ *, 12, 5, 16; 1999 RM₂₇ *, 6, 2, 1; 1999 RN₂₇ *, 6, 2, 1; 1999 RO₂₇ *, 7, 3, 4; 1999 RP₂₇ *, 8, 3, 4; 1999 RQ₂₇ *, 11, 4, 6; 1999 RR₂₇ *, 5, 2, 1; 1999 RS₂₇ *, 5, 2, 1; 1999 RT₂₇ *, 7, 3, 4; 1999 RU₂₇ *, 13, 4, 6; 1999 RV₂₇ *, 7, 3, 5; 1999 RW₂₇ *, 10, 4, 9; 1999 RJ₃₁ *, 8, 3, 2; 1999 RK₃₁ *, 6, 3, 4; 1999 RL₃₁ *, 6, 3, 3; 1999 RM₃₁ *, 15, 7, 3; 1999 RN₃₁ *, 13, 6, 5; 1999 RS₃₁, 2, 1, 0; 1999 RE₃₂ *, 6, 3, 2; 1999 RF₃₂ *, 6, 3, 2; 1999 RG₃₂ *, 7, 3, 2; 1999 RH₃₂ *, 7, 3, 2; 1999 RJ₃₂ *, 6, 3, 2; 1999 RK₃₂ *, 7, 3, 2; 1999 RL₃₂ *, 7, 3, 2; 1999 RM₃₂ *, 7, 3, 2; 1999 RN₃₂ *, 7, 3, 2; 1999 RO₃₂ *, 6, 3, 2; 1999 RQ₃₂, 9, 4, 3; 1999 RZ₃₂, 7, 3, 2; 1999 RA₃₃, 7, 3, 2; 1999 RD₃₄ *, 6, 3, 5; 1999 RE₃₄ *, 8, 4, 6; 1999 RF₃₄ *, 7, 3, 3; 1999 RG₃₄ *, 6, 2, 1; 1999 RH₃₄ *, 6, 3, 2; 1999 RJ₃₄ *, 10, 5, 4; 1999 RK₃₄ *, 7, 3, 2; 1999 RL₃₄ *, 7, 3, 2; 1999 RM₃₄ *, 7, 3, 2; 1999 RN₃₄ *, 11, 5, 4; 1999 RO₃₄ *, 10, 4, 3; 1999 RP₃₄ *, 12, 5, 4; 1999 RQ₃₄ *, 12, 5, 4; 1999 RX₃₄ *, 8, 3, 2; 1999 RY₃₄ *, 10, 4, 11; 1999 RZ₃₄ *, 11, 4, 11; 1999 RH₃₅, 5, 2, 1; 1999 RM₃₅ *, 9, 4, 5; 1999 RN₃₅ *, 4, 2, 1; 1999 RO₃₅ *, 9, 4, 3; 1999 RP₃₅ *, 9, 4, 3; 1999 RQ₃₅ *, 6, 3, 3; 1999 RS₃₅ *, 7, 3, 3; 1999 RT₃₅ *, 7, 3, 3; 1999 RF₃₆ *, 10, 4, 5; 1999 RG₃₆ *, 11, 5, 11; 1999 RH₃₆ *, 9, 4, 11; 1999 RJ₃₆ *, 7, 3, 2; 1999 RL₃₆, 4, 2, 1; 1999 RR₃₆ *, 9, 5, 4; 1999 RS₃₆ *, 10, 5, 4; 1999 RT₃₆ *, 8, 4, 3; 1999 RT₃₇ *, 9, 4, 3; 1999 RU₃₇ *, 7, 3, 2; 1999 RV₃₇ *, 7, 3, 2; 1999 RW₃₇ *, 7, 3, 2; 1999 RX₃₇ *, 7, 3, 2;

1999 RY₃₇ *, 7, 3, 2; 1999 RZ₃₇ *, 7, 3, 2; 1999 RA₃₈ *, 9, 4, 9; 1999 RB₃₈ *, 7, 3, 2; 1999 RC₃₈ *, 9, 4, 3; 1999 RD₃₈ *, 7, 3, 2; 1999 RE₃₈ *, 7, 3, 2; 1999 RF₃₈ *, 9, 4, 3; 1999 RG₃₈ *, 7, 3, 2; 1999 RH₃₈ *, 7, 3, 2; 1999 RJ₃₈ *, 6, 3, 2; 1999 RK₃₈ *, 7, 3, 2; 1999 RL₃₈ *, 7, 3, 2; 1999 RM₃₈ *, 8, 4, 3; 1999 RN₃₈ *, 9, 4, 9; 1999 RO₃₈ *, 9, 4, 3; 1999 RS₃₈ *, 9, 5, 10; 1999 RT₃₈ *, 12, 5, 9; 1999 RU₄₁ *, 10, 4, 4; 1999 RV₄₁ *, 10, 4, 4; 1999 RW₄₁ *, 8, 3, 2; 1999 RX₄₁ *, 9, 4, 9; 1999 RY₄₁ *, 10, 4, 9; 1999 RZ₄₁ *, 10, 4, 9; 1999 RA₄₂ *, 8, 3, 2; 1999 RB₄₂ *, 8, 3, 2; 1999 RC₄₂ *, 7, 3, 2; 1999 RK₄₂ *, 11, 5, 9; 1999 RL₄₂ *, 11, 5, 10; 1999 RM₄₂ *, 9, 3, 2; 1999 RN₄₂ *, 11, 4, 9; 1999 RO₄₂ *, 9, 3, 2; 1999 RP₄₂ *, 10, 3, 2; 1999 RQ₄₂ *, 9, 4, 9; 1999 RR₄₂ *, 12, 4, 9; 1999 RH₄₃ *, 4, 2, 1; 1999 RS₄₃ *, 12, 5, 10; 1999 RT₄₃ *, 7, 3, 3; 1999 RU₄₃ *, 6, 3, 4; 1999 RV₄₃ *, 9, 3, 2; 1999 RW₄₃ *, 10, 3, 2; 1999 RX₄₃ *, 9, 3, 2; 1999 RY₄₃ *, 6, 2, 1; 1999 RZ₄₃ *, 10, 3, 7; 1999 RA₄₄ *, 8, 3, 7; 1999 RB₄₄ *, 7, 3, 7; 1999 RC₄₄ *, 7, 3, 7; 1999 RQ₄₄ *, 6, 3, 2; 1999 RR₄₄ *, 8, 3, 7; 1999 RS₄₄ *, 10, 3, 2; 1999 RR₁₆₈, 2, 1, 0; 1999 SD *, 7, 3, 5; 1999 SE *, 7, 3, 5; 1999 SF *, 8, 3, 5; 1999 SG *, 9, 3, 5; 1999 SH *, 6, 2, 1; 1999 SJ *, 9, 3, 5; 1999 SK *, 9, 3, 5; 1999 SM₁ *, 6, 3, 6; 1999 SN₁ *, 8, 3, 6; 1999 SO₁ *, 5, 2, 4; 1999 SF₂ *, 5, 2, 1; 1999 SG₂ *, 5, 2, 1; 1999 SH₂ *, 5, 2, 1; 1999 SJ₂ *, 6, 2, 1; 2560 P-L, 2, 1, 0; 4189 P-L, 3, 1, 0; 6602 P-L, 5, 2, 1; 1108 T-2, 2, 1, 0; 2390 T-3, 5, 2, 1; (298), 2, 1, 0; (321), 3, 1, 0; (331), 3, 1, 0; (470), 4, 2, 1; (555), 3, 1, 0; (585), 3, 1, 0; (586), 6, 3, 2; (632), 2, 1, 0; (846), 3, 1, 0; (1247), 4, 2, 1; (1281), 3, 1, 0; (1382), 6, 2, 1; (1383), 4, 1, 0; (1403), 2, 1, 0; (1482), 2, 1, 0; (1489), 2, 1, 0; (1835), 3, 1, 0; (1856), 2, 1, 0; (1895), 10, 3, 5; (1905), 3, 1, 0; (2030), 5, 2, 2; (2355), 2, 1, 0; (2359), 3, 1, 0; (2367), 10, 4, 11; (2400), 5, 2, 1; (2439), 2, 1, 0; (2499), 3, 1, 0; (2586), 2, 1, 0; (2598), 8, 3, 2; (2611), 3, 1, 0; (2673), 2, 1, 0; (2746), 2, 1, 0; (3070), 2, 1, 0; (3247), 5, 2, 4; (3282), 2, 1, 0; (3385), 2, 1, 0; (3432), 8, 4, 4; (3437), 4, 2, 5; (3455), 4, 2, 1; (3615), 2, 1, 0; (3628), 3, 1, 0; (3636), 3, 1, 0; (3742), 7, 3, 2; (3911), 3, 1, 0; (4003), 4, 2, 2; (4101), 4, 2, 1; (4135), 6, 3, 9; (4309), 9, 4, 5; (4337), 5, 2, 2; (4347), 7, 3, 2; (4371), 2, 1, 0; (4372), 6, 3, 4; (4412), 5, 2, 1; (4533), 2, 1, 0; (4553), 2, 1, 0; (4644), 2, 1, 0; (4782), 4, 2, 1; (4784), 3, 1, 0; (5246), 2, 1, 0; (5334), 3, 1, 0; (5404), 9, 3, 5; (5591), 11, 4, 6; (5653), 5, 2, 1; (5729), 6, 3, 2; (5770), 6, 3, 2; (5883), 8, 3, 2; (5887), 4, 2, 2; (5892), 4, 1, 0; (5901), 4, 2, 1; (6034), 2, 1, 0; (6076), 3, 1, 0; (6229), 4, 2, 3; (6549), 7, 2, 1; (6573), 2, 1, 0; (6666), 3, 1, 0; (6667), 7, 3, 2; (6778), 3, 1, 0; (6833), 2, 1, 0; (7077), 5, 2, 10; (7149), 2, 1, 0; (7191), 3, 1, 0; (7312), 3, 1, 0; (7376), 3, 1, 0; (7435), 2, 1, 0; (7634), 2, 1, 0; (7639), 2, 1, 0; (8004), 3, 1, 0; (8416), 2, 1, 0; (8509), 12, 5, 4; (8750), 6, 3, 7; (8783), 13, 6, 7; (8797), 9, 4, 4; (8805), 3, 1, 0; (8862), 12, 4, 6; (8885), 2, 1, 0; (8904), 6, 2, 1; (8949), 2, 1, 0; (8969), 5, 2, 2; (8974), 11, 5, 6; (9004), 6, 2, 1; (9010), 9, 3, 2; (9097), 9, 4, 9; (9110), 7, 3, 2; (9257), 2, 1, 0; (9315), 2, 1, 0; (9365), 3, 1, 0; (9410), 3, 1, 0; (11084), 2, 1, 0; (11257), 3, 1, 0; (11312), 3, 1, 0; [2179, 367, 145*, 1996/01/18–1999/09/23]

121 Kharkov University, Chuguevskaya Station

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0.70-m $f/4$ reflector + CCD

GSC

1999 ND₄₃, 13, 3, 16; 1999 RQ₃₆, 8, 2, 2; (198), 15, 3, 4; [36, 3, 0*, 1999/09/05–1999/09/22]

126 Monte Viseggi

P. Pietrapiana, via Stefano Clemente 22, I-10143 Torino, Italy
[mc7316@mclink.it]

Observers P. Pietrapiana, L. Sannino, L. Zannoni, A. Bondielli

Measurer P. Pietrapiana

0.40-m $f/5$ reflector + CCD

GSC

1999 RH₁ *, 18, 5, 5; [18, 1, 1*, 1999/09/04–1999/09/09]

127 Bornheim

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

0.19-m $f/4$ FFC + CCD

GSC

1975 YD, 7, 3, 6; 1983 RL, 7, 3, 6; 1986 TR, 7, 3, 6; 1990 OG₄, 4, 2, 14; 1990 OB₅, 6, 3, 21; 1991 VA₃, 4, 2, 2; 1992 OJ₁, 4, 2, 14; 1995 KA₁, 6, 3, 6; 1999 ND₄₃, 6, 3, 6; 1999 NK₅₆, 4, 2, 7; (1367), 6, 2, 7; (11263), 6, 3, 16; [67, 12, 0*, 1999/08/12–1999/09/08]

130 Lumezzane

S. Foglia, F. Bisleri 11, I-20418 Milan, Italy [md3576@mclink.it]

Observers G. Pizzetti, W. Marinello

0.40-m $f/4$ reflector + CCD

USNO-A1.0

(699), 4, 1, 0; (7536), 4, 1, 0; (7628), 3, 1, 0; [11, 3, 0*, 1999/09/11]

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

1999 RU₃₈, 5, 1, 0; 1999 RY₄₄, 3, 1, 0; 1999 RZ₄₄, 5, 1, 0; 1999 RA₄₅, 3, 1, 0; 1999 RB₄₅, 3, 1, 0; [19, 5, 0*, 1999/09/16–1999/09/17]

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

1999 NT, 6, 2, 1; (733), 3, 1, 0; (2987), 3, 1, 0; (8736), 3, 1, 0; [15, 4, 0*, 1999/09/07–1999/09/10]

134 Groszschwabhausen

H.-G. Reimann, Universitaets-Sternwarte Jena, Schillergäßchen 2, D-07745 Jena,

Germany [rei@astro.uni-jena.de]

0.90-m $f/2$ Schmidt + CCD

GSC

1992 UP₈, 3, 1, 0; [3, 1, 0*, 1999/09/14]

138 Village-Neuf

C. Demeautis, 9 rue de Huningue, F-68300 Saint-Louis, France

[Sky.walker@wanadoo.fr]

0.30-m $f/4$ reflector + CCD

GSC

1998 FN₁₁₆, 5, 1, 0; 1999 MV₁, 3, 1, 0; 1999 NR₁₁, 3, 1, 0; 1999 NV₁₁, 5, 1, 0; 1999 RJ₁₄, 4, 2, 3; 1999 RZ₃₆ *, 7, 2, 7; 1999 RU₃₈, 4, 1, 0; (1442), 2, 1, 0; (4369), 3, 1, 0; [36, 9, 1*, 1999/09/01–1999/09/13]

143 Gnosca

S. Sposetti, CH-6525 Gnosca, Switzerland [spo@ dial.eunet.ch]

0.20-m $f/7.1$ reflector + CCD

GSC

1998 HV₆, 6, 2, 2; 1999 NX₄, 6, 2, 1; 1999 OB₁, 6, 2, 1; 1999 QT₁, 6, 2, 1; 1999 QU₁, 6, 2, 1; 1999 QN₂ *, 5, 2, 1; 1999 QO₂ *, 11, 4, 10; 1999 RV₂, 3, 1, 0; 1999 RH₂₇, 3, 1, 0; [52, 9, 2*, 1999/08/30–1999/09/09]

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

1989 SR, 4, 1, 0; 1991 VU₅, 4, 1, 0; 1997 XH, 7, 2, 1; 1998 DU, 3, 1, 0; 5141 T-2, 4, 1, 0; [22, 5, 0*, 1999/09/02–1999/09/03]

147 Osservatorio Astronomico di Suno

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[apan@pn.itnet.it]

Observers G. Bianchi, V. Sacco

Measurer M. Carpino

0.40-m $f/4.1$ reflector + CCD

USNO-A1.0

(3208), 2, 1, 0; (4805), 1, 1, 0; (7766), 2, 1, 0; (8289), 4, 1, 0; [9, 4, 0*, 1999/08/17–1999/09/07]

148 Guitalens

A. Klotz, Le Gravel, F-81220 Guitalens, France [klotz@irsamc1.ups-tlse.fr]

0.20-m $f/6.15$ reflector + CCD

GSC

1992 YM₂, 3, 1, 0; 1998 DJ₂₀, 6, 2, 4; 1998 HE₈, 3, 1, 0; 1999 QS₂, 2, 1, 0; 1999 RV₃₁ *, 9, 3, 4; 1999 RY₄₄ *, 3, 1, 0; [26, 6, 2*, 1999/09/02–1999/09/13]

151 Eschenberg Observatory, Winterthur

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

[griesser@spectraweb.ch]

0.25-m $f/8.0$ reflector + CCD

GSC

1988 RJ₃, 20, 5, 8; 1988 RM₃, 38, 9, 15; 1990 SU₁₅, 4, 1, 0; 1992 UP₈, 26, 7, 15; 1994 UZ₁₂, 34, 7, 11; 1999 HF₁, 7, 1, 0; 1999 ND₄₃, 34, 6, 8; 1999 PJ₁, 6, 1, 0; 1999 QJ, 9, 2, 6; 1999 RB₃₂, 18, 3, 2; (87), 3, 1, 0; (699), 7, 2, 8; (832), 3, 1, 0; (1863), 3, 1, 0; (1935), 3, 1, 0; (3951), 3, 1, 0; [218, 16, 0*, 1999/08/30–1999/09/18]

153 Stuttgart-Hoffeld

R. Stuber, Hoffeldstrasse 121, D-70597 Stuttgart, Germany

[rolf.stuber@swol.de]

Observer R. Stuber

Measurer K. Stuber

0.25-m $f/7.2$ reflector + CCD

GSC

(483), 7, 2, 1; (1146), 6, 2, 1; [13, 2, 0*, 1999/09/03–1999/09/11]

158 Promiod

G. A. Sala, CCD Astronomy Research Centre, Via Cottalorda 27, I-21022 Azzate

(VA), Italy [g.sala@skylink.it]

0.30-m $f/7$ Schmidt-Cassegrain + CCD

USNO-SA1.0

1999 RW₄₄ *, 6, 2, 3; [6, 1, 1*, 1999/09/13–1999/09/17]

159 Monte Agliale

S. Donati, Monte Agliale Astronomical Observatory, Borgo a Mozzano, Lucca,

Italy [ilra@comune.lucca.it]

Observers M. M. M. Santangelo, S. Donati

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

USNO-A1.0, USNO-A2.0

1998 FH₁₁₅, 5, 2, 1; 1999 PL, 27, 5, 22; 1999 QE, 23, 3, 8; 1999 RY₃₂ *, 26, 3, 4; 1999 RF₃₇ *, 48, 5, 11; 1999 RJ₄₄ *, 32, 4, 12; 1999 RD₁₇₆ *, 24, 3, 8; (2499), 6, 1, 0; [191, 8, 4*, 1999/08/31–1999/09/23]

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

(16), 4, 2, 3; (5144), 3, 2, 1; [7, 2, 0*, 1999/09/03–1999/09/24]

164 St. Michel sur Meurthe

L. Bernasconi, 244 rue du Closé, F-88470 St. Michel sur Meurthe, France

[laurent.bernasconi.51@wanadoo.fr]

Observers L. Bernasconi, B. Chardonnnes, P. Antonini

0.212-m $f/3.9$ reflector + CCD

USNO

1978 QF₁, 3, 1, 0; 1994 EC₅, 3, 1, 0; 1997 BT₃, 3, 1, 0; 1999 PR₁, 3, 1, 0; 1999 RU, 3, 1, 0; 1999 RD₁, 3, 1, 0; 1999 RJ₁₄, 9, 3, 7; 1999 RA₃₃ *, 6, 2, 2; 1999 RB₃₃ *, 6, 2, 1; 1999 RC₃₃ *, 6, 2, 1; 1999 RM₃₃ *, 7, 2, 2; 1999 RL₃₄, 3, 1, 0; 1999 RH₃₅ *, 8, 2, 2; 1999 RU₃₈ *, 3, 1, 0; 1999 RZ₄₄ *, 3, 1, 0; 1999 RA₄₅ *, 3, 1, 0; 1999 RB₄₅ *, 3, 1, 0; 1999 RW₅₄, 2, 1, 0; (125), 3, 1, 0; (169), 9, 3, 2; (720), 3, 1, 0; (1029), 3, 1, 0; (1442), 3, 1, 0; (1621), 3, 1, 0; (1833), 3, 1, 0; (1856), 13, 4, 8; (1895), 8, 2, 2; (2217), 3, 1, 0; (2589), 4, 1, 0; (2788), 9, 3, 6; (3636), 4, 1, 0; (3694), 3, 1, 0; (4347), 17, 5, 8; (4538), 3, 1, 0; (4884), 6, 2, 2; (5246), 13, 4, 8; (5404), 4, 1, 0; (5878), 3, 1, 0; (6143), 10, 3, 3; (6436), 9, 3, 2; (6824), 9, 3, 6; (7566), 6, 2, 1; (8603), 7, 2, 1; (8768), 3, 1, 0; (9010), 6, 2, 7; (11367), 2, 1, 0; [249, 46, 9*, 1999/09/03–1999/09/12]

165 Piera Observatory, Barcelona

J. Guarro, Balmes 2, E-08784 Piera, Barcelona, Spain

[jguarro@astro.gea.cesca.es]

0.40-m $f/2$ Schmidt + CCD

GSC

1955 RE₁, 2, 1, 0; 1969 QR, 1, 1, 0; 1975 YD, 2, 1, 0; 1980 KE, 2, 1, 0; 1981 EL₃₃, 2, 1, 0; 1983 RL, 2, 1, 0; 1986 TR, 2, 1, 0; (7536), 2, 1, 0; [15, 8, 0*, 1999/09/09–1999/09/12]

166 Úpice

L. Vyskočil, Havlíčkova 18, CZ-54401 Dvůr Králové, Czech Republic

[lvyskocil@post.cz]

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

GSC 1.2

1994 WH₃, 4, 2, 1; 1999 RW₄₅ *, 4, 2, 1; (1223), 4, 2, 1; (1382), 4, 2, 1; (1383), 4, 2, 1; (1811), 4, 2, 1; (1835), 4, 2, 1; (2385), 4, 2, 1; [32, 8, 1*, 1999/09/12–1999/09/14]

250 Hubble Space Telescope

M. McMaster, Space Telescope Science Institute, 3700 San Martin Drive,

Baltimore, MD 21218, U.S.A. [mcmaster@stsci.edu]

Observer K. Noll

Measurers R. W. Evans, K. R. Stapelfeldt

2.4-m reflector + $f/28.3$ CCD, 2.4-m reflector + $f/12.9$ CCD

1999 NJ₆₄, 22, 1, 0; [22, 1, 0*, 1999/07/25]

292 Burlington

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

0.30-m Schmidt-Cassegrain + focal reducer + CCD

GSC

1999 RS₁₂₅, 3, 1, 0; [3, 1, 0*, 1999/08/17]

322 Perth Observatory, Bickley-MCT

J. Biggs, Perth Observatory, Bickley, WA 6076, Australia

[jamieb@calm.wa.gov.au]

0.25-m $f/4.5$ reflector + CCD

GSC

1986 QY₂, 3, 1, 0; 1995 YV₃, 3, 1, 0; 1999 HX₂, 3, 1, 0; 1999 JO₈, 5, 2, 17; 1999 OS₃, 6, 2, 17; 1999 RQ₂₈, 3, 1, 0; 1999 RQ₃₆, 6, 1, 0; 1999 RY₁₃₃, 3, 1, 0; (2161), 3, 1, 0; (11363), 3, 1, 0; [38, 10, 0*, 1999/08/31–1999/09/17]

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 X. Zhou, X. M. Teng, X. Y. Li, J. Zhu, Z. Y. Zheng, Y. H. Li

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

0.60-m Schmidt + CCD

1978 ST₇, 9, 2, 3; 1978 VM₁₁, 3, 1, 0; 1981 DA₂, 3, 1, 0; 1992 RT₅, 3, 1, 0; 1993 FZ₂₆, 3, 1, 0; 1993 FA₄₆, 3, 1, 0; 1994 AB₈, 3, 1, 0; 1994 JN, 6, 2, 3; 1995 SU₅, 3, 1, 0; 1996 HZ₂₁, 6, 1, 0; 1996 TJ₆, 3, 1, 0; 1996 TL₆, 4, 1, 0; 1996 TR₁₃, 3, 1, 0; 1996 VT₃₁, 3, 1, 0; 1996 VB₃₈, 6, 2, 2;

1996 VD₃₈, 4, 1, 0; 1996 WM₃, 3, 1, 0; 1996 XT₂₆, 3, 1, 0; 1997 BV₂, 3, 1, 0; 1997 LH₉, 3, 1, 0; 1997 SW, 3, 1, 0; 1997 UF₁₁, 4, 1, 0; 1997 UB₂₁, 3, 1, 0; 1997 WC₃₂, 3, 1, 0; 1997 XQ₁₃, 3, 1, 0; 1998 BS₄, 3, 1, 0; 1998 EC₉, 3, 1, 0; 1998 EF₉, 4, 1, 0; 1998 FF₁₀, 6, 2, 10; 1998 FL₇₄, 3, 1, 0; 1998 FU₁₀₂, 4, 1, 0; 1998 FM₁₂₁, 6, 2, 1; 1998 FO₁₃₀, 3, 1, 0; 1998 HY₄₄, 3, 1, 0; 1998 KF₁₀, 4, 1, 0; 1998 KC₃₂, 3, 1, 0; 1998 SK₂, 3, 1, 0; 1998 UG₃₂, 6, 2, 32; 1998 WX₁₇, 3, 1, 0; 1998 WY₁₇, 3, 1, 0; 1999 ET, 10, 3, 39; 1999 HC₈, 6, 2, 11; 1999 NG₉, 3, 1, 0; 1999 NJ₂₀, 3, 1, 0; 1999 NW₅₀, 4, 1, 0; 1999 NK₅₃, 4, 1, 0; 1999 QP₂ *, 9, 3, 7; 1999 RQ₃₆, 3, 1, 0; 1999 RT₁₁₇, 6, 2, 2; 1999 RK₁₅₅, 6, 2, 7; 1999 RA₁₅₆, 6, 2, 6; 1999 RC₁₅₆, 6, 2, 7; 1999 RO₂₁₃ *, 6, 2, 5; 5021 P-L, 3, 1, 0; 3162 T-2, 3, 1, 0; (3661), 6, 2, 5; (4147), 15, 4, 11; (7746), 6, 2, 5; [255, 58, 2*, 1995/07/16–1999/09/19]

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 LF₆, 3, 1, 0; 1999 ND₄₃, 3, 1, 0; 1999 RE₂₁, 11, 4, 39; [17, 3, 0*, 1999/08/11–1999/09/27]

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 PT₄, 5, 2, 8; [5, 1, 0*, 1999/09/03–1999/09/11]

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

1989 UR, 3, 1, 0; 1995 GN, 3, 2, 1; 1995 SO₂, 3, 2, 3; 1995 YZ₁, 2, 1, 0; 1997 US₉, 3, 1, 0; 1998 QR₅₂, 2, 1, 0; 1998 RO₁, 3, 1, 0; 1999 HW₂, 3, 1, 0; 1999 HX₂, 3, 1, 0; 1999 LF₆, 3, 1, 0; 1999 ND₄₃, 3, 1, 0; 1999 OP₃, 3, 1, 0; 1999 PJ₁, 3, 1, 0; 1999 QJ, 3, 1, 0; 1999 RU₂, 3, 1, 0; 1999 RV₂, 3, 1, 0; 1999 RH₂₇, 3, 1, 0; 1999 RN₂₈, 3, 1, 0; 1999 RQ₂₈, 3, 1, 0; 1999 RR₂₈, 3, 1, 0; 1999 RD₃₂, 3, 1, 0; [61, 21, 0*, 1999/09/08–1999/09/12]

365 Kashiara

F. Uto, 12-1 Shirakashi Cho 7 Chome, Kashiara, Nara-Ken, 634 Japan

[nag01736@niftyserve.or.jp]

0.28-m $f/6.3$ refractor + CCD

GSC

1997 FK₄, 4, 2, 3; 1999 RE₃₇ *, 4, 2, 3; [8, 2, 1*, 1999/09/09–1999/09/12]

372 Geisei

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

0.60-m $f/3.5$ reflector

GSC

(1863), 1, 1, 0; [1, 1, 0*, 1999/08/21]

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

1985 CD, 1, 1, 0; 1995 UG, 2, 1, 0; 1995 UF₆, 3, 1, 0; 1995 WV₃, 3, 1, 0; 1995 WH₁₇, 1, 1, 0; 1995 YN₄, 3, 1, 0; 1996 QG₁, 2, 1, 0; 1996 VW, 4, 2, 7; 1996 XU₃₀, 2, 1, 0; 1997 EQ₂₅, 4, 2, 8; 1999 QT₂ *, 7, 2, 5; 1999 QU₂ *, 5, 2, 5; 1999 RD₁, 4, 1, 0; 1999 RM₃, 5, 2, 9; 1999 RE₄₀ *, 4, 2, 1; [50, 15, 3*, 1999/04/16–1999/09/19]

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 RD₃₇ *, 7, 4, 8; [7, 1, 1*, 1999/09/09–1999/09/17]

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

1986 GD, 2, 1, 0; [2, 1, 0*, 1992/11/18]

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

1997 US₉, 3, 1, 0; 1998 XK₆₃, 4, 1, 0; 1999 CP₃, 4, 1, 0; 1999 JD₈, 3, 1, 0; 1999 NZ₄, 6, 2, 11; 1999 OP₃, 6, 2, 11; 1999 OR₃, 3, 1, 0; 1999 PJ₁, 3, 1, 0; 1999 QJ, 3, 1, 0; 1999 RB₁₉, 4, 1, 0; 1999 RR₂₈, 4, 1, 0; 1999 RA₃₂, 4, 1, 0; 1104 T-2, 4, 1, 0; [51, 13, 0*, 1998/11/28–1999/09/09]

413 Siding Spring

R. H. McNaught, Anglo-Australian Observatory, Coonabarabran, NSW 2357, Australia [rmn@aaocbn2.aao.gov.au] (1)

A. Boattini, Istituto di Astrofisica Spaziale, Via Fosso del Cavaliere, I-00133 Rome, Italy [boattini@ias.rm.cnr.it] (6)

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

Observers R. H. McNaught, K. S. Russell

Measurers R. H. McNaught, O. Hernius, A. Boattini, G. Forti, M. Tombelli, L. Tesi

1.2-m U.K. Schmidt, 1.0-m $f/8$ reflector + CCD

USNO-A2.0, GSC-ACT, PPM

{1} 1988 PD₁, 4, 2, 1; 1992 JG, 3, 1, 0; 1993 HA, 3, 1, 0; 1994 TF₂, 2, 1, 0; 1994 WZ₂, 4, 2, 1; 1995 YV₃, 2, 1, 0; 1997 GO₂₇, 5, 2, 2; 1998 RO₁, 2, 1, 0; 1998 WM, 5, 2, 19; 1998 YN₁, 2, 1, 0; 1999 BN₃₃, 3, 2, 1; 1999 CU₃, 2, 1, 0; 1999 CW₈, 2, 1, 0; 1999 CF₉, 3, 1, 0; 1999 DJ₄, 6, 2, 2; 1999 DB₇, 3, 1, 0; 1999 FP₁₉, 2, 1, 0; 1999 FN₅₃, 6, 3, 19; 1999 JB, 2, 1, 0; 1999 JD₆, 5, 2, 1; 1999 JT₆, 3, 1, 0; 1999 JO₈, 4, 2, 14; 1999 KV₄, 3, 1, 0; 1999 LT, 2, 1, 0; 1999 LN₂₈, 2, 1, 0; 1999 LD₃₀, 4, 2, 4; 1999 LD₃₁, 3, 1, 0; 1999 LE₃₁, 3, 1, 0; 1999 ML, 4, 2, 20; 1999 NZ₄, 2, 1, 0; 1999 OQ₃, 2, 1, 0; 1999 OW₃, 2, 1, 0; 1999 PK, 2, 1, 0; 1999 PL₁, 2, 1, 0; 1999 PM₁, 5, 2, 19; 1999 PO₁, 4, 2, 18; 1999 QJ, 8, 4, 19; 1999 RM₂₈ *, 10, 5, 17; 1999 RO₃₆, 2, 1, 0; 1999 RQ₃₆, 2, 1, 0; 1999 RD₄₂ *, 6, 3, 5; 1999 RZ₄₂ *, 4, 2, 2; 1999 RA₄₃ *, 6, 3, 15; 1999 RB₄₃ *, 4, 2, 2; 1999 RC₄₃ *, 6, 3, 7; 1999 RD₄₃ *, 7, 3, 5; 1999 RF₄₄, 3, 1, 0; 1999 RJ₄₅ *, 13, 4, 7; 1999 RK₄₅, 4, 1, 0; 1999 SF₁, 2, 1, 0; 1999 SL₁, 3, 1, 0; 2779 P-L, 2, 1, 0; (3753), 2, 2, 2; (4953), 2, 1, 0; (5131), 2, 1, 0; (5604), 2, 1, 0; (5786), 4, 2, 19; (11311), 3, 1, 0; [210, 58, 8*, 1990/09/23–1999/09/20]

{6} 1995 KN, 4, 2, 80; 1995 UP₆, 2, 1, 0; 1996 PJ₅, 2, 1, 0; 1996 RD₄, 2, 1, 0; 1997 BC₉, 1, 1, 0; 1997 CA₁₇, 2, 1, 0; 1997 GR₅, 2, 1, 0; 1997 UB₁, 2, 1, 0; 1998 BH₁₀, 4, 2, 1912; 1998 BB₄₄, 2, 1, 0; 1999 HY₂, 4, 2, 2509; [27, 11, 0*, 1977/07/21–1992/05/24]

{8} 1993 FX₂₁, 1, 1, 0; 1998 HB₉₇, 1, 1, 0; 1998 QL₂₄, 1, 1, 0; 1998 SP₄₂, 1, 1, 0; 1999 NJ₅₄, 1, 1, 0; 4052 P-L, 1, 1, 0; 3487 T-3, 1, 1, 0; [7, 7, 0*, 1993/04/16–1993/04/18]

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, ACT

1997 AR₁₆, 3, 1, 0; [3, 1, 0*, 1998/07/04]

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

1992 UD₂, 3, 1, 0; 1995 SO₅, 7, 3, 8; 1995 YV₃, 3, 1, 0; [13, 3, 0*, 1999/09/03–1999/09/11]

426 Woomera

F. B. Zoltowski, 10 Gundawarra St., P.O. Box 84, Woomera, SA 5720, Australia

[fbzolt@CompuServe.com]

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

USNO-SA2.0

1981 SD₂, 6, 2, 2; 1998 FK₁, 5, 2, 5; 1998 FZ₁₄, 6, 2, 2; 1998 GG₁, 6, 2, 2; 1998 GH₁, 6, 2, 2; 1998 HL₅₂, 6, 2, 5; 1998 KL, 6, 2, 5; 1999 ME₁, 4, 2, 1; 1999 NJ₆₄, 6, 1, 0; 1999 PD, 10, 3, 27; 1999 PH₄, 6, 2, 1; 1999 RB₁₉, 3, 1, 0; 1999 RG₂₈, 6, 2, 1; 1999 RK₂₈, 6, 2, 1; 1999 RL₂₈, 3, 1, 0; 1999 RM₂₈, 8, 3, 11; 1999 RN₂₈, 3, 1, 0; 1999 RQ₂₈, 6, 2, 1; 1999 RR₂₈, 3, 1, 0; 1999 RX₃₁, 6, 2, 1; 1999 RY₃₁, 6, 2, 1; 1999 RA₃₂, 8, 3, 2; 1999 RO₃₆, 3, 1, 0; 1999 RP₃₆, 3, 1, 0; 1999 RQ₃₆, 3, 1, 0; 1999 RU₃₆ *, 9, 4, 6; 1999 RV₃₆ *, 9, 3, 5; 1999 RF₄₄ *, 9, 3, 7; 1999 RJ₄₅, 3, 1, 0; 1999 RK₄₅, 3, 1, 0; 1999 RL₄₅, 3, 1, 0; 1999 RM₄₅, 3, 1, 0; 1999 SL₁ *, 5, 2, 4; (7267), 5, 2, 1; [183, 34, 4*, 1999/08/10–1999/09/20]

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

1998 FS₇₅, 4, 2, 1; 1998 FM₁₂₆, 2, 2, 2; 1998 HW₁₀₁, 4, 2, 8; 1998 KH₅₈, 4, 2, 1; 1998 OH₁₂, 4, 2, 1; 1998 OM₁₂, 2, 1, 0; 1998 PO₁, 2, 1, 0; 1999 GK₄, 3, 1, 0; 1999 HX, 2, 1, 0; 1999 HX₂, 2, 1, 0; 1999 KU₄, 3, 1, 0; 1999 LN₂₈, 2, 1, 0; 1999 MB, 1, 1, 0; 1999 MO, 2, 1, 0; 1999 MP, 2, 1, 0; 1999 MQ, 1, 1, 0; 1999 MR, 2, 1, 0; 1999 NJ, 2, 2, 4; 1999 NK, 2, 1, 0; 1999 NP, 2, 1, 0; 1999 ND₁, 1, 1, 0; 1999 NK₄, 1, 1, 0; 1999 NM₄, 2, 1, 0; 1999 NN₄, 2, 1, 0; 1999 OM, 2, 2, 2; 1999 OD₁, 2, 2, 2; 1999 OE₁, 2, 2, 1; 1999 OO₁, 2, 1, 0; 1999 PE, 3, 2, 12; 1999 PF, 4, 2, 12; 1999 PG, 4, 2, 12; 1999 PR₁, 1, 1, 0; 1999 PU₁, 4, 2, 11; 1999 PV₁, 4, 2, 14; 1999 PZ₁, 4, 2, 3; 1999 PA₂, 2, 1, 0; 1999 PB₂, 4, 2, 2; 1999 PC₂, 4, 2, 14; 1999 PA₄, 3, 2, 1; 1999 PB₄, 4, 2, 16; 1999 PD₄, 3, 2, 12; 1999 PE₄, 3, 2, 12; 1999 PH₄, 4, 2, 13; 1999 PO₄, 6, 3, 16; 1999 PP₄, 6, 3, 16; 1999 PU₄, 4, 2, 12; 1999 RU *, 12, 6, 15; 1999 RV₂, 2, 1, 0; 1999 RW₂ *, 6, 3, 4; 1999 RB₁₉, 4, 2, 2; 1999 RG₂₈, 2, 1, 0; 1999 RK₂₈, 1, 1, 0; 1999 RM₂₈, 1, 1, 0; 1999 RQ₂₈, 4, 2, 9; 1999 RR₂₈, 2, 1, 0; 1999 RX₃₁, 4, 2, 3; 1999 RP₃₆, 7, 3, 7; 1999 RQ₃₆, 21, 7, 11; 1999 RV₃₈ *, 6, 3, 7; 1999 RW₃₈ *, 7, 4, 7; 1999 RX₃₈ *, 8, 4, 6; 1999 RY₃₈ *, 8, 4, 6; 1999 RZ₃₈ *, 10, 5, 6; 1999 RA₃₉ *, 7, 4, 6; 1999 RE₄₃ *, 4, 2, 1; 1999 RG₄₄ *, 7, 4, 4; 1999 RH₄₄ *, 9, 4, 4; 1999 RJ₄₅, 7, 3, 3; 1999 RK₄₅, 9, 4, 6; 1999 SL *, 8, 4, 5; (4953), 2, 1, 0; (5892), 2, 1, 0; (6719), 2, 1, 0; (11405), 2, 1, 0; [293, 74, 12*, 1999/09/03–1999/09/24]

429 Hawker

J. B. Child, 64 Woolner Circuit, Hawker, ACT 2614, Australia

[jbchild@dynamite.com.au]

Observers J. B. Child, E. Bek

0.32-m $f/4.8$ reflector + CCD

GSC-1.2

1996 PA₇, 2, 1, 0; [2, 1, 0*, 1999/09/11]

432 Boambee

V. A. Gardiner, 44 Shaws Close, Boambee, NSW 2452, Australia

[vgardi@chc.net.au]

0.20-m Schmidt-Cassegrain + CCD

GSC

1995 YV₃, 3, 3, 2; (599), 1, 1, 0; (617), 2, 2, 1; (705), 2, 2, 1; (2967), 1, 1, 0; (3266), 2, 2, 1; (4315), 2, 2, 1; [13, 7, 0*, 1999/09/12–1999/09/16]

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, R. Greatrex, M. Arthur, T. List

0.50-m $f/6.4$ Cassegrain reflector + CCD

USNO-A2.0

1998 DT₁₀, 3, 1, 0; 1999 QG, 13, 4, 25; 1999 RB *, 15, 5, 25; 1999 RM₁ *, 9, 3, 23; 1999 RQ₃₆, 5, 1, 0; [45, 5, 2*, 1999/09/02–1999/09/27]

468 Astronomical Observatory, Campo Catino

F. Mallia, Via dei Siculi 37, I-04100 Latina, Italy [pa0115@panservice.it]

Observers G. Masi, M. Di Sora, F. Mallia

0.25-m $f/3$ reflector + CCD

GSC

1990 RA₃, 3, 1, 0; 1997 HE₁₄, 3, 1, 0; 1999 RG₂₂, 3, 1, 0; 1999 RQ₃₂ *, 7, 3, 8; 1999 RC₃₄ *, 4, 2, 7; 1999 RR₃₄ *, 4, 2, 7; [24, 6, 3*, 1999/09/10–1999/09/18]

470 Ceccano

G. Masi, Via Madonna de Loco 47, I-03023 Ceccano (FR), Italy

[gianmasi@fr.flashnet.it]

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

USNO-A2.0

1997 EK₈, 2, 1, 0; 1999 PM, 3, 1, 0; 1999 PO₃, 3, 1, 0; 1999 QV₁, 12, 4, 10; 1999 RA *, 20, 6, 10; 1999 RN *, 11, 5, 9; 1999 RS₂ *, 7, 3, 2; 1999 RB₁₉, 2, 1, 0; 1999 RQ₃₂, 4, 2, 6; 1999 RC₃₄, 4, 2, 1; 1999 RR₃₄, 4, 2, 1; 1999 RL₃₅ *, 7, 3, 2; (699), 2, 1, 0; [81, 13, 4*, 1999/09/01–1999/09/26]

540 Linz

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

0.30-m $f/5.2$ Schmidt Cassegrain + CCD

USNO-A2.0

1999 LF₆, 3, 1, 0; 1999 ND₄₃, 9, 3, 3; 1999 RB₃₂, 11, 3, 3; 1999 RK₃₃, 7, 2, 2; [30, 4, 0*, 1999/09/10–1999/09/14]

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

1985 UJ₃, 3, 1, 0; 1993 OR₈, 3, 1, 0; 1995 UY₁, 2, 1, 0; 1995 WT₄, 4, 1, 0; 1999 QC, 4, 1, 0; 1999 RJ₂₀, 2, 1, 0; 1999 RA₂₈ *, 14, 5, 7; 1999 RR₃₂ *, 11, 4, 4; 1999 RA₃₇ *, 6, 3, 2; 1999 RB₃₇ *, 7, 3, 2; 1999 RC₃₇ *, 7, 3, 2; 1999 RJ₇₆, 2, 1, 0; 1999 RF₁₈₃, 1, 1, 0; 1999 RL₁₈₃, 2, 1, 0; 1051 T-1, 2, 1, 0; (3495), 2, 1, 0; (4249), 2, 1, 0; (5503), 8, 3, 5; (6438), 2, 1, 0; [84, 19, 5*, 1999/08/06–1999/09/14]

557 Ondřejov

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

Observers P. Pravec, L. Šarounová, M. Wolf, P. Kušnirák

0.65-m $f/3.6$ reflector + CCD

USNO-SA1.0, USNO-SA2.0

1979 QM₃, 4, 1, 0; 1986 PY, 3, 1, 0; 1989 GS₄, 7, 2, 1; 1989 VA, 3, 1, 0; 1995 OJ, 5, 2, 2; 1995 PG, 5, 2, 1; 1995 SP, 4, 1, 0; 1995 SJ₁, 5, 2, 1; 1995 SM₁, 6, 2, 1; 1995 SK₃, 6, 2, 4; 1996 BB₁, 3, 1, 0; 1996 EX₁, 7, 2, 12; 1996 FR₁, 8, 2, 2; 1996 OO, 7, 2, 1; 1997 AP₁₀, 4, 1, 0; 1997 CB, 3, 1, 0; 1997 EL₁₁, 5, 2, 2; 1997 JD, 5, 2, 1; 1997 JO, 6, 2, 1; 1997 TT₉, 8, 2, 1; 1997 VV₁, 6, 2, 1; 1998 DG₂₀, 4, 2, 3; 1998 FE₂, 6, 2, 2; 1998 FC₃, 5, 2, 1; 1998 FF₃, 5, 2, 1; 1998 FD₇₃, 4, 2, 1; 1998 HH₅₅, 8, 2, 1; 1998 KU₅₁, 3, 1, 0; 1998 OZ₄, 4, 2, 1; 1998 QS₁, 5, 2, 4; 1998 QO₄, 4, 2, 1; 1998 QR₅₂, 3, 1, 0; 1998 RM, 4, 2, 1; 1998 SD₁₅, 2, 1, 0; 1998 SJ₁₀₅, 2, 1, 0; 1998 UL, 4, 2, 2; 1998 XS₁₆, 3, 1, 0; 1999 LF₆, 5, 1, 0; 1999 ML, 3, 1, 0; 1999 ND₄₃, 5, 1, 0; 1999 NR₅₂, 13, 3, 2;

1999 OQ, 6, 2, 1; 1999 OQ₃, 3, 1, 0; 1999 OR₃, 5, 1, 0; 1999 OW₃, 3, 1, 0; 1999 PA₁, 2, 1, 0; 1999 PB₁, 7, 3, 7; 1999 PC₁, 5, 2, 2; 1999 PP₁, 9, 3, 10; 1999 PX₁, 7, 2, 1; 1999 PH₃, 4, 2, 1; 1999 PF₃, 9, 3, 2; 1999 PS₃, 4, 1, 0; 1999 PV₄, 11, 4, 10; 1999 PW₄, 9, 3, 12; 1999 PB₅, 9, 4, 9; 1999 QO, 4, 2, 1; 1999 QR₁, 7, 3, 7; 1999 QZ₁, 12, 5, 12; 1999 QA₂, 5, 2, 3; 1999 QG₂, 11, 4, 20; 1999 QK₂ *, 7, 2, 1; 1999 QL₂ *, 13, 4, 5; 1999 QM₂ *, 19, 6, 11; 1999 QR₂ *, 14, 5, 13; 1999 RE *, 13, 5, 10; 1999 RO *, 10, 4, 9; 1999 RP *, 11, 4, 8; 1999 RQ *, 13, 5, 8; 1999 RR *, 12, 4, 9; 1999 RS *, 11, 5, 16; 1999 RG₁ *, 11, 4, 8; 1999 RS₂, 3, 1, 0; 1999 RU₂, 10, 3, 3; 1999 RV₂, 8, 3, 2; 1999 RJ₃ *, 9, 4, 8; 1999 RK₃ *, 9, 4, 7; 1999 RQ₁₂, 8, 2, 1; 1999 RB₁₉, 14, 3, 2; 1999 RH₂₇, 7, 2, 2; 1999 RJ₂₇, 4, 1, 0; 1999 RG₂₈, 4, 1, 0; 1999 RH₂₈, 5, 2, 1; 1999 RK₂₈, 4, 2, 1; 1999 RL₂₈, 3, 1, 0; 1999 RN₂₈, 9, 3, 7; 1999 RP₂₈, 11, 3, 2; 1999 RQ₂₈, 3, 1, 0; 1999 RR₂₈, 6, 2, 1; 1999 RS₂₈ *, 14, 4, 8; 1999 RO₃₁ *, 9, 3, 8; 1999 RP₃₁ *, 9, 3, 6; 1999 RQ₃₁ *, 12, 4, 8; 1999 RR₃₁ *, 6, 3, 4; 1999 RU₃₁ *, 17, 5, 7; 1999 RY₃₁, 5, 2, 2; 1999 RA₃₂, 7, 2, 1; 1999 RB₃₂, 3, 1, 0; 1999 RC₃₂, 3, 1, 0; 1999 RD₃₂, 6, 2, 2; 1999 RT₃₂ *, 13, 4, 4; 1999 RE₃₃, 3, 1, 0; 1999 RC₃₃, 6, 3, 3; 1999 RJ₃₃, 4, 1, 0; 1999 RK₃₃, 3, 1, 0; 1999 RS₃₄ *, 13, 5, 9; 1999 RT₃₄ *, 11, 4, 4; 1999 RU₃₄ *, 11, 4, 5; 1999 RV₃₄ *, 13, 4, 4; 1999 RW₃₄ *, 13, 4, 5; 1999 RV₃₅ *, 10, 3, 3; 1999 RW₃₅ *, 19, 6, 13; 1999 RX₃₅ *, 10, 4, 10; 1999 RO₃₆, 5, 2, 1; 1999 RP₃₆, 8, 2, 1; 1999 RP₃₈ *, 14, 4, 6; 1999 RQ₃₈ *, 10, 3, 3; 1999 RH₄₀ *, 12, 3, 2; 1999 RJ₄₀ *, 12, 3, 2; 1999 RY₄₁, 4, 1, 0; 1999 RE₄₂ *, 7, 2, 1; 1999 RF₄₂ *, 9, 3, 8; 1999 RG₄₂ *, 16, 3, 6; 1999 RH₄₂ *, 13, 4, 8; 1999 RK₄₃ *, 5, 2, 1; 1999 RL₄₃ *, 12, 4, 7; 1999 RM₄₃ *, 17, 5, 9; 1999 RN₄₃ *, 7, 2, 1; 1999 RX₄₄ *, 7, 2, 5; 1999 RK₄₅, 5, 1, 0; 1999 RL₄₅, 8, 2, 1; 1999 RM₄₅, 6, 2, 1; 1999 RN₄₅, 3, 1, 0; 1999 RV₁₀₉, 11, 3, 6; 1999 RW₁₂₃, 7, 2, 1; 1999 RX₁₂₃, 5, 2, 1; 1999 RO₁₉₀ *, 23, 6, 9; 1999 RP₂₁₃ *, 12, 4, 6; 1999 RQ₂₁₃ *, 6, 2, 4; 1999 SP₁ *, 8, 3, 2; 1999 SQ₁ *, 9, 3, 5; 1999 SR₁ *, 5, 2, 2; 1999 SS₁ *, 10, 3, 4; 1999 SK₂, 7, 2, 1; 1999 ST₂ *, 5, 2, 3; 1999 SU₂ *, 11, 3, 3; 1999 SV₂ *, 5, 2, 2; 1999 SW₂ *, 5, 2, 1; 4221 T-3, 5, 2, 1; (267), 2, 1, 0; (604), 2, 1, 0; (1863), 10, 2, 6; (2321), 4, 1, 0; (2439), 2, 1, 0; (2507), 3, 1, 0; (5290), 4, 1, 0; (5408), 3, 1, 0; (5786), 3, 1, 0; (6239), 4, 1, 0; (6491), 2, 1, 0; (6905), 3, 1, 0; (7613), 3, 1, 0; (8494), 4, 1, 0; (9057), 3, 1, 0; [1171, 164, 52*, 1998/09/16–1999/09/25]

560 Madonna di Dossobuono

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

[astrofil@astbo1.bo.cnr.it]

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

0.40-m $f/3.5$ reflector + CCD

GSC

1984 HH₁, 9, 3, 2; 1998 FH₇₅, 9, 3, 2; 1999 RA₃₆ *, 6, 2, 2; (6206), 4, 1, 0; [28, 4, 1*, 1999/09/05–1999/09/12]

561 Piskésető

J. Kelemen, Konkoly Observatory, P.O. Box 67, H-1525 Budapest, Hungary

[kelemen@ogyalla.konkoly.hu]

Observers J. Kelemen, N. Tibor

0.60-m Schmidt telescope + CCD

USNO-A2.0

1997 VP₂, 8, 2, 3; 1997 YY₁, 8, 2, 3; 1999 FW₃₂, 7, 2, 3; (11047), 4, 1, 0; (11352), 8, 2, 3; [35, 5, 0*, 1999/05/16–1999/05/19]

565 Bassano Bresciano

U. Quadri, Osservatorio di Bassano Bresciano, Via S. Michele 4, I-25020 Bassano Bresciano (BS), Italy [astrofil@astbo1.bo.cnr.it]

Observers U. Quadri, L. Strabla

0.40-m $f/2.5$ Schmidt + CCD

GSC

4013 P-L, 2, 1, 0; [2, 1, 0*, 1993/10/15]

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

1977 CP, 3, 1, 0; 1978 SH₇, 3, 1, 0; 1979 HN₅, 3, 1, 0; 1981 EQ₁₁, 3, 1, 0; 1988 RC₁₁, 6, 2, 447; 1989 SO₁, 3, 1, 0; 1990 SE₈, 3, 1, 0; 1991 VM₁₂, 3, 1, 0; 1992 EU₁₀, 3, 1, 0; 1992 RN, 3, 1, 0; 1992 SY₁₂, 3, 1, 0; 1993 BG₃, 9, 3, 91; 1993 GN, 3, 1, 0; 1994 BG₄, 3, 1, 0; 1995 BP, 3, 1, 0; 1996 DO₆, 3, 1, 0; 1996 JW₁, 3, 1, 0; 1996 TX₃, 3, 1, 0; 1996 TJ₆, 3, 1, 0; 1996 TT₅₂, 3, 1, 0; 1996 WM₃, 3, 1, 0; 1997 MD₈, 3, 1, 0; 1997 TW₁₅, 6, 2, 37; 1997 UF₁₁, 3, 1, 0; 1998 CD₅, 6, 2, 32; 1998 DE₃₆, 3, 1, 0; 1998 EF₉, 6, 1, 0; 1998 EM₁₀, 3, 1, 0; 1998 EH₁₃, 3, 1, 0; 1998 EU₂₀, 3, 1, 0; 1998 FM₁₃, 3, 1, 0; 1998 FO₁₇, 3, 1, 0; 1998 FU₂₀, 3, 1, 0; 1998 FZ₂₂, 6, 2, 28; 1998 FK₂₅, 3, 1, 0; 1998 FM₂₈, 3, 1, 0; 1998 FG₅₇, 3, 1, 0; 1998 FD₆₁, 3, 1, 0; 1998 FW₁₀₀, 3, 1, 0; 1998 FK₁₀₄, 6, 2, 57; 1998 FV₁₀₇, 3, 1, 0; 1998 FL₁₁₆, 3, 1, 0; 1998 GW₁₀, 3, 1, 0; 1998 HN₈, 3, 1, 0; 1998 HK₁₃, 3, 1, 0; 1998 HB₃₉, 3, 1, 0; 1998 HJ₅₁, 3, 1, 0; 1998 HF₈₀, 3, 1, 0; 1998 HA₉₄, 3, 1, 0; 1998 HD₉₇, 3, 1, 0; 1998 HQ₁₀₁, 3, 1, 0; 1998 HU₁₀₉, 3, 1, 0; 1998 HG₁₁₁, 3, 1, 0; 1998 HN₁₁₉, 3, 1, 0; 1998 HK₁₃₅, 3, 1, 0; 1998 JL, 3, 1, 0; 1998 KW₉, 3, 1, 0; 1998 KF₁₄, 3, 1, 0; 1998 KY₂₇, 3, 1, 0; 1998 KZ₃₀, 3, 1, 0; 1998 KL₅₆, 9, 3, 501; 1998 KR₆₂, 3, 1, 0; 1998 MY₂₉, 3, 1, 0; 1998 QS₉₃, 3, 1, 0; 1998 QC₉₈, 3, 1, 0; 1998 RB₆₂, 3, 1, 0; 1998 UK₆, 6, 2, 6; 1998 UA₂₃, 3, 1, 0; 1998 VP₄₄, 3, 1, 0; 1998 WK₃₂, 3, 1, 0; 1999 AU₉, 3, 1, 0; 1999 JP₇₀, 3, 1, 0; 1999 JT₇₁, 3, 1, 0; 1999 JD₉₁, 3, 1, 0; 1999 JT₁₂₆, 3, 1, 0; 1999 LE₁₀, 6, 2, 61; 1999 ND₉, 3, 1, 0; 1999 NL₃₉, 3, 1, 0; 1999 NT₅₃, 3, 1, 0; 1999 NF₅₅, 3, 1, 0; 1999 OS, 3, 1, 0; 1999 OV₁, 3, 1, 0; 1999 PA₂, 3, 1, 0; 1999 PL₄, 3, 1, 0; 1999 RD₃₇, 3, 1, 0; 2733 P-L, 3, 1, 0; 4275 P-L, 3, 1, 0; 3162 T-2, 3, 1, 0; 2031 T-3, 3, 1, 0; 3460 T-3, 3, 1, 0; [306, 90, 0*, 1995/12/21–1998/11/16]

568 Mauna Kea

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@cft.hawaii.edu] (3)

Observers C. Veillet (3), D. J. Tholen (2)

Measurers C. Veillet (3), D. J. Tholen (2), R. J. Whiteley (2)

3.6-m Canada-France-Hawaii Telescope + CCD, 2.24-m reflector + CCD

USNO-A2.0

{2} 1995 UU₆, 2, 1, 0; 1999 JD₁₃, 2, 1, 0; 1999 OW₃, 2, 1, 0; [6, 3, 0*, 1999/09/13]

{3} 1994 WT₃, 2, 1, 0; 1999 CX₁₀₉, 2, 1, 0; 1999 CL₁₅₄, 2, 1, 0; 1999 CL₁₅₅ *, 4, 2, 2; 1999 CM₁₅₅ *, 6, 3, 2; 1999 CN₁₅₅ *, 4, 2, 1; 1999 CO₁₅₅ *, 4, 2, 1; 1999 CP₁₅₅ *, 4, 2, 1; 6232 P-L, 2, 1, 0; (11332), 2, 1, 0; [32, 10, 5*, 1999/02/06–1999/03/10]

587 Sormano

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

Observers A. Testa, F. Manca, M. Cavagna, V. Giuliani, P. Chiavenna

0.5-m reflector + CCD

GSC

1996 VB₁, 4, 2, 1; 1996 XB₂, 2, 1, 0; 1998 HY₄₄, 3, 1, 0; 1999 LF₆, 2, 1, 0; 1999 NC₄₃, 1, 1, 0; 1999 ND₄₃, 4, 1, 0; 1999 OP₃, 3, 1, 0; 1999 PJ₁, 3, 1, 0; 1999 RB₃₂, 3, 1, 0; 1999 RC₃₂, 2, 1, 0; 1999 RD₃₂, 2, 1, 0; 1999 RJ₃₃, 1, 1, 0; 1999 RK₃₃, 6, 2, 6; [36, 13, 0*, 1995/11/14–1999/09/18]

589 Santa Lucia Stroncone

A. Vagnozzi, Via Santa Lucia 68, I-05039 Stroncone (Terni), Italy [vagnozzi@freenet.hut.fi]

Observers A. Vagnozzi, G. Bernabei, V. Risoldi, V. Scirri

0.50-m $f/2.8$ Ritchey-Chrétien + CCD

GSC

1995 SQ₂, 11, 3, 6; 1996 EG, 9, 3, 6; 1999 RC *, 15, 5, 6; [35, 3, 1*, 1999/09/01–1999/09/07]

595 Farra d'Isonzo

L. Bittesini, Via dei Conventi 10, I-34070 Farra D'Isonzo (GO), Italy [ccaf@tmedia.it]

Observers G. Lombardi, E. Pettarin, M. Spolaor, A. Toso, L. Bittesini, C. Tonini, L. Bianchini, W. Boschin, A. Olivieri

Measurers L. Drigo, G. Lombardi, M. Spolaor, E. Pettarin, C. Tonini, A. Toso

0.4-m $f/4.5$ reflector + CCD

GSC, USNO-SA1.0

1994 AJ₃, 4, 2, 1; 1994 BN₄, 4, 2, 1; 1994 EB, 4, 2, 2; 1994 LH, 4, 2, 1; 1995 JG, 4, 2, 1; 1998 FK₁₅, 4, 2, 6; 1999 NU, 4, 2, 2; 1999 NZ, 4, 2, 3; 1999 NA₁, 4, 2, 1; 1999 NF₅, 4, 2, 1; 1999 OH, 2, 1, 0; 1999 PJ₁, 3, 1, 0; 1999 QC, 2, 1, 0; 1999 RU₂, 9, 3, 7; 1999 RV₂, 7, 2, 7; 1999 RB₁₉, 5, 2, 2; 1999 RH₂₇, 2, 1, 0; 1999 RG₂₈, 2, 1, 0; 1999 RK₂₈, 6, 2, 1; 1999 RL₂₈, 4, 1, 0; 1999 RQ₂₈, 3, 1, 0; 1999 RR₂₈, 5, 2, 1; 1999 RS₃₁ *, 4, 2, 1; 1999 RX₃₁, 8, 2, 1; 1999 RY₃₁, 3, 1, 0; 1999 RB₃₂, 7, 2, 5; 1999 RC₃₂, 3, 1, 0; 1999 RD₃₂, 4, 1, 0; 1999 RG₃₃, 3, 1, 0; 1999 RK₃₃, 5, 1, 0; 1999 RP₃₆, 4, 2, 4; 1999 RQ₃₆, 8, 2, 4; 1999 RS₃₇ *, 7, 3, 3; 1999 RJ₄₅, 6, 2, 1; 1999 RK₄₅, 10, 3, 2; 1999 RM₄₅, 3, 1, 0; 1999 RN₄₅, 3, 1, 0; (2439), 3, 1, 0; (2507), 2, 1, 0; [173, 39, 2*, 1999/08/31–1999/09/16]

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

1981 EP₃₈, 3, 1, 0; 1995 KA₁, 3, 1, 0; 1998 DP₁₃, 6, 2, 1; 1999 QC, 4, 1, 0; 1999 RF₂₈ *, 6, 2, 1; [22, 5, 1*, 1999/08/18–1999/09/18]

599 Campo Imperatore-CINEOS

A. Carusi, Istituto di Astrofisica Spaziale, Via Fosso del Cavaliere, I-00133 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 FV₇₄, 2, 1, 0; 1999 NU₁₁, 2, 1, 0; [4, 2, 0*, 1996/11/13–1997/03/17]

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

1998 KN₃₂, 2, 1, 0; 9548 P-L, 2, 1, 0; [4, 2, 0*, 1996/04/21–1996/10/23]

610 Pianoro

V. Goretta, Via Resistenza 93, I-40065 Pianoro (BO), Italy [astrofil@astbo1.bo.cnr.it]

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

GSC

1981 EE₄₇, 5, 1, 0; 1988 RZ₅, 5, 1, 0; 1988 VR₃, 5, 1, 0; 1989 RL, 5, 1, 0; 1989 SR, 5, 1, 0; 1989 UU₃, 5, 1, 0; 1990 SU₁₅, 5, 1, 0; 1991 LZ, 5, 1, 0; 1991 UL₃, 5, 1, 0; 1993 FO₃₆, 5, 1, 0; 1994 WG, 5, 1, 0; 1995 MB, 5, 1, 0; 1999 ML, 5, 1, 0; 1999 ND₄₃, 10, 2, 5; 1999 QJ, 20, 3, 5; (112), 8, 1, 0; (141), 5, 1, 0; (205), 5, 1, 0; (699), 42, 3, 14; (999), 5, 1, 0; (1863), 10, 2, 5; (1867), 5, 1, 0; (2259), 5, 1, 0; (2402), 5, 1, 0; (2853), 5, 1, 0; (2987), 5, 1, 0; (5535), 5, 1, 0; (5589), 5, 1, 0; (6206), 5, 1, 0; (6573), 5, 1, 0; (7772), 5, 1, 0; (8736), 5, 1, 0; (11263), 5, 1, 0; (11277), 5, 1, 0; [235, 34, 0*, 1999/09/03–1999/09/21]

611 Starkenburg Sternwarte, Heppenheim

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

Observers M. Busch, S. Kluegl, R. Stoss, E. Schwab, J. Rothermel, P. Geffert, A. Seib

Measurers R. Stoss, M. Busch, S. Kluegl, E. Schwab, P. Geffert

0.30-m $f/6.3$ reflector + CCD, 0.45-m $f/4.4$ reflector + CCD
USNO-A2.0

1995 WP₁₇, 8, 3, 10; 1996 UF, 3, 1, 0; 1998 DK₁, 3, 1, 0; 1998 DB₃₆, 6, 2, 5; 1998 FM₁₂, 2, 1, 0; 1998 FK₆₃, 3, 1, 0; 1998 JE₄, 9, 3, 2; 1999 PO₃, 2, 1, 0; 1999 PG₆, 2, 1, 0; 1999 RM *, 17, 5, 10; 1999 RP₂₆, 7, 2, 1; 1999 RK₂₈, 3, 1, 0; 1999 RT₂₈ *, 10, 4, 5; 1999 RZ₃₁, 4, 1, 0; 1999 RB₃₂, 4, 1, 0; 1999 RC₃₂, 3, 1, 0; 1999 RW₃₃ *, 8, 4, 4; 1999 RJ₃₅ *, 11, 3, 2; 1999 RK₃₅ *, 9, 3, 2; 1999 RO₃₆, 3, 1, 0; 4764 P-L, 2, 1, 0; (4245), 3, 1, 0; (4371), 12, 4, 8; (6034), 10, 4, 7; [144, 24, 5*, 1999/09/02–1999/09/14]

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

1989 SP₁₁, 4, 1, 0; 1998 FV₁₅, 3, 1, 0; 1998 MN₄, 7, 2, 5; 1999 NE₅, 2, 1, 0; 1999 PZ, 3, 1, 0; 1999 RF₂₃, 6, 2, 7; 1999 RK₂₈, 3, 1, 0; 1999 RD₃₂, 3, 1, 0; 1999 RG₃₃, 4, 1, 0; 1999 RQ₃₆, 4, 1, 0; 1999 RJ₄₅, 3, 1, 0; (81), 3, 1, 0; [45, 12, 0*, 1999/09/01–1999/09/15]

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

1981 EQ₃₄, 8, 2, 1; 1994 PA₁₄, 16, 5, 8; 1995 QB₁₀, 9, 3, 2; 1996 TP₆₆, 5, 2, 4; 1998 FC₁₁₈, 7, 2, 2; 1998 HM₁₄₆, 6, 2, 1; 1998 KG₃₈, 7, 2, 3; 1999 OT, 9, 3, 8; 1999 OU, 16, 5, 9; 1999 QL, 11, 4, 8; 1999 RH₃ *, 14, 4, 3; 1999 RR₂₇, 12, 2, 3; 1999 RS₂₇, 6, 2, 3; 1999 RV₂₇, 11, 2, 3; 1999 RF₃₀, 10, 2, 2; 1999 RT₃₁ *, 6, 2, 3; 1999 RF₈₅, 10, 3, 7; 1999 RG₂₁₃ *, 12, 4, 4; 1999 RH₂₁₃ *, 11, 3, 3; 1999 RJ₂₁₃ *, 14, 4, 3; 1999 RK₂₁₃ *, 10, 3, 2; 1999 RL₂₁₃ *, 6, 2, 1; 1999 RM₂₁₃ *, 11, 2, 6; 1999 RN₂₁₃ *, 14, 3, 5; 1999 RQ₂₁₄ *, 7, 3, 2; 1999 SJ₁ *, 9, 2, 2; 1999 SN₂, 4, 1, 0; (11427), 6, 2, 1; [267, 28, 11*, 1999/09/02–1999/09/19]

627 Blauvac

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0.26-m $f/4.7$ reflector + CCD

GSC, USNO-SA1.0

1998 DJ₂₀, 6, 2, 1; 1999 QS₂ *, 8, 3, 4; 1999 RJ₁₄, 8, 3, 5; 1999 RV₃₁, 3, 1, 0; (162), 3, 1, 0; (1731), 3, 1, 0; (2717), 3, 1, 0; (3873), 6, 1, 0; (4026), 5, 2, 1; (4973), 6, 2, 1; [51, 10, 1*, 1999/08/29–1999/09/13]

628 Mülheim-Ruhr

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Observers A. Boeker, A. Martin

0.2-m Schmidt-Cassegrain + CCD

USNO-A2.0

1988 RM₃, 4, 1, 0; 1990 BO, 8, 2, 6; 1992 YY, 4, 1, 0; 1995 MB, 4, 1, 0; 1999 JL₈₁, 12, 3, 8; 1999 NT₁, 4, 1, 0; (11058), 3, 1, 0; (11171), 8, 2, 8; (11277), 4, 1, 0; [51, 9, 0*, 1999/09/02–1999/09/11]

629 JATE Observatory, Szeged

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

Observers K. Sárneczky, L. Kiss

0.28-m Schmidt-Cassegrain + CCD

GSC

1931 TC₂, 4, 1, 0; 1931 UB, 2, 1, 0; 1971 SB, 3, 1, 0; 1973 QR₁, 4, 1, 0; 1975 YD, 3, 1, 0; 1999 RQ₃₆, 10, 1, 0; (11405), 4, 1, 0; [30, 7, 0*, 1999/02/27–1999/09/14]

642 Oak Bay, Victoria

C. E. Spratt, 1431 St. Patrick Street, Victoria, BC VS8 4Y5, Canada

[cspratt@islandnet.com]

0.20-m $f/5.0$ Schmidt-Cassegrain + CCD

GSC

(699), 11, 5, 5; (779), 5, 2, 1; (895), 7, 3, 7; (1146), 5, 2, 1; (1367), 8, 3, 2; (2917), 4, 2, 2; [40, 6, 0*, 1999/09/08–1999/09/18]

643 OCA-Anza Observatory

M. White, 28089 Calle Valdes, Mission Viejo, CA 92692, U.S.A.

[minorwhite@email.msn.com]

Observers M. White, M. Collins

0.57-m Cassegrain reflector + CCD

GSC

1998 KO₃₁, 4, 2, 4; 1999 RO₃₃ *, 4, 2, 4; 1999 RP₃₃ *, 6, 3, 14; 1999 RQ₃₃ *, 6, 3, 14; 1999 RR₃₃ *, 6, 3, 14; 1999 RF₄₃ *, 4, 2, 4; 1999 RG₄₃ *, 6, 3, 14; 1999 RE₁₅₈, 2, 1, 0; 4661 P-L, 2, 1, 0; (8752), 2, 1, 0; [42, 10, 6*, 1999/09/04–1999/09/18]

649 Powell Observatory, Louisburg

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

[lrobinson@ix.netcom.com]

Observers L. Robinson, M. Cofer

Measurer L. Robinson

0.30-m Schmidt-Cassegrain + CCD

GSC-1.1

1978 VE₇, 2, 1, 0; 1997 CN, 2, 1, 0; 1998 JC₄, 3, 1, 0; 1998 KZ₄₆, 2, 1, 0; 1999 RB₃₅, 1, 1, 0; (29), 2, 1, 0; (179), 3, 1, 0; (219), 3, 1, 0; (227), 3, 1, 0; (334), 3, 1, 0; (372), 3, 1, 0; (405), 3, 1, 0; (485), 6, 2, 3; (625), 3, 1, 0; (696), 3, 1, 0; (737), 3, 1, 0; (743), 2, 1, 0; (752), 3, 1, 0; (872), 3, 1, 0; (893), 2, 1, 0; (1374), 3, 1, 0; (1731), 5, 2, 3; (1925), 3, 1, 0; (2428), 2, 1, 0; (3112), 3, 1, 0; (5144), 4, 2, 3; (5622), 3, 1, 0; (6002), 2, 1, 0; (8828), 2, 1, 0; [82, 29, 0*, 1999/08/29–1999/09/25]

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

USNO-A2.0

1989 UR, 3, 1, 0; 1997 US₉, 3, 1, 0; 1999 HY₁, 2, 1, 0; 1999 JU₆, 3, 1, 0; 1999 LY₅, 2, 1, 0; 1999 NZ₄, 6, 2, 2; 1999 ND₄₃, 3, 1, 0; 1999 OP₃, 3, 1, 0; 1999 PJ₁, 6, 2, 13; 1999 PS₃, 3, 1, 0; 1999 RK₁, 6, 2, 8; 1999 RL₁, 6, 2, 8; 1999 RB₂, 3, 1, 0; 1999 RC₂, 3, 1, 0; 1999 RU₂, 6, 2, 8; 1999 RV₂, 6, 2, 14; 1999 RH₂₇, 6, 2, 9; 1999 RJ₂₇, 9, 3, 6; 1999 RK₂₈, 3, 1, 0; 1999 RN₂₈, 3, 1, 0; 1999 RP₂₈, 6, 2, 1; 1999 RR₂₈, 9, 3, 6; 1999 RZ₃₁, 9, 3, 7; 1999 RA₃₂, 3, 1, 0; 1999 RB₃₂, 12, 4, 8; 1999 RC₃₂, 9, 3, 4; 1999 RD₃₂, 12, 4, 6; 1999 RG₃₃, 12, 5, 13; 1999 RH₃₃, 10, 4, 9; 1999 RK₃₃, 3, 1, 0; 1999 RO₃₆, 6, 2, 2; 1999 RP₃₆, 12, 4, 8; 1999 RK₄₅, 3, 1, 0; 1999 RL₄₅, 3, 1, 0; 1999 RM₄₅, 6, 2, 1; 1999 RN₄₅, 6, 2, 5; 1999 RU₁₉₂, 3, 1, 0; 1999 SK₁ *, 6, 2, 1; 1999 SK₂, 11, 3, 3; 1999 SL₂, 9, 3, 3; [235, 40, 1*, 1999/09/01–1999/09/22]

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 ND₄₃, 2, 1, 0; 1999 PJ₁, 3, 1, 0; 1999 RB₁₉, 3, 1, 0; 1999 RK₂₈, 4, 1, 0; 1999 RB₃₂, 8, 2, 1; 1999 RD₃₂, 3, 1, 0; 1999 RK₃₃, 5, 1, 0; 1999 RQ₃₆, 4, 1, 0; [32, 8, 0*, 1999/09/01–1999/09/12]

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 W. M. Owen, Jr., A. U. Tonomous

Measurer W. M. Owen, Jr.

0.61-m $f/16$ reflector + CCD

ACT

1999 JM₈, 3, 1, 0; (6), 3, 1, 0; (14), 2, 1, 0; (16), 6, 2, 1; (18), 2, 1, 0; (47), 2, 1, 0; (48), 13, 4, 5; (56), 7, 3, 3; (81), 12, 2, 1; (85), 4, 2, 3; (105), 17, 4, 5; (112), 7, 2, 3; (141), 4, 1, 0; (194), 7, 2, 1; (198), 5, 2, 1; (216), 1, 1, 0; (337), 6, 3, 3; (346), 6, 3, 5; (354), 8, 1, 0; (375), 8, 2, 3; (522), 3, 1, 0; (554), 2, 1, 0; (568), 7, 2, 3; (690), 2, 1, 0; (747), 4, 2, 1; (804), 4, 1, 0; (5535), 6, 2, 4; [151, 27, 0*, 1999/09/02–1999/09/07]

675 Palomar

A. Boattini, Istituto di Astrofisica Spaziale, Via Fosso del Cavaliere, I-00133 Rome, Italy [boattini@ias.rm.cnr.it] (1)

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@rulhl1.leidenuniv.nl] (4)

E. Bowell, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff, AZ 86001, U.S.A. [elgb@lowell.edu] (6)

9 = 6 + 3

Observers J. Brewer (1, L), T. Gehrels (4, L), D. J. Griffith (3, L), E. F. Helin (2, S), H. E. Holt (3, S), K. Lawrence (2, S), J. Mueller (1, L),

C. S. Shoemaker (3, S), E. M. Shoemaker (3, S)

Measurers A. Boattini (1), G. Forti (1), R. Gal (1), A. Milani (1), B. A. Skiff (6),

L. Tesi (1), M. Tombelli (1), C. J. van Houten (4), I. van Houten-

Groeneveld (4), A. Wisse (4)

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

{1} 1994 DG₄, 4, 2, 48; 1994 NE₂, 2, 1, 0; 1995 FS₂, 2, 1, 0; 1995 WL₈, 2, 1, 0; 1996 OE₂, 4, 2, 15706; 1996 PJ₅, 2, 1, 0; 1996 UL₁, 4, 2, 13000; 1997 UB₁, 2, 1, 0; 1998 BB₄₄, 4, 2, 13965; 1999 HY₂, 2, 1, 0; [28, 10, 0*, 1950/12/09–1995/10/18]

{2} 1993 UN₉ *, 3, 2, 1; 1993 UO₉ *, 3, 2, 1; 1997 NQ₃, 3, 2, 1; 1998 JK₃, 2, 1, 0; 1998 RA₆₀, 3, 2, 1; (4718), 3, 2, 1; (6211), 3, 2, 1; [20, 7, 2*, 1993/10/20–1994/10/10]

{3} 1998 HQ₁₉, 2, 1, 0; [2, 1, 0*, 1992/08/24]

{4} 2013 P-L *, 8, 8, 32; 2033 P-L *, 8, 8, 32; 2047 P-L *, 8, 8, 32; 2071 P-L *, 7, 7, 32; 2554 P-L *, 8, 8, 32; 2617 P-L *, 8, 8, 32; 2737 P-L *, 8, 8, 32; 2861 P-L *, 8, 4, 5; 3057 P-L *, 4, 4, 4; 3065 P-L *, 6, 6, 5; 4527 P-L *, 5, 3, 4; 4893 P-L *, 6, 5, 23; 5021 P-L *, 6, 5, 9; 6082 P-L *, 9, 8, 32; 6326 P-L *, 11, 7, 30; 6589 P-L *, 8, 8, 32; 6688 P-L *, 7, 7, 32; 9536 P-L *, 4, 4, 32; 1177 T-1 *, 6, 5, 9; 1276 T-1 *, 12, 8, 51; 2303 T-1 *, 5, 4, 8; 3195 T-1 *, 10, 8, 51; 1043 T-2 *, 12, 7, 16; 1114 T-2 *, 15, 8, 16; 1405 T-2 *, 15, 8, 16; 2027 T-2 *, 19, 8, 16; 2121 T-2 *, 15, 8, 16; 2243 T-2 *, 15, 8, 16; 2316 T-2 *, 8, 4, 6; 2414 T-2 *, 7, 4, 6; 3116 T-2 *, 15, 8, 16; 3144 T-2 *, 15, 8, 16; 3240 T-2 *, 29, 8, 16; 4110 T-2 *, 9, 5, 10; 4200 T-2 *, 15, 8, 16; 5089 T-2 *, 8, 4, 6; 5134 T-2 *, 14, 7, 15; 5163 T-2 *, 14, 7, 15; 5178 T-2 *, 12, 6, 11; 5366 T-2 *, 9, 5, 15; 1079 T-3 *, 9, 5, 11; 1118 T-3 *, 10, 6, 15; 4170 T-3 *, 13, 7, 15; 5019 T-3 *, 12, 6, 11; 5160 T-3 *, 10, 5, 10; 5278 T-3 *, 5, 3, 5; [467, 46, 46*, 1960/09/24–1977/10/22]

{6} 1997 MD₈, 2, 1, 0; 1998 VP₄₄, 2, 1, 0; [4, 2, 0*, 1950/04/22–1951/02/04]

{9} 1986 GD₂, 2, 1, 0; 1992 HA₂, 2, 1, 0; 1992 ST₁₇, 2, 1, 0; 1993 FU₃₅, 1, 1, 0; 1993 FU₄₁, 2, 1, 0; 1995 WK₇, 2, 1, 0; 1996 BP₃, 2, 1, 0; 1996 GG₁₇, 4, 2, 21; 1998 HA₁₁₆, 2, 1, 0; 1998 JL₃, 2, 1, 0; 1999 NG₉, 2, 1, 0; 6577 P-L, 2, 1, 0; 5082 T-3, 2, 1, 0; [27, 13, 0*, 1988/03/18–1994/11/07]

678 Fountain Hills

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

[cwjuels@futureone.com]

0.32-m $f/5.5$ reflector + CCD

GSC

1998 FD₆₂, 6, 2, 2; 1999 RT *, 16, 5, 14; 1999 RJ₁ *, 12, 5, 13; 1999 RD₂ *, 10, 4, 12; 1999 RE₂ *, 9, 3, 2; 1999 RX₂ *, 6, 2, 1; 1999 RF₃, 7, 2, 2; 1999 RM₁₄, 7, 2, 2; 1999 RO₁₄, 6, 2, 2; 1999 RA₂₃,

6, 2, 1; 1999 RC₂₈ *, 11, 5, 11; 1999 RD₂₈ *, 11, 4, 10; 1999 RE₂₈ *, 13, 4, 10; 1999 RL₃₃ *, 8, 3, 9; 1999 RK₃₆ *, 7, 2, 2; 1999 RL₃₆ *, 10, 4, 7; 1999 RJ₄₂ *, 8, 3, 5; 1999 RP₄₃ *, 9, 3, 5; 1999 RQ₄₃ *, 7, 3, 5; 1999 RG₄₅ *, 7, 2, 4; 1999 RJ₄₅, 3, 1, 0; 1999 RA₁₄₉, 6, 2, 4; 1999 RO₁₉₃ *, 9, 3, 13; (2888), 3, 1, 0; (3661), 2, 1, 0; (7304), 3, 1, 0; [202, 26, 16*, 1999/09/04–1999/09/27]

681 Calgary

G. W. Billings, 2320 Cherokee Dr NW, Calgary, Alberta T2L 0X7, Canada

[gbillings@talisman-energy.com]

0.36-m $f/7$ Schmidt-Cassegrain + CCD

GSC-1.2, USNO-A2.0

1980 FV₂, 4, 2, 1; 1980 PJ₁, 4, 2, 3; 1989 SC₄, 4, 2, 7; 1989 TW₄, 4, 2, 3; 1990 BF₄, 4, 2, 1; 1990 BO₆, 2, 2; 1990 BT₄, 4, 2, 1; 1990 OF₄, 4, 2, 3; 1991 PZ₁₂, 3, 2, 3; 1992 HG₄, 4, 2, 1; 1992 PE₃, 4, 2, 2; 1992 SQ₂₃, 7, 2, 3; 1992 UM₆, 4, 2, 6; 1992 WD₈, 5, 2, 1; 1992 YY₈, 8, 2, 2; 1993 PV₅, 4, 2, 3; 1994 UA₂, 4, 2, 1; 1994 VD₇, 4, 2, 2; 1994 WG₄, 4, 2, 3; 1995 MB₄, 4, 2, 2; 1996 AE₁, 6, 2, 2; 1996 BP₃, 4, 2, 1; 1997 FH₁, 4, 2, 3; 1998 FB₁₀, 5, 2, 1; 1998 FX₃₉, 7, 2, 1; 1998 HG₁₂₁, 3, 2, 1; 1999 RE₁, 10, 2, 2; 1999 RC₃₆, 8, 2, 2; 1999 RD₄₄ *, 9, 4, 5; 1999 RE₄₄ *, 12, 4, 5; 1999 ST₁ *, 4, 2, 1; 1999 SU₁ *, 6, 2, 1; 1222 T-1, 4, 2, 3; 1071 T-3, 4, 2, 6; 1168 T-3, 4, 2, 1; (2252), 4, 2, 3; [183, 36, 4*, 1999/09/05–1999/09/23]

682 Kanab

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

[mened@xpressweb.com]

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

GSC

1978 UL₄, 6, 2, 3; 1982 SC₇, 7, 2, 2; 1988 TE₆, 6, 2, 3; 1990 OB₅, 6, 2, 3; 1990 SU₁₅, 4, 1, 0; 1992 UP₈, 3, 1, 0; 1995 SE₄, 6, 2, 3; 1997 AN₂₁, 6, 1, 0; 1998 FN₁₁₈, 9, 2, 3; 1998 HW₁₇, 4, 2, 1; 1999 NM₂, 5, 1, 0; 1999 RB₃₉ *, 16, 5, 4; 1999 RE₅₀, 3, 1, 0; 1999 RY₅₇, 3, 1, 0; 1999 RN₁₄₉, 3, 1, 0; 9056 P-L, 13, 4, 4; (737), 11, 3, 6; (999), 4, 1, 0; (2041), 9, 3, 2; (2313), 3, 1, 0; (11263), 7, 2, 1; [134, 21, 1*, 1999/08/06–1999/09/16]

684 Prescott

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

[comba@northlink.com]

0.46-m $f/4.5$ reflector + CCD

GSC

1986 QX₁, 4, 2, 2; 1988 SN₂, 2, 1, 0; 1996 TD₇, 4, 2, 1; 1996 TO₆₆, 6, 2, 1; 1996 VX₂₉, 6, 2, 1; 1996 WX₂, 2, 1, 0; 1996 XC₄, 4, 2, 1; 1996 XH₂₆, 4, 2, 1; 1997 BP₅, 5, 2, 1; 1997 CF₂₂, 4, 2, 1; 1997 CK₂₂, 6, 3, 2; 1997 EO₇, 3, 1, 0; 1997 EK₈, 9, 4, 5; 1997 GL₂₈, 4, 2, 1; 1998 FZ₄, 5, 2, 1; 1998 HE₂₀, 4, 2, 1; 1998 HF₂₀, 4, 2, 2; 1998 HR₂₃, 4, 2, 1; 1998 HS₂₃, 4, 2, 2; 1998 KX₅, 5, 2, 1; 1998 KM₉, 5, 2, 1; 1998 MY₁, 2, 1, 0; 1999 NG₄₁, 4, 1, 0; 1999 ON₁, 2, 1, 0; 1999 PC₃, 3, 2, 1; 1999 PG₁, 5, 2, 1; 1999 PH₁, 6, 3, 2; 1999 PD₂, 4, 2, 1; 1999 PM₃, 6, 3, 4; 1999 PR₃, 4, 2, 1; 1999 PZ₃, 4, 2, 1; 1999 RG *, 15, 6, 18; 1999 RH *, 5, 2, 1; 1999 RJ *, 5, 2, 1; 1999 RK *, 6, 2, 1; 1999 RL *, 15, 7, 15; 1999 RF₁ *, 4, 2, 1; 1999 RP₁ *, 6, 3, 3; 1999 RQ₁ *, 5, 2, 1; 1999 RR₁ *, 6, 3, 2; 1999 RS₂, 2, 1, 0; 1999 RT₂ *, 4, 2, 1; 1999 RS₅, 4, 2, 1; 1999 RQ₃₂, 4, 2, 1; 1999 RD₃₃ *, 4, 2, 3; 1999 RE₃₅ *, 8, 4, 7; 1999 RY₃₅ *, 4, 2, 1; 1999 RZ₃₅ *, 6, 3, 4; 1999 RW₃₆ *, 9, 4, 5; 1999 RX₃₆ *, 4, 2, 1; 1999 RY₃₆ *, 9, 4, 5; 1999 RR₄₃ *, 5, 2, 2; 1999 SA *, 6, 2, 2; 1999 SB *, 6, 3, 5; 1999 SC *, 5, 2, 2; 1999 SE₁ *, 5, 2, 3; 1999 SF₁ *, 6, 2, 3; 1236 T-2, 4, 2, 1; [296, 58, 23*, 1999/09/03–1999/09/21]

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]

Observer M. W. Buie

1.07-m reflector + CCD

USNO-A2.0

1998 FX₅₈, 2, 1, 0; [2, 1, 0*, 1998/01/08]

691 Kitt Peak, Steward Observatory

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

U.S.A. [bob@lpl.arizona.edu]

Observers T. Gehrels, J. V. Scotti, J. A. Larsen, J. Montani, T. H. Bressi,
T. Williams, A. Tubbiolo

0.91-m Spacewatch telescope + CCD
USNO-A1.0

1931 TC₂, 3, 1, 0; 1977 DL₄, 3, 1, 0; 1978 UA₅, 6, 2, 4; 1979 MP₈, 3, 1, 0; 1981 EV₂₁, 3, 1, 0; 1981 EV₂₄, 3, 1, 0; 1981 EO₃₀, 3, 1, 0; 1981 EE₃₉, 3, 1, 0; 1982 JD₂, 3, 1, 0; 1984 SF₃, 3, 1, 0; 1984 SC₆, 3, 1, 0; 1985 RP₃, 3, 1, 0; 1986 GD₃, 3, 1, 0; 1988 PR₃, 3, 1, 0; 1988 RT₃, 3, 1, 0; 1988 RZ₅, 3, 1, 0; 1988 RM₈, 3, 1, 0; 1988 RW₁₀, 6, 2, 9; 1988 RM₁₁, 3, 1, 0; 1988 VW₂, 3, 1, 0; 1988 VR₃, 6, 2, 9; 1989 RL₃, 3, 1, 0; 1989 SP₁₁, 6, 2, 2722; 1990 DW₂, 6, 2, 12; 1990 RF₁, 3, 1, 0; 1990 SE₈, 6, 2, 13; 1990 SQ₈, 3, 1, 0; 1990 SV₉, 6, 2, 67; 1990 SM₁₄, 2, 1, 0; 1991 FT₂, 3, 1, 0; 1991 GB₃, 3, 1, 0; 1991 VO₁, 3, 1, 0; 1991 VM₁₂, 3, 1, 0; 1991 XL₄, 3, 1, 0; 1992 DT₂, 3, 1, 0; 1992 DL₆, 4, 2, 12; 1992 ES₆, 3, 1, 0; 1992 ER₁₃, 3, 1, 0; 1992 GC₅, 3, 1, 0; 1992 KJ₃, 3, 1, 0; 1992 OF₂, 3, 1, 0; 1992 PM₂, 3, 1, 0; 1992 RK₂, 3, 1, 0; 1992 WK₉, 3, 1, 0; 1993 BD₆, 6, 2, 1439; 1993 FM₆, 2, 1, 0; 1993 FQ₂₁, 6, 2, 9; 1993 FZ₂₆, 3, 1, 0; 1993 FO₃₆, 3, 1, 0; 1993 FF₄₁, 3, 1, 0; 1993 FZ₄₁, 3, 1, 0; 1993 GN₃, 3, 1, 0; 1993 ON₈, 3, 1, 0; 1993 PB₇, 3, 1, 0; 1993 PK₇, 6, 2, 10; 1993 QQ₄, 3, 1, 0; 1993 RM₇, 12, 4, 31; 1993 SG₅, 3, 1, 0; 1993 TD₂₅, 3, 1, 0; 1993 TF₃₄, 3, 1, 0; 1993 XH₃, 3, 1, 0; 1994 AX₆, 6, 2, 2; 1994 AB₈, 3, 1, 0; 1994 AG₁₀, 6, 2, 10; 1994 CL₃, 3, 1, 0; 1994 GS₄, 3, 1, 0; 1994 PQ₁₀, 3, 1, 0; 1994 PA₁₄, 3, 1, 0; 1994 PF₂₀, 3, 1, 0; 1994 PJ₂₀, 3, 1, 0; 1994 RN₂₈, 3, 1, 0; 1994 TD₃, 3, 1, 0; 1994 XM₃, 3, 1, 0; 1995 DE₇, 6, 2, 53; 1995 OS₁, 3, 1, 0; 1995 SB₃₃, 3, 1, 0; 1995 SS₅₂, 6, 2, 9; 1995 UR₈, 2, 1, 0; 1995 UM₁₂, 3, 1, 0; 1995 VK₁, 3, 1, 0; 1995 VX₂, 3, 1, 0; 1995 VH₁₁, 2, 1, 0; 1995 WM₆, 3, 1, 0; 1995 WP₁₇, 3, 1, 0; 1995 XU₁, 3, 1, 0; 1995 YB₃, 2, 1, 0; 1995 YF₇, 3, 1, 0; 1995 YV₂₂, 3, 1, 0; 1996 BZ₃, 3, 1, 0; 1996 BS₉, 2, 1, 0; 1996 CP₇, 3, 1, 0; 1996 JW₁, 3, 1, 0; 1996 JG₃, 3, 1, 0; 1996 SJ₇, 6, 2, 2163; 1996 TJ₆, 3, 1, 0; 1996 TJ₁₁, 3, 1, 0; 1996 TT₁₄, 2, 1, 0; 1996 TX₆₂, 3, 1, 0; 1996 UF₃, 3, 1, 0; 1996 XK₁, 3, 1, 0; 1996 XF₂₃, 6, 2, 483; 1996 XU₂₆, 2, 1, 0; 1997 AB₁, 3, 1, 0; 1997 AP₂, 6, 2, 1867; 1997 AH₄, 3, 1, 0; 1997 AW₆, 3, 1, 0; 1997 AT₁₃, 3, 1, 0; 1997 AQ₁₅, 6, 2, 10; 1997 BR₈, 3, 1, 0; 1997 CS₅, 2, 4; 1997 CP₁, 6, 2, 14; 1997 CX₂, 3, 1, 0; 1997 CB₁₀, 3, 1, 0; 1997 CK₁₂, 3, 1, 0; 1997 CV₁₅, 3, 1, 0; 1997 CX₂₂, 3, 1, 0; 1997 DR₃, 3, 1, 0; 1997 EL₃, 3, 1, 0; 1997 EN₂, 3, 1, 0; 1997 EL₆, 3, 1, 0; 1997 ER₂₆, 3, 1, 0; 1997 EN₃₂, 3, 1, 0; 1997 EX₄₁, 3, 1, 0; 1997 EL₅₅, 3, 1, 0; 1997 GX₃, 3, 1, 0; 1997 GD₁₅, 6, 2, 16; 1997 GW₃₀, 6, 2, 12; 1997 HV₈, 3, 1, 0; 1997 LH₉, 3, 1, 0; 1997 MR₃, 3, 1, 0; 1997 MD₈, 3, 1, 0; 1997 PY₃, 3, 1, 0; 1997 TW₁₅, 3, 1, 0; 1997 XY₈, 12, 4, 2446; 1998 AU₉, 3, 1, 0; 1998 BC₄, 3, 1, 0; 1998 BP₈, 3, 1, 0; 1998 BQ₈, 5, 2, 7; 1998 BK₁₅, 3, 1, 0; 1998 BM₁₇, 2, 1, 0; 1998 BJ₁₉, 6, 2, 6; 1998 BA₂₀, 3, 1, 0; 1998 BA₂₁, 3, 1, 0; 1998 CC₃, 6, 2, 10; 1998 CB₄, 3, 1, 0; 1998 DT₁, 3, 1, 0; 1998 DB₃₆, 3, 1, 0; 1998 DE₃₆, 6, 2, 588; 1998 ER₃, 3, 1, 0; 1998 EC₉, 3, 1, 0; 1998 EJ₁₁, 1, 1, 0; 1998 EQ₁₁, 3, 1, 0; 1998 ED₁₄, 3, 1, 0; 1998 FF₃, 6, 2, 7; 1998 FP₁₁, 3, 1, 0; 1998 FO₁₇, 3, 1, 0; 1998 FW₁₉, 6, 2, 11; 1998 FJ₂₅, 3, 1, 0; 1998 FB₂₉, 3, 1, 0; 1998 FK₃₂, 6, 2, 498; 1998 FT₃₄, 3, 1, 0; 1998 FM₄₀, 3, 1, 0; 1998 FO₄₈, 3, 1, 0; 1998 FA₅₄, 3, 1, 0; 1998 FM₅₄, 3, 1, 0; 1998 FH₅₆, 3, 1, 0; 1998 FH₆₁, 3, 1, 0; 1998 FS₆₃, 3, 1, 0; 1998 FW₆₃, 3, 1, 0; 1998 FW₆₆, 3, 1, 0; 1998 FJ₆₇, 3, 1, 0; 1998 FM₆₈, 3, 1, 0; 1998 FX₆₈, 3, 1, 0; 1998 FV₇₀, 3, 1, 0; 1998 FA₇₃, 3, 1, 0; 1998 FC₇₄, 3, 1, 0; 1998 FL₇₄, 6, 2, 25; 1998 FR₇₆, 5, 2, 7; 1998 FJ₇₉, 2, 1, 0; 1998 FA₁₀₂, 3, 1, 0; 1998 FW₁₀₂, 3, 1, 0; 1998 FJ₁₀₂, 3, 1, 0; 1998 FC₁₀₆, 3, 1, 0; 1998 FZ₁₁₃, 3, 1, 0; 1998 FG₁₁₆, 3, 1, 0; 1998 FH₁₁₆, 3, 1, 0; 1998 FH₁₂₂, 3, 1, 0; 1998 FM₁₂₂, 6, 1, 0; 1998 FN₁₂₂, 2, 1, 0; 1998 FP₁₂₂, 3, 1, 0; 1998 FP₁₂₃, 3, 1, 0; 1998 FE₁₂₅, 3, 1, 0; 1998 FZ₁₃₀, 6, 2, 2; 1998 HV₄, 2, 1, 0; 1998 HT₁₄, 3, 1, 0; 1998 HR₂₇, 3, 1, 0; 1998 HJ₃₃, 3, 1, 0; 1998 HV₄₄, 6, 2, 18; 1998 HO₄₉, 3, 1, 0; 1998 HN₅₁, 3, 1, 0; 1998 HQ₅₁, 3, 1, 0; 1998 HD₅₂, 6, 2, 2003; 1998 HK₅₂, 3, 1, 0; 1998 HL₅₂, 3, 1, 0; 1998 HS₆₀, 3, 1, 0; 1998 HM₆₈, 3, 1, 0; 1998 HQ₆₈, 6, 2, 1; 1998 HA₇₅, 3, 1, 0; 1998 HN₇₉, 3, 1, 0; 1998 HO₇₉, 6, 2, 15; 1998 HF₈₀, 2, 1, 0; 1998 HL₈₆, 3, 1, 0; 1998 HX₉₁, 3, 1, 0; 1998 HQ₉₂, 3, 1, 0; 1998 HB₉₅, 3, 1, 0; 1998 HC₉₆, 3, 1, 0; 1998 HE₉₉, 3, 1, 0; 1998 HX₉₉, 3, 1, 0; 1998 HL₁₀₀, 3, 1, 0; 1998 HO₁₂₄, 3, 1, 0; 1998 HX₁₂₄, 3, 1, 0; 1998 HX₁₂₇, 6, 2, 24; 1998 HR₁₃₃, 3, 1, 0; 1998 HR₁₃₆, 3, 1, 0; 1998 HV₁₃₇, 9, 3, 15; 1998 HL₁₄₉, 3, 1, 0; 1998 JK₃, 3, 1, 0; 1998 JK₃, 3, 1, 0; 1998 KL₃, 3, 1, 0; 1998 KL₁, 6, 2, 415; 1998 KC₉, 3, 1, 0; 1998 KF₁₀, 3, 1, 0; 1998 KC₃₂, 3, 1, 0; 1998 KN₃₂, 6, 2, 87; 1998 KB₃₄, 3, 1, 0; 1998 KJ₃₅, 3, 1, 0; 1998 KJ₄₈, 3, 1, 0; 1998 KZ₅₄, 6, 2, 9; 1998 KK₅₅, 3, 1, 0; 1998 KL₅₅, 3, 1, 0; 1998 MG₁, 6, 2, 14; 1998 MZ₈, 3, 1, 0; 1998 QP₁₇, 6, 2, 1033; 1998 QF₅₁, 3, 1, 0; 1998 QY₉₁, 3, 1, 0; 1998 QC₉₈, 6, 2, 1487; 1998 RO₂₂, 3, 1, 0; 1998 RD₄₉, 3, 1, 0; 1998 RK₅₇, 3, 1, 0; 1998 RK₇₂, 6, 2, 22; 1998 SK₂, 6, 2, 38; 1998 SY₂₅, 3, 1, 0; 1998 SG₃₅, 6, 2, 6; 1998 SX₆₀, 3, 1, 0; 1998 SR₆₂, 3, 1, 0; 1998 ST₇₂, 3, 1, 0; 1998 SO₁₃₄, 3, 1, 0; 1998 TG₃₀, 2, 1, 0; 1998 UA₂₃, 3, 1, 0; 1998 UE₂₄, 3, 1, 0; 1998 UG₃₂, 3, 1, 0; 1998 VY₁₄, 3, 1, 0; 1998 VN₄₀, 3, 1, 0; 1998 VR₄₃, 6, 2, 10; 1998 WL₁₂, 6, 2, 1093; 1998 WR₁₅, 3, 1, 0; 1998 XB₁₄, 2, 1, 0; 1998 XC₉₆, 3, 1, 0; 1999 BW₃, 3, 1, 0; 1999 BP₅, 3, 1, 0; 1999 BT₁₁, 3, 1, 0; 1999 CD₂₉, 3, 1, 0; 1999 CW₆₅, 9, 3, 479; 1999 CQ₈₅, 3, 1, 0; 1999 CF₁₀₄, 3, 1, 0; 1999 CR₁₀₉, 3, 1, 0; 1999 CC₁₄₇, 5, 2, 36; 1999 ET₃, 3, 1, 0; 1999 GD₂₀, 6, 2, 29; 1999 KA₁₆, 3, 1, 0; 1999 KJ₁₇, 3, 1, 0; 1999 NF₄, 5, 2, 29; 1999 NT₄, 3, 1, 0; 1999 NV₈, 3, 1, 0; 1999 NG₉, 9, 3, 2115; 1999 NS₉, 9, 3, 2395; 1999 NA₁₀, 9, 3, 1392; 1999 NF₁₀, 6, 2, 10; 1999 NJ₁₀, 6, 2, 23; 1999 NO₁₀, 9, 3, 13; 1999 NE₁₂, 6, 2, 2721; 1999 NH₂₉, 5, 2, 1508; 1999 NA₃₈, 3, 1, 0; 1999 NX₃₉, 3, 1, 0; 1999 NH₄₁, 3, 1, 0; 1999 NJ₄₁, 3, 1, 0; 1999 NJ₄₂, 3, 1, 0; 1999 NX₄₈, 6, 2, 22; 1999 NF₅₀, 3, 1, 0; 1999 NJ₅₃, 2, 1, 0; 1999 NE₅₄, 3, 1, 0; 1999 NR₅₄, 3, 1, 0; 1999 OL₈, 8, 3, 954; 1999 OS₆, 2, 2012; 1999 PH₁, 3, 1, 0; 1999 PZ₁, 3, 1, 0; 1999 PA₂, 3, 1, 0; 1999 PR₅, 3, 1, 0;

0; 1999 PS₅, 3, 1, 0; 1999 QA₂, 3, 1, 0; 1999 QV₂ *, 9, 3, 23; 1999 RB₃, 3, 1, 0; 1999 RO₃, 3, 1, 0; 1999 RS₁, 3, 1, 0; 1999 RT₁, 6, 2, 944; 1999 RZ₁, 3, 1, 0; 1999 RA₂, 3, 1, 0; 1999 RF₂ *, 9, 3, 13; 1999 RG₂ *, 6, 2, 2; 1999 RH₂ *, 6, 2, 1; 1999 RJ₂ *, 12, 4, 13; 1999 RK₂ *, 11, 4, 13; 1999 RY₂, 3, 1, 0; 1999 RE₃, 6, 2, 9; 1999 RF₃, 3, 1, 0; 1999 RO₃, 3, 1, 0; 1999 RK₄ *, 6, 2, 5; 1999 RL₄ *, 6, 2, 5; 1999 RM₄ *, 6, 2, 5; 1999 RN₄ *, 6, 2, 5; 1999 RO₄ *, 6, 2, 5; 1999 RP₄ *, 6, 2, 5; 1999 RQ₄ *, 6, 2, 5; 1999 RR₄ *, 6, 2, 5; 1999 RS₄ *, 6, 2, 5; 1999 RT₄ *, 6, 2, 5; 1999 RU₄ *, 5, 2, 5; 1999 RV₄ *, 6, 2, 5; 1999 RW₄ *, 9, 3, 14; 1999 RX₄ *, 6, 2, 5; 1999 RY₄ *, 9, 3, 14; 1999 RZ₄ *, 6, 2, 5; 1999 RA₅ *, 6, 2, 5; 1999 RB₅ *, 6, 2, 5; 1999 RC₅ *, 6, 2, 5; 1999 RD₅ *, 6, 2, 5; 1999 RE₅ *, 6, 2, 5; 1999 RF₅ *, 6, 2, 5; 1999 RG₅ *, 6, 2, 5; 1999 RH₅ *, 6, 2, 5; 1999 RJ₅ *, 6, 2, 5; 1999 RK₅ *, 6, 2, 5; 1999 RL₅ *, 6, 2, 5; 1999 RM₅ *, 6, 2, 5; 1999 RN₅ *, 6, 2, 5; 1999 RO₅ *, 6, 2, 5; 1999 RP₅ *, 6, 2, 5; 1999 RQ₅ *, 6, 2, 5; 1999 RS₅ *, 9, 3, 14; 1999 RS₅ *, 6, 2, 5; 1999 RT₅ *, 6, 2, 5; 1999 RU₅ *, 6, 2, 5; 1999 RV₅ *, 6, 2, 5; 1999 RW₅ *, 6, 2, 5; 1999 RX₅ *, 6, 2, 5; 1999 RY₅ *, 6, 2, 5; 1999 RZ₅ *, 6, 2, 5; 1999 RA₆ *, 6, 2, 5; 1999 RB₆ *, 6, 2, 5; 1999 RC₆ *, 6, 2, 5; 1999 RD₆ *, 6, 2, 5; 1999 RE₆ *, 6, 2, 5; 1999 RF₆ *, 6, 2, 5; 1999 RG₆ *, 6, 2, 5; 1999 RH₆ *, 6, 2, 5; 1999 RJ₆ *, 6, 2, 5; 1999 RK₆ *, 6, 2, 5; 1999 RL₆ *, 9, 3, 14; 1999 RM₆ *, 6, 2, 5; 1999 RN₆ *, 6, 2, 5; 1999 RO₆ *, 6, 2, 5; 1999 RP₆ *, 6, 2, 5; 1999 RQ₆ *, 6, 2, 5; 1999 RR₆ *, 6, 2, 5; 1999 RS₆ *, 6, 2, 5; 1999 RT₆ *, 6, 2, 5; 1999 RU₆ *, 6, 2, 5; 1999 RV₆ *, 6, 2, 5; 1999 RW₆ *, 6, 2, 5; 1999 RX₆ *, 6, 2, 5; 1999 RY₆ *, 6, 2, 5; 1999 RZ₆ *, 6, 2, 5; 1999 RA₇ *, 6, 2, 5; 1999 RB₇ *, 6, 2, 5; 1999 RC₇ *, 6, 2, 5; 1999 RD₇ *, 6, 2, 5; 1999 RE₇ *, 6, 2, 5; 1999 RF₇ *, 6, 2, 5; 1999 RG₇ *, 6, 2, 5; 1999 RH₇ *, 6, 2, 5; 1999 RJ₇ *, 6, 2, 5; 1999 RK₇ *, 6, 2, 5; 1999 RL₇ *, 6, 2, 5; 1999 RM₇ *, 6, 2, 5; 1999 RN₇ *, 6, 2, 5; 1999 RO₇ *, 6, 2, 5; 1999 RP₇ *, 6, 2, 5; 1999 RQ₇ *, 6, 2, 5; 1999 RR₇ *, 6, 2, 5; 1999 RS₇ *, 6, 2, 5; 1999 RT₇ *, 5, 2, 5; 1999 RU₇ *, 6, 2, 5; 1999 RV₇ *, 6, 2, 5; 1999 RW₇ *, 6, 2, 5; 1999 RX₇ *, 6, 2, 5; 1999 RY₇ *, 6, 2, 5; 1999 RZ₇ *, 6, 2, 5; 1999 RA₈ *, 6, 2, 5; 1999 RB₈ *, 6, 2, 5; 1999 RC₈ *, 6, 2, 4; 1999 RD₈ *, 6, 2, 4; 1999 RE₈ *, 6, 2, 4; 1999 RF₈ *, 6, 2, 4; 1999 RG₈ *, 6, 2, 4; 1999 RH₈ *, 6, 2, 4; 1999 RJ₈ *, 6, 2, 4; 1999 RK₈ *, 9, 3, 22; 1999 RL₈ *, 6, 2, 4; 1999 RM₈ *, 5, 2, 4; 1999 RN₈ *, 6, 2, 4; 1999 RO₈ *, 6, 2, 4; 1999 RS₈ *, 6, 2, 4; 1999 RT₈ *, 6, 2, 4; 1999 RU₈ *, 6, 2, 4; 1999 RV₈ *, 6, 2, 4; 1999 RW₈ *, 6, 2, 4; 1999 RX₈ *, 6, 2, 4; 1999 RY₈ *, 6, 2, 4; 1999 RZ₈ *, 6, 2, 4; 1999 RA₉ *, 6, 2, 4; 1999 RB₉ *, 9, 3, 13; 1999 RC₉ *, 6, 2, 4; 1999 RD₉ *, 6, 2, 4; 1999 RE₉ *, 6, 2, 4; 1999 RF₉ *, 9, 3, 13; 1999 RG₉ *, 6, 2, 4; 1999 RH₉ *, 9, 3, 13; 1999 RJ₉ *, 6, 2, 4; 1999 RK₉ *, 9, 3, 13; 1999 RL₉ *, 6, 2, 4; 1999 RM₉ *, 6, 2, 4; 1999 RN₉ *, 6, 2, 4; 1999 RO₉ *, 6, 2, 4; 1999 RP₉ *, 6, 2, 4; 1999 RQ₉ *, 6, 2, 4; 1999 RR₉ *, 5, 2, 4; 1999 RS₉ *, 6, 2, 3; 1999 RT₉ *, 6, 2, 3; 1999 RU₉ *, 6, 2, 2; 1999 RV₉ *, 5, 2, 2; 1999 RW₉ *, 6, 2, 1; 1999 RX₉ *, 6, 2, 1; 1999 RY₉ *, 6, 2, 1; 1999 RZ₉ *, 6, 2, 1; 1999 RA₁₀ *, 6, 2, 1; 1999 RB₁₀ *, 9, 3, 11; 1999 RM₁₁, 3, 1, 0; 1999 RH₁₄, 3, 1, 0; 1999 RK₁₄, 3, 1, 0; 1999 RM₁₅, 3, 1, 0; 1999 RT₁₆, 3, 1, 0; 1999 RU₁₆, 6, 2, 927; 1999 RS₁₇, 3, 1, 0; 1999 RT₁₇, 6, 2, 4; 1999 RA₁₈, 9, 3, 13; 1999 RB₁₈, 9, 3, 12; 1999 RC₁₈, 6, 2, 4; 1999 RD₁₈, 6, 2, 4; 1999 RE₁₈, 6, 2, 12; 1999 RF₁₈, 6, 2, 4; 1999 RV₁₈, 3, 1, 0; 1999 RW₁₈, 3, 1, 0; 1999 RX₁₈, 3, 1, 0; 1999 RH₁₉, 9, 3, 13; 1999 RJ₁₉, 3, 1, 0; 1999 RP₁₉, 3, 1, 0; 1999 RQ₁₉, 3, 1, 0; 1999 RR₁₉, 3, 1, 0; 1999 RS₁₉, 3, 1, 0; 1999 RU₁₉, 9, 3, 1067; 1999 RG₂₂, 3, 1, 0; 1999 RY₂₂, 3, 1, 0; 1999 RZ₂₂, 3, 1, 0; 1999 RJ₂₄, 3, 1, 0; 1999 RP₂₆, 3, 1, 0; 1999 RU₂₆, 3, 1, 0; 1999 RJ₂₇ *, 7, 2, 1; 1999 RK₂₇, 6, 2, 1915; 1999 RT₂₈, 3, 1, 0; 1999 RM₃₁, 3, 1, 0; 1999 RW₃₁ *, 6, 2, 6; 1999 RE₃₂, 3, 1, 0; 1999 RF₃₂, 3, 1, 0; 1999 RG₃₂, 6, 2, 9; 1999 RH₃₂, 3, 1, 0; 1999 RJ₃₂, 6, 2, 10; 1999 RM₃₂, 3, 1, 0; 1999 RN₃₂, 6, 2, 9; 1999 RU₃₂, 3, 1, 0; 1999 RZ₃₂, 3, 1, 0; 1999 RH₃₃ *, 8, 3, 13; 1999 RR₃₃, 3, 1, 0; 1999 RE₃₄, 3, 1, 0; 1999 RF₃₄, 6, 2, 10; 1999 RG₃₄, 3, 1, 0; 1999 RO₃₄, 3, 1, 0; 1999 RP₃₄, 3, 1, 0; 1999 RL₃₅, 6, 2, 1822; 1999 RP₃₅, 3, 1, 0; 1999 RQ₃₅, 3, 1, 0; 1999 RY₃₅, 3, 1, 0; 1999 RK₃₆, 3, 1, 0; 1999 RA₃₇, 6, 2

5; 1999 RB₁₂₃ *, 5, 2, 4; 1999 RF₁₂₃ *, 6, 2, 4; 1999 RV₁₂₃ *, 6, 2, 5; 1999 RV₁₂₄ *, 6, 2, 5; 1999 RW₁₂₄ *, 6, 2, 4; 1999 RX₁₂₄ *, 6, 2, 5; 1999 RY₁₂₄, 3, 1, 0; 1999 RA₁₂₈, 3, 1, 0; 1999 RF₁₂₉, 3, 1, 0; 1999 RQ₁₂₉, 3, 1, 0; 1999 RW₁₂₉, 3, 1, 0; 1999 RC₁₃₀, 6, 2, 8; 1999 RK₁₃₁ *, 6, 2, 5; 1999 RJ₁₃₃ *, 6, 2, 5; 1999 RJ₁₃₅ *, 3, 1, 0; 1999 RE₁₃₆ *, 6, 2, 4; 1999 RP₁₃₈ *, 5, 2, 4; 1999 RQ₁₃₈, 6, 2, 12; 1999 RH₁₃₉, 3, 1, 0; 1999 RD₁₄₁ *, 6, 2, 4; 1999 RG₁₄₃, 3, 1, 0; 1999 RQ₁₄₃, 3, 1, 0; 1999 RX₁₄₃ *, 6, 2, 5; 1999 RZ₁₄₃ *, 5, 2, 4; 1999 RD₁₄₄ *, 6, 2, 3; 1999 RN₁₄₄ *, 6, 2, 3; 1999 RT₁₄₄ *, 6, 2, 4; 1999 RL₁₄₇ *, 6, 2, 4; 1999 RM₁₄₇ *, 6, 2, 4; 1999 RT₁₄₈ *, 6, 2, 4; 1999 RK₁₅₃ *, 6, 2, 4; 1999 RU₁₅₃ *, 6, 2, 4; 1999 RV₁₅₃ *, 6, 2, 4; 1999 RM₁₅₄, 3, 1, 0; 1999 RS₁₅₅ *, 6, 2, 4; 1999 RY₁₅₆, 3, 1, 0; 1999 RT₁₅₈, 3, 1, 0; 1999 RX₁₅₈ *, 6, 2, 4; 1999 RY₁₅₈ *, 6, 2, 4; 1999 RE₁₅₉ *, 6, 2, 4; 1999 RH₁₆₀ *, 6, 2, 4; 1999 RZ₁₆₀, 3, 1, 0; 1999 RA₁₆₁, 3, 1, 0; 1999 RV₁₆₂ *, 6, 2, 4; 1999 RX₁₆₂ *, 6, 2, 4; 1999 RV₁₆₃ *, 6, 2, 4; 1999 RE₁₆₄ *, 6, 2, 4; 1999 RF₁₆₄ *, 3, 1, 0; 1999 RG₁₆₄, 17, 6, 2872; 1999 RH₁₆₄, 6, 2, 12; 1999 RA₁₆₅ *, 6, 2, 4; 1999 RM₁₆₅, 3, 1, 0; 1999 RO₁₆₅, 6, 2, 4; 1999 RP₁₆₅, 9, 3, 13; 1999 RQ₁₆₅, 9, 3, 1007; 1999 RR₁₆₅, 6, 2, 4; 1999 RS₁₆₅, 6, 2, 12; 1999 RT₁₆₅, 6, 2, 13; 1999 RU₁₆₅, 3, 1, 0; 1999 RB₁₆₆ *, 6, 2, 4; 1999 RH₁₆₆ *, 6, 2, 4; 1999 RL₁₆₆ *, 6, 2, 4; 1999 RN₁₆₆ *, 6, 2, 4; 1999 RF₁₆₇ *, 6, 2, 4; 1999 RH₁₆₈, 3, 1, 0; 1999 RM₁₆₈, 6, 2, 12; 1999 RN₁₆₈, 9, 3, 14; 1999 RO₁₆₈, 6, 2, 13; 1999 RP₁₆₈, 3, 1, 0; 1999 RQ₁₆₈, 3, 1, 0; 1999 RR₁₆₈, 3, 1, 0; 1999 RT₁₆₈, 6, 2, 12; 1999 RB₁₆₉ *, 5, 2, 4; 1999 RU₁₆₉ *, 6, 2, 4; 1999 RC₁₇₀ *, 6, 2, 4; 1999 RK₁₇₀ *, 6, 2, 4; 1999 RL₁₇₀, 9, 3, 14; 1999 RN₁₇₀, 9, 3, 12; 1999 RO₁₇₀, 9, 3, 12; 1999 RQ₁₇₀, 6, 2, 12; 1999 RS₁₇₀, 3, 1, 0; 1999 RT₁₇₀, 3, 1, 0; 1999 RU₁₇₀, 3, 1, 0; 1999 RV₁₇₀, 3, 1, 0; 1999 RG₁₇₅, 6, 2, 14; 1999 RH₁₇₅, 6, 2, 14; 1999 RW₁₇₅ *, 6, 2, 4; 1999 RX₁₇₅ *, 6, 2, 4; 1999 RY₁₇₅ *, 6, 2, 4; 1999 RA₁₇₆ *, 6, 2, 4; 1999 RV₁₇₆ *, 6, 2, 4; 1999 RW₁₇₆ *, 6, 2, 4; 1999 RD₁₇₇ *, 6, 2, 4; 1999 RJ₁₇₇, 3, 1, 0; 1999 RO₁₇₇, 3, 1, 0; 1999 RU₁₇₇ *, 6, 2, 4; 1999 RB₁₇₈ *, 6, 2, 4; 1999 RD₁₇₈ *, 6, 2, 4; 1999 RE₁₇₈ *, 6, 2, 4; 1999 RF₁₇₈ *, 6, 2, 4; 1999 RX₁₇₈ *, 6, 2, 4; 1999 RZ₁₇₈ *, 6, 2, 4; 1999 RH₁₈₁ *, 6, 2, 4; 1999 RJ₁₈₁ *, 6, 2, 4; 1999 RO₁₈₁ *, 6, 2, 4; 1999 RR₁₈₁ *, 6, 2, 4; 1999 RS₁₈₁ *, 5, 2, 4; 1999 RV₁₈₂, 3, 1, 0; 1999 RX₁₈₂, 3, 1, 0; 1999 RP₁₈₅, 3, 1, 0; 1999 RQ₁₈₅, 6, 2, 4; 1999 RR₁₈₅, 9, 3, 13; 1999 RS₁₈₅, 3, 1, 0; 1999 RF₁₈₆ *, 6, 2, 4; 1999 RQ₁₈₆, 6, 2, 13; 1999 RS₁₈₆ *, 6, 2, 4; 1999 RU₁₈₆, 3, 1, 0; 1999 RB₁₈₇, 6, 2, 12; 1999 RD₁₈₇, 9, 3, 14; 1999 RV₁₈₇ *, 6, 2, 4; 1999 RC₁₈₈ *, 6, 2, 4; 1999 RB₁₈₉ *, 6, 2, 4; 1999 RR₁₉₀ *, 6, 2, 4; 1999 RT₁₉₀ *, 6, 2, 4; 1999 RU₁₉₀ *, 6, 2, 4; 1999 RW₁₉₀ *, 6, 2, 4; 1999 RA₁₉₁ *, 6, 2, 4; 1999 RB₁₉₁ *, 6, 2, 1; 1999 RL₁₉₁ *, 8, 3, 2; 1999 RM₁₉₁ *, 6, 2, 1; 1999 RO₁₉₁ *, 6, 2, 1; 1999 RQ₁₉₁, 3, 1, 0; 1999 RW₁₉₁, 9, 3, 12; 1999 RJ₁₉₂ *, 6, 2, 1; 1999 RK₁₉₂ *, 6, 2, 1; 1999 RL₁₉₂ *, 6, 2, 1; 1999 RM₁₉₂ *, 6, 2, 1; 1999 RN₁₉₂ *, 6, 2, 1; 1999 RQ₁₉₂, 3, 1, 0; 1999 RS₁₉₂ *, 5, 2, 1; 1999 RT₁₉₂ *, 6, 2, 1; 1999 RU₁₉₂ *, 8, 3, 3; 1999 RV₁₉₂ *, 6, 2, 1; 1999 RX₁₉₂ *, 9, 3, 3; 1999 RZ₁₉₂ *, 6, 2, 3; 1999 RA₁₉₃ *, 6, 2, 3; 1999 RL₁₉₃, 6, 2, 11; 1999 RP₁₉₃ *, 6, 2, 3; 1999 RQ₁₉₃ *, 8, 3, 3; 1999 RR₁₉₃ *, 6, 2, 3; 1999 RR₂₁₃ *, 6, 2, 6; 1999 RS₂₁₃ *, 6, 2, 6; 1999 RT₂₁₃ *, 6, 2, 6; 1999 RU₂₁₃ *, 6, 2, 6; 1999 RV₂₁₃ *, 8, 2, 6; 1999 RW₂₁₃ *, 6, 2, 6; 1999 RX₂₁₃ *, 6, 2, 6; 1999 RY₂₁₃ *, 6, 2, 6; 1999 RZ₂₁₃ *, 6, 2, 6; 1999 RA₂₁₄ *, 6, 2, 6; 1999 RB₂₁₄ *, 6, 2, 6; 1999 RC₂₁₄ *, 6, 2, 6; 1999 RD₂₁₄, 3, 1, 0; 1999 RF₂₁₄, 3, 1, 0; 1999 SM *, 6, 2, 2; 1999 SN *, 6, 2, 2; 1999 SO *, 6, 2, 2; 1999 SP *, 6, 2, 2; 1999 SQ *, 6, 2, 2; 1999 SR *, 6, 2, 2; 1999 SS *, 6, 2, 2; 1999 ST *, 6, 2, 2; 1999 SU *, 6, 2, 2; 1999 SV *, 6, 2, 2; 1999 SW *, 6, 2, 2; 1999 SX *, 6, 2, 2; 1999 SY *, 6, 2, 2; 1999 SZ *, 6, 2, 2; 1999 SA₁ *, 6, 2, 2; 1999 SB₁ *, 6, 2, 2; 1999 SC₁ *, 6, 2, 2; 1999 SD₁ *, 6, 2, 2; 1999 SK₂ *, 5, 2, 1; 1999 SL₂ *, 5, 2, 1; 2040 P-L, 3, 1, 0; 2047 P-L, 3, 1, 0; 2085 P-L, 6, 2, 8; 2155 P-L, 3, 1, 0; 2234 P-L, 3, 1, 0; 2549 P-L, 6, 2, 14; 2560 P-L, 8, 3, 13; 2565 P-L, 3, 1, 0; 2602 P-L, 3, 1, 0; 2617 P-L, 3, 1, 0; 2622 P-L, 3, 1, 0; 2635 P-L, 3, 1, 0; 2647 P-L, 3, 1, 0; 2650 P-L, 3, 1, 0; 2654 P-L, 3, 1, 0; 2664 P-L, 3, 1, 0; 2688 P-L, 2, 1, 0; 2691 P-L, 3, 1, 0; 2698 P-L, 3, 1, 0; 2740 P-L, 6, 2, 5; 2796 P-L, 3, 1, 0; 2849 P-L, 3, 1, 0; 3065 P-L, 6, 2, 35; 4061 P-L, 3, 1, 0; 4075 P-L, 3, 1, 0; 4088 P-L, 6, 2, 57; 4157 P-L, 3, 1, 0; 4525 P-L, 3, 1, 0; 4555 P-L, 3, 1, 0; 4625 P-L, 6, 2, 2565; 4644 P-L, 3, 1, 0; 4648 P-L, 12, 4, 1507; 4654 P-L, 3, 1, 0; 4659 P-L, 6, 2, 19; 4764 P-L, 3, 1, 0; 4770 P-L, 3, 1, 0; 4780 P-L, 6, 2, 4; 4809 P-L, 2, 1, 0; 4812 P-L, 3, 1, 0; 4905 P-L, 6, 2, 18; 6110 P-L, 3, 1, 0; 6184 P-L, 3, 1, 0; 6276 P-L, 3, 1, 0; 6309 P-L, 3, 1, 0; 6335 P-L, 3, 1, 0; 6538 P-L, 3, 1, 0; 6623 P-L, 3, 1, 0; 6637 P-L, 6, 2, 2544; 6704 P-L, 9, 3, 59; 6772 P-L, 3, 1, 0; 6774 P-L, 3, 1, 0; 6799 P-L, 2, 1, 0; 9093 P-L, 3, 1, 0; 9518 P-L, 3, 1, 0; 9606 P-L, 3, 1, 0; 1051 T-1, 3, 1, 0; 1056 T-1, 3, 1, 0; 1064 T-1, 3, 1, 0; 1211 T-1, 6, 2, 1507; 1220 T-1, 3, 1, 0; 1238 T-1, 3, 1, 0; 1276 T-1, 3, 1, 0; 2127 T-1, 2, 1, 0; 2307 T-1, 2, 1, 0; 3219 T-1, 6, 2, 4; 3222 T-1, 2, 1, 0; 3243 T-1, 2, 1, 0; 3290 T-1, 3, 1, 0; 4105 T-1, 3, 1, 0; 4109 T-1, 3, 1, 0; 4265 T-1, 3, 1, 0; 4841 T-1, 3, 1, 0; 1043 T-2, 3, 1, 0; 1107 T-2, 3, 1, 0; 1114 T-2, 3, 1, 0; 1131 T-2, 3, 1, 0; 1142 T-2, 3, 1, 0; 1158 T-2, 3, 1, 0; 1236 T-2, 6, 2, 1988; 1242 T-2, 6, 2, 1477; 1282 T-2, 3, 1, 0; 1320 T-2, 3, 1, 0; 1343 T-2, 3, 1, 0; 2028 T-2, 6, 2, 1860; 2056 T-2, 6, 1, 0; 2090 T-2, 3, 1, 0; 2184 T-2, 3, 1, 0; 2197 T-2, 3, 1, 0; 2204 T-2, 6, 2, 2245; 2638 T-2, 3, 1, 0; 3044 T-2, 3, 1, 0; 3144 T-2, 3, 1, 0; 3152 T-2, 3, 1, 0; 3161 T-2, 3, 1, 0; 3222 T-2, 6, 2, 2051; 3288 T-2, 3, 1, 0; 3353 T-2, 3, 1, 0; 4081 T-2, 3, 1, 0; 4089 T-2, 3, 1, 0; 4128 T-2, 6, 2, 25; 4136 T-2, 3, 1, 0; 4200 T-2, 6, 2, 17; 4249 T-2, 6, 2, 43; 4297 T-2, 3, 1, 0; 5049 T-2, 3, 1, 0; 1014 T-3, 6, 2, 2387; 1083 T-3, 3, 1, 0; 1090 T-3, 3, 1, 0; 2035 T-3, 3, 1, 0; 2367 T-3, 6, 2, 16; 2382 T-3, 3, 1, 0; 3150 T-3, 3, 1, 0; 3166 T-3, 3, 1, 0; 3168 T-3, 6, 2, 568; 3195 T-3, 3, 1, 0; 3283 T-3, 3, 1, 0; 3382 T-3, 2, 1, 0; 3477 T-3, 3, 1, 0; 4050 T-3, 6, 2, 9; 4079 T-3, 3, 1, 0; 4137 T-3, 3, 1, 0; 4208 T-3, 6, 1, 0; 4217 T-3, 3, 1, 0; 5083 T-3, 3, 1, 0; (298), 3, 1, 0; (893), 3, 1, 0; (950), 3, 1, 0; (958), 3, 1, 0; (1247), 3,

1, 0; (1345), 3, 1, 0; (1559), 3, 1, 0; (1668), 3, 1, 0; (1855), 6, 2, 4; (1924), 3, 1, 0; (1984), 3, 1, 0; (2030), 3, 1, 0; (2367), 3, 1, 0; (2586), 3, 1, 0; (2749), 3, 1, 0; (2885), 3, 1, 0; (2914), 3, 1, 0; (2941), 3, 1, 0; (2995), 3, 1, 0; (3337), 2, 1, 0; (3380), 2, 1, 0; (3429), 6, 2, 12; (3715), 3, 1, 0; (3742), 6, 2, 11; (3912), 3, 1, 0; (4003), 3, 1, 0; (4309), 6, 2, 9; (4372), 6, 2, 9; (4375), 9, 3, 3; (4402), 3, 1, 0; (4587), 3, 1, 0; (4782), 3, 1, 0; (4784), 3, 1, 0; (4831), 3, 1, 0; (4841), 3, 1, 0; (5144), 6, 2, 11; (5161), 3, 1, 0; (5233), 3, 1, 0; (5503), 3, 1, 0; (5507), 9, 3, 13; (5591), 3, 1, 0; (5859), 3, 1, 0; (5938), 3, 1, 0; (5961), 3, 1, 0; (6034), 3, 1, 0; (6040), 6, 2, 11; (6187), 3, 1, 0; (6549), 3, 1, 0; (6580), 3, 1, 0; (6667), 3, 1, 0; (6732), 3, 1, 0; (6750), 2, 1, 0; (6773), 6, 2, 8; (6812), 6, 2, 12; (6816), 3, 1, 0; (6836), 3, 1, 0; (6848), 3, 1, 0; (6930), 6, 2, 5; (6998), 5, 2, 7; (7149), 3, 1, 0; (7296), 6, 2, 6; (7408), 3, 1, 0; (7588), 6, 2, 7; (7613), 6, 2, 2; (8466), 3, 1, 0; (8485), 3, 1, 0; (8549), 3, 1, 0; (8602), 6, 2, 5; (8703), 6, 2, 6; (8797), 6, 2, 9; (8819), 3, 1, 0; (8869), 2, 1, 0; (8876), 3, 1, 0; (8918), 6, 2, 5; (8923), 6, 2, 4; (8949), 6, 2, 11; (9026), 2, 1, 0; (9040), 3, 1, 0; (9107), 5, 2, 7; (9336), 3, 1, 0; (9352), 3, 1, 0; (10997), 5, 2, 11; (11167), 3, 1, 0; (11300), 9, 2, 7; (11357), 3, 1, 0; [4640, 1021, 289*, 1991/09/05–1999/09/19]

693 University of Arizona, Catalina Station

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

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

1.54-m reflector + CCD

GSC-1.1

1999 RJ₃₃, 3, 1, 0; [3, 1, 0*, 1999/09/25]

695 Kitt Peak

C. W. Hergenrother, Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ 85721, U.S.A. [chergen@lpl.arizona.edu]

Observer C. W. Hergenrother

2.3-m $f/9$ reflector + CCD

GSC, USNO-A2.0

1999 HX₂, 3, 1, 0; 1999 RN₁₂₁, 3, 1, 0; [6, 2, 0*, 1999/09/13]

696 F. L. Whipple Observatory, Mount Hopkins

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

Observers C. Ernst, M. Holman

Measurer C. Ernst

1.2-m $f/8$ reflector + CCD

USNO-A1.0

1998 FZ₁₁₃, 3, 1, 0; [3, 1, 0*, 1996/09/19]

699 Lowell Observatory–LONEOS

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

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

Measurer B. W. Koehn

0.59-m LONEOS Schmidt + CCD

USNO-A2.0

1931 TC₂, 3, 1, 0; 1931 UB, 3, 1, 0; 1966 PL, 3, 1, 0; 1973 QR₁, 3, 1, 0; 1974 XW, 3, 1, 0; 1976 UN₁₄, 3, 1, 0; 1977 QF₁, 3, 1, 0; 1978 PE, 6, 2, 30; 1978 QF₁, 3, 1, 0; 1978 QA₂, 3, 1, 0; 1978 SX₇, 3, 1, 0; 1978 TO₈, 6, 2, 35; 1978 VX₄, 3, 1, 0; 1979 MM₃, 3, 1, 0; 1979 QP, 3, 1, 0; 1979 QJ₁, 6, 2, 34; 1979 QM₃, 3, 1, 0; 1980 DS₄, 3, 1, 0; 1980 FH₅, 3, 1, 0; 1981 DG₂, 3, 1, 0; 1981 EW₅, 3, 1, 0; 1981 EK₉, 6, 2, 14; 1981 EP₁₂, 3, 1, 0; 1981 EV₁₂, 3, 1, 0; 1981 EZ₁₂, 3, 1, 0; 1981 ET₁₃, 3, 1, 0; 1981 EY₁₃, 3, 1, 0; 1981 EZ₁₅, 3, 1, 0; 1981 EL₂₀, 3, 1, 0; 1981 ES₂₃, 3, 1, 0; 1981 ET₂₃, 3, 1, 0; 1981 EN₂₄, 3, 1, 0; 1981 EK₂₇, 3, 1, 0; 1981 EQ₃₀, 3, 1, 0; 1981 EL₃₃, 3, 1, 0; 1981 EQ₃₄, 3, 1, 0; 1981 EM₄₁, 3, 1, 0; 1981 EU₄₂, 3, 1, 0; 1981 EZ₄₂, 3, 1, 0; 1981 EE₄₆, 3, 1, 0; 1981 EE₄₇, 3, 1, 0; 1981 QR₂, 3, 1, 0; 1981 RF₂, 3, 1, 0; 1981 SE₉, 9, 3, 29; 1981 TK, 3, 1, 0; 1982 SC, 3, 1, 0; 1982 SM₂, 3, 1, 0; 1982 SO₅, 3, 1, 0; 1982 UA₆, 3, 1, 0; 1982 VY₃, 3, 1, 0; 1982 VD₅, 3, 1, 0; 1983 RL, 6, 2, 17; 1983 RL₃, 6, 2, 14; 1983 YK, 3, 1, 0; 1984 JE, 6, 2, 14; 1984 SY₁, 3, 1, 0; 1985 DA, 3, 1, 0; 1985 RW, 3, 1, 0; 1985 UJ₃, 3, 1, 0; 1986 EP₅, 3, 1, 0;

1986 PY₃, 3, 1, 0; 1986 QY₂, 9, 3, 31; 1986 RW₅, 3, 1, 0; 1986 VW, 3, 1, 0; 1987 QW₂, 3, 1, 0; 1987 SE₃, 3, 1, 0; 1988 BC₄, 3, 1, 0; 1988 CW₂, 3, 1, 0; 1988 DF₂, 6, 2, 14; 1988 EY₁, 3, 1, 0; 1988 PR, 3, 1, 0; 1988 RJ₃, 3, 1, 0; 1988 RM₃, 6, 2, 6; 1988 RW₃, 6, 2, 7; 1988 RP₄, 6, 2, 20; 1988 RZ₅, 3, 1, 0; 1988 RJ₆, 3, 1, 0; 1988 RG₁₀, 3, 1, 0; 1988 SN, 3, 1, 0; 1988 TE, 9, 3, 37; 1988 VA, 3, 1, 0; 1988 VT₂, 3, 1, 0; 1988 VR₃, 3, 1, 0; 1989 GS₄, 6, 2, 7; 1989 RL, 3, 1, 0; 1989 SL₂, 2, 1, 0; 1989 UU₃, 3, 1, 0; 1989 WU₂, 3, 1, 0; 1989 XD₁, 6, 2, 13; 1990 DW₂, 6, 2, 20; 1990 KD₁, 3, 1, 0; 1990 OZ, 3, 1, 0; 1990 OG₄, 3, 1, 0; 1990 OS₄, 3, 1, 0; 1990 RC₂, 6, 2, 20; 1990 RA₃, 3, 1, 0; 1990 RD₅, 6, 2, 21; 1990 SF₁, 3, 1, 0; 1990 SX₈, 3, 1, 0; 1990 SU₁₅, 3, 1, 0; 1990 TT₁₀, 3, 1, 0; 1990 UO₄, 3, 1, 0; 1990 VV₈, 3, 1, 0; 1990 WZ, 3, 1, 0; 1990 WU₁, 3, 1, 0; 1991 AB₂, 6, 2, 1; 1991 BZ, 3, 1, 0; 1991 CO₁, 3, 1, 0; 1991 EY₁, 6, 2, 30; 1991 ED₂, 3, 1, 0; 1991 EX₂, 6, 2, 1; 1991 EA₄, 3, 1, 0; 1991 FJ₂, 3, 1, 0; 1991 GU₃, 3, 1, 0; 1991 GZ₄, 6, 2, 27; 1991 GY₇, 3, 1, 0; 1991 GE₉, 3, 1, 0; 1991 GJ₁₀, 3, 1, 0; 1991 JF, 3, 1, 0; 1991 LV₂, 3, 1, 0; 1991 PT₁₀, 3, 1, 0; 1991 RP₁, 6, 2, 20; 1991 RV₂, 3, 1, 0; 1991 RB₁₉, 6, 2, 1; 1991 RN₂₇, 3, 1, 0; 1991 SD₁, 3, 1, 0; 1991 TH₃, 3, 1, 0; 1991 UE₂, 3, 1, 0; 1991 UL₃, 3, 1, 0; 1991 VJ₁, 6, 2, 27; 1991 VU₄, 3, 1, 0; 1991 VU₅, 6, 2, 11; 1991 XH, 3, 1, 0; 1991 YU, 3, 1, 0; 1992 AE₁, 3, 1, 0; 1992 CP₂, 3, 1, 0; 1992 DL₇, 3, 1, 0; 1992 ER₄, 6, 2, 6; 1992 EG₆, 3, 1, 0; 1992 ER₈, 3, 1, 0; 1992 EB₁₆, 3, 1, 0; 1992 GM₂, 3, 1, 0; 1992 GZ₄, 3, 1, 0; 1992 OP₅, 3, 1, 0; 1992 OJ₈, 9, 3, 29; 1992 PQ₁, 4, 2, 29; 1992 PO₂, 6, 2, 17; 1992 PV₃, 3, 1, 0; 1992 RS₅, 3, 1, 0; 1992 SG₁₃, 3, 1, 0; 1992 SK₁₃, 3, 1, 0; 1992 ST₁₇, 3, 1, 0; 1992 UW₁, 3, 1, 0; 1992 UD₃, 3, 1, 0; 1992 UE₄, 3, 1, 0; 1992 UP₈, 3, 1, 0; 1992 WJ, 3, 1, 0; 1992 WX, 6, 2, 13; 1992 WD₁, 3, 1, 0; 1992 YA₁, 3, 1, 0; 1993 BN, 3, 1, 0; 1993 BT₂, 3, 1, 0; 1993 BX₂, 3, 1, 0; 1993 BD₄, 3, 1, 0; 1993 BZ₁₂, 3, 1, 0; 1993 CJ₁, 3, 1, 0; 1993 DJ₁, 3, 1, 0; 1993 FL₄, 3, 1, 0; 1993 FM₅, 3, 1, 0; 1993 FB₈, 3, 1, 0; 1993 FV₁₁, 3, 1, 0; 1993 FY₁₂, 2, 1, 0; 1993 FF₁₉, 6, 2, 29; 1993 FS₂₃, 6, 2, 26; 1993 FU₂₄, 6, 2, 20; 1993 FZ₂₄, 9, 3, 36; 1993 FH₂₇, 6, 2, 30; 1993 FS₂₇, 3, 1, 0; 1993 FU₃₃, 3, 1, 0; 1993 FA₃₇, 3, 1, 0; 1993 FX₅₀, 3, 1, 0; 1993 FD₅₁, 6, 2, 1; 1993 FU₅₁, 3, 1, 0; 1993 FZ₅₇, 3, 1, 0; 1993 GL, 6, 2, 27; 1993 GR, 3, 1, 0; 1993 HY₅, 3, 1, 0; 1993 LE, 3, 1, 0; 1993 OR₈, 3, 1, 0; 1993 OF₉, 3, 1, 0; 1993 PB₇, 3, 1, 0; 1993 SE₃, 3, 1, 0; 1993 ST₅, 2, 1, 0; 1993 UD₇, 3, 1, 0; 1994 AC, 3, 1, 0; 1994 AN₂, 3, 1, 0; 1994 AX₆, 9, 3, 37; 1994 BY, 3, 1, 0; 1994 BH₁, 6, 2, 1; 1994 BG₄, 3, 1, 0; 1994 BN₄, 3, 1, 0; 1994 CL, 6, 2, 6; 1994 CA₁, 3, 1, 0; 1994 CN₈, 3, 1, 0; 1994 CX₁₂, 3, 1, 0; 1994 CO₁₆, 3, 1, 0; 1994 CO₁₇, 3, 1, 0; 1994 CL₁₈, 6, 2, 30; 1994 ES, 3, 1, 0; 1994 EC₅, 3, 1, 0; 1994 FY, 6, 2, 13; 1994 HA, 3, 1, 0; 1994 JG₄, 3, 1, 0; 1994 JQ₆, 3, 1, 0; 1994 LC, 6, 2, 13; 1994 LH, 3, 1, 0; 1994 PQ₁₀, 9, 3, 30; 1994 PX₁₁, 3, 1, 0; 1994 PT₁₃, 2, 1, 0; 1994 PC₁₄, 6, 2, 20; 1994 PK₂₀, 3, 1, 0; 1994 PW₂₉, 3, 1, 0; 1994 QQ, 3, 1, 0; 1994 RB₁₇, 3, 1, 0; 1994 TF₁, 3, 1, 0; 1994 UH₂, 3, 1, 0; 1994 UZ₁₂, 3, 1, 0; 1994 WG, 2, 1, 0; 1995 FA₇, 3, 1, 0; 1995 GV, 3, 1, 0; 1995 HK, 3, 1, 0; 1995 KF, 3, 1, 0; 1995 OS₁, 5, 2, 7; 1995 ON₄, 3, 1, 0; 1995 GR, 3, 1, 0; 1995 SO₂, 3, 1, 0; 1995 SS₄, 6, 2, 25; 1995 SP₈, 2, 1, 0; 1995 SW₂₅, 3, 1, 0; 1995 SH₂₆, 3, 1, 0; 1995 ST₅₄, 3, 1, 0; 1995 TF₂, 3, 1, 0; 1995 TG₂, 3, 1, 0; 1995 UG₂, 3, 1, 0; 1995 UE₈, 3, 1, 0; 1995 UQ₄₄, 3, 1, 0; 1995 VG, 3, 1, 0; 1995 WB, 3, 1, 0; 1995 WD₁, 6, 2, 46; 1995 WM₆, 3, 1, 0; 1995 WP₁₇, 3, 1, 0; 1995 XC, 3, 1, 0; 1995 XT, 3, 1, 0; 1995 XX, 3, 1, 0; 1995 XU₁, 3, 1, 0; 1995 YB₁, 3, 1, 0; 1995 YJ₁, 3, 1, 0; 1995 YN₄, 3, 1, 0; 1996 AG₂, 3, 1, 0; 1996 BQ₂, 3, 1, 0; 1996 BM₃, 6, 2, 37; 1996 CL₂, 3, 1, 0; 1996 EG, 3, 1, 0; 1996 EX₁, 3, 1, 0; 1996 RG₁, 3, 1, 0; 1996 SC₁, 3, 1, 0; 1996 TX₇, 3, 1, 0; 1996 TC₈, 3, 1, 0; 1996 TJ₁₁, 9, 3, 47; 1996 TT₁₄, 9, 3, 37; 1996 TD₁₅, 3, 1, 0; 1996 UF, 3, 1, 0; 1996 UZ, 3, 1, 0; 1996 UB₁, 3, 1, 0; 1996 VT, 3, 1, 0; 1996 VJ₂, 3, 1, 0; 1996 VB₅, 3, 1, 0; 1996 VT₅, 3, 1, 0; 1996 VU₈, 3, 1, 0; 1996 VZ₈, 6, 2, 8; 1996 VY₂₉, 3, 1, 0; 1996 VY₃₈, 3, 1, 0; 1996 WA, 3, 1, 0; 1996 XG, 3, 1, 0; 1996 XB₃, 3, 1, 0; 1996 XJ₁₅, 6, 2, 13; 1996 XF₁₉, 6, 2, 4; 1996 XZ₃₀, 3, 1, 0; 1996 XQ₃₂, 3, 1, 0; 1996 YN₂, 3, 1, 0; 1997 AE, 3, 1, 0; 1997 AD₁, 9, 3, 37; 1997 AV₁, 3, 1, 0; 1997 AA₂, 3, 1, 0; 1997 AZ₃, 3, 1, 0; 1997 AO₄, 3, 1, 0; 1997 AV₄, 6, 2, 53; 1997 AB₅, 3, 1, 0; 1997 AB₆, 3, 1, 0; 1997 AC₇, 3, 1, 0; 1997 AR₈, 6, 2, 1; 1997 AJ₁₃, 6, 2, 3; 1997 AZ₂₁, 3, 1, 0; 1997 AM₂₂, 3, 1, 0; 1997 BX, 3, 1, 0; 1997 BZ₁, 5, 2, 14; 1997 BN₃, 6, 2, 8; 1997 BO₃, 3, 1, 0; 1997 BT₃, 3, 1, 0; 1997 CR, 3, 1, 0; 1997 CY, 3, 1, 0; 1997 CG₁, 3, 1, 0; 1997 CX₂, 6, 2, 30; 1997 CK₁₃, 3, 1, 0; 1997 CP₁₉, 3, 1, 0; 1997 CR₁₉, 3, 1, 0; 1997 CA₂₀, 3, 1, 0; 1997 CD₂₀, 3, 1, 0; 1997 CF₂₂, 3, 1, 0; 1997 CK₂₂, 3, 1, 0; 1997 CS₂₈, 3, 1, 0; 1997 CC₂₉, 3, 1, 0; 1997 EL, 6, 2, 26; 1997 EK₆, 3, 1, 0; 1997 EL₆, 3, 1, 0; 1997 EO₇, 3, 1, 0; 1997 EQ₁₇, 3, 1, 0; 1997 EM₂₅, 3, 1, 0; 1997 EQ₂₅, 3, 1, 0; 1997 ER₂₆, 3, 1, 0; 1997 FL₂, 3, 1, 0; 1997 FK₄, 3, 1, 0; 1997 GX₇, 6, 2, 1; 1997 GG₂₃, 3, 1, 0; 1997 GL₂₃, 3, 1, 0; 1997 GX₂₄, 2, 1, 0; 1997 HE₁₄, 3, 1, 0; 1997 XH, 3, 1, 0; 1997 XZ₄, 3, 1, 0; 1998 AR₄, 3, 1, 0; 1998 AU₉, 3, 1, 0; 1998 AV₉, 3, 1, 0; 1998 BG₄, 3, 1, 0; 1998 BM₁₇, 3, 1, 0; 1998 BJ₁₉, 3, 1, 0; 1998 BN₂₅, 6, 2, 27; 1998 BH₂₆, 3, 1, 0; 1998 BL₃₉, 3, 1, 0; 1998 CR₁, 3, 1, 0; 1998 CP₂, 9, 3, 30; 1998 CC₃, 3, 1, 0; 1998 DU, 3, 1, 0; 1998 DK₁, 6, 2, 36; 1998 DY₄, 6, 2, 1; 1998 DT₉, 3, 1, 0; 1998 DY₉, 3, 1, 0; 1998 DT₁₀, 3, 1, 0; 1998 DE₁₁, 9, 3, 28; 1998 DT₁₁, 6, 2, 30; 1998 DK₁₄, 3, 1, 0; 1998 DG₂₀, 3, 1, 0; 1998 DW₃₁, 6, 2, 18; 1998 DT₃₄, 3, 1, 0; 1998 DB₃₆, 3, 1, 0; 1998 EF, 6, 2, 27; 1998 EP₁, 3, 1, 0; 1998 EP₃, 3, 1, 0; 1998 EP₆, 3, 1, 0; 1998 EX₆, 3, 1, 0; 1998 EJ₁₁, 6, 2, 26; 1998 EP₁₁, 3, 1, 0; 1998 FO₅, 3, 1, 0; 1998 FC₉, 6, 2, 28; 1998 FB₁₀, 3, 1, 0; 1998 FP₁₁, 3, 1, 0; 1998 FY₁₁, 6, 2, 50; 1998 FM₁₂, 3, 1, 0; 1998 FB₁₄, 3, 1, 0; 1998 FY₁₄, 3, 1, 0; 1998 FZ₁₄, 3, 1, 0; 1998 FV₁₅, 3, 1, 0; 1998 FF₁₆, 3, 1, 0; 1998 FW₁₉, 6, 2, 37; 1998 FJ₂₂, 3, 1, 0; 1998 FY₃₅, 3, 1, 0; 1998 FM₄₀, 3, 1, 0; 1998 FN₄₃, 3, 1, 0; 1998 FL₄₄, 3, 1, 0; 1998 FR₄₇, 3, 1, 0; 1998 FO₄₈, 6, 2, 29; 1998 FJ₄₉, 3, 1, 0; 1998 FQ₄₉, 3, 1, 0; 1998 FG₅₃, 3, 1, 0; 1998 FM₅₄, 3, 1, 0; 1998 FG₅₆, 9, 3, 30; 1998 FV₆₀, 3, 1, 0; 1998 FF₆₂, 3, 1, 0; 1998 FK₆₃, 3, 1, 0; 1998 FP₆₅, 3, 1, 0; 1998 FF₆₆, 3, 1,

0; 1998 FO₆₆, 5, 2, 1; 1998 FW₆₆, 6, 2, 26; 1998 FV₆₇, 6, 2, 1; 1998 FE₆₉, 6, 2, 20; 1998 FX₆₉, 6, 2, 13; 1998 FO₇₀, 3, 1, 0; 1998 FZ₇₀, 3, 1, 0; 1998 FZ₇₃, 2, 1, 0; 1998 FA₇₄, 2, 1, 0; 1998 FC₇₄, 6, 2, 26; 1998 FD₇₄, 3, 1, 0; 1998 FC₇₅, 3, 1, 0; 1998 FS₇₅, 3, 1, 0; 1998 FL₇₆, 3, 1, 0; 1998 FR₇₆, 3, 1, 0; 1998 FG₇₇, 6, 2, 13; 1998 FP₇₇, 3, 1, 0; 1998 FS₇₇, 9, 3, 24; 1998 FJ₇₈, 3, 1, 0; 1998 FU₇₉, 3, 1, 0; 1998 FU₉₀, 6, 2, 25; 1998 FP₉₃, 3, 1, 0; 1998 FZ₉₇, 3, 1, 0; 1998 FX₉₈, 6, 2, 28; 1998 FY₉₉, 9, 3, 28; 1998 FZ₁₀₂, 6, 2, 29; 1998 FJ₁₀₅, 3, 1, 0; 1998 FB₁₁₁, 3, 1, 0; 1998 FM₁₁₃, 2, 1, 0; 1998 FD₁₁₄, 3, 1, 0; 1998 FE₁₁₄, 3, 1, 0; 1998 FB₁₁₅, 3, 1, 0; 1998 FH₁₁₅, 3, 1, 0; 1998 FT₁₁₅, 6, 2, 14; 1998 FE₁₁₇, 3, 1, 0; 1998 FG₁₁₇, 3, 1, 0; 1998 FL₁₁₇, 3, 1, 0; 1998 FS₁₁₈, 3, 1, 0; 1998 FL₁₂₁, 2, 1, 0; 1998 FS₁₂₁, 3, 1, 0; 1998 FP₁₂₂, 3, 1, 0; 1998 FA₁₂₃, 3, 1, 0; 1998 FE₁₂₅, 3, 1, 0; 1998 FM₁₂₆, 3, 1, 0; 1998 FZ₁₃₀, 4, 2, 17; 1998 GJ₁, 3, 1, 0; 1998 GW₁₀, 6, 2, 26; 1998 HT, 3, 1, 0; 1998 HF₃, 3, 1, 0; 1998 HY₆, 3, 1, 0; 1998 HE₈, 3, 1, 0; 1998 HH₁₉, 6, 2, 25; 1998 HT₁₉, 6, 2, 15; 1998 HO₃₃, 3, 1, 0; 1998 HO₃₅, 3, 1, 0; 1998 HK₃₉, 3, 1, 0; 1998 HT₃₉, 3, 1, 0; 1998 HS₄₂, 6, 2, 13; 1998 HT₄₂, 3, 1, 0; 1998 HW₄₄, 3, 1, 0; 1998 HY₄₄, 3, 1, 0; 1998 HO₄₅, 3, 1, 0; 1998 HV₅₀, 3, 1, 0; 1998 HB₅₁, 6, 2, 30; 1998 HH₅₁, 3, 1, 0; 1998 HJ₅₄, 3, 1, 0; 1998 HM₅₇, 6, 2, 21; 1998 HS₆₀, 3, 1, 0; 1998 HN₆₈, 3, 1, 0; 1998 HA₇₅, 3, 1, 0; 1998 HN₇₉, 6, 2, 30; 1998 HV₇₉, 3, 1, 0; 1998 HP₈₃, 3, 1, 0; 1998 HQ₉₂, 6, 2, 18; 1998 HH₉₃, 3, 1, 0; 1998 HA₉₄, 3, 1, 0; 1998 HU₉₄, 3, 1, 0; 1998 HD₉₅, 3, 1, 0; 1998 HS₉₆, 3, 1, 0; 1998 HQ₉₇, 3, 1, 0; 1998 HT₉₈, 3, 1, 0; 1998 HJ₉₉, 9, 3, 47; 1998 HX₉₉, 6, 2, 6; 1998 HC₁₀₀, 9, 3, 30; 1998 HF₁₀₀, 6, 2, 29; 1998 HH₁₁₄, 6, 2, 13; 1998 HV₁₁₆, 3, 1, 0; 1998 HW₁₁₈, 3, 1, 0; 1998 HN₁₁₉, 6, 2, 26; 1998 HL₁₂₀, 3, 1, 0; 1998 HM₁₂₁, 3, 1, 0; 1998 HC₁₂₂, 3, 1, 0; 1998 HF₁₂₂, 3, 1, 0; 1998 HT₁₂₅, 3, 1, 0; 1998 HV₁₃₇, 3, 1, 0; 1998 HR₁₄₀, 3, 1, 0; 1998 HV₁₄₃, 3, 1, 0; 1998 HH₁₄₆, 2, 1, 0; 1998 HM₁₄₆, 3, 1, 0; 1998 HD₁₄₈, 6, 2, 12; 1998 JK, 3, 1, 0; 1998 JR, 3, 1, 0; 1998 JO₁, 9, 3, 37; 1998 JV₁, 3, 1, 0; 1998 JC₂, 6, 2, 30; 1998 JO₂, 3, 1, 0; 1998 JX₂, 6, 2, 14; 1998 JB₄, 3, 1, 0; 1998 JF₄, 3, 1, 0; 1998 KL, 6, 2, 20; 1998 KL₁, 3, 1, 0; 1998 KW₃, 2, 1, 0; 1998 KV₇, 3, 1, 0; 1998 KA₁₀, 6, 2, 13; 1998 KF₁₄, 3, 1, 0; 1998 KD₁₈, 6, 2, 16; 1998 KK₁₈, 3, 1, 0; 1998 KY₁₈, 6, 2, 27; 1998 KS₁₉, 3, 1, 0; 1998 KL₂₀, 3, 1, 0; 1998 KV₂₀, 3, 1, 0; 1998 KD₂₂, 3, 1, 0; 1998 KY₂₇, 3, 1, 0; 1998 KR₂₉, 6, 2, 48; 1998 KL₃₁, 3, 1, 0; 1998 KO₃₁, 3, 1, 0; 1998 KO₃₅, 3, 1, 0; 1998 KY₃₅, 6, 2, 14; 1998 KG₃₈, 6, 2, 20; 1998 KS₃₉, 3, 1, 0; 1998 KE₄₀, 6, 2, 13; 1998 KO₄₆, 6, 2, 13; 1998 KF₄₇, 3, 1, 0; 1998 KV₄₇, 3, 1, 0; 1998 KJ₄₈, 3, 1, 0; 1998 KB₅₁, 3, 1, 0; 1998 KQ₅₁, 3, 1, 0; 1998 KU₅₁, 3, 1, 0; 1998 KJ₅₂, 3, 1, 0; 1998 KF₅₃, 6, 2, 6; 1998 KZ₅₄, 3, 1, 0; 1998 KB₅₅, 6, 2, 3; 1998 KL₅₅, 3, 1, 0; 1998 KR₅₅, 3, 1, 0; 1998 KU₅₅, 6, 2, 13; 1998 KN₅₆, 6, 2, 30; 1998 KR₆₂, 3, 1, 0; 1998 LL₂, 3, 1, 0; 1998 MK₄, 3, 1, 0; 1998 ML₄, 9, 3, 31; 1998 MC₄₅, 3, 1, 0; 1998 OH₆, 3, 1, 0; 1998 OM₁₂, 3, 1, 0; 1998 PO₁, 3, 1, 0; 1998 QN₇, 3, 1, 0; 1998 QZ₈₀, 3, 1, 0; 1998 QS₉₃, 9, 3, 70; 1998 RB₆₂, 9, 2, 45; 1998 SD₂, 3, 1, 0; 1998 SJ₁₄₁, 3, 1, 0; 1998 UG₃₂, 6, 2, 17; 1998 UL₃₈, 3, 1, 0; 1998 WX₁₇, 6, 2, 16; 1998 XL₄, 9, 3, 29; 1998 YR₁₈, 6, 2, 12; 1999 DV₁, 3, 1, 0; 1999 FT₈, 3, 1, 0; 1999 FE₃₇, 3, 1, 0; 1999 JB₅₀, 3, 1, 0; 1999 JB₈₁, 3, 1, 0; 1999 JM₈₁, 3, 1, 0; 1999 KG₄, 9, 3, 12; 1999 KR₄, 3, 1, 0; 1999 KS₇, 3, 1, 0; 1999 LV₁, 6, 2, 7; 1999 LM₇, 6, 2, 35; 1999 LO₇, 6, 2, 35; 1999 MK₁, 3, 1, 0; 1999 ML₁, 3, 1, 0; 1999 MM₁, 3, 1, 0; 1999 MN₁, 3, 1, 0; 1999 MV₁, 3, 1, 0; 1999 MC₂, 3, 1, 0; 1999 NV, 3, 1, 0; 1999 NA₁, 6, 2, 27; 1999 NB₁, 6, 2, 1; 1999 NM₂, 5, 2, 11; 1999 NN₂, 3, 1, 0; 1999 NP₂, 3, 1, 0; 1999 NQ₂, 3, 1, 0; 1999 NZ₃, 3, 1, 0; 1999 NB₄, 3, 1, 0; 1999 ND₄, 3, 1, 0; 1999 NF₄, 6, 2, 29; 1999 NG₄, 3, 1, 0; 1999 NH₄, 6, 2, 32; 1999 NR₄, 6, 2, 1; 1999 NT₄, 3, 1, 0; 1999 NX₄, 6, 2, 7; 1999 NF₅, 3, 1, 0; 1999 NG₅, 6, 2, 8; 1999 NC₆, 6, 2, 81; 1999 NK₆, 3, 1, 0; 1999 NZ₆, 6, 2, 1; 1999 NF₇, 3, 1, 0; 1999 NL₇, 5, 2, 1; 1999 NN₇, 3, 1, 0; 1999 NR₇, 6, 2, 84; 1999 NA₈, 3, 1, 0; 1999 NB₈, 3

1999 PA₄, 3, 1, 0; 1999 PK₄, 3, 1, 0; 1999 PL₄, 3, 1, 0; 1999 PO₄, 3, 1, 0; 1999 PR₄, 3, 1, 0; 1999 PT₄, 3, 1, 0; 1999 PV₄, 6, 2, 13; 1999 PW₄, 3, 1, 0; 1999 PZ₄, 3, 1, 0; 1999 PB₅, 3, 1, 0; 1999 PS₅, 3, 1, 0; 1999 PH₆ *, 6, 2, 6; 1999 PJ₆ *, 6, 2, 5; 1999 PK₆ *, 6, 2, 9; 1999 PL₆ *, 6, 2, 1; 1999 PM₆ *, 6, 2, 1; 1999 PN₆ *, 6, 2, 1; 1999 PO₆ *, 6, 2, 1; 1999 PP₆ *, 6, 2, 1; 1999 PQ₆ *, 6, 2, 1; 1999 QA₃, 1, 0; 1999 QJ₂, 6, 2, 31; 1999 QQ₂, 3, 1, 0; 1999 QR₁, 3, 1, 0; 1999 QV₁, 3, 1, 0; 1999 QB₂, 3, 1, 0; 1999 QJ₂, 12, 3, 30; 1999 QO₂, 3, 1, 0; 1999 QP₂, 6, 2, 17; 1999 QS₂, 3, 1, 0; 1999 QT₂, 6, 2, 26; 1999 RA₆, 2, 22; 1999 RB₃, 3, 1, 0; 1999 RE₃, 3, 1, 0; 1999 RF₃, 3, 1, 0; 1999 RL₃, 3, 1, 0; 1999 RN₃, 3, 1, 0; 1999 RO₃, 3, 1, 0; 1999 RP₃, 3, 1, 0; 1999 RR₃, 3, 1, 0; 1999 RS₃, 3, 1, 0; 1999 RT₃, 3, 1, 0; 1999 RV₃, 3, 1, 0; 1999 RW₃, 3, 1, 0; 1999 RX₃, 3, 1, 0; 1999 RY₆, 6, 2, 8; 1999 RC₁, 3, 1, 0; 1999 RD₁, 3, 1, 0; 1999 RG₁, 3, 1, 0; 1999 RH₁, 3, 1, 0; 1999 RJ₁, 3, 1, 0; 1999 RW₁, 3, 1, 0; 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1999 RS₁₂, 3, 1, 0; 1999 RV₁₂, 3, 1, 0; 1999 RW₁₂, 3, 1, 0; 1999 RY₁₂, 3, 1, 0; 1999 RZ₁₂, 3, 1, 0; 1999 RA₁₃, 3, 1, 0; 1999 RB₁₃, 6, 2, 14; 1999 RC₁₃, 3, 1, 0; 1999 RD₁₃, 3, 1, 0; 1999 RF₁₃, 3, 1, 0; 1999 RH₁₃, 3, 1, 0; 1999 RL₁₃, 3, 1, 0; 1999 RF₁₄, 3, 1, 0; 1999 RH₁₄, 3, 1, 0; 1999 RK₁₄, 6, 2, 14; 1999 RM₁₄, 3, 1, 0; 1999 RN₁₄, 3, 1, 0; 1999 RR₁₄, 3, 1, 0; 1999 RS₁₄, 6, 2, 17; 1999 RM₁₅, 3, 1, 0; 1999 RD₁₆, 3, 1, 0; 1999 RS₁₆, 3, 1, 0; 1999 RV₁₆, 3, 1, 0; 1999 RW₁₆, 3, 1, 0; 1999 RX₁₆, 3, 1, 0; 1999 RY₁₆, 6, 2, 20; 1999 RZ₁₆, 6, 2, 20; 1999 RA₁₇, 3, 1, 0; 1999 RJ₁₇, 3, 1, 0; 1999 RK₁₇, 3, 1, 0; 1999 RL₁₇, 3, 1, 0; 1999 RV₁₇, 3, 1, 0; 1999 RT₁₇, 3, 1, 0; 1999 RV₁₇, 3, 1, 0; 1999 RW₁₇, 3, 1, 0; 1999 RX₁₇, 3, 1, 0; 1999 RY₁₇, 3, 1, 0; 1999 RB₁₈, 3, 1, 0; 1999 RD₁₈, 3, 1, 0; 1999 RE₁₈, 3, 1, 0; 1999 RF₁₈, 3, 1, 0; 1999 RG₁₈, 6, 2, 26; 1999 RJ₁₈, 3, 1, 0; 1999 RK₁₈, 3, 1, 0; 1999 RM₁₈, 3, 1, 0; 1999 RQ₁₈, 3, 1, 0; 1999 RS₁₈, 3, 1, 0; 1999 RS₁₈, 3, 1, 0; 1999 RU₁₈, 3, 1, 0; 1999 RV₁₈, 3, 1, 0; 1999 RW₁₈, 3, 1, 0; 1999 RX₁₈, 3, 1, 0; 1999 RB₁₉ *, 3, 1, 0; 1999 RH₁₉, 3, 1, 0; 1999 RO₁₉, 3, 1, 0; 1999 RP₁₉, 6, 2, 20; 1999 RR₁₉, 3, 1, 0; 1999 RS₁₉, 3, 1, 0; 1999 RU₁₉, 6, 2, 20; 1999 RV₁₉, 3, 1, 0; 1999 RW₁₉, 6, 2, 20; 1999 RX₁₉, 3, 1, 0; 1999 RE₂₀, 3, 1, 0; 1999 RF₂₀, 3, 1, 0; 1999 RJ₂₀, 3, 1, 0; 1999 RK₂₀, 3, 1, 0; 1999 RB₂₁, 3, 1, 0; 1999 RE₂₁, 3, 1, 0; 1999 RF₂₁, 3, 1, 0; 1999 RG₂₁, 3, 1, 0; 1999 RH₂₁, 3, 1, 0; 1999 RJ₂₁, 3, 1, 0; 1999 RK₂₁, 3, 1, 0; 1999 RL₂₁, 3, 1, 0; 1999 RT₂₁, 3, 1, 0; 1999 RV₂₁, 3, 1, 0; 1999 RA₂₂, 3, 1, 0; 1999 RG₂₂, 3, 1, 0; 1999 RD₂₂, 3, 1, 0; 1999 RS₂₂, 6, 2, 27; 1999 RV₂₂, 3, 1, 0; 1999 RA₂₃, 3, 1, 0; 1999 RF₂₃, 3, 1, 0; 1999 RK₂₃, 3, 1, 0; 1999 RO₂₃, 3, 1, 0; 1999 RQ₂₃, 3, 1, 0; 1999 RR₂₃, 3, 1, 0; 1999 RV₂₃, 3, 1, 0; 1999 RW₂₃, 3, 1, 0; 1999 RX₂₃, 3, 1, 0; 1999 RY₂₃, 3, 1, 0; 1999 RA₂₄, 3, 1, 0; 1999 RB₂₄, 3, 1, 0; 1999 RC₂₄, 3, 1, 0; 1999 RE₂₄, 3, 1, 0; 1999 RF₂₄, 3, 1, 0; 1999 RR₂₄, 3, 1, 0; 1999 RS₂₄, 3, 1, 0; 1999 RV₂₄, 3, 1, 0; 1999 RB₂₅, 3, 1, 0; 1999 RG₂₅, 3, 1, 0; 1999 RH₂₅, 3, 1, 0; 1999 RK₂₅, 3, 1, 0; 1999 RP₂₅, 3, 1, 0; 1999 RS₂₅, 3, 1, 0; 1999 RU₂₅, 3, 1, 0; 1999 RJ₂₆, 3, 1, 0; 1999 RN₂₆, 3, 1, 0; 1999 RD₂₇, 3, 1, 0; 1999 RE₂₇, 6, 2, 26; 1999 RG₂₇, 3, 1, 0; 1999 RH₂₇, 3, 1, 0; 1999 RK₂₇, 3, 1, 0; 1999 RM₂₇, 6, 2, 30; 1999 RV₂₇, 9, 3, 30; 1999 RP₂₇, 3, 1, 0; 1999 RQ₂₇, 6, 2, 20; 1999 RR₂₇, 3, 1, 0; 1999 RS₂₇, 6, 2, 10; 1999 RT₂₇, 6, 1, 0; 1999 RU₂₇, 3, 1, 0; 1999 RV₂₇, 3, 1, 0; 1999 RY₂₇, 6, 2, 26; 1999 RZ₂₇, 3, 1, 0; 1999 RE₂₈, 3, 1, 0; 1999 RG₂₈ *, 3, 1, 0; 1999 RQ₂₈ *, 3, 1, 0; 1999 RX₂₈, 6, 2, 26; 1999 RY₂₈, 6, 2, 16; 1999 RA₂₉, 3, 1, 0; 1999 RO₂₉, 3, 1, 0; 1999 RQ₂₉, 3, 1, 0; 1999 RS₂₉, 6, 2, 31; 1999 RT₂₉, 3, 1, 0; 1999 RW₂₉, 3, 1, 0; 1999 RD₃₀, 3, 1, 0; 1999 RW₃₀, 6, 2, 27; 1999 RK₃₁, 3, 1, 0; 1999 RL₃₁, 6, 2, 23; 1999 RM₃₁, 3, 1, 0; 1999 RN₃₁, 3, 1, 0; 1999 RB₃₂, 3, 1, 0; 1999 RC₃₂, 3, 1, 0; 1999 RD₃₂, 3, 1, 0; 1999 RF₃₂, 6, 2, 20; 1999 RX₃₂, 6, 2, 1; 1999 RA₃₃, 3, 1, 0; 1999 RC₃₃, 3, 1, 0; 1999 RD₃₃, 3, 1, 0; 1999 RF₃₃, 3, 1, 0; 1999 RP₃₃, 3, 1, 0; 1999 RQ₃₃, 3, 1, 0; 1999 RX₃₃, 3, 1, 0; 1999 RA₃₄, 3, 1, 0; 1999 RD₃₄, 3, 1, 0; 1999 RJ₃₄, 3, 1, 0; 1999 RM₃₄, 3, 1, 0; 1999 RW₃₄, 3, 1, 0; 1999 RA₃₅, 3, 1, 0; 1999 RH₃₅, 6, 2, 23; 1999 RM₃₅, 3, 1, 0; 1999 RO₃₅, 6, 2, 9; 1999 RS₃₅, 3, 1, 0; 1999 RY₃₅, 3, 1, 0; 1999 RA₃₆, 3, 1, 0; 1999 RE₃₆, 9, 3, 28; 1999 RK₃₆, 6, 2, 14; 1999 RP₃₆ *, 3, 1, 0; 1999 RW₃₆, 3, 1, 0; 1999 RZ₃₆, 3, 1, 0; 1999 RB₃₇, 3, 1, 0; 1999 RC₃₇, 3, 1, 0; 1999 RD₃₇, 6, 2, 26; 1999 RY₃₇, 3, 1, 0; 1999 RD₃₈, 3, 1, 0; 1999 RE₃₈, 3, 1, 0; 1999 RJ₃₈, 3, 1, 0; 1999 RL₃₈, 3, 1, 0; 1999 RM₃₈, 3, 1, 0; 1999 RY₃₈, 6, 2, 26; 1999 RO₃₉, 3, 1, 0; 1999 RP₃₉, 3, 1, 0; 1999 RR₃₉, 3, 1, 0; 1999 RS₃₉, 6, 2, 11; 1999 RU₃₉, 3, 1, 0; 1999 RE₄₀, 3, 1, 0; 1999 RF₄₀, 3, 1, 0; 1999 RK₄₀, 6, 2, 30; 1999 RN₄₀, 3, 1, 0; 1999 RP₄₀, 3, 1, 0; 1999 RH₄₁, 3, 1, 0; 1999 RV₄₁, 3, 1, 0; 1999 RW₄₁, 3, 1, 0; 1999 RX₄₁, 3, 1, 0; 1999 RY₄₁, 3, 1, 0; 1999 RB₄₂, 3, 1, 0; 1999 RD₄₂, 3, 1, 0; 1999 RV₄₂, 3, 1, 0; 1999 RW₄₂, 3, 1, 0; 1999 RY₄₂, 3, 1, 0; 1999 RE₄₃, 3, 1, 0; 1999 RH₄₃, 3, 1, 0; 1999 RO₄₃, 3, 1, 0; 1999 RP₄₃, 3, 1, 0; 1999 RG₄₄, 6, 2, 26; 1999 RD₄₄, 3, 1, 0; 1999 RT₄₄, 6, 2, 26; 1999 RU₄₄, 3, 1, 0; 1999 RA₄₅, 3, 1, 0; 1999 RC₄₅, 3, 1, 0; 1999 RJ₄₅, 3, 1, 0; 1999 RQ₄₅, 6, 2, 20; 1999 RW₄₅, 3, 1, 0; 1999 RY₄₅, 3, 1, 0; 1999 RZ₄₅, 3, 1, 0; 1999 RA₄₆, 3, 1, 0; 1999 RC₄₆, 3, 1, 0; 1999 RJ₄₆, 3, 1, 0; 1999 RM₄₆, 3, 1, 0; 1999 RQ₄₆, 3, 1, 0; 1999 RB₄₇, 3, 1, 0; 1999 RC₄₇, 3, 1, 0; 1999 RD₄₇, 3, 1, 0; 1999 RE₄₇, 3, 1, 0; 1999 RG₄₇, 6, 2, 24; 1999 RH₄₇, 6, 2, 1; 1999 RS₄₇, 6, 2, 28; 1999 RA₄₈, 3, 1, 0; 1999 RH₄₈, 3, 1, 0; 1999 RJ₄₈, 6, 2, 23; 1999 RR₄₈, 3, 1, 0; 1999 RS₄₈, 3, 1, 0; 1999 RV₄₈,

3, 1, 0; 1999 RZ₄₈, 3, 1, 0; 1999 RF₄₉, 3, 1, 0; 1999 RG₄₉, 3, 1, 0; 1999 RF₅₀, 3, 1, 0; 1999 RG₅₀, 6, 2, 25; 1999 RH₅₀, 3, 1, 0; 1999 RN₅₀, 3, 1, 0; 1999 RC₅₁, 6, 2, 32; 1999 RD₅₁, 3, 1, 0; 1999 RE₅₁, 6, 2, 7; 1999 RM₅₁, 3, 1, 0; 1999 RO₅₁, 3, 1, 0; 1999 RR₅₁, 3, 1, 0; 1999 RX₅₁, 3, 1, 0; 1999 RZ₅₁, 3, 1, 0; 1999 RA₅₂, 3, 1, 0; 1999 RC₅₂, 3, 1, 0; 1999 RD₅₂, 3, 1, 0; 1999 RK₅₂, 3, 1, 0; 1999 RT₅₂, 3, 1, 0; 1999 RU₅₂, 9, 3, 37; 1999 RV₅₂, 3, 1, 0; 1999 RW₅₂, 3, 1, 0; 1999 RH₅₃, 3, 1, 0; 1999 RK₅₃, 3, 1, 0; 1999 RR₅₃, 6, 2, 30; 1999 RZ₅₃, 3, 1, 0; 1999 RA₅₄, 3, 1, 0; 1999 RB₅₄, 3, 1, 0; 1999 RC₅₄, 9, 3, 37; 1999 RH₅₄, 3, 1, 0; 1999 RN₅₄, 6, 2, 7; 1999 RJ₅₄, 9, 3, 54; 1999 RT₅₄, 9, 3, 30; 1999 RU₅₄, 6, 2, 30; 1999 RW₅₄, 3, 1, 0; 1999 RJ₅₅, 3, 1, 0; 1999 RK₅₅, 9, 3, 18; 1999 RN₅₅, 3, 1, 0; 1999 RP₅₅, 3, 1, 0; 1999 RQ₅₅, 3, 1, 0; 1999 RR₅₅, 3, 1, 0; 1999 RT₅₅, 3, 1, 0; 1999 RU₅₅, 9, 3, 31; 1999 RV₅₅, 3, 1, 0; 1999 RX₅₅, 3, 1, 0; 1999 RB₅₆, 3, 1, 0; 1999 RC₅₆, 3, 1, 0; 1999 RD₅₆, 3, 1, 0; 1999 RF₅₆, 3, 1, 0; 1999 RJ₅₆, 3, 1, 0; 1999 RV₅₆, 3, 1, 0; 1999 RK₅₇, 6, 2, 25; 1999 RM₅₇, 3, 1, 0; 1999 RN₅₇, 3, 1, 0; 1999 RO₅₇, 3, 1, 0; 1999 RQ₅₇, 3, 1, 0; 1999 RS₅₇, 3, 1, 0; 1999 RT₅₇, 6, 1, 0; 1999 RU₅₇, 3, 1, 0; 1999 RV₅₇, 3, 1, 0; 1999 RW₅₇, 3, 1, 0; 1999 RX₅₇, 3, 1, 0; 1999 RY₅₇, 6, 2, 30; 1999 RH₅₈, 3, 1, 0; 1999 RU₅₈, 3, 1, 0; 1999 RV₅₈, 3, 1, 0; 1999 RW₅₈, 3, 1, 0; 1999 RT₅₉, 3, 1, 0; 1999 RA₆₁, 3, 1, 0; 1999 RE₆₁, 3, 1, 0; 1999 RL₆₁, 3, 1, 0; 1999 RU₆₁, 6, 2, 14; 1999 RZ₆₁, 3, 1, 0; 1999 RE₆₂, 6, 2, 5; 1999 RJ₆₂, 3, 1, 0; 1999 RK₆₂, 3, 1, 0; 1999 RL₆₂, 3, 1, 0; 1999 RW₆₂, 3, 1, 0; 1999 RO₆₃, 9, 3, 28; 1999 RV₆₃, 9, 3, 29; 1999 RY₆₃, 6, 2, 21; 1999 RE₆₄, 3, 1, 0; 1999 RG₆₄, 3, 1, 0; 1999 RH₆₄, 3, 1, 0; 1999 RJ₆₄, 3, 1, 0; 1999 RL₆₄, 3, 1, 0; 1999 RN₆₄, 3, 1, 0; 1999 RP₆₄, 3, 1, 0; 1999 RQ₆₄, 3, 1, 0; 1999 RG₆₅, 6, 2, 28; 1999 RJ₆₅, 3, 1, 0; 1999 RY₆₅, 3, 1, 0; 1999 RB₆₆, 3, 1, 0; 1999 RE₆₇, 3, 1, 0; 1999 RK₆₇, 3, 1, 0; 1999 RT₆₇, 3, 1, 0; 1999 RY₆₇, 3, 1, 0; 1999 RV₆₈, 3, 1, 0; 1999 RW₆₈, 3, 1, 0; 1999 RA₆₉, 3, 1, 0; 1999 RE₆₉, 3, 1, 0; 1999 RO₆₉, 3, 1, 0; 1999 RR₆₉, 3, 1, 0; 1999 RT₆₉, 3, 1, 0; 1999 RO₇₀, 3, 1, 0; 1999 RP₇₀, 3, 1, 0; 1999 RN₇₁, 3, 1, 0; 1999 RY₇₁, 3, 1, 0; 1999 RD₇₂, 3, 1, 0; 1999 RE₇₂, 3, 1, 0; 1999 RG₇₂, 3, 1, 0; 1999 RL₇₂, 3, 1, 0; 1999 RM₇₂, 3, 1, 0; 1999 RN₇₂, 3, 1, 0; 1999 RW₇₂, 3, 1, 0; 1999 RA₇₃, 3, 1, 0; 1999 RL₇₃, 3, 1, 0; 1999 RO₇₃, 3, 1, 0; 1999 RX₇₃, 3, 1, 0; 1999 RA₇₄, 3, 1, 0; 1999 RD₇₄, 3, 1, 0; 1999 RG₇₄, 3, 1, 0; 1999 RL₇₄, 3, 1, 0; 1999 RQ₇₄, 3, 1, 0; 1999 RE₇₄, 6, 2, 26; 1999 RB₇₅, 3, 1, 0; 1999 RK₇₅, 3, 1, 0; 1999 RQ₇₅, 6, 2, 21; 1999 RD₇₆, 3, 1, 0; 1999 RL₇₆, 3, 1, 0; 1999 RM₇₆, 3, 1, 0; 1999 RH₇₈, 3, 1, 0; 1999 RV₇₈, 3, 1, 0; 1999 RD₈₁, 3, 1, 0; 1999 RE₈₁, 3, 1, 0; 1999 RF₈₁, 6, 2, 30; 1999 RN₈₁, 3, 1, 0; 1999 RO₈₁, 3, 1, 0; 1999 RQ₈₁, 3, 1, 0; 1999 RS₈₁, 6, 2, 20; 1999 RT₈₁, 3, 1, 0; 1999 RX₈₁, 3, 1, 0; 1999 RY₈₁, 3, 1, 0; 1999 RH₈₃, 6, 2, 6; 1999 RT₈₃, 3, 1, 0; 1999 RB₈₄, 6, 2, 6; 1999 RC₈₄, 6, 2, 6; 1999 RF₈₄, 3, 1, 0; 1999 RN₈₄, 3, 1, 0; 1999 RO₈₄, 3, 1, 0; 1999 RZ₈₅, 3, 1, 0; 1999 RB₈₆, 3, 1, 0; 1999 RC₈₆, 3, 1, 0; 1999 RS₈₆, 6, 2, 24; 1999 RS₈₆, 3, 1, 0; 1999 RT₈₆, 6, 2, 24; 1999 RA₈₇, 3, 1, 0; 1999 RB₈₇, 6, 2, 10; 1999 RF₈₇, 3, 1, 0; 1999 RT₈₇, 3, 1, 0; 1999 RV₈₇, 6, 2, 14; 1999 RV₈₈, 3, 1, 0; 1999 RZ₈₉, 3, 1, 0; 1999 RA₉₁, 3, 1, 0; 1999 RC₉₂, 6, 2, 9; 1999 RD₉₂, 3, 1, 0; 1999 RE₉₂, 3, 1, 0; 1999 RF₉₂, 3, 1, 0; 1999 RD₉₄, 3, 1, 0; 1999 RD₉₅, 3, 1, 0; 1999 RH₉₅, 3, 1, 0; 1999 RG₉₅, 3, 1, 0; 1999 RX₉₅, 3, 1, 0; 1999 RY₉₅, 3, 1, 0; 1999 RD₉₆, 3, 1, 0; 1999 RF₉₆, 3, 1, 0; 1999 RG₉₆, 3, 1, 0; 1999 RM₉₆, 3, 1, 0; 1999 RV₉₆, 3, 1, 0; 1999 RF₉₇, 3, 1, 0; 1999 RP₉₇, 6, 2, 14; 1999 RQ₉₈, 3, 1, 0; 1999 RR₉₈, 6, 2, 26; 1999 RT₉₈, 3, 1, 0; 1999 RU₉₈, 6, 2, 23; 1999 RW₉₈, 3, 1, 0; 1999 RX₉₈, 6, 2, 13; 1999 RZ₉₈, 3, 1, 0; 1999 RB₉₉, 6, 2, 13; 1999 RD₉₉, 3, 1, 0; 1999 RT₁₀₀, 3, 1, 0; 1999 RV₁₀₀

1999 SEPT. 28

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[illegible]

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703 Catalina Sky Survey

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Observers T. B. Spahr, C. W. Hergenrother, T. B. Spahr, S. Larson

0.41-m $f/3$ Schmidt + CCD

USNO-SA1.0, USNO-A1.0, USNO-SA2.0, USNO-A2.0

1931 TC₂, 4, 1, 0; 1971 SB, 4, 1, 0; 1975 YD, 4, 1, 0; 1977 DL₄, 4, 1, 0; 1977 QW, 4, 1, 0; 1977 QF₁, 4, 1, 0; 1977 QN₂, 4, 1, 0; 1978 RD₂, 4, 1, 0; 1978 ST₇, 4, 1, 0; 1978 TH₇, 4, 1, 0; 1978 VP₉, 3, 1, 0; 1980 DS₄, 4, 1, 0; 1980 KE, 4, 1, 0; 1980 PJ₁, 4, 1, 0; 1981 DS₁, 4, 1, 0; 1981 DL₂, 4, 1, 0; 1981 EP₂, 4, 1, 0; 1981 ET₅, 4, 1, 0; 1981 EW₅, 8, 1, 0; 1981 EM₆, 4, 1, 0; 1981 EV₆, 8, 2, 1; 1981 EN₇, 4, 1, 0; 1981 EF₁₂, 4, 1, 0; 1981 EP₁₂, 4, 1, 0; 1981 EL₁₃, 4, 1, 0; 1981 ET₁₃, 8, 2, 10; 1981 EY₁₃, 4, 1, 0; 1981 EF₁₆, 4, 1, 0; 1981 EH₁₉, 4, 1, 0; 1981 EL₂₀, 4, 1, 0; 1981 EG₃₁, 4, 1, 0; 1981 EX₃₂, 4, 1, 0; 1981 EH₃₃, 4, 1, 0; 1981 EL₃₃, 4, 1, 0; 1981 EQ₃₄, 4, 1, 0; 1981 EE₄₆, 4, 1, 0; 1981 EH₄₈, 4, 1, 0; 1981 TK, 4, 1, 0; 1982 SM₂, 4, 1, 0; 1982 VD₅, 4, 1, 0; 1984 SY₁, 8, 2, 7; 1985 CD, 4, 1, 0; 1985 RQ₃, 4, 1, 0; 1985 RA₄, 4, 1, 0; 1986 PY, 4, 1, 0; 1986 TR, 4, 1, 0; 1987 YS₁, 4, 1, 0; 1988 BY₂, 4, 1, 0; 1988 BJ₅, 4, 1, 0; 1988 DG₂, 4, 1, 0; 1988 EY₁, 4, 1, 0; 1988 RG₁₀, 4, 1, 0; 1988 SN₁, 4, 1, 0; 1988 SP₂, 8, 2, 1; 1988 VR₃, 4, 1, 0; 1988 XB₂, 4, 1, 0; 1989 AG₇, 4, 1, 0; 1989 CG₁, 4, 1, 0; 1989 CQ₂, 4, 1, 0; 1989 EX, 8, 2, 5; 1989 GJ₄, 4, 1, 0; 1989 NH₁, 4, 1, 0; 1989 SR, 8, 2, 7; 1989 SP₁₁, 4, 1, 0; 1989 TW, 4, 1, 0; 1989 TY, 4, 1, 0; 1989 TS₂, 4, 1, 0; 1989 UR, 4, 1, 0; 1990 BC₂, 12, 2, 1; 1990 ES₁, 4, 1, 0; 1990 EZ₂, 4, 1, 0; 1990 KD, 4, 1, 0; 1990 KD₁, 4, 1, 0; 1990 QE₆, 4, 1, 0; 1990 QO₆, 4, 1, 0; 1990 RT₂, 4, 1, 0; 1990 RD₅, 4, 1, 0; 1990 RD₆, 4, 1, 0; 1990 TT₁₀, 4, 1, 0; 1990 VF₈, 4, 1, 0; 1990 VU₈, 4, 1, 0; 1990 VV₈, 4, 1, 0; 1990 WU₁, 8, 2, 10; 1991 CR₁, 4, 1, 0; 1991 FF, 4, 1, 0; 1991 FH, 4, 1, 0; 1991 FZ₂, 4, 1, 0; 1991 GB₃, 4, 1, 0; 1991 GM₉, 4, 1, 0; 1991 JD, 4, 1, 0; 1991 JF, 4, 1, 0; 1991 PK₁, 4, 1, 0; 1991 PL₂, 4, 1, 0; 1991 PT₁₀, 8, 2, 4; 1991 RN₂₇, 4, 1, 0; 1991 SD₁, 4, 1, 0; 1991 TH₃, 4, 1, 0; 1991 TF₁₄, 4, 1, 0; 1991 UD₃, 4, 1, 0; 1991 UL₃, 4, 1, 0; 1991 VE₂, 4, 1, 0; 1991 VT₃, 4, 1, 0; 1991 VU₅, 8, 2, 7; 1991 VL₆, 4, 1, 0; 1991 XH, 4, 1, 0; 1992 AE₁, 4, 1, 0; 1992 DK₆, 4, 1, 0; 1992 DL₇, 4, 1, 0; 1992 DP₁₃, 4, 1, 0; 1992 EP₁₁, 4, 1, 0; 1992 EB₁₆, 4, 1, 0; 1992 GM₂, 4, 1, 0; 1992 GC₅, 8, 2, 23; 1992 HG, 4, 1, 0; 1992 JG, 4, 1, 0; 1992 OB₃, 4, 1, 0; 1992 PO₂, 4, 1, 0; 1992 PV₃, 4, 1, 0; 1992 RW₂, 4, 1, 0; 1992 RD₃, 4, 1, 0; 1992 RZ₃, 4, 1, 0; 1992 UX, 4, 1, 0; 1992 UY, 4, 1, 0; 1992 US₁, 4, 1, 0; 1992 UW₁, 4, 1, 0; 1992 UW₂, 4, 1, 0; 1992 UD₃, 4, 1, 0; 1992 UT₃, 4, 1, 0; 1992 UM₆, 4, 1, 0; 1992 WR, 4, 1, 0; 1992 WD₁, 4, 1, 0; 1992 WS₃, 4, 1, 0; 1992 YA₁, 4, 1, 0; 1993 BD₆, 4, 1, 0; 1993 BZ₁₂, 4, 1, 0; 1993 DM, 4, 1, 0; 1993 DE₁, 4, 1, 0; 1993 DJ₁, 4, 1, 0; 1993 ES, 4, 1, 0; 1993 FO₈, 4, 1, 0; 1993 FY₈, 4, 1, 0; 1993 FY₁₂, 4, 1, 0; 1993 FZ₂₁, 4, 1, 0; 1993 FS₂₂, 4, 1, 0; 1993 FO₃₆, 4, 1, 0; 1993 FA₄₆, 4, 1, 0; 1993 FU₅₁, 4, 1, 0; 1993 KB₂, 4, 1, 0; 1993 LR₁, 8, 1, 0; 1993 NZ₁, 4, 1, 0; 1993 OX₁₁, 4, 1, 0; 1993 VA₂, 4, 1, 0; 1994 AC, 4, 1, 0; 1994 AM₃, 8, 2, 2; 1994 BW, 4, 1, 0; 1994 BX, 4, 1, 0; 1994 BN₄, 4, 1, 0; 1994 CA₁, 4, 1, 0; 1994 CM₁₁

4, 1, 0; 1995 KL₁, 8, 2, 7; 1995 OA, 4, 1, 0; 1995 QG, 4, 1, 0; 1995 QB₁₀, 8, 2, 4; 1995 SR₃, 4, 1, 0; 1995 SS₄, 4, 1, 0; 1995 SS₅, 8, 2, 2; 1995 TG₂, 8, 2, 4; 1995 UZ₄₅, 4, 1, 0; 1995 VP, 4, 1, 0; 1995 WD₁, 4, 1, 0; 1995 WU₄, 4, 1, 0; 1995 XJ₁, 4, 1, 0; 1995 YQ, 4, 1, 0; 1995 YZ₁, 4, 1, 0; 1995 YU₉, 4, 1, 0; 1996 AG₇, 4, 1, 0; 1996 BV₁, 4, 1, 0; 1996 CK₂, 8, 2, 2; 1996 EQ₂, 4, 1, 0; 1996 KA₃, 4, 1, 0; 1996 UB₁, 4, 1, 0; 1996 VJ₂, 12, 3, 4; 1996 VT₄, 4, 1, 0; 1996 VG₆, 4, 1, 0; 1996 VL₃₀, 4, 1, 0; 1996 WA₁, 4, 1, 0; 1996 WE₃, 4, 1, 0; 1996 XC, 4, 1, 0; 1996 XJ₆, 4, 1, 0; 1996 XL₁, 4, 1, 0; 1996 XV₁, 4, 1, 0; 1996 XG₅, 3, 1, 0; 1996 XF₁₉, 4, 1, 0; 1996 XU₃₀, 4, 1, 0; 1996 XZ₃₀, 8, 2, 4; 1996 XQ₃₂, 4, 1, 0; 1996 YH₁, 4, 1, 0; 1997 AQ, 4, 1, 0; 1997 AA₂, 4, 1, 0; 1997 AO₄, 4, 1, 0; 1997 AT₄, 3, 1, 0; 1997 AP₁₂, 4, 1, 0; 1997 AC₁₃, 4, 1, 0; 1997 AT₁₆, 4, 1, 0; 1997 AB₁₈, 4, 1, 0; 1997 AM₂₁, 4, 1, 0; 1997 AN₂₁, 4, 1, 0; 1997 AQ₂₂, 4, 1, 0; 1997 BX, 4, 1, 0; 1997 BR₁, 4, 1, 0; 1997 BU₄, 4, 1, 0; 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1999 PJ₄, 4, 1, 0; 1999 PL₄, 4, 1, 0; 1999 PT₄, 4, 1, 0; 1999 QH, 4, 1, 0; 1999 QU₁, 4, 1, 0; 1999 QB₂, 8, 2, 1; 1999 QJ₂, 4, 1, 0; 1999 QK₂, 4, 1, 0; 1999 QJ₂, 4, 1, 0; 1999 QJ₂, 4, 1, 0; 1999 QP₂, 4, 1, 0; 1999 QT₂, 4, 1, 0; 1999 RC, 4, 1, 0; 1999 RN, 12, 2, 23; 1999 RP, 4, 1, 0; 1999 RQ, 4, 1, 0; 1999 RV *, 12, 3, 4; 1999 RW *, 12, 3, 4; 1999 RX *, 12, 3, 4; 1999 RZ *, 12, 3, 10; 1999 RA₁ *, 12, 3, 10; 1999 RB₁ *, 12, 3, 10; 1999 RC₁ *, 8, 2, 1; 1999 RD₁, 4, 1, 0; 1999 RH₁, 4, 1, 0; 1999 RK₁ *, 4, 1, 0; 1999 RL₁ *, 4, 1, 0; 1999 RT₁, 8, 1, 0; 1999 RV₁, 4, 1, 0; 1999 RW₁, 12, 2, 23; 1999 RB₂ *, 10, 2, 1; 1999 RC₂ *, 20, 5, 7; 1999 RD₂, 4, 1, 0; 1999 RE₂, 4, 1, 0; 1999 RL₂ *, 8, 2, 3; 1999 RM₂ *, 8, 2, 3; 1999 RN₂ *, 12, 3, 10; 1999 RO₂ *, 12, 3, 10; 1999 RP₂ *, 8, 2, 1; 1999 RQ₂ *, 8, 2, 1; 1999 RR₂ *, 8, 2, 1; 1999 RU₂ *, 4, 1, 0; 1999 RV₂ *, 6, 1, 0; 1999 RE₃, 4, 1, 0; 1999 RG₃, 12, 2, 23; 1999 RN₃ *, 8, 2, 4; 1999 RO₃ *, 8, 2, 4; 1999 RP₃ *, 8, 2, 4; 1999 RQ₃ *, 8, 2, 4; 1999 RR₃ *, 8, 2, 4; 1999 RS₃ *, 8, 2, 4; 1999 RT₃ *, 12, 2, 4; 1999 RU₃ *, 8, 2, 4; 1999 RV₃ *, 8, 2, 4; 1999 RW₃ *, 8, 2, 4; 1999 RX₃ *, 8, 2, 4; 1999 RY₃ *, 8, 2, 4; 1999 RZ₃ *, 8, 2, 4; 1999 RA₄ *, 8, 2, 4; 1999 RB₄ *, 8, 2, 4; 1999 RC₄ *, 8, 2, 4; 1999 RD₄ *, 8, 2, 4; 1999 RE₄ *, 8, 2, 3; 1999 RF₄ *, 8, 2, 3; 1999 RG₄ *, 8, 2, 3; 1999 RH₄ *, 8, 2, 3; 1999 RJ₄ *, 8, 2, 3; 1999 RS₄, 4, 1, 0; 1999 RT₄, 4, 1, 0; 1999 RK₈, 4, 1, 0; 1999 RG₁₁, 4, 1, 0; 1999 RN₁₁, 8, 1, 0; 1999 RP₁₁, 8, 2, 63; 1999 RU₁₁, 4, 1, 0; 1999 RR₁₄, 4, 1, 0; 1999 RS₁₄, 4, 1, 0; 1999 RM₁₅, 4, 1, 0; 1999 RT₁₆, 4, 1, 0; 1999 RU₁₆, 4, 1, 0; 1999 RV₁₆, 4,

1, 0; 1999 RW₁₆, 8, 2, 10; 1999 RY₁₆, 4, 1, 0; 1999 RZ₁₆, 4, 1, 0; 1999 RA₁₇, 4, 1, 0; 1999 RB₁₇, 8, 2, 10; 1999 RD₁₇, 8, 2, 9; 1999 RF₁₇, 8, 2, 10; 1999 RJ₁₇, 8, 2, 10; 1999 RK₁₇, 8, 2, 10; 1999 RN₁₇, 8, 2, 10; 1999 RO₁₇, 8, 2, 10; 1999 RP₁₇, 4, 1, 0; 1999 RQ₁₇, 4, 1, 0; 1999 RX₁₇, 4, 1, 0; 1999 RT₁₇, 4, 1, 0; 1999 RU₁₇, 4, 1, 0; 1999 RV₁₇, 4, 1, 0; 1999 RW₁₇, 4, 1, 0; 1999 RX₁₇, 4, 1, 0; 1999 RY₁₇, 4, 1, 0; 1999 RA₁₈, 4, 1, 0; 1999 RC₁₈, 4, 1, 0; 1999 RG₁₈, 4, 1, 0; 1999 RL₁₈, 8, 1, 0; 1999 RO₁₈, 4, 1, 0; 1999 RR₁₈, 4, 1, 0; 1999 RS₁₈, 4, 1, 0; 1999 RU₁₈, 4, 1, 0; 1999 RB₁₉, 4, 1, 0; 1999 RC₁₉, 4, 1, 0; 1999 RH₁₉, 4, 1, 0; 1999 RJ₁₉, 4, 1, 0; 1999 RK₁₉, 8, 2, 10; 1999 RN₂₀, 4, 1, 0; 1999 RC₂₁, 4, 1, 0; 1999 RF₂₁, 8, 2, 23; 1999 RG₂₁, 4, 1, 0; 1999 RH₂₁, 4, 1, 0; 1999 RJ₂₁, 12, 2, 23; 1999 RK₂₁, 4, 1, 0; 1999 RL₂₁, 8, 2, 23; 1999 RN₂₁, 4, 1, 0; 1999 RP₂₁, 4, 1, 0; 1999 RQ₂₁, 4, 1, 0; 1999 RR₂₁, 8, 2, 23; 1999 RS₂₁, 4, 1, 0; 1999 RT₂₁, 4, 1, 0; 1999 RU₂₁, 8, 2, 23; 1999 RV₂₁, 8, 2, 23; 1999 RW₂₁, 4, 1, 0; 1999 RX₂₁, 4, 1, 0; 1999 RY₂₁, 4, 1, 0; 1999 RZ₂₁, 4, 1, 0; 1999 RA₂₂, 8, 2, 23; 1999 RC₂₂, 12, 2, 23; 1999 RD₂₂, 4, 1, 0; 1999 RF₂₂, 8, 1, 0; 1999 RG₂₂, 4, 1, 0; 1999 RH₂₂, 8, 1, 0; 1999 RJ₂₂, 8, 1, 0; 1999 RK₂₂, 4, 1, 0; 1999 RL₂₂, 4, 1, 0; 1999 RY₂₂, 8, 1, 0; 1999 RZ₂₂, 8, 1, 0; 1999 RA₂₃, 8, 1, 0; 1999 RB₂₃, 8, 1, 0; 1999 RC₂₃, 8, 2, 23; 1999 RD₂₃, 4, 1, 0; 1999 RE₂₃, 8, 1, 0; 1999 RF₂₃, 8, 2, 23; 1999 RG₂₃, 8, 2, 23; 1999 RH₂₃, 12, 2, 23; 1999 RJ₂₃, 4, 1, 0; 1999 RL₂₃, 4, 1, 0; 1999 RO₂₃, 4, 1, 0; 1999 RQ₂₃, 8, 2, 23; 1999 RS₂₃, 8, 2, 23; 1999 RT₂₃, 4, 1, 0; 1999 RV₂₃, 4, 1, 0; 1999 RW₂₃, 4, 1, 0; 1999 RX₂₃, 8, 1, 0; 1999 RY₂₃, 4, 1, 0; 1999 RB₂₄, 8, 2, 23; 1999 RE₂₄, 4, 1, 0; 1999 RG₂₄, 8, 1, 0; 1999 RH₂₄, 4, 1, 0; 1999 RJ₂₄, 4, 1, 0; 1999 RB₂₅, 4, 1, 0; 1999 RS₂₅, 4, 1, 0; 1999 RU₂₆, 8, 2, 23; 1999 RD₂₇, 4, 1, 0; 1999 RH₂₇ *, 4, 1, 0; 1999 RN₂₇, 8, 1, 0; 1999 RP₂₇, 4, 1, 0; 1999 RQ₂₇, 4, 1, 0; 1999 RS₂₇, 8, 1, 0; 1999 RT₂₇, 8, 1, 0; 1999 RU₂₇, 4, 1, 0; 1999 RX₂₇, 4, 1, 0; 1999 RZ₂₇, 4, 1, 0; 1999 RE₂₈, 4, 1, 0; 1999 RK₂₈, 4, 1, 0; 1999 RP₂₈ *, 4, 1, 0; 1999 RS₂₈, 4, 1, 0; 1999 RX₂₈, 4, 1, 0; 1999 RA₂₉, 4, 1, 0; 1999 RL₂₉, 4, 1, 0; 1999 RO₂₉, 4, 1, 0; 1999 RP₂₉, 8, 2, 7; 1999 RS₂₉, 4, 1, 0; 1999 RT₂₉, 8, 1, 0; 1999 RU₂₉, 4, 1, 0; 1999 RW₂₉, 4, 1, 0; 1999 RC₃₀, 4, 1, 0; 1999 RD₃₀, 8, 1, 0; 1999 RE₃₀, 4, 1, 0; 1999 RF₃₀, 4, 1, 0; 1999 RV₃₀, 4, 1, 0; 1999 RW₃₀, 4, 1, 0; 1999 RY₃₀, 4, 1, 0; 1999 RO₃₁, 4, 1, 0; 1999 RS₃₁, 4, 1, 0; 1999 RU₃₁, 4, 1, 0; 1999 RX₃₁, 8, 1, 0; 1999 RZ₃₁ *, 4, 1, 0; 1999 RE₃₂, 4, 1, 0; 1999 RG₃₂, 4, 1, 0; 1999 RH₃₂, 8, 2, 23; 1999 RK₃₂, 8, 1, 0; 1999 RM₃₂, 8, 2, 23; 1999 RN₃₂, 4, 1, 0; 1999 RO₃₂, 12, 2, 23; 1999 RQ₃₂, 4, 1, 0; 1999 RS₃₂, 4, 1, 0; 1999 RU₃₂, 4, 1, 0; 1999 RW₃₂, 4, 1, 0; 1999 RY₃₂, 4, 1, 0; 1999 RC₃₃, 4, 1, 0; 1999 RD₃₃, 4, 1, 0; 1999 RE₃₃ *, 6, 2, 1; 1999 RF₃₃, 4, 1, 0; 1999 RG₃₃, 4, 1, 0; 1999 RH₃₃, 4, 1, 0; 1999 RJ₃₃, 12, 2, 23; 1999 RK₃₃, 4, 1, 0; 1999 RL₃₃, 4, 1, 0; 1999 RM₃₃, 4, 1, 0; 1999 RN₃₃, 4, 1, 0; 1999 RO₃₃, 4, 1, 0; 1999 RP₃₃ *, 8, 2, 5; 1999 RS₃₃ *, 8, 2, 5; 1999 RT₃₃ *, 8, 2, 5; 1999 RV₃₃ *, 8, 2, 5; 1999 RW₃₃ *, 8, 2, 5; 1999 RX₃₃ *, 8, 2, 5; 1999 RY₃₃ *, 8, 2, 5; 1999 RZ₃₃ *, 8, 2, 5; 1999 RA₃₄, 4, 1, 0; 1999 RB₃₄, 4, 1, 0; 1999 RC₃₄, 4, 1, 0; 1999 RD₃₄, 12, 2, 23; 1999 RE₃₄, 4, 1, 0; 1999 RF₃₄, 4, 1, 0; 1999 RG₃₄, 4, 1, 0; 1999 RH₃₄, 8, 1, 0; 1999 RJ₃₄, 4, 1, 0; 1999 RK₃₄, 4, 1, 0; 1999 RL₃₄, 4, 1, 0; 1999 RM₃₄, 4, 1, 0; 1999 RN₃₄, 4, 1, 0; 1999 RO₃₄, 4, 1, 0; 1999 RP₃₄ *, 8, 2, 5; 1999 RS₃₄ *, 8, 2, 5; 1999 RT₃₄ *, 8, 2, 5; 1999 RV₃₄ *, 8, 2, 5; 1999 RW₃₄ *, 8, 2, 5; 1999 RX₃₄ *, 8, 2, 5; 1999 RY₃₄ *, 8, 2, 5; 1999 RZ₃₄ *, 8, 2, 5; 1999 RA₃₅, 4, 1, 0; 1999 RB₃₅ *, 8, 2, 5; 1999 RC₃₅, 4, 1, 0; 1999 RD₃₅ *, 8, 2, 5; 1999 RE₃₅ *, 8, 2, 5; 1999 RF₃₅ *, 8, 2, 5; 1999 RG₃₅, 4, 1, 0; 1999 RH₃₅, 4, 1, 0; 1999 RJ₃₅, 4, 1, 0; 1999 RK₃₅, 4, 1, 0; 1999 RL₃₅, 4, 1, 0; 1999 RM₃₅, 4, 1, 0; 1999 RN₃₅, 4, 1, 0; 1999 RO₃₅, 4, 1, 0; 1999 RP₃₅ *, 8, 2, 5; 1999 RS₃₅ *, 8, 2, 5; 1999 RT₃₅ *, 8, 2, 5; 1999 RV₃₅ *, 8, 2, 5; 1999 RW₃₅ *, 8, 2, 5; 1999 RX₃₅ *, 8, 2, 5; 1999 RY₃₅ *, 8, 2, 5; 1999 RZ₃₅ *, 8, 2, 5; 1999 RA

4, 1, 0; 1999 RP₁₀₈, 4, 1, 0; 1999 RZ₁₀₈, 4, 1, 0; 1999 RD₁₀₉, 4, 1, 0; 1999 RH₁₀₉, 4, 1, 0; 1999 RL₁₀₉, 4, 1, 0; 1999 RM₁₀₉, 4, 1, 0; 1999 RN₁₀₉, 4, 1, 0; 1999 RO₁₀₉, 4, 1, 0; 1999 RR₁₀₉, 4, 1, 0; 1999 RS₁₀₉, 4, 1, 0; 1999 RU₁₀₉, 4, 1, 0; 1999 RV₁₀₉, 4, 1, 0; 1999 RB₁₁₀, 4, 1, 0; 1999 RJ₁₁₀, 8, 2, 1; 1999 RN₁₁₀, 4, 1, 0; 1999 RB₁₁₁, 4, 1, 0; 1999 RJ₁₁₃, 4, 1, 0; 1999 RB₁₁₄, 4, 1, 0; 1999 RJ₁₁₄, 4, 1, 0; 1999 RY₁₁₄, 4, 1, 0; 1999 RZ₁₁₄, 4, 1, 0; 1999 RG₁₁₅, 8, 2, 63; 1999 RJ₁₁₅, 4, 1, 0; 1999 RM₁₁₅, 4, 1, 0; 1999 RP₁₁₅, 4, 1, 0; 1999 RX₁₁₅, 4, 1, 0; 1999 RH₁₁₆, 4, 1, 0; 1999 RV₁₁₆, 4, 1, 0; 1999 RX₁₁₆, 4, 1, 0; 1999 RB₁₁₇, 4, 1, 0; 1999 RA₁₁₈, 4, 1, 0; 1999 RD₁₁₈, 4, 1, 0; 1999 RE₁₁₈, 4, 1, 0; 1999 RY₁₁₉, 4, 1, 0; 1999 RG₁₂₀, 4, 1, 0; 1999 RO₁₂₂, 4, 1, 0; 1999 RT₁₂₂, 4, 1, 0; 1999 RU₁₂₂, 4, 1, 0; 1999 RV₁₂₂, 4, 1, 0; 1999 RE₁₂₃, 4, 1, 0; 1999 RG₁₂₃, 4, 1, 0; 1999 RL₁₂₃, 4, 1, 0; 1999 RN₁₂₃, 4, 1, 0; 1999 RP₁₂₃, 4, 1, 0; 1999 RQ₁₂₃, 4, 1, 0; 1999 RR₁₂₃, 4, 1, 0; 1999 RZ₁₂₃, 4, 1, 0; 1999 RB₁₂₄, 4, 1, 0; 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1999 RH₁₆₇, 4, 1, 0; 1999 RM₁₆₇, 4, 1, 0; 1999 RN₁₆₇, 4, 1, 0; 1999 RG₁₆₉, 4, 1, 0; 1999 RH₁₆₉, 4, 1, 0; 1999 RF₁₆₉, 4, 1, 0; 1999 RS₁₆₉, 4, 1, 0; 1999 RV₁₆₉, 4, 1, 0; 1999 RW₁₆₉, 4, 1, 0; 1999 RZ₁₇₆, 4, 1, 0; 1999 RU₁₈₁, 4, 1, 0; 1999 RV₁₈₃, 4, 1, 0; 1999 RC₁₈₄, 4, 1, 0; 1999 RL₁₈₆, 4, 1, 0; 1999 RL₁₉₀, 4, 1, 0; 1999 RP₁₉₀, 4, 1, 0; 1999 RQ₁₉₀, 4, 1, 0; 1999 RE₁₉₁, 4, 1, 0; 1999 RQ₁₉₄, 4, 1, 0; 1999 RR₁₉₄, 4, 1, 0; 1999 RV₁₉₄, 4, 1, 0; 1999 RH₁₉₆, 4, 1, 0; 1999 RQ₁₉₆, 4, 1, 0; 1999 RR₁₉₆, 4, 1, 0; 1999 RY₁₉₆, 4, 1, 0; 1999 RA₁₉₇, 4, 1, 0; 1999 RO₁₉₇, 4, 1, 0; 1999 RB₁₉₈, 4, 1, 0; 1999 RC₁₉₈, 4, 1, 0; 1999 RG₁₉₈, 4, 1, 0; 1999 RG₁₉₉, 4, 1, 0; 1999 RL₁₉₉, 4, 1, 0; 1999 RN₁₉₉, 4, 1, 0; 1999 RO₁₉₉, 4, 1, 0; 1999 RP₁₉₉, 4, 1, 0; 1999 RK₂₀₁, 4, 1, 0; 1999 RL₂₀₁, 4, 1, 0; 1999 RL₂₀₂, 4, 1, 0; 1999 RN₂₀₂, 4, 1, 0; 1999 RP₂₀₂, 4, 1, 0; 1999 RQ₂₀₂, 4, 1, 0; 1999 RR₂₀₂, 4, 1, 0; 1999 RS₂₀₂, 4, 1, 0; 1999 RT₂₀₂, 4, 1, 0; 1999 RU₂₀₂, 4, 1, 0; 1999 RW₂₀₃, 4, 1, 0; 1999 RA₂₀₄, 4, 1, 0; 1999 RW₂₀₄, 4, 1, 0; 1999 RW₂₀₅, 4, 1, 0; 1999 RY₂₀₅, 4, 1, 0; 1999 RR₂₀₇, 4, 1, 0; 1999 RS₂₀₇, 4, 1, 0; 1999 RV₂₀₈, 4, 1, 0; 1999 RZ₂₀₈, 4, 1, 0; 1999 RY₂₀₉, 4, 1, 0; 1999 RJ₂₁₄, 4, 1, 0; 1999 SD, 4, 1, 0; 1999 SE, 4, 1, 0; 1999 SG, 4, 1, 0; 2506 P-L, 4, 1, 0; 2560 P-L, 4, 1, 0; 4037 P-L, 4, 1, 0; 4055 P-L, 4, 1, 0; 4061 P-L, 4, 1, 0; 4087 P-L, 4, 1, 0; 4214 P-L, 4, 1, 0; 4730 P-L, 4, 1, 0; 4780 P-L, 4, 1, 0; 4861 P-L, 4, 1, 0; 5016 P-L, 4, 1, 0; 6636 P-L, 4, 1, 0; 6703 P-L, 4, 1, 0; 6791 P-L, 4, 1, 0; 7569 P-L, 4, 1, 0; 1182 T-1, 4, 1, 0; 3219 T-1, 4, 1, 0; 1101 T-2, 4, 1, 0; 1158 T-2, 4, 1, 0; 3013 T-2, 4, 1, 0; 3024 T-2, 4, 1, 0; 3162 T-2, 3, 1, 0; 4223 T-2, 4, 1, 0; 4306 T-2, 4, 1, 0; 5141 T-2, 4, 1, 0; 1068 T-3, 4, 1, 0; 1135 T-3, 3, 1, 0; 1168 T-3, 4, 1, 0; 2203 T-3, 4, 1, 0; 3102 T-3, 4, 1, 0; 3164 T-3, 4, 1, 0; 3468 T-3, 4, 1, 0; 4102 T-3, 4, 1, 0; (13), 4, 1, 0; (57), 4, 1, 0; (76), 4, 1, 0; (81), 8, 1, 0; (85), 4, 1, 0; (141), 4, 1, 0; (145), 4, 1, 0; (199), 4, 1, 0; (205), 4, 1, 0; (283), 4, 1, 0; 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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

1931 TC₂, 8, 2, 7; 1942 TB, 3, 1, 0; 1955 RE₁, 18, 4, 8; 1966 PL, 5, 1, 0; 1969 QR, 13, 3, 14; 1971 SB, 19, 4, 7; 1973 QR₁, 15, 3, 7; 1973 UK₅, 15, 3, 6; 1974 XW, 8, 2, 4; 1975 SX, 3, 1, 0; 1975 SC₂, 4, 1, 0; 1975 YD, 9, 2, 8; 1976 QK₁, 2, 1, 0; 1976 UN₁₄, 5, 1, 0; 1977 DL₄, 4, 1, 0; 1977 ER₅, 10, 2, 2; 1977 PB, 5, 1, 0; 1977 RK, 3, 1, 0; 1977 RG₁₉, 17, 3, 524; 1978 NF, 5, 1, 0; 1978 PE, 10, 2, 6; 1978 QF₁, 15, 3, 6; 1978 QA₂, 5, 1, 0; 1978 RQ₉, 10, 2, 6; 1978 RA₁₀, 28, 4, 7; 1978 SC₇, 5, 1, 0; 1978 SH₇, 4, 1, 0; 1978 ST₇, 10, 2, 10; 1978 SX₇, 23, 4, 7; 1978 TH₇, 5, 1, 0; 1978 TO₈, 15, 3, 7; 1978 UL₄, 16, 4, 8; 1978 VT

8; 1981 EV₆, 14, 3, 6; 1981 EK₉, 15, 3, 7; 1981 EQ₁₁, 4, 1, 0; 1981 EF₁₂, 5, 1, 0; 1981 EP₁₂, 12, 3, 8; 1981 ES₁₂, 12, 3, 6; 1981 EV₁₂, 20, 4, 11; 1981 EE₁₃, 5, 1, 0; 1981 EO₁₃, 9, 2, 1; 1981 ET₁₃, 14, 3, 7; 1981 EY₁₃, 12, 3, 5; 1981 EM₁₄, 4, 1, 0; 1981 EO₁₄, 4, 1, 0; 1981 EZ₁₅, 14, 3, 7; 1981 EF₁₆, 3, 1, 0; 1981 EO₁₆, 10, 2, 1; 1981 EH₁₇, 15, 3, 7; 1981 EL₁₇, 4, 1, 0; 1981 EG₁₈, 10, 2, 2; 1981 EM₁₈, 7, 2, 4; 1981 EK₂₀, 4, 1, 0; 1981 EL₂₀, 5, 1, 0; 1981 EH₂₂, 4, 1, 0; 1981 EQ₂₃, 15, 3, 6; 1981 ES₂₃, 13, 3, 6; 1981 ET₂₃, 5, 1, 0; 1981 EN₂₄, 4, 1, 0; 1981 EW₂₆, 17, 4, 7; 1981 EH₂₇, 8, 2, 2; 1981 EK₂₇, 8, 2, 2; 1981 EL₂₈, 4, 1, 0; 1981 EF₂₉, 4, 1, 0; 1981 EO₃₀, 15, 3, 7; 1981 EP₃₀, 4, 1, 0; 1981 EB₃₁, 5, 1, 0; 1981 EX₃₂, 5, 1, 0; 1981 EH₃₃, 14, 3, 7; 1981 EL₃₃, 10, 3, 8; 1981 ET₃₃, 4, 1, 0; 1981 EQ₃₄, 10, 2, 6; 1981 EO₃₅, 10, 2, 10; 1981 ER₃₅, 10, 2, 10; 1981 EA₃₆, 15, 3, 6; 1981 EP₃₈, 13, 3, 9; 1981 EM₄₁, 3, 1, 0; 1981 EZ₄₂, 15, 3, 7; 1981 EC₄₃, 4, 1, 0; 1981 EG₄₄, 5, 1, 0; 1981 EE₄₆, 23, 4, 7; 1981 EE₄₇, 179, 6, 7; 1981 EP₄₇, 9, 2, 5; 1981 EH₄₈, 9, 1, 0; 1981 SD₂, 4, 1, 0; 1981 SE₉, 18, 4, 6; 1981 TK₅, 5, 1, 0; 1981 UL₂₉, 10, 2, 10; 1981 VF₅, 1, 0; 1982 SC₁₅, 3, 6; 1982 SM₂, 10, 2, 4; 1982 SO₅, 4, 1, 0; 1982 UQ₁₀, 5, 1, 0; 1982 VY₃, 5, 1, 0; 1982 VD₅, 5, 1, 0; 1983 AA₃, 3, 1, 0; 1983 RL₃₃, 33, 6, 10; 1983 RL₃₃, 15, 3, 7; 1983 YK₁₅, 15, 3, 7; 1984 DZ₄, 4, 1, 0; 1984 EU₁, 15, 3, 6; 1984 HH₁, 15, 3, 7; 1984 JE₁₀, 10, 2, 7; 1984 SY₁, 17, 4, 6; 1985 CD₄, 4, 1, 0; 1985 RA₄, 5, 1, 0; 1985 UJ₃, 15, 3, 7; 1986 CB₅, 5, 1, 0; 1986 EP₅, 15, 3, 7; 1986 GD₁₄, 14, 3, 479; 1986 PY₁₇, 17, 3, 6; 1986 QF₁, 4, 1, 0; 1986 QX₁, 3, 1, 0; 1986 QR₂, 5, 1, 0; 1986 QY₂, 10, 2, 6; 1986 RW₅, 15, 3, 7; 1986 TR₁₃, 13, 3, 10; 1987 BA₂₄, 14, 3, 6; 1987 SE₃, 10, 2, 4; 1987 WO₁, 5, 1, 0; 1987 XC₅, 5, 1, 0; 1987 YS₁, 3, 1, 0; 1988 BW₁₀, 10, 2, 10; 1988 BJ₅, 10, 2, 10; 1988 CY₄, 4, 1, 0; 1988 CG₂, 4, 1, 0; 1988 CW₂, 15, 3, 7; 1988 CL₄, 4, 1, 0; 1988 DF₂, 15, 3, 7; 1988 PQ₄, 4, 1, 0; 1988 PR₃₃, 33, 5, 7; 1988 PD₁, 5, 1, 0; 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1991 AH₂, 5, 1, 0; 1991 CM₅, 5, 1, 0; 1991 CE₁, 14, 3, 9; 1991 CR₁, 10, 2, 4; 1991 ED₄, 4, 1, 0; 1991 EM₃, 3, 1, 0; 1991 EY₁, 15, 3, 6; 1991 ED₂, 13, 3, 6; 1991 EX₂, 13, 3, 6; 1991 EA₄, 4, 1, 0; 1991 FD₈, 8, 2, 1; 1991 FF₁₀, 10, 2, 2; 1991 FH₃, 3, 1, 0; 1991 FJ₂, 4, 1, 0; 1991 FT₂, 8, 2, 2; 1991 GW₅, 5, 1, 0; 1991 GB₃, 10, 2, 7; 1991 GU₃, 13, 3, 5; 1991 GZ₄, 10, 2, 6; 1991 GZ₅, 5, 1, 0; 1991 GC₇, 10, 2, 7; 1991 GL₇, 12, 3, 7; 1991 GY₇, 3, 1, 0; 1991 GE₈, 15, 3, 6; 1991 GJ₈, 9, 2, 7; 1991 GE₉, 15, 3, 6; 1991 GM₉, 10, 3, 7; 1991 GJ₁₀, 5, 1, 0; 1991 HN₅, 5, 1, 0; 1991 JF₁₉, 4, 6; 1991 LR₅, 5, 1, 0; 1991 LZ₉, 9, 2, 8; 1991 LV₂, 10, 2, 7; 1991 NB₁, 15, 2, 10; 1991 NS₂, 5, 1, 0; 1991 PK₁, 5, 1, 0; 1991 PY₁, 5, 1, 0; 1991 PY₂, 9, 2, 10; 1991 PG₇, 10, 2, 6; 1991 PT₁₀, 13, 3, 6; 1991 PV₁₁, 3, 1, 0; 1991 PZ₁₄, 15, 3, 7; 1991 RP₁, 15, 3, 7; 1991 RD₇, 5, 1, 0; 1991 RB₁₉, 15, 3, 6; 1991 RE₂₅, 19, 3, 6; 1991 RT₂₆, 5, 1, 0; 1991 RN₂₇, 39, 6, 11; 1991 RM₂₉, 16, 4, 8; 1991 SO₅, 5, 1, 0; 1991 SD₁, 5, 1, 0; 1991 TE₁, 4, 1, 0; 1991 TR₁, 3, 1, 0; 1991 TV₁, 8, 1, 0; 1991 TC₂, 5, 1, 0; 1991 TH₃, 9, 2, 7; 1991 TF₁₄, 34, 6, 6; 1991 UD₃, 9, 1, 0; 1991 UL₃, 17, 4, 8; 1991 US₃, 5, 1, 0; 1991 VJ₁, 10, 2, 6; 1991 VO₁, 5, 1, 0; 1991 VA₃, 12, 3, 8; 1991 VT₃, 10, 2, 10; 1991 VU₄, 9, 2, 4; 1991 VU₅, 24, 4, 6; 1991 WD₃, 3, 1, 0; 1991 XH₅, 5, 1, 0; 1991 YT₁, 16, 4, 6; 1991 YU₉, 9, 2, 6; 1992 AE₁, 9, 2, 1; 1992 BJ₁, 14, 3, 6; 1992 BT₂, 4, 1, 0; 1992 CP₂, 15, 3, 7; 1992 DF₆, 5, 1, 0; 1992 DK₆, 5, 1, 0; 1992 DL₇, 25, 4, 7; 1992 DM₇, 15, 3, 6; 1992 DU₇, 14, 3, 7; 1992 ER₄, 15, 3, 7; 1992 EG₆, 10, 2, 4; 1992 ED₈, 18, 4, 7; 1992 EU₁₀, 5, 1, 0; 1992 EP₁₁, 10, 2, 7; 1992 EB₁₆, 10, 2, 2; 1992 EQ₂₇, 15, 3, 7; 1992 FZ₁₀, 2, 4; 1992 GM₂, 3, 1, 0; 1992 GZ₄, 4, 1, 0; 1992 GC₅, 19, 4, 7; 1992 HA₁₀, 10, 2, 1; 1992 HG₃, 3, 1, 0; 1992 HD₅, 9, 2, 1; 1992 HY₆, 5, 1, 0; 1992 HD₇, 4, 1, 0; 1992 JG₅, 5, 1, 0; 1992 JU₂, 5, 1, 0; 1992 LF₄, 4, 1, 0; 1992 OO₅, 5, 1, 0; 1992 OJ₁, 20, 5, 10; 1992 OB₃, 5, 1, 0; 1992 OP₅, 9, 2, 2; 1992 OJ₈, 4, 1, 0; 1992 PY₅, 5, 1, 0; 1992 PQ₁, 8, 1, 0; 1992 PA₂, 10, 2, 10; 1992 PO₂, 14, 3, 6; 1992 PQ₂, 9, 2, 8; 1992 PV₃, 5, 1, 0; 1992 QS₁, 3, 1, 0; 1992 RC₁, 5, 1, 0; 1992 RF₂, 13, 3, 7; 1992 RK₂, 15, 3, 7; 1992 RD₃, 5, 1, 0; 1992 RZ₃, 15, 3, 7; 1992 RS₅, 12, 3, 6; 1992 SO₁₀, 10, 2, 10; 1992 SJ₁, 4, 1, 0; 1992 SX₁, 10, 2, 7; 1992 SN₂, 4, 1, 0; 1992 SA₄, 15, 3, 6; 1992 SG₁₃, 15, 3, 7; 1992 ST₁₇, 20, 4, 62; 1992 SU₂₁, 5, 1, 0; 1992 UX₄, 4, 1, 0; 1992 UW₁, 3, 1, 0; 1992 UN₂, 10, 2, 4; 1992 UD₃, 13, 3, 7; 1992 UE₄, 8, 2, 4; 1992 UA₆, 8, 2, 9; 1992 UP₈, 10, 2, 2; 1992 WJ₁₅, 15, 3, 6; 1992 WX₅, 5, 1, 0; 1992 WD₁, 15, 3,

6; 1992 WD₈, 7, 2, 4; 1992 YY₁₅, 15, 2, 10; 1992 YA₁, 15, 3, 7; 1992 YM₂, 8, 1, 0; 1992 YP₂, 4, 1, 0; 1993 BA₅, 5, 1, 0; 1993 BN₁₅, 15, 3, 6; 1993 BT₂, 14, 3, 7; 1993 BX₂, 14, 3, 6; 1993 BF₃, 5, 1, 0; 1993 BR₃, 5, 1, 0; 1993 BD₄, 9, 2, 4; 1993 BD₆, 15, 3, 6; 1993 BZ₁₂, 8, 2, 4; 1993 CJ₁, 8, 2, 7; 1993 CK₁, 5, 1, 0; 1993 CR₁, 25, 4, 6; 1993 DM₅, 5, 1, 0; 1993 DV₉, 9, 2, 2; 1993 DE₁₁, 11, 3, 10; 1993 DJ₁, 5, 1, 0; 1993 DD₂, 5, 1, 0; 1993 EP₁₀, 10, 2, 10; 1993 FN₉, 9, 2, 7; 1993 FQ₂, 5, 1, 0; 1993 FM₅, 24, 3, 6; 1993 FO₈, 4, 1, 0; 1993 FY₈, 5, 1, 0; 1993 FV₁₁, 15, 3, 6; 1993 FY₁₂, 15, 3, 6; 1993 FT₁₄, 4, 1, 0; 1993 FF₁₆, 5, 1, 0; 1993 FF₁₉, 15, 3, 6; 1993 FO₂₁, 15, 3, 6; 1993 FQ₂₁, 10, 2, 2; 1993 FS₂₃, 15, 3, 6; 1993 FQ₂₄, 13, 3, 5; 1993 FU₂₄, 10, 2, 7; 1993 FZ₂₄, 15, 3, 6; 1993 FZ₂₆, 15, 3, 7; 1993 FH₂₇, 10, 2, 6; 1993 FS₂₇, 15, 3, 7; 1993 FU₃₃, 5, 1, 0; 1993 FO₃₆, 10, 2, 7; 1993 FA₃₇, 25, 4, 6; 1993 FZ₄₁, 10, 2, 2; 1993 FQ₄₃, 20, 3, 6; 1993 FA₄₆, 15, 3, 7; 1993 FX₅₀, 5, 1, 0; 1993 FD₅₁, 15, 3, 6; 1993 FU₅₁, 14, 3, 7; 1993 FZ₅₇, 10, 2, 6; 1993 FF₈₂, 4, 1, 0; 1993 GL₅, 5, 1, 0; 1993 GR₂₇, 5, 6; 1993 HE₅, 5, 1, 0; 1993 HZ₅, 5, 1, 0; 1993 KT₁, 5, 1, 0; 1993 KW₁, 10, 2, 10; 1993 KB₂, 14, 3, 6; 1993 LE₈, 2, 4; 1993 NZ₁, 24, 4, 8; 1993 OC₂, 3, 1, 0; 1993 OH₅, 46, 5, 7; 1993 OR₈, 15, 3, 7; 1993 OF₉, 34, 7, 476; 1993 OX₁₁, 14, 3, 6; 1993 PB₇, 5, 1, 0; 1993 PK₇, 9, 2, 2; 1993 QQ₄, 8, 2, 2; 1993 RA₈, 60, 4, 9; 1993 SE₃, 5, 1, 0; 1993 SG₅, 5, 1, 0; 1993 ST₅, 4, 1, 0; 1993 TF₃₄, 12, 3, 7; 1994 AC₃, 1, 0; 1994 AP₅, 5, 1, 0; 1994 AG₁, 5, 1, 0; 1994 AN₂, 12, 3, 10; 1994 AX₄, 12, 3, 8; 1994 AX₆, 19, 3, 2; 1994 BX₅, 5, 1, 0; 1994 BH₁, 13, 3, 6; 1994 BP₃, 5, 1, 0; 1994 BN₄, 12, 3, 8; 1994 CL₂₄, 24, 4, 7; 1994 CA₁, 14, 3, 6; 1994 CG₁, 4, 1, 0; 1994 CN₈, 15, 3, 6; 1994 CK₁₀, 15, 2, 7; 1994 CU₁₀, 5, 1, 0; 1994 CX₁₀, 5, 1, 0; 1994 CG₁₂, 8, 2, 7; 1994 CX₁₂, 28, 5, 6; 1994 CN₁₃, 5, 1, 0; 1994 CG₁₄, 5, 1, 0; 1994 CL₁₄, 5, 1, 0; 1994 CO₁₆, 7, 2, 6; 1994 CO₁₇, 14, 3, 6; 1994 DS₅, 5, 1, 0; 1994 EB₁₃, 3, 6; 1994 EP₉, 9, 2, 4; 1994 EQ₅, 5, 1, 0; 1994 ES₅, 5, 1, 0; 1994 EB₂, 5, 1, 0; 1994 EL₂, 4, 1, 0; 1994 EC₅, 15, 3, 6; 1994 EJ₇, 5, 1, 0; 1994 EV₇, 4, 1, 0; 1994 EW₇, 4, 1, 0; 1994 FY₃, 3, 1, 0; 1994 GG₁, 5, 1, 0; 1994 GY₄, 4, 1, 0; 1994 GU₉, 5, 1, 0; 1994 GW₁₀, 3, 1, 0; 1994 GY₁₀, 10, 2, 59; 1994 HA₁₆, 16, 4, 8; 1994 JG₄, 15, 3, 7; 1994 JU₈, 5, 1, 0; 1994 LC₄, 4, 1, 0; 1994 LH₅, 5, 1, 0; 1994 PX₅, 5, 1, 0; 1994 PK₃, 13, 3, 6; 1994 PK₅, 3, 1, 0; 1994 PU₅, 5, 1, 0; 1994 PC₇, 8, 2, 7; 1994 PK₉, 10, 2, 6; 1994 PX₉, 5, 1, 0; 1994 PQ₁₀, 15, 3, 7; 1994 PX₁₁, 15, 3, 7; 1994 PT₁₃, 10, 2, 6; 1994 PA₁₄, 9, 2, 5; 1994 PC₁₄, 15, 3, 7; 1994 PO₁₆, 7, 2, 10; 1994 PY₁₇, 15, 3, 7; 1994 PO₁₈, 34, 5, 7; 1994 PF₂₀, 16, 4, 7; 1994 PK₂₀, 19, 4, 7; 1994 PL₂₂, 136, 6, 7; 1994 PO₂₅, 7, 2, 4; 1994 PZ₂₈, 4, 1, 0; 1994 PW₂₉, 15, 3, 7; 1994 PC₃₇, 5, 1, 0; 1994 PP₃₉, 3, 1, 0; 1994 QZ₁₉, 4, 7; 1994 RB₁₇, 15, 3, 7; 1994 TD₉, 2, 7; 1994 TZ₄, 4, 1, 0; 1994 TF₁, 5, 1, 0; 1994 TT₁₆, 4, 1, 0; 1994 UH₂, 10, 2, 6; 1994 UZ₁₂, 14, 3, 6; 1994 VK₁₃, 3, 6; 1994 VN₉, 9, 2, 5; 1994 WG₉, 4, 1, 0; 1994 WB₃, 5, 1, 0; 1994 WH₃, 15, 3, 7; 1994 WP₁₃, 5, 1, 0; 1994 XM₁₀, 10, 2, 7; 1995 BT₅, 5, 1, 0; 1995 FV₃, 3, 1, 0; 1995 FA₇, 4, 1, 0; 1995 GA₉, 9, 2, 6; 1995 GV₂₄, 4, 6; 1995 HK₁₅, 3, 6; 1995 HP₉, 9, 2, 6; 1995 KF₄, 4, 1, 0; 1995 KA₁, 20, 5, 10; 1995 KO₁, 5, 1, 0; 1995 NE₁₀, 10, 2, 2; 1995 OJ₁₃, 3, 7; 1995 OU₄, 4, 1, 0; 1995 OS₁, 8, 2, 6; 1995 ON₄, 10, 3, 5; 1995 PG₁₃, 3, 6; 1995 QG₁₅, 3, 7; 1995 QQ₄, 4, 1, 0; 1995 QR₉, 9, 2, 7; 1995 QY₃, 8, 2, 8; 1995 QB₁₀, 13, 3, 6; 1995 QC₁₀, 4, 1, 0; 1995 RA₅, 5, 1, 0; 1995 RJ₅, 5, 1, 0; 1995 SB₁, 3, 1, 0; 1995 SM₁, 4, 1, 0; 1995 SQ₁, 4, 1, 0; 1995 SO₂, 10, 2, 5; 1995 SQ₂, 9, 2, 1; 1995 SE₄, 13, 3, 6; 1995 SS₄, 7, 2, 885; 1995 SF₈, 5, 1, 0; 1995 SU₁₅, 5, 1, 0; 1995 SW₂₅, 15, 3, 7; 1995 SL₃₅, 3, 1, 0; 1995 ST₅₄, 8, 2, 4; 1995 TP₁₉, 4, 7; 1995 TZ₁, 5, 1, 0; 1995 TG₂, 13,

1996 XW₁₉, 17, 4, 8; 1996 XF₂₃, 5, 1, 0; 1996 XH₂₆, 3, 1, 0; 1996 XU₂₆, 10, 2, 6; 1996 XY₂₈, 16, 3, 6; 1996 XP₂₉, 15, 3, 6; 1996 XU₃₀, 8, 2, 8; 1996 XZ₃₀, 15, 3, 7; 1996 XJ₃₁, 5, 1, 0; 1996 XQ₃₂, 3, 1, 0; 1996 XL₃₃, 3, 1, 0; 1996 YJ, 15, 3, 10; 1996 YG₁, 4, 1, 0; 1996 YE₁, 5, 1, 0; 1996 YV₁, 8, 2, 1; 1996 YJ₂, 5, 1, 0; 1996 YL₂, 9, 2, 4; 1996 YN₂, 19, 4, 501; 1997 AE, 14, 3, 6; 1997 AG, 5, 1, 0; 1997 AH, 5, 1, 0; 1997 AT, 5, 1, 0; 1997 AD₁, 10, 2, 6; 1997 AV₁, 15, 3, 7; 1997 AA₂, 22, 4, 6; 1997 AB₂, 5, 1, 0; 1997 AW₂, 3, 1, 0; 1997 AZ₃, 4, 1, 0; 1997 AF₄, 5, 1, 0; 1997 AM₄, 5, 1, 0; 1997 AO₄, 13, 3, 6; 1997 AT₄, 10, 2, 10; 1997 AV₄, 20, 4, 26; 1997 AB₅, 5, 1, 0; 1997 AO₅, 5, 1, 0; 1997 AQ₅, 5, 1, 0; 1997 AB₆, 5, 1, 0; 1997 AW₆, 10, 2, 2; 1997 AC₇, 5, 1, 0; 1997 AK₇, 4, 1, 0; 1997 AD₈, 8, 2, 2; 1997 AR₈, 8, 2, 2; 1997 AP₁₂, 8, 2, 4; 1997 AC₁₃, 5, 1, 0; 1997 AD₁₃, 5, 1, 0; 1997 AJ₁₃, 15, 3, 2; 1997 AT₁₃, 4, 1, 0; 1997 AQ₁₅, 4, 1, 0; 1997 AT₁₆, 10, 2, 4; 1997 AT₂₀, 5, 1, 0; 1997 AN₂₁, 15, 3, 6; 1997 AZ₂₁, 14, 3, 6; 1997 AM₂₂, 10, 2, 4; 1997 AQ₂₂, 4, 1, 0; 1997 BX, 22, 5, 6; 1997 BR₁, 32, 4, 5; 1997 BY₁, 5, 1, 0; 1997 BZ₁, 15, 3, 7; 1997 BV₂, 8, 2, 32; 1997 BA₃, 18, 3, 7; 1997 BN₃, 7, 2, 4; 1997 BO₃, 5, 1, 0; 1997 BS₃, 4, 1, 0; 1997 BT₃, 31, 5, 7; 1997 BY₄, 4, 1, 0; 1997 BP₅, 4, 1, 0; 1997 BH₈, 4, 1, 0; 1997 BR₈, 5, 1, 0; 1997 BU₈, 10, 2, 7; 1997 BD₉, 3, 1, 0; 1997 BN₉, 18, 4, 10; 1997 CN, 3, 1, 0; 1997 CR, 5, 1, 0; 1997 CS, 15, 3, 7; 1997 CY, 15, 3, 7; 1997 CG₁, 5, 1, 0; 1997 CX₂, 14, 3, 7; 1997 CK₁₂, 14, 2, 3; 1997 CK₁₃, 19, 4, 7; 1997 CV₁₅, 22, 3, 6; 1997 CP₁₉, 10, 2, 6; 1997 CR₁₉, 13, 3, 7; 1997 CT₁₉, 10, 2, 2; 1997 CA₂₀, 4, 1, 0; 1997 CD₂₀, 10, 2, 7; 1997 CF₂₂, 10, 2, 7; 1997 CK₂₂, 14, 3, 6; 1997 CL₂₈, 3, 1, 0; 1997 CS₂₈, 10, 2, 7; 1997 CC₂₉, 3, 1, 0; 1997 DR, 15, 3, 7; 1997 EK, 17, 4, 6; 1997 EL, 24, 4, 6; 1997 ED₅, 6, 2, 5; 1997 EK₆, 5, 1, 0; 1997 EL₆, 4, 1, 0; 1997 EO₇, 14, 3, 7; 1997 EU₁₆, 15, 3, 7; 1997 EQ₁₇, 15, 3, 7; 1997 EM₂₅, 5, 1, 0; 1997 EQ₂₅, 13, 3, 7; 1997 ER₂₆, 10, 2, 5; 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1998 DU₂, 4, 1, 0; 1998 DY₄, 15, 3, 6; 1998 DR₅, 9, 2, 6; 1998 DT₉, 9, 2, 2; 1998 DV₉, 8, 2, 6; 1998 DT₁₀, 13, 3, 6; 1998 DE₁₁, 15, 3, 7; 1998 DH₁₁, 8, 2, 1; 1998 DT₁₁, 19, 4, 6; 1998 DG₁₂, 4, 1, 0; 1998 DM₁₃, 14, 3, 6; 1998 DP₁₃, 5, 1, 0; 1998 DD₁₄, 5, 1, 0; 1998 DK₁₄, 9, 2, 2; 1998 DE₁₆, 9, 2, 5; 1998 DG₂₀, 3, 1, 0; 1998 DJ₂₀, 15, 3, 7; 1998 DB₂₄, 5, 1, 0; 1998 DW₃₁, 5, 1, 0; 1998 DZ₃₃, 4, 1, 0; 1998 DT₃₄, 14, 3, 7; 1998 DB₃₅, 4, 1, 0; 1998 DC₃₅, 10, 2, 6; 1998 DB₃₆, 9, 2, 1; 1998 EF, 10, 2, 4; 1998 EX₂, 4, 1, 0; 1998 EZ₂, 5, 1, 0; 1998 ED₃, 7, 2, 4; 1998 EP₃, 5, 1, 0; 1998 EL₅, 11, 3, 60; 1998 EP₆, 14, 3, 7; 1998 ER₆, 7, 2, 4; 1998 EX₆, 15, 3, 7; 1998 EJ₈, 5, 1, 0; 1998 EK₈, 15, 3, 6; 1998 EM₁₀, 8, 2, 3; 1998 EJ₁₁, 8, 2, 1; 1998 EP₁₁, 9, 2, 4; 1998 ET₁₁, 3, 1, 0; 1998 EY₁₁, 7, 2, 23; 1998 EA₁₂, 13, 3, 6; 1998 EF₁₂, 5, 1, 0; 1998 EG₁₂, 5, 1, 0; 1998 EV₁₂, 13, 3, 24; 1998 ED₁₄, 5, 1, 0; 1998 FK₁, 8, 2, 7; 1998 FE₂, 9, 2, 4; 1998 FH₂, 9, 2, 1; 1998 FF₃, 14, 3, 6; 1998 FN₅, 3, 1, 0; 1998 FO₅, 4, 1, 0; 1998 FT₈, 5, 1, 0; 1998 FC₉, 9, 2, 2; 1998 FB₁₀, 9, 2, 9; 1998 FU₁₀, 5, 1, 0; 1998 FG₁₁, 5, 1, 0; 1998 FH₁₁, 4, 1, 0; 1998 FO₁₁, 11, 3, 6; 1998 FP₁₁, 10, 2, 2; 1998 FY₁₁, 15, 3, 6; 1998 FA₁₂, 5, 1, 0; 1998 FM₁₂, 15, 3, 7; 1998 FB₁₄, 15, 3, 6; 1998 FY₁₄, 5, 1, 0; 1998 FZ₁₄, 10, 2, 5; 1998 FD₁₅, 3, 1, 0; 1998 FS₁₅, 15, 4, 8; 1998 FV₁₅, 20, 4, 7; 1998 FW₁₅, 5, 1, 0; 1998 FZ₁₅, 4, 1, 0; 1998 FW₁₉, 8, 2, 6; 1998 FU₂₀, 3, 1, 0; 1998 FW₂₀, 3, 1, 0; 1998 FJ₂₂, 10, 2, 2; 1998 FZ₂₂, 8, 2, 23; 1998 FH₂₃, 4, 1, 0; 1998 FJ₂₅, 8, 2, 3; 1998 FK₂₅, 4, 1, 0; 1998 FD₂₆, 5, 1, 0; 1998 FX₂₇, 3, 1, 0; 1998 FM₂₈, 8, 2, 3; 1998 FY₂₈, 7, 2, 3; 1998 FP₃₀, 4, 1, 0; 1998 FY₃₁, 10, 2, 21; 1998 FK₃₂, 4, 1, 0; 1998 FA₃₃, 17, 4, 7; 1998 FO₃₄, 5, 1, 0; 1998 FU₃₆, 4, 1, 0; 1998 FM₄₀, 25, 2, 2; 1998 FV₄₀, 12, 3, 7; 1998 FZ₄₀, 3, 1, 0; 1998 FH₄₂, 10, 2, 2; 1998 FO₄₂, 3, 1, 0; 1998 FG₄₃, 9, 2, 5; 1998 FN₄₃, 15, 3, 7; 1998 FL₄₄, 5, 1, 0; 1998 FF₄₆, 5, 1, 0; 1998 FR₄₇, 4, 1, 0; 1998 FX₄₇, 14, 3, 9; 1998 FZ₄₇, 13, 3, 6; 1998 FO₄₈, 10, 2, 6; 1998 FJ₄₉, 10, 2, 5; 1998 FK₄₉, 3, 1, 0; 1998 FG₄₉, 5, 1, 0; 1998 FQ₄₉, 23, 4, 7; 1998 FT₅₁, 3, 1, 0; 1998 FG₅₃, 18, 3, 7; 1998 FM₅₄, 10, 2, 7; 1998 FA₅₆, 14, 3, 6; 1998 FG₅₆, 20, 4, 60; 1998 FH₅₆, 4, 1, 0; 1998 FN₅₈, 9, 2, 1; 1998 FT₅₉, 15, 3, 7; 1998 FF₆₀, 4, 1, 0; 1998 FH₆₀, 13, 3, 6; 1998 FV₆₀, 20, 3, 7; 1998 FO₆₁, 9, 2, 2; 1998 FD₆₂, 13, 3, 9; 1998 FF₆₂, 5, 1, 0; 1998 FS₆₂, 4, 1, 0; 1998 FK₆₃, 5, 1, 0; 1998 FV₆₃, 5, 1, 0; 1998 FW₆₃, 9, 2, 21; 1998 FQ₆₄, 8, 2, 2; 1998 FX₆₄, 5, 1, 0; 1998 FA₆₅, 5, 1, 0; 1998 FE₆₅, 10, 2, 4; 1998 FG₆₅, 4, 1, 0; 1998 FP₆₅, 14, 3, 6; 1998 FF₆₆, 14, 3, 6; 1998 FJ₆₆, 5, 1, 0; 1998 FO₆₆, 3, 1, 0; 1998 FW₆₆, 24, 5, 537; 1998 FY₆₆, 10, 2, 2; 1998 FF₆₇, 5, 1, 0; 1998 FJ₆₇, 14, 3, 25; 1998 FV₆₇, 15, 3, 6; 1998 FW₆₇, 5, 1, 0; 1998 FC₆₈, 5, 1, 0; 1998 FZ₆₈, 18, 4, 10; 1998 FE₆₉, 14, 3, 7; 1998 FG₆₉, 14, 3, 6; 1998 FX₆₉, 5, 1, 0; 1998 FN₇₀, 10, 2, 2; 1998 FO₇₀, 3, 1, 0; 1998 FT₇₀, 7, 2, 4; 1998 FV₇₀, 10, 2, 4; 1998 FZ₇₀, 8, 2, 4; 1998 FH₇₁, 3, 1, 0; 1998 FL₇₁, 10, 2, 4; 1998 FY₇₁, 9, 2, 4; 1998 FP₇₂, 11, 3, 2; 1998 FQ₇₂, 15, 3, 6; 1998 FZ₇₃, 3, 1, 0; 1998 FA₇₄, 10, 2, 4; 1998 FC₇₄, 19, 4, 533; 1998 FD₇₄, 10, 2, 7; 1998 FL₇₄, 4, 1, 0; 1998 FV₇₄, 5, 1, 0; 1998 FW₇₄, 5, 1, 0; 1998 FC₇₅, 12, 3, 6; 1998 FF₇₅, 5, 1, 0; 1998 FG₇₅, 5, 1, 0; 1998 FH₇₅, 15, 3, 7; 1998 FS₇₅, 5, 1, 0; 1998 FL₇₆, 5, 1, 0; 1998 FR₇₆, 5, 1, 0; 1998 FG₇₇, 5, 1, 0; 1998 FP₇₇, 10, 2, 6; 1998 FS₇₇, 15, 3, 60; 1998 FW₇₇, 5, 1, 0; 1998 FA₇₈, 5, 1, 0; 1998 FH₇₈, 4, 1, 0; 1998 FJ₇₈, 5, 1, 0; 1998 FB₇₉, 5, 1, 0; 1998 FU₇₉, 5, 1, 0; 1998 FP₉₃, 3, 1, 0; 1998 FZ₉₇, 7, 2, 8; 1998 FY₉₉,

18, 4, 7; 1998 FX₁₀₂, 5, 1, 0; 1998 FZ₁₀₂, 12, 3, 6; 1998 FJ₁₀₃, 5, 1, 0; 1998 FR₁₀₃, 3, 1, 0; 1998 FD₁₀₄, 8, 2, 8; 1998 FO₁₀₄, 7, 2, 5; 1998 FJ₁₀₅, 14, 2, 1; 1998 FL₁₀₅, 22, 4, 7; 1998 FK₁₀₆, 10, 2, 10; 1998 FM₁₀₈, 5, 1, 0; 1998 FU₁₀₈, 7, 2, 6; 1998 FB₁₁₁, 19, 4, 7; 1998 FG₁₁₂, 7, 2, 2; 1998 FM₁₁₃, 4, 1, 0; 1998 FR₁₁₃, 5, 1, 0; 1998 FZ₁₁₃, 9, 2, 25; 1998 FD₁₁₄, 20, 4, 6; 1998 FE₁₁₄, 3, 1, 0; 1998 FL₁₁₄, 5, 1, 0; 1998 FM₁₁₄, 5, 1, 0; 1998 FB₁₁₅, 8, 2, 26; 1998 FG₁₁₅, 5, 1, 0; 1998 FH₁₁₅, 14, 3, 10; 1998 FS₁₁₅, 5, 1, 0; 1998 FT₁₁₅, 15, 3, 7; 1998 FX₁₁₅, 4, 1, 0; 1998 FB₁₁₆, 14, 3, 8; 1998 FL₁₁₆, 5, 1, 0; 1998 FN₁₁₆, 10, 2, 6; 1998 FU₁₁₆, 4, 1, 0; 1998 FY₁₁₆, 18, 4, 6; 1998 FC₁₁₇, 15, 3, 57; 1998 FE₁₁₇, 4, 1, 0; 1998 FG₁₁₇, 10, 2, 8; 1998 FH₁₁₇, 15, 3, 7; 1998 FL₁₁₇, 8, 2, 1; 1998 FC₁₁₈, 17, 4, 8; 1998 FE₁₁₈, 14, 3, 6; 1998 FH₁₁₈, 6, 2, 4; 1998 FL₁₁₈, 4, 1, 0; 1998 FN₁₁₈, 3, 1, 0; 1998 FL₁₂₁, 5, 1, 0; 1998 FM₁₂₁, 25, 3, 6; 1998 FO₁₂₁, 7, 2, 2; 1998 FS₁₂₁, 5, 1, 0; 1998 FM₁₂₂, 10, 2, 7; 1998 FN₁₂₂, 12, 3, 25; 1998 FP₁₂₂, 9, 2, 25; 1998 FE₁₂₅, 29, 5, 7; 1998 FL₁₂₅, 13, 3, 6; 1998 FP₁₂₅, 14, 3, 6; 1998 FM₁₂₆, 15, 3, 7; 1998 FC₁₂₇, 9, 2, 1; 1998 FZ₁₃₀, 10, 2, 2; 1998 FY₁₃₉, 5, 1, 0; 1998 FO₁₄₁, 4, 1, 0; 1998 FC₁₄₄, 4, 1, 0; 1998 FW₁₄₄ *, 15, 3, 53; 1998 GZ, 3, 1, 0; 1998 GF₁, 7, 2, 6; 1998 GG₁, 13, 3, 496; 1998 GH₁, 5, 1, 0; 1998 GJ₁, 13, 3, 59; 1998 GK₁, 9, 2, 9; 1998 GN₇, 5, 1, 0; 1998 GV₈, 4, 1, 0; 1998 GE₉, 14, 3, 6; 1998 GO₉, 4, 1, 0; 1998 GW₁₀, 14, 3, 509; 1998 HT, 19, 4, 7; 1998 HE₁, 5, 1, 0; 1998 HF₃, 13, 4, 481; 1998 HV₄, 5, 1, 0; 1998 HV₆, 10, 2, 484; 1998 HY₆, 5, 1, 0; 1998 HE₈, 8, 2, 9; 1998 HN₈, 5, 1, 0; 1998 HM₁₁, 5, 1, 0; 1998 HQ₁₂, 5, 1, 0; 1998 HK₁₃, 12, 3, 20; 1998 HH₁₄, 8, 2, 7; 1998 HT₁₄, 4, 1, 0; 1998 HW₁₇, 15, 3, 7; 1998 HQ₁₈, 13, 3, 7; 1998 HH₁₉, 15, 3, 7; 1998 HQ₁₉, 9, 2, 482; 1998 HS₁₉, 9, 2, 2; 1998 HT₁₉, 15, 3, 6; 1998 HV₁₉, 10, 2, 6; 1998 HE₂₀, 15, 3, 6; 1998 HZ₂₀, 4, 1, 0; 1998 HC₂₁, 10, 2, 4; 1998 HC₂₂, 12, 3, 7; 1998 HQ₂₂, 18, 4, 6; 1998 HG₂₃, 16, 4, 7; 1998 HO₂₃, 4, 1, 0; 1998 HT₂₃, 16, 4, 6; 1998 HK₂₄, 9, 2, 5; 1998 HQ₂₄, 5, 1, 0; 1998 HH₂₇, 8, 2, 4; 1998 HE₂₉, 5, 1, 0; 1998 HB₃₀, 10, 2, 4; 1998 HZ₃₁, 13, 3, 8; 1998 HA₃₂, 13, 3, 25; 1998 HJ₃₃, 8, 2, 7; 1998 HU₃₃, 5, 1, 0; 1998 HS₃₄, 10, 2, 4; 1998 HO₃₅, 5, 1, 0; 1998 HC₃₆, 15, 3, 6; 1998 HA₃₉, 10, 2, 4; 1998 HK₃₉, 10, 2, 4; 1998 HC₄₀, 5, 1, 0; 1998 HS₄₂, 5, 1, 0; 1998 HU₄₃, 5, 1, 0; 1998 HW₄₄, 20, 2, 4; 1998 HY₄₄, 13, 3, 6; 1998 HO₄₅, 59, 4, 9; 1998 HT₄₅, 9, 2, 4; 1998 HW₄₅, 8, 2, 7; 1998 HP₄₆, 9, 2, 52; 1998 HV₅₀, 10, 2, 6; 1998 HB₅₁, 10, 2, 6; 1998 HF₅₁, 15, 3, 7; 1998 HG₅₁, 12, 3, 6; 1998 HH₅₁, 39, 4, 7; 1998 HL₅₁, 4, 1, 0; 1998 HN₅₁, 5, 1, 0; 1998 HQ₅₁, 10, 2, 2; 1998 HD₅₂, 9, 2, 15; 1998 HK₅₂, 5, 1, 0; 1998 HL₅₂, 5, 1, 0; 1998 HX₅₂, 4, 1, 0; 1998 HJ₅₄, 10, 2, 5; 1998 HM₅₇, 10, 2, 48; 1998 HD₆₀, 4, 1, 0; 1998 HS₆₀, 19, 4, 7; 1998 HX₆₆, 4, 1, 0; 1998 HA₇₅, 19, 4, 7; 1998 HX₇₈, 10, 2, 10; 1998 HF₈₀, 5, 1, 0; 1998 HV₈₁, 4, 1, 0; 1998 HP₈₃, 9, 2, 4; 1998 HE₈₄, 3, 1, 0; 1998 HC₈₅, 4, 1, 0; 1998 HV₈₇, 4, 1, 0; 1998 HX₈₈, 9, 2, 4; 1998 HX₈₉, 20, 3, 6; 1998 HX₉₁, 5, 1, 0; 1998 HZ₉₁, 17, 3, 7; 1998 HQ₉₂, 10, 2, 418; 1998 HH₉₃, 10, 2, 2; 1998 HV₉₃, 4, 1, 0; 1998 HX₉₃, 4, 1, 0; 1998 HA₉₄, 10, 2, 21; 1998 HC₉₄, 9, 2, 21; 1998 HU₉₄, 4, 1, 0; 1998 HD₉₅, 5, 1, 0; 1998 HJ₉₅, 5, 1, 0; 1998 HZ₉₆, 5, 1, 0; 1998 HD₉₇, 5, 1, 0; 1998 HH₉₇, 3, 1, 0; 1998 HQ₉₇, 10, 2, 4; 1998 HP₉₈, 5, 1, 0; 1998 HT₉₈, 10, 2, 6; 1998 HF₉₉, 8, 2, 2; 1998 HJ₉₉, 15, 3, 478; 1998 HX₉₉, 13, 3, 7; 1998 HZ₉₉, 32, 4, 4; 1998 HC₁₀₀, 15, 3, 7; 1998 HE₁₀₀, 15, 3, 7; 1998 HF₁₀₀, 8, 2, 6; 1998 HM₁₀₀, 3, 1, 0; 1998 HQ₁₀₁, 8, 2, 56; 1998 HM₁₀₂, 4, 1, 0; 1998 HF₁₀₃, 4, 1, 0; 1998 HT₁₀₇, 5, 1, 0; 1998 HU₁₀₉, 5, 1, 0; 1998 HG₁₁₁, 18, 4, 65; 1998 HX₁₁₂, 5, 1, 0; 1998 HH₁₁₄, 5, 1, 0; 1998 HV₁₁₄, 15, 3, 65; 1998 HB₁₁₅, 9, 2, 6; 1998 HB₁₁₅, 4, 1, 0; 1998 HA₁₁₆, 10, 2, 28; 1998 HO₁₁₆, 7, 2, 1; 1998 HO₁₁₇, 5, 1, 0; 1998 HW₁₁₈, 3, 1, 0; 1998 HN₁₁₉, 10, 2, 28; 1998 HW₁₁₉, 21, 4, 6; 1998 HL₁₂₀, 9, 2, 4; 1998 HF₁₂₁, 5, 1, 0; 1998 HM₁₂₁, 11, 3, 5; 1998 HC₁₂₂, 10, 2, 4; 1998 HF₁₂

2, 10; 1998 OM₁₂, 10, 2, 4; 1998 PO₁, 5, 1, 0; 1998 QJ₈, 5, 1, 0; 1998 QF₅₁, 4, 1, 0; 1998 QR₅₂, 9, 2, 5; 1998 QE₇₃, 3, 1, 0; 1998 RF₁, 5, 1, 0; 1998 RO₁, 10, 2, 4; 1998 RU₂₂, 10, 2, 6; 1998 RK₅₇, 4, 1, 0; 1998 RB₆₂, 5, 1, 0; 1998 SD₂, 28, 5, 6; 1998 SQ₆, 5, 1, 0; 1998 SG₂₇, 3, 1, 0; 1998 SQ₅₃, 5, 1, 0; 1998 SW₁₄₄, 4, 1, 0; 1998 TG₁₆, 5, 1, 0; 1998 TX₃₁, 4, 1, 0; 1998 UF₅, 1, 0; 1998 UF₃₁, 3, 1, 0; 1998 UG₃₂, 9, 2, 21; 1998 WX₁₇, 5, 1, 0; 1998 WY₁₇, 5, 1, 0; 1998 WK₃₂, 5, 1, 0; 1998 XD₂₆, 5, 1, 0; 1998 XS₇₃, 4, 1, 0; 1998 YR₁₈, 5, 1, 0; 1999 AZ₃, 5, 1, 0; 1999 AC₆, 10, 2, 32; 1999 BW₃, 5, 1, 0; 1999 FV₈, 8, 2, 1; 1999 FJ₃₁, 5, 1, 0; 1999 FQ₃₃, 4, 1, 0; 1999 FV₃₃, 4, 1, 0; 1999 GN₄, 5, 1, 0; 1999 GQ₅, 4, 1, 0; 1999 GS₅, 5, 1, 0; 1999 GR₇, 10, 2, 55; 1999 GQ₈, 5, 1, 0; 1999 GR₈, 4, 1, 0; 1999 GV₈, 5, 1, 0; 1999 GY₁₀, 5, 1, 0; 1999 GF₁₆, 5, 1, 0; 1999 GU₃₀, 4, 1, 0; 1999 GQ₃₁, 5, 1, 0; 1999 GM₃₂, 5, 1, 0; 1999 HX₂, 15, 3, 3; 1999 HC₈, 10, 2, 23; 1999 HR₁₀, 4, 1, 0; 1999 JK₂, 5, 1, 0; 1999 JZ₇, 5, 1, 0; 1999 JM₈, 10, 2, 2; 1999 JD₁₃, 3, 1, 0; 1999 JN₁₇, 10, 2, 4; 1999 JH₆₃, 5, 1, 0; 1999 JB₆₅, 17, 4, 24; 1999 JB₆₇, 5, 1, 0; 1999 JE₆₇, 5, 1, 0; 1999 JB₆₈, 5, 1, 0; 1999 JT₇₁, 4, 1, 0; 1999 JJ₈₁, 12, 3, 62; 1999 JK₈₁, 15, 3, 6; 1999 JL₈₁, 19, 3, 6; 1999 JM₈₁, 21, 5, 63; 1999 JS₈₁, 5, 1, 0; 1999 JS₈₆, 5, 1, 0; 1999 JD₉₁, 4, 1, 0; 1999 JK₁₂₃, 5, 1, 0; 1999 KG₄, 10, 2, 6; 1999 KR₄, 10, 2, 5; 1999 KS₇, 13, 3, 6; 1999 KJ₁₅, 10, 2, 6; 1999 KK₁₅, 20, 4, 63; 1999 KM₁₅, 15, 3, 6; 1999 KA₁₆, 25, 5, 64; 1999 KJ₁₇, 12, 3, 48; 1999 LN₂, 2, 1, 0; 1999 LP₅, 1, 0; 1999 LV₁, 5, 1, 0; 1999 LO₄, 5, 1, 0; 1999 LL₇, 3, 1, 0; 1999 LM₇, 8, 2, 4; 1999 LO₇, 9, 2, 4; 1999 LX₇, 5, 1, 0; 1999 LE₁₀, 8, 2, 389; 1999 MK₅, 1, 0; 1999 ML₅, 1, 0; 1999 MO₅, 1, 0; 1999 MT₅, 5, 1, 0; 1999 MK₁, 10, 2, 5; 1999 ML₁, 10, 2, 5; 1999 MM₁, 10, 2, 4; 1999 MN₁, 10, 2, 6; 1999 MV₁, 10, 2, 2; 1999 MC₂, 5, 1, 0; 1999 NC₅, 5, 1, 0; 1999 ND₄, 4, 1, 0; 1999 NK₅, 5, 1, 0; 1999 NT₁₂, 12, 3, 4; 1999 NV₈, 8, 2, 4; 1999 NZ₄, 4, 1, 0; 1999 NA₁, 9, 2, 4; 1999 NB₁, 4, 1, 0; 1999 NQ₁, 14, 3, 5; 1999 NR₁, 13, 3, 5; 1999 NW₁, 6, 2, 3; 1999 NK₂, 9, 2, 5; 1999 NM₂, 13, 3, 8; 1999 NO₂, 10, 2, 7; 1999 NP₂, 15, 3, 7; 1999 NQ₂, 15, 3, 7; 1999 NU₃, 5, 1, 0; 1999 NZ₃, 7, 2, 6; 1999 ND₄, 4, 1, 0; 1999 NF₄, 5, 1, 0; 1999 NG₄, 10, 2, 2; 1999 NH₄, 13, 3, 6; 1999 NS₄, 28, 4, 7; 1999 NT₄, 107, 6, 7; 1999 NW₄, 5, 1, 0; 1999 NX₄, 15, 3, 6; 1999 NE₅, 4, 1, 0; 1999 NF₅, 7, 2, 6; 1999 NG₅, 9, 2, 4; 1999 NJ₅, 7, 2, 4; 1999 NZ₅, 5, 1, 0; 1999 NF₆, 4, 1, 0; 1999 NG₆, 8, 2, 4; 1999 NK₆, 10, 2, 2; 1999 NB₇, 9, 2, 2; 1999 NC₇, 9, 2, 2; 1999 NF₇, 10, 2, 2; 1999 NJ₇, 9, 2, 4; 1999 NQ₇, 8, 2, 2; 1999 NR₇, 9, 2, 2; 1999 NU₇, 4, 1, 0; 1999 NV₇, 5, 1, 0; 1999 NX₇, 12, 2, 1; 1999 NC₈, 10, 2, 4; 1999 ND₈, 9, 2, 4; 1999 NJ₈, 9, 2, 4; 1999 NK₈, 14, 3, 6; 1999 NL₈, 10, 2, 4; 1999 NN₈, 11, 3, 6; 1999 NQ₈, 10, 2, 2; 1999 NR₈, 10, 2, 4; 1999 NS₈, 10, 2, 4; 1999 NT₈, 4, 1, 0; 1999 NV₈, 9, 2, 2; 1999 NC₉, 9, 2, 4; 1999 ND₉, 19, 4, 536; 1999 NE₉, 13, 3, 6; 1999 NG₉, 10, 2, 6; 1999 NH₉, 10, 2, 4; 1999 NJ₉, 10, 2, 2; 1999 NM₉, 13, 3, 6; 1999 NN₉, 12, 3, 6; 1999 NO₉, 15, 3, 6; 1999 NP₉, 8, 2, 4; 1999 NQ₉, 8, 2, 2; 1999 NR₉, 17, 4, 6; 1999 NS₉, 15, 3, 115; 1999 NU₉, 18, 4, 6; 1999 NW₉, 13, 3, 890; 1999 NX₉, 5, 1, 0; 1999 NY₉, 7, 2, 4; 1999 NA₁₀, 14, 3, 6; 1999 NB₁₀, 9, 2, 5; 1999 ND₁₀, 14, 3, 6; 1999 NF₁₀, 9, 2, 6; 1999 NG₁₀, 10, 2, 2; 1999 NH₁₀, 14, 3, 6; 1999 NJ₁₀, 13, 3, 6; 1999 NM₁₀, 9, 2, 4; 1999 NO₁₀, 9, 2, 6; 1999 NP₁₀, 15, 3, 6; 1999 NQ₁₀, 13, 3, 6; 1999 NR₁₀, 15, 3, 6; 1999 NT₁₀, 5, 1, 0; 1999 NV₁₀, 8, 2, 4; 1999 NW₁₀, 10, 2, 4; 1999 NX₁₀, 8, 2, 5; 1999 NZ₁₀, 14, 3, 6; 1999 NA₁₁, 15, 3, 6; 1999 NB₁₁, 9, 2, 2; 1999 NF₁₁, 10, 2, 4; 1999 NG₁₁, 5, 1, 0; 1999 NK₁₁, 10, 2, 6; 1999 NM₁₁, 10, 2, 2; 1999 NN₁₁, 10, 2, 6; 1999 NO₁₁, 9, 2, 4; 1999 NP₁₁, 7, 2, 6; 1999 NR₁₁, 10, 2, 5; 1999 NS₁₁, 19, 4, 508; 1999 NU₁₁, 12, 3, 6; 1999 NV₁₁, 15, 3, 7; 1999 NW₁₁, 15, 3, 6; 1999 NX₁₂, 8, 2, 4; 1999 NS₁₂, 5, 1, 0; 1999 NC₁₅, 5, 1, 0; 1999 NH₁₆, 5, 1, 0; 1999 NQ₁₈, 3, 1, 0; 1999 NJ₂₀, 5, 1, 0; 1999 NS₂₈, 5, 1, 0; 1999 NL₃₁, 14, 3, 598; 1999 NA₃₅, 9, 2, 4; 1999 NZ₃₅, 4, 1, 0; 1999 NS₃₆, 5, 1, 0; 1999 NT₃₆, 10, 2, 6; 1999 NJ₃₇, 5, 1, 0; 1999 NK₃₇, 7, 2, 4; 1999 NN₃₇, 5, 1, 0; 1999 NP₃₇, 3, 1, 0; 1999 NW₃₇, 4, 1, 0; 1999 NZ₃₇, 15, 3, 6; 1999 NA₃₈, 10, 2, 4; 1999 NB₃₈, 8, 2, 4; 1999 NG₃₈, 10, 2, 4; 1999 NK₃₈, 8, 2, 6; 1999 NQ₃₈, 9, 2, 4; 1999 NR₃₈, 10, 2, 4; 1999 NC₃₉, 5, 1, 0; 1999 ND₃₉, 9, 2, 4; 1999 NL₃₉, 9, 2, 4; 1999 NM₃₉, 4, 1, 0; 1999 NN₃₉, 8, 2, 4; 1999 NO₃₉, 8, 2, 6; 1999 NP₃₉, 9, 2, 4; 1999 NX₃₉, 10, 2, 4; 1999 NE₄₀, 5, 1, 0; 1999 NJ₄₀, 5, 1, 0; 1999 NK₄₀, 10, 2, 4; 1999 NM₄₀, 6, 2, 2; 1999 NT₄₀, 3, 1, 0; 1999 NU₄₀, 10, 2, 4; 1999 NV₄₀, 10, 2, 6; 1999 NW₄₀, 10, 2, 4; 1999 NA₄₁, 10, 2, 4; 1999 NC₄₁, 9, 2, 4; 1999 NG₄₁, 9, 2, 4; 1999 NH₄₁, 9, 2, 4; 1999 NJ₄₁, 14, 3, 6; 1999 NQ₄₁, 9, 2, 4; 1999 NU₄₁, 10, 2, 6; 1999 NV₄₁, 10, 2, 4; 1999 NY₄₁, 10, 2, 6; 1999 NX₄₂, 8, 2, 4; 1999 ND₄₃, 8, 2, 16; 1999 NW₄₄, 4, 1, 0; 1999 NL₄₅, 5, 1, 0; 1999 NE₄₈, 4, 1, 0; 1999 NY₄₈, 13, 3, 5; 1999 NY₄₈, 27, 5, 500; 1999 NF₄₉, 5, 1, 0; 1999 NG₄₉, 4, 1, 0; 1999 NK₄₉, 10, 2, 4; 1999 NL₄₉, 3, 1, 0; 1999 NS₄₉, 9, 2, 6; 1999 NU₄₉, 9, 2, 4; 1999 NA₅₀, 23, 5, 510; 1999 NB₅₀, 13, 3, 111; 1999 ND₅₀, 9, 2, 1; 1999 NF₅₀, 9, 2, 6; 1999 NJ₅₀, 5, 1, 0; 1999 NK₅₀, 14, 3, 6; 1999 NT₅₂, 14, 3, 6; 1999 NU₅₂, 30, 6, 539; 1999 NV₅₂, 12, 3, 6; 1999 NW₅₂, 12, 3, 6; 1999 NY₅₂, 11, 3, 6; 1999 NZ₅₂, 14, 3, 6; 1999 NB₅₃, 15, 3, 6; 1999 ND₅₃, 10, 2, 5; 1999 NG₅₃, 19, 4, 117; 1999 NJ₅₃, 19, 3, 6; 1999 NK₅₃, 7, 2, 5; 1999 NN₅₃, 14, 3, 6; 1999 NP₅₃, 13, 3, 6; 1999 NR₅₃, 9, 2, 1; 1999 NS₅₃, 10, 2, 5; 1999 NT₅₃, 26, 5, 514; 1999 NV₅₃, 13, 3, 6; 1999 NW₅₃, 11, 3, 6; 1999 NZ₅₃, 8, 2, 1; 1999 NA₅₄, 14, 3, 6; 1999 NB₅₄, 6, 2, 1; 1999 NC₅₄, 7, 2, 5; 1999 ND₅₄, 7, 2, 1; 1999 NE₅₄, 10, 2, 5; 1999 NF₅₄, 12, 3, 6; 1999 NH₅₄, 14, 3, 6; 1999 NJ₅₄, 13, 3, 6; 1999 NK₅₄, 13, 3, 5; 1999 NP₅₄, 8, 2, 5; 1999 NR₅₄, 8, 2, 1; 1999 NT₅₄, 10, 2, 5; 1999 NX₅₄, 19, 4, 116; 1999 NC₅₅, 17, 4, 119; 1999 NE₅₅, 9, 2, 6; 1999 NF₅₅, 9, 2, 6; 1999 NG₅₅, 8, 2, 6; 1999 NH₅₅, 8, 2, 1; 1999 NJ₅₅, 8, 2, 6; 1999 NK₅₅, 11, 3, 8; 1999 NL₅₅, 8, 2, 1; 1999 NN₅₅, 7, 2, 6; 1999 NQ₅₅, 17, 4, 8; 1999 NS₅₅, 13, 2, 5; 1999 NT₅₅, 16, 4, 6; 1999 NU₅₅, 13, 3, 5; 1999 NV₅₅, 16, 4, 6; 1999 NW₅₅, 12, 3, 7; 1999 NY₅₅, 8, 2, 1; 1999 NZ₅₅, 12, 3, 7; 1999 NA₅₆, 7, 2, 6; 1999 NC₅₆, 5, 1, 0; 1999 ND₅₆, 8, 2, 6; 1999 NE₅₆, 8, 2, 6; 1999 NF₅₆, 12, 3, 8; 1999 NH₅₆, 17, 4, 116; 1999 NK₅₆, 14, 3, 8; 1999 NM₅₆, 8, 2, 8; 1999 NQ₅₆, 7, 2, 8; 1999 NR₅₆, 8, 2, 8; 1999 NS₅₆,

13, 3, 36; 1999 NT₅₆, 12, 3, 8; 1999 NU₅₆, 17, 4, 534; 1999 NV₅₆, 9, 2, 8; 1999 NW₅₆, 8, 2, 8; 1999 NX₅₆, 9, 2, 8; 1999 NY₅₆, 8, 2, 6; 1999 NZ₅₆, 7, 2, 6; 1999 NA₅₇, 17, 5, 38; 1999 NB₅₇, 11, 3, 8; 1999 NC₅₇, 12, 3, 8; 1999 ND₅₇, 11, 3, 8; 1999 NF₅₇, 6, 2, 2; 1999 NH₅₇, 7, 2, 6; 1999 NB₅₈, 5, 1, 0; 1999 NN₅₉, 10, 2, 5; 1999 NP₅₉, 18, 3, 6; 1999 NQ₅₉, 18, 4, 6; 1999 NR₅₉, 22, 4, 116; 1999 NS₅₉, 8, 2, 1; 1999 NW₆₁, 8, 2, 4; 1999 NE₆₂, 14, 3, 446; 1999 NJ₆₂, 9, 2, 1; 1999 NY₆₂, 14, 3, 6; 1999 NB₆₃, 8, 2, 1; 1999 NW₆₃, 9, 2, 4; 1999 NG₆₄, 9, 2, 2; 1999 NH₆₄, 18, 4, 3; 1999 NJ₆₄ *, 4, 1, 0; 1999 OB₂, 15, 3, 6; 1999 OC₁₀, 10, 2, 6; 1999 OH₉, 9, 2, 2; 1999 OK₅, 5, 1, 0; 1999 OL₁₀, 2, 6; 1999 OM₅, 1, 0; 1999 ON₃, 3, 1, 0; 1999 OO₅, 5, 1, 0; 1999 OQ₁₃, 3, 6; 1999 OS₄₀, 6, 498; 1999 OW₉, 9, 2, 6; 1999 OB₁, 12, 3, 6; 1999 ON₁, 3, 1, 0; 1999 OV₁, 9, 2, 8; 1999 OX₁, 8, 2, 8; 1999 OB₂, 10, 2, 10; 1999 OD₂, 10, 2, 10; 1999 OE₂, 9, 2, 10; 1999 OG₂, 12, 3, 2; 1999 OJ₂, 10, 2, 10; 1999 OK₃, 15, 3, 7; 1999 OO₃, 10, 2, 10; 1999 OS₃, 5, 1, 0; 1999 OU₃, 10, 2, 4; 1999 PB₂, 4, 1, 0; 1999 PC₁₀, 10, 2, 4; 1999 PD₄, 1, 0; 1999 PE₁₅, 3, 6; 1999 PF₉, 9, 2, 4; 1999 PJ₁₄, 3, 6; 1999 PK₄, 1, 0; 1999 PM₂₆, 4, 6; 1999 PV₁₃, 3, 6; 1999 PX₉, 9, 2, 2; 1999 PZ₉, 9, 2, 6; 1999 PG₁, 14, 3, 6; 1999 PH₁₄, 14, 3, 6; 1999 PP₁, 15, 3, 7; 1999 PR₁, 39, 3, 2; 1999 PS₁, 15, 3, 7; 1999 PT₁, 14, 3, 7; 1999 PU₁, 15, 3, 6; 1999 PV₁, 14, 3, 7; 1999 PX₁, 8, 2, 4; 1999 PZ₁, 15, 3, 6; 1999 PA₂, 15, 3, 6; 1999 PB₂, 10, 2, 4; 1999 PC₂, 15, 3, 6; 1999 PE₂, 17, 3, 6; 1999 PM₂, 14, 3, 7; 1999 PV₂, 7, 2, 2; 1999 PG₂, 7, 2, 2; 1999 PH₃, 17, 3, 6; 1999 PJ₃, 4, 1, 0; 1999 PM₃, 15, 3, 7; 1999 PN₃, 8, 2, 1; 1999 PO₃, 8, 2, 6; 1999 PP₃, 20, 4, 62; 1999 PT₃, 5, 1, 0; 1999 PY₃, 9, 2, 2; 1999 PZ₃, 5, 1, 0; 1999 PA₄, 10, 2, 5; 1999 PB₄, 15, 3, 7; 1999 PD₄, 14, 3, 6; 1999 PE₄, 9, 2, 4; 1999 PF₄, 11, 3, 6; 1999 PH₄, 13, 3, 3; 1999 PK₄, 3, 1, 0; 1999 PL₄, 8, 2, 10; 1999 PO₄, 41, 6, 7; 1999 PP₄, 14, 3, 6; 1999 PR₄, 28, 5, 7; 1999 PS₄, 17, 4, 7; 1999 PT₄, 15, 3, 7; 1999 PU₄, 9, 2, 4; 1999 PV₄, 5, 1, 0; 1999 PW₄, 14, 3, 6; 1999 PZ₄, 10, 2, 2; 1999 PR₅, 7, 2, 2; 1999 PS₅, 17, 4, 59; 1999 QA₁₅, 3, 7; 1999 QC₈, 8, 2, 53; 1999 QF₁₀, 10, 2, 2; 1999 QG₅, 5, 1, 0; 1999 QJ₁₅, 3, 7; 1999 QV₁, 10, 2, 5; 1999 QQ₁₄, 3, 6; 1999 QR₃, 3, 1, 0; 1999 QT₁, 19, 3, 57; 1999 QU₁, 20, 4, 55; 1999 QV₁₀, 10, 2, 46; 1999 QB₂, 19, 5, 55; 1999 QD₂, 19, 4, 54; 1999 QH₂, 15, 3, 7; 1999 QJ₂, 19, 4, 53; 1999 QK₂, 18, 4, 63; 1999 QM₂, 14, 3, 6; 1999 QO₂, 17, 4, 59; 1999 QP₂, 18, 2, 1; 1999 QV₂, 165, 7, 60; 1999 QS₂, 15, 3, 7; 1999 QT₂, 51, 7, 509; 1999 RA₂₈, 6, 115; 1999 RB₁₅, 15, 3, 6; 1999 RC₅, 1, 0; 1999 RF₁₉, 4, 7; 1999 RG₅, 5, 1, 0; 1999 RL₉, 9, 2, 2; 1999 RM₅, 5, 1, 0; 1999 RN₁₀, 10, 2, 7; 1999 RO₁₃, 3, 6; 1999 RP₂₇, 4, 7; 1999 RQ₅, 1, 0; 1999 RR₃, 3, 1, 0; 1999 RS₅, 1, 0; 1999 RT₅, 19, 4, 6; 1999 RV₂₅, 5, 62; 1999 RW₁₃, 3, 6; 1999 RX₈, 8, 2; 1999 RY₁₈, 4, 58; 1999 RZ₉, 2, 10; 1999 RA₁, 20, 4, 3; 1999 RB₁, 14, 3, 7; 1999 RC₁, 19, 4, 60; 1999 RD₁, 38, 4, 7; 1999 RE₁, 15, 2, 10; 1999 RF₁, 5, 1, 0; 1999 RG₁, 5, 1, 0; 1999 RH₁, 21, 4, 7; 1999 RJ₁, 5, 1, 0; 1999 RM₁, 18, 4, 6; 1999 RN₁, 7, 2, 5; 1999 RO₁, 5, 1, 0; 1999 RP₁, 19, 3, 6; 1999 RR₁, 13, 2, 1; 1999 RS₁, 4, 1, 0; 1999 RT₁, 10, 2, 53; 1999 RU₁, 5, 1, 0; 1999 RV₁, 4, 1, 0; 1999 RW₁, 15, 3, 60; 1999 RX₁, 5, 1, 0; 1999 RY₁, 5, 1, 0; 1999 RZ₁, 4, 1, 0; 1999 RA₂, 10, 2, 2; 1999 RB₂, 3, 1, 0; 1999 RJ₂, 3, 1, 0; 1999 RL₂, 10, 3, 8; 1999 RM₂, 9, 2, 5; 1999 RN₂, 10, 2, 5; 1999 RO₂, 8, 2, 1; 1999 RP₂, 16, 4, 62; 1999 RQ₂, 4, 1, 0; 1999 RR₂, 9, 2, 4; 1999 RS₂, 5, 1, 0; 1999 RT₂, 7, 2, 2; 1999 RU₂, 24, 5, 7; 1999 RV₂, 3, 1, 0; 1999 RW₂, 9, 2, 4; 1999 RX₂, 10, 2, 2; 1999 RY₂, 10, 2, 7; 1999 RZ₂, 5, 1, 0; 1999 RA₃, 5, 1, 0; 1999 RB₃, 4, 1, 0; 1999 RD₃, 20, 2, 2; 1999 RE₃, 25, 3, 7; 1999 RF₃, 10, 2, 7; 1999 RG₃, 13, 3, 60; 1999 RH₃, 10, 2, 4; 1999 RM₃, 15, 3, 7; 1999 RN₃, 10, 2, 4; 1999 RO₃, 23, 5, 62; 1999 RP₃, 10, 2, 2; 1999 RR₃, 15, 3, 63; 1999 RS₃, 8, 2, 5; 1999 RT₃, 14, 3, 62; 1999 RU₃, 18, 4, 63; 1999 RV₃, 6, 2, 2; 1999 RW

1; 1999 RF₁₃ *, 16, 3, 2; 1999 RG₁₃ *, 8, 2, 1; 1999 RH₁₃ *, 21, 4, 7; 1999 RJ₁₃ *, 21, 4, 7; 1999 RK₁₃ *, 8, 2, 1; 1999 RL₁₃ *, 22, 4, 7; 1999 RM₁₃ *, 10, 2, 1; 1999 RN₁₃ *, 18, 4, 6; 1999 RO₁₃ *, 29, 4, 6; 1999 RP₁₃ *, 7, 2, 1; 1999 RQ₁₃ *, 7, 2, 1; 1999 RR₁₃ *, 8, 2, 1; 1999 RS₁₃ *, 18, 4, 6; 1999 RT₁₃ *, 20, 4, 6; 1999 RV₁₃ *, 25, 4, 6; 1999 RW₁₃ *, 20, 4, 6; 1999 RX₁₃ *, 9, 2, 1; 1999 RY₁₃ *, 28, 4, 6; 1999 RZ₁₃ *, 18, 4, 6; 1999 RA₁₄ *, 29, 4, 6; 1999 RB₁₄ *, 30, 4, 6; 1999 RC₁₄ *, 8, 2, 1; 1999 RD₁₄ *, 13, 2, 1; 1999 RE₁₄ *, 10, 2, 1; 1999 RF₁₄ *, 49, 4, 6; 1999 RG₁₄ *, 33, 3, 2; 1999 RH₁₄ *, 18, 4, 6; 1999 RJ₁₄ *, 19, 4, 6; 1999 RK₁₄ *, 23, 4, 7; 1999 RL₁₄ *, 19, 4, 7; 1999 RM₁₄ *, 19, 4, 7; 1999 RN₁₄ *, 19, 4, 7; 1999 RO₁₄ *, 22, 4, 7; 1999 RP₁₄ *, 13, 3, 2; 1999 RQ₁₄ *, 22, 4, 7; 1999 RR₁₄ *, 22, 5, 7; 1999 RS₁₄ *, 18, 4, 7; 1999 RT₁₄ *, 20, 4, 7; 1999 RU₁₄ *, 19, 4, 7; 1999 RV₁₄ *, 17, 4, 7; 1999 RW₁₄ *, 15, 4, 7; 1999 RX₁₄ *, 131, 6, 7; 1999 RY₁₄ *, 112, 6, 7; 1999 RZ₁₄ *, 6, 2, 1; 1999 RA₁₅ *, 164, 6, 7; 1999 RB₁₅ *, 126, 6, 7; 1999 RC₁₅ *, 76, 4, 7; 1999 RD₁₅ *, 78, 4, 4; 1999 RE₁₅ *, 49, 4, 7; 1999 RF₁₅ *, 8, 2, 1; 1999 RG₁₅ *, 9, 2, 1; 1999 RH₁₅ *, 10, 2, 1; 1999 RJ₁₅ *, 25, 4, 6; 1999 RK₁₅ *, 24, 4, 6; 1999 RL₁₅ *, 24, 4, 6; 1999 RM₁₅ *, 54, 7, 7; 1999 RN₁₅ *, 122, 6, 7; 1999 RO₁₅ *, 122, 4, 3; 1999 RP₁₅ *, 9, 2, 1; 1999 RQ₁₅ *, 149, 6, 7; 1999 RS₁₅ *, 98, 5, 4; 1999 RT₁₅ *, 46, 4, 3; 1999 RU₁₅ *, 29, 4, 3; 1999 RV₁₅ *, 125, 6, 7; 1999 RW₁₅ *, 8, 2, 1; 1999 RX₁₅ *, 16, 4, 3; 1999 RY₁₅ *, 24, 4, 3; 1999 RZ₁₅ *, 29, 4, 3; 1999 RA₁₆ *, 26, 4, 3; 1999 RB₁₆ *, 24, 4, 3; 1999 RC₁₆ *, 24, 4, 3; 1999 RD₁₆ *, 31, 5, 7; 1999 RE₁₆ *, 60, 6, 7; 1999 RF₁₆ *, 32, 4, 7; 1999 RG₁₆ *, 39, 4, 7; 1999 RH₁₆ *, 15, 4, 3; 1999 RJ₁₆ *, 19, 4, 3; 1999 RK₁₆ *, 29, 4, 3; 1999 RL₁₆ *, 29, 4, 3; 1999 RM₁₆ *, 26, 4, 3; 1999 RN₁₆ *, 16, 4, 7; 1999 RO₁₆ *, 26, 4, 7; 1999 RP₁₆ *, 26, 4, 3; 1999 RQ₁₆ *, 31, 4, 7; 1999 RS₁₆ *, 33, 4, 7; 1999 RT₁₆ *, 20, 4, 7; 1999 RU₁₆ *, 19, 4, 7; 1999 RV₁₆ *, 30, 5, 7; 1999 RW₁₆ *, 17, 4, 7; 1999 RX₁₆ *, 16, 4, 7; 1999 RY₁₆ *, 17, 4, 7; 1999 RZ₁₆ *, 19, 4, 7; 1999 RA₁₇ *, 25, 4, 3; 1999 RB₁₇ *, 19, 4, 7; 1999 RC₁₇ *, 8, 2, 1; 1999 RD₁₇ *, 27, 5, 7; 1999 RE₁₇ *, 14, 4, 3; 1999 RF₁₇ *, 19, 4, 7; 1999 RG₁₇ *, 17, 4, 7; 1999 RH₁₇ *, 8, 2, 1; 1999 RJ₁₇ *, 19, 4, 7; 1999 RK₁₇ *, 18, 4, 7; 1999 RL₁₇ *, 9, 2, 1; 1999 RM₁₇ *, 8, 2, 1; 1999 RN₁₇ *, 18, 4, 7; 1999 RO₁₇ *, 17, 4, 7; 1999 RP₁₇ *, 25, 4, 3; 1999 RQ₁₇ *, 23, 4, 3; 1999 RS₁₇ *, 19, 4, 3; 1999 RT₁₇ *, 23, 4, 3; 1999 RU₁₇ *, 26, 5, 7; 1999 RV₁₇ *, 27, 5, 7; 1999 RW₁₇ *, 30, 5, 7; 1999 RX₁₇ *, 29, 5, 7; 1999 RY₁₇ *, 30, 5, 7; 1999 RZ₁₇ *, 22, 4, 7; 1999 RA₁₈ *, 14, 3, 7; 1999 RB₁₈ *, 19, 4, 7; 1999 RC₁₈ *, 18, 4, 7; 1999 RD₁₈ *, 19, 4, 7; 1999 RE₁₈ *, 18, 4, 7; 1999 RF₁₈ *, 16, 4, 7; 1999 RG₁₈ *, 17, 4, 6; 1999 RH₁₈ *, 17, 4, 6; 1999 RJ₁₈ *, 28, 5, 6; 1999 RK₁₈ *, 28, 5, 6; 1999 RL₁₈ *, 18, 4, 9; 1999 RM₁₈ *, 17, 4, 9; 1999 RN₁₈ *, 31, 4, 7; 1999 RO₁₈ *, 22, 5, 11; 1999 RP₁₈ *, 27, 4, 3; 1999 RQ₁₈ *, 19, 4, 7; 1999 RS₁₈ *, 35, 5, 7; 1999 RT₁₈ *, 29, 5, 7; 1999 RU₁₈ *, 29, 4, 3; 1999 RV₁₈ *, 30, 5, 7; 1999 RW₁₈ *, 24, 4, 7; 1999 RX₁₈ *, 24, 4, 7; 1999 RY₁₈ *, 41, 6, 7; 1999 RZ₁₈ *, 6, 2, 1; 1999 RA₁₉ *, 17, 4, 7; 1999 RB₁₉ *, 18, 4, 63; 1999 RC₁₉ *, 40, 6, 7; 1999 RD₁₉ *, 66, 4, 4; 1999 RE₁₉ *, 7, 2, 1; 1999 RF₁₉ *, 6, 2, 1; 1999 RG₁₉ *, 35, 5, 4; 1999 RH₁₉ *, 18, 4, 7; 1999 RJ₁₉ *, 13, 4, 7; 1999 RK₁₉ *, 18, 4, 7; 1999 RL₁₉ *, 7, 2, 1; 1999 RM₁₉ *, 15, 4, 6; 1999 RN₁₉ *, 56, 4, 3; 1999 RO₁₉ *, 36, 6, 60; 1999 RP₁₉ *, 22, 4, 7; 1999 RQ₁₉ *, 16, 4, 7; 1999 RS₁₉ *, 18, 4, 7; 1999 RT₁₉ *, 41, 6, 7; 1999 RU₁₉ *, 24, 4, 7; 1999 RV₁₉ *, 18, 4, 7; 1999 RW₁₉ *, 19, 4, 7; 1999 RX₁₉ *, 19, 4, 7; 1999 RY₁₉ *, 17, 4, 9; 1999 RZ₁₉ *, 9, 2, 1; 1999 RA₂₀ *, 13, 3, 2; 1999 RB₂₀ *, 8, 2, 1; 1999 RC₂₀ *, 8, 2, 1; 1999 RD₂₀ *, 9, 2, 1; 1999 RE₂₀ *, 19, 4, 7; 1999 RF₂₀ *, 38, 6, 7; 1999 RG₂₀ *, 8, 2, 1; 1999 RH₂₀ *, 8, 2, 1; 1999 RJ₂₀ *, 23, 3, 2; 1999 RK₂₀ *, 16, 4, 9; 1999 RL₂₀ *, 19, 3, 2; 1999 RM₂₀ *, 14, 2, 1; 1999 RN₂₀ *, 61, 6, 54; 1999 RO₂₀ *, 14, 2, 1; 1999 RP₂₀ *, 13, 2, 1; 1999 RQ₂₀ *, 32, 3, 2; 1999 RS₂₀ *, 49, 3, 2; 1999 RT₂₀ *, 11, 2, 1; 1999 RU₂₀ *, 19, 2, 1; 1999 RV₂₀ *, 9, 2, 1; 1999 RW₂₀ *, 14, 2, 1; 1999 RX₂₀ *, 38, 3, 2; 1999 RY₂₀ *, 14, 2, 1; 1999 RZ₂₀ *, 13, 2, 1; 1999 RA₂₁ *, 47, 3, 2; 1999 RB₂₁ *, 33, 4, 9; 1999 RC₂₁ *, 16, 4, 7; 1999 RD₂₁ *, 7, 2, 1; 1999 RE₂₁ *, 20, 4, 7; 1999 RF₂₁ *, 20, 4, 7; 1999 RG₂₁ *, 24, 4, 7; 1999 RH₂₁ *, 25, 4, 7; 1999 RJ₂₁ *, 23, 4, 7; 1999 RK₂₁ *, 19, 4, 7; 1999 RL₂₁ *, 19, 4, 60; 1999 RM₂₁ *, 19, 4, 7; 1999 RN₂₁ *, 21, 4, 7; 1999 RO₂₁ *, 19, 4, 7; 1999 RP₂₁ *, 15, 4, 7; 1999 RQ₂₁ *, 9, 2, 1; 1999 RS₂₁ *, 11, 3, 7; 1999 RT₂₁ *, 10, 2, 1; 1999 RU₂₁ *, 14, 3, 7; 1999 RV₂₁ *, 15, 3, 7; 1999 RW₂₁ *, 9, 2, 1; 1999 RX₂₁ *, 7, 2, 1; 1999 RY₂₁ *, 19, 4, 7; 1999 RZ₂₁ *, 7, 2, 1; 1999 RA₂₂ *, 18, 4, 7; 1999 RB₂₂ *, 9, 2, 1; 1999 RC₂₂ *, 19, 4, 7; 1999 RD₂₂ *, 19, 4, 7; 1999 RE₂₂ *, 18, 4, 7; 1999 RF₂₂ *, 19, 4, 7; 1999 RG₂₂ *, 18, 4, 7; 1999 RH₂₂ *, 24, 4, 7; 1999 RI₂₂ *, 24, 4, 7; 1999 RJ₂₂ *, 9, 2, 1; 1999 RK₂₂ *, 9, 2, 1; 1999 RL₂₂ *, 20, 4, 7; 1999 RM₂₂ *, 9, 2, 1; 1999 RN₂₂ *, 9, 2, 1; 1999 RO₂₂ *, 6, 2, 1; 1999 RP₂₂ *, 13, 3, 2; 1999 RQ₂₂ *, 14, 3, 2; 1999 RS₂₂ *, 10, 2, 1; 1999 RT₂₂ *, 15, 3, 2; 1999 RU₂₂ *, 9, 2, 1; 1999 RV₂₂ *, 9, 2, 1; 1999 RW₂₂ *, 8, 2, 1; 1999 RX₂₂ *, 8, 2, 1; 1999 RY₂₂ *, 8, 2, 1; 1999 RZ₂₂ *, 9, 2, 1; 1999 RA₂₃ *, 9, 2, 1; 1999 RB₂₃ *, 20, 4, 7; 1999 RC₂₃ *, 20, 4, 7; 1999 RD₂₃ *, 9, 2, 1; 1999 RE₂₃ *, 14, 4, 60; 1999 RF₂₃ *, 10, 2, 1; 1999 RG₂₃ *, 11, 3, 7; 1999 RH₂₃ *, 15, 3, 7; 1999 RJ₂₃ *, 14, 4, 7; 1999 RK₂₃ *, 23, 5, 53; 1999 RL₂₃ *, 16, 4, 7; 1999 RM₂₃ *, 8, 2, 1; 1999 RN₂₃ *, 9, 2, 1; 1999 RO₂₃ *, 17, 3, 7; 1999 RP₂₃ *, 9, 2, 1; 1999 RQ₂₃ *, 22, 5, 60; 1999 RS₂₃ *, 14, 3, 7; 1999 RT₂₃ *, 19, 4, 7; 1999 RU₂₃ *, 18, 4, 7; 1999 RV₂₃ *, 15, 3, 2; 1999 RW₂₃ *, 20, 4, 7; 1999 RX₂₃ *, 20, 4, 7; 1999 RY₂₃ *, 13, 3, 7; 1999 RZ₂₃ *, 17, 4, 7; 1999 RA₂₄ *, 19, 4, 7; 1999 RB₂₄ *, 25, 5, 60; 1999 RC₂₄ *, 18, 4, 7; 1999 RD₂₄ *, 6, 2, 1; 1999 RE₂₄ *, 19, 4, 7; 1999 RF₂₄ *, 10,

2, 1; 1999 RG₂₄ *, 9, 2, 1; 1999 RH₂₄ *, 19, 4, 7; 1999 RJ₂₄ *, 19, 4, 7; 1999 RK₂₄ *, 22, 4, 7; 1999 RL₂₄ *, 13, 2, 1; 1999 RM₂₄ *, 22, 4, 7; 1999 RN₂₄ *, 8, 2, 1; 1999 RO₂₄ *, 19, 3, 2; 1999 RP₂₄ *, 23, 4, 7; 1999 RQ₂₄ *, 7, 2, 1; 1999 RV₂₄ *, 10, 2, 1; 1999 RS₂₄ *, 10, 2, 1; 1999 RT₂₄ *, 9, 2, 1; 1999 RU₂₄ *, 9, 2, 1; 1999 RV₂₄ *, 15, 3, 2; 1999 RW₂₄ *, 8, 2, 1; 1999 RX₂₄ *, 8, 2, 1; 1999 RY₂₄ *, 9, 2, 1; 1999 RZ₂₄ *, 9, 2, 1; 1999 RA₂₅ *, 9, 2, 1; 1999 RB₂₅ *, 13, 3, 2; 1999 RC₂₅ *, 10, 2, 1; 1999 RD₂₅ *, 10, 2, 1; 1999 RE₂₅ *, 9, 2, 1; 1999 RF₂₅ *, 9, 2, 1; 1999 RG₂₅ *, 9, 2, 1; 1999 RH₂₅ *, 14, 3, 2; 1999 RJ₂₅ *, 10, 2, 1; 1999 RK₂₅ *, 10, 2, 1; 1999 RL₂₅ *, 8, 2, 1; 1999 RM₂₅ *, 9, 2, 1; 1999 RN₂₅ *, 10, 2, 1; 1999 RO₂₅ *, 9, 2, 1; 1999 RP₂₅ *, 14, 3, 2; 1999 RQ₂₅ *, 7, 2, 1; 1999 RS₂₅ *, 9, 2, 1; 1999 RT₂₅ *, 8, 2, 1; 1999 RU₂₅ *, 14, 3, 2; 1999 RV₂₅ *, 9, 2, 1; 1999 RW₂₅ *, 10, 2, 1; 1999 RX₂₅ *, 10, 2, 1; 1999 RY₂₅ *, 8, 2, 1; 1999 RZ₂₅ *, 8, 2, 1; 1999 RA₂₆ *, 10, 2, 1; 1999 RB₂₆ *, 8, 2, 1; 1999 RC₂₆ *, 16, 4, 7; 1999 RD₂₆ *, 8, 2, 1; 1999 RE₂₆ *, 9, 2, 1; 1999 RF₂₆ *, 20, 4, 7; 1999 RG₂₆ *, 18, 4, 7; 1999 RH₂₆ *, 17, 4, 7; 1999 RJ₂₆ *, 19, 4, 7; 1999 RK₂₆ *, 10, 2, 1; 1999 RL₂₆ *, 9, 2, 1; 1999 RM₂₆ *, 7, 2, 1; 1999 RN₂₆ *, 17, 4, 7; 1999 RO₂₆ *, 15, 3, 2; 1999 RP₂₆ *, 8, 2, 1; 1999 RQ₂₆ *, 14, 4, 7; 1999 RS₂₆ *, 11, 2, 1; 1999 RT₂₆ *, 8, 2, 1; 1999 RU₂₆ *, 12, 3, 7; 1999 RV₂₆ *, 8, 2, 1; 1999 RW₂₆ *, 8, 2, 1; 1999 RX₂₆ *, 7, 2, 1; 1999 RY₂₆ *, 7, 2, 1; 1999 RZ₂₆ *, 7, 2, 1; 1999 RA₂₇ *, 16, 4, 7; 1999 RB₂₇ *, 11, 2, 1; 1999 RC₂₇ *, 8, 2, 1; 1999 RD₂₇ *, 12, 3, 2; 1999 RE₂₇ *, 16, 4, 53; 1999 RF₂₇ *, 23, 4, 7; 1999 RG₂₇ *, 13, 3, 2; 1999 RH₂₇ *, 20, 4, 60; 1999 RI₂₇ *, 19, 4, 60; 1999 RJ₂₇ *, 15, 3, 7; 1999 RK₂₇ *, 17, 4, 7; 1999 RL₂₇ *, 18, 4, 7; 1999 RM₂₇ *, 14, 3, 7; 1999 RN₂₇ *, 14, 3, 7; 1999 RO₂₇ *, 15, 3, 7; 1999 RP₂₇ *, 15, 3, 7; 1999 RQ₂₇ *, 25, 5, 10; 1999 RS₂₇ *, 15, 3, 6; 1999 RT₂₇ *, 14, 3, 7; 1999 RA₂₈ *, 9, 2, 5; 1999 RB₂₈ *, 20, 4, 7; 1999 RC₂₈ *, 15, 3, 6; 1999 RD₂₈ *, 13, 3, 9; 1999 RE₂₈ *, 15, 3, 48; 1999 RF₂₈ *, 3, 1, 0; 1999 RG₂₈ *, 8, 2, 7; 1999 RH₂₈ *, 8, 2, 7; 1999 RI₂₈ *, 8, 2, 7; 1999 RJ₂₈ *, 6, 2, 2; 1999 RK₂₈ *, 23, 4, 7; 1999 RL₂₈ *, 4, 1, 0; 1999 RM₂₈ *, 8, 2, 2; 1999 RN₂₈ *, 4, 1, 0; 1999 RO₂₈ *, 10, 2, 2; 1999 RV₂₈ *, 15, 3, 7; 1999 RW₂₈ *, 15, 3, 7; 1999 RX₂₈ *, 18, 4, 6; 1999 RY₂₈ *, 55, 7, 54; 1999 RZ₂₈ *, 10, 2, 2; 1999 RA₂₉ *, 52, 6, 7; 1999 RB₂₉ *, 9, 2, 2; 1999 RC₂₉ *, 13, 3, 7; 1999 RD₂₉ *, 7, 2, 2; 1999 RE₂₉ *, 9, 2, 1; 1999 RF₂₉ *, 10, 2, 1; 1999 RG₂₉ *, 19, 3, 5; 1999 RH₂₉ *, 18, 3, 5; 1999 RJ₂₉ *, 7, 2, 1; 1999 RK₂₉ *, 14, 2, 1; 1999 RL₂₉ *, 18, 3, 6; 1999 RM₂₉ *, 17, 3, 5; 1999 RN₂₉ *, 10, 2, 1; 1999 RO₂₉ *, 17, 4, 36; 1999 RP₂₉ *, 27, 5, 6; 1999 RQ₂₉ *, 20, 5, 10; 1999 RS₂₉ *, 8, 2, 1; 1999 RT₂₉ *, 22, 4, 10; 1999 RU₂₉ *, 25, 5, 6; 1999 RV₂₉ *, 35, 7, 34; 1999 RW₂₉ *, 7, 2, 1; 1999 RX₂₉ *, 24, 6, 68; 1999 RY₂₉ *, 9, 2, 1; 1999 RZ₂₉ *, 8, 2, 1; 1999 RA₃₀ *, 7, 2, 1; 1999 RB₃₀ *, 13, 2, 1; 1999 RC₃₀ *, 12, 3, 8; 1999 RD₃₀ *, 21, 3, 2; 1999 RE₃₀ *, 21, 5, 10; 1999 RF₃₀ *, 21, 5, 62; 1999 RG₃₀ *, 13, 3, 8; 1999 RH₃₀ *, 22, 5, 10; 1999 RJ₃₀ *, 15, 3, 10; 1999 RK₃₀ *, 10, 2, 1; 1999 RL₃₀ *, 26, 6, 10; 1999 RM₃₀ *, 9, 2, 1; 1999 RN₃₀ *, 27, 6, 10; 1999 RO₃₀ *, 10, 2, 1; 1999 RP₃₀ *, 17, 4, 10; 1999 RQ₃₀ *, 10, 2, 1; 1999 RS₃₀ *, 29, 6, 6; 1999 RT₃₀ *, 9, 2, 1; 1999 RU₃₀ *, 9, 2, 1; 1999 RV₃₀ *, 8, 2, 1; 1999 RW₃₀ *, 8, 2, 1; 1999 RX₃₀ *, 22, 5, 10; 1999 RY₃₀ *, 10, 2, 1; 1999 RZ₃₀ *, 15, 3, 10; 1999 RA₃₁ *, 15, 2, 1; 1999 RB₃₁ *, 8, 2, 1; 1999 RC₃₁ *, 9, 2, 1; 1999 RD₃₁ *, 19, 3, 10; 1999 RE₃₁ *, 8, 2, 1; 1999 RF₃₁ *, 8, 2, 1; 1999 RG₃₁ *, 13, 2, 1; 1999 RH₃₁ *, 7, 2, 1; 1999 RJ₃₁ *, 10, 2, 5; 1999 RK₃₁ *, 5, 1, 0; 1999 RL₃₁ *, 7, 2, 2; 1999 RM₃₁ *, 10, 2, 6; 1999 RN₃₁ *, 15, 3, 7; 1999 RO₃₁ *, 8, 2, 2; 1999 RP₃₁ *, 7, 2, 1; 1999 RV₃₁ *, 14, 3, 7; 1999 RW₃₁ *, 17, 3, 4; 1999 RX₃₁ *, 13, 2, 1; 1999 RY₃₁ *, 10, 2, 1; 1999 RZ₃₁ *, 35, 6, 10; 1999 RA₃₂ *, 15, 3, 7; 1999 RB₃₂ *, 10, 2, 7; 1999 RC₃₂ *, 18, 4, 60; 1999 RD₃₂ *, 15, 3, 7; 1999 RE₃₂ *, 14, 3, 60; 1999 RF₃₂ *, 10, 2, 7; 1999 RG₃₂ *, 10, 2, 7; 1999 RH₃₂ *, 15, 3, 7; 1999 RJ₃₂ *, 14, 3, 60; 1999 RK₃₂ *, 10, 2, 7; 1999 RL₃₂ *, 10, 2, 2; 1999 RM₃₂ *, 13, 3, 7; 1999 RN₃₂ *, 5, 1, 0; 1999 RO₃₂ *, 15, 3, 7; 1999 RP₃₂ *, 10, 2, 5; 1999 RQ₃₂ *, 3, 1, 0; 1999 RV₃₂ *, 8, 2, 2; 1999 RW₃₂ *, 14, 3, 6; 1999 RX₃₂ *, 3, 1, 0; 1999 RY₃₂ *, 8, 2, 2; 1999 RZ₃₂ *, 15, 3, 6; 1999 RA₃₃ *, 15, 3, 6; 1999 RB₃₃ *, 10, 2, 4; 1999 RC₃₃ *, 15, 3, 6; 1999 RD₃₃ *, 13, 3, 7; 1999 RE₃₃ *, 13, 2, 2; 1999 RF₃₃ *, 15, 3, 6; 1999 RG₃₃ *, 9, 2, 2; 1999 RH₃₃ *, 10, 2, 2; 1999 RJ₃₃ *, 15, 3, 7; 1999 RK₃₃ *, 9, 2, 4; 1999 RL₃₃ *, 8, 2, 5; 1999 RM₃₃ *, 15, 3, 7; 1999 RN₃₃ *, 15, 3, 7; 1999 RO₃₃ *, 15, 3, 7; 1999 RP₃₃ *, 15, 3, 7; 1999 RQ₃₃ *, 15, 3, 7; 1999 RS₃₃ *, 10, 2, 7; 1999 RT₃₃ *, 6, 2, 7; 1999 RU₃₃ *, 11, 3, 6; 1999 RV₃₃ *, 11, 3, 6; 1999 RW₃₃ *, 14, 4, 36; 1999 RX₃₃ *, 15, 4, 36; 1999 RY₃₃ *, 35, 7, 89; 1999 RZ₃₃ *, 29, 6, 51; 1999 RA₃₄ *, 14, 3, 7; 1999 RB₃₄ *, 10, 2, 7; 1999 RC₃₄ *, 14, 3, 503; 1999 RD₃₄ *, 10, 2, 7; 1999 RE

10, 2, 7; 1999 RP₄₀ *, 12, 3, 7; 1999 RQ₄₀ *, 9, 3, 7; 1999 RR₄₀ *, 7, 2, 7; 1999 RS₄₀ *, 8, 2, 7; 1999 RT₄₀ *, 9, 2, 7; 1999 RU₄₀ *, 10, 2, 7; 1999 RV₄₀ *, 10, 2, 7; 1999 RW₄₀ *, 7, 2, 7; 1999 RX₄₀ *, 15, 3, 53; 1999 RY₄₀ *, 7, 2, 7; 1999 RZ₄₀ *, 9, 2, 5; 1999 RA₄₁ *, 9, 2, 5; 1999 RB₄₁ *, 9, 2, 5; 1999 RC₄₁ *, 9, 2, 5; 1999 RD₄₁ *, 7, 2, 5; 1999 RE₄₁ *, 8, 2, 5; 1999 RF₄₁ *, 9, 2, 1; 1999 RG₄₁ *, 9, 2, 1; 1999 RH₄₁ *, 9, 2, 1; 1999 RJ₄₁ *, 9, 2, 1; 1999 RK₄₁ *, 9, 2, 1; 1999 RL₄₁ *, 10, 2, 1; 1999 RQ₄₁ *, 18, 2, 2; 1999 RW₄₁ *, 40, 4, 7; 1999 RX₄₁ *, 5, 1, 0; 1999 RY₄₁ *, 10, 2, 46; 1999 RZ₄₁ *, 5, 1, 0; 1999 RB₄₂ *, 5, 1, 0; 1999 RC₄₂ *, 5, 1, 0; 1999 RT₄₂ *, 14, 3, 63; 1999 RV₄₂ *, 10, 2, 7; 1999 RW₄₂ *, 14, 3, 6; 1999 RX₄₂ *, 10, 2, 2; 1999 RY₄₂ *, 15, 3, 7; 1999 RG₄₃ *, 9, 2, 5; 1999 RH₄₃ *, 23, 3, 7; 1999 RL₄₃ *, 3, 1, 0; 1999 RO₄₃ *, 10, 2, 6; 1999 RP₄₃ *, 15, 3, 53; 1999 RG₄₄ *, 9, 2, 4; 1999 RH₄₄ *, 9, 2, 4; 1999 RK₄₄ *, 10, 2, 5; 1999 RL₄₄ *, 8, 2, 9; 1999 RM₄₄ *, 14, 3, 10; 1999 RN₄₄ *, 8, 2, 8; 1999 RO₄₄ *, 15, 2, 5; 1999 RQ₄₄ *, 10, 2, 2; 1999 RT₄₄ *, 15, 3, 6; 1999 RU₄₄ *, 15, 3, 7; 1999 RW₄₄ *, 10, 2, 5; 1999 RZ₄₄ *, 14, 3, 6; 1999 RA₄₅ *, 22, 4, 6; 1999 RC₄₅ *, 32, 5, 6; 1999 RD₄₅ *, 8, 2, 1; 1999 RE₄₅ *, 8, 2, 1; 1999 RF₄₅ *, 21, 4, 5; 1999 RG₄₅ *, 15, 3, 7; 1999 RJ₄₅ *, 9, 2, 57; 1999 RK₄₅ *, 10, 2, 1; 1999 RL₄₅ *, 4, 1, 0; 1999 RM₄₅ *, 5, 1, 0; 1999 RN₄₅ *, 5, 1, 0; 1999 RQ₄₅ *, 15, 3, 53; 1999 RS₄₅ *, 6, 2, 2; 1999 RW₄₅ *, 15, 3, 7; 1999 RY₄₅ *, 13, 3, 58; 1999 RZ₄₅ *, 13, 2, 2; 1999 RA₄₆ *, 25, 5, 62; 1999 RB₄₆ *, 13, 3, 58; 1999 RC₄₆ *, 14, 3, 58; 1999 RD₄₆ *, 6, 2, 4; 1999 RE₄₆ *, 10, 2, 4; 1999 RF₄₆ *, 10, 2, 6; 1999 RG₄₆ *, 9, 2, 2; 1999 RH₄₆ *, 13, 3, 59; 1999 RJ₄₆ *, 9, 2, 4; 1999 RK₄₆ *, 8, 2, 4; 1999 RL₄₆ *, 8, 2, 4; 1999 RM₄₆ *, 10, 2, 4; 1999 RN₄₆ *, 10, 2, 4; 1999 RO₄₆ *, 8, 2, 6; 1999 RP₄₆ *, 9, 2, 2; 1999 RQ₄₆ *, 9, 2, 6; 1999 RS₄₆ *, 8, 2, 4; 1999 RT₄₆ *, 12, 3, 59; 1999 RU₄₆ *, 8, 2, 4; 1999 RV₄₆ *, 8, 2, 6; 1999 RW₄₆ *, 9, 2, 6; 1999 RX₄₆ *, 8, 2, 2; 1999 RY₄₆ *, 7, 2, 2; 1999 RZ₄₆ *, 10, 2, 2; 1999 RA₄₇ *, 9, 2, 2; 1999 RB₄₇ *, 10, 2, 4; 1999 RC₄₇ *, 10, 2, 4; 1999 RD₄₇ *, 10, 2, 4; 1999 RE₄₇ *, 9, 2, 4; 1999 RF₄₇ *, 9, 2, 4; 1999 RG₄₇ *, 12, 3, 59; 1999 RH₄₇ *, 13, 3, 60; 1999 RJ₄₇ *, 7, 2, 6; 1999 RL₄₇ *, 8, 2, 6; 1999 RM₄₇ *, 9, 2, 2; 1999 RN₄₇ *, 7, 2, 2; 1999 RO₄₇ *, 9, 2, 6; 1999 RP₄₇ *, 8, 2, 2; 1999 RQ₄₇ *, 8, 2, 2; 1999 RS₄₇ *, 10, 2, 2; 1999 RT₄₇ *, 19, 4, 116; 1999 RU₄₇ *, 9, 2, 4; 1999 RV₄₇ *, 10, 2, 4; 1999 RW₄₇ *, 10, 2, 4; 1999 RX₄₇ *, 10, 2, 4; 1999 RY₄₇ *, 9, 2, 4; 1999 RZ₄₇ *, 10, 2, 4; 1999 RA₄₈ *, 7, 2, 4; 1999 RB₄₈ *, 13, 3, 59; 1999 RC₄₈ *, 10, 2, 4; 1999 RD₄₈ *, 10, 2, 6; 1999 RE₄₈ *, 13, 3, 62; 1999 RF₄₈ *, 10, 2, 2; 1999 RG₄₈ *, 8, 2, 2; 1999 RH₄₈ *, 10, 2, 2; 1999 RJ₄₈ *, 10, 2, 2; 1999 RK₄₈ *, 10, 2, 6; 1999 RL₄₈ *, 9, 2, 2; 1999 RM₄₈ *, 8, 2, 4; 1999 RN₄₈ *, 9, 2, 2; 1999 RO₄₈ *, 8, 2, 6; 1999 RP₄₈ *, 8, 2, 6; 1999 RQ₄₈ *, 8, 2, 4; 1999 RS₄₈ *, 8, 2, 4; 1999 RT₄₈ *, 7, 2, 2; 1999 RU₄₈ *, 8, 2, 2; 1999 RV₄₈ *, 8, 2, 2; 1999 RW₄₈ *, 7, 2, 4; 1999 RX₄₈ *, 9, 2, 4; 1999 RY₄₈ *, 9, 2, 4; 1999 RZ₄₈ *, 14, 4, 58; 1999 RA₄₉ *, 6, 2, 6; 1999 RB₄₉ *, 6, 2, 6; 1999 RC₄₉ *, 9, 2, 2; 1999 RD₄₉ *, 9, 2, 6; 1999 RE₄₉ *, 8, 2, 6; 1999 RF₄₉ *, 14, 3, 61; 1999 RG₄₉ *, 10, 2, 2; 1999 RH₄₉ *, 10, 2, 4; 1999 RJ₄₉ *, 10, 2, 4; 1999 RK₄₉ *, 10, 2, 4; 1999 RL₄₉ *, 10, 2, 4; 1999 RM₄₉ *, 10, 2, 4; 1999 RN₄₉ *, 10, 2, 4; 1999 RO₄₉ *, 9, 2, 4; 1999 RP₄₉ *, 10, 2, 4; 1999 RQ₄₉ *, 9, 2, 4; 1999 RS₄₉ *, 8, 2, 4; 1999 RT₄₉ *, 10, 2, 6; 1999 RU₄₉ *, 7, 2, 2; 1999 RV₄₉ *, 9, 2, 6; 1999 RW₄₉ *, 9, 2, 2; 1999 RX₄₉ *, 7, 2, 2; 1999 RY₄₉ *, 14, 3, 58; 1999 RZ₄₉ *, 9, 2, 2; 1999 RA₅₀ *, 9, 2, 2; 1999 RB₅₀ *, 8, 2, 2; 1999 RC₅₀ *, 7, 2, 6; 1999 RD₅₀ *, 7, 2, 6; 1999 RE₅₀ *, 9, 2, 6; 1999 RF₅₀ *, 10, 2, 6; 1999 RG₅₀ *, 7, 2, 2; 1999 RH₅₀ *, 8, 2, 2; 1999 RJ₅₀ *, 9, 2, 2; 1999 RK₅₀ *, 9, 2, 2; 1999 RL₅₀ *, 8, 2, 2; 1999 RM₅₀ *, 8, 2, 6; 1999 RN₅₀ *, 10, 2, 2; 1999 RO₅₀ *, 8, 2, 4; 1999 RP₅₀ *, 10, 2, 4; 1999 RQ₅₀ *, 8, 2, 4; 1999 RS₅₀ *, 10, 2, 4; 1999 RT₅₀ *, 9, 2, 4; 1999 RV₅₀ *, 10, 2, 4; 1999 RW₅₀ *, 10, 2, 4; 1999 RX₅₀ *, 8, 2, 4; 1999 RY₅₀ *, 10, 2, 4; 1999 RZ₅₀ *, 6, 2, 4; 1999 RA₅₁ *, 8, 2, 6; 1999 RB₅₁ *, 9, 2, 6; 1999 RC₅₁ *, 18, 4, 62; 1999 RD₅₁ *, 10, 2, 6; 1999 RE₅₁ *, 19, 4, 62; 1999 RF₅₁ *, 9, 2, 2; 1999 RG₅₁ *, 10, 2, 2; 1999 RH₅₁ *, 7, 2, 2; 1999 RJ₅₁ *, 9, 2, 2; 1999 RK₅₁ *, 9, 2, 2; 1999 RL₅₁ *, 7, 2, 2; 1999 RM₅₁ *, 15, 4, 58; 1999 RN₅₁ *, 7, 2, 6; 1999 RO₅₁ *, 10, 2, 6; 1999 RP₅₁ *, 8, 2, 2; 1999 RQ₅₁ *, 9, 2, 2; 1999 RS₅₁ *, 10, 2, 2; 1999 RT₅₁ *, 9, 2, 6; 1999 RU₅₁ *, 8, 2, 2; 1999 RV₅₁ *, 10, 2, 2; 1999 RW₅₁ *, 10, 2, 6; 1999 RX₅₁ *, 10, 2, 2; 1999 RY₅₁ *, 8, 2, 2; 1999 RZ₅₁ *, 13, 3, 58; 1999 RA₅₂ *, 8, 2, 6; 1999 RB₅₂ *, 8, 2, 6; 1999 RC₅₂ *, 9, 2, 4; 1999 RD₅₂ *, 10, 2, 4; 1999 RE₅₂ *, 10, 2, 4; 1999 RF₅₂ *, 10, 2, 4; 1999 RG₅₂ *, 10, 2, 4; 1999 RH₅₂ *, 10, 2, 4; 1999 RJ₅₂ *, 6, 2, 4; 1999 RK₅₂ *, 10, 2, 4; 1999 RL₅₂ *, 7, 2, 4; 1999 RM₅₂ *, 7, 2, 4; 1999 RN₅₂ *, 10, 2, 4; 1999 RO₅₂ *, 10, 2, 4; 1999 RP₅₂ *, 9, 2, 4; 1999 RQ₅₂ *, 9, 2, 4; 1999 RS₅₂ *, 14, 3, 59; 1999 RT₅₂ *, 10, 2, 6; 1999 RU₅₂ *, 13, 3, 59; 1999 RV₅₂ *, 10, 2, 6; 1999 RW₅₂ *, 10, 2, 6; 1999 RX₅₂ *, 10, 2, 6; 1999 RY₅₂ *, 9, 2, 2; 1999 RZ₅₂ *, 10, 2, 2; 1999 RA₅₃ *, 8, 2, 2; 1999 RB₅₃ *, 13, 3, 55; 1999 RC₅₃ *, 8, 2, 6; 1999 RD₅₃ *, 8, 2, 2; 1999 RE₅₃ *, 9, 2, 6; 1999 RF₅₃ *, 9, 2, 6; 1999 RG₅₃ *, 10, 2, 2; 1999 RH₅₃ *, 14, 3, 6; 1999 RJ₅₃ *, 6, 2, 2; 1999 RK₅₃ *, 9, 2, 2; 1999 RL₅₃ *, 9, 2, 2; 1999 RM₅₃ *, 10, 2, 2; 1999 RN₅₃ *, 6, 2, 2; 1999 RO₅₃ *, 9, 2, 2; 1999 RP₅₃ *, 12, 2, 7; 1999 RQ₅₃ *, 8, 2, 6; 1999 RS₅₃ *, 9, 2, 2; 1999 RT₅₃ *, 9, 2, 6; 1999 RU₅₃ *, 10, 2, 2; 1999 RV₅₃ *, 10, 2, 6; 1999 RW₅₃ *, 9, 2, 2; 1999 RX₅₃ *, 10, 2, 6; 1999 RY₅₃ *, 8, 2, 2; 1999 RZ₅₃ *, 10, 2, 6; 1999 RA₅₄ *, 10, 2, 6; 1999 RB₅₄ *, 13, 3, 59; 1999 RC₅₄ *, 13, 3, 59; 1999 RD₅₄ *, 8, 2, 6; 1999 RE₅₄ *, 7, 2, 6; 1999 RF₅₄ *, 10, 2, 6; 1999 RG₅₄ *, 10, 2, 4; 1999 RH₅₄ *, 8, 2, 6; 1999 RJ₅₄ *, 10, 2, 6; 1999 RK₅₄ *, 9, 2, 6; 1999 RL₅₄ *, 12, 2, 6; 1999 RM₅₄ *, 10, 2, 6; 1999 RN₅₄ *, 10, 2, 6; 1999 RO₅₄ *, 8, 2, 6; 1999 RP₅₄ *, 10, 2, 6; 1999 RQ₅₄ *, 10, 2, 6; 1999 RR₅₄ *, 10, 2, 2; 1999 RS₅₄ *, 10, 2, 2; 1999 RT₅₄ *, 9, 2, 2; 1999 RU₅₄ *, 15, 3, 7; 1999 RV₅₄ *, 8, 2, 2; 1999 RW₅₄ *, 10, 2, 2; 1999 RX₅₄ *,

10, 2, 6; 1999 RY₅₄ *, 7, 2, 7; 1999 RZ₅₄ *, 8, 2, 7; 1999 RA₅₅ *, 6, 2, 7; 1999 RB₅₅ *, 8, 2, 7; 1999 RC₅₅ *, 8, 2, 7; 1999 RD₅₅ *, 10, 2, 2; 1999 RE₅₅ *, 10, 2, 7; 1999 RF₅₅ *, 8, 2, 2; 1999 RG₅₅ *, 8, 2, 2; 1999 RH₅₅ *, 7, 2, 6; 1999 RJ₅₅ *, 15, 3, 58; 1999 RK₅₅ *, 10, 2, 6; 1999 RL₅₅ *, 8, 2, 2; 1999 RM₅₅ *, 8, 2, 6; 1999 RN₅₅ *, 7, 2, 6; 1999 RO₅₅ *, 8, 2, 6; 1999 RP₅₅ *, 10, 2, 6; 1999 RQ₅₅ *, 7, 2, 6; 1999 RS₅₅ *, 8, 2, 6; 1999 RS₅₅ *, 10, 2, 6; 1999 RT₅₅ *, 10, 2, 6; 1999 RU₅₅ *, 15, 3, 62; 1999 RV₅₅ *, 10, 2, 6; 1999 RW₅₅ *, 9, 2, 6; 1999 RX₅₅ *, 10, 2, 6; 1999 RY₅₅ *, 10, 2, 4; 1999 RZ₅₅ *, 9, 2, 4; 1999 RA₅₆ *, 9, 2, 4; 1999 RB₅₆ *, 10, 2, 4; 1999 RC₅₆ *, 9, 2, 6; 1999 RD₅₆ *, 10, 2, 6; 1999 RE₅₆ *, 13, 2, 2; 1999 RF₅₆ *, 9, 2, 6; 1999 RH₅₆ *, 9, 2, 6; 1999 RJ₅₆ *, 9, 2, 6; 1999 RK₅₆ *, 9, 2, 6; 1999 RL₅₆ *, 7, 2, 6; 1999 RM₅₆ *, 8, 2, 2; 1999 RN₅₆ *, 8, 2, 2; 1999 RO₅₆ *, 7, 2, 2; 1999 RP₅₆ *, 10, 2, 2; 1999 RQ₅₆ *, 9, 2, 2; 1999 RS₅₆ *, 8, 2, 2; 1999 RT₅₆ *, 9, 2, 2; 1999 RU₅₆ *, 8, 2, 7; 1999 RV₅₆ *, 10, 2, 2; 1999 RW₅₆ *, 8, 2, 7; 1999 RX₅₆ *, 9, 2, 7; 1999 RY₅₆ *, 10, 2, 2; 1999 RZ₅₆ *, 6, 2, 7; 1999 RA₅₇ *, 9, 2, 2; 1999 RB₅₇ *, 10, 2, 2; 1999 RC₅₇ *, 9, 2, 2; 1999 RD₅₇ *, 9, 2, 2; 1999 RE₅₇ *, 9, 2, 6; 1999 RF₅₇ *, 8, 2, 2; 1999 RG₅₇ *, 9, 2, 6; 1999 RH₅₇ *, 10, 2, 2; 1999 RJ₅₇ *, 10, 2, 6; 1999 RK₅₇ *, 10, 2, 6; 1999 RM₅₇ *, 8, 2, 6; 1999 RN₅₇ *, 10, 2, 6; 1999 RO₅₇ *, 8, 2, 6; 1999 RS₅₇ *, 10, 2, 6; 1999 RT₅₇ *, 10, 2, 6; 1999 RU₅₇ *, 10, 2, 6; 1999 RV₅₇ *, 8, 2, 6; 1999 RW₅₇ *, 10, 2, 6; 1999 RX₅₇ *, 10, 2, 6; 1999 RY₅₇ *, 10, 2, 6; 1999 RZ₅₇ *, 9, 2, 6; 1999 RA₅₈ *, 7, 2, 6; 1999 RB₅₈ *, 9, 2, 2; 1999 RC₅₈ *, 8, 2, 2; 1999 RD₅₈ *, 8, 2, 2; 1999 RE₅₈ *, 7, 2, 2; 1999 RF₅₈ *, 8, 2, 6; 1999 RG₅₈ *, 10, 2, 2; 1999 RH₅₈ *, 10, 2, 2; 1999 RJ₅₈ *, 7, 2, 2; 1999 RK₅₈ *, 14, 2, 2; 1999 RL₅₈ *, 10, 2, 7; 1999 RM₅₈ *, 10, 2, 7; 1999 RN₅₈ *, 9, 2, 2; 1999 RO₅₈ *, 10, 2, 7; 1999 RP₅₈ *, 8, 2, 2; 1999 RQ₅₈ *, 8, 2, 2; 1999 RS₅₈ *, 9, 2, 2; 1999 RT₅₈ *, 10, 2, 2; 1999 RU₅₈ *, 10, 2, 7; 1999 RV₅₈ *, 9, 2, 2; 1999 RW₅₈ *, 7, 2, 7; 1999 RX₅₈ *, 9, 2, 2; 1999 RY₅₈ *, 8, 2, 2; 1999 RZ₅₈ *, 8, 2, 2; 1999 RA₅₉ *, 7, 2, 7; 1999 RB₅₉ *, 10, 2, 2; 1999 RC₅₉ *, 10, 2, 2; 1999 RD₅₉ *, 9, 2, 2; 1999 RE₅₉ *, 8, 2, 2; 1999 RF₅₉ *, 9, 2, 2; 1999 RG₅₉ *, 9, 2, 2; 1999 RH₅₉ *, 7, 2, 2; 1999 RJ₅₉ *, 8, 2, 2; 1999 RK₅₉ *, 8, 2, 2; 1999 RL₅₉ *, 10, 2, 2; 1999 RM₅₉ *, 12, 2, 2; 1999 RN₅₉ *, 12, 2, 2; 1999 RO₅₉ *, 9, 2, 2; 1999 RP₅₉ *, 10, 2, 6; 1999 RQ₅₉ *, 8, 2, 2; 1999 RS₅₉ *, 8, 2, 6; 1999 RT₅₉ *, 9, 2, 2; 1999 RU₅₉ *, 9, 2, 4; 1999 RV₅₉ *, 9, 2, 4; 1999 RW₅₉ *, 9, 2, 4; 1999 RX₅₉ *, 7, 2, 2; 1999 RY₅₉ *, 8, 2, 2; 1999 RC₆₀ *, 6, 2, 4; 1999 RD₆₀ *, 7, 2, 2; 1999 RE₆₀ *, 9, 2, 2; 1999 RF₆₀ *, 9, 2, 2; 1999 RG₆₀ *, 9, 2, 2; 1999 RH₆₀ *, 6, 2, 2; 1999 RJ₆₀ *, 7, 2, 6; 1999 RK₆₀ *, 8, 2, 4; 1999 RL₆₀ *, 8, 2, 4; 1999 RM₆₀ *, 7, 2, 2; 1999 RN₆₀ *, 6, 2, 2; 1999 RO₆₀ *, 6, 2, 2; 1999 RP₆₀ *, 6, 2, 2; 1999 RQ₆₀ *, 9, 2, 2; 1999 RS₆₀ *, 7, 2, 2; 1999 RT₆₀ *, 9, 2, 2; 1999 RV₆₀ *, 8, 2, 2; 1999 RW₆₀ *, 7, 2, 2; 1999 RX₆₀ *, 7, 2, 2; 1999 RY₆₀ *, 8, 2, 6; 1999 RZ₆₀ *, 7, 2, 2; 1999 RA₆₁ *, 8, 2, 6; 1999 RB₆₁ *, 6, 2, 2; 1999 RC₆₁ *, 7, 2, 2; 1999 RD₆₁ *, 7, 2, 2; 1999 RE₆₁ *, 9, 2, 2; 1999 RF₆₁ *, 8, 2, 7; 1999 RG₆₁ *, 8, 2, 2; 1999 RH₆₁ *, 9, 2, 2; 1999 RJ₆₁ *, 9, 2, 6; 1999 RK₆₁ *, 9, 2, 2; 1999 RL₆₁ *, 8, 2, 2; 1999 RM₆₁ *, 8, 2, 2; 1999 RN₆₁ *, 6, 2, 2; 1999 RO₆₁ *, 6, 2, 6; 1999 RP₆₁ *, 9, 2, 6; 1999 RQ₆₁ *, 8, 2, 6; 1999 RS₆₁ *, 7, 2, 2; 1999 RT₆₁ *, 8, 2, 2; 1999 RU₆₁ *, 9, 2, 2; 1999 RV₆₁ *, 7, 2, 2; 1999 RW₆₁ *, 8, 2, 2; 1999 RX₆₁ *, 6, 2, 6; 1999 RY₆₁ *, 6, 2, 2; 1999 RZ₆₁ *, 8, 2, 2; 1999 RA₆₂ *, 7, 2, 2; 1999 RB₆₂ *, 10, 2, 6; 1999 RC₆₂ *, 10, 2, 6; 1999 RD₆₂ *, 10, 2, 6; 1999 RE₆₂ *, 10, 2, 6; 1999 RF₆₂ *, 10, 2, 6; 1999 RG₆₂ *, 9, 2, 6; 1999 RH₆₂ *, 6, 2, 6; 1999 RJ₆₂ *, 10, 2, 6; 1999 RK₆₂ *, 10, 2, 6; 1999 RL₆₂ *, 9, 2, 6; 1999 RM₆₂ *, 10, 2, 6; 1999 RN₆₂ *, 8, 2, 6; 1999 RO₆₂ *, 10, 2, 2; 1999 RP₆₂ *, 10, 2, 2; 1999 RQ₆₂ *, 9, 2, 2; 1999 RS₆₂ *, 8, 2, 2; 1999 RT₆₂ *, 7, 2, 2; 1999 RU₆₂ *, 9, 2, 7; 1999 RV₆₂ *, 9, 2, 7; 1999 RW₆₂ *, 9, 2, 2; 1999 RX₆₂ *, 7, 2, 7; 1999 RY₆₂ *, 8, 2, 2; 1999 RZ₆₂ *, 10, 2, 7; 1999 RA₆₃ *, 10, 2, 7; 1999 RB₆₃ *, 10, 2, 7; 1999 RC₆₃ *, 10, 2, 2; 1999 RD₆₃ *, 8, 2, 7; 1999 RE₆₃ *, 9, 2, 2; 1999 RF₆₃ *, 10, 2, 2; 1999 RG₆₃ *, 8, 2, 7; 1999 RH₆₃ *, 9, 2, 2; 1999 RJ₆₃ *, 9, 2, 7; 1999 RK₆₃ *, 10, 2, 2; 1999 RL₆₃ *, 6, 2, 2; 1999 RM₆₃ *, 8, 2, 7; 1999 RN₆₃ *, 9, 2, 7; 1999 RO₆₃ *, 20, 3, 7; 1999 RP₆₃ *, 10, 2, 7; 1999 RQ₆₃ *, 8, 2, 2; 1999 RS₆₃ *, 7, 2, 7; 1999 RT₆₃ *, 6, 2, 7; 1999 RU₆₃ *, 8, 2, 2; 1999 RV₆₃ *, 10, 2, 2; 1999 RW₆₃ *, 9, 2, 6; 1999 RX₆₃ *, 8, 2, 6; 1999 RY₆₃ *, 10, 2, 2; 1999 RZ₆₃ *, 8, 2, 2; 1999 RA₆₄ *, 9, 2, 2; 1999 RB₆₄ *, 7, 2, 2; 1999 RC₆₄ *, 8, 2, 2; 1999 RD₆₄ *, 9, 2, 6; 1999 RE₆₄ *, 10, 2, 2; 1999 RF₆₄ *, 10, 2, 2; 1999 RG₆₄

10, 2, 2; 1999 RV₆₆ *, 15, 2, 2; 1999 RW₆₆ *, 8, 2, 6; 1999 RX₆₆ *, 9, 2, 6; 1999 RY₆₆ *, 10, 2, 2; 1999 RZ₆₆ *, 8, 2, 2; 1999 RA₆₇ *, 8, 2, 6; 1999 RB₆₇ *, 8, 2, 2; 1999 RC₆₇ *, 8, 2, 2; 1999 RD₆₇ *, 9, 2, 2; 1999 RE₆₇ *, 9, 2, 2; 1999 RF₆₇ *, 7, 2, 2; 1999 RG₆₇ *, 10, 2, 7; 1999 RH₆₇ *, 10, 2, 2; 1999 RJ₆₇ *, 10, 2, 2; 1999 RK₆₇ *, 20, 3, 7; 1999 RL₆₇ *, 9, 2, 7; 1999 RM₆₇ *, 9, 2, 7; 1999 RN₆₇ *, 9, 2, 7; 1999 RO₆₇ *, 9, 2, 7; 1999 RP₆₇ *, 10, 2, 7; 1999 RQ₆₇ *, 10, 2, 2; 1999 RR₆₇ *, 10, 2, 2; 1999 RS₆₇ *, 18, 4, 7; 1999 RT₆₇ *, 17, 4, 7; 1999 RU₆₇ *, 9, 2, 2; 1999 RV₆₇ *, 10, 2, 7; 1999 RW₆₇ *, 7, 2, 2; 1999 RX₆₇ *, 7, 2, 7; 1999 RY₆₇ *, 10, 2, 2; 1999 RZ₆₇ *, 8, 2, 2; 1999 RA₆₈ *, 7, 2, 2; 1999 RB₆₈ *, 9, 2, 2; 1999 RC₆₈ *, 9, 2, 2; 1999 RD₆₈ *, 9, 2, 7; 1999 RE₆₈ *, 9, 2, 7; 1999 RF₆₈ *, 10, 2, 2; 1999 RG₆₈ *, 9, 2, 2; 1999 RH₆₈ *, 9, 2, 7; 1999 RJ₆₈ *, 9, 2, 2; 1999 RK₆₈ *, 63, 2, 4; 1999 RL₆₈ *, 7, 2, 2; 1999 RM₆₈ *, 8, 2, 6; 1999 RN₆₈ *, 8, 2, 2; 1999 RO₆₈ *, 8, 2, 2; 1999 RP₆₈ *, 10, 2, 6; 1999 RQ₆₈ *, 8, 2, 2; 1999 RS₆₈ *, 10, 2, 6; 1999 RS₆₈ *, 9, 2, 6; 1999 RT₆₈ *, 14, 2, 6; 1999 RU₆₈ *, 8, 2, 2; 1999 RV₆₈ *, 8, 2, 2; 1999 RW₆₈ *, 10, 2, 2; 1999 RX₆₈ *, 10, 2, 6; 1999 RY₆₈ *, 9, 2, 2; 1999 RZ₆₈ *, 9, 2, 2; 1999 RA₆₉ *, 9, 2, 2; 1999 RB₆₉ *, 8, 2, 2; 1999 RC₆₉ *, 8, 2, 2; 1999 RD₆₉ *, 9, 2, 2; 1999 RE₆₉ *, 10, 2, 2; 1999 RF₆₉ *, 9, 2, 2; 1999 RG₆₉ *, 7, 2, 6; 1999 RH₆₉ *, 6, 2, 2; 1999 RJ₆₉ *, 8, 2, 6; 1999 RK₆₉ *, 9, 2, 2; 1999 RL₆₉ *, 8, 2, 2; 1999 RM₆₉ *, 10, 2, 2; 1999 RN₆₉ *, 10, 2, 2; 1999 RO₆₉ *, 9, 2, 2; 1999 RP₆₉ *, 8, 2, 6; 1999 RQ₆₉ *, 8, 2, 2; 1999 RS₆₉ *, 10, 2, 2; 1999 RT₆₉ *, 10, 2, 2; 1999 RU₆₉ *, 9, 2, 2; 1999 RV₆₉ *, 6, 2, 2; 1999 RW₆₉ *, 8, 2, 2; 1999 RX₆₉ *, 10, 2, 2; 1999 RY₆₉ *, 9, 2, 7; 1999 RZ₆₉ *, 9, 2, 2; 1999 RA₇₀ *, 7, 2, 2; 1999 RB₇₀ *, 9, 2, 2; 1999 RC₇₀ *, 18, 4, 7; 1999 RD₇₀ *, 10, 2, 2; 1999 RE₇₀ *, 18, 4, 7; 1999 RF₇₀ *, 22, 4, 7; 1999 RG₇₀ *, 8, 2, 2; 1999 RH₇₀ *, 9, 2, 2; 1999 RI₇₀ *, 9, 2, 2; 1999 RJ₇₀ *, 9, 2, 2; 1999 RK₇₀ *, 9, 2, 2; 1999 RL₇₀ *, 8, 2, 2; 1999 RM₇₀ *, 10, 2, 2; 1999 RN₇₀ *, 9, 2, 2; 1999 RO₇₀ *, 16, 4, 7; 1999 RP₇₀ *, 21, 5, 53; 1999 RQ₇₀ *, 8, 2, 7; 1999 RR₇₀ *, 7, 2, 7; 1999 RS₇₀ *, 7, 2, 7; 1999 RT₇₀ *, 9, 2, 7; 1999 RU₇₀ *, 6, 2, 7; 1999 RV₇₀ *, 8, 2, 7; 1999 RW₇₀ *, 8, 2, 2; 1999 RX₇₀ *, 26, 4, 7; 1999 RY₇₀ *, 7, 2, 7; 1999 RZ₇₀ *, 30, 4, 7; 1999 RA₇₁ *, 34, 4, 7; 1999 RB₇₁ *, 9, 2, 7; 1999 RC₇₁ *, 16, 2, 7; 1999 RD₇₁ *, 21, 4, 7; 1999 RE₇₁ *, 8, 2, 7; 1999 RF₇₁ *, 11, 2, 3; 1999 RG₇₁ *, 27, 4, 7; 1999 RH₇₁ *, 30, 4, 7; 1999 RJ₇₁ *, 29, 4, 6; 1999 RK₇₁ *, 26, 4, 7; 1999 RL₇₁ *, 24, 4, 6; 1999 RN₇₁ *, 21, 4, 6; 1999 RO₇₁ *, 8, 2, 2; 1999 RP₇₁ *, 8, 2, 3; 1999 RQ₇₁ *, 7, 2, 6; 1999 RR₇₁ *, 24, 4, 6; 1999 RS₇₁ *, 16, 4, 6; 1999 RT₇₁ *, 19, 4, 7; 1999 RU₇₁ *, 18, 4, 7; 1999 RV₇₁ *, 10, 2, 6; 1999 RW₇₁ *, 8, 2, 2; 1999 RX₇₁ *, 9, 2, 2; 1999 RY₇₁ *, 18, 4, 6; 1999 RZ₇₁ *, 20, 4, 7; 1999 RA₇₂ *, 9, 2, 6; 1999 RB₇₂ *, 8, 2, 2; 1999 RC₇₂ *, 8, 2, 2; 1999 RD₇₂ *, 29, 4, 7; 1999 RE₇₂ *, 39, 4, 7; 1999 RF₇₂ *, 39, 4, 7; 1999 RG₇₂ *, 15, 4, 6; 1999 RH₇₂ *, 10, 2, 2; 1999 RI₇₂ *, 10, 2, 2; 1999 RJ₇₂ *, 7, 2, 2; 1999 RK₇₂ *, 33, 4, 6; 1999 RL₇₂ *, 33, 4, 6; 1999 RM₇₂ *, 16, 4, 6; 1999 RN₇₂ *, 28, 4, 7; 1999 RO₇₂ *, 39, 4, 7; 1999 RP₇₂ *, 47, 6, 7; 1999 RQ₇₂ *, 10, 2, 2; 1999 RS₇₂ *, 7, 2, 2; 1999 RT₇₂ *, 9, 2, 2; 1999 RU₇₂ *, 10, 2, 7; 1999 RV₇₂ *, 10, 2, 7; 1999 RW₇₂ *, 9, 2, 2; 1999 RX₇₂ *, 10, 2, 7; 1999 RY₇₂ *, 11, 2, 7; 1999 RZ₇₂ *, 7, 2, 7; 1999 RA₇₃ *, 40, 4, 7; 1999 RB₇₃ *, 9, 2, 7; 1999 RC₇₃ *, 24, 2, 7; 1999 RD₇₃ *, 42, 4, 7; 1999 RE₇₃ *, 8, 2, 7; 1999 RF₇₃ *, 6, 2, 7; 1999 RG₇₃ *, 7, 2, 2; 1999 RH₇₃ *, 14, 3, 11; 1999 RJ₇₃ *, 8, 2, 2; 1999 RK₇₃ *, 11, 3, 11; 1999 RL₇₃ *, 18, 4, 62; 1999 RM₇₃ *, 10, 2, 2; 1999 RN₇₃ *, 9, 2, 2; 1999 RO₇₃ *, 18, 4, 7; 1999 RP₇₃ *, 8, 2, 7; 1999 RQ₇₃ *, 10, 2, 7; 1999 RS₇₃ *, 8, 2, 2; 1999 RT₇₃ *, 16, 4, 7; 1999 RU₇₃ *, 10, 2, 7; 1999 RV₇₃ *, 20, 3, 7; 1999 RW₇₃ *, 10, 2, 2; 1999 RX₇₃ *, 15, 3, 7; 1999 RY₇₃ *, 10, 2, 7; 1999 RZ₇₃ *, 8, 2, 7; 1999 RA₇₄ *, 9, 2, 7; 1999 RB₇₄ *, 8, 2, 2; 1999 RC₇₄ *, 9, 2, 7; 1999 RD₇₄ *, 15, 3, 7; 1999 RE₇₄ *, 8, 2, 6; 1999 RF₇₄ *, 7, 2, 2; 1999 RG₇₄ *, 10, 2, 2; 1999 RH₇₄ *, 8, 2, 2; 1999 RJ₇₄ *, 8, 2, 2; 1999 RK₇₄ *, 8, 2, 2; 1999 RL₇₄ *, 10, 2, 2; 1999 RM₇₄ *, 9, 2, 6; 1999 RN₇₄ *, 19, 4, 6; 1999 RO₇₄ *, 7, 2, 2; 1999 RP₇₄ *, 7, 2, 2; 1999 RQ₇₄ *, 13, 4, 4; 1999 RR₇₄ *, 38, 4, 7; 1999 RT₇₄ *, 14, 2, 7; 1999 RU₇₄ *, 18, 2, 7; 1999 RV₇₄ *, 38, 4, 7; 1999 RW₇₄ *, 8, 2, 2; 1999 RX₇₄ *, 9, 2, 2; 1999 RY₇₄ *, 9, 2, 2; 1999 RZ₇₄ *, 8, 2, 7; 1999 RA₇₅ *, 9, 2, 6; 1999 RB₇₅ *, 10, 2, 2; 1999 RC₇₅ *, 10, 2, 7; 1999 RD₇₅ *, 14, 2, 7; 1999 RE₇₅ *, 8, 2, 2; 1999 RF₇₅ *, 10, 2, 2; 1999 RG₇₅ *, 10, 2, 7; 1999 RH₇₅ *, 6, 2, 7; 1999 RI₇₅ *, 9, 2, 2; 1999 RJ₇₅ *, 25, 4, 7; 1999 RK₇₅ *, 8, 2, 7; 1999 RL₇₅ *, 8, 2, 7; 1999 RM₇₅ *, 8, 2, 7; 1999 RN₇₅ *, 9, 2, 7; 1999 RO₇₅ *, 9, 2, 7; 1999 RP₇₅ *, 10, 2, 7; 1999 RQ₇₅ *, 18, 4, 7; 1999 RS₇₅ *, 13, 3, 9; 1999 RT₇₅ *, 9, 2, 2; 1999 RU₇₅ *, 9, 2, 2; 1999 RV₇₅ *, 13, 3, 9; 1999 RW₇₅ *, 18, 4, 11; 1999 RX₇₅ *, 10, 2, 2; 1999 RY₇₅ *, 8, 2, 7; 1999 RZ₇₅ *, 9, 2, 7; 1999 RA₇₆ *, 16, 4, 7; 1999 RB₇₆ *, 7, 2, 7; 1999 RC₇₆ *, 8, 2, 7; 1999 RD₇₆ *, 11, 2, 7; 1999 RE₇₆ *, 7, 2, 2; 1999 RF₇₆ *, 9, 2, 7; 1999 RG₇₆ *, 9, 2, 7; 1999 RH₇₆ *, 24, 4, 7; 1999 RJ₇₆ *, 23, 4, 7; 1999 RK₇₆ *, 9, 2, 7; 1999 RL₇₆ *, 23, 4, 7; 1999 RM₇₆ *, 25, 4, 7; 1999 RN₇₆ *, 7, 2, 4; 1999 RO₇₆ *, 7, 2, 7; 1999 RP₇₆ *, 6, 2, 7; 1999 RQ₇₆ *, 9, 2, 7; 1999 RS₇₆ *, 6, 2, 7; 1999 RT₇₆ *, 8, 2, 7; 1999 RU₇₆ *, 10, 2, 2; 1999 RV₇₆ *, 7, 2, 2; 1999 RW₇₆ *, 9, 2, 2; 1999 RX₇₆ *, 8, 2, 2; 1999 RY₇₆ *, 17, 4, 6; 1999 RZ₇₆ *, 8, 2, 2; 1999 RA₇₇ *, 16, 4, 6; 1999 RB₇₇ *, 8, 2, 2; 1999 RC₇₇ *, 9, 2, 6; 1999 RD₇₇ *, 7, 2, 2; 1999 RE₇₇ *, 7, 2, 2; 1999 RF₇₇ *, 7, 2, 2; 1999 RG₇₇ *, 7, 2, 2; 1999 RH₇₇ *, 7, 2, 2; 1999 RJ₇₇ *, 12, 2, 2; 1999 RK₇₇ *, 7, 2, 2; 1999 RL₇₇ *, 7, 2, 2; 1999 RM₇₇ *, 7, 2, 2; 1999 RN₇₇ *, 7, 2, 2; 1999 RO₇₇ *, 9, 2, 2; 1999 RP₇₇ *, 7, 2, 2; 1999 RQ₇₇ *, 9, 2, 6; 1999 RS₇₇ *, 8, 2, 2; 1999 RT₇₇ *, 7, 2, 2; 1999 RU₇₇ *, 9, 2, 2; 1999 RV₇₇ *, 6, 2, 7; 1999 RW₇₇ *, 6, 2, 6; 1999 RX₇₇ *, 9, 2, 2; 1999 RY₇₇ *, 7, 2, 6; 1999 RZ₇₇ *, 8, 2, 6; 1999 RA₇₈ *, 8, 2, 6; 1999 RB₇₈ *, 8, 2, 6; 1999 RC₇₈ *, 9, 2, 6; 1999 RD₇₈ *, 8, 2, 7; 1999 RE₇₈ *, 6, 2, 2; 1999 RF₇₈ *, 8, 2, 2; 1999 RG₇₈ *, 6, 2, 2; 1999 RH₇₈ *, 8, 2, 2; 1999 RJ₇₈ *, 9, 2, 2; 1999 RK₇₈ *, 7, 2, 7; 1999 RL₇₈ *, 9, 2, 2; 1999 RM₇₈ *, 8, 2, 2; 1999 RN₇₈ *, 7, 2, 2; 1999 RO₇₈ *, 8, 2, 2;

1999 RP₇₈ *, 7, 2, 6; 1999 RQ₇₈ *, 7, 2, 2; 1999 RR₇₈ *, 8, 2, 2; 1999 RS₇₈ *, 15, 4, 7; 1999 RT₇₈ *, 8, 2, 2; 1999 RU₇₈ *, 8, 2, 2; 1999 RV₇₈ *, 17, 4, 7; 1999 RW₇₈ *, 16, 2, 4; 1999 RX₇₈ *, 17, 2, 6; 1999 RY₇₈ *, 15, 2, 2; 1999 RZ₇₈ *, 15, 2, 2; 1999 RA₇₉ *, 18, 2, 2; 1999 RB₇₉ *, 6, 2, 2; 1999 RC₇₉ *, 7, 2, 2; 1999 RD₇₉ *, 13, 2, 4; 1999 RE₇₉ *, 7, 2, 4; 1999 RF₇₉ *, 7, 2, 4; 1999 RG₇₉ *, 7, 2, 3; 1999 RH₇₉ *, 9, 2, 6; 1999 RJ₇₉ *, 7, 2, 6; 1999 RK₇₉ *, 8, 2, 6; 1999 RL₇₉ *, 7, 2, 2; 1999 RM₇₉ *, 7, 2, 2; 1999 RN₇₉ *, 9, 2, 7; 1999 RO₇₉ *, 18, 2, 7; 1999 RS₇₉ *, 6, 2, 2; 1999 RT₇₉ *, 7, 2, 7; 1999 RU₇₉ *, 7, 2, 7; 1999 RV₇₉ *, 7, 2, 2; 1999 RW₇₉ *, 8, 2, 7; 1999 RX₇₉ *, 8, 2, 2; 1999 RY₇₉ *, 8, 2, 7; 1999 RZ₇₉ *, 6, 2, 2; 1999 RA₈₀ *, 6, 2, 2; 1999 RB₈₀ *, 9, 2, 2; 1999 RC₈₀ *, 7, 2, 7; 1999 RD₈₀ *, 9, 2, 2; 1999 RE₈₀ *, 7, 2, 7; 1999 RF₈₀ *, 9, 2, 2; 1999 RG₈₀ *, 9, 2, 2; 1999 RH₈₀ *, 13, 2, 2; 1999 RJ₈₀ *, 11, 2, 4; 1999 RK₈₀ *, 6, 2, 2; 1999 RL₈₀ *, 7, 2, 2; 1999 RM₈₀ *, 6, 2, 2; 1999 RN₈₀ *, 8, 2, 2; 1999 RO₈₀ *, 6, 2, 2; 1999 RP₈₀ *, 6, 2, 6; 1999 RQ₈₀ *, 7, 2, 2; 1999 RS₈₀ *, 6, 2, 7; 1999 RS₈₀ *, 9, 2, 6; 1999 RT₈₀ *, 7, 2, 6; 1999 RU₈₀ *, 6, 2, 2; 1999 RV₈₀ *, 6, 2, 7; 1999 RW₈₀ *, 13, 3, 11; 1999 RX₈₀ *, 7, 2, 7; 1999 RY₈₀ *, 6, 2, 2; 1999 RZ₈₀ *, 7, 2, 2; 1999 RA₈₁ *, 8, 2, 7; 1999 RB₈₁ *, 7, 2, 6; 1999 RC₈₁ *, 8, 2, 7; 1999 RD₈₁ *, 8, 2, 2; 1999 RE₈₁ *, 18, 4, 7; 1999 RF₈₁ *, 18, 4, 7; 1999 RG₈₁ *, 9, 2, 7; 1999 RH₈₁ *, 8, 2, 7; 1999 RJ₈₁ *, 7, 2, 2; 1999 RK₈₁ *, 9, 2, 7; 1999 RL₈₁ *, 20, 4, 7; 1999 RM₈₁ *, 22, 4, 7; 1999 RN₈₁ *, 38, 5, 7; 1999 RO₈₁ *, 24, 4, 7; 1999 RP₈₁ *, 7, 2, 2; 1999 RQ₈₁ *, 21, 4, 7; 1999 RS₈₁ *, 9, 2, 7; 1999 RT₈₁ *, 25, 4, 7; 1999 RU₈₁ *, 17, 4, 7; 1999 RV₈₁ *, 25, 4, 7; 1999 RW₈₁ *, 9, 2, 2; 1999 RX₈₁ *, 18, 4, 7; 1999 RY₈₁ *, 13, 3, 9; 1999 RZ₈₁ *, 10, 2, 2; 1999 RA₈₂ *, 11, 3, 9; 1999 RB₈₂ *, 9, 2, 2; 1999 RC₈₂ *, 18, 4, 55; 1999 RD₈₂ *, 6, 2, 2; 1999 RE₈₂ *, 9, 2, 2; 1999 RF₈₂ *, 14, 3, 11; 1999 RG₈₂ *, 10, 2, 2; 1999 RH₈₂ *, 9, 2, 2; 1999 RJ₈₂ *, 9, 2, 2; 1999 RK₈₂ *, 14, 3, 9; 1999 RL₈₂ *, 10, 2, 2; 1999 RM₈₂ *, 10, 2, 2; 1999 RN₈₂ *, 10, 2, 2; 1999 RO₈₂ *, 13, 3, 9; 1999 RP₈₂ *, 7, 2, 2; 1999 RQ₈₂ *, 10, 2, 2; 1999 RS₈₂ *, 8, 2, 2; 1999 RS₈₂ *, 9, 2, 2; 1999 RT₈₂ *, 10, 2, 2; 1999 RU₈₂ *, 10, 2, 2; 1999 RV₈₂ *, 9, 2, 7; 1999 RW₈₂ *, 19, 4, 7; 1999 RX₈₂ *, 8, 2, 7; 1999 RY₈₂ *, 9, 2, 7; 1999 RZ₈₂ *, 9, 2, 7; 1999 RA₈₃ *, 19, 4, 7; 1999 RB₈₃ *, 10, 2, 7; 1999 RC₈₃ *, 9, 2, 7; 1999 RD₈₃ *, 7, 2, 2; 1999 RE₈₃ *, 10, 2, 7; 1999 RF₈₃ *, 10, 2, 7; 1999 RG₈₃ *, 10, 2, 7; 1999 RH₈₃ *, 18, 4, 7; 1999 RJ₈₃ *, 18, 4, 7; 1999 RK₈₃ *, 7, 2, 3; 1999 RL₈₃ *, 9, 2, 7; 1999 RM₈₃ *, 8, 2, 2; 1999 RN₈₃ *, 8, 2, 2; 1999 RO₈₃ *, 7, 2, 7; 1999 RP₈₃ *, 8, 2, 7; 1999 RQ₈₃ *, 9, 2, 7; 1999 RS₈₃ *, 8, 2, 7; 1999 RS₈₃ *, 10, 2, 7; 1999 RT₈₃ *, 9, 2, 6; 1999 RU₈₃ *, 9, 2, 7; 1999 RV₈₃ *, 10, 2, 7; 1999 RW₈₃ *, 10, 2, 7; 1999 RX₈₃ *, 6, 2, 2; 1999 RY₈₃ *, 10, 2, 7; 1999 RZ₈₃ *, 7, 2, 7; 1999 RA₈₄ *, 7, 2, 7; 1999 RB₈₄ *, 17, 4, 7; 1999 RC₈₄ *, 18, 4, 7; 1999 RD₈₄ *, 8, 2, 2; 1999 RE₈₄ *, 18, 4, 7; 1999 RF₈₄ *, 10, 2, 7; 1999 RG₈₄ *, 9, 2, 7; 1999 RH₈₄ *, 9, 2, 7; 1999 RJ₈₄ *, 9, 2, 2; 1999 RK₈₄ *, 10, 2, 2; 1999 RL₈₄ *, 9, 2, 2; 1999 RM₈₄ *, 10, 2, 2; 1999 RN₈₄ *, 19, 4, 55; 1999 RO₈₄ *, 9, 2, 2; 1999 RP₈₄ *, 10, 2, 2; 1999 RQ₈₄ *, 9, 2, 2; 1999 RS₈₄ *, 15, 2, 2; 1999 RS₈₄ *, 10, 2, 2; 1999 RT₈₄ *, 29, 2, 2; 1999 RU₈₄ *, 25, 2, 2; 1999 RV₈₄ *, 10, 2, 2; 1999 RW₈₄ *, 23, 2, 2; 1999 RX₈₄ *, 8, 2, 7; 1999 RY₈₄ *, 19, 2, 2; 1999 RZ₈₄ *, 9, 2, 7; 1999 RA₈₅ *, 10, 2, 7; 1999 RB₈₅ *, 8, 2, 7; 1999 RC₈₅ *, 8, 2, 7; 1999 RD₈₅ *, 7, 2, 2; 1999 RE₈₅ *, 9, 2, 2; 1999 RF₈₅ *, 8, 2, 2; 1999 RG₈₅ *, 14, 4, 7; 1999 RH₈₅ *, 9, 2, 7; 1999 RJ₈₅ *, 15, 2, 7; 1999 RK₈₅ *, 8, 2, 7; 1999 RL₈₅ *, 9, 2, 7; 1999 RM₈₅ *, 15, 2, 7; 1999 RN₈₅ *, 15, 2, 7; 1999 RO₈₅ *, 12, 2, 7; 1999 RP₈₅ *, 15, 2, 7; 1999 RQ₈₅ *, 11, 2, 7; 1999 RS₈₅ *, 13, 2, 7; 1999 RS₈₅ *, 13, 2, 7; 1999 RT₈₅ *, 10, 2, 7; 1999 RU₈₅ *, 9, 2, 7; 1999 RV₈₅ *, 10, 2, 7; 1999 RW₈₅ *, 13, 2, 7; 1999 RX₈₅ *, 10, 2, 7; 1999 RY₈₅ *, 9, 2, 7; 1999 RZ₈₅ *, 10, 2, 7; 1999 RA₈₆ *, 10, 2, 7; 1999 RB₈₆ *, 9, 2, 7; 1999 RC₈₆ *, 15, 2, 7; 1999 RD₈₆ *, 10, 2, 7; 1999 RE₈₆ *, 10, 2, 7; 1999 RF₈₆ *, 10, 2, 7; 1999 RG₈₆ *, 15, 2, 7; 1999 RH₈₆ *, 9, 2, 7; 1999 RJ₈₆ *, 10, 2, 7; 1999 RK₈₆ *, 8, 2, 7; 1999 RL₈₆ *, 10, 2, 7; 1999 RM₈₆ *, 12, 2, 7; 1999 RN₈₆ *, 14, 2, 7; 1999 RO₈₆ *, 9, 2, 7; 1999 RP₈₆ *, 10, 2, 7; 1999 RQ₈₆ *, 10, 2, 7; 1999 RS₈₆ *, 15, 2, 7; 1999 RT₈₆ *, 14, 2, 7; 1999 RU₈₆ *, 10, 2, 7; 1999 RV₈₆ *, 10, 2, 7; 1999 RW₈₆ *, 10, 2, 7; 1999 RX₈₆ *, 8, 2, 7; 1999 RY₈₆ *, 10, 2, 7; 1999 RZ₈₆ *, 10, 2, 7; 1999 RA₈₇ *, 10, 2, 7; 1999 RB₈₇ *, 13, 3, 60; 1999 RC₈₇ *, 9,

2, 7; 1999 RZ₈₉ *, 10, 2, 7; 1999 RA₉₀ *, 9, 2, 7; 1999 RB₉₀ *, 10, 2, 7; 1999 RC₉₀ *, 10, 2, 7; 1999 RD₉₀ *, 9, 2, 7; 1999 RE₉₀ *, 10, 2, 7; 1999 RF₉₀ *, 10, 2, 7; 1999 RG₉₀ *, 10, 2, 7; 1999 RH₉₀ *, 10, 2, 7; 1999 RJ₉₀ *, 10, 2, 7; 1999 RK₉₀ *, 8, 2, 7; 1999 RL₉₀ *, 9, 2, 7; 1999 RM₉₀ *, 6, 2, 7; 1999 RN₉₀ *, 10, 2, 7; 1999 RO₉₀ *, 9, 2, 7; 1999 RP₉₀ *, 10, 2, 7; 1999 RQ₉₀ *, 10, 2, 7; 1999 RR₉₀ *, 10, 2, 7; 1999 RS₉₀ *, 10, 2, 7; 1999 RT₉₀ *, 9, 2, 7; 1999 RU₉₀ *, 10, 2, 7; 1999 RV₉₀ *, 10, 2, 7; 1999 RW₉₀ *, 8, 2, 7; 1999 RX₉₀ *, 8, 2, 7; 1999 RY₉₀ *, 10, 2, 7; 1999 RZ₉₀ *, 9, 2, 7; 1999 RA₉₁ *, 10, 2, 7; 1999 RB₉₁ *, 7, 2, 7; 1999 RC₉₁ *, 8, 2, 7; 1999 RD₉₁ *, 10, 2, 7; 1999 RE₉₁ *, 10, 2, 7; 1999 RF₉₁ *, 10, 2, 7; 1999 RG₉₁ *, 9, 2, 7; 1999 RH₉₁ *, 10, 2, 7; 1999 RJ₉₁ *, 10, 2, 7; 1999 RK₉₁ *, 8, 2, 7; 1999 RL₉₁ *, 6, 2, 7; 1999 RM₉₁ *, 8, 2, 7; 1999 RN₉₁ *, 10, 2, 7; 1999 RO₉₁ *, 9, 2, 7; 1999 RP₉₁ *, 10, 2, 7; 1999 RQ₉₁ *, 8, 2, 7; 1999 RR₉₁ *, 10, 2, 7; 1999 RS₉₁ *, 9, 2, 7; 1999 RT₉₁ *, 10, 2, 7; 1999 RU₉₁ *, 9, 2, 7; 1999 RV₉₁ *, 10, 2, 7; 1999 RW₉₁ *, 8, 2, 7; 1999 RX₉₁ *, 10, 2, 7; 1999 RY₉₁ *, 7, 2, 2; 1999 RZ₉₁ *, 9, 2, 2; 1999 RA₉₂ *, 10, 2, 7; 1999 RB₉₂ *, 8, 2, 2; 1999 RC₉₂ *, 13, 2, 55; 1999 RD₉₂ *, 10, 2, 2; 1999 RE₉₂ *, 10, 2, 2; 1999 RF₉₂ *, 14, 3, 48; 1999 RG₉₂ *, 8, 2, 2; 1999 RH₉₂ *, 8, 2, 2; 1999 RJ₉₂ *, 6, 2, 2; 1999 RK₉₂ *, 10, 2, 2; 1999 RL₉₂ *, 9, 2, 2; 1999 RM₉₂ *, 9, 2, 2; 1999 RN₉₂ *, 10, 2, 7; 1999 RO₉₂ *, 10, 2, 7; 1999 RP₉₂ *, 10, 2, 7; 1999 RQ₉₂ *, 10, 2, 7; 1999 RS₉₂ *, 10, 2, 7; 1999 RT₉₂ *, 10, 2, 7; 1999 RU₉₂ *, 8, 2, 7; 1999 RV₉₂ *, 8, 2, 7; 1999 RW₉₂ *, 10, 2, 7; 1999 RX₉₂ *, 10, 2, 7; 1999 RY₉₂ *, 9, 2, 7; 1999 RZ₉₂ *, 9, 2, 7; 1999 RA₉₃ *, 10, 2, 7; 1999 RB₉₃ *, 10, 2, 7; 1999 RC₉₃ *, 7, 2, 7; 1999 RD₉₃ *, 8, 2, 7; 1999 RE₉₃ *, 10, 2, 7; 1999 RF₉₃ *, 9, 2, 7; 1999 RG₉₃ *, 7, 2, 7; 1999 RH₉₃ *, 10, 2, 7; 1999 RJ₉₃ *, 9, 2, 7; 1999 RK₉₃ *, 10, 2, 7; 1999 RL₉₃ *, 6, 2, 7; 1999 RM₉₃ *, 8, 2, 7; 1999 RN₉₃ *, 10, 2, 7; 1999 RO₉₃ *, 8, 2, 7; 1999 RP₉₃ *, 9, 2, 7; 1999 RQ₉₃ *, 10, 2, 7; 1999 RS₉₃ *, 8, 2, 7; 1999 RT₉₃ *, 10, 2, 7; 1999 RU₉₃ *, 7, 2, 7; 1999 RV₉₃ *, 10, 2, 7; 1999 RW₉₃ *, 10, 2, 7; 1999 RX₉₃ *, 8, 2, 7; 1999 RY₉₃ *, 8, 2, 7; 1999 RZ₉₃ *, 9, 2, 7; 1999 RA₉₄ *, 10, 2, 7; 1999 RB₉₄ *, 8, 2, 7; 1999 RC₉₄ *, 10, 2, 7; 1999 RD₉₄ *, 10, 2, 7; 1999 RE₉₄ *, 10, 2, 7; 1999 RF₉₄ *, 10, 2, 7; 1999 RG₉₄ *, 9, 2, 7; 1999 RH₉₄ *, 8, 2, 7; 1999 RJ₉₄ *, 10, 2, 7; 1999 RK₉₄ *, 10, 2, 7; 1999 RL₉₄ *, 7, 2, 7; 1999 RM₉₄ *, 9, 2, 7; 1999 RN₉₄ *, 10, 2, 7; 1999 RO₉₄ *, 10, 2, 7; 1999 RP₉₄ *, 10, 2, 7; 1999 RQ₉₄ *, 8, 2, 7; 1999 RR₉₄ *, 8, 2, 7; 1999 RS₉₄ *, 10, 2, 7; 1999 RT₉₄ *, 7, 2, 7; 1999 RU₉₄ *, 9, 2, 7; 1999 RV₉₄ *, 10, 2, 7; 1999 RW₉₄ *, 10, 2, 7; 1999 RX₉₄ *, 10, 2, 7; 1999 RY₉₄ *, 8, 2, 2; 1999 RZ₉₄ *, 10, 2, 2; 1999 RA₉₅ *, 9, 2, 2; 1999 RB₉₅ *, 9, 2, 2; 1999 RC₉₅ *, 6, 2, 2; 1999 RD₉₅ *, 10, 2, 2; 1999 RE₉₅ *, 9, 2, 2; 1999 RF₉₅ *, 8, 2, 2; 1999 RG₉₅ *, 10, 2, 2; 1999 RH₉₅ *, 14, 2, 2; 1999 RJ₉₅ *, 6, 2, 2; 1999 RK₉₅ *, 10, 2, 2; 1999 RL₉₅ *, 10, 2, 2; 1999 RM₉₅ *, 7, 2, 7; 1999 RN₉₅ *, 9, 2, 2; 1999 RO₉₅ *, 10, 2, 7; 1999 RP₉₅ *, 10, 2, 7; 1999 RQ₉₅ *, 10, 2, 7; 1999 RV₉₅ *, 10, 2, 7; 1999 RW₉₅ *, 10, 2, 7; 1999 RX₉₅ *, 10, 2, 7; 1999 RY₉₅ *, 10, 2, 7; 1999 RZ₉₅ *, 10, 2, 7; 1999 RA₉₆ *, 9, 2, 7; 1999 RB₉₆ *, 10, 2, 7; 1999 RC₉₆ *, 9, 2, 7; 1999 RD₉₆ *, 9, 2, 7; 1999 RE₉₆ *, 9, 2, 7; 1999 RF₉₆ *, 10, 2, 2; 1999 RG₉₆ *, 10, 2, 7; 1999 RH₉₆ *, 10, 2, 7; 1999 RJ₉₆ *, 10, 2, 7; 1999 RK₉₆ *, 10, 2, 7; 1999 RL₉₆ *, 10, 2, 7; 1999 RM₉₆ *, 10, 2, 7; 1999 RN₉₆ *, 6, 2, 2; 1999 RO₉₆ *, 7, 2, 2; 1999 RP₉₆ *, 6, 2, 2; 1999 RQ₉₆ *, 17, 4, 7; 1999 RR₉₆ *, 8, 2, 2; 1999 RS₉₆ *, 9, 2, 2; 1999 RT₉₆ *, 16, 4, 7; 1999 RU₉₆ *, 15, 4, 7; 1999 RV₉₆ *,

1; 1999 RL₁₀₁ *, 7, 2, 1; 1999 RM₁₀₁ *, 8, 2, 1; 1999 RO₁₀₁ *, 8, 2, 1; 1999 RP₁₀₁ *, 9, 2, 1; 1999 RQ₁₀₁ *, 16, 4, 56; 1999 RR₁₀₁ *, 13, 2, 1; 1999 RS₁₀₁ *, 6, 2, 6; 1999 RT₁₀₁ *, 7, 2, 1; 1999 RU₁₀₁ *, 7, 2, 6; 1999 RV₁₀₁ *, 12, 3, 6; 1999 RW₁₀₁ *, 8, 2, 1; 1999 RX₁₀₁ *, 7, 2, 6; 1999 RY₁₀₁ *, 8, 2, 6; 1999 RZ₁₀₁ *, 6, 2, 1; 1999 RA₁₀₂ *, 7, 2, 1; 1999 RB₁₀₂ *, 6, 2, 6; 1999 RC₁₀₂ *, 13, 3, 8; 1999 RD₁₀₂ *, 24, 5, 62; 1999 RE₁₀₂ *, 30, 7, 483; 1999 RF₁₀₂ *, 20, 5, 14; 1999 RG₁₀₂ *, 8, 2, 2; 1999 RH₁₀₂ *, 7, 2, 1; 1999 RJ₁₀₂ *, 10, 3, 8; 1999 RK₁₀₂ *, 19, 5, 53; 1999 RL₁₀₂ *, 9, 2, 1; 1999 RM₁₀₂ *, 16, 4, 6; 1999 RN₁₀₂ *, 20, 4, 66; 1999 RO₁₀₂ *, 9, 2, 1; 1999 RP₁₀₂ *, 9, 2, 6; 1999 RQ₁₀₂ *, 12, 3, 8; 1999 RS₁₀₂ *, 17, 4, 6; 1999 RT₁₀₂ *, 22, 4, 66; 1999 RU₁₀₂ *, 28, 4, 8; 1999 RV₁₀₂ *, 7, 2, 1; 1999 RW₁₀₂ *, 26, 6, 66; 1999 RX₁₀₂ *, 9, 2, 1; 1999 RY₁₀₂ *, 8, 2, 1; 1999 RZ₁₀₂ *, 18, 4, 6; 1999 RA₁₀₃ *, 17, 4, 6; 1999 RB₁₀₃ *, 17, 4, 36; 1999 RC₁₀₃ *, 16, 4, 56; 1999 RD₁₀₃ *, 12, 3, 8; 1999 RE₁₀₃ *, 12, 3, 8; 1999 RF₁₀₃ *, 11, 3, 8; 1999 RG₁₀₃ *, 20, 5, 56; 1999 RH₁₀₃ *, 15, 4, 36; 1999 RJ₁₀₃ *, 6, 2, 2; 1999 RK₁₀₃ *, 7, 2, 2; 1999 RL₁₀₃ *, 13, 3, 8; 1999 RM₁₀₃ *, 18, 4, 6; 1999 RN₁₀₃ *, 8, 2, 1; 1999 RO₁₀₃ *, 22, 4, 6; 1999 RP₁₀₃ *, 16, 4, 6; 1999 RQ₁₀₃ *, 17, 4, 6; 1999 RS₁₀₃ *, 8, 2, 1; 1999 RT₁₀₃ *, 20, 2, 1; 1999 RU₁₀₃ *, 29, 5, 64; 1999 RV₁₀₃ *, 9, 2, 1; 1999 RW₁₀₃ *, 13, 3, 8; 1999 RX₁₀₃ *, 16, 4, 55; 1999 RY₁₀₃ *, 12, 3, 8; 1999 RZ₁₀₃ *, 9, 2, 1; 1999 RA₁₀₄ *, 9, 2, 1; 1999 RB₁₀₄ *, 7, 2, 1; 1999 RC₁₀₄ *, 8, 2, 1; 1999 RD₁₀₄ *, 7, 2, 1; 1999 RE₁₀₄ *, 7, 2, 1; 1999 RF₁₀₄ *, 9, 2, 1; 1999 RG₁₀₄ *, 20, 5, 8; 1999 RH₁₀₄ *, 8, 2, 2; 1999 RI₁₀₄ *, 16, 4, 55; 1999 RJ₁₀₄ *, 12, 3, 8; 1999 RK₁₀₄ *, 9, 2, 2; 1999 RL₁₀₄ *, 6, 2, 2; 1999 RM₁₀₄ *, 6, 2, 2; 1999 RN₁₀₄ *, 10, 3, 8; 1999 RO₁₀₄ *, 9, 2, 1; 1999 RP₁₀₄ *, 9, 2, 1; 1999 RQ₁₀₄ *, 12, 3, 8; 1999 RS₁₀₄ *, 8, 2, 1; 1999 RT₁₀₄ *, 6, 2, 1; 1999 RU₁₀₄ *, 8, 2, 1; 1999 RV₁₀₄ *, 8, 2, 1; 1999 RW₁₀₄ *, 11, 3, 8; 1999 RX₁₀₄ *, 9, 3, 8; 1999 RY₁₀₄ *, 7, 2, 1; 1999 RZ₁₀₄ *, 10, 2, 1; 1999 RA₁₀₅ *, 10, 2, 1; 1999 RB₁₀₅ *, 13, 2, 1; 1999 RC₁₀₅ *, 10, 2, 6; 1999 RD₁₀₅ *, 9, 2, 1; 1999 RE₁₀₅ *, 10, 2, 1; 1999 RF₁₀₅ *, 10, 2, 1; 1999 RG₁₀₅ *, 10, 2, 1; 1999 RH₁₀₅ *, 10, 2, 1; 1999 RI₁₀₅ *, 10, 2, 1; 1999 RJ₁₀₅ *, 10, 2, 1; 1999 RK₁₀₅ *, 10, 2, 1; 1999 RL₁₀₅ *, 10, 2, 1; 1999 RM₁₀₅ *, 10, 2, 1; 1999 RN₁₀₅ *, 9, 2, 1; 1999 RO₁₀₅ *, 10, 2, 1; 1999 RP₁₀₅ *, 13, 2, 1; 1999 RQ₁₀₅ *, 10, 2, 1; 1999 RS₁₀₅ *, 17, 4, 55; 1999 RT₁₀₅ *, 26, 6, 55; 1999 RU₁₀₅ *, 20, 5, 57; 1999 RV₁₀₅ *, 15, 3, 10; 1999 RW₁₀₅ *, 15, 3, 10; 1999 RX₁₀₅ *, 13, 3, 10; 1999 RY₁₀₅ *, 10, 2, 1; 1999 RZ₁₀₅ *, 13, 3, 10; 1999 RA₁₀₆ *, 9, 2, 1; 1999 RB₁₀₆ *, 10, 2, 3; 1999 RC₁₀₆ *, 22, 5, 8; 1999 RD₁₀₆ *, 8, 2, 1; 1999 RE₁₀₆ *, 31, 6, 55; 1999 RF₁₀₆ *, 10, 2, 3; 1999 RG₁₀₆ *, 18, 4, 3; 1999 RH₁₀₆ *, 8, 2, 1; 1999 RJ₁₀₆ *, 8, 2, 1; 1999 RK₁₀₆ *, 9, 2, 1; 1999 RL₁₀₆ *, 10, 2, 1; 1999 RM₁₀₆ *, 13, 4, 3; 1999 RN₁₀₆ *, 8, 2, 1; 1999 RO₁₀₆ *, 10, 2, 3; 1999 RP₁₀₆ *, 10, 2, 3; 1999 RQ₁₀₆ *, 33, 6, 55; 1999 RS₁₀₆ *, 10, 2, 1; 1999 RT₁₀₆ *, 10, 2, 1; 1999 RU₁₀₆ *, 14, 3, 10; 1999 RV₁₀₆ *, 10, 2, 1; 1999 RW₁₀₆ *, 10, 2, 1; 1999 RX₁₀₆ *, 6, 2, 1; 1999 RY₁₀₆ *, 7, 2, 1; 1999 RZ₁₀₆ *, 6, 2, 1; 1999 RA₁₀₇ *, 7, 2, 6; 1999 RB₁₀₇ *, 8, 2, 6; 1999 RC₁₀₇ *, 9, 2, 6; 1999 RD₁₀₇ *, 9, 2, 6; 1999 RE₁₀₇ *, 8, 2, 6; 1999 RF₁₀₇ *, 9, 2, 1; 1999 RG₁₀₇ *, 9, 2, 1; 1999 RH₁₀₇ *, 7, 2, 1; 1999 RJ₁₀₇ *, 8, 2, 1; 1999 RK₁₀₇ *, 8, 2, 1; 1999 RL₁₀₇ *, 9, 2, 1; 1999 RM₁₀₇ *, 9, 2, 1; 1999 RN₁₀₇ *, 9, 2, 1; 1999 RO₁₀₇ *, 13, 3, 10; 1999 RP₁₀₇ *, 7, 2, 2; 1999 RQ₁₀₇ *, 9, 2, 1; 1999 RS₁₀₇ *, 8, 2, 1; 1999 RT₁₀₇ *, 17, 4, 6; 1999 RU₁₀₇ *, 9, 2, 1; 1999 RV₁₀₇ *, 9, 2, 6; 1999 RW₁₀₇ *, 9, 2, 1; 1999 RX₁₀₇ *, 7, 2, 1; 1999 RY_{107</}

2, 4; 1999 RJ₁₁₂ *, 17, 4, 62; 1999 RK₁₁₂ *, 8, 2, 4; 1999 RL₁₁₂ *, 10, 2, 4; 1999 RM₁₁₂ *, 8, 2, 4; 1999 RN₁₁₂ *, 9, 2, 4; 1999 RO₁₁₂ *, 10, 2, 4; 1999 RP₁₁₂ *, 8, 2, 4; 1999 RQ₁₁₂ *, 9, 2, 4; 1999 RS₁₁₂ *, 10, 2, 4; 1999 RT₁₁₂ *, 9, 2, 4; 1999 RU₁₁₂ *, 8, 2, 5; 1999 RV₁₁₂ *, 9, 2, 4; 1999 RW₁₁₂ *, 10, 2, 5; 1999 RX₁₁₂ *, 14, 2, 4; 1999 RY₁₁₂ *, 8, 2, 4; 1999 RZ₁₁₂ *, 7, 2, 2; 1999 RA₁₁₃ *, 8, 2, 2; 1999 RB₁₁₃ *, 8, 2, 4; 1999 RC₁₁₃ *, 12, 2, 2; 1999 RD₁₁₃ *, 8, 2, 4; 1999 RE₁₁₃ *, 8, 2, 4; 1999 RF₁₁₃ *, 8, 2, 5; 1999 RG₁₁₃ *, 9, 2, 5; 1999 RH₁₁₃ *, 9, 2, 5; 1999 RJ₁₁₃ *, 7, 2, 5; 1999 RK₁₁₃ *, 6, 2, 5; 1999 RL₁₁₃ *, 9, 2, 5; 1999 RM₁₁₃ *, 6, 2, 4; 1999 RN₁₁₃ *, 9, 2, 4; 1999 RO₁₁₃ *, 7, 2, 5; 1999 RP₁₁₃ *, 13, 2, 4; 1999 RQ₁₁₃ *, 14, 2, 4; 1999 RS₁₁₃ *, 8, 2, 1; 1999 RT₁₁₃ *, 11, 2, 5; 1999 RU₁₁₃ *, 15, 2, 5; 1999 RV₁₁₃ *, 9, 2, 2; 1999 RW₁₁₃ *, 8, 2, 1; 1999 RX₁₁₃ *, 14, 2, 5; 1999 RY₁₁₃ *, 14, 2, 5; 1999 RZ₁₁₃ *, 20, 4, 4; 1999 RA₁₁₄ *, 9, 2, 2; 1999 RB₁₁₄ *, 14, 2, 2; 1999 RC₁₁₄ *, 17, 3, 2; 1999 RD₁₁₄ *, 14, 2, 2; 1999 RE₁₁₄ *, 7, 2, 2; 1999 RF₁₁₄ *, 7, 2, 5; 1999 RH₁₁₄ *, 13, 2, 1; 1999 RJ₁₁₄ *, 14, 2, 5; 1999 RK₁₁₄ *, 11, 3, 6; 1999 RL₁₁₄ *, 13, 2, 5; 1999 RM₁₁₄ *, 16, 2, 4; 1999 RN₁₁₄ *, 16, 2, 4; 1999 RO₁₁₄ *, 14, 2, 5; 1999 RP₁₁₄ *, 7, 2, 5; 1999 RQ₁₁₄ *, 13, 2, 5; 1999 RR₁₁₄ *, 15, 2, 5; 1999 RS₁₁₄ *, 15, 2, 5; 1999 RT₁₁₄ *, 14, 2, 5; 1999 RU₁₁₄ *, 15, 2, 5; 1999 RV₁₁₄ *, 8, 2, 5; 1999 RW₁₁₄ *, 20, 2, 5; 1999 RX₁₁₄ *, 15, 2, 5; 1999 RY₁₁₄ *, 25, 3, 6; 1999 RZ₁₁₄ *, 18, 3, 6; 1999 RA₁₁₅ *, 19, 2, 5; 1999 RB₁₁₅ *, 8, 2, 5; 1999 RC₁₁₅ *, 20, 3, 6; 1999 RD₁₁₅ *, 13, 3, 6; 1999 RE₁₁₅ *, 13, 2, 4; 1999 RF₁₁₅ *, 15, 2, 4; 1999 RG₁₁₅ *, 20, 4, 62; 1999 RH₁₁₅ *, 8, 2, 4; 1999 RJ₁₁₅ *, 15, 3, 6; 1999 RK₁₁₅ *, 15, 3, 6; 1999 RL₁₁₅ *, 10, 2, 4; 1999 RM₁₁₅ *, 15, 3, 6; 1999 RN₁₁₅ *, 15, 3, 6; 1999 RO₁₁₅ *, 10, 2, 4; 1999 RP₁₁₅ *, 14, 3, 6; 1999 RQ₁₁₅ *, 10, 2, 4; 1999 RS₁₁₅ *, 15, 3, 6; 1999 RT₁₁₅ *, 8, 2, 4; 1999 RU₁₁₅ *, 15, 2, 4; 1999 RV₁₁₅ *, 10, 2, 4; 1999 RW₁₁₅ *, 10, 2, 4; 1999 RX₁₁₅ *, 19, 4, 52; 1999 RY₁₁₅ *, 10, 2, 4; 1999 RZ₁₁₅ *, 10, 2, 4; 1999 RA₁₁₆ *, 10, 2, 4; 1999 RB₁₁₆ *, 10, 2, 4; 1999 RC₁₁₆ *, 10, 2, 4; 1999 RD₁₁₆ *, 7, 2, 4; 1999 RE₁₁₆ *, 8, 2, 4; 1999 RF₁₁₆ *, 8, 2, 4; 1999 RG₁₁₆ *, 8, 2, 4; 1999 RH₁₁₆ *, 19, 4, 63; 1999 RJ₁₁₆ *, 8, 2, 5; 1999 RK₁₁₆ *, 10, 2, 5; 1999 RL₁₁₆ *, 10, 2, 5; 1999 RM₁₁₆ *, 10, 2, 5; 1999 RN₁₁₆ *, 7, 2, 5; 1999 RO₁₁₆ *, 10, 2, 5; 1999 RP₁₁₆ *, 10, 2, 5; 1999 RS₁₁₆ *, 10, 2, 5; 1999 RT₁₁₆ *, 10, 2, 4; 1999 RU₁₁₆ *, 8, 2, 4; 1999 RV₁₁₆ *, 22, 5, 62; 1999 RW₁₁₆ *, 13, 3, 6; 1999 RX₁₁₆ *, 24, 5, 62; 1999 RY₁₁₆ *, 8, 2, 4; 1999 RZ₁₁₆ *, 9, 2, 4; 1999 RA₁₁₇ *, 10, 2, 4; 1999 RB₁₁₇ *, 25, 5, 115; 1999 RC₁₁₇ *, 10, 2, 4; 1999 RD₁₁₇ *, 10, 2, 4; 1999 RE₁₁₇ *, 9, 2, 4; 1999 RF₁₁₇ *, 9, 2, 4; 1999 RG₁₁₇ *, 10, 2, 4; 1999 RH₁₁₇ *, 9, 2, 5; 1999 RJ₁₁₇ *, 9, 2, 5; 1999 RK₁₁₇ *, 8, 2, 5; 1999 RL₁₁₇ *, 8, 2, 5; 1999 RM₁₁₇ *, 12, 3, 63; 1999 RN₁₁₇ *, 10, 2, 5; 1999 RO₁₁₇ *, 10, 2, 5; 1999 RP₁₁₇ *, 9, 2, 5; 1999 RQ₁₁₇ *, 10, 2, 5; 1999 RS₁₁₇ *, 8, 2, 5; 1999 RT₁₁₇ *, 8, 2, 1; 1999 RU₁₁₇ *, 10, 2, 5; 1999 RV₁₁₇ *, 9, 2, 1; 1999 RW₁₁₇ *, 8, 2, 5; 1999 RX₁₁₇ *, 10, 2, 5; 1999 RY₁₁₇ *, 8, 2, 5; 1999 RZ₁₁₇ *, 10, 2, 5; 1999 RA₁₁₈ *, 15, 3, 63; 1999 RB₁₁₈ *, 10, 2, 5; 1999 RC₁₁₈ *, 8, 2, 5; 1999 RD₁₁₈ *, 15, 3, 63; 1999 RE₁₁₈ *, 18, 4, 116; 1999 RF₁₁₈ *, 10, 2, 4; 1999 RG₁₁₈ *, 10, 2, 4; 1999 RH₁₁₈ *, 10, 2, 4; 1999 RJ₁₁₈ *, 10, 2, 4; 1999 RK₁₁₈ *, 14, 3, 6; 1999 RL₁₁₈ *, 12, 3, 6; 1999 RM₁₁₈ *, 10, 2, 4; 1999 RN₁₁₈ *, 9, 2, 4; 1999 RO₁₁₈ *, 10, 2, 4; 1999 RP₁₁₈ *, 9, 2, 4; 1999 RQ₁₁₈ *, 10, 2, 5; 1999 RS₁₁₈ *, 9, 2, 5; 1999 RT₁₁₈ *, 9, 2, 5; 1999 RU₁₁₈ *, 17, 4, 63; 1999 RV₁₁₈ *, 8, 2, 5; 1999 RW₁₁₈ *, 10, 2, 5; 1999 RX₁₁₈ *, 10, 2, 5; 1999 RY₁₁₈ *, 8, 2, 5; 1999 RZ₁₁₈ *, 11, 3, 6; 1999 RA₁₁₉ *, 9, 2, 5; 1999 RB₁₁₉ *, 15, 4, 8; 1999 RC₁₁₉ *, 10, 2, 5; 1999 RD₁₁₉ *, 9, 2, 1; 1999 RE₁₁₉ *, 8, 2, 5; 1999 RF₁₁₉ *, 8, 2, 5; 1999 RG₁₁₉ *, 22, 5, 63; 1999 RH₁₁₉ *, 10, 2, 5; 1999 RJ₁₁₉ *, 9, 2, 5; 1999 RK₁₁₉ *, 9, 2, 5; 1999 RL₁₁₉ *, 18, 4, 60; 1999 RM₁₁₉ *, 9, 2, 5; 1999 RN₁₁₉ *, 8, 2, 5; 1999 RO₁₁₉ *, 7, 2, 4; 1999 RP₁₁₉ *, 9, 2, 4; 1999 RS₁₁₉ *, 10, 2, 4; 1999 RT₁₁₉ *, 9, 2, 4; 1999 RU₁₁₉ *, 14, 3, 6; 1999 RV₁₁₉ *, 8, 2, 4; 1999 RW₁₁₉ *, 10, 2, 4; 1999 RX₁₁₉ *, 10, 2, 4; 1999 RY₁₁₉ *, 18, 4, 52; 1999 RZ₁₁₉ *, 8, 2, 4; 1999 RA₁₂₀ *, 9, 2, 4; 1999 RB₁₂₀ *, 6, 2, 4; 1999 RC₁₂₀ *, 8, 2, 4; 1999 RD₁₂₀ *, 9, 2, 4; 1999 RE₁₂₀ *, 8, 2, 4; 1999 RF₁₂₀ *, 10, 2, 4; 1999 RG₁₂₀ *, 18, 4, 59; 1999 RH₁₂₀ *, 15, 3, 6; 1999 RJ₁₂₀ *, 10, 2, 4; 1999 RK₁₂₀ *, 10, 2, 4; 1999 RL₁₂₀ *, 9, 3, 6; 1999 RM₁₂₀ *, 10, 2, 4; 1999 RN₁₂₀ *, 8, 2, 4; 1999 RO₁₂₀ *, 9, 2, 4; 1999 RP₁₂₀ *, 15, 3, 7; 1999 RQ₁₂₀ *, 8, 2, 5; 1999 RS₁₂₀ *, 15, 3, 7; 1999 RT₁₂₀ *, 9, 2, 5; 1999 RU₁₂₀ *, 9, 2, 5; 1999 RV₁₂₀ *, 17, 4, 117; 1999 RW₁₂₀ *, 9, 2, 5; 1999 RX₁₂₀ *, 10, 2, 5; 1999 RY₁₂₀ *, 10, 2, 5; 1999 RZ₁₂₀ *, 15, 3, 63; 1999 RA₁₂₁ *, 10, 2, 5; 1999 RB₁₂₁ *, 10, 2, 5; 1999 RC₁₂₁ *, 9, 2, 5; 1999 RD₁₂₁ *, 9, 2, 5; 1999 RE₁₂₁ *, 10, 2, 5; 1999 RF₁₂₁ *, 10, 2, 5; 1999 RG₁₂₁ *, 10, 2, 5; 1999 RH₁₂₁ *, 9, 2, 5; 1999 RJ₁₂₁ *, 10, 2, 5; 1999 RK₁₂₁ *, 11, 2, 5; 1999 RL₁₂₁ *, 12, 2, 4; 1999 RM₁₂₁ *, 18, 2, 4; 1999 RO₁₂₁ *, 18, 2, 4; 1999 RP₁₂₁ *, 8, 2, 4; 1999 RQ₁₂₁ *, 9, 2, 4; 1999 RS₁₂₁ *, 9, 2, 5; 1999 RT₁₂₁ *, 9, 2, 5; 1999 RU₁₂₁ *, 14, 3, 63; 1999 RV₁₂₁ *, 7, 2, 4; 1999 RW₁₂₁ *, 9, 2, 4; 1999 RX₁₂₁ *, 9, 2, 5; 1999 RY₁₂₁ *, 7, 2, 5; 1999 RZ₁₂₁ *, 8, 2, 1; 1999 RA₁₂₂ *, 9, 2, 4; 1999 RB₁₂₂ *, 9, 2, 4; 1999 RC₁₂₂ *, 8, 2, 5; 1999 RD₁₂₂ *, 8, 2, 5; 1999 RE₁₂₂ *, 16, 4, 63; 1999 RF₁₂₂ *, 9, 2, 5; 1999 RG₁₂₂ *, 7, 2, 5; 1999 RH₁₂₂ *, 9, 2, 5; 1999 RJ₁₂₂ *, 7, 2, 5; 1999 RK₁₂₂ *, 10, 2, 5; 1999 RL₁₂₂ *, 7, 2, 5; 1999 RM₁₂₂ *, 7, 2, 5; 1999 RN₁₂₂ *, 7, 2, 4; 1999 RO₁₂₂ *, 11, 3, 6; 1999 RP₁₂₂ *, 6, 2, 4; 1999 RR₁₂₂ *, 47, 2, 2; 1999 RS₁₂₂ *, 20, 2, 5; 1999 RT₁₂₂ *, 15, 2, 4; 1999 RU₁₂₂ *, 37, 4, 4; 1999 RV₁₂₂ *, 19, 3, 6; 1999 RW₁₂₂ *, 8, 2, 1; 1999 RX₁₂₂ *, 14, 2, 5; 1999 RA₁₂₃ *, 16, 2, 1; 1999 RC₁₂₃ *, 15, 2, 5; 1999 RD₁₂₃ *, 11, 2, 1; 1999 RE₁₂₃ *, 17, 4, 8; 1999 RG₁₂₃ *, 15, 4, 8; 1999 RH₁₂₃ *, 16, 4, 8; 1999 RJ₁₂₃ *, 15, 4, 8; 1999 RK₁₂₃ *, 16, 4, 8; 1999 RL₁₂₃ *, 15, 3, 2; 1999 RM₁₂₃ *, 8, 2, 1; 1999 RN₁₂₃ *, 22, 5, 55;

1999 RO₁₂₃ *, 8, 2, 1; 1999 RP₁₂₃ *, 22, 5, 55; 1999 RQ₁₂₃ *, 22, 5, 10; 1999 RR₁₂₃ *, 25, 5, 10; 1999 RS₁₂₃ *, 13, 2, 4; 1999 RT₁₂₃ *, 15, 2, 5; 1999 RU₁₂₃ *, 25, 4, 7; 1999 RW₁₂₃ *, 17, 3, 7; 1999 RX₁₂₃ *, 13, 2, 2; 1999 RY₁₂₃ *, 13, 3, 9; 1999 RZ₁₂₃ *, 21, 5, 38; 1999 RA₁₂₄ *, 17, 4, 8; 1999 RB₁₂₄ *, 22, 5, 55; 1999 RC₁₂₄ *, 38, 5, 7; 1999 RD₁₂₄ *, 20, 3, 7; 1999 RE₁₂₄ *, 16, 4, 8; 1999 RF₁₂₄ *, 9, 2, 1; 1999 RG₁₂₄ *, 18, 4, 8; 1999 RH₁₂₄ *, 12, 3, 9; 1999 RJ₁₂₄ *, 9, 2, 1; 1999 RK₁₂₄ *, 7, 2, 1; 1999 RL₁₂₄ *, 22, 4, 8; 1999 RM₁₂₄ *, 7, 2, 2; 1999 RN₁₂₄ *, 9, 2, 1; 1999 RO₁₂₄ *, 17, 4, 8; 1999 RP₁₂₄ *, 8, 2, 1; 1999 RQ₁₂₄ *, 13, 3, 9; 1999 RR₁₂₄ *, 12, 2, 5; 1999 RS₁₂₄ *, 10, 2, 5; 1999 RT₁₂₄ *, 10, 2, 5; 1999 RU₁₂₄ *, 10, 2, 5; 1999 RY₁₂₄ *, 15, 3, 7; 1999 RZ₁₂₄ *, 10, 2, 5; 1999 RA₁₂₅ *, 64, 2, 2; 1999 RB₁₂₅ *, 10, 2, 5; 1999 RC₁₂₅ *, 10, 2, 5; 1999 RD₁₂₅ *, 6, 2, 5; 1999 RE₁₂₅ *, 10, 2, 5; 1999 RF₁₂₅ *, 10, 2, 5; 1999 RG₁₂₅ *, 14, 2, 5; 1999 RH₁₂₅ *, 10, 2, 5; 1999 RJ₁₂₅ *, 10, 2, 5; 1999 RK₁₂₅ *, 9, 2, 5; 1999 RL₁₂₅ *, 10, 2, 5; 1999 RM₁₂₅ *, 8, 2, 5; 1999 RN₁₂₅ *, 10, 2, 5; 1999 RO₁₂₅ *, 8, 2, 5; 1999 RP₁₂₅ *, 10, 2, 5; 1999 RQ₁₂₅ *, 15, 3, 7; 1999 RS₁₂₅ *, 14, 3, 7; 1999 RT₁₂₅ *, 8, 2, 5; 1999 RU₁₂₅ *, 7, 2, 5; 1999 RV₁₂₅ *, 10, 2, 5; 1999 RW₁₂₅ *, 10, 2, 5; 1999 RX₁₂₅ *, 10, 2, 5; 1999 RY₁₂₅ *, 10, 2, 5; 1999 RZ₁₂₅ *, 10, 2, 5; 1999 RA₁₂₆ *, 10, 2, 5; 1999 RB₁₂₆ *, 8, 2, 5; 1999 RC₁₂₆ *, 10, 2, 5; 1999 RD₁₂₆ *, 8, 2, 5; 1999 RE₁₂₆ *, 10, 2, 5; 1999 RF₁₂₆ *, 10, 2, 5; 1999 RG₁₂₆ *, 13, 3, 7; 1999 RH₁₂₆ *, 10, 2, 5; 1999 RJ₁₂₆ *, 10, 2, 5; 1999 RK₁₂₆ *, 7, 2, 5; 1999 RL₁₂₆ *, 8, 2, 5; 1999 RM₁₂₆ *, 9, 2, 5; 1999 RN₁₂₆ *, 9, 2, 5; 1999 RO₁₂₆ *, 10, 2, 5; 1999 RP₁₂₆ *, 8, 2, 5; 1999 RQ₁₂₆ *, 10, 2, 5; 1999 RV₁₂₆ *, 10, 2, 5; 1999 RW₁₂₆ *, 15, 3, 6; 1999 RX₁₂₆ *, 15, 2, 5; 1999 RY₁₂₆ *, 9, 2, 5; 1999 RZ₁₂₆ *, 9, 2, 5; 1999 RA₁₂₇ *, 10, 2, 5; 1999 RB₁₂₇ *, 10, 2, 5; 1999 RC₁₂₇ *, 9, 2, 5; 1999 RD₁₂₇ *, 9, 2, 5; 1999 RE₁₂₇ *, 8, 2, 5; 1999 RF₁₂₇ *, 10, 2, 5; 1999 RG₁₂₇ *, 10, 2, 5; 1999 RH₁₂₇ *, 8, 2, 5; 1999 RJ₁₂₇ *, 10, 2, 5; 1999 RK₁₂₇ *, 9, 2, 5; 1999 RL₁₂₇ *, 10, 2, 5; 1999 RM₁₂₇ *, 10, 2, 5; 1999 RN₁₂₇ *, 10, 2, 5; 1999 RO₁₂₇ *, 10, 2, 5; 1999 RP₁₂₇ *, 10, 2, 5; 1999 RQ₁₂₇ *, 9, 2, 5; 1999 RV₁₂₇ *, 8, 2, 4; 1999 RW₁₂₇ *, 11, 4, 62; 1999 RX₁₂₇ *, 10, 2, 4; 1999 RY₁₂₇ *, 9, 2, 4; 1999 RZ₁₂₇ *, 7, 2, 4; 1999 RA₁₂₈ *, 17, 3, 6; 1999 RB₁₂₈ *, 9, 2, 4; 1999 RC₁₂₈ *, 7, 2, 4; 1999 RD₁₂₈ *, 8, 2, 4; 1999 RE₁₂₈ *, 10, 2, 4; 1999 RF₁₂₈ *, 10, 2, 4; 1999 RG₁₂₈ *, 10, 2, 4; 1999 RH₁₂₈ *, 10, 2, 4; 1999 RJ₁₂₈ *, 9, 2, 4; 1999 RK₁₂₈ *, 13, 3, 6; 1999 RL₁₂₈ *, 10, 2, 4; 1999 RM₁₂₈ *, 10, 2, 5; 1999 RN₁₂₈ *, 7, 2, 4; 1999 RO₁₂₈ *, 10, 2, 5; 1999 RP₁₂₈ *, 9, 2, 5; 1999 RQ₁₂₈ *, 9, 2, 5; 1999 RS₁₂₈ *, 14, 3, 7; 1999 RJ₁₂₉ *, 10, 2, 4; 1999 RK₁₂₉ *, 10, 2, 4; 1999 RL₁₂₉ *, 9, 2, 4; 1999 RM₁₂₉ *, 10, 2, 4; 1999 RN₁₂₉ *, 10, 2, 4; 1999 RO₁₂₉ *, 9, 2, 4; 1999 RP₁₂₉ *, 10, 2, 4; 1999 RQ₁₂₉ *, 10, 2, 4; 1999 RS₁₂₉ *, 10, 2, 4; 1999 RT₁₂₉ *, 9, 2, 4; 1999 RU₁₂₉ *, 10, 2, 4; 1999 RV₁₂₉ *, 8, 2, 4; 1999 RW₁₂₉ *, 14, 3, 6; 1999 RX₁₂₉ *, 10, 2, 4; 1999 RY₁₂₉ *, 15, 3, 6; 1999 RZ₁₂₉ *, 14, 3, 6; 1999 RA₁₃₀ *, 10, 2, 4; 1999 RB₁₃₀ *, 8, 2, 4; 1999 RC₁₃₀ *, 15, 3, 6; 1999 RD₁₃₀ *, 13, 3, 6; 1999 RE₁₃₀ *, 10, 2, 4; 1999 RF₁₃₀ *, 7, 2, 4; 1999 RG₁₃₀ *, 9, 2, 4; 1999 RH₁₃₀ *, 10, 2, 4; 1999 RJ₁₃₀ *, 10, 2, 4; 1999 RK₁₃₀ *, 8, 2, 4; 1999 RL₁₃₀ *, 10, 2, 4; 1999 RM₁₃₀ *, 10, 2, 4; 1999 RN₁₃₀ *, 10, 2, 4; 1999 RO₁₃₀ *, 15, 3, 6; 1999 RP₁₃₀ *, 10, 2, 4; 1999 RQ₁₃₀ *, 10, 2, 4; 1999 RS₁₃₀ *, 14, 3, 7; 1999 RT₁₃₀ *, 10, 2, 5; 1999 RU₁₃₀ *, 8, 2, 5; 1999 RV₁₃₀ *, 8, 2, 5; 1999 RW₁₃₀ *, 7, 2, 5; 1999 RX₁₃₀ *, 10, 2, 5; 1999 RY₁₃₀ *, 7, 2, 5; 1999 RZ₁₃₀ *, 9, 2, 5; 1999 RA₁₃₁ *, 10, 2, 5; 1999 RB₁₃₁ *, 9, 2, 5; 1999 RC₁₃₁ *, 10, 2, 5; 1999 RD₁₃₁ *, 11, 3, 6; 1999 RE₁₃₁ *, 10, 2, 5; 1999 RF₁₃₁ *, 14, 3, 6; 1999 RG₁₃₁ *, 10, 2, 2; 1999 RH₁₃₁ *, 14, 3, 6; 1999 RJ₁₃₁ *, 8, 2, 1; 1999 RK₁₃₁ *, 8, 2, 1; 1999 RL₁₃₁ *, 10, 2, 5; 1999 RM₁₃₁ *, 10, 2, 5; 1999 RN₁₃₁ *, 10, 2, 5; 1999 RO₁₃₁ *, 7, 2, 5; 1999 RP₁₃₁ *, 10, 2, 5; 1999 RQ₁₃₁ *, 7, 2, 5; 1999 RS₁₃₁ *, 10, 2, 5; 1999 RT₁₃₁ *, 10, 2, 5; 1999 RU₁₃₁ *, 8, 2, 5; 1999 RV₁₃₁ *, 10, 2, 5; 1999 RW₁₃₁ *, 9, 2, 5; 1999 RX₁₃₁ *, 10, 2, 5; 1999 RY₁₃₁ *, 10, 2, 5; 1999 RZ₁₃₁ *, 9, 2, 5; 1999 RA₁₃₂ *, 10, 2, 5; 1999 RB₁₃₂ *, 10, 2, 5; 1999 RC₁₃₂ *, 10, 2, 5; 1999 RD₁₃₂ *, 10, 2, 5; 1999 RE₁₃₂ *, 10, 2, 5; 1999 RF₁₃₂ *, 8, 2, 5; 1999 RG₁₃₂ *, 10, 2, 5; 1999 RH₁₃₂ *, 10, 2, 5; 1999 RJ₁₃₂ *, 13, 3, 6; 1999 RK₁₃₂ *, 7, 2, 5; 1999 RL₁₃₂ *, 15, 3, 6; 1999 RM₁₃₂ *, 8, 2, 5; 1999 RN₁₃₂ *, 10, 2, 5; 1999 RO₁₃₂ *, 10, 2, 5; 1999 RP₁₃₂ *, 10, 2, 5; 1999 RQ₁₃₂ *, 9, 2, 5; 1999 RS₁₃₂ *, 12, 3, 7; 1999 RT₁₃₂ *, 10, 2, 5; 1999 RU₁₃₂ *, 10, 2, 5; 1999 RV₁₃₂ *, 8, 2, 5; 1999 RW₁₃₂ *, 8, 2, 5; 1999 RX₁₃₂ *, 10, 2, 5; 1999 RY₁₃₂ *, 10, 2, 5; 1999 RZ₁₃₂ *, 7, 2, 5; 1999 RA₁₃₃ *, 10, 2, 5; 1999 RB₁₃₃ *, 14, 3, 6; 1999 RC₁₃₃ *, 8, 2, 5; 1999 RD₁₃₃ *, 8, 2, 5; 1999 RE₁₃₃ *, 12, 3, 6; 1999 RF₁₃₃ *, 8, 2, 1; 1999 RG₁₃₃ *, 10, 2, 5; 1999 RH₁₃₃ *, 8, 2, 1; 1999 RK₁

7; 1999 RS₁₃₄ *, 8, 2, 5; 1999 RT₁₃₄ *, 10, 2, 5; 1999 RU₁₃₄ *, 10, 2, 5; 1999 RV₁₃₄ *, 10, 2, 5; 1999 RW₁₃₄ *, 9, 2, 5; 1999 RX₁₃₄ *, 10, 2, 5; 1999 RY₁₃₄ *, 9, 2, 5; 1999 RZ₁₃₄ *, 10, 2, 4; 1999 RA₁₃₅ *, 10, 2, 4; 1999 RB₁₃₅ *, 10, 2, 4; 1999 RC₁₃₅ *, 10, 2, 4; 1999 RD₁₃₅ *, 10, 2, 4; 1999 RE₁₃₅ *, 10, 2, 4; 1999 RF₁₃₅ *, 10, 2, 4; 1999 RG₁₃₅ *, 9, 2, 4; 1999 RH₁₃₅ *, 15, 3, 6; 1999 RJ₁₃₅ *, 13, 3, 6; 1999 RK₁₃₅ *, 7, 2, 4; 1999 RL₁₃₅ *, 8, 2, 4; 1999 RM₁₃₅ *, 10, 2, 4; 1999 RN₁₃₅ *, 10, 2, 4; 1999 RO₁₃₅ *, 15, 3, 6; 1999 RP₁₃₅ *, 9, 2, 4; 1999 RQ₁₃₅ *, 15, 3, 6; 1999 RR₁₃₅ *, 9, 2, 4; 1999 RS₁₃₅ *, 8, 2, 4; 1999 RT₁₃₅ *, 10, 2, 4; 1999 RU₁₃₅ *, 9, 2, 4; 1999 RV₁₃₅ *, 9, 2, 4; 1999 RW₁₃₅ *, 10, 2, 4; 1999 RX₁₃₅ *, 10, 2, 4; 1999 RY₁₃₅ *, 10, 2, 4; 1999 RZ₁₃₅ *, 14, 3, 6; 1999 RA₁₃₆ *, 13, 3, 6; 1999 RB₁₃₆ *, 14, 3, 6; 1999 RC₁₃₆ *, 8, 2, 4; 1999 RD₁₃₆ *, 10, 2, 4; 1999 RE₁₃₆ *, 15, 3, 6; 1999 RG₁₃₆ *, 10, 2, 4; 1999 RH₁₃₆ *, 10, 2, 4; 1999 RJ₁₃₆ *, 10, 2, 4; 1999 RK₁₃₆ *, 10, 2, 4; 1999 RL₁₃₆ *, 10, 2, 4; 1999 RM₁₃₆ *, 14, 3, 6; 1999 RN₁₃₆ *, 10, 2, 4; 1999 RO₁₃₆ *, 10, 2, 4; 1999 RP₁₃₆ *, 10, 2, 4; 1999 RQ₁₃₆ *, 10, 2, 4; 1999 RR₁₃₆ *, 12, 3, 6; 1999 RS₁₃₆ *, 10, 2, 4; 1999 RT₁₃₆ *, 8, 2, 4; 1999 RU₁₃₆ *, 10, 2, 4; 1999 RV₁₃₆ *, 10, 2, 4; 1999 RW₁₃₆ *, 10, 2, 4; 1999 RX₁₃₆ *, 9, 2, 4; 1999 RY₁₃₆ *, 10, 2, 5; 1999 RZ₁₃₆ *, 6, 2, 5; 1999 RA₁₃₇ *, 10, 2, 4; 1999 RB₁₃₇ *, 10, 2, 4; 1999 RC₁₃₇ *, 9, 2, 4; 1999 RD₁₃₇ *, 8, 2, 5; 1999 RE₁₃₇ *, 9, 2, 5; 1999 RF₁₃₇ *, 9, 2, 5; 1999 RG₁₃₇ *, 10, 2, 5; 1999 RH₁₃₇ *, 15, 3, 6; 1999 RJ₁₃₇ *, 14, 3, 6; 1999 RK₁₃₇ *, 10, 2, 5; 1999 RL₁₃₇ *, 8, 2, 5; 1999 RM₁₃₇ *, 10, 2, 5; 1999 RN₁₃₇ *, 8, 2, 4; 1999 RO₁₃₇ *, 8, 2, 4; 1999 RP₁₃₇ *, 10, 2, 4; 1999 RS₁₃₇ *, 9, 2, 4; 1999 RT₁₃₇ *, 10, 2, 4; 1999 RU₁₃₇ *, 10, 2, 4; 1999 RV₁₃₇ *, 10, 2, 4; 1999 RW₁₃₇ *, 10, 2, 4; 1999 RX₁₃₇ *, 10, 2, 4; 1999 RY₁₃₇ *, 8, 2, 4; 1999 RZ₁₃₇ *, 10, 2, 4; 1999 RA₁₃₈ *, 10, 2, 4; 1999 RB₁₃₈ *, 15, 3, 6; 1999 RC₁₃₈ *, 10, 2, 4; 1999 RD₁₃₈ *, 8, 2, 4; 1999 RE₁₃₈ *, 8, 2, 4; 1999 RF₁₃₈ *, 10, 2, 4; 1999 RG₁₃₈ *, 10, 2, 4; 1999 RH₁₃₈ *, 11, 3, 6; 1999 RJ₁₃₈ *, 10, 2, 4; 1999 RK₁₃₈ *, 10, 2, 4; 1999 RL₁₃₈ *, 10, 2, 4; 1999 RM₁₃₈ *, 14, 3, 6; 1999 RN₁₃₈ *, 24, 6, 58; 1999 RO₁₃₈ *, 13, 3, 9; 1999 RQ₁₃₈ *, 14, 3, 7; 1999 RS₁₃₈ *, 10, 3, 9; 1999 RT₁₃₈ *, 8, 2, 5; 1999 RU₁₃₈ *, 9, 2, 5; 1999 RV₁₃₈ *, 14, 3, 7; 1999 RW₁₃₈ *, 9, 2, 5; 1999 RX₁₃₈ *, 8, 2, 5; 1999 RY₁₃₈ *, 11, 2, 5; 1999 RZ₁₃₈ *, 7, 2, 1; 1999 RA₁₃₉ *, 9, 2, 5; 1999 RB₁₃₉ *, 7, 2, 5; 1999 RC₁₃₉ *, 8, 2, 5; 1999 RD₁₃₉ *, 8, 2, 4; 1999 RE₁₃₉ *, 8, 2, 4; 1999 RF₁₃₉ *, 7, 2, 4; 1999 RG₁₃₉ *, 6, 2, 4; 1999 RH₁₃₉ *, 12, 3, 6; 1999 RJ₁₃₉ *, 8, 2, 4; 1999 RK₁₃₉ *, 8, 2, 4; 1999 RL₁₃₉ *, 9, 2, 4; 1999 RM₁₃₉ *, 7, 2, 4; 1999 RN₁₃₉ *, 9, 2, 4; 1999 RO₁₃₉ *, 9, 2, 4; 1999 RP₁₃₉ *, 8, 2, 4; 1999 RQ₁₃₉ *, 7, 2, 4; 1999 RS₁₃₉ *, 6, 2, 4; 1999 RT₁₃₉ *, 8, 2, 4; 1999 RU₁₃₉ *, 8, 2, 5; 1999 RV₁₃₉ *, 7, 2, 5; 1999 RW₁₃₉ *, 9, 2, 5; 1999 RX₁₃₉ *, 8, 2, 5; 1999 RY₁₃₉ *, 13, 3, 7; 1999 RZ₁₃₉ *, 9, 2, 5; 1999 RA₁₄₀ *, 8, 2, 5; 1999 RB₁₄₀ *, 8, 2, 5; 1999 RC₁₄₀ *, 9, 2, 5; 1999 RD₁₄₀ *, 7, 2, 5; 1999 RE₁₄₀ *, 6, 2, 5; 1999 RF₁₄₀ *, 9, 2, 5; 1999 RG₁₄₀ *, 9, 2, 5; 1999 RH₁₄₀ *, 8, 2, 5; 1999 RI₁₄₀ *, 8, 2, 5; 1999 RJ₁₄₀ *, 8, 2, 5; 1999 RK₁₄₀ *, 8, 2, 4; 1999 RL₁₄₀ *, 8, 2, 4; 1999 RM₁₄₀ *, 8, 2, 4; 1999 RN₁₄₀ *, 9, 2, 4; 1999 RO₁₄₀ *, 6, 2, 4; 1999 RP₁₄₀ *, 8, 2, 4; 1999 RQ₁₄₀ *, 9, 2, 4; 1999 RS₁₄₀ *, 8, 2, 4; 1999 RT₁₄₀ *, 9, 2, 4; 1999 RU₁₄₀ *, 8, 2, 4; 1999 RV₁₄₀ *, 9, 2, 4; 1999 RW₁₄₀ *, 9, 2, 5; 1999 RX₁₄₀ *, 6, 2, 4; 1999 RY₁₄₀ *, 7, 2, 4; 1999 RZ₁₄₀ *, 9, 2, 4; 1999 RA₁₄₁ *, 9, 2, 4; 1999 RB₁₄₁ *, 9, 2, 4; 1999 RC₁₄₁ *, 6, 2, 2; 1999 RE₁₄₁ *, 17, 2, 2; 1999 RF₁₄₁ *, 12, 2, 5; 1999 RG₁₄₁ *, 7, 2, 5; 1999 RH₁₄₁ *, 7, 2, 5; 1999 RJ₁₄₁ *, 11, 3, 7; 1999 RK₁₄₁ *, 8, 2, 5; 1999 RL₁₄₁ *, 7, 2, 5; 1999 RM₁₄₁ *, 8, 2, 5; 1999 RN₁₄₁ *, 8, 2, 5; 1999 RO₁₄₁ *, 12, 3, 6; 1999 RP₁₄₁ *, 7, 2, 4; 1999 RQ₁₄₁ *, 8, 2, 4; 1999 RS₁₄₁ *, 8, 2, 4; 1999 RT₁₄₁ *, 8, 2, 5; 1999 RU₁₄₁ *, 8, 2, 5; 1999 RV₁₄₁ *, 8, 2, 4; 1999 RW₁₄₁ *, 6, 2, 5; 1999 RX₁₄₁ *, 6, 2, 5; 1999 RY₁₄₁ *, 25, 2, 5; 1999 RZ₁₄₁ *, 10, 2, 5; 1999 RA₁₄₂ *, 14, 2, 5; 1999 RB₁₄₂ *, 13, 2, 5; 1999 RC₁₄₂ *, 15, 2, 5; 1999 RD₁₄₂ *, 8, 2, 5; 1999 RE₁₄₂ *, 10, 2, 5; 1999 RF₁₄₂ *, 10, 2, 5; 1999 RG₁₄₂ *, 9, 2, 5; 1999 RH₁₄₂ *, 8, 2, 5; 1999 RJ₁₄₂ *, 10, 2, 5; 1999 RK₁₄₂ *, 14, 3, 6; 1999 RL₁₄₂ *, 10, 2, 5; 1999 RM₁₄₂ *, 7, 2, 5; 1999 RN₁₄₂ *, 9, 2, 5; 1999 RO₁₄₂ *, 10, 2, 5; 1999 RP₁₄₂ *, 14, 3, 6; 1999 RQ₁₄₂ *, 10, 2, 5; 1999 RS₁₄₂ *, 10, 2, 5; 1999 RT₁₄₂ *, 10, 2, 5; 1999 RU₁₄₂ *, 9, 2, 5; 1999 RV₁₄₂ *, 10, 2, 5; 1999 RW₁₄₂ *, 14, 2, 5; 1999 RX₁₄₂ *, 9, 2, 5; 1999 RY₁₄₂ *, 14, 2, 5; 1999 RZ₁₄₂ *, 20, 2, 5; 1999 RA₁₄₃ *, 15, 3, 7; 1999 RB₁₄₃ *, 10, 2, 5; 1999 RC₁₄₃ *, 9, 2, 5; 1999 RD₁₄₃ *, 7, 2, 5; 1999 RE₁₄₃ *, 10, 2, 5; 1999 RF₁₄₃ *, 8, 2, 5; 1999 RG₁₄₃ *, 20, 3, 7; 1999 RH₁₄₃ *, 15, 2, 5; 1999 RI₁₄₃ *, 10, 2, 5; 1999 RJ₁₄₃ *, 10, 2, 5; 1999 RK₁₄₃ *, 10, 2, 5; 1999 RL₁₄₃ *, 10, 2, 5; 1999 RM₁₄₃ *, 10, 2, 5; 1999 RN₁₄₃ *, 10, 2, 5; 1999 RO₁₄₃ *, 9, 2, 5; 1999 RP₁₄₃ *, 10, 2, 5; 1999 RQ₁₄₃ *, 11, 3, 7; 1999 RS₁₄₃ *, 8, 2, 5; 1999 RT₁₄₃ *, 8, 2, 5; 1999 RU₁₄₃ *, 9, 2, 5; 1999 RV₁₄₃ *, 10, 2, 5; 1999 RW₁₄₃ *, 10, 2, 5; 1999 RX₁₄₃ *, 7, 2, 5; 1999 RA₁₄₄ *, 10, 2, 5; 1999 RB₁₄₄ *, 7, 2, 5; 1999 RC₁₄₄ *, 8, 2, 5; 1999 RD₁₄₄ *, 7, 2, 1; 1999 RE₁₄₄ *, 10, 2, 5; 1999 RF₁₄₄ *, 9, 2, 5; 1999 RG₁₄₄ *, 9, 2, 5; 1999 RH₁₄₄ *, 10, 2, 5; 1999 RJ₁₄₄ *, 13, 3, 6; 1999 RK₁₄₄ *, 9, 2, 5; 1999 RL₁₄₄ *, 14, 3, 6; 1999 RM₁₄₄ *, 9, 2, 2; 1999 RO₁₄₄ *, 26, 5; 1999 RP₁₄₄ *, 8, 2, 1; 1999 RQ₁₄₄ *, 9, 2, 5; 1999 RS₁₄₄ *, 7, 2, 1; 1999 RT₁₄₄ *, 17, 4, 8; 1999 RU₁₄₄ *, 10, 2, 5; 1999 RV₁₄₄ *, 9, 2, 5; 1999 RW₁₄₄ *, 10, 2, 5; 1999 RX₁₄₄ *, 8, 2, 5; 1999 RY₁₄₄ *, 9, 2, 5; 1999 RZ₁₄₄ *, 10, 2, 5; 1999 RA₁₄₅ *, 9, 2, 1; 1999 RB₁₄₅ *, 13, 3, 5; 1999 RC₁₄₅ *, 9, 2, 5; 1999 RD₁₄₅ *, 14, 3, 5; 1999 RE₁₄₅ *, 9, 2, 5; 1999 RF₁₄₅ *, 9, 2, 5; 1999 RG₁₄₅ *, 10, 2, 5; 1999 RH₁₄₅ *, 10, 2, 5; 1999 RI₁₄₅ *, 6, 2, 5; 1999 RJ₁₄₅ *, 9, 2, 5; 1999 RK₁₄₅ *, 10, 2, 5; 1999 RL₁₄₅ *, 10, 2, 5; 1999 RM₁₄₅ *, 10, 2, 5; 1999 RN₁₄₅ *, 10, 2, 5; 1999 RO₁₄₅ *, 10, 2, 5; 1999 RP₁₄₅ *, 15, 3, 7; 1999 RQ₁₄₅ *, 10, 2, 5; 1999 RS₁₄₅ *, 8, 2, 5; 1999 RT₁₄₅ *, 9, 2, 5; 1999 RU₁₄₅ *, 10, 2, 5; 1999 RV₁₄₅ *, 10, 2, 5; 1999 RW₁₄₅ *, 7, 2, 5; 1999 RX₁₄₅ *, 9, 2, 5; 1999 RY₁₄₅ *, 10, 2, 5; 1999 RZ₁₄₅ *, 9, 2, 5; 1999 RA₁₄₆ *, 15, 3, 7; 1999 RB₁₄₆ *, 8, 2, 5; 1999 RC₁₄₆ *, 15, 3, 7; 1999 RD₁₄₆ *, 15, 3, 7; 1999 RE₁₄₆ *, 7, 2, 5; 1999 RF₁₄₆ *, 10, 2, 5; 1999 RG₁₄₆ *, 15, 3, 7; 1999 RH₁₄₆ *, 14, 3, 7; 1999 RJ₁₄₆ *, 10, 2, 5; 1999 RK₁₄₆ *, 10, 2, 5; 1999 RL₁₄₆ *, 8, 2, 5; 1999 RM₁₄₆ *, 10, 2, 5; 1999 RN₁₄₆ *, 10, 2, 5; 1999 RO₁₄₆ *, 8, 2, 5; 1999 RP₁₄₆ *, 10, 2, 5; 1999 RQ₁₄₆ *, 10, 2, 5; 1999 RS₁₄₆ *, 8, 2, 5; 1999 RT₁₄₆ *, 9, 2, 5; 1999 RU₁₄₆ *, 10, 2, 5; 1999 RV₁₄₆ *, 10, 2, 5; 1999 RW₁₄₆ *, 10, 2, 5; 1999 RX₁₄₆ *, 9, 2, 5; 1999 RY₁₄₆ *, 8, 2, 5; 1999 RZ₁₄₆ *, 10, 2, 5; 1999 RA₁₄₇ *, 8, 2, 5; 1999 RB₁₄₇ *, 9, 2, 5; 1999 RC₁₄₇ *, 10, 2, 5; 1999 RD₁₄₇ *, 10, 2, 5; 1999 RE₁₄₇ *, 16, 3, 5; 1999 RF₁₄₇ *, 10, 2, 5; 1999 RG₁₄₇ *, 13, 3, 5; 1999 RH₁₄₇ *, 8, 2, 5; 1999 RJ₁₄₇ *, 8, 2, 1; 1999 RK₁₄₇ *, 8, 2, 5; 1999 RN₁₄₇ *, 8, 2, 1; 1999 RO₁₄₇ *, 13, 3, 6; 1999 RP₁₄₇ *, 10, 2, 5; 1999 RQ₁₄₇ *, 9, 2, 5; 1999 RR₁₄₇ *, 13, 3, 6; 1999 RS₁₄₇ *, 8, 2, 5; 1999 RT₁₄₇ *, 10, 2, 5; 1999 RU₁₄₇ *, 10, 2, 5; 1999 RV₁₄₇ *, 9, 2, 5; 1999 RW₁₄₇ *, 14, 3, 7; 1999 RX₁₄₇ *, 10, 2, 5; 1999 RY₁₄₇ *, 10, 2, 5; 1999 RZ₁₄₇ *, 8, 2, 5; 1999 RA₁₄₈ *, 10, 2, 5; 1999 RB₁₄₈ *, 10, 2, 5; 1999 RC₁₄₈ *, 10, 2, 5; 1999 RD₁₄₈ *, 10, 2, 5; 1999 RE₁₄₈ *, 8, 2, 5; 1999 RF₁₄₈ *, 10, 2, 5; 1999 RG₁₄₈ *, 15, 3, 7; 1999 RH₁₄₈ *, 10, 2, 5; 1999 RJ₁₄₈ *, 15, 3, 7; 1999 RK₁₄₈ *, 10, 2, 5; 1999 RL₁₄₈ *, 10, 2, 5; 1999 RM₁₄₈ *, 10, 2, 5; 1999 RN₁₄₈ *, 10, 2, 5; 1999 RO₁₄₈ *, 10, 2, 5; 1999 RP₁₄₈ *, 10, 2, 5; 1999 RQ₁₄₈ *, 10, 2, 5; 1999 RS₁₄₈ *, 10, 2, 5; 1999 RT₁₄₈ *, 2, 5; 1999 RU₁₄₈ *, 9, 2, 5; 1999 RV₁₄₈ *, 10, 2, 5; 1999 RW₁₄₈ *, 10, 2, 5; 1999 RX₁₄₈ *, 9, 2, 4; 1999 RY₁₄₈ *, 13, 3, 6; 1999 RZ₁₄₈ *, 10, 2, 4; 1999 RA₁₄₉ *, 15, 3, 6; 1999 RB₁₄₉ *, 9, 2, 4; 1999 RC₁₄₉ *, 9, 2, 4; 1999 RD₁₄₉ *, 10, 2, 4; 1999 RE₁₄₉ *, 10, 2, 4; 1999 RF₁₄₉ *, 10, 2, 4; 1999 RG₁₄₉ *, 9, 2, 4; 1999 RH₁₄₉ *, 9, 2, 4; 1999 RJ₁₄₉ *, 9, 2, 4; 1999 RK₁₄₉ *, 7, 2, 4; 1999 RL₁₄₉ *, 8, 2, 4; 1999 RM₁₄₉ *, 10, 2, 4; 1999 RN₁₄₉ *, 19, 4, 59; 1999 RO₁₄₉ *, 10, 2, 4; 1999 RP₁₄₉ *, 9, 2, 4; 1999 RQ₁₄₉ *, 10, 2, 5; 1999 RR₁₄₉ *, 7, 2, 5; 1999 RS₁₄₉ *, 10, 2, 5; 1999 RT₁₄₉ *, 8, 2, 5; 1999 RU₁₄₉ *, 10, 2, 5; 1999 RV₁₄₉ *, 10, 2, 5; 1999 RW₁₄₉ *, 10, 2, 5; 1999 RX₁₄₉ *, 10, 2, 5; 1999 RY₁₄₉ *, 10, 2, 5; 1999 RZ₁₄₉ *, 13, 3, 7; 1999 RA₁₅₀ *, 10, 2, 5; 1999 RB₁₅₀ *, 10, 2, 5; 1999 RC₁₅₀ *, 9, 2, 5; 1999 RD₁₅₀ *, 7, 2, 5; 1999 RE₁₅₀ *, 15, 3, 7; 1999 RF₁₅₀ *, 9, 2, 4; 1999 RG₁₅₀ *, 9, 2, 5; 1999 RH₁₅₀ *, 10, 2, 4; 1999 RJ₁₅₀ *, 9, 2, 4; 1999 RK₁₅₀ *, 10, 2, 4; 1999 RL₁₅₀ *, 10, 2, 4; 1999 RM₁₅₀ *, 8, 2, 4; 1999 RN₁₅₀ *, 9, 2, 4; 1999 RO₁₅₀ *, 9, 2, 4; 1999 RP₁₅₀ *, 10, 2, 4; 1999 RQ₁₅₀ *, 10, 2, 4; 1999 RS₁₅₀ *, 10, 2, 4; 1999 RT₁₅₀ *, 10, 2, 4; 1999 RU₁₅₀ *, 10, 2, 4; 1999 RV₁₅₀ *, 10, 2, 4; 1999 RW₁₅₀ *, 13, 3, 6; 1999 RX₁₅₀ *, 7, 2, 4; 1999 RY₁₅₀ *, 8, 2, 4; 1999 RZ₁₅₀ *, 10, 2, 4; 1999 RA₁₅₁ *, 7, 2, 4; 1999 RB₁₅₁ *, 15, 3, 6; 1999 RC₁₅₁ *, 7, 2, 4; 1999 RD₁₅₁ *, 15, 3, 6; 1999 RE₁₅₁ *, 7, 2, 4; 1999 RF₁₅₁ *, 15, 3, 6; 1999 RG₁₅₁ *, 9, 2, 4; 1999 RH₁₅₁ *, 15, 3, 6; 1999 RI₁₅₁ *, 15, 3, 6; 1999 RJ₁₅₁ *, 9, 2, 4; 1999 RK₁₅₁ *, 8, 2, 4; 1999 RL₁₅₁ *, 10, 2, 4; 1999 RM₁₅₁ *, 10, 2, 4; 1999 RN₁₅₁ *, 10, 2, 4; 1999 RO₁₅₁ *, 10, 2, 4; 1999 RP₁₅₁ *, 12, 3, 6; 1999 RQ₁₅₁ *, 7, 2, 4; 1999 RS₁₅₁ *, 10, 2, 4; 1999 RT₁₅₁ *, 9, 2, 4; 1999 RU₁₅₁ *, 9, 2, 4; 1999 RV₁₅₁ *, 10, 2, 4; 1999 RW₁₅₁ *, 15, 3, 6; 1999 RX₁₅₁ *, 10, 2, 4; 1999 RY₁₅₁ *, 10, 2, 4; 1999 RZ₁₅₁ *, 9, 2, 4; 1999 RA₁₅₂ *, 10, 2, 4; 1999 RB₁₅₂ *, 10, 2, 4; 1999 RC₁₅₂ *, 8, 2, 4; 1999 RD₁₅₂ *, 14, 3, 6; 1999 RE₁₅₂ *, 14, 3, 7; 1999 RF₁₅₂ *, 10, 2, 4; 1999 RG₁₅₂ *, 10, 2, 5; 1999 RH₁₅₂ *, 8, 2, 5; 1999 RJ₁₅₂ *, 10, 2, 5; 1999 RK₁₅₂ *, 10, 2, 5; 1999 RL₁₅₂ *, 10, 2, 5; 1999 RM₁₅₂ *, 14, 3, 7; 1999 RN₁₅₂ *, 14, 3, 7; 1999 RO₁₅₂ *, 9, 2, 5; 1999 RP₁₅₂ *, 9, 2, 5; 1999 RQ₁₅₂ *, 10, 2, 5; 1999 RS₁₅₂ *, 10, 2, 5; 1999 RT₁₅₂ *, 9, 2, 5; 1999 RU₁₅₂ *, 12, 3, 7; 1999 RV₁₅₂ *, 14, 3, 7; 1999 RW₁₅₂ *, 9, 2, 5; 1999 RX₁₅₂ *, 10, 2, 5; 1999 RY₁₅₂ *, 15, 3, 7; 1999 RZ₁₅₂ *, 9, 2, 5; 1999 RA₁₅₃ *, 9, 2, 5; 1999 RB₁₅₃ *, 14, 3, 7; 1999 RC₁₅₃ *, 14, 3, 7; 1999 RD₁₅₃ *, 6, 2, 5; 1999 RE₁₅₃ *, 10, 2, 5; 1999 RF₁₅₃ *, 9, 2, 5; 1999 RG₁₅₃ *, 8, 2, 5; 1999 RH₁₅₃ *, 15, 3, 7; 1999 RJ₁₅₃ *, 8, 2, 1; 1999 RL₁₅₃ *, 9, 2, 5; 1999 RM₁₅₃ *, 8, 2, 1; 1999 RN₁₅₃ *, 13, 3, 6; 1999 RO₁₅₃ *, 8, 2, 5; 1999 RP₁₅₃ *, 14, 3, 6; 1999 RQ₁₅₃ *, 10, 2, 5; 1999 RS₁₅₃ *, 10, 2, 5; 1999 RT₁₅₃ *, 9, 2, 5; 1999 RU₁₅₃ *, 10, 2, 5; 1999 RV₁₅₃ *, 10, 2, 5; 1999 RW₁₅₃ *, 8, 2, 5; 1999 RX₁₅₃ *, 10, 2, 5; 1999 RY₁₅₃ *, 8, 2, 5; 1999 RZ₁₅₃ *, 14, 3, 7; 1999 RA₁₅₄ *, 10, 2, 5; 1999 RB₁₅₄ *, 9, 2, 5; 1999 RC₁₅₄ *, 15, 3, 7; 1999 RD₁₅₄ *, 10, 2, 5; 1999 RE₁₅₄ *, 10, 2, 5; 1999 RF₁₅₄ *, 10, 2, 5; 1999 RG₁₅₄ *, 15, 3, 7; 1999 RH₁₅₄ *, 14, 3, 7; 1999 RJ₁₅₄ *, 10, 2, 5; 1999 RK₁₅₄ *, 10, 2, 5; 1999 RL₁₅₄ *, 9, 2, 5; 1999 RM₁₅₄ *, 14, 3, 7; 1999 RN₁₅₄ *, 14, 3, 7; 1999 RO₁₅₄ *, 10, 2, 5; 1999 RP₁₅₄ *, 8, 2, 5; 1999 RQ₁₅₄ *, 15, 3, 7;

7; 1999 RB₁₅₇ *, 8, 2, 5; 1999 RC₁₅₇ *, 9, 2, 5; 1999 RD₁₅₇ *, 10, 2, 4; 1999 RE₁₅₇ *, 10, 2, 4; 1999 RF₁₅₇ *, 8, 2, 4; 1999 RG₁₅₇ *, 9, 2, 4; 1999 RH₁₅₇ *, 10, 2, 4; 1999 RJ₁₅₇ *, 9, 2, 4; 1999 RK₁₅₇ *, 10, 2, 4; 1999 RL₁₅₇ *, 14, 3, 6; 1999 RM₁₅₇ *, 9, 2, 4; 1999 RN₁₅₇ *, 10, 2, 4; 1999 RO₁₅₇ *, 15, 3, 6; 1999 RP₁₅₇ *, 9, 2, 4; 1999 RQ₁₅₇ *, 10, 2, 4; 1999 RR₁₅₇ *, 10, 2, 4; 1999 RS₁₅₇ *, 7, 2, 4; 1999 RT₁₅₇ *, 8, 2, 4; 1999 RU₁₅₇ *, 14, 3, 6; 1999 RV₁₅₇ *, 10, 2, 4; 1999 RW₁₅₇ *, 6, 2, 4; 1999 RX₁₅₇ *, 10, 2, 4; 1999 RY₁₅₇ *, 10, 2, 4; 1999 RZ₁₅₇ *, 15, 3, 6; 1999 RA₁₅₈ *, 10, 2, 4; 1999 RB₁₅₈ *, 15, 3, 6; 1999 RC₁₅₈ *, 13, 3, 6; 1999 RD₁₅₈ *, 10, 2, 4; 1999 RE₁₅₈ *, 15, 3, 6; 1999 RF₁₅₈ *, 15, 3, 6; 1999 RG₁₅₈ *, 6, 2, 4; 1999 RH₁₅₈ *, 10, 2, 4; 1999 RJ₁₅₈ *, 14, 3, 6; 1999 RK₁₅₈ *, 13, 3, 6; 1999 RL₁₅₈ *, 15, 3, 6; 1999 RM₁₅₈ *, 15, 2, 4; 1999 RN₁₅₈ *, 15, 3, 6; 1999 RO₁₅₈ *, 9, 2, 4; 1999 RP₁₅₈ *, 13, 3, 6; 1999 RQ₁₅₈ *, 8, 2, 5; 1999 RS₁₅₈ *, 15, 3, 7; 1999 RT₁₅₈ *, 15, 3, 7; 1999 RU₁₅₈ *, 8, 2, 5; 1999 RV₁₅₈ *, 7, 2, 5; 1999 RW₁₅₈ *, 9, 2, 4; 1999 RZ₁₅₈ *, 10, 2, 4; 1999 RA₁₅₉ *, 15, 3, 6; 1999 RB₁₅₉ *, 13, 3, 6; 1999 RC₁₅₉ *, 14, 3, 6; 1999 RD₁₅₉ *, 8, 2, 4; 1999 RE₁₅₉ *, 15, 3, 6; 1999 RF₁₅₉ *, 10, 2, 4; 1999 RG₁₅₉ *, 8, 2, 4; 1999 RH₁₅₉ *, 8, 2, 4; 1999 RJ₁₅₉ *, 9, 2, 4; 1999 RK₁₅₉ *, 10, 2, 4; 1999 RL₁₅₉ *, 10, 2, 4; 1999 RM₁₅₉ *, 15, 3, 6; 1999 RN₁₅₉ *, 10, 2, 4; 1999 RO₁₅₉ *, 8, 2, 4; 1999 RP₁₅₉ *, 20, 3, 6; 1999 RQ₁₅₉ *, 14, 3, 6; 1999 RS₁₅₉ *, 13, 3, 6; 1999 RT₁₅₉ *, 8, 2, 4; 1999 RJ₁₅₉ *, 14, 3, 6; 1999 RK₁₅₉ *, 15, 3, 6; 1999 RL₁₅₉ *, 15, 3, 6; 1999 RM₁₅₉ *, 6, 2, 4; 1999 RN₁₅₉ *, 14, 3, 6; 1999 RO₁₅₉ *, 15, 3, 6; 1999 RP₁₅₉ *, 14, 3, 6; 1999 RQ₁₅₉ *, 15, 3, 6; 1999 RS₁₅₉ *, 6, 2, 4; 1999 RT₁₅₉ *, 14, 3, 6; 1999 RU₁₅₉ *, 15, 3, 6; 1999 RV₁₅₉ *, 15, 3, 6; 1999 RW₁₅₉ *, 15, 3, 6; 1999 RZ₁₅₉ *, 15, 3, 6; 1999 RA₁₆₀ *, 10, 2, 4; 1999 RB₁₆₀ *, 15, 3, 6; 1999 RC₁₆₀ *, 20, 2, 4; 1999 RD₁₆₀ *, 10, 2, 4; 1999 RE₁₆₀ *, 7, 2, 4; 1999 RF₁₆₀ *, 10, 2, 4; 1999 RG₁₆₀ *, 10, 2, 4; 1999 RH₁₆₀ *, 10, 2, 4; 1999 RJ₁₆₀ *, 9, 2, 4; 1999 RK₁₆₀ *, 10, 2, 4; 1999 RL₁₆₀ *, 9, 2, 4; 1999 RM₁₆₀ *, 8, 2, 4; 1999 RN₁₆₀ *, 9, 2, 4; 1999 RO₁₆₀ *, 7, 2, 4; 1999 RP₁₆₀ *, 12, 3, 7; 1999 RQ₁₆₀ *, 9, 2, 4; 1999 RS₁₆₀ *, 14, 3, 6; 1999 RT₁₆₀ *, 9, 2, 4; 1999 RU₁₆₀ *, 9, 2, 4; 1999 RV₁₆₀ *, 7, 2, 5; 1999 RW₁₆₀ *, 9, 2, 5; 1999 RX₁₆₀ *, 7, 2, 5; 1999 RY₁₆₀ *, 8, 2, 5; 1999 RZ₁₆₀ *, 11, 3, 6; 1999 RA₁₆₁ *, 11, 3, 7; 1999 RB₁₆₁ *, 8, 2, 5; 1999 RC₁₆₁ *, 9, 2, 5; 1999 RD₁₆₁ *, 8, 2, 5; 1999 RE₁₆₁ *, 8, 2, 5; 1999 RF₁₆₁ *, 9, 2, 5; 1999 RG₁₆₁ *, 9, 2, 5; 1999 RH₁₆₁ *, 8, 2, 5; 1999 RJ₁₆₁ *, 9, 2, 5; 1999 RK₁₆₁ *, 7, 2, 5; 1999 RL₁₆₁ *, 7, 2, 5; 1999 RM₁₆₁ *, 8, 2, 5; 1999 RN₁₆₁ *, 13, 3, 7; 1999 RO₁₆₁ *, 9, 2, 4; 1999 RP₁₆₁ *, 7, 2, 4; 1999 RQ₁₆₁ *, 6, 2, 4; 1999 RS₁₆₁ *, 7, 2, 5; 1999 RT₁₆₁ *, 8, 2, 4; 1999 RU₁₆₁ *, 9, 2, 4; 1999 RV₁₆₁ *, 7, 2, 4; 1999 RW₁₆₁ *, 9, 2, 5; 1999 RX₁₆₁ *, 6, 2, 5; 1999 RY₁₆₁ *, 6, 2, 5; 1999 RZ₁₆₁ *, 7, 2, 5; 1999 RA₁₆₂ *, 7, 2, 5; 1999 RB₁₆₂ *, 9, 2, 5; 1999 RC₁₆₂ *, 9, 2, 5; 1999 RD₁₆₂ *, 8, 2, 5; 1999 RE₁₆₂ *, 8, 2, 4; 1999 RF₁₆₂ *, 8, 2, 4; 1999 RG₁₆₂ *, 8, 2, 4; 1999 RH₁₆₂ *, 6, 2, 4; 1999 RJ₁₆₂ *, 7, 2, 5; 1999 RK₁₆₂ *, 7, 2, 5; 1999 RL₁₆₂ *, 9, 2, 5; 1999 RM₁₆₂ *, 7, 2, 5; 1999 RN₁₆₂ *, 18, 3, 7; 1999 RO₁₆₂ *, 15, 2, 5; 1999 RP₁₆₂ *, 9, 2, 2; 1999 RQ₁₆₂ *, 13, 3, 7; 1999 RS₁₆₂ *, 16, 4, 9; 1999 RT₁₆₂ *, 16, 4, 9; 1999 RU₁₆₂ *, 12, 3, 2; 1999 RV₁₆₂ *, 16, 3, 2; 1999 RW₁₆₂ *, 7, 2, 5; 1999 RX₁₆₂ *, 10, 2, 5; 1999 RY₁₆₂ *, 10, 2, 5; 1999 RZ₁₆₂ *, 10, 2, 5; 1999 RA₁₆₃ *, 10, 2, 5; 1999 RB₁₆₃ *, 10, 2, 5; 1999 RC₁₆₃ *, 15, 3, 7; 1999 RD₁₆₃ *, 15, 3, 7; 1999 RE₁₆₃ *, 8, 2, 5; 1999 RF₁₆₃ *, 8, 2, 5; 1999 RG₁₆₃ *, 15, 3, 7; 1999 RH₁₆₃ *, 10, 2, 5; 1999 RJ₁₆₃ *, 10, 2, 5; 1999 RK₁₆₃ *, 10, 2, 5; 1999 RL₁₆₃ *, 15, 3, 7; 1999 RM₁₆₃ *, 9, 2, 5; 1999 RN₁₆₃ *, 7, 2, 5; 1999 RO₁₆₃ *, 15, 3, 7; 1999 RP₁₆₃ *, 10, 2, 5; 1999 RQ₁₆₃ *, 7, 2, 5; 1999 RS₁₆₃ *, 25, 2, 5; 1999 RT₁₆₃ *, 9, 2, 5; 1999 RU₁₆₃ *, 15, 3, 7; 1999 RV₁₆₃ *, 24, 2, 5; 1999 RW₁₆₃ *, 9, 2, 5; 1999 RX₁₆₃ *, 15, 3, 7; 1999 RY₁₆₃ *, 10, 2, 5; 1999 RZ₁₆₃ *, 10, 2, 5; 1999 RA₁₆₄ *, 10, 2, 5; 1999 RB₁₆₄ *, 10, 2, 5; 1999 RC₁₆₄ *, 10, 2, 5; 1999 RD₁₆₄ *, 10, 2, 5; 1999 RE₁₆₄ *, 15, 3, 7; 1999 RF₁₆₄ *, 14, 3, 7; 1999 RG₁₆₄ *, 15, 3, 7; 1999 RH₁₆₄ *, 15, 3, 7; 1999 RJ₁₆₄ *, 9, 2, 5; 1999 RK₁₆₄ *, 9, 2, 5; 1999 RL₁₆₄ *, 9, 2, 5; 1999 RM₁₆₄ *, 6, 2, 5; 1999 RN₁₆₄ *, 10, 2, 5; 1999 RO₁₆₄ *, 15, 3, 7; 1999 RP₁₆₄ *, 14, 3, 7; 1999 RQ₁₆₄ *, 10, 2, 5; 1999 RS₁₆₄ *, 7, 2, 5; 1999 RT₁₆₄ *, 10, 2, 5; 1999 RU₁₆₄ *, 15, 3, 7; 1999 RV₁₆₄ *, 15, 3, 7; 1999 RW₁₆₄ *, 15, 3, 7; 1999 RX₁₆₄ *, 13, 2, 5; 1999 RY₁₆₄ *, 10, 2, 5; 1999 RZ₁₆₄ *, 12, 3, 7; 1999 RA₁₆₅ *, 9, 2, 5; 1999 RB₁₆₅ *, 9, 2, 5; 1999 RC₁₆₅ *, 14, 3, 7; 1999 RD₁₆₅ *, 10, 2, 5; 1999 RE₁₆₅ *, 9, 2, 5; 1999 RF₁₆₅ *, 10, 2, 5; 1999 RG₁₆₅ *, 15, 3, 7; 1999 RH₁₆₅ *, 10, 2, 5; 1999 RJ₁₆₅ *, 9, 2, 5; 1999 RK₁₆₅ *, 8, 2, 5; 1999 RL₁₆₅ *, 15, 3, 7; 1999 RM₁₆₅ *, 15, 3, 7; 1999 RN₁₆₅ *, 8, 2, 5; 1999 RO₁₆₅ *, 13, 3, 7; 1999 RP₁₆₅ *, 12, 3, 7; 1999 RQ₁₆₅ *, 20, 5, 5; 1999 RS₁₆₅ *, 15, 3, 7; 1999 RT₁₆₅ *, 12, 3, 7; 1999 RU₁₆₅ *, 10, 2, 5; 1999 RV₁₆₅ *, 15, 3, 7; 1999 RW₁₆₅ *, 7, 2, 5; 1999 RX₁₆₅ *, 10, 2, 5; 1999 RY₁₆₅ *, 15, 3, 7; 1999 RZ₁₆₅ *, 9, 2, 5; 1999 RA₁₆₆ *, 7, 2, 4; 1999 RB₁₆₆ *, 20, 2, 2; 1999 RC₁₆₆ *, 10, 2, 5; 1999 RD₁₆₆ *, 8, 2, 4; 1999 RE₁₆₆ *, 13, 3, 3; 1999 RF₁₆₆ *, 14, 3, 6; 1999 RG₁₆₆ *, 10, 2, 4; 1999 RH₁₆₆ *, 8, 2, 4; 1999 RJ₁₆₆ *, 9, 2, 4; 1999 RK₁₆₆ *, 15, 3, 4; 1999 RL₁₆₆ *, 9, 2, 2; 1999 RM₁₆₆ *, 22, 5, 6; 1999 RN₁₆₆ *, 9, 2, 4; 1999 RO₁₆₆ *, 9, 2, 4; 1999 RS₁₆₆ *, 9, 2, 4; 1999 RT₁₆₆ *, 8, 2, 4; 1999 RU₁₆₆ *, 7, 2, 4; 1999 RV₁₆₆ *, 8, 2, 4; 1999 RW₁₆₆ *, 9, 2, 4; 1999 RX₁₆₆ *, 9, 2, 4; 1999 RY₁₆₆ *, 10, 2, 4; 1999 RZ₁₆₆ *, 6, 2, 4; 1999 RA₁₆₇ *, 8, 2, 4; 1999 RB₁₆₇ *, 8, 2, 4; 1999 RC₁₆₇ *, 8, 2, 4; 1999 RD₁₆₇ *, 9, 2, 4; 1999 RE₁₆₇ *, 9, 2, 4; 1999 RF₁₆₇ *, 9, 2, 4; 1999 RG₁₆₇ *, 14, 3, 4; 1999 RH₁₆₇ *, 14, 3, 4; 1999 RJ₁₆₇ *, 9, 2, 4; 1999 RK₁₆₇ *, 7, 2, 1; 1999 RL₁₆₇ *, 8, 2, 4; 1999 RM₁₆₇ *, 12, 3, 6; 1999 RN₁₆₇ *, 9, 2, 4; 1999 RO₁₆₇ *, 9, 2, 4; 1999 RP₁₆₇ *, 12, 3, 5; 1999 RQ₁₆₇ *, 14, 3, 6; 1999 RS₁₆₇ *, 6, 2, 4; 1999 RT₁₆₇ *, 9, 2, 5; 1999 RU₁₆₇ *, 15, 3, 7; 1999 RV₁₆₇ *, 8, 2, 5; 1999 RW₁₆₇ *, 9, 2, 5; 1999 RX₁₆₇ *, 9, 2, 5; 1999 RY₁₆₇ *, 8, 2, 5; 1999 RZ₁₆₇ *, 10, 2, 5; 1999 RA₁₆₈ *, 15, 3, 7; 1999 RB₁₆₈ *, 9, 2, 5; 1999 RC₁₆₈ *, 15, 3, 7; 1999 RD₁₆₈ *, 15, 3, 7; 1999 RE₁₆₈ *, 15, 3, 7; 1999 RF₁₆₈ *, 15, 3, 7; 1999 RG₁₆₈ *, 7, 2, 5; 1999 RH₁₆₈ *, 13, 3, 7; 1999 RJ₁₆₈ *, 10, 2, 5; 1999 RK₁₆₈ *, 15, 3, 7; 1999 RL₁₆₈ *, 10, 2, 5; 1999 RM₁₆₈ *, 14, 3, 7;

1999 RN₁₆₈ *, 10, 2, 5; 1999 RO₁₆₈ *, 15, 3, 7; 1999 RP₁₆₈ *, 15, 3, 7; 1999 RQ₁₆₈ *, 14, 3, 7; 1999 RR₁₆₈ *, 15, 3, 7; 1999 RS₁₆₈ *, 15, 3, 7; 1999 RT₁₆₈ *, 13, 3, 7; 1999 RU₁₆₈ *, 10, 2, 5; 1999 RV₁₆₈ *, 9, 2, 5; 1999 RW₁₆₈ *, 14, 3, 7; 1999 RX₁₆₈ *, 13, 3, 7; 1999 RY₁₆₈ *, 10, 2, 5; 1999 RZ₁₆₈ *, 15, 3, 7; 1999 RA₁₆₉ *, 14, 3, 7; 1999 RB₁₆₉ *, 15, 3, 7; 1999 RC₁₆₉ *, 15, 3, 7; 1999 RD₁₆₉ *, 15, 3, 7; 1999 RE₁₆₉ *, 9, 2, 5; 1999 RF₁₆₉ *, 9, 2, 5; 1999 RG₁₆₉ *, 15, 3, 7; 1999 RH₁₆₉ *, 15, 3, 7; 1999 RJ₁₆₉ *, 9, 2, 5; 1999 RK₁₆₉ *, 8, 2, 5; 1999 RL₁₆₉ *, 10, 2, 5; 1999 RM₁₆₉ *, 9, 2, 5; 1999 RN₁₆₉ *, 15, 2, 5; 1999 RO₁₆₉ *, 9, 2, 5; 1999 RP₁₆₉ *, 15, 3, 7; 1999 RQ₁₆₉ *, 10, 2, 5; 1999 RS₁₆₉ *, 14, 3, 7; 1999 RT₁₆₉ *, 6, 2, 5; 1999 RV₁₆₉ *, 15, 3, 7; 1999 RW₁₆₉ *, 13, 3, 7; 1999 RX₁₆₉ *, 15, 3, 7; 1999 RY₁₆₉ *, 10, 2, 5; 1999 RZ₁₆₉ *, 13, 3, 7; 1999 RA₁₇₀ *, 10, 2, 5; 1999 RB₁₇₀ *, 10, 2, 5; 1999 RD₁₇₀ *, 15, 3, 7; 1999 RE₁₇₀ *, 15, 3, 7; 1999 RF₁₇₀ *, 8, 2, 5; 1999 RG₁₇₀ *, 15, 3, 7; 1999 RH₁₇₀ *, 15, 3, 7; 1999 RJ₁₇₀ *, 15, 3, 7; 1999 RK₁₇₀ *, 17, 3, 5; 1999 RL₁₇₀ *, 28, 5, 7; 1999 RM₁₇₀ *, 6, 2, 2; 1999 RN₁₇₀ *, 17, 3, 5; 1999 RO₁₇₀ *, 9, 2, 5; 1999 RP₁₇₀ *, 15, 3, 7; 1999 RQ₁₇₀ *, 15, 3, 7; 1999 RS₁₇₀ *, 8, 2, 5; 1999 RT₁₇₀ *, 14, 3, 7; 1999 RU₁₇₀ *, 15, 3, 7; 1999 RV₁₇₀ *, 15, 3, 7; 1999 RW₁₇₀ *, 10, 2, 5; 1999 RX₁₇₀ *, 9, 2, 5; 1999 RY₁₇₀ *, 10, 2, 5; 1999 RZ₁₇₀ *, 13, 3, 7; 1999 RA₁₇₁ *, 8, 2, 5; 1999 RB₁₇₁ *, 7, 2, 5; 1999 RC₁₇₁ *, 10, 2, 5; 1999 RD₁₇₁ *, 9, 2, 5; 1999 RE₁₇₁ *, 15, 3, 7; 1999 RF₁₇₁ *, 10, 2, 5; 1999 RG₁₇₁ *, 9, 2, 5; 1999 RH₁₇₁ *, 9, 2, 5; 1999 RJ₁₇₁ *, 15, 3, 7; 1999 RK₁₇₁ *, 15, 3, 7; 1999 RL₁₇₁ *, 13, 3, 7; 1999 RM₁₇₁ *, 8, 2, 5; 1999 RN₁₇₁ *, 15, 3, 7; 1999 RO₁₇₁ *, 14, 2, 5; 1999 RP₁₇₁ *, 10, 2, 5; 1999 RQ₁₇₁ *, 15, 3, 7; 1999 RS₁₇₁ *, 9, 2, 5; 1999 RT₁₇₁ *, 8, 2, 5; 1999 RU₁₇₁ *, 10, 2, 5; 1999 RV₁₇₁ *, 18, 4, 60; 1999 RW₁₇₁ *, 10, 2, 5; 1999 RX₁₇₁ *, 15, 3, 7; 1999 RY₁₇₁ *, 8, 2, 4; 1999 RZ₁₇₁ *, 8, 2, 4; 1999 RA₁₇₂ *, 9, 2, 4; 1999 RB₁₇₂ *, 7, 2, 4; 1999 RC₁₇₂ *, 9, 2, 4; 1999 RD₁₇₂ *, 7, 2, 4; 1999 RE₁₇₂ *, 7, 2, 4; 1999 RF₁₇₂ *, 14, 3, 6; 1999 RG₁₇₂ *, 14, 3, 6; 1999 RH₁₇₂ *, 9, 2, 4; 1999 RJ₁₇₂ *, 9, 2, 4; 1999 RK₁₇₂ *, 15, 3, 6; 1999 RL₁₇₂ *, 9, 2, 4; 1999 RM₁₇₂ *, 15, 3, 6; 1999 RN₁₇₂ *, 12, 2, 4; 1999 RO₁₇₂ *, 9, 2, 4; 1999 RP₁₇₂ *, 9, 2, 4; 1999 RQ₁₇₂ *, 8, 2, 4; 1999 RS₁₇₂ *, 9, 2, 4; 1999 RT₁₇₂ *, 8, 2, 4; 1999 RU₁₇₂ *, 9, 2, 4; 1999 RV₁₇₂ *, 8, 2, 4; 1999 RW₁₇₂ *, 9, 2, 4; 1999 RX₁₇₂ *, 9, 2, 4; 1999 RY₁₇₂ *, 8, 2, 4; 1999 RZ₁₇₂ *, 7, 2, 4; 1999 RA₁₇₃ *, 8, 2, 4; 1999 RB₁₇₃ *, 8, 2, 4; 1999 RC₁₇₃ *, 8, 2, 4; 1999 RD₁₇₃ *, 7, 2, 4; 1999 RE₁₇₃ *, 7, 2, 4; 1999 RF₁₇₃ *, 7, 2, 4; 1999 RG₁₇₃ *, 8, 2, 4; 1999 RH₁₇₃ *, 8, 2, 4; 1999 RJ₁₇₃ *, 9, 2, 4; 1999 RK₁₇₃ *, 9, 2, 4; 1999 RL₁₇₃ *, 12, 3, 4; 1999 RM₁₇₃ *, 8, 2, 4; 1999 RN₁₇₃ *, 12, 3, 4; 1999 RO₁₇₃ *, 14, 3, 59; 1999 RP₁₇₃ *, 8, 2, 4; 1999 RQ₁₇₃ *, 9, 2, 4; 1999 RS₁₇₃ *, 9, 2, 4; 1999 RT₁₇₃ *, 7, 2, 4; 1999 RU₁₇₃ *, 10, 2, 4; 1999 RV₁₇₃ *, 10, 2, 4; 1999 RW₁₇₃ *, 10, 2, 4; 1999 RX₁₇₃ *, 10, 2, 4; 1999 RY₁₇₃ *, 12, 3, 6; 1999 RZ₁₇₃ *, 15, 3, 6; 1999 RA₁₇₄ *, 10, 2, 5; 1999 RB₁₇₄ *, 9, 2, 5; 1999 RC₁₇₄ *, 15, 3, 7; 1999 RD₁₇₄ *, 8, 2, 4; 1999 RE₁₇₄ *, 6, 2, 5; 1999 RF₁₇₄ *, 9, 2, 4; 1999 RG₁₇₄ *, 10, 2, 5; 1999 RH₁₇₄ *, 15, 3, 7; 1999 RJ₁₇₄ *, 15, 3, 7; 1999 RK₁₇₄ *, 15, 3, 7; 1999 RL₁₇₄ *, 9, 2, 5; 1999 RM₁₇₄ *, 8, 2, 5; 1999 RN₁₇₄ *, 7, 2, 5; 1999 RO₁₇₄ *, 6, 2, 5; 1999 RP₁₇₄ *, 15, 3, 7; 1999 RQ₁₇₄ *, 15, 3, 7; 1999 RS₁₇₄ *, 9, 2, 5; 1999 RT₁₇₄ *, 11, 3, 5; 1999 RU₁₇₄ *, 15, 3, 7; 1999 RV₁₇₄ *, 15, 3, 7; 1999 RW₁₇₄ *, 15, 3, 7; 1999 RX₁₇₄ *, 9, 2, 5; 1999 RY₁₇₄ *, 18, 4, 7; 1999 RZ₁₇₄ *, 6, 2, 1; 1999 RA₁₇₅ *, 18, 4, 7; 1999 RB₁₇₅ *, 7, 2, 1; 1999 RC₁₇₅ *, 8, 2, 1; 1999 RD₁₇₅ *, 16, 4, 7; 1999 RE₁₇₅ *, 8, 2, 5; 1999 RF₁₇₅ *, 14, 3, 7; 1999 RG₁₇₅ *, 14, 3, 7; 1999 RH₁₇₅ *, 13, 3, 7; 1999 RJ₁₇₅ *, 7, 2, 5; 1999 RK₁₇₅ *, 25, 4, 5; 1999 RL₁₇₅ *, 15, 3, 7; 1999 RM₁₇₅ *, 9, 2, 5; 1999 RN₁₇₅ *, 26, 4, 5; 1999 RO₁₇₅ *, 14, 3, 7; 1999 RP₁₇₅ *, 10, 2, 5; 1999 RQ₁₇₅ *, 10, 2, 5; 1999 RS₁₇₅ *, 10, 2, 5; 1999 RT₁₇₅ *, 8, 2, 5; 1999 RU₁₇₅ *, 8, 2, 5; 1999 RV₁₇₅ *, 15, 3, 7; 1999 RW₁₇₅ *, 10, 2, 5; 1999 RX₁₇₅ *, 12, 3, 3; 1999 RY₁₇₅ *, 13, 3, 7; 1999 RZ₁₇₅ *, 15, 3, 7; 1999 RA₁₇₆ *, 15, 3, 7; 1999 RB₁₇₆ *, 15, 3, 7; 1999 RC₁₇₆ *, 10, 2, 5; 1999 RD₁₇₆ *, 10, 2, 5; 1999 RE₁₇₆ *, 10, 2, 5; 1999 RF₁₇₆ *, 9, 2, 5; 1999 RG₁₇₆ *, 10, 2, 5; 1999 RH₁₇₆ *, 10, 2, 5; 1999 RJ₁₇₆ *, 10, 2, 5; 1999 RK₁₇₆ *, 14, 3, 7; 1999 RL₁₇₆ *, 10, 2, 5; 1999 RM₁₇₆ *, 8, 2, 5; 1999 RN₁₇₆ *, 15, 3, 7; 1999 RO₁₇₆ *, 14, 3, 7; 1999 RP₁₇₆ *, 10, 2, 5; 1999 RQ₁₇₆ *, 8, 2, 5; 1999 RS₁₇₆ *, 15, 3, 7; 1999 RT₁

2, 4; 1999 RD₁₈₀ *, 9, 2, 4; 1999 RE₁₈₀ *, 9, 2, 4; 1999 RF₁₈₀ *, 9, 2, 4; 1999 RG₁₈₀ *, 8, 2, 4; 1999 RH₁₈₀ *, 7, 2, 4; 1999 RJ₁₈₀ *, 8, 2, 4; 1999 RK₁₈₀ *, 9, 2, 4; 1999 RL₁₈₀ *, 9, 2, 4; 1999 RM₁₈₀ *, 9, 2, 4; 1999 RN₁₈₀ *, 7, 2, 4; 1999 RO₁₈₀ *, 8, 2, 4; 1999 RP₁₈₀ *, 7, 2, 4; 1999 RQ₁₈₀ *, 7, 2, 4; 1999 RS₁₈₀ *, 9, 2, 4; 1999 RT₁₈₀ *, 9, 2, 4; 1999 RU₁₈₀ *, 9, 2, 4; 1999 RV₁₈₀ *, 9, 2, 4; 1999 RW₁₈₀ *, 10, 2, 5; 1999 RX₁₈₀ *, 9, 2, 5; 1999 RY₁₈₀ *, 7, 2, 1; 1999 RZ₁₈₀ *, 10, 2, 5; 1999 RA₁₈₁ *, 9, 2, 5; 1999 RB₁₈₁ *, 8, 2, 1; 1999 RC₁₈₁ *, 18, 4, 7; 1999 RD₁₈₁ *, 10, 2, 5; 1999 RE₁₈₁ *, 10, 2, 5; 1999 RF₁₈₁ *, 9, 2, 5; 1999 RG₁₈₁ *, 9, 2, 5; 1999 RH₁₈₁ *, 10, 2, 5; 1999 RI₁₈₁ *, 10, 2, 5; 1999 RJ₁₈₁ *, 15, 2, 5; 1999 RK₁₈₁ *, 10, 2, 5; 1999 RL₁₈₁ *, 10, 2, 5; 1999 RM₁₈₁ *, 15, 2, 5; 1999 RN₁₈₁ *, 10, 2, 5; 1999 RO₁₈₁ *, 8, 2, 1; 1999 RP₁₈₁ *, 8, 2, 1; 1999 RQ₁₈₁ *, 10, 2, 5; 1999 RT₁₈₁ *, 10, 2, 5; 1999 RU₁₈₁ *, 19, 4, 60; 1999 RV₁₈₁ *, 8, 2, 5; 1999 RW₁₈₁ *, 9, 2, 5; 1999 RX₁₈₁ *, 10, 2, 5; 1999 RY₁₈₁ *, 17, 4, 7; 1999 RZ₁₈₁ *, 9, 2, 5; 1999 RA₁₈₂ *, 10, 2, 5; 1999 RB₁₈₂ *, 6, 2, 5; 1999 RC₁₈₂ *, 10, 2, 5; 1999 RD₁₈₂ *, 10, 2, 5; 1999 RE₁₈₂ *, 9, 2, 5; 1999 RF₁₈₂ *, 10, 2, 5; 1999 RG₁₈₂ *, 10, 2, 5; 1999 RH₁₈₂ *, 10, 2, 5; 1999 RI₁₈₂ *, 9, 2, 5; 1999 RJ₁₈₂ *, 10, 2, 5; 1999 RK₁₈₂ *, 10, 2, 5; 1999 RL₁₈₂ *, 10, 2, 5; 1999 RM₁₈₂ *, 10, 2, 5; 1999 RN₁₈₂ *, 8, 2, 5; 1999 RO₁₈₂ *, 9, 2, 5; 1999 RP₁₈₂ *, 8, 2, 5; 1999 RQ₁₈₂ *, 10, 2, 5; 1999 RR₁₈₂ *, 10, 2, 5; 1999 RS₁₈₂ *, 10, 2, 5; 1999 RT₁₈₂ *, 8, 2, 5; 1999 RU₁₈₂ *, 8, 2, 5; 1999 RV₁₈₂ *, 8, 2, 5; 1999 RW₁₈₂ *, 14, 3, 7; 1999 RX₁₈₂ *, 14, 3, 7; 1999 RY₁₈₂ *, 10, 2, 5; 1999 RZ₁₈₂ *, 9, 2, 5; 1999 RA₁₈₃ *, 10, 2, 5; 1999 RB₁₈₃ *, 10, 2, 5; 1999 RC₁₈₃ *, 9, 2, 5; 1999 RD₁₈₃ *, 10, 2, 5; 1999 RE₁₈₃ *, 10, 2, 5; 1999 RF₁₈₃ *, 9, 2, 5; 1999 RG₁₈₃ *, 8, 2, 5; 1999 RH₁₈₃ *, 10, 2, 5; 1999 RI₁₈₃ *, 19, 3, 7; 1999 RJ₁₈₃ *, 10, 2, 5; 1999 RK₁₈₃ *, 8, 2, 5; 1999 RL₁₈₃ *, 10, 2, 5; 1999 RM₁₈₃ *, 10, 2, 5; 1999 RN₁₈₃ *, 9, 2, 5; 1999 RO₁₈₃ *, 10, 2, 5; 1999 RP₁₈₃ *, 10, 2, 5; 1999 RQ₁₈₃ *, 10, 2, 5; 1999 RS₁₈₃ *, 10, 2, 5; 1999 RT₁₈₃ *, 10, 2, 5; 1999 RU₁₈₃ *, 10, 2, 5; 1999 RV₁₈₃ *, 15, 3, 7; 1999 RW₁₈₃ *, 14, 3, 7; 1999 RX₁₈₃ *, 8, 2, 5; 1999 RY₁₈₃ *, 9, 2, 5; 1999 RZ₁₈₃ *, 10, 2, 5; 1999 RA₁₈₄ *, 9, 2, 5; 1999 RB₁₈₄ *, 9, 2, 5; 1999 RC₁₈₄ *, 14, 3, 7; 1999 RD₁₈₄ *, 8, 2, 5; 1999 RE₁₈₄ *, 10, 2, 5; 1999 RF₁₈₄ *, 10, 2, 5; 1999 RG₁₈₄ *, 9, 2, 4; 1999 RH₁₈₄ *, 9, 2, 4; 1999 RI₁₈₄ *, 10, 2, 5; 1999 RJ₁₈₄ *, 10, 2, 5; 1999 RK₁₈₄ *, 9, 2, 4; 1999 RL₁₈₄ *, 9, 2, 4; 1999 RM₁₈₄ *, 9, 2, 4; 1999 RN₁₈₄ *, 8, 2, 4; 1999 RO₁₈₄ *, 9, 2, 4; 1999 RP₁₈₄ *, 9, 2, 4; 1999 RQ₁₈₄ *, 9, 2, 4; 1999 RS₁₈₄ *, 9, 2, 4; 1999 RT₁₈₄ *, 9, 2, 4; 1999 RV₁₈₄ *, 9, 2, 4; 1999 RW₁₈₄ *, 8, 2, 4; 1999 RX₁₈₄ *, 9, 2, 4; 1999 RY₁₈₄ *, 9, 2, 4; 1999 RZ₁₈₄ *, 9, 2, 4; 1999 RA₁₈₅ *, 9, 2, 4; 1999 RB₁₈₅ *, 9, 2, 4; 1999 RC₁₈₅ *, 9, 2, 4; 1999 RD₁₈₅ *, 9, 2, 4; 1999 RE₁₈₅ *, 9, 2, 4; 1999 RF₁₈₅ *, 9, 2, 4; 1999 RG₁₈₅ *, 9, 2, 4; 1999 RH₁₈₅ *, 9, 2, 4; 1999 RI₁₈₅ *, 9, 2, 4; 1999 RJ₁₈₅ *, 9, 2, 4; 1999 RK₁₈₅ *, 9, 2, 4; 1999 RL₁₈₅ *, 7, 2, 4; 1999 RM₁₈₅ *, 7, 2, 5; 1999 RN₁₈₅ *, 16, 2, 2; 1999 RO₁₈₅ *, 8, 2, 5; 1999 RP₁₈₅ *, 8, 2, 5; 1999 RQ₁₈₅ *, 12, 3, 7; 1999 RS₁₈₅ *, 12, 3, 7; 1999 RT₁₈₅ *, 7, 2, 5; 1999 RU₁₈₅ *, 7, 2, 5; 1999 RV₁₈₅ *, 8, 2, 5; 1999 RW₁₈₅ *, 7, 2, 5; 1999 RX₁₈₅ *, 10, 2, 5; 1999 RY₁₈₅ *, 17, 2, 5; 1999 RZ₁₈₅ *, 7, 2, 2; 1999 RA₁₈₆ *, 17, 2, 2; 1999 RB₁₈₆ *, 32, 5; 1999 RC₁₈₆ *, 12, 2, 5; 1999 RD₁₈₆ *, 8, 2, 5; 1999 RE₁₈₆ *, 7, 2, 2; 1999 RF₁₈₆ *, 7, 2, 4; 1999 RG₁₈₆ *, 6, 2, 4; 1999 RH₁₈₆ *, 6, 2, 4; 1999 RI₁₈₆ *, 6, 2, 4; 1999 RJ₁₈₆ *, 6, 2, 4; 1999 RK₁₈₆ *, 7, 2, 1; 1999 RL₁₈₆ *, 10, 3, 6; 1999 RM₁₈₆ *, 9, 2, 5; 1999 RN₁₈₆ *, 9, 2, 5; 1999 RO₁₈₆ *, 6, 2, 5; 1999 RP₁₈₆ *, 8, 2, 5; 1999 RQ₁₈₆ *, 10, 3, 7; 1999 RS₁₈₆ *, 8, 2, 5; 1999 RT₁₈₆ *, 7, 2, 5; 1999 RU₁₈₆ *, 14, 3, 7; 1999 RV₁₈₆ *, 7, 2, 5; 1999 RW₁₈₆ *, 6, 2, 5; 1999 RX₁₈₆ *, 8, 2, 5; 1999 RY₁₈₆ *, 8, 2, 5; 1999 RZ₁₈₆ *, 8, 2, 5; 1999 RA₁₈₇ *, 12, 2, 2; 1999 RB₁₈₇ *, 13, 3, 7; 1999 RC₁₈₇ *, 9, 2, 5; 1999 RD₁₈₇ *, 11, 3, 7; 1999 RE₁₈₇ *, 8, 2, 5; 1999 RF₁₈₇ *, 7, 2, 5; 1999 RG₁₈₇ *, 9, 2, 5; 1999 RH₁₈₇ *, 7, 2, 4; 1999 RI₁₈₇ *, 8, 2, 4; 1999 RJ₁₈₇ *, 8, 2, 4; 1999 RK₁₈₇ *, 7, 2, 1; 1999 RL₁₈₇ *, 8, 2, 4; 1999 RM₁₈₇ *, 6, 2, 4; 1999 RN₁₈₇ *, 9, 2, 4; 1999 RO₁₈₇ *, 9, 2, 4; 1999 RP₁₈₇ *, 13, 3, 7; 1999 RQ₁₈₇ *, 7, 2, 5; 1999 RR₁₈₇ *, 8, 2, 5; 1999 RS₁₈₇ *, 8, 2, 5; 1999 RT₁₈₇ *, 7, 2, 5; 1999 RU₁₈₇ *, 7, 2, 5; 1999 RV₁₈₇ *, 7, 2, 5; 1999 RW₁₈₇ *, 7, 2, 5; 1999 RX₁₈₇ *, 15, 4, 7; 1999 RY₁₈₇ *, 9, 2, 5; 1999 RZ₁₈₇ *, 9, 2, 5; 1999 RA₁₈₈ *, 8, 2, 5; 1999 RB₁₈₈ *, 8, 2, 5; 1999 RC₁₈₈ *, 9, 2, 5; 1999 RD₁₈₈ *, 2, 5; 1999 RE₁₈₈ *, 8, 2, 5; 1999 RF₁₈₈ *, 9, 2, 5; 1999 RG₁₈₈ *, 8, 2, 5; 1999 RH₁₈₈ *, 6, 2, 4; 1999 RI₁₈₈ *, 8, 2, 4; 1999 RJ₁₈₈ *, 6, 2, 4; 1999 RK₁₈₈ *, 6, 2, 4; 1999 RL₁₈₈ *, 8, 2, 4; 1999 RM₁₈₈ *, 8, 2, 4; 1999 RN₁₈₈ *, 8, 2, 4; 1999 RO₁₈₈ *, 7, 2, 4; 1999 RP₁₈₈ *, 9, 2, 5; 1999 RQ₁₈₈ *, 9, 2, 5; 1999 RS₁₈₈ *, 7, 2, 5; 1999 RT₁₈₈ *, 8, 2, 5; 1999 RU₁₈₈ *, 8, 2, 5; 1999 RV₁₈₈ *, 9, 2, 5; 1999 RW₁₈₈ *, 7, 2, 5; 1999 RX₁₈₈ *, 9, 2, 5; 1999 RY₁₈₈ *, 9, 2, 5; 1999 RZ₁₈₈ *, 8, 2, 5; 1999 RA₁₈₉ *, 8, 2, 5; 1999 RB₁₈₉ *, 7, 2, 5; 1999 RC₁₈₉ *, 14, 3, 7; 1999 RD₁₈₉ *, 9, 2, 5; 1999 RE₁₈₉ *, 8, 2, 5; 1999 RF₁₈₉ *, 8, 2, 5; 1999 RG₁₈₉ *, 7, 2, 5; 1999 RH₁₈₉ *, 8, 2, 5; 1999 RI₁₈₉ *, 8, 2, 5; 1999 RJ₁₈₉ *, 8, 2, 5; 1999 RK₁₈₉ *, 8, 2, 5; 1999 RL₁₈₉ *, 7, 2, 5; 1999 RM₁₈₉ *, 9, 2, 5; 1999 RN₁₈₉ *, 6, 2, 5; 1999 RO₁₈₉ *, 8, 2, 5; 1999 RP₁₈₉ *, 9, 2, 5; 1999 RQ₁₈₉ *, 8, 2, 5; 1999 RS₁₈₉ *, 9, 2, 5; 1999 RT₁₈₉ *, 8, 2, 4; 1999 RU₁₈₉ *, 6, 2, 4; 1999 RV₁₈₉ *, 6, 2, 4; 1999 RW₁₈₉ *, 7, 2, 4; 1999 RX₁₈₉ *, 7, 2, 2; 1999 RY₁₈₉ *, 7, 2, 5; 1999 RZ₁₈₉ *, 7, 2, 4; 1999 RA₁₉₀ *, 7, 2, 5; 1999 RB₁₉₀ *, 8, 2, 5; 1999 RC₁₉₀ *, 7, 2, 5; 1999 RD₁₉₀ *, 12, 2, 1; 1999 RE₁₉₀ *, 17, 4, 8; 1999 RF₁₉₀ *, 9, 2, 4; 1999 RG₁₉₀ *, 7, 2, 1; 1999 RH₁₉₀ *, 8, 2, 1; 1999 RI₁₉₀ *, 18, 2, 1; 1999 RJ₁₉₀ *, 33, 4, 5; 1999 RK₁₉₀ *, 12, 3, 6; 1999 RL₁₉₀ *, 8, 2, 1; 1999 RM₁₉₀ *, 22, 4, 7; 1999 RN₁₉₀ *, 41, 5; 1999 RO₁₉₀ *, 14, 4, 8; 1999 RS₁₉₀ *, 11, 2, 4; 1999 RV₁₉₀ *, 7, 2, 4; 1999 RW₁₉₀ *, 7, 2, 1; 1999 RX₁₉₀ *, 7, 2, 1; 1999 RY₁₉₀ *, 7, 2, 4; 1999 RZ₁₉₀ *, 11, 2, 3; 1999 RA₁₉₁ *, 10, 2, 3; 1999 RB₁₉₁ *, 14, 2, 3; 1999 RC₁₉₁ *, 13, 2, 2; 1999 RD₁₉₁ *, 8, 2, 2; 1999 RE₁₉₁ *, 10, 2, 3; 1999 RF₁₉₁ *, 12, 2, 3; 1999 RG₁₉₁ *, 12, 2, 3; 1999 RH₁₉₁ *, 14, 2, 3; 1999 RI₁₉₁ *, 8, 2, 2; 1999 RJ₁₉₁ *, 9, 2, 2; 1999 RK₁₉₁ *, 19, 2, 2; 1999 RL₁₉₁ *, 19, 2, 2; 1999 RM₁₉₁ *, 8, 2, 3; 1999 RN₁₉₁ *, 10, 3, 7; 1999 RO₁₉₁ *, 15, 2, 3; 1999 RP₁₉₁ *, 13, 2, 3; 1999 RQ₁₉₁ *, 14, 2, 3; 1999 RS₁₉₁ *, 13, 2, 3; 1999 RT₁₉₁ *, 14, 2, 3; 1999 RU₁₉₁ *, 10, 2,

3; 1999 RV₁₉₁ *, 11, 2, 2; 1999 RW₁₉₁ *, 12, 2, 3; 1999 RX₁₉₁ *, 12, 2, 3; 1999 RY₁₉₁ *, 10, 2, 3; 1999 RZ₁₉₁ *, 10, 2, 3; 1999 RA₁₉₂ *, 14, 3, 7; 1999 RB₁₉₂ *, 6, 2, 1; 1999 RC₁₉₂ *, 10, 2, 1; 1999 RD₁₉₂ *, 20, 2, 1; 1999 RE₁₉₂ *, 20, 2, 1; 1999 RF₁₉₂ *, 19, 2, 1; 1999 RG₁₉₂ *, 8, 2, 1; 1999 RH₁₉₂ *, 10, 2, 1; 1999 RI₁₉₂ *, 8, 2, 1; 1999 RJ₁₉₂ *, 7, 2, 1; 1999 RK₁₉₂ *, 20, 2, 1; 1999 RL₁₉₂ *, 23, 4, 7; 1999 RM₁₉₂ *, 27, 2, 1; 1999 RN₁₉₂ *, 18, 2, 1; 1999 RO₁₉₂ *, 19, 2, 1; 1999 RP₁₉₂ *, 19, 2, 1; 1999 RQ₁₉₂ *, 9, 2, 1; 1999 RS₁₉₂ *, 9, 2, 1; 1999 RT₁₉₂ *, 9, 2, 1; 1999 RU₁₉₂ *, 9, 2, 1; 1999 RV₁₉₂ *, 9, 2, 1; 1999 RW₁₉₂ *, 9, 2, 1; 1999 RX₁₉₂ *, 9, 2, 1; 1999 RY₁₉₂ *, 9, 2, 1; 1999 RZ₁₉₂ *, 9, 2, 1; 1999 RA₁₉₃ *, 18, 2, 1; 1999 RB₁₉₃ *, 8, 2, 1; 1999 RC₁₉₃ *, 9, 2, 1; 1999 RD₁₉₃ *, 5, 1, 0; 1999 RE₁₉₃ *, 9, 2, 9; 1999 RF₁₉₃ *, 8, 2, 9; 1999 RG₁₉₃ *, 9, 2, 9; 1999 RH₁₉₃ *, 9, 2, 9; 1999 RI₁₉₃ *, 8, 2, 9; 1999 RJ₁₉₃ *, 8, 2, 9; 1999 RK₁₉₃ *, 9, 2, 9; 1999 RL₁₉₃ *, 13, 3, 55; 1999 RM₁₉₃ *, 8, 2, 9; 1999 RN₁₉₃ *, 9, 2, 9; 1999 RO₁₉₃ *, 8, 2, 9; 1999 RP₁₉₃ *, 9, 2, 9; 1999 RQ₁₉₃ *, 8, 2, 9; 1999 RS₁₉₃ *, 8, 2, 9; 1999 RT₁₉₃ *, 8, 2, 9; 1999 RU₁₉₃ *, 8, 2, 9; 1999 RV₁₉₃ *, 9, 2, 9; 1999 RW₁₉₃ *, 8, 2, 9; 1999 RX₁₉₃ *, 8, 2, 9; 1999 RY₁₉₃ *, 8, 2, 9; 1999 RZ₁₉₃ *, 13, 3, 55; 1999 RA₁₉₄ *, 8, 2, 9; 1999 RB₁₉₄ *, 9, 2, 9; 1999 RC₁₉₄ *, 8, 2, 9; 1999 RD₁₉₄ *, 8, 2, 9; 1999 RE₁₉₄ *, 8, 2, 9; 1999 RF₁₉₄ *, 9, 2, 9; 1999 RG₁₉₄ *, 9, 2, 9; 1999 RH₁₉₄ *, 9, 2, 9; 1999 RI₁₉₄ *, 8, 2, 9; 1999 RJ₁₉₄ *, 8, 2, 9; 1999 RK₁₉₄ *, 9, 2, 9; 1999 RL₁₉₄ *, 9, 2, 9; 1999 RM₁₉₄ *, 9, 2, 9; 1999 RN₁₉₄ *, 8, 2, 9; 1999 RO₁₉₄ *, 8, 2, 9; 1999 RP₁₉₄ *, 6, 2, 9; 1999 RQ₁₉₄ *, 9, 2, 9; 1999 RS₁₉₄ *, 8, 2, 9; 1999 RT₁₉₄ *, 7, 2, 9; 1999 RU₁₉₄ *, 8, 2, 8; 1999 RV₁₉₄ *, 15, 3, 56; 1999 RW₁₉₄ *, 7, 2, 8; 1999 RX₁₉₄ *, 15, 3, 56; 1999 RY₁₉₄ *, 6, 2, 8; 1999 RZ₁₉₄ *, 6, 2, 8; 1999 RA₁₉₅ *, 6, 2, 8; 1999 RB₁₉₅ *, 9, 2, 8; 1999 RC₁₉₅ *, 8, 2, 8; 1999 RD₁₉₅ *, 11, 3, 10; 1999 RE₁₉₅ *, 9, 2, 8; 1999 RF₁₉₅ *, 9, 2, 8; 1999 RG₁₉₅ *, 8, 2, 8; 1999 RH₁₉₅ *, 7, 2, 8; 1999 RI₁₉₅ *, 9, 2, 8; 1999 RJ₁₉₅ *, 9, 2, 8; 1999 RK₁₉₅ *, 9, 2, 8; 1999 RL₁₉₅ *, 9, 2, 8; 1999 RM₁₉₅ *, 11, 3, 56; 1999 RN₁₉₅ *, 11, 3, 36; 1999 RO₁₉₅ *, 8, 2, 8; 1999 RP₁₉₅ *, 9, 2, 8; 1999 RQ₁₉₅ *, 8, 2, 8; 1999 RS₁₉₅ *, 9, 2, 8; 1999 RT₁₉₅ *, 11, 3, 10; 1999 RU₁₉₅ *, 6, 2, 8; 1999 RV₁₉₅ *, 9, 2, 8; 1999 RW₁₉₅ *, 8, 2, 8; 1999 RX₁₉₅ *, 8, 2, 8; 1999 RY₁₉₅ *, 8, 2, 8; 1999 RZ₁₉₅ *, 7, 2, 8; 1999 RA₁₉₆ *, 8, 2, 8; 1999 RB₁₉₆ *, 7, 2, 8; 1999 RC₁₉₆ *, 7, 2, 8; 1999 RD₁₉₆ *, 8, 2, 8; 1999 RE₁₉₆ *, 6, 2, 8; 1999 RF₁₉₆ *, 7, 2, 8; 1999 RG₁₉₆ *, 6, 2, 8; 1999 RH₁₉₆ *, 7, 2, 8; 1999 RI₁₉₆ *, 7, 2, 8; 1999 RJ₁₉₆ *, 7, 2, 8; 1999 RK₁₉₆ *, 6, 2, 8; 1999 RL₁₉₆ *, 6, 2, 8; 1999 RM₁₉₆ *, 7, 2, 8; 1999 RN₁₉₆ *, 6, 2, 8; 1999 RO₁₉₆ *, 6, 2, 8; 1999 RP₁₉₆ *, 7, 2, 8; 1999 RQ₁₉₆ *, 11, 3, 55; 1999 RS₁₉₆ *, 7, 2, 8; 1999 RT₁₉₆ *, 6, 2, 8; 1999 RV₁₉₆ *, 7, 2, 8; 1999 RW₁₉₆ *, 9, 2, 8; 1999 RX₁₉₆ *, 14, 3, 55; 1999 RY₁₉₆ *, 24, 4, 57; 1999 RZ₁₉₆ *, 14, 3, 55; 1999 RA₁₉₇ *, 7, 2, 8; 1999 RB₁₉₇ *, 8, 2, 8; 1999 RC₁₉₇ *, 9, 2, 8; 1999 RD₁₉₇ *, 9, 2, 8; 1999 RE₁₉₇ *, 7, 2, 8; 1999 RF₁₉₇ *, 9, 2, 8; 1999 RG₁₉₇ *, 13, 3, 10; 1999 RH₁₉₇ *, 9, 2, 8; 1999 RI₁₉₇ *, 13, 3, 10; 1999 RJ₁₉₇ *, 8, 2, 8; 1999 RK₁₉₇ *, 9, 2, 8; 1999 RL₁₉₇ *, 9, 2, 8; 1999 RM₁₉₇ *, 9, 2, 8; 1999 RN₁₉₇ *, 8, 2, 8; 1999 RO₁₉₇ *, 14, 3, 55; 1999 RP₁₉₇ *, 7, 2, 8; 1999 RQ₁₉₇ *, 7, 2, 8; 1999 RS₁₉₇ *, 7, 2, 8; 1999 RT₁₉₇ *, 7, 2, 8; 1999 RU₁₉₇ *, 8, 2, 8; 1999 RV₁₉₇ *, 7, 2, 8; 1999 RW₁₉₇ *, 7, 2, 8; 1999 RX₁₉₇ *, 16, 4, 14; 1999 RY₁₉₇ *, 7, 2, 8; 1999 RZ₁₉₇ *, 7, 2, 8; 1999 RA₁₉₈ *, 7, 2, 8; 1999 RB₁₉₈ *, 7, 2, 8; 1999 RC₁₉₈ *, 8, 2, 8; 1999 RD₁₉₈ *, 3, 55; 1999 RE₁₉₈ *, 8, 2, 7; 1999 RF₁₉₈ *, 7, 2, 7; 1999 RG₁₉₈ *, 10, 2, 7; 1999 RH₁₉₈ *, 2, 7; 1999 RI₁₉₈ *, 9, 2, 7; 1999 RJ₁₉₈ *, 9, 2, 7; 1999 RK₁₉₈ *, 9, 2, 7; 1999 RL₁₉₈ *, 9, 2, 7; 1999 RM₁₉₈ *, 9, 2, 7; 1999 RN₁₉₈ *, 9, 2, 7; 1999 RO₁₉₈ *, 9, 2, 7; 1999 RP₁₉₈ *, 9, 2, 7; 1999 RQ₁₉₈ *, 9, 2, 7; 1999 RS₁₉₈ *, 16, 4, 87; 1999 RT₁₉₈ *, 9, 2, 6; 1999 RU₁₉₈ *, 8, 2, 6; 1999 RV₁₉₈ *, 8, 2, 6; 1999 RW₁₉₈ *, 8, 2, 6; 1999 RX₁₉₈ *, 8, 2, 6; 1999 RY₁₉₈ *, 8, 2, 6; 1999 RZ₁₉₈ *, 7, 2, 6; 1999 RA₁₉₉ *, 7, 2, 6; 1999 RB₁₉₉ *, 8, 2, 6; 1999 RC₁₉₉ *, 6, 2, 6; 1999 RD₁₉₉ *, 7, 2, 6; 1999 RE₁₉₉ *, 6, 2, 6; 1999 RF₁₉₉ *, 15, 4, 56; 1999 RG₁₉₉ *, 8, 2, 11; 1999 RH₁₉₉ *, 9, 2, 10; 1999 RI₁₉₉ *, 9, 2, 10; 1999 RJ₁₉₉ *, 10, 2, 10; 1999 RK₁₉₉ *, 10, 2, 10; 1999 RL₁₉₉ *, 10, 2, 10; 1999 RM₁₉₉ *, 10, 2, 10; 1999 RN₁₉₉ *, 10, 2, 10; 1999 RO₁₉₉ *, 10, 2, 10;

10; 1999 RL₂₀₃ *, 9, 2, 10; 1999 RM₂₀₃ *, 7, 2, 10; 1999 RN₂₀₃ *, 8, 2, 10; 1999 RO₂₀₃ *, 8, 2, 10; 1999 RP₂₀₃ *, 9, 2, 10; 1999 RQ₂₀₃ *, 8, 2, 10; 1999 RR₂₀₃ *, 12, 2, 10; 1999 RS₂₀₃ *, 9, 2, 10; 1999 RT₂₀₃ *, 9, 2, 10; 1999 RU₂₀₃ *, 11, 2, 10; 1999 RV₂₀₃ *, 9, 2, 10; 1999 RW₂₀₃ *, 8, 2, 10; 1999 RX₂₀₃ *, 7, 2, 10; 1999 RY₂₀₃ *, 6, 2, 10; 1999 RZ₂₀₃ *, 8, 2, 10; 1999 RA₂₀₄ *, 9, 2, 10; 1999 RB₂₀₄ *, 8, 2, 10; 1999 RC₂₀₄ *, 10, 2, 10; 1999 RD₂₀₄ *, 10, 2, 10; 1999 RE₂₀₄ *, 10, 2, 10; 1999 RF₂₀₄ *, 10, 2, 10; 1999 RG₂₀₄ *, 8, 2, 10; 1999 RH₂₀₄ *, 9, 2, 10; 1999 RJ₂₀₄ *, 9, 2, 10; 1999 RK₂₀₄ *, 10, 2, 10; 1999 RL₂₀₄ *, 8, 2, 10; 1999 RM₂₀₄ *, 9, 2, 10; 1999 RN₂₀₄ *, 8, 2, 10; 1999 RO₂₀₄ *, 9, 2, 10; 1999 RP₂₀₄ *, 9, 2, 10; 1999 RQ₂₀₄ *, 9, 2, 10; 1999 RR₂₀₄ *, 10, 2, 10; 1999 RS₂₀₄ *, 10, 2, 10; 1999 RT₂₀₄ *, 10, 2, 10; 1999 RU₂₀₄ *, 10, 2, 10; 1999 RV₂₀₄ *, 10, 2, 10; 1999 RW₂₀₄ *, 10, 2, 10; 1999 RX₂₀₄ *, 9, 2, 10; 1999 RY₂₀₄ *, 10, 2, 10; 1999 RZ₂₀₄ *, 9, 2, 10; 1999 RA₂₀₅ *, 10, 2, 10; 1999 RB₂₀₅ *, 10, 2, 10; 1999 RC₂₀₅ *, 6, 2, 10; 1999 RD₂₀₅ *, 10, 2, 10; 1999 RE₂₀₅ *, 10, 2, 10; 1999 RF₂₀₅ *, 10, 2, 10; 1999 RG₂₀₅ *, 10, 2, 10; 1999 RH₂₀₅ *, 9, 2, 10; 1999 RJ₂₀₅ *, 10, 2, 10; 1999 RK₂₀₅ *, 10, 2, 10; 1999 RL₂₀₅ *, 10, 2, 10; 1999 RM₂₀₅ *, 10, 2, 10; 1999 RN₂₀₅ *, 7, 2, 10; 1999 RO₂₀₅ *, 10, 2, 10; 1999 RP₂₀₅ *, 10, 2, 10; 1999 RQ₂₀₅ *, 10, 2, 10; 1999 RR₂₀₅ *, 10, 2, 10; 1999 RS₂₀₅ *, 10, 2, 10; 1999 RT₂₀₅ *, 9, 2, 10; 1999 RU₂₀₅ *, 10, 2, 10; 1999 RV₂₀₅ *, 10, 2, 10; 1999 RW₂₀₅ *, 9, 2, 10; 1999 RX₂₀₅ *, 10, 2, 10; 1999 RY₂₀₅ *, 10, 2, 10; 1999 RZ₂₀₅ *, 10, 2, 10; 1999 RA₂₀₆ *, 8, 2, 10; 1999 RB₂₀₆ *, 10, 2, 10; 1999 RC₂₀₆ *, 10, 2, 10; 1999 RD₂₀₆ *, 10, 2, 10; 1999 RE₂₀₆ *, 8, 2, 10; 1999 RF₂₀₆ *, 10, 2, 10; 1999 RG₂₀₆ *, 10, 2, 10; 1999 RH₂₀₆ *, 8, 2, 10; 1999 RJ₂₀₆ *, 7, 2, 10; 1999 RK₂₀₆ *, 10, 2, 10; 1999 RL₂₀₆ *, 10, 2, 10; 1999 RM₂₀₆ *, 10, 2, 10; 1999 RN₂₀₆ *, 10, 2, 10; 1999 RO₂₀₆ *, 10, 2, 10; 1999 RP₂₀₆ *, 10, 2, 10; 1999 RQ₂₀₆ *, 10, 2, 10; 1999 RS₂₀₆ *, 10, 2, 10; 1999 RT₂₀₆ *, 10, 2, 10; 1999 RU₂₀₆ *, 10, 2, 10; 1999 RV₂₀₆ *, 10, 2, 10; 1999 RW₂₀₆ *, 10, 2, 10; 1999 RX₂₀₆ *, 8, 2, 10; 1999 RY₂₀₆ *, 10, 2, 10; 1999 RZ₂₀₆ *, 7, 2, 10; 1999 RA₂₀₇ *, 9, 2, 10; 1999 RB₂₀₇ *, 9, 2, 10; 1999 RC₂₀₇ *, 10, 2, 10; 1999 RD₂₀₇ *, 10, 2, 10; 1999 RE₂₀₇ *, 9, 2, 10; 1999 RF₂₀₇ *, 10, 2, 10; 1999 RG₂₀₇ *, 10, 2, 10; 1999 RH₂₀₇ *, 7, 2, 10; 1999 RJ₂₀₇ *, 10, 2, 10; 1999 RK₂₀₇ *, 10, 2, 10; 1999 RL₂₀₇ *, 10, 2, 10; 1999 RM₂₀₇ *, 9, 2, 10; 1999 RN₂₀₇ *, 10, 2, 10; 1999 RO₂₀₇ *, 10, 2, 10; 1999 RP₂₀₇ *, 10, 2, 10; 1999 RQ₂₀₇ *, 10, 2, 10; 1999 RS₂₀₇ *, 10, 2, 10; 1999 RT₂₀₇ *, 10, 2, 10; 1999 RU₂₀₇ *, 10, 2, 10; 1999 RV₂₀₇ *, 9, 2, 10; 1999 RW₂₀₇ *, 9, 2, 10; 1999 RX₂₀₇ *, 10, 2, 10; 1999 RY₂₀₇ *, 10, 2, 10; 1999 RZ₂₀₇ *, 9, 2, 10; 1999 RA₂₀₈ *, 10, 2, 10; 1999 RB₂₀₈ *, 10, 2, 10; 1999 RC₂₀₈ *, 10, 2, 10; 1999 RD₂₀₈ *, 10, 2, 10; 1999 RE₂₀₈ *, 10, 2, 10; 1999 RF₂₀₈ *, 10, 2, 10; 1999 RG₂₀₈ *, 8, 2, 10; 1999 RH₂₀₈ *, 10, 2, 10; 1999 RJ₂₀₈ *, 10, 2, 10; 1999 RK₂₀₈ *, 10, 2, 10; 1999 RL₂₀₈ *, 7, 2, 10; 1999 RM₂₀₈ *, 8, 2, 10; 1999 RN₂₀₈ *, 9, 2, 10; 1999 RO₂₀₈ *, 10, 2, 10; 1999 RP₂₀₈ *, 10, 2, 10; 1999 RQ₂₀₈ *, 10, 2, 10; 1999 RR₂₀₈ *, 8, 2, 10; 1999 RS₂₀₈ *, 10, 2, 10; 1999 RT₂₀₈ *, 9, 2, 10; 1999 RU₂₀₈ *, 9, 2, 10; 1999 RV₂₀₈ *, 10, 2, 10; 1999 RW₂₀₈ *, 10, 2, 10; 1999 RX₂₀₈ *, 10, 2, 10; 1999 RY₂₀₈ *, 10, 2, 10; 1999 RZ₂₀₈ *, 9, 2, 10; 1999 RA₂₀₉ *, 9, 2, 10; 1999 RB₂₀₉ *, 9, 2, 10; 1999 RC₂₀₉ *, 10, 2, 10; 1999 RD₂₀₉ *, 9, 2, 10; 1999 RE₂₀₉ *, 9, 2, 10; 1999 RF₂₀₉ *, 9, 2, 10; 1999 RG₂₀₉ *, 8, 2, 10; 1999 RH₂₀₉ *, 9, 2, 10; 1999 RJ₂₀₉ *, 8, 2, 10; 1999 RK₂₀₉ *, 8, 2, 10; 1999 RL₂₀₉ *, 10, 2, 10; 1999 RM₂₀₉ *, 10, 2, 10; 1999 RN₂₀₉ *, 9, 2, 10; 1999 RO₂₀₉ *, 10, 2, 10; 1999 RP₂₀₉ *, 9, 2, 10; 1999 RQ₂₀₉ *, 10, 2, 10; 1999 RS₂₀₉ *, 10, 2, 10; 1999 RT₂₀₉ *, 9, 2, 10; 1999 RU₂₀₉ *, 10, 2, 10; 1999 RV₂₀₉ *, 10, 2, 10; 1999 RW₂₀₉ *, 7, 2, 10; 1999 RX₂₀₉ *, 10, 2, 10; 1999 RY₂₀₉ *, 10, 2, 10; 1999 RZ₂₀₉ *, 10, 2, 10; 1999 RA₂₁₀ *, 10, 2, 10; 1999 RB₂₁₀ *, 10, 2, 10; 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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

(6489), 2, 1, 0; (11398), 1, 1, 0; *[3, 2, 0*, 1999/09/04–1999/09/05]*

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. L. Africano

0.76-m *f*/3.0 reflector + CCD

GSC

1999 RJ₄₅, 1, 1, 0; 1999 RK₄₅, 3, 1, 0; 1999 RL₄₅, 3, 1, 0; 1999 RM₄₅, 3, 1, 0; 1999 RN₄₅, 3, 1, 0; *[13, 5, 0*, 1999/09/15]*

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 RB₃₂, 4, 1, 0; (2469), 6, 2, 1; (3922), 4, 2, 1; (4747), 4, 2, 1; (4813), 8, 2, 2; *[26, 5, 0*, 1999/09/07–1999/09/14]*

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

1995 YN₄, 2, 1, 0; 1999 RP₁, 6, 2, 3; 2508 P-L, 2, 1, 0; (4227), 3, 1, 0; [13, 4, 0*, 1999/09/05–1999/09/13]

718 University of Utah Hansen Planetarium, Tooele

P. Wiggins, University of Utah Hansen Planetarium, 15 South State Street, Salt Lake City, UT 84111-1590, U.S.A. [p.wiggins@cc.utah.edu]

Observers P. Wiggins, H. Phaneuf

0.35-m $f/4.1$ Schmidt-Cassegrain + CCD
GSC

1992 OJ₁, 11, 3, 2; 1995 KA₁, 9, 3, 5; 1996 XB₂, 3, 2, 1; 1997 AN₁₇, 6, 2, 3; 1998 KN₅₆, 2, 1, 0; 1999 KF₄, 6, 2, 1; 1999 PO₃, 4, 1, 0; 1071 T-3, 6, 2, 1; (6671), 3, 2, 2; [50, 9, 0*, 1999/08/08–1999/09/22]

719 Etscorn Observatory

D. A. Klinglesmith III, 1215 Vista Drive, Socorro, NM 87801, U.S.A.
[TheKs@aol.com]

0.355-m Schmidt-Cassegrain + CCD
GSC

1999 QJ, 4, 2, 5; 1999 RV₂, 2, 1, 0; 1999 RB₁₉, 5, 2, 1; 1999 RB₃₂, 4, 1, 0; 1999 RD₃₂, 2, 1, 0; (699), 4, 2, 5; (3731), 4, 1, 0; (6838), 2, 1, 0; [27, 8, 0*, 1999/09/06–1999/09/27]

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

(16), 4, 1, 0; (28), 4, 1, 0; (141), 4, 1, 0; (488), 4, 1, 0; (747), 4, 1, 0; [20, 5, 0*, 1999/09/13]

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-ACT

1981 EY₂, 3, 1, 0; 1988 RL₆, 5, 2, 7; 1993 FF₁₉, 2, 1, 0; 1993 FS₂₇, 3, 1, 0; 1995 UG, 6, 2, 7; 1997 EQ₄₁, 2, 1, 0; 1998 DU, 3, 1, 0; 1998 DD₁₄, 4, 2, 1; 1998 FD₁₁₇, 5, 2, 1; 1998 FN₁₁₈, 6, 2, 7; 1999 JH₈₁, 5, 2, 1; 1999 KF₄, 3, 1, 0; 1999 LJ, 2, 1, 0; 1999 LN, 4, 2, 1; 1999 NT₁, 2, 1, 0; 1999 NB₄, 6, 2, 7; 1999 NQ₈, 3, 1, 0; 1999 NA₁₁, 6, 2, 7; 1999 NV₁₁, 3, 1, 0; 1999 RU₅₄, 5, 2, 7; 5578 P-L, 3, 1, 0; (2207), 3, 1, 0; (8543), 3, 1, 0; (11290), 3, 1, 0; [90, 24, 0*, 1999/08/14–1999/09/14]

726 Brainerd

J. E. Wentworth, 6469 Madson Ave. N.W., Brainerd, MN 56401, U.S.A.
[jimw@brainerd.net]

0.280-m Schmidt-Cassgrain + CCD
GSC-1.1

1999 ND₄₃, 34, 6, 12; 1999 RK₃₃, 12, 2, 1; [46, 2, 0*, 1999/09/06–1999/09/18]

727 Zeno Observatory, Edmond

T. Stafford, 2947 Village Circle, Edmond, OK 73013, U.S.A.
[tstafford@ainetplex.com]

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

1973 QR₁, 2, 1, 0; 1976 UN₁₄, 3, 1, 0; 1999 RO₃₉ *, 10, 4, 9; 1999 RP₃₉ *, 10, 4, 9; (1519), 2, 1, 0; (3590), 3, 1, 0; [30, 6, 2*, 1999/09/02–1999/09/22]

734 Farpoint Observatory, Eskridge

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

Observers G. Hug, G. Bell, C. Lambrecht

0.30-m Schmidt-Cassegrain + CCD
GSC-1.1, USNO-A2.0

1993 FZ₄₁, 24, 5, 7; 1999 PK₃, 7, 2, 4; 1999 PL₃, 4, 1, 0; 1999 PZ₃, 6, 1, 0; 1999 PK₄, 4, 1, 0; 1999 PR₄, 6, 1, 0; 1999 PS₄, 9, 1, 0; 1999 QA, 5, 1, 0; 1999 QP, 4, 1, 0; 1999 QS₁, 5, 1, 0; 1999 QH₂, 5, 1, 0; 1999 QJ₂, 9, 2, 14; 1999 RF *, 28, 5, 13; 1999 RN₁ *, 20, 4, 12; 1999 RU₂, 3, 1, 0; 1999 RV₂, 4, 1, 0; 1999 RB₈, 4, 1, 0; 1999 RB₁₉, 3, 1, 0; 1999 RW₁₉, 14, 3, 7; 1999 RH₂₇, 3, 1, 0; 1999 RU₂₇, 6, 1, 0; 1999 RK₂₈, 5, 1, 0; 1999 RY₃₁, 3, 1, 0; 1999 RA₃₂, 3, 1, 0; 1999 RB₃₂, 4, 1, 0; 1999 RP₃₂ *, 19, 4, 9; 1999 RZ₃₂ *, 30, 6, 14; 1999 RS₃₃ *, 16, 4, 14; 1999 RT₃₃ *, 12, 3, 11; 1999 RU₃₃ *, 15, 3, 10; 1999 RV₃₃ *, 23, 4, 10; 1999 RO₃₆ *, 37, 4, 8; 1999 RG₃₇ *, 6, 2, 7; 1999 RJ₄₃ *, 13, 3, 6; 1999 RL₁₉₃ *, 10, 2, 1; 1999 RM₁₉₃ *, 14, 3, 8; 1999 RN₁₉₃ *, 11, 2, 1; (2507), 4, 1, 0; (3742), 15, 3, 4; [413, 39, 14*, 1999/09/02–1999/09/21]

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, K. Rivich, R. Wicker
Measurers R. Pepper, K. Rivich, W. G. Dillon

0.46-m reflector + CCD
USNO-A2.0

1999 RP₁₆, 7, 3, 2; 1999 RQ₁₆, 7, 3, 2; 1999 RN₃₃ *, 9, 4, 6; (5149), 2, 1, 0; [25, 4, 1*, 1999/09/10–1999/09/16]

739 Sunflower Observatory, Olathe

L. Robinson, Sunflower Observatory, 14680 W. 144 St., Olathe, KS 66062, U.S.A.
[lrobinson@ix.netcom.com]

0.30-m Schmidt-Cassegrain + CCD
GSC-1.1

1981 DN₁, 6, 2, 14; 1996 XZ₃₀, 3, 1, 0; 1997 AV, 4, 1, 0; 1998 DU, 2, 1, 0; 1999 PK, 4, 1, 0; 1999 PO₃, 5, 2, 7; 1999 PZ₃, 3, 1, 0; 1999 PK₄, 4, 1, 0; 1999 PS₄, 2, 1, 0; 1999 QA, 4, 1, 0; 1999 QP, 3, 1, 0; 1999 QH₂, 3, 1, 0; 1999 RA, 11, 4, 12; 1999 RN, 2, 1, 0; 1999 RS₂, 4, 1, 0; 1999 RC₂₁, 3, 1, 0; 1999 RG₂₂, 4, 1, 0; 1999 RB₃₂, 2, 1, 0; 1999 RD₃₂, 3, 1, 0; 1999 RC₃₄, 3, 1, 0; 1999 RB₃₅ *, 33, 9, 12; 1999 RL₃₅, 3, 1, 0; 1999 RB₃₉, 3, 1, 0; 1999 RK₂₀₆, 2, 1, 0; 9056 P-L, 3, 1, 0; (8843), 4, 1, 0; (11263), 4, 1, 0; [127, 27, 1*, 1999/08/21–1999/09/23]

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, D. R. Burditt
0.46-m Cassegrain reflector + CCD

GSC-1.1

1999 PQ₃, 11, 3, 2; 1999 RM₄₁ *, 8, 2, 2; [19, 2, 1*, 1999/09/07–1999/09/11]

747 Baton Rouge Observatory

W. R. Cooney, 10330 Dunn Dr., Baton Rouge, LA 70810, U.S.A.
[walt@sprintmail.com]

Observers W. R. Cooney, K. Wefel, M. Hess, S. Lazar, P. Lazar, D. Thomas
Measurers F. J. Barnett, W. R. Cooney

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

1999 NE₈, 7, 2, 1; 1999 PO₃, 8, 2, 3; 1999 RS₂, 4, 1, 0; 1999 RC₃₄, 4, 1, 0; 1999 RL₃₅, 4, 1, 0; (2415), 4, 1, 0; (3357), 3, 1, 0; [34, 7, 0*, 1999/01/19–1999/09/18]

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

1986 TR₇, 2, 1; 1990 OG₄, 6, 2, 1; 1990 OB₅, 4, 2, 1; 1999 ND₄₃, 8, 2, 1; (85), 2, 1, 0; (141), 2, 1, 0; (737), 4, 2, 2; (895), 2, 1, 0; (2313), 3, 1, 0; [38, 9, 0*, 1999/09/16–1999/09/23]

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

1999 RC₃₅ *, 10, 5, 12; [10, 1, 1*, 1999/09/11–1999/09/23]

807 Cerro Tololo

J. W. Parker, Southwest Research Institute, 1050 Walnut Street, Suite 426,
Boulder, CO 80302, U.S.A. [joel@boulder.swri.edu]

Observer J. W. Parker

Measurer J. W. Parker

4-m Blanco reflector + CCD

USNO-A2.0

1995 SM₅₅, 3, 2, 1; [3, 1, 0*, 1999/08/06–1999/08/07]

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@astro.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} 1988 RC₁₁, 3, 1, 0; 1992 RQ₄, 3, 1, 0; 1993 QM₄, 6, 2, 952; 1993 TF₃₄, 6, 2, 1591; 1994 PQ₁₀, 3, 1, 0; 1994 PC₁₄, 3, 1, 0; 1997 GX₃, 3, 1, 0; 1997 LH₉, 3, 1, 0; 1998 FY₂₈, 3, 1, 0; 1998 GW₁₀, 3, 1, 0; 1998 KQ₅₁, 3, 1, 0; 1998 SV₁₀₅, 3, 1, 0; 1999 CV₅₄, 3, 1, 0; 1999 NH₁₂, 3, 1, 0; 1999 RN₈₄, 3, 1, 0; 2027 P-L, 3, 1, 0; 2085 P-L, 3, 1, 0; 4105 P-L, 3, 1, 0; 4112 P-L, 3, 1, 0; 4525 P-L, 3, 1, 0; 4527 P-L, 6, 2, 11; 1068 T-1, 3, 1, 0; 1348 T-2, 3, 1, 0; 2199 T-2, 3, 1, 0; 3161 T-2, 3, 1, 0; 4194 T-2, 3, 1, 0; 2239 T-3, 3, 1, 0; 3283 T-3, 3, 1, 0; 3465 T-3, 3, 1, 0; 4049 T-3, 3, 1, 0; [99, 30, 0*, 1992/05/03–1998/09/21]

{7} 1997 MC₈, 3, 1, 0; 1998 OZ₄, 3, 1, 0; 1998 TY₂₀, 6, 2, 10; 2156 P-L, 3, 1, 0; 4088 P-L, 6, 2, 5; 6309 P-L, 3, 1, 0; 4092 T-2, 3, 1, 0; [27, 7, 0*, 1993/09/14–1993/10/22]

{8} 1979 MT₈, 3, 3, 33; 1990 RJ₅, 3, 3, 6; 1990 SV₉, 1, 1, 0; 1992 EA₁₃, 1, 1, 0; 1992 EO₃₆, 1, 1, 0; 1993 CS₁, 3, 3, 4; 1994 EV₇, 3, 2, 1; 1994 PX₁₁, 1, 1, 0; 1994 PK₂₀, 1, 1, 0; 1994 PG₃₅, 1, 1, 0; 1995 SS₁₃, 11, 9, 30; 1995 SU₃₇, 3, 2, 24; 1995 SD₄₉, 17, 13, 30; 1995 SL₄₉, 7, 6, 29; 1995 XC₅, 2, 2, 5; 1997 CL₁, 2, 2, 1; 1997 CN₁, 1, 1, 0; 1997 CX₂₂, 7, 6, 29; 1997 LH₄, 1, 1, 0; 1998 ED₁₄, 4, 4, 4; 1998 FK₂₅, 2, 2, 2; 1998 FB₂₉, 2, 2, 1; 1998 FD₁₃₂, 2, 2, 2; 1998 HC₁₀₀, 8, 8, 30; 1998 HX₁₁₂, 3, 3, 4; 1998 HD₁₂₉, 16, 13, 28; 1998 RR₂₉, 1, 1, 0; 1999 KK₁₅, 12, 10, 36; 2674 P-L, 1, 1, 0; 4115 P-L, 1, 1, 0; 5578 P-L, 1, 1, 0; 1277 T-2, 2, 2, 4; 2176 T-2, 1, 1, 0; [125, 33, 0*, 1992/03/02–1998/03/02]

810 Wallace Observatory, Westford

L. Crespo da Silva, 54 Westland Ave #11, Boston, MA 02115, U.S.A.

[lcresp@mit.edu]

Observer L. Crespo da Silva

0.61-m $f/2.7$ reflector + CCD

GSC

1999 QQ₂ *, 5, 2, 3; (720), 2, 1, 0; [7, 2, 1*, 1999/08/16–1999/08/19]

842 Gettysburg College Observatory

G. A. Snyder, Gettysburg College, 300 N. Washington Street, Gettysburg,
PA 17325, U.S.A. [gsnyder@gettysburg.edu]

Observers L. Marschall, J. Lynch, A. Duffy, P. R. Cooper, G. Yurick

Measurer G. Snyder

0.4-m $f/11.5$ reflector + CCD

USNO-A2.0

1991 VA₃, 4, 1, 0; 1999 HX₂, 3, 1, 0; (112), 4, 1, 0; (664), 5, 1, 0; (895), 2, 1, 0; [18, 5, 0*, 1999/07/16–1999/09/24]

843 Decatur

L. C. Ball, 4311 Emerald Lane, Decatur, AL 35603, U.S.A. [dustoff72@aol.com]

0.30-m $f/6.5$ Schmidt-Cassegrain + CCD

GSC

1981 DH₁, 6, 2, 1; 1991 VJ₁, 6, 2, 1; 1997 CD₂₀, 6, 2, 1; (2469), 5, 2, 4; (4813), 5, 2, 4; (7717), 3, 2, 1; (7766), 5, 2, 2; (8764), 6, 2, 4; [42, 8, 0*, 1999/09/05–1999/09/17]

844 Los Molinos

T. Gallardo, Departamento de Astronomia, Facultad de Ciencias, Montevideo,
Uruguay [gallardo@fisica.edu.uy]

Observers R. Salvo, E. Rocha, H. Cucurullo

0.35-m $f/6.4$ reflector + CCD

USNO-A2.0

1995 YV₃, 3, 1, 0; 1998 KR₆₂, 5, 1, 0; (3753), 3, 1, 0; (8315), 3, 1, 0; [14, 4, 0*, 1998/05/17–1999/08/29]

848 Tenagra Observatory, Cottage Grove

P. R. Holvorcem, Departamento de Matematica/IMECC, Universidade Estadual de
Campiñas, Campiñas, SP 13081-970, Brazil [canis@mpc.com.br]

Observer M. Schwartz

Measurer P. R. Holvorcem

0.36-m $f/11$ Schmidt-Cassegrain + CCD

GSC-ACT, USNO-SA2.0, USNO-A2.0

1999 LF₆, 12, 4, 13; 1999 NZ₄, 2, 1, 0; 1999 ND₄₃, 6, 2, 2; 1999 OP₃, 4, 2, 2; 1999 QJ, 6, 2, 1; 1999 RV₂, 2, 1, 0; 1999 RQ₁₅, 5, 2, 1; 1999 RH₂₇, 3, 1, 0; 1999 RP₂₈, 3, 1, 0; 1999 RQ₂₈, 9, 3, 9; 1999 RR₂₈, 5, 2, 2; 1999 RY₃₁, 3, 1, 0; 1999 RZ₃₁, 2, 1, 0; 1999 RA₃₂, 2, 1, 0; 1999 RB₃₂, 4, 1, 0; 1999 RC₃₂, 16, 5, 9; 1999 RD₃₂, 17, 5, 9; 1999 RG₃₃, 5, 1, 0; 1999 RK₃₃, 5, 2, 2; 1999 RL₃₃, 5, 1, 0; 1999 RO₃₆, 5, 1, 0; 1999 RP₃₆, 8, 2, 2; 1999 RQ₃₆, 23, 4, 10; 1999 RY₄₁, 4, 1, 0; 1999 RJ₄₂, 5, 2, 2; 1999 RP₄₃, 9, 3, 3; 1999 RQ₄₃, 6, 2, 3; 1999 RW₄₄, 6, 2, 1; 1999 RG₄₅, 3, 1, 0; 1999 RH₄₅ *, 5, 2, 2; 1999 RJ₄₅, 11, 3, 2; 1999 RK₄₅, 10, 3, 2; 1999 RL₄₅, 5, 1, 0; 1999 RM₄₅, 5, 1, 0; 1999 RN₄₅, 8, 2, 1; 1999 RO₁₉₃, 8, 3, 3; 4764 P-L, 6, 2, 2; (699), 9, 3, 3; (1387), 2, 1, 0; (1591), 2, 1, 0; (1761), 3, 1, 0; (2479), 3, 1, 0; (2894), 4, 2, 3; [266, 43, 1*, 1999/07/23–1999/09/26]

849 Everstar Observatory, Olathe

G. Fedon, 21251 W. 123rd St., Olathe, KS 66061, U.S.A. [antares@everstar.com]

Observers M. Abraham, G. Fedon

Measurer G. Fedon

0.25-m Schmidt-Cassegrain + CCD

GSC-1.1

(897), 3, 1, 0; (1031), 3, 1, 0; (1367), 3, 1, 0; (2363), 3, 1, 0; (4045), 3, 1, 0; (4379), 2, 1, 0; (4709), 3, 1, 0; [20, 7, 0*, 1999/09/22–1999/09/23]

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, L. Duczmal

Measurer C. Jacques

0.30-m $f/3.3$ reflector + CCD

GSC

1998 YE₃, 3, 1, 0; 1999 NM₉, 3, 1, 0; 1999 PK, 3, 1, 0; 1999 PM, 4, 1, 0; 1999 PO₃, 3, 1, 0; 1999 PF₄, 6, 2, 1; 1999 PG₄, 6, 2, 3; 1999 RA, 7, 2, 1; 1999 RU₂, 5, 2, 2; 1999 RV₂, 3, 1, 0; 1999 RB₁₉, 3, 1, 0; 1999 RH₂₇, 3, 1, 0; 1999 RG₃₃, 3, 1, 0; 1999 RQ₃₆, 27, 3, 5; 1999 RJ₄₅, 4, 1, 0; 1999 RK₄₅, 4, 1, 0; 4226 P-L, 2, 1, 0; [89, 17, 0*, 1999/01/11–1999/09/20]

886 Susono

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

0.25-m $f/6.3$ reflector + CCD

GSC

1985 CD, 2, 1, 0; 1991 JF, 2, 1, 0; 1992 UX, 2, 1, 0; 1992 YY, 4, 2, 14; 1993 DD₂, 4, 2, 14; 1995 UG, 2, 1, 0; 1995 WU₄, 2, 1, 0; 1996 XU₃₀, 2, 1, 0; 1999 QH, 2, 1, 0; [22, 9, 0*, 1999/08/08–1999/09/19]

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

1991 JF, 2, 1, 0; 1992 YY, 7, 3, 2; 1993 DD₂, 2, 1, 0; 1993 EP, 5, 2, 15; 1995 QR, 5, 2, 2; 1995 SK₂, 3, 1, 0; 1995 UG, 2, 1, 0; 1995 UR₈, 2, 1, 0; 1995 WV₃, 2, 1, 0; 1995 WU₄, 2, 1, 0; 1996 BM₃, 3, 1, 0; 1997 AC₁₃, 2, 1, 0; 1997 EQ₂₅, 3, 2, 1; 1998 DB₂₄, 3, 1, 0; 1999 PB, 2, 1, 0; 1999 PZ₄, 2, 1, 0; 1999 QH, 5, 2, 13; 1999 QT₂, 6, 2, 1; 1999 RD₁ *, 13, 5, 13; 1999 RE₁ *, 8, 3, 8; 1999 RO₁ *, 4, 2, 2; 1999 RM₃ *, 10, 4, 11; 1999 RK₁₀, 3, 1, 0; 1999 RF₂₆, 2, 1, 0; 1999 RA₁₂₂, 2, 1, 0; [100, 25, 4*, 1999/08/08–1999/09/19]

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

1991 RE₂₀, 3, 1, 0; 1998 KU₂, 3, 1, 0; 1998 QS₅₂, 3, 1, 0; 1998 VR, 3, 1, 0; 1998 VO₃₃, 2, 1, 0; [14, 5, 0*, 1998/03/22–1998/11/19]

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

1990 SV₉, 3, 1, 0; 1996 JG₃, 3, 1, 0; 1996 JK₁₃, 3, 1, 0; 1997 SW, 3, 1, 0; 1997 TO₇, 3, 1, 0; 1997 UB₅, 3, 1, 0; 1997 UD₅, 3, 1, 0; 1998 CD₅, 3, 1, 0; 1998 FM₁₃, 3, 1, 0; 1998 FM₂₈, 3, 1, 0; 1998 FG₅₈, 3, 1, 0; 1998 FD₁₃₂, 3, 1, 0; 1998 HM₅₇, 3, 1, 0; 1998 HM₆₆, 3, 1, 0; 1998 KK₅₈, 3, 1, 0; 1998 QS₁₃, 3, 1, 0; 1998 QS₉₃, 3, 1, 0; 1998 ST₁₅₁, 3, 1, 0; 1998 TX₃₁, 6, 2, 97; 1999 GE₆, 3, 1, 0; 1999 JD₇₂, 3, 1, 0; 1999 KJ₁₇, 3, 1, 0; 1999 NN₁₁, 3, 1, 0; 1999 NZ₃₅, 3, 1, 0; 2013 P-L, 3, 1, 0; 4273 T-1, 3, 1, 0; [81, 26, 0*, 1996/10/19–1999/01/21]

946 Ametlla de Mar

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

[jnomen@astro.gea.cesca.es]

0.30-m $f/5.0$ reflector + CCD

USNO-SA1.0

1999 PS₁, 5, 2, 9; 1999 PT₁, 3, 1, 0; 1999 RB₃₂, 3, 1, 0; 1999 RD₃₂, 2, 1, 0; 1999 RS₃₂ *, 10, 4, 8; [23, 5, 1*, 1999/09/02–1999/09/18]

947 Saint-Sulpice

B. Christophe, 63 rue Belliard, F-75018 Paris, France

[bernard.christophe@hol.fr]

0.60-m $f/5.6$ relector + CCD

GSC, USNO-SA1.0

1998 DY₉, 2, 1, 0; (186), 3, 1, 0; (1342), 5, 3, 7; (1656), 1, 1, 0; (2039), 4, 2, 1; (3208), 2, 1, 0; (3703), 2, 1, 0; (3922), 2, 1, 0; (4388), 2, 1, 0; (4483), 3, 2, 7; (4546), 3, 1, 0; (4667), 1, 1, 0; (5092), 1, 1, 0; (5224), 1, 1, 0; (5785), 2, 1, 0; (8289), 5, 3, 7; [39, 16, 0*, 1999/05/01–1999/09/12]

950 La Palma

R. Casas, Instituto de Astrofísica de Canarias, E-38200 La Laguna, Spain

[rcr@ot.iac.es]

Observers L. M. Cairos, C. Zurita, B. Garcia, M. R. Kidger

Measurer R. Casas

2.56-m Nordic Optical Telescope + CCD

GSC-1.1, GSC-1.2

1994 TB, 3, 1, 0; 1998 PH, 4, 1, 0; 1999 RH₁₁₆, 4, 1, 0; [11, 3, 0*, 1999/08/09–1999/09/17]

951 Highworth

J. W. Rock, 2 Spa Close, Highworth, Swindon, Wiltshire SN6 7PJ, England

[OC34@dia1.pipex.com]

0.30-m Newtonian reflector + CCD

GSC

3105 T-3, 5, 2, 6; [5, 1, 0*, 1999/08/31–1999/09/06]

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

1997 CZ₅, 4, 1, 0; 1999 RQ₃₆, 6, 1, 0; 1999 RJ₄₅, 6, 1, 0; (664), 3, 1, 0; (724), 2, 1, 0; (1309), 3, 1, 0; (2251), 3, 1, 0; (3337), 3, 1, 0; (3451), 2, 1, 0; (3648), 3, 1, 0; (3704), 3, 1, 0; (3728), 5, 2, 2; (3829), 4, 1, 0; (4290), 3, 1, 0; (4679), 2, 1, 0; (5962), 2, 1, 0; (6002), 2, 1, 0; (6773), 2, 1, 0; (7385), 2, 1, 0; (8636), 3, 1, 0; (8653), 3, 1, 0; [66, 21, 0*, 1999/08/04–1999/09/17]

954 Teide Observatory

R. Casas, Instituto de Astrofísica de Canarias, Via Lactea, E-38200 La Laguna,

Tenerife, Canary Islands, Spain [rcr@11.iac.es]

Observers M. R. Z. Osorio, C. Zurita

Measurer R. Casas

0.8-m $f/11.3$ Cassegrain + CCD

GSC-1.2

1999 RP₄₄ *, 6, 2, 2; [6, 1, 1*, 1999/09/03–1999/09/05]

975 Valencia

À. López, Observatorio Astronómico de Valencia, Avda. Blasco Ibanez 13, E-46010

Valencia, Spain [Alvaro.Lopez@uv.es]

Observers À. López G., A. Flores M.

Measurers À. López G., A. Flores M., J. A. Morano F., J. Pastor E.

0.15-m $f/15$ refractor

PPM, GSC

(3), 2, 1, 0; (5), 2, 1, 0; (6), 4, 2, 29; (8), 3, 1, 0; (10), 11, 5, 90; (14), 2, 1, 0; (18), 2, 1, 0; (25), 4, 1, 0; (39), 2, 1, 0; (40), 2, 1, 0; (48), 2, 1, 0; (88), 8, 3, 9; (141), 2, 1, 0; (324), 2, 1, 0; (387), 4, 2, 3; (747), 1, 1, 0; [53, 16, 0*, 1989/04/28–1997/02/26]

ORBITAL ELEMENTS

Orbital elements have been computed by the following contributors:

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A. Doppler, c/o Archenthald-Sternwarte, Alt-Treptow 1, D-12435 Berlin, Germany [doppler@aobs.de]
D. W. E. Green, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138, U.S.A. [dgreen@cfa.harvard.edu]
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S. Nakano, 3-19, 1 chome, Takenokuchi, Sumoto, Hyogo-ken 656, Japan [snakano@cfa.harvard.edu]
G. V. Williams, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138, U.S.A. [gwilliams@cfa.harvard.edu]

C/1999 H1 (Lee)

Epoch 1999 July 1.0 TT = JDT 2451360.5

<i>T</i>	1999 July 11.1719 TT		Marsden	
<i>q</i>	0.708108	(2000.0)	P	Q
<i>z</i>	+0.000347	ω 40.6994	-0.5563329	+0.8169357
	± 0.000002	Ω 162.6489	+0.5665164	+0.2390486
<i>e</i>	0.999754	<i>i</i> 149.3534	+0.6079086	+0.5248541

From 450 observations 1999 Apr. 16–Sept. 25, mean residual 0^{''}.8.

C/1999 H3 (LINEAR)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>T</i>	1999 Aug. 18.2492 TT		Nakano	
<i>q</i>	3.500825	(2000.0)	P	Q
<i>z</i>	-0.000774	ω 101.9143	-0.3789386	-0.8284226
	± 0.000010	Ω 332.7238	-0.6112631	+0.5586944
<i>e</i>	1.002711	<i>i</i> 115.8403	+0.6948115	+0.0397057

From 319 observations 1999 Apr. 22–Sept. 9, mean residual 0^{''}.6.

C/1999 J2 (Skiff)

Epoch 2000 Apr. 6.0 TT = JDT 2451640.5

<i>T</i>	2000 Apr. 5.8523 TT		Nakano	
<i>q</i>	7.110140	(2000.0)	P	Q
<i>z</i>	-0.000186	ω 127.1293	-0.4258964	-0.4830856
	± 0.000014	Ω 50.0417	-0.7116233	-0.3433115
<i>e</i>	1.001323	<i>i</i> 86.4128	+0.5587527	-0.8054598

From 319 observations 1999 May 12–Sept. 9, mean residual 0^{''}.6.

C/1999 J3 (LINEAR)

Epoch 1999 Sept. 19.0 TT = JDT 2451440.5

<i>T</i>	1999 Sept. 20.1670 TT		Nakano	
<i>q</i>	0.976797	(2000.0)	P	Q
<i>z</i>	+0.000631	ω 161.9813	+0.5770142	+0.3479731
	± 0.000020	Ω 228.9777	+0.5753761	+0.4688920
<i>e</i>	0.999383	<i>i</i> 101.6555	+0.5796525	-0.8118221

From 82 observations 1999 May 12–Sept. 13, mean residual 0^{''}.7.

C/1999 K6 (LINEAR)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>T</i>	1999 July 24.6659 TT		Nakano	
<i>q</i>	2.247014	(2000.0)	P	Q
<i>z</i>	+0.002863	ω 56.7598	+0.2964296	+0.6925081
	± 0.000008	Ω 245.3728	-0.9186199	+0.3951372
<i>e</i>	0.993567	<i>i</i> 46.3447	+0.2612795	+0.6035719

From 150 observations 1999 May 20–Sept. 22, mean residual 0^{''}.6.

C/1999 K8 (LINEAR)

Epoch 2000 Apr. 6.0 TT = JDT 2451640.5

<i>T</i>	2000 Apr. 24.3733 TT		Nakano	
<i>q</i>	4.200177	(2000.0)	P	Q
<i>z</i>	-0.000242	ω 164.6370	+0.9722572	+0.1004380
	± 0.000024	Ω 195.3937	+0.0090704	+0.8862570
<i>e</i>	1.001016	<i>i</i> 52.7339	+0.2337385	-0.4521734

From 130 observations 1999 May 26–Sept. 27, mean residual 0^{''}.6.

C/1999 N2 (Lynn)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>T</i>	1999 July 23.0505 TT		Nakano	
<i>q</i>	0.761284	(2000.0)	P	Q
<i>z</i>	+0.003337	ω 357.8340	-0.2506424	-0.3656472
	± 0.000027	Ω 254.6757	-0.8736383	-0.3134617
<i>e</i>	0.997459	<i>i</i> 111.6561	-0.4170546	+0.8763811

From 168 observations 1999 July 14–Sept. 11, mean residual 0^{''}.7.

C/1999 N4 (LINEAR)

Epoch 2000 May 25.5263 TT

<i>T</i>	2000 May 25.5263 TT		Nakano	
<i>q</i>	5.499088	(2000.0)	P	Q
		ω 90.5786	-0.2344884	-0.9673898
		Ω 345.8616	-0.9721012	+0.2339374
<i>e</i>	1.0	<i>i</i> 156.9162	+0.0058612	+0.0971090

From 94 observations 1999 July 12–Aug. 29.

C/1999 R1 (SOHO)

Epoch 1999 Sept. 5.52 TT

<i>T</i>	1999 Sept. 5.52 TT		Marsden	
<i>q</i>	0.0565	(2000.0)	P	Q
		ω 43.74	+0.65845	-0.75232
		Ω 5.22	+0.60891	+0.51568
<i>e</i>	1.0	<i>i</i> 13.69	+0.44235	+0.40999

From 52 observations 1999 Sept. 4–6.

P/1999 RO₂₈ (LONEOS)

Epoch 1999 Oct. 2.3486 TT

<i>T</i>	1999 Oct. 2.3486 TT		Marsden	
<i>q</i>	1.231198	(2000.0)	P	Q
<i>n</i>	0.1500705	ω 219.8711	+0.9860817	-0.1486831
<i>a</i>	3.507028	Ω 148.4432	+0.1638336	+0.9451478
<i>e</i>	0.648934	<i>i</i> 8.1736	-0.0283085	+0.2908418
<i>P</i>	6.57			

From 65 observations 1999 Sept. 7–16.

C/1999 S1 (SOHO) T 1999 Sept. 17.87 TT q 0.0050 (2000.0) ω 80.28 Ω 1.11 e 1.0 i 144.06

From 51 observations 1999 Sept. 16–17.

C/1999 S2 (McNaught-Watson) T 2001 May 22.6014 TT q 6.930854 (2000.0) ω 318.0272 Ω 67.7574 e 1.0 i 66.3923

From 23 observations 1999 Sept. 19–27.

C/1999 S3 (LINEAR) T 1999 Nov. 6.2541 TT q 1.924490 (2000.0) ω 42.9036 Ω 12.4859 e 1.0 i 71.6991

From 117 observations 1999 Sept. 24–28.

106P/Schuster

Epoch 1999 Dec. 8.0 TT = JDT 2451520.5

 T 1999 Dec. 16.2266 TT q 1.549720 (2000.0) n 0.1351437 ω 355.8585 a 3.760730 Ω 50.5895 e 0.587921 i 20.1388 P 7.29

From 78 observations 1977–1999, mean residual 0''8. Nongravitational parameters

 $A_1 = +0.15$, $A_2 = +0.0061$.**114P/Wiseman-Skiff**

Epoch 2000 Jan. 17.0 TT = JDT 2451560.5

 T 2000 Jan. 11.7374 TT q 1.569438 (2000.0) n 0.1480592 ω 172.8215 a 3.538717 Ω 271.0703 e 0.556495 i 18.2911 P 6.66

From 53 observations 1986–1999, mean residual 0''9.

141P/Machholz 2

Epoch 1999 Dec. 8.0 TT = JDT 2451520.5

 T 1999 Dec. 9.2752 TT q 0.748905 (2000.0) n 0.1888712 ω 149.2991 a 3.008561 Ω 246.1434 e 0.751075 i 12.8116 P 5.22

From 207 observations 1994–1999, mean residual 0''9. Nongravitational parameters

 $A_1 = -0.55$, $A_2 = -0.5196$, $A_3 = +0.63$.

Marsden

P **Q**

+0.18420 −0.98282

−0.95917 −0.18226

+0.21465 +0.02896

Marsden

P **Q**

+0.5293196 −0.0224289

+0.7821029 +0.4003537

−0.3288400 +0.9160861

Marsden

P **Q**

+0.6689595 −0.7143947

+0.0796891 −0.2056315

+0.7390148 +0.6688467

Marsden

P **Q**

+0.6856020 −0.6776351

+0.6774066 +0.4600428

+0.2665901 +0.5737345

142P/Ge-Wang

Epoch 1999 July 1.0 TT = JDT 2451360.5

 T 1999 June 21.4788 TT q 2.496395 (2000.0) n 0.0882617 ω 177.3858 a 4.995986 Ω 177.1399 e 0.500320 i 12.1732 P 11.2

From 17 observations 1988–1999, mean residual 0''8.

Marsden

P **Q**

+0.9954903 +0.0942785

−0.0904131 +0.9765057

−0.0287161 +0.1937734

(11434)* 1931 TC₂ = 1990 SX₁₉ = 1990 UZ₁₁ = 1998 FT₁₄₄

Discovered 1931 Oct. 10 by K. Reinmuth at Heidelberg.

Id. T. Kobayashi (*MPC* 34171), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

 M 6.73233 (2000.0) n 0.21711879 ω 340.70385 a 2.7416022 Ω 349.11240 e 0.2803822 i 8.70616 P 4.54 H 13.3 G 0.15 U 2

Residuals in seconds of arc

1931 10 10 024 0.9− 2.3− 1998 05 16 704 0.1+ 0.3− 1999 09 07 704 0.2+ 0.0

1931 10 16 024 1.5+ 1.0+ 1998 05 16 704 1.0+ 0.3− 1999 09 07 704 0.1+ 0.5−

1931 10 19 024 (4.8+ 2.5+) 1998 05 16 704 1.5+ 1.1− 1999 09 07 704 0.1− 0.2−

1931 11 04 024 0.2+ 0.2+ 1999 07 16 704 0.0 1.0− 1999 09 07 704 0.3− 0.4−

1990 09 18 675 0.6− 1.1− 1999 07 16 704 0.4+ 1.0− 1999 09 07 704 1.0− 0.5−

1990 09 18 675 (4.9− 4.0−) 1999 07 16 704 0.2− 1.1− 1999 09 11 120 0.2− 0.1−

1990 10 23 095 0.6+ 0.6− 1999 07 16 704 0.1+ 1.2− 1999 09 11 120 1.1− 0.2−

1998 03 25 704 1.0− 0.4− 1999 07 16 704 0.1+ 1.1− 1999 09 11 108 0.1+ 0.6−

1998 03 25 704 0.4− 0.6+ 1999 08 22 703 0.1+ 0.7+ 1999 09 11 108 0.4− 1.1−

1998 03 25 704 0.4− 0.5+ 1999 08 22 703 0.1− 0.4+ 1999 09 11 108 1.0+ 0.5+

1998 03 25 704 0.9− 0.6+ 1999 08 22 703 0.0 0.9+ 1999 09 13 629 0.3− 0.5−

1998 03 31 704 0.7− 0.3− 1999 08 22 703 0.3+ 0.6+ 1999 09 13 629 0.6+ 0.5+

1998 03 31 704 0.1+ 0.4+ 1999 08 22 699 0.1− 0.3+ 1999 09 13 629 0.7+ 0.1+

1998 03 31 704 0.3+ 0.1+ 1999 08 22 699 0.0 1.2+ 1999 09 13 629 0.3+ 0.3−

1998 03 31 704 0.1− 1.5+ 1999 08 22 699 0.0 0.7+ 1999 09 14 704 0.1+ 0.5+

1998 03 31 704 0.0 0.6+ 1999 09 05 120 0.4− 0.3− 1999 09 14 704 0.1+ 0.3+

1998 04 20 704 0.4− 0.3− 1999 09 05 120 0.6− 0.2+ 1999 09 14 704 0.3+ 0.5+

1998 04 20 704 0.3− 0.2− 1999 09 06 120 0.0 0.3+ 1999 09 14 703 0.0 0.2−

1998 04 20 704 0.2+ 0.1− 1999 09 06 691 0.3− 0.0 1999 09 14 703 0.1+ 0.8+

1998 04 20 704 0.4+ 0.1− 1999 09 06 691 0.3− 0.1+ 1999 09 14 703 0.4+ 0.5+

1998 04 20 704 0.9− 1.5− 1999 09 06 691 0.2− 0.1+ 1999 09 14 703 0.4+ 0.8+

1998 05 16 704 1.2+ 0.4− 1999 09 06 120 0.3− 0.6+

1998 05 16 704 0.2+ 0.4+ 1999 09 06 120 0.2− 0.6+

(11435)* 1931 UB = 1984 UF₁ = 1990 EZ₉ = 1998 HT₅₇

Discovered 1931 Oct. 17 by K. Reinmuth at Heidelberg.

Id. T. Kobayashi (*MPC* 11855), G. V. Williams (*MPC* 32206), A. Doppler(*MPC* 34480), M. E. Sansaturio (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

 M 357.55549 (2000.0) n 0.26085401 ω 116.67582 a 2.4258896 Ω 234.93568 e 0.2176989 i 1.36205 P 3.78 H 14.1 G 0.15 U 2

Residuals in seconds of arc

1931 10 17 024 0.2− 1.7+ 1998 03 25 704 0.7+ 0.6− 1998 04 22 704 0.9− 0.5+

1931 10 20 024 (7.6− 1.6−) 1998 03 25 704 1.2+ 0.7+ 1998 04 22 704 0.1+ 0.5+

1931 11 02 024 (9.5+ 9.5+) 1998 03 25 704 0.1− 0.1− 1998 05 16 704 1.2+ 1.0+

1984 10 28 046 1.0+ 1.6− 1998 03 29 704 1.1+ 0.9− 1998 05 16 704 0.6− 0.7+

1984 10 28 046 (0.8+ 2.8−) 1998 03 29 704 0.4+ 1.2− 1998 05 16 704 0.3+ 0.9+

1984 10 29	046	0.4+	1.2-	1998 03 29	704	0.3-	1.5-	1998 05 16	704	0.3-	0.3-
1984 10 29	046	0.9+	0.8+	1998 03 29	704	1.7+	0.5+	1999 08 13	699	0.9-	0.2-
1984 10 30	046	2.2-	0.3+	1998 03 29	704	0.0	0.6+	1999 08 13	699	0.2-	0.2+
1984 10 30	046	2.3-	0.9+	1998 04 01	704	0.2-	1.7-	1999 08 13	699	1.5-	1.7+
1990 03 04	809	(6.9- 4.6+)		1998 04 01	704	(1.7- 2.7-)		1999 08 13	699	0.1+	0.5-
1990 03 04	809	(3.4- 3.3+)		1998 04 01	704	1.3-	0.0	1999 08 13	699	1.5-	0.5+
1990 03 04	809	(1.2- 4.4+)		1998 04 01	704	0.4-	1.0-	1999 08 13	699	0.2-	0.1+
1997 01 15	566	0.7+	0.6+	1998 04 21	704	0.0	1.1+	1999 09 05	699	0.0	0.7+
1997 01 15	566	1.1+	0.3+	1998 04 21	704	1.2-	0.7+	1999 09 05	699	0.8+	0.4+
1997 01 15	566	0.4+	0.6+	1998 04 21	704	0.2-	1.3+	1999 09 05	699	0.5+	0.6+
1997 02 07	566	0.3+	0.4+	1998 04 21	704	0.3-	0.8+	1999 09 11	106	0.4+	0.2-
1997 02 07	566	0.3-	0.2+	1998 04 21	704	(2.3+ 1.2+)		1999 09 11	106	0.3+	0.6-
1997 02 07	566	0.4-	0.3+	1998 04 22	704	0.1-	0.9+	1999 09 11	106	0.2+	0.3+
1998 03 25	704	0.4+	0.5+	1998 04 22	704	0.3+	0.8+	1999 09 13	629	0.8+	0.3+
1998 03 25	704	0.1+	0.6-	1998 04 22	704	0.3-	0.5+	1999 09 14	629	0.9+	0.1-

(11436)* 1969 QR = 1988 DP

Discovered 1969 Aug. 22 by L. Kohoutek at Bergedorf.

Id. C. M. Bardwell (*MPC* 12958)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Bardwell

<i>M</i>	35.42923		(2000.0)	P	Q
<i>n</i>	0.29694864	ω	55.60844	+0.42135683	+0.90015310
<i>a</i>	2.2250947	Ω	239.68180	-0.86837956	+0.36537056
<i>e</i>	0.1413819	<i>i</i>	7.34612	-0.26148682	+0.23712603
<i>P</i>	3.32	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1969 08 22	029	1.1+	1.3+	1992 06 29	801	0.2+	0.1-	1999 07 23	704	0.4-	0.2-
1969 08 22	029	0.2+	0.3-	1992 06 30	801	0.2+	0.1+	1999 07 23	704	0.3-	0.5+
1969 09 02	029	0.1-	0.2-	1992 06 30	801	0.0	0.2-	1999 09 08	704	0.5+	1.1-
1969 09 04	029	0.5-	0.3-	1996 12 09	658	1.4+	0.3+	1999 09 08	704	0.6+	0.0
1969 09 18	029	0.7-	0.1+	1996 12 09	658	1.2+	0.2+	1999 09 08	704	0.2+	0.6-
1988 02 19	413	2.3-	0.4+	1996 12 14	658	0.3-	0.4+	1999 09 08	704	0.2+	0.7-
1988 02 22	413	2.1-	0.6+	1996 12 14	658	0.9-	0.0	1999 09 08	704	0.3+	0.4-
1988 02 22	413	0.3-	1.1-	1996 12 14	658	0.4+	0.0	1999 09 11	165	1.9+	0.8-
1988 02 23	413	1.4-	0.3-	1998 03 18	426	0.3+	0.3-	1999 09 16	704	0.8-	0.6+
1988 02 23	413	2.1+	0.6-	1998 03 18	426	0.1+	0.0	1999 09 16	704	0.5-	0.1-
1988 02 25	413	0.1-	0.0	1998 03 18	426	0.2+	0.0	1999 09 16	704	0.5-	0.3+
1988 02 25	413	0.8+	0.1+	1998 03 20	426	0.1+	0.0	1999 09 16	704	0.1+	0.8-
1988 03 10	413	0.3-	0.1+	1998 03 20	426	0.1-	0.7-	1999 09 22	704	0.1+	0.1-
1988 03 10	413	1.2+	0.6-	1998 03 20	426	0.0	0.1+	1999 09 22	704	0.1+	0.7-
1989 09 01	801	0.9-	0.6+	1999 07 23	704	0.7-	0.1+	1999 09 22	704	0.1-	0.1-
1989 09 03	801	(1.9+ 3.4+)		1999 07 23	704	0.4-	0.0	1999 09 22	704	0.1-	0.0
1992 06 29	801	0.2+	0.5-	1999 07 23	704	0.5-	0.2+				

(11437)* 1971 SB = 1993 FX

Discovered 1971 Sept. 16 by J. Gibson and C. U. Cesco at El Leoncito.

Id. G. V. Williams (*MPC* 22049)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	281.08756		(2000.0)	P	Q
<i>n</i>	0.38768279	ω	76.35437	+0.30194587	-0.95288452
<i>a</i>	1.8627377	Ω	355.72807	+0.65256576	+0.22875098
<i>e</i>	0.0984753	<i>i</i>	22.89415	+0.69497239	+0.19920862
<i>P</i>	2.54	<i>H</i>	14.6	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1971 09 16	808	1.0-	0.4+	1998 03 25	610	1.7+	0.8+	1999 09 08	704	0.1-	0.1+
1971 09 18	808	0.6-	2.0+	1998 03 25	629	0.9+	0.5-	1999 09 08	704	0.1+	0.3+
1971 09 18	808	0.2+	0.3-	1998 03 25	629	0.3+	1.0-	1999 09 08	704	0.1-	0.0
1971 09 22	808	0.1+	0.1+	1998 03 25	629	0.6-	0.5-	1999 09 08	704	0.1-	0.2+
1971 09 22	808	0.2-	0.2+	1998 03 25	629	1.8+	0.8-	1999 09 09	704	0.2+	0.1-
1971 09 26	808	0.1+	0.4-	1998 04 15	704	0.2-	0.7+	1999 09 09	704	0.2-	0.2-
1971 09 26	808	0.5+	0.2-	1998 04 15	704	1.8-	0.4+	1999 09 09	704	0.2-	0.2+
1971 10 12	808	0.6-	0.7+	1998 04 15	704	0.6-	0.9+	1999 09 09	704	0.0	0.0
1971 10 12	808	0.6-	0.4-	1998 04 15	704	0.8+	0.2+	1999 09 09	704	0.1-	0.1-

1971 10 14	808	0.3+	0.3-	1998 04 15	704	0.0	0.2-	1999 09 09	120	0.4-	0.6+
1971 10 14	808	0.3+	0.2-	1998 04 20	610	1.2+	0.4-	1999 09 09	120	0.1-	1.0+
1993 03 21	675	1.6-	0.6+	1998 04 20	610	0.8+	0.1-	1999 09 10	120	0.1+	0.2+
1993 03 21	675	(0.1- 3.4-)		1998 04 20	610	0.5+	0.0	1999 09 10	120	0.1+	0.0
1993 03 22	675	(1.7- 3.5-)		1998 04 20	610	0.0	0.1+	1999 09 11	120	0.6-	0.2+
1993 03 22	675	(3.7- 4.2-)		1998 04 20	610	0.1-	0.2+	1999 09 11	120	0.3-	0.7+
1994 10 27	563	0.6+	0.7-	1998 05 01	566	0.7-	0.0	1999 09 12	106	0.3-	0.3+
1994 10 27	563	0.2+	0.3-	1998 05 01	566	0.5-	0.1+	1999 09 12	106	1.9-	0.9+
1998 02 21	327	0.1-	0.0	1998 05 01	566	0.6-	0.0	1999 09 13	106	0.0	0.2+
1998 02 21	327	0.4-	0.5+	1998 05 02	566	0.2-	0.3-	1999 09 13	629	1.1+	0.1+
1998 02 21	327	0.0	0.2+	1998 05 02	566	0.3+	0.1-	1999 09 13	629	0.1+	1.1+
1998 02 27	689	0.5-	0.2-	1998 05 02	566	0.0	0.2-	1999 09 13	629	0.2+	1.7+
1998 03 03	699	0.4+	0.2+	1999 08 22	703	1.0-	0.2-	1999 09 14	704	0.2+	0.5-
1998 03 03	699	0.1+	1.2+	1999 08 22	703	0.5-	0.4+	1999 09 14	704	0.2+	0.5-
1998 03 03	699	0.4+	0.2+	1999 08 22	703	0.7-	0.2-	1999 09 14	704	0.1+	0.5-
1998 03 08	689	0.2-	0.2+	1999 08 22	703	0.4-	0.1-	1999 09 14	704	0.1+	0.5-
1998 03 19	689	0.4+	0.3+	1999 09 07	704	0.2+	0.1-	1999 09 14	704	0.1+	0.4-
1998 03 25	610	0.0	0.4+	1999 09 07	704	0.4+	0.2-	1999 09 14	703	0.0	0.3+
1998 03 25	610	0.8+	0.5+	1999 09 07	704	0.3+	0.3-	1999 09 14	703	0.4-	0.1+
1998 03 25	610	1.0+	0.6+	1999 09 07	704	0.9+	0.6-	1999 09 14	703	0.4-	0.2-
1998 03 25	610	1.4+	0.7+	1999 09 07	704	0.3+	0.1-	1999 09 14	703	0.6-	0.6-

(11438)* 1973 QR₁ = 1973 SK₂ = 1992 HK₅

Discovered 1973 Aug. 29 by T. M. Smirnova at the Crimean Astrophysical Observatory.

Id. C. M. Bardwell (d, *MPC* 4576), T. Kobayashi (*MPC* 22221)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Bardwell

<i>M</i>	19.83260		(2000.0)	P	Q
<i>n</i>	0.30356704	ω	104.88958	+0.61503036	+0.78826487
<i>a</i>	2.1926348	Ω	203.09824	-0.74111308	+0.56949252
<i>e</i>	0.1925524	<i>i</i>	2.83368	-0.26923792	+0.23305956
<i>P</i>	3.25	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1973 08 29	095	0.3-	1.7-	1995 04 09	560	0.2-	0.9-	1999 09 07	704	0.4+	0.1-
1973 09 02	095	(1.1-	5.7-)	1998 02 23	566	0.6+	0.7-	1999 09 07	704	0.4+	0.5-
1973 09 22	095	0.3+	2.1+	1998 02 23	566	0.9+	0.7-	1999 09 07	704	0.4+	0.4-
1973 09 23	095	(2.5-	4.6+)	1998 02 23	566	0.7+	0.7-	1999 09 07	704	0.3+	0.5-
1992 04 24	691	0.2+	0.6-	1998 02 27	566	0.3+	1.2-	1999 09 07	704	0.4-	1.0-
1992 04 24	691	0.1-	0.5-	1998 02 27	566	0.0	1.2-	1999 09 09	704	0.1+	0.2-
1992 04 24	691	0.1-	0.6-	1998 02 27	566	0.6+	1.6-	1999 09 09	704	0.0	0.2+
1992 04 25	809	0.4+	0.0	1998 03 03	704	0.0	0.3-	1999 09 09	704	0.0	0.1-
1992 04 25	809	1.2+	0.6-	1998 03 03	704	0.6+	0.6-	1999 09 09	704	0.1+	0.1+
1992 05 03	809	0.3-	0.3+	1998 03 03	704	0.2+	0.2-	1999 09 09	704	0.2+	0.1+
1992 05 03	809	0.3+	0.3+	1998 03 03	704	0.1-	0.3-	1999 09 11	699	0.1-	0.6+
1992 05 03	809	0.8+	0.4+	1998 03 03	704	0.1+	0.3-	1999 09 11	699	0.8+	0.8+
1992 05 03	095	1.5-	1.9+	1998 03 04	704	2.0-	0.8-	1999 09 11	699	0.3+	0.6+
1992 05 04	809	0.8-	0.1+	1998 03 04	704	1.4-	0.4-	1999 09 13	629	0.0	0.1+
1992 05 04	809	0.7-	0.1-	1998 03 04	704	1.6-	0.2-	1999 09 13	629	0.3-	0.1-
1992 05 04	809	0.3+	0.2-	1998 03 04	704	(2.4-	0.6-)	1999 09 13	629	0.3-	0.0
1992 05 08	809	0.4-	0.0	1998 03 04	704	(2.9-	0.0)	1999 09 13	629	0.3-	0.1+
1992 05 08	809	0.5-	0.4-	1999 07 23	704	0.1-	1.0-	1999 09 13	106	0.7-	0.3+
1992 05 08	809	0.2-	0.2-	1999 07 23	704	0.2+	1.2-	1999 09 13	106	0.3-	1.6+
1992 05 10	809	0.1-	0.2+	1999 07 23	704	0.8+	0.9-	1999 09 13	106	0.1-	0.3+
1992 05 10	809	0.3+	0.5+	1999 07 23	704	0.6+	0.9-	1999 09 14	704	0.3-	0.9-
1992 05 10	809	0.5+	0.4+	1999 07 23	704	1.7+	0.8-	1999 09 14	704	0.2-	1.3-
1992 05 11	809	0.1-	0.4-	1999 08 22	106	0.3-	0.4+	1999 09 14	704	0.1-	1.0-
1992 05 11	809	0.9+	0.4-	1999 08 22	106	0.5-	0.1+	1999 09 14	704	0.2-	0.9-
1992 05 11	809	1.1+	0.0	1999 08 22	106	0.1-	0.1+	1999 09 14	704	0.1+	1.1-
1995 04 09	560	1.3-	0.8+	1999 09 02	727	0.6+	0.4-				
1995 04 09	560	1.3-	0.3-	1999 09 02	727	0.6+	0.4-				

1999 SEPT. 28

M.P.C. 35817

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	252.89706		(2000.0)	P	Q
<i>n</i>	0.22909394	ω	26.70243	-0.28065788	-0.95625972
<i>a</i>	2.6452109	Ω	79.68991	+0.86494857	-0.28922254
<i>e</i>	0.1833079	<i>i</i>	4.80738	+0.41604703	-0.04379120
<i>P</i>	4.30	<i>H</i>	13.5	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1974 12 14	330	0.6+	1.6-	1991 11 12	894	0.9-	0.2-	1999 08 12	699	0.1+	0.1-
1974 12 18	330	0.2-	0.5-	1991 11 12	894	1.1-	0.7+	1999 09 07	699	0.0	0.6+
1975 01 12	330	0.4+	0.1-	1991 11 15	894	0.7+	1.4+	1999 09 07	699	0.2+	0.5+
1978 11 01	095	(1.1+	5.8-)	1991 11 15	894	0.4+	0.2-	1999 09 07	699	1.3+	0.0
1984 02 06	688	1.5-	0.1+	1991 12 01	675	1.1+	0.5-	1999 09 09	704	0.1-	0.2+
1984 02 06	688	0.4-	0.7-	1991 12 03	675	(2.7+	1.8-)	1999 09 09	704	0.5-	0.2+
1988 01 11	033	0.5+	1.3+	1991 12 03	675	1.0+	0.9-	1999 09 09	704	0.1+	0.6+
1988 01 11	033	0.2+	1.2+	1997 05 03	327	0.3+	0.9+	1999 09 09	704	1.0-	0.2-
1991 11 09	399	0.9-	1.0+	1997 05 03	327	0.9+	0.2+	1999 09 13	704	0.0	0.1+
1991 11 09	399	0.8-	0.5+	1997 05 03	327	0.6+	0.5+	1999 09 13	704	0.2-	0.5+
1991 11 11	399	0.2-	0.5-	1999 08 12	699	0.7+	0.3-	1999 09 13	704	0.4-	0.4-
1991 11 11	399	0.4-	0.4-	1999 08 12	699	0.6-	0.3-	1999 09 13	704	0.3+	0.3-

(11440)* 1975 SC₂ = 1997 EG₅₀

Discovered 1975 Sept. 30 by S. J. Bus at Palomar.

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

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	219.43703		(2000.0)	P	Q
<i>n</i>	0.15676842	ω	262.58625	-0.06234418	-0.99754312
<i>a</i>	3.4064105	Ω	191.13959	+0.96848566	-0.05273118
<i>e</i>	0.0649422	<i>i</i>	9.51942	+0.24114047	-0.04612089
<i>P</i>	6.29	<i>H</i>	12.3	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1975 09 30	675	0.5-	0.8+	1998 05 23	704	(3.2-	1.6+)	1999 07 13	704	0.2+	0.2+
1975 10 01	675	0.3-	0.7+	1998 05 26	704	0.6+	0.6-	1999 07 13	704	0.0	0.2+
1975 10 02	675	0.1-	0.7+	1998 05 26	704	0.3+	0.8+	1999 07 13	704	0.1+	0.2+
1975 10 15	675	0.1+	2.2+	1998 05 26	704	0.6+	0.0	1999 07 13	704	0.2+	0.1-
1975 10 16	675	0.3-	0.6+	1998 05 26	704	0.6-	0.3-	1999 07 13	704	0.1+	0.5+
1997 03 05	809	1.0+	1.1+	1998 05 26	704	0.9-	1.2+	1999 07 23	704	1.2-	0.3-
1997 03 05	809	0.0	1.0+	1998 06 19	704	0.2+	1.3-	1999 07 23	704	0.3+	0.4+
1997 03 05	809	0.3-	0.3+	1998 06 19	704	1.1+	0.1+	1999 07 23	704	0.0	0.2+
1997 03 06	809	(0.8+	2.7+)	1998 06 19	704	(2.2+	1.1+)	1999 09 09	704	0.4+	0.6+
1997 03 06	809	0.3+	1.8+	1998 06 19	704	1.4-	0.0	1999 09 09	704	0.5+	0.3+
1997 03 06	809	0.4+	2.0+	1998 06 19	704	0.7-	0.9-	1999 09 09	704	0.0	0.3+
1998 05 23	704	0.1-	1.0+	1998 06 26	699	1.1+	1.6-	1999 09 09	704	1.2-	0.2+
1998 05 23	704	0.9+	1.6+	1998 06 26	699	0.9-	0.1-				
1998 05 23	704	0.4+	0.4+	1998 06 26	699	0.4-	0.7-				

(11441)* 1975 YD = 1989 GA₂

Discovered 1975 Dec. 31 by M. R. Cesco at El Leoncito.

Id. T. Kobayashi (*MPC* 14779)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	307.68675		(2000.0)	P	Q
<i>n</i>	0.24029423	ω	204.93218	+0.45994273	-0.87821198
<i>a</i>	2.5623620	Ω	218.06744	+0.84617584	+0.47826309
<i>e</i>	0.2562838	<i>i</i>	12.27936	+0.26914519	-0.00285145
<i>P</i>	4.10	<i>H</i>	12.8	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1975 12 31	808	0.1+	0.3-	1991 10 14	095	(1.1+	5.1-)	1999 07 22	704	0.5+	0.5+
1975 12 31	808	0.3-	1.2+	1991 11 03	366	1.5+	0.5-	1999 09 02	127	0.1-	0.3+
1976 01 03	808	0.4+	0.3+	1991 11 03	366	(2.4+	1.7+)	1999 09 02	127	0.2+	0.4+
1976 01 03	808	0.8+	0.4-	1991 11 06	366	(2.9+	0.6+)	1999 09 02	127	0.1-	0.3+
1976 01 06	808	0.2-	0.6+	1991 11 06	366	0.8+	0.1-	1999 09 04	127	0.2-	0.7+
1976 01 06	808	0.3+	0.1+	1991 11 11	894	1.0+	1.7-	1999 09 04	127	0.4-	0.6+

1989 04 03	809	0.2-	1.6-	1991 11 11	894	1.1+	0.8-	1999 09 07	703	0.7-	0.1-
1989 04 03	809	0.2+	1.6-	1991 12 04	399	0.2-	0.5-	1999 09 07	703	0.1-	0.2+
1989 04 03	809	0.2-	1.9-	1991 12 04	399	0.5-	0.7+	1999 09 07	703	0.1+	0.1+
1989 04 05	809	0.0	0.9-	1991 12 07	399	0.3-	0.5+	1999 09 07	703	0.4-	1.0+
1989 04 05	809	0.8-	1.0-	1991 12 07	399	0.5+	0.9-	1999 09 08	704	0.2-	0.1-
1989 04 05	809	0.4-	1.4-	1995 10 24	801	0.1-	0.9-	1999 09 08	704	0.2+	0.2-
1989 04 08	809	1.7+	0.5+	1995 10 24	801	0.1-	0.8-	1999 09 08	704	0.8-	0.0
1989 04 08	809	1.0+	0.1+	1995 10 27	801	0.1+	0.2+	1999 09 08	704	0.4-	0.2-
1989 04 08	809	1.0+	0.8+	1995 10 27	801	0.2+	0.2+	1999 09 08	704	0.5-	0.2-
1989 04 10	809	1.6-	0.3-	1995 11 18	801	0.1+	0.6-	1999 09 08	127	0.0	0.0
1989 04 10	809	1.8-	1.2-	1995 11 18	801	0.1+	0.6-	1999 09 08	127	0.0	0.1-
1989 04 10	809	1.5-	0.4-	1995 11 23	801	0.1-	0.5-	1999 09 11	106	0.3+	0.4-
1991 09 13	801	0.0	0.3+	1995 11 23	801	0.1-	0.5-	1999 09 11	106	0.2+	0.2+
1991 09 13	801	0.1+	0.3+	1995 12 22	801	0.2-	0.7-	1999 09 11	106	0.9+	0.2+
1991 10 04	801	0.4-	0.4+	1995 12 22	801	0.1-	0.8-	1999 09 11	165	0.3+	0.4+
1991 10 04	801	0.6-	0.5+	1997 02 12	689	0.4+	1.7+	1999 09 12	165	0.3-	0.3+
1991 10 05	095	(0.8-	2.7-)	1998 06 19	704	0.4-	0.3-	1999 09 13	629	0.2+	0.3-
1991 10 05	095	(0.8+	4.0-)	1998 06 19	704	1.2+	0.6+	1999 09 13	629	0.3+	0.3-
1991 10 07	801	0.2-	0.1-	1998 06 19	704	0.6+	0.4-	1999 09 13	629	0.3+	0.2-
1991 10 07	801	0.1-	0.1-	1998 06 19	704	0.1-	0.6-	1999 09 16	704	0.0	0.4+
1991 10 13	403	0.2+	0.6+	1998 06 19	704	0.8-	0.8-	1999 09 16	704	0.0	0.4+
1991 10 13	403	0.1-	0.1+	1999 07 22	704	0.2+	0.5-	1999 09 16	704	0.3+	0.2-
1991 10 13	366	0.9-	1.4-	1999 07 22	704	0.6+	0.1-	1999 09 16	704	0.4-	0.2-
1991 10 13	366	1.9-	1.7-	1999 07 22	704	0.8+	0.4-				
1991 10 14	095	0.4-	0.3+	1999 07 22	704	0.5+	0.1+				

(11442)* 1976 UN₁₄ = 1996 VQ₂₁

Discovered 1976 Oct. 22 by H. Kosai and K. Hurukawa at the Kiso Station of the Tokyo Astronomical Observatory.

Id. G. V. Williams (*MPC* 28580)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	321.37251		(2000.0)	P	Q
<i>n</i>	0.29812557	ω	334.74588	+0.88030944	-0.46840597
<i>a</i>	2.2192347	Ω	53.39210	+0.44959955	+0.77318386
<i>e</i>	0.0369693	<i>i</i>	5.37347	+0.15137877	+0.42753078
<i>P</i>	3.31	<i>H</i>	14.4	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1976 10 22	381	0.5-	0.5+	1998 04 20	688	0.3+	0.1+	1998 05 16	704	(2.3-	0.4-)
1976 10 22	381	0.1+	0.4+	1998 04 20	688	0.2+	0.0	1999 08 22	703	0.0	0.4+
1976 10 24	381	0.9-	0.1+	1998 04 20	688	0.4+	0.1+	1999 08 22	703	0.0	0.6+
1976 10 24	381	0.6+	0.9+	1998 04 21	704	0.1+	0.3+	1999 08 22	703	0.6-	0.3-
1976 11 18	381	0.1-	0.2-	1998 04 21	704	0.5+	0.3+	1999 08 22	703	0.2+	0.4-
1976 11 18	381	0.0	0.2-	1998 04 21	704	0.8+	0.4+	1999 09 05	699	0.2+	0.8+
1996 11 08	691	0.1+	0.5-	1998 04 21	704	0.1-	0.2+	1999 09 05	699	0.2-	0.5+
1996 11 08	691	0.0	0.0	1998 04 21	704	0.3-	0.8+	1999 09 05	699	0.0	0.6+
1996 11 08	691	0.0	0.2-	1998 04 22	704	0.3+	0.0	1999 09 14	727	0.1-	0.3-
1996 11 09	691	0.2+	0.1-	1998 04 22	704	0.8+	0.2-	1999 09 14	704	0.1+	0.1-
1996 11 09	691	0.0	0.2-	1998 04 22	704	0.4+	0.7-	1999 09 14	727	0.0	0.6-
1996 11 09	691	0.3+	0.1-	1998 04 22	704	0.7+	0.4-	1999 09 14	704	0.1+	0.4-
1998 03 29	704	0.4-	0.3+	1998 04 22	704	0.1-	1.5-	1999 09 14	727	0.1+	0.9-
1998 03 29	704	0.8-	0.3+	1998 05 16	704	0.0	0.4+	1999 09 14	704	0.1-	0.1+
1998 03 29	704	1.0-	0.4+	1998 05 16	704	0.1+	0.5+	1999 09 14	704	0.4+	0.5-
1998 03 29	704	0.5-	0.4+	1998 05 16	704	1.0-	0.3-	1999 09 14	704	0.0	0.1-
1998 03 29	704	0.4-	0.6+	1998 05 16	704	0.3-	1.9-				

(11443)* 1977 CP = 1984 CJ₁ = 1991 CE₅ = 1999 ND₂₂

Discovered 1977 Feb. 11 by E. Bowell at Palomar.

Id. S. Nakano (*MPC* 35276)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	135.56275		(2000.0)		P		Q				
<i>n</i>	0.28097980	ω	127.77814		-0.90490298		-0.42553141				
<i>a</i>	2.3086210	Ω	27.04069		+0.38432292		-0.82560258				
<i>e</i>	0.1484800	<i>i</i>	1.08146		+0.18288384		-0.37054473				
<i>P</i>	3.51	<i>H</i>	14.6		<i>G</i>	0.15	<i>U</i>	2			
Residuals in seconds of arc											
1977 02 11	675	0.3-	0.6-	1996 09 13	566	0.2+	0.5-	1999 06 14	691	0.2-	0.3+
1977 02 11	675	(12.4+	3.4-)	1996 09 13	566	0.6+	0.7-	1999 07 14	704	0.2+	0.7-
1977 02 12	675	0.4-	1.0-	1998 01 07	699	0.0	0.2-	1999 07 14	704	0.0	0.5-
1977 02 12	675	0.0	0.6+	1998 01 07	699	0.8+	0.1-	1999 07 14	704	0.6-	1.9-
1977 02 14	675	0.3-	0.4+	1998 01 07	699	0.6+	0.7-	1999 07 16	704	0.6+	0.1-
1984 02 04	688	1.5+	1.6-	1998 02 13	327	0.4-	0.1+	1999 07 16	704	0.9+	1.2-
1984 02 04	688	(2.5-	1.0-)	1998 02 13	327	0.5-	0.1+	1999 07 16	704	0.1+	0.4+
1991 02 11	675	0.5-	1.0-	1998 02 13	327	0.5-	0.0	1999 07 16	704	0.0	0.5-
1991 02 11	675	1.3-	1.0-	1999 06 14	691	0.2+	0.2-				
1996 09 13	566	0.0	1.0-	1999 06 14	691	0.4-	0.2+				

(11444)* 1978 QA₂ = 1985 RN

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

Observatory.

Id. E. Bowell (*MPC* 10291), K. Hurukawa (*ibid.*), O. Kippes (*ibid.*),L. D. Schmadel (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	1.72456		(2000.0)		P		Q				
<i>n</i>	0.28258842	ω	154.87468		+0.95646030		+0.29172005				
<i>a</i>	2.2998516	Ω	188.18021		-0.27743410		+0.89903414				
<i>e</i>	0.2214472	<i>i</i>	3.67350		-0.09063122		+0.32655326				
<i>P</i>	3.49	<i>H</i>	14.8		<i>G</i>	0.15	<i>U</i>	2			
Residuals in seconds of arc											
1978 08 31	095	1.5-	1.5-	1998 03 20	704	0.2-	1.6+	1998 04 20	704	0.8+	0.6-
1978 09 05	095	2.4-	1.3+	1998 03 20	704	0.0	1.5-	1998 04 20	704	0.0	1.1+
1978 09 27	095	(0.4-	3.1-)	1998 03 20	704	1.5+	0.4-	1998 04 20	704	0.1-	1.5-
1985 08 15	688	0.9+	0.2+	1998 03 20	704	0.4+	0.8+	1998 04 20	704	0.3+	0.0
1985 08 15	688	1.8+	1.3-	1998 03 20	704	(3.9-	0.1-)	1998 04 20	704	(0.0	2.7-)
1985 08 23	095	(2.8-	3.2+)	1998 03 22	704	0.4+	0.2-	1998 04 22	704	0.6+	1.0-
1985 09 14	688	0.9+	1.6-	1998 03 22	704	0.2-	1.1-	1998 04 22	704	0.1+	0.2+
1985 09 14	688	0.5-	1.5-	1998 03 22	704	1.9-	1.8+	1998 04 22	704	0.3-	0.8-
1985 09 15	095	0.6+	1.1+	1998 03 22	704	0.1-	0.5+	1998 04 22	704	0.7-	0.4-
1985 09 18	688	1.9+	1.3-	1998 03 22	704	1.2-	1.3+	1998 04 22	704	1.9-	0.5-
1985 09 18	688	1.9-	1.1-	1998 03 28	704	0.4+	0.6-	1999 07 23	704	0.1+	0.5-
1985 09 20	095	2.1+	1.8+	1998 03 28	704	0.5+	0.4-	1999 07 23	704	0.4+	0.2-
1985 10 12	688	0.5-	2.0+	1998 03 28	704	0.6+	0.4+	1999 07 23	704	0.3-	0.1+
1985 10 12	688	0.8+	1.2+	1998 03 28	704	0.7+	0.9+	1999 07 23	704	0.0	0.4+
1988 05 10	675	0.4+	0.1+	1998 03 28	704	0.2+	0.3+	1999 07 23	704	0.5-	0.1-
1988 05 10	675	0.1+	1.0+	1998 03 29	704	0.3+	0.4+	1999 09 05	699	0.3-	0.5+
1992 09 30	801	0.8+	0.5+	1998 03 29	704	0.0	0.1+	1999 09 05	699	0.0	0.5+
1992 09 30	801	0.7+	0.1-	1998 03 29	704	0.2-	0.2+	1999 09 05	699	0.3-	0.4+
1992 10 02	691	0.1+	0.4-	1998 03 29	704	0.2+	0.8-	1999 09 07	704	0.9+	1.0+
1992 10 02	691	0.2-	0.3-	1998 03 29	704	1.3-	1.1+	1999 09 07	704	0.3+	0.2-
1992 10 02	691	0.4-	0.2-	1998 04 01	704	0.2-	0.4+	1999 09 07	704	0.6+	0.7-
1992 10 04	691	0.1-	0.6+	1998 04 01	704	1.5+	0.9+	1999 09 07	704	1.3+	1.7-
1992 10 04	691	0.2-	0.4+	1998 04 01	704	0.5-	0.3+	1999 09 07	704	0.9-	1.4-
1992 10 04	691	0.1-	0.5+	1998 04 01	704	1.3-	0.3-	1999 09 11	106	0.9-	0.7+
1992 10 24	801	0.1+	0.9-	1998 04 01	704	0.4+	0.1+	1999 09 11	106	0.7-	0.2+
1992 10 24	801	0.0	0.6-	1998 04 19	704	(1.4-	2.5+)	1999 09 12	106	1.5-	1.2+
1995 05 07	104	0.0	0.2-	1998 04 19	704	1.0+	1.0-	1999 09 16	106	2.0-	1.9+
1995 05 07	104	0.4-	0.4-	1998 04 19	704	0.1+	0.3-	1999 09 16	106	0.4+	0.2-
1997 01 17	599	(5.5+	0.2+)	1998 04 19	704	0.5+	0.6+	1999 09 16	106	(3.3-	1.5+)
1997 01 17	599	0.1+	0.9-	1998 04 19	704	(1.4-	2.1-)				

(11445)* 1978 SC₇ = 1975 CH = 1991 RO₇

Discovered 1978 Sept. 26 by L. V. Zhuravleva at the Crimean Astrophysical

Observatory.

Id. H. Kaneda (*MPC* 19291)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	277.48247		(2000.0)		P		Q				
<i>n</i>	0.22988560	ω	54.69588		+0.52699944		-0.84975072				
<i>a</i>	2.6391346	Ω	3.58809		+0.68911034		+0.41763394				
<i>e</i>	0.1748448	<i>i</i>	12.90303		+0.49739172		+0.32172286				
<i>P</i>	4.29	<i>H</i>	13.6		<i>G</i>	0.15	<i>U</i>	1			
Residuals in seconds of arc											
1975 02 08	033	0.3+	0.9+	1993 03 19	691	0.4+	0.0	1995 09 29	809	0.1-	1.1+
1975 02 08	033	(3.2-	1.3+)	1993 03 19	691	0.1+	0.0	1999 07 14	704	0.1-	0.4-
1978 09 26	095	0.4-	0.8-	1993 03 19	691	0.3-	0.2+	1999 07 14	704	0.1-	0.4-
1978 10 02	095	1.3+	0.4+	1995 08 30	809	1.0+	0.5-	1999 07 14	704	0.3-	1.0-
1978 10 08	095	1.1-	0.1+	1995 08 31	809	1.2+	0.2-	1999 07 14	704	0.5-	0.1-
1991 09 10	033	0.9-	0.9-	1995 08 31	809	0.8-	0.4-	1999 07 14	704	0.1+	1.0-
1991 09 11	033	0.2+	0.4+	1995 09 01	809	(2.0-	0.2-)	1999 09 11	704	0.0	0.3+
1991 09 11	033	(1.6+	2.6+)	1995 09 20	809	(2.5-	2.0+)	1999 09 11	704	0.3-	0.3+
1991 09 13	033	(0.7-	2.4-)	1995 09 22	809	1.4-	0.9+	1999 09 11	704	0.3+	0.5+
1991 09 13	033	0.0	0.8-	1995 09 22	809	0.1+	0.1+	1999 09 11	704	0.1+	1.4+
1991 09 14	033	0.4+	0.8-	1995 09 23	809	0.8+	0.8+	1999 09 11	704	0.0	0.7+

(11446)* 1978 TO₈ = 1983 RU

Discovered 1978 Oct. 9 by L. V. Zhuravleva at the Crimean Astrophysical

Observatory.

Id. T. Kobayashi (*MPC* 12949), W. Landgraf (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	329.21017		(2000.0)		P		Q				
<i>n</i>	0.18416681	ω	163.99632		+0.94839400		-0.31697581				
<i>a</i>	3.0595799	Ω	214.48767		+0.28922362		+0.87591990				
<i>e</i>	0.1987924	<i>i</i>	0.87721		+0.12999427		+0.36371784				
<i>P</i>	5.35	<i>H</i>	13.0		<i>G</i>	0.15	<i>U</i>	1			
Residuals in seconds of arc											
1978 10 09	095	0.2-	0.5+	1994 10 10	691	0.2-	0.4-	1999 08 03	859	0.1-	0.1+
1978 10 28	675	0.7+	1.1+	1994 11 03	801	0.8+	1.4+	1999 08 03	859	0.0	0.1+
1978 10 29	675	0.5+	0.9+	1994 11 03	801	0.1-	0.4+	1999 08 03	859	0.2-	0.1+
1978 11 01	095	1.3-	2.2+	1994 11 08	801	0.6+	0.7+	1999 08 09	106	0.4+	1.3+
1983 09 04	688	0.6+	2.5-	1994 11 08	801	1.0+	1.4+	1999 08 09	106	0.2-	1.4+
1983 09 04	688	2.1+	1.3-	1995 11 27	691	0.1-	1.0-	1999 08 09	106	0.1+	0.8+
1983 09 05	046	0.5+	2.3-	1995 11 27	691	0.1+	1.0-	1999 08 12	859	1.0-	0.7-
1983 09 06	046	0.7+	1.8-	1995 11 27	691	0.7+	0.8-	1999 08 12	859	0.9-	0.9-
1983 09 07	046	(0.1-	3.7-)	1995 12 25	691	0.2+	1.0-	1999 08 12	859	0.9-	0.9-
1983 09 07	046	(1.5+	3.5-)	1995 12 25	691	0.3+	0.7-	1999 08 22	699	0.8-	1.1+
1983 09 08	046	0.5+	1.9-	1995 12 25	691	0.4+	0.3-	1999 08 22	699	0.0	1.2+
1983 09 08	046	(0.0	3.2-)	1997 03 10	809	(0.5-	2.8-)	1999 08 22	699	0.7-	1.2+
1989 11 29	400	1.7-	1.6+	1997 03 10	809	(0.8+	3.7-)	1999 09 07	704	0.2+	0.5+
1989 11 29	400	0.8-	0.7+	1997 03 10	809	(0.8+	4.2-)	1999 09 07	704	0.0	0.5-
1992 04 04	809	(2.6+	0.6-)	1997 03 11	809	(0.8+	2.4-)	1999 09 07	704	0.1-	0.4-
1992 04 04	809	(2.7+	0.1-)	1997 03 11	809	(0.2+	2.6-)	1999 09 07	704	0.1-	0.1-
1992 04 04	809	(3.0+	1.2-)	1997 03 11	809	(0.0	3.0-)	1999 09 07	704	0.4-	0.2-
1992 04 06	809	(2.1+	1.5-)	1997 04 28	691	0.0	0.2+	1999 09 09	704	0.1+	0.7+
1992 04 06	809	1.2-	1.1-	1997 04 28	691	0.2-	0.2+	1999 09 09	704	0.6+	0.2+
1992 04 06	809	(4.8-	0.5-)	1997 04 28	691	0.1+	0.1+	1999 09 09	704	0.5+	0.2-
1994 10 02	400	0.5-	1.3-	1997 04 30	691	0.3-	0.2+	1999 09 09	704	0.2+	0.0
1994 10 02	400	0.3+	0.5-	1997 04 30	691	0.0	0.0	1999 09 09	704	0.0	0.3-
1994 10 03	801	0.6-	0.4-	1997 04 30	691	0.2+	0.1-	1999 09 14	704	0.7+	0.8+
1994 10 03	801	1.0-	0.0	1997 05 09	691	0.4+	0.3-	1999 09 14	704	0.6+	0.5+
1994 10 03	400	0.1+	0.2-	1997 05 09	691	0.0	0.4-	1999 09 14	704	0.6+	0.6+
1994 10 03	400	0.9-	0.4-	1997 05 09	691	0.9+	0.7+	1999 09 14	704	0.7+	0.1-
1994 10 07	801	0.0	0.8-	1998 05 24	704	1.4-	0.6+	1999 09 14	704	0.5+	0.5+
1994 10 07	801	0.4-	0.8-	1998 05 24	704	0.3+	1.3+	1999 09 26	699	0.1+	0.4+

1994 10 10	691	0.2−	0.2−	1998 05 24	704	0.3+	1.2+	1999 09 26	699	0.2−	0.2−
1994 10 10	691	0.5−	0.4−	1998 05 24	704	0.6−	0.2+	1999 09 26	699	0.4−	0.3+

(11447)* 1978 UL₄ = 1978 TG₈ = 1991 VO₄

Discovered 1978 Oct. 27 by C. M. Olmstead at Palomar.

Id. G. V. Williams (*MPC* 20806)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	311.96678	ω	172.39573	+0.87189174	−0.47119532		
<i>a</i>	2.6267616	Ω	216.69089	+0.43672505	+0.87137312		
<i>e</i>	0.1985681	<i>i</i>	12.89502	+0.22153107	+0.13668888		
<i>P</i>	4.26	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1978 10 08	095	(2.4−	3.5+)	1998 05 01	704	0.7−	0.0	1999 09 08	704	0.1−	0.7+
1978 10 27	675	0.2+	0.0	1998 05 01	704	0.3−	1.3+	1999 09 08	704	0.1+	0.7+
1978 10 28	675	0.1−	0.1+	1998 05 22	704	0.1−	0.7+	1999 09 09	682	0.1−	0.2−
1978 10 29	675	0.1+	0.2+	1998 05 22	704	(4.1−	0.7+)	1999 09 09	682	0.3+	0.4−
1978 11 28	675	0.5−	0.3−	1998 05 22	704	0.3+	0.1−	1999 09 09	704	0.3+	0.0
1978 11 29	675	0.1+	0.2−	1998 05 22	704	0.4+	1.7+	1999 09 09	704	0.0	0.2+
1991 11 09	399	0.6−	0.8+	1998 05 22	704	1.7−	1.0−	1999 09 09	704	1.7−	1.4+
1991 11 09	399	1.3−	0.2−	1998 05 24	704	1.4+	1.0+	1999 09 09	704	0.3−	0.3+
1991 11 11	894	1.5+	1.8+	1998 05 24	704	1.3+	0.5−	1999 09 09	704	0.3+	0.6+
1991 11 11	894	0.8+	0.2−	1998 05 24	704	1.1+	0.6+	1999 09 09	682	0.3+	0.2−
1991 11 15	894	0.4−	0.3−	1998 05 24	704	1.6+	1.7+	1999 09 10	704	0.2+	0.5−
1991 11 15	894	0.1+	0.6+	1998 05 24	704	0.8+	0.2+	1999 09 10	704	0.2+	0.1+
1991 12 09	894	(5.0+	2.1−)	1999 07 12	704	0.7+	0.4−	1999 09 10	704	0.4+	0.2−
1998 04 18	688	0.9−	0.3−	1999 07 12	704	0.4+	0.5−	1999 09 12	682	0.2−	0.3+
1998 04 18	688	1.2−	0.5−	1999 07 12	704	0.5+	0.0	1999 09 12	682	0.0	0.0
1998 04 18	688	1.1−	0.4−	1999 07 12	704	0.3+	0.3−	1999 09 12	682	0.2−	0.4+
1998 04 22	704	(2.7−	2.2−)	1999 07 12	704	0.3+	0.1+	1999 09 16	704	0.1−	0.0
1998 04 22	704	(0.6+	2.8+)	1999 07 22	704	0.4+	0.2−	1999 09 16	704	0.1+	0.1−
1998 04 22	704	0.9−	1.4−	1999 07 22	704	0.1+	0.6−	1999 09 16	704	0.8−	0.2+
1998 04 22	704	1.1+	0.1+	1999 07 22	704	0.1+	0.2−	1999 09 16	704	0.3−	0.3−
1998 05 01	704	0.6−	0.7+	1999 07 22	704	0.4+	0.2−	1999 09 16	704	0.3−	0.1−
1998 05 01	704	(2.2−	2.5−)	1999 07 22	704	0.8−	1.0−				
1998 05 01	704	(3.7−	1.2−)	1999 09 08	704	0.5−	0.3+				

(11448)* 1979 MB₆

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

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	322.44916	ω	210.66570	+0.99939114	−0.01705674		
<i>a</i>	2.2311775	Ω	150.26555	+0.02659576	+0.93706623		
<i>e</i>	0.1948048	<i>i</i>	3.51830	−0.02258344	+0.34873478		
<i>P</i>	3.33	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1978 03 15	675	2.3+	0.9+	1998 03 22	704	1.0−	1.3+	1998 03 29	704	(1.5+	2.2−)
1978 03 16	675	(4.0+	0.6+)	1998 03 22	704	0.5−	1.9−	1998 03 29	704	0.2+	0.5−
1979 06 23	413	(2.8+	0.3+)	1998 03 22	704	(2.6+	1.7−)	1998 03 29	704	(2.7−	1.0−)
1979 06 24	413	0.4+	0.5−	1998 03 24	704	1.0−	0.4−	1999 07 13	704	0.0	0.3−
1979 06 25	413	1.8+	0.0	1998 03 24	704	0.0	0.6−	1999 07 13	704	0.5−	0.1+
1979 06 29	413	0.6+	0.3+	1998 03 24	704	(3.2+	2.2+)	1999 07 13	704	0.2−	0.1+
1979 07 24	413	0.9−	0.7−	1998 03 24	704	0.8+	0.4+	1999 07 13	704	0.3−	0.3−
1979 07 26	675	1.8−	1.5+	1998 03 24	704	1.1−	1.2−	1999 07 13	704	0.0	0.0
1979 07 27	675	1.0+	0.8−	1998 03 24	704	1.6+	0.8−	1999 07 19	704	0.2+	0.4+
1979 07 27	675	(3.2+	1.3+)	1998 03 24	704	0.5+	0.8−	1999 07 19	704	0.8−	0.0
1979 08 23	675	1.4−	1.4−	1998 03 24	704	0.2+	0.3+	1999 07 19	704	1.2−	0.5+
1996 11 03	399	0.0	0.4−	1998 03 24	704	(3.3−	1.6+)	1999 09 11	704	1.0+	0.3−
1996 11 03	399	0.4+	1.0−	1998 03 24	704	1.6−	0.6−	1999 09 11	704	1.1+	0.2−
1998 03 22	704	1.1−	0.7+	1998 03 29	704	0.1+	0.9+	1999 09 11	704	1.1+	0.8+
1998 03 22	704	1.4−	0.9−	1998 03 29	704	1.2+	0.2+	1999 09 11	704	1.4+	0.8−

(11449)* 1979 QP = 1990 TJ₁₂

Discovered 1979 Aug. 22 by C.-I. Lagerkvist at the European Southern Observatory.

Id. R. Nagata (*MPC* 17626)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	84.39196	ω	302.97253	−0.39111889	+0.92019586		
<i>a</i>	2.9091411	Ω	303.99497	−0.83770056	−0.36327711		
<i>e</i>	0.0305010	<i>i</i>	1.12630	−0.38116110	−0.14584005		
<i>P</i>	4.96	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1954 07 29	675	1.6+	0.3−	1994 08 11	809	1.1+	0.5−	1999 08 18	859	1.7−	0.0
1954 07 29	675	0.6−	1.3+	1994 08 11	809	0.7+	0.0	1999 09 07	704	0.6−	0.0
1979 08 22	809	2.1−	1.0−	1994 08 11	809	0.7+	0.3+	1999 09 07	704	0.6−	0.2−
1979 08 22	809	1.0+	0.6+	1994 09 03	809	1.7+	1.3+	1999 09 07	704	0.6−	0.1−
1979 08 22	809	1.1−	0.3−	1994 09 03	809	1.6+	0.9+	1999 09 07	704	0.8−	0.2+
1979 08 23	809	1.0−	1.0−	1994 09 03	809	1.1+	0.1+	1999 09 07	704	0.5−	0.3+
1979 08 23	809	0.3+	0.5−	1994 09 04	809	1.0+	0.4+	1999 09 09	704	0.2−	0.0
1979 08 26	809	1.0−	0.6−	1994 09 04	809	1.1+	1.2+	1999 09 09	704	0.1−	0.5−
1979 08 26	809	1.3−	0.3−	1994 09 04	809	1.1+	0.8+	1999 09 09	704	0.6+	1.0−
1979 08 30	809	0.7−	0.4+	1995 12 21	566	0.3+	0.3−	1999 09 09	704	0.2−	1.0−
1979 08 30	809	0.7−	0.4+	1995 12 21	566	0.5+	0.4−	1999 09 09	704	0.7−	1.5−
1990 10 14	033	0.4+	0.3−	1995 12 21	566	0.7+	0.3−	1999 09 13	106	0.4−	0.1+
1990 10 15	033	0.2+	0.5−	1995 12 25	566	1.0−	0.1−	1999 09 13	106	0.0	0.5+
1990 10 15	033	0.1−	0.0	1995 12 25	566	1.3−	0.3−	1999 09 14	106	0.1−	0.1+
1990 10 18	033	0.5+	0.5−	1995 12 25	566	0.9−	0.1−	1999 09 14	704	0.3−	0.4−
1990 10 18	033	0.2−	0.9+	1998 05 24	704	0.2+	0.1−	1999 09 14	704	0.1−	0.7−
1992 02 28	691	0.4+	0.4−	1998 05 24	704	0.4−	0.5−	1999 09 14	704	0.1−	0.5−
1992 02 28	691	0.3+	0.3−	1998 05 24	704	0.3+	1.0−	1999 09 14	704	0.0	0.3−
1992 02 28	691	0.2+	0.1−	1998 05 24	704	0.3−	0.2+	1999 09 14	704	0.2+	0.2−
1994 08 10	809	1.8+	0.4+	1998 05 24	704	0.7−	0.4−	1999 09 26	699	0.1−	0.4−
1994 08 10	809	1.1+	0.1+	1999 08 18	859	1.4−	0.2+	1999 09 26	699	1.2+	0.2+
1994 08 10	809	1.1+	0.2+	1999 08 18	859	1.5−	0.3+	1999 09 26	699	0.3+	1.2+

(11450)* 1979 QJ₁ = 1988 CC₁

Discovered 1979 Aug. 22 by C.-I. Lagerkvist at the European Southern Observatory.

Id. T. Kobayashi (*MPC* 13598)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	123.15151	ω	31.62026	−0.99751755	+0.00520097		
<i>a</i>	2.2407726	Ω	148.44678	−0.02535310	−0.95691602		
<i>e</i>	0.1028148	<i>i</i>	7.71241	+0.06569596	−0.29031823		
<i>P</i>	3.35	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1979 08 22	809	0.2+	0.8−	1998 01 26	566	0.4+	0.9−	1999 07 13	704	0.1−	0.0
1979 08 22	809	0.6+	1.0−	1998 01 26	566	0.1+	0.8−	1999 07 13	704	0.1+	0.3+
1979 08 22	809	0.1−	0.9−	1998 01 26	566	0.0	1.1−	1999 07 13	704	0.5−	0.4−
1979 08 23	809	0.9−	1.7−	1998 01 29	566	0.0	0.2+	1999 07 19	704	0.3+	0.3+
1979 08 23	809	0.1−	1.6−	1998 01 29	566	0.0	0.0	1999 07 19	704	0.3+	0.1+
1979 08 26	809	0.7+	0.1+	1998 01 29	566	0.4−	0.1+	1999 07 19	704	0.2+	0.6+
1979 08 26	809	0.2−	1.7−	1998 02 17	327	0.6−	0.9+	1999 08 08	699	0.6−	0.4+
1979 08 26	809	0.7−	2.3−	1998 02 17	327	0.6−	1.0+	1999 08 08	699	0.0	0.7+
1979 08 30	809	1.9+	0.7−	1998 02 17	327	0.6−	1.0+	1999 08 08	699	0.2−	0.0
1979 08 30	809	(1.5+	10.9−)	1998 02 23	566	0.1+	0.1−	1999 09 07	704	0.2+	0.4+
1988 02 11	675	(10.8−	0.6−)	1998 02 23	566	0.2+	0.5+	1999 09 07	704	0.1+	1.0+
1988 02 14	675	(26.1−	4.5−)	1998 02 23	566	0.3+	0.1+	1999 09 07	704	0.0	0.6+
1988 03 13	675	0.6+	1.8−	1999 07 10	620	0.4−	0.7+	1999 09 07	704	0.1−	0.5−
1988 03 13	675	0.0	1.0−	1999 07 10	620	0.4−	1.5+	1999 09 11	699	0.4−	1.6+
1993 10 21	809	0.2+	1.1+	1999 07 10	620	0.3+	0.9+	1999 09 11	699	0.3+	0.9−
1993 10 21	809	0.6−	1.6+	1999 07 13	704	0.0	0.1−	1999 09 11	699	0.6+	0.4+
1993 10 21	809	(3.3−	0.8+)	1999 07 13	704	0.2−	0.7+				

(11451)* 1979 QR₁ = 1993 JU = 1994 RY

Discovered 1979 Aug. 22 by C.-I. Lagerkvist at the European Southern Observatory.

Id. K. Kinoshita (*MPC* 23969)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.19998986	ω	258.78315	−0.40083891	+0.91612977		
<i>a</i>	2.8959923	Ω	347.58131	−0.82954688	−0.36565878		
<i>e</i>	0.0680326	<i>i</i>	1.56326	−0.38881892	−0.16431649		
<i>P</i>	4.93	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1979 08 22	809	0.4+	1.9−	1994 09 09	360	0.0	0.2+	1999 08 12	699	0.6−	0.7−
1979 08 23	809	0.1+	1.8−	1994 09 09	360	0.2+	0.2+	1999 08 12	699	0.3+	0.8+
1979 08 23	809	0.0	1.6−	1994 09 13	360	0.0	0.1−	1999 08 12	699	0.5−	1.4+
1979 08 26	809	0.1+	0.2−	1994 09 13	360	0.1−	0.2−	1999 09 07	704	0.2−	0.1+
1979 08 26	809	0.6+	1.6−	1994 09 13	360	0.1+	0.1+	1999 09 07	704	0.4−	0.1+
1979 08 26	809	0.3−	0.2+	1995 11 28	896	1.7+	0.7−	1999 09 07	704	0.2−	0.2+
1993 05 14	809	1.6+	1.2−	1995 11 28	896	0.9+	1.4−	1999 09 07	704	0.9−	0.3+
1993 05 14	809	1.4+	0.6−	1995 11 30	327	0.5+	0.6−	1999 09 07	704	0.3−	0.5−
1993 05 14	809	1.0+	1.0−	1995 11 30	327	0.9+	0.4−	1999 09 09	704	0.1−	0.0
1993 05 15	809	0.2+	0.1−	1995 11 30	327	0.9+	0.9−	1999 09 09	704	0.3−	0.1−
1993 05 15	809	0.4−	1.3−	1995 12 01	900	0.4+	0.3−	1999 09 09	704	0.1−	0.2−
1993 05 15	809	1.0−	0.3−	1995 12 01	900	0.7+	0.8−	1999 09 09	704	0.6−	0.6+
1994 09 01	033	0.7−	0.5+	1997 02 01	691	1.2−	0.2−	1999 09 09	704	0.8−	0.5−
1994 09 02	033	0.8−	0.7+	1997 02 01	691	0.7−	0.1−	1999 09 14	704	0.3−	0.1+
1994 09 08	360	0.3+	0.2+	1997 02 01	691	0.6−	0.1−	1999 09 14	704	0.0	0.1+
1994 09 08	360	0.4+	0.4+	1997 02 11	691	1.1−	0.9+	1999 09 14	704	0.7+	0.0
1994 09 08	360	0.1+	0.2+	1997 02 11	691	0.5−	0.1−	1999 09 14	704	0.4+	0.7−
1994 09 09	360	0.0	0.1+	1997 02 11	691	0.5−	0.2−				

(11452)* 1980 KE = 1988 SD₄ = 1998 FA₉₆

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

Id. G. V. Williams (*MPC* 31707)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26721393	ω	53.75612	+0.64702274	+0.75021680		
<i>a</i>	2.3872431	Ω	257.14288	−0.73668007	+0.56904147		
<i>e</i>	0.2179680	<i>i</i>	8.02756	−0.19663176	+0.33669950		
<i>P</i>	3.69	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1980 05 22	809	1.0−	1.8+	1988 09 16	095	0.0	0.5−	1999 07 23	704	0.4−	0.0
1980 05 22	809	0.9−	1.6+	1988 09 16	095	0.1+	0.7+	1999 07 23	704	0.3−	0.1+
1980 05 22	809	1.1−	1.9+	1998 03 24	566	0.4−	1.0−	1999 07 23	704	0.3−	0.3−
1980 05 23	809	(2.2+	5.1+)	1998 03 24	566	0.2−	0.6−	1999 08 11	704	0.1+	1.0−
1980 05 23	809	(2.5+	5.5+)	1998 03 24	566	0.1−	0.9−	1999 08 11	704	0.5+	0.5−
1980 05 23	809	(2.1+	5.9+)	1998 03 28	704	0.4−	1.4−	1999 08 11	704	0.4+	0.9+
1980 05 24	809	0.8+	2.0−	1998 03 28	704	0.0	0.2+	1999 08 11	704	0.2−	0.3+
1980 05 24	809	2.1+	2.0−	1998 03 28	704	0.7+	0.1−	1999 09 07	703	0.6−	0.7+
1980 06 01	809	0.5−	0.0	1998 03 28	704	0.2+	0.2+	1999 09 07	703	0.5−	0.3+
1980 06 01	809	0.2+	0.0	1998 03 28	704	(4.1−	2.0+)	1999 09 07	703	(2.2−	0.3+)
1980 06 01	809	0.3+	0.5−	1998 03 31	704	1.1+	0.1+	1999 09 07	703	0.4−	0.8+
1980 06 02	809	0.3+	0.2−	1998 03 31	704	0.7+	0.3−	1999 09 08	704	0.3+	0.2−
1980 06 02	809	0.2−	0.4−	1998 03 31	704	0.1−	0.8−	1999 09 08	704	0.4+	0.7−
1980 06 02	809	0.6+	0.2−	1998 03 31	704	0.6−	0.2−	1999 09 08	704	0.1−	0.6−
1980 06 04	809	0.7+	1.1+	1998 03 31	704	0.5−	0.5−	1999 09 08	704	0.1+	1.3−
1980 06 04	809	0.1+	1.2+	1998 04 01	704	0.4+	0.2−	1999 09 08	704	0.5+	1.0−
1980 06 04	809	0.1−	1.0+	1998 04 01	704	1.5+	0.5−	1999 09 11	106	0.5−	0.0
1980 06 05	809	0.9−	0.8+	1998 04 01	704	0.2−	0.1+	1999 09 11	106	0.4+	0.4−
1980 06 05	809	0.7−	0.6+	1998 04 01	704	0.3−	0.9+	1999 09 11	106	(2.3+	0.4+)
1980 06 05	809	0.0	0.2−	1998 04 01	704	0.5+	0.8+	1999 09 11	165	0.2+	1.0+
1980 06 11	809	0.1−	1.8−	1998 04 18	704	1.1−	0.6−	1999 09 12	165	0.7+	0.7+

1980 06 11	809	0.6−	1.3−	1998 04 18	704	1.6−	0.7+	1999 09 18	704	0.3+	0.4−
1980 06 11	809	0.8−	0.7−	1998 04 18	704	0.4−	0.2+	1999 09 18	704	0.4+	0.4−
1980 06 12	809	1.5+	0.2−	1998 04 18	704	0.9−	0.2+	1999 09 18	704	0.2+	0.4−
1980 06 12	809	0.4+	0.2−	1999 07 23	704	0.5−	0.0	1999 09 18	704	0.2+	0.5−
1980 06 12	809	0.2−	0.3−	1999 07 23	704	0.4−	0.0	1999 09 18	704	0.0	0.3−

(11453)* 1981 DS₁

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

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23997759	ω	89.36061	+0.90030554	−0.41356109		
<i>a</i>	2.5646155	Ω	295.06095	+0.31535579	+0.83467933		
<i>e</i>	0.1106853	<i>i</i>	8.61613	+0.30000109	+0.36369995		
<i>P</i>	4.11	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1954 09 28	675	0.4+	0.5+	1981 05 02	413	1.3−	1.4−	1999 09 09	704	0.1−	0.3+
1954 09 28	675	0.8−	0.2+	1981 05 03	413	(3.1+	0.8−)	1999 09 09	704	0.4−	0.1−
1978 07 07	675	0.6−	1.0+	1999 07 23	704	0.5+	0.6−	1999 09 10	704	0.0	0.5+
1978 07 08	675	0.2+	0.3+	1999 07 23	704	0.1−	0.9−	1999 09 10	704	0.1−	0.0
1978 07 09	675	0.3+	0.1−	1999 07 23	704	0.4+	0.6−	1999 09 10	704	0.3−	0.2+
1981 02 09	413	0.3+	0.9+	1999 07 23	704	0.2+	0.5−	1999 09 13	046	0.2−	0.2+
1981 02 12	413	0.9+	0.1+	1999 07 23	704	0.1−	0.4−	1999 09 13	046	0.4−	0.0
1981 02 28	413	1.1−	1.5+	1999 09 07	703	0.9−	0.3+	1999 09 13	046	0.3−	0.6+
1981 03 06	413	1.0−	1.4+	1999 09 07	703	0.2−	0.1−	1999 09 16	704	0.4+	0.0
1981 03 06	413	0.9+	0.6−	1999 09 07	703	0.3−	0.0	1999 09 16	704	0.3+	0.6+
1981 03 08	413	1.3−	0.2+	1999 09 07	703	0.4−	0.1+	1999 09 16	704	0.3−	0.5−
1981 03 08	413	0.7+	0.8−	1999 09 08	704	0.0	0.2+	1999 09 16	704	0.0	0.9+
1981 03 12	413	0.7−	0.4−	1999 09 08	704	0.1+	0.1−	1999 09 18	704	0.5+	0.0
1981 03 12	413	1.4+	1.1−	1999 09 08	704	0.4−	0.0	1999 09 18	704	0.5+	0.2−
1981 04 08	413	0.2−	0.2−	1999 09 08	704	0.3−	0.1−	1999 09 18	704	0.4+	0.0
1981 04 08	413	1.1+	0.1+	1999 09 08	704	0.2+	0.1−	1999 09 18	704	0.3+	0.5−
1981 04 09	413	1.8−	1.7+	1999 09 09	704	0.2+	0.7+	1999 09 18	704	0.7+	0.0
1981 04 09	413	1.6+	0.2+	1999 09 09	704	0.1+	0.3−				
1981 05 01	413	0.9+	0.6−	1999 09 09	704	0.1−	0.0				

(11454)* 1981 DT₂ = 1989 EM₆ = 1991 PS₁₁

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

Id. E. Bowell (*MPC* 18806), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23543219	ω	103.80053	+0.28382792	−0.94995014		
<i>a</i>	2.5975195	Ω	328.74008	+0.75356238	+0.30515349		
<i>e</i>	0.0997982	<i>i</i>	14.56800	+0.59294642	+0.06690349		
<i>P</i>	4.19	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1981 02 09	413	0.2+	0.9+	1981 05 02	413	0.9+	2.2−	1993 02 20	801	0.3+	0.3−
1981 02 12	413	(2.8+	4.3+)	1989 02 02	675	1.1−	1.2+	1993 02 25	801	0.1−	0.5+
1981 02 14	413	(2.8−	0.7−)	1989 02 02	675	0.8−	0.7+	1993 02 25	801	0.6−	0.1−
1981 02 28	413	0.9−	0.8+	1989 03 07	033	0.3+	0.1−	1996 12 09	801	0.4+	1.3−
1981 02 28	413	1.6+	0.4+	1991 08 07	675	0.8+	1.5−	1996 12 09	801	0.3+	0.5−
1981 03 06	413	1.9−	0.1−	1991 08 07	675	1.5+	0.4−	1996 12 10	801	0.4+	1.1−
1981 03 06	413	0.0	1.9−	1991 08 08	675	0.7−	0.3−	1999 07 14	704	0.8−	0.2+
1981 03 08	413	1.2−	0.0	1991 08 08	675	0.0	0.2+	1999 07 14	704	1.0−	0.2−
1981 03 08	413	0.6+	0.7−	1991 08 10	675	(1.5+	2.3−)	1999 07 14	704	1.0−	0.0
1981 03 10	413	(3.8−	0.8−)	1991 09 14	675	0.1+	0.8−	1999 07 14	704	0.6−	0.3−
1981 03 10	413	1.4−	1.1−	1991 09 14	675	0.2+	0.7−	1999 07 14	704	0.6−	0.2+
1981 03 12	413	(4.5−	0.4−)	1993 01 19	801	0.4+	0.2+	1999 09 11	704	1.1+	1.2+
1981 03 12	413	0.6+	0.7−	1993 01 19	801	0.3+	0.1+	1999 09 11	704	0.9+	0.2+
1981 03 12	413	1.6−	0.6+	1993 01 27	801	0.4+	0.6+	1999 09 11	704	1.8+	0.5+
1981 03 12	413	1.2+	0.0	1993 01 27	801	0.4+	0.9+	1999 09 11	704	0.1−	0.4+
1981 04 30	413	1.0+	0.8−	1993 02 20	801	0.4−	0.8+				

(11455)* 1981 EN₄ = 1987 KR₁

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* 17816)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18426726	ω	203.15633	-0.09016682	-0.98238151		
<i>a</i>	3.0584679	Ω	252.33745	+0.93851277	-0.02881220		
<i>e</i>	0.0525447	<i>i</i>	9.89219	+0.33326225	-0.18465215		
<i>P</i>	5.35	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1981 02 02	413	1.4+	0.6-	1987 05 30	413	0.3-	0.9+
1981 02 09	413	1.0+	0.0	1987 05 30	413	1.2-	0.4+
1981 03 02	413	0.6-	1.4+	1991 01 15	688	1.2+	0.9+
1981 03 02	413	1.5+	0.8+	1991 01 15	688	1.2+	0.8+
1981 03 07	413	0.2-	1.0+	1995 12 17	411	1.1-	0.0
1981 03 07	413	1.5+	0.0	1995 12 17	411	1.1-	0.4-
1981 03 10	413	1.0-	1.0+	1998 06 03	704	0.8+	1.6-
1981 03 10	413	0.4+	0.2+	1998 06 03	704	1.0-	0.1+
1981 03 12	413	0.8-	1.1+	1998 06 03	704	1.5+	0.4-
1981 03 12	413	1.4+	0.5+	1998 06 03	704	0.3-	1.0-
1981 04 07	413	0.2+	0.6+	1999 07 12	704	0.1+	0.3-
1981 04 07	413	0.3+	0.3+	1999 07 12	704	0.4-	0.2+
1981 04 08	413	0.8+	0.3-	1999 07 12	704	0.3-	0.4-
1981 04 09	413	1.2-	0.1+	1999 07 12	704	0.1-	0.8+
1981 04 09	413	1.0-	0.2+	1999 07 12	704	0.6-	0.4+
1981 05 02	413	1.0-	1.0-	1999 09 08	704	0.4-	0.8+
1981 05 03	413	0.0	0.4-	1999 09 08	704	0.5-	0.4+

(11456)* 1981 EK₉ = 1998 KN₄₈

Discovered 1981 Mar. 1 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey.

Id. G. V. Williams (*MPC* 31946)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18325334	ω	34.02984	+0.79830227	+0.60037737		
<i>a</i>	3.0697390	Ω	289.00218	-0.56315020	+0.71615220		
<i>e</i>	0.0731034	<i>i</i>	2.88233	-0.21348382	+0.35591155		
<i>P</i>	5.38	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1981 02 09	413	0.2-	1.2+	1992 04 30	691	0.4-	0.1-
1981 02 13	413	0.7+	0.9+	1992 04 30	691	1.1+	0.6-
1981 03 01	413	0.9-	0.7+	1997 04 03	566	0.2-	0.1+
1981 03 01	413	1.8+	0.2-	1997 04 03	566	0.2+	0.1+
1981 03 07	413	0.8-	0.6+	1997 04 03	566	0.2-	0.0
1981 03 07	413	0.4+	0.7+	1998 05 22	704	(2.8+ 0.4+)	
1981 03 11	413	1.2+	0.5+	1998 05 22	704	(1.1- 2.1+)	
1981 03 11	413	0.1-	0.4+	1998 05 22	704	0.6-	0.8+
1981 03 15	413	1.3-	0.4+	1998 05 22	704	0.0	0.6+
1981 03 15	413	0.1+	0.4+	1998 05 24	704	(1.7+ 2.3-)	
1981 04 05	413	1.7-	0.2+	1998 05 24	704	(2.5+ 0.7-)	
1981 04 05	413	1.0+	0.5-	1998 05 24	704	0.1-	0.3-
1981 04 12	413	1.4-	0.6-	1998 05 24	704	0.7+	0.1-
1981 04 12	413	1.8+	1.4-	1999 08 22	699	0.9-	0.3-
1981 04 30	413	0.5-	1.2-	1999 08 22	699	1.1-	1.1-
1981 05 02	413	0.5+	0.7-	1999 08 22	699	0.1-	0.8+
1992 04 30	691	0.8-	0.8-	1999 09 05	699	0.1-	0.3-

(11457)* 1981 EF₁₂

Discovered 1981 Mar. 1 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>		(2000.0)		P		Q	
<i>n</i>	0.28500373	ω	327.16690	-0.57524508	+0.81315871		
<i>a</i>	2.2868395	Ω	267.56637	-0.73003733	-0.55928005		
<i>e</i>	0.1270195	<i>i</i>	5.09288	-0.36896965	-0.16117919		
<i>P</i>	3.46	<i>H</i>	15.8	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1979 11 22	675	(11.7+ 4.4+)	1981 05 03	413	0.5+	1.1-	1999 07 13
1979 11 24	675	(6.9+ 5.5+)	1988 04 12	413	0.5-	0.4+	1999 07 13
1979 11 25	675	(8.9+ 6.4+)	1988 04 12	413	(3.8+ 3.1-)		1999 07 13
1981 02 09	413	0.8+	0.2-	1989 10 02	697	(3.1- 0.8+)	1999 07 13
1981 02 14	413	(3.7+ 0.1-)	1989 10 03	697	0.0	0.2-	1999 09 04
1981 03 01	413	(3.5+ 0.5-)	1997 10 09	691	0.5-	0.3+	1999 09 04
1981 03 01	413	(4.3+ 1.3-)	1997 10 09	691	0.4+	0.2-	1999 09 04
1981 03 06	413	1.0-	0.5+	1997 10 09	691	0.2-	0.1+
1981 03 06	413	0.6-	0.0	1997 12 29	691	0.0	0.3+
1981 03 08	413	(3.3+ 0.5-)	1997 12 29	691	0.1+	0.4+	1999 09 07
1981 03 12	413	0.1+	1.2+	1997 12 29	691	0.1-	0.0
1981 04 08	413	0.2+	0.5-	1998 01 26	566	0.1+	0.3-
1981 04 08	413	(3.3+ 3.5-)	1998 01 26	566	0.2+	0.0	1999 09 07
1981 04 09	413	0.7-	0.1+	1998 01 26	566	0.0	0.4-
1981 04 09	413	1.0+	0.7-	1999 07 13	704	0.4+	0.7+

(11458)* 1981 EV₁₂ = 1989 WR₇ = 1996 BD₁₈

Discovered 1981 Mar. 1 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey.

Id. E. Bowell (*MPC* 28838), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18757688	ω	55.75175	+0.88438758	-0.46083777		
<i>a</i>	3.0223854	Ω	331.47958	+0.36074614	+0.77557110		
<i>e</i>	0.1306768	<i>i</i>	8.92497	+0.29617704	+0.43141399		
<i>P</i>	5.25	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1981 02 12	413	(3.1+ 0.2+)	1981 05 01	413	0.7-	0.0	1999 09 09
1981 02 12	413	0.3+	0.2-	1981 05 03	413	1.2-	1.1-
1981 03 01	413	0.4-	0.1+	1989 11 28	675	0.1-	0.3-
1981 03 01	413	0.9+	1.2-	1989 11 28	675	0.1+	0.5+
1981 03 06	413	1.1-	1.2+	1996 01 25	691	0.4-	0.2-
1981 03 06	413	1.5+	0.7-	1996 01 25	691	0.1+	0.1-
1981 03 08	413	0.4-	0.1+	1996 01 25	691	0.1+	0.3-
1981 03 08	413	0.1+	0.9-	1999 08 22	699	0.6-	1.5+
1981 03 12	413	0.7-	0.1-	1999 08 22	699	0.4-	1.2+
1981 03 12	413	1.5+	0.7-	1999 08 22	699	1.2+	1.0+
1981 04 06	413	1.0-	2.3+	1999 09 07	704	0.0	0.8-
1981 04 06	413	(3.2+ 1.0-)	1999 09 07	704	0.3-	0.6-	1999 09 18
1981 04 08	413	0.6-	0.2-	1999 09 07	704	0.1-	0.9-
1981 04 08	413	0.9+	1.2-	1999 09 07	704	0.1-	0.8-
1981 04 09	413	0.6-	0.6+	1999 09 07	704	0.0	1.0-

(11459)* 1981 ET₁₃

Discovered 1981 Mar. 1 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>		(2000.0)		P		Q	
<i>n</i>	0.28572739	ω	294.74981	-0.67868630	+0.73131112		
<i>a</i>	2.2829766	Ω	292.33366	-0.64467044	-0.63730276		
<i>e</i>	0.2176509	<i>i</i>	4.19066	-0.35183083	-0.24295934		
<i>P</i>	3.45	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1979 11 22	675	0.2+	0.9-	1981 05 01	413	0.7-	0.7-	1999 09 04	703	0.2-	0.4+
1979 11 24	675	0.5-	0.5-	1981 05 03	413	1.1-	0.3-	1999 09 07	704	0.0	0.5+
1979 11 25	675	0.1-	1.1+	1984 01 08	675	(6.0-	2.1+)	1999 09 07	704	0.3+	1.1+
1981 02 12	413	0.6+	1.0+	1984 01 08	675	0.1+	0.8+	1999 09 07	704	0.6+	0.2+
1981 02 12	413	2.1+	2.1+	1988 04 10	293	(4.0+	0.8-)	1999 09 07	704	0.3-	0.1-
1981 03 01	413	0.3+	0.5+	1988 04 10	293	(4.1+	0.7-)	1999 09 07	704	0.1-	0.4+
1981 03 01	413	2.1+	0.1+	1991 01 20	511	(4.2-	1.3+)	1999 09 09	704	0.3-	0.3+
1981 03 06	413	1.1-	0.4+	1991 01 20	511	(3.4-	0.3+)	1999 09 09	704	0.4-	0.3+
1981 03 06	413	1.4+	0.2-	1998 01 08	688	0.5-	0.4-	1999 09 09	704	0.3+	0.8+
1981 03 08	413	0.3-	0.2+	1998 01 08	688	0.1-	0.3-	1999 09 09	704	0.1-	0.0
1981 03 08	413	1.2+	0.7+	1998 01 26	566	0.1-	0.3-	1999 09 09	704	0.5-	0.0
1981 03 12	413	0.6-	0.1+	1998 01 26	566	0.0	0.1-	1999 09 14	704	0.1-	0.1+
1981 03 12	413	1.3+	0.9-	1998 01 26	566	0.1-	0.3-	1999 09 14	704	0.2-	0.5+
1981 04 06	413	1.2-	1.4+	1999 08 22	699	0.7-	0.1-	1999 09 14	704	0.1+	0.4+
1981 04 06	413	0.1-	0.3+	1999 08 22	699	0.0	0.5-	1999 09 14	704	0.3+	0.5+
1981 04 08	413	1.0-	0.0	1999 08 22	699	1.4+	0.7-	1999 09 14	703	0.3-	0.5+
1981 04 08	413	0.6+	0.8-	1999 09 04	703	1.2-	0.8+	1999 09 14	703	0.2-	0.0
1981 04 09	413	0.9+	0.7+	1999 09 04	703	0.3-	0.7+	1999 09 14	703	0.2-	0.1+
1981 04 09	413	0.4+	0.4+	1999 09 04	703	0.1-	0.1-	1999 09 14	703	0.2+	0.7-

(11460)* 1981 EZ₁₅

Discovered 1981 Mar. 1 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>	271.01976	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.29339815	ω	127.11425	+0.33103311	-0.94069870
<i>a</i>	2.2430096	Ω	303.39429	+0.83512582	+0.32866431
<i>e</i>	0.1132298	<i>i</i>	5.09754	+0.43929710	+0.08405784
<i>P</i>	3.36	<i>H</i>	15.6	<i>G</i>	0.15 <i>U</i> 2

Residuals in seconds of arc

1979 09 18	675	0.2+	0.5-	1981 05 01	413	0.4+	0.5-	1999 09 07	704	0.5-	0.5-
1979 09 19	675	0.2+	0.3-	1981 05 03	413	0.8-	0.8-	1999 09 07	704	0.0	0.2-
1981 02 09	413	1.0+	0.9-	1984 01 25	675	0.1-	0.1+	1999 09 07	704	0.5-	0.5-
1981 02 12	413	0.3-	0.4-	1984 01 26	675	0.2+	0.2-	1999 09 09	704	0.1+	0.2-
1981 03 01	413	1.6-	0.4+	1999 08 22	703	0.3-	0.0	1999 09 09	704	0.5+	0.1-
1981 03 01	413	2.0-	0.5-	1999 08 22	703	0.1+	1.1+	1999 09 09	704	0.1-	0.9+
1981 03 06	413	(7.0+	2.4-)	1999 08 22	703	0.0	0.5+	1999 09 09	704	0.9+	0.4+
1981 03 06	413	1.1-	0.3-	1999 08 22	703	0.2+	0.7+	1999 09 14	704	0.2+	0.2+
1981 03 08	413	0.7-	0.6+	1999 09 05	699	0.4-	0.2+	1999 09 14	704	0.2+	0.0
1981 03 08	413	1.7+	0.6+	1999 09 05	699	0.9-	0.7-	1999 09 14	704	0.1-	0.1-
1981 03 12	413	1.5+	0.4+	1999 09 05	699	0.0	0.4-	1999 09 14	704	0.3-	0.3-
1981 04 09	413	1.1+	0.2-	1999 09 07	704	0.6+	0.7-	1999 09 14	704	0.5+	0.8-
1981 04 09	413	(3.0+	1.2-)	1999 09 07	704	0.0	0.1+				

(11461)* 1981 EM₁₈

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>	119.83491	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.28621936	ω	201.09743	-0.99909990	-0.01753029
<i>a</i>	2.2803598	Ω	337.79230	+0.03401166	-0.87523300
<i>e</i>	0.1000275	<i>i</i>	5.86579	-0.02534966	-0.48338379
<i>P</i>	3.44	<i>H</i>	14.2	<i>G</i>	0.15 <i>U</i> 1

Residuals in seconds of arc

1979 10 18	675	0.3+	1.4-	1981 04 06	413	1.5-	0.9-	1998 01 29	566	0.0	0.6+
1979 10 18	675	0.9+	1.0-	1981 04 06	413	0.5+	1.7-	1998 01 29	566	0.0	0.6+
1981 02 02	413	0.5-	0.0	1981 04 07	413	0.9-	0.4+	1998 02 18	560	0.0	0.0
1981 02 09	413	1.4-	0.3+	1981 04 07	413	1.2+	0.6-	1998 02 18	560	0.5-	0.1-
1981 02 13	413	0.7-	0.3+	1981 04 10	413	0.1-	0.1+	1998 02 20	560	0.3+	0.3+
1981 03 02	413	0.8-	1.0+	1981 04 30	413	0.3-	0.6-	1998 02 20	560	0.1+	0.6+
1981 03 02	413	0.1+	0.3-	1981 05 02	413	0.0	0.4-	1998 02 20	560	0.1+	0.4+
1981 03 03	413	0.8-	0.6+	1991 01 19	675	0.2+	0.1+	1999 07 14	704	0.1+	0.7+

1981 03 03	413	0.6+	0.1+	1991 01 19	675	0.5+	0.0	1999 07 14	704	0.2+	0.8+
1981 03 07	413	0.8-	0.9+	1996 09 14	566	0.2+	0.7-	1999 07 14	704	0.5-	0.1+
1981 03 07	413	1.2+	0.6-	1996 09 14	566	0.3+	0.4-	1999 07 14	704	0.1+	0.2+
1981 03 11	413	0.7-	0.1+	1996 09 14	566	0.5+	0.6-	1999 07 14	704	0.7+	0.1+
1981 03 11	413	1.3+	0.5-	1998 01 25	566	0.3+	1.4-	1999 09 07	704	0.1-	0.1-
1981 03 16	413	1.6-	1.0+	1998 01 25	566	0.0	0.9-	1999 09 07	704	0.0	0.2+
1981 03 16	413	1.2+	0.2+	1998 01 25	566	0.4+	1.3-	1999 09 07	704	0.1-	1.0+
1981 03 29	413	0.2-	0.3-	1998 01 29	758	0.1-	0.9+	1999 09 07	704	0.7-	0.2-
1981 03 29	413	1.0+	1.3-	1998 01 29	758	0.1+	0.8+	1999 09 11	704	0.4-	0.7-
1981 04 05	413	(2.6-	1.4-)	1998 01 29	758	0.1-	0.7+	1999 09 11	704	0.0	1.3-
1981 04 05	413	0.4+	2.3-	1998 01 29	566	0.1-	0.6+	1999 09 11	704	0.2-	0.5+

(11462)* 1981 ES₂₃ = 1991 RW₄₀

Discovered 1981 Mar. 3 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey.

Id. G. V. Williams (*MPC* 21931)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	298.97810	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.23935092	ω	242.74919	+0.78453411	-0.61999213
<i>a</i>	2.5690900	Ω	155.56168	+0.57772692	+0.72452219
<i>e</i>	0.1008881	<i>i</i>	1.49172	+0.22525063	+0.30112681
<i>P</i>	4.12	<i>H</i>	15.0	<i>G</i>	0.15 <i>U</i> 2

Residuals in seconds of arc

1981 02 09	413	0.3+	0.7-	1991 09 15	691	1.2-	0.4+	1999 08 21	691	0.1-	0.4+
1981 02 13	413	2.0+	1.9-	1995 08 19	809	(2.3+	0.4+)	1999 08 21	691	0.2-	0.0
1981 03 03	413	0.6+	1.3-	1995 08 20	809	1.5+	0.4+	1999 08 21	691	0.3-	0.1+
1981 03 03	413	0.2+	0.5-	1997 02 07	566	0.5+	0.0	1999 09 07	704	0.3+	0.6-
1981 03 07	413	0.7-	0.2-	1997 02 07	566	0.0	0.3+	1999 09 07	704	0.2-	0.9-
1981 03 07	413	1.0+	1.0-	1997 02 07	566	0.1-	0.4+	1999 09 07	704	1.2+	0.7-
1981 03 11	413	2.2-	0.4+	1998 04 22	704	0.5-	1.3-	1999 09 07	704	0.0	0.0
1981 03 11	413	(4.1+	3.0-)	1998 04 22	704	0.5+	0.2+	1999 09 07	704	0.2-	0.0
1981 03 29	413	0.3-	0.5+	1998 04 22	704	0.6-	0.5-	1999 09 09	704	0.3+	0.9+
1981 03 29	413	2.3+	0.1-	1998 04 22	704	0.7-	0.2-	1999 09 09	704	0.4-	0.4-
1981 04 11	413	0.1+	0.9+	1998 05 01	704	0.7-	0.7-	1999 09 09	704	0.6+	0.7+
1981 04 26	413	(3.2+	3.2-)	1998 05 01	704	1.2+	0.1-	1999 09 09	704	1.4+	0.7+
1981 05 02	413	1.9-	1.2+	1998 05 01	704	1.2-	1.8+	1999 09 09	704	0.4+	0.2+
1991 09 10	033	0.5-	0.2-	1998 05 01	704	0.9+	1.4+	1999 09 13	704	0.5+	0.5-
1991 09 10	033	0.1+	0.0	1998 05 01	704	1.8-	1.4+	1999 09 13	704	0.5+	1.3-
1991 09 13	033	0.8-	0.7-	1999 08 08	699	0.3-	0.3+	1999 09 13	704	0.6+	1.1-
1991 09 15	691	0.9-	0.1+	1999 08 08	699	0.3-	0.6+				
1991 09 15	691	1.1-	0.4+	1999 08 08	699	0.2+	0.3+				

(11463)* 1981 EN₂₄ = 1998 FA₆₆

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

Id. G. V. Williams (*MPC* 31522)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	233.53611	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.29184161	ω	197.54434	-0.04182241	-0.99867373
<i>a</i>	2.2509780	Ω	254.86068	+0.92036894	-0.02681289
<i>e</i>	0.1144801	<i>i</i>	1.78260	+0.38880830	-0.04395275
<i>P</i>	3.38	<i>H</i>	15.2	<i>G</i>	0.15 <i>U</i> 1

Residuals in seconds of arc

1981 02 12	413	0.4+	0.1+	1998 03 22	704	0.7-	0.2-	1998 04 18	704	0.9+	0.2+
1981 02 13	413	1.8+	0.5-	1998 03 22	704	0.2+	0.5+	1998 04 18	704	0.3+	0.4+
1981 03 02	413	1.8+	0.7-	1998 03 22	704	0.3-	0.0	1998 04 18	704	0.5-	0.2-
1981 03 06	413	1.2-	1.3+	1998 03 22	704	1.6-	0.8-	1998 04 18	704	0.3+	0.1-
1981 03 06	413	(2.8+	0.5-)	1998 03 22	699	0.1-	0.7+	1998 04 18	704	0.0	0.1+
1981 03 11	413	0.5-	0.9+	1998 03 22	699	0.5-	0.8-	1998 04 19	704	0.7+	0.1-
1981 03 11	413	2.3+	0.9-	1998 03 22	699	1.1-	0.1-	1998 04 19	704	0.6-	1.0+
1981 03 15	413	0.0	0.8+	1998 03 25	704	1.2+	0.9-	1998 04 19	704	(0.1-	2.1-)
1981 03 15	413	1.4+	0.7+	1998 03 25	704	0.2+	0.4-	1998 04 19	704	0.6+	0.5+
1981 03 15	413	0.3+	1.6+	1998 03 25	704	0.4-	0.5-	1998 04 20	704	0.0	0.7+

1981 04 05	413	1.5-	0.8-	1998 03 25	704	0.6+	0.2-	1998 04 20	704	0.4-	1.0-
1981 04 05	413	1.5-	0.4+	1998 03 25	704	(0.8+	2.7-)	1998 04 20	704	0.8+	0.7+
1981 04 06	413	2.1-	0.1-	1998 03 25	566	0.4-	0.0	1998 04 20	704	0.2+	0.5-
1981 04 06	413	0.1-	0.4-	1998 03 25	566	0.4-	0.5-	1998 04 20	704	(2.9-	0.1-)
1981 04 07	413	(3.4-	0.4+)	1998 03 25	566	0.5-	0.7-	1998 04 22	704	0.8+	0.3-
1981 04 07	413	0.6+	1.7-	1998 03 28	704	0.1-	0.3-	1998 04 22	704	0.4+	1.0+
1981 04 12	413	2.0-	0.1-	1998 03 28	704	0.3+	0.6-	1998 04 22	704	0.7-	1.0-
1981 04 12	413	0.3+	0.4-	1998 03 28	704	0.1-	1.0-	1998 04 22	704	0.0	1.4+
1981 05 02	413	(1.0+	2.8-)	1998 03 28	704	0.3+	0.4-	1998 04 22	704	0.6+	0.2-
1981 05 03	413	0.3+	0.2+	1998 03 28	704	0.0	0.8-	1998 04 24	699	1.1+	1.5+
1996 09 15	566	0.2+	0.2-	1998 03 29	704	0.6+	0.2+	1998 04 24	699	0.5-	0.2+
1996 09 15	566	0.0	0.2-	1998 03 29	704	0.2+	0.2-	1998 04 24	699	1.0-	0.4+
1996 09 15	566	0.1+	0.5-	1998 03 29	704	(3.0-	1.1+)	1999 07 16	704	0.1+	0.5-
1998 03 03	704	0.7-	0.6-	1998 03 29	704	0.3-	0.1-	1999 07 16	704	0.3-	0.5-
1998 03 03	704	(0.1+	2.3+)	1998 03 29	704	0.2+	0.2-	1999 07 16	704	0.5+	1.2-
1998 03 03	704	(0.6-	2.4+)	1998 04 01	704	1.0+	0.7+	1999 08 07	699	0.4-	0.7+
1998 03 03	704	(4.1-	2.1-)	1998 04 01	704	0.7-	0.8+	1999 08 07	699	0.3-	0.1+
1998 03 20	704	0.7-	0.8-	1998 04 01	704	1.1+	0.3+	1999 08 07	699	0.1+	1.6+
1998 03 20	704	1.6-	0.3-	1998 04 01	704	0.4+	0.2-	1999 09 09	704	0.0	0.5+
1998 03 20	704	0.2-	0.1+	1998 04 01	704	0.2+	1.1+	1999 09 09	704	0.4+	1.0-
1998 03 20	704	0.3-	0.1-	1998 04 04	699	1.2+	0.5+	1999 09 09	704	0.5+	0.5+
1998 03 20	704	0.8-	0.5-	1998 04 04	699	0.9+	0.4-	1999 09 09	704	0.3-	0.5-
1998 03 22	704	0.6-	0.3+	1998 04 04	699	0.4+	0.6+				

(11464)* 1981 EL₂₈ = 1994 PH₂₁

Discovered 1981 Mar. 6 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey.

Id. B. G. Marsden (*MPC* 24384)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Marsden			
<i>M</i>	275.29791	(2000.0)		P		Q	
<i>n</i>	0.19222183	ω	287.30549	+0.07962920		-0.99678698	
<i>a</i>	2.9734975	Ω	158.12174	+0.92316296		+0.07046649	
<i>e</i>	0.2698937	<i>i</i>	1.33088	+0.37607093		+0.03808137	
<i>P</i>	5.13	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1981 02 09	413	0.7+	0.8-	1994 08 12	809	0.4+	1.0+	1995 10 28	327	0.6-	0.1+
1981 02 12	413	0.2+	0.3+	1994 08 12	809	1.3+	1.4+	1999 08 13	691	1.0+	0.2-
1981 02 13	413	0.5-	1.5+	1994 08 12	809	0.3+	0.5+	1999 08 13	691	0.9+	0.1+
1981 03 06	413	0.2-	0.6-	1994 08 13	809	(1.2-	2.1+)	1999 08 13	691	1.1+	0.3-
1981 03 06	413	(3.7+	1.6-)	1994 08 13	809	0.0	1.0+	1999 08 22	703	0.4+	0.6+
1981 03 11	413	1.3-	0.2+	1994 08 13	809	0.6-	0.3+	1999 08 22	703	0.6-	0.3+
1981 03 11	413	1.0+	0.6-	1994 09 05	809	0.5-	0.8-	1999 08 22	703	0.9-	0.5+
1981 03 15	413	0.3-	0.5+	1994 09 05	809	0.8-	0.9-	1999 08 22	703	1.6-	0.7-
1981 04 06	413	2.2-	1.2+	1994 09 05	809	0.8-	1.2-	1999 09 13	704	0.5+	1.2-
1981 04 06	413	2.0+	0.9-	1994 09 06	809	0.1-	0.6-	1999 09 13	704	1.1-	0.4+
1981 04 10	413	1.5-	1.3+	1994 09 06	809	0.8+	0.0	1999 09 13	704	0.4+	0.0
1981 04 10	413	0.0	0.9-	1994 09 06	809	0.3+	0.8-	1999 09 13	704	0.3-	1.0+
1981 04 26	413	1.8+	1.3-	1995 10 28	327	0.1+	0.3-				
1981 05 01	413	0.6+	0.1-	1995 10 28	327	0.5+	0.5+				

(11465)* 1981 EP₃₀

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>	271.17201	(2000.0)		P		Q	
<i>n</i>	0.18058005	ω	224.13037	+0.77782052		-0.62755498	
<i>a</i>	3.0999609	Ω	174.41254	+0.62845917		+0.77612679	
<i>e</i>	0.0236659	<i>i</i>	20.56731	+0.00585696		+0.06166004	
<i>P</i>	5.46	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1981 02 09	413	1.6+	0.7-	1995 11 24	413	1.5+	0.3-	1999 07 12	704	0.1+	0.2-
1981 02 13	413	1.5+	0.4+	1998 04 23	704	0.1+	0.3-	1999 07 12	704	0.7-	1.4-
1981 03 02	413	0.1+	0.6-	1998 04 23	704	0.7-	1.1+	1999 07 12	704	0.7-	0.3+

1981 03 02	413	0.4+	1.8-	1998 04 23	704	0.2-	0.7+	1999 07 22	704	0.3+	0.2+
1981 03 06	413	1.1-	0.3+	1998 04 23	704	0.0	1.3+	1999 07 22	704	0.4-	0.1-
1981 03 06	413	(3.2+	1.7-)	1998 04 23	566	0.1+	0.6+	1999 07 22	704	0.2-	0.0
1981 03 11	413	1.5-	0.4-	1998 04 23	566	0.3+	0.7+	1999 07 22	704	0.3+	0.1-
1981 03 11	413	0.6-	1.5-	1998 04 23	566	0.2-	0.8+	1999 07 22	704	0.2+	0.3+
1981 04 26	413	(0.7+	3.8-)	1999 07 09	653	0.1+	0.3-	1999 09 08	704	0.5+	0.7+
1989 11 06	675	0.1-	0.7+	1999 07 09	653	0.3-	0.2-	1999 09 08	704	0.6+	0.4+
1989 11 06	675	0.0	0.7+	1999 07 10	653	0.5-	0.4-	1999 09 08	704	0.8+	0.7-
1994 09 30	675	0.2-	0.6+	1999 07 10	653	0.2+	1.2-	1999 09 08	704	0.9+	0.0
1994 09 30	675	1.0-	1.2-	1999 07 12	704	0.9+	0.2-				
1995 11 24	413	1.0-	0.4+	1999 07 12	704	0.3-	0.4-				

(11466)* 1981 EL₃₃ = 1992 OS

Discovered 1981 Mar. 1 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey.

Id. G. V. Williams (*MPC* 20629)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	1.95239	(2000.0)		P		Q	
<i>n</i>	0.28643885	ω	29.90340	+0.80862147		+0.58085935	
<i>a</i>	2.2791947	Ω	294.29194	-0.55807330		+0.70701324	
<i>e</i>	0.3147715	<i>i</i>	5.88503	-0.18624048		+0.40340388	
<i>P</i>	3.44	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1978 04 12	413	(2.5-	0.2-)	1992 07 26	675	0.3+	0.7-	1999 09 08	704	0.4+	0.3-
1978 04 12	413	1.7+	0.4-	1992 07 28	675	0.3-	0.5-	1999 09 08	704	0.5+	0.4-
1981 02 02	413	0.6+	0.8+	1992 07 28	675	0.9-	0.4-	1999 09 08	704	0.3-	0.6-
1981 02 14	413	0.1-	0.3+	1999 06 20	703	0.0	0.3+	1999 09 09	165	0.9+	0.1-
1981 03 01	413	1.0-	0.5+	1999 06 20	703	0.4+	0.5+	1999 09 09	165	0.3+	0.2+
1981 03 01	413	0.2+	0.8-	1999 06 20	703	0.8+	0.2+	1999 09 10	704	0.3+	0.2-
1981 03 07	413	(3.6-	1.0+)	1999 06 20	703	0.3+	0.5+	1999 09 10	704	0.2+	0.3-
1981 03 07	413	0.5-	0.2+	1999 08 22	699	0.4-	0.2+	1999 09 10	704	0.2-	0.1-
1981 03 11	413	0.4+	0.2-	1999 08 22	699	0.3-	0.4+	1999 09 12	106	0.1+	0.2-
1981 03 15	413	0.6-	0.2-	1999 08 22	699	0.1-	0.3+	1999 09 12	106	0.5-	0.4-
1981 03 15	413	(3.6+	0.1-)	1999 09 05	703	0.0	0.7-	1999 09 12	106	0.2-	0.3-
1981 04 29	413	0.3+	0.1-	1999 09 05	703	0.1-	0.1+	1999 09 16	704	0.7+	0.6+
1992 05 29	413	0.1+	0.0	1999 09 05	703	0.4-	0.0	1999 09 16	704	0.6-	0.5+
1992 05 29	413	0.5-	0.3-	1999 09 05	703	0.1-	0.8+	1999 09 16	704	0.7-	0.3+
1992 07 26	675	0.1-	1.0+	1999 09 08	704	0.2+	0.2-				

(11467)* 1981 EA₃₆ = 1997 CC₅

Discovered 1981 Mar. 3 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey.

Id. G. V. Williams (*MPC* 29094)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	303.35083	(2000.0)		P		Q	
<i>n</i>	0.24024958	ω	76.65291	+0.78936331		-0.61280087	
<i>a</i>	2.5626795	Ω	321.12097	+0.53787037		+0.71948424	
<i>e</i>	0.1215887	<i>i</i>	3.39377	+0.29597471		+0.32682950	
<i>P</i>	4.10	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1981 03 03	413	2.2+	0.7-	1997 01 28	327	0.2+	0.3+	1999 08 22	703	1.4+	0.1+
1981 03 07	413	1.9-	0.2+	1997 01 28	327	0.3+	0.4+	1999 08 22	703	0.6-	0.0
1981 03 07	413	(3.2-	1.5+)	1997 01 28	327	0.0	0.5+	1999 09 07	704	1.1-	0.7+
1981 03 11	413	0.7+	0.1-	1997 01 30	327	0.2+	0.5+	1999 09 07	704	0.5-	0.2+
1981 03 11	413	0.3-	0.0	1997 01 30	327	0.4-	0.3-	1999 09 07	704	0.7-	0.4-
1981 03 15	413	2.2-	0.4+	1997 01 30	327	1.1+	0.6+	1999 09 07	704	1.4-	0.2+
1981 03 15	413	1.1+	0.7-	1997 02 06	566	0.5+	0.1+	1999 09 07	704	0.3-	0.1-
1981 03 16	413	(5.5-	0.0)	1997 02 06	566	0.8+	0.2+	1999 09 09	704	0.2+	0.1-
1991 10 07	691	0.5-	0.1+	1997 02 06	566	0.5+	0.1+	1999 09 09	704	0.7-	0.5-
1991 10 07	691	0.1+	0.3-	1997 02 07	566	0.7-	1.7-	1999 09 09	704	0.3+	0.3-
1991 10 07	691	0.1+	0.2-	1997 02 07	566	1.1-	1.9-	1999 09 09	704	0.2+	0.2+
1995 08 19	809	0.5+	0.4+	1997 02 07	566	0.3+	1.6-	1999 09 09	704	0.4-	1.2-
1995 08 20	809	0.5+	0.1+	1997 02 08	566	0.1+	0.3-	1999 09 13	704	0.2-	0.8+

1995 08 22	809	0.3+	0.6-	1997 02 08	566	0.1+	0.1-	1999 09 13	704	0.1-	0.5-
1997 01 14	566	0.1+	0.7+	1997 02 08	566	0.0	0.2-	1999 09 13	704	0.5+	0.6-
1997 01 14	566	1.5-	0.9+	1999 08 22	703	0.3+	0.5-	1999 09 13	704	0.9+	0.8+
1997 01 14	566	0.7-	0.6+	1999 08 22	703	1.5+	0.4-	1999 09 13	704	0.5+	0.3+

(11468)* 1981 EU₄₂ = 1995 YB₂₄ = 1998 LF

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

Id. K. Ichikawa (*MPC* 32214), B. G. Marsden (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

M	322.12524		(2000.0)	P	Q
n	0.18234631	ω	156.35777	+0.99862491	-0.05206521
a	3.0799102	Ω	206.62890	+0.04565518	+0.92114457
e	0.1624192	i	0.78289	+0.02576617	+0.38572257
P	5.41	H	14.1	G 0.15	U 1

Residuals in seconds of arc

1981 03 02	413	(10.6- 4.8+)	1998 05 01	704	0.2+ 0.4+	1999 07 13	704	0.1+ 0.0
1981 03 11	413	(4.0- 0.9+)	1998 05 01	704	(0.8- 2.3+)	1999 07 13	704	0.2- 0.3-
1981 03 15	413	1.3- 0.8-	1998 05 01	704	(2.5+ 0.9-)	1999 07 13	704	0.1+ 0.4+
1981 05 01	413	1.5+ 0.8+	1998 05 01	704	(2.9- 0.2+)	1999 07 16	704	0.6- 0.0
1995 12 23	566	0.4+ 0.4+	1998 06 14	684	0.5- 0.2-	1999 07 16	704	0.4+ 0.1+
1995 12 23	566	0.5+ 0.4+	1998 06 14	684	0.2+ 1.0+	1999 07 16	704	0.3+ 0.6+
1995 12 23	566	0.4- 0.7+	1998 06 15	684	0.1+ 0.1+	1999 08 07	699	0.2- 1.3+
1995 12 24	566	0.3+ 0.8+	1998 06 15	684	0.5+ 0.5+	1999 08 07	699	0.1+ 0.7+
1995 12 24	566	0.2- 0.7+	1999 07 13	704	0.2+ 0.3-	1999 08 07	699	0.7- 0.3-
1995 12 24	566	0.1- 0.7+	1999 07 13	704	0.3- 0.4+			

(11469)* 1981 EZ₄₂ = 1984 BZ₄ = 1996 VS₁₅

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* 28581), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	36.54091		(2000.0)	P	Q
n	0.28320362	ω	86.34956	+0.08216639	+0.99661566
a	2.2965197	Ω	188.36471	-0.92088372	+0.07498973
e	0.2303814	i	0.95725	-0.38107987	+0.03367138
P	3.48	H	15.6	G 0.15	U 2

Residuals in seconds of arc

1981 02 12	413	1.4-	0.9+	1996 11 11	691	0.1+	0.0	1999 09 07	704	0.1-	0.2-
1981 02 12	413	1.2-	0.7+	1996 11 18	691	0.1+	0.0	1999 09 09	704	0.6+	0.7-
1981 02 13	413	0.2-	0.4+	1996 11 18	691	0.2+	0.0	1999 09 09	704	0.3+	0.9-
1981 03 02	413	2.1+	0.5-	1996 11 18	691	0.1-	0.2+	1999 09 09	704	0.1-	0.3-
1981 03 06	413	(3.4+	1.5-)	1998 02 06	688	0.2+	0.2+	1999 09 09	704	0.4-	0.8-
1981 03 06	413	0.7+	0.9+	1998 02 06	688	0.0	0.1+	1999 09 09	704	0.9+	0.1-
1981 03 11	413	0.7-	0.4-	1998 02 06	688	0.0	0.5+	1999 09 13	106	0.1-	0.6+
1981 03 15	413	0.5-	0.7-	1999 08 19	470	0.7-	0.1+	1999 09 13	106	0.3-	1.1+
1981 03 15	413	0.8+	0.4-	1999 08 19	470	0.5-	0.2-	1999 09 14	106	0.1+	0.5+
1984 01 25	675	1.8+	1.1-	1999 09 05	699	0.7-	0.7+	1999 09 14	704	0.5+	0.4-
1984 01 26	675	1.5-	0.7+	1999 09 05	699	0.1+	0.5+	1999 09 14	704	0.7+	0.5-
1996 11 05	691	0.1-	0.1-	1999 09 05	699	0.2+	0.6+	1999 09 14	704	0.1+	1.1+
1996 11 05	691	0.3-	0.1-	1999 09 07	704	0.1+	0.1-	1999 09 14	704	0.5+	0.3-
1996 11 05	691	0.2-	0.0	1999 09 07	704	0.3-	0.0	1999 09 14	704	1.0+	0.8-
1996 11 11	691	0.1+	0.1-	1999 09 07	704	0.2-	0.2-	1999 09 14	106	0.7-	0.1-
1996 11 11	691	0.0	0.1-	1999 09 07	704	0.2-	0.0	1999 09 14	106	1.1-	1.6+

(11470)* 1981 EE₄₇ = 1991 VR₁₂ = 1995 YN₂₂

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

Id. G. V. Williams (*MPC* 26899)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	332.60730		(2000.0)	P	Q
n	0.24117058	ω	214.19138	+0.95879372	-0.28227479
a	2.5561510	Ω	162.12111	+0.27842609	+0.91105743
e	0.2112358	i	6.01670	+0.05651115	+0.30049176
P	4.09	H	14.3	G 0.15	U 2

Residuals in seconds of arc

1981 02 13	413	0.2+	2.8-	1999 09 09	704	0.4+	0.2+	1999 09 10	704	0.2-	0.1+
1981 03 02	413	(2.8-	0.9-)	1999 09 09	704	0.2-	0.7+	1999 09 10	704	0.5-	0.2-
1981 03 03	413	(3.0+	1.2-)	1999 09 09	704	0.3+	0.3+	1999 09 10	704	0.0	0.3-
1981 03 07	413	1.5+	1.2-	1999 09 09	704	0.4-	0.2-	1999 09 10	704	0.1-	0.4+
1981 03 11	413	(3.2-	0.1-)	1999 09 09	704	0.1-	0.3-	1999 09 10	704	0.2-	0.6+
1981 03 11	413	0.0	1.6-	1999 09 09	704	0.0	0.2-	1999 09 10	704	0.3-	0.2+
1981 04 26	413	0.4+	0.9-	1999 09 09	704	0.0	0.5+	1999 09 10	704	0.7-	0.1-
1981 05 02	413	1.2-	0.5+	1999 09 09	704	0.2+	0.2-	1999 09 10	704	0.5+	0.1-
1991 11 01	808	1.0-	0.0	1999 09 09	704	0.4+	0.2+	1999 09 10	704	0.2-	0.1+
1991 11 01	808	0.9-	0.4+	1999 09 09	704	0.6+	0.1+	1999 09 10	704	0.1-	0.5+
1991 11 09	808	(5.7-	2.1-)	1999 09 09	704	0.1-	0.4+	1999 09 11	704	0.0	0.1-
1991 11 09	808	0.4+	0.8+	1999 09 09	704	0.1-	0.5-	1999 09 11	704	0.1-	0.1+
1991 11 12	808	0.1+	0.1+	1999 09 09	704	0.6-	0.0	1999 09 11	704	0.2-	0.1-
1991 11 12	808	0.6-	0.9+	1999 09 09	704	0.2+	0.1-	1999 09 11	704	0.1+	0.1-
1995 12 19	327	1.2-	0.3-	1999 09 09	704	0.2+	0.2+	1999 09 11	704	0.2+	0.2-
1995 12 19	327	0.9-	0.2+	1999 09 09	704	0.1+	0.1-	1999 09 11	704	0.1-	0.0
1995 12 19	327	0.7-	0.4+	1999 09 09	704	0.1-	0.1+	1999 09 11	704	0.1+	0.1-
1995 12 21	327	0.7-	0.3+	1999 09 09	704	0.2-	0.1+	1999 09 11	704	0.1+	0.1-
1995 12 21	327	1.6-	0.1+	1999 09 09	704	0.5-	0.8-	1999 09 11	704	0.2-	0.1-
1995 12 21	327	0.8-	0.8+	1999 09 09	704	0.4-	0.6-	1999 09 11	704	0.3+	0.1+
1996 01 31	327	0.4+	0.4+	1999 09 09	704	0.4-	0.0	1999 09 11	704	0.1-	0.1+
1996 01 31	327	0.8+	0.2-	1999 09 09	704	0.4+	0.2+	1999 09 11	704	0.1-	0.4+
1996 01 31	327	1.2+	0.7+	1999 09 09	704	0.1-	0.2+	1999 09 11	704	0.1+	0.1+
1996 02 01	327	(0.6+	2.0+)	1999 09 09	704	0.3+	0.0	1999 09 11	704	0.3+	0.2-
1996 02 01	327	0.8+	0.2+	1999 09 09	704	0.1-	0.3+	1999 09 11	704	0.1-	0.2-
1996 02 01	327	0.1+	1.1+	1999 09 09	704	0.3-	0.2+	1999 09 11	704	0.2+	0.6-
1998 04 22	704	0.8-	0.4+	1999 09 09	704	0.4-	0.6+	1999 09 11	704	0.3-	0.1+
1998 04 22	704	0.5-	0.7-	1999 09 09	704	0.0	0.1+	1999 09 11	704	0.0	0.4-
1998 04 22	704	(2.7+	0.1+)	1999 09 09	704	0.3-	0.2+	1999 09 11	704	0.3-	0.5-
1998 04 22	704	0.4-	0.3-	1999 09 09	704	0.2-	0.3-	1999 09 11	704	0.2+	0.5-
1998 04 22	704	(3.2-	0.2-)	1999 09 10	704	0.6+	0.9+	1999 09 11	704	0.3+	0.5-
1998 05 01	704	0.4+	0.7+	1999 09 10	704	0.0	0.2-	1999 09 11	704	0.2+	0.3-
1998 05 01	704	0.8-	0.3-	1999 09 10	704	0.4+	0.5+	1999 09 11	704	0.1+	0.1-
1998 05 01	704	0.0	0.4+	1999 09 10	704	0.3+	0.3+	1999 09 11	704	0.0	0.1+
1998 05 01	704	0.3+	1.5+	1999 09 10	704	0.1-	0.4-	1999 09 11	704	0.2+	0.8-
1998 05 01	704	0.0	1.0+	1999 09 10	704	0.0	0.2-	1999 09 11	704	0.1+	0.6-
1998 05 22	704	1.2-	1.3-	1999 09 10	704	0.2+	0.1+	1999 09 11	704	0.3+	0.5-
1998 05 22	704	0.4-	0.3-	1999 09 10	704	0.2-	0.1-	1999 09 11	704	0.0	0.9-
1998 05 22	704	0.3+	0.5-	1999 09 10	704	0.4+	0.1-	1999 09 11	704	0.4+	0.8-
1998 05 22	704	0.8-	0.8+	1999 09 10	704	0.1-	0.1+	1999 09 11	704	0.3+	0.3-
1998 05 22	704	0.4+	0.1-	1999 09 10	704	0.2-	0.6-	1999 09 11	704	0.2+	0.5-
1998 05 24	704	0.6+	0.6+	1999 09 10	704	0.1-	0.7-	1999 09 11	704	0.1+	0.6-
1998 05 24	704	0.5+	0.1+	1999 09 10	704	0.0	0.5-	1999 09 11	704	0.3+	0.8-
1998 05 24	704	0.1-	0.1+	1999 09 10	704	0.2+	0.5-	1999 09 11	704	0.2+	0.5-
1998 05 24	704	0.6+	0.6+	1999 09 10	704	0.7+	0.1-	1999 09 11	704	0.1+	0.0
1998 05 24	704	0.1-	0.3+	1999 09 10	704	1.1-	2.3+	1999 09 11	704	0.3+	0.7-
1998 06 22	701	0.2+	1.2+	1999 09 10	704	0.0	0.4+	1999 09 11	704	0.1-	0.9-
1998 06 22	701	0.3-	0.5+	1999 09 10	704	0.2-	0.2+	1999 09 11	704	0.2+	0.8-
1999 07 15	106	0.6+	0.9+	1999 09 10	704	0.3-	0.4+	1999 09 11	704	0.0	0.7-
1999 07 15	106	0.2+	1.2+	1999 09 10	704	0.2-	0.4+	1999 09 11	704	0.3+	1.0-
1999 07 16	704	0.1-	0.4+	1999 09 10	704	0.1-	0.3+	1999 09 11	704	0.3+	1.0-
1999 07 16	704	0.2-	0.0	1999 09 10	704	0.3+	0.2+	1999 09 11	704	0.1-	0.3-
1999 07 16	704	0.0	0.8+	1999 09 10	704	0.6-	0.0	1999 09 11	704	0.3+	0.9-
1999 07 16	704	0.1+	0.2+	1999 09 10	704	0.2-	0.2+	1999 09 11	704	0.2+	0.7-
1999 08 08	699	0.1+	1.6+	1999 09 10	704	0.0	0.2+	1999 09 11	704	0.5+	0.9-
1999 08 08	699	0.2+	1.9+	1999 09 10	704	0.1-	0.2+	1999 09 11	704	0.4+	0.8-
1999 08 08	699	0.1-	1.7+	1999 09 10	704	0.2+	0.2+	1999 09 11	704	0.3+	0.2-
1999 09 07	704	0.2-	0.4+	1999 09 10	704	0.3-	0.3+	1999 09 11	704	0.3+	0.6-
1999 09 07	704	0.2-	0.1+	1999 09 10	704	0.3-	0.2+	1999 09 11	704	0.5+	0.8-

1999 09 07	704	0.4−	0.0	1999 09 10	704	0.2+	0.1+	1999 09 11	704	0.4+	0.9−
1999 09 07	704	0.2−	0.1−	1999 09 10	704	0.3+	0.3+	1999 09 11	704	0.2+	1.4−
1999 09 07	704	0.6−	0.2−	1999 09 10	704	0.1−	0.2+	1999 09 11	704	0.0	0.8−
1999 09 08	704	0.5−	0.4+	1999 09 10	704	0.1+	0.4+	1999 09 11	704	0.6+	1.1−
1999 09 08	704	0.1−	0.2+	1999 09 10	704	0.2−	0.1+	1999 09 11	704	0.2+	1.0−
1999 09 08	704	0.4−	0.6+	1999 09 10	704	0.1−	0.2+	1999 09 11	704	0.3+	1.0−
1999 09 08	704	0.4−	0.3+	1999 09 10	704	0.1−	0.4+	1999 09 11	704	0.2+	1.1−
1999 09 08	704	0.0	0.3+	1999 09 10	704	0.1−	0.5+	1999 09 11	704	0.5+	1.3−
1999 09 08	704	0.4−	0.5+	1999 09 10	704	0.1−	0.0	1999 09 11	704	0.5+	0.9−
1999 09 08	704	0.1+	0.4+	1999 09 10	704	0.0	0.7−	1999 09 11	704	0.2+	0.6−
1999 09 08	704	0.5−	0.0	1999 09 10	704	0.1−	0.1−	1999 09 13	610	0.8+	0.1+
1999 09 08	704	0.2−	0.8+	1999 09 10	704	0.2−	0.2+	1999 09 13	610	0.5+	0.1+
1999 09 09	704	0.2−	0.3+	1999 09 10	704	0.2−	0.0	1999 09 13	610	0.3+	0.0
1999 09 09	704	0.5−	0.0	1999 09 10	704	0.3+	0.2+	1999 09 13	610	0.1−	0.0
1999 09 09	704	0.2+	0.6+	1999 09 10	704	0.2+	0.1−	1999 09 13	610	0.3−	0.2−
1999 09 09	704	0.1+	0.4+	1999 09 10	704	0.4+	0.1−	1999 09 14	704	0.3+	0.1+
1999 09 09	704	0.0	0.9+	1999 09 10	704	0.1−	0.5+	1999 09 14	704	0.2+	0.7+
1999 09 09	704	0.1+	0.5+	1999 09 10	704	0.3+	0.6+	1999 09 14	704	0.5+	0.6+
1999 09 09	704	0.0	0.4+	1999 09 10	704	0.3−	0.2−	1999 09 14	704	0.2+	0.4+
1999 09 09	704	0.7−	0.3−	1999 09 10	704	0.3+	0.1+	1999 09 14	704	0.4+	0.2+
1999 09 09	704	0.2−	0.1−	1999 09 10	704	0.0	0.3+				
1999 09 09	704	0.2+	0.0	1999 09 10	704	0.2−	0.2−				

(11471)* 1981 EH₄₈

Discovered 1981 Mar. 6 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>	227.96302	(2000.0)	P	Q		
<i>n</i>	0.23867120	ω	235.47388	−0.21963789	−0.97224287	
<i>a</i>	2.5739654	Ω	227.42826	+0.92712894	−0.18228910	
<i>e</i>	0.1394176	<i>i</i>	6.28665	+0.30362992	−0.14667814	
<i>P</i>	4.13	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1979 10 18	675	1.2−	0.5−	1998 05 22	704	1.1−	1.1+	1999 09 08	703	0.1−	0.5+
1979 10 18	675	0.5+	1.4+	1998 05 22	704	1.1+	0.7+	1999 09 08	703	0.1+	1.1+
1981 02 09	413	0.2−	0.7−	1998 05 22	704	0.3−	0.0	1999 09 08	703	0.2−	1.0+
1981 02 12	413	0.8−	0.0	1998 05 22	699	0.4−	1.2−	1999 09 08	703	0.9−	0.4+
1981 03 06	413	0.3+	1.4+	1998 05 22	699	1.4−	1.4−	1999 09 09	704	0.3+	0.1−
1981 03 06	413	(4.4+ 1.8−)		1998 05 22	699	1.2+	0.5−	1999 09 09	704	0.4−	1.1+
1981 03 08	413	0.7−	0.5+	1999 07 13	704	0.0	0.9−	1999 09 09	704	1.6+	0.4−
1981 03 08	413	1.0+	0.4+	1999 07 13	704	0.3+	0.5+	1999 09 09	704	0.3−	0.1+
1981 03 12	413	0.1−	1.3+	1999 07 13	704	0.5−	0.5−	1999 09 09	704	0.0	0.7−
1981 04 08	413	0.4−	1.6+	1999 07 13	704	0.5−	0.7+	1999 09 09	704	0.2+	0.4+
1981 04 08	413	0.0	1.0+	1999 07 13	704	0.1+	0.1−	1999 09 09	704	0.2−	0.8+
1981 04 09	413	0.2−	0.1−	1999 08 12	699	0.4+	0.4−	1999 09 09	704	0.4−	0.1+
1981 04 09	413	1.2+	0.7−	1999 08 12	699	0.4−	0.3−	1999 09 09	704	1.0+	0.2−
1981 05 01	413	1.7+	1.5−	1999 08 12	699	0.2−	0.0				

(11472)* 1981 SE₉ = 1981 RG = 1992 UX₁ = 1998 FP₁₂₀

Discovered 1981 Sept. 24 at the Perth Observatory.

Id. K. Hurukawa (d. *MPC* 10513), G. V. Williams (*MPC* 31711)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams			
<i>M</i>	356.75413	(2000.0)	P	Q		
<i>n</i>	0.27233196	ω	214.41348	+0.85360937	+0.51832199	
<i>a</i>	2.3572392	Ω	114.28500	−0.46421660	+0.80211697	
<i>e</i>	0.2418253	<i>i</i>	3.26394	−0.23633447	+0.29656482	
<i>P</i>	3.62	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1981 09 03	688	1.0−	0.8−	1998 03 22	704	0.4−	0.7−	1999 09 03	699	1.0−	0.3−
1981 09 03	688	(0.1− 2.6−)		1998 03 22	704	(2.4+ 0.1+)		1999 09 06	699	0.5−	0.1+
1981 09 24	323	(3.7+ 1.7−)		1998 03 22	704	1.0−	1.5−	1999 09 06	699	0.5−	0.0
1981 09 24	323	0.8+	0.8+	1998 03 29	704	0.6+	0.7+	1999 09 06	699	0.4−	0.2−
1981 09 26	688	(1.5+ 3.7−)		1998 03 29	704	0.4−	0.7−	1999 09 07	704	0.3+	0.2+

1981 09 26	688	(0.7− 3.6−)		1998 03 29	704	0.4−	1.1−	1999 09 07	704	0.3+	0.2−
1981 09 26	688	2.2+	0.9−	1998 03 29	704	0.2−	0.4+	1999 09 07	704	0.0	0.1−
1981 09 26	688	(3.2− 2.4−)		1998 03 29	704	0.5−	1.4−	1999 09 07	704	0.2+	0.3−
1981 09 26	323	1.4−	0.7−	1998 04 19	704	0.5+	1.2+	1999 09 07	704	0.3−	0.1−
1981 09 28	323	(1.9− 3.7−)		1998 04 19	704	(3.3+ 1.3+)		1999 09 08	704	0.8+	0.6+
1981 10 02	323	0.1+	0.6+	1998 04 19	704	0.4−	0.1−	1999 09 08	704	0.8+	0.9−
1992 10 21	403	(5.3− 0.9−)Y		1998 04 19	704	(4.7− 0.1+)		1999 09 08	704	1.1+	0.9−
1992 10 21	403	0.5−	1.7+ Y	1999 06 20	699	1.4−	0.4+	1999 09 08	704	0.7+	1.5−
1992 10 26	403	(0.2+ 2.9−)		1999 06 20	699	0.5−	0.1+	1999 09 09	704	1.0+	0.5+
1992 10 26	403	1.3−	0.3+	1999 06 20	699	1.0−	0.5+	1999 09 09	704	0.5+	1.3−
1998 01 29	691	0.3+	0.0	1999 08 08	699	0.1+	0.6+	1999 09 09	704	2.0+	1.0−
1998 01 29	691	0.3+	0.0	1999 08 08	699	0.2−	0.7+	1999 09 09	704	1.1+	1.3−
1998 01 29	691	0.4+	0.4−	1999 08 08	699	0.0	0.7+	1999 09 13	704	0.7+	0.2+
1998 03 20	704	0.0	0.5−	1999 08 13	699	0.7−	0.6+	1999 09 13	704	0.1+	0.5+
1998 03 20	704	1.6+	1.0+	1999 08 13	699	0.7−	0.5+	1999 09 13	704	0.6+	0.5−
1998 03 20	704	1.5−	1.3−	1999 08 13	699	0.3−	0.7+	1999 09 13	704	0.5+	0.3+
1998 03 20	704	0.5+	1.3+	1999 09 03	699	1.2−	0.4+	1999 09 13	704	0.5−	0.3−
1998 03 22	704	0.4+	1.2+	1999 09 03	699	1.5−	0.1+				

(11473)* 1982 SC = 1997 EW₃₂ = 1998 FZ₁₁₆

Discovered 1982 Sept. 22 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. G. V. Williams (*MPC* 31711)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams			
<i>M</i>	352.30987	(2000.0)	P	Q		
<i>n</i>	0.23094302	ω	353.46869	+0.95180545	+0.30482040	
<i>a</i>	2.6310725	Ω	348.60843	−0.27305103	+0.79179887	
<i>e</i>	0.2431838	<i>i</i>	9.89026	−0.13967652	+0.52928165	
<i>P</i>	4.27	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1982 08 17	095	(2.1+ 8.6+)	1998 03 25	704	0.8−	0.4+	1999 09 07	704	0.3−	0.3−
1982 08 19	675	1.0+ 1.9+	1998 03 31	704	0.5−	0.8+	1999 09 07	704	0.2−	0.1+
1982 08 19	675	2.4+ 0.8+	1998 03 31	704	0.1−	0.1+	1999 09 07	704	0.5−	0.1+
1982 09 11	046	1.4+ 0.5−	1998 03 31	704	0.0	1.2−	1999 09 07	704	0.1−	0.5+
1982 09 11	046	(8.1− 1.0−)	1998 03 31	704	0.5−	0.3−	1999 09 07	704	0.1+ 0.0	
1982 09 14	046	0.3+ 1.8−	1998 03 31	704	1.7−	1.7−	1999 09 09	704	0.2−	0.0
1982 09 14	046	0.9+ 2.3−	1998 04 01	704	0.5−	0.7+	1999 09 09	704	0.0	0.2−
1982 09 15	046	0.0 1.4−	1998 04 01	704	0.5+	1.5+	1999 09 09	704	0.5+	0.0
1982 09 15	046	1.6− 0.6−	1998 04 01	704	0.7+	1.1+	1999 09 09	704	0.4+	0.6+
1982 09 16	046	0.2− 0.5−	1998 04 01	704	0.1+	0.6+	1999 09 09	704	0.1−	0.4+
1982 09 16	046	0.7− 0.2−	1998 04 01	704	1.6−	0.4−	1999 09 12	682	0.2+	0.2−
1982 09 20	675	(1.0+ 3.9+)	1998 04 19	688	0.3+	0.2−	1999 09 12	682	0.3+	0.0
1982 09 20	675	(1.5+ 3.0+)	1998 04 19	688	0.3+	0.2−	1999 09 12	682	0.7+	0.0
1982 09 22	688	(2.8+ 2.0−)	1998 04 19	688	0.3+	0.1−	1999 09 12	682	0.5+	0.2+
1982 09 22	688	(4.8+ 0.1+)	1998 04 20	704	0.5+	0.7−	1999 09 13	704	0.1+	0.0
1997 03 04	704	0.3− 0.4+	1998 04 20	704	0.2+	0.9−	1999 09 13	704	0.1−	0.0
1997 03 04	704	1.0+ 0.6−	1998 04 20	704	(3.2+ 0.7+)		1999 09 13	704	0.2−	0.4−
1997 03 05	704	0.6+ 0.8+	1998 04 20	704	0.7+	0.7−	1999 09 13	704	0.2−	0.1−
1997 03 05	704	0.1+ 0.5−	1998 04 20	704	(3.0− 0.6−)		1999 09 13	704	0.4−	0.1−
1997 03 06	704	0.5− 0.1+	1998 04 30	699	1.5+	0.7−	1999 09 14	682	0.7+	0.1−
1997 03 06	704	0.0 0.7+	1998 04 30	699	0.3+	0.2−	1999 09 14	682	0.8−	0.1+
1998 03 25	704	0.5− 0.1−	1998 04 30	699	0.6+	0.2−	1999 09 14	682	0.0	0.1−
1998 03 25	704	0.9− 0.3+	1999 08 09	106	0.7−	1.1+	1999 09 26	699	0.3−	0.4+
1998 03 25	704	1.2− 0.6−	1999 08 09	106	1.4−	1.1+	1999 09 26	699	0.1−	0.5+
1998 03 25	704	0.3+ 1.0+	1999 08 09	106	(1.7− 2.1+)		1999 09 26	699	0.3−	0.5+

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Marsden						
<i>M</i>	342.01471	(2000.0)			P		Q				
<i>n</i>	0.28708845	ω	355.23074		+0.96129176		+0.27491864				
<i>a</i>	2.2757553	Ω	348.76050		−0.24957466		+0.84051997				
<i>e</i>	0.1957485	<i>i</i>	5.41163		−0.11675037		+0.46684679				
<i>P</i>	3.43	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	2				
Residuals in seconds of arc											
1982 09 18	809	0.2−	0.2−	1998 03 22	327	0.2−	0.0	1999 07 14	704	1.2−	0.4−
1982 09 18	809	0.7+	1.0−	1998 03 22	327	0.0	0.1+	1999 08 13	703	0.4+	1.1−
1982 09 18	809	1.7+	2.1−	1998 03 22	327	0.3−	0.2+	1999 08 13	703	0.8−	1.3−
1982 09 24	095	0.5−	0.4+	1998 03 28	327	0.3−	0.0	1999 08 13	703	2.0−	0.7−
1982 09 27	095	0.8−	1.0+	1998 03 28	327	0.4+	0.4−	1999 08 13	703	2.8−	0.3−
1995 05 21	817	0.6+	0.2−	1998 03 28	327	0.4+	0.1+	1999 08 13	699	1.3+	0.4−
1995 05 21	817	0.3−	1.0+	1998 03 29	704	(3.1−	1.1+)	1999 08 13	699	0.0	0.3−
1995 05 21	817	0.6+	1.1−	1998 03 29	704	0.7+	0.9−	1999 08 13	699	0.2−	0.1−
1995 05 21	817	0.4−	1.0+	1998 03 29	704	0.3+	1.5−	1999 09 03	699	0.2−	0.4−
1995 05 23	817	0.0	0.7+	1998 03 29	704	0.0	1.9−	1999 09 03	699	0.2+	0.1−
1995 05 23	817	0.8+	0.7−	1998 03 29	704	1.0−	1.6−	1999 09 03	699	0.9−	0.3−
1995 05 23	817	0.1−	0.3−	1998 04 01	704	0.7−	0.5−	1999 09 07	704	0.6+	0.1−
1998 03 05	327	0.6−	0.3−	1998 04 01	704	0.3−	1.4−	1999 09 07	704	0.3+	0.2+
1998 03 05	327	0.6−	0.1−	1998 04 01	704	0.4+	0.8+	1999 09 07	704	1.4+	1.0+
1998 03 05	327	0.7−	0.1−	1998 04 01	704	1.4−	0.9+	1999 09 07	704	1.0+	0.4+
1998 03 20	704	0.0	0.3−	1998 04 19	704	1.7+	0.3+	1999 09 07	704	1.0+	1.6+
1998 03 20	704	0.1−	0.0	1998 04 19	704	0.5−	1.3+	1999 09 11	704	0.7+	0.6+
1998 03 20	704	0.3−	1.9−	1998 04 19	704	1.8+	0.8+	1999 09 11	704	0.4+	0.2+
1998 03 20	704	1.6−	0.7+	1998 04 19	704	0.2+	1.2−	1999 09 11	704	0.2+	0.6+
1998 03 22	704	0.5−	0.3+	1998 04 19	704	1.8+	1.3+	1999 09 11	704	0.9+	0.8+
1998 03 22	704	0.8+	0.5−	1999 07 14	704	0.3+	0.0	1999 09 11	704	1.0+	1.2+
1998 03 22	704	0.2−	0.1+	1999 07 14	704	0.1+	0.6−	1999 09 13	106	0.2−	0.5−
1998 03 22	704	0.2−	1.9+	1999 07 14	704	0.4−	0.0	1999 09 13	106	0.1+	0.4−
1998 03 22	704	1.1−	0.4+	1999 07 14	704	0.1−	0.2+	1999 09 13	106	0.2−	0.4−

(11475)* 1982 VL = 1977 FQ₁ = 1980 BG₂ = 1996 XW₁₄

Discovered 1982 Nov. 11 by Z. Vávrová at Kleť.

Id. K. Ichikawa (*MPC* 29094)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams						
M	269.84169		(2000.0)		P		Q				
n	0.28803083		ω 65.53468		−0.41409467		−0.90238618				
a	2.2707887		Ω 49.46829		+0.76796212		−0.41669779				
e	0.1047439		i 9.02826		+0.48863051		−0.10982775				
P	3.42		H 13.7	G	0.15		U	1			
Residuals in seconds of arc											
1977 03 26	095	0.3+	0.6+	1996 12 12	709	0.1+	0.1+	1996 12 17	684	0.2+	0.6+
1980 01 23	095	(3.8+	0.3+)	1996 12 12	684	0.2+	0.2+	1996 12 17	684	0.3+	0.5+
1982 11 11	046	1.7−	0.0	1996 12 12	709	0.0	0.0	1997 03 09	689	0.1−	0.5+
1982 11 11	046	0.7−	0.5+	1996 12 12	684	0.3+	0.1+	1997 03 10	689	0.0	0.2+
1982 11 14	046	0.3−	1.3−	1996 12 12	684	0.2+	0.1+	1999 08 08	046	0.5−	0.1−
1982 11 14	046	1.5+	0.6−	1996 12 13	684	0.2−	0.5+	1999 08 08	046	0.3−	0.2+
1982 11 20	046	2.0+	0.2−	1996 12 13	684	0.2−	0.5+	1999 08 08	046	0.0	0.1+
1982 11 20	046	(3.8−	1.1+)	1996 12 15	709	0.2−	0.0	1999 08 09	046	0.3−	0.6+
1996 12 11	620	0.6+	1.0−	1996 12 15	709	0.7−	0.4−	1999 08 09	046	0.3−	0.4+
1996 12 11	620	0.1+	0.4−	1996 12 15	709	0.2−	0.0	1999 08 09	046	1.2−	0.4−
1996 12 11	620	0.4+	0.4−	1996 12 15	709	0.4−	0.3−	1999 09 15	106	0.8+	0.3+
1996 12 12	709	0.0	0.0	1996 12 15	709	0.0	0.0	1999 09 15	106	0.3−	0.7+
1996 12 12	709	0.0	0.0	1996 12 15	709	0.2−	0.4+	1999 09 15	106	0.1+	0.9+
1996 12 12	709	0.1+	0.1+	1996 12 15	709	0.1+	0.2+				

(11476)* 1984 HH₁ = 1991 EV₈ = 1998 CT₄

Discovered 1984 Apr. 23 by W. Ferreri and V. Zappalà at the European Southern Observatory.

Id. B. G. Marsden (*MPC* 31376)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Marsden					
M	71.85787		(2000.0)			P		Q			
n	0.27458125		ω	83.21828		−0.34265673		+0.93940967			
a	2.3443483		Ω	166.73025		−0.87790806		−0.31647904			
e	0.1945257		i	2.44433		−0.33446046		−0.13172124			
P	3.59 <th>H</th> <td colspan="2">14.8</td> <th>G</th> <td colspan="2">0.15</td> <th>U</th> <td colspan="2">2</td>		H	14.8		G	0.15		U	2	
Residuals in seconds of arc											
1984 04 23	809	0.8−	0.6+	1998 03 03	704	0.4+	0.5+	1999 09 07	704	0.4−	0.5+
1984 04 23	809	0.7−	0.5+	1998 03 03	704	0.2−	0.1−	1999 09 07	704	0.1−	0.6−
1984 04 24	809	0.2−	0.6+	1998 03 03	704	1.1−	0.6+	1999 09 07	704	0.0	0.7−
1984 04 24	809	0.4−	0.6+	1998 03 04	809	0.0	2.0+	1999 09 07	704	0.4−	0.2−
1984 04 25	809	0.8−	0.2+	1998 03 04	809	0.0	1.0+	1999 09 09	704	0.7−	0.3+
1984 04 25	809	1.6+	0.5−	1998 03 04	809	0.6−	1.7+	1999 09 09	704	0.6−	0.4+
1984 04 27	809	0.0	0.0	1998 03 04	704	0.5−	0.1+	1999 09 09	704	0.2−	0.2−
1984 04 27	809	0.1+	0.5+	1998 03 04	704	0.2−	0.6+	1999 09 09	704	0.1+	0.1−
1984 04 30	809	1.2+	0.6+	1998 03 04	704	0.0	1.2−	1999 09 09	704	0.2+	1.0+
1984 04 30	809	1.4+	0.3+	1998 03 04	704	(2.1−	0.8−)	1999 09 10	560	0.2−	0.3−
1991 03 12	675	0.4−	1.5−	1999 07 16	704	0.8+	0.3+	1999 09 10	560	0.7−	0.3−
1991 03 12	675	1.4−	0.9−	1999 07 16	704	0.9−	1.2+	1999 09 10	560	1.1−	0.1−
1998 02 06	809	1.1+	0.1+	1999 07 16	704	0.1+	0.0	1999 09 11	560	0.8−	0.4+
1998 02 06	809	0.6+	0.7−	1999 07 16	704	1.0+	0.5+	1999 09 11	560	0.3−	0.4−
1998 02 06	809	0.8+	0.4+	1999 08 22	703	0.6−	0.6+	1999 09 11	560	0.1−	0.2+
1998 02 07	809	1.7+	0.9+	1999 08 22	703	0.3−	0.4+	1999 09 12	560	1.0−	0.4+
1998 02 07	809	1.4+	1.5+	1999 08 22	703	0.3−	0.6+	1999 09 12	560	0.3+	0.7+
1998 02 07	809	1.0+	1.3+	1999 08 22	703	0.2+	0.9+	1999 09 12	560	0.3−	0.4+
1998 03 03	809	(0.2+	3.7+)	1999 08 22	703	0.2+	0.4+	1999 09 14	704	0.5−	0.0
1998 03 03	809	(0.4+	3.5+)	1999 08 22	703	0.5+	0.4+	1999 09 14	704	0.1+	0.4+
1998 03 03	809	(0.1+	3.4+)	1999 08 22	703	0.8+	1.7+	1999 09 14	704	0.0	0.2−
1998 03 03	704	0.3−	0.3+	1999 08 22	703	1.2+	0.9+	1999 09 14	704	0.4+	0.4−
1998 03 03	704	0.4−	0.0	1999 09 07	704	0.2−	0.2−	1999 09 14	704	0.7+	0.2+

(11477)* 1984 SY₁ = 1979 WL₇ = 1998 KU₄₇

Discovered 1984 Sept. 29 by A. Mrkos at Kleť.

Id. S. Nakano (*MPC* 32441)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Nakano					
<i>M</i>	286.59598		(2000.0)			P		Q			
<i>n</i>	0.19086575		ω	186.25814		+0.57938766		−0.80610878			
<i>a</i>	2.9875652		Ω	228.40910		+0.75460329		+0.58636371			
<i>e</i>	0.0967695		<i>i</i>	9.26476		+0.30803218		+0.07978873			
<i>P</i>	5.16		<i>H</i>	12.2	<i>G</i>	0.15		<i>U</i>	1		
Residuals in seconds of arc											
1979 11 17	095	1.2−	1.4+	1998 06 26	704	0.1−	0.1+	1999 09 08	704	0.1+	0.2+
1984 09 29	046	(0.2−	2.7−)	1998 06 26	704	0.2+	0.3+	1999 09 09	704	0.1+	0.2−
1984 09 30	046	(0.1+	2.6−)	1998 06 26	704	0.8−	1.2−	1999 09 09	704	0.4+	0.2+
1984 09 30	046	0.1+	0.4−	1999 08 02	046	0.7−	0.0	1999 09 09	704	0.1+	0.1+
1984 10 01	046	0.5−	0.5−	1999 08 02	046	0.5−	0.6+	1999 09 09	704	0.2−	0.2+
1984 10 06	046	1.7+	0.8+	1999 08 02	046	0.4−	0.2+	1999 09 09	704	0.0	0.3+
1997 04 11	691	0.2−	0.0	1999 08 02	046	0.7−	0.1+	1999 09 09	046	0.3−	0.0
1997 04 11	691	0.4+	0.9+	1999 08 03	046	0.1+	0.3+	1999 09 09	046	0.3−	0.0
1997 04 11	691	0.4+	0.6+	1999 08 03	046	0.1+	0.1+	1999 09 09	046	0.2−	0.1−
1998 05 22	704	0.2−	0.0	1999 08 04	046	0.4+	0.6+	1999 09 10	704	0.1+	0.3−
1998 05 22	704	0.2−	0.1+	1999 08 04	046	0.1+	0.6+	1999 09 10	704	0.0	0.2+
1998 05 22	704	0.3+	0.4−	1999 08 14	165	(2.2+	0.7+)	1999 09 10	704	0.3+	1.1−
1998 05 22	704	0.2+	0.7−	1999 08 15	165	0.5+	0.7−	1999 09 14	704	0.1+	0.3−
1998 05 22	704	0.3−	0.1+	1999 08 15	165	0.8+	0.1−	1999 09 14	704	0.5−	0.2+
1998 05 24	704	0.5−	0.9+	1999 08 22	046	0.2+	0.1+	1999 09 14	703	0.3−	0.1+
1998 05 24	704	0.2+	0.3+	1999 08 22	046	0.1+	0.0	1999 09 14	704	0.2+	0.7−
1998 05 24	704	0.9+	1.6+	1999 08 22	046	0.0	0.1+	1999 09 14	703	0.1−	0.0
1998 05 24	704	0.9−	0.2+	1999 09 07	703	0.6+	0.1−	1999 09 14	704	0.4−	0.4−
1998 06 24	704	0.0	0.8−	1999 09 07	703	0.2−	0.0	1999 09 14	703	0.1−	0.2+
1998 06 24	704	0.5+	0.3−	1999 09 07	703	0.3−	0.3+	1999 09 14	703	0.5−	0.0
1998 06 24	704	0.0	0.4+	1999 09 07	703	1.9+	0.5+	1999 09 14	704	0.4−	1.0−
1998 06 24	704	0.7+	0.0	1999 09 08	704	0.1−	0.1+	1999 09 19	699	0.5−	0.3+

1998 06 26 704 0.2- 0.5- 1999 09 08 704 0.2- 0.1- 1999 09 19 699 0.3- 0.5+
 1998 06 26 704 0.1+ 0.1+ 1999 09 08 704 0.1+ 0.1- 1999 09 19 699 0.1- 0.3+

(11478)* 1985 CD = 1978 PP₄ = 1998 KD₅₄

Discovered 1985 Feb. 14 by K. Suzuki and T. Urata at Toyota.

Id. T. Urata (*MPC* 32657)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Nakano	
<i>M</i>	136.20913	(2000.0)	P	Q	
<i>n</i>	0.23791011	ω	53.72414	-0.88808225	+0.44396166
<i>a</i>	2.5794520	Ω	152.05120	-0.45903361	-0.87028677
<i>e</i>	0.1304541	<i>i</i>	14.73353	+0.02445519	-0.21330493
<i>P</i>	4.14	<i>H</i>	13.4	<i>G</i>	0.15 <i>U</i> 2

Residuals in seconds of arc

1978 08 02	414	0.1+	0.0	1985 02 24	809	1.1+	0.1+	1998 06 04	704	1.2+	0.3+
1978 08 02	414	(3.7- 3.7-)		1985 02 24	809	1.0+	0.2+	1998 06 04	704	0.3-	0.4+
1985 02 12	809	0.5-	0.6+	1985 02 24	809	0.7+	0.3+	1998 06 19	704	0.8+	0.2+
1985 02 12	809	0.3-	0.5+	1985 02 24	881	1.0+	0.2-	1998 06 19	704	0.7+	0.2+
1985 02 12	809	0.2-	0.5+	1985 02 24	881	0.3-	0.1-	1998 06 19	704	1.1+	0.2+
1985 02 14	809	0.2-	0.1+	1985 02 25	809	0.1+	0.2-	1998 06 19	704	0.9+	0.9+
1985 02 14	809	0.1+	0.3-	1985 02 25	809	0.3+	0.2+	1998 06 19	704	1.6-	0.8-
1985 02 14	809	0.3+	0.4-	1985 02 25	809	0.2+	0.5+	1998 07 19	566	0.6-	0.9-
1985 02 14	881	1.2-	0.1+	1985 02 25	809	0.4+	0.6-	1998 07 19	566	0.1-	0.8-
1985 02 14	881	1.5-	1.6+	1985 02 25	809	0.4+	0.5-	1998 07 19	566	0.3-	1.0-
1985 02 15	809	0.5-	0.0	1985 02 25	809	0.9+	0.6-	1998 09 19	385	0.1+	0.3+
1985 02 15	809	0.5-	0.1-	1985 02 26	809	0.6+	0.2+	1998 09 19	385	0.4+	0.4+
1985 02 15	809	0.2-	0.1+	1985 02 26	809	0.5+	0.2+	1998 09 20	385	1.4-	0.8-
1985 02 16	809	0.8-	1.0-	1985 02 26	809	0.7+	0.2+	1998 09 20	385	0.0	0.6+
1985 02 16	809	0.6-	1.3-	1985 02 27	809	0.4-	0.2-	1998 08 12	699	0.3+	0.6+
1985 02 16	809	0.3-	1.2-	1985 02 27	809	0.4-	0.1+	1998 08 12	699	0.5+	0.3+
1985 02 17	809	0.5-	0.4-	1985 02 28	809	0.4-	0.4+	1998 08 12	699	0.0	0.6+
1985 02 17	809	0.4-	0.5-	1985 02 28	809	0.1-	0.5-	1998 08 22	703	1.0+	1.1+
1985 02 17	809	0.2+	0.6-	1998 05 23	704	0.5+	0.4+	1998 08 22	703	0.2+	0.6+
1985 02 18	809	1.6-	0.3-	1998 05 23	704	0.9+	0.6+	1998 08 22	703	0.1-	1.5+
1985 02 18	809	1.4-	0.3-	1998 05 23	704	1.1-	0.1+	1998 08 22	703	0.1+	1.3+
1985 02 18	809	1.4-	0.4-	1998 05 23	704	0.4+	0.3-	1999 09 08	703	0.3+	0.7+
1985 02 19	809	0.7-	0.3+	1998 05 23	704	0.7-	1.1-	1999 09 08	703	0.1-	0.5+
1985 02 19	809	0.5-	0.3+	1998 05 26	704	0.0	0.7+	1999 09 08	703	1.9-	0.3-
1985 02 19	809	0.1+	0.2+	1998 05 26	704	0.7-	0.3-	1999 09 08	703	0.7-	0.5-
1985 02 20	809	1.2+	0.3+	1998 05 26	704	1.1-	0.7+	1999 09 13	704	0.1-	1.1-
1985 02 20	809	1.4+	0.4+	1998 05 26	704	1.3-	0.5+	1999 09 13	704	0.1-	1.7-
1985 02 20	809	1.9+	0.3+	1998 05 26	704	1.3-	0.5-	1999 09 13	704	0.6-	1.1-
1985 02 21	809	0.6-	0.0	1998 06 04	699	0.6+	0.0	1999 09 13	704	0.4-	1.6-
1985 02 21	809	0.7-	0.2+	1998 06 04	699	0.2+	0.2-	1999 09 19	886	1.2+	0.5-
1985 02 21	809	0.8-	0.5+	1998 06 04	699	0.0	0.1+	1999 09 19	886	0.6+	0.2+
1985 02 24	809	1.4+	0.4+	1998 06 04	704	1.6+	0.2+	1999 09 19	385	0.1+	0.3+
1985 02 24	809	1.3+	0.7+	1998 06 04	704	0.2+	0.2-				
1985 02 24	809	1.1+	0.2+	1998 06 04	704	0.4+	0.4-				

(11479)* 1986 EP₅ = 1982 SH₁₁ = 1991 CW₃ = 1992 HZ₆

Discovered 1986 Mar. 6 by G. DeSanctis at the European Southern

Observatory.

Id. K. Kinoshita (*MPC* 24735)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams	
<i>M</i>	51.60630	(2000.0)	P	Q	
<i>n</i>	0.17261634	ω	115.51400	+0.18464378	+0.98275873
<i>a</i>	3.1945874	Ω	165.11694	-0.91457847	+0.17538932
<i>e</i>	0.1484268	<i>i</i>	2.13953	-0.35979562	+0.05851374
<i>P</i>	5.71	<i>H</i>	12.8	<i>G</i>	0.15 <i>U</i> 1

Residuals in seconds of arc

1982 09 27	095	(0.9- 3.3-)		1997 02 12	689	(6.4+ 0.1+)	1999 08 12	699	0.5+	0.0	
1986 03 06	809	0.0	0.1-	1998 05 22	704	0.2-	0.2-	1999 08 12	699	0.7+	0.3+
1986 03 06	809	0.1+	0.3+	1998 05 22	704	0.1+	0.6+	1999 08 12	699	0.8+	0.6+
1986 03 07	809	0.4-	0.1+	1998 05 22	704	0.1-	0.1+	1999 09 07	704	0.0	0.2-

1986 03 07	809	0.2+	1.0+	1998 05 22	704	(0.1- 2.1-)	1999 09 07	704	0.4+	0.6-	
1986 03 10	809	0.5-	0.7-	1998 05 22	704	0.3-	1.2-	1999 09 07	704	0.6+	0.2-
1986 03 10	809	0.6-	1.3+	1998 05 24	704	0.4+	0.9+	1999 09 07	704	0.0	0.2-
1986 03 17	809	1.2-	0.2+	1998 05 24	704	0.8-	0.3+	1999 09 07	704	0.2+	0.4-
1986 03 17	809	1.6-	0.0	1998 05 24	704	0.4-	0.2+	1999 09 09	704	0.8-	0.6-
1991 02 12	372	0.5+	1.9-	1998 05 24	704	0.1+	0.5-	1999 09 09	704	0.5-	0.5-
1991 02 12	372	(3.3+ 1.1+)		1998 05 24	704	0.8-	0.1+	1999 09 09	704	0.2-	0.1-
1992 04 24	809	0.1+	1.3+	1998 05 24	426	0.5-	0.0	1999 09 09	704	0.4+	0.2-
1992 04 24	809	0.5+	1.4+	1998 05 24	426	0.5-	0.1-	1999 09 09	704	1.0+	0.4+
1992 04 24	809	0.8+	1.2+	1998 05 24	426	0.6-	0.1-	1999 09 11	699	0.4+	0.4+
1992 04 25	809	1.5+	1.1-	1998 05 25	426	0.7-	0.1+	1999 09 11	699	0.1+	0.8+
1992 04 25	809	1.6+	0.5-	1998 05 25	426	0.6-	0.0	1999 09 11	699	0.2+	0.6+
1992 04 25	691	0.9+	0.3-	1998 05 25	426	0.6-	0.1+	1999 09 12	106	0.1+	0.0
1992 04 25	691	0.7+	0.2-	1998 06 24	704	0.4+	0.2+	1999 09 12	106	2.2-	0.9-
1992 04 25	691	0.8+	0.2-	1998 06 24	704	0.5+	0.8-	1999 09 14	704	0.0	0.2-
1992 05 01	809	0.4-	1.8-	1998 06 24	704	0.6+	0.2-	1999 09 14	704	0.0	0.0
1992 05 01	809	0.5-	1.7-	1998 06 24	704	0.3-	0.2-	1999 09 14	704	0.1+	0.0
1992 05 01	809	1.3-	1.4-	1998 06 24	704	0.2-	1.3+	1999 09 14	704	0.3-	0.4-
1992 05 08	809	0.6+	0.4-	1998 06 29	699	0.1+	0.3+	1999 09 14	704	0.2+	0.1+
1992 05 08	809	0.6+	0.3-	1998 06 29	699	0.2+	0.3+				
1992 05 08	809	0.6+	0.2-	1998 06 29	699	0.3+	0.0				

(11480)* 1986 RW₅ = 1996 UH = 1998 FM₄₂

Discovered 1986 Sept. 7 by L. I. Chernykh at the Crimean Astrophysical

Observatory.

Id. A. Doppler (*MPC* 31712)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams	
<i>M</i>	336.57331	(2000.0)	P	Q	
<i>n</i>	0.30008656	ω	138.91212	+0.99781292	+0.05429381
<i>a</i>	2.2095560	Ω	218.02550	-0.06412523	+0.93350048
<i>e</i>	0.1713036	<i>i</i>	3.50904	+0.01604174	+0.35444187
<i>P</i>	3.28	<i>H</i>	14.3	<i>G</i>	0.15 <i>U</i> 1

Residuals in seconds of arc

1986 09 07	095	0.4+	0.5-	1998 03 22	704	1.2-	1.3-	1998 04 19	704	1.3-	0.4+
1986 09 11	095	0.6-	2.3-	1998 03 28	704	0.6-	0.3+	1999 08 10	106	0.0	0.3+
1986 10 05	095	(0.4+ 4.9-)		1998 03 28	704	0.2-	0.5+	1999 08 10	106	0.6-	0.8+
1986 10 10	095	(2.7+ 0.8+)		1998 03 28	704	0.6+	0.7-	1999 08 10	106	0.1-	0.4+
1992 05 03	809	1.7+	1.4+	1998 03 28	704	(2.4- 2.1+)		1999 09 06	699	0.1-	0.5+
1992 05 03	809	0.1+	0.2+	1998 03 29	704	0.4-	1.3-	1999 09 06	699	0.0	0.9+
1992 05 03	809	1.3+	0.0	1998 03 29	704	1.2-	1.1-	1999 09 06	699	0.3-	0.8+
1996 10 16	411	0.8+	0.1-	1998 03 29	704	0.9-	0.1-	1999 09 07	704	0.1-	0.6-
1996 10 16	411	1.2+	0.7-	1998 03 29	704	0.7+	1.6-	1999 09 07	704	0.0	0.1-
1996 10 17	411	0.9+	1.4-	1998 03 29	704	0.2+	1.6-	1999 09 07	704	0.2+	0.4-
1996 10 17	411	0.8+	0.2+	1998 04 01	704	0.5+	0.1-	1999 09 07	704	0.3-	0.1-
1996 11 07	691	0.6-	1.4+	1998 04 01	704	0.4+	0.3+	1999 09 07	704	0.2-	0.2+
1996 11 07	691	0.5-	0.6+	1998 04 01	704	0.3-	1.1-	1999 09 09	704	0.1+	0.1-
1996 11 07	691	0.4-	0.8+	1998 04 01	704	(0.8- 3.2-)		1999 09 09	704	0.0	0.1-
1998 03 20	704	0.2+	0.5+	1998 04 01	704	0.5-	0.4-	1999 09 09	704	0.6-	0.3-
1998 03 20	704	0.5+	1.5+	1998 04 18	704	0.1+	0.6-	1999 09 09	704	0.1-	0.7-
1998 03 20	704	0.6-	1.0+	1998 04 18	704	0.0	0.5-	1999 09 09	704	0.4-	1.0-
1998 03 20	704	0.3-	0.3+	1998 04 18	704	0.2-	0.4+	1999 09 14	704	0.1+	0.1-
1998 03 20	704	0.9-	0.5+	1998 04 18	704	0.1-	0.9-	1999 09 14	704	0.3+	0

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	323.14854		(2000.0)	P	Q				
<i>n</i>	0.23854719	ω	157.61613	+0.84421575	-0.52763872				
<i>a</i>	2.5748574	Ω	234.57219	+0.47257301	+0.81573709				
<i>e</i>	0.0376380	<i>i</i>	6.64732	+0.25293183	+0.23700292				
<i>P</i>	4.13	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	1		
Residuals in seconds of arc									
1987 11 22	688	(1.1+	3.4+)	1995 10 24	801	0.7+	0.0	1998 05 24	704 0.1- 0.3+
1987 11 22	688	1.0-	1.4+	1995 10 24	801	0.3+	0.1+	1998 05 24	704 (2.7+ 2.7-)
1987 11 23	046	1.1+	0.6+	1995 11 18	801	0.3-	0.1+	1998 05 24	704 0.6- 0.3+
1987 11 23	046	(6.6+	3.3+)	1995 11 18	801	0.2-	0.4+	1998 05 24	704 0.0 0.1+
1987 11 26	046	1.3+	0.9-	1995 11 23	801	0.1-	0.2+	1998 05 24	704 0.0 0.2-
1987 11 26	046	1.0-	0.3-	1995 11 23	801	0.3-	0.4+	1999 07 23	704 0.2+ 0.0
1987 11 26	046	0.1-	1.7-	1995 12 22	801	0.0	0.1+	1999 07 23	704 0.0 0.4+
1987 11 27	046	1.0+	0.9-	1995 12 23	801	0.1-	0.2+	1999 07 23	704 0.1- 0.0
1991 10 29	399	0.2+	1.0+	1997 02 12	732	0.2-	0.2-	1999 07 23	704 0.4+ 0.2+
1991 10 29	399	1.0-	0.8+	1997 02 12	732	0.6-	0.5+	1999 07 23	704 0.6+ 0.3+
1991 10 31	399	0.3-	1.0-	1997 02 12	732	0.6-	0.8+	1999 09 08	704 0.6+ 0.5+
1991 10 31	399	0.0	0.4-	1997 02 13	732	0.6-	0.0	1999 09 08	704 0.3+ 0.2+
1991 11 09	399	1.5-	0.3+	1997 02 13	732	0.3-	0.1-	1999 09 08	704 0.4+ 0.2+
1991 11 09	399	1.8-	0.8+	1997 02 13	732	1.2-	0.1+	1999 09 08	704 0.6+ 0.5+
1993 02 16	474	0.4+	0.0	1998 05 22	704	0.7-	1.7+	1999 09 08	704 0.3+ 0.3+
1993 02 16	474	2.0+	1.3+	1998 05 22	704	0.0	0.6+	1999 09 11	106 0.3- 0.3+
1993 02 17	474	1.3+	1.7+	1998 05 22	704	0.3+	0.5+	1999 09 11	106 0.5- 0.8+
1993 02 23	474	1.0+	0.1-	1998 05 22	704	(1.1+	2.5-)	1999 09 11	106 0.4- 0.6+
1993 02 23	474	1.4+	0.1-	1998 05 22	704	0.3-	0.4-		

(11482)* 1988 BW = 1990 SG₁₆ = 1993 LB₁

Discovered 1988 Jan. 25 by S. Ueda and H. Kaneda at Kushiro.

Id. G. V. Williams (*MPC* 22400)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	274.51892		(2000.0)	P	Q				
<i>n</i>	0.22957530	ω	140.90446	-0.24428319	-0.96123837				
<i>a</i>	2.6415121	Ω	322.72699	+0.82830454	-0.13828356				
<i>e</i>	0.1229395	<i>i</i>	12.18764	+0.50421951	-0.23853397				
<i>P</i>	4.29	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	1		
Residuals in seconds of arc									
1988 01 24	399	(3.8-	0.3-)	1990 09 17	675	0.4+	1.1-	1999 07 23	704 0.4- 0.1-
1988 01 24	399	2.2-	0.1-	1993 06 13	413	0.4+	0.2+	1999 07 23	704 0.3- 0.7+
1988 01 24	399	1.2+	1.1-	1993 06 14	413	0.3+	0.1+	1999 07 23	704 0.6- 0.4+
1988 01 25	399	0.0	1.5+	1993 06 15	413	0.1+	0.0	1999 07 23	704 0.4- 0.4+
1988 01 25	399	0.7-	0.0	1993 06 15	413	0.0	0.5-	1999 07 23	704 0.9- 1.1+
1988 01 25	399	(3.7-	0.3+)	1993 06 15	413	0.4-	0.4-	1999 09 08	704 0.2- 0.8+
1988 02 08	399	2.1-	0.3-	1993 06 18	413	0.4-	0.6-	1999 09 08	704 0.1- 0.5+
1988 02 08	399	0.2-	0.3-	1993 06 18	413	0.6-	0.7-	1999 09 08	704 0.2+ 0.1+
1988 02 18	399	(3.4-	0.5+)	1994 07 12	675	0.3-	1.0+	1999 09 08	704 0.5+ 0.7+
1988 02 18	399	0.7-	0.9+	1994 07 12	675	0.9-	1.2+	1999 09 08	704 0.1+ 0.9+
1988 02 18	399	0.0	0.0	1996 01 15	118	0.4-	0.2-	1999 09 18	704 0.3+ 0.0
1988 02 19	399	0.6+	0.7+	1996 01 15	118	0.1-	0.2-	1999 09 18	704 0.3+ 0.3-
1988 02 19	399	1.4+	0.7-	1996 01 17	118	0.1-	0.1+	1999 09 18	704 0.3+ 0.6-
1988 02 19	399	1.4+	0.4-	1996 01 17	118	0.2-	0.2+	1999 09 18	704 0.2- 0.2-
1988 02 23	399	1.4+	0.5-	1996 01 30	118	0.1+	0.4-	1999 09 18	704 0.0 0.4-
1988 02 23	399	1.0+	1.7+	1996 01 30	118	0.1+	1.0-		
1990 09 17	675	0.7+	1.6-	1997 04 27	689	0.3+	1.5+		

(11483)* 1988 BC₄ = 1995 UR₄

Discovered 1988 Jan. 19 by H. Debehogne at the European Southern Observatory.

Id. T. Kobayashi (*MPC* 25955)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	308.17552		(2000.0)	P	Q				
<i>n</i>	0.23160274	ω	254.09773	+0.38961589	-0.92096181				
<i>a</i>	2.6260737	Ω	172.96463	+0.86085578	+0.36210481				
<i>e</i>	0.1491716	<i>i</i>	2.51101	+0.32730227	+0.14390777				
<i>P</i>	4.26	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	2		
Residuals in seconds of arc									
1988 01 19	809	0.4-	0.4-	1995 11 02	411	0.5-	0.1-	1997 03 11	809 0.7+ 1.7+
1988 01 19	809	0.4+	0.7-	1995 11 02	411	0.5+	0.2-	1997 03 11	809 0.2+ 0.7+
1988 01 21	809	1.4-	0.8-	1995 11 16	399	0.2+	1.0+	1997 04 05	566 0.2+ 0.4-
1988 01 21	809	0.7-	0.3-	1995 11 16	399	0.8-	1.7-	1997 04 05	566 0.5+ 0.2-
1988 01 23	809	1.4-	0.3+	1995 11 17	399	0.1-	1.4+	1997 04 05	566 0.4+ 0.3-
1988 01 23	809	1.1-	0.2-	1995 11 17	399	(2.2-	0.8-)	1999 08 13	699 0.2- 0.1-
1988 01 24	809	0.2-	0.5+	1995 11 21	563	0.1+	0.0	1999 08 13	699 1.9- 0.3+
1988 01 24	809	0.4-	0.0	1995 11 21	563	0.3+	0.5-	1999 08 13	699 0.1+ 0.1+
1988 01 24	809	0.1+	0.0	1995 11 21	563	0.0	0.7+	1999 09 05	699 0.5- 0.9-
1988 01 26	809	0.5+	0.4-	1995 11 21	563	0.3+	0.2+	1999 09 05	699 0.0 0.1+
1988 01 26	809	0.5+	0.4+	1995 11 28	905	0.6+	0.3-	1999 09 05	699 0.2- 0.1+
1988 01 28	809	1.6+	0.0	1995 11 28	905	1.1+	0.8-	1999 09 16	120 0.2+ 0.2+
1988 01 28	809	2.2+	0.4+	1995 11 30	905	1.0-	0.6-	1999 09 16	120 0.5+ 0.6+
1988 01 30	809	(4.6+	0.3+)	1995 11 30	905	0.8+	1.2+	1999 09 17	120 0.7+ 0.0
1995 10 25	411	1.7-	0.9+	1997 03 10	809	0.3-	0.4+	1999 09 17	120 0.0 0.7+
1995 10 25	411	0.4-	0.4-	1997 03 10	809	0.5-	0.1-	1999 09 18	120 0.4- 0.4+
1995 10 26	411	0.0	0.3+	1997 03 10	809	0.7-	0.5+	1999 09 18	120 0.9+ 0.2+
1995 10 26	411	0.2+	0.1+	1997 03 11	809	0.7+	1.3+		

(11484)* 1988 DF₂ = 1993 FX₄₃

Discovered 1988 Feb. 17 by E. W. Elst at the European Southern Observatory.

Id. T. Kobayashi (*MPC* 23972)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	260.58435		(2000.0)	P	Q				
<i>n</i>	0.22491725	ω	92.48573	+0.11409541	-0.99343664				
<i>a</i>	2.6778580	Ω	350.95074	+0.88975309	+0.10581531				
<i>e</i>	0.0666218	<i>i</i>	2.95825	+0.44195213	+0.04343697				
<i>P</i>	4.38	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	1		
Residuals in seconds of arc									
1971 03 24	675	0.3+	1.2-	1995 10 27	801	0.0	0.2-	1999 09 05	699 0.1+ 0.3+
1971 03 25	675	0.6-	0.1+	1995 10 27	801	0.1-	0.4-	1999 09 05	699 0.2- 0.4+
1971 03 25	675	0.2-	0.3+	1995 11 23	801	0.2+	0.2-	1999 09 07	704 0.8+ 0.7-
1988 02 16	809	0.8-	0.9-	1995 11 23	801	0.7+	0.6-	1999 09 07	704 0.0 0.3-
1988 02 16	809	0.3-	0.5-	1997 01 18	327	0.9+	1.4+	1999 09 07	704 0.2+ 0.1-
1988 02 16	809	0.2-	0.7-	1997 01 18	327	0.9+	0.9+	1999 09 07	704 0.3+ 0.4-
1988 02 17	809	0.2+	1.4-	1997 01 18	327	0.9+	0.7+	1999 09 07	704 0.1- 0.5-
1988 02 17	809	0.7+	2.2-	1997 02 01	327	0.7-	0.6+	1999 09 08	106 0.5+ 0.8+
1988 02 17	809	0.9+	1.6-	1997 02 01	327	0.9+	0.6+	1999 09 08	106 0.3+ 1.3+
1988 02 21	809	0.1-	1.3-	1997 02 01	327	0.8+	0.5+	1999 09 08	106 0.0 0.8+
1988 02 21	809	1.1-	1.0-	1997 02 06	327	0.2+	0.6+	1999 09 09	704 0.4+ 0.0
1988 02 21	809	1.1-	0.5-	1997 02 06	327	0.7-	0.8+	1999 09 09	704 0.4+ 0.4-
1988 02 23	809	0.0	0.1-	1997 02 06	327	0.0	1.1+	1999 09 09	704 0.8- 0.0
1988 02 23	809	0.2+	0.3+	1998 05 24	704	0.3-	0.1+	1999 09 09	704 0.0 0.0
1988 02 23	809	0.2-	0.4-	1998 05 24	704	1.2+	1.7-	1999 09 09	704 0.3+ 0.2+
1993 03 19	809	0.9-	0.9+	1998 05 24	704	0.1+	1.3-	1999 09 14	704 0.3- 0.2-
1993 03 20	809	1.1+	0.3+	1998 05 24	704	1.6-	0.9-	1999 09 14	704 0.4+ 0.8-
1993 03 24	809	(3.2-	2.7+)	1999 08 22	699	0.2-	0.3-	1999 09 14	704 0.0 0.5-
1993 03 24	809	(2.3+	0.7+)	1999 08 22	699	1.6-	0.3+	1999 09 14	704 0.2- 0.4-
1995 10 24	801	0.5-	0.5+	1999 08 22	699	0.4+	0.2-	1999 09 14	704 0.2+ 0.7-
1995 10 24	801	0.5-	0.3+	1999 09 05	699	0.3-	0.8+		

(11485)* 1988 RW₃ = 1981 JA₄

Discovered 1988 Sept. 8 by F. Börngen at Tautenburg.

Id. E. Bowell (*MPC* 19863)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams						
M	5.26345		(2000.0)		P		Q				
n	0.17427324	ω	293.69276		+0.71726471		+0.69671138				
a	3.1743069	Ω	22.14880		-0.62803433		+0.65333452				
e	0.1442450	i	1.69652		-0.30183475		+0.29622163				
P	5.66	H	13.6	G	0.15	U	2				
Residuals in seconds of arc											
1981 05 08	675	0.1+	0.8+	1998 05 01	704	0.0	0.9-	1999 09 06	699	0.4+	0.6+
1981 05 09	675	0.5+	0.1+	1998 05 01	704	0.0	0.8-	1999 09 06	699	1.2+	0.7+
1988 09 08	033	0.2+	0.7+	1998 05 01	704	0.1-	0.7-	1999 09 07	704	0.4+	0.9-
1988 09 09	033	0.0	0.7+	1998 05 01	704	0.4-	1.1-	1999 09 07	704	0.0	0.2-
1988 09 09	033	0.8+	0.0	1998 05 22	704	0.6-	0.1+	1999 09 07	704	0.3+	0.4-
1988 09 10	033	0.5-	0.4-	1998 05 22	704	0.2-	0.7-	1999 09 07	704	1.0-	0.1-
1988 09 10	033	1.2-	0.7-	1998 05 22	704	1.5+	0.7+	1999 09 07	704	0.1+	0.5+
1988 09 11	033	1.0-	0.4-	1998 05 22	704	1.6-	0.0	1999 09 13	699	0.4-	0.0
1988 09 15	675	0.5+	0.2-	1998 05 22	704	1.0-	1.1+	1999 09 13	704	0.0	1.5-
1988 09 15	675	0.1-	0.8-	1998 05 22	699	0.1+	0.3+	1999 09 13	699	0.3+	0.0
1988 10 05	807	1.0+	0.3-	1998 05 22	699	0.2+	1.4+	1999 09 13	704	0.3+	0.3-
1988 10 08	807	1.5+	0.5-	1998 05 22	699	0.6-	0.4-	1999 09 13	704	0.1+	1.1-
1988 11 04	807	0.5-	0.3+	1999 07 18	113	0.2+	0.2+	1999 09 13	699	0.5+	0.1+
1988 11 06	807	0.8-	0.5-	1999 07 18	113	0.7+	0.2-	1999 09 13	704	0.4-	0.0
1992 04 09	691	0.3+	0.4-	1999 08 19	113	0.4-	1.3+	1999 09 13	704	0.7-	0.1+
1992 04 09	691	0.3+	0.5-	1999 08 19	113	0.7-	1.8+				
1992 04 09	691	0.4+	0.3-	1999 09 06	699	0.0	0.3+				

(11486)* 1988 RE₆ = 1981 UD₁₈ = 1992 WO

Discovered 1988 Sept. 5 by H. Debehogne at the European Southern Observatory.

Id. S. Nakano (*MPC* 21258)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Nakano					
M	297.45379		(2000.0)		P		Q				
n	0.26929508		ω 340.47023		+0.49445016		-0.86860159				
a	2.3749279		Ω 79.88451		+0.80179457		+0.44138893				
e	0.2059246		i 1.88654		+0.33562555		+0.22518235				
P	3.66 <td colspan="2">H 14.7<td colspan="2">G 0.15<td colspan="2">U 1</td><td colspan="2"></td></td></td>		H 14.7 <td colspan="2">G 0.15<td colspan="2">U 1</td><td colspan="2"></td></td>		G 0.15 <td colspan="2">U 1</td> <td colspan="2"></td>		U 1				
Residuals in seconds of arc											
1981 10 24	095	0.0	2.1-	1988 09 11	809	1.0-	0.3+	1999 08 12	699	0.5-	0.4+
1988 09 05	809	0.3-	0.4-	1988 10 08	807	1.4+	0.5-	1999 08 12	699	0.0	0.2+
1988 09 05	809	0.4-	1.1-	1988 11 03	807	0.4-	1.1-	1999 08 12	699	0.3-	0.3+
1988 09 05	809	0.4-	1.9-	1988 11 05	807	0.9+	0.4+	1999 08 18	428	1.0-	0.4-
1988 09 07	809	0.6+	0.1+	1992 10 25	675	0.6-	0.2-	1999 08 18	428	0.8-	0.2+
1988 09 07	809	0.7+	0.1+	1992 10 25	675	0.6+	0.1+	1999 09 07	704	0.2+	0.6-
1988 09 07	809	1.1+	0.2+	1992 11 16	400	0.7-	0.2-	1999 09 07	704	0.2+	0.8-
1988 09 07	809	1.3+	0.2+	1992 11 16	400	1.7+	1.5-	1999 09 07	704	0.1+	0.2-
1988 09 07	809	1.2+	0.3+	1992 11 17	400	1.0-	0.4+	1999 09 07	704	0.4+	0.2-
1988 09 07	809	1.4+	0.3+	1992 11 17	400	1.3+	0.2+	1999 09 07	704	0.5+	0.2-
1988 09 10	809	0.0	0.1-	1992 11 18	399	0.4-	0.1+	1999 09 07	106	0.4+	0.1+
1988 09 10	809	0.1+	0.0	1992 11 18	399	1.5-	0.5+	1999 09 07	106	0.5+	0.3+
1988 09 10	809	0.4-	0.1+	1997 01 12	566	0.6+	0.1+	1999 09 07	106	0.3+	0.6+
1988 09 10	809	1.3-	0.5+	1997 01 12	566	0.4+	0.0	1999 09 09	704	0.2+	0.0
1988 09 10	809	1.1-	0.5+	1997 01 12	566	0.2+	0.2-	1999 09 09	704	0.2+	0.0
1988 09 10	809	0.9-	0.6+	1998 06 20	691	0.9-	0.2-	1999 09 09	704	0.9+	0.7-
1988 09 10	809	0.7-	0.7+	1998 06 20	691	0.8-	0.4-	1999 09 09	704	0.2-	0.7-
1988 09 10	809	0.6-	0.7+	1998 06 28	691	0.1-	0.6-	1999 09 13	704	0.2-	0.0
1988 09 10	809	0.4-	0.7+	1998 06 28	691	0.2+	0.4-	1999 09 13	704	0.2-	0.2-
1988 09 11	675	1.2+	1.4+	1998 06 28	691	0.5+	0.5-	1999 09 13	704	0.1+	0.0
1988 09 11	675	0.3+	1.3+	1998 07 02	691	0.3-	0.2-	1999 09 13	704	0.1-	0.3-
1988 09 11	809	0.6-	0.2+	1998 07 02	691	0.1-	0.5-	1999 09 13	704	0.4-	0.1-
1988 09 11	809	0.9-	0.1+	1998 07 02	691	0.8-	0.3-				

(11487)* 1988 RG₁₀

Discovered 1988 Sept. 14 by S. J. Bus at Cerro Tololo.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams					
M 324.60755			(2000.0)			P			Q		
n	0.08412123	ω	7.01028	+0.98305500	+0.18237169						
a	5.1586054	Ω	342.44882	-0.17102705	+0.87609571						
e	0.0487719	i	3.52329	-0.06597438	+0.44631476						
P	11.72	H	11.4	G	0.15	U	1				
Residuals in seconds of arc											
1988 09 14	807	1.2-	0.5-	1989 10 31	807	0.8+	0.2+	1999 08 07	699	0.9-	0.0
1988 09 15	807	0.1-	0.1-	1990 10 16	675	1.7-	0.9+	1999 08 07	699	1.0+	0.6-
1988 09 16	807	0.4+	0.1-	1990 10 16	675	0.2-	0.1-	1999 08 07	699	0.6-	0.3-
1988 10 04	807	0.0	0.2+	1991 11 13	688	0.1+	0.1-	1999 08 13	703	0.4+	0.0
1988 10 05	807	0.6-	0.4+	1991 11 13	688	0.5-	0.1-	1999 08 13	703	0.8-	1.7-
1988 10 07	807	0.1-	0.0	1991 11 13	688	0.1+	0.2-	1999 08 13	703	1.4-	1.0+
1988 10 08	807	0.2+	0.8-	1994 02 14	675	0.1+	1.1-	1999 08 13	703	1.4-	1.0+
1988 10 08	807	0.8-	0.3+	1994 02 14	675	0.1-	0.4-	1999 09 11	704	0.1+	0.8-
1988 11 03	807	0.7+	0.1+	1999 07 14	704	1.4+	0.4+	1999 09 11	704	0.4+	0.8+
1988 11 05	807	0.8+	0.6-	1999 07 14	704	0.8+	0.0	1999 09 11	704	0.1-	0.7-
1989 10 02	807	1.2+	0.3-	1999 07 14	704	0.2+	0.1+	1999 09 11	704	0.4-	0.1+
1989 10 04	807	0.9+	0.0	1999 07 14	704	0.7+	0.3-	1999 09 11	704	0.0	0.1+
1989 10 28	807	0.1+	0.3+	1999 07 14	704	0.7+	0.6+				

(11488)* 1988 RM₁₁

Discovered 1988 Sept. 14 by S. J. Bus at Cerro Tololo.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams					
<i>M</i>		(2000.0)		P		Q					
<i>n</i>	0.08478168	ω	233.98772	+0.96608257		−0.25557099					
<i>a</i>	5.1317803	Ω	140.78197	+0.25173486		+0.90013219					
<i>e</i>	0.0380340	<i>i</i>	3.35351	+0.05756761		+0.35276834					
<i>P</i>	11.63	<i>H</i>	11.6	<i>G</i>	0.15	<i>U</i>	1				
Residuals in seconds of arc											
1988 09 14	807	0.3−	0.4−	1992 12 25	691	0.8−	0.0	1999 09 06	691	0.3+	0.7+
1988 09 15	807	0.5+	0.4−	1994 02 15	675	0.5+	1.2−	1999 09 06	691	0.0	0.8+
1988 10 06	807	0.0	0.2−	1994 02 15	675	0.3+	1.5−	1999 09 07	704	0.5+	0.8−
1988 10 07	807	1.0−	0.7−	1996 03 25	413	0.2−	0.2−	1999 09 07	704	0.6+	0.5−
1988 11 04	807	0.5+	0.5−	1996 03 25	413	0.0	0.3−	1999 09 07	704	0.4−	0.9−
1988 11 06	807	0.0	0.0	1999 07 13	704	0.4−	0.4−	1999 09 13	704	0.7+	0.2−
1989 10 02	807	0.5+	0.3−	1999 07 13	704	0.5−	0.5+	1999 09 13	704	0.8+	0.8+
1989 10 06	807	0.7+	0.0	1999 07 13	704	0.0	0.3−	1999 09 13	704	0.6−	0.3+
1989 10 28	807	0.5+	0.2+	1999 07 13	704	0.2−	0.3−	1999 09 13	704	0.3−	0.8+
1992 12 25	691	0.7−	0.4+	1999 07 13	704	0.1−	0.5−	1999 09 13	704	0.3−	0.2−
1992 12 25	691	0.4−	0.5+	1999 09 06	691	0.4−	0.6+				

(11489)* 1988 SN

Discovered 1988 Sept. 22 by S. Ueda and H. Kaneda at Kushiro.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Nakano					
M	335.83036		(2000.0)		P		Q				
n	0.26782294		ω		20.96169		+0.92650887		-0.37626537		
a	2.3836228		Ω		1.14906		+0.32609991		+0.79979002		
e	0.1335263		i		6.82576		+0.18772363		+0.46771817		
P	3.68		H	13.7		G	0.15		U	1	
Residuals in seconds of arc											
1988 09 17	399	1.3+	0.1+	1988 10 18	399	0.5-	0.1+	1988 05 24	704	0.5-	0.4+
1988 09 22	399	2.0-	0.8-	1988 10 18	399	(3.2+	0.3+)	1999 08 13	699	0.1-	0.6+
1988 09 22	399	(2.3-	1.5-)	1997 01 04	411	0.3+	0.0	1999 08 13	699	0.3-	0.0
1988 09 22	399	0.5+	0.7+	1997 01 04	411	1.1+	0.1+	1999 08 13	699	0.2+	0.2+
1988 10 03	399	0.9+	0.2+	1997 01 06	411	1.0+	0.2+	1999 09 05	699	0.1-	0.4+
1988 10 03	399	0.6+	0.5-	1997 01 06	411	1.5+	0.0	1999 09 05	699	0.2-	0.3+
1988 10 03	399	0.3+	0.1-	1997 02 11	689	1.4-	0.3-	1999 09 05	699	0.2-	0.4+
1988 10 03	399	(2.8+	0.4-)	1997 02 26	689	1.1-	0.8-	1999 09 06	120	0.1+	0.1-
1988 10 03	399	0.3-	1.4-	1997 03 09	689	0.2+	0.7+	1999 09 06	120	0.2+	0.0
1988 10 04	046	1.9-	1.0-	1997 03 10	689	1.1-	1.7+	1999 09 06	120	0.1-	0.3-
1988 10 04	046	(3.7-	1.5-)	1998 04 22	704	(2.8-	0.7-)	1999 09 07	704	0.0	0.0

1988 10 05	399	1.1−	0.3+	1998 04 22	704	0.9−	0.5+	1999 09 07	704	0.2+	0.3−
1988 10 05	399	0.3+	0.1+	1998 04 22	704	0.5−	1.2+	1999 09 07	704	0.2+	0.1+
1988 10 05	399	0.8+	0.4+	1998 04 22	704	(6.2−	2.7+)	1999 09 07	704	0.1+	0.6+
1988 10 08	399	0.3−	1.1−	1998 05 22	704	0.6+	0.8+	1999 09 07	704	0.6−	0.7+
1988 10 11	046	0.2+	0.7−	1998 05 22	704	0.1+	1.1−	1999 09 11	120	0.5−	0.2−
1988 10 11	046	1.5+	0.6+	1998 05 22	704	0.3−	0.0	1999 09 11	120	0.4−	0.1−
1988 10 14	046	(7.5−	0.2+)	1998 05 22	704	1.5+	0.5−	1999 09 11	120	0.3−	0.1+
1988 10 14	046	(5.7−	1.5−)	1998 05 24	704	0.4−	1.0−	1999 09 13	684	0.1−	0.4+
1988 10 16	399	0.9+	0.3−	1998 05 24	704	1.0+	0.0	1999 09 13	684	0.0	0.5+
1988 10 16	399	0.3+	0.3−	1998 05 24	704	0.7−	0.2−	1999 09 16	106	0.4−	0.5+
1988 10 16	399	0.2−	1.2+	1998 05 24	704	0.1+	0.7+	1999 09 16	106	(3.3−	1.0+)

(11490)* 1988 TE = 1976 JU₅

Discovered 1988 Oct. 3 by S. Ueda and H. Kaneda at Kushiro.

Id. S. Nakano (*MPC* 28842)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	337.45636		(2000.0)	P		Q
<i>n</i>	0.26462283	ω	97.71909	+0.99973816	+0.01058832	
<i>a</i>	2.4028012	Ω	261.67583	−0.01774238	+0.91852250	
<i>e</i>	0.2244939	<i>i</i>	1.17472	+0.01445050	+0.39522691	
<i>P</i>	3.72	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1976 05 03	809	0.9+	0.2−	1998 03 25	704	(2.4−	0.5−)	1999 08 08	699	1.0+	0.6+
1988 09 17	399	1.6−	0.4+	1998 03 28	704	1.3+	0.0	1999 08 13	691	0.4+	0.3−
1988 09 22	399	(1.0−	2.7−)	1998 03 28	704	1.1−	1.1−	1999 08 13	691	0.3+	0.3−
1988 09 22	399	0.7−	0.1−	1998 03 28	704	0.4−	1.2−	1999 08 13	691	0.4+	0.2−
1988 10 03	399	2.1+	1.0−	1998 03 28	704	(6.6−	0.0)	1999 09 07	704	0.1−	0.2−
1988 10 03	399	2.1−	0.9−	1998 03 29	704	0.1−	1.2−	1999 09 07	704	0.2−	0.3−
1988 10 03	399	0.0	0.1+	1998 03 29	704	0.2−	0.2+	1999 09 07	704	0.2−	0.4−
1988 10 03	399	1.7+	0.9−	1998 03 29	704	0.2+	0.0	1999 09 07	704	0.6−	0.6−
1988 10 04	046	0.3−	0.8−	1998 03 29	704	0.7−	0.1−	1999 09 07	704	0.6−	0.8−
1988 10 04	046	0.1+	1.4−	1998 03 29	704	0.3−	0.9−	1999 09 09	704	0.3+	0.0
1988 10 05	399	0.3−	1.7−	1998 04 01	704	0.4−	0.8−	1999 09 09	704	0.1−	0.2+
1988 10 05	399	0.9+	0.5−	1998 04 01	704	1.0+	1.0+	1999 09 09	704	0.2+	0.3−
1988 10 05	399	0.9+	0.9−	1998 04 01	704	0.5+	1.8+	1999 09 09	704	0.0	0.4+
1988 10 07	675	0.1−	0.8−	1998 04 01	704	0.7−	1.7+	1999 09 09	704	0.1+	0.4−
1988 10 07	675	0.0	0.6−	1998 04 01	704	0.8+	0.1−	1999 09 09	682	0.6+	0.1+
1988 10 11	046	0.7−	0.8+	1998 04 18	704	1.1+	0.3−	1999 09 09	682	0.9−	0.2−
1988 10 11	046	1.9+	1.3+	1998 04 18	704	1.0−	0.4−	1999 09 09	704	0.5+	0.2+
1988 10 14	046	0.5−	1.3+	1998 04 18	704	1.0−	0.6−	1999 09 09	682	1.0−	0.0
1988 10 14	046	0.7+	0.4+	1998 04 18	704	0.3−	0.9−	1999 09 09	704	0.0	0.4+
1988 10 19	399	(2.2−	2.5−)	1998 04 20	704	0.9+	1.3−	1999 09 09	704	0.1−	0.1−
1988 10 19	399	(2.1−	2.9−)	1998 04 20	704	1.0−	1.1+	1999 09 09	704	0.2−	0.3−
1988 10 19	399	0.6−	1.1−	1998 04 20	704	0.7−	1.0−	1999 09 09	704	1.0−	0.7−
1996 12 20	411	0.2−	0.1−	1998 04 20	704	0.2+	0.4−	1999 09 12	682	0.4−	0.1−
1996 12 20	411	0.3+	0.5+	1998 04 22	704	1.7−	0.3+	1999 09 12	682	0.2+	0.4+
1997 01 26	411	0.1+	1.9+	1998 04 22	704	(1.0−	3.1+)	1999 09 12	682	0.2−	0.1+
1997 01 26	411	1.2+	0.0	1998 04 22	704	0.2−	0.5+	1999 09 13	699	0.1+	1.4+
1998 03 20	704	0.3−	0.7−	1998 04 22	704	1.1+	0.2+	1999 09 13	699	0.0	1.4+
1998 03 20	704	0.4−	1.2−	1998 04 22	704	(2.7−	0.8−)	1999 09 13	704	0.5+	0.2+
1998 03 20	704	0.0	0.7+	1999 06 20	703	1.1−	0.5−	1999 09 13	704	0.3+	0.1−
1998 03 20	704	0.6+	2.1+	1999 06 20	703	0.5+	0.0	1999 09 13	699	0.1−	1.0+
1998 03 22	704	0.1−	0.0	1999 06 20	703	0.2−	0.2−	1999 09 13	704	0.0	0.4+
1998 03 22	704	0.8+	0.4+	1999 06 20	703	0.2+	0.1+	1999 09 13	704	0.2−	0.2−
1998 03 22	704	0.3−	1.2−	1999 08 07	699	0.1+	0.2+	1999 09 13	704	0.7−	0.2−
1998 03 22	704	(0.5+	3.5−)	1999 08 07	699	0.3−	0.3+	1999 09 14	106	0.6+	0.1+
1998 03 25	704	0.5+	0.5−	1999 08 07	699	0.0	0.6+	1999 09 14	106	0.1+	0.0
1998 03 25	704	1.6−	1.3−	1999 08 08	699	0.9+	0.7+	1999 09 14	106	0.0	0.2+
1998 03 25	704	(2.2−	0.3−)	1999 08 08	699	0.0	0.7+				

(11491)* 1988 VT₂ = 1988 VN₁

Discovered 1988 Nov. 8 by S. Ueda and H. Kaneda at Kushiro.

Id. K. Watanabe (d, *MPC* 13998)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	327.71182		(2000.0)	P		Q
<i>n</i>	0.26435756	ω	111.78704	+0.88417665	−0.46629162	
<i>a</i>	2.4044083	Ω	276.01652	+0.41738574	+0.81578394	
<i>e</i>	0.1702775	<i>i</i>	1.63361	+0.20981133	+0.34215303	
<i>P</i>	3.73	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1988 11 02	399	(3.0−	6.9−)	1997 03 05	046	0.5+	0.1+	1999 09 09	704	0.4+	0.1−
1988 11 02	399	0.2+	1.6−	1997 03 05	046	0.7+	0.3+	1999 09 09	704	0.1−	0.1+
1988 11 02	399	0.3−	0.3+	1997 07 16	704	1.7+	0.7−	1999 09 09	704	0.3−	0.4−
1988 11 08	399	0.0	0.2+	1997 07 16	704	0.3+	0.8+	1999 09 09	704	0.2−	0.2−
1988 11 08	399	1.0+	1.3−	1997 07 16	704	0.0	0.7+	1999 09 09	704	0.4−	0.1+
1988 11 08	399	(2.4−	4.1−)	1997 08 22	699	0.2+	0.8+	1999 09 09	704	0.4−	0.1−
1988 11 11	399	(2.3−	3.1−)	1997 08 22	699	0.3−	0.6+	1999 09 09	704	0.3−	0.3−
1988 11 11	399	1.0−	1.1−	1997 08 22	699	0.3−	0.2+	1999 09 09	704	0.1−	0.0
1988 11 11	399	0.8−	0.6−	1997 09 07	704	0.1−	0.3−	1999 09 09	704	0.1−	0.1−
1988 11 11	399	1.8−	1.0−	1997 09 07	704	0.8+	0.2−	1999 09 09	704	0.4−	0.1+
1988 11 14	399	0.8+	0.8+	1997 09 07	704	0.4+	0.5−	1999 09 09	704	0.1−	0.1−
1988 11 14	399	1.3+	0.9+	1997 09 07	704	0.3+	0.4−	1999 09 09	704	0.2−	0.1+
1988 11 14	399	0.6+	0.5−	1997 09 07	704	0.2+	0.4−	1999 09 09	704	0.2−	0.2−
1992 12 18	010	1.9+	0.7+	1999 09 08	704	0.2+	0.2−	1999 09 09	704	0.1−	0.3+
1992 12 19	010	(2.1+	2.6+)	1999 09 08	704	0.2+	0.2−	1999 09 09	704	0.6−	0.2+
1992 12 19	010	0.9+	1.5+	1999 09 08	704	0.1+	0.1−	1999 09 09	704	0.1−	0.4+
1995 10 22	691	0.1−	1.2+	1999 09 08	704	0.1+	0.2−	1999 09 09	704	0.1−	0.2+
1995 10 22	691	0.3+	0.9+	1999 09 08	704	0.1+	0.3+	1999 09 12	106	0.2+	0.1+
1995 10 22	691	0.1−	0.9+	1999 09 08	704	0.2+	0.4+	1999 09 12	106	0.9−	1.0+
1997 01 06	411	0.2−	0.9+	1999 09 08	704	0.5+	0.1+	1999 09 13	106	0.3+	0.5−
1997 01 06	411	0.5−	0.3+	1999 09 08	704	0.1+	0.3+	1999 09 16	704	0.5−	0.3+
1997 01 07	411	0.9−	0.2+	1999 09 09	704	0.2−	0.0	1999 09 16	704	0.6−	0.2+
1997 01 07	411	1.2−	1.0+	1999 09 09	704	0.0	0.2−	1999 09 16	704	0.2−	0.1+
1997 03 05	046	0.6+	0.0	1999 09 09	704	0.1+	0.5−	1999 09 16	704	0.0	0.9+

(11492)* 1988 VR₃ = 1992 YV₄

Discovered 1988 Nov. 13 by K. Endate and K. Watanabe at Kitami.

Id. G. V. Williams (*MPC* 21788)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	337.13396		(2000.0)	P		Q
<i>n</i>	0.26281242	ω	194.26266	+0.95315332	−0.30247892	
<i>a</i>	2.4138232	Ω	183.34652	+0.28123248	+0.88894189	
<i>e</i>	0.2045989	<i>i</i>	2.25001	+0.11138689	+0.34393142	
<i>P</i>	3.75	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i> 1

Residuals in seconds of arc

1988 11 13	400	1.0−	0.1+	1998 04 22	704	0.3+	1.5+	1999 09 07	691	0.5−	0.3−
1988 11 13	400	2.2+	0.6+	1998 04 22	704	(4.8−	0.9+)	1999 09 07	691	0.4−	0.4−
1988 11 16	400	0.9+	0.9+	1998 05 01	704	1.1+	0.5−	1999 09 07	691	0.5−	0.2−
1988 11 16	400	0.6−	0.2−	1998 05 01	704	0.9+	1.1−	1999 09 07	704	0.0	0.4+
1988 11 16	400	0.7−	0.5−	1998 05 01	704	0.9+	0.1+	1999 09 07	704	0.4+	0.4+
1988 12 01	400	0.5+	0.7+	1998 05 01	704	1.7+	0.4−	1999 09 07	704	0.1+	0.4+
1988 12 01	400	0.1+	1.0+	1998 05 22	704	1.0−	0.3+	1999 09 07	704	0.3−	0.2+
1988 12 01	888	(2.9−	7.1−)	1998 05 22	704	0.4−	0.1+	1999 09 07	704	0.6−	0.2+
1988 12 01	888	(1.1−	3.8−)	1998 05 22	704	0.2−	0.1+	1999 09 07	120	0.1−	0.0
1988 12 03	888	0.2−	0.3+	1998 05 22	704	1.0−	0.1+	1999 09 07	120	0.6−	0.2−
1988 12 03	888	0.6−	0.4−	1998 05 23	704	0.4−	1.3+	1999 09 09	120	0.2+	0.1+
1988 12 06	400	1.6−	1.2+	1998 05 23	704	0.3+	1.3+	1999 09 09	120	0.3+	0.4−
1988 12 06	400	1.0−	0.5+	1998 05 23	704	0.4−	1.3+	1999 09 11	106	0.2−	0.1+
1988 12 07	888	(3.0+	6.2−)	1998 05 23	704	(2.7+	1.2+)	1999 09 12	106	0.1+	0.0
1988 12 07	888	(0.4+	4.9−)	1998 05 23	704	1.5−	0.2+	1999 09 12	106	0.0	0.5+
1988 12 11	400	0.2−	0.7−	1998 05 24	704	0.1−	0.1+	1999 09 14	610	0.0	0.5+
1988 12 11	400	0.1−	0.6+	1998 05 24	704	0.2−	0.3+	1999 09 14	610	0.3+	0.6+
1988 12 14	877	(0.3−	3.9+)	Y 1998 05 24	704	0.2−	0.4+	1999 09 14	610	0.4+	0.6+
1988 12 14	877	1.0+	1.5+	Y 1998 05 24	704	0.4−	0.6+	1999 09 14	610	0.5+	0.7+
1992 12 30	033	0.0	0.1+	1998 05 24	704	0.1−	0.7+	1999 09 14	610	0.8+	0.9+
1992 12 30	033	0.6+	0.6−	1999 07 16	704	0.2+	0.1−	1999 09 14	704	0.1−	0.1+
1993 01 01	033	0.0	0.3−	1999 07 16	704	0.3+	0.7−	1999 09 14	704	0.0	0.0

1993 01 24	675	0.3−	1.1+	1999 07 16	704	0.2−	0.0	1999 09 14	704	0.3+	0.2+
1993 01 24	675	0.2+	1.4+	1999 07 16	704	0.2+	0.8+	1999 09 14	704	0.1+	0.0
1997 01 31	691	0.2−	0.3−	1999 07 16	704	0.1+	0.0	1999 09 14	704	0.1−	0.1−
1997 01 31	691	0.2−	0.0	1999 08 22	699	0.5−	0.0	1999 09 14	703	0.1+	0.2−
1997 01 31	691	0.1−	0.2−	1999 08 22	699	0.3−	0.1+	1999 09 14	703	0.3+	0.5−
1998 04 21	704	0.8−	1.1−	1999 08 22	699	0.9−	0.5+	1999 09 14	703	0.8+	0.8−
1998 04 21	704	1.8+	1.8+	1999 08 22	106	0.5−	0.4+	1999 09 14	703	0.3+	1.4−
1998 04 21	704	1.2+	1.3+	1999 08 23	106	0.5−	0.2+	1999 09 16	691	0.2−	0.1−
1998 04 21	704	0.8+	0.2+	1999 08 23	106	0.8−	0.7+	1999 09 16	691	0.3−	0.4−
1998 04 21	704	0.2+	0.7−	1999 09 06	120	0.2+	0.5+	1999 09 16	691	0.2−	0.3−
1998 04 22	704	0.0	1.3+	1999 09 06	120	0.2−	0.6+				
1998 04 22	704	0.5+	1.1+	1999 09 07	120	0.4+	0.1+				

(11493)* 1988 VN₅ = 1997 EM₇

Discovered 1988 Nov. 4 by A. Mrkos at Kleť.

Id. G. V. Williams (*MPC* 29912)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	268.33548	(2000.0)	
<i>n</i>	0.25922928	ω	281.72709
<i>a</i>	2.4360153	Ω	160.82912
<i>e</i>	0.1662796	<i>i</i>	2.54813
<i>P</i>	3.80	<i>H</i>	14.4
Residuals in seconds of arc			
<i>G</i>	0.15	<i>U</i>	1

1998 11 04	046	0.2−	0.6−	1997 04 02	118	0.0	0.5+	1999 08 22	046	0.6+	0.5+
1988 11 04	046	1.9+	1.9+	1997 04 08	118	0.3−	0.3+	1999 08 22	046	0.1−	0.6−
1988 11 05	046	0.9+	0.1+	1997 04 08	118	0.0	0.1+	1999 08 22	046	0.2+	0.6+
1988 11 05	046	1.0+	0.2−	1998 05 20	046	0.1−	0.2+	1999 09 07	704	0.3+	0.1+
1988 11 10	046	1.7−	1.7−	1998 05 20	046	0.5−	0.2−	1999 09 07	704	0.2+	0.1−
1988 11 10	046	1.5−	0.8−	1998 05 20	046	0.1−	0.1+	1999 09 07	704	0.4+	0.1+
1994 04 15	691	2.0−	0.8−	1998 05 22	704	0.9+	0.7+	1999 09 07	704	0.1−	0.0
1994 04 15	691	1.6+	0.1−	1998 05 22	704	2.0−	1.1+	1999 09 07	704	0.4+	0.4−
1994 04 15	691	0.1−	0.1−	1998 05 22	704	0.0	1.7+	1999 09 09	704	0.8+	0.3+
1997 03 05	118	0.3+	0.1−	1998 05 22	704	0.4+	0.1−	1999 09 09	704	0.4+	0.9−
1997 03 05	118	0.2+	0.0	1998 05 24	704	0.1−	0.7−	1999 09 09	704	0.0	1.0−
1997 03 05	118	0.2+	0.0	1998 05 24	704	1.0+	1.1−	1999 09 09	704	0.4−	0.9−
1997 03 07	118	0.0	0.1+	1998 05 24	704	0.8+	0.1+	1999 09 09	704	0.6−	1.1−
1997 03 07	118	0.0	0.2+	1998 05 24	704	0.6+	1.7−	1999 09 09	046	0.6−	0.1+
1997 03 07	118	0.1−	0.3+	1998 05 28	046	0.3−	0.3−	1999 09 09	046	0.1−	0.4+
1997 03 08	118	0.2+	0.1−	1998 05 28	046	0.4−	0.1−	1999 09 09	046	0.2−	0.1−
1997 03 08	118	0.1+	0.3−	1998 05 28	046	0.2−	0.5−	1999 09 13	704	0.2−	0.3−
1997 03 10	118	0.3+	0.1+	1998 08 06	046	0.0	0.1+	1999 09 13	704	0.1−	0.4+
1997 03 10	118	0.1+	0.2+	1999 08 06	046	0.2+	0.1+	1999 09 13	704	0.4−	0.6−
1997 03 10	118	0.1−	0.2+	1999 08 06	046	0.1+	0.2+	1999 09 13	704	0.4−	0.0
1997 03 10	118	0.1+	0.2+	1999 08 07	046	0.7−	0.3+	1999 09 13	704	0.3−	1.0−
1997 03 22	118	0.1−	0.0	1999 08 07	046	0.4−	0.3+	1999 09 13	046	0.9−	0.0
1997 03 22	118	0.0	0.1+	1999 08 07	046	0.1+	0.1+	1999 09 13	046	0.1−	0.3+
1997 03 26	118	0.2+	0.3−	1999 08 07	046	0.5−	0.3+	1999 09 13	046	0.1−	0.3+
1997 03 26	118	0.5−	0.3−	1999 08 20	046	0.1−	0.2+	1999 09 14	106	0.7−	0.5+
1997 03 26	118	0.4−	1.1−	1999 08 20	046	0.2−	0.7+	1999 09 14	106	1.2+	0.4+
1997 04 02	118	0.6−	0.2+	1999 08 20	046	0.9+	0.7+				
1997 04 02	118	0.1+	0.4+	1999 08 20	046	0.9+	0.7+				

(11494)* 1988 VM₉ = 1969 UQ = 1984 SZ₆

Discovered 1988 Nov. 2 by M. Yanai and K. Watanabe at Kitami.

Id. H. Kaneda (*MPC* 18815)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano			
<i>M</i>	256.26903	(2000.0)	
<i>n</i>	0.25839255	ω	60.34079
<i>a</i>	2.4412714	Ω	27.77872
<i>e</i>	0.1734505	<i>i</i>	7.10157
<i>P</i>	3.81	<i>H</i>	14.3
Residuals in seconds of arc			
<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1969 10 16	095	0.6+	1.9−	1992 12 21	801	0.3−	0.0	1998 05 24	704	0.7+	0.2+
1984 09 28	809	1.2+	0.8−	1992 12 23	801	0.4−	0.2−	1998 05 24	704	0.7−	1.0+
1984 09 28	809	1.0+	0.8−	1992 12 23	801	0.6−	0.1+	1999 08 13	699	0.1−	0.2−
1984 09 28	809	1.1+	0.7−	1997 01 12	367	0.1+	0.3−	1999 08 13	699	0.0	0.4−
1984 09 29	809	0.1+	0.3+	1997 01 12	367	0.4+	0.2−	1999 08 13	699	0.1+	0.2+
1984 09 29	809	0.3+	0.1−	1997 01 13	127	0.6−	1.0−	1999 08 13	046	0.2−	0.2−
1984 09 29	809	0.4+	0.3−	1997 01 13	127	0.6−	0.9−	1999 08 13	046	0.4−	0.4+
1984 09 30	809	0.2−	0.8+	1997 01 14	127	0.4−	0.2+	1999 08 13	046	0.6−	0.1+
1984 09 30	809	0.0	0.4+	1997 01 14	127	0.1+	0.1+	1999 08 14	557	0.2+	0.3+
1984 09 30	809	0.1−	0.2+	1997 01 17	732	0.4−	0.0	1999 08 14	557	0.1−	0.4+
1988 10 07	675	1.2+	1.7−	1997 01 17	732	0.8+	0.8+	1999 08 14	428	0.7−	0.2+
1988 10 07	675	1.7+	1.7−	1997 01 17	732	1.8+	0.8+	1999 08 14	428	0.6−	0.5+
1988 10 18	400	(3.9−	0.6+)	1997 01 27	732	0.9+	0.8+	1999 08 14	426	0.1+	0.1+
1988 10 18	400	(4.2−	1.9+)	1997 01 27	732	0.6+	1.2+	1999 08 14	426	0.0	0.1−
1988 11 02	400	0.3+	1.6+	1997 01 27	732	0.1+	0.3−	1999 08 14	426	0.1+	0.2+
1988 11 02	400	2.1−	0.8+	1998 04 28	809	(3.6+	0.2+)	1999 08 15	859	0.1−	0.3−
1988 11 02	400	1.6−	0.7+	1998 04 28	809	(3.6+	0.0)	1999 08 15	859	0.1−	0.3+
1988 11 08	400	0.4−	0.5+	1998 04 28	809	(2.8+	1.9−)	1999 08 15	859	0.0	0.3−
1988 11 08	400	0.9−	0.1+	1998 05 22	704	0.0	1.0+	1999 08 15	859	0.1+	0.2−
1992 09 30	801	0.3−	0.2−	1998 05 22	704	0.8−	0.6+	1999 08 15	684	0.4−	0.4+
1992 10 23	801	0.4−	0.2+	1998 05 22	704	0.3+	0.8+	1999 08 15	684	0.5−	0.4+
1992 10 23	801	0.1−	0.2+	1998 05 22	704	0.2−	0.1−	1999 08 15	426	0.0	0.0
1992 10 28	801	0.7−	0.4+	1998 05 22	704	2.0−	0.9−	1999 08 15	426	0.1−	0.2+
1992 10 28	801	0.5−	0.2+	1998 05 23	704	0.5−	0.9−	1999 08 15	426	0.1−	0.0
1992 11 21	400	1.6+	0.7−	1998 05 23	704	1.9+	0.8+	1999 09 11	704	0.7+	0.3+
1992 11 21	400	0.1−	0.1+	1998 05 23	704	0.1+	0.9−	1999 09 11	704	0.3+	0.0
1992 12 15	399	0.3+	0.0	1998 05 23	704	1.4−	0.6+	1999 09 11	704	0.1−	0.2+
1992 12 15	399	0.4−	0.3+	1998 05 23	428	0.2−	0.7−	1999 09 11	704	0.5+	0.9+
1992 12 17	399	1.5−	0.3+	1998 05 23	428	0.5+	0.3−	1999 09 11	704	0.5+	1.0+
1992 12 17	399	(2.6−	0.8−)	1998 05 24	704	1.1+	0.7−				
1992 12 21	801	0.6−	0.2+	1998 05 24	704	0.1+	1.1+				

(11495)* 1988 XR = 1969 TF₂ = 1969 VF

Discovered 1988 Dec. 3 by K. Endate and K. Watanabe at Kitami.

Id. T. Kobayashi (*MPC* 14202)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano			
<i>M</i>	325.86727	(2000.0)	
<i>n</i>	0.26203193	ω	161.28259
<i>a</i>	2.4186140	Ω	236.46968
<i>e</i>	0.2283450	<i>i</i>	1.03097
<i>P</i>	3.76	<i>H</i>	14.7
Residuals in seconds of arc			
<i>G</i>	0.15	<i>U</i>	1

1954 12 21	675	0.0	1.1−	1988 12 06	400	0.5+	0.9−	1999 09 07	704	0.3+	0.2−
1954 12 21	675	0.6−	1.0−	1988 12 06	400	0.3+	1.4−	1999 09 07	704	0.1+	0.1−
1969 10 08	095	0.9+	1.4+	1988 12 06	400	0.0	0.2+	1999 09 07	704	0.1−	0.2−
1969 10 16	095	(2.7+	5.5+)	1988 12 10	400	0.1−	0.5+	1999 09 07	704	0.4−	0.3+
1969 11 04	095	(81.0+	65.5−)	1988 12 10	400	0.7+	0.3+	1999 09 07	704	1.2−	0.1−
1971 03 24	675	(5.2−	12.2−)	1988 12 16	400	0.8+	0.6+	1999 09 09	704	0.6−	0.1−
1971 03 25	675	0.8−	0.5−	1988 12 16	400	0.6+	1.4−	1999 09 09	704	0.1−	0.0
1971 03 25	675	0.9+	0.2−	1994 05 04	691	0.2−	0.1−	1999 09 09	704	0.0	0.0
1971 03 26	675	1.5+	0.1−	1994 05 04	691	0.0	0.2−	1999 09 09	704	0.5−	0.1−
1971 03 27	675	1.0−	1.4−	1994 05 04	691	0.3+	0.0	1999 09 09	704	0.4−	0.1+
1971 04 02	675	1.8−	0.1+	1999 07 16	704	0.5+	0.5−	1999 09 16	704	0.2+	0.0
1988 12 03	400	0.7−	0.0	1999 07 16	704	0.6+	0.5−	1999 09 16	704	0.4+	0

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams						
M	73.29641		(2000.0)		P		Q				
n	0.23316388	ω	122.00439		−0.21383659		+0.96436658				
a	2.6143388	Ω	134.78594		−0.95388137		−0.17173782				
e	0.1363571	i	12.67990		−0.21067567		−0.20125413				
P	4.23 <th>H</th> <td>13.9</td> <th>G</th> <td>0.15<th>U</th><td colspan="3">1</td></td>	H	13.9	G	0.15 <th>U</th> <td colspan="3">1</td>	U	1				
Residuals in seconds of arc											
1988 12 11	675	1.6+	0.0	1998 04 03	704	0.6+	0.1−	1998 06 17	704	0.4+	1.2+
1988 12 11	675	1.9−	0.9+	1998 04 23	704	0.1+	0.1−	1998 06 17	704	(3.2−	1.1−
1989 01 10	033	0.2−	0.6+	1998 04 23	704	0.2+	0.7+	1999 07 16	704	0.0	0.5−
1989 01 11	033	0.4+	0.4+	1998 04 23	704	1.3−	1.1+	1999 07 16	704	0.5+	0.0
1989 01 12	033	0.1−	0.1+	1998 04 23	704	0.0	0.8+	1999 07 16	704	0.2−	0.3−
1989 02 02	033	0.0	0.1+	1998 04 23	704	1.1−	0.8+	1999 07 16	704	0.9−	0.3−
1989 02 04	033	0.6+	0.5−	1998 04 24	704	0.6+	0.2+	1999 07 16	704	0.6+	0.1−
1994 05 13	675	0.9−	0.2−	1998 04 24	704	0.0	0.1+	1999 09 04	703	0.1−	0.0
1994 05 13	675	1.3+	0.1−	1998 04 24	704	0.6+	0.6+	1999 09 04	703	0.1−	0.4+
1994 06 03	691	0.2−	0.6−	1998 04 24	704	0.1+	0.0	1999 09 04	703	0.0	0.3+
1994 06 03	691	0.0	0.2+	1998 04 24	704	0.2+	0.0	1999 09 04	703	0.1+	0.1+
1994 06 03	691	0.2−	0.5−	1998 05 16	704	1.0+	1.2+	1999 09 05	113	0.3−	0.2−
1994 06 06	675	1.7−	0.1+	1998 05 16	704	(0.8+	2.7+)	1999 09 05	113	0.9+	0.8+
1994 06 06	675	1.2+	0.3+	1998 05 16	704	0.3−	0.3−	1999 09 13	704	0.5−	0.1+
1998 03 08	699	0.1−	0.8+	1998 05 16	704	0.5−	1.7−	1999 09 13	704	0.2−	0.3+
1998 03 08	699	0.1−	0.5+	1998 05 16	704	0.0	1.2−	1999 09 13	704	0.0	0.3+
1998 03 08	699	(2.6−	0.1+)	1998 05 28	704	0.2+	0.3+	1999 09 13	704	0.2−	0.3+
1998 04 02	704	0.1+	0.1−	1998 05 28	704	0.6+	0.4−	1999 09 13	704	0.1−	0.3+
1998 04 02	704	0.4+	0.2+	1998 05 28	704	0.1+	0.6−	1999 09 13	704	0.0	0.1+
1998 04 02	704	0.6−	0.1−	1998 05 28	704	0.8+	0.7−	1999 09 13	704	0.1+	0.8+
1998 04 03	704	0.2+	0.4−	1998 05 28	704	1.2−	0.6+	1999 09 13	704	0.0	0.6−
1998 04 03	704	0.2−	0.4+	1998 06 17	704	0.7−	0.1−	1999 09 14	106	0.8−	1.2+
1998 04 03	704	1.2+	0.7−	1998 06 17	704	1.2+	0.4+	1999 09 14	106	0.1+	0.6+
1998 04 03	704	0.2+	0.2+	1998 06 17	704	1.3−	0.4+				

(11497)* 1989 CG₁ = 1952 BO₂ = 1990 MB₂ = 1997 CO₂₇

Discovered 1989 Feb. 6 by E. F. Helin at Palomar.

Id. E. Bowell (*MPC* 29297), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams	
<i>M</i>	172.33776	(2000.0)		P	Q	
<i>n</i>	0.24001945	ω	246.52065	−0.95471252	+0.22375360	
<i>a</i>	2.5643172	Ω	305.84558	−0.09358225	−0.85149476	
<i>e</i>	0.0876102	<i>i</i>	14.00047	−0.28242941	−0.47422674	
<i>P</i>	4.11	<i>H</i>	12.5	<i>G</i>	0.15	<i>U</i> 1

Residuals in seconds of arc											
1952 01 31	675	0.3+	0.2+	1997 02 02	327	1.0−	0.3+	1999 07 22	704	0.6−	0.8−
1952 01 31	675	0.3+	0.9+	1997 02 13	327	0.6+	0.4−	1999 07 22	704	0.6−	1.0−
1989 02 06	675	0.5−	1.1−	1997 02 13	327	0.3−	0.5−	1999 07 22	704	0.0	0.6−
1989 02 06	675	(0.5−	2.9−)	1997 02 13	327	1.0−	0.4−	1999 07 22	704	0.6−	0.8−
1989 02 12	675	0.4−	1.0−	1997 02 13	327	0.7+	0.4−	1999 09 08	704	0.4+	0.0
1989 03 07	413	0.1+	0.5+	1997 02 17	327	1.2+	0.8−	1999 09 08	704	0.1−	0.4+
1989 03 07	413	1.0+	0.1+	1997 02 17	327	0.2+	0.0	1999 09 08	704	0.7+	0.3+
1990 06 28	808	0.4−	0.3−	1997 02 17	327	1.1+	0.2−	1999 09 08	704	0.1+	0.0
1990 06 28	808	0.3−	0.3+	1997 03 30	124	0.9−	0.4+	1999 09 08	704	0.2+	0.4+
1997 01 11	691	0.3+	0.2−	1997 03 30	124	0.7−	0.9+	1999 09 13	703	0.2+	0.6+
1997 01 11	691	0.1+	0.2+	1997 03 30	124	0.6−	0.5+	1999 09 13	703	0.1+	0.4+
1997 01 11	691	0.2+	0.2−	1998 06 14	689	1.0−	0.1+	1999 09 13	703	0.4+	0.5+
1997 02 02	327	1.3−	0.4+	1998 07 21	704	0.9+	0.5−	1999 09 13	703	0.2+	0.0
1997 02 02	327	0.6−	0.3+	1998 07 21	704	0.7+	0.1−				
1997 02 02	327	0.2+	0.5+	1999 07 22	704	0.5−	0.4−				

(11498)* 1989 GS₄ = 1990 RX₆

Discovered 1989 Apr. 3 by E. W. Elst at the European Southern Observatory.

Id. H. Kaneda (*MPC* 17961)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams					
M	38.59144		(2000.0)		P		Q				
n	0.21537063		ω 95.46129		+0.03116367		+0.99951085				
a	2.7564179		Ω 176.32148		−0.93247734		+0.03001915				
e	0.1499171		i 2.34514		−0.35988170		+0.00877025				
P	4.58 <td colspan="2">H 14.2<td colspan="2">G 0.15<td colspan="2">U 1</td><td colspan="2"></td></td></td>		H 14.2 <td colspan="2">G 0.15<td colspan="2">U 1</td><td colspan="2"></td></td>		G 0.15 <td colspan="2">U 1</td> <td colspan="2"></td>		U 1				
Residuals in seconds of arc											
1989 04 03	809	0.1+	1.7+	1998 03 22	704	0.5+	0.2−	1998 04 24	699	0.8−	1.0+
1989 04 03	809	(5.3−	3.9+)	1998 03 22	704	0.2−	0.2−	1998 04 24	699	0.0	0.4+
1989 04 03	809	(0.5+	3.6+)	1998 03 22	704	0.1+	0.3−	1999 08 12	699	0.1+	0.9+
1989 04 05	809	0.6+	0.7+	1998 03 22	704	0.5+	0.5−	1999 08 12	699	0.5+	0.9+
1989 04 05	809	1.1+	0.6+	1998 03 22	704	0.2−	0.0	1999 08 12	699	0.2−	0.6+
1989 04 05	809	1.3+	0.6+	1998 03 24	704	1.4−	0.7−	1999 08 31	557	0.6+	0.6−
1989 04 09	809	0.1−	0.6+	1998 03 24	704	(0.8−	2.4−)	1999 08 31	557	0.5+	0.0
1989 04 09	809	0.5+	0.8+	1998 03 24	704	0.5+	0.3−	1999 08 31	557	0.2+	0.3+
1989 04 09	809	0.6+	1.8+	1998 03 24	704	0.7−	0.1−	1999 09 01	557	0.2−	0.1−
1989 04 11	809	1.2−	0.8+	1998 03 24	704	0.1+	0.4−	1999 09 01	557	0.0	0.0
1989 04 11	809	0.6+	0.5+	1998 03 24	704	0.1+	0.3−	1999 09 01	557	0.1+	0.0
1989 04 12	809	0.5+	0.1+	1998 03 24	704	0.1−	0.5−	1999 09 01	557	0.3+	0.2+
1989 04 12	809	0.2−	0.9+	1998 03 24	704	0.2+	0.1−	1999 09 06	699	0.9+	0.7+
1989 04 12	809	0.4−	0.4+	1998 03 24	704	0.2−	0.3−	1999 09 06	699	0.0	0.7+
1990 09 13	809	0.8−	0.1−	1998 03 24	704	0.1+	0.6+	1999 09 06	699	0.1+	0.2−
1990 09 13	809	0.3−	0.1−	1998 03 28	704	0.1+	1.5−	1999 09 07	704	0.3−	1.3−
1990 09 13	809	0.0	0.4−	1998 03 28	704	0.7−	1.0−	1999 09 07	704	0.5+	1.0−
1990 09 14	809	0.4−	0.4+	1998 03 28	704	0.5+	0.9−	1999 09 07	704	0.2+	1.2−
1990 09 14	809	0.1−	0.4+	1998 03 28	704	0.5+	1.5−	1999 09 07	704	0.1−	1.3−
1990 09 14	809	0.0	0.5+	1998 03 28	704	0.3−	1.5−	1999 09 07	704	0.3−	1.3−
1990 09 15	809	0.1+	0.7+	1998 03 29	704	0.4+	0.4−	1999 09 09	704	0.2+	0.0
1990 09 15	809	0.6+	0.8+	1998 03 29	704	0.3+	0.7−	1999 09 09	704	0.8+	0.9−
1990 09 15	809	1.0+	0.7+	1998 03 29	704	0.5−	0.1−	1999 09 09	704	0.1−	0.7−
1990 09 18	675	1.1−	0.3−	1998 03 29	704	0.5+	0.0	1999 09 09	704	0.1+	0.8−
1990 09 18	675	(1.1−	2.5−)	1998 03 29	704	0.8+	0.8−	1999 09 09	704	0.2−	0.4−
1998 03 04	704	(3.3−	0.2+)	1998 04 19	704	0.4−	0.1−	1999 09 13	699	0.8−	0.9+
1998 03 04	704	(3.8−	1.3+)	1998 04 19	704	0.3+	1.4−	1999 09 13	704	0.4+	0.3−
1998 03 04	704	(2.6−	1.5+)	1998 04 19	704	1.3−	0.4−	1999 09 13	704	0.1+	0.2−
1998 03 04	704	(3.7−	0.6+)	1998 04 19	704	1.3−	0.8+	1999 09 13	699	1.0−	0.1+
1998 03 04	704	(4.7−	0.4−)	1998 04 20	704	0.1−	0.1+	1999 09 13	704	0.3−	0.8−
1998 03 20	704	0.1+	0.4−	1998 04 20	704	0.7−	0.2−	1999 09 13	704	0.2−	0.3−
1998 03 20	704	0.3+	0.8−	1998 04 20	704	0.4−	1.3+	1999 09 13	704	0.4−	0.9−
1998 03 20	704	0.5+	0.5−	1998 04 20	704	1.3−	0.5+	1999 09 13	699	0.3+	0.1+
1998 03 20	704	0.5+	0.8−	1998 04 20	704	0.8−	1.3+				
1998 03 20	704	0.2+	0.9−	1998 04 24	699	0.7−	0.6−				

(11499)* 1989 RL = 1998 FE

1996 12 02	691	0.1+	0.7-	1999 07 08	120	0.2-	0.3-	1999 09 12	106	0.0	0.7+
1996 12 02	691	0.0	0.6-	1999 07 16	704	0.2-	0.1-	1999 09 12	106	0.3-	1.1+
1998 03 03	704	0.3+	1.6-	1999 07 16	704	0.9-	0.0	1999 09 13	610	0.0	0.2+
1998 03 03	704	0.2+	1.0-	1999 07 16	704	0.9-	0.0	1999 09 13	610	0.1-	0.1+
1998 03 03	704	(1.1+	2.6-)	1999 07 16	704	0.7-	0.2-	1999 09 13	610	0.2-	0.1+
1998 03 03	704	1.2-	1.1+	1999 09 05	691	0.0	0.1+	1999 09 13	610	0.3-	0.1-
1998 03 20	704	0.4+	0.4+	1999 09 05	691	0.0	0.0	1999 09 13	610	0.5-	0.1-
1998 03 20	704	0.4+	1.5-	1999 09 05	691	0.1+	0.1-	1999 09 14	704	0.0	0.3-
1998 03 20	704	0.4+	0.6-	1999 09 07	704	0.1+	0.0	1999 09 14	704	0.1+	0.2-
1998 03 20	704	0.8+	1.0-	1999 09 07	704	0.0	0.2-	1999 09 14	704	0.1+	0.6-
1998 03 22	704	0.4-	0.2+	1999 09 07	704	0.2+	0.4-	1999 09 14	704	0.1+	0.4-
1998 03 22	704	0.5-	0.1+	1999 09 07	704	0.2-	0.5-	1999 09 14	704	0.1-	0.3-
1998 03 22	704	0.5-	0.3+	1999 09 08	704	0.5+	0.4-				
1998 03 22	704	1.1-	1.9-	1999 09 08	704	0.4+	0.4-				

(11500)* 1989 UR

Discovered 1989 Oct. 28 by J. Mueller and D. Mendenhall at Palomar.
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5 Williams

M	164.32561		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.87785596	ω	289.25828	-0.94809672	-0.28256301
a	1.0802407	Ω	234.58749	+0.31436309	-0.90190383
e	0.3558972	i	10.30864	-0.04783775	-0.32669195
P	1.12	H	18.4	G 0.15	U 2

Residuals in seconds of arc

1989 10 25	010	1.2-	0.3+	1998 11 02	860	0.6-	0.4+	1998 11 20	860	0.1+	0.5-
1989 10 26	010	1.7-	2.0-	1998 11 05	151	0.5-	0.6-	1998 11 20	860	0.3-	0.9-
1989 10 28	675	0.4+	1.5+	1998 11 05	151	0.1-	0.6+	1998 11 20	860	0.4-	1.7-
1989 10 28	675	0.8-	1.3-	1998 11 05	118	0.1-	0.0	1998 11 20	360	0.1+	0.2+
1989 10 29	675	1.7-	1.8-	1998 11 06	118	0.1+	0.1+	1998 11 20	360	0.3+	0.2+
1989 10 29	675	1.6+	0.5+	1998 11 07	151	0.2+	0.2+	1998 11 20	360	0.3+	0.2+
1989 10 31	010	0.1-	1.2-	1998 11 07	151	0.2+	0.3+	1998 11 20	952	(2.0+	3.3+)
1989 10 31	010	1.0+	0.0	1998 11 07	540	0.2+	0.0	1998 11 20	952	(1.8+	3.4+)
1989 10 31	010	0.8+	0.7-	1998 11 07	540	0.2+	0.1+	1998 11 20	952	(1.5+	3.8+)
1989 10 31	010	(2.9+	1.8+)	1998 11 07	540	0.0	0.1+	1998 11 20	952	(1.6+	3.5+)
1989 11 01	675	1.9+	0.9-	1998 11 10	360	0.1-	0.3+	1998 11 22	151	1.4-	0.5-
1989 11 01	675	1.4+	0.6+	1998 11 10	360	0.2-	0.3+	1998 11 22	151	1.2-	0.1-
1989 11 27	010	1.3-	2.2-	1998 11 10	360	0.1-	0.4+	1998 11 24	426	0.6-	1.1-
1989 11 27	010	(3.0-	3.2-)	1998 11 11	658	0.2+	0.3-	1998 11 24	426	0.0	0.5-
1989 11 27	010	(2.6-	3.4-)	1998 11 11	658	0.2+	0.2-	1998 11 24	426	0.2-	0.7-
1989 11 28	010	1.5-	2.5-	1998 11 11	658	0.1+	0.3-	1998 11 24	557	0.6-	0.3-
1989 11 28	010	(1.7+	7.3+)	1998 11 11	127	0.8+	0.5-	1998 11 24	557	0.7-	0.4-
1997 10 09	691	(3.1+	1.1-)	1998 11 11	127	0.5+	0.8-	1998 11 24	118	0.6-	0.4+
1997 10 09	691	0.1-	0.4-	1998 11 11	143	0.2+	0.4+	1998 11 24	118	0.6-	0.1+
1997 10 09	691	(2.2+	0.6-)	1998 11 11	143	0.0	0.1+	1998 11 24	118	0.6-	0.2+
1997 10 10	691	0.3-	0.1-	1998 11 11	143	0.4+	0.2+	1998 11 24	557	0.6-	0.0
1997 10 10	691	0.2-	0.6-	1998 11 11	151	0.8+	0.0	1998 11 24	557	0.7-	0.0
1997 10 10	691	0.8-	0.1-	1998 11 11	151	0.6+	0.1-	1998 11 24	491	0.6+	1.9+
1998 08 28	658	1.4-	0.8-	1998 11 12	557	0.4+	0.2+	1998 11 24	491	(0.4+	3.6+)
1998 08 28	658	1.5-	0.6-	1998 11 12	557	0.4+	0.1+	1998 11 24	491	(0.6+	3.0+)
1998 08 28	658	0.3-	0.8-	1998 11 12	557	0.5+	0.1+	1998 11 24	491	0.5+	0.5-
1998 09 22	658	0.3-	0.3-	1998 11 13	557	0.5+	0.0	1998 11 24	491	(0.2-	2.7+)
1998 09 22	658	1.1-	1.1-	1998 11 13	557	0.4+	0.1-	1998 11 25	426	0.4-	0.3+
1998 09 22	658	0.4-	0.3-	1998 11 14	758	0.2-	0.5+	1998 11 25	426	0.4-	0.1+
1998 09 22	611	(2.3-	3.4-)	1998 11 14	758	0.3-	0.5+	1998 11 25	426	0.3-	0.1+
1998 09 22	611	0.2-	1.7+	1998 11 14	758	0.4-	0.3+	1998 11 25	426	0.2-	0.4+
1998 10 19	658	0.3-	0.1-	1998 11 14	758	0.4-	0.4+	1998 11 26	670	0.2-	0.4-
1998 10 19	658	0.4-	0.3-	1998 11 15	610	0.6-	0.2+	1998 11 26	670	0.0	0.2-
1998 10 19	658	0.6-	0.1-	1998 11 15	610	0.6-	0.1+	1998 11 26	670	0.0	0.3-
1998 10 22	561	0.4+	0.3+	1998 11 15	610	0.3-	0.1-	1998 12 04	428	1.1+	0.4+
1998 10 22	561	0.4+	0.3+	1998 11 15	610	0.1-	0.1-	1998 12 04	428	1.0+	1.3+
1998 10 22	561	0.6+	0.4+	1998 11 15	610	0.4+	0.0	1998 12 04	428	1.6+	0.5+
1998 10 22	561	0.4+	0.0	1998 11 15	610	0.3+	0.2-	1998 12 04	428	1.7+	0.8+
1998 10 23	561	0.4+	0.3+	1998 11 15	610	0.2+	0.1-	1998 12 06	428	0.1-	0.1-
1998 10 23	561	0.3+	0.0	1998 11 15	610	0.2+	0.0	1998 12 06	428	0.5+	0.1+
1998 10 23	561	0.7+	0.3+	1998 11 15	610	0.4+	0.1+	1998 12 06	428	0.0	0.4+
1998 10 23	561	0.4+	0.0	1998 11 15	610	0.6+	0.4+	1998 12 06	428	0.4-	0.2-

1998 10 23	561	0.5+	0.2+	1998 11 15	610	0.2+	0.3+	1998 12 06	428	0.0	0.1+
1998 10 23	561	0.5+	0.0	1998 11 15	610	0.2+	0.2+	1998 12 09	428	0.6-	0.7-
1998 10 23	118	0.4+	0.1+	1998 11 15	610	0.2+	0.0	1998 12 09	428	1.7-	1.1-
1998 10 23	118	0.5+	0.1+	1998 11 15	610	0.4+	0.1-	1999 08 08	711	1.1-	0.5+
1998 10 24	360	0.2+	0.0	1998 11 15	610	0.7+	0.1-	1999 08 22	402	0.4+	0.7-
1998 10 24	360	0.3+	0.1-	1998 11 15	610	0.4+	0.3+	1999 08 22	402	0.4+	0.3-
1998 10 24	360	0.2+	0.2-	1998 11 15	610	0.3+	0.2+	1999 08 22	402	0.3-	0.3-
1998 10 25	540	0.1+	0.1-	1998 11 15	610	0.1+	0.1+	1999 09 06	658	0.2-	0.0
1998 10 25	540	0.1-	0.2+	1998 11 15	610	0.2+	0.2+	1999 09 06	658	0.4+	0.1-
1998 10 25	540	0.1-	0.0	1998 11 15	610	0.3+	0.3+	1999 09 06	658	0.3+	0.2-
1998 10 27	658	0.7-	0.0	1998 11 15	610	0.0	0.6+	1999 09 12	360	0.0	0.2+
1998 10 27	658	0.6-	0.1+	1998 11 15	610	0.1+	0.4+	1999 09 12	360	0.5-	0.1-
1998 10 27	658	0.6-	0.0	1998 11 15	610	0.4+	0.4+	1999 09 12	360	0.1-	0.2-
1998 10 28	143	0.9-	0.3+	1998 11 15	610	0.4+	0.4+	1999 09 13	703	0.8-	0.2+
1998 10 29	143	0.4-	0.0	1998 11 15	610	0.7+	0.6+	1999 09 13	703	0.1+	1.0-
1998 10 29	143	0.2-	0.3+	1998 11 16	118	0.4+	0.4+	1999 09 13	703	0.9-	0.7+
1998 10 31	402	0.3-	0.0	1998 11 17	118	0.7+	0.8+	1999 09 13	703	0.6+	0.6+
1998 10 31	402	0.2-	0.1-	1998 11 17	691	0.2+	0.4+	1999 09 18	704	0.3+	0.0
1998 10 31	402	0.3-	0.0	1998 11 17	691	0.6+	0.2+	1999 09 18	704	0.8+	1.1+
1998 11 02	860	0.3-	0.5+	1998 11 17	691	0.2-	0.3-	1999 09 18	704	0.3+	0.6+
1998 11 02	860	0.4+	0.7+	1998 11 20	860	0.3+	0.8-	1999 09 18	704	0.4+	0.4-

(11501)* 1989 UU₃ = 1982 SJ₁₀ = 1991 GL₄

Discovered 1989 Oct. 29 by Y. Mizuno and T. Furuta at Kani.

Id. H. Kaneda (*MPC* 18632)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	311.61112		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.28865042	ω	209.83475	+0.76754323	-0.64091577
a	2.2675381	Ω	190.04478	+0.59908663	+0.72293598
e	0.1749588	i	3.35790	+0.22797500	+0.25805146
P	3.41	H	14.8	G 0.15	U 1

Residuals in seconds of arc

1982 09 26	095	(4.2+	3.0-)	1998 04 21	704	0.8+	1.0+	1999 08 22	699	0.6+	0.2+
1989 10 28	403	0.5+	2.0-	1998 04 21	704	1.7-	1.4-	1999 08 22	699	0.0	0.5+
1989 10 29	403	1.5+	1.5+	1998 04 21	704	(4.3-	0.1-)	1999 08 22	699	0.5+	0.3+
1989 11 02	403	0.8-	0.2-	1998 04 22	704	0.7-	0.4+	1999 09 07	704	0.6-	0.6-
1989 11 02	403	1.6-	1.3-	1998 04 22	704	0.3-	0.9-	1999 09 07	704	0.0	0.2-
1991 04 08	809	2.1+	0.6+	1998 04 22	704	1.2-	0.1+	1999 09 07	704	0.1-	0.2-
1991 04 08	809	1.8+	1.2+	1998 04 22	704	1.1-	0.5-	1999 09 07	704	0.3+	0.0
1991 04 08	809	1.7+	1.2+	1998 04 22	704	(6.2-	0.3-)	1999 09 07	704	0.0	0.3+
1991 04 10	809	1.1+	1.0+	1998 05 01	704	0.1-	0.4-	1999 09 09	704	0.4-	0.0
1991 04 10	809	0.1-	0.7+	1998 05 01	704	0.2+	0.7-	1999 09 09	704	0.8-	0.2+
1991 04 10	809	0.6+	2.0+	1998 05 01	704	1.0+	1.3-	1999 09 09	704	0.3-	0.0
1991 04 15	675	(3.0+	0.6-)	1998 05 01	704	0.7-	0.3-	1999 09 09	704	0.2+	0.3-
1991 04 15	675	1.4-	0.2+	1998 05 01	704	0.5-	1.0-	1999 09 09	704	0.3-	0.2-
1994 02 15	675	0.9-	1.5-	1998 05 22	704	0.9+	1.0+	1999 09 13	610	0.2-	0.2+
1994 02 15	675	0.1+	0.3-	1998 05 22	704	0.2-	1.0+	1999 09 13	610	0.1+	0.0
1996 12 08	886	0.5-	1.4+	1998 05 22	704	1.3-	1.0+	1999 09 13	610	0.5+	0.2-
1996 12 08	886	0.4-	0.6+	1998 05 22	704	0.2-	1.0+	1999 09 13	610	0.8+	0.3-
1996 12 10	327	0.2+	1.4+	1999 08 21	715	0.1-	0.2+	1999 09 13	610	1.1+	0.5-
1996 12 10	327	0.7+	1.0+	1999 08 21	715	0.2-	0.3+	1999 09 14	704	0.7-	0.3+
1996 12 10	327	1.1+	1.1+	1999 08 21	715	0.3-	0.0	1999 09 14	704	0.3-	0.6+
1996 12 28	886	0.2-	0.6-	1999 08 22	715	0.1+	1.4+	1999 09 14	704	0.5-	0.2+
1996 12 28	886	0.5-	0.3-	1999 08 22	715	0.3+	0.8+	1999 09 14	704	0.1+	0.3+
1998 04 21	704	1.1+	0.9-	1999 08 22	715	0.1+	0.6+	1999 09 14	704	0.2-	0.1+

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	296.39233		(2000.0)	P		Q	
<i>n</i>	0.18142594	ω	320.52779	+0.71189624		−0.70034105	
<i>a</i>	3.0903176	Ω	84.01162	+0.65688101		+0.63772979	
<i>e</i>	0.1924637	<i>i</i>	3.00937	+0.24841718		+0.32066046	
<i>P</i>	5.43	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1978 12 03	675	0.4+	0.5−	1994 09 07	801	0.0	0.2+	1998 06 02	809	0.9+	0.3+
1978 12 03	675	0.5+	0.5−	1994 10 01	399	1.2−	0.5+	1998 06 02	809	0.2+	0.2+
1978 12 05	675	(2.9+	0.6+)	1994 10 01	399	1.3−	0.4+	1998 06 02	809	0.1−	0.0
1978 12 06	675	0.3+	0.9−	1994 11 04	675	0.5−	1.3+	1999 07 14	704	0.5+	0.1+
1978 12 06	675	0.8+	0.8−	1994 11 04	675	0.3+	0.9+	1999 07 14	704	0.2+	1.1−
1983 09 10	688	0.9−	1.7+	1995 12 20	691	0.6+	0.3−	1999 07 14	704	0.1−	0.5−
1983 09 10	688	0.4+	0.6+	1995 12 20	691	0.7+	0.0	1999 07 14	704	0.3−	0.7−
1989 11 21	399	0.6−	0.9+	1995 12 20	691	0.5+	0.2−	1999 07 14	704	0.8−	0.6−
1989 11 21	399	0.4−	0.5+	1995 12 26	691	0.3+	0.2−	1999 09 07	704	0.1+	0.4−
1989 11 21	399	0.1+	0.1−	1995 12 26	691	0.2+	0.2−	1999 09 07	704	0.8+	0.3+
1989 11 22	399	(3.6+	3.0−)	1995 12 26	691	0.3+	0.5−	1999 09 07	704	0.8+	0.5−
1989 11 22	399	(0.3−	2.5−)	1997 04 03	704	0.7−	0.1−	1999 09 07	704	0.8+	0.2+
1989 11 22	399	0.2+	0.6−	1997 04 03	704	0.1−	0.2−	1999 09 07	704	0.4+	0.4+
1989 12 23	399	0.2+	0.8−	1997 04 11	704	0.4+	0.5+	1999 09 11	704	0.6+	0.5+
1989 12 23	399	1.8−	1.2−	1997 04 11	704	0.7+	1.9+	1999 09 11	704	0.3−	0.3+
1989 12 23	399	0.5−	0.1−	1998 05 22	704	1.6−	0.3−	1999 09 11	704	0.5+	0.2−
1992 05 07	691	0.6+	0.7+	1998 05 22	704	(1.8−	3.4+)	1999 09 11	704	1.0+	0.5−
1992 05 07	691	0.2+	0.9+	1998 05 22	704	0.2+	0.2+	1999 09 11	704	0.7+	0.3−
1992 05 07	691	0.2+	0.5+	1998 05 22	704	(2.3−	1.5+)	1999 09 13	699	0.0	0.6−
1994 09 03	801	0.3−	0.5+	1998 06 01	809	0.8−	0.6−	1999 09 13	699	0.5−	0.1+
1994 09 03	801	0.2+	0.4+	1998 06 01	809	0.9−	1.1−	1999 09 13	699	0.6−	0.7−
1994 09 07	801	0.2+	0.4+	1998 06 01	809	0.7−	0.9−				

(11503)* 1990 BF = 1940 BB = 1958 DK₁ = 1976 GE₈ = 1976 GH₈
= 1983 CU₃

Discovered 1990 Jan. 21 by Y. Mizuno and T. Furuta at Kani.

Id. K. Ichikawa (*MPC* 16032), O. Kippes (d, *MPC* 6840), T. Urata (d, *NOC* 1160)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	240.67351		(2000.0)	P		Q	
<i>n</i>	0.27582162	ω	155.83311	−0.50362853		−0.86272710	
<i>a</i>	2.3373147	Ω	324.35918	+0.77940599		−0.43106856	
<i>e</i>	0.1031037	<i>i</i>	4.46763	+0.37267226		−0.26435175	
<i>P</i>	3.57	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1940 01 30	053	(13.9+	45.4−)	X	1992 09 25	691	0.5−	0.8+	1998 05 24	704	0.4−	0.4−
1958 02 18	760	0.9+	0.2+		1992 09 25	691	0.3−	1.0+	1998 05 24	704	0.5−	0.1+
1958 02 18	760	0.3+	1.5+		1992 10 20	095	0.1−	1.1−	1998 05 24	704	0.4−	0.5+
1976 04 01	808	0.9−	1.4−		1992 10 29	801	0.2−	0.5+	1998 05 24	704	0.7−	0.5+
1976 04 01	808	0.6+	0.1+		1992 10 29	801	0.2−	0.4+	1998 05 24	704	(0.9−	2.8+)
1976 04 04	808	0.3−	0.5−		1994 04 08	801	0.6+	0.1+	1999 08 15	859	0.3−	0.2+
1976 04 04	808	1.0−	0.4−		1994 04 08	801	0.5+	0.0	1999 08 15	859	0.3+	0.1+
1983 02 08	330	(5.0+	2.6+)		1994 04 11	808	1.2+	1.9+	1999 08 15	859	0.0	0.2+
1990 01 21	403	(1.3+	2.4+)	Y	1994 04 11	808	2.0+	1.4+	1999 09 07	704	0.1+	0.4+
1990 01 21	403	0.2+	0.2+	Y	1994 04 13	808	(0.2−	3.1−)	1999 09 07	704	0.0	0.0
1990 01 23	403	0.8−	0.3−		1994 04 13	808	0.5+	0.5+	1999 09 07	704	0.3+	0.2+
1990 01 23	403	0.1−	0.7−		1994 04 15	801	0.3+	0.0	1999 09 07	704	0.2+	0.4+
1990 01 26	403	1.2−	0.8+		1994 04 15	801	0.1+	0.1−	1999 09 07	704	0.2−	0.1+
1990 01 26	403	0.4+	0.0		1994 05 10	801	0.3−	0.1−	1999 09 20	681	0.0	0.2+
1990 02 01	403	(3.3+	0.4+)	Y	1994 05 10	801	0.2−	0.3−	1999 09 20	681	0.0	0.4+
1990 02 01	403	(4.1+	0.8−)	Y	1994 05 14	801	0.5−	0.3−	1999 09 21	681	0.5+	0.2−
1992 09 25	691	0.4−	0.9+		1994 05 14	801	0.0	0.1−	1999 09 21	681	0.2+	0.2−

(11504)* 1990 BT = 1978 TD₁ = 1983 BQ = 1992 ST₁₂ = 1997 EM₃₅

Discovered 1990 Jan. 21 by T. Hioki and S. Hayakawa at Okutama.

Id. A. Doppler (*MPC* 33928)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	313.21865		(2000.0)	P		Q	
<i>n</i>	0.28386782	ω	98.83292	+0.37493418		−0.92476167	
<i>a</i>	2.2929360	Ω	328.89497	+0.79329761		+0.35639193	
<i>e</i>	0.1616659	<i>i</i>	7.24122	+0.47969080		+0.13341906	
<i>P</i>	3.47	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1978 10 02	095	0.3+	0.2+	1992 09 27	372	0.3+	0.3+	1997 03 05	704	0.3+	1.2+
1983 01 21	688	1.5−	1.3−	1992 09 28	095	0.6+	0.2+	1999 06 13	703	0.4+	0.1+
1983 01 21	688	0.5+	1.6−	1992 09 28	095	(0.9+	2.6+)	1999 06 13	703	0.2+	0.5−
1990 01 21	877	(0.3−	2.2+)	1992 10 01	372	(3.7−	0.4+)	1999 06 13	703	0.0	0.7−
1990 01 21	402	0.5−	1.0−	1992 10 20	095	1.1−	0.3+	1999 06 13	703	1.5−	0.1+
1990 01 21	402	0.2−	0.8+	1997 02 03	566	0.3−	0.2+	1999 09 21	681	0.0	0.2+
1990 01 21	877	(3.1−	1.8+)	1997 02 03	566	0.2−	0.0	1999 09 21	681	0.2−	0.4+
1990 01 24	877	(3.7−	0.1+)	1997 02 03	566	0.6−	0.1+	1999 09 22	681	0.2−	0.7+
1990 01 24	877	(4.3−	1.9+)	1997 03 04	704	1.6+	0.7+	1999 09 22	681	0.1+	0.1−
1990 01 27	877	(0.9−	3.0+)	1997 03 04	704	1.4+	0.7+				
1990 01 27	877	0.3−	0.5+	1997 03 05	704	0.7+	0.5+				

(11505)* 1990 DW₂ = 1978 EG₁₀ = 1993 SF₁₃ = 1994 WR

Discovered 1990 Feb. 24 by H. Debehogne at the European Southern

Observatory.

Id. K. Kinoshita (*MPC* 24562)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	100.57121		(2000.0)	P		Q	
<i>n</i>	0.15943914	ω	264.64133	−0.45923817		+0.88822110	
<i>a</i>	3.3682638	Ω	338.00668	−0.80088852		−0.42022729	
<i>e</i>	0.0249157	<i>i</i>	1.95716	−0.38428880		−0.18566717	
<i>P</i>	6.18	<i>H</i>	12.4	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1978 03 15	675	0.5+	0.7+	1993 09 18	675	0.3+	0.4−	1999 09 07	704	0.3+	0.8+
1978 03 16	675	0.6+	0.0	1993 09 18	675	0.1−	0.1−	1999 09 07	704	0.1−	0.4+
1987 10 17	675	1.2−	1.4+	1993 09 22	675	0.4+	0.3−	1999 09 07	704	0.2−	0.2−
1987 10 17	675	0.9−	1.0+	1993 09 22	675	0.1+	0.1−	1999 09 07	704	0.2+	0.1−
1990 02 24	809	0.6−	0.7+	1993 09 23	809	0.1+	0.8+	1999 09 09	704	0.5+	0.8+
1990 02 24	809	0.2−	0.7+	1993 09 23	809	0.2+	0.9−	1999 09 09	704	0.6+	0.1+
1990 02 24	809	0.1+	0.5+	1993 09 23	809	0.2−	0.9−	1999 09 09	704	0.0	0.9+
1990 02 25	809	0.2−	0.5+	1994 11 25	411	(0.7−	2.5−)	1999 09 09	704	0.4+	1.0+
1990 02 25	809	0.1+	0.5+	1994 11 25	411	(0.6−	2.6−)	1999 09 09	704	0.2−	0.7+
1990 02 25	809	0.3+	0.3+	1994 11 26	411	0.4−	0.7−	1999 09 11	699	0.6−	0.7+
1990 02 26	809	0.6−	0.3−	1994 11 26	411	0.1−	1.3−	1999 09 11	699	0.3−	0.4+
1990 02 26	809	0.3−	0.2−	1998 05 29	704	(0.6−	3.0+)	1999 09 11	699	0.8+	0.9+
1990 02 26	809	0.0	0.1−	1998 05 29	704	0.5−	0.6−	1999 09 14	704	0.2+	1.1+
1990 02 27	809	1.0+	0.3+	1998 05 29	704	0.1−	0.9+	1999 09 14	704	(2.6−	1.9+)
1990 02 27	809	0.8+	0.3+	1998 05 29	704	0.5−	0.3−	1999 09 14	704	0.1−	0.1−
1990 02 27	809	1.1+	0.3+	1999 08 22	699	0.1−	0.7+	1999 09 14	704	0.0	0.4−
1990 03 02	809	(2.8+	0.5−)	1999 08 22	699	0.1+	0.3−	1999 09 14	704	0.3−	0.5−
1990 03 02	809	(2.8+	0.5−)	1999 08 22	699	0.3−	0.3+	1999 09 18	691	0.2+	0.4−
1990 03 02	809	(3.0+	0.4−)	1999 09 06	691	0.8−	0.7−	1999 09 18	691	0.4+	0.3−
1993 09 16	809	(1.5−	2.4−)	1999 09 06	691	0.8−	0.4−	1999 09 18	691	0.5+	0.3−
1993 09 16	809	(1.7−	3.3−)	1999 09 06	691	0.7−	0.4−				
1993 09 16	809	(2.9−	3.3−)	1999 09 07	704	0.2+	0.3+				

(11506)* 1990 ES₁ = 1991 OA₁

Discovered 1990 Mar. 2 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (*MPC* 18819)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	71.48547		(2000.0)	P	Q		
n	0.25885320	ω	352.68735	+0.19144051	+0.97525277		
a	2.4383742	Ω	288.30149	-0.89451162	+0.12698117		
e	0.0956285	i	6.68978	-0.40397957	+0.18099123		
P	3.81	H	14.8	G	0.15	U	1

Residuals in seconds of arc

1990 02 24	809	0.8-	0.8-	1991 08 10	675	1.0+	1.0-	1999 09 05	703	0.5+	0.0
1990 02 24	809	1.0-	1.4-	1991 08 10	675	(2.2+	1.0-)	1999 09 05	703	1.1+	0.0
1990 02 24	809	1.5-	1.8-	1996 12 19	327	0.1+	0.0	1999 09 05	703	0.8+	0.7+
1990 03 02	809	0.1+	1.7-	1996 12 19	327	0.1-	0.1+	1999 09 08	704	1.7-	2.8-
1990 03 02	809	0.7-	1.7-	1996 12 19	327	0.2+	0.2+	1999 09 08	704	0.1-	1.2-
1990 03 02	809	0.5+	1.9-	1998 05 01	566	0.4-	0.1-	1999 09 08	704	0.1-	0.5-
1990 03 04	809	(0.0	2.8-)	1998 05 01	566	0.3+	0.3+	1999 09 08	704	0.4+	0.1+
1990 03 04	809	1.3-	2.3-	1998 05 01	566	0.2-	0.5+	1999 09 08	704	0.0	0.6-
1990 03 04	809	1.8-	1.9-	1998 05 02	566	0.2-	0.0	1999 09 18	704	1.2+	0.3-
1991 07 16	675	0.3-	1.0-	1998 05 02	566	0.1-	0.1+	1999 09 18	704	0.6+	0.4-
1991 07 16	675	0.3+	1.7-	1998 05 02	566	0.5+	0.2+	1999 09 18	704	0.1+	0.2+
1991 07 18	675	0.6+	1.0-	1999 07 23	704	0.5-	0.3-	1999 09 18	704	0.8+	0.6-
1991 07 18	675	1.0+	1.3-	1999 07 23	704	0.1-	0.4-	1999 09 18	704	0.2+	1.1-
1991 08 07	675	(2.4+	1.6-)	1999 07 23	704	0.2+	1.2-				
1991 08 07	675	(0.4+	2.3-)	1999 09 05	703	0.1-	0.9-				

(11507)* 1990 OF = 1994 LP₃

Discovered 1990 July 20 by E. F. Helin at Palomar.

Id. B. G. Marsden (*MPC* 23973)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

M	15.06988		(2000.0)	P	Q
n	0.22661690	ω	85.37913	+0.89540608	+0.39839602
a	2.6644517	Ω	251.03652	-0.44379411	+0.83464656
e	0.2932378	i	12.13570	+0.03598257	+0.38032320
P	4.35	H	14.0	G 0.15	U 1

Residuals in seconds of arc

1990 07 20	675	(0.1-	4.3-)	1994 06 03	809	1.2-	1.8+	1999 07 22	704	0.1-	0.7+
1990 07 20	675	(0.3+	3.1-)	1994 06 04	809	0.6-	0.1+	1999 07 22	704	0.6+	0.1+
1990 07 22	675	(0.3+	3.3-)	1994 06 04	809	0.3+	1.0+	1999 07 22	704	0.1+	0.4+
1990 07 22	675	1.5+	0.2+	1994 06 04	809	0.9+	0.5-	1999 07 22	704	0.3+	0.3+
1990 08 17	675	0.4+	0.3-	1995 12 09	608	0.4+	0.6-	1999 07 22	704	0.0	0.8+
1990 08 17	675	0.8-	0.0	1995 12 09	608	0.2-	0.3+	1999 09 09	681	0.2-	0.3+
1990 08 19	675	0.2-	0.5-	1996 01 14	608	0.0	1.4+	1999 09 09	681	0.3-	0.0
1990 08 19	675	0.5-	0.4-	1996 01 14	608	0.1+	1.0+	1999 09 12	681	0.2-	0.3+
1994 06 03	809	0.3+	0.5+	1996 01 16	608	0.3+	0.7+	1999 09 12	681	0.3-	0.2+
1994 06 03	809	0.1+	1.0+	1996 01 16	608	0.0	0.7+				

(11508)* 1990 TF₁₃ = 1995 UQ₇

Discovered 1990 Oct. 12 by F. Börngen and L. D. Schmadel at Tautenburg.

Id. S. Nakano (*MPC* 26168)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	207.61166		(2000.0)	P	Q
n	0.21226116	ω	59.69000	-0.80559477	-0.56611743
a	2.7832723	Ω	85.28686	+0.46533756	-0.78712845
e	0.1026689	i	10.09704	+0.36671245	-0.24482617
P	4.64	H	12.9	G 0.15	U 2

Residuals in seconds of arc

1990 10 11	033	0.9+	0.5-	1995 11 16	399	0.1+	0.7-	1999 08 19	113	0.3+	0.7-
1990 10 12	033	0.4-	0.1+	1995 11 16	399	0.6-	1.6+	1999 08 19	113	0.8-	1.0-
1990 10 12	033	0.8+	0.4-	1995 11 17	399	0.5+	0.8+	1999 09 08	113	0.3-	0.4+
1990 10 13	033	0.5+	1.4-	1995 11 17	399	1.4-	0.9+	1999 09 08	113	0.0	0.6+
1990 10 14	033	0.7-	0.3-	1997 02 01	113	0.1-	0.4-	1999 09 13	704	0.1+	0.7+
1995 10 27	399	0.8-	0.6-	1997 02 01	113	0.0	0.2-	1999 09 13	704	0.2-	0.5+
1995 10 27	399	(0.2-	2.8-)	1997 02 01	113	0.1-	0.1-	1999 09 13	704	0.0	0.8+

1995 10 28	399	1.0+	0.5-	1997 04 21	611	0.8+	0.6+	1999 09 13	704	0.1+	0.2+
1995 10 28	399	0.6+	0.2-	1997 04 22	611	0.7-	0.2+				

(11509)* 1990 VL₆ = 1989 SN₇ = 1989 VM₅

Discovered 1990 Nov. 15 by E. W. Elst at the European Southern

Observatory.

Id. T. Kobayashi (*MPC* 23976), S. Nakano (d, *ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	334.67057		(2000.0)	P	Q
n	0.08336088	ω	127.54015	+0.92943852	+0.32149337
a	5.1899262	Ω	214.79053	-0.34768766	+0.92738350
e	0.1431647	i	18.50235	+0.12352056	+0.19131613
P	11.82	H	10.1	G 0.15	U 1

Residuals in seconds of arc

1989 09 29	675	1.4-	0.7-	1998 06 19	704	0.8+	1.4+	1999 07 22	704	0.4+	0.2+
1989 09 29	675	0.2-	0.2-	1998 06 19	704	0.1-	0.0	1999 07 22	704	0.2-	0.3+
1989 11 03	675	0.4-	0.0	1998 06 19	704	0.1-	0.5-	1999 07 22	704	0.1-	0.4+
1989 11 03	675	0.4+	0.5-	1998 06 25	704	0.2+	0.7-	1999 07 22	704	0.3-	0.6+
1989 11 04	675	0.6+	0.2-	1998 06 25	704	0.1+	0.8-	1999 07 22	704	0.5-	0.4+
1989 11 04	675	0.6+	1.2-	1998 06 25	704	0.3-	0.3-	1999 07 25	718	1.5+	1.9+
1990 11 15	809	1.9+	0.1-	1998 06 25	704	0.3-	0.1+	1999 07 25	118	0.4-	0.2+
1990 11 15	809	1.0+	0.1-	1999 07 12	704	0.6+	0.2+	1999 07 25	118	0.2-	0.0
1990 11 15	809	0.9+	0.3-	1999 07 12	704	0.3+	0.1+	1999 09 08	704	1.1+	0.3+
1990 11 17	809	0.4+	0.4+	1999 07 12	704	0.1+	0.1+	1999 09 08	704	0.0	0.1-
1990 11 17	809	1.2+	0.1-	1999 07 12	704	0.1+	0.5-	1999 09 08	704	0.4+	0.7-
1990 11 17	809	0.0	1.0+	1999 07 12	704	0.5-	0.1-	1999 09 08	704	0.3+	0.6-
1990 11 23	809	1.1-	0.3+	1999 07 12	704	0.6-	0.2-	1999 09 08	704	0.5-	0.7-
1990 11 23	809	1.6-	0.5+	1999 07 12	704	0.1+	0.0	1999 09 09	704	0.4+	0.8-
1990 11 23	809	1.7-	0.0	1999 07 12	704	0.4+	0.1+	1999 09 09	704	0.3+	0.2-
1994 02 15	675	0.6-	1.1-	1999 07 12	704	0.7-	0.2+	1999 09 09	704	0.2+	0.9-
1994 02 15	675	0.4-	1.3-	1999 07 12	704	0.1-	0.3+	1999 09 09	704	0.9-	0.7-
1998 06 19	704	0.1-	0.6-	1999 07 19	118	0.5-	0.2-				
1998 06 19	704	0.4+	0.3+	1999 07 19	118	0.4-	0.2-				

(11510)* 1990 VV₈ = 1978 EL₂ = 1998 MB₉

Discovered 1990 Nov. 11 by E. W. Elst at the European Southern

Observatory.

Id. A. Doppler (*MPC* 33226)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	161.81009		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$		
n	0.20436214	ω	355.18233	-0.99663992	-0.08190570		
a	2.8545375	Ω	180.12394	+0.08115795	-0.98655358		
e	0.0756598	i	15.28360	+0.01105694	-0.14143370		
P	4.82	H	12.7	G	0.15	U	2

Residuals in seconds of arc

1978 03 05	095	0.6-	1.4-	1998 05 26	704	0.1-	0.7+	1999 09 05	703	0.8+	0.5+
1988 04 09	675	0.5+	1.2+	1998 05 26	704	0.9-	0.5-	1999 09 05	703	0.1+	0.4+
1988 04 09	675	0.0	0.4+	1998 06 03	704	0.0	0.8+	1999 09 05	703	0.1+	0.5+
1990 11 11	809	0.1+	0.2+	1998 06 03	704	0.9-	0.4-	1999 09 05	703	1.0-	0.1+
1990 11 11	809	0.6+	0.4+	1998 06 03	704	0.9+	1.4-	1999 09 07	704	0.1+	0.1-
1990 11 11	809	0.7+	0.7-	1998 06 03	704	0.2+	0.5-	1999 09 07	704	0.3+	0.1-
1990 11 13	809	1.2-	1.8-	1998 06 19	704	0.9-	0.7+	1999 09 07	704	0.4+	0.1+
1990 11 13	809	0.3-	0.9-	1998 06 19	704	0.4-	0.6+	1999 09 07	704	0.5+	0.5+
1990 11 13	809	0.2+	1.5-	1998 06 19	704	0.2-	0.0	1999 09 07	704	0.2+	0.2+
1990 11 16	809	0.0	1.1-	1998 06 19	704	0.4-	0.3+	1999 09 09	704	0.1+	0.5+
1990 11 16	809	0.3-	0.8-	1998 06 25	704	0.1-	1.5-	1999 09 09	704	0.4-	0.1+
1990 11 16	809	0.3-	0.3-	1998 06 25	704	0.5-	0.6-	1999 09 09	704	0.1-	0.5-
1990 11 17	809	1.2+	0.7+	1998 06 25	704	0.8-	0.7-	1999 09 09	704	0.4+	0.6-
1990 11 17	809	0.2+	1.7+	1998 06 25	704	0.1+	0.9-	1999 09 09	704	0.1-	0.7-
1990 11 17	809	0.8-	0.9+	1999 05 17	703	0.9-	0.4-	1999 09 14	704	0.3-	0.1+
1993 05 29	691	0.7+	0.0	1999 05 17	703	0.6+	0.4+	1999 09 14	704	0.3-	0.0
1993 05 29	691	0.6+	0.2+	1999 05 17	703	0.0	0.1+	1999 09 14	704	0.5-	0.2-
1993 05 29	691	0.5+	0.0	1999 05 17	703	1.2+	0.1+	1999 09 14	704	0.2-	0.0

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1998 05 26	704	0.4+	0.1+	1999 08 22	699	0.5+	0.4+	1999 09 14	704	0.4-	0.4-
1998 05 26	704	1.4+	0.8-	1999 08 22	699	0.3-	0.6+				
1998 05 26	704	(2.3-	1.1-)	1999 08 22	699	0.1+	0.5+				

(11511)* 1990 WK₂ = 1985 QH₁ = 1996 BZ₂

Discovered 1990 Nov. 18 by E. F. Helin at Palomar.

Id. G. V. Williams (*MPC* 26561, *MPC* 34492), A. Doppler (*MPC* 34492)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	323.65737	(2000.0)	P		Q	
<i>n</i>	0.21931388	ω	138.56635	+0.38117184	-0.90095683	
<i>a</i>	2.7232780	Ω	288.08558	+0.78040438	+0.43379691	
<i>e</i>	0.1871058	<i>i</i>	12.59766	+0.49565818	+0.00985028	
<i>P</i>	4.49	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i> 1

Residuals in seconds of arc

1985 08 16	675	(57.1-	0.8+)	1996 01 21	399	0.9-	0.9+	1998 06 26	704	1.2+	1.1-
1985 08 16	675	(54.7-	2.0+)	1996 01 21	399	0.3-	1.8+	1999 07 22	704	0.0	0.2-
1985 08 17	675	2.3-	0.6-	1996 03 18	801	0.0	1.3-	1999 07 22	704	0.3-	0.2-
1985 08 17	675	1.2-	0.6+	1996 03 18	801	0.0	1.8-	1999 07 22	704	0.4-	0.7-
1990 11 18	675	1.5+	0.2+	1996 03 21	801	0.4+	1.0-	1999 07 22	704	0.3-	0.5-
1990 11 18	675	0.8+	0.1-	1996 03 21	801	0.5+	0.5-	1999 07 22	704	0.5+	0.7-
1990 11 19	675	0.8+	0.4-	1998 06 16	426	1.2-	1.2-	1999 09 03	704	0.5-	0.5-
1990 11 19	675	0.5-	0.6-	1998 06 16	426	0.2-	0.9-	1999 09 03	704	0.1-	0.0
1990 12 15	675	(0.1+	3.2-)	1998 06 16	426	0.7-	0.2-	1999 09 03	704	0.3-	0.0
1990 12 15	675	1.9+	0.3-	1998 06 17	426	0.1+	0.7+	1999 09 22	704	0.5-	0.1-
1990 12 17	675	(3.5+	1.9-)	1998 06 17	426	0.2+	0.3+	1999 09 22	704	0.0	0.5+
1990 12 17	675	0.3+	0.9-	1998 06 26	704	1.0+	1.7-	1999 09 22	704	0.1-	0.9+
1996 01 18	399	0.3-	0.5+	1998 06 26	704	1.7+	1.5+	1999 09 22	704	0.1-	1.3+
1996 01 18	399	0.4-	0.0	1998 06 26	704	1.2+	0.3+				

(11512)* 1991 AB₂ = 1969 UO₁ = 1996 TG₅₁

Discovered 1991 Jan. 11 by E. F. Helin at Palomar.

Id. G. V. Williams (*MPC* 28298, unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	156.10788	(2000.0)	P		Q	
<i>n</i>	0.28880148	ω	332.44046	-0.84927646	-0.52792191	
<i>a</i>	2.2667473	Ω	175.68327	+0.49639205	-0.80188419	
<i>e</i>	0.1251225	<i>i</i>	4.02795	+0.17978996	-0.27978598	
<i>P</i>	3.41	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1969 10 16	095	(0.2+	8.5-)	1998 03 03	704	0.2-	0.3+	1999 07 13	704	1.5+	0.9-
1990 12 21	372	(0.1+	2.6+)	1998 03 03	704	0.8-	0.5+	1999 07 19	704	0.1+	0.0
1990 12 21	372	(0.8-	3.7+)	1998 03 03	704	0.4-	0.4+	1999 07 19	704	0.2+	0.2-
1991 01 11	675	0.8+	0.1-	1998 03 04	704	0.6+	0.7+	1999 07 19	704	0.1-	0.1-
1991 01 11	675	0.6+	0.5-	1998 03 04	704	0.0	0.9+	1999 07 21	699	0.7-	0.2+
1991 01 15	675	0.3-	0.1+	1998 03 04	704	0.1+	0.4+	1999 07 21	699	0.1+	1.0+
1991 01 15	675	1.1-	0.0	1998 03 04	704	0.5+	0.0	1999 07 21	699	0.4-	0.7+
1996 10 05	809	0.6-	0.1+	1998 03 04	704	0.2+	0.9+	1999 08 07	699	1.2-	0.6-
1996 10 05	809	0.2+	0.4+	1998 04 27	699	0.3-	0.0	1999 08 07	699	0.2+	0.8+
1996 10 05	809	0.2-	1.3+	1998 04 27	699	0.1+	0.0	1999 08 07	699	0.4-	0.8-
1996 10 06	809	0.2-	1.1+	1998 04 27	699	0.1-	0.2+	1999 08 08	699	0.4+	0.7+
1996 10 06	809	0.1-	1.5+	1998 04 29	566	0.3+	1.1+	1999 08 08	699	0.1-	1.3+
1996 10 06	809	1.3-	1.0+	1998 04 29	566	0.5+	1.1+	1999 08 08	699	0.4-	0.3+
1998 01 24	566	0.6+	0.3-	1998 04 29	566	0.2+	1.1+	1999 09 07	704	0.2-	1.1+
1998 01 24	566	0.7+	0.3-	1999 07 13	704	0.1+	1.0-	1999 09 07	704	0.1-	0.0
1998 01 24	566	0.5+	0.4-	1999 07 13	704	0.3+	0.1-	1999 09 07	704	0.2+	0.5+
1998 03 03	704	0.0	0.6+	1999 07 13	704	0.1+	0.1-	1999 09 07	704	0.3-	0.4+
1998 03 03	704	0.0	0.2+	1999 07 13	704	0.0	0.3-	1999 09 07	704	0.4+	0.0

(11513)* 1991 CE₁ = 1969 JH = 1977 UN₃ = 1987 QO₈ = 1997 GY₁₃

Discovered 1991 Feb. 12 by Y. Kushida and O. Muramatsu at the Yatsugatake South Base Observatory.

Id. K. Ichikawa (*MPC* 29914), S. Nakano (unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	154.99320	(2000.0)	P		Q	
<i>n</i>	0.17463150	ω	333.35274	-0.98174854	+0.18116571	
<i>a</i>	3.1699639	Ω	217.22940	-0.15292913	-0.93289050	
<i>e</i>	0.0699980	<i>i</i>	5.48871	-0.11305964	-0.31127849	
<i>P</i>	5.64	<i>H</i>	12.5	<i>G</i>	0.15	<i>U</i> 1

Residuals in seconds of arc

1969 05 05	095	0.0	1.4-	1997 03 13	809	(1.4-	2.6-)	1998 06 26	704	0.5-	1.4+
1977 10 18	675	0.3-	0.4-	1997 03 13	809	(1.5-	2.5-)	1998 06 26	704	0.0	0.4+
1977 10 19	675	0.1+	0.1-	1997 03 13	809	(1.6-	2.6-)	1999 08 20	470	0.4+	1.0+
1987 08 17	010	(2.5+	23.9+)	1997 04 03	704	0.2-	0.9+	1999 08 20	470	(1.2+	2.5+)
1987 08 17	010	(3.2+	26.0+)	1997 04 03	704	0.3-	0.6+	1999 09 07	704	0.4-	0.2-
1987 08 17	010	(1.7+	25.0+)	1997 04 05	704	0.2+	0.4+	1999 09 07	704	0.4-	0.3-
1991 02 09	675	1.4-	0.2+	1997 04 05	704	0.5+	0.4+	1999 09 07	704	0.1-	0.3-
1991 02 09	675	0.2+	0.3+	1997 04 06	704	0.5+	1.0+	1999 09 07	704	0.3-	0.3+
1991 02 12	896	(0.4+	2.8+)	1997 04 06	704	0.5+	0.1+	1999 09 07	704	1.1-	0.0
1991 02 12	896	0.4-	1.8+	1997 04 07	704	0.5+	0.7+	1999 09 09	704	0.7+	0.1+
1991 02 13	896	0.4-	0.8+	1997 04 07	704	0.1-	1.1+	1999 09 09	704	0.6+	0.4+
1991 02 13	896	1.5+	2.0-	1998 06 24	704	0.6+	0.1+	1999 09 09	704	0.5+	0.4+
1994 10 27	691	0.1-	0.0	1998 06 24	704	0.4-	0.4-	1999 09 09	704	0.3+	0.0
1994 10 27	691	0.1-	0.1+	1998 06 24	704	0.0	0.9+	1999 09 09	704	1.0+	0.2+
1994 10 27	691	0.1+	0.0	1998 06 24	704	(2.6-	0.2-)	1999 09 16	704	0.2+	0.4+
1997 03 11	809	0.1+	0.9-	1998 06 26	704	0.6+	1.2-	1999 09 16	704	0.1+	0.1+
1997 03 11	809	0.1+	1.4-	1998 06 26	704	0.3-	0.2-	1999 09 16	704	0.5-	0.0
1997 03 11	809	0.5-	1.6-	1998 06 26	704	0.8-	1.3-	1999 09 16	704	0.8-	0.1-

(11514)* 1991 CO₁ = 1981 GM = 1989 WU₅ = 1997 GY₃₈

Discovered 1991 Feb. 13 by M. Koishikawa at the Ayashi Station of the Sendai

Observatory.

Id. A. Gnädig (*MPC* 32446)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	211.02602	(2000.0)	P		Q	
<i>n</i>	0.18750497	ω	337.04824	-0.92219573	-0.38672298	
<i>a</i>	3.0231581	Ω	180.20400	+0.37600758	-0.89627339	
<i>e</i>	0.0283719	<i>i</i>	9.83678	+0.09040652	-0.21711596	
<i>P</i>	5.26	<i>H</i>	12.2	<i>G</i>	0.15	<i>U</i> 1

Residuals in seconds of arc

1981 04 05	688	(2.7+	2.7-)	1997 04 07	809	(1.2-	4.7-)	1998 10 09	747	0.2+	0.1-
1981 04 05	688	(0.5+	5.0-)	1997 04 08	809	0.5-	1.0+	1998 10 09	747	1.1+	0.1-
1981 04 07	688	1.1-	1.1+	1997 04 08	809	0.3-	0.5+	1998 10 09	747	0.2+	0.2+
1981 04 07	688	0.8-	0.5-	1997 04 08	809	1.0-	0.2+	1998 10 09	747	0.3-	0.0
1981 04 09	688	0.4-	1.1-	1997 04 09	809	0.5+	1.0+	1998 10 09	747	1.1+	0.3-
1981 04 09	688	2.4+	1.0-	1997 04 09	809	0.2-	0.6+	1999 06 13	703	0.9-	0.5-
1989 11 24	095	(1.1-	3.3+)	1997 04 09	809	0.4-	0.3-	1999 06 13	703	0.2-	1.0+
1991 01 22	675	0.8-	0.5-	1997 04 10	809	1.5+	1.7+	1999 06 13	703	0.1+	0.3-
1991 01 22	675	0.4-	1.3-	1997 04 10	809	1.4+	1.3+	1999 06 13	703	1.1-	0.6+
1991 02 13	391	0.9-	0.0	1997 04 10	809	1.1+	1.0+	1999 09 05	699	0.3+	0.6+
1991 02 13	391	0.7+	0.2+	1998 06 25	704	0.2+	1.1-	1999 09 05	699	0.0	1.1+
1991 02 17	391	(6.1+	0.1-)	1998 06 25	704	1.2-	0.3+	1999 09 05	699	0.2+	1.2+
1991 02 17	391	(7.7+	4.9+)	1998 06 25	704	0.1+	1.5-	1999 09 14	106	0.0	0.8+
1997 04 07	809	(0.1+	5.1-)	1998 06 25	704	0.8+	1.6-	1999 09 14	106	0.1+	0.9+
1997 04 07	809	(0.8-	4.7-)	1998 06 25	704	1.9-	0.2-	1999 09 14	106	0.1+	0.7+

(11515)* 1991 CR₁ = 1984 YV₆

Discovered 1991 Feb. 12 by M. Arai and H. Mori at Yorii.

Id. B. G. Marsden (*MPC* 20507)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	257.66662		(2000.0)	P	Q
<i>n</i>	0.17650321	ω	313.30764	+0.42428528	-0.89649032
<i>a</i>	3.1475138	Ω	111.18223	+0.86538296	+0.35992916
<i>e</i>	0.0879223	<i>i</i>	7.86667	+0.26663522	+0.25837203
<i>P</i>	5.58	<i>H</i>	12.8	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1984 12 20	010	1.0+	0.7-	1998 05 22	704	(0.1+	2.4-)	1999 07 16	704	0.4+	1.3+
1984 12 28	010	0.7-	1.3-	1998 05 23	910	1.0+	0.1+	1999 07 20	699	0.0	0.2-
1991 02 07	875	0.1-	1.0+	1998 05 23	910	0.9+	0.1+	1999 07 20	699	0.1-	0.1-
1991 02 07	875	0.2-	0.6+	1998 05 23	910	1.0+	0.1+	1999 07 20	699	0.0	0.2+
1991 02 12	372	(4.9-	0.6-)	1998 05 24	704	0.2-	0.3-	1999 08 13	703	0.7-	0.4+
1991 02 12	372	0.9-	0.6+	1998 05 24	704	1.5+	0.0	1999 08 13	703	0.1-	0.2+
1991 02 12	875	0.2+	0.1+	1998 05 24	704	0.4-	0.5-	1999 08 13	703	0.1-	0.1+
1991 02 12	875	1.8+	0.3+	1998 05 24	704	0.5-	0.3-	1999 08 13	703	0.8-	0.6-
1991 02 16	372	(0.3+	2.7-)	1998 06 03	704	0.5-	0.2+	1999 09 07	704	0.1-	1.5+
1991 02 16	372	0.1-	0.3+	1998 06 03	704	0.5-	0.0	1999 09 07	704	0.4-	0.7-
1991 02 16	372	0.2+	0.2-	1998 06 03	704	0.8-	0.3-	1999 09 07	704	1.3-	0.9-
1991 02 16	372	0.6-	0.4+	1998 06 03	704	1.2-	0.4-	1999 09 07	704	(0.1-	2.1-)
1991 02 17	875	0.7+	0.2-	1998 06 03	704	1.5-	0.7-	1999 09 07	704	(1.5-	2.4-)
1991 02 20	875	0.1-	0.5+	1999 07 14	704	0.8+	0.1-	1999 09 11	704	0.0	0.5+
1991 02 20	875	0.3-	0.5-	1999 07 14	704	0.3+	0.2-	1999 09 11	704	0.8-	0.9+
1994 09 10	675	0.0	0.0	1999 07 14	704	0.4+	0.1-	1999 09 11	704	0.1-	0.6+
1994 09 10	675	0.5-	1.1-	1999 07 14	704	0.9+	0.1+	1999 09 11	704	0.1+	0.3-
1998 05 22	704	0.5+	0.8-	1999 07 14	704	0.8+	0.1+	1999 09 11	704	0.9-	0.3-
1998 05 22	704	(1.1-	2.1+)	1999 07 16	704	1.5+	0.1-				
1998 05 22	704	0.5-	1.0+	1999 07 16	704	0.9+	0.7+				

(11516)* 1991 ED = 1981 JO₂

Discovered 1991 Mar. 6 by T. Seki at Geisei.

Id. S. Nakano (*MPC* 18128)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	54.21509		(2000.0)	P	Q
<i>n</i>	0.28442299	ω	242.30533	+0.12740300	+0.98913476
<i>a</i>	2.2899513	Ω	35.25367	-0.85936890	+0.14701028
<i>e</i>	0.1072747	<i>i</i>	7.30133	-0.49523083	-0.00064075
<i>P</i>	3.47	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1981 05 05	675	1.1-	0.2-	1998 03 24	704	0.5+	0.4+	1998 04 19	704	0.6-	0.0
1981 05 06	675	1.4+	0.6+	1998 03 24	704	0.2-	0.2-	1998 04 19	704	0.4-	0.7+
1991 03 06	372	0.1+	0.0	1998 03 24	704	0.1+	0.1-	1998 04 19	704	0.1+	0.1+
1991 03 06	372	1.1+	0.3+	1998 03 25	704	0.2+	0.4+	1998 04 19	704	0.9-	0.1-
1991 03 09	372	(6.2-	0.2-)	1998 03 25	704	1.1+	1.1+	1998 04 19	704	2.1-	0.2-
1991 03 09	372	(3.0-	0.4-)	1998 03 25	704	0.5+	0.2-	1999 07 16	704	0.2-	1.0-
1991 03 13	372	2.0-	0.0	1998 03 25	704	0.7+	0.6-	1999 07 16	704	0.8-	1.0-
1991 03 13	372	0.0	1.1-	1998 03 25	704	1.0+	0.6-	1999 07 16	704	0.4+	1.2-
1991 04 02	372	0.6+	1.1-	1998 03 26	704	0.1-	0.1+	1999 09 08	106	0.4-	1.3+
1991 04 02	372	0.9-	0.9+	1998 03 26	704	0.1+	0.5+	1999 09 08	106	0.5-	0.2+
1998 02 26	699	1.7+	0.5-	1998 03 26	704	0.7+	0.0	1999 09 13	704	0.5+	0.3+
1998 02 26	699	0.1-	1.3-	1998 04 03	809	(2.5-	2.6+)	1999 09 13	704	0.0	0.6+
1998 02 26	699	0.9+	0.0	1998 04 03	809	2.1-	1.7+	1999 09 13	704	0.4+	0.0
1998 03 24	704	0.4-	0.0	1998 04 03	809	(2.3-	1.6+)	1999 09 13	704	0.1+	0.4+

(11517)* 1991 EA₄ = 1997 GS₃

Discovered 1991 Mar. 12 by H. Debehogne at the European Southern Observatory.

Id. S. Nakano (*MPC* 29613)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	231.12870		(2000.0)	P	Q
<i>n</i>	0.18005301	ω	119.96613	-0.22471146	-0.97442053
<i>a</i>	3.1060072	Ω	343.01897	+0.89036292	-0.20404700
<i>e</i>	0.1546922	<i>i</i>	0.60122	+0.39592755	-0.09417777
<i>P</i>	5.47	<i>H</i>	13.4	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1991 02 22	511	1.9-	0.1+	1997 03 12	809	(1.3-	3.1+)	1997 04 11	704	0.6+	0.3-
1991 03 12	809	0.8-	0.1+	1997 03 12	809	(0.9-	2.4+)	1997 04 11	704	1.0+	1.6-
1991 03 12	809	0.1-	0.4-	1997 03 13	809	0.6-	0.9-	1999 07 13	704	0.4-	0.2-
1991 03 12	809	0.6+	0.4-	1997 03 13	809	0.3-	0.2-	1999 07 13	704	0.3-	0.7-
1991 03 15	809	0.3+	0.5-	1997 03 13	809	0.6+	0.1-	1999 07 13	704	0.7+	0.4-
1991 03 15	809	0.6+	0.4-	1997 03 13	809	(3.2-	1.6-)	1999 07 13	704	0.1-	0.3-
1991 03 15	809	0.8+	0.3-	1997 03 13	809	1.5-	1.3-	1999 08 07	699	1.0+	0.6-
1993 07 12	809	0.2+	0.6+	1997 03 13	809	(4.2-	1.1-)	1999 08 07	699	0.4+	0.6+
1993 07 12	809	0.2-	0.4+	1997 04 02	400	1.0-	1.0+	1999 08 07	699	0.2+	0.2+
1993 07 12	809	0.3-	0.3+	1997 04 02	400	0.5-	0.7-	1999 09 09	704	0.2-	0.5+
1997 03 11	809	0.7+	0.2+	1997 04 03	704	1.2+	0.3+	1999 09 09	704	0.3+	0.4-
1997 03 11	809	0.4+	1.2+	1997 04 03	704	0.0	0.3+	1999 09 09	704	0.1+	0.5-
1997 03 11	809	0.0	0.4+	1997 04 03	400	0.7-	0.5-	1999 09 09	704	0.8-	1.3-
1997 03 12	809	0.2+	2.0+	1997 04 03	400	0.2-	0.1+				

(11518)* 1991 GB₃ = 1993 QB₄

Discovered 1991 Apr. 8 by E. W. Elst at the European Southern Observatory.

Id. B. G. Marsden (*MPC* 22593)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	173.91133		(2000.0)	P	Q
<i>n</i>	0.17044676	ω	160.49408	-0.99995663	+0.00800170
<i>a</i>	3.2216391	Ω	19.96619	-0.00925229	-0.91213933
<i>e</i>	0.1164594	<i>i</i>	0.79982	+0.00106886	-0.40980217
<i>P</i>	5.78	<i>H</i>	13.3	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1991 03 22	809	1.2+	1.5-	1993 08 19	010	(3.3+	0.8+)	1997 05 05	704	0.0	0.6-
1991 03 22	809	1.4+	1.4-	1993 08 19	010	1.8+	0.1+	1997 05 05	704	0.0	0.2-
1991 03 22	809	1.9+	1.7-	1993 08 19	010	(2.6+	1.1-)	1997 05 05	704	0.3-	0.3-
1991 03 23	809	0.7-	0.7+	1993 08 20	809	1.3-	0.4+	1998 07 02	699	0.3+	0.2-
1991 03 23	809	0.7-	0.7+	1993 08 20	809	1.3-	1.2+	1998 07 02	699	1.0-	0.1+
1991 03 23	809	0.5-	0.6+	1993 08 20	809	1.2-	1.3+	1998 07 02	699	0.0	1.6-
1991 03 24	809	1.4+	1.3+	1993 08 24	809	0.5+	1.4+	1998 08 17	704	0.8+	0.7-
1991 03 24	809	1.5+	1.2+	1993 08 24	809	0.1-	1.6+	1998 08 17	704	(0.8+	3.1-)
1991 03 24	809	1.8+	1.0+	1993 08 24	809	0.1+	0.4+	1998 08 17	704	0.1-	1.2-
1991 03 25	809	0.3-	0.4+	1993 09 19	010	(2.5+	0.3-)	1999 08 22	703	0.3-	0.3-
1991 03 25	809	0.1-	0.3+	1993 09 19	010	(2.4+	1.2+)	1999 08 22	703	0.7-	0.3+
1991 03 25	809	0.0	0.1+	1993 09 20	010	(4.9+	0.3-)	1999 08 22	703	0.1+	0.2+
1991 04 08	809	0.4+	0.3-	1993 09 20	010	(5.4+	0.1-)	1999 08 22	703	0.9+	0.3-
1991 04 08	809	0.1-	1.0-	1993 09 20	010	(4.8+	0.9-)	1999 09 06	691	0.5-	0.3-
1991 04 08	809	0.4-	1.5-	1997 04 02	704	0.2+	0.4+	1999 09 06	691	0.5-	0.4-
1991 04 08	809	0.7-	0.1+	1997 04 02	704	0.3-	0.6+	1999 09 06	691	0.2-	0.5-
1991 04 08	809	0.9-	0.1+	1997 04 06	704	0.0	0.7+	1999 09 07	704	0.1-	0.7-
1991 04 08	809	0.8-	0.5-	1997 04 06	704	0.2+	1.3+	1999 09 07	704	0.1-	0.3+
1991 04 10	809	1.6+	1.4+	1997 04 07	704	0.7+	0.9+	1999 09 07	704	0.3-	0.5-
1991 04 10	809	0.6-	1.6+	1997 04 07	704	0.7-	0.8+	1999 09 07	704	0.1+	0.4-
1991 04 10	809	1.0-	0.1+	1997 04 08	704	0.3+	0.2+	1999 09 07	704	0.9+	1.4+
1991 04 10	809	0.7-	0.2+	1997 04 08	704	0.6+	0.4+	1999 09 11	120	(1.6+	2.0-)
1991 04 10	809	1.8-	0.5+	1997 04 30	704	0.1+	0.2-	1999 09 11	120	0.0	1.0-
1991 04 10	809	1.8-	0.2+	1997 04 30	704	0.2+	0.3-	1999 09 14	704	0.8-	0.4+
1991 04 15	675	0.6+	0.4-	1997 04 30	704	0.2+	0.2+	1999 09 14	704	0.5+	0.2-
1991 04 15	675	0.9+	0.8-	1997 04 30	704	0.1+	0.3-	1999 09 14	704	0.4+	0.2-
1991 04 19	809	0.9-	0.4-	1997 04 30	704	0.1+	0.1+	1999 09 14	704	0.2-	0.7+
1991 04 19	809	(4.2-	0.0)	1997 05 01	704	0.2+	0.1-	1999 09 14	704	0.1-	0.2-
1991 04 19	809	(2.2-	0.5-)	1997 05 01	704	0.2+	0.0	1999 09 14	703	(3.3+	0.7-)
1991 05 15	675	1.2-	0.5-	1997 05 01	704	0.5+	0.1-	1999 09 14	703	0.6+	0.2+
1991 05 15	675	0.5-	0.2-	1997 05 01	704	0.0	0.1+	1999 09 14	703	0.7+	0.4+
1991 05 17	675	0.9+	0.2+	1997 05 01	704	0.1+	0.2-	1999 09 14	703	0.4+	0.3-

1991 05 17 675 0.3- 0.3- 1997 05 05 704 0.2- 0.4-
 1993 08 18 010 (3.3+ 1.5+) 1997 05 05 704 0.1- 0.2-

(11519)* 1991 GZ₄ = 1976 GX = 1999 NC₁₁

Discovered 1991 Apr. 8 by E. W. Elst at the European Southern Observatory.
 Id. G. V. Williams (*MPC* 35284)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	50.87017	ω	215.62158	-0.28666690	+0.95786372		
<i>a</i>	2.3937411	Ω	37.72900	-0.87207309	-0.25318045		
<i>e</i>	0.1550936	<i>i</i>	1.67305	-0.39662401	-0.13563466		
<i>P</i>	3.70	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1976 04 01	095	1.1+	0.1+	1991 05 20	776	0.8-	0.1+	1999 07 13	704	0.1+	0.4-
1991 04 08	809	1.5-	0.6+	1991 05 20	776	0.6-	0.3-	1999 07 13	704	0.7-	0.8+
1991 04 08	809	0.3+	0.5+	1991 05 20	776	0.3+	0.7-	1999 07 13	704	0.3-	0.5+
1991 04 08	809	0.1+	0.4+	1991 05 20	776	0.4+	0.3+	1999 07 13	704	0.7-	0.5+
1991 04 10	809	0.2+	0.8+	1991 05 20	776	0.8-	0.4+	1999 07 16	704	0.1-	0.5+
1991 04 10	809	0.6+	0.1+	1991 05 20	776	0.5-	0.7-	1999 07 16	704	0.2+	0.6+
1991 04 10	809	0.2+	0.2+	1991 05 20	776	0.7-	0.2-	1999 07 16	704	0.2-	0.4-
1991 04 19	809	1.0+	0.3+	1991 05 20	776	0.5-	0.5-	1999 08 07	699	0.7-	0.4+
1991 04 19	809	1.3-	0.4+	1991 05 20	776	0.5-	0.2-	1999 08 07	699	0.9-	1.2+
1991 04 19	809	0.9+	0.7-	1991 05 20	776	0.8-	0.2+	1999 08 07	699	0.1-	0.1+
1991 04 19	809	1.7+	0.5-	1991 05 20	776	1.0-	0.1+	1999 09 03	699	0.0	0.1+
1991 04 19	809	1.8+	0.3-	1991 05 21	776	0.7-	0.4+	1999 09 03	699	1.0-	0.6-
1991 04 19	809	1.8+	0.3-	1991 05 21	776	0.1-	1.0+	1999 09 03	699	0.3-	0.9-
1991 04 19	675	0.3+	1.1-	1991 06 03	776	0.1+	0.1-	1999 09 07	704	1.1+	0.4-
1991 04 19	675	0.9+	0.1-	1991 06 03	776	0.3+	0.3-	1999 09 07	704	0.9+	0.2+
1991 05 15	675	0.6+	1.4-	1991 06 03	776	0.1+	0.5+	1999 09 07	704	0.9+	0.2-
1991 05 15	675	0.4-	0.4-	1996 11 05	691	0.5-	0.5-	1999 09 07	704	1.1+	1.3-
1991 05 19	776	0.5-	0.1+	1996 11 05	691	0.5-	0.5-	1999 09 07	704	0.3+	1.0-
1991 05 19	776	0.4+	1.0+	1996 11 05	691	0.9-	0.2-	1999 09 13	704	0.9+	0.6-
1991 05 20	776	1.4-	0.3+	1998 01 25	691	1.4-	1.9-	1999 09 13	704	0.6+	0.7-
1991 05 20	776	0.7-	0.6-	1998 01 25	691	0.9+	0.5-	1999 09 13	704	0.3+	0.1+
1991 05 20	776	1.9-	0.2-	1998 01 25	691	0.7+	1.4-	1999 09 13	704	0.5+	0.3+
1991 05 20	776	1.4-	0.1-	1999 07 13	704	0.2+	0.1+	1999 09 13	704	0.4+	1.4-

(11520)* 1991 GE₈ = 1989 VE₅

Discovered 1991 Apr. 8 by E. W. Elst at the European Southern Observatory.
 Id. G. V. Williams (*MPC* 25064)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	230.86279	ω	95.88299	-0.36685379	-0.92990491		
<i>a</i>	2.2849935	Ω	15.71754	+0.81036777	-0.33335758		
<i>e</i>	0.0969201	<i>i</i>	5.58538	+0.45686143	-0.15540138		
<i>P</i>	3.45	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1989 11 03	675	0.1-	0.8-	1998 04 22	704	0.8-	0.5-	1998 05 24	704	0.3+	0.4-
1989 11 03	675	(0.9+ 2.7-)		1998 04 22	704	0.9-	1.2-	1998 05 24	704	0.5-	0.5+
1989 11 04	675	0.6+	0.5-	1998 04 22	704	0.2-	1.0-	1999 08 12	699	0.7+	0.7-
1989 11 04	675	0.9+	1.0-	1998 04 25	699	0.2+	0.3+	1999 08 12	699	0.2-	0.0
1991 04 08	809	0.7+	0.9-	1998 04 25	699	0.3+	0.2-	1999 08 12	699	0.0	0.3-
1991 04 08	809	0.1+	1.1-	1998 04 25	699	0.3-	0.2-	1999 09 07	704	0.1+	0.1-
1991 04 08	809	(0.4- 2.6-)		1998 04 29	566	0.3+	0.5-	1999 09 07	704	0.2-	0.0
1991 04 10	809	0.5+	1.3+	1998 04 29	566	0.1+	0.7-	1999 09 07	704	0.1-	0.2+
1991 04 10	809	0.6-	0.8+	1998 04 29	566	0.3+	1.0-	1999 09 07	704	0.8+	1.2+
1991 04 10	809	0.0	0.3+	1998 05 01	704	0.1-	0.3-	1999 09 07	704	0.1+	0.4-
1991 04 15	675	0.5+	0.5-	1998 05 01	704	0.3-	0.8-	1999 09 09	704	0.4-	0.2-
1991 04 15	675	0.7-	0.5-	1998 05 01	704	0.6-	0.6-	1999 09 09	704	0.6-	0.1+
1991 04 19	809	0.8+	1.4+	1998 05 01	704	0.6+	0.3+	1999 09 09	704	0.9+	0.5+
1991 04 19	809	0.1-	2.0+	1998 05 01	704	0.5-	0.2+	1999 09 09	704	0.3+	0.1-
1991 04 19	809	0.6+	1.2+	1998 05 22	704	0.9+	0.2-	1999 09 09	704	0.7-	0.5+
1998 04 21	704	0.1-	0.1+	1998 05 22	704	0.2-	0.5-	1999 09 13	704	0.3-	0.1-

1998 04 21 704 0.4+ 0.1- 1998 05 22 704 0.6- 0.9- 1999 09 13 704 0.4- 0.2+
 1998 04 21 704 0.4+ 0.8- 1998 05 22 704 1.0+ 0.0 1999 09 13 704 0.2- 0.2-
 1998 04 21 704 1.4- 0.9- 1998 05 22 704 0.0 0.6+ 1999 09 13 704 0.2- 0.6+
 1998 04 21 704 0.3+ 0.3+ 1998 05 24 704 0.2+ 0.7+ 1999 09 13 704 0.5- 0.1-
 1998 04 22 704 1.0- 1.8+ 1998 05 24 704 0.5+ 0.6-
 1998 04 22 704 0.6- 0.1+ 1998 05 24 704 0.0 0.5+

(11521)* 1991 GE₉ = 1991 FD₃ = 1988 RS₁

Discovered 1991 Apr. 10 by E. W. Elst at the European Southern
 Observatory.

Id. S. Nakano (*MPC* 19308)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	270.42434	ω	323.84092	+0.11620803	-0.99269137		
<i>a</i>	3.1469692	Ω	119.46506	+0.91981579	+0.09519616		
<i>e</i>	0.1733980	<i>i</i>	2.14257	+0.37474605	+0.07417232		
<i>P</i>	5.58	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1988 09 07	033	0.1+	0.7+	1991 04 15	675	(2.4+ 0.4-)	1997 05 05	704	0.9+	0.1+
1988 09 08	033	0.4-	0.7-	1991 04 15	675	1.3+ 1.7-	1997 05 05	704	0.7+ 0.4+	
1988 09 08	033	1.0+	1.0+	1991 04 19	809	0.8- 0.2+	1997 05 05	704	0.8+	0.1-
1988 09 10	675	0.7-	0.6-	1991 04 19	809	1.6- 0.2-	1999 08 08	699	0.1+	0.5+
1988 09 10	675	0.3-	1.4-	1991 04 19	809	1.7- 0.6-	1999 08 08	699	0.8+	0.2+
1988 09 11	675	0.2-	0.6-	1997 04 06	704	0.3- 0.7+	1999 08 08	699	0.2+	1.9+
1988 09 11	675	0.9-	0.5+	1997 04 06	704	0.3+ 0.9+	1999 09 07	704	0.3+	0.1+
1988 09 12	675	1.8+	0.4-	1997 04 07	809	0.6- 0.2-	1999 09 07	704	0.3+	0.8+
1988 10 07	675	0.8+	0.2-	1997 04 07	809	1.0- 0.1-	1999 09 07	704	0.0	1.1-
1988 10 07	675	0.5+	1.4-	1997 04 07	809	1.6- 0.7-	1999 09 07	704	0.4-	0.5+
1988 10 09	675	1.2+	1.6-	1997 04 08	809	2.1- 1.7-	1999 09 07	704	0.6-	0.3-
1988 10 09	675	0.1-	1.8-	1997 04 08	809	(3.3- 1.4-)	1999 09 09	704	0.4-	0.3+
1991 03 20	809	0.8-	1.4-	1997 04 08	809	(2.9- 3.0-)	1999 09 09	704	0.1+	0.7+
1991 03 20	809	0.3-	1.5-	1997 04 08	704	0.2+ 0.5-	1999 09 09	704	0.1+	0.5+
1991 03 20	809	0.3-	1.4-	1997 04 08	704	0.2+ 0.5+	1999 09 09	704	0.0	0.0
1991 03 21	809	0.0	0.4-	1997 04 30	704	0.0 0.4+	1999 09 09	704	0.6-	0.0
1991 03 21	809	0.3+	0.7-	1997 04 30	704	0.8+ 0.8+	1999 09 13	704	0.6+	0.4-
1991 03 21	809	0.6+	0.4-	1997 04 30	704	1.9+ 0.6+	1999 09 13	704	0.7-	0.1-
1991 04 10	809	1.3+	0.7+	1997 04 30	704	0.4- 0.7+	1999 09 13	704	0.5-	0.5-
1991 04 10	809	0.4-	0.3+	1997 05 05	704	0.9+ 0.6+	1999 09 13	704	0.3-	0.1-
1991 04 10	809	0.6-	0.2+	1997 05 05	704	0.4+ 0.3-	1999 09 13	704	0.2+	1.4-

(11522)* 1991 JF = 1998 FU₉₆

Discovered 1991 May 3 by T. Urata at the Nihondaira Observatory.

Id. G. V. Williams (*MPC* 31717)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	60.59932	ω	23.39387	-0.12783456	+0.98741449		
<i>a</i>	2.3772484	Ω	239.37754	-0.92619054	-0.15243125		
<i>e</i>	0.1017241	<i>i</i>	6.21205	-0.35472442	+0.04215859		
<i>P</i>	3.67	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1991 05 03	385	0.9-	0.1-	1998 03 04	704	1.9-	0.1-	1999 09 05	703	0.6-	0.4+
1991 05 03	385	0.1-	0.3+	1998 03 04	704	(2.5-	0.2-)	1999 09 05	703	0.5-	0.1-
1991 05 05	385	(2.9-	0.0)	1998 03 04	704	1.8-	0.3+	1999 09 08	699	0.5-	0.1-
1991 05 05	385	0.2-	0.1+	1998 03 31	704	0.1+	0.6-	1999 09 08	699	0.3-	0.2+
1991 05 07	385	1.0-	1.2-	1998 03 31	704	0.4-	1.0-	1999 09 08	704	0.0	0.3-
1991 05 07	385	0.6-	0.5+	1998 03 31	704	0.7-	0.4-	1999 09 08	704	0.1+	0.0
1991 05 13	675	0.5-	0.4-	1998 03 31	704	0.8+	0.4-	1999 09 08	699	0.7-	0.6+
1991 05 13	675	0.6+	1.6+	1998 03 31	704	0.6-	0.9-	1999 09 08	704	0.2+	0.0
1991 05 15	675	0.9+	0.4+	1998 04 01	704	0.3-	0.5-	1999 09 08	704	0.5+	0.2+
1991 05 15	675	1.0+	0.4+	1998 04 01	704	0.2+	1.4-	1999 09 08	704	0.3+	0.0
1991 05 17	385	(2.5+	2.4+)	1998 04 01	704	0.7-	0.6-	1999 09 09	704	0.6+	0.6-
1991 05 17	385	0.8+	0.0	1998 04 01	704	0.5+	0.2-	1999 09 09	704	0.4+	0.8-
1992 10 26	691	0.2+	0.3-	1998 04 01	704	1.2-	0.5-	1999 09 09	704	0.1-	0.9-

1992 10 26	691	0.4+	0.2-	1998 04 18	704	0.4-	0.7-	1999 09 09	704	0.6+	1.4-
1992 10 26	691	0.0	0.1-	1998 04 18	704	1.0-	0.6+	1999 09 09	704	0.4+	1.7-
1998 02 22	566	1.3+	0.1-	1998 04 18	704	0.2+	0.1-	1999 09 10	704	0.4-	0.3+
1998 02 22	566	0.9+	0.1+	1998 04 18	704	1.8-	0.6+	1999 09 10	704	1.0+	0.5-
1998 02 22	566	1.0+	0.7-	1999 08 22	888	0.0	0.3+	1999 09 10	704	0.1+	0.2-
1998 03 03	704	0.7+	0.0	1999 08 22	888	0.1+	0.1+	1999 09 10	704	0.7+	0.3-
1998 03 03	704	0.8+	0.6+	1999 09 04	886	0.2-	0.9-	1999 09 14	704	0.2+	0.1+
1998 03 03	704	0.1-	0.9-	1999 09 04	886	0.2+	0.1+	1999 09 14	704	0.1+	0.1-
1998 03 03	704	0.8+	0.5-	1999 09 04	888	0.5+	0.5-	1999 09 14	704	0.3+	0.5+
1998 03 03	704	0.5+	0.2-	1999 09 04	888	0.3+	0.5-	1999 09 14	704	0.1-	0.0
1998 03 04	704	(2.3-	0.1-)	1999 09 05	703	0.9-	0.3-	1999 09 14	704	0.0	0.2+
1998 03 04	704	(2.5-	0.1-)	1999 09 05	703	0.2-	0.3+				

(11523)* 1991 PK₁

Discovered 1991 Aug. 15 by E. F. Helin at Palomar.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	317.15772		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.24285576	ω	252.02304	+0.86451676	-0.46963508
a	2.5443124	Ω	135.52266	+0.50030547	+0.83814190
e	0.1953527	i	14.80534	-0.04801258	+0.27741853
P	4.06	H	13.9	G 0.15	U 2

Residuals in seconds of arc

1991 08 15	675	1.6+	0.6-	1998 05 23	704	0.1+	0.1+	1999 08 13	699	0.6-	0.7+
1991 08 15	675	0.4+	0.6-	1998 05 23	704	1.3+	1.7-	1999 08 13	699	0.2-	0.3+
1991 08 16	675	(1.2-	3.0-)	1998 05 23	704	1.8-	0.1+	1999 08 13	699	0.7-	0.8+
1991 09 05	675	1.2-	0.8-	1998 05 23	704	0.7-	0.6+	1999 09 08	703	0.8-	0.4-
1991 09 05	675	0.1+	1.2-	1999 06 20	703	0.5-	0.0	1999 09 08	703	0.0	0.5-
1991 09 08	675	(0.5-	2.6-)	1999 06 20	703	0.1-	0.1-	1999 09 08	703	(2.9-	2.3+)
1991 09 08	675	(1.6-	4.4-)	1999 06 20	703	0.7+	0.4+	1999 09 08	703	0.1+	0.3+
1997 01 09	691	0.0	0.1+	1999 06 20	703	1.7+	0.3-	1999 09 11	704	0.2-	0.4-
1997 01 09	691	0.0	0.1-	1999 07 16	704	0.3-	0.4-	1999 09 11	704	0.1-	0.0
1997 01 09	691	0.0	0.2-	1999 07 16	704	0.1-	0.6-	1999 09 11	704	0.3+	0.1-
1998 04 24	704	0.9+	0.3+	1999 07 16	704	0.2-	0.6-	1999 09 11	704	0.8+	0.5+
1998 04 24	704	0.8+	0.7-	1999 07 21	699	0.4+	0.6+	1999 09 11	704	0.3+	0.5+
1998 04 24	704	(3.9-	0.0)	1999 07 21	699	0.1+	1.1+				
1998 05 23	704	1.1-	0.1-	1999 07 21	699	0.2-	0.9+				

(11524)* 1991 PY₂ = 1938 DP₁ = 1975 FM = 1992 WA₆

Discovered 1991 Aug. 2 by E. W. Elst at the European Southern Observatory.

Id. K. Kinoshita (*MPC* 23516)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	238.26869		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$		
n	0.26626719	ω	168.26280	-0.67679854	-0.72989015		
a	2.3928985	Ω	324.20588	+0.66145404	-0.54571885		
e	0.1248198	i	9.44100	+0.32314437	-0.41164464		
P	3.70	H	14.0	G	0.15	U	2

Residuals in seconds of arc

1938 02 20	024	(1.3-	4.3-)	1997 01 16	599	1.2-	0.2+	1997 04 07	566	0.8-	0.4-
1975 03 17	095	1.1+	0.6+	1997 01 17	599	0.6-	0.3+	1999 07 23	704	0.5+	0.4+
1991 08 02	809	0.9+	0.6-	1997 02 15	124	0.3+	0.4-	1999 07 23	704	0.4+	0.3+
1991 08 02	809	1.7+	1.4-	1997 02 15	124	1.3+	0.5-	1999 07 23	704	0.1+	0.2+
1991 08 02	809	1.6+	0.4-	1997 02 15	124	0.0	0.4-	1999 07 23	704	0.2-	0.5-
1991 08 07	809	1.4-	1.3-	1997 02 15	124	0.4+	0.2-	1999 09 08	704	0.1+	0.3-
1991 08 07	809	(1.5-	2.3-)	1997 02 15	124	0.6+	0.3-	1999 09 08	704	0.1+	0.1+
1991 08 07	809	(0.2+	2.3-)	1997 02 15	124	0.8+	0.0	1999 09 08	704	0.1-	0.4+
1991 08 14	809	0.2-	0.5-	1997 03 27	689	1.1-	0.5+	1999 09 08	704	0.4+	1.0+
1991 08 14	809	0.4-	0.6-	1997 04 05	566	0.9-	0.3-	1999 09 18	704	0.0	1.0+
1991 08 14	809	1.0-	0.7-	1997 04 05	566	0.6+	0.2-	1999 09 18	704	0.1-	0.8+
1992 11 21	675	(2.0-	2.7-)	1997 04 05	566	1.3+	0.3-	1999 09 18	704	0.2-	0.6+
1992 11 21	675	1.2-	1.8-	1997 04 07	566	0.5-	0.6-	1999 09 18	704	0.2-	0.3+
1992 11 22	675	0.3-	1.9-	1997 04 07	566	1.6-	0.2-	1999 09 18	704	0.4-	0.8+

(11525)* 1991 RE₂₅ = 1997 CJ₄

Discovered 1991 Sept. 11 by H. E. Holt at Palomar.

Id. S. Nakano (*MPC* 29614)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	323.38083		(2000.0)	P	Q
n	0.24081302	ω	251.04798	+0.87801026	-0.47102184
a	2.5586806	Ω	136.94050	+0.47250231	+0.82457478
e	0.2304660	i	7.15728	+0.07641702	+0.31339251
P	4.09	H	14.3	G 0.15	U 1

Residuals in seconds of arc

1991 09 11	675	1.1+	1.8-	1998 05 22	688	0.5-	0.3-	1999 09 07	704	0.3+	0.6+
1991 09 11	675	0.5+	1.6-	1998 05 22	688	0.3-	0.2-	1999 09 09	704	0.0	0.0
1991 09 13	675	0.8+	0.7-	1998 05 22	688	0.3-	0.1-	1999 09 09	704	0.0	0.3-
1991 09 15	675	0.7-	0.1+	1998 05 23	704	(2.9+	2.8-)	1999 09 09	704	0.5-	0.0
1991 09 15	675	0.3-	0.2-	1998 05 23	704	0.3+	1.3+	1999 09 09	704	0.5-	0.1-
1993 02 16	691	0.2+	0.5+	1998 05 23	704	0.0	1.5-	1999 09 09	704	0.0	0.6+
1993 02 16	691	(4.7+	5.7-)	1998 05 23	704	0.1+	1.9-	1999 09 09	704	0.7+	0.2+
1997 02 03	411	0.4-	1.3-	1998 05 23	704	1.1-	0.2-	1999 09 09	704	0.3-	0.1+
1997 02 03	411	1.4+	0.9-	1998 05 28	704	1.0+	0.3-	1999 09 09	704	0.1+	0.2+
1997 02 04	566	0.2-	0.3+	1998 05 28	704	1.0-	0.2-	1999 09 09	704	0.4-	0.3-
1997 02 04	566	0.1+	0.2+	1998 05 28	704	0.2+	1.2+	1999 09 13	704	0.0	0.0
1997 02 04	566	0.0	0.1-	1998 05 28	704	1.4+	2.1+	1999 09 13	704	0.2-	0.0
1997 02 06	411	0.6+	0.4+	1998 05 28	704	(5.0-	1.6+)	1999 09 13	704	0.2-	0.3-
1997 02 06	411	0.1-	0.9+	1999 07 16	704	0.9-	0.3+	1999 09 13	704	0.2-	0.4+
1997 02 12	411	0.5-	0.1+	1999 07 16	704	0.2-	0.3+	1999 09 13	704	0.1-	0.0
1997 02 12	411	1.0-	0.3-	1999 07 16	704	0.5+	0.2-	1999 09 13	106	0.4+	0.3+
1997 03 02	411	0.1-	0.1+	1999 07 16	704	0.4+	1.1-	1999 09 13	106	0.1+	0.4+
1997 03 02	411	0.1-	0.1+	1999 09 07	704	0.4-	0.1-	1999 09 13	106	0.3+	0.0
1998 04 24	704	1.3+	1.1-	1999 09 07	704	0.1-	0.0	1999 09 13	106	0.0	0.6+
1998 04 24	704	(2.5+	0.4-)	1999 09 07	704	0.3+	0.0	1999 09 13	106	0.2+	0.7+
1998 04 24	704	1.7-	1.4-	1999 09 07	704	0.1-	0.5+	1999 09 13	106	0.2+	0.2+

(11526)* 1991 UL₃

Discovered 1991 Oct. 31 by S. Ueda and H. Kaneda at Kushiro.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	339.41931		(2000.0)	P	Q
n	0.23541088	ω	146.43802	+0.99418291	-0.00673915
a	2.5976763	Ω	214.44036	-0.02010701	+0.96888146
e	0.2070703	i	10.95688	+0.10581134	+0.24743341
P	4.19	H	13.7	G 0.15	U 2

Residuals in seconds of arc

1991 10 31	399	0.7+	0.3+	1998 05 01	704	0.0	0.4+	1999 09 08	699	0.8-	0.3+
1991 10 31	399	2.0+	0.1+	1998 05 01	699	0.7+	0.3+	1999 09 08	699	1.0-	0.2-
1991 11 04	399	0.9+	0.6+	1998 05 01	704	0.8-	0.5+	1999 09 08	704	0.8-	0.2-
1991 11 04	399	0.0	0.4+	1998 05 01	699	0.8+	0.4+	1999 09 08	704	0.1-	0.1+
1991 11 05	894	0.0	1.0+	1998 05 01	704	0.1-	0.3+	1999 09 08	704	0.5-	0.2-
1991 11 05	894	0.3-	0.1-	1998 05 01	699	0.1+	0.7+	1999 09 08	704	0.6-	0.1-
1991 11 11	894	0.2-	1.3-	1998 05 01	704	0.7-	0.9+	1999 09 09	704	0.2-	0.1-
1991 11 11	894	0.0	0.3-	1998 05 16	704	0.4-	0.9+	1999 09 09	704	0.4-	0.8-
1991 12 04	399	0.9-	1.0+	1998 05 16	704	(0.5-	2.3+)	1999 09 09	704	0.1-	0.0
1991 12 04	399	0.8-	0.7+	1998 05 16	704	2.1+	0.8-	1999 09 09	704	0.1+	0.3-
1991 12 05	399	0.9-	1.2+	1998 05 16	704	0.7-	0.6+	1999 09 09	704	0.3+	0.2-
1991 12 05	399	0.9-	1.4+	1998 05 16	704	0.4-	1.1+	1999 09 10	704	0.1+	0.3-
1994 05 14	691	0.6-	0.0	1999 07 12	704	0.5-	0.1-	1999 09 10	704	0.1+	0.6-
1994 05 14	691	0.1-	0.8+	1999 07 12	704	0.8+	0.7+	1999 09 10	704	0.2+	0.6-
1994 05 14	691	0.7-	0.5+	1999 07 12	704	0.9+	0.6-	1999 09 10	106	0.2+	0.0
1994 06 11	691	0.3+	0.4+	1999 07 12	704	0.7+	1.1+	1999 09 10	106	0.4-	0.1+
1994 06 11	691	0.2+	0.6+	1999 07 16	596	0.5-	0.8+	1999 09 10	106	0.0	0.2+
1994 06 11	691	0.0	0.5+	1999 07 16	596	0.2-	0.5+	1999 09 13	610	0.4+	0.6-
1998 04 22	704	0.0	0.1-	1999 07 16	596	0.5-	0.2+	1999 09 13	610	0.4+	0.6-
1998 04 22	704	0.8+	0.6+	1999 07 22	704	1.1+	0.0	1999 09 13	610	0.3+	0.6-
1998 04 22	704	0.9+	0.7-	1999 07 22	704	1.3+	0.6+	1999 09 13	610	0.3+	0.7-
1998 04 22	704	0.3-	0.5-	1999 07 22	704	1.0+	0.9+	1999 09 13	610	0.3+	0.8-

M.P.C. 35840

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1998 04 30	699	0.0	0.4+	1999 07 22	704	0.2+	1.0+	1999 09 16	704	0.1-	0.0
1998 04 30	699	0.5+	0.0	1999 07 22	704	0.2-	1.8+	1999 09 16	704	0.3+	0.5+
1998 04 30	699	0.0	0.5+	1999 09 04	703	0.0	0.4-	1999 09 16	704	0.0	0.6-
1998 04 30	566	0.7-	1.2-	1999 09 04	703	0.1-	0.1-	1999 09 16	704	0.1+	0.2-
1998 04 30	566	0.3-	1.2-	1999 09 04	703	0.3-	0.3+	1999 09 16	704	0.3+	0.1+
1998 04 30	566	0.0	1.9-	1999 09 04	703	0.2-	0.5+				
1998 05 01	704	0.2-	0.1+	1999 09 08	699	1.0-	0.5+				

(11527)* 1991 VU₄ = 1974 VD₂

Discovered 1991 Nov. 5 by S. Otomo at Kiyosato.

Id. G. V. Williams (*MPC* 25065)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams							
<i>M</i>	315.80480	(2000.0)	P	Q			
<i>n</i>	0.23247829	ω	252.56602	+0.92554627	-0.37521136		
<i>a</i>	2.6194761	Ω	129.44039	+0.36754846	+0.85809707		
<i>e</i>	0.2320287	<i>i</i>	3.77149	+0.09095179	+0.35055080		
<i>P</i>	4.24	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1974 11 15	095	0.2+	0.1-	1995 10 25	801	0.2-	0.7-	1999 07 16	704	0.1+	0.2+
1984 01 25	675	0.6-	0.3+	1997 01 31	691	0.4-	0.3+	1999 07 16	704	0.2+	0.1+
1984 01 26	675	0.8-	0.3+	1997 01 31	691	0.3+	0.2+	1999 07 16	704	0.2-	0.0
1991 11 05	894	0.5+	0.2-	1997 01 31	691	0.2-	0.2+	1999 08 07	699	0.1-	0.2+
1991 11 05	894	0.6-	0.2-	1998 04 21	704	1.0+	1.6-	1999 08 07	699	0.2+	0.5+
1991 11 10	894	0.0	0.7-	1998 04 21	704	(1.2-	2.2-)	1999 08 07	699	0.1+	0.4+
1991 11 10	894	0.5-	0.5-	1998 04 21	704	0.5+	1.1-	1999 09 07	704	0.5+	0.3+
1991 12 07	894	0.8+	1.6+	1998 04 21	704	(2.5+	0.9+)	1999 09 07	704	0.3-	0.2-
1991 12 07	894	1.1+	0.1+	1998 04 21	704	0.6-	0.5+	1999 09 07	704	0.2+	0.0
1995 08 30	801	0.3+	0.2+	1999 07 13	704	0.2+	0.1-	1999 09 07	704	0.8-	0.5-
1995 08 30	801	0.4-	0.3+	1999 07 13	704	0.1+	0.3-	1999 09 11	704	0.3-	0.3+
1995 09 29	801	0.4+	0.0	1999 07 13	704	0.3+	0.3-	1999 09 11	704	0.1+	0.1+
1995 09 29	801	0.4+	0.4+	1999 07 13	704	0.2-	0.6-	1999 09 11	704	0.1+	0.1-
1995 10 23	801	0.5-	0.3-	1999 07 13	704	0.1-	0.7-	1999 09 11	704	0.2-	0.2+
1995 10 23	801	0.4-	0.5-	1999 07 14	106	0.1+	0.1+	1999 09 11	704	0.2-	0.6+
1995 10 25	801	0.3+	0.7-	1999 07 14	106	0.9-	0.9+				

(11528)* 1991 XH

Discovered 1991 Dec. 3 by Y. Kushida and O. Muramatsu at the Yatsugatake

South Base Observatory.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano							
<i>M</i>	341.28161	(2000.0)	P	Q			
<i>n</i>	0.23371935	ω	238.28972	+0.95862780	-0.22668548		
<i>a</i>	2.6101949	Ω	134.16470	+0.26319350	+0.93625460		
<i>e</i>	0.1636776	<i>i</i>	13.88817	-0.10845238	+0.26840456		
<i>P</i>	4.22	<i>H</i>	12.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1984 01 25	675	1.3+	1.0+	1998 05 23	704	0.0	0.6-	1998 06 04	699	0.7+	0.1+
1984 01 26	675	0.6+	0.8+	1998 05 23	704	0.3+	0.2+	1998 06 05	689	0.2-	0.4-
1991 12 03	896	0.3-	0.4-	1998 05 23	699	0.4+	0.3+	1999 07 16	704	0.2+	0.6-
1991 12 04	896	2.0-	1.7-	1998 05 23	699	0.4+	0.0	1999 07 16	704	0.4+	0.7-
1991 12 09	896	0.5+	1.0-	1998 05 23	699	0.1+	0.3+	1999 07 16	704	0.0	0.6-
1991 12 12	896	0.7+	1.2+	1998 05 26	704	0.3+	0.2-	1999 07 16	704	0.0	0.8-
1991 12 15	896	0.6-	0.8-	1998 05 26	704	0.7-	0.6+	1999 07 16	704	0.1+	1.1-
1992 01 01	896	(3.7+	0.2-)	1998 05 26	704	0.2-	0.5-	1999 09 08	703	0.5-	0.1+
1993 04 15	675	0.4-	0.2+	1998 05 26	704	0.4-	0.8-	1999 09 08	703	0.3-	0.4+
1993 04 15	675	1.3-	1.4+	1998 05 26	704	0.3-	0.2+	1999 09 08	703	0.9-	0.2+
1994 06 08	595	1.0-	0.3+	1998 05 27	699	0.2-	0.2+	1999 09 08	703	1.0-	0.7+
1994 06 08	595	0.8-	0.3+	1998 05 27	699	0.5+	0.1-	1999 09 09	106	0.1-	0.7+
1995 08 24	801	0.5-	0.3+	1998 05 27	699	0.2-	0.8+	1999 09 09	106	0.0	0.5+
1995 08 24	801	0.6-	0.1+	1998 05 27	699	0.5+	0.5-	1999 09 09	106	0.1-	0.4+
1995 08 30	801	0.2-	0.5-	1998 05 27	699	0.4+	0.1-	1999 09 11	699	0.3+	1.2+
1995 08 30	801	0.2-	0.3-	1998 05 27	699	1.1+	0.9-	1999 09 11	699	0.0	1.1+
1995 09 28	801	1.0+	0.5-	1998 05 28	689	0.2-	0.1+	1999 09 11	699	0.1-	0.9+
1995 09 28	801	0.9+	0.4-	1998 06 03	704	0.6-	0.3-	1999 09 13	704	0.3+	0.1-

1995 09 29	801	1.1+	0.6-	1998 06 03	704	0.4-	0.3-	1999 09 13	704	0.5+	0.2-
1995 10 23	801	0.3+	0.3+	1998 06 03	704	0.2-	0.1+	1999 09 13	704	0.1+	0.1+
1995 10 23	801	0.4+	0.2+	1998 06 03	704	0.3+	0.0	1999 09 13	704	0.1+	0.1+
1998 05 23	704	0.5+	0.6-	1998 06 03	704	0.0	0.2-	1999 09 13	704	0.1-	0.2-
1998 05 23	704	0.3+	0.3+	1998 06 04	699	0.3+	0.4+				
1998 05 23	704	0.4-	0.2-	1998 06 04	699	0.0	0.1+				

(11529)* 1992 BJ₁ = 1982 YX₃ = 1995 UX_s

Discovered 1992 Jan. 28 by S. Ueda and H. Kaneda at Kushiro.

Id. S. Nakano (*MPC* 26171)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano							
<i>M</i>	289.17102	(2000.0)	P	Q			
<i>n</i>	0.22433542	ω	1.23711	+0.18212166	-0.98095901		
<i>a</i>	2.6824861	Ω	78.27245	+0.90154535	+0.13920361		
<i>e</i>	0.2469114	<i>i</i>	3.95083	+0.39248909	+0.13543183		
<i>P</i>	4.39	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1982 12 23	095	0.1+	0.2+	1995 10 30	400	1.2+	0.9+	1999 08 12	699	0.0	1.4+
1988 03 18	675	0.4-	0.1+	1995 10 30	400	0.0	2.0-	1999 08 12	699	0.4-	0.6+
1992 01 28	399	0.3+	1.9+	1995 11 13	894	0.4+	0.5+	1999 09 07	704	0.4-	0.2-
1992 01 28	399	0.7-	1.7+	1995 11 13	894	0.1+	1.1-	1999 09 07	704	0.5-	0.7+
1992 01 29	675	1.0+	1.1+	1995 11 16	808	0.4+	0.8+	1999 09 07	704	0.2+	0.9-
1992 01 29	675	1.7+	1.0-	1995 11 16	808	(0.3+	2.6-)	1999 09 07	704	0.6-	0.0
1992 01 29	399	0.4-	1.2+	1995 11 16	894	0.8+	0.3-	1999 09 07	704	0.6-	0.0
1992 01 29	399	(2.6-	0.4+)	1995 11 16	894	2.0-	0.8-	1999 09 09	704	0.2+	0.2-
1992 01 31	675	1.1+	1.2+	1995 12 18	801	0.0	0.2-	1999 09 09	704	0.5+	1.1+
1992 01 31	675	0.1+	0.1-	1995 12 18	801	0.0	0.4-	1999 09 09	704	0.5+	1.4+
1992 02 05	399	0.3+	0.2-	1995 12 23	801	0.3+	0.6-	1999 09 09	704	1.3+	1.5+
1992 02 05	399	1.6-	0.1-	1995 12 23	801	0.6+	0.8-	1999 09 09	704	(2.3+	2.7+)
1992 02 08	399	(3.1-	2.2-)	1996 01 24	691	0.5-	0.9+	1999 09 13	704	0.2-	0.6+
1992 02 08	399	(3.5-	1.7+)	1996 01 24	691	0.2-	0.0	1999 09 13	704	0.7-	0.3+
1995 10 28	400	0.7+	0.0	1996 01 24	691	0.2-	0.4+	1999 09 13	704	0.6-	0.4-
1995 10 28	400	0.6-	0.8-	1999 08 12	699	0.6-	0.6+	1999 09 13	704	1.0-	0.4+

(11530)* 1992 CP₂ = 1995 WU₃

Discovered 1992 Feb. 2 by E. W. Elst at the European Southern Observatory.

Id. S. Nakano (*MPC* 26171)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano							
<i>M</i>	73.10571	(2000.0)	P	Q			
<i>n</i>	0.21192598	ω	74.88862	+0.04652751	+0.99842410		
<i>a</i>	2.7862061	Ω	197.86725	-0.95127393	+0.03470154		
<i>e</i>	0.0099874	<i>i</i>	5.86977	-0.30481652	+0.04410361		
<i>P</i>	4.65	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1992 01 30	809	(0.9-	2.6-)	1995 11 30	691	0.1-	0.5+	1999 08 12	699	0.6-	0.6+
1992 01 30	809	(0.5-	3.1-)	1995 11 30	691	0.6-	0.4+	1999 08 12	699	0.6-	0.1-
1992 01 30	809	(1.1-	2.4-)	1997 03 12	704	0.7+	1.6+	1999 08 12	699	0.2+	0.5+
1992 02 02	809	(1.1+	2.6-)	1997 03 12	704	0.4+	1.1+	1999 09 07	704	0.6+	0.4-
1992 02 02	809	0.2-	2.1-	1998 05 22	704	0.7-	0.9-	1999 09 07	704	0.5+	0.0
1992 02 02	809	(0.6-	2.7-)	1998 05 22	704	0.1+	0.1+	1999 09 07	704	0.3+	0.5-
1992 02 06	809	(0.3-	2.9-)	1998 05 22	704	0.2-	0.9-	1999 09 07	704	0.4+	0.3-
1992 02 06	809	0.8+	2.1-	1998 05 22	704	0.1+	0.1+	1999 09 07	704	0.4+	0.8-
1992 02 06	809	0.0	1.8-	1998 05 22	704	0.0	1.0+	1999 09 09	704	0.5+	0.4-
1992 02 12	809	(1.2+	2.5-)	1998 05 24	704	0.1+	0.6-	1999 09 09	704	0.4+	0.6-
1992 02 12	809	0.0	1.9-	1998 05 24	704	0.0	0.6+	1999 09 09	704	0.3+	0.4+

1999 SEPT. 28

1995 11 23	691	0.4−	0.4+	1998 06 26	704	0.7−	0.3+	1999 09 14	704	0.1+	0.0
1995 11 23	691	0.5−	0.3+	1998 06 26	704	1.0+	1.0−	1999 09 14	704	0.0	0.1+
1995 11 30	691	0.5−	0.5+	1998 06 26	704	0.9−	1.6−				

(11531)* 1992 DL₇ = 1982 DJ₃

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* 23861)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams							
<i>M</i>	7.48266		(2000.0)	P		Q					
<i>n</i>	0.19925740	ω	230.92069	+0.93593777		+0.34993979					
<i>a</i>	2.9030849	Ω	108.56389	−0.30886137		+0.86958974					
<i>e</i>	0.0655904	<i>i</i>	2.38992	−0.16918967		+0.34836163					
<i>P</i>	4.95	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	1				

Residuals in seconds of arc

1982 02 20	033	0.6−	0.4−	1998 06 26	704	0.2−	0.8+	1999 09 08	704	0.8+	0.3−
1982 02 20	033	0.8−	0.5−	1998 06 26	704	0.2−	0.1+	1999 09 09	704	0.1−	0.2−
1982 02 20	033	0.3−	0.2−	1999 07 16	704	0.1−	0.2+	1999 09 09	704	0.6+	0.5−
1982 02 21	033	1.4+	1.5−	1999 07 16	704	0.3+	0.3+	1999 09 09	704	0.2+	0.4−
1982 02 21	033	0.2−	0.1−	1999 07 16	704	0.8+	0.3+	1999 09 09	704	0.2+	0.4−
1992 02 29	809	0.1−	0.3+	1999 07 16	704	0.8+	0.4+	1999 09 09	704	0.2+	0.5−
1992 03 03	809	0.1−	0.6+	1999 07 16	704	0.8+	0.8−	1999 09 14	704	0.3−	0.5−
1992 03 07	809	0.2+	0.6+	1999 08 12	699	1.4−	1.8+	1999 09 14	704	0.5−	0.5−
1994 09 02	675	0.7−	0.5+	1999 08 12	699	0.5−	0.7+	1999 09 14	704	0.0	0.5−
1994 09 02	675	0.3−	0.1−	1999 08 12	699	0.1−	0.8+	1999 09 14	704	0.3−	0.4−
1998 05 24	704	1.0+	0.9−	1999 09 05	699	1.0−	1.0+	1999 09 14	704	0.5+	0.8−
1998 05 24	704	0.3−	1.1−	1999 09 05	699	0.7−	1.0+	1999 09 14	704	0.4−	0.2−
1998 05 24	704	1.6+	0.8−	1999 09 05	699	0.2−	2.0+	1999 09 14	704	0.3−	0.0
1998 05 24	704	1.2+	1.3−	1999 09 07	704	0.1+	0.7−	1999 09 14	704	0.5−	0.4−
1998 05 24	704	0.7−	0.6−	1999 09 07	704	0.0	0.4−	1999 09 14	704	0.3−	0.6−
1998 06 24	704	(2.5+ 1.5−)		1999 09 07	704	0.7+	0.5−	1999 09 14	704	0.7−	0.3−
1998 06 24	704	0.6+	0.7−	1999 09 07	704	0.8+	0.3−	1999 09 14	703	0.0	0.4+
1998 06 24	704	0.1−	0.4+	1999 09 07	704	0.3+	0.2−	1999 09 14	703	0.1−	0.5+
1998 06 24	704	0.2−	1.8+	1999 09 08	704	0.3+	0.8−	1999 09 14	703	0.3−	0.7+
1998 06 24	704	1.2−	1.4+	1999 09 08	704	0.4+	1.0−	1999 09 14	703	0.1+	1.1+
1998 06 26	704	0.7−	0.3+	1999 09 08	704	1.2+	0.8−				
1998 06 26	704	0.8−	0.4−	1999 09 08	704	0.6+	0.6−				

(11532)* 1992 ER₄

Discovered 1992 Mar. 1 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							
<i>M</i>	30.05849		(2000.0)	P		Q					
<i>n</i>	0.20046907	ω	243.53172	+0.67844077		+0.73282559					
<i>a</i>	2.8913753	Ω	69.29055	−0.65277082		+0.63367968					
<i>e</i>	0.0471814	<i>i</i>	3.17547	−0.33705844		+0.24782395					
<i>P</i>	4.92	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	1				

Residuals in seconds of arc

1992 03 01	809	1.0+	1.1+	1998 05 27	426	0.3−	1.0−	1999 09 07	704	0.3+	1.2−
1992 03 04	809	0.2+	1.0+	1998 05 27	426	0.1−	0.7−	1999 09 07	704	1.3−	0.2−
1992 03 06	809	0.0	0.9+	1998 06 01	809	1.6+	1.1+	1999 09 07	704	0.8−	0.8−
1992 04 04	809	0.2−	0.4−	1998 06 01	809	0.7+	0.3+	1999 09 09	704	0.2+	0.6−
1997 02 12	411	0.1+	0.2+	1998 06 01	809	0.4+	0.5+	1999 09 09	704	0.6−	0.1+
1997 02 12	411	0.5+	0.1+	1998 06 02	809	0.6+	1.5+	1999 09 09	704	0.6−	0.2+
1997 02 13	411	0.7+	0.8+	1998 06 02	809	0.3+	0.5+	1999 09 09	704	0.3−	0.2+
1997 02 13	411	0.5−	0.8+	1998 06 02	809	0.3−	0.7+	1999 09 09	704	0.3−	0.1−
1998 05 22	704	0.5+	0.1+	1998 06 03	704	(1.2− 2.2−)		1999 09 11	699	1.1+	0.5+
1998 05 22	704	0.8−	0.2−	1998 06 03	704	0.4−	1.2+	1999 09 11	699	0.2+	0.8+
1998 05 22	704	(2.2− 0.5−)		1998 06 03	704	0.6+	0.9+	1999 09 11	699	0.7+	0.2−
1998 05 22	704	1.2−	0.9−	1998 06 03	704	0.1−	1.0+	1999 09 12	106	0.4−	0.2−
1998 05 22	704	0.5−	1.4+	1998 08 22	703	0.5+	0.1−	1999 09 12	106	0.1−	0.3+
1998 05 23	426	0.1−	1.3−	1999 08 22	703	0.7+	0.7+	1999 09 13	106	0.5+	0.3+
1998 05 23	426	0.7+	1.0−	1999 08 22	703	0.9−	0.1+	1999 09 14	704	0.5−	0.5+

M.P.C. 35841

1998 05 23	426	0.4+	0.8−	1999 08 22	703	0.4−	0.6+	1999 09 14	704	0.6−	0.3+
1998 05 24	704	0.9−	1.1−	1999 09 05	699	0.0	0.9+	1999 09 14	704	0.1−	0.1+
1998 05 24	704	(0.1− 2.1−)		1999 09 05	699	1.4+	0.8+	1999 09 14	704	0.7−	0.8+
1998 05 24	704	(1.0+ 2.5−)		1999 09 05	699	0.5+	1.3+	1999 09 14	704	0.4−	0.1−
1998 05 24	704	0.6−	0.5−	1999 09 07	704	0.0	0.2−				
1998 05 27	426	0.4−	0.6−	1999 09 07	704	0.2−	0.5−				

(11533)* 1992 EG₆ = 1998 KW₈

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* 31957)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams							
<i>M</i>	63.18481		(2000.0)	P		Q					
<i>n</i>	0.18914644	ω	130.15081	−0.12682915		+0.98398845					
<i>a</i>	3.0056421	Ω	132.09268	−0.95365333		−0.08623120					
<i>e</i>	0.0929387	<i>i</i>	9.71525	−0.27287304		−0.15598368					
<i>P</i>	5.21	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	1				

Residuals in seconds of arc

1992 03 01	809	0.3−	0.2−	1998 05 23	699	0.3−	0.3−	1998 07 17	699	1.6−	0.2+
1992 03 02	809	0.1−	0.2+	1998 05 24	699	0.2+	0.7−	1998 07 17	699	0.5−	0.6+
1992 03 05	809	0.1−	0.8+	1998 05 24	699	0.4−	1.4−	1998 08 12	699	0.0	0.2+
1992 03 07	809	0.2+	0.2+	1998 05 24	699	0.3+	0.3−	1998 08 12	699	0.1−	0.1−
1992 04 04	809	0.4+	0.3−	1998 05 26	704	0.5−	0.8−	1998 08 12	699	0.1−	0.1+
1994 09 10	675	0.1−	0.0	1998 05 26	704	1.4+	1.4+	1999 09 07	699	0.5−	0.2+
1994 09 10	675	0.7+	1.0−	1998 05 26	704	0.3+	0.1+	1999 09 07	699	0.3+	0.0
1998 04 18	688	0.7−	0.5+	1998 05 26	704	0.2+	0.3−	1999 09 07	699	0.3−	0.7+
1998 04 18	688	0.8−	0.6+	1998 05 26	704	0.1−	0.6+	1999 09 09	704	0.3+	0.3+
1998 04 18	688	0.8−	0.6+	1998 06 03	704	0.1+	0.2+	1999 09 09	704	0.4+	0.1−
1998 05 05	699	0.1+	0.5+	1998 06 03	704	1.3+	1.1+	1999 09 09	704	0.5−	0.4+
1998 05 05	699	0.1−	0.4−	1998 06 03	704	0.6+	0.8−	1999 09 09	704	0.4−	0.6−
1998 05 05	699	0.7−	0.1−	1998 06 03	704	0.0	0.2+	1999 09 09	704	0.4−	0.9−
1998 05 23	704	0.2+	0.5−	1998 06 04	699	0.5+	0.3−	1999 09 13	704	0.2+	0.4+
1998 05 23	704	0.8+	0.2−	1998 06 04	699	0.7+	0.3−	1999 09 13	704	0.1−	0.4+
1998 05 23	704	0.0	0.0	1998 06 04	699	0.2−	0.6+	1999 09 13	704	0.0	0.4+
1998 05 23	704	0.3−	0.7−	1998 06 28	699	0.6+	0.7+	1999 09 13	704	0.3+	0.1+
1998 05 23	704	0.1−	0.8−	1998 06 28	699	0.2+	0.1+	1999 09 13	704	0.3+	0.1−
1998 05 23	699	0.1+	0.4−	1998 06 28	699	0.4+	0.6+				
1998 05 23	699	0.1−	0.2−	1998 07 17	699	1.2−	0.1+				

(11534)* 1992 EB₁₆ = 1989 SR₁₁ = 1998 MT₂₀

Discovered 1992 Mar. 1 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. A. Doppler (*MPC* 33681)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams							
<i>M</i>	33.11042		(2000.0)	P		Q					
<i>n</i>	0.19782077	ω	106.22469	+0.69727378		+0.71672683					
<i>a</i>	2.9171233	Ω	207.99315	−0.66596469		+0.64228887					
<i>e</i>	0.0644005	<i>i</i>	1.29157	−0.26514203		+0.27160204					
<i>P</i>	4.98	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	1				

Residuals in seconds of arc

1989 09 30	809	0.3−	0.7−	1998 06 24	704	0.0	0.1−	1999 09 07	704	0.0	0.6−
1989 09 30	809	0.1+	0.6−	1998 06 24	704	1.5−	0.0	1999 09 07	704	0.3+	1.0−
1989 09 30	809	0.3+	0.4−	1998 06 24	704	0.7−	0.6+	1999 09 07	704	0.4−	0.3−
1989 10 01	809	0.3−	0.9+	1998 06 24	704	0.1−	0.8+	1999 09 07	704	0.2−	0.9−
1989 10 01	809	0.1−	0.8+	1998 06 26	704	0.6+	0.7−	1999 09 07	704	0.5−	0.7−
1989 10 01	809	0.0	1.0+	1998 06 26	704	1.5+	0.0	1999 09 09	704	0.0	0.2+
1992 03 01	809	0.1+	0.4+	1998 06 26	704	1.5−	1.8−	1999 09 09	704	0.2−	0.2+
1992 03 03	809	0.6−	0.3−	1998 06 26	704	(0.4−	2.7+)	1999 09 09	704	0.4−	0.1+
1992 03 06	809	0.8+	0.3−	1999 07 16	704	0.3−	0.1−	1999 09 09	704	0.8+	1.3−
1992 04 07	809	0.5−	0.2−	1999 07 16	704	0.4−	0.3−	1999 09 09	704	0.2−	0.2−
1998 05 24	704	(1.0−	2.2−)	1999 07 16	704	1.0−	0.4−	1999 09 14	703	0.4−	0.2+
1998 05 24	704	(2.8+	1.0−)	1999 07 16	704	0.2+	0.5−	1999 09 14	703	0.2+	0.5+
1998 05 24	704	0.0	1.4+	1999 08 22	699	0.2−	0.6+	1999 09 14	703	0.6+	1.1+

1998 05 24 704 1.8+ 0.9+ 1999 08 22 699 0.9+ 0.7+ 1999 09 14 703 1.3+ 0.3+
 1998 06 24 704 0.0 0.9- 1999 08 22 699 0.1- 1.1+

(11535)* 1992 EQ₂₇ = 1989 SY₉

Discovered 1992 Mar. 4 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. T. Kobayashi (*MPC* 25730)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.19716538	ω	131.77741	+0.47881475	+0.87788414		
<i>a</i>	2.9235842	Ω	166.82464	-0.81488688	+0.44759028		
<i>e</i>	0.0710472	<i>i</i>	1.87917	-0.32664324	+0.17024209		
<i>P</i>	5.00	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1989 09 26	809	1.5-	0.0	1995 11 26	411	0.7+	0.4-	1998 06 03	704	0.2-	0.7-
1989 09 26	809	1.0-	0.0	1995 11 26	411	0.6-	0.8+	1998 06 03	704	0.8+	0.5+
1989 09 26	809	0.5-	0.1+	1997 03 05	691	0.5+	0.1+	1998 06 03	704	1.3+	0.5-
1989 09 28	809	0.6+	0.8+	1997 03 05	691	0.5+	0.1+	1999 08 12	699	0.0	1.5-
1989 09 28	809	0.8+	0.9+	1997 03 05	691	0.5+	0.1+	1999 08 12	699	0.3-	0.7-
1989 09 28	809	0.9+	0.8+	1998 05 06	696	1.0+	0.1-	1999 08 12	699	1.1-	0.0
1989 09 29	809	0.5-	0.5-	1998 05 06	696	0.3+	1.2+	1999 09 07	704	0.3-	0.3+
1989 09 29	809	0.3-	0.5-	1998 05 06	696	1.6+	1.2+	1999 09 07	704	0.7-	0.9+
1989 09 29	809	0.1+	0.9-	1998 05 06	696	0.7-	0.5-	1999 09 07	704	0.2-	0.2+
1989 09 29	675	0.4+	0.3+	1998 05 06	696	1.3-	0.5-	1999 09 07	704	0.1-	0.2-
1989 09 29	675	1.0+	0.7+	1998 05 22	704	0.1+	0.2+	1999 09 07	704	0.9-	0.8-
1992 02 25	675	(0.3+ 2.5+)		1998 05 22	704	0.8-	0.2-	1999 09 09	704	0.4+	0.4+
1992 02 25	675	0.1-	1.3-	1998 05 22	704	0.0	1.2+	1999 09 09	704	0.2-	0.5+
1992 03 04	809	0.7-	0.9+	1998 05 22	704	(1.6- 2.2+)		1999 09 09	704	0.4+	0.6+
1992 03 06	691	0.3+	0.2-	1998 05 22	704	0.0	0.3-	1999 09 09	704	0.0	0.4+
1992 03 06	691	0.1-	0.2+	1998 05 24	704	0.2+	0.4-	1999 09 09	704	0.4+	0.3+
1992 03 06	691	0.2-	0.3+	1998 05 24	704	0.3+	0.1+	1999 09 14	704	0.5+	0.2-
1992 03 07	809	0.3-	0.9+	1998 05 24	704	(1.3- 2.2+)		1999 09 14	704	0.2+	0.2-
1992 04 06	809	0.5-	0.7-	1998 05 24	704	(0.3- 2.5-)		1999 09 14	704	0.6+	0.1-
1993 05 23	809	(0.3- 3.6-)		1998 05 24	704	(1.7- 2.1-)		1999 09 14	704	0.5+	0.1-
1993 05 23	809	(0.1- 2.5-)		1998 06 03	704	1.3-	0.4+	1999 09 14	704	0.5+	0.8-
1993 05 23	809	(0.7+ 3.2-)		1998 06 03	704	1.0-	1.0-				

(11536)* 1992 FZ = 1986 EP₁

Discovered 1992 Mar. 26 by S. Ueda and H. Kaneda at Kushiro.

Id. S. Nakano (*MPC* 29100)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18002100	ω	158.77656	-0.89647990	-0.44285919		
<i>a</i>	3.1063753	Ω	354.87008	+0.38037298	-0.75285614		
<i>e</i>	0.0893219	<i>i</i>	9.08961	+0.22724477	-0.48691209		
<i>P</i>	5.47	<i>H</i>	12.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1986 03 06	688	1.0-	1.8+	1997 02 03	411	1.3+	0.2-	1999 07 14	704	0.5+	0.9-
1986 03 06	688	1.9+	0.2-	1997 02 04	411	1.8+	0.2-	1999 07 14	704	0.6-	0.4+
1992 03 26	399	0.3+	1.0-	1997 02 04	411	0.6+	0.1+	1999 09 07	704	0.5-	0.6+
1992 03 26	399	0.7+	0.6-	1997 03 01	399	0.8+	0.7+	1999 09 07	704	0.2-	0.7+
1992 03 28	399	2.1-	0.2-	1997 03 01	399	0.3-	0.6+	1999 09 07	704	0.0	0.6+
1992 03 28	399	1.4-	0.1-	1997 03 03	399	0.4-	0.7+	1999 09 07	704	0.1+	0.3+
1992 04 23	399	(3.1+ 0.7+)		1997 03 03	399	0.3-	0.6+	1999 09 07	704	0.3-	0.3+
1992 04 27	399	1.3+	0.9+	1997 03 08	399	1.8-	0.5-	1999 09 11	704	0.4-	0.1-
1992 04 27	399	0.5-	0.4-	1997 03 08	399	1.7-	0.0	1999 09 11	704	0.6-	0.2-
1992 05 02	399	0.0	1.0+	1999 07 14	704	0.0	0.7+	1999 09 11	704	0.3-	0.4+
1992 05 02	399	1.3+	0.3-	1999 07 14	704	0.0	0.1-	1999 09 11	704	0.4+	0.1+
1997 02 03	411	1.2+	0.5-	1999 07 14	704	0.5+	0.3-	1999 09 11	704	0.1-	0.7+

(11537)* 1992 HY₆ = 1976 KF₂

Discovered 1992 Apr. 29 by F. Börngen at Tautenburg.

Id. G. V. Williams (*MPC* 30450)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.30345725	ω	164.24831	-0.26813398	+0.95946377		
<i>a</i>	2.1931637	Ω	90.13749	-0.89299351	-0.21372726		
<i>e</i>	0.1450102	<i>i</i>	4.97929	-0.36147859	-0.18371152		
<i>P</i>	3.25	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1976 05 29	413	0.2-	0.5-	1997 12 24	327	0.2-	0.2+	1999 07 16	704	0.7-	0.7+
1976 05 29	413	0.2-	0.4-	1997 12 29	566	0.1-	1.3+	1999 07 16	704	0.8-	0.8+
1976 05 30	413	0.3+	0.5+	1997 12 29	566	0.3+	1.1+	1999 07 16	704	0.7-	0.0
1976 05 30	413	0.1+	0.1-	1997 12 29	566	0.0	1.2+	1999 07 16	704	0.6+	0.1-
1992 04 29	033	0.2+	0.0	1998 01 25	566	0.1-	0.4+	1999 07 16	704	0.4+	0.2+
1992 04 29	033	0.4+	0.2+	1998 01 25	566	0.0	0.3+	1999 07 16	704	0.3+	0.2-
1992 04 30	033	0.3+	0.8+	1998 01 25	566	0.1-	0.1+	1999 07 16	704	0.5+	0.1-
1992 05 03	033	0.1+	0.5+	1999 07 14	704	0.1-	0.4+	1999 09 11	704	0.1-	0.1+
1992 05 04	033	0.1-	0.4+	1999 07 14	704	0.4-	0.1-	1999 09 11	704	0.3+	0.7+
1992 05 05	033	0.2-	0.2+	1999 07 14	704	0.5-	0.3+	1999 09 11	704	0.2+	0.5+
1997 12 24	327	0.3+	0.0	1999 07 14	704	0.4-	0.1+	1999 09 11	704	0.3+	0.6+
1997 12 24	327	0.9+	0.1+	1999 07 14	704	0.8-	0.2+	1999 09 11	704	0.2+	0.6+

(11538)* 1992 OJ₈

Discovered 1992 July 22 by H. Debehogne and À. López G. at the European Southern Observatory.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28340922	ω	18.69602	+0.76056914	+0.64138071		
<i>a</i>	2.2954089	Ω	300.98697	-0.60967234	+0.65213991		
<i>e</i>	0.1321819	<i>i</i>	6.75407	-0.22323579	+0.40415879		
<i>P</i>	3.48	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1992 07 22	809	1.3+	0.0	1994 01 09	675	(0.6+	2.3-)	1999 07 13	106	0.1-	0.5+
1992 07 22	809	1.7+	0.2-	1998 01 08	688	0.2-	0.1-	1999 07 14	704	0.6+	0.6+
1992 07 22	809	2.0+	0.0	1998 01 08	688	0.5-	0.1-	1999 07 14	704	0.1+	0.4+
1992 07 23	809	1.1+	0.0	1998 01 24	566	0.0	0.0	1999 07 14	704	0.1+	0.5+
1992 07 23	809	1.5+	0.2-	1998 01 24	566	0.3+	0.1+	1999 07 14	704	0.1+	0.0
1992 07 23	809	1.9+	0.5-	1998 01 24	566	0.1+	0.2-	1999 07 14	704	0.4-	0.4+
1992 07 27	809	0.3-	0.9-	1998 02 25	566	0.2+	0.2-	1999 07 15	120	0.1-	0.2+
1992 07 27	809	0.0	0.6-	1998 02 25	566	0.1+	0.4-	1999 07 15	120	0.7+	0.2+
1992 07 27	809	0.8+	0.5-	1998 02 25	566	0.3+	0.5-	1999 07 15	120	0.4+	0.1-
1992 07 28	809	0.7-	1.0-	1998 03 03	704	0.6-	0.5-	1999 07 15	120	0.3-	0.3+
1992 07 28	809	0.6-	0.4-	1998 03 03	704	0.2+	0.3+	1999 07 16	704	0.1+	0.2+
1992 07 28	809	0.3+	0.3-	1998 03 03	699	0.1-	0.0	1999 07 16	704	0.7+	0.4+
1992 07 28	809	1.3-	0.4+	1998 03 03	699	0.0	0.5-	1999 07 16	704	0.0	0.1-
1992 07 28	809	0.6-	0.5+	1998 03 03	699	0.7+	0.1-	1999 07 16	704	0.2-	0.5-
1992 07 28	809	0.3+	0.4+	1998 03 03	704	0.1+	0.2+	1999 07 16	704	0.3+	0.0
1992 07 31	809	0.6-	0.5+	1998 03 03	704	0.3+	0.5-	1999 07 16	704	0.2-	1.0-
1992 07 31	809	0.2-	0.5+	1998 03 03	704	0.3-	0.0	1999 07 16	704	1.2+	0.4-
1992 07 31	809	0.0	0.7+	1998 03 04	704	(2.3-	0.3+)	1999 08 07	699	0.7-	0.3+
1992 08 04	809	0.6+	1.3-	1998 03 04	704	(2.2-	0.3+)	1999 08 07	699	1.0-	0.5+
1992 08 04	809	0.2+	1.0-	1998 03 04	704	(2.6-	0.6-)	1999 08 07	699	0.6-	0.5+
1992 08 04	809	0.2+	0.7-	1998 03 04	704	(2.6-	0.2+)	1999 08 08	699	0.9-	0.1-
1992 08 05	809	1.6-	1.5-	1998 03 04	704	(2.7-	0.6-)	1999 08 08	699	0.7-	0.6+
1992 08 05	809	1.5-	1.7-	1998 03 24	691	0.0	0.9+	1999 08 08	699	0.6-	0.5+
1992 08 05	809	1.5-	1.4-	1998 03 24	691	0.5-	0.6+	1999 09 05	699	0.1+	0.0
1993 12 17	411	0.4+	0.3+	1998 03 24	691	0.9-	0.4+	1999 09 05	699	0.7-	0.3-
1993 12 17	411	0.0	0.2+	1999 07 12	106	1.3-	0.3+	1999 09 05	699	0.5-	0.8-
1993 12 18	411	0.1-	1.3-	1999 07 12	106	0.6-	0.4-	1999 09 07	704	1.6+	0.8-
1993 12 18	411	0.4-	0.6-	1999 07 12	106	0.1-	0.5+	1999 09 07	704	0.4+	0.4-
1993 12 18	411	0.1-	0.3-	1999 07 13	106	0.3-	1.0+	1999 09 07	704	0.7+	1.5+
1994 01 09	675	0.5-	1.5-	1999 07 13	106	0.2+	0.6+	1999 09 07	704	0.3-	1.4+

(11539)* 1992 PQ₂ = 1982 UU₉ = 1996 YX₁

Discovered 1992 Aug. 2 by H. E. Holt at Palomar.

Id. G. V. Williams (*MPC* 28848)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	337.82691		(2000.0)		P		Q
<i>n</i>	0.28713149	ω	104.39505		+0.96972396		-0.22273420
<i>a</i>	2.2755279	Ω	268.54808		+0.16702516		+0.90404688
<i>e</i>	0.1275067	<i>i</i>	5.74819		+0.17815175		+0.36481325
<i>P</i>	3.43	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1982 10 22	095	0.2+	1.4+	1996 12 20	327	0.5+	0.6-	1999 07 23	704	0.0	0.9+
1992 08 02	675	0.7+	1.1-	1996 12 20	327	0.6+	0.4-	1999 07 23	704	0.8+	1.1+
1992 08 02	675	0.4+	0.2-	1996 12 20	327	0.0	0.2-	1999 07 23	704	0.7+	0.5-
1992 08 03	675	0.7-	1.6-	1996 12 21	327	0.7-	0.6-	1999 09 08	704	0.1-	0.2+
1992 08 03	675	(2.3-	0.2-)	1996 12 21	327	1.3-	0.3+	1999 09 08	704	0.2+	0.7+
1992 08 06	675	(0.5+	2.2-)	1996 12 21	327	0.0	0.0	1999 09 08	704	0.1-	0.2+
1992 08 06	675	0.9-	1.2-	1998 04 19	688	0.0	0.8+	1999 09 08	704	0.1+	0.4+
1992 08 06	675	0.6+	0.7+	1998 04 19	688	0.1-	0.5+	1999 09 08	704	0.7-	0.9+
1992 08 06	675	0.8+	0.0	1998 04 19	688	0.1+	0.7+	1999 09 16	704	0.6-	0.1-
1992 08 21	675	0.7-	0.8+	1998 05 22	688	0.1+	0.0	1999 09 16	704	0.3-	0.4+
1992 08 21	675	(1.2+	3.2-)	1998 05 22	688	0.1+	0.1+	1999 09 16	704	0.6-	0.3+
1992 08 27	675	0.6+	0.9-	1998 05 22	688	1.1+	0.0	1999 09 16	704	0.2-	0.0
1992 08 27	675	0.4-	0.9-	1999 07 23	704	1.1+	0.2+				

(11540)* 1992 PV₃ = 1977 DP₇ = 1995 HQ

Discovered 1992 Aug. 5 by H. E. Holt at Palomar.

Id. S. Nakano (*MPC* 34186)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	18.86059		(2000.0)		P		Q
<i>n</i>	0.28274032	ω	194.28309		+0.50720903		+0.85898649
<i>a</i>	2.2990278	Ω	106.23677		-0.78339440		+0.49332298
<i>e</i>	0.1602269	<i>i</i>	4.17299		-0.35921053		+0.13702061
<i>P</i>	3.49	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 02 19	381	0.3+	0.4-	1997 01 16	684	0.4-	0.2-	1999 08 13	699	0.4-	0.5+
1977 02 19	381	0.7-	0.4+	1997 12 08	910	0.6-	0.0	1999 09 07	699	0.0	0.3+
1992 08 05	675	0.3+	0.4-	1997 12 08	910	0.6-	0.1-	1999 09 07	699	0.3-	1.6+
1992 08 05	675	0.6+	1.0-	1997 12 08	910	1.0-	0.1-	1999 09 07	699	0.1-	1.5+
1992 08 06	675	0.6+	0.9-	1998 03 24	566	0.1-	0.8-	1999 09 08	703	0.1-	0.6-
1992 08 06	675	0.6+	1.2-	1998 03 24	566	0.0	1.1-	1999 09 08	703	0.6+	0.1-
1995 03 31	691	0.8+	0.3+	1998 03 24	566	0.1+	0.8-	1999 09 08	703	0.6+	0.9-
1995 03 31	691	0.9+	0.1+	1998 03 25	704	0.5+	0.1-	1999 09 08	703	0.7-	0.5-
1995 03 31	691	0.5+	0.2+	1998 03 25	704	0.3+	1.3+	1999 09 13	704	0.3+	0.3+
1995 04 27	399	1.3-	0.7+	1998 03 25	704	0.7+	0.5-	1999 09 13	704	0.0	0.0
1995 04 27	399	1.8-	0.1-	1998 03 25	704	0.9+	0.1-	1999 09 13	704	0.3+	0.1-
1995 05 05	399	0.8-	0.0	1998 03 25	704	0.2-	0.6-	1999 09 13	704	0.4-	0.3-
1995 05 05	399	1.5+	0.1+	1999 08 13	699	0.3-	0.3+	1999 09 13	704	0.4-	0.1-
1997 01 16	684	0.3-	0.1-	1999 08 13	699	0.3-	0.3+				

(11541)* 1992 SY₁₄ = 1982 WJ = 1982 XG₄

Discovered 1992 Sept. 28 by S. Ueda and H. Kaneda at Kushiro.

Id. S. Nakano (*MPC* 21118)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	327.66049		(2000.0)		P		Q
<i>n</i>	0.28737963	ω	164.10073		+0.72186787		-0.68231702
<i>a</i>	2.2742178	Ω	239.51359		+0.61942030		+0.71150802
<i>e</i>	0.1091447	<i>i</i>	7.70542		+0.30858591		+0.16792801
<i>P</i>	3.43	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1982 11 20	046	(1.7-	2.7+)	1996 12 30	689	0.3+	1.5+	1998 06 01	691	0.0	0.0
1982 11 20	046	(2.5+	4.5+)	1998 05 22	704	0.2+	0.2+	1998 06 01	691	0.6+	1.4+
1982 12 13	381	(0.3+	3.3+)	1998 05 22	704	0.6-	0.5+	1998 06 03	704	0.2+	0.2+
1982 12 14	381	0.3-	2.1+	1998 05 22	704	0.4-	0.0	1998 06 03	704	0.1+	0.8-
1982 12 14	381	0.0	1.0+	1998 05 22	704	1.7-	0.5+	1998 06 03	704	0.2-	0.6+
1992 09 28	399	0.9-	0.6-	1998 05 22	704	1.9-	0.2-	1998 06 03	704	(1.3-	3.1-)
1992 09 28	399	0.3-	0.9-	1998 05 24	704	1.0+	0.6+	1999 07 23	704	0.0	0.0
1992 10 19	399	(2.5+	1.2+)	1998 05 24	704	0.7+	0.3-	1999 07 23	704	0.2-	0.4-
1992 10 19	399	0.2-	0.2+	1998 05 24	704	1.1+	1.2+	1999 07 23	704	0.1+	0.7+
1992 10 22	399	1.6+	0.2-	1998 05 24	704	0.3+	0.2-	1999 07 23	704	0.0	0.3+
1992 10 22	399	0.3+	1.0+	1998 05 24	704	0.6-	1.6+	1999 07 23	704	0.2-	0.5-
1994 03 04	323	0.1-	0.6-	1998 05 25	699	0.4+	0.1+	1999 09 22	118	0.2-	0.6+
1995 08 26	801	(3.6+	0.7-)	1998 05 25	699	0.8+	0.0	1999 09 22	118	0.0	0.7+
1995 08 26	801	(4.6+	0.5+)	1998 05 25	699	0.3+	0.2+	1999 09 23	118	0.0	0.7+
1995 08 29	801	(3.8+	0.6-)	1998 06 01	691	0.2+	0.6+	1999 09 23	118	0.2-	0.4+

(11542)* 1992 SU₂₁ = 1931 BR = 1987 FV₁

Discovered 1992 Sept. 22 by E. W. Elst at the European Southern

Observatory.

Id. T. Kobayashi (*MPC* 24744), S. Nakano (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	262.98765		(2000.0)		P		Q
<i>n</i>	0.12483815	ω	50.29958		+0.38275806		-0.92316509
<i>a</i>	3.9649511	Ω	17.29743		+0.80683350		+0.31529600
<i>e</i>	0.2328566	<i>i</i>	6.86329		+0.45001774		+0.21989691
<i>P</i>	7.90	<i>H</i>	11.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1931 01 26	754	0.1-	0.6-	1995 02 01	411	0.4+	0.7-	1999 07 14	704	0.0	1.3-
1987 03 26	033	0.2-	0.5-	1995 02 27	801	0.4-	0.1+	1999 07 14	704	0.2+	0.8-
1987 03 26	033	1.0+	0.0	1995 02 27	801	0.4-	0.4+	1999 07 16	704	0.2-	0.2-
1992 09 22	809	0.6+	0.2-	1995 03 02	801	0.5-	0.1-	1999 07 16	704	0.4-	1.1+
1992 09 22	809	0.4-	0.8-	1995 03 02	801	0.4+	0.2+	1999 07 16	704	0.3-	0.3+
1992 09 22	809	1.4-	1.3-	1996 03 17	566	0.9-	0.1+	1999 07 16	704	0.6-	0.2+
1992 09 23	809	0.9+	0.3+	1996 03 17	566	0.8-	0.2+	1999 09 11	704	1.9+	0.2-
1992 09 23	809	0.2+	0.3-	1996 03 17	566	0.8-	0.3-	1999 09 11	704	0.2+	0.8+
1992 09 23	809	0.5-	0.7-	1996 05 21	566	0.2+	0.5+	1999 09 11	704	1.2+	0.8+
1992 09 29	691	0.8-	0.6+	1996 05 21	566	0.4-	0.5+	1999 09 11	704	1.2+	0.6+
1992 09 29	691	0.3-	0.2+	1996 05 21	566	0.0	0.1-	1999 09 11	704	0.3-	0.9+
1992 09 29	691	0.7+	0.1+	1999 07 14	704	0.2+	0.6-				
1995 02 01	411	1.0+	1.1-	1999 07 14	704	0.3+	1.3-				

(11543)* 1992 UN₂

Discovered 1992 Oct. 25 by N. Kawasato at Uenohara.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	296.04455		(2000.0)		P		Q
<i>n</i>	0.26735874	ω	358.92026		+0.65301133		-0.75624886
<i>a</i>	2.3863810	Ω	50.30916		+0.69525006		+0.57723923
<i>e</i>	0.1988271	<i>i</i>	3.03861		+0.30033906		+0.30803009
<i>P</i>	3.69	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1988 08 16	675	1.2-	1.6-	1992 11 21	376	0.6+	1.2-	1998 05 01	704	(5.0-	2.4-)
1988 08 16	675	(3.0-	1.6-)	1992 11 27	675	0.2-	1.2-	1999 08 08	376	0.0	0.3+
1988 09 11	675	0.1+	0.7+	1992 11 27	675	0.1-	0.4-	1999 08 11	376	0.5+	0.7+
1988 09 11	675	0.8+	0.5+	1992 11 29	376	0.2-	0.5-	1999 08 11	376	0.5+	0.2-
1992 10 21	675	0.2-	0.3+	1992 11 29	376	0.0	0.3+	1999 08 11	376	0.6+	0.3+
1992 10 21	675	0.2+	0.4+	1996 11 08	327	0.2-	0.0	1999 09 07	704	0.1+	0.9-
1992 10 25	376	0.2+	0.1-	1996 11 08	327	0.4-	0.1+	1999 09 07	704	0.4-	0.6-
1992 10 25	376	0.6-	0.4+	1996 11 08	327	0.1-	0.2-	1999 09 07	704	0.6-	0.7-
1992 10 27	376	1.9-	2.0+	1998 04 22	704	0.6-	0.5+	1999 09 07	704	0.5-	0.4-
1992 10 27	376	0.4+	0.1-	1998 04 22	704	0.8+	1.3+	1999 09 07	704	0.4+	1.4-
1992 10 31	376	0.3-	0.9+	1998 04 22	704	1.1+	0.1-	1999 09 11	704	0.1-	0.0
1992 10 31	376	0.2+	0.4-	1998 04 22	704	(3.3-	1.0+)	1999 09 11	704	0.4+	0.8+

1992 11 14	376	0.1−	1.5+	1998 05 01	704	1.7+	0.4−	1999 09 11	704	0.3−	0.5+
1992 11 14	376	0.4+	0.3+	1998 05 01	704	0.5−	1.4−	1999 09 11	704	0.1−	0.2+
1992 11 21	376	1.6+	0.7−	1998 05 01	704	1.6−	1.4+	1999 09 11	704	0.2+	0.9+

(11544)* 1992 UD₃ = 1959 VA = 1981 TB₂ = 1981 UD₁

Discovered 1992 Oct. 26 by S. Otomo at Kiyosato.

Id. S. Nakano (d, *MPC* 10752; *MPC* 21589)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Nakano			
<i>M</i>	298.20114	(2000.0)		P	Q		
<i>n</i>	0.26944985	ω	180.50122	+0.63131852	−0.76778872		
<i>a</i>	2.3740184	Ω	230.35635	+0.71202185	+0.62967679		
<i>e</i>	0.1572613	<i>i</i>	8.15717	+0.30734641	+0.11835377		
<i>P</i>	3.66	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1955 09 13	760	0.2+	0.1+	1998 04 22	704	0.1+	0.4−	1999 08 30	762	0.1+	0.7−
1955 09 13	760	0.5−	1.3+	1998 04 22	704	0.8−	0.0	1999 08 30	762	1.7−	1.0−
1959 11 03	760	(3.9+	3.2+)	1998 04 22	704	0.3−	0.0	1999 09 04	703	0.6−	0.4−
1981 10 03	095	(3.1+	0.6+)	1998 04 22	704	0.3+	0.5+	1999 09 04	703	0.0	0.4+
1981 10 30	704	(4.0+	0.1−)	1998 04 22	704	0.6+	0.5+	1999 09 04	703	0.5−	0.7+
1981 10 30	704	(3.8+	0.1−)	1998 05 01	704	0.2−	1.4−	1999 09 04	703	0.0	1.5+
1981 10 31	704	(3.5+	3.6−)	1998 05 01	704	0.3+	1.5−	1999 09 08	699	0.9−	1.0+
1992 10 26	894	0.6−	0.3+	1998 05 01	704	0.2−	1.8−	1999 09 08	699	0.1+	1.0+
1992 10 26	894	(0.6+	2.9+)	1998 05 01	704	0.7−	2.0−	1999 09 08	699	0.2−	1.0+
1992 10 27	372	(3.6−	0.6+)	1998 05 01	704	0.2−	1.6−	1999 09 09	704	0.5+	0.1+
1992 10 27	894	0.4−	0.5−	1998 05 22	704	0.4−	0.0	1999 09 09	704	0.2+	0.1+
1992 10 27	894	1.0−	0.9+	1998 05 22	704	0.2+	0.7+	1999 09 09	704	0.1+	0.2+
1992 10 30	894	0.0	0.8−	1998 05 22	704	0.3+	0.4−	1999 09 09	704	0.2+	0.2−
1992 10 30	894	0.0	1.8+	1998 05 22	704	0.5+	0.9−	1999 09 09	704	0.1+	0.2−
1992 10 30	372	1.4−	0.9−	1998 05 22	704	0.1−	0.7−	1999 09 10	704	0.1+	0.6−
1992 11 18	894	(2.2−	2.5+)	1998 05 24	704	0.1−	0.5−	1999 09 10	704	0.5+	0.1+
1992 11 18	894	0.0	1.5−	1998 05 24	704	0.2+	0.3+	1999 09 10	704	0.1−	1.5−
1992 11 21	894	0.4+	1.8−	1998 05 24	704	0.4−	1.6+	1999 09 11	106	0.5−	0.3−
1992 11 21	894	0.3+	0.4−	1998 05 24	704	0.1+	0.9+	1999 09 11	106	0.7−	0.3+
1992 11 24	894	1.7+	0.6−	1998 05 24	704	1.0−	0.1+	1999 09 11	106	0.9+	0.5−
1992 11 24	894	1.4+	1.8−	1999 07 12	704	0.2+	0.1−	1999 09 16	704	0.3+	0.2−
1992 11 29	894	0.7+	0.2+	1999 07 12	704	1.0+	0.0	1999 09 16	704	0.2+	0.2−
1992 11 29	894	1.1−	1.0−	1999 07 12	704	0.9+	0.2−	1999 09 16	704	0.5+	0.3−
1997 01 12	367	1.6+	0.8+	1999 07 12	704	1.0+	0.5+	1999 09 16	704	0.4+	0.2−
1997 02 11	689	1.1−	0.4−	1999 08 20	762	0.2−	0.6−	1999 09 16	704	0.2+	0.6−
1997 02 12	689	0.5+	0.0	1999 08 20	762	0.1+	0.1−				

(11545)* 1992 UE₄ = 1981 UM₂₃

Discovered 1992 Oct. 26 by K. Endate and K. Watanabe at Kitami.

Id. S. Nakano (*MPC* 21590)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Nakano			
<i>M</i>	301.41064	(2000.0)		P	Q		
<i>n</i>	0.26853604	ω	313.77860	+0.70981055	−0.70136421		
<i>a</i>	2.3794011	Ω	90.87660	+0.66356172	+0.63471194		
<i>e</i>	0.2389528	<i>i</i>	3.74150	+0.23633625	+0.32439021		
<i>P</i>	3.67	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1981 10 24	675	0.5−	0.2−	1997 01 18	886	0.5−	0.1−	1999 09 03	699	0.5−	0.4+
1981 10 25	675	0.0	0.0	1997 01 26	327	0.5−	0.5+	1999 09 03	699	0.2+	1.2−
1992 10 22	675	0.2+	0.2−	1997 01 26	327	0.5−	0.5+	1999 09 03	699	1.1−	0.6+
1992 10 22	675	0.5−	0.5+	1997 01 26	327	0.4−	0.0	1999 09 07	704	0.2+	0.2−
1992 10 26	400	0.5−	0.4−	1997 01 28	886	1.1+	0.3−	1999 09 07	704	0.2+	0.5+
1992 10 26	400	0.2−	0.9+	1997 01 28	886	(1.2+	2.5−)	1999 09 07	704	0.9+	0.3+
1992 10 28	400	0.0	0.3+	1998 05 01	704	0.3+	0.7+	1999 09 07	704	0.3+	0.5+
1992 10 28	400	0.6+	0.1−	1998 05 01	704	1.5+	0.6+	1999 09 11	704	0.1+	0.1+
1992 11 15	400	0.0	0.1+	1998 05 01	704	0.0	0.4+	1999 09 11	704	0.5−	0.8+
1992 11 15	400	2.1+	0.0	1998 05 01	704	(3.7−	0.0)	1999 09 11	704	0.1−	0.0
1992 11 30	675	0.5−	0.4−	1999 07 20	699	0.9−	0.1+	1999 09 11	704	0.4−	0.9−

1992 11 30	675	0.1−	0.9+	1999 07 20	699	0.1−	0.3−
1997 01 18	886	0.1+	1.1+	1999 07 20	699	0.1+	0.5+

(11546)* 1992 UM₆ = 1979 BZ₂ = 1981 SY₅ = 1988 QJ

Discovered 1992 Oct. 28 by M. Yanai and K. Watanabe at Kitami.

Id. S. Nakano (*MPC* 21276)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Nakano			
<i>M</i>	300.52750	(2000.0)		P	Q		
<i>n</i>	0.27592056	ω	131.53414	+0.26041669	−0.96396753		
<i>a</i>	2.3367558	Ω	303.29259	+0.86535372	+0.25798383		
<i>e</i>	0.1843026	<i>i</i>	3.72544	+0.42818932	+0.06489177		
<i>P</i>	3.57	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1979 01 27	675	0.1+	0.3+	1992 11 21	400	0.0	0.8−	1999 07 23	704	0.5−	0.2+
1979 01 29	675	0.7+	0.2+	1992 11 21	400	0.7+	0.9−	1999 07 23	704	0.3−	0.8+
1981 09 28	095	0.6−	0.0	1997 02 04	886	1.3−	0.6+	1999 09 09	681	0.2+	0.3−
1988 08 19	413	(2.8+	0.3+)	1997 02 04	886	0.1−	0.3−	1999 09 09	681	0.3+	0.0
1988 08 20	413	(4.1−	1.0−)	1997 02 06	886	0.3−	0.7−	1999 09 15	681	0.4+	0.4−
1992 10 28	400	0.0	1.8+	1997 02 06	886	0.5+	0.7+	1999 09 15	681	0.5+	0.4−
1992 10 28	400	1.5−	0.5−	1997 02 14	367	0.2+	0.3−	1999 09 18	703	0.1−	0.2+
1992 11 01	400	(5.9−	0.7+)	1997 02 14	367	0.4+	0.0	1999 09 18	703	0.1−	0.1−
1992 11 01	400	1.3+	1.3+	1999 07 23	704	0.2+	0.2+	1999 09 18	703	0.1−	0.0
1992 11 16	400	1.4−	0.9+	1999 07 23	704	0.3+	0.2+	1999 09 18	703	0.2+	0.1+
1992 11 16	400	0.2+	1.9−	1999 07 23	704	0.2+	0.3−				

(11547)* 1992 UP₈ = 1990 EU₆ = 1997 AH₁₄

Discovered 1992 Oct. 31 by F. Börngen at Tautenburg.

Id. G. V. Williams (*MPC* 28849)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	312.20269	(2000.0)		P	Q		
<i>n</i>	0.27492157	ω	113.98739	+0.61105842	−0.79096997		
<i>a</i>	2.3424132	Ω	298.30993	+0.71277360	+0.56694300		
<i>e</i>	0.2210353	<i>i</i>	2.03161	+0.34432746	+0.23009159		
<i>P</i>	3.59	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1990 03 02	809	1.1−	0.6−	1999 07 16	704	0.2−	0.3+	1999 09 09	704	0.4+	0.5+
1990 03 02	809	0.7−	0.3−	1999 08 19	113	0.6−	0.6+	1999 09 09	704	0.0	0.6+
1990 03 02	809	0.2−	0.3−	1999 08 19	113	0.7−	0.4+	1999 09 10	113	1.4−	0.4+
1990 03 06	809	1.2+	1.3+	1999 08 19	113	1.1−	0.0	1999 09 10	113	1.2−	0.5+
1990 03 06	809	1.2+	1.6+	1999 08 19	113	0.1−	0.3+	1999 09 10	113	1.6−	0.7+
1990 03 06	809	1.4+	1.9+	1999 08 22	699	0.1−	0.8+	1999 09 10	151	0.3−	0.8−
1992 10 31	033	1.0+	0.5−	1999 08 22	699	0.0	0.2+	1999 09 10	151	0.7+	0.3−
1992 10 31	033	0.1+	0.4−	1999 08 22	699	0.3+	0.2+	1999 09 10	151	0.5+	0.2+
1992 11 01	033	0.3+	0.1+	1999 09 04	151	0.4−	0.5−	1999 09 10	151	0.1−	0.3+
1992 11 23	033	0.0	0.0	1999 09 04	151	0.2+	1.6−	1999 09 11	113	0.1−	0.8+
1992 11 23	033	1.4−	0.2+	1999 09 04	151	1.9+	0.0	1999 09 11	113	0.3+	0.5+
1996 12 18	327	0.2−	0.5−	1999 09 04	151	0.5−	0.1+	1999 09 12	151	0.3+	0.4+
1996 12 18	327	0.2+	0.1−	1999 09 04	682	(2.2+	0.3−)	1999 09 12	151	1.1+	0.4−
1996 12 18	327	0.2+	0.6−	1999 09 04	682	(2.2+	0.8−)	1999 09 12	151	0.7+	0.3−
1997 01 05	327	0.8+	0.3+	1999 09 04	682	(3.4−	0.7+)	1999 09 13	151	0.3+	0.5+
1997 01 05	327	0.6+	0.1+	1999 09 07	704	0.1−	0.2−	1999 09 13	151	0.0	0.4+
1997 01 05	327	0.6−	0.1+	1999 09 07	704	0.3−	0.3−	1999 09 13	151	0.9+	0.2+
1997 01 08	327	0.8−	0.4+	1999 09 07	704	0.7−	0.0	1999 09 13	151	0.8+	0.3+
1997 01 08	327	0.2−	0.4+	1999 09 07	704	0.4−	0.5−	1999 09 14	151	0.2+	0.0
1997 01 08	327	0.5−	0.3+	1999 09 07	704	0.9−	0.3−	1999 09 14	151	0.3−	0.1−
1997 01 11	327	0.1+	0.3−	1999 09 07	151	1.0−	0.6−	1999 09 14	151	0.5+	0.6+
1997 01 11	327	0.3−	0.3+	1999 09 07	151	0.2−	0.1+	1999 09 14	151	0.6+	0.2−
1997 01 11	327	0.3−	0.3+	1999 09 07	151	0.1−	0.4−	1999 09 14	151	1.5+	0.2−
1997 01 31	691	0.3−	0.8−	1999 09 07	151	0.1−	0.6−	1999 09 14	134	0.4+	0.1+
1997 01 31	691	0.5+	0.1−	1999 09 08	113	1.1−	0.0	1999 09 14	134	0.6+	0.3−
1997 01 31	691	0.5+	0.5−	1999 09 08	113	1.2−	0.1−	1999 09 14	134	0.6+	0.5−
1999 07 16	704	0.3−	0.8−	1999 09 09	704	0.2+	0.3+	1999 09 18	151	0.5−	0.7+

1999 07 16 704 0.6+ 0.3- 1999 09 09 704 0.1- 0.3+ 1999 09 18 151 0.1- 1.2+
 1999 07 16 704 0.2+ 0.8- 1999 09 09 704 0.3+ 0.3+

(11548)* 1992 WD₈

Discovered 1992 Nov. 25 by C. S. Shoemaker at Palomar.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	224.46889		(2000.0)	P	Q
<i>n</i>	0.25638420	ω	197.33769	-0.66205707	-0.65055753
<i>a</i>	2.4540037	Ω	295.98325	+0.72729968	-0.43788210
<i>e</i>	0.2321022	<i>i</i>	24.45230	+0.18087457	-0.62051121
<i>P</i>	3.84	<i>H</i>	13.1	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1951 01 04	675	0.3+	0.2+	1996 12 09	801	0.2+	0.8-	1999 07 22	704	0.7+	0.0
1951 01 04	675	0.2+	0.4+	1996 12 09	801	0.4+	0.5-	1999 08 11	704	0.3+	0.1+
1992 11 25	675	1.3+	0.2+	1997 01 13	127	0.7-	1.0+	1999 08 11	704	0.3-	0.3+
1992 11 25	675	1.6+	0.9+	1997 01 13	127	0.5-	0.5+	1999 08 11	704	0.0	0.3+
1992 11 30	675	0.1-	0.4+	1997 01 13	127	0.3-	0.3+	1999 08 11	704	0.3+	0.1+
1992 11 30	675	0.1+	0.3-	1997 01 14	127	0.6-	0.6+	1999 09 14	681	0.3-	0.1+
1992 12 01	675	(2.3+	1.0+)	1997 01 14	127	0.4-	0.6+	1999 09 14	681	0.5-	0.2-
1992 12 01	675	1.1+	1.0-	1997 01 14	127	0.4+	0.1+	1999 09 15	681	0.1-	0.1-
1992 12 22	670	0.6-	0.3+	1997 01 16	127	0.4+	1.0-	1999 09 15	681	0.1-	0.1-
1992 12 22	670	1.0-	0.7-	1997 01 16	127	0.1+	0.1+	1999 09 15	681	0.6-	0.1-
1992 12 22	670	(0.7+	2.2+)	1997 01 16	127	0.6+	0.3+	1999 09 18	704	1.1+	0.3-
1992 12 22	670	0.1+	1.5+	1997 03 11	046	0.4+	0.2-	1999 09 18	704	0.3+	0.7-
1993 01 24	675	0.0	0.3-	1997 03 11	046	0.5+	0.3-	1999 09 18	704	0.8-	0.2+
1993 01 24	675	0.1-	1.2-	1997 03 11	046	0.4+	0.3-	1999 09 18	704	1.2+	0.2+
1993 01 25	675	1.0-	1.9-	1999 07 22	704	0.6-	0.0	1999 09 22	704	0.6+	0.5+
1993 01 25	675	0.9-	0.3-	1999 07 22	704	0.2+	0.1+	1999 09 22	704	0.3-	0.7+
1993 03 22	801	0.6-	0.2-	1999 07 22	704	0.7-	0.5-	1999 09 22	704	0.7-	0.2+
1993 03 23	801	0.5-	0.3-	1999 07 22	704	0.1-	0.6-				

(11549)* 1992 YY = 1959 UM

Discovered 1992 Dec. 25 by A. Natori and T. Urata at JCPM Yakiimo Station.

Id. D. J. Asher (*MPC* 28586)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	111.14969		(2000.0)	P	Q
<i>n</i>	0.24457842	ω	324.50100	-0.58978725	+0.78303139
<i>a</i>	2.5323513	Ω	268.54089	-0.68776661	-0.61522828
<i>e</i>	0.0883562	<i>i</i>	11.39552	-0.42323528	-0.09141124
<i>P</i>	4.03	<i>H</i>	12.4	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1959 10 29	760	0.5-	2.3+	1998 05 06	423	0.3-	0.4+	1999 07 22	704	0.3+	0.4-
1959 10 29	760	0.7-	2.5+	1998 05 08	423	0.1+	0.3+	1999 07 22	704	0.2+	0.1+
1992 12 25	885	0.7-	0.1+	1998 05 08	423	0.4-	0.1+	1999 09 04	888	0.3-	0.0
1992 12 25	885	0.1+	1.7+	1998 05 08	423	0.4-	0.1-	1999 09 04	888	0.1+	0.6-
1992 12 26	885	0.3+	0.6-	1998 05 08	423	0.0	0.1+	1999 09 04	888	0.2-	0.1-
1992 12 26	885	0.4+	0.5+	1998 05 21	888	0.4+	0.5-	1999 09 05	681	0.3-	0.1+
1992 12 26	894	0.5+	0.5-	1998 05 21	888	0.4+	0.2-	1999 09 05	681	0.4-	0.0
1992 12 26	894	0.6+	0.3-	1998 05 21	888	0.4+	0.3-	1999 09 05	681	0.3-	0.0
1992 12 30	033	0.0	0.4+	1998 05 23	423	0.2+	0.1-	1999 09 05	681	0.5-	0.1-
1992 12 30	033	0.3-	0.0	1998 05 23	423	0.4+	0.4-	1999 09 05	681	0.4-	0.0
1992 12 30	885	1.1-	1.1-	1998 05 23	423	0.4+	0.4-	1999 09 05	681	0.5-	0.1-
1992 12 30	885	0.1-	0.2+	1998 05 23	423	0.7+	0.5-	1999 09 05	886	0.1-	0.2+
1993 01 01	033	0.1+	0.0	1998 05 23	423	0.4+	0.4-	1999 09 05	886	0.4-	0.3-
1993 01 02	885	0.1-	0.3+	1998 05 27	428	0.9+	0.3-	1999 09 05	888	0.2-	0.1+
1993 01 02	885	0.4+	0.7+	1998 05 27	428	1.0+	0.5-	1999 09 05	888	0.5-	0.1+
1996 12 11	411	0.0	0.1+	1998 05 28	428	0.8+	0.5-	1999 09 06	888	0.5-	0.0
1996 12 11	411	0.3-	0.6+	1998 05 28	428	1.0+	0.4-	1999 09 06	888	0.3-	0.0
1996 12 12	411	0.2-	0.3+	1998 06 15	888	0.7+	0.1+	1999 09 07	681	0.8-	0.1+
1996 12 12	411	0.1-	0.5+	1998 06 15	888	0.6+	0.2+	1999 09 07	681	0.6-	0.1-
1997 01 03	385	0.2+	0.2-	1998 06 15	888	0.7+	0.1+	1999 09 08	704	0.3+	0.0
1997 01 03	385	0.8+	0.2-	1998 06 16	704	0.7+	0.8+	1999 09 08	704	0.3-	0.2-

1997 01 03	385	0.3+	0.2-	1998 06 16	704	0.6+	0.1+	1999 09 08	704	0.2-	0.3-
1997 01 13	385	0.3-	0.0	1998 06 16	704	0.4+	0.4+	1999 09 08	704	0.2-	0.2-
1997 01 13	385	0.3-	0.1+	1998 06 16	704	1.8+	0.1+	1999 09 08	704	0.0	0.5-
1998 04 14	423	1.1-	0.5+	1998 06 16	704	1.6+	0.3+	1999 09 08	704	0.2-	0.4-
1998 04 14	423	0.7-	0.0	1998 06 18	704	0.5+	1.4-	1999 09 08	704	0.1+	0.3-
1998 04 18	423	1.9-	0.7+	1998 06 18	704	1.1-	1.2-	1999 09 08	704	0.4-	0.0
1998 04 18	423	1.9-	0.5+	1998 06 18	704	1.3+	1.1+	1999 09 08	704	0.2-	0.4-
1998 04 18	423	1.1-	0.7+	1998 06 18	704	1.1+	0.9+	1999 09 08	704	0.3-	0.1-
1998 04 18	423	1.5-	0.2+	1998 06 18	704	0.8-	2.1+	1999 09 10	628	0.2+	0.4+
1998 04 29	886	1.2+	0.2-	1998 07 11	699	0.8-	0.2-	1999 09 10	628	0.1+	0.5+
1998 04 29	886	1.1+	0.2+	1998 07 11	699	0.4-	0.2-	1999 09 10	628	0.6+	0.2+
1998 05 01	566	0.6-	0.2+	1998 07 11	699	0.8-	0.5-	1999 09 11	628	0.5+	0.3+
1998 05 01	566	0.3-	0.3+	1998 07 12	699	1.3-	0.0	1999 09 18	704	0.8+	0.0
1998 05 01	566	0.2+	0.3+	1998 07 12	699	0.4-	0.1+	1999 09 18	704	0.6+	0.0
1998 05 02	566	0.2-	0.6+	1998 07 12	699	0.9-	0.4+	1999 09 18	704	0.7+	0.2+
1998 05 02	566	0.1-	0.7+	1998 07 13	699	1.0-	0.1+	1999 09 18	704	0.5+	0.3+
1998 05 02	566	0.3+	0.8+	1998 07 13	699	0.4-	0.5+	1999 09 18	704	0.7+	0.5+
1998 05 06	423	0.7-	0.2+	1998 07 13	699	0.6-	0.0	1999 09 19	886	0.3+	0.1+
1998 05 06	423	0.5-	0.2+	1999 07 22	704	0.0	0.0	1999 09 19	886	1.7+	0.9+
1998 05 06	423	0.4-	0.2+	1999 07 22	704	0.1+	0.3-				
1998 05 06	423	0.4-	0.0	1999 07 22	704	0.4+	0.2+				

(11550)* 1993 BN = 1986 OM

Discovered 1993 Jan. 20 by T. Urata at the Nihondaira Observatory.

Id. T. Urata (*MPC* 21803)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	160.15717		(2000.0)	P	Q
<i>n</i>	0.22647114	ω	200.53064	-0.93681501	-0.33295875
<i>a</i>	2.6655948	Ω	319.51197	+0.33957857	-0.79182916
<i>e</i>	0.1365022	<i>i</i>	9.51338	+0.08404775	-0.51200103
<i>P</i>	4.35	<i>H</i>	12.9	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1986 07 27	413	1.0-	0.4+	1993 02 24	411	0.1-	0.5+	1999 08 03	691	0.3-	0.1+
1986 07 27	413	1.0+	1.1+	1993 02 24	411	0.5-	0.1+	1999 08 03	691	0.3-	0.1-
1986 08 01	413	(2.9-	1.6-)	1995 10 13	118	0.1-	0.1+	1999 08 03	691	0.3-	0.0
1986 08 01	413	0.0	0.5-	1995 10 13	118	0.1+	0.0	1999 09 06	699	0.2-	1.4+
1993 01 20	385	0.2-	1.4+	1995 10 14	118	0.0	0.1+	1999 09 06	699	0.2-	0.7+
1993 01 20	385	0.7+	0.3+	1995 10 14	118	0.2+	0.3+	1999 09 06	699	1.9-	0.3+
1993 01 21	385	1.4-	0.3-	1995 10 15	118	0.1+	0.7+	1999 09 07	704	0.1-	0.3+
1993 01 21	385	1.3-	1.2-	1995 10 15	118	0.0	0.5+	1999 09 07	704	0.1-	0.2-
1993 01 27	010	0.0	0.5-	1995 10 23	118	0.9-	0.9-	1999 09 07	704	0.1+	0.1-
1993 01 27	010	0.4-	0.5-	1995 10 23	118	0.4-	0.7-	1999 09 07	704	0.1+	0.0
1993 01 27	010	0.5-	0.4-	1995 10 26	118	0.0	0.2-	1999 09 07	704	0.2+	0.1+
1993 01 28	385	0.6+	0.1-	1995 10 27	118	0.0	0.4-	1999 09 09	704	0.2+	0.0
1993 01 28	385	1.2-	0.2-	1995 11 21	118	0.2+	0.1-	1999 09 09	704	0.1+	0.2-
1993 01 29	691	0.0	0.1+	1995 11 21	118	0.2-	0.0	1999 09 09	704	0.1-	0.4+
1993 01 29	691	0.0	0.4+	1997 01 06	385	0.1-	0.1-	1999 09 09	704	0.0	0.3+
1993 01 29	691	0.1+	0.0	1997 01 06	385	0.4-	0.4-	1999 09 09	704	0.2+	0.2-
1993 01 30	905	1.7+	0.3+	1997 01 09	385	0.9+	0.6+	1999 09 13	704	0.5+	0.6-
1993 01 30	905	1.4+	0.7-	1997 02 04	385	0.1-	0.2+	1999 09 13	704	0.9+	0.3-
1993 02 20	010	0.3-	0.3-	1997 02 04	385	0.1+	0.1+	1999 09 13	704	0.4+	0.1-
1993 02 20	010	0.1-	0.1-	1997 07 16	704	1.3+	1.4-	1999 09 13	704	0.6+	0.7-
1993 02 20	010	0.1-	0.3-	1999 07 16	704	0.5+	0.7-	1999 09 13	704	0.3+	0.6-
1993 02											

Residuals in seconds of arc

1993 01 21	385	1.1+	0.2+	1993 02 24	385	0.2+	0.1+	1998 05 23	699	0.2-	0.4+
1993 01 21	385	1.0-	2.0-	1993 02 24	385	0.5+	0.3+	1998 05 23	699	0.7+	0.3-
1993 01 31	885	0.4-	0.7+	1993 02 24	385	0.1-	0.3+	1998 05 23	699	0.5+	0.5+
1993 02 01	885	0.4-	0.6+	1997 01 28	385	0.5+	0.7-	1998 05 24	699	0.1-	0.1-
1993 02 01	885	1.1+	0.9-	1997 01 28	385	0.4-	0.7-	1998 05 24	699	0.9-	0.5-
1993 02 11	411	1.0-	0.6+	1997 01 31	385	0.0	0.4-	1998 05 24	699	0.3+	0.2+
1993 02 11	411	0.2+	0.1+	1997 01 31	385	0.5-	0.6+	1998 06 15	888	0.0	0.7-
1993 02 11	411	0.2-	0.2-	1997 03 04	385	0.8+	1.3-	1998 06 15	888	0.4-	0.6-
1993 02 12	411	0.5-	0.2-	1997 03 04	385	0.2+	0.3-	1999 07 14	704	0.2-	0.0
1993 02 12	411	0.3+	0.7+	1998 04 29	888	0.8-	0.5-	1999 07 14	704	0.4-	0.7+
1993 02 12	411	0.2+	0.1-	1998 04 29	888	0.6+	1.2-	1999 07 14	704	0.3-	0.0
1993 02 13	411	0.0	0.5+	1998 05 20	888	0.0	0.3+	1999 07 14	704	0.6-	0.3+
1993 02 13	411	0.2+	0.9+	1998 05 20	888	0.2+	0.2+	1999 07 14	704	0.3-	0.5+
1993 02 13	411	0.0	1.0-	1998 05 20	888	0.2-	0.2+	1999 09 11	704	0.1+	0.2+
1993 02 24	411	0.4-	0.4+	1998 05 23	704	0.9-	1.0-	1999 09 11	704	0.4+	0.2-
1993 02 24	411	0.3+	1.9+	1998 05 23	704	0.3+	1.0+	1999 09 11	704	0.5+	0.3-
1993 02 24	411	0.2-	0.1+	1998 05 23	704	0.5+	0.2+	1999 09 11	704	0.7+	0.3+
1993 02 24	385	0.4+	0.5+	1998 05 23	704	0.4-	0.6+	1999 09 11	704	0.1-	0.1-

(11552)* 1993 BD₄ = 1975 NP₁ = 1994 CE₂₀

Discovered 1993 Jan. 27 by E. W. Elst at Caussols.

Id. G. V. Williams (*MPC* 31103)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>M</i>	20.58728	<i>ω</i>	178.29837	<i>Ω</i>	+0.73432970	<i>i</i>	+0.65793158
<i>n</i>	0.08393763	<i>Ω</i>	138.89822	<i>i</i>	-0.62574233	<i>ω</i>	+0.75147773
<i>a</i>	5.1661249	<i>i</i>	14.71538	<i>ω</i>	-0.26307113	<i>Ω</i>	+0.04906381
<i>e</i>	0.1533775	<i>ω</i>	14.71538	<i>Ω</i>	-0.26307113	<i>i</i>	+0.04906381
<i>P</i>	11.74	<i>H</i>	10.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1975 07 12	095	(30.1-	4.1+)	1998 06 21	688	0.7+	0.5-	1998 08 29	747	0.1-	0.0
1993 01 27	010	0.3+	0.5-	1998 06 21	688	0.7+	0.4-	1998 08 30	747	0.1-	0.3+
1993 01 27	010	0.1+	0.9-	1998 07 12	689	0.8-	1.0-	1998 08 30	747	0.6-	0.1+
1993 01 27	010	1.1+	1.6-	1998 07 20	910	0.2-	0.0	1999 08 12	699	0.3-	0.2-
1993 01 28	010	1.7-	0.1-	1998 07 20	910	0.1-	0.1+	1999 08 12	699	0.3-	0.1-
1993 01 28	010	1.7-	0.0	1998 07 20	910	0.1+	1.2+	1999 08 12	699	0.1+	0.6-
1993 01 28	010	1.3-	0.1-	1998 07 20	910	0.0	0.4+	1999 09 07	699	0.2-	0.2-
1993 02 20	010	1.0+	1.4-	1998 07 21	910	0.0	0.4+	1999 09 07	699	0.2-	0.5+
1993 02 20	010	0.6+	1.2-	1998 07 21	910	0.0	0.4+	1999 09 07	699	0.0	0.7+
1993 02 20	010	0.3+	1.5-	1998 07 23	910	0.4-	0.1+	1999 09 09	704	0.1-	0.5-
1993 02 22	010	0.1-	1.6-	1998 07 24	910	0.4-	0.1+	1999 09 09	704	0.1-	0.1-
1993 02 23	010	0.8+	1.3-	1998 07 24	910	0.4-	0.2+	1999 09 09	704	0.3+	0.3+
1994 02 10	809	(1.5+	2.1+)	1998 07 24	118	1.0-	0.3-	1999 09 09	704	0.8+	0.9+
1994 02 10	809	0.6+	1.8+	1998 07 24	118	1.1-	0.5-	1999 09 09	704	0.9+	1.2+
1994 02 10	809	0.2+	1.8+	1998 08 17	704	1.1+	1.9-	1999 09 13	704	0.3+	0.0
1994 02 13	809	(1.4+	2.6+)	1998 08 17	704	0.1+	1.5-	1999 09 13	704	0.4+	1.4-
1994 02 13	809	(1.4+	2.4+)	1998 08 17	704	0.5+	1.4-	1999 09 13	704	0.3-	0.3-
1994 02 13	809	(0.2+	2.8+)	1998 08 17	704	(0.4+	2.4-)	1999 09 13	704	1.2-	0.9-
1998 06 21	688	0.7+	0.5-	1998 08 17	704	0.9+	1.5-				

(11553)* 1993 BD₆ = 1998 HV₆₈

Discovered 1993 Jan. 27 by E. W. Elst at Caussols.

Id. G. V. Williams (*MPC* 31960)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>M</i>	22.91036	<i>ω</i>	329.25388	<i>Ω</i>	+0.55374321	<i>i</i>	+0.83249931
<i>n</i>	0.22987786	<i>Ω</i>	334.35757	<i>i</i>	-0.75541650	<i>ω</i>	+0.49330052
<i>a</i>	2.6391938	<i>i</i>	2.34435	<i>ω</i>	-0.35030611	<i>Ω</i>	+0.25218940
<i>e</i>	0.0549328	<i>ω</i>	2.34435	<i>Ω</i>	-0.35030611	<i>i</i>	+0.25218940
<i>P</i>	4.29	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1991 11 08	691	0.2-	0.4+	1998 04 01	704	1.3-	0.7-	1999 08 22	703	0.3-	0.1+
1991 11 08	691	0.0	0.3+	1998 04 01	704	(3.2+	0.8-)	1999 08 22	703	0.7+	1.0-
1991 11 08	691	0.3-	0.5+	1998 04 19	691	0.4-	1.0+	1999 08 22	703	1.0+	1.1-

1993 01 27	010	0.0	1.4+	1998 04 19	691	0.6-	0.2+	1999 09 07	704	0.1+	0.6-
1993 01 27	010	1.0+	0.0	1998 04 19	691	0.4-	0.4+	1999 09 07	704	0.2+	0.4+
1993 01 27	010	0.8+	0.1-	1998 04 21	704	0.0	0.3+	1999 09 07	704	0.2-	0.3+
1993 01 28	010	1.4+	0.4+	1998 04 21	704	0.2-	0.0	1999 09 07	704	0.5+	0.8-
1993 01 28	010	0.6+	1.2+	1998 04 21	704	0.1+	0.1+	1999 09 07	704	0.2-	1.1-
1993 01 28	010	0.1+	0.7+	1998 04 21	704	1.0+	0.2+	1999 09 09	704	0.2+	0.3-
1993 02 20	010	1.6-	1.0-	1998 04 21	704	0.5+	0.3+	1999 09 09	704	0.5+	1.0+
1993 02 20	010	1.4-	1.3-	1998 04 22	704	0.1-	0.0	1999 09 09	704	0.0	0.4+
1993 02 20	010	1.0-	0.8-	1998 04 22	704	0.4+	0.2+	1999 09 09	704	0.1-	0.2+
1993 02 22	010	(0.3+	2.6-)	1998 04 22	704	0.2+	0.1+	1999 09 09	704	0.3-	0.3+
1993 02 23	010	0.2-	1.6-	1998 04 22	704	0.6+	0.3-	1999 09 13	704	0.5-	0.2+
1995 10 17	691	0.2-	0.2+	1998 04 22	704	0.1-	0.2+	1999 09 13	704	0.1-	0.1+
1995 10 17	691	0.3+	0.1+	1998 04 25	699	0.8+	0.3-	1999 09 13	704	0.7-	0.0
1995 10 17	691	0.1-	0.2+	1998 04 25	699	0.7+	0.2-	1999 09 13	704	0.1+	0.5+
1998 04 01	704	0.0	0.0	1998 04 25	699	0.6+	0.3-	1999 09 13	704	0.2-	0.1+
1998 04 01	704	1.2-	0.4+	1999 08 22	703	0.5-	0.5+				

(11554)* 1993 BZ₁₂ = 1994 EL₆ = 1998 OD₂

Discovered 1993 Jan. 22 by E. W. Elst at the European Southern

Observatory.

Id. A. Lowe (*MPC* 32228), 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>M</i>	84.06171	<i>ω</i>	124.05810	<i>Ω</i>	-0.28426307	<i>i</i>	+0.94046629
<i>n</i>	0.08298019	<i>Ω</i>	128.31258	<i>i</i>	-0.93917066	<i>ω</i>	-0.23407781
<i>a</i>	5.2057876	<i>i</i>	13.73714	<i>ω</i>	-0.19275110	<i>Ω</i>	-0.24643608
<i>e</i>	0.0622493	<i>ω</i>	13.73714	<i>Ω</i>	-0.19275110	<i>i</i>	-0.24643608
<i>P</i>	11.88	<i>H</i>	10.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1993 01 22	809	0.9+	0.7-	1998 07 01	691	0.4+	0.4+	1999 09 07	699	0.0	0.6+
1993 01 22	809	1.1+	0.5-	1998 07 16	691	0.2-	0.3+	1999 09 07	699	0.2-	0.7+
1993 01 22	809	1.6+	0.9-	1998 07 16	691	0.0	0.1+	1999 09 07	699	1.2-	1.0+
1993 01 28	809	0.5-	0.9+	1998 07 16	691	0.4+	0.0	1999 09 08	703	0.4-	0.9+
1993 01 28	809	1.1-	0.5+	1998 07 25	691	0.0	0.1+	1999 09 08	703	0.7-	0.4+
1993 01 28	809	1.7-	1.0+	1998 07 25	691	0.1+	0.0	1999 09 08	703	0.9+	0.4+
1994 03 09	010	1.6+	1.7+	1998 07 25	691	0.8+	0.1+	1999 09 08	703	0.0	0.7-
1994 03 09	010	1.2+	1.8+	1998 08 17	704	0.2-	0.3-	1999 09 09	704	0.2-	0.2-
1994 03 09	010	0.4+	1.3+	1998 08 17	704	0.0	0.0	1999 09 09	704	0.2+	0.0
1994 03 10	010	0.1-	0.0	1998 08 17	704	0.0	0.7-	1999 09 09	704	0.3+	0.5+
1994 03 10	010	1.4-	0.1+	1998 08 17	704	0.2-	0.9-	1999 09 09	704	(0.9+	3.2+)
1994 03 10	010	1.0-	0.1+	1998 08 17	704	0.7+	1.1-	1999 09 09	704	(0.7+	2.2+)
1998 06 24	699	0.0	0.6+	1998 09 14	699	1.1-	1.0+	1999 09 13	704	0.4+	0.4+
1998 06 24	699	0.1+	0.3-	1998 09 14	699	1.6-	0.7+	1999 09 13	704	0.4+	1.2-
1998 06 24	699	(1.7-	3.7+)	1999 08 12	699	0.5-	0.6+	1999 09 13	704	0.1-	1.1-
1998 07 01	691	0.3+	0.4+	1999 08 12	699	0.1-	1.2+				
1998 07 01	691	0.4+	0.1+	1999 08 12	699	0.0	1.6+				

(11555)* 1993 CR₁ = 1997 AP₆

Discovered 1993 Feb. 15 by S. Ueda and H. Kaneda at Kushiro.

Id. S. Nakano (*MPC* 28850)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	158.46651		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.22590880	ω	24.66461	-0.98871336	-0.08963711
a	2.6700165	Ω	149.44066	+0.06435472	-0.97768188
e	0.1045689	i	13.65713	+0.13529358	-0.19000878
P	4.36	H	13.4	G 0.15	U 1

1993 03 24	675	0.1-	0.6+	1998 06 03	704	0.4+	0.9+	1999 09 08	704	0.3+	0.6+
1997 01 03	376	0.0	0.9-	1998 06 03	704	0.6+	0.6+	1999 09 08	704	0.8-	0.9+
1997 01 03	376	0.3+	0.2-	1998 06 03	704	0.2+	0.8+	1999 09 09	704	0.0	0.7+
1997 01 06	376	0.1+	0.9+	1998 06 03	704	0.6+	0.8+	1999 09 09	704	0.4-	0.3+
1997 01 06	376	0.1-	0.2+	1998 06 19	704	0.1-	0.4-	1999 09 09	704	0.2-	0.0
1997 01 06	376	0.1-	0.6-	1998 06 19	704	1.0-	0.1-	1999 09 09	704	0.3-	0.5+
1998 05 23	704	0.0	0.3+	1998 06 19	704	0.2-	0.8-	1999 09 09	704	0.3-	0.4+
1998 05 23	704	0.5+	0.4-	1998 06 19	704	0.1-	0.2-	1999 09 09	704	0.9-	0.7+
1998 05 23	704	0.1-	0.2-	1998 06 19	704	0.1+	0.1-	1999 09 09	704	0.7-	0.5+
1998 05 23	704	0.7-	0.8-	1999 08 10	428	0.1+	0.7-	1999 09 09	704	0.7-	1.6-
1998 05 23	704	0.0	0.5-	1999 08 10	428	1.2+	0.5-	1999 09 09	704	0.9-	2.1+
1998 05 24	691	0.8-	0.0	1999 08 10	428	0.5+	0.9-	1999 09 09	704	0.6-	1.2-
1998 05 24	691	0.9-	0.3-	1999 08 11	428	0.1-	0.9-	1999 09 13	704	0.5-	0.5+
1998 05 24	691	0.6-	0.5-	1999 08 11	428	0.1+	0.9-	1999 09 13	704	0.1-	0.6+
1998 05 26	704	0.6-	0.6+	1999 09 07	704	0.1-	0.4+	1999 09 13	704	0.2-	0.7-
1998 05 26	704	0.4+	0.9-	1999 09 07	704	1.0+	0.6+	1999 09 13	704	0.1-	0.1-
1998 05 26	704	0.9+	0.0	1999 09 07	704	0.2+	0.9+	1999 09 13	704	0.4+	0.2-
1998 05 26	704	0.1+	0.8-	1999 09 07	704	0.7+	1.1+				

(11556)* 1993 DV = 1997 AJ₂₁

Discovered 1993 Feb. 21 by S. Ueda and H. Kaneda at Kushiro.

Id. S. Nakano (*MPC* 28850)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23415162	ω	199.15496	-0.20562151	-0.97766090		
<i>a</i>	2.6069815	Ω	262.72932	+0.90351332	-0.17254126		
<i>e</i>	0.1854174	<i>i</i>	2.51783	+0.37600995	-0.12003613		
<i>P</i>	4.21	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1991 09 15	691	0.6+	0.7-	1993 02 25	511	(4.1+	1.7-)	1998 05 24	704	0.0	1.2-
1991 09 15	691	1.2+	1.9-	1993 02 25	399	1.1-	0.2+	1998 05 24	704	0.9-	0.4-
1991 09 15	691	0.6+	0.6-	1993 02 25	399	1.3-	1.5-	1998 05 24	704	0.6+	0.1-
1993 02 15	399	0.8-	1.9+	1993 03 12	399	0.2+	0.3+	1998 05 24	704	(2.5-	1.0+)
1993 02 15	399	0.4+	0.1-	1993 03 12	399	1.8+	0.0	1999 07 13	704	0.4-	0.4-
1993 02 19	511	0.7-	1.9-	1993 03 18	399	0.6-	0.9+	1999 07 13	704	2.0-	1.5+
1993 02 19	511	(4.8+	3.5-)	1993 03 18	399	(2.9-	0.9+)	1999 07 13	704	(2.4-	0.8+)
1993 02 19	511	(0.7-	2.4-)	1997 01 09	399	0.0	0.8+	1999 07 13	704	0.3+	0.7-
1993 02 19	511	(4.6+	1.3-)	1997 01 09	399	0.1-	0.5+	1999 09 07	704	0.2-	0.5+
1993 02 20	511	(1.3+	7.2-)	1997 01 12	399	0.5+	0.2-	1999 09 07	704	0.0	0.1-
1993 02 20	511	(0.9+	10.8-)	1997 01 12	399	0.5-	0.9-	1999 09 07	704	0.2-	0.5-
1993 02 21	511	(2.5-	2.6-)	1997 01 16	399	0.4+	1.5-	1999 09 07	704	0.3+	0.9+
1993 02 21	399	1.6+	1.6+	1997 01 16	399	(2.7+	0.1-)	1999 09 09	704	0.7-	0.6-
1993 02 21	399	0.2+	0.8-	1998 05 22	704	0.1-	0.6+	1999 09 09	704	0.4+	0.2-
1993 02 22	511	2.0-	2.1-	1998 05 22	704	0.9+	0.4-	1999 09 09	704	1.0+	0.1-
1993 02 22	511	0.6-	0.6+	1998 05 22	704	0.4+	0.9-	1999 09 09	704	0.3+	0.9-
1993 02 22	511	(4.8-	4.0-)	1998 05 22	704	(2.1+	2.4-)	1999 09 09	704	0.3-	0.5-
1993 02 24	511	1.0+	1.1-	1998 05 24	704	0.0	0.0				

(11557)* 1993 FO₈

Discovered 1993 Mar. 17 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>		(2000.0)		P		Q	
<i>n</i>	0.21736303	ω	12.05472	-0.17795092	-0.98074956		
<i>a</i>	2.7395481	Ω	88.23510	+0.89602478	-0.19526683		
<i>e</i>	0.0694886	<i>i</i>	4.61361	+0.40678381	+0.00107830		
<i>P</i>	4.53	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1993 03 17	809	0.9-	0.9-	1998 04 22	704	0.4-	0.4-	1998 05 24	704	0.0	0.1+
1993 03 18	809	0.7-	0.2-	1998 04 22	704	0.4-	0.8-	1998 05 24	704	0.9+	0.4-
1993 03 23	809	0.5-	0.4-	1998 04 22	704	0.4-	0.2-	1998 05 24	704	0.9+	0.4-
1993 04 16	413	1.4+	0.2-	1998 04 22	704	1.1-	0.1+	1998 05 24	704	1.2-	0.5+
1997 01 02	411	0.4+	0.9+	1998 05 01	704	0.5-	0.3-	1999 07 14	704	0.4+	1.9-

1997 01 02	411	1.0-	0.6+	1998 05 01	704	0.1+	0.8+	1999 07 14	704	0.6+	0.5-
1997 01 03	411	0.4-	0.2-	1998 05 01	704	0.5+	0.7+	1999 07 14	704	0.1+	0.1+
1997 01 03	411	0.8+	0.1-	1998 05 01	704	0.1-	0.8-	1999 07 14	704	0.2+	0.4-
1997 01 30	369	0.4+	0.3+	1998 05 22	704	1.4+	1.4-	1999 08 13	703	0.7+	1.3-
1997 01 30	369	1.5-	0.1+	1998 05 22	704	1.6-	1.2+	1999 08 13	703	1.7-	1.6-
1997 02 01	369	0.4-	0.6-	1998 05 22	704	0.5+	0.7-	1999 08 13	703	1.4-	0.6-
1997 02 01	369	0.6+	0.4+	1998 05 22	704	1.1+	1.0+	1999 08 13	703	2.4-	0.5-
1997 02 01	369	0.3-	0.0	1998 05 22	704	0.2+	0.5+	1999 09 07	704	0.0	1.6+
1997 02 04	566	0.4+	0.2+	1998 05 23	704	0.1-	0.5+	1999 09 07	704	1.0+	1.8+
1997 02 04	566	0.5+	0.0	1998 05 23	704	0.3-	1.0+	1999 09 07	704	1.4+	2.0+
1997 02 04	566	0.9+	0.1-	1998 05 23	704	0.9+	0.2-	1999 09 07	704	1.8+	1.3+
1998 04 22	704	0.9+	0.5+	1998 05 23	704	0.3-	1.0+				

(11558)* 1993 FY₈ = 1998 HK₈₉

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* 31960)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21150147	ω	255.02906	+0.66625268	+0.74305852		
<i>a</i>	2.7899331	Ω	56.92582	-0.65203615	+0.62147234		
<i>e</i>	0.0834427	<i>i</i>	4.31299	-0.36187875	+0.24826631		
<i>P</i>	4.66	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1990 09 28	675	0.1-	0.2-	1998 04 21	704	0.2-	0.4+	1998 05 22	704	0.4+	0.7-
1993 03 17	809	1.6-	0.9+	1998 04 21	704	0.1-	0.4-	1998 05 22	704	(2.0-	1.9+)
1993 03 18	809	0.0	1.3-	1998 04 22	704	1.0-	0.7+	1999 08 13	699	0.4-	0.2+
1993 03 18	809	0.5+	0.6+	1998 04 22	704	0.3+	1.8+	1999 08 13	699	0.6-	0.7+
1993 03 23	809	0.4+	0.3-	1998 04 22	704	0.1-	0.1-	1999 08 13	699	0.3+	0.7+
1993 04 16	413	1.1+	0.3-	1998 04 22	704	1.4-	0.7-	1999 09 08	703	0.3+	0.6-
1997 01 09	691	0.1-	0.2+	1998 04 22	704	1.2-	1.8-	1999 09 08	703	0.1-	0.0
1997 01 09	691	0.1+	0.2+	1998 05 01	704	0.5-	0.9+	1999 09 08	703	0.4-	1.1-
1997 01 09	691	0.1+	0.1+	1998 05 01	704	0.1-	1.3+	1999 09 08	703	0.7-	0.1+
1998 03 29	910	1.3+	0.0	1998 05 01	704	0.8+	1.1-	1999 09 13	704	0.7+	0.8+
1998 03 29	910	1.7+	0.2-	1998 05 01	704	0.6+	0.2+	1999 09 13	704	0.1-	0.5-
1998 03 29	910	1.6+	0.4+	1998 05 01	704	1.0-	1.5+	1999 09 13	704	0.0	0.1-
1998 04 21	704	0.1+	0.8-	1998 05 22	704	1.4-	0.3-	1999 09 13	704	0.3+	0.2-
1998 04 21	704	0.3-	0.6-	1998 05 22	704	0.4+	1.7-	1999 09 13	704	0.6+	0.7+
1998 04 21	704	0.7+	0.4+	1998 05 22	704	0.6-	1.0+				

(11559)* 1993 FS₂₃ = 1990 TO₁₁

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* 23525)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21161831	ω	19.47591	+0.98299245	+0.18252995		
<i>a</i>	2.7889061	Ω	329.98449	-0.17339739	+0.88623584		
<i>e</i>	0.0861765	<i>i</i>	2.31608	-0.06049130	+0.42575679		
<i>P</i>	4.66	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1990 10 11	033	1.0+	0.1+	1998 04 22	704	0.8-	1.1+	1999 09 07	704	0.5+	1.1-
1990 10 12	033	0.3-	0.8-	1998 04 22	704	0.9-	1.3-	1999 09 07	704	0.6+	0.5-
1990 10 12	033	0.3-	0.4-	1998 04 22	704	0.7-	0.3+	1999 09 07	704	0.0	0.0
1990 10 13	033	0.6+	0.7-	1998 05 01	704	1.2-	0.3-	1999 09 07	704	0.9-	0.0
1990 10 14	033	0.7-	0.0	1998 05 01	704	0.6+	1.1+	1999 09 07	704	0.1-	1.3-
1993 03 21	809	0.1+	0.2-	1998 05 01	704	(0.3+	2.1-)	1999 09 09	704	0.5-	0.7-
1993 03 22	809	0.3+	0.1+	1998 05 01	704	1.9-	0.1-	1999 09 09	704	0.7-	0.1+
1993 03 26	809	0.7+	1.1-	1999 08 08	699	0.1-	2.0+	1999 09 09	704	0.4-	0.2+
1993 03 27	809	0.7+	0.2-	1999 08 08	699	0.3+	1.1+	1999 09 09	704	0.6-	0.4-
1993 04 16	413	1.3+	0.9-	1999 08 08	699	0.1-	1.6+	1999 09 09	704	0.2-	0.7-
1995 10 21	596	1.1-	0.2-	1999 08 22	703	0.3-	0.0	1999 09 13	704	0.1+	0.4-
1995 10 21	596	1.1-	0.0	1999 08 22	703	0.2-	0.3-	1999 09 13	704	0.6+	0.6-

1995 10 21	596	0.5−	0.1−	1999 08 22	703	0.2+	0.2−	1999 09 13	704	1.6+	0.9+
1997 02 06	566	0.0	0.1−	1999 08 22	703	0.4+	0.5+	1999 09 13	704	0.2+	0.8−
1997 02 06	566	0.6+	0.3+	1999 09 03	699	0.4+	0.1−	1999 09 13	704	0.5+	0.4+
1997 02 06	566	1.3+	0.6−	1999 09 03	699	1.4+	1.0+				
1998 04 22	704	0.8−	0.1−	1999 09 03	699	0.0	1.6+				

(11560)* 1993 FU₂₄ = 1997 EM₃₈

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* 29617)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	48.69525	(2000.0)		P	Q		
<i>n</i>	0.21814504	ω	312.86053	+0.41990884	+0.90751867		
<i>a</i>	2.7329970	Ω	341.96184	−0.82367650	+0.37677353		
<i>e</i>	0.0515487	<i>i</i>	1.72054	−0.38109525	+0.18561136		
<i>P</i>	4.52	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1993 03 21	809	0.1−	1.2+	1998 06 03	704	0.5−	0.7+	1999 08 22	699	1.1−	0.7+
1993 03 22	809	0.6+	1.5+	1998 06 03	704	0.2−	0.6+	1999 08 22	699	0.1+	0.7+
1993 03 26	809	0.1−	0.4+	1998 06 03	704	0.3+	0.2−	1999 09 07	704	0.4−	0.7−
1993 04 21	413	0.9+	0.4−	1998 06 03	704	0.8+	0.8−	1999 09 07	704	0.1−	0.8−
1997 02 08	910	(6.4−	1.9+)	1998 06 27	699	1.0+	0.6−	1999 09 07	704	0.2−	0.2−
1997 02 08	910	(6.5−	1.8+)	1998 06 27	699	0.0	0.1−	1999 09 07	704	0.3+	0.4−
1997 02 08	910	(6.5−	1.7+)	1998 06 27	699	0.3−	0.2−	1999 09 07	704	0.3+	0.5−
1997 03 05	704	0.2+	0.2−	1999 08 12	699	0.5−	0.2−	1999 09 11	699	0.4+	0.3+
1997 03 05	704	0.7−	0.4−	1999 08 12	699	1.1−	0.5+	1999 09 11	699	0.6−	1.0+
1997 03 06	704	0.5+	0.1+	1999 08 12	699	0.0	1.0+	1999 09 11	699	0.6+	0.5+
1997 03 06	704	0.2+	1.3+	1999 08 22	703	0.3−	1.2+	1999 09 14	704	0.3+	0.1−
1998 05 24	704	1.0+	0.7+	1999 08 22	703	0.7−	0.0	1999 09 14	704	0.4+	0.7−
1998 05 24	704	0.4+	0.5−	1999 08 22	703	0.4+	1.2+	1999 09 14	704	0.1−	0.7−
1998 05 24	704	1.1−	0.5−	1999 08 22	699	0.1+	0.6+	1999 09 14	704	0.2+	0.6−
1998 05 24	704	1.6−	0.1−	1999 08 22	703	0.3+	0.8+	1999 09 14	704	0.1+	0.3−

(11561)* 1993 FZ₂₄ = 1997 EL₃₅

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* 29617)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	340.24057	(2000.0)		P	Q		
<i>n</i>	0.21156660	ω	6.12546	+0.97409013	+0.22507915		
<i>a</i>	2.7893605	Ω	340.82354	−0.21024738	+0.86524018		
<i>e</i>	0.0824338	<i>i</i>	3.85535	−0.08333344	+0.44799421		
<i>P</i>	4.66	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1993 03 21	809	0.8+	0.3+	1998 05 01	704	0.9+	0.4−	1999 09 07	704	0.0	0.2−
1993 03 22	809	1.3+	0.1+	1998 05 01	704	1.6−	0.1+	1999 09 07	704	0.4−	0.4+
1993 03 26	809	0.1+	0.7+	1998 05 01	704	1.4−	0.8+	1999 09 09	704	0.3−	1.1−
1993 04 18	413	0.1−	0.3+	1999 07 21	699	(3.0−	0.8+)	1999 09 09	704	0.6+	1.0−
1995 10 25	033	0.5−	1.1−	1999 07 21	699	0.9−	0.5+	1999 09 09	704	0.1−	0.9−
1995 10 25	033	0.7−	0.7−	1999 07 21	699	0.3−	0.1+	1999 09 09	704	0.0	0.9−
1997 02 08	566	0.7+	0.6−	1999 08 08	699	0.0	1.0+	1999 09 09	704	0.4+	0.7−
1997 02 08	566	0.5+	0.3−	1999 08 08	699	0.6−	1.1+	1999 09 13	699	0.8+	0.4+
1997 02 08	566	0.1+	0.4−	1999 08 08	699	0.5+	1.4+	1999 09 13	704	0.4−	0.8−
1997 03 04	704	0.4−	0.6+	1999 09 06	699	0.2+	0.5−	1999 09 13	699	0.1−	0.6+
1997 03 04	704	0.9−	0.3−	1999 09 06	699	0.2+	0.4+	1999 09 13	704	0.1+	0.5−
1997 03 06	704	0.2−	0.5+	1999 09 06	699	0.4+	1.7+	1999 09 13	704	0.6−	0.0
1997 03 06	704	1.3+	0.1−	1999 09 07	704	0.2+	0.1+	1999 09 13	704	0.0	0.5−
1998 05 01	704	1.2−	1.8−	1999 09 07	704	0.1+	0.5+	1999 09 13	699	1.1+	1.0+
1998 05 01	704	0.4−	1.2−	1999 09 07	704	0.4+	0.6−	1999 09 13	704	0.4−	0.2−

(11562)* 1993 FU₃₃ = 1970 EO₂ = 1991 XW₁

Discovered 1993 Mar. 19 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. T. Kobayashi (*MPC* 24109)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	183.17808	(2000.0)		P	Q		
<i>n</i>	0.21578255	ω	88.17529	−0.79885394	−0.59785789		
<i>a</i>	2.7529089	Ω	55.10197	+0.51473605	−0.73647594		
<i>e</i>	0.0901643	<i>i</i>	4.63805	+0.31125419	−0.31649506		
<i>P</i>	4.57	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1970 03 04	805	0.6−	0.3+	1995 10 26	691	0.2−	0.2+	1998 05 24	704	0.1−	0.0
1970 03 04	805	0.4+	0.1+	1995 10 26	691	0.0	0.0	1998 05 24	704	0.8−	1.6+
1970 03 04	805	0.6+	0.1−	1995 10 26	691	0.1−	0.1+	1998 05 24	704	0.3−	0.1+
1991 12 10	033	1.0−	0.3+	1995 10 27	801	0.2−	0.1+	1998 05 24	704	0.4−	0.3+
1991 12 10	033	0.5+	0.3+	1995 10 27	801	0.2−	0.1+	1999 08 13	699	0.2+	0.7+
1991 12 11	033	0.4−	0.0	1995 11 18	801	0.5+	0.3+	1999 08 13	699	0.7+	0.4+
1993 03 19	809	0.9+	0.8−	1997 01 28	689	0.2+	0.6−	1999 08 13	699	0.3−	0.7+
1993 03 20	809	0.4+	0.4+	1997 01 30	369	0.8+	0.7−	1999 09 07	699	1.1+	1.8−
1993 03 24	809	0.3−	0.7+	1997 01 30	369	0.1−	0.6+	1999 09 07	699	0.2−	0.9+
1993 04 18	413	0.2+	0.4+	1998 05 22	704	0.5−	1.1−	1999 09 07	699	0.7+	1.8−
1995 10 20	691	0.9−	0.2−	1998 05 22	704	0.8−	0.0	1999 09 11	704	0.3+	0.8+
1995 10 20	691	0.8−	0.0	1998 05 22	704	0.5+	0.4+	1999 09 11	704	0.0	0.6+
1995 10 20	691	0.6−	0.2−	1998 05 22	704	0.7−	0.8−	1999 09 11	704	0.2+	0.6+
1995 10 25	801	1.0+	0.3+	1998 05 22	704	0.1+	0.9+	1999 09 11	704	0.6+	0.7−
1995 10 25	801	1.3−	0.2+	1998 05 24	704	0.9+	0.2+	1999 09 11	704	0.2+	0.5+

(11563)* 1993 FO₃₆ = 1976 UM₁₈ = 1985 QY₄ = 1985 RY₅

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* 23526), N. S. Chernykh (d, *ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	38.29783	(2000.0)		P	Q		
<i>n</i>	0.21191304	ω	120.20426	+0.50262247	+0.86450601		
<i>a</i>	2.7863196	Ω	179.96896	−0.83948209	+0.48809862		
<i>e</i>	0.1331172	<i>i</i>	9.62306	−0.20649570	+0.11995454		
<i>P</i>	4.65	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1976 10 22	381	0.9−	0.1−	1998 04 23	704	0.5+	0.3−	1999 09 07	704	0.0	0.1+
1976 10 22	381	0.4−	0.6−	1998 04 24	704	0.3+	0.0	1999 09 07	704	0.0	0.5+
1976 10 24	381	1.3−	1.2−	1998 04 24	704	0.3−	0.4−	1999 09 07	704	0.1+	0.5−
1985 08 18	095	2.2+	0.9+	1998 04 24	704	0.2+	0.3−	1999 09 07	704	0.4−	0.0
1985 09 15	095	(1.1−	3.9−)	1998 05 01	699	0.5+	0.1−	1999 09 09	120	0.1−	0.1+
1985 09 20	095	0.1−	0.9+	1998 05 01	699	0.5−	0.4+	1999 09 09	120	0.4−	0.3−
1988 03 18	675	1.0+	1.6+	1998 05 01	699	0.0	0.1−	1999 09 11	106	0.2+	0.5+
1988 03 18	675	0.1+	0.2+	1998 05 05	699	0.4−	0.8+	1999 09 12	106	0.1−	0.3+
1993 03 19	809	0.6+	0.6+	1998 05 05	699	0.6−	0.6+	1999 09 12	106	0.0	0.6+
1993 03 20	809	0.4+	0.5+	1998 05 05	699	0.1−	1.0+	1999 09 14	610	0.2+	0.6+
1993 03 24	809	0.7+	0.5−	1998 05 23	704	2.0−	0.6+	1999 09 14	610	0.2+	0.5+
1993 04 21	413	1.6+	0.3+	1998 05 23	704	0.8−	0.0	1999 09 14	610	0.2+	0.5+
1994 07 12	801	1.7+	0.7+	1998 05 23	704	0.6+	0.0	1999 09 14	610	0.3+	0.6+
1994 07 12	801	0.3+	0.1+	1998 05 23	704	0.3−	0.4−	1999 09 14	610	0.4+	0.5+
1994 07 13	801	0.1+	0.1−	1998 05 23	704	0.1+	0.7+	1999 09 14	704	0.4+	0.3+
1994 07 13	801	0.0	0.5−	1998 05 25	704	0.4−	0.9−	1999 09 14	704	0.4+	0.0
1994 07 13	657	0.4+	0.9+	1998 05 25	704	1.0−	0.1+	1999 09 14	704	0.5+	0.1+
1994 07 13	657	0.1−	0.1−	1998 05 25	704	1.7−	0.1+	1999 09 14	704	0.3+	0.0
1994 07 13	657	0.2−	0.2+	1998 06 02	699	0.1+	0.2−	1999 09 14	704	0.4+	0.1−
1994 07 28	657	0.6−	0.3+	1998 06 02	699	0.6+	0.2−	1999 09 14	703	0.5−	0.4+
1994 07 28	657	(3.2−	0.1+)	1998 06 02	699	0.5−	0.4−	1999 09 14	703	0.3−	0.3+
1994 07 28	657	0.7−	0.2−	1999 07 23	704	0.6−	0.0	1999 09 14	703	0.4−	0.6−
1994 08 04	801	0.7+	0.8−	1999 07 23	704	0.2−	0.3−	1999 09 14	703	0.4−	1.4−
1994 08 07	801	0.2+	0.2−	1999 07 23	704	0.3−	0.1+	1999 09 16	691	0.2−	0.0

1998 04 23	704	0.2+	0.3+	1999 07 23	704	0.5-	0.3-	1999 09 16	691	0.2-	0.2-
1998 04 23	704	0.3+	0.9-	1999 07 23	704	0.4-	0.7-	1999 09 16	691	0.1-	0.2-
1998 04 23	704	1.0+	0.9-	1999 09 07	704	0.2-	0.3+				

(11564)* 1993 FU₄₁ = 1977 TO₄ = 1977 UA₁ = 1998 XN₉₃

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* 33685)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28713884	ω	165.32310	+0.99054913	+0.13670582		
<i>a</i>	2.2754891	Ω	186.84877	-0.13336404	+0.94100818		
<i>e</i>	0.1837913	<i>i</i>	5.35695	-0.03203840	+0.30954019		
<i>P</i>	3.43	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1977 10 07	095	0.7-	2.5-	1994 11 01	033	0.2+	0.4+	1998 12 22	704	1.1-	0.3+
1977 10 17	095	1.5+	0.4-	1994 11 01	033	0.5-	0.4+	1998 12 22	704	0.2+	0.8+
1993 03 19	809	0.4-	0.1-	1998 12 15	704	1.4+	0.9-	1999 01 18	704	0.1+	0.1+
1993 03 20	809	0.9+	0.7-	1998 12 15	704	0.4-	0.2-	1999 01 18	704	1.0-	1.6+
1993 03 24	809	1.3+	0.3+	1998 12 15	704	0.9-	0.3+	1999 01 18	704	(2.5+	2.7+)
1993 04 01	474	0.9-	1.2-	1998 12 15	704	0.6+	0.3-	1999 01 20	704	(2.3+	2.2+)
1993 04 01	474	1.7-	0.6-	1998 12 15	704	0.3-	0.1-	1999 01 20	704	0.6+	0.6+
1994 09 30	675	0.1-	0.3+	1998 12 22	704	0.4+	0.4+	1999 01 20	704	1.5+	0.4-
1994 09 30	675	0.0	0.2+	1998 12 22	704	0.4-	0.3+	1999 01 20	704	0.6-	0.2-

(11565)* 1993 FD₅₁ = 1986 TJ₁₈ = 1995 UO₈

Discovered 1993 Mar. 19 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. T. Kobayashi (*MPC* 26174)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22517992	ω	103.33945	+0.95239185	-0.30472640		
<i>a</i>	2.6757751	Ω	274.40289	+0.27587265	+0.87472506		
<i>e</i>	0.2394879	<i>i</i>	0.54994	+0.12978460	+0.37682607		
<i>P</i>	4.38	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1986 10 02	095	0.5-	1.1+	1995 11 12	411	0.8-	0.1-	1999 09 07	704	0.3-	0.2+
1993 03 19	809	0.3+	0.5+	1995 11 12	411	0.6-	0.6+	1999 09 07	704	0.1+	0.3-
1993 03 20	809	0.1+	1.7+	1999 07 21	699	0.6+	0.7+	1999 09 07	704	0.1-	0.2-
1993 03 24	809	0.4+	0.1+	1999 07 21	699	0.1-	0.6+	1999 09 07	704	0.1+	0.1-
1995 10 27	411	0.6+	0.2+	1999 07 21	699	0.5+	0.8+	1999 09 09	704	0.1-	0.4-
1995 10 27	411	0.0	0.1-	1999 08 07	699	0.6+	0.4+	1999 09 09	704	0.1-	0.0
1995 10 28	327	0.1+	0.4-	1999 08 07	699	0.0	0.3+	1999 09 09	704	0.7-	0.3+
1995 10 28	327	0.7+	0.1+	1999 08 07	699	0.2-	0.3+	1999 09 09	704	0.4-	0.1+
1995 10 28	327	0.5+	0.4+	1999 08 08	699	0.5+	0.3-	1999 09 09	704	0.1+	0.1+
1995 11 01	411	0.3+	0.7-	1999 08 08	699	0.2+	0.2+	1999 09 13	704	0.1-	0.2+
1995 11 01	411	0.1+	0.2-	1999 08 08	691	0.2-	0.0	1999 09 13	704	0.3-	0.7-
1995 11 03	411	0.2-	0.0	1999 08 08	699	0.7+	0.1+	1999 09 13	704	0.5-	0.8-
1995 11 03	411	0.3-	0.2-	1999 08 08	691	0.2-	0.0	1999 09 13	704	0.0	0.4-
1995 11 11	411	0.3-	0.8+	1999 08 08	691	0.2-	0.2-	1999 09 13	704	0.2-	0.7-
1995 11 12	411	0.2-	0.3+	1999 09 07	704	0.1+	0.2+				

(11566)* 1993 FU₅₁ = 1990 RD₁₆

Discovered 1993 Mar. 17 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. A. Doppler (*MPC* 34846), M. E. Sansaturio (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21757860	ω	266.43458	+0.39493211	+0.91697131		
<i>a</i>	2.7377383	Ω	27.04668	-0.78585611	+0.36903736		
<i>e</i>	0.1067063	<i>i</i>	7.13764	-0.47587688	+0.15157523		
<i>P</i>	4.53	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1984 03 29	413	1.5-	0.2-	1995 11 24	691	0.1-	0.2+	1999 09 07	704	0.1+	1.6+
1984 03 29	413	0.6+	0.5+	1995 11 24	691	0.2-	0.3+	1999 09 09	704	0.2+	0.9-
1990 08 29	675	(2.9-	0.6-)	1998 05 24	704	0.5+	0.1+	1999 09 09	704	0.1+	1.4-
1990 08 29	675	0.4+	0.4-	1998 05 24	704	(2.3-	1.4-)	1999 09 09	704	0.3+	0.4-
1990 09 15	809	0.6-	0.8+	1998 05 24	704	1.3-	1.4+	1999 09 09	704	0.1+	0.7+
1990 09 15	809	0.5-	1.4+	1998 05 24	704	0.5+	0.1-	1999 09 09	704	0.3-	0.9-
1990 09 15	809	0.2-	1.3+	1998 08 22	703	0.3+	0.7+	1999 09 14	704	0.6+	0.4-
1993 03 17	809	0.9+	0.2-	1998 08 22	703	0.2+	0.5+	1999 09 14	704	0.0	0.0
1993 03 18	809	0.8+	1.1-	1998 08 22	703	0.0	0.3-	1999 09 14	704	0.1-	0.6-
1993 03 20	691	0.3-	0.4+	1998 08 22	703	(1.6+	2.5+)	1999 09 14	704	0.0	0.5-
1993 03 20	691	0.1-	0.2+	1999 09 05	699	0.4-	0.8+	1999 09 14	704	0.2+	0.3-
1993 03 20	691	0.0	0.2+	1999 09 05	699	0.5+	0.1-	1999 09 14	703	0.3+	0.7+
1993 04 14	691	1.0+	0.3+	1999 09 05	699	0.4-	0.7+	1999 09 14	703	0.7-	0.5+
1993 04 14	691	0.3+	0.8+	1999 09 07	704	0.3+	0.4-	1999 09 14	703	0.0	0.1+
1993 04 14	691	0.3+	0.9+	1999 09 07	704	0.4-	0.1-	1999 09 14	703	0.3+	0.6-
1995 11 24	691	1.1-	0.2+	1999 09 07	704	0.5-	0.3+				

(11567)* 1993 FF₈₂ = 1993 HY₇ = 1976 SZ₂ = 1986 WN₁₀

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* 24744; d, *MPC* 25961; *MPC* 34502), A. Doppler (*MPC* 34502)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20960510	ω	167.41597	-0.96263937	+0.26797113		
<i>a</i>	2.8067355	Ω	28.22088	-0.25503385	-0.84886922		
<i>e</i>	0.0114316	<i>i</i>	4.72447	-0.09101199	-0.45564518		
<i>P</i>	4.70	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1976 09 24	095	0.1+	0.4-	1998 04 21	704	(1.0+	2.2+)	1998 05 01	566	0.2-	0.0
1986 11 30	381	1.8+	0.1-	1998 04 21	120	0.6-	1.5+	1998 05 02	566	0.2+	0.1+
1986 11 30	381	1.3-	0.4+	1998 04 21	120	0.3-	1.2+	1998 05 02	566	0.1+	0.1-
1986 12 01	381	0.2-	0.7-	1998 04 21	120	0.9-	1.1+	1998 05 02	566	0.4-	0.4-
1986 12 01	381	0.2-	0.5-	1998 04 22	704	0.4+	0.0	1998 05 22	699	1.8+	1.5-
1993 03 19	809	(3.2-	1.6-)	1998 04 22	704	0.1-	0.2-	1998 05 22	699	1.3+	0.5-
1993 03 20	809	(1.7-	2.5-)	1998 04 22	704	0.0	0.1+	1998 05 22	699	0.6-	0.3-
1993 03 23	809	0.1-	1.0+	1998 04 22	704	0.1+	0.1-	1998 05 26	691	0.3-	0.2+
1993 03 24	691	0.1-	0.8-	1998 04 22	704	0.0	0.2+	1998 05 26	691	0.7-	0.4+
1993 03 24	691	0.1+	0.8-	1998 04 25	120	0.6-	0.2-	1998 05 26	691	1.0+	0.0
1993 03 24	691	0.1+	0.8-	1998 04 25	120	0.7+	0.2-	1998 05 28	691	1.0-	0.5+
1993 04 16	413	(5.7-	11.1+)	1998 04 29	120	0.4-	0.1+	1998 05 28	691	0.8-	0.4+
1993 04 17	413	(2.2-	1.9-)	1998 04 29	120	1.4+	0.1-	1998 05 28	691	0.9-	0.6+
1995 09 22	691	0.2-	0.1-	1998 04 30	699	0.9+	0.2-	1999 07 14	704	0.6+	0.1+
1995 09 22	691	0.0	0.1+	1998 04 30	699	0.1+	0.7-	1999 07 14	704	0.3-	0.1-
1995 09 22	691	0.1-	0.1-	1998 04 30	699	0.4+	0.1-	1999 07 14	704	0.3+	0.0
1995 09 27	691	0.0	0.0	1998 05 01	704	(3.0+	0.5+)	1999 07 14	704	0.5+	1.0+
1995 09 27	691	0.2-	0.3+	1998 05 01	704	1.4-	0.3+	1999 07 14	704	0.1-	0.1+
1995 09 27	691	0.1+	0.3+	1998 05 01	704	0.5+	0.7-	1999 09 11	704	0.0	0.1-
1998 04 21	704	0.7-	0.1-	1998 05 01	704	1.0+	1.0-	1999 09 11	704	1.4-	0.4+
1998 04 21	704	0.4-	0.1+	1998 05 01	704	0.3+	0.7-	1999 09 11	704	0.0	1.2-
1998 04 21	704	0.5-	0.4+	1998 05 01	566	0.4+	0.2+	1999 09 11	704	0.9+	1.0-
1998 04 21	704	1.0-	0.8+	1998 05 01	566	0.4+	0.4-				

(11568)* 1993 GL = 1985 SV₄ = 1997 AA₁₃

Discovered 1993 Apr. 14 by S. Otomo at Kiyosato.

Id. S. Nakano (*MPC* 29103)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	63.75109		(2000.0)	P	Q
<i>n</i>	0.20319248	ω	206.46177	-0.25356928	+0.96664193
<i>a</i>	2.8654816	Ω	48.87230	-0.87877546	-0.21458365
<i>e</i>	0.0285049	<i>i</i>	2.74995	-0.40429731	-0.13984722
<i>P</i>	4.85	<i>H</i>	12.8	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1985 09 20	095	(0.3+ 4.3-)	1998 04 06	732	1.3- 0.8-	1998 05 24	704	0.0 0.5-
1993 03 24	675	0.8- 1.5+	1998 04 21	704	0.1+ 0.4+	1998 05 24	704	0.4+ 0.4+
1993 04 14	894	0.8+ 0.4-	1998 04 21	704	0.2+ 0.3-	1998 05 24	704	0.8+ 0.5-
1993 04 14	894	2.0+ 0.2-	1998 04 21	704	0.1+ 0.7-	1998 05 24	704	0.4- 0.6+
1993 04 15	399	0.6+ 0.5+	1998 04 21	704	0.5- 0.4-	1999 07 13	704	0.0 0.6+
1993 04 15	399	0.0 1.0+	1998 04 21	704	0.0 0.1-	1999 07 13	704	0.1+ 0.1+
1993 04 16	399	0.7- 0.1-	1998 04 22	704	0.3+ 0.0	1999 07 13	704	0.4- 0.0
1993 04 16	399	(2.7- 0.8+)	1998 04 22	704	0.2- 0.6+	1999 07 13	704	0.4+ 0.4-
1993 04 17	894	0.2+ 0.0	1998 04 22	704	0.5- 0.1-	1999 07 13	704	0.1+ 1.2-
1993 04 17	894	0.6- 1.3-	1998 04 22	704	0.6- 0.0	1999 07 16	704	0.3+ 0.4+
1993 04 25	361	(0.5- 2.6+)	1998 04 22	704	0.2- 0.2-	1999 07 16	704	0.8+ 0.0
1993 04 25	361	0.3- 2.1+	1998 04 25	699	0.9+ 0.2+	1999 07 16	704	0.2+ 0.2-
1993 04 25	361	(0.2- 3.7+)	1998 04 25	699	0.6+ 0.3+	1999 08 07	699	0.2- 0.0
1997 01 10	411	0.2- 1.8+	1998 04 25	699	0.9+ 0.2+	1999 08 07	699	0.1+ 0.5+
1997 01 10	411	0.1- 0.2+	1998 05 01	704	(1.2- 2.2-)	1999 08 07	699	0.4- 0.3+
1997 01 11	411	0.1+ 0.2+	1998 05 01	704	0.1- 0.1-	1999 09 03	699	0.0 0.7+
1997 01 11	411	0.1+ 0.5+	1998 05 01	704	0.8+ 0.8+	1999 09 03	699	0.3- 0.5+
1997 01 14	411	0.3- 0.8-	1998 05 01	704	0.5- 0.8+	1999 09 03	699	0.2- 0.2+
1997 01 14	411	0.0 0.2-	1998 05 22	704	0.5- 0.4-	1999 09 07	704	0.3- 0.4+
1997 01 27	411	0.3+ 0.2-	1998 05 22	704	0.7+ 0.9-	1999 09 07	704	0.6- 0.1-
1997 01 27	411	0.1+ 0.3-	1998 05 22	704	0.4- 0.0	1999 09 07	704	0.2- 0.2-
1997 02 12	411	0.2+ 0.2+	1998 05 22	704	0.7- 0.2+	1999 09 07	704	0.3- 0.5-
1997 02 12	411	0.1+ 0.3-	1998 05 22	704	0.7- 0.1+	1999 09 07	704	0.6- 1.0+
1998 04 05	732	0.6- 0.1+	1998 05 22	699	0.5+ 0.2-	1999 09 13	106	0.3+ 0.0
1998 04 05	732	1.2- 0.4-	1998 05 22	699	0.6+ 0.6-	1999 09 13	106	0.2+ 0.5-
1998 04 05	732	0.2- 0.5+	1998 05 22	699	0.1+ 0.5-	1999 09 13	106	0.4+ 0.3+
1998 04 06	732	0.9+ 0.5+	1998 05 24	704	0.1- 1.1-			

(11569)* 1993 KB₂ = 1983 SK = 1983 TK

Discovered 1993 May 27 by C. S. Shoemaker at Palomar.

Id. G. V. Williams (*MPC* 22414)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	29.61450		(2000.0)	P	Q
<i>n</i>	0.18016064	ω	97.89142	+0.07196587	+0.99717359
<i>a</i>	3.1047701	Ω	176.03878	-0.99303736	+0.07365696
<i>e</i>	0.1597426	<i>i</i>	18.20394	-0.09326150	-0.01481478
<i>P</i>	5.47	<i>H</i>	12.0	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1983 09 29	046	(0.4+ 7.3-)	1998 04 20	704	0.6- 1.3+	1999 07 12	704	0.1- 0.4-
1983 09 29	046	(1.9- 5.9-)	1998 04 20	704	1.7+ 0.0	1999 07 12	704	1.5- 0.8-
1983 10 05	046	(2.1+ 10.5-)	1998 04 20	704	0.3+ 1.4-	1999 07 22	704	0.1- 0.8+
1983 10 05	046	(5.1- 6.2-)	1998 04 20	704	0.0 1.7+	1999 07 22	704	0.1- 0.4+
1992 03 03	809	0.2- 0.1-	1998 04 20	704	0.7+ 0.5+	1999 07 22	704	0.2- 0.5+
1992 03 05	809	0.3+ 1.2+	1998 04 21	704	0.8- 1.1+	1999 07 22	704	0.5- 0.5+
1992 03 08	809	0.5+ 0.8+	1998 04 21	704	0.9- 0.7+	1999 07 22	704	1.1+ 0.4+
1992 04 07	809	0.3- 0.9+	1998 04 21	704	0.4- 0.3+	1999 07 22	951	0.0 0.4+
1993 05 24	675	(0.8+ 2.4-)	1998 04 21	704	1.0- 0.2+	1999 07 23	951	0.1- 0.5+
1993 05 25	675	(0.6+ 3.0-)	1998 04 21	704	1.0- 1.7+	1999 07 23	951	0.0 0.6+
1993 05 27	675	0.4- 0.8-	1998 04 22	127	0.3- 0.7+	1999 07 24	951	0.4+ 0.7+
1993 05 27	675	0.3+ 1.0-	1998 04 22	127	0.1+ 0.7+	1999 07 26	127	0.8+ 1.2-
1993 06 22	071	(2.7- 3.3-)	1998 04 24	704	0.0 1.2+	1999 07 26	127	0.7+ 0.9-
1993 06 22	071	(4.6- 3.4-)	1998 04 24	704	0.6+ 0.8+	1999 07 29	127	0.9+ 0.9+
1993 06 22	071	(3.8- 5.1-)	1998 04 24	704	0.4+ 1.2+	1999 07 29	127	1.0+ 0.8+
1993 06 23	071	(4.1- 4.5-)	1998 04 24	704	0.6+ 1.2+	1999 08 09	106	0.2- 0.1+
1993 06 23	071	(3.9- 4.9-)	1998 04 30	127	1.2+ 1.1+	1999 08 09	106	1.3- 0.7+
1998 03 24	704	0.2- 1.0-	1998 04 30	127	0.9+ 1.2+	1999 08 09	106	(2.8- 1.2-)
1998 03 24	704	0.1+ 0.7-	1998 05 01	566	1.0- 0.6-	1999 09 08	704	0.3+ 0.4-

1998 03 24	704	0.4- 0.6-	1998 05 01	566	0.7- 0.7-	1999 09 08	704	0.2- 0.5-
1998 03 24	704	0.0 0.9-	1998 05 01	566	0.7- 0.7-	1999 09 08	704	0.1+ 0.4-
1998 03 24	704	0.1- 0.6-	1998 05 02	566	0.6- 0.5-	1999 09 08	704	0.1- 0.6-
1998 03 25	704	0.2+ 0.0	1998 05 02	566	0.0 0.1+	1999 09 09	704	0.0 0.6-
1998 03 25	704	0.2- 0.1+	1998 05 02	566	0.2- 0.5-	1999 09 09	704	0.0 0.2-
1998 03 25	704	0.1- 0.8-	1998 05 02	566	0.3+ 0.0	1999 09 09	704	0.2- 0.5-
1998 03 25	704	0.8+ 0.8-	1998 05 02	566	0.5- 0.4-	1999 09 09	704	0.1- 0.4-
1998 03 25	704	0.2- 0.9-	1998 05 02	566	0.5+ 0.3+	1999 09 09	704	0.2- 0.3-
1998 03 25	367	0.3- 0.1-	1998 05 16	704	1.4+ 0.1-	1999 09 14	704	0.0 0.0
1998 03 25	367	0.4- 0.3-	1998 05 16	704	1.3+ 0.1+	1999 09 14	703	0.1- 0.1+
1998 03 26	566	0.0 1.1-	1998 05 16	704	0.3+ 0.0	1999 09 14	704	0.0 0.2-
1998 03 26	566	0.1- 1.1-	1998 05 16	704	(0.1+ 2.7+)	1999 09 14	703	0.0 0.0
1998 03 26	566	0.1+ 0.9-	1998 05 16	704	(2.0- 1.8+)	1999 09 14	704	0.2+ 0.1+
1998 03 27	426	0.0 0.3-	1999 07 11	628	0.2+ 0.7+	1999 09 14	703	0.4- 0.0
1998 03 27	426	0.1- 0.3-	1999 07 11	628	0.3+ 0.5+	1999 09 14	704	0.0 0.0
1998 03 27	426	0.1- 0.4-	1999 07 11	628	0.3+ 0.4+	1999 09 14	703	0.0 0.0
1998 03 28	426	0.1- 0.4-	1999 07 11	628	0.1+ 0.4+	1999 09 14	704	0.0 0.2-
1998 03 28	426	0.1- 0.4-	1999 07 12	704	0.2- 0.3+			
1998 03 28	426	0.2- 0.3-	1999 07 12	704	1.0- 0.4-			

(11570)* 1993 LE = 1997 CD₁

Discovered 1993 June 14 by H. E. Holt at Palomar.

Id. S. Nakano (*MPC* 29103)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	55.64041		(2000.0)	P	Q
<i>n</i>	0.18758790	ω	144.73087	+0.12863579	+0.97979406
<i>a</i>	3.0222670	Ω	132.12692	-0.95068895	+0.16578697
<i>e</i>	0.0817792	<i>i</i>	11.91748	-0.28221154	-0.11188509
<i>P</i>	5.25	<i>H</i>	12.9	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1993 06 14	675	1.5+ 2.0-	1998 05 26	610	0.5+ 1.2+	1998 06 19	704	0.6+ 0.0
1993 06 17	675	0.1- 0.2+	1998 05 27	699	0.3+ 0.3-	1998 06 19	704	0.6- 0.2-
1993 06 20	675	1.7- 0.7-	1998 05 27	699	0.0 0.3-	1999 07 16	704	0.1- 0.1+
1997 02 01	411	0.1+ 0.3-	1998 05 27	699	0.2+ 0.1-	1999 07 16	704	0.7+ 0.3-
1997 02 01	411	0.1- 0.6-	1998 06 03	704	0.2- 0.0	1999 07 16	704	0.7+ 0.3+
1997 02 03	411	0.0 0.5-	1998 06 03	704	0.1- 0.1+	1999 07 16	704	0.2+ 0.5-
1997 02 03	411	0.2+ 0.0	1998 06 03	704	0.0 0.7+	1999 08 12	699	1.1- 0.7+
1997 02 11	411	0.1+ 0.5+	1998 06 03	704	0.6- 0.1-	1999 08 12	699	0.1+ 0.5+
1997 02 11	411	0.4- 0.4+	1998 06 03	704	0.1+ 0.7-	1999 08 12	699	0.2- 0.3+
1998 05 23	704	0.8- 0.2-	1998 06 13	610	0.1- 0.5+	1999 09 07	699	0.2- 0.5+
1998 05 23	704	0.2+ 0.7-	1998 06 13	610	0.3- 0.5+	1999 09 07	699	0.1- 0.3+
1998 05 23	704	0.1+ 1.1+	1998 06 13	610	0.6- 0.6+	1999 09 07	699	0.6+ 0.3+
1998 05 23	704	0.9+ 0.4-	1998 06 13	610	0.8- 0.6+	1999 09 09	704	0.8+ 0.1+
1998 05 23	704	0.1+ 1.3+	1998 06 14	610	0.9+ 0.1+	1999 09 09	704	0.4+ 1.0+
1998 05 26	704	0.2+ 0.1-	1998 06 14	610	0.9+ 0.1+	1999 09 09	704	2.1- 0.2-
1998 05 26	704	0.2- 0.2-	1998 06 14	610	0.9+ 0.1+	1999 09 09	704	0.6- 1.9-
1998 05 26	704	0.2+ 0.3-	1998 06 14	610	1.0+ 0.0	1999 09 09	704	(2.3- 2.0-)
1998 05 26	610	1.2- 0.8-	1998 06 19	704	0.0 0.0	1999 09 13	704	0.5+ 0.2-
1998 05 26	610	0.7- 0.3-	1998 06 19	704	0.6- 0.1-	1999 09 13	704	0.3+ 0.3-
1998 05 26	610	0.0 0.6+	1998 06 19	704	0.2+ 0.2-	1999 09 13	704	0.1+ 0.1-

(11571)* 1993 OR_s = 1994 VS₂

Discovered 1993 July 20 by E. W. Elst at the European Southern

Observatory.

Id. S. Nakano (*MPC* 24568)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	320.33142		(2000.0)	P	Q
n	0.18343012	ω	270.30630	+0.67153359	-0.74019772
a	3.0677663	Ω	137.44234	+0.69821650	+0.61679842
e	0.2409469	i	2.87401	+0.24806524	+0.26770700
P	5.37	H	13.9	G 0.15	U 1

Residuals in seconds of arc

1993 07 13	809	(1.1+ 3.4+)	1997 04 30	704	1.1+ 0.6+	1999 09 07	704	0.1- 0.8-
1993 07 13	809	(0.8+ 3.5+)	1997 05 01	704	0.4+ 0.5-	1999 09 07	704	0.1+ 0.7-
1993 07 13	809	(0.3- 3.8+)	1997 05 01	704	0.5- 0.5+	1999 09 07	704	0.2+ 0.8-
1993 07 19	809	0.2+ 0.3-	1997 05 01	704	0.2+ 0.1-	1999 09 07	704	0.3+ 1.0-
1993 07 19	809	0.6- 0.3+	1997 05 01	704	0.3+ 1.1-	1999 09 09	704	0.2+ 0.3+
1993 07 19	809	0.1- 0.4-	1997 05 01	704	1.7- 0.3-	1999 09 09	704	0.0 0.4-
1993 07 20	809	(0.9- 2.8+)	1997 05 05	704	0.9+ 0.2+	1999 09 09	704	0.0 0.0
1993 07 20	809	(0.9- 3.2+)	1997 05 05	704	1.6- 1.1+	1999 09 09	704	0.5+ 0.1-
1993 07 20	809	(0.8- 2.4+)	1997 05 05	704	0.5+ 0.2+	1999 09 09	704	0.4+ 0.0
1993 07 24	809	(1.3+ 3.2+)	1997 05 05	704	(2.6- 0.8+)	1999 09 12	106	0.2+ 0.7+
1994 11 01	400	1.0+ 0.4-	1999 07 16	704	0.3+ 0.3+	1999 09 12	106	0.3+ 0.6+
1994 11 01	400	0.7+ 1.3+	1999 07 16	704	1.5+ 0.5-	1999 09 13	106	0.2+ 0.8+
1994 11 03	400	0.3- 1.9-	1999 07 16	704	1.4+ 0.2-	1999 09 14	704	0.4- 0.1+
1994 11 03	400	1.8+ 1.0+	1999 07 16	704	0.9+ 0.5-	1999 09 14	704	0.1- 0.0
1994 11 29	400	1.2- 0.0	1999 08 22	703	0.8- 0.7+	1999 09 14	704	0.7- 0.2-
1994 11 29	400	1.5- 1.8+	1999 08 22	703	0.1+ 1.0+	1999 09 14	704	0.4- 0.3-
1995 02 03	691	(0.5- 3.2+)	1999 08 22	703	0.4- 0.9+	1999 09 14	704	0.2- 0.3-
1995 02 03	691	0.5- 0.4-	1999 08 22	703	0.3- 0.5+	1999 09 14	552	1.0- 0.2+
1995 02 03	691	0.7- 0.2-	1999 09 05	699	0.4+ 0.4-	1999 09 14	552	0.7- 0.4+
1997 04 30	704	0.3+ 1.3+	1999 09 05	699	0.0 0.6+	1999 09 14	552	1.6- 0.8+
1997 04 30	704	0.4+ 0.1+	1999 09 05	699	0.2+ 0.5+			
1997 04 30	704	0.8+ 1.1+	1999 09 07	704	0.2+ 0.8-			

(11572)* 1993 RM₇ = 1996 HB₁₀ = 1997 TQ₂₁

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

Id. A. Doppler (*MPC* 33686)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	275.76041		(2000.0)	P	Q
n	0.26125260	ω	51.82975	+0.00815464	+0.99994224
a	2.4234216	Ω	218.63925	-0.92092254	+0.00478139
e	0.1700788	i	0.64248	-0.38966034	+0.00962601
P	3.77	H	15.2	G 0.15	U 1

Residuals in seconds of arc

1993 09 15	809	0.5+ 0.0	1993 09 24	809	1.0+ 0.4+	1997 10 21	691	0.4- 0.2+
1993 09 15	809	0.0 0.0	1996 04 17	809	0.2+ 0.1+	1998 12 13	691	0.1+ 0.1-
1993 09 15	809	1.4- 0.9-	1996 04 17	809	0.2+ 0.0	1998 12 13	691	0.2- 0.3-
1993 09 17	809	1.9- 0.5-	1996 04 17	809	0.1- 0.1-	1998 12 13	691	0.1- 0.4-
1993 09 17	809	0.5- 1.1-	1996 04 18	809	0.0 0.4-	1998 12 23	691	1.1- 0.0
1993 09 17	809	(3.7- 1.4-)	1996 04 18	809	0.5- 0.8-	1998 12 23	691	0.9- 0.2-
1993 09 18	809	0.7+ 0.5-	1996 04 18	809	0.3- 0.4-	1998 12 23	691	(1.7+ 7.7-)
1993 09 18	809	0.9+ 0.2+	1997 10 04	691	0.0 0.4-	1998 12 26	691	0.3- 0.1-
1993 09 18	809	0.3- 0.3-	1997 10 04	691	0.0 0.0	1998 12 26	691	0.7- 0.0
1993 09 18	675	(2.7- 0.4+)	1997 10 04	691	0.0 0.1-	1998 12 26	691	0.3- 0.1-
1993 09 18	675	(3.1- 0.6-)	1997 10 10	691	0.2+ 0.1-	1999 01 13	691	0.9+ 0.1-
1993 09 22	675	(4.4- 0.2-)	1997 10 10	691	0.5+ 0.1+	1999 01 13	691	1.1+ 0.2+
1993 09 22	675	(2.7- 0.9-)	1997 10 10	691	0.1+ 0.2-	1999 01 13	691	1.0+ 0.1-
1993 09 24	809	(2.3+ 3.4+)	1997 10 21	691	0.2- 0.3+			
1993 09 24	809	1.7+ 1.2+	1997 10 21	691	0.2- 0.1+			

(11573)* 1993 SK₃ = 1982 YN₄

Discovered 1993 Sept. 20 by F. Börngen and L. D. Schmadel at Tautenburg. Id. C. M. Bardwell (*MPC* 25068)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	317.12604		(2000.0)	P	Q
n	0.16847482	ω	127.98634	+0.18946498	-0.98143621
a	3.2467291	Ω	311.06506	+0.88803471	+0.18421016
e	0.2733994	i	2.26255	+0.41892406	+0.05338146
P	5.85	H	12.9	G 0.15	U 1

Residuals in seconds of arc

1982 12 23	095	0.8+ 0.5+	1993 09 22	675	0.0 0.1+	1995 03 07	113	0.6+ 0.8-
1989 01 08	675	0.4- 0.9-	1993 09 23	809	(1.1- 2.7-)	1995 03 10	113	1.0- 0.1-

1989 01 08	675	0.6- 0.8+	1993 09 23	809	(2.2- 3.3-)	1995 03 10	113	0.2+ 0.2+
1993 09 15	809	(1.1+ 3.0+)	1993 09 23	809	(1.7- 2.9-)	1995 03 10	113	0.6- 0.1-
1993 09 15	809	(0.4+ 2.8+)	1993 10 12	095	0.4- 0.0	1995 03 23	033	0.0 0.2+
1993 09 15	809	(0.8- 2.9+)	1993 10 17	033	0.1+ 0.6-	1995 03 29	033	1.4- 0.5+
1993 09 16	809	1.7- 0.6-	1993 10 17	033	0.9+ 0.3-	1998 07 20	113	(3.1+ 0.6+)
1993 09 16	809	0.1- 1.4-	1994 01 23	413	0.5+ 0.0	1998 07 20	113	1.1+ 0.5-
1993 09 16	809	0.3+ 0.7-	1994 01 23	413	0.4- 0.3+	1998 07 20	113	0.3- 0.1+
1993 09 17	809	(0.1+ 2.0+)	1995 01 06	033	0.9- 0.2+	1999 08 22	113	0.5- 0.3+
1993 09 17	809	(0.4- 3.0+)	1995 02 03	801	(0.7- 2.7-)	1999 08 22	113	0.5- 0.3+
1993 09 17	809	(1.3+ 2.6+)	1995 02 19	292	1.4+ 0.0	1999 09 10	113	0.4+ 0.7+
1993 09 18	809	(0.9+ 6.4+)	1995 02 19	292	1.0- 0.6-	1999 09 10	113	0.4+ 0.5+
1993 09 18	809	(1.2+ 5.4+)	1995 02 27	801	0.7- 0.2+	1999 09 10	113	0.1- 0.1+
1993 09 18	809	(0.4+ 5.3+)	1995 02 27	801	0.5+ 0.7-	1999 09 10	113	0.1- 0.5+
1993 09 18	675	0.1+ 0.4+	1995 03 04	033	0.3+ 0.2+	1999 09 10	113	0.1+ 0.4+
1993 09 18	675	1.6+ 1.1-	1995 03 04	033	0.6- 0.6+	1999 09 13	106	0.6- 0.6+
1993 09 20	033	0.8- 0.8-	1995 03 05	801	0.2+ 0.5-	1999 09 13	106	0.0 0.0
1993 09 22	033	0.1- 0.4-	1995 03 05	801	0.4+ 0.4-	1999 09 13	106	0.2+ 0.3+
1993 09 22	033	0.6+ 0.3-	1995 03 07	113	1.1+ 0.7-			
1993 09 22	675	0.4+ 0.3+	1995 03 07	113	0.4+ 0.2-			

(11574)* 1994 BP₃ = 1977 DM₂ = 1998 FY₈₂

Discovered 1994 Jan. 16 by E. W. Elst and C. Pollas at Caussols.

Id. A. Gnädig (*MPC* 31963)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	343.80955		(2000.0)	P	Q
n	0.28389667	ω	195.71340	+0.88997523	+0.43471712
a	2.2927807	Ω	137.64485	-0.39326518	+0.88456031
e	0.2492249	i	11.79478	-0.23083887	+0.16903869
P	3.47	H	13.8	G 0.15	U 2

Residuals in seconds of arc

1977 02 18	381	0.3- 0.5+	1999 05 20	704	1.1+ 0.1+	1999 07 13	106	0.5- 0.0
1977 02 18	381	0.8+ 1.7+	1999 05 20	704	(3.3+ 1.9-)	1999 07 13	106	0.9- 0.2-
1977 02 19	381	0.0 0.8+	1999 05 20	704	1.4+ 1.3-	1999 07 13	106	0.5+ 0.9-
1977 02 19	381	0.2- 0.5+	1999 05 21	704	0.7+ 1.0-	1999 07 13	106	0.1- 0.4-
1994 01 16	010	1.3+ 1.4+	1999 05 21	704	0.7+ 0.6-	1999 07 14	704	1.3- 0.6+
1994 01 16	010	0.2- 0.1+	1999 05 21	704	1.5+ 0.7+	1999 07 14	704	1.0- 0.5+
1994 01 17	010	0.1+ 0.6-	1999 05 21	704	0.9+ 1.3-	1999 07 14	704	0.8- 0.3+
1994 01 17	010	0.0 0.2+	1999 05 21	704	(0.4- 2.1+)	1999 07 14	704	0.9- 0.5+
1994 01 17	010	0.2+ 0.4-	1999 05 21	704	0.0 1.1+	1999 07 14	704	0.7- 0.1-
1994 01 30	010	(7.8+ 2.5-)	1999 05 21	704	0.5- 0.0	1999 07 17	106	0.1- 0.0
1994 01 30	010	(9.3+ 4.3-)	1999 05 21	704	0.0 1.2+	1999 07 17	106	0.1- 0.0
1994 01 31	010	(0.9- 2.8+)	1999 05 21	704	1.1+ 1.0+	1999 07 17	106	0.1+ 0.0
1994 01 31	010	(0.8- 3.9+)	1999 06 21	701	0.4+ 0.5-	1999 07 19	704	0.1+ 0.3+
1994 01 31	010	(0.0 2.8-)	1999 06 21	701	0.6+ 0.3-	1999 07 19	704	0.1- 0.3+
1998 03 24	704	0.7- 0.9-	1999 06 21	701	0.5+ 0.7-	1999 07 19	704	0.2+ 0.1+
1998 03 24	704	0.7- 0.2+	1999 06 23	701	0.7+ 0.6-	1999 07 23	704	0.6+ 0.1-
1998 03 24	704	0.2- 1.7-	1999 06 23	701	0.7+ 0.7-	1999 07 23	704	0.2+ 0.6+
1998 03 24	704	0.7- 0.4-	1999 07 13	704	0.7- 0.2+	1999 07 23	704	0.5+ 0.8+
1998 03 25	704	0.6- 0.1-	1999 07 13	704	0.6- 0.3+	1999 07 23	704	0.3+ 0.5+
1998 03 25	704	0.1+ 0.8+	1999 07 13	704	0.5- 0.5+	1999 09 11	704	0.2+ 0.1+
1998 03 25	704	0.9+ 0.6-	1999 07 13	704	0.8- 0.3+	1999 09 11	704	0.0 0.2-
1998 03 25	704	0.3- 0.0	1999 07 13	704	0.5- 0.6+	1999 09 11	704	0.2+ 1.0+
1998 03 25	704	0.4+ 1.0+	1999 07 13	106	0.1- 0.4-	1999 09 11	704	1.0+ 0.9-
1999 05 20	704	0.4- 0.3+	1999 07 13	106	0.1- 0.7-	1999 09 11	704	0.3- 0.3-

(11575)* 1994 BN₄

Discovered 1994 Jan. 31 at Farra d'Isonzo.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	5.99872		(2000.0)	P	Q
n	0.28128584	ω	75.17503	+0.85728306	+0.50589261
a	2.3069462	Ω	254.35347	-0.50225675	+0.78096969
e	0.1499048	i	5.69735	-0.11315437	+0.36627723
P	3.50	H	13.9	G 0.15	U 1

Residuals in seconds of arc

1994 01 31	595	0.2-	0.3+	1997 01 12	595	0.2-	0.2-	1998 04 19	704	0.3-	0.3-
1994 01 31	595	0.5-	0.5+	1997 01 15	599	0.6-	0.3-	1998 04 20	595	0.3-	0.4-
1994 02 01	595	0.0	0.2+	1997 01 16	599	0.6-	0.5-	1998 04 20	595	0.1-	0.4+
1994 02 03	589	1.8+	0.2-	1997 01 16	599	0.4-	0.6-	1998 04 25	595	0.4-	0.1-
1994 02 03	589	0.5+	0.6+	1997 01 29	595	0.4-	0.5-	1998 04 25	595	0.4-	0.3+
1994 02 03	589	0.7+	0.3-	1997 01 29	595	0.1-	0.1+	1998 04 29	566	1.7-	0.3-
1994 02 03	589	0.4+	0.6+	1997 01 29	595	0.3-	0.1+	1998 04 29	566	1.3-	0.3-
1994 02 03	589	0.1+	0.0	1997 02 01	595	0.3-	0.1-	1998 04 29	566	1.7-	0.2-
1994 02 06	595	0.1-	0.3+	1997 02 01	595	0.2+	0.3-	1999 07 23	704	0.1-	0.0
1994 02 06	595	0.2-	0.5+	1998 02 23	566	1.3+	1.2-	1999 07 23	704	0.7-	0.4+
1994 02 07	595	0.5-	0.0	1998 02 23	566	1.7+	0.9-	1999 07 23	704	0.6-	0.5+
1994 02 07	595	0.5-	0.1+	1998 02 23	566	1.2+	0.9-	1999 07 26	595	0.9-	0.6+
1994 02 14	595	0.4-	0.0	1998 03 03	704	0.6+	0.1+	1999 07 26	595	0.9+	0.2-
1994 02 14	595	0.3-	0.1+	1998 03 03	704	0.3-	1.0+	1999 09 01	595	0.7-	0.2-
1994 03 10	595	0.2-	0.0	1998 03 03	704	1.1+	0.3-	1999 09 01	595	0.5+	0.4-
1994 03 10	595	0.6+	0.7-	1998 03 03	704	1.7+	0.1-	1999 09 02	595	0.1+	0.1-
1994 03 12	595	0.3-	0.1-	1998 03 03	704	0.5+	1.3+	1999 09 02	595	0.1+	0.2-
1994 03 12	595	0.9+	0.6+	1998 03 04	704	1.9-	1.1-	1999 09 04	703	0.3-	0.4-
1996 12 02	411	0.1-	0.8-	1998 03 04	704	1.4-	0.2+	1999 09 04	703	0.2-	0.1+
1996 12 02	411	0.5+	0.0	1998 03 04	704	(3.2-	0.0)	1999 09 04	703	0.0	0.6+
1996 12 03	411	0.3-	0.1-	1998 03 04	704	(1.7-	3.1+)	1999 09 04	703	0.5+	0.1-
1996 12 03	411	0.1+	0.2-	1998 03 04	704	(2.3-	1.3+)	1999 09 08	704	0.0	2.8+
1996 12 06	595	0.7+	0.1+	1998 03 26	595	0.8+	0.3+	1999 09 08	704	0.4-	0.4+
1996 12 06	595	0.7+	0.3+	1998 03 26	595	0.5+	0.2+	1999 09 08	704	0.2-	0.3-
1996 12 08	595	0.2+	0.1+	1998 03 28	595	0.4+	1.0+	1999 09 08	704	0.0	0.2-
1996 12 08	595	0.0	0.1+	1998 03 28	595	0.8+	0.4+	1999 09 08	704	0.1-	0.5-
1996 12 12	905	1.4+	0.6+	1998 03 31	704	0.6+	0.8+	1999 09 10	704	0.4+	0.0
1996 12 12	905	1.8+	0.4-	1998 03 31	704	0.3+	0.2+	1999 09 10	704	0.2+	0.1+
1996 12 12	905	1.6-	0.3-	1998 03 31	704	(2.1+	0.3+)	1999 09 10	704	0.1-	0.5-
1996 12 15	905	0.2+	0.7+	1998 03 31	704	0.8-	0.4+	1999 09 10	106	0.2-	0.3+
1996 12 15	905	0.2-	0.8+	1998 03 31	704	0.4+	0.6+	1999 09 11	106	0.3-	0.1+
1996 12 15	595	0.3-	0.4+	1998 04 01	704	0.1-	0.6+	1999 09 11	106	0.2-	0.2+
1996 12 15	595	0.5-	0.2+	1998 04 01	704	0.2+	0.3+	1999 09 12	699	0.1-	0.0
1996 12 26	327	0.9-	1.0-	1998 04 01	704	0.6+	0.2+	1999 09 12	699	0.3-	0.6+
1996 12 26	327	0.2+	0.1-	1998 04 01	704	0.1+	0.2+	1999 09 12	699	0.2-	0.2+
1996 12 26	327	0.3-	0.1+	1998 04 19	704	0.3-	0.6-	1999 09 16	704	0.2+	0.2+
1997 01 12	595	0.4-	1.1+	1998 04 19	704	0.3-	0.7+	1999 09 16	704	0.5+	0.4+
1997 01 12	595	(2.3+	0.1+)	1998 04 19	704	0.3-	0.9+	1999 09 16	704	0.3+	0.5+
1997 01 12	595	0.3+	0.4-	1998 04 19	704	0.4-	0.1+	1999 09 16	704	0.2+	0.0

(11576)* 1994 CL = 1998 FC₁₅

Discovered 1994 Feb. 3 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 31540)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	77.13698		(2000.0)		P	Q	
n	0.26184909	ω	255.76063		-0.30086316	+0.95360351	
a	2.4197398	Ω	356.66837		-0.78534514	-0.25430682	
e	0.1308297	i	10.94262		-0.54103084	-0.16114708	
P	3.76	H	13.3	G	0.15	U	1

Residuals in seconds of arc

1994 02 03	411	1.2+	1.4-	1998 03 22	704	0.7+	0.5+	1999 07 16	704	0.8+	0.3+
1994 02 03	411	0.7+	0.7-	1998 03 22	704	1.0-	1.6+	1999 08 12	699	0.3-	0.5+
1994 02 05	411	0.3+	0.3-	1998 03 22	704	0.5-	0.4+	1999 08 12	699	0.7-	1.1+
1994 02 05	411	0.3-	0.3+	1998 03 24	399	1.2-	1.5+	1999 08 12	699	0.1-	0.7+
1994 02 05	411	0.5+	0.3+	1998 03 24	399	1.6-	0.3+	1999 09 05	699	0.0	0.8+
1994 02 10	411	0.1+	0.1-	1998 03 28	704	0.3+	0.5+	1999 09 05	699	0.7+	0.8+
1994 02 10	411	0.2-	0.1+	1998 03 28	704	0.5+	0.3+	1999 09 05	699	0.7+	0.8+
1994 02 10	411	0.1+	0.3+	1998 03 28	704	0.6+	0.5-	1999 09 06	691	0.3-	0.5+
1994 02 14	411	0.1+	0.4+	1998 03 28	704	0.6+	0.6-	1999 09 06	691	0.4-	0.4+
1994 02 14	411	0.0	0.2-	1998 03 28	704	0.6-	1.6-	1999 09 06	691	0.2-	0.4+
1994 02 14	411	0.1-	0.0	1998 03 29	704	0.6-	0.9+	1999 09 07	704	0.4-	0.7-
1994 02 14	896	1.2-	0.0	1998 03 29	704	0.7+	0.0	1999 09 07	704	0.3-	0.8-
1994 02 14	896	0.8+	0.6+	1998 03 29	704	0.1+	0.8+	1999 09 07	704	0.1-	0.7-
1994 02 15	675	1.1-	1.4+	1998 03 29	704	0.4-	0.2+	1999 09 07	704	0.0	0.9-

1994 02 15	675	1.1-	1.2+	1998 03 29	704	0.1-	0.8-	1999 09 07	704	0.4-	0.9-
1994 03 04	411	0.4-	0.7-	1998 03 31	699	0.3+	0.8+	1999 09 09	704	0.1+	0.1+
1994 03 04	411	0.4+	0.9-	1998 03 31	699	0.7+	0.6+	1999 09 09	704	0.4-	0.0
1994 03 04	411	0.3+	0.4-	1998 03 31	699	1.6+	0.4+	1999 09 09	704	0.2-	0.0
1997 01 14	327	0.1-	0.3+	1998 04 01	704	0.0	0.3+	1999 09 09	704	0.0	0.4-
1997 01 14	327	0.3-	0.1+	1998 04 01	704	0.3-	0.3+	1999 09 09	704	0.5-	0.2-
1997 01 14	327	0.4+	0.2+	1998 04 01	704	0.3+	0.6+	1999 09 09	704	0.4-	0.5-
1998 02 24	566	0.4+	0.8-	1998 04 01	704	0.9+	0.7+	1999 09 09	704	0.2+	0.1-
1998 02 24	566	0.3+	0.7-	1998 04 01	704	0.3-	0.4+	1999 09 09	704	0.1-	0.1-
1998 02 24	566	0.7+	1.0-	1998 04 18	704	0.4+	0.4+	1999 09 09	704	0.1-	0.1+
1998 03 04	704	(2.7-	0.2+)	1998 04 18	704	0.2+	0.4-	1999 09 09	704	0.1+	0.1-
1998 03 04	704	(2.9-	0.5+)	1998 04 18	704	0.6+	1.3-	1999 09 10	704	0.1+	0.3+
1998 03 04	704	(3.3-	0.5+)	1998 04 18	704	0.4-	0.8-	1999 09 10	704	0.1-	0.2-
1998 03 04	704	(3.3-	0.4-)	1998 04 18	704	(1.8-	3.8+)	1999 09 10	704	0.0	0.2-
1998 03 04	704	(3.8-	0.1-)	1998 04 19	704	0.1+	0.2-	1999 09 10	704	0.0	0.2+
1998 03 08	699	0.0	0.7+	1998 04 19	704	1.3+	1.1-	1999 09 11	699	0.2+	1.1+
1998 03 08	699	0.6+	0.5+	1998 04 19	704	0.4+	1.1-	1999 09 11	699	0.1+	0.9+
1998 03 08	699	0.5-	0.8+	1998 04 19	704	0.1-	0.4-	1999 09 11	699	0.2+	1.1+
1998 03 20	704	0.1+	0.0	1998 04 19	704	0.1+	0.0	1999 09 12	106	0.1-	0.9+
1998 03 20	704	0.1-	0.2-	1998 06 18	704	1.1+	1.0-	1999 09 12	106	0.6+	0.3-
1998 03 20	704	0.4+	0.3+	1998 06 18	704	0.4+	1.0+	1999 09 13	106	0.2+	0.1+
1998 03 20	704	0.1-	0.1+	1998 06 18	704	0.3-	0.2-	1999 09 14	704	0.4-	0.1+
1998 03 20	704	0.4-	0.0	1998 06 18	704	1.1-	0.3+	1999 09 14	704	0.2-	0.1-
1998 03 21	399	1.0-	0.3+	1999 07 16	704	0.2+	0.9-	1999 09 14	704	0.4-	0.0
1998 03 21	399	0.6-	0.1+	1999 07 16	704	0.7+	0.5-	1999 09 14	704	0.4-	0.2-
1998 03 22	704	0.2-	0.1+	1999 07 16	704	0.1-	0.3-	1999 09 14	704	0.5-	0.2-
1998 03 22	704	0.5-	0.4-	1999 07 16	704	0.7+	0.1-				

(11577)* 1994 CO₁₇ = 1975 GE = 1979 HD₄ = 1995 QU₂

Discovered 1994 Feb. 8 by E. W. Elst at the European Southern Observatory.

Id. T. Urata (*MPC* 25643)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	44.30954		(2000.0)	P	Q		
n	0.25647685	ω	206.18339	+0.20559081	+0.97627477		
a	2.4534127	Ω	75.74236	-0.88512471	+0.21512504		
e	0.1414266	i	4.02149	-0.41747654	+0.02467355		
P	3.84	H	14.0	G	0.15	U	1

Residuals in seconds of arc

1975 04 15	805	1.7+	2.2+	1995 08 20	905	0.3+	0.5+	1999 09 07	699	0.2+	0.1+
1975 04 18	805	1.1-	1.2+	1995 08 24	905	0.2-	0.1-	1999 09 07	699	0.6-	0.3+
1979 04 30	095	(2.8-	1.5+)	1995 08 24	905	0.6+	0.9+	1999 09 07	704	0.1-	0.8+
1994 02 08	809	1.6+	0.7+	1996 11 30	327	(2.7-	0.5+)	1999 09 07	704	0.3+	0.2+
1994 02 08	809	0.7+	0.5+	1996 11 30	327	1.5-	0.7+	1999 09 07	704	0.0	0.0
1994 02 08	809	0.9+	0.6+	1996 11 30	327	1.4-	0.2-	1999 09 07	699	0.7-	1.0+
1994 02 10	809	(3.1+	1.0+)	1998 03 03	699	0.1+	0.9+	1999 09 07	704	0.0	0.1+
1994 02 10	809	(2.0+	1.1+)	1998 03 03	699	0.7+	0.0	1999 09 07	704	0.4+	0.2+
1994 02 10	809	1.9+	0.3+	1998 03 03	699	0.2-	1.1+	1999 09 09	704	0.1-	0.2+
1994 02 13	809	(2.4+	0.7+)	1998 04 19	704	0.2-	0.4+	1999 09 09	704	0.4-	0.8+
1994 02 13	809	1.9+	0.3+	1998 04 19	704	0.8-	0.7+	1999 09 09	704	0.7+	0.7+
1994 02 13	809	0.7+	0.5+	1998 04 19	704	0.4-	1.0+	1999 09 09	704	1.0+	1.2+
1994 02 16	010	(0.2-	3.8+)	1998 04 19	704	1.0-	0.9+	1999 09 09	704	0.8+	1.7+
1994 02 16	010	(0.4-	4.4+)	1998 04 19	704	0.6-	0.1+	1999 09 13	704	0.1+	1.1+
1995 08 16	905	1.4-	1.7-	1999 07 16	704	1.0-	0.3-	1999 09 13	704	0.2+	0.5+
1995 08 16	905	0.5-	0.7-	1999 07 16	704	0.8-	0.2-	1999 09 13	704	0.1+	0.9+
1995 08 16	905	0.9-	0.5+	1999 07 16	704	0.2-	0.5-	1999 09 13	704	0.1-	0.1+
1995 08 20	905	0.4-	0.8+	1999 07 16	704	0.9-	0.0				

1999 SEPT. 28

M.P.C. 35853

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	180.80032		(2000.0)	P	Q
<i>n</i>	0.25417943	ω	320.61369	-0.68478819	-0.72859169
<i>a</i>	2.4681740	Ω	172.56288	+0.69415888	-0.65834169
<i>e</i>	0.0789850	<i>i</i>	6.56932	+0.22183009	-0.18905124
<i>P</i>	3.88	<i>H</i>	14.2	<i>G</i>	0.15

Residuals in seconds of arc

1990 03 06	809	(1.3+ 2.6+)	1998 02 27	596	0.6+ 0.2+	1998 04 22	704	0.6- 0.5-
1990 03 06	809	(1.3+ 3.0+)	1998 02 28	596	0.3- 0.1-	1998 04 22	704	0.3- 0.3-
1990 03 06	809	(1.5+ 3.2+)	1998 02 28	596	0.0 0.3-	1998 04 22	704	0.1- 0.6-
1990 03 07	809	0.9+ 1.1+	1998 03 19	596	0.2- 0.2+	1998 04 22	704	0.6- 0.1+
1990 03 07	809	0.9+ 0.5+	1998 03 19	596	0.1+ 0.3+	1998 04 30	699	0.5+ 0.3-
1990 03 07	809	0.9+ 0.1-	1998 03 19	596	0.3- 0.5+	1998 04 30	699	0.6+ 0.4-
1992 10 25	675	0.7- 0.5+	1998 03 20	704	0.4+ 0.5+	1998 04 30	699	0.5+ 0.8-
1992 10 25	675	0.5+ 0.1+	1998 03 20	704	0.8+ 0.3+	1998 05 01	699	0.2- 0.2-
1994 03 04	596	1.8- 0.7-	1998 03 20	704	0.1+ 0.3+	1998 05 01	699	0.9+ 0.4-
1994 03 04	596	1.8- 0.3+	1998 03 20	704	0.2+ 0.3-	1998 05 01	699	1.0+ 0.1+
1994 03 04	596	(3.1- 1.7+)	1998 03 22	704	1.3- 0.8+	1999 07 13	704	0.5- 0.3-
1994 03 05	596	(2.3- 2.7-)	1998 03 22	704	0.0 0.8+	1999 07 13	704	0.5- 0.2-
1994 03 05	596	0.3+ 1.6-	1998 03 22	704	0.3+ 0.5+	1999 07 13	704	0.6- 0.6-
1994 03 05	596	(3.0+ 1.6-)	1998 03 22	704	0.5+ 0.2-	1999 07 13	704	0.9- 0.7-
1994 03 05	596	(0.5+ 3.5-)	1998 03 22	704	0.5+ 0.4+	1999 07 13	704	0.2- 0.4-
1994 03 06	596	(4.2- 1.8-)	1998 03 25	704	0.6+ 0.7+	1999 08 02	596	0.6- 0.0
1994 03 06	596	(0.9+ 2.8-)	1998 03 25	704	0.6+ 0.9+	1999 08 02	596	1.4- 0.1+
1994 03 06	596	(0.5- 2.4-)	1998 03 25	704	0.2+ 0.7+	1999 08 02	596	1.0- 0.5+
1994 03 06	596	(2.1- 4.4-)	1998 03 25	704	0.5+ 1.2+	1999 09 05	595	0.0 0.4-
1994 03 07	596	0.1- 0.6-	1998 03 25	704	0.8+ 0.6+	1999 09 05	595	0.0 0.1+
1994 03 07	596	1.8- 0.9-	1998 03 26	566	0.7+ 0.5+	1999 09 07	704	0.1+ 0.9+
1994 03 07	596	0.2+ 0.8-	1998 03 26	566	1.6+ 0.0	1999 09 07	704	0.6+ 0.3-
1994 03 18	596	1.5- 0.4-	1998 03 26	566	0.7+ 0.1+	1999 09 07	704	0.2+ 0.6-
1994 03 18	596	(4.6- 2.3+)	1998 04 03	596	0.7- 0.1-	1999 09 07	704	0.3+ 0.3-
1994 03 18	596	(1.2+ 2.7-)	1998 04 03	596	1.0- 0.2-	1999 09 07	595	0.6+ 0.6-
1994 03 30	596	1.7+ 1.6+	1998 04 03	596	0.9- 0.1+	1999 09 07	595	0.7+ 0.2+
1994 03 30	596	0.1- 0.1+	1998 04 20	704	0.2- 0.1+	1999 09 09	704	1.2+ 0.6+
1994 03 30	596	(2.4- 0.1-)	1998 04 20	704	1.0- 0.3-	1999 09 09	704	0.8+ 0.2-
1994 04 03	675	0.5- 1.1-	1998 04 20	704	0.3- 0.0	1999 09 09	704	0.2- 0.9+
1994 04 03	675	0.2- 0.4-	1998 04 20	704	0.1+ 0.3-	1999 09 09	704	0.1+ 0.6-
1994 04 04	675	0.1+ 0.6+	1998 04 20	704	1.0- 0.5-	1999 09 13	704	0.3+ 0.9+
1994 04 04	675	1.1- 0.4+	1998 04 20	596	0.3+ 0.1-	1999 09 13	704	0.4+ 0.9+
1994 04 08	596	(0.2+ 2.1+)	1998 04 20	596	0.5- 0.2-	1999 09 13	704	0.1+ 0.4+
1994 04 08	596	0.3+ 0.2-	1998 04 20	596	0.0 0.1-	1999 09 13	704	1.1+ 0.6+
1994 04 08	596	0.2+ 0.1+	1998 04 22	704	0.3+ 0.4-	1999 09 13	704	0.3- 0.0

(11579)* 1994 JN = 1990 OJ₁

Discovered 1994 May 6 by K. Endate and K. Watanabe at Kitami.

Id. S. Nakano (*MPC* 23785)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	53.10494		(2000.0)	P	Q
<i>n</i>	0.23640770	ω	87.38108	+0.31565846	+0.94488742
<i>a</i>	2.5903690	Ω	201.64654	-0.93697374	-0.29593652
<i>e</i>	0.1961890	<i>i</i>	13.62194	-0.14979969	+0.14003338
<i>P</i>	4.17	<i>H</i>	13.6	<i>G</i>	0.15

Residuals in seconds of arc

1990 07 20	675	0.8- 0.0	1998 03 25	704	0.7+ 0.4-	1998 05 16	704	0.9- 0.6+
1990 07 20	675	0.3+ 1.2-	1998 03 25	704	1.3+ 0.8+	1998 05 16	704	0.4- 0.3+
1990 07 22	675	0.6- 0.3-	1998 03 25	704	(2.3+ 1.9+)	1998 05 16	704	0.9- 1.6-
1990 07 22	675	0.2+ 0.6-	1998 03 25	704	0.5- 0.3+	1998 05 22	566	1.9- 1.0-
1994 05 06	400	0.6- 1.7-	1998 03 29	704	0.3+ 0.0	1998 05 22	566	1.5- 0.7-
1994 05 06	400	0.8+ 1.0+	1998 03 29	704	0.2+ 0.1-	1998 05 22	566	1.8- 0.8-
1994 05 07	400	0.9- 0.6+	1998 03 29	704	0.3+ 0.0	1998 05 28	699	0.9- 0.9-
1994 05 07	400	1.2- 0.4-	1998 03 29	704	0.5- 1.0+	1998 05 28	699	0.5- 0.5-
1994 05 15	675	0.4+ 0.8+	1998 03 29	704	0.1- 0.6-	1998 05 28	699	0.4- 1.0-
1994 05 15	675	0.1+ 0.1+	1998 04 01	704	0.4+ 0.5-	1999 07 23	704	0.2+ 0.1+
1994 05 16	675	0.3+ 0.7-	1998 04 01	704	0.4+ 0.2+	1999 07 23	704	0.3+ 0.4+

1994 05 16	675	1.0+ 0.2+	1998 04 01	704	0.0 0.3+	1999 07 23	704	0.1- 0.8+
1994 06 07	675	0.8+ 1.0+	1998 04 01	704	0.5- 0.1+	1999 07 23	704	0.5- 0.6+
1994 06 07	675	0.1+ 0.3+	1998 04 01	704	0.6+ 0.6+	1999 07 23	704	0.2- 0.2+
1994 06 11	400	0.9+ 0.5+	1998 04 21	704	0.3+ 0.3+	1999 08 19	327	0.1- 0.1-
1994 06 11	400	1.7+ 1.4-	1998 04 21	704	0.9+ 0.1+	1999 08 19	327	0.3+ 0.2-
1995 10 14	118	0.4+ 0.3-	1998 04 21	704	0.6- 1.1+	1999 08 19	327	0.1+ 0.1+
1995 10 19	118	1.0+ 0.1-	1998 04 21	704	0.2- 1.2+	1999 08 22	327	0.5- 0.3+
1995 10 21	118	0.5+ 0.0	1998 04 21	704	0.3+ 1.6+	1999 08 22	327	0.1- 0.3+
1995 10 26	118	0.4- 0.1+	1998 04 22	704	0.3+ 0.7+	1999 08 22	327	0.6- 0.5+
1995 11 14	691	0.3- 0.4-	1998 04 22	704	0.9+ 1.0+	1999 09 05	703	1.1+ 0.1-
1995 11 14	691	0.5- 0.6-	1998 04 22	704	1.2+ 0.9+	1999 09 05	703	0.3+ 0.7+
1995 11 14	691	0.3- 0.5-	1998 04 22	704	0.6+ 0.0	1999 09 05	703	0.1+ 0.5+
1995 11 19	691	0.4- 0.2+	1998 04 22	704	0.5+ 0.6+	1999 09 05	703	0.5- 1.0+
1995 11 19	691	0.6- 0.4-	1998 04 28	900	0.3- 0.1+	1999 09 13	106	0.6+ 0.7+
1995 11 19	691	0.4- 0.6-	1998 04 28	900	0.9- 0.5-	1999 09 13	106	0.2+ 0.6+
1995 11 25	801	0.1+ 0.6-	1998 05 16	704	0.1+ 0.4-	1999 09 13	106	0.1- 0.4+
1998 03 25	704	1.1+ 0.8-	1998 05 16	704	0.1+ 0.7+			

(11580)* 1994 JG₄ = 1982 DH₂ = 1998 LJ

Discovered 1994 May 3 by Spacewatch at Kitt Peak.

Id. B. G. Marsden (*MPC* 32234)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	226.41049		(2000.0)	P	Q
<i>n</i>	0.25928961	ω	267.24228	-0.54818238	-0.83575687
<i>a</i>	2.4356374	Ω	216.05870	+0.78716785	-0.50275195
<i>e</i>	0.1317512	<i>i</i>	3.08970	+0.28260015	-0.22079612
<i>P</i>	3.80	<i>H</i>	14.4	<i>G</i>	0.15

Residuals in seconds of arc

1982 02 21	046	0.1- 1.7-	1998 05 24	704	(2.4- 1.3-)	1999 09 07	704	0.2+ 1.0-
1982 02 21	046	0.5- 0.7-	1998 06 01	809	(2.0+ 2.5+)	1999 09 07	704	0.3- 0.5-
1992 11 26	691	0.0 0.3+	1998 06 01	809	(1.6+ 2.1+)	1999 09 07	704	0.1+ 0.4+
1992 11 26	691	0.0 0.5+	1998 06 01	809	(0.1+ 2.3+)	1999 09 07	704	0.4+ 0.1-
1992 11 26	691	(1.0- 2.3+)	1998 06 02	809	1.0+ 0.1+	1999 09 09	704	0.1+ 0.1-
1994 05 03	691	0.6- 0.3-	1998 06 02	809	0.5+ 1.0+	1999 09 09	704	0.0 0.0
1994 05 03	691	0.5- 0.3-	1998 06 02	809	0.2+ 0.5-	1999 09 09	704	0.7+ 0.0
1994 05 03	691	0.5- 0.3-	1998 06 03	704	0.4+ 1.2-	1999 09 09	704	0.2+ 0.7-
1994 05 11	691	0.3- 0.3-	1998 06 03	704	1.0- 1.2+	1999 09 09	704	1.8+ 0.5+
1994 05 11	691	0.3- 0.3-	1998 06 03	704	(0.8- 2.0+)	1999 09 11	118	0.3- 0.1+
1994 05 11	691	0.2- 0.1-	1998 06 03	704	1.0+ 1.0-	1999 09 11	118	0.1- 0.1-
1994 05 17	691	0.1- 0.4-	1998 06 24	704	1.5+ 0.7-	1999 09 12	118	0.2- 0.1+
1994 05 17	691	0.2+ 0.0	1998 06 24	704	(0.6- 2.2-)	1999 09 12	118	0.3- 0.1+
1994 05 17	691	0.0 0.2-	1998 06 24	704	1.4- 0.0	1999 09 14	704	0.1- 0.2-
1994 06 08	675	1.6+ 1.8+	1999 08 22	699	0.8- 0.1+	1999 09 14	704	0.2+ 0.9-
1998 05 24	704	1.8- 0.5-	1999 08 22	699	0.6- 1.4+	1999 09 14	704	0.2- 0.4-
1998 05 24	704	(2.3- 0.5+)	1999 08 22	699	(0.1+ 2.5+)	1999 09 14	704	0.1- 0.9-
1998 05 24	704	0.3+ 1.4+	1999 09 07	704	0.0 0.5+	1999 09 14	704	0.1+ 1.0-

(11581)* 1994 PK₉ = 1992 EV₇ = 1998 HR₁₂₁

Discovered 1994 Aug. 10 by E. W. Elst at the European Southern

Observatory.

Id. A. Gnädig (*MPC* 32235)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	357.75677		(2000.0)	P	Q
<i>n</i>	0.19187218	ω	162.38364	+0.79272967	+0.60659682
<i>a</i>	2.9771089	Ω	159.90692	-0.57823765	+0.77954551
<i>e</i>	0.0844363	<i>i</i>	10.08638	-0.19292718	+0.15604197
<i>P</i>	5.14	<i>H</i>	14.0	<i>G</i>	0.15

Residuals in seconds of arc

1992 03 02	809	0.9- 0.5+	1998 04 23	704	0.7- 1.0-	1999 07 13	704	0.2- 0.8-
1992 03 04	809	0.5+ 0.6-	1998 04 23	704	1.0+ 0.3+	1999 08 12	699	1.2- 0.4+
1992 03 07	809	0.1- 0.2-	1998 04 23	704	0.5- 0.9-	1999 08 12	699	0.6- 0.3+
1994 08 10	809	0.9- 1.0-	1998 04 23	704	0.4+ 0.6+	1999 08 12	699	0.7- 0.1+
1994 08 10	809	1.5- 1.5-	1998 04 23	704	0.2+ 0.0	1999 09 04	703	1.4- 0.8+

1994 08 10	809	1.5−	1.2−	1998 04 24	704	1.1+	0.5−	1999 09 04	703	0.3−	0.1−
1994 08 11	809	(2.3−	0.5−)	1998 04 24	704	0.7+	0.2+	1999 09 04	703	0.7−	0.6−
1994 08 11	809	(2.9−	0.8−)	1998 04 24	704	0.5−	0.5+	1999 09 04	703	1.0−	0.4−
1994 08 11	809	(3.1−	1.3−)	1998 04 24	704	1.4+	0.8+	1999 09 07	704	0.5+	0.0
1994 09 03	809	0.7+	0.7+	1998 05 23	704	1.1−	1.5+	1999 09 07	704	0.4+	0.4+
1994 09 03	809	0.9+	0.2−	1998 05 23	704	0.8+	0.3−	1999 09 07	704	1.2+	0.0
1994 09 03	809	0.8+	1.0+	1998 05 23	704	1.1−	0.7−	1999 09 07	704	0.6−	0.1−
1994 09 04	809	0.9+	1.0+	1998 05 23	704	0.7−	0.6+	1999 09 07	704	0.2+	0.2−
1994 09 04	809	0.7+	1.1+	1998 05 23	704	0.9−	0.5−	1999 09 13	704	1.0+	0.9+
1994 09 04	809	0.1+	0.6+	1999 07 13	704	0.1−	0.2+	1999 09 13	704	1.1+	0.2+
1997 02 07	566	0.0	0.3+	1999 07 13	704	0.3−	0.2−	1999 09 13	704	1.0+	0.8−
1997 02 07	566	0.2+	0.1+	1999 07 13	704	0.1−	0.4−	1999 09 13	704	1.0+	0.3+
1997 02 07	566	0.3+	0.5+	1999 07 13	704	0.3−	0.2−	1999 09 13	704	1.0+	0.1+

(11582)* 1994 PC₁₄ = 1992 CW₁

Discovered 1994 Aug. 10 by E. W. Elst at the European Southern

Observatory.

Id. G. V. Williams (*MPC* 24748)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	177.90184	(2000.0)	P	Q	
<i>n</i>	0.20258286	ω	225.99775	−0.97131326	−0.23735455
<i>a</i>	2.8712274	Ω	300.26673	+0.22273389	−0.88652469
<i>e</i>	0.0074091	<i>i</i>	0.96905	+0.08330761	−0.39716091
<i>P</i>	4.87	<i>H</i>	13.8	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1992 02 12	303	(1.5+	3.9−)	1994 09 03	809	0.2+	0.6+	1999 09 09	704	0.7−	0.4−
1992 02 13	303	1.1−	1.7−	1994 09 03	809	0.4+	0.4+	1999 09 09	704	0.9−	0.4−
1992 02 27	675	0.1−	0.3−	1994 09 03	809	0.3+	0.9+	1999 09 09	704	0.1+	0.1−
1992 02 28	675	0.2+	0.6−	1994 09 04	809	1.2+	0.5−	1999 09 09	704	0.1+	0.3+
1992 02 28	675	(1.8−	2.0−)	1994 09 04	809	0.3+	0.6−	1999 09 09	704	0.4+	0.2+
1993 05 14	809	0.6+	0.1−	1994 09 04	809	0.5+	0.2−	1999 09 11	699	0.1−	1.1+
1993 05 14	809	0.7−	1.2+	1999 08 22	699	0.4−	0.6+	1999 09 11	699	0.7−	0.1+
1993 05 14	809	0.2+	0.3−	1999 08 22	699	0.1+	0.2+	1999 09 11	699	0.4−	0.2+
1994 08 10	809	1.2+	1.2−	1999 08 22	699	0.1−	1.1+	1999 09 14	704	1.4+	0.6−
1994 08 10	809	0.7+	1.4−	1999 09 07	704	0.4−	0.2−	1999 09 14	704	0.4+	0.6+
1994 08 10	809	0.3−	1.2−	1999 09 07	704	0.8−	0.3+	1999 09 14	704	0.4+	0.1+
1994 08 11	809	(0.5+	2.4−)	1999 09 07	704	0.2−	0.1+	1999 09 14	704	0.4+	0.2+
1994 08 11	809	0.5−	1.9−	1999 09 07	704	0.3−	0.2+	1999 09 14	704	0.2+	0.1+
1994 08 11	809	1.1−	1.6−	1999 09 07	704	0.3−	0.3+				

(11583)* 1994 PZ₂₈ = 1998 FY₇₉

Discovered 1994 Aug. 12 by E. W. Elst at the European Southern

Observatory.

Id. G. V. Williams (*MPC* 31727)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	13.58200	(2000.0)	P	Q	
<i>n</i>	0.19119776	ω	181.72428	+0.45966271	+0.88489654
<i>a</i>	2.9841056	Ω	115.64718	−0.81380705	+0.45363843
<i>e</i>	0.1370750	<i>i</i>	4.79072	−0.35556755	+0.10568959
<i>P</i>	5.15	<i>H</i>	14.2	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1992 02 05	691	0.0	0.2−	1998 03 24	704	(2.1+	1.8+)	1998 04 22	704	0.2+	1.4+
1992 02 05	691	0.6−	0.1−	1998 03 24	704	0.6−	0.7+	1998 04 22	704	(2.4−	0.2+)
1992 02 05	691	0.4+	0.6−	1998 03 24	704	0.9−	0.4−	1998 04 22	704	0.2−	1.7−
1994 08 12	809	1.3+	0.6−	1998 03 24	704	(3.2−	0.6+)	1999 07 16	704	0.4−	0.1−
1994 08 12	809	0.9+	0.8−	1998 03 25	704	1.1+	0.1+	1999 07 16	704	0.2−	0.3−
1994 08 12	809	0.4−	1.1−	1998 03 25	704	(3.5+	3.2+)	1999 07 16	704	0.5+	0.1+
1994 08 13	809	0.1+	1.8−	1998 03 25	704	0.2−	0.4+	1999 08 07	691	1.2+	0.4+
1994 08 13	809	0.5+	1.4−	1998 03 25	704	0.7−	0.8+	1999 08 07	691	0.5+	0.9+
1994 08 13	809	0.5+	1.6−	1998 03 25	704	(3.2−	0.6−)	1999 08 07	691	0.4+	0.6+
1994 09 05	809	0.3−	0.2−	1998 04 21	704	1.1+	0.1−	1999 09 07	704	0.6−	1.5+
1994 09 05	809	0.1+	0.6+	1998 04 21	704	(2.1−	0.5−)	1999 09 07	704	0.4−	1.1+
1994 09 05	809	1.4−	0.8+	1998 04 21	704	0.2−	1.0−	1999 09 07	704	0.3−	1.1+

1994 09 06	809	0.6+	0.4+	1998 04 21	704	0.7−	1.4−	1999 09 07	704	1.8−	0.6+
1994 09 06	809	0.6+	0.2−	1998 04 21	704	0.0	1.0−				
1994 09 06	809	0.2−	0.8−	1998 04 22	704	0.5+	1.2+				

(11584)* 1994 PP₃₉ = 1997 DK

Discovered 1994 Aug. 10 by E. W. Elst at the European Southern

Observatory.

Id. A. Gnädig (*MPC* 31240), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	250.53030	(2000.0)	P	Q	
<i>n</i>	0.18589048	ω	100.78807	+0.38284657	−0.91961276
<i>a</i>	3.0406373	Ω	326.27374	+0.77354346	+0.37118033
<i>e</i>	0.0833494	<i>i</i>	9.11764	+0.50503368	+0.12859831
<i>P</i>	5.30	<i>H</i>	13.4	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1993 05 10	413	0.2−	0.2−	1994 09 04	809	(4.6+	0.8+)	1997 03 09	369	0.8−	0.5−
1993 05 10	413	0.2+	0.1−	1994 09 04	809	(4.3+	0.7+)	1997 07 14	704	0.1−	0.5−
1993 05 10	413	0.0	0.2−	1994 09 09	691	0.2−	0.3−	1997 07 14	704	0.2+	0.1−
1994 08 10	809	1.6+	0.1+	1994 09 09	691	0.1+	0.2+	1997 07 14	704	0.1+	0.4+
1994 08 10	809	1.3+	1.4+	1994 09 09	691	0.0	0.2−	1997 07 14	704	0.9−	0.0
1994 08 10	809	1.3+	0.4+	1997 01 17	599	0.3+	0.6−	1997 07 14	704	0.1−	0.7+
1994 08 10	809	(5.2+	1.1−)	1997 01 18	599	(5.1−	5.1+)	1997 07 16	704	0.0	0.3+
1994 08 10	809	(3.6+	1.0−)	1997 02 27	369	0.2−	0.5+	1997 07 16	704	0.5−	0.1+
1994 08 10	809	(3.8+	0.3−)	1997 02 27	369	0.4+	0.2+	1997 07 16	704	0.0	0.4+
1994 08 11	809	0.2−	1.4−	1997 03 01	369	0.2+	0.4−	1997 07 17	428	1.0+	0.3−
1994 08 11	809	1.2−	1.6−	1997 03 01	369	0.3+	0.4+	1997 07 17	428	0.8−	0.5+
1994 08 11	809	1.1−	1.0−	1997 03 04	369	0.4+	0.0	1997 07 18	428	0.2−	0.2+
1994 09 03	809	(4.1+	0.2−)	1997 03 04	369	0.4−	0.4−	1997 07 18	428	0.3−	0.4+
1994 09 03	809	(2.5+	0.2−)	1997 03 04	369	0.1−	0.3−	1997 09 07	704	0.0	0.5−
1994 09 03	809	(3.5+	0.8−)	1997 03 09	369	0.4−	0.1+	1997 09 07	704	1.1+	0.2+
1994 09 04	809	(4.0+	1.0+)	1997 03 09	369	0.5−	0.5−	1997 09 07	704	0.1−	0.4−

(11585)* 1994 RB₁₇ = 1979 OO = 1982 BQ₁₅ = 1987 DJ₃

Discovered 1994 Sept. 3 by E. W. Elst at the European Southern Observatory.

Id. K. Ichikawa (*MPC* 25220)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	10.28757	(2000.0)	P	Q	
<i>n</i>	0.20233581	ω	179.59012	+0.88445863	+0.46614351
<i>a</i>	2.8735640	Ω	152.59443	−0.42824425	+0.82881166
<i>e</i>	0.0727114	<i>i</i>	2.62139	−0.18531000	+0.30948580
<i>P</i>	4.87	<i>H</i>	13.3	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1979 07 24	675	1.2−	1.1+	1997 04 28	704	1.2−	0.2+	1999 07 16	704	1.3−	0.2−
1979 07 25	675	1.9−	1.6+	1997 04 28	704	0.8−	0.4+	1999 07 16	704	0.4+	0.9−
1982 01 30	675	0.6−	1.0+	1997 04 28	704	0.4+	0.6−	1999 09 07	704	0.1−	0.1−
1982 01 31	675	1.1+	0.5+	1997 04 28	704	1.9−	0.8−	1999 09 07	704	0.6−	0.3−
1987 02 23	010	0.7+	0.5+	1998 05 22	704	0.7+	0.6+	1999 09 07	704	0.8−	0.3−
1987 02 23	010	0.9+	0.8+	1998 05 22	704	0.3+	0.8+	1999 09 07	704	0.9−	0.9−
1987 02 23	010	1.1+	0.3+	1998 05 22	704	0.4−	0.9+	1999 09 07	704	0.8−	0.4−
1990 11 14	675	0.3−	0.7+	1998 05 22	704	1.1+	0.1−	1999 09 09	704	0.1+	0.0
1990 11 14	675	0.9+	0.3−	1998 05 22	704	0.1−	0.3+	1999 09 09	704	0.1+	0.9−
1994 08 10	809	1.3+	0.3+	1998 05 24	704	0.0	0.2−	1999 09 09	704	0.4−	0.3−
1994 08 10	809	0.5+	0.3−	1998 05 24	704	0.3+	0.2+	1999 09 09	704	0.3+	0.1+
1994 08 10	809	0.0	0.2+	1998 05 24	704	0.9−	1.0+	1999 09 09	704	0.3−	0.2+
1994 08 11	675	1.1−	1.6−	1998 05 24	704	0.8−	0.3+	1999 09 11	699	0.5−	0.8+
1994 08 11	675	0.4+	0.6−	1998 05 24	704	0.5−	0.0	1999 09 11	699	0.1−	0.9+
1994 09 03	809 (2.1+	0.5+)		1998 06 03	704	0.7+	0.5−	1999 09 11	699	0.1−	0.8+
1994 09 03	809	1.9+	0.5+	1998 06 03	704	1.2+	1.8−	1999 09 14	704	0.1−	0.2+
1994 09 03	809 (2.7+	1.0+)		1998 06 03	704	0.1−	0.8−	1999 09 14	704	0.2−	0.6+
1994 09 04	809	1.7+	0.9+	1998 06 03	704	0.1−	0.2+	1999 09 14	704	0.0	0.6+
1994 09 04	809	1.2+	0.4+	1998 06 03	704	0.9+	0.5−	1999 09 14	704	0.3+	0.2+
1994 09 04	809	0.4+	1.4+	1999 07 16	704	1.0−	1.5−	1999 09 14	704	0.3+	0.3+
1997 04 28	704	1.0−	0.1−	1999 07 16	704	0.0	1.5−				

(11586)* 1994 UA₂ = 1982 JZ₂ = 1992 JH₂

Discovered 1994 Oct. 31 by S. Ueda and H. Kaneda at Kushiro.

Id. S. Nakano (*MPC* 24400)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	0.39312		(2000.0)		P		Q
<i>n</i>	0.19098484	ω	147.80231		+0.98554013		-0.12584688
<i>a</i>	2.9863231	Ω	219.92171		+0.09174419		+0.95928969
<i>e</i>	0.1241054	<i>i</i>	10.18347		+0.14245578		+0.25283563
<i>P</i>	5.16	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1982 05 15	675	1.4+	0.3+	1994 10 31	399	(2.9-	0.7-)	1994 12 03	675	0.1-	0.5-
1982 05 16	675	1.7-	0.4-	1994 10 31	399	(4.2-	1.5+)	1997 04 08	689	0.1-	1.3+
1982 05 16	675	1.1-	1.5+	1994 11 04	675	0.0	0.2+	1997 04 09	689	1.2-	1.0+
1982 05 18	675	0.6+	1.1+	1994 11 06	675	0.3+	0.4-	1999 07 23	704	0.1+	0.5+
1992 05 03	809	0.1-	0.2-	1994 11 06	675	0.3+	0.2+	1999 07 23	704	0.7+	0.7+
1992 05 03	809	0.3+	0.5-	1994 11 07	399	0.2-	0.7+	1999 07 23	704	0.1+	0.3-
1992 05 03	809	0.0	0.6-	1994 11 07	399	(2.1-	2.4+)	1999 07 23	704	0.5+	0.3-
1992 05 04	809	0.6+	0.3+	1994 11 28	675	0.2-	0.3+	1999 09 20	681	0.2-	0.1-
1992 05 04	809	0.8+	0.2+	1994 11 28	675	0.4+	0.7+	1999 09 20	681	0.1-	0.2-
1992 05 04	809	1.0+	0.6+	1994 11 30	675	0.2+	0.6+	1999 09 21	681	0.5-	0.2+
1994 10 26	399	0.4+	1.5+	1994 11 30	675	0.7+	1.1+	1999 09 21	681	0.5-	0.4+
1994 10 26	399	1.3-	0.1-	1994 12 03	675	0.6-	0.7-				

(11587)* 1994 UH₂ = 1988 SR₃ = 1997 JS₁₈

Discovered 1994 Oct. 31 by S. Ueda and H. Kaneda at Kushiro.

Id. T. B. Spahr (*MPC* 30663), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	327.19303		(2000.0)		P		Q
<i>n</i>	0.17594967	ω	310.28148		+0.96569744		-0.25495079
<i>a</i>	3.1541118	Ω	64.54076		+0.25172242		+0.87253493
<i>e</i>	0.2022085	<i>i</i>	3.12880		+0.06375174		+0.41675280
<i>P</i>	5.60	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1988 09 16	095	0.8-	2.7+	1997 03 11	809	0.6-	1.2-	1999 09 03	699	0.8-	0.1+
1988 09 16	095	1.2-	1.5+	1997 05 02	910	(2.9+	1.3-)	1999 09 03	699	0.2+	0.6-
1994 10 31	399	1.1+	1.0+	1997 05 02	910	(2.7+	1.5-)	1999 09 07	704	0.9+	0.2-
1994 10 31	399	0.3-	0.0	1997 05 02	910	(2.8+	1.5-)	1999 09 07	704	0.1-	0.6-
1994 11 07	399	0.2+	0.5+	1998 05 22	704	0.3+	1.9+	1999 09 07	704	0.1-	0.6-
1994 11 07	399	0.8-	0.5+	1998 05 22	704	(2.6+	0.7+)	1999 09 07	704	0.2+	0.6-
1994 11 08	894	0.0	0.3+	1998 05 22	704	0.8+	1.5+	1999 09 07	704	0.2+	1.0-
1994 11 08	894	1.4-	0.4-	1998 05 22	704	1.0-	0.1+	1999 09 08	703	0.5-	0.9-
1994 11 10	894	1.2+	0.3-	1998 05 24	704	1.6+	0.9+	1999 09 08	703	0.3-	0.1-
1994 11 10	894	0.3+	0.2+	1998 05 24	704	1.0-	0.5-	1999 09 08	703	0.0	0.4-
1994 11 23	399	0.9-	0.9-	1998 05 24	704	0.4-	0.3-	1999 09 08	703	1.5-	1.0+
1994 11 23	399	0.2+	0.7+	1998 05 24	704	0.2+	1.0+	1999 09 13	704	0.4+	0.6-
1997 03 10	809	0.7+	0.4+	1998 05 24	704	0.7+	0.6-	1999 09 13	704	0.6+	0.6-
1997 03 10	809	0.0	0.6+	1999 08 13	699	0.1-	0.6+	1999 09 13	704	0.6+	0.4-
1997 03 10	809	0.4+	0.6+	1999 08 13	699	0.3+	0.5+	1999 09 13	704	0.3+	0.2-
1997 03 11	809	0.4-	0.6-	1999 08 13	699	0.2-	0.3+	1999 09 13	704	0.6+	0.1-
1997 03 11	809	0.5-	0.6-	1999 09 03	699	0.8+	0.7-				

(11588)* 1994 UZ₁₂ = 1988 VH₁₂ = 1989 YW = 1996 DP₆

Discovered 1994 Oct. 28 by F. Börngen at Tautenburg.

Id. K. Kinoshita (*MPC* 27107)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	335.84773		(2000.0)		P		Q
<i>n</i>	0.17314548	ω	244.72149		+0.96690160		-0.24206842
<i>a</i>	3.1880756	Ω	129.18111		+0.25502331		+0.90693407
<i>e</i>	0.1593045	<i>i</i>	5.97198		+0.00802545		+0.34478033
<i>P</i>	5.69	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1988 10 07	675	0.8+	1.0-	1999 08 22	113	0.5-	1.0-	1999 09 10	151	0.5-	0.6+
1988 10 07	675	0.5+	0.8-	1999 09 03	151	0.5+	0.4-	1999 09 10	151	0.9+	2.0+
1988 11 03	327	(0.7+	4.3+)	1999 09 03	151	0.5-	0.2+	1999 09 10	113	0.0	0.0
1988 11 03	327	(1.3+	4.1+)	1999 09 03	151	0.1+	0.7+	1999 09 10	151	0.7+	0.2-
1989 12 07	675	0.6+	0.0	1999 09 03	151	2.0+	0.1+	1999 09 11	151	1.2-	1.3+
1989 12 30	413	1.0-	2.4+	1999 09 05	113	1.0-	1.9-	1999 09 11	151	0.8+	1.0+
1989 12 30	413	1.5+	0.9-	1999 09 05	113	0.2+	0.0	1999 09 11	113	0.2+	2.3-
1989 12 31	413	1.6-	0.2+	1999 09 07	699	1.3-	0.1+	1999 09 11	113	0.6+	1.2-
1993 09 07	413	0.2-	0.5-	1999 09 07	704	0.2+	0.3+	1999 09 11	151	0.5-	0.6-
1993 09 07	413	0.1+	1.2-	1999 09 07	704	0.1+	0.0	1999 09 11	151	1.7-	1.2-
1994 10 28	033	0.1-	0.3-	1999 09 07	704	0.3-	0.3+	1999 09 11	151	0.5+	0.2-
1994 10 28	033	0.3+	0.7-	1999 09 07	699	0.6-	0.5-	1999 09 11	151	0.3+	0.2+
1994 11 01	033	0.4+	0.8-	1999 09 07	704	0.1-	0.1+	1999 09 11	151	0.8-	0.4+
1994 11 02	033	0.2-	1.1-	1999 09 07	704	0.3+	0.4+	1999 09 12	151	0.2-	0.1+
1996 02 16	010	0.1-	0.5+	1999 09 07	699	0.4-	0.4+	1999 09 13	704	0.5-	0.1+
1996 02 16	010	0.3-	0.8+	1999 09 07	151	0.8-	0.3+	1999 09 13	704	0.2-	0.4+
1996 02 16	010	0.2+	1.0+	1999 09 07	151	1.8-	0.2-	1999 09 13	704	0.3-	0.5+
1996 02 17	010	1.4+	0.8+	1999 09 07	151	0.4-	0.5-	1999 09 13	704	0.8-	0.2-
1996 02 17	010	0.3-	1.2+	1999 09 07	151	1.9+	1.0+	1999 09 13	151	0.5-	0.7+
1996 02 17	010	1.1+	0.8+	1999 09 08	151	(2.4+	3.9+)	1999 09 13	151	0.2+	0.5+
1999 08 19	113	0.1-	0.6-	1999 09 08	151	0.5-	0.8+	1999 09 13	151	1.0+	1.5-
1999 08 19	113	0.1-	0.3-	1999 09 08	151	0.6+	0.2+	1999 09 13	151	1.1+	0.4+
1999 08 20	151	0.2-	0.1-	1999 09 08	151	0.1+	0.1+	1999 09 14	151	1.4+	0.5+
1999 08 20	151	1.1-	1.3-	1999 09 09	704	0.2+	1.0+	1999 09 14	151	0.2-	1.0+
1999 08 21	151	1.3-	0.8+	1999 09 09	704	0.6+	0.2+	1999 09 14	151	0.8-	0.4+
1999 08 21	151	0.3-	0.2-	1999 09 09	704	0.1+	0.3+	1999 09 14	151	1.1-	0.3+
1999 08 22	151	0.7+	0.4+	1999 09 09	704	0.4+	0.1+	1999 09 14	151	0.3-	0.8+
1999 08 22	151	(2.4-	4.5-)	1999 09 09	704	0.2-	0.9+	1999 09 14	151	1.0-	0.2-
1999 08 22	151	0.9+	0.7-	1999 09 10	113	0.1-	0.2-				
1999 08 22	113	0.0	0.4+	1999 09 10	151	0.2+	0.2-				

(11589)* 1994 WG

Discovered 1994 Nov. 25 by T. Kobayashi at Oizumi.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	301.61159		(2000.0)		P		Q
<i>n</i>	0.15932215	ω	145.70002		+0.78930702		-0.57280107
<i>a</i>	3.3699124	Ω	250.77630		+0.49767558		+0.807776162
<i>e</i>	0.0577730	<i>i</i>	13.54306		+0.35960179		+0.13935602
<i>P</i>	6.19	<i>H</i>	11.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1987 11 23	675	0.3-	0.4-	1995 01 29	385	0.9-	0.5+	1999 09 08	704	0.5-	0.2+
1987 11 23	675	0.3-	0.9+	1995 02 01	887	0.1+	0.3+	1999 09 08	704	0.3+	0.6+
1994 11 24	905	0.4-	0.8+	1995 02 01	887	0.3+	0.1-	1999 09 09	681	0.3-	0.6-
1994 11 24	905	0.3-	0.4+	1995 02 01	887	0.1-	0.1-	1999 09 09	681	0.2-	0.4-
1994 11 25	411	1.0-	0.6-	1996 01 31	411	1.5-	2.0-	1999 09 10	106	0.2-	0.0
1994 11 25	411	0.8-	0.6-	1996 01 31	411	1.1-	1.8-	1999 09 10	106	0.7-	0.4+
1994 11 26	411	0.3-	0.4+	1996 02 02	411	1.1-	1.8-	1999 09 10	106	0.9-	0.4+
1994 11 26	411	0.5-	0.2-	1996 02 02	411	0.4-	1.8-	1999 09 12	681	0.3-	0.4-
1994 12 03	098	(4.9-	0.4-)	1996 02 19	411	0.2+	1.0-	1999 09 12	681	0.1+	0.1+
1994 12 03	098	(4.1-	0.6-)	1996 02 19	411	0.7-	1.1-	1999 09 12	610	0.7+	1.1-
1994 12 06	411	0.7+	0.4+	1999 07 22	704	1.1+	0.3-	1999 09 12	610	0.8+	1.5-
1994 12 06	411	0.3+	0.2+	1999 07 22	704	0.9+	0.6-	1999 09 12	610	0.9+	1.8-
1994 12 14	411	0.8+	0.2-	1999 07 22	704	0.2+	0.2-	1999 09 12	610	1.1+	2.0-
1994 12 14	411	0.7+	0.5+	1999 07 22	704	0.4+	0.3-	1999 09 12	610	(1.3+	2.4-)
1994 12 22	411	0.9+	0.3-	1999 07 22	704	0.4-	0.3-	1999 09 16	704	0.0	0.8-
1994 12 22	411	0.1+	0.7-	1999 09 08	699	0.5-	0.5-	1999 09 16	704	0.6+	0.0
1995 01 19	411	0.1+	1.7+	1999 09 08	699	0.1-	0.5+	1999 09 16	704	0.7+	1.5-
1995 01 19	411	1.7+	1.0+	1999 09 08	704	0.1-	0.2+	1999 09 16	704	0.0	0.0
1995 01 29	385	0.2+	0.7-	1999 09 08	704	0.2-	0.1-	1999 09 16	704	0.5+	0.5+

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	338.63189		(2000.0)	P	Q
<i>n</i>	0.17573138	ω	262.91380	+0.96811384	-0.24846558
<i>a</i>	3.1567233	Ω	111.46893	+0.24125412	+0.89038641
<i>e</i>	0.1752665	<i>i</i>	1.96713	+0.06746882	+0.38141434
<i>P</i>	5.61	<i>H</i>	13.0	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1982 08 14	095	1.4-	1.5+	1994 12 10	399	1.6+	0.2+	1999 09 09	704	0.6-	0.3-
1988 10 07	675	0.9+	1.4-	1996 02 12	399	0.0	0.5-	1999 09 09	704	1.2-	0.2-
1988 10 11	046	1.3-	1.3+	1996 02 12	399	0.2+	1.7-	1999 09 12	106	0.4+	0.5+
1988 10 11	046	0.5-	0.7+	1996 02 24	399	0.1-	0.4+	1999 09 12	166	0.2+	0.2-
1988 10 13	675	0.2+	0.4-	1996 02 24	399	1.3-	0.3+	1999 09 12	106	0.5+	0.8+
1988 10 13	675	0.5+	0.0	1999 08 08	682	0.9+	1.0-	1999 09 13	106	0.5+	0.7+
1988 10 14	046	1.1-	0.2+	1999 08 08	682	0.1-	0.2-	1999 09 13	166	0.0	0.4-
1988 10 14	046	0.8+	1.2+	1999 08 08	682	0.4-	1.1-	1999 09 13	166	0.3+	0.6-
1993 08 13	675	1.4+	0.3+	1999 09 07	704	0.2+	0.2+	1999 09 14	166	0.4+	0.5-
1994 11 28	399	0.1+	0.4-	1999 09 07	704	0.1+	0.2+	1999 09 14	704	0.1-	0.1-
1994 11 28	399	0.3-	0.1-	1999 09 07	704	0.0	0.1-	1999 09 14	704	0.3-	0.5-
1994 11 29	399	0.8-	0.5+	1999 09 07	704	0.6+	0.1+	1999 09 14	704	0.4-	0.8-
1994 11 29	399	1.3-	0.1-	1999 09 07	704	0.2+	0.1+	1999 09 14	704	0.3-	0.8-
1994 12 09	399	1.2+	0.9+	1999 09 09	704	0.5+	0.2+	1999 09 14	704	0.3-	1.0-
1994 12 09	399	0.0	0.2-	1999 09 09	704	0.3-	0.1+				
1994 12 10	399	0.4+	0.4-	1999 09 09	704	0.2-	0.1-				

(11591)* 1995 FV

Discovered 1995 Mar. 28 by T. Kobayashi at Oizumi.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	65.14949		(2000.0)	P	Q
<i>n</i>	0.28158365	ω	70.57134	-0.70573767	+0.70756414
<i>a</i>	2.3053193	Ω	154.42546	-0.67719971	-0.65883876
<i>e</i>	0.0901392	<i>i</i>	4.76763	-0.20817036	-0.25550828
<i>P</i>	3.50	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1989 09 27	675	1.0-	1.1+	1995 04 26	691	0.4+	0.2+	1999 07 13	704	0.0	0.4-
1989 09 27	675	0.8-	0.2+	1995 04 26	691	0.6+	0.6-	1999 07 18	106	0.0	0.3+
1989 09 29	675	1.3+	0.2+	1995 04 26	691	0.1+	0.0	1999 07 18	106	0.1+	0.3+
1989 09 29	675	0.8+	0.5+	1995 04 26	411	1.0-	0.3-	1999 07 18	106	0.3-	0.3+
1991 01 17	675	1.7-	1.3+	1995 04 26	411	0.0	0.2-	1999 07 19	704	0.7+	1.2+
1991 01 17	675	1.8-	1.3+	1996 10 07	809	0.8+	0.7-	1999 07 19	704	0.4-	0.2-
1995 03 28	411	1.5+	0.1+	1996 10 07	809	0.8+	0.4+	1999 07 19	704	0.4-	0.2-
1995 03 28	411	1.7+	0.7-	1996 10 07	809	0.9+	0.5+	1999 07 22	704	0.3-	0.5+
1995 04 01	411	0.6+	0.2+	1998 01 23	910	0.3+	0.0	1999 07 22	704	1.2-	0.3+
1995 04 01	411	0.3+	0.7+	1998 01 23	910	0.4+	0.2-	1999 07 22	704	1.1-	0.6+
1995 04 04	411	0.6+	0.7+	1998 01 23	910	0.3+	0.0	1999 09 11	704	0.7-	0.7-
1995 04 07	411	0.9-	0.1-	1999 07 13	704	0.4+	0.1-	1999 09 11	704	0.7-	0.0
1995 04 07	411	0.6+	0.9+	1999 07 13	704	0.1+	0.1+	1999 09 11	704	0.5+	0.4-
1995 04 19	411	0.9-	0.5-	1999 07 13	704	0.0	0.0				
1995 04 19	411	0.5-	0.6-	1999 07 13	704	0.5-	0.5-				

(11592)* 1995 FA₇ = 1998 FS₉

Discovered 1995 Mar. 23 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPC* 31542)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	35.34641		(2000.0)	P	Q
<i>n</i>	0.29650167	ω	130.12069	+0.00365140	+0.99900499
<i>a</i>	2.2273303	Ω	140.02108	-0.93723425	+0.01891756
<i>e</i>	0.1396703	<i>i</i>	3.96692	-0.34868128	-0.04038763
<i>P</i>	3.32	<i>H</i>	15.7	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1989 07 05	675	0.8+	0.5-	1995 04 04	691	0.1-	0.3-	1999 07 16	704	0.3+	0.1-
1989 07 05	675	0.1+	1.6-	1995 04 04	691	0.6-	0.2-	1999 07 16	704	0.0	0.3-
1989 07 29	675	0.3-	1.5-	1998 03 24	910	0.2-	0.6-	1999 07 20	699	0.4-	1.0+

1989 07 29	675	0.2+	1.8-	1998 03 24	910	0.3+	0.2-	1999 07 20	699	0.5-	0.8+
1992 05 06	691	0.8+	0.5+	1998 03 24	910	0.3+	0.9-	1999 07 20	699	0.6-	1.0+
1992 05 06	691	0.6+	0.9+	1998 03 25	910	0.1-	0.9-	1999 08 07	699	0.3+	0.9+
1992 05 06	691	0.4+	0.7+	1998 03 25	910	0.4+	0.9-	1999 08 07	699	0.4+	1.2+
1995 03 23	691	0.4-	0.1+	1998 03 25	910	0.6+	0.6-	1999 08 07	699	0.0	0.2+
1995 03 23	691	0.5-	0.2-	1999 07 13	704	0.1-	0.3-	1999 09 07	704	0.5+	1.1+
1995 03 23	691	0.4-	0.1-	1999 07 13	704	0.0	0.3-	1999 09 07	704	0.4+	1.7+
1995 03 29	691	0.2-	0.6-	1999 07 13	704	0.0	0.4-	1999 09 07	704	0.2-	2.0-
1995 03 29	691	0.2-	0.1-	1999 07 13	704	0.0	0.5-	1999 09 07	704	0.2+	2.0-
1995 03 29	691	0.7-	0.0	1999 07 13	704	0.8-	0.9-				
1995 04 04	691	0.3+	0.2-	1999 07 16	704	0.0	0.5-				

(11593)* 1995 HK = 1998 CN₃

Discovered 1995 Apr. 20 by K. Endate and K. Watanabe at Kitami.

Id. B. G. Marsden (*MPC* 31386)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	114.42082		(2000.0)	P	Q
<i>n</i>	0.29899537	ω	76.74389	-0.87341853	+0.48582061
<i>a</i>	2.2149287	Ω	132.31099	-0.46246693	-0.80600149
<i>e</i>	0.0935624	<i>i</i>	2.59198	-0.15252675	-0.33814188
<i>P</i>	3.30	<i>H</i>	14.5	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1995 04 20	400	0.6+	0.4-	1998 02 07	809	(2.9+	1.9+)	1998 03 24	566	0.8-	1.3-
1995 04 20	400	(0.2+	3.5-)	1998 02 07	809	(2.9+	2.5+)	1998 04 27	699	0.2+	0.4-
1995 04 24	400	1.4+	0.3+	1998 02 22	399	(3.4+	0.3-)	1998 04 27	699	0.8+	0.3-
1995 04 24	400	0.5+	0.2-	1998 02 22	399	(2.9+	0.9+)	1998 04 27	699	0.3-	0.3-
1995 04 26	691	0.3-	0.2+	1998 02 24	566	1.4+	0.2+	1999 08 07	699	0.2-	0.8+
1995 04 26	691	0.1-	0.4+	1998 02 24	566	1.4+	0.1+	1999 08 07	699	0.0	0.8+
1995 04 26	691	0.2-	0.4+	1998 02 24	566	1.4+	0.0	1999 08 07	699	0.3-	0.4+
1995 05 01	691	0.5-	0.3+	1998 03 03	704	0.9+	0.0	1999 09 07	704	0.1+	0.4-
1995 05 01	691	0.2-	0.4+	1998 03 03	809	(5.4+	5.0+)	1999 09 07	704	0.3-	0.4-
1995 05 01	691	0.1-	0.3+	1998 03 03	704	0.8+	0.4+	1999 09 07	704	0.2-	0.5-
1995 05 07	397	(3.3-	3.0+)	1998 03 03	809	(4.9+	4.9+)	1999 09 07	704	0.2-	1.0-
1995 05 07	397	0.6-	1.4-	1998 03 03	809	(4.5+	4.5+)	1999 09 07	704	0.2-	0.9-
1995 05 08	397	0.1+	0.3-	1998 03 03	704	1.2+	0.5+	1999 09 07	106	0.8+	0.1+
1995 05 08	397	0.4-	0.1-	1998 03 03	704	0.4+	1.2+	1999 09 07	106	0.7+	0.2+
1995 05 28	400	0.4-	0.1+	1998 03 03	704	0.6+	0.3+	1999 09 07	106	0.4+	0.4+
1996 10 11	566	0.5+	0.1-	1998 03 04	809	(3.3+	3.6+)	1999 09 09	704	0.1+	0.2-
1996 10 11	566	0.0	0.1+	1998 03 04	809	(3.5+	3.2+)	1999 09 09	704	1.0+	0.2+
1996 10 11	566	0.0	0.0	1998 03 04	809	(3.2+	2.9+)	1999 09 09	704	0.5-	0.1+
1997 12 06	910	1.4-	0.1-	1998 03 04	704	1.0-	0.1+	1999 09 09	704	0.0	0.9-
1997 12 06	910	1.4-	0.0	1998 03 04	704	1.6-	0.3+	1999 09 09	704	0.3-	0.2-
1997 12 06	910	1.3-	0.0	1998 03 04	704	1.6-	0.9-	1999 09 13	704	0.3-	0.1-
1998 02 06	809	(4.4+	2.0+)	1998 03 04	704	1.3-	0.5-	1999 09 13	704	0.6+	0.9-
1998 02 06	809	(3.5+	2.4+)	1998 03 04	704	1.4-	0.4-	1999 09 13	704	0.2-	0.5-
1998 02 06	809	(3.2+	1.9+)	1998 03 24	566	0.2+	1.6-	1999 09 13	704	0.0	0.4+
1998 02 07	809	(3.6+	2.3+)	1998 03 24	566	0.1+	1.6-	1999 09 13	704	0.1-	0.6-

(11594)* 1995 HP = 1996 XG₆

Discovered 1995 Apr. 27 by S. Ueda and H. Kaneda at Kushiro.

Id. S. Nakano (*MPC* 28591)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	4.92301		(2000.0)	P	Q
<i>n</i>	0.27767924	ω	214.60115	+0.70428270	+0.70723852
<i>a</i>	2.3268789	Ω	100.25911	-0.63637064	+0.66741974
<i>e</i>	0.2393036	<i>i</i>	3.59148	-0.31467172	+0.23316212
<i>P</i>	3.55	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1995 04 26	691	0.1+	0.2+	1998 02 25	566	0.2+	0.2-	1999 08 13	699	0.6-	0.6+
1995 04 26	691	0.1+	0.1+	1998 02 25	566	0.1-	0.2-	1999 08 13	699	0.5-	0.7+
1995 04 26	691	0.4+	0.0	1998 03 25	704	0.4-	0.2+	1999 09 07	704	0.6+	0.4+

1995 05 01	691	0.4+	0.1-	1998 03 25	704	0.1+	0.8-	1999 09 07	704	0.3-	0.1-
1995 05 01	691	0.1+	0.3-	1998 03 25	566	0.2-	0.3+	1999 09 13	704	1.7+	0.2+
1995 05 01	691	0.1+	0.1-	1998 03 25	566	0.3+	0.0	1999 09 13	704	0.2+	1.2-
1995 05 05	399	0.7-	1.4-	1998 03 25	566	1.0+	0.5-	1999 09 13	704	0.1+	0.6-
1995 05 05	399	0.2-	0.2-	1999 06 25	699	0.7-	0.9+	1999 09 13	704	0.1-	0.1+
1996 12 03	905	0.2+	0.2+	1999 06 25	699	0.2-	0.2+	1999 09 13	704	0.3-	1.6-
1996 12 03	905	0.6-	0.8-	1999 06 25	699	0.4-	0.2+	1999 09 13	106	1.3+	1.7-
1996 12 08	385	0.3+	0.4+	1999 07 16	704	(1.0-	2.7+)	1999 09 13	106	0.3-	0.2-
1996 12 08	385	0.2+	0.6-	1999 07 16	704	0.9+	0.3+	1999 09 13	106	1.3-	0.2-
1996 12 08	385	0.1-	0.6-	1999 07 16	704	(1.3+	2.5-)				
1998 02 25	566	0.1+	0.4+	1999 08 13	699	0.2-	0.4+				

(11595)* 1995 KN = 1997 WX₃₂

Discovered 1995 May 23 by A. Boattini and L. Tesi at San Marcello Pistoiese.
Id. G. V. Williams (*MPC* 31106)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	88.04278		(2000.0)	P	Q		
n	0.29051731	ω	84.12667	-0.93854999	-0.33462195		
a	2.2578134	Ω	76.30083	+0.27209226	-0.86809600		
e	0.0743229	i	4.99369	+0.21234339	-0.36665717		
P	3.39	H	14.4	G	0.15	U	1

Residuals in seconds of arc

1983 07 13	413	1.7-	1.0+	1998 01 15	104	0.1+	0.4+	1999 05 17	699	0.0	0.8+
1983 07 13	413	0.7-	1.2+	1998 01 15	104	0.1+	0.4+	1999 05 17	703	0.6+	0.3+
1983 10 01	413	0.1-	0.4+	1998 01 19	104	0.4-	0.0	1999 05 17	699	0.4+	0.6+
1983 10 01	413	0.6+	0.4+	1998 01 19	104	0.2-	0.1-	1999 05 17	703	1.5-	0.8+
1995 01 07	408	0.9+	0.8+	1998 01 19	104	0.3-	0.0	1999 05 17	703	(2.3+	1.0+)
1995 01 07	408	1.6-	0.5-	1998 02 06	104	0.3-	1.5+	1999 05 17	703	0.0	1.1+
1995 01 07	408	0.4-	0.9-	1998 02 06	104	0.5-	1.4+	1999 05 18	704	0.0	0.3-
1995 05 23	104	1.4+	0.3-	1998 02 06	104	0.3-	1.3+	1999 05 18	704	0.6+	0.5-
1995 05 23	104	0.1+	0.5+	1998 12 26	104	0.8+	0.7+	1999 05 18	704	0.2+	0.2-
1995 05 23	104	0.6-	0.9+	1998 12 26	104	0.0	1.3+	1999 05 18	704	0.5+	0.3+
1995 05 23	104	0.7+	0.2-	1998 12 26	104	0.2+	1.5+	1999 05 18	704	0.2+	0.0
1995 05 23	104	0.2+	0.4-	1998 12 26	104	1.5+	1.4+	1999 05 19	704	0.4+	0.9-
1995 05 24	104	0.6-	1.0-	1999 04 19	699	0.8+	0.2+	1999 05 19	704	0.6-	0.4-
1995 05 24	104	0.4+	1.0-	1999 04 19	699	0.6+	0.4+	1999 05 19	704	0.1+	0.6-
1995 05 24	104	0.8+	0.1-	1999 04 19	699	1.6+	0.2+	1999 05 19	704	0.2-	0.0
1995 05 28	104	1.6-	0.0	1999 04 26	104	0.2-	0.2+	1999 06 04	699	0.5+	0.6+
1995 05 28	104	0.1+	0.5+	1999 04 26	104	1.1-	0.8-	1999 06 04	699	1.0+	0.4+
1995 05 28	104	0.5+	0.3+	1999 05 10	704	0.1+	0.3-	1999 06 04	699	0.6+	0.4+
1995 05 28	104	0.3-	0.7-	1999 05 10	704	0.2+	0.3+	1999 06 09	704	1.5+	0.4-
1995 06 07	104	0.5+	1.4-	1999 05 10	704	0.2-	0.4+	1999 06 09	704	0.2+	0.2-
1995 06 07	104	0.2-	0.6-	1999 05 10	704	0.0	0.6+	1999 06 09	704	0.5-	0.6+
1995 06 07	104	0.7-	0.2+	1999 05 10	704	0.3-	0.5+	1999 06 09	704	1.1-	0.6+
1997 11 29	704	0.0	0.1-	1999 05 13	704	0.2-	0.3+	1999 06 09	704	1.0-	1.0-
1997 11 29	704	1.6+	1.3+	1999 05 13	704	0.1-	0.2+	1999 06 14	699	0.1+	0.7+
1997 11 29	704	0.3+	0.6+	1999 05 13	704	0.1-	0.6-	1999 06 14	704	0.9+	0.4+
1997 11 29	704	0.3+	0.5-	1999 05 13	704	(0.9+	2.8-)	1999 06 14	704	0.1+	0.4+
1997 11 29	704	0.0	0.7+	1999 05 13	704	0.1-	0.6-	1999 06 14	699	0.2+	0.0
1997 12 04	704	1.1-	0.6+	1999 05 14	704	0.6-	0.8+	1999 06 14	704	0.4+	0.2+
1997 12 04	704	1.0-	0.7+	1999 05 14	704	0.5-	0.1+	1999 06 14	704	0.5+	0.1+
1997 12 04	704	(2.3-	1.0+)	1999 05 14	704	0.2-	0.2+	1999 06 14	699	0.2-	0.2+
1997 12 04	704	1.1-	1.1+	1999 05 14	704	0.5-	0.6+	1999 06 14	704	0.4-	0.2+
1997 12 04	704	0.5-	0.5+	1999 05 14	704	0.8-	0.9+				
1998 01 15	104	0.1-	0.5+	1999 05 17	699	0.7+	0.0				

(11596)* 1995 KA₁

Discovered 1995 May 26 by T. B. Spahr at the University of Arizona's Catalina Station.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	20.21101		(2000.0)	P	Q
n	0.26942287	ω	112.08322	+0.46395146	+0.88516637
a	2.3741769	Ω	185.92749	-0.88492391	+0.46127785
e	0.2312190	i	19.84918	-0.04072739	+0.06085429
P	3.66	H	14.5	G 0.15	U 1

Residuals in seconds of arc

1988 08 15	675	0.2-	1.0-	1995 06 10	816	0.7-	1.2-	1999 09 02	127	0.1-	0.3-
1988 08 15	675	0.4-	1.0-	1995 06 15	608	0.7+	0.2+	1999 09 04	127	0.4-	0.5-
1988 08 17	675	0.6+	0.1+	1995 06 15	608	0.7+	0.0	1999 09 04	127	0.4-	0.4-
1988 08 17	675	0.6+	0.4-	1995 06 20	104	0.7+	0.9+	1999 09 05	718	1.0+	1.5+
1988 09 14	675	0.9-	2.0-	1995 06 20	104	0.6+	0.9+	1999 09 05	718	0.6+	1.3+
1988 09 14	675	0.4+	1.1-	1995 06 20	104	1.2+	0.9+	1999 09 05	718	(0.8+	2.1+)
1995 05 26	693	0.2+	0.0	1995 06 20	104	1.1+	0.9+	1999 09 06	718	0.4+	0.1+
1995 05 27	693	1.0-	0.8+	1995 06 23	816	0.5+	0.4+	1999 09 06	718	0.0	0.1+
1995 05 27	693	0.3+	0.4-	1995 06 23	816	0.5+	0.8+	1999 09 06	718	0.4+	1.2+
1995 05 27	691	0.0	0.4-	1995 06 23	816	0.1+	0.4+	1999 09 08	704	1.4-	0.6+
1995 05 27	691	0.3-	0.1-	1995 06 24	658	0.3+	1.1+	1999 09 08	704	0.4-	0.4+
1995 05 31	658	0.0	0.2-	1995 06 24	658	0.3+	1.2+	1999 09 08	704	0.6-	0.2-
1995 05 31	658	0.0	0.2-	1995 06 25	658	0.1-	1.0+	1999 09 08	704	0.7-	0.2-
1995 05 31	658	0.6-	0.2-	1995 06 25	658	0.0	1.1+	1999 09 08	127	0.3-	0.2-
1995 06 01	658	0.2+	0.4-	1995 06 25	658	0.1-	1.1+	1999 09 08	127	0.4-	0.4-
1995 06 01	658	0.3+	0.4-	1995 08 28	816	0.4-	0.4-	1999 09 09	704	0.1-	0.4+
1995 06 01	658	0.2+	0.5-	1996 12 16	696	0.1+	1.0+	1999 09 09	704	0.2-	0.1-
1995 06 01	691	(3.5+	0.1+)	1996 12 16	696	0.3-	0.8+	1999 09 09	704	0.2-	0.0
1995 06 01	691	(2.5+	0.2-)	1996 12 16	696	0.1+	0.7+	1999 09 09	704	0.4-	0.2-
1995 06 03	658	(3.0+	0.8+)	1997 02 01	696	0.2+	0.3-	1999 09 09	704	0.2-	0.2-
1995 06 03	658	(2.9+	0.7+)	1997 02 01	696	0.0	0.6-	1999 09 10	704	0.0	0.1-
1995 06 03	658	(3.1+	0.7+)	1997 02 01	696	0.2+	0.7-	1999 09 10	704	0.1-	0.3-
1995 06 07	104	0.7-	0.5-	1999 08 11	704	0.3+	0.7+	1999 09 10	704	0.1-	0.1+
1995 06 07	104	0.8-	0.2-	1999 08 11	704	0.3+	0.4+	1999 09 10	106	0.1+	0.3-
1995 06 07	104	0.4-	0.5-	1999 08 11	704	0.2+	0.7+	1999 09 10	106	0.0	0.0
1995 06 07	104	0.2-	1.3-	1999 08 11	704	2.0+	0.4+	1999 09 10	106	0.5-	0.5-
1995 06 08	608	0.4+	0.7-	1999 08 11	704	0.2+	0.2+	1999 09 16	704	0.4+	0.2+
1995 06 08	608	0.2+	0.1-	1999 08 18	596	0.5-	0.1+	1999 09 16	704	0.4+	0.4+
1995 06 09	816	0.8-	0.6-	1999 08 18	596	0.6-	0.4+	1999 09 16	704	0.0	0.1+
1995 06 09	816	0.4-	0.4-	1999 08 18	596	0.5-	0.2+	1999 09 16	704	0.9-	0.4-
1995 06 09	816	0.5-	0.4-	1999 09 01	718	0.4+	0.3+	1999 09 18	704	0.0	0.8-
1995 06 09	608	0.8-	0.5-	1999 09 01	718	1.5+	1.7+	1999 09 18	704	0.5-	0.1+
1995 06 09	608	0.8-	0.2-	1999 09 01	718	0.6+	1.0+	1999 09 18	704	0.3+	0.7-
1995 06 10	816	0.0	0.9-	1999 09 02	127	0.2+	0.5-	1999 09 18	704	0.1+	0.7-

(11597)* 1995 KL₁ = 1974 PE

Discovered 1995 May 31 by R. H. McNaught at Siding Spring.

Id. G. V. Williams (*MPC* 25534)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	95.63494		(2000.0)	P	Q
n	0.28045431	ω	284.57711	-0.57045024	+0.76394310
a	2.3115040	Ω	306.56819	-0.53117804	-0.62324833
e	0.2076061	i	22.05849	-0.62644745	-0.16718991
P	3.51	H	13.5	G 0.15	U 1

Residuals in seconds of arc

1974 08 13	675	0.1+	0.8-	1995 07 20	413	0.2-	0.0	1999 07 22	704	0.1+	0.0
1974 08 14	675	0.4+	0.4-	1995 09 12	413	0.5-	0.6-	1999 07 22	704	1.0+	0.2-
1974 08 16	675	0.0	0.4+	1997 12 31	689	0.8+	1.2+	1999 07 22	704	0.2+	0.3+
1995 05 31	413	0.5-	0.3+	1998 01 26	566	0.2-	0.4-	1999 07 22	704	0.4+	0.7-
1995 05 31	413	0.8+	0.9-	1998 01 26	566	0.2-	0.3-	1999 08 11	704	0.7-	0.2-
1995 06 02	413	0.1-	0.6+	1998 01 26	566	0.3-	0.4-	1999 08 11	704	0.5+	0.1-
1995 06 02	413	0.0	0.7+	1998 02 24	423	0.4-	0.1+	1999 08 11	704	0.2+	0.2+
1995 06 04	413	0.1+	0.6+	1998 02 24	423	0.2+	0.4+	1999 08 11	704	0.6+	0.0
1995 06 04	413	0.1+	0.5+	1998 02 24	423	0.1-	0.7+	1999 09 06	703	1.3-	0.3+
1995 06 08	413	0.2+	0.5+	1998 02 25	423	0.5+	0.2-	1999 09 06	703	0.5-	0.2+
1995 06 08	413	0.1+	0.4+	1998 02 25	423	0.4+	0.2+	1999 09 06	703	0.1+	0.0
1995 06 19	413	0.0	0.1+	1998 02 25	423	0.1-	0.1-	1999 09 06	703	0.0	0.3-

1995 06 19	413	0.1−	0.0	1998 03 08	689	0.1−	0.3−	1999 09 13	703	0.1−	0.4+
1995 06 19	413	0.1+	0.1+	1998 03 19	699	0.2−	0.1−	1999 09 13	703	0.1−	0.1+
1995 07 06	413	0.7−	0.7−	1998 03 19	699	0.0	0.5−	1999 09 13	703	0.0	0.1+
1995 07 06	413	0.4−	0.7−	1998 03 19	699	0.5−	0.2−	1999 09 13	703	0.1+	0.4+
1995 07 20	413	0.2−	0.1−	1999 07 22	704	0.1+	0.2+				

(11598)* 1995 OJ = 1980 FK₁₁

Discovered 1995 July 22 by L. Šarounová at Ondřejov.

Id. G. V. Williams (*MPC* 31240)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Q			
<i>M</i>	132.97195	(2000.0)	P		Q		
<i>n</i>	0.27453332	ω	72.50426	−0.94975481	+0.30991810		
<i>a</i>	2.3446211	Ω	125.52869	−0.30369103	−0.87861499		
<i>e</i>	0.1734729	<i>i</i>	3.08364	−0.07574666	−0.36329943		
<i>P</i>	3.59	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1980 03 16	095	0.5+	0.8+	1998 03 20	704	0.2−	0.4−	1998 04 28	699	0.4+	0.5+
1995 07 22	557	0.1−	0.0	1998 03 20	704	0.3−	0.6−	1998 04 28	691	0.1+	0.1−
1995 07 22	557	0.0	0.5+	1998 03 20	704	1.3−	0.4−	1998 04 28	691	0.1+	0.5−
1995 07 22	557	0.2−	0.7+	1998 03 22	704	0.7−	0.5−	1998 04 28	691	0.0	0.3−
1995 07 23	557	0.2−	0.7+	1998 03 22	704	0.4−	0.3−	1998 04 30	699	0.5+	0.4+
1995 07 23	557	0.2−	0.2+	1998 03 22	704	1.2−	0.3−	1998 04 30	699	1.1+	0.9−
1995 07 24	557	0.3−	0.3+	1998 03 22	704	0.7−	0.7−	1998 04 30	699	0.8+	0.3+
1995 07 24	557	0.1−	0.0	1998 03 22	704	0.8−	0.4−	1998 05 03	691	0.4−	0.3−
1995 07 24	557	0.2−	0.2+	1998 03 22	699	0.7−	0.7+	1998 05 03	691	0.3−	0.3−
1995 07 24	557	0.2−	0.2−	1998 03 22	699	0.4−	1.0+	1998 05 03	691	0.4−	0.3−
1995 07 26	557	0.0	0.2+	1998 03 22	699	0.7−	0.3+	1998 05 23	699	0.1+	0.5+
1995 07 26	557	0.2+	0.1−	1998 03 25	704	0.3−	0.1+	1998 05 23	699	0.4+	0.4+
1995 07 29	557	0.4+	0.3−	1998 03 25	704	0.2−	0.3+	1998 05 23	699	0.8+	0.6−
1995 07 29	557	0.1+	0.1+	1998 03 25	704	0.6+	0.4−	1999 08 05	557	0.7−	1.2−
1995 08 05	557	0.6+	0.3−	1998 03 25	704	0.5+	0.4+	1999 08 05	557	0.4+	1.1−
1995 08 05	557	0.1−	0.1−	1998 03 25	704	1.6−	0.8+	1999 08 05	557	0.0	0.7−
1995 08 23	557	0.5+	0.0	1998 03 28	704	0.1−	0.6−	1999 08 06	557	0.2−	0.4−
1995 08 23	557	0.3+	0.2+	1998 03 28	704	0.0	0.6−	1999 08 06	557	0.0	1.0−
1995 08 28	557	0.2+	0.2−	1998 03 28	704	0.4−	0.9−	1999 08 31	557	0.0	0.5−
1995 08 28	557	0.1−	0.2−	1998 03 28	704	1.7+	0.4−	1999 08 31	557	0.8−	0.4−
1995 09 17	557	1.1−	0.7−	1998 03 28	704	1.2−	1.8−	1999 09 02	557	0.1−	0.0
1995 09 17	557	0.7−	0.1−	1998 03 29	704	0.1+	0.5−	1999 09 02	557	0.1+	0.1−
1995 09 17	557	0.6−	0.6+	1998 03 29	704	1.4−	0.2+	1999 09 02	557	0.2−	0.3−
1995 09 17	557	0.3−	0.1−	1998 03 29	704	0.7−	0.5+	1999 09 07	704	0.6+	0.6+
1998 01 26	557	0.1+	0.6+	1998 03 29	704	0.7−	0.2+	1999 09 07	704	0.4+	0.2+
1998 01 26	557	0.8−	0.5+	1998 03 29	704	0.7−	0.7−	1999 09 07	704	0.0	0.6+
1998 01 27	557	0.6−	0.8+	1998 04 20	704	0.6+	0.1−	1999 09 07	704	0.9+	1.4+
1998 01 27	557	0.1+	0.4+	1998 04 20	704	1.2+	0.2−	1999 09 09	704	0.3+	0.7+
1998 02 21	557	0.3+	0.7+	1998 04 20	704	1.1+	0.7+	1999 09 09	704	0.7−	0.5−
1998 02 21	557	0.3+	1.0+	1998 04 20	704	0.2+	0.6+	1999 09 09	704	0.2−	0.5−
1998 02 21	557	0.2+	0.8+	1998 04 20	704	0.1−	0.0	1999 09 09	704	(2.1− 2.4−)	
1998 02 24	557	0.2+	0.7+	1998 04 22	704	1.2+	0.1−	1999 09 14	704	0.5+	0.1+
1998 02 24	557	0.3+	0.7+	1998 04 22	704	1.9+	0.1−	1999 09 14	704	1.0+	0.4+
1998 02 24	557	0.3+	0.6+	1998 04 22	704	1.7+	0.9−	1999 09 14	704	0.6+	0.1−
1998 03 19	557	0.7−	0.1−	1998 04 22	704	1.5+	0.3−	1999 09 14	704	0.0	0.0
1998 03 19	557	0.4−	0.1+	1998 04 22	704	0.7+	0.3−	1999 09 14	704	0.0	0.9+
1998 03 20	704	1.1−	0.2−	1998 04 28	699	0.4+	0.7+				
1998 03 20	704	0.8−	0.5−	1998 04 28	699	0.5+	0.5+				

(11599)* 1995 QR = 1998 HD₂₁

Discovered 1995 Aug. 16 by Y. Shimizu and T. Urata at Nachi-Katsuura Observatory.

Id. G. V. Williams (*MPC* 31728)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Q			
<i>M</i>	20.52701	(2000.0)	P		Q		
<i>n</i>	0.25879340	ω	278.66835	+0.72821215	+0.68472159		
<i>a</i>	2.4387498	Ω	38.12622	−0.60859931	+0.66577964		
<i>e</i>	0.1776939	<i>i</i>	2.72791	−0.31514115	+0.29646892		
<i>P</i>	3.81	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1994 03 10	691	0.4+	0.4+	1998 03 28	704	0.4−	0.1+	1998 04 30	699	0.3+	1.3+
1994 03 10	691	0.3+	0.3+	1998 03 29	704	0.4−	0.3−	1998 04 30	699	0.1+	0.9−
1995 08 16	905	0.3−	0.6+	1998 03 29	704	0.7+	0.6+	1998 04 30	699	0.1−	1.3−
1995 08 16	905	0.3+	0.0	1998 03 29	704	0.1+	1.1+	1999 08 22	699	0.1+	0.0
1995 08 18	905	1.3+	0.9−	1998 03 29	704	1.8−	1.5+	1999 08 22	699	0.0	0.3+
1995 08 18	905	0.0	0.4−	1998 03 29	704	1.2−	1.4+	1999 08 22	699	0.2+	0.4+
1995 08 20	905	0.3+	0.2−	1998 04 19	704	0.1+	0.2−	1999 09 04	888	0.3+	0.1+
1995 08 20	905	0.1−	0.0	1998 04 19	704	0.2−	0.4−	1999 09 04	888	0.1+	0.1−
1995 09 01	905	0.1−	0.1+	1998 04 19	704	0.6−	0.5−	1999 09 06	888	0.3+	0.2−
1995 09 01	905	1.0+	1.3+	1998 04 19	704	(1.5− 4.0−)		1999 09 06	888	0.2+	0.3−
1995 09 17	905	1.1−	0.3+	1998 04 20	704	0.7+	0.4−	1999 09 06	888	0.3+	0.2−
1995 09 17	905	1.0−	0.5−	1998 04 20	704	0.3+	0.5−	1999 09 07	704	0.2+	0.3+
1995 09 17	905	0.9−	0.1−	1998 04 20	704	0.1+	1.4+	1999 09 07	704	0.2+	0.4+
1998 03 20	704	(0.3+ 3.2+)		1998 04 20	704	0.3−	0.2−	1999 09 07	704	0.1−	0.3+
1998 03 20	704	1.7+	0.1+	1998 04 22	704	0.5+	0.2−	1999 09 07	704	0.1+	0.5+
1998 03 20	704	0.2−	0.3−	1998 04 22	704	0.2+	0.9+	1999 09 11	108	0.4+	0.3−
1998 03 20	704	1.4−	0.7−	1998 04 22	704	0.8+	0.3+	1999 09 11	108	1.4−	0.1−
1998 03 20	704	0.8−	0.3+	1998 04 22	704	1.1+	0.6−	1999 09 11	108	0.2−	0.4+
1998 03 25	699	0.5−	0.8+	1998 04 22	704	0.8+	0.7−	1999 09 14	704	0.2−	0.2+
1998 03 25	699	0.7+	0.1+	1998 04 28	699	0.5+	1.3−	1999 09 14	704	0.3−	0.0
1998 03 25	699	(0.1− 3.0+)		1998 04 28	699	0.6+	1.6−	1999 09 14	704	0.3−	0.2+
1998 03 28	704	0.0	0.9+	1998 04 28	699	0.6+	0.6−	1999 09 14	704	0.2−	0.5+
1998 03 28	704	0.4−	1.0+	1998 04 28	566	0.7−	0.4−	1999 09 14	704	0.5−	0.4+
1998 03 28	704	0.4−	1.0+	1998 04 28	566	0.3+	0.6−				
1998 03 28	704	0.4+	1.2+	1998 04 28	566	0.1−	0.3−				

(11600)* 1995 SQ₂

Discovered 1995 Sept. 26 by A. Vagnozzi at Stroncone.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Q			
<i>M</i>	31.28629	(2000.0)	P		Q		
<i>n</i>	0.22911254	ω	26.71122	+0.25327560	+0.95046288		
<i>a</i>	2.6450678	Ω	258.40570	−0.91720924	+0.17671719		
<i>e</i>	0.1509741	<i>i</i>	10.60009	−0.30753647	+0.25571734		
<i>P</i>	4.30	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1991 11 28	691	0.1−	0.5−	1995 11 20	589	1.3+	0.4+	1999 07 22	704	0.5−	0.1−
1991 11 28	691	1.0−	0.5+	1995 11 24	589	(2.2−	0.7−)	1999 07 22	704	0.0	1.1+
1991 11 28	691	0.1+	0.1−	1995 11 24	589	(2.6−	0.5−)	1999 07 22	704	1.0+	0.3+
1995 09 26	589	0.2−	0.1−	1997 01 12	589	0.2−	0.3+	1999 07 22	704	0.0	0.8+
1995 09 26	589	0.0	0.9−	1997 01 12	589	0.2+	1.2+	1999 09 01	589	0.9+	0.5−
1995 09 26	589	0.8+	0.3−	1997 01 15	589	0.9+	0.3−	1999 09 01	589	1.1−	0.3+
1995 09 26	589	0.0	0.1+	1997 01 15	589	1.1−	0.8+	1999 09 01	589	0.2+	0.1−
1995 09 27	589	0.8−	0.6+	1997 01 15	589	0.6+	0.2−	1999 09 01	589	0.2+	1.5+
1995 09 27	589	0.0	0.7−	1997 01 15	589	0.6+	0.2+	1999 09 02	589	0.2+	0.2−
1995 09 27	589	0.1+	0.4+	1997 01 15	589	0.3−	0.2−	1999 09 02	589	0.1+	0.1−
1995 10 01	589	0.3−	0.3−	1997 01 15	589	0.5+	0.9−	1999 09 02	589	0.4+	0.4−
1995 10 01	589	0.2−	0.1+	1997 01 30	589	0.3+	0.6+	1999 09 02	589	0.2−	0.2−
1995 10 01	589	0.7+	0.2+	1997 01 30	589	0.1−	0.8+	1999 09 07	589	0.6−	0.6−
1995 10 14	589	0.5+	0.1−	1997 01 30	589	1.6−	0.1+	1999 09 07	589	0.1+	0.3−
1995 10 14	589	0.1−	0.1+	1997 01 30	589	0.1−	0.0	1999 09 07	589	0.2+	0.4−
1995 10 21	589	0.2−	0.5+	1998 03 22	589	1.3+	0.6−	1999 09 08	704	0.4−	1.1+
1995 10 21	589	0.8−	0.2−	1998 03 22	589	0.2+	1.3+	1999 09 08	704	0.5−	0.4−
1995 10 25	589	0.2−	0.9+	1998 03 22	589	0.4+	0.1+	1999 09 08	704	0.3+	0.1−
1995 10 25	589	0.0	0.3−	1998 04 19	589	0.8−	0.8+	1999 09 08	704	0.7+	1.3+
1995 10 25	589	0.5−	0.1+	1998 04 19	589	0.5+	1.0+	1999 09 08	704	0.4+	0.5+
1995 10 25	589	0.5−	0.5−	1999 07 12	704	0.8−	0.3+	1999 09 09	704	0.3−	0.3+
1995 11 18	589	0.4−	0.6+	1999 07 12	704	1.1−	0.0	1999 09 09	704	1.5+	1.1−

1995 11 18	589	0.5+	0.2+	1999 07 12	704	0.4−	0.7+	1999 09 09	704	0.2−	0.1−
1995 11 18	589	1.2+	0.8+	1999 07 12	704	0.7−	0.3−	1999 09 09	704	1.0−	0.7−
1995 11 20	589	1.3+	0.3+	1999 07 22	704	0.5−	0.0				

(11601)* 1995 SE₄ = 1991 VN₅

Discovered 1995 Sept. 28 by S. P. Laurie at Church Stretton.

Id. G. V. Williams (*MPC* 25966)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	310.29754	(2000.0)	P		Q	
<i>n</i>	0.22862892	ω	110.98322	+0.90552312	−0.35241689	
<i>a</i>	2.6487966	Ω	270.27408	+0.24476670	+0.88875976	
<i>e</i>	0.1169967	<i>i</i>	13.66749	+0.34657920	+0.29310140	
<i>P</i>	4.31	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1991 11 02	675	0.3−	0.3+	1995 10 21	966	1.4+	0.7+	1999 09 08	704	0.2+	0.6−
1991 11 02	675	0.0	0.3−	1995 10 21	966	(3.9−	0.6+)	1999 09 08	704	0.2−	1.4−
1991 11 05	675	0.4−	0.8−	1997 01 14	966	0.8−	0.9+	1999 09 09	704	0.8−	0.7+
1991 11 05	675	0.2−	0.3−	1997 01 15	966	0.2+	0.5+	1999 09 09	704	0.1+	0.0
1991 12 02	675	1.1+	0.2−	1997 01 15	966	(1.7+	2.2+)	1999 09 09	682	0.3−	0.5+
1991 12 02	675	0.2−	1.1−	1997 02 13	966	0.3+	0.7−	1999 09 09	704	0.1−	0.6−
1995 09 28	966	0.4+	0.2−	1997 02 14	966	0.6+	0.2−	1999 09 09	704	0.1−	0.4−
1995 09 28	966	0.2+	0.4−	1999 07 12	704	0.1+	0.3−	1999 09 09	682	1.1−	0.4+
1995 09 28	966	0.1+	0.1−	1999 07 12	704	0.1+	0.1+	1999 09 09	682	0.1+	0.3+
1995 09 29	966	0.1−	0.4−	1999 07 12	704	0.1−	0.6+	1999 09 12	682	(2.1−	0.4−)
1995 09 29	966	0.2+	0.2−	1999 07 12	704	0.4−	0.3+	1999 09 12	682	0.2−	0.3−
1995 09 29	966	0.1+	0.2−	1999 07 12	704	0.1+	0.6+	1999 09 12	682	(0.3−	5.3−)
1995 09 29	966	0.8−	0.4−	1999 07 22	704	0.5+	0.2+	1999 09 14	704	0.6+	0.9+
1995 10 04	966	1.2−	0.8+	1999 07 22	704	0.3+	0.2−	1999 09 14	704	0.1−	0.1+
1995 10 04	966	0.1+	0.2+	1999 07 22	704	1.0+	0.1+	1999 09 14	704	0.1+	0.6−
1995 10 19	966	0.2+	0.9+	1999 07 22	704	0.4+	0.0	1999 09 14	704	0.2+	0.5−
1995 10 19	966	0.3−	0.7+	1999 07 22	704	0.6+	0.5+	1999 09 14	704	0.0	0.4+
1995 10 19	966	0.4−	0.6+	1999 09 08	704	0.2−	1.2−				
1995 10 21	966	0.9−	1.1+	1999 09 08	704	0.2−	1.0−				

(11602)* 1995 ST₅₄ = 1989 DF = 1991 TW₁₀

Discovered 1995 Sept. 28 by R. Weber at Lincoln Laboratory ETS, New Mexico.

Id. B. G. Marsden (*MPC* 28568), M. E. Sansaturio (*MPC* 35296)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	123.88941	(2000.0)	P		Q	
<i>n</i>	0.22506570	ω	229.54069	−0.99007645	+0.00383583	
<i>a</i>	2.6766803	Ω	310.19470	+0.06758173	−0.86344878	
<i>e</i>	0.1325735	<i>i</i>	10.59734	−0.12321257	−0.50442194	
<i>P</i>	4.38	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1989 02 26	399	1.5+	0.9−	1995 09 30	704	0.6+	0.6−	1999 07 16	704	0.4−	0.6−
1989 02 26	399	1.0−	0.4−	1995 09 30	704	1.0+	0.7+	1999 07 16	704	0.6−	0.3−
1989 02 26	399	0.1+	0.8+	1995 10 27	704	0.6+	1.0+	1999 08 07	699	0.9−	0.5+
1989 02 26	399	1.3−	0.1−	1995 10 28	704	0.9+	0.9+	1999 08 07	699	0.5−	0.5−
1991 10 11	691	0.4−	0.3−	1996 11 05	599	0.5+	1.0+	1999 08 07	699	0.5+	0.8−
1991 10 11	691	0.0	0.2−	1996 11 05	599	0.8−	1.6−	1999 09 09	704	0.2−	1.3+
1991 10 11	691	0.8−	0.5−	1998 03 26	566	0.3+	0.4−	1999 09 09	704	0.8−	0.1+
1991 10 14	691	(2.6−	0.6−)	1998 03 26	566	0.7+	0.1+	1999 09 09	704	1.1+	0.4−
1991 10 14	691	1.9−	0.6−	1998 03 26	566	0.2+	0.1+	1999 09 09	704	0.6+	0.1−
1991 10 14	691	1.8−	0.3−	1999 07 13	704	0.9−	0.3−	1999 09 13	704	0.2−	0.0
1995 09 27	704	1.8+	1.0+	1999 07 13	704	0.7−	0.5−	1999 09 13	704	0.3−	1.1+
1995 09 28	704	1.2+	0.2+	1999 07 13	704	1.2−	0.4−	1999 09 13	704	0.5+	0.6−
1995 09 28	704	1.4+	0.5+	1999 07 13	704	0.9−	0.5−	1999 09 13	704	0.1−	0.1−
1995 09 29	704	1.3+	1.3+	1999 07 13	704	1.2−	0.4−				
1995 09 29	704	1.7+	0.6+	1999 07 16	704	0.4+	1.1−				

(11603)* 1995 TF

Discovered 1995 Oct. 5 by Z. Moravec at Kleř.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	10.38495	(2000.0)	P		Q	
<i>n</i>	0.23740922	ω	328.93802	+0.92890153	+0.36759952	
<i>a</i>	2.5830788	Ω	9.81123	−0.26205357	+0.73807136	
<i>e</i>	0.1042035	<i>i</i>	15.26397	−0.26166748	+0.56579260	
<i>P</i>	4.15	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i> 1

Residuals in seconds of arc

1995 10 05	046	0.2+	0.1+	1995 12 17	046	0.1+	0.2+	1999 08 22	699	0.1−	0.4+
1995 10 05	046	0.2−	0.3−	1995 12 17	046	0.4+	0.5+	1999 08 25	046	0.2−	0.0
1995 10 05	046	0.2+	0.0	1996 02 09	046	0.2−	0.1−	1999 08 25	046	0.4−	0.6+
1995 10 05	046	0.2+	0.2−	1996 02 09	046	0.4+	1.3−	1999 08 25	046	0.1+	0.3+
1995 10 05	046	0.2+	0.0	1996 02 09	046	1.6+	0.6−	1999 09 05	046	0.0	0.3+
1995 10 05	046	0.4+	0.2+	1997 01 14	046	0.1−	0.1+	1999 09 05	046	0.1+	0.5+
1995 10 05	046	0.5+	0.1+	1997 01 14	046	0.4−	0.3−	1999 09 05	046	0.1−	0.4+
1995 10 05	046	0.8+	0.1−	1997 01 14	046	0.1−	0.4−	1999 09 07	704	0.1+	0.2−
1995 10 05	046	0.5+	0.0	1997 01 15	046	0.1−	0.2−	1999 09 07	704	0.1+	0.1−
1995 10 07	046	0.2+	0.0	1997 01 15	046	0.2−	0.1−	1999 09 07	704	0.1−	0.1−
1995 10 07	046	0.5+	0.2+	1997 01 15	046	0.1−	0.3−	1999 09 07	704	0.4−	0.2+
1995 10 07	046	0.5+	0.1+	1997 02 10	046	0.2+	0.0	1999 09 07	704	0.2−	0.2−
1995 10 12	046	0.2+	0.0	1997 02 10	046	0.7+	0.3+	1999 09 08	704	0.5−	0.0
1995 10 12	046	0.3+	0.1−	1997 02 10	046	0.6+	0.4+	1999 09 08	704	0.2−	0.6−
1995 10 12	046	0.0	0.2−	1997 02 10	046	0.8+	0.1+	1999 09 08	704	0.4−	0.1+
1995 10 22	046	1.8−	0.9−	1997 02 10	046	0.2+	0.2+	1999 09 08	704	0.8−	0.1+
1995 10 22	046	1.6−	0.8−	1997 02 10	046	0.4+	0.1−	1999 09 09	704	0.2−	0.1+
1995 10 22	046	1.8−	1.1−	1997 03 06	046	0.4+	1.0+	1999 09 09	704	0.3+	0.3+
1995 10 22	046	0.1+	0.5+	1997 03 06	046	0.3+	1.3+	1999 09 09	704	0.1+	0.6+
1995 10 22	046	0.1+	0.3+	1997 03 06	046	0.2+	1.0+	1999 09 09	704	0.3+	0.7+
1995 10 22	046	0.1−	0.1+	1997 03 07	046	0.6−	0.1+	1999 09 09	704	0.0	0.3+
1995 11 10	046	0.1−	0.2+	1997 03 07	046	0.4−	0.1+	1999 09 14	704	0.5−	0.1−
1995 11 10	046	0.0	0.1+	1997 03 07	046	0.5−	0.1+	1999 09 14	704	0.3+	0.6−
1995 11 10	046	0.1−	0.1+	1998 03 31	046	0.1−	0.2+	1999 09 14	704	0.2−	0.5−
1995 11 26	046	0.6+	0.1+	1998 03 31	046	0.1+	0.3−	1999 09 14	704	0.4+	0.4−
1995 11 26	046	0.4+	0.1+	1998 03 31	046	0.2−	0.3+	1999 09 14	704	0.4+	0.1+
1995 11 26	046	0.3+	0.0	1999 08 22	699	0.3−	1.1+				
1995 12 17	046	0.1+	0.4+	1999 08 22	699	0.9−	0.4+				

(11604)* 1995 UB₁ = 1997 DN

Discovered 1995 Oct. 21 by K. Korlević and V. Brcic at Višnjjan.

Id. K. Korlević (*MPC* 29303)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	145.08580	(2000.0)	P		Q	
<i>n</i>	0.19139735	ω	281.09714	−0.95039444	−0.28190732	
<i>a</i>	2.9820306	Ω	242.64118	+0.31013238	−0.89121374	
<i>e</i>	0.0201653	<i>i</i>	8.51122	−0.02383941	−0.35533975	
<i>P</i>	5.15	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i> 1

Residuals in seconds of arc

1995 10 21	120	0.4−	0.2+	1998 04 21	704	0.5+	0.1+	1998 05 24	704	0.1+	0.4−
1995 10 21	120	0.5−	0.5+	1998 04 21	704	0.6−	0.2+	1998 05 24	704	1.5+	0.8−
1995 10 22	120	0.7+	0.5+	1998 04 21	704	1.1−	0.4−	1998 05 24	704	0.7−	0.6−
1995 10 22	120	0.7+	0.4+	1998 04 22	704	0.2−	0.8+	1999 07 06	120	0.2−	0.3+
1995 10 23	120	0.8−	0.8+	1998 04 22	704	0.0	1.1+	1999 07 06	120	(5.3+	2.2+)
1995 10 24	120	0.0	0.5+	1998 04 22	704	1.1−	1.0+	1999 07 06	120	0.5+	1.0+
1995 10 24	120	0.2+	0.4−	1998 04 22	704	0.4−	0.8−	1999 07 06	120	0.6−	0.7+
1995 10 24	120	0.1+	0.5+	1998 04 22	704	1.8−	0.7−	1999 07 07	120	0.5−	0.6+
1995 10 25	033	0.0	0.7−	1998 04 25	699	0.1+	1.4+	1999 07 07	120	1.4+	1.1−
1995 10 25	033	0.4−	0.6−	1998 04 25	699	0.3+	1.1+	1999 07 13	704	0.1−	0.0
1995 11 20	120	0.2−	0.0	1998 04 25	699	0.0	0.0	1999 07 13	704	0.5−	0.1+
1995 11 20	120	0.2+	0.3−	1998 04 30	566	0.4+	0.4+	1999 07 13	704	0.4−	0.4−
1996 12 10	327	0.3+	0.7+	1998 04 30	566	0.5+	0.1−	1999 07 13	704	0.0	0.5+
1996 12 10	327	0.8−	0.5+	1998 04 30	566	0.8−	0.3−	1999 07 13	704	0.0	0.7+
1996 12 10	327	0.1−	0.0	1998 05 01	704	1.1+	0.5+	1999 09 09	704	0.2+	0.3−

1997 02 27	120	0.1−	0.0	1998 05 01	704	0.2−	0.3−	1999 09 09	704	0.4+	0.7−
1997 02 27	120	0.1+	0.1+	1998 05 01	704	0.9+	0.7−	1999 09 09	704	0.2−	0.2+
1997 02 27	120	0.1+	0.1−	1998 05 01	704	0.4−	0.2+	1999 09 09	704	0.1+	0.6−
1997 02 27	120	0.7+	0.2−	1998 05 22	704	(2.3+	1.8−)	1999 09 09	704	0.4−	0.1−
1997 02 28	120	0.6+	0.1+	1998 05 22	704	0.7+	0.4−	1999 09 09	704	0.4−	0.3+
1997 02 28	120	1.0−	1.2+	1998 05 22	704	0.5+	0.5+	1999 09 09	704	0.2−	0.8+
1997 02 28	120	0.8+	0.6+	1998 05 22	704	0.2+	0.5−	1999 09 09	704	0.2−	1.0+
1997 02 28	120	0.3+	0.3+	1998 05 22	704	0.5−	0.2+	1999 09 09	704	0.4+	0.3+
1998 04 21	704	0.5+	0.2+	1998 05 24	704	0.9+	0.8−	1999 09 09	704	0.3−	0.1−
1998 04 21	704	0.2−	0.0	1998 05 24	704	(0.7−	3.1−)				

(11605)* 1995 UP₆

Discovered 1995 Oct. 19 by L. Tesi and A. Boattini at San Marcello Pistoiese.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	13.34350		(2000.0)	P	Q
<i>n</i>	0.24004009	ω	92.30189	+0.76996303	+0.61282944
<i>a</i>	2.5641703	Ω	229.96464	−0.63765134	+0.72866699
<i>e</i>	0.1629829	<i>i</i>	13.42448	−0.02361561	+0.30575234
<i>P</i>	4.11	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1954 09 28	675	0.5+	0.1−	1995 11 20	104	0.5−	0.5−	1998 05 16	704	(0.4−	2.1+)
1954 09 28	675	0.2−	0.2−	1995 12 09	104	0.7+	0.6−	1998 05 16	704	0.0	0.9+
1954 10 06	675	0.5+	1.5−	1995 12 09	104	0.2+	0.0	1998 05 16	704	(3.0−	0.5+)
1954 10 06	675	0.7−	1.1+	1995 12 09	104	0.5+	0.5+	1999 08 03	104	1.7−	0.3+
1985 01 21	413	0.5−	0.2+	1995 12 19	104	0.1+	0.1+	1999 08 03	104	1.5−	0.2+
1985 01 21	413	0.5+	0.1−	1995 12 19	104	0.1−	0.1+	1999 08 03	104	1.0−	0.2−
1995 10 19	104	0.6+	0.6+	1995 12 19	104	0.1−	0.1+	1999 08 05	104	(2.6−	2.1+)
1995 10 19	104	0.5+	0.2+	1997 01 15	104	0.4+	0.1−	1999 08 05	104	0.1+	1.2+
1995 10 19	104	0.8+	0.2+	1997 01 15	104	0.2+	0.1−	1999 08 05	104	0.0	1.0+
1995 10 20	104	0.5+	1.6−	1997 01 15	104	0.1−	0.0	1999 08 05	104	0.1−	0.7+
1995 10 20	104	0.2+	0.2−	1997 01 16	104	0.0	0.6+	1999 08 13	108	1.3+	1.0+
1995 10 20	104	0.1−	1.0−	1997 01 16	104	0.1+	0.5+	1999 08 14	108	0.5+	0.5+
1995 10 20	104	0.3−	0.6−	1997 01 16	104	1.0−	0.5+	1999 08 14	108	0.4−	0.1−
1995 10 21	104	0.2+	0.1+	1997 01 17	104	1.3+	0.1+	1999 08 18	104	0.0	0.1+
1995 10 21	104	0.1+	0.4+	1997 01 17	104	0.9+	0.3+	1999 08 18	104	0.0	0.1−
1995 10 22	104	1.0−	1.8−	1997 01 17	104	0.8+	0.3+	1999 08 18	104	0.3+	0.2−
1995 10 22	104	0.2−	0.9−	1997 01 28	104	1.5−	0.4+	1999 09 08	704	0.4−	0.1−
1995 10 22	104	0.2−	0.4−	1997 01 28	104	0.8−	0.3+	1999 09 08	704	0.1+	0.0
1995 10 23	104	0.1+	1.2−	1997 01 28	104	0.0	0.2+	1999 09 08	704	0.2−	0.4−
1995 10 23	104	(2.3−	0.6−)	1998 03 29	104	1.0−	0.3−	1999 09 08	704	0.1−	0.1−
1995 10 23	104	(3.5−	0.7−)	1998 03 29	104	0.8−	0.2−	1999 09 08	704	0.2+	0.7−
1995 10 26	104	0.0	0.0	1998 03 29	104	0.6−	0.1−	1999 09 08	108	1.7−	0.8−
1995 10 26	104	0.1+	0.1+	1998 04 20	704	0.4+	0.4−	1999 09 08	108	(2.2+	0.5+)
1995 10 26	104	0.1+	0.1−	1998 04 20	704	(0.3−	2.5−)	1999 09 08	108	(2.3+	1.3+)
1995 10 31	104	0.4−	0.7−	1998 04 20	704	0.9+	1.0−	1999 09 08	108	0.6+	1.7+
1995 10 31	104	0.4−	0.4+	1998 04 20	704	0.4+	1.2−	1999 09 08	108	(2.1−	0.4+)
1995 10 31	104	0.3−	0.0	1998 04 20	704	1.1−	2.0−	1999 09 09	108	(2.4+	0.5+)
1995 11 18	104	1.8+	1.0+	1998 04 20	104	0.3−	0.1+	1999 09 09	108	0.5−	0.2−
1995 11 18	104	0.3+	0.3−	1998 04 20	104	0.2−	0.0	1999 09 09	108	1.4+	0.7−
1995 11 19	658	0.1−	0.0	1998 04 20	104	0.0	0.1+	1999 09 09	108	1.3+	1.1+
1995 11 19	658	0.4−	0.1+	1998 04 30	699	1.0+	1.9+	1999 09 18	704	0.2+	0.3+
1995 11 19	658	0.3−	0.0	1998 04 30	699	0.2+	1.0−	1999 09 18	704	0.0	0.3+
1995 11 20	104	0.5+	0.4−	1998 04 30	699	0.4+	0.1−	1999 09 18	704	0.3−	0.1+
1995 11 20	104	0.2−	0.2−	1998 05 16	704	0.2+	1.5−	1999 09 18	704	0.1+	0.0

(11606)* 1995 UU₆

Discovered 1995 Oct. 19 by D. J. Tholen at Mauna Kea.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	19.45660		(2000.0)	P	Q
<i>n</i>	0.25793533	ω	29.69901	+0.99435403	−0.09750542
<i>a</i>	2.4441555	Ω	335.78939	+0.06546646	+0.87420386
<i>e</i>	0.1660113	<i>i</i>	5.85949	+0.08351173	+0.47566827
<i>P</i>	3.82	<i>H</i>	16.9	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1995 10 19	568	1.0+	0.2+	1995 10 24	568	0.0	0.1−	1997 05 30	568	0.3+	0.7−
1995 10 19	568	1.1+	0.0	1995 11 24	691	1.0−	0.4−	1997 05 30	568	0.3+	0.6−
1995 10 19	568	1.1+	0.2+	1995 11 24	691	1.0−	0.5−	1998 01 30	568	0.1+	0.4−
1995 10 19	568	1.1+	0.1+	1995 12 07	568	0.9−	0.8−	1998 01 30	568	0.2−	0.1−
1995 10 19	568	0.4+	0.1−	1995 12 07	568	0.7−	1.0−	1998 01 30	568	0.4−	0.3−
1995 10 19	568	0.3+	0.1−	1996 02 15	568	0.3−	0.2+	1998 07 25	568	0.0	0.3−
1995 10 20	568	0.0	0.1+	1996 02 15	568	0.2−	0.5+	1998 07 25	568	0.3−	0.1−
1995 10 20	568	0.1+	0.1+	1996 03 17	568	0.0	0.1−	1998 07 25	568	0.3−	0.0
1995 10 21	568	0.0	0.1−	1996 03 17	568	0.6−	0.1+	1999 07 09	568	0.1−	0.0
1995 10 21	568	0.1−	0.0	1996 03 18	568	0.2−	0.1−	1999 07 09	568	0.2−	0.3+
1995 10 22	568	0.1−	0.0	1996 03 18	568	0.5−	0.2−	1999 07 10	568	0.1+	0.6+
1995 10 22	568	0.0	0.0	1997 02 09	568	0.1+	0.1+	1999 07 10	568	0.1+	0.7+
1995 10 23	568	0.0	0.0	1997 02 09	568	0.0	0.0	1999 09 13	568	0.1−	0.3+
1995 10 23	568	0.2−	0.0	1997 02 10	568	0.0	0.1−	1999 09 13	568	0.1−	0.2+
1995 10 24	568	0.2−	0.1−	1997 02 10	568	0.0	0.1−				

(11607)* 1995 WX₁

Discovered 1995 Nov. 16 by N. Sato and T. Urata at Chichibu.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	111.57485		(2000.0)	P	Q
<i>n</i>	0.17457294	ω	318.63906	−0.93148961	+0.29293058
<i>a</i>	3.1706728	Ω	239.63068	−0.23164564	−0.93481333
<i>e</i>	0.1622839	<i>i</i>	14.47655	−0.28047709	−0.20078775
<i>P</i>	5.65	<i>H</i>	12.9	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1995 11 16	369	0.8−	0.4+	1996 01 26	369	1.1+	1.1+	1998 06 03	704	0.7+	0.9−
1995 11 16	369	0.6−	0.2+	1996 02 20	887	0.4+	0.4+	1998 06 03	704	1.1+	0.1+
1995 11 16	369	1.5−	0.4+	1996 02 20	887	2.1+	0.4+	1998 06 03	704	0.1−	0.6+
1995 11 18	369	0.8−	0.0	1996 02 20	887	1.4+	0.0	1998 06 03	704	1.5−	1.2+
1995 11 18	369	0.7−	0.1−	1997 01 13	385	0.2+	0.1+	1999 07 12	704	0.3−	0.7+
1995 11 18	369	0.8−	0.1−	1997 01 13	385	0.2+	0.2−	1999 07 12	704	0.0	0.6−
1995 11 27	691	0.3−	0.0	1997 01 15	369	0.5+	0.2−	1999 07 12	704	0.9+	0.1−
1995 11 27	691	0.3−	0.2+	1997 01 15	369	0.9+	0.4+	1999 07 12	704	0.7−	0.2−
1995 11 27	691	0.1−	0.0	1997 02 06	385	0.8−	0.1−	1999 07 12	704	0.5+	0.5+
1995 11 29	369	0.1−	0.3+	1997 02 06	385	0.8−	0.5+	1999 07 12	704	0.5−	0.3−
1995 11 29	369	0.0	0.1−	1997 02 09	369	0.4−	0.4−	1999 07 12	704	0.8+	0.2+
1995 11 29	369	0.7+	0.2−	1997 02 09	369	0.1+	0.1+	1999 07 12	704	0.2−	0.9+
1995 12 01	887	0.6+	0.7+	1998 05 20	886	1.3+	0.4+	1999 07 12	704	0.0	0.8+
1995 12 01	887	1.1+	0.5−	1998 05 20	886	1.1−	0.8−	1999 07 12	704	0.7−	0.4+
1995 12 23	691	0.4−	0.2+	1998 05 20	888	0.5+	0.2−	1999 07 22	704	0.6−	0.8−
1995 12 23	691	0.4−	0.5+	1998 05 20	888	0.1−	0.2+	1999 07 22	704	0.1+	0.3−
1996 01 18	369	0.1−	0.3−	1998 05 20	888	0.5−	0.5+	1999 07 22	704	0.1−	0.6−
1996 01 18	369	0.7+	1.1−	1998 05 24	704	0.3+	0.0	1999 07 22	704	1.2+	1.5−
1996 01 18	369	1.3+	0.8+	1998 05 24	704	0.5−	0.1+	1999 09 16	704	0.2−	0.9−
1996 01 26	369	0.6−	0.4−	1998 05 24	704	0.1+	0.4+	1999 09 16	704	0.4+	0.2+
1996 01 26	369	0.1+	1.1−	1998 05 24	704	(2.5+	0.8−)	1999 09 16	704	0.3−	1.2+
1996 01 26	369	0.3−	1.6+	1998 05 24	704	0.3−	1.0+	1999 09 16	704	0.4−	0.5+

(11608)* 1995 WU₄ = 1990 RK₉

Discovered 1995 Nov. 18 by Y. Shimizu and T. Urata at the Nachi-Katsuura

1999 SEPT. 28

M.P.C. 35861

1990 09 18	675	0.9+	1.1-	1999 07 09	888	0.3-	0.7+	1999 09 07	703	1.7-	0.3+
1995 11 18	905	0.8-	0.6-	1999 07 09	888	0.4+	0.3+	1999 09 08	704	0.5-	0.4+
1995 11 18	905	0.3-	0.6-	1999 07 09	888	0.1+	0.3-	1999 09 08	704	0.2-	0.4+
1995 11 21	905	0.3-	1.0-	1999 07 23	704	0.7+	0.3+	1999 09 08	704	1.9+	0.3+
1995 11 21	905	1.0+	0.1-	1999 07 23	704	0.0	0.3+	1999 09 08	704	1.3-	0.2+
1995 11 25	905	0.1+	0.0	1999 07 23	704	0.0	0.7+	1999 09 08	704	0.0	0.9+
1995 11 25	905	0.2-	0.1-	1999 07 23	704	0.1-	0.9+	1999 09 18	704	0.8-	0.1+
1995 12 15	905	0.9+	0.0	1999 07 23	704	0.3+	0.0	1999 09 18	704	(2.6+	0.9-)
1995 12 15	905	1.1+	0.0	1999 09 04	888	0.2-	0.0	1999 09 18	704	0.6-	0.4-
1995 12 21	905	0.1-	0.9+	1999 09 04	888	0.1+	0.1-	1999 09 18	704	0.4-	0.3-
1995 12 21	905	1.5-	1.1+	1999 09 05	886	1.3+	1.0-				
1997 03 05	385	0.7-	1.3+	1999 09 05	886	1.1+	0.4-				

(11609)* 1995 XT = 1989 TU₈ = 1994 RA₁₂

Discovered 1995 Dec. 12 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 26413)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
226.32266		(2000.0)			
<i>n</i>	0.18247365	ω	348.12509	-0.23160029	-0.97213853
<i>a</i>	3.0784772	Ω	115.25745	+0.89577796	-0.22761240
<i>e</i>	0.1358636	<i>i</i>	2.29181	+0.37939842	-0.05602922
<i>P</i>	5.40	<i>H</i>	12.8	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1989 09 29	675	1.4-	1.2-	1995 12 20	411	0.1-	0.3-	1999 07 13	704	0.6-	1.3-
1989 09 29	675	1.0+	1.3-	1995 12 20	411	0.5-	0.9+	1999 07 16	704	0.6-	0.2+
1989 10 08	809	(3.0+	0.3-)	1995 12 25	411	0.3-	0.8-	1999 07 16	704	0.2+	0.7-
1989 10 08	809	2.0+	0.3-	1995 12 25	411	0.4+	0.3-	1999 07 16	704	0.5-	0.3+
1989 10 08	809	(2.7+	0.8-)	1997 03 27	689	1.5+	1.0-	1999 07 19	106	0.1+	0.3-
1991 01 22	675	0.4-	0.2+	1997 03 29	327	0.3-	0.8-	1999 07 19	106	1.3-	0.7-
1991 01 22	675	0.7+	0.4+	1997 03 29	327	0.3-	0.8-	1999 08 07	699	0.1-	0.3-
1994 09 01	033	0.6-	0.4-	1997 03 29	327	0.0	0.8-	1999 08 07	699	1.4+	0.2+
1994 09 02	033	0.1+	0.2+	1997 03 30	327	0.6-	0.3-	1999 08 07	699	0.3-	0.4+
1994 09 03	033	(0.4-	2.3+)	1997 03 30	327	0.0	0.5-	1999 09 07	704	0.5+	0.6+
1994 09 12	675	0.4+	0.6-	1997 03 30	327	0.7-	0.0	1999 09 07	704	0.8+	0.7+
1994 09 12	675	0.0	0.2-	1998 06 03	704	(2.4-	0.4-)	1999 09 07	704	1.0+	0.8+
1994 10 01	675	0.3+	1.2-	1998 06 03	704	1.1-	0.8-	1999 09 13	704	0.9+	0.0
1995 12 12	411	0.4+	0.2+	1998 06 03	704	1.2-	0.2+	1999 09 13	704	0.7+	0.7+
1995 12 12	411	0.0	1.0+	1999 07 13	704	0.2-	0.5-	1999 09 13	704	0.9+	0.7+
1995 12 14	411	0.4-	0.7-	1999 07 13	704	0.4-	0.1+	1999 09 13	704	0.5+	0.2-
1995 12 14	411	0.4-	0.7-	1999 07 13	704	1.6-	0.0	1999 09 13	704	0.6+	1.2+

(11610)* 1995 XJ₁ = 1989 SX₁₂ = 1993 LB₂

Discovered 1995 Dec. 15 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 26572)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
284.98783		(2000.0)			
<i>n</i>	0.18721769	ω	133.39777	+0.71264085	-0.68485551
<i>a</i>	3.0262500	Ω	270.45783	+0.59166465	+0.70319725
<i>e</i>	0.0698656	<i>i</i>	8.74541	+0.37692966	+0.19101457
<i>P</i>	5.26	<i>H</i>	12.1	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1989 09 28	493	(1.1-	2.8-)	1998 05 22	704	1.4+	0.6-	1999 07 23	704	0.1-	0.1-
1989 09 28	493	0.1+	2.0-	1998 05 22	704	0.4-	0.9-	1999 07 23	704	0.1+	0.2-
1989 10 03	493	(0.1+	5.1-)	1998 05 24	704	1.2-	0.8+	1999 07 23	704	0.0	0.1-
1989 10 03	493	(0.5+	3.2-)	1998 05 24	704	0.4-	0.9+	1999 09 08	703	0.4-	1.1+
1993 06 13	675	0.5+	0.6-	1998 05 24	704	0.1+	0.2+	1999 09 08	703	0.3-	0.0
1993 06 13	675	0.7+	0.7-	1998 05 24	704	0.0	0.4+	1999 09 08	703	0.6-	0.1+
1993 06 14	675	0.4+	1.3-	1998 05 24	704	0.1-	0.3+	1999 09 08	703	0.2+	0.6-
1995 12 15	411	0.0	0.4-	1998 06 18	704	0.0	0.1-	1999 09 09	704	0.2+	0.0
1995 12 15	411	0.2-	0.2+	1998 06 18	704	0.5-	0.4-	1999 09 09	704	0.2+	0.3+
1995 12 16	411	0.0	0.0	1998 06 18	704	(0.9+	2.3+)	1999 09 09	704	0.0	0.3+
1995 12 16	411	0.1-	0.0	1998 06 18	704	0.7-	1.3+	1999 09 09	704	0.1+	0.3-
1995 12 22	411	0.1+	0.3-	1999 07 13	704	0.3+	0.0	1999 09 09	704	0.3-	0.3-

1995 12 22	411	0.3+	0.7-	1999 07 13	704	0.0	0.2+	1999 09 12	106	0.3-	0.4+
1995 12 25	411	0.2-	0.7+	1999 07 13	704	0.1+	0.1-	1999 09 12	106	0.2-	0.5+
1995 12 25	411	0.1+	0.0	1999 07 13	704	0.1-	0.3+	1999 09 14	704	0.5+	0.5+
1995 12 29	411	0.3+	0.2+	1999 07 13	704	0.5-	0.3+	1999 09 14	704	0.3+	0.4-
1995 12 29	411	0.1+	0.1-	1999 07 15	367	0.0	0.2+	1999 09 14	704	0.2+	0.0
1998 05 22	704	0.4+	0.1+	1999 07 15	367	0.1-	0.1-	1999 09 14	704	0.4+	0.1+
1998 05 22	704	0.2+	0.6-	1999 07 15	367	0.0	0.5+	1999 09 14	704	0.1-	0.4-
1998 05 22	704	0.1+	0.6-	1999 07 23	704	0.1-	0.1+				

(11611)* 1995 YQ = 1998 HQ₁₂₀ = 1998 LD₃

Discovered 1995 Dec. 18 at Haleakala by the JPL Near-Earth Asteroid

Tracking program.

Id. G. V. Williams (*MPC* 32242)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
18.17291		(2000.0)			
<i>n</i>	0.19064131	ω	179.28030	+0.45565968	+0.87159409
<i>a</i>	2.9899095	Ω	117.81198	-0.81771846	+0.49011964
<i>e</i>	0.0757575	<i>i</i>	11.79686	-0.35172543	-0.01031938
<i>P</i>	5.17	<i>H</i>	13.0	<i>G</i>	0.15
				<i>U</i>	0

Residuals in seconds of arc

1993 05 14	691	0.5-	0.3-	1995 12 24	566	0.0	0.5+	1998 05 27	699	0.4+	0.4+
1993 05 14	691	0.6-	0.5-	1995 12 24	566	0.0	0.1-	1998 05 27	699	0.5+	0.3+
1993 05 14	691	0.4-	0.4-	1995 12 24	566	0.0	0.1+	1998 05 27	699	0.7+	0.2+
1993 06 11	691	0.9+	0.4-	1997 02 03	691	0.0	0.2-	1998 06 02	699	0.1+	1.0+
1993 06 11	691	0.4-	0.4-	1997 02 03	691	0.0	0.3-	1998 06 02	699	0.1+	0.8+
1993 06 11	691	0.4+	0.4-	1997 02 03	691	0.2+	0.4-	1998 06 02	699	0.0	0.5+
1995 12 18	566	0.6+	0.3+	1998 04 23	704	0.2-	0.6-	1999 07 14	704	0.4+	0.1+
1995 12 18	566	0.2+	0.6+	1998 04 23	704	0.2-	0.4+	1999 07 14	704	0.3+	0.0
1995 12 18	566	0.9+	0.3+	1998 04 23	704	0.7+	0.3+	1999 07 14	704	0.4+	0.3+
1995 12 19	566	0.3-	0.2+	1998 04 23	704	1.2+	0.3+	1999 07 14	704	0.1+	0.1+
1995 12 19	566	0.2-	0.2+	1998 04 23	704	0.9-	0.3+	1999 07 14	704	0.4+	0.1-
1995 12 19	566	0.1-	0.5+	1998 04 24	704	0.1-	0.2-	1999 08 13	703	0.0	0.0
1995 12 19	566	0.0	0.2+	1998 04 24	704	0.6+	0.1+	1999 08 13	703	0.6-	0.1+
1995 12 19	566	0.3-	0.7+	1998 04 24	704	0.5+	0.1-	1999 08 13	703	1.6-	0.4+
1995 12 19	566	0.1-	0.4+	1998 04 24	704	0.4+	0.8+	1999 08 13	703	(3.2-	0.1-)
1995 12 19	566	0.4-	0.3+	1998 05 23	704	0.1+	0.2+	1999 08 13	699	0.8-	0.4+
1995 12 19	566	0.4-	0.5+	1998 05 23	704	0.0	0.4-	1999 08 13	699	0.7-	0.2+
1995 12 19	566	0.3-	0.0	1998 05 23	704	0.2+	0.4-	1999 08 13	699	0.5-	0.6+
1995 12 21	566	0.5-	0.1+	1998 05 23	704	0.3-	0.5+	1999 09 11	704	0.4+	1.2+
1995 12 21	566	0.1+	0.1+	1998 05 23	704	0.9-	0.7+	1999 09 11	704	0.2+	0.0
1995 12 21	566	0.2-	0.2+	1998 05 25	704	0.4-	0.1+	1999 09 11	704	0.7+	0.6+
1995 12 22	566	0.3-	0.3+	1998 05 25	704	0.6+	0.5+	1999 09 11	704	0.6+	0.2-
1995 12 22	566	0.4-	0.4+	1998 05 25	704	0.6-	1.7+	1999 09 11	704	0.8+	1.3-
1995 12 22	566	0.2-	0.3+	1998 05 25	704	0.2+	0.8+				

(11612)* 1995 YZ₁

Discovered 1995 Dec. 21 by A. Nakamura at Kuma Kogen.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
278.89138		(2000.0)			
<i>n</i>	0.19982472	ω	58.48860	+0.33842047	-0.94064515
<i>a</i>	2.8975876	Ω	11.81449	+0.81526760	+0.27947894
<i>e</i>	0.1783630	<i>i</i>	7.19885	+0.46990459	+0.19255708
<i>P</i>	4.93	<i>H</i>	13.9	<i>G</i>	0.15

1996 01 11	360	0.1+	0.5+	1997 04 05	704	1.0+	0.1+	1999 09 07	704	0.3+	0.4-
1996 01 11	360	0.2-	0.3+	1997 04 06	704	0.5+	0.5+	1999 09 08	703	0.3-	0.4-
1996 01 24	360	0.6+	0.5+	1997 04 06	704	0.3-	1.4+	1999 09 08	703	0.2-	0.4-
1996 01 24	360	0.4+	0.5+	1997 04 07	704	0.7+	0.6+	1999 09 08	703	1.4-	0.2-
1996 02 15	360	0.4-	0.5-	1997 04 07	704	1.3+	1.0+	1999 09 08	703	1.1-	0.8+
1996 02 15	360	0.1-	0.9-	1997 04 07	360	0.8-	0.3+	1999 09 09	360	0.1-	0.5-
1997 03 04	360	0.1-	0.1+	1997 04 07	360	0.6-	0.4+	1999 09 09	360	0.1+	0.5-
1997 03 04	360	0.2-	0.1+	1997 04 07	360	0.6-	0.1+	1999 09 13	704	0.4+	0.6-
1997 03 04	360	0.1-	0.1+	1997 04 29	360	0.1-	0.3-	1999 09 13	704	0.2+	0.3+
1997 03 11	809	(4.7-	0.7-)	1997 04 29	360	0.6-	0.1-	1999 09 13	704	0.0	0.7+
1997 03 11	809	(2.6-	0.4-)	1997 04 29	360	0.5-	0.2-	1999 09 13	704	1.2-	0.7+

(11613)* 1995 YN₄ = 1953 TS = 1979 VJ₁

Discovered 1995 Dec. 23 by Y. Shimizu and T. Urata at the Nachi-Katsuura Observatory.

Id. S. Nakano (*MPC* 26575)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	291.46788		(2000.0)	P	Q		
<i>n</i>	0.19134771	ω	68.17161	+0.62349287	-0.78035872		
<i>a</i>	2.9825464	Ω	342.98738	+0.64313049	+0.54677575		
<i>e</i>	0.1163374	<i>i</i>	9.42777	+0.44456700	+0.30344118		
<i>P</i>	5.15	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1953 10 07	760	0.4+	1.2-	1996 01 27	385	0.3-	0.2+	1999 09 07	704	0.4+	0.6+
1979 11 14	095	0.9+	0.6-	1997 03 09	385	0.1-	0.5+	1999 09 08	704	0.2+	0.1+
1994 08 16	950	(2.7-	1.4+)	1997 03 09	385	0.3+	1.1+	1999 09 08	704	0.0	0.5-
1994 08 16	950	(2.6-	1.9+)	1997 03 18	385	0.5+	0.2-	1999 09 08	704	0.0	0.3-
1995 12 23	905	0.1+	0.3+	1997 03 18	385	0.7+	1.0+	1999 09 09	704	0.7-	0.3+
1995 12 23	905	0.0	0.1-	1999 08 08	699	0.6+	1.0+	1999 09 09	704	0.3+	0.2+
1995 12 25	905	0.0	0.3+	1999 08 08	699	0.8+	1.8+	1999 09 09	704	1.1-	0.0
1995 12 25	905	0.9+	0.3-	1999 08 08	699	0.4+	0.8+	1999 09 09	704	0.7-	1.1-
1996 01 09	905	0.2+	0.4-	1999 09 05	715	0.2+	1.3+	1999 09 09	704	0.6-	0.8-
1996 01 09	905	0.5-	0.4-	1999 09 05	715	0.1+	1.4+	1999 09 13	704	0.4-	0.6-
1996 01 09	905	0.2-	0.1-	1999 09 05	385	1.5-	0.2-	1999 09 13	704	0.1-	0.2+
1996 01 13	385	0.1+	0.9+	1999 09 05	385	0.8-	0.4+	1999 09 13	704	1.1-	0.2-
1996 01 13	385	0.3-	1.1+	1999 09 05	385	1.0-	0.0	1999 09 13	704	0.4-	0.1+
1996 01 13	385	0.5+	1.4+	1999 09 07	704	0.5+	0.1+	1999 09 13	704	0.3-	0.4-
1996 01 13	385	0.2+	0.7+	1999 09 07	704	0.2+	0.1-	1999 09 14	106	0.5+	0.6+
1996 01 27	385	0.4-	0.3+	1999 09 07	704	0.1+	0.1-	1999 09 14	106	0.6+	0.4+
1996 01 27	385	0.1-	0.1+	1999 09 07	704	0.4+	0.1+	1999 09 14	106	0.4+	0.4+

(11614)* 1996 AD₂

Discovered 1996 Jan. 14 at the Astronomical and Geophysical Observatory, Modra.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	336.16303		(2000.0)	P	Q		
<i>n</i>	0.19108716	ω	277.98190	+0.95555321	-0.20943871		
<i>a</i>	2.9852569	Ω	94.28520	+0.27541662	+0.88524908		
<i>e</i>	0.1331254	<i>i</i>	12.00957	-0.10518436	+0.41529447		
<i>P</i>	5.16	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1996 01 13	897	0.4+	0.7+	1996 03 20	118	0.6-	0.3-	1998 05 24	704	0.6+	1.1+
1996 01 13	897	0.4+	0.4+	1996 04 10	118	0.1+	0.3-	1998 05 24	704	1.1-	0.0
1996 01 13	897	0.0	0.2+	1996 04 10	118	0.7+	0.1-	1998 06 03	704	0.8+	1.7-
1996 01 13	897	0.2+	0.7+	1996 04 17	118	0.1-	0.0	1998 06 03	704	0.5-	0.7-
1996 01 14	118	0.2+	0.1+	1996 04 17	118	0.3-	0.1-	1998 06 03	704	1.5-	0.4+
1996 01 14	118	0.0	0.0	1996 04 20	118	0.5+	0.6-	1998 06 03	704	0.3-	1.6+
1996 01 14	118	0.0	0.2+	1997 02 07	118	0.0	0.1+	1998 06 04	118	0.3+	0.4+
1996 01 15	118	0.3+	0.3+	1997 02 07	118	0.2-	0.0	1998 06 05	118	0.2+	0.6+
1996 01 15	118	0.4+	0.4+	1997 02 10	118	0.1+	0.3+	1998 06 24	704	1.3+	0.6+
1996 01 16	897	1.1+	0.4+	1997 02 10	118	0.1-	0.3-	1998 06 24	704	1.4+	0.1+
1996 01 16	897	0.0	0.3+	1997 02 23	118	0.4+	0.7+	1998 06 24	704	0.3+	1.7-
1996 01 17	118	0.3+	0.2+	1997 02 23	118	0.6+	0.3+	1998 06 24	704	0.2+	0.5+

1996 01 17	118	0.4+	0.1+	1997 04 02	118	0.4+	0.2-	1998 06 26	704	1.6+	0.9-
1996 01 17	118	0.6-	0.9-	1997 04 02	118	0.5+	0.2+	1998 06 26	704	0.6-	0.3+
1996 01 17	118	0.5-	0.7-	1997 05 04	118	(0.2+	2.2+)	1998 06 26	704	0.6+	1.7-
1996 01 21	118	0.2-	0.4+	1997 05 04	118	0.2+	1.7+	1998 06 26	704	0.3-	1.0-
1996 01 21	118	0.3-	0.3+	1998 03 21	118	0.9-	0.3+	1999 08 11	118	0.5+	0.5-
1996 01 31	118	0.3-	0.0	1998 03 21	118	0.7-	0.9-	1999 08 11	118	0.4+	0.3-
1996 01 31	118	0.3-	0.5-	1998 03 23	118	0.4-	0.5-	1999 08 11	118	0.2+	0.2-
1996 01 31	118	0.1-	0.3-	1998 03 23	118	0.3-	0.6-	1999 08 14	118	0.5-	0.3+
1996 01 31	118	0.3-	0.2-	1998 03 24	118	0.3-	0.4-	1999 08 14	118	0.3-	0.1-
1996 02 05	118	0.5-	0.1-	1998 03 24	118	0.4-	0.7-	1999 09 02	118	0.7+	0.0
1996 02 09	118	0.2+	0.2-	1998 05 16	118	0.4+	0.2+	1999 09 02	118	0.5+	0.6-
1996 02 22	118	0.0	0.3-	1998 05 16	118	0.1-	0.2+	1999 09 02	118	0.3+	0.7-
1996 02 23	118	0.2-	0.4-	1998 05 16	118	0.4-	0.2+	1999 09 11	704	0.4-	0.5+
1996 02 24	118	0.1-	0.4-	1998 05 22	704	0.1-	0.0	1999 09 11	704	0.5-	0.4+
1996 02 25	118	0.2-	0.2-	1998 05 22	704	0.7+	1.2+	1999 09 11	704	0.3-	1.1+
1996 02 27	118	0.3-	0.4-	1998 05 22	704	0.3-	1.4+	1999 09 11	704	0.1-	0.7+
1996 02 27	118	0.3-	0.4-	1998 05 22	704	1.6-	0.9-	1999 09 11	704	0.3-	0.9+
1996 03 07	118	0.3-	0.1-	1998 05 24	704	0.1-	1.0+	1999 09 14	118	0.2-	0.3-
1996 03 09	118	0.1+	0.2-	1998 05 24	704	(3.0-	0.1+)	1999 09 14	118	0.2-	0.1-

(11615)* 1996 AE₄ = 1994 TG₁₇

Discovered 1996 Jan. 13 by K. Endate and K. Watanabe at Kitami.

Id. G. V. Williams (*MPC* 27719), C. P. deSaint-Aignan (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	247.45847		(2000.0)	P	Q		
<i>n</i>	0.17417587	ω	306.58812	-0.04180694	-0.99881815		
<i>a</i>	3.1754898	Ω	145.78277	+0.93018398	-0.04796664		
<i>e</i>	0.1632282	<i>i</i>	2.52654	+0.36470529	+0.00784267		
<i>P</i>	5.66	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1949 11 19	675	0.3-	0.2+	1996 01 17	400	(28.7-	9.3+)	1999 09 07	704	0.3+	0.5+
1949 11 19	675	0.4+	0.8+	1996 01 17	400	(25.4-	9.2+)	1999 09 07	704	0.1+	0.2+
1991 04 15	675	0.1+	1.0-	1996 01 30	400	0.4-	0.0	1999 09 07	704	0.3+	0.2-
1991 04 15	675	1.8-	0.7+	1996 01 30	400	0.5+	0.8-	1999 09 08	704	0.2+	0.7-
1994 09 11	675	0.8+	0.6+	1996 02 11	400	0.7+	0.2+	1999 09 08	704	0.2+	0.3+
1994 09 11	675	0.2+	1.7-	1996 02 11	400	0.8+	0.3+	1999 09 08	704	0.6+	1.1-
1994 10 01	675	0.3-	0.8-	1999 07 13	704	0.1-	0.5+	1999 09 08	704	0.5+	0.1-
1994 10 01	675	0.6-	0.4-	1999 07 13	704	0.1+	0.0	1999 09 09	704	0.2-	0.2+
1994 10 02	691	0.4-	0.2-	1999 07 13	704	0.0	0.3+	1999 09 09	704	0.5+	0.5+
1994 10 02	691	1.0-	0.3-	1999 07 13	704	0.3+	0.5+	1999 09 09	704	0.4-	0.3+
1994 10 02	691	0.3-	0.4-	1999 07 13	704	0.6-	0.3-	1999 09 09	704	0.1+	0.1-
1995 12 23	691	0.2+	0.1+	1999 07 16	704	0.3+	0.1+	1999 09 09	704	0.2-	0.3+
1995 12 23	691	0.2+	0.0	1999 07 16	704	0.1-	0.7+	1999 09 13	704	0.3+	0.3-
1995 12 23	691	0.1+	0.0	1999 07 16	704	0.4-	0.1-	1999 09 13	704	0.4+	0.0
1996 01 13	400	0.5-	1.0+	1999 09 07	704	0.4+	0.0	1999 09 13	704	0.1-	1.0+
1996 01 13	400	(2.2+	0.5+)	1999 09 07	704	0.7-	0.5+				

(11616)* 1996 BQ₂ = 1991 JK₂

Discovered 1996 Jan. 26 by T. Kobayashi at Oizumi.

Id. T. Kobayashi (*MPC* 26753)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	271.24843		(2000.0)	P	Q		
<i>n</i>	0.15669579	ω	290.41483	+0.32907697	-0.92864148		
<i>a</i>	3.4074632	Ω	139.07155	+0.93417067	+0.29364838		
<i>e</i>	0.0686233	<i>i</i>	15.15519	+0.13796200	+0.22670606		
<i>P</i>	6.29	<i>H</i>	12.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1991 05 08	

1993 10 10	675	0.3+	0.1-	1998 06 19	704	0.4+	0.6+	1999 09 07	704	0.4-	0.5+
1993 10 10	675	0.3-	0.5+	1998 06 19	704	0.5+	1.0+	1999 09 07	704	0.3-	0.0
1996 01 26	411	1.0+	0.0	1998 06 19	704	0.1-	0.4+	1999 09 07	704	0.6-	0.4+
1996 01 26	411	0.7+	1.6-	1998 06 19	704	0.5+	0.1+	1999 09 07	704	0.0	0.3+
1996 01 27	411	0.1+	0.2-	1998 06 25	704	0.9+	1.2-	1999 09 13	704	0.1-	1.0+
1996 01 27	411	0.3+	0.2-	1998 06 25	704	1.0-	1.1-	1999 09 13	704	0.5+	0.0
1996 01 30	411	0.2-	0.2+	1998 06 25	704	0.0	1.3+	1999 09 13	704	0.6+	0.1-
1996 01 30	411	1.0+	0.2-	1998 06 25	704	0.4+	0.2-	1999 09 13	704	0.8+	0.1-
1996 02 12	411	0.0	0.5+	1999 07 16	704	0.3-	0.3+	1999 09 13	704	0.9+	0.7-

(11617)* 1996 CL₂ = 1991 FC₅ = 1994 US₁₁

Discovered 1996 Feb. 12 by S. Ueda and H. Kaneda at Kushiro.

Id. S. Nakano (*MPC* 26909)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18217757	ω	79.18980	+0.01601731	-0.99907892		
<i>a</i>	3.0818117	Ω	10.14886	+0.80621306	-0.01064463		
<i>e</i>	0.1151011	<i>i</i>	13.05715	+0.59140845	+0.04156925		
<i>P</i>	5.41	<i>H</i>	12.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1991 03 12	675	0.9-	0.9-	1996 02 16	399	1.2+	0.5+	1999 09 07	704	0.0	0.3-
1991 03 12	675	0.2-	0.4-	1996 02 22	399	1.0-	0.7+	1999 09 07	704	0.3-	0.4-
1991 03 18	675	0.1-	0.2-	1996 02 22	399	0.6-	1.2+	1999 09 07	704	0.1-	0.8-
1991 03 18	675	1.1-	1.8-	1996 02 24	399	1.3+	1.0-	1999 09 07	704	0.3-	1.5-
1994 10 03	675	0.2+	0.1-	1996 02 24	399	0.4-	1.7-	1999 09 08	704	0.4-	0.5-
1994 10 03	675	0.3+	0.1+	1996 03 09	399	1.3-	1.3-	1999 09 08	704	0.2+	0.8-
1994 10 28	400	0.9-	0.2-	1996 03 09	399	(0.6+	2.8-)	1999 09 08	704	0.1+	0.7-
1994 10 28	400	0.1-	0.8-	1999 08 22	703	0.5+	0.3+	1999 09 08	704	0.1-	0.4-
1994 11 03	400	0.2+	1.1+	1999 08 22	703	0.6+	0.2+	1999 09 08	704	0.2-	0.7-
1994 11 03	400	0.9-	1.3-	1999 08 22	703	1.0+	1.4+	1999 09 14	704	0.2+	0.5-
1994 11 07	675	0.3+	1.1+	1999 08 22	703	1.1+	1.7+	1999 09 14	704	0.2+	1.0-
1994 11 07	675	0.4+	0.7+	1999 09 05	699	0.2+	0.4+	1999 09 14	704	0.3+	0.6-
1996 02 12	399	0.0	0.6+	1999 09 05	699	0.3+	0.8+	1999 09 14	704	0.1+	0.7-
1996 02 12	399	0.2+	0.2+	1999 09 05	699	0.1+	0.5+	1999 09 14	704	0.0	0.5-
1996 02 16	399	(2.6+	0.6-)	1999 09 07	704	0.1+	0.2-				

(11618)* 1996 EX₁ = 1980 KJ₁ = 1997 JQ₁₈

Discovered 1996 Mar. 15 at Haleakala by the JPL Near-Earth Asteroid Tracking program.

Id. T. B. Spahr (*MPC* 30458), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17464535	ω	258.65305	+0.21648630	-0.97626825		
<i>a</i>	3.1697963	Ω	178.79670	+0.96848158	+0.21399836		
<i>e</i>	0.1096402	<i>i</i>	16.11923	+0.12319538	+0.03324172		
<i>P</i>	5.64	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1980 05 17	095	1.0+	0.4-	1996 03 20	566	0.3+	0.5-	1997 05 30	691	0.1+	0.1+
1993 09 15	691	0.7-	0.6-	1996 03 20	566	0.5-	0.6-	1997 05 30	691	0.1+	0.3+
1993 09 15	691	0.5-	0.6-	1996 03 26	566	0.5-	0.5+	1997 05 30	691	0.1+	0.1+
1993 09 15	691	0.5-	0.6-	1996 03 26	566	0.3-	0.5+	1999 09 05	699	0.0	0.8+
1996 03 15	566	0.7+	1.4-	1996 03 26	566	0.4-	0.5+	1999 09 05	699	0.2+	0.4-
1996 03 15	566	0.3+	0.9-	1996 04 22	566	0.0	0.6+	1999 09 05	699	0.7+	0.3-
1996 03 15	566	0.5+	0.8-	1996 04 22	566	0.2-	0.1-	1999 09 12	557	0.0	0.0
1996 03 19	566	0.9-	0.1+	1996 04 22	566	0.1-	0.0	1999 09 13	557	0.0	0.0
1996 03 19	566	0.6-	0.1+	1996 04 23	566	0.9+	0.9+	1999 09 13	557	0.3-	0.1+
1996 03 19	566	0.8-	0.4-	1996 04 23	566	0.5+	1.5+	1999 09 25	557	0.2+	0.3+
1996 03 20	566	0.4+	0.8-	1996 04 23	566	0.2+	1.2+	1999 09 25	557	0.2+	0.0
1996 03 20	566	0.5-	0.6-	1997 05 14	691	0.0	0.2-	1999 09 25	557	0.1+	0.3+
1996 03 20	566	0.5+	0.5-	1997 05 14	691	0.1-	0.3-	1999 09 25	557	0.7+	0.6-
1996 03 20	566	0.4-	0.3-	1997 05 14	691	0.0	0.2-				

(11619)* 1996 GG₁₇ = 1998 XA₉₂

Discovered 1996 Apr. 13 by S. Ueda and H. Kaneda at Kushiro.

Id. G. V. Williams (*MPC* 33694)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.24499050	ω	157.25028	+0.20564261	+0.97354422		
<i>a</i>	2.5295109	Ω	124.48010	-0.91543696	+0.22734864		
<i>e</i>	0.1337795	<i>i</i>	6.94072	-0.34595708	-0.02289640		
<i>P</i>	4.02	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1992 03 11	691	0.0	0.1-	1996 05 08	399	1.7-	1.1+	1998 12 22	704	0.0	0.6+
1992 03 11	691	0.0	0.0	1996 05 08	399	1.5+	1.3+	1998 12 22	704	0.4-	0.7+
1992 03 11	691	0.1-	0.0	1996 05 11	399	0.2-	1.8-	1999 01 18	704	1.1-	0.3+
1993 09 19	675	0.5+	0.5-	1996 05 11	399	0.7+	1.4-	1999 01 18	704	0.5-	1.0+
1993 09 19	675	(0.2+	4.6-)	1998 12 15	704	0.5+	1.0-	1999 01 18	704	(1.8+	2.3+)
1993 10 10	675	0.1-	0.1-	1998 12 15	704	0.6+	0.5+	1999 01 18	704	0.2-	1.4+
1993 10 10	675	0.1+	0.9-	1998 12 15	704	0.5+	0.8-	1999 01 20	704	(3.1-	0.9-)
1996 04 13	399	(2.8+	0.5-)	1998 12 15	704	0.4+	0.4+	1999 01 20	704	0.3+	0.0
1996 04 13	399	(2.5+	0.9+)	1998 12 15	704	1.2+	0.7-	1999 01 20	704	0.5-	0.9-
1996 04 14	399	0.7-	0.7-	1998 12 22	704	0.7+	0.8-	1999 01 20	704	0.5-	1.1-
1996 04 14	399	(1.2-	2.0-)	1998 12 22	704	0.4-	0.2+	1999 01 20	704	0.8-	0.6-

(11620)* 1996 OE₂

Discovered 1996 July 23 by A. Boattini and A. Di Paola at the Astronomical Observatory, Campo Imperatore.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22959614	ω	337.22290	+0.05156171	+0.97618323		
<i>a</i>	2.6413523	Ω	295.18025	-0.87666089	-0.05682628		
<i>e</i>	0.1352569	<i>i</i>	13.46545	-0.47833782	+0.20937305		
<i>P</i>	4.29	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1950 12 09	675	1.5-	1.9-	1996 08 24	658	0.4-	1.2-	1997 12 24	104	0.3-	0.8+
1950 12 09	675	0.7-	2.4-	1996 08 24	658	0.4-	1.4-	1997 12 25	104	0.3+	1.2+
1993 12 09	675	0.4-	0.1-	1996 08 24	658	0.4-	1.3-	1997 12 28	104	0.2+	0.8+
1993 12 09	675	1.1+	0.3+	1996 08 25	658	0.2-	0.6-	1997 12 28	104	0.5+	0.6+
1996 07 23	599	0.2+	0.4+	1996 08 25	658	0.3-	0.6-	1997 12 28	104	0.3+	0.9+
1996 07 23	599	0.0	0.2+	1996 08 25	658	0.2-	0.6-	1999 03 13	104	0.4+	0.0
1996 07 24	599	0.8-	1.4+	1996 09 08	104	0.2-	0.3-	1999 03 13	104	0.1+	0.2+
1996 07 24	599	1.0-	0.5+	1996 09 08	104	0.2+	0.7-	1999 03 13	104	0.7+	0.4+
1996 07 26	599	0.1+	0.1+	1996 09 21	658	0.2+	0.3+	1999 03 22	704	0.6+	0.4-
1996 07 26	599	0.3-	0.2+	1996 09 21	658	0.2+	0.0	1999 03 22	704	0.1+	0.0
1996 08 05	104	0.1+	0.0	1996 09 21	658	0.2+	0.0	1999 03 22	704	(3.0-	0.4-)
1996 08 05	104	0.2+	0.2-	1996 09 21	658	0.4+	0.1+	1999 03 22	704	(4.3-	0.4-)
1996 08 05	104	0.0	0.4+	1996 09 25	658	0.4-	0.4-	1999 04 03	104	1.3-	0.1-
1996 08 05	104	0.2+	0.3+	1996 09 25	658	0.2-	0.4-	1999 04 03	104	1.4-	0.3+
1996 08 05	104	0.4+	0.8+	1996 09 25	658	0.5+	0.2-	1999 04 05	104	0.5+	0.2-
1996 08 14	104	0.0	0.6+	1996 11 03	104	0.4+	0.4+	1999 04 05	104	0.2-	0.4-
1996 08 14	104	0.5+	0.7+	1996 11 03	104	0.1+	0.3+				
1996 08 14	104	1.0+	0.7+	1996 11 03	104	0.3+	0.2+				

(11621)* 1996 PJ₅

Discovered 1996 Aug. 15 by M. Tombelli and G. Forti at Montelupo.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17247964	ω	26.37857	+0.99591727	-0.02781848		
<i>a</i>	3.1962751	Ω	334.76679	-0.02482196	+0.83026871		
<i>e</i>	0.1239441	<i>i</i>	11.62157	+0.08679096	+0.55666867		
<i>P</i>	5.71	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1979 09 21	413	0.7−	0.4+	1996 09 08	104	0.1−	0.0	1997 12 07	108	0.1−	0.4+
1979 09 21	413	0.5+	0.0	1996 09 08	104	0.4−	0.2+	1997 12 07	108	1.1−	1.6−
1991 10 10	675	0.3−	0.6+	1996 09 10	108	(2.8+	0.5+)	1997 12 24	108	1.5+	1.5−
1991 10 10	675	0.3−	0.4+	1996 09 10	108	0.8+	0.1−	1997 12 24	108	0.1+	1.1+
1996 08 15	108	0.7+	2.0−	1996 09 10	108	0.2+	0.9+	1999 01 19	104	1.6+	0.2−
1996 08 16	108	0.0	1.0−	1996 09 14	108	0.6+	0.6+	1999 01 19	104	0.6+	0.0
1996 08 17	108	0.5−	1.1−	1996 09 14	108	0.9+	0.3−	1999 01 19	704	0.7+	0.7−
1996 08 17	108	1.1−	0.7−	1996 10 03	108	0.4−	1.3+	1999 01 19	704	1.2+	0.1+
1996 08 17	108	(2.5+	0.7+)	1996 10 03	108	(2.2−	0.9+)	1999 01 19	704	(0.0	2.1−)
1996 08 17	108	1.0−	1.0+	1996 10 03	108	(2.1−	0.7−)	1999 01 19	704	(2.1+	0.1+)
1996 08 19	108	1.0+	1.0+	1997 09 30	104	0.1+	0.1−	1999 01 19	704	(2.0−	0.7−)
1996 08 19	108	0.6−	0.5+	1997 09 30	104	0.9+	0.3+	1999 01 20	104	0.6+	0.2−
1996 08 19	108	0.5+	0.8−	1997 09 30	104	0.4+	0.9+	1999 01 20	104	0.8+	0.1+
1996 08 19	108	0.9+	1.3−	1997 10 13	104	0.2−	0.1−	1999 02 07	104	0.9−	1.2+
1996 08 23	108	0.2−	0.8−	1997 10 13	104	0.1−	0.2−	1999 02 07	104	0.5−	1.1+
1996 08 23	108	(1.1−	2.1−)	1997 10 13	104	0.1−	0.3−	1999 02 07	104	1.4+	0.2−
1996 09 06	596	0.1+	0.6+	1997 10 13	104	0.0	0.1−	1999 02 10	704	0.1−	0.4+
1996 09 06	596	0.0	0.1+	1997 10 27	104	0.7+	0.1+	1999 02 10	704	0.4−	0.4+
1996 09 06	596	0.2−	1.9+	1997 10 27	104	0.6+	0.1−	1999 02 10	704	0.4−	0.8+
1996 09 06	108	1.9−	1.6+	1997 10 27	104	0.7+	0.1−	1999 02 10	704	0.6−	0.9+
1996 09 06	108	0.6−	0.0	1997 10 27	104	0.4+	0.1−	1999 02 10	704	0.3−	1.5+
1996 09 07	108	0.5+	1.2−	1997 12 06	104	0.7−	0.1−	1999 02 11	108	0.2−	0.3−
1996 09 07	108	0.1−	1.3+	1997 12 06	104	0.4−	0.5+	1999 02 11	108	0.9+	1.4+
1996 09 08	809	0.4−	0.4+	1997 12 06	104	0.3−	0.4−	1999 02 19	566	0.0	0.6−
1996 09 08	809	0.2−	0.3+	1997 12 06	104	1.5−	1.2−	1999 02 19	566	0.2−	0.5−
1996 09 08	809	0.5−	1.3+	1997 12 07	108	0.5+	0.5−	1999 02 19	566	0.9−	0.1−
1996 09 08	104	0.2+	0.6+	1997 12 07	108	0.3−	0.5+				

(11622)* 1996 RD₄

Discovered 1996 Sept. 9 by A. Boattini and L. Tesi at San Marcello Pistoiese.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	315.56421		<i>P</i>	<i>Q</i>
<i>n</i>	0.22012593	ω	252.55649	+0.50252074
<i>a</i>	2.7165763	Ω	48.90897	+0.51136127
<i>e</i>	0.1614483	<i>i</i>	13.36192	−0.53481482
<i>P</i>	4.48	<i>H</i>	13.5	0.15
			<i>G</i>	0.15
			<i>U</i>	1

Residuals in seconds of arc

1982 11 07	413	0.4−	0.2−	1996 12 04	104	0.1+	0.2+	1999 05 12	704	0.7+	0.5+
1982 11 07	413	0.2+	0.6+	1996 12 04	104	0.1+	0.3+	1999 05 12	704	0.1−	0.4+
1996 09 09	104	0.4−	0.0	1996 12 04	104	0.2+	0.2+	1999 05 12	704	0.2−	1.0+
1996 09 09	104	0.1−	0.1+	1996 12 05	610	1.3−	0.3+	1999 05 13	704	0.2−	0.2+
1996 09 09	104	0.0	0.2+	1996 12 05	610	0.6−	0.2+	1999 05 13	704	1.0+	0.1−
1996 09 09	104	0.9−	1.2+	1996 12 05	610	0.0	0.2+	1999 05 13	704	0.3−	0.2+
1996 09 15	108	1.6+	0.9−	1996 12 15	104	0.5−	0.7+	1999 05 13	704	0.0	0.5−
1996 09 15	108	1.2+	0.9+	1996 12 15	104	0.4−	0.8+	1999 05 13	704	0.5−	0.5−
1996 09 15	108	1.4+	0.3−	1996 12 15	104	0.4−	1.0+	1999 05 14	704	0.0	0.9−
1996 09 18	360	0.3−	0.2+	1997 01 14	104	0.7−	0.5+	1999 05 14	704	1.1−	0.1+
1996 09 18	360	0.4−	0.5+	1997 01 14	104	0.3−	0.6+	1999 05 14	704	0.0	0.9+
1996 09 18	360	0.4−	0.3+	1997 01 14	104	0.2−	0.7+	1999 05 14	704	0.8−	1.8+
1996 10 02	104	0.6−	0.6+	1998 01 19	104	0.5−	1.0−	1999 05 14	704	(2.1+	0.5+)
1996 10 02	104	0.6−	0.7+	1998 01 19	104	0.6−	0.9−	1999 05 17	704	0.1+	0.0
1996 10 02	104	0.7−	0.7+	1998 01 19	104	0.3−	0.8−	1999 05 17	704	0.1+	0.4+
1996 10 02	104	(3.1−	2.4+)	1998 01 28	104	0.2+	0.1+	1999 05 17	704	0.1+	1.4+
1996 10 04	104	0.7+	0.2+	1998 01 28	104	0.2+	0.0	1999 05 17	704	0.4−	1.0+
1996 10 04	104	0.8+	0.2+	1998 01 28	104	0.3+	0.1−	1999 05 17	704	0.4+	0.4+
1996 10 11	104	0.1+	0.1−	1998 02 15	104	0.3−	0.5+	1999 05 18	704	0.3−	0.7−
1996 10 11	104	0.1−	0.1+	1998 02 15	104	0.1−	0.4+	1999 05 18	704	0.5−	0.3+
1996 10 11	104	0.2+	0.1+	1998 02 15	104	0.1−	0.3+	1999 05 18	704	0.2−	0.2−
1996 10 18	104	0.1−	0.1+	1999 04 06	104	0.4+	0.4−	1999 05 18	704	0.0	0.3+
1996 10 18	104	0.3+	0.1+	1999 04 06	104	0.0	1.0−	1999 05 18	704	0.8−	1.2+
1996 10 18	104	0.5+	0.1+	1999 04 06	120	0.7−	0.4−	1999 05 18	699	0.8+	0.5+
1996 10 18	104	0.4+	0.8−	1999 04 06	120	0.5−	1.0−	1999 05 18	699	0.9+	0.4+
1996 10 30	104	0.4+	0.1−	1999 04 06	120	1.4+	0.4−	1999 05 18	699	0.3+	1.1+
1996 10 30	104	0.3+	0.1−	1999 04 12	704	0.4+	1.0−	1999 05 19	704	0.2−	1.3+
1996 10 30	104	0.5+	0.2−	1999 04 12	704	0.2+	0.9−	1999 05 19	704	0.7−	1.4+

1996 11 07	104	0.2+	0.5+	1999 04 12	704	0.5+	0.3−	1999 05 19	704	0.6−	0.1−
1996 11 07	104	0.9+	0.4+	1999 04 12	704	0.2−	1.1−	1999 05 19	704	0.3+	1.0+
1996 12 01	108	0.1−	1.9+	1999 04 15	704	(0.5+	2.1−)	1999 05 19	704	0.6−	1.2+
1996 12 01	610	0.6−	0.2+	1999 04 15	704	0.8+	1.2+	1999 06 04	747	0.9+	0.5+
1996 12 01	108	0.3+	0.7−	1999 04 15	704	(1.5+	2.4−)	1999 06 04	747	0.9+	0.3+
1996 12 01	610	0.7−	0.3+	1999 04 19	104	1.3+	0.8−	1999 06 05	747	0.2+	0.0
1996 12 01	108	1.0−	0.5−	1999 04 19	104	1.1+	0.0	1999 06 05	747	0.4−	0.2+
1996 12 01	610	1.1−	0.3+	1999 04 19	704	1.0+	0.8−	1999 06 05	747	0.4+	0.6−
1996 12 02	104	0.2−	0.2−	1999 04 19	704	1.3+	0.8−	1999 06 08	704	1.0+	0.6+
1996 12 02	104	0.2−	0.2−	1999 04 19	704	0.7+	0.5−	1999 06 08	704	0.8−	0.5+
1996 12 02	104	0.4−	0.2−	1999 04 19	704	0.7+	0.6−	1999 06 08	704	0.6−	0.6+
1996 12 03	108	0.4−	1.1−	1999 04 19	704	0.8+	0.9−	1999 06 08	704	1.8−	0.1−
1996 12 03	108	1.5−	0.8−	1999 05 12	704	1.4−	0.9+				
1996 12 03	108	1.0+	0.6−	1999 05 12	704	0.0	0.3+				

(11623)* 1996 TC₁₀ = 1988 GO₁ = 1998 HP₇₈

Discovered 1996 Oct. 8 by S. Otomo at Nanyou.

Id. G. V. Williams (*MPC* 31973)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	211.61897		<i>P</i>	<i>Q</i>
<i>n</i>	0.29781093	ω	109.72651	−0.66635995
<i>a</i>	2.2207975	Ω	22.27096	+0.62941572
<i>e</i>	0.0978136	<i>i</i>	7.10298	+0.39975026
<i>P</i>	3.31	<i>H</i>	14.6	0.15
			<i>G</i>	0.15
			<i>U</i>	1

Residuals in seconds of arc

1988 04 10	046	1.4−	0.3−	1998 04 22	704	0.1+	0.4+	1999 09 09	704	0.7−	0.6−
1988 04 10	046	0.1−	2.5−	1998 04 22	704	0.1+	0.6−	1999 09 09	704	0.3−	0.7+
1996 10 08	358	0.2−	0.4+	1998 04 25	699	0.2+	0.4+	1999 09 09	704	0.0	0.7+
1996 10 08	358	0.3−	0.9−	1998 04 25	699	0.7+	0.5+	1999 09 09	704	0.2+	0.9+
1996 10 09	358	1.3+	0.2+	1998 04 25	699	0.3+	0.3+	1999 09 09	704	0.9+	1.3+
1996 10 09	358	0.2−	1.9−	1998 05 16	691	1.2−	0.5+	1999 09 13	704	0.1−	0.2+
1996 10 22	358	(1.6+	2.2+)	1998 05 16	691	1.0−	0.6+	1999 09 13	704	0.3−	0.1−
1996 10 22	358	0.9−	0.0	1998 05 16	691	1.1−	0.6+	1999 09 13	704	0.6+	1.2−
1996 10 29	327	0.0	0.0	1998 05 16	704	0.1−	0.4−	1999 09 13	704	1.4−	0.3−
1996 10 29	327	0.8−	0.0	1998 05 16	704	0.3+	0.2−	1999 09 14	704	0.2+	0.2+
1996 10 29	327	0.5−	0.1−	1998 05 16	704	0.6−	0.7−	1999 09 14	704	0.3+	0.0
1996 10 29	327	0.4+	0.4+	1998 05 16	704	1.1−	0.3−	1999 09 14	704	0.1−	0.1−
1996 11 03	358	0.6+	0.2−	1998 05 24	691	0.1+	0.0	1999 09 14	704	0.7+	0.0
1996 11 03	358	1.8+	1.0+	1998 05 24	691	0.7+	0.1+	1999 09 14	704	0.5+	0.3−
1996 11 10	358	0.1−	1.0−	1998 05 30	691	0.3+	0.2+	1999 09 14	704	0.1+	0.5−
1996 11 10	358	(3.7−	0.1−)	1998 05 30	691	0.3+	0.2+	1999 09 14	704	0.7+	0.3−
1998 04 21	704	0.4+	0.1+	1998 05 30	691	1.5+	0.2−	1999 09 14	704	0.1+	0.4−
1998 04 21	704	0.5+	0.3+	1999 08 12	699	0.3+	0.3+	1999 09 14	704	0.5+	0

1988 01 22	303	(3.4+ 2.0+)	1998 03 22	704	0.6- 1.0-	1999 09 07	704	0.1+ 0.0
1988 01 23	303	(6.9+ 0.3-)	1998 03 22	704	0.1+ 0.4-	1999 09 07	704	0.5+ 0.1+
1988 01 23	303	(7.1+ 7.0-)	1998 03 28	704	0.0 0.1+	1999 09 07	704	0.6+ 0.2-
1988 01 23	303	(7.9+ 5.9-)	1998 03 28	704	0.2- 0.4+	1999 09 07	704	0.5+ 0.2+
1996 10 16	411	1.2- 0.5+	1998 03 28	704	0.0 0.9-	1999 09 08	691	0.2+ 0.2-
1996 10 16	411	1.2- 0.0	1998 03 28	704	0.2+ 1.0-	1999 09 08	691	0.2+ 0.2-
1996 10 17	411	1.3+ 0.0	1998 03 28	704	1.5- 0.9-	1999 09 08	691	0.2+ 0.2-
1996 10 17	411	0.6+ 1.2-	1998 03 29	704	0.5- 0.0	1999 09 09	704	0.4+ 0.1-
1996 10 20	411	0.1- 1.1-	1998 03 29	704	0.1+ 0.7+	1999 09 09	704	0.2- 0.1-
1996 10 20	411	0.8- 0.8-	1998 03 29	704	0.2- 0.6+	1999 09 09	704	0.2- 0.1-
1996 10 21	411	0.8- 0.5-	1998 03 29	704	0.3- 0.5+	1999 09 09	704	0.2- 0.4-
1996 10 21	411	0.7- 0.1-	1998 03 29	704	0.1- 1.1-	1999 09 09	704	0.7- 0.5-
1996 11 03	411	0.4+ 0.8-	1998 04 19	704	(1.2- 4.7-)	1999 09 11	699	0.0 0.1+
1996 11 03	411	0.0 0.6+	1998 04 19	704	0.9+ 0.1-	1999 09 11	699	0.2+ 0.1+
1996 11 13	411	0.5+ 0.1-	1998 04 19	704	1.0+ 0.4-	1999 09 11	699	0.3- 0.1+
1996 11 13	411	0.1+ 0.6+	1998 04 19	704	0.7+ 0.7-	1999 09 12	106	0.3+ 0.2-
1996 11 30	411	0.8+ 0.8+	1998 04 19	704	(0.7+ 4.2-)	1999 09 12	106	0.3- 0.2-
1996 11 30	411	0.1- 0.3+	1999 07 16	704	0.6- 0.1-	1999 09 12	106	0.2- 0.2+
1997 01 15	566	0.5+ 0.0	1999 07 16	704	0.5- 0.0	1999 09 12	106	0.2- 0.2-
1997 01 15	566	0.8+ 0.2+	1999 07 16	704	0.7- 0.4+	1999 09 12	106	0.3- 0.6-
1997 01 15	566	0.4+ 0.9-	1999 07 16	704	0.2- 0.3-	1999 09 12	106	0.4- 0.2+
1998 03 20	704	0.4- 0.0	1999 07 16	704	0.1- 0.5+	1999 09 14	704	0.6+ 0.0
1998 03 20	704	0.6+ 0.1-	1999 08 12	699	0.5- 0.2+	1999 09 14	704	0.4+ 0.2-
1998 03 20	704	0.5- 0.1-	1999 08 12	699	0.4- 0.6+	1999 09 14	704	0.6+ 0.2+
1998 03 20	704	(2.3- 3.2-)	1999 08 12	699	0.5- 0.2+	1999 09 14	704	0.7+ 0.5+
1998 03 20	704	1.4- 0.7+	1999 09 04	611	0.2+ 0.2-	1999 09 14	704	0.5+ 0.3+

(11625)* 1996 UL₁

Discovered 1996 Oct. 20 by L. Tesi and G. Cattani at San Marcello Pistoiese.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	229.48717	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.18594967	ω	141.21143	+0.96963104
<i>a</i>	3.0399920	Ω	206.03192	-0.24232472
<i>e</i>	0.0700199	<i>i</i>	11.67264	+0.03308137
<i>P</i>	5.30	<i>H</i>	13.7	<i>U</i>
			0.15	1

Residuals in seconds of arc

1954 12 22	675	0.4- 1.4-	1996 12 02	104	1.0- 0.4-	1998 01 28	104	0.6- 0.2-
1954 12 22	675	0.7+ 1.5-	1996 12 02	104	0.6- 0.0	1998 02 17	104	0.5- 0.4+
1990 07 26	675	0.9- 0.5-	1996 12 04	104	0.5- 0.9-	1998 02 17	104	0.6- 0.3+
1990 07 26	675	0.4+ 0.3+	1996 12 04	104	0.7- 0.8-	1998 02 17	104	0.5- 0.5+
1996 10 20	104	0.5- 1.1+	1996 12 04	104	1.0- 1.0-	1999 03 21	104	0.7- 1.1+
1996 10 20	104	0.7- 0.2+	1996 12 04	104	1.0- 1.2-	1999 03 21	104	0.8- 0.1+
1996 10 20	104	1.2- 0.7-	1996 12 15	104	0.7- 0.3+	1999 03 21	104	0.3- 0.4-
1996 10 22	104	0.1+ 0.1-	1996 12 15	104	0.5- 0.6+	1999 03 23	704	0.5+ 0.4-
1996 10 22	104	0.0 0.4-	1996 12 15	104	0.0 0.9+	1999 03 23	704	1.0+ 0.4+
1996 10 22	104	0.1- 0.5-	1997 01 01	104	0.6+ 0.4+	1999 03 23	704	1.3+ 0.1+
1996 10 23	104	(2.4+ 0.4+)	1997 01 01	104	0.9+ 0.5+	1999 03 23	704	0.2- 0.3+
1996 10 23	104	1.5+ 0.3+	1997 01 01	104	1.1+ 0.5+	1999 03 23	104	0.7- 1.8+
1996 10 23	104	1.6+ 0.6+	1997 01 14	104	0.4+ 0.0	1999 03 23	104	1.9+ 2.0-
1996 10 30	104	0.6- 2.0+	1997 01 14	104	0.3+ 0.1+	1999 03 23	104	0.7+ 0.2-
1996 10 30	104	0.4- 0.8+	1997 01 14	104	0.3+ 0.1+	1999 03 23	104	0.4+ 0.6+
1996 10 30	104	0.4- 0.1-	1997 01 30	104	0.2+ 0.4+	1999 03 24	104	0.4- 1.3+
1996 10 31	104	0.8- 0.7+	1997 01 30	104	0.2- 0.5+	1999 03 24	104	0.0 0.5+
1996 10 31	104	0.4- 0.7+	1997 01 30	104	0.0 0.6+	1999 03 24	104	0.2+ 0.4+
1996 10 31	104	0.2- 0.8+	1998 01 19	104	0.1- 0.3-	1999 04 10	699	1.3- 0.5+
1996 11 06	104	1.1+ 0.6-	1998 01 19	104	0.0 0.1-	1999 04 10	699	0.5+ 0.9+
1996 11 06	104	1.1+ 0.5-	1998 01 19	104	0.0 0.1-	1999 04 10	699	1.0- 0.6+
1996 11 06	104	1.4+ 0.4-	1998 01 25	104	0.1- 0.5-	1999 04 17	704	1.1+ 1.3+
1996 11 24	104	1.3+ 1.5+	1998 01 25	104	0.2+ 0.9-	1999 04 17	704	1.4+ 1.0-
1996 11 24	104	1.0+ 1.5+	1998 01 25	104	(2.8- 0.9-)	1999 04 17	704	0.4- 0.7+
1996 11 24	104	0.6+ 1.4+	1998 01 28	104	0.4- 0.0	1999 04 17	704	0.2- 0.1-
1996 12 02	104	0.9- 0.3-	1998 01 28	104	0.2- 0.1-	1999 04 17	704	0.2- 0.7-

(11626)* 1996 VW₂ = 1981 JJ₄ = 1991 GD₉

Discovered 1996 Nov. 8 by S. P. Laurie at Church Stretton.

Id. G. V. Williams (*MPC* 28600)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	268.01712	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.28855252	ω	56.85096	+0.23080280
<i>a</i>	2.2680509	Ω	19.86281	+0.86270122
<i>e</i>	0.0980206	<i>i</i>	4.77397	+0.44997409
<i>P</i>	3.42	<i>H</i>	14.5	<i>U</i>
			0.15	1

Residuals in seconds of arc

1981 05 08	675	0.7- 0.7-	1998 04 22	704	0.1- 0.4-	1999 08 12	699	0.3+ 0.1+
1981 05 09	675	1.6+ 0.1-	1998 04 22	704	0.3- 0.5-	1999 08 12	699	0.2+ 0.1-
1991 04 10	809	0.9- 0.0	1998 04 22	704	0.3- 0.4-	1999 09 07	704	0.1- 0.1-
1991 04 10	809	1.9- 0.6+	1998 04 22	704	0.6- 1.0-	1999 09 07	704	0.4+ 0.1+
1991 04 10	809	(3.1- 0.1-)	1998 04 22	704	1.1- 0.5-	1999 09 07	704	0.1+ 0.1+
1991 04 19	809	(2.1+ 0.2+)	1998 04 25	699	0.2- 0.1-	1999 09 07	704	0.4+ 0.4-
1991 04 19	809	0.1- 0.1+	1998 04 25	699	0.3+ 0.4-	1999 09 07	704	0.4+ 0.5+
1991 04 19	809	(3.5- 0.9-)	1998 04 25	699	0.9+ 0.7-	1999 09 07	106	0.3- 0.3+
1996 11 08	966	0.6- 0.3+	1998 05 01	704	1.0+ 0.2+	1999 09 07	106	1.0+ 0.0
1996 11 08	966	0.5+ 0.1-	1998 05 01	704	(2.2+ 2.2+)	1999 09 07	106	0.5+ 0.3+
1996 11 08	966	0.9+ 0.2+	1998 05 01	704	1.0+ 0.1+	1999 09 09	704	0.3+ 0.0
1996 11 09	966	0.1+ 0.1-	1998 05 01	704	0.6+ 0.1+	1999 09 09	704	0.1- 0.2-
1996 11 09	966	0.5+ 0.4+	1998 05 01	704	(2.0+ 0.8+)	1999 09 09	704	0.3- 0.1-
1996 11 17	966	0.4- 0.1-	1998 05 16	691	0.7+ 1.2+	1999 09 09	704	0.8- 0.6-
1996 11 17	966	0.1+ 0.2-	1998 05 16	691	0.7+ 1.0+	1999 09 09	704	0.8- 0.6-
1996 12 13	966	0.5- 0.3+	1998 05 16	691	1.0+ 1.0+	1999 09 13	704	0.6- 0.4-
1996 12 13	966	0.3- 0.4+	1998 05 23	691	0.3- 0.6+	1999 09 13	704	0.4- 0.3-
1998 04 21	704	0.0 0.2+	1998 05 23	691	0.7- 0.2+	1999 09 13	704	0.5- 0.3-
1998 04 21	704	0.2+ 0.8-	1998 05 30	691	0.4+ 0.7+	1999 09 13	704	0.3- 0.2+
1998 04 21	704	0.7- 0.5-	1998 05 30	691	0.6+ 0.8+	1999 09 13	704	0.3- 0.2+
1998 04 21	704	0.5- 0.5-	1998 05 30	691	0.5+ 0.3+			
1998 04 21	704	0.3- 0.0	1999 08 12	699	0.5+ 0.4+			

(11627)* 1996 VT₄ = 1979 VA₃ = 1994 CG₁₉

Discovered 1996 Nov. 13 by T. Kobayashi at Oizumi.

Id. T. B. Spahr (*MPC* 30670), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	233.74732	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.29056734	ω	216.27444	-0.60557058
<i>a</i>	2.2575542	Ω	271.12467	+0.74721185
<i>e</i>	0.0545445	<i>i</i>	4.46207	+0.27378592
<i>P</i>	3.39	<i>H</i>	14.0	<i>U</i>
			0.15	2

Residuals in seconds of arc

1979 11 14	095	(1.7- 3.3-)	1998 04 28	809	(3.2+ 2.6+)	1998 06 18	704	1.1- 0.3-
1994 02 10	691	0.6+ 0.5+	1998 04 28	809	(2.4+ 1.3+)	1998 06 18	704	1.5- 1.1+
1994 02 10	691	0.3+ 0.7+	1998 05 22	704	0.7+ 0.1-	1998 06 18	704	1.9- 1.5-
1994 02 10	691	0.4+ 0.3+	1998 05 22	704	0.0 0.5-	1998 06 18	704	(2.2- 0.9-)
1996 11 13	411	0.3- 0.8-	1998 05 22	704	0.3+ 0.1+	1998 06 27	699	0.4- 0.2+
1996 11 13	411	0.1- 0.6-	1998 05 22	699	0.9+ 0.1-	1998 06 27	699	0.1+ 0.3+
1996 11 14	411	0.7- 0.2-	1998 05 22	699	0.5+ 0.3-	1998 06 27	699	0.2- 0.3-
1996 11 14	411	0.2- 0.8-	1998 05 22	704	0.5+ 0.2-	1999 07 23	704	0.0 0.0
1996 11 19	411	0.3+ 0.8+	1998 05 22	699	0.2+ 0.1-	1999 07 23	704	0.1+ 0.4-
1996 11 19	411	0.2+ 0.2+	1998 05 22	704	1.0+ 0.7+	1999 07 23	704	0.2- 0.5+
1996 11 30	411	0.3- 0.4+	1998 05 24	704	0.2+ 0.2+	1999 07 23	704	0.8- 0.4-
1996 11 30	411	0.4- 0.3+	1998 05 24	704	0.0 0.5+	1999 07 23	704	0.2+ 0.7+
1996 12 08	411	0.1+ 0.4+	1998 05 24	704	0.0 0.9+	1999 09 08	704	0.0 0.3-
1996 12 08	411	0.4- 0.1+	1998 05 24	704	0.8- 1.8+	1999 09 08	704	0.5+ 0.1-
1997 02 08	566	0.1+ 0.1+	1998 05 24	704	0.6- 1.7+	1999 09 08	704	0.1+ 0.2+
1997 02 08	566	0.4+ 0.3-	1998 05 26	367	0.4+ 0.1-	1999 09 08	704	0.4+ 0.1+
1997 02 08	566	0.4+ 0.2-	1998 05 26	367	0.1+ 0.0	1999 09 08	704	0.0 0.4+
1998 04 25	809	1.0+ 0.3-	1998 06 16	704	0.7- 0.4-	1999 09 18	703	0.1- 0.4+
1998 04 25	809	0.0 0.7-	1998 06 16	704	0.6+ 0.3-	1999 09 18	703	0.2- 0.5+
1998 04 25	809	0.3+ 1.2-	1998 06 16	704	(1.1- 2.7-)	1999 09 18	703	0.2- 0.5+
1998 04 28	809	(3.3+ 3.8+)	1998 06 16	704	(2.7- 0.4-)	1999 09 18	703	0.1+ 0.6+

(11628)* 1996 VB₅ = 1986 TO₁₃

Discovered 1996 Nov. 13 by Y. Ikari at Moriyama.

Id. S. Nakano (*MPC* 31112)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	353.79069		(2000.0)	P	Q
<i>n</i>	0.29626619	ω	287.64931	+0.92895341	+0.35973392
<i>a</i>	2.2285104	Ω	51.35812	-0.28284626	+0.84200149
<i>e</i>	0.0464597	<i>i</i>	6.42406	-0.23883792	+0.40202611
<i>P</i>	3.33	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1986 10 05	095	0.4+	0.9-	1996 12 07	355	0.5-	0.7-	1998 03 31	402	0.2-	0.1-
1996 11 13	900	0.2-	0.1-	1996 12 08	355	0.3+	0.8+	1998 03 31	402	0.1-	0.1+
1996 11 13	900	0.0	0.1+	1996 12 08	355	0.3+	0.6+	1998 03 31	127	0.8-	1.3+
1996 11 13	900	0.5+	0.2-	1996 12 14	355	1.2-	0.1-	1998 03 31	127	0.8-	1.1+
1996 11 13	900	0.0	0.2-	1996 12 14	355	1.4-	0.5-	1998 04 04	900	0.1-	0.4-
1996 11 14	900	0.6+	0.5+	1996 12 15	402	0.3-	0.1+	1998 04 04	900	0.3-	0.0
1996 11 14	900	0.8+	0.1-	1996 12 15	402	0.3-	0.2+	1998 04 19	704	0.3-	0.4+
1996 11 15	900	0.1+	0.7+	1996 12 27	402	0.3-	0.1-	1998 04 19	704	0.3-	1.1+
1996 11 15	900	0.3+	0.0	1996 12 27	402	0.1-	0.5-	1998 04 19	704	0.6-	1.5+
1996 11 15	900	0.1+	0.0	1996 12 28	355	0.3+	0.5-	1998 04 19	704	0.1+	0.9+
1996 11 16	402	(3.1+)	(0.1-)	1996 12 28	355	0.4+	0.1+	1998 04 19	704	1.0-	0.7+
1996 11 16	402	(3.0+)	(0.2-)	1996 12 29	355	0.8+	0.6+	1998 04 19	402	0.1-	0.4+
1996 11 16	402	(3.1+)	(0.1-)	1996 12 29	355	0.1+	0.6-	1998 04 19	402	0.1+	0.3+
1996 11 16	402	(2.8+)	(0.2-)	1996 12 30	900	(2.2-	(0.1-)	1998 04 19	402	0.0	0.3+
1996 11 16	402	(2.7+)	(0.2-)	1996 12 30	900	1.0-	0.1+	1998 04 27	900	0.4-	0.5-
1996 11 16	402	(2.9+)	(0.3-)	1997 01 02	355	0.0	0.4+	1998 04 27	900	0.9+	0.1-
1996 11 19	900	0.0	0.1+	1997 01 02	355	0.3-	0.7+	1998 04 28	566	0.0	0.2+
1996 11 19	900	0.1-	0.3+	1997 01 12	402	0.3-	0.2-	1998 04 28	566	0.1+	0.6+
1996 11 20	402	1.2+	0.0	1997 01 12	402	0.0	0.1-	1998 04 28	566	0.1-	0.1+
1996 11 20	402	1.3+	0.2+	1997 01 12	402	0.1-	0.2-	1998 05 27	402	0.8+	0.4-
1996 11 20	402	1.2+	0.2+	1998 01 02	900	0.8+	0.5+	1998 05 27	402	0.3+	0.1+
1996 11 27	900	0.6+	0.3-	1998 01 02	900	(2.4+	(0.1-)	1998 05 27	402	0.5-	0.1+
1996 11 27	900	1.8+	0.3-	1998 01 30	900	0.1-	0.4-	1999 07 10	900	0.7+	0.2-
1996 11 30	355	0.6+	0.1-	1998 01 30	900	0.3+	0.7+	1999 07 10	900	0.2+	0.0
1996 11 30	355	0.1+	0.8-	1998 02 27	566	0.3-	1.9-	1999 07 24	900	0.9+	0.6-
1996 12 03	900	0.7-	0.0	1998 02 27	566	0.4-	2.0-	1999 07 24	900	0.2-	0.2-
1996 12 03	900	1.1-	0.2+	1998 02 27	566	0.4-	1.9-	1999 09 07	699	0.4-	0.4-
1996 12 03	402	1.0-	0.1+	1998 03 17	900	0.5+	0.3-	1999 09 07	699	0.3+	0.3-
1996 12 03	402	0.9-	0.1+	1998 03 17	900	0.6+	0.2-	1999 09 07	699	0.4+	0.5-
1996 12 03	402	0.9-	0.1+	1998 03 18	402	1.2+	0.3-	1999 09 13	704	1.1-	1.3+
1996 12 03	355	0.6-	0.5-	1998 03 18	402	1.2+	0.1-	1999 09 13	704	0.1-	0.2+
1996 12 03	355	0.6-	0.0	1998 03 18	402	1.2+	0.2-	1999 09 13	704	0.1+	0.5+
1996 12 06	900	0.2+	0.4+	1998 03 22	900	0.3-	0.5-	1999 09 13	704	0.2-	0.1+
1996 12 06	900	1.0-	0.4+	1998 03 22	900	0.6-	0.4-	1999 09 13	704	0.4-	0.2+
1996 12 07	355	0.4-	0.8-	1998 03 31	402	0.2-	0.1+				

(11629)* 1996 VY₂₉ = 1982 SW₁ = 1982 UF₅ = 1989 UC

Discovered 1996 Nov. 7 by S. Ueda and H. Kaneda at Kushiro.

Id. K. Ichikawa (*MPC* 29118)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	353.18722		(2000.0)	P	Q
<i>n</i>	0.28450791	ω	136.02490	+0.78396106	+0.62078948
<i>a</i>	2.2894956	Ω	185.60815	-0.58289575	+0.73326081
<i>e</i>	0.1627186	<i>i</i>	2.96051	-0.21362957	+0.27739683
<i>P</i>	3.46	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 2

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

1982 09 15	010	0.2+	0.9-	1998 03 03	704	0.2+	0.3+	1998 04 23	540	0.7+	1.9+
1982 09 16	010	(0.00+	0.08+)	1998 03 03	704	1.0+	1.3+	1999 07 13	704	0.2+	0.1-
1982 10 20	033	0.3+	0.8-	1998 03 03	704	0.7+	0.0	1999 07 13	704	0.5+	0.2-
1989 10 20	403	1.4+	0.8+	Y 1998 03 03	704	1.3-	0.2-	1999 07 13	704	0.1+	0.2-
1989 10 20	403	(5.3+	2.2+)	Y 1998 03 03	704	0.1-	0.2-	1999 07 13	704	0.2+	0.2-
1989 10 23	403	(3.6-	1.3+)	1998 03 03	699	0.1+	0.7+	1999 07 13	704	0.2+	0.4-
1989 10 23	403	1.7-	1.6+	1998 03 03	699	0.6-	0.1+	1999 07 18	106	0.1+	0.5+

1996 11 07	399	0.0	1.3+	1998 03 03	699	1.2+	0.6+	1999 07 18	106	0.3-	0.5+
1996 11 07	399	(2.5+	0.3+)	1998 03 04	704	(3.3-	0.5+)	1999 07 18	106	0.0	0.4+
1996 11 12	399	0.6-	0.5-	1998 03 04	704	(3.3-	1.5+)	1999 07 19	704	0.3+	0.6-
1996 11 12	399	0.4+	0.1+	1998 03 04	704	(3.6-	1.8-)	1999 07 19	704	0.5+	0.0
1996 11 15	399	0.5-	0.8+	1998 03 04	704	(3.6-	0.5-)	1999 07 19	704	0.3-	0.4-
1996 11 15	399	(0.3+	2.8+)	1998 03 04	704	(2.6-	0.2+)	1999 07 21	699	0.2-	0.8+
1998 02 21	327	0.0	0.2+	1998 03 08	327	0.5-	0.2+	1999 07 21	699	0.5-	0.8+
1998 02 21	327	0.2+	0.2+	1998 03 08	327	0.0	0.7+	1999 07 21	699	0.4-	0.6+
1998 02 21	327	0.1+	0.0	1998 03 08	327	0.0	0.0	1999 08 08	699	0.6-	0.7+
1998 02 23	327	0.7-	0.6-	1998 04 22	540	0.3-	0.3-	1999 08 08	699	0.1-	0.8+
1998 02 23	327	0.1-	0.0	1998 04 22	540	1.4+	0.7+	1999 08 08	699	0.6-	1.0+
1998 02 23	327	0.1+	0.2-	1998 04 23	540	(2.4+	1.8+)				

(11630)* 1996 VY₃₈ = 1996 TB₆₈ = 1998 CU₄

Discovered 1996 Nov. 7 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. A. Doppler (*MPC* 34869), G. V. Williams (d, *ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	59.83220		(2000.0)	P	Q
<i>n</i>	0.28240798	ω	129.37229	-0.33555770	+0.94169285
<i>a</i>	2.3008311	Ω	121.00437	-0.87294346	-0.30094423
<i>e</i>	0.0631103	<i>i</i>	1.65879	-0.35407732	-0.15048971
<i>P</i>	3.49	<i>H</i>	15.4	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1995 05 31	691	0.2-	1.3+	1996 11 16	327	0.1-	0.2-	1999 07 13	704	0.3-	0.9-
1995 05 31	691	1.5+	1.4+	1996 11 16	327	0.3-	0.1+	1999 07 13	704	0.3+	0.5-
1995 05 31	691	0.1-	1.2+	1998 01 09	910	0.8+	0.2-	1999 07 13	704	1.3-	1.1-
1996 10 14	327	0.2-	0.5+	1998 01 09	910	1.0+	0.2-	1999 07 13	704	0.5+	1.5-
1996 10 14	327	0.1-	0.3+	1998 01 09	910	0.9+	0.1-	1999 07 16	704	0.2-	0.2+
1996 10 14	327	0.3+	0.0	1998 01 22	696	0.2+	0.8+	1999 07 16	704	0.5+	0.5-
1996 10 29	327	0.5+	0.6+	1998 01 22	696	0.3+	0.7+	1999 07 16	704	0.3+	0.7-
1996 10 29	327	0.2-	1.1+	1998 02 06	809	1.0-	0.2+	1999 08 07	699	0.6+	0.3+
1996 10 29	327	1.1-	0.7+	1998 02 06	809	1.5-	0.6+	1999 08 07	699	0.2+	0.5+
1996 10 29	327	0.8-	0.5+	1998 02 06	809	0.8-	0.7-	1999 08 07	699	0.1-	0.1-
1996 11 07	327	0.1+	0.5-	1998 02 07	809	(3.0+	3.9+)	1999 09 07	704	0.0	0.8+
1996 11 07	327	0.1-	0.8+	1998 02 07	809	(2.6+	3.0+)	1999 09 07	704	0.9+	0.0
1996 11 07	327	0.3+	0.1-	1998 02 07	809	(2.6+	4.1+)	1999 09 07	704	0.2+	0.4+
1996 11 07	327	0.5+	0.0	1998 02 26	566	0.1-	0.6-	1999 09 07	704	0.0	0.3+
1996 11 07	327	0.1+	0.3+	1998 02 26	566	0.2+	0.5-	1999 09 07	704	0.1-	0.1+
1996 11 07	327	0.3-	0.4-	1998 02 26	566	0.3+	0.3-				
1996 11 16	327	0.2-	0.7-	1999 07 13	704	0.5-	0.7+				

(11631)* 1996 XV₁ = 1989 YG₁

Discovered 1996 Dec. 2 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 28606)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	20.97695		(2000.0)	P	Q
<i>n</i>	0.27348329	ω	45.38079	+0.85542578	+0.50851747
<i>a</i>	2.3506187	Ω	283.82081	-0.49922187	+0.75902864
<i>e</i>	0.1299619	<i>i</i>	5.80819	-0.13792846	+0.40655321
<i>P</i>	3.60	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1989 12 30	413	0.2-	0.0	1998 03 31	704	(3.3-	3.0+)	1999 07 23	704	0.3+	0.3+
1989 12 30	413	0.3-	0.3+	1998 04 01	704	1.1+	1.3+	1999 07 23	704	0.5+	0.4+
1989 12 31	413	0.9+	1.0+	1998 04 01	704	1.2+	0.6-	1999 09 05	703	0.3+	0.4-
1996 12 02	411	0.2-	0.1-	1998 04 01	704	0.3-	0.4-	1999 09 05	703	0.2+	0.5-
1996 12 02	411	0.2+	0.3-	1998 04 01	704	(2.6-	0.3-)	1999 09 05	703	0.1+	0.1+

1996 12 28	411	0.4+	0.2-	1998 04 30	699	0.3+	0.1+	1999 09 18	704	0.1-	0.4-
1996 12 28	411	0.8+	0.3+	1998 04 30	699	0.5+	0.5+	1999 09 18	704	0.3-	0.1-
1998 03 31	704	1.8-	0.1+	1999 07 23	704	0.6+	0.0	1999 09 18	704	0.6-	0.2+
1998 03 31	704	0.7+	1.8+	1999 07 23	704	0.1+	0.1-	1999 09 18	704	0.2-	0.1-
1998 03 31	704	0.9+	0.2-	1999 07 23	704	0.2+	0.0	1999 09 18	704	0.3-	0.0

(11632)* 1996 XB₃ = 1991 KG₂

Discovered 1996 Dec. 3 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 29926), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Nakano			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26177157	ω	182.34436	+0.78612651	+0.61699911		
<i>a</i>	2.4202175	Ω	139.48447	-0.56615124	+0.74241018		
<i>e</i>	0.2052319	<i>i</i>	3.20254	-0.24794734	+0.26103491		
<i>P</i>	3.77	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1988 11 06	675	0.2+	0.6-	1998 03 22	704	0.1-	0.8-	1999 07 16	704	0.3-	0.1-
1988 11 06	675	0.1+	0.4-	1998 03 22	704	0.0	0.8+	1999 07 16	704	0.6-	0.6-
1991 05 17	809	(1.5-	3.3-)	1998 03 22	704	0.1-	0.0	1999 07 16	704	0.8-	1.0-
1991 05 17	809	(0.8-	2.8-)	1998 03 22	704	0.2+	0.0	1999 09 07	704	0.1-	0.2+
1991 05 17	809	(1.1-	3.1-)	1998 03 28	704	0.1+	0.3+	1999 09 07	704	0.1-	0.3+
1996 12 03	411	0.2+	0.4+	1998 03 28	704	0.1+	0.4+	1999 09 07	704	0.0	0.2+
1996 12 03	411	0.5+	0.1-	1998 03 28	704	0.5+	0.4+	1999 09 07	704	0.2-	0.3+
1996 12 06	411	0.4+	0.1+	1998 03 28	704	0.4+	0.0	1999 09 07	704	1.0-	0.7-
1996 12 06	411	0.1+	0.5+	1998 03 28	704	0.2+	0.1+	1999 09 09	704	0.1+	0.0
1996 12 12	411	0.4-	0.2-	1998 03 29	704	0.1-	0.5+	1999 09 09	704	0.3+	0.1+
1996 12 12	411	0.5-	0.1+	1998 03 29	704	0.6+	0.5+	1999 09 09	704	0.6+	0.2+
1996 12 19	411	1.2-	0.4+	1998 03 29	704	0.3+	0.4+	1999 09 09	704	0.4+	1.1+
1996 12 19	411	0.3+	0.8+	1998 03 29	704	0.5-	0.1+	1999 09 09	704	0.5+	0.6+
1996 12 28	411	0.4+	0.1+	1998 03 29	704	0.7+	0.2+	1999 09 11	699	0.3+	0.5+
1996 12 28	411	0.0	0.4-	1998 04 19	704	0.1+	0.9+	1999 09 11	699	0.7+	0.2+
1998 03 20	704	0.5-	0.3-	1998 04 19	704	0.3+	1.0+	1999 09 11	699	0.2+	0.8+
1998 03 20	704	0.4-	0.0	1998 04 19	704	0.1+	1.1+	1999 09 14	704	0.2+	0.4-
1998 03 20	704	0.0	0.1-	1998 04 19	704	0.3-	0.1+	1999 09 14	704	0.1+	0.3+
1998 03 20	704	0.2+	0.5-	1998 04 19	704	0.1-	0.8+	1999 09 14	704	0.6-	0.3+
1998 03 20	704	0.2+	1.7-	1999 07 16	704	0.5-	0.2-	1999 09 14	704	0.7-	0.6+
1998 03 22	704	0.2-	0.3-	1999 07 16	704	0.1-	0.2-	1999 09 14	704	0.3-	0.3+

(11633)* 1996 XG₉

Discovered 1996 Dec. 2 by T. Pauwels at Uccle.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21150720	ω	168.77636	-0.64622805	+0.75051984		
<i>a</i>	2.7898827	Ω	60.80468	-0.71186015	-0.52754620		
<i>e</i>	0.1630902	<i>i</i>	9.11132	-0.27503532	-0.39801379		
<i>P</i>	4.66	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1993 01 28	675	0.2-	0.7-	1997 02 10	012	0.0	0.3-	1998 03 24	704	0.4+	0.0
1993 01 28	675	0.5-	1.9-	1997 02 10	012	0.8+	0.5+	1998 03 25	704	0.7-	0.8-
1996 12 02	012	0.3-	0.1+	1997 12 27	688	0.2+	0.4+	1998 03 25	704	0.6+	0.8+
1996 12 02	012	0.5-	0.5+	1997 12 27	688	0.0	0.1+	1998 03 25	704	0.4-	0.4-
1996 12 03	012	0.3-	0.4+	1997 12 29	688	0.5+	0.1+	1998 03 25	704	0.1-	0.5+
1996 12 10	709	0.1+	0.4-	1997 12 29	688	0.1+	0.4-	1998 03 25	704	0.4-	0.1+
1996 12 10	709	0.1-	1.3+	1998 01 22	012	0.4+	0.8+	1999 07 14	704	0.3+	0.4+
1996 12 10	709	0.2+	0.4-	1998 01 22	012	0.2-	0.7+	1999 07 14	704	0.0	0.4-
1996 12 10	709	0.2+	0.2-	1998 01 22	012	0.2-	0.2-	1999 07 14	704	0.4+	0.4-
1996 12 10	709	0.2+	0.4-	1998 02 19	012	0.1+	0.9+	1999 07 14	704	0.1-	0.3-
1996 12 10	709	0.0	0.4-	1998 02 19	012	0.3-	0.1-	1999 07 14	704	0.9+	0.9-
1996 12 10	709	0.0	0.4-	1998 02 19	012	0.2-	0.5-	1999 07 16	704	0.1-	0.3-
1996 12 10	709	0.2+	0.4-	1998 02 26	566	0.6+	0.0	1999 07 16	704	0.4-	0.7+
1996 12 10	709	0.2+	0.4-	1998 02 26	566	0.8+	0.1+	1999 07 16	704	0.1+	0.4-
1997 01 13	012	1.1-	1.3+	1998 02 26	566	0.5+	0.1+	1999 09 11	704	0.2-	0.3-
1997 01 13	012	0.0	0.6-	1998 03 09	012	0.4-	0.0	1999 09 11	704	0.2-	0.0

1997 01 13	012	0.6+	0.5-	1998 03 09	012	0.7-	0.1+	1999 09 11	704	0.5+	0.5-
1997 01 14	012	0.2-	0.1+	1998 03 09	012	0.3-	0.0	1999 09 11	704	0.2-	0.3+
1997 01 14	012	0.0	0.1+	1998 03 24	704	0.1+	0.5-	1999 09 11	704	0.8-	0.9+
1997 01 14	012	0.0	0.1-	1998 03 24	704	0.4+	0.3+				
1997 02 10	012	0.3+	0.4+	1998 03 24	704	0.1-	0.9-				

(11634)* 1996 XU₃₀ = 1978 WS₁₅

Discovered 1996 Dec. 12 by Y. Shimizu and T. Urata at the Nachi-Katsuura

Observatory.

Id. T. Urata (*MPC* 28874)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Nakano			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27525617	ω	188.82484	+0.31491669	-0.93820837		
<i>a</i>	2.3405145	Ω	242.92714	+0.88033915	+0.34524513		
<i>e</i>	0.0977398	<i>i</i>	9.27420	+0.35472589	-0.02389261		
<i>P</i>	3.58	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1978 11 30	675	0.3-	0.4-	1998 04 22	704	0.2-	0.7+	1999 08 22	888	0.0	0.2+
1978 12 01	675	0.3+	0.0	1998 04 22	704	0.7+	1.6+	1999 09 04	703	0.1-	0.4-
1996 12 12	905	0.8+	0.3-	1998 04 22	704	(1.5-	2.5+)	1999 09 04	703	0.1-	0.5-
1996 12 12	905	1.0+	0.3+	1998 04 22	704	0.1-	0.5+	1999 09 04	703	0.2-	0.3-
1996 12 14	905	0.6+	0.2+	1998 05 01	704	0.0	0.9+	1999 09 04	703	0.6-	0.2-
1996 12 14	905	0.8-	0.0	1998 05 01	704	1.9-	0.9+	1999 09 05	886	0.4-	0.3-
1997 01 06	385	0.2-	0.4+	1998 05 01	704	0.2-	0.4+	1999 09 05	886	1.2+	0.3-
1997 01 06	385	0.1+	0.7+	1998 05 01	704	0.1-	0.7+	1999 09 08	704	0.2+	1.9+
1997 01 07	385	0.4-	0.8+	1998 05 22	704	0.8+	0.4-	1999 09 08	704	0.6-	0.4+
1997 01 07	385	0.7+	0.2+	1998 05 22	704	(2.3+	0.7-)	1999 09 08	704	0.0	0.0
1997 01 15	599	1.2-	0.3-	1998 05 22	704	1.0+	0.1+	1999 09 16	704	0.3+	0.7+
1997 01 15	599	1.0-	0.0	1998 05 22	704	(1.1+	3.5-)	1999 09 16	704	0.5+	0.1+
1998 04 21	704	0.2-	0.6+	1998 05 24	704	1.2+	1.7-	1999 09 16	704	0.2+	0.1+
1998 04 21	704	1.0-	0.1+	1998 05 24	704	(1.4-	2.5+)	1999 09 16	704	0.3+	0.8+
1998 04 21	704	0.3-	0.1-	1998 05 24	704	1.5+	0.4-	1999 09 16	704	0.1+	0.9+
1998 04 21	704	0.2-	0.2-	1998 05 24	704	0.1-	2.0-	1999 09 19	385	0.2-	0.6-
1998 04 21	704	0.4-	0.3+	1998 08 22	888	0.7-	0.1-	1999 09 19	385	0.5-	0.6-

(11635)* 1996 XQ₃₂ = 1974 FB = 1981 JC₄ = 1991 HE₅

Discovered 1996 Dec. 6 by S. Ueda and H. Kaneda at Kushi.

Id. K. Ichikawa (*MPC* 29119)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Nakano			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29231058	ω	247.72235	-0.32844682	-0.94339670		
<i>a</i>	2.2485697	Ω	221.54226	+0.89015844	-0.29285314		
<i>e</i>	0.0976616	<i>i</i>	3.98623	+0.31581743	-0.15569107		
<i>P</i>	3.37	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1974 03 22	805	0.4+	0.1+	1998 05 22	704	0.0	0.9+	1998 06 21	688	0.6-	0.1-
1974 03 23	805	0.1+	0.3+	1998 05 22	704	0.5+	0.5-	1998 06 21	688	0.6-	0.1-
1981 05 08	675	0.2-	0.7-	1998 05 22	704	(3.2-	1.2+)	1999 07 23	704	0.7+	0.5+
1981 05 09	675	0.6-	0.0	1998 05 24	704	0.0	0.8+	1999 07 23	704	0.7-	0.1+
1991 04 19	809	(3.5+	0.4+)	1998 05 24	704	0.8+	0.3+	1999 07 23	704	0.8+	1.5-
1991 04 19	809	(2.8+	0.7+)	1998 05 24	704	0.0	0.3-	1999 07 23	704	1.3-	0.7-
1991 04 19	809	(2.7+	0.2+)	1998 05 24	704	0.1-	0.3+	1999 09 05	699	0.3+	0.7+
1996 12 06	399	0.0	0.9+	1998 05 24	704	0.9-	0.0	1999 09 05	699	0.3-	0.7+
1996 12 06	399	0.4-	0.3-	1998 05 26	704	0.9+	0.1+	1999 09 05	699	0.2-	0.5+
1996 12 07	399	0.7-	0.8+	1998 05 26	704	0.5-	0.6+	1999 09 07	704	0.5+	0.0
1996 12 07	399	0.9-	1.3+	1998 05 26	704	0.8+	0.2+	1999 09 07	704	0.3-	0.0
1996 12 15	399	0.9+	1.2+	1998 05 26	704	0.2-	0.3+	1999 09 07	704	0.7+	0.2+
1996 12 15	399	0.6+	1.0+	1998 05 26	704	0.1-	0.0	1999 09 18	703	0.4+	0.2+
1998 03 22	691	(1.1-	2.3+)	1998 06 03	704	0.3+	0.1-	1999 09 18	703	0.5-	0.5+
1998 03 22	691	0.8-	1.9+	1998 06 03	704	0.4+	0.5+	1999 09 18	703	0.5-	0.2+
1998 03 22	691	0.6-	1.2+	1998 06 03	704	0.5+	1.2-	1999 09 18	703	0.5-	0.2+
1998 05 22	704	0.3-	1.0+	1998 06 03	704	1.6+	1.3+				
1998 05 22	704	0.1-	0.8+	1998 06 21	688	0.4-	0.2+				

(11636)* 1996 YH₁

Discovered 1996 Dec. 27 at the Astronomical and Geophysical Observatory,
Modra.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	58.94684		(2000.0)		P		Q	
<i>n</i>	0.24504330	ω	151.01873		+0.15448942		+0.98290143	
<i>a</i>	2.5291475	Ω	127.68957		-0.92911956		+0.17901695	
<i>e</i>	0.1135430	<i>i</i>	7.27359		-0.33596112		-0.04310107	
<i>P</i>	4.02	<i>H</i>	14.9		<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1991 10 02	691	0.4+	0.6-	1998 03 10	118	0.3+	0.2-	1998 05 16	704	0.8-	0.1+
1991 10 02	691	0.1+	0.5-	1998 03 21	118	0.5-	0.5-	1998 05 16	704	1.0+	0.3-
1991 10 02	691	0.2+	0.7-	1998 03 21	118	0.5-	0.6-	1998 05 16	704	1.2+	0.6-
1996 12 27	118	0.1-	0.1-	1998 03 21	118	0.7-	0.7-	1998 05 28	704	0.5+	0.8-
1996 12 28	118	0.3-	0.1-	1998 03 24	118	0.3-	0.6-	1998 05 28	704	(1.6+	2.7-)
1996 12 28	118	0.4+	0.1+	1998 03 24	118	0.5-	0.6-	1998 05 28	704	1.8-	0.1-
1996 12 28	118	0.5+	0.6+	1998 04 15	118	0.2+	0.0	1998 05 28	704	0.7-	0.8-
1996 12 28	118	0.5+	0.6+	1998 04 15	118	0.2-	0.2+	1998 05 28	704	0.3+	0.5+
1996 12 30	118	0.2+	0.5-	1998 04 21	704	0.5-	0.5+	1999 08 22	703	0.1+	0.5+
1996 12 30	118	0.6+	0.3-	1998 04 21	704	0.2-	0.1+	1999 08 22	703	0.1-	1.1+
1997 01 08	118	0.2+	0.0	1998 04 21	704	0.4-	0.5-	1999 08 22	703	0.3-	0.0
1997 01 08	118	0.7-	1.1-	1998 04 21	704	0.2+	0.7-	1999 08 22	703	0.4-	0.0
1997 01 11	118	0.3+	0.2+	1998 04 21	704	0.3-	0.3-	1999 09 02	118	0.4+	0.8-
1997 01 13	118	0.3-	0.4-	1998 04 23	704	0.6+	0.5+	1999 09 02	118	0.6+	0.1+
1997 01 14	118	0.4-	0.1+	1998 04 23	704	0.1+	0.0	1999 09 03	118	0.8-	0.6-
1997 01 14	118	0.2-	0.1-	1998 04 23	704	0.5+	0.4+	1999 09 03	118	0.7-	0.4-
1997 01 14	118	0.5-	0.1+	1998 04 23	704	0.2-	0.0	1999 09 08	703	1.6-	0.5-
1997 01 26	118	0.1+	0.4-	1998 04 23	704	0.3-	0.3+	1999 09 08	703	0.2-	0.3+
1997 01 26	118	0.3+	0.5-	1998 04 24	704	0.5+	0.6-	1999 09 08	703	0.7+	0.7-
1997 02 03	118	0.5-	0.5-	1998 04 24	704	1.1+	0.1+	1999 09 08	703	0.8+	0.8-
1997 02 03	118	0.5-	0.7-	1998 04 24	704	0.4+	0.1-	1999 09 14	704	0.3+	0.1-
1998 02 28	118	0.3-	0.5-	1998 04 24	704	0.4+	0.4-	1999 09 14	704	0.3+	0.5-
1998 02 28	118	0.1+	0.1-	1998 04 24	704	0.5-	0.4-	1999 09 14	704	0.7+	0.8-
1998 02 28	118	0.3+	0.5+	1998 04 26	118	0.2-	0.2-	1999 09 14	704	0.6+	0.7-
1998 03 10	118	0.1-	0.2-	1998 04 26	118	0.0	0.3-	1999 09 14	704	1.0+	0.3-
1998 03 10	118	0.3+	0.3-	1998 05 16	704	1.1-	0.6+				

(11637)* 1996 YJ₂ = 1969 AU = 1991 XQ₄ = 1998 KE₆₀

Discovered 1996 Dec. 24 by the Beijing Schmidt CCD Asteroid Program at
Xinglong.

Id. S. Nakano (*MPC* 32247), A. Gnädig (*ibid.*), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	211.69664		(2000.0)		P		Q	
<i>n</i>	0.21222223	ω	351.13751		-0.28073129		-0.94477820	
<i>a</i>	2.7836127	Ω	115.02005		+0.89162577		-0.32191427	
<i>e</i>	0.1901899	<i>i</i>	10.75307		+0.35523714		+0.06136254	
<i>P</i>	4.64	<i>H</i>	13.1		<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1969 01 15	095	(4.3+	5.8-)	1997 01 13	400	(0.3-	2.9+)	1998 05 26	704	(1.8-	2.7-)
1991 12 02	675	0.4+	1.5-	1997 01 13	905	0.5-	1.0-	1998 06 26	699	0.6-	0.2+
1991 12 02	675	0.2+	0.8-	1997 01 13	905	0.1+	0.5-	1998 06 26	699	0.1-	0.0
1996 12 24	327	0.7-	0.7+	1997 01 16	905	0.1+	1.6+	1998 06 26	699	0.9-	0.4-
1996 12 24	327	0.9-	0.2+	1997 01 16	905	1.2-	0.7+	1999 07 14	704	0.1-	0.7+
1996 12 24	327	0.9-	0.1+	1997 01 19	400	0.1+	0.1+	1999 07 14	704	0.2+	0.0
1996 12 25	327	0.4+	0.9+	1997 01 19	400	0.0	0.2+	1999 07 14	704	0.1+	0.4+
1996 12 25	327	0.7+	0.0	1997 01 19	400	0.5-	0.6-	1999 07 14	704	0.3-	0.4+
1996 12 25	327	0.5-	0.5+	1997 01 19	400	0.2+	0.4-	1999 07 14	704	0.0	0.1+
1997 01 04	327	0.8+	0.3+	1998 05 23	704	0.0	0.1-	1999 07 16	704	0.2+	0.4+
1997 01 04	327	0.1+	0.3+	1998 05 23	704	1.7+	0.5-	1999 07 16	704	0.1+	0.0
1997 01 04	327	0.5+	0.5+	1998 05 23	704	0.7-	0.5+	1999 07 16	704	0.3-	0.6+
1997 01 08	327	0.0	0.5+	1998 05 23	704	0.3-	0.3+	1999 09 07	704	0.8+	0.2-
1997 01 08	327	0.9+	0.5+	1998 05 23	704	0.1+	1.4-	1999 09 07	704	0.3+	0.2+

1997 01 08	327	0.7-	0.3+	1998 05 26	704	0.2-	0.9-	1999 09 07	704	0.1-	0.0
1997 01 12	400	1.3+	1.2-	1998 05 26	704	0.7+	0.3+	1999 09 07	704	0.1+	0.0
1997 01 12	400	0.7+	1.8-	1998 05 26	704	0.6-	0.2-	1999 09 07	704	1.1-	1.1-

(11638)* 1997 AH = 1988 YG = 1992 YM₅

Discovered 1997 Jan. 2 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 28878)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	290.53277		(2000.0)		P		Q	
<i>n</i>	0.25554215	ω	311.99142		+0.70251607		-0.70328705	
<i>a</i>	2.4593916	Ω	93.02190		+0.68093399		+0.61977982	
<i>e</i>	0.1800497	<i>i</i>	6.26046		+0.20688179		+0.34822450	
<i>P</i>	3.86	<i>H</i>	14.1		<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1988 12 28	010	1.2-	0.1+	1997 01 26	411	0.0	0.5+	1998 05 01	704	0.4-	0.8-
1992 12 18	403	1.1+	1.3- Y	1998 04 21	704	0.0	0.4-	1999 07 14	704	0.0	0.1+
1992 12 18	403	(3.5-	1.0+)	1998 04 21	704	1.3+	0.0	1999 07 14	704	0.1-	0.8+
1992 12 18	901	(4.7+	0.8+)	Y 1998 04 21	704	0.1+	0.1+	1999 07 14	704	0.1+	0.5+
1992 12 18	901	1.1+	2.1+ Y	1998 04 21	704	0.8-	0.0	1999 07 14	704	0.4-	0.6+
1997 01 02	411	0.2-	0.5+	1998 04 21	704	0.4+	0.0	1999 07 14	704	0.3-	0.8+
1997 01 02	411	0.6-	0.4+	1998 04 22	704	1.0+	0.4+	1999 07 16	704	0.4-	0.5+
1997 01 03	411	0.5-	0.2+	1998 04 22	704	0.2-	0.7+	1999 07 16	704	0.5-	1.2+
1997 01 03	411	0.8-	0.3-	1998 04 22	704	0.8+	0.6+	1999 07 16	704	0.6-	0.8+
1997 01 07	411	0.0	0.1+	1998 04 22	704	0.3+	0.5+	1999 09 11	704	0.4+	0.8-
1997 01 07	411	0.1-	0.3+	1998 04 22	704	1.6-	0.9+	1999 09 11	704	0.4+	0.8-
1997 01 14	411	0.2+	0.3-	1998 05 01	704	0.4+	0.0	1999 09 11	704	0.6+	0.5-
1997 01 14	411	0.0	0.1+	1998 05 01	704	0.5-	0.1-	1999 09 11	704	0.0	1.1-
1997 01 26	411	0.6+	0.0	1998 05 01	704	0.3-	1.7-	1999 09 11	704	0.0	0.4-

(11639)* 1997 AO₄ = 1991 YJ₂

Discovered 1997 Jan. 6 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 29633)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	20.79678		(2000.0)		P		Q	
<i>n</i>	0.21701551	ω	186.61459		+0.66556793		+0.74160291	
<i>a</i>	2.7424720	Ω	125.14953		-0.67996174		+0.64889113	
<i>e</i>	0.1036003	<i>i</i>	5.89173		-0.30768710		+0.17019229	
<i>P</i>	4.54	<i>H</i>	13.5		<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1991 12 30	511	0.2-	1.4-	1998 04 23	704	1.5-	1.2-	1999 08 12	699	0.2-	0.2-
1991 12 30	511	1.1-	0.5+	1998 04 24	704	0.7+	0.6-	1999 08 12	699	0.0	0.2+
1993 04 14	675	0.2+	0.9-	1998 04 24	704	1.5-	0.6+	1999 08 12	699	0.3-	0.4-
1993 04 14	675	1.3+	0.0	1998 04 24	704	0.0	0.1+	1999 09 07	699	0.3+	0.6+
1996 12 19	327	0.1+	0.8+	1998 04 24	704	0.1+	0.2+	1999 09 07	704	0.2-	0.1+
1996 12 19	327	0.2+	0.8+	1998 05 18	700	0.3-	1.4+	1999 09 07	704	0.3-	0.6-
1996 12 19	327	0.6+	0.8+	1998 05 18	700	(0.6+	2.6+)	1999 09 07	704	0.3-	0.2-
1997 01 06	411	0.8-	0.2-	1998 05 22	704	0.3-	0.2-	1999 09 07	699	0.3-	0.7+
1997 01 06	411	0.4+	0.1+	1998 05 22	704	0.3-	0.2-	1999 09 07	704	0.3-	0.0
1997 01 07	411	0.7+	0.2+	1998 05 22	704	0.3+	0.2-	1999 09 07	704	0.3-	0.0
1997 01 07	411	0.2+	0.2-	1998 05 22	704	0.6+	1.5-	1999 09 07	699	0.1-	0.5+
1997 01 11	411	0.1+	0.2-	1998 05 22	704	0.6-	0.2-	1999 09 08	703	0.5-	0.8-
1997 01 11	411	0.0	0.6+	1998 05 22	700	0.0	0.3+	1999 09 08	703	0.0	0.1+
1997 01 16	411	0.5-	0.2+	1998 05 22	700	0.0	0.6+	1999 09 08	703	0.1-	0.1-
1997 01 16	411	0.0	0.2+	1998 05 24	704	1.5+	0.4+	1999 09 08	703	0.2+	0.4-
1997 01 28	411	0.9+	0.6+	1998 05 24	704	1.4+	0.8-	1999 09 08	106	0.1+	0.2+
1997 01 28	411	0.4-	0.2-	1998 05 24	704	0.7-	0.9+	1999 09 08	106	0.4+	0.1-
1998 04 21	704	0.1-	0.0	1998 05 24	704	0.1+	0.5-	1999 09 08	106	0.1+	0.4+
1998 04 21	704	0.3-	0.1+	1998 05 24	704	0.0	0.4-	1999 09 09	704	0.4-	0.2-
1998 04 21	704	0.5+	0.1-	1998 05 27	699	0.5-	0.4+	1999 09 09	704	0.3-	0.9+
1998 04 21	704	0.6+	0.2+	1998 05 27	699	0.9-	1.0+	1999 09 09	704	0.7+	0.9+
1998 04 21	704	0.1+	1.1+	1998 05 27	699	0.6-	0.5+	1999 09 09	704	1.4+	1.5+
1998 04 23	704	0.2+	0.2+	1999 07 16	704	0.7-	0.4+	1999 09 13	704	0.4+	0.4+
1998 04 23	704	0.8+	0.2+	1999 07 16	704	0.1-	0.1+	1999 09 13	704	0.0	0.2+

1999 SEPT. 28

1998 04 23 704 0.4- 0.2- 1999 07 16 704 0.5- 0.0 1999 09 13 704 0.0 0.1-
 1998 04 23 704 0.3+ 0.1+ 1999 07 16 704 0.7+ 1.1- 1999 09 13 704 (2.3+ 0.8-)

(11640)* 1997 AT₄ = 1990 EJ₃

Discovered 1997 Jan. 6 by T. Kobayashi at Oizumi.

Id. G. V. Williams (*MPC* 28879)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	333.03118	(2000.0)	P	Q	
<i>n</i>	0.26678145	ω	87.83462	+0.88217131	-0.46444298
<i>a</i>	2.3898224	Ω	299.83099	+0.38846595	+0.81116950
<i>e</i>	0.1222646	<i>i</i>	5.15121	+0.26621042	+0.35538255
<i>P</i>	3.69	<i>H</i>	14.6	<i>G</i>	0.15 <i>U</i> 1

Residuals in seconds of arc

1990 03 02	809	0.5-	0.1+	1997 01 16	411	0.8-	0.6+	1999 09 06	703	0.5-	0.1+
1990 03 02	809	0.5-	0.1-	1997 01 16	411	0.3+	0.1+	1999 09 06	703	1.0-	0.3+
1990 03 02	809	0.1-	0.3-	1997 01 27	411	0.3+	0.3-	1999 09 06	703	0.7-	0.8-
1990 03 04	809	1.7-	1.0-	1997 01 27	411	0.2-	0.0	1999 09 08	704	0.5+	0.5-
1990 03 04	809	0.8+	0.5-	1997 02 07	566	1.3+	0.1+	1999 09 08	704	0.6+	0.2+
1990 03 04	809	0.7+	0.4-	1997 02 07	566	1.0+	0.1+	1999 09 08	704	0.3+	0.4-
1996 12 20	327	0.8-	0.1-	1997 02 07	566	0.5+	0.2+	1999 09 08	704	0.3+	0.8-
1996 12 20	327	0.5-	0.1+	1998 05 22	704	1.3+	0.1+	1999 09 08	704	0.3-	0.0
1996 12 20	327	0.1+	0.2+	1998 05 22	704	0.0	0.8-	1999 09 18	704	0.0	0.1-
1997 01 06	411	0.2+	0.2-	1998 05 22	704	1.6-	0.2+	1999 09 18	704	0.0	0.7-
1997 01 06	411	0.2+	0.9+	1998 05 22	704	0.3+	1.2+	1999 09 18	704	0.1-	0.8-
1997 01 07	411	0.1+	0.1+	1998 05 22	704	(1.6-	2.1+)	1999 09 18	704	0.2+	0.3+
1997 01 07	411	0.0	0.1+	1999 07 23	704	0.9+	0.8+	1999 09 18	704	0.4+	0.2-
1997 01 11	411	0.3-	0.2+	1999 07 23	704	0.7-	1.5+				
1997 01 11	411	0.3-	0.1+	1999 07 23	704	0.5+	1.6+				

(11641)* 1997 AP₁₂ = 1994 NM₁₀

Discovered 1997 Jan. 7 by Y. Shimizu and T. Urata at the Nachi-Katsuura

Observatory.

Id. S. Nakano (*MPC* 29124)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Nakano			
<i>M</i>	174.02196	(2000.0)	P	Q	
<i>n</i>	0.21391420	ω	211.68724	-0.79817078	-0.57270733
<i>a</i>	2.7689151	Ω	292.23170	+0.58627421	-0.66707102
<i>e</i>	0.0718859	<i>i</i>	11.64834	+0.13858560	-0.47646885
<i>P</i>	4.61	<i>H</i>	14.1	<i>G</i>	0.15 <i>U</i> 1

Residuals in seconds of arc

1994 07 08	809	1.7+	1.0-	1997 02 06	385	0.5+	0.1-	1999 08 13	699	0.2+	0.5+
1994 07 08	809	0.1+	1.0-	1998 05 28	701	0.2-	0.4+	1999 09 04	703	0.0	1.0+
1994 07 08	809	0.1-	0.4-	1998 05 28	701	0.1+	0.4+	1999 09 04	703	0.8-	0.5+
1994 07 09	809	0.4-	0.1+	1998 05 28	701	0.2+	0.2+	1999 09 04	703	0.6-	0.7+
1994 07 09	809	0.4+	0.2-	1998 05 29	701	(3.9-	3.1+)	1999 09 04	703	0.8-	0.8+
1994 07 09	809	0.8-	0.3-	1998 05 29	701	(3.2-	3.2+)	1999 09 09	704	0.3-	0.0
1997 01 07	905	0.5-	0.2+	1999 07 13	704	0.2-	0.8+	1999 09 09	704	0.1+	0.8-
1997 01 07	905	0.2+	1.4+	1999 07 13	704	0.2-	0.3+	1999 09 09	704	0.7-	1.8-
1997 01 08	905	0.8+	1.1+	1999 07 13	704	1.1+	0.1-	1999 09 09	704	1.0+	0.9-
1997 01 08	905	0.6-	1.1-	1999 07 13	704	0.7-	0.2+	1999 09 13	704	1.1+	0.0
1997 02 01	905	0.8-	1.1-	1999 07 23	704	1.0-	0.7+	1999 09 13	704	1.2+	0.2-
1997 02 06	385	0.2+	0.8-	1999 07 23	704	0.5-	0.3+	1999 09 13	704	0.1-	0.4-
1997 02 06	385	0.1+	0.4-	1999 07 23	704	0.4-	0.1-	1999 09 13	704	1.3+	0.0

(11642)* 1997 AN₂₁ = 1993 CY

Discovered 1997 Jan. 13 by Y. Shimizu and T. Urata at the Nachi-Katsuura

Observatory.

Id. T. Urata (*MPC* 29126)

M.P.C. 35869

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	267.19589	(2000.0)	P	Q
<i>n</i>	0.23948338	ω	117.93404	+0.32841960 -0.92916582
<i>a</i>	2.5681425	Ω	311.84030	+0.76665689 +0.36716591
<i>e</i>	0.1319244	<i>i</i>	13.16504	+0.55170443 +0.04289614
<i>P</i>	4.12	<i>H</i>	14.0	<i>G</i> 0.15 <i>U</i> 1

Residuals in seconds of arc

1993 02 15	399	1.7+	1.8+	1997 02 07	098	1.7-	2.0-	1999 09 04	682	0.2-	0.4-
1993 02 15	399	(4.0+	2.0+)	1997 02 07	098	1.8-	0.0	1999 09 04	682	0.3-	0.3+
1993 02 16	399	(2.8-	1.0+)	1997 02 07	098	2.0-	1.5-	1999 09 04	682	0.0	0.1+
1993 02 16	399	0.9-	0.0	1997 02 11	385	0.6+	0.1-	1999 09 04	682	0.6+	0.0
1993 02 25	399	0.5+	0.5-	1997 02 11	385	0.9+	0.1-	1999 09 04	682	0.4-	0.5+
1993 02 25	399	0.4-	0.2+	1997 02 14	691	0.2-	0.0	1999 09 07	704	0.5-	0.2-
1997 01 13	905	1.0-	0.2+	1997 02 14	691	0.2-	0.1+	1999 09 07	704	0.5+	0.3-
1997 01 13	905	0.4+	1.2+	1997 02 14	691	0.5-	0.6-	1999 09 07	704	0.8+	0.6-
1997 01 16	905	0.9-	0.9-	1998 05 29	701	0.2+	0.9-	1999 09 07	704	0.6-	0.4-
1997 01 16	905	0.2+	0.1+	1998 05 29	701	0.7-	0.8-	1999 09 07	704	0.3+	1.0-
1997 01 18	046	0.4+	0.2-	1998 05 29	701	0.5-	0.7-	1999 09 08	703	0.6-	0.5+
1997 01 18	046	0.4+	0.1-	1999 07 13	704	0.5+	0.6+	1999 09 08	703	0.5+	0.1+
1997 01 18	046	0.3+	0.2-	1999 07 13	704	0.3+	0.2+	1999 09 08	703	0.5-	0.6-
1997 01 18	046	0.5+	0.2-	1999 07 13	704	0.3+	0.0	1999 09 08	703	0.4-	0.8-
1997 01 19	046	0.3+	0.2-	1999 07 13	704	0.6-	0.3-	1999 09 09	704	0.3+	0.5-
1997 01 19	046	0.4+	0.3-	1999 07 13	704	0.1+	0.0	1999 09 09	704	0.1+	0.4-
1997 01 19	046	0.3+	0.2-	1999 07 16	704	0.0	0.4-	1999 09 09	704	0.3+	0.5-
1997 01 19	046	0.3+	0.2-	1999 07 16	704	0.2+	0.6+	1999 09 09	704	0.5+	0.7-
1997 01 30	098	0.5-	1.0-	1999 07 16	704	0.5+	0.0	1999 09 09	704	0.1-	0.7-
1997 01 30	098	0.5-	0.2+	1999 07 21	699	0.1+	0.8+	1999 09 13	704	0.0	0.5-
1997 01 31	098	1.0-	0.1-	1999 07 21	699	0.2-	0.7+	1999 09 13	704	0.6+	0.1+
1997 01 31	098	(0.8+	2.5-)	1999 07 21	699	0.1-	0.3+	1999 09 13	704	0.4+	0.2+
1997 02 01	905	0.9+	0.3-	1999 08 08	886	0.0	1.4-	1999 09 13	704	0.2+	0.6+
1997 02 01	905	0.7+	0.1+	1999 08 08	886	0.2-	0.7-	1999 09 13	704	0.3+	0.4+
1997 02 07	098	0.5+	0.3-	1999 09 04	682	0.1+	0.0				

(11643)* 1997 AM₂₂ = 1984 ST₄ = 1988 VD₁₂

Discovered 1997 Jan. 8 by the Beijing Schmidt CCD Asteroid Program at

Xinglong.

Id. G. V. Williams (*MPC* 29635)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	267.92265	(2000.0)	P	Q	
<i>n</i>	0.25688881	ω	300.85849	+0.29969103	-0.95298945
<i>a</i>	2.4507890	Ω	131.63353	+0.89445724	+0.26437610
<i>e</i>	0.2603900	<i>i</i>	3.42726	+0.33186071	+0.14804184
<i>P</i>	3.84	<i>H</i>	14.3	<i>G</i> 0.15 <i>U</i> 1	

Residuals in seconds of arc

1984 09 19	071	(3.1-	0.2-)	1997 02 05	327	0.5+	0.3-	1999 07 20	699	0.6-	1.6-
1984 09 19	071	0.9+	1.0-	1997 02 05	327	0.4-	0.2-	1999 07 20	699	0.4-	0.2+
1984 09 19	071	(4.1-	0.1-)	1997 02 06	657	1.3+	0.3+	1999 07 20	699	0.8-	0.0
1984 09 19	071	1.2+	1.2+	1997 02 06	657	1.4+	0.8-	1999 07 20	691	0.3+	0.2+
1988 11 03	327	1.5-	0.0	1997 02 06	657	0.7+	0.1-	1999 07 20	691	0.1+	0.0
1988 11 03	327	0.8-	0.3-	1997 04 04	566	1.0-	0.5-	1999 07 20	691	0.1+	0.2-
1997 01 08	327	0.5+	0.4+	1997 04 04	566	0.5+	0.4-	1999 09 07	704	0.3-	0.8-
1997 01 08	327	0.1+	0.3-	1997 04 04	566	0.0	0.6-	1999 09 07	704	0.3-	0.2+
1997 01 08	327	0.1-	0.1-	1997 05 29	327	0.4+	0.2-	1999 09 07	704	0.6+	0.0
1997 01 18	327	0.7+	0.1-	1997 05 29	327	1.3-	0.1-	1999 09 07	704	0.4+	0.8-
1997 01 18	327	0.2-	0.2+	1997 05 29	327	0.9+	0.1+	1999 09 07	704	0.3-	0.4-
1997 01 18	327	0.0	0.4-	1998 05 25	327	0.7-	0.2-	1999 09 11	699	1.1-	1.3-
1997 01 29	327	0.6+	0.1-	1998 05 25	327	0.6-	0.1-	1999 09 11	699	1.5+	0.2+
1997 01 29	327	0.6-	0.2-	1998 05 25	327	0.1-	0.0	1999 09 11	704	0.3+	0.3-
1997 01 29	327	0.1-	0.3-	1999 07 13	704	0.4+	0.3-	1999 09 11	699	1.6-	1.2-
1997 02 04	657	1.2-	0.1+	1999 07 13	704	0.7-	0.8+	1999 09 11	704	0.5+	0.4-
1997 02 04	657	1.1-	0.7-	1999 07 13	704	0.9+	0.3+	1999 09 11	704	0.0	0.7-
1997 02 04	657	0.8-	0.4-	1999 07 13	704	0.0	1.7+	1999 09 11	704	0.8+	0.1+
1997 02 05	327	0.4-	0.1-	1999 07 13	704	1.2+					

(11644)* 1997 BR₁ = 1970 EV = 1982 OL = 1986 AF₁

Discovered 1997 Jan. 29 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 29636)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		140.94553		(2000.0)		P		Q	
<i>n</i>		0.18130825	ω	56.05784		−0.98637651		+0.06819045	
<i>a</i>		3.0916549	Ω	127.39596		−0.10917468		−0.95209397	
<i>e</i>		0.2618450	<i>i</i>	10.86153		+0.12305390		−0.29810592	
<i>P</i>		5.44	<i>H</i>	12.6		<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1970 03 07	095	0.2+	0.7+	1998 06 24	704	0.2+	0.8−	1999 09 11	704	0.3+	0.3+
1982 07 25	801	1.4−	0.2+	1998 06 24	704	1.6−	1.1+	1999 09 11	704	0.6+	0.0
1986 01 11	688	(3.5+	0.9−)	1998 06 24	704	1.4+	0.6+	1999 09 11	704	0.6+	0.3+
1986 01 11	688	1.0+	1.4−	1998 06 24	704	1.1+	1.1+	1999 09 11	704	0.9+	0.1+
1997 01 29	411	0.3−	0.6+	1998 06 24	704	0.0	0.8+	1999 09 13	704	0.5−	0.0
1997 01 29	411	0.1−	0.4+	1999 08 12	699	0.9+	0.2+	1999 09 13	704	0.4−	0.4−
1997 01 30	411	0.3−	0.6+	1999 08 12	699	0.6+	0.1+	1999 09 13	704	0.5−	0.5+
1997 01 30	411	0.1−	0.6+	1999 08 12	699	0.2−	0.3+	1999 09 13	704	0.6+	0.0
1997 02 06	411	0.0	0.7+	1999 09 08	703	0.1+	0.5+	1999 09 13	704	0.6−	0.2+
1997 02 06	411	0.0	0.6+	1999 09 08	703	0.8−	0.6−	1999 09 13	704	0.6+	0.0
1997 02 13	411	0.4+	0.3+	1999 09 08	703	0.6−	0.4+	1999 09 13	704	0.9−	0.5−
1997 02 13	411	0.1+	0.2+	1999 09 08	703	0.2−	0.5+	1999 09 13	704	0.0	0.2−
1997 02 26	411	0.6+	0.8+	1999 09 09	704	0.1+	0.3+	1999 09 13	704	0.1−	0.1+
1997 02 26	411	0.5+	0.5+	1999 09 09	704	0.7−	2.0+	1999 09 13	704	0.2+	0.1+
1997 03 07	688	0.6−	0.3+	1999 09 09	704	0.2−	1.2−	1999 09 13	704	0.4−	0.5−
1997 03 07	688	0.5−	0.3+	1999 09 09	704	0.5−	0.8−	1999 09 13	704	0.0	0.5−
1998 06 19	734	(0.5−	2.8+)	1999 09 11	704	0.1+	0.3+	1999 09 13	704	0.2+	0.5+
1998 06 19	734	0.1−	0.5−	1999 09 11	704	0.0	0.6+	1999 09 13	704	1.9+	0.4−
1998 06 19	734	0.3+	0.5+	1999 09 11	704	0.3+	0.0	1999 09 14	704	1.6−	1.1+
1998 06 21	734	0.3+	0.6−	1999 09 11	704	0.0	0.3+	1999 09 14	704	(1.4−	2.3+)
1998 06 21	734	0.4−	0.4−	1999 09 11	704	0.2+	0.5+	1999 09 14	704	(2.2−	0.2+)
1998 06 21	734	0.1−	0.5−	1999 09 11	704	0.3+	0.1+	1999 09 14	704	1.4−	1.1+

(11645)* 1997 BY₁ = 1991 TA₂ = 1993 CE

Discovered 1997 Jan. 29 by T. Kobayashi at Oizumi.

Id. G. V. Williams (*MPC* 29636)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		335.35345		(2000.0)		P		Q	
<i>n</i>		0.24190541	ω	238.06493		+0.96922827		−0.18030085	
<i>a</i>		2.5509718	Ω	131.73550		+0.21874525		+0.94309507	
<i>e</i>		0.1869785	<i>i</i>	12.97880		−0.11290299		+0.27939810	
<i>P</i>		4.07	<i>H</i>	13.4		<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1991 10 10	675	(0.5−	3.1+)	1997 03 04	704	1.5+	0.6+	1998 05 23	704	0.7−	0.3+
1991 10 10	675	(1.7+	4.6+)	1997 03 04	704	0.7+	0.3+	1998 05 23	704	0.2−	0.0
1991 10 13	675	(0.7−	2.5+)	1997 03 05	704	0.9+	0.5+	1998 05 23	704	1.3−	0.2+
1991 10 13	675	(1.1+	2.1+)	1997 03 05	704	1.8+	1.2+	1999 07 16	704	0.1−	0.7+
1993 02 12	372	(3.1−	0.9+)	1997 03 06	704	1.1+	1.2+	1999 07 16	704	0.2−	0.2+
1993 02 13	372	0.3−	1.0−	1997 03 06	704	1.5+	1.8+	1999 07 16	704	0.1+	0.2+
1997 01 29	411	0.9−	1.4+	1998 04 23	704	0.3+	0.1+	1999 07 16	704	0.2−	0.8+
1997 01 29	411	0.8−	1.0+	1998 04 23	704	0.9+	0.5−	1999 08 12	699	0.3−	0.8+
1997 01 30	411	0.6−	0.4+	1998 04 23	704	0.0	1.8+	1999 08 12	699	0.2−	1.1+
1997 01 30	411	0.7−	0.3+	1998 04 23	704	1.4+	0.0	1999 08 12	699	0.6−	1.0+
1997 02 06	411	0.5−	1.1+	1998 04 23	704	0.6−	0.3+	1999 09 11	704	0.2−	0.6+
1997 02 06	411	0.9−	0.7+	1998 04 24	704	0.4+	0.8−	1999 09 11	704	0.4+	0.6+
1997 02 13	411	0.2−	0.7+	1998 04 24	704	0.4−	0.5+	1999 09 11	704	0.1−	0.8+
1997 02 13	411	0.3−	0.5+	1998 04 24	704	1.3+	0.5+	1999 09 11	704	0.2−	1.1+
1997 02 26	411	0.0	0.8−	1998 05 23	704	0.7−	0.3+	1999 09 11	704	0.2−	0.9+
1997 02 26	411	0.5−	0.0	1998 05 23	704	0.3−	0.1+				

(11646)* 1997 BZ₁ = 1989 EQ₁₀ = 1991 VD₁₇

Discovered 1997 Jan. 29 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 29636), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		349.70670		(2000.0)		P		Q	
<i>n</i>		0.23834898	ω	291.76078		+0.99880328		+0.04140355	
<i>a</i>		2.5762847	Ω	65.87419		−0.02718080		+0.91243738	
<i>e</i>		0.0734677	<i>i</i>	1.63460		−0.04065970		+0.40711642	
<i>P</i>		4.14	<i>H</i>	14.5		<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1989 03 05	033	0.3+	0.5+	1998 04 22	704	0.2+	0.8−	1999 08 22	703	0.8−	0.9+
1989 03 05	033	0.1+	0.3+	1998 04 22	704	0.3+	0.6+	1999 08 22	699	0.9−	0.1+
1991 11 03	691	0.0	0.3+	1998 04 22	704	1.3−	0.6+	1999 08 22	699	0.2−	0.1+
1991 11 03	691	0.0	0.2+	1998 04 22	704	(3.3−	1.7−)	1999 09 05	699	1.1−	2.0+
1991 11 03	691	0.2−	0.0	1998 04 25	809	(4.2+	3.8+)	1999 09 05	699	0.0	2.0+
1997 01 15	566	1.5+	0.2+	1998 04 25	809	(2.6+	2.0+)	1999 09 05	699	0.2−	1.1+
1997 01 15	566	0.2+	0.2+	1998 04 25	809	(2.9+	1.4+)	1999 09 07	704	0.5+	0.7−
1997 01 15	566	0.7+	0.1+	1998 04 28	809	(4.4+	2.7+)	1999 09 07	704	0.1+	0.8−
1997 01 15	566	1.1+	0.2+	1998 04 28	809	(2.5+	1.9+)	1999 09 07	704	1.1+	1.1−
1997 01 15	566	0.2+	0.0	1998 04 28	809	1.8+	1.1+	1999 09 07	704	0.7+	1.4−
1997 01 15	566	0.3+	0.1+	1998 05 22	704	0.6−	0.9+	1999 09 07	704	0.5+	0.8−
1997 01 29	411	0.2−	0.3−	1998 05 22	704	1.8+	0.0	1999 09 09	704	0.1+	0.7−
1997 01 29	411	0.6−	0.2−	1998 05 22	704	0.2−	0.1−	1999 09 09	704	0.5+	0.9−
1997 01 30	411	0.5−	0.8+	1998 05 22	704	0.8−	0.4+	1999 09 09	704	0.8+	0.2−
1997 01 30	411	0.3−	0.5−	1998 05 22	704	0.1+	0.3−	1999 09 09	704	0.2+	0.3−
1997 02 04	411	1.6−	1.2+	1998 05 24	704	0.8−	1.5−	1999 09 09	704	0.5+	0.6−
1997 02 04	411	0.3−	0.2+	1998 05 24	704	0.0	0.3−	1999 09 14	704	0.2−	0.9−
1997 02 13	411	0.7−	1.1−	1998 05 24	704	0.8−	0.8−	1999 09 14	704	0.1+	0.3−
1997 02 13	411	0.1+	0.2−	1998 05 24	704	0.4−	0.5−	1999 09 14	704	0.3−	0.8−
1997 02 26	411	0.3+	1.0−	1998 05 24	704	0.4+	0.6−	1999 09 14	704	0.2−	1.1−
1997 02 27	411	0.1+	0.6−	1999 08 22	703	0.6+	1.0+	1999 09 14	704	0.1+	0.7−
1997 02 27	411	1.0−	0.5−	1999 08 22	703	0.3−	0.7+				
1997 02 27	411	0.3+	1.2−	1999 08 22	703	0.9−	1.8+				

(11647)* 1997 BN₃ = 1978 NQ₆ = 1998 KN₂₅

Discovered 1997 Jan. 31 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 31985), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		223.69848		(2000.0)		P		Q	
<i>n</i>		0.18820454	ω	44.95513		+0.00475686		−0.99947800	
<i>a</i>		3.0156619	Ω	44.80166		+0.90425560		−0.00934450	
<i>e</i>		0.0626596	<i>i</i>	2.59913		+0.42696509		+0.03092570	
<i>P</i>		5.24	<i>H</i>	13.2		<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1978 07 10	675	(6.8+	3.5+)	Y	1998 05 01	704	0.8−	0.0	1999 07 14	704	0.1−	0.4+
1978 07 11	675	(3.7−	6.7−)	Y	1998 05 01	704	0.6−	0.6−	1999 07 14	704	0.4+	1.2+
1978 07 13	675	0.3+	0.8−	Y	1998 05 01	704	0.4−	0.5+	1999 07 14	704	0.2−	0.7+
1995 11 14	691	0.7−	0.1+		1998 05 01	704	(0.4+	2.3+)	1999 07 16	704	0.1+	0.2+
1995 11 14	691	0.5−	0.5+		1998 05 22	704	0.2+	0.1+	1999 07 16	704	0.2−	0.8+
1995 11 14	691	0.2+	0.2−		1998 05 22	704	0.5+	1.7−	1999 07 16	704	0.6−	1.0+
1997 01 31	411	0.4−	0.1+		1998 05 22	704	1.5−	0.2+	1999 09 03	699	1.5−	1.1+
1997 01 31	411	1.3+	0.2−		1998 05 22	704	0.0	0.6−	1999 09 03	699	1.3+	0.2−
1997 02 01	411	0.5+	0.3+		1998 05 22	704	0.0	0.2−	1999 09 03	699	0.5+	0.4+
1997 02 01	411	0.3+	0.2−		1998 05 22	699	(2.2−	0.7+)	1999 09 07	704	1.0+	0.3−
1997 02 11	411	0.6−	0.8+		1998 05 22	699	0.1−	0.3−	1999 09 07	704	0.1−	1.1−
1997 02 11	411	0.3−	0.8+		1998 05 22	699	0.8−	0.3−	1999 09 07	704	2.1−	1.9−
1997 03 01	411	0.7+	0.6−		1998 05 24	704	0.5+	0.1+	1999 09 11	704	0.6+	0.1+
1997 03 01	411	0.3+	0.0		1998 05 24	704	0.6+	0.2−	1999 09 11	704	0.4+	0.0
1998 04 22	704	(0.5+	2.4−)		1998 05 24	704	0.6−	0.7−	1999 09 11	699	0.4+	0.3−
1998 04 22	704	1.2−	1.2+		1998 05 24	704	0.8+	0.8−	1999 09 11	704	0.2+	0.4−
1998 04 22	704	(2.9−	0.4−)		1998 05 24	704	0.4−	0.0	1999 09 11	704	0.9−	0.2−
1998 04 22	704	0.7−	0.4+		1999 07 06	428	1.0+	0.6+	1999 09 11	699	0.3−	0.3−
1998 04 28	809	1.2+	1.7+		1999 07 07	428	0.1−	0.5+	1999 09 11	699	0.3+	0.6−
1998 04 28	809	1.2+	1.2+		1999 07 07	428	0.1+	0.3+				
1998 04 28	809	0.6+	0.2+		1999 07 14	704	0.1−	1.0+				

(11648)* 1997 BT₃ = 1985 UY₆ = 1992 DZ₁₃

Discovered 1997 Jan. 31 by T. Kobayashi at Oizumi.

Id. B. G. Marsden (*MPC* 32473), S. Nakano (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	215.73123		(2000.0)	P		Q	
<i>n</i>	0.20483278	ω	15.50279	−0.58757547	−0.80757713		
<i>a</i>	2.8501633	Ω	110.50838	+0.73652014	−0.55973614		
<i>e</i>	0.0256316	<i>i</i>	3.10525	+0.33510170	−0.18578113		
<i>P</i>	4.81	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1985 10 18	095	0.8+	0.2+	1997 03 12	908	0.3+	1.0+	1999 09 09	704	0.8+	1.5+
1989 07 05	675	0.4+	0.2−	1997 03 12	908	2.0+	2.3+	1999 09 10	704	0.3−	0.3+
1989 07 05	675	0.9−	1.3−	1998 05 22	704	0.4−	1.0+	1999 09 10	704	0.4−	0.2+
1992 02 29	033	0.4−	0.1+	1998 05 22	704	0.5+	0.6+	1999 09 10	704	0.0	0.2+
1992 02 29	033	0.0	0.1+	1998 05 22	704	0.7−	0.2+	1999 09 11	164	0.9+	0.4+
1992 03 01	033	0.2−	0.3−	1998 05 22	704	0.2−	0.4−	1999 09 11	164	0.0	0.5+
1997 01 31	411	0.1−	0.4+	1998 06 26	704	1.2+	0.6−	1999 09 11	164	0.6+	1.2+
1997 01 31	411	0.2+	0.3+	1998 06 26	704	0.5−	0.5−	1999 09 13	704	0.1−	0.1+
1997 02 01	411	0.1+	0.9+	1998 06 26	704	0.1+	1.8+	1999 09 13	704	0.2+	0.2+
1997 02 01	411	0.1−	0.4+	1998 06 26	704	0.7+	0.4−	1999 09 13	704	0.6−	0.4−
1997 02 12	411	0.8−	0.1+	1999 08 12	699	0.1+	0.0	1999 09 13	704	0.3+	0.4−
1997 02 12	411	0.6−	0.1+	1999 08 12	699	1.4−	0.3+	1999 09 14	704	0.4−	0.2+
1997 02 12	411	0.5−	0.6+	1999 09 07	699	0.5−	0.9+	1999 09 14	704	0.0	0.1−
1997 02 13	411	0.7−	0.3+	1999 09 07	704	0.4−	0.2−	1999 09 14	704	0.4−	0.2+
1997 02 13	411	0.2+	0.2+	1999 09 07	699	0.4−	1.0+	1999 09 14	704	0.7−	0.2+
1997 02 16	411	0.4+	0.2+	1999 09 07	704	0.1−	0.1−	1999 09 14	704	0.3−	0.3+
1997 02 16	411	0.3+	0.5+	1999 09 07	704	0.2−	0.0	1999 09 14	704	0.1−	0.4+
1997 03 01	411	0.4+	0.4+	1999 09 07	699	0.4−	0.2+	1999 09 14	704	0.1−	0.3−
1997 03 01	411	1.0+	1.2+	1999 09 07	704	0.3−	0.4+	1999 09 14	704	0.2−	0.3+
1997 03 09	908	0.7+	0.2+	1999 09 07	704	0.2−	0.5+	1999 09 14	704	0.4−	0.5+
1997 03 09	908	0.3−	0.1−	1999 09 08	106	0.3+	1.0+	1999 09 14	704	0.4−	0.3+
1997 03 09	908	0.8+	0.5+	1999 09 08	106	0.8+	0.7+	1999 09 14	704	0.0	0.4+
1997 03 11	908	0.6+	0.3+	1999 09 08	106	0.2−	0.4+	1999 09 14	704	0.4−	0.2+
1997 03 11	908	0.3+	0.7+	1999 09 09	704	0.7−	0.5−	1999 09 14	704	0.1−	0.7+
1997 03 11	908	0.4+	0.5+	1999 09 09	704	0.2+	0.5+	1999 09 14	704	0.3−	0.3+
1997 03 12	908	0.2+	1.8+	1999 09 09	704	0.5+	0.6+	1999 09 14	704	0.1−	0.3+

(11649)* 1997 BR₆ = 1985 XP = 1988 TN₄ = 1999 QC₂

Discovered 1997 Jan. 29 by Y. Shimizu and T. Urata at the Nachi-Katsuura Observatory.

Id. T. Kagawa (*MPC* 35610), S. Nakano (*ibid.*), M. E. Sansaturio (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	306.14985		(2000.0)	P		Q	
<i>n</i>	0.27799640	ω	98.69715	+0.25732984	−0.96571750		
<i>a</i>	2.3251087	Ω	336.30560	+0.84973068	+0.24300284		
<i>e</i>	0.1477018	<i>i</i>	4.88501	+0.46015120	+0.09131990		
<i>P</i>	3.55	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1985 12 09	046	1.0−	2.0−	1997 02 13	385	0.1−	0.1+	1999 08 18	888	0.5+	0.7−
1985 12 09	046	1.3+	0.4−	1997 03 05	704	0.5+	0.1+	1999 08 18	888	0.3+	0.6+
1988 10 09	413	0.4+	0.3+	1997 03 05	704	(3.0+	0.3+)	1999 08 22	888	0.2+	0.0
1988 10 09	413	0.1+	0.4−	1997 03 06	704	0.7+	0.7−	1999 08 22	888	0.4−	0.1+
1997 01 29	905	0.0	0.3+	1997 03 06	704	0.9+	0.3+	1999 09 12	703	0.8−	0.1−
1997 01 29	905	0.2−	0.3+	1997 03 08	385	0.6−	0.2+	1999 09 12	703	0.2−	0.4+
1997 02 01	905	0.1−	0.2+	1997 03 08	385	0.4−	0.3+	1999 09 12	703	0.0	0.4+
1997 02 01	905	1.0+	0.7−	1997 03 31	385	0.5−	0.9+	1999 09 12	703	0.2−	0.5+
1997 02 03	566	0.5+	0.4+	1997 03 31	385	0.5−	0.1+	1999 09 13	106	0.1+	0.1+
1997 02 03	566	0.3+	0.2+	1997 03 31	385	0.1+	0.1+	1999 09 13	106	0.3+	0.5+
1997 02 03	566	0.9+	0.4+	1999 06 13	703	0.7−	0.3+	1999 09 13	106	0.2−	0.2+
1997 02 09	385	0.6−	0.5+	1999 06 13	703	0.3−	0.3+	1999 09 15	106	0.2+	0.1−
1997 02 09	385	0.7−	0.2+	1999 06 13	703	1.2−	0.5+	1999 09 15	106	0.2−	0.8+
1997 02 13	385	0.3−	0.0	1999 06 13	703	0.7−	0.1+	1999 09 15	106	0.3+	0.3+

(11650)* 1997 CN = 1941 SB = 1991 PD₁₈

Discovered 1997 Feb. 1 by T. Kobayashi at Oizumi.

Id. T. Kobayashi (*MPC* 31114), S. Nakano (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	17.91055		(2000.0)	P		Q	
<i>n</i>	0.25596794	ω	49.36413	+0.97185932	+0.21435028		
<i>a</i>	2.4566634	Ω	298.05119	−0.23532918	+0.86503732		
<i>e</i>	0.2572081	<i>i</i>	6.35532	−0.01047103	+0.45361260		
<i>P</i>	3.85	<i>H</i>	12.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1941 08 28	062	1.6+	0.4+	1997 02 03	411(23.7−	0.0)	1999 07 24	649	0.3+	1.3+	
1941 09 16	062	1.2−	0.8−	1997 02 11	411	0.1+	0.3+	1999 07 24	649	0.6−	1.2+
1991 08 08	675	0.2−	1.1−	1997 02 11	411	0.5−	0.1−	1999 09 02	649	1.0+	0.7−
1991 08 08	675	0.4−	1.5−	1997 02 11	411	0.8−	0.2+	1999 09 02	649	0.0	0.1+
1991 09 12	675	0.7+	0.3+	1997 02 12	411	0.1−	0.5−	1999 09 03	704	0.4−	0.0
1991 09 12	675	0.6+	0.0	1997 02 12	411	0.3−	0.1−	1999 09 03	704	0.3−	0.5−
1997 02 01	411	0.5−	0.0	1997 03 01	411	0.5+	0.9−	1999 09 03	704	0.5−	0.5−
1997 02 01	411	0.8+	0.0	1997 03 01	411	0.3−	1.6−				
1997 02 03	411(23.0−	1.6−)		1999 07 24	649	0.3+	1.2+				

(11651)* 1997 CY = 1985 SY₃ = 1988 GL₂ = 1998 KR₃₉

Discovered 1997 Feb. 1 by T. Kobayashi at Oizumi.

Id. G. V. Williams (*MPC* 31986)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	230.37577		(2000.0)	P		Q	
<i>n</i>	0.20969762	ω	283.26558	−0.28024648	−0.95992460		
<i>a</i>	2.8059098	Ω	183.01303	+0.89865533	−0.26141089		
<i>e</i>	0.0129585	<i>i</i>	2.81786	+0.33746186	−0.10104015		
<i>P</i>	4.70	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1985 09 20	095	0.5−	1.2+	1998 05 24	704	1.8+	0.8+	1999 09 07	704	0.0	0.4−
1988 04 13	054	0.3−	1.0−	1998 05 24	704	1.0−	0.1+	1999 09 07	704	0.4−	0.8−
1997 02 01	411	0.2+	0.3+	1998 05 24	704	0.4−	0.1+	1999 09 07	704	0.6−	0.3−
1997 02 01	411	0.1+	0.7−	1998 05 24	704	1.4−	0.4−	1999 09 09	704	0.4−	0.0
1997 02 03	411	1.5−	0.0	1998 05 24	704	0.1−	0.7−	1999 09 09	704	0.2−	0.4−
1997 02 03	411	0.1+	0.1−	1998 06 03	704	1.2−	0.9+	1999 09 09	704	0.7−	0.2+
1997 02 11	411	0.5+	1.1+	1998 06 03	704	0.5+	1.0−	1999 09 09	704	0.1−	0.0
1997 02 11	411	1.4+	0.6+	1998 06 03	704	0.5+	1.6+	1999 09 09	704	0.5−	0.3+
1997 03 01	411	0.4+	0.1+	1998 06 03	704	1.0+	0.4−	1999 09 14	704	0.2+	0.4+
1997 03 01	411	0.7−	1.2+	1999 08 08	699	0.2−	1.2+	1999 09 14	704	0.6+	0.2−
1998 05 22	704	0.3+	0.3+	1999 08 08	699	0.1−	0.4+	1999 09 14	704	0.6+	0.3+
1998 05 22	704	0.3−	0.3+	1999 08 08	699	1.6+	0.6+	1999 09 14	704	0.1+	0.0
1998 05 22	704	0.7+	0.7−	1999 09 07	704	0.0	0.2−	1999 09 14	704	0.7+	0.2−
1998 05 22	704	0.2−	0.2+	1999 09 07	704	0.6−	0.5−				

(11652)* 1997 CK₁₃ = 1976 MH = 1986 ES

Discovered 1997 Feb. 7 by P. Sicoli and F. Manca at Sormano.

Id. S. Nakano (*MPC* 29310)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	118.08628		(2000.0)	P		Q	
<i>n</i>	0.18005905	ω	121.17468	−0.73831263	+0.67263957		
<i>a</i>	3.1059377	Ω	101.14654	−0.63470619	−0.66809753		
<i>e</i>	0.1184928	<i>i</i>	2.89202	−0.22812828	−0.31812213		
<i>P</i>	5.47	<i>H</i>	12.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1976 06 20	095	(4.3+	5.4+)	1997 04 01	587	0.3-	0.7-	1999 09 05	699	0.5+	1.1+
1986 03 05	688	1.1+	1.6-	1997 04 01	587	0.4-	0.8-	1999 09 05	699	0.3-	0.1+
1986 03 05	688	1.7-	0.0	1997 04 02	587	0.1+	0.4-	1999 09 05	699	0.1+	1.2+
1997 02 07	587	1.7-	0.6-	1997 04 02	587	0.0	0.6-	1999 09 07	704	0.4+	0.4-
1997 02 08	587	0.5-	1.3+	1997 04 02	587	0.2-	0.7-	1999 09 07	704	0.3+	0.5-

1997 02 08	587	0.5−	0.6+	1997 04 07	587	0.0	0.5−	1999 09 07	704	0.2+	0.8−
1997 02 08	587	0.0	0.6+	1997 04 07	587	0.0	0.5−	1999 09 07	704	0.1+	0.7−
1997 02 08	587	0.1+	0.4+	1997 04 09	587	0.2+	0.3−	1999 09 07	704	0.2−	0.0
1997 02 13	587	0.3+	0.0	1997 04 12	587	0.4+	0.4−	1999 09 08	704	0.5+	0.6−
1997 02 13	587	0.0	0.4+	1997 04 12	587	0.1+	0.1−	1999 09 08	704	0.6+	0.6−
1997 02 27	587	0.1−	0.1+	1997 04 12	587	0.2−	0.3+	1999 09 08	704	0.2−	0.7−
1997 02 27	587	0.1+	0.2+	1998 05 29	704	0.7−	0.1+	1999 09 08	704	0.2+	0.9−
1997 03 01	369	0.8−	0.1+	1998 05 29	704	0.1+	0.1+	1999 09 08	704	0.2−	0.5−
1997 03 01	369	0.0	0.4+	1998 05 29	704	0.9+	0.5−	1999 09 09	704	0.7−	0.3−
1997 03 04	369	0.1−	0.1−	1998 05 29	704	0.9−	0.3+	1999 09 09	704	0.1+	0.7−
1997 03 04	369	0.2+	1.0+	1998 05 29	704	(1.7−	2.6−)	1999 09 09	704	0.2−	1.1−
1997 03 06	587	0.2+	0.4−	1998 06 24	704	0.5+	0.2−	1999 09 09	704	0.2+	1.2−
1997 03 06	587	1.4+	0.4+	1998 06 24	704	0.4+	0.5+	1999 09 14	704	0.8+	0.2−
1997 03 09	369	0.4+	0.2+	1998 06 24	704	0.2−	0.0	1999 09 14	704	0.7+	0.7−
1997 03 09	369	0.7+	0.1+	1998 06 24	704	0.1−	1.8−	1999 09 14	704	0.6+	0.2−
1997 03 09	369	0.4+	0.3+	1998 06 26	704	0.4−	0.4−	1999 09 14	704	0.3+	0.2+
1997 03 16	587	0.1−	0.4−	1998 06 26	704	0.1−	1.0+	1999 09 14	704	0.1+	0.7−
1997 03 16	587	0.1+	0.5−	1998 06 26	704	0.5+	0.9+	1999 09 14	703	0.1−	0.5+
1997 03 31	587	0.5−	0.5−	1999 08 12	699	1.3−	0.5+	1999 09 14	703	0.3−	0.5+
1997 03 31	587	0.3−	1.2−	1999 08 12	699	0.3−	0.5+	1999 09 14	703	0.4−	0.7+
1997 03 31	587	0.0	0.1−	1999 08 12	699	0.5+	0.6+	1999 09 14	703	0.1−	0.6+

(11653)* 1997 CA₂₀ = 1988 QG = 1991 CX₄

Discovered 1997 Feb. 12 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 29641)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	194.71346		(2000.0)		P		Q
<i>n</i>	0.17517439	ω	336.82012		−0.53145604		−0.84093726
<i>a</i>	3.1634112	Ω	145.04103		+0.80236763		−0.53830600
<i>e</i>	0.0547291	<i>i</i>	10.24162		+0.27158915		−0.05523742
<i>P</i>	5.63	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1988 08 16	675	(2.2+	2.7−)	1998 05 23	704	0.3+	0.5−	1998 06 26	699	0.5−	0.9+
1988 08 17	675	0.6−	1.5−	1998 05 23	704	0.6−	0.1−	1998 06 26	699	0.6+	1.5−
1991 02 09	675	0.8+	0.1+	1998 05 23	704	0.1+	1.6+	1999 07 13	704	0.2+	0.6+
1991 02 09	675	0.5+	0.8+	1998 05 23	704	1.3−	1.2−	1999 07 13	704	0.1−	0.2+
1997 02 12	411	0.2+	0.0	1998 05 25	699	0.2+	0.5−	1999 07 13	704	0.7−	0.2−
1997 02 12	411	0.0	0.4−	1998 05 25	699	0.5+	0.2−	1999 07 13	704	0.2−	0.1−
1997 02 13	411	0.5−	0.4−	1998 05 25	699	0.9+	0.5−	1999 07 13	704	0.0	0.3+
1997 02 13	411	0.8−	0.2+	1998 05 26	704	1.2+	1.2−	1999 07 16	704	0.1+	0.4−
1997 02 16	411	0.6−	0.6−	1998 05 26	704	0.7+	1.8+	1999 07 16	704	0.5+	0.5−
1997 02 16	411	0.1+	0.2+	1998 05 26	704	0.2−	0.3+	1999 07 16	704	0.2−	0.1+
1997 02 26	411	0.2+	0.4−	1998 05 26	704	1.1−	0.4+	1999 08 08	699	0.3−	0.7+
1997 02 26	411	0.1+	0.3−	1998 05 26	704	0.3+	1.8+	1999 08 08	699	0.9+	0.4+
1997 03 09	411	0.6−	0.2+	1998 06 19	704	1.1−	1.0−	1999 08 08	699	1.0+	0.8+
1997 03 09	411	0.0	0.1−	1998 06 19	704	0.7−	0.0	1999 09 07	704	0.6−	0.5−
1998 04 18	688	0.0	0.5−	1998 06 19	704	(0.1+	2.8−)	1999 09 07	704	0.3−	0.5−
1998 04 18	688	0.1−	0.2−	1998 06 19	704	1.0−	0.9+	1999 09 07	704	0.4+	0.2−
1998 04 18	688	0.1−	0.3−	1998 06 19	704	0.6+	0.1−	1999 09 07	704	0.7−	0.6−
1998 05 23	704	0.5+	0.1−	1998 06 26	699	1.6+	0.4+				

(11654)* 1997 CD₂₀ = 1979 SV₁₂ = 1998 KZ₃₇

Discovered 1997 Feb. 12 by T. Kobayashi at Oizumi.

Id. A. Gnädig (*MPC* 32474)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	321.14597		(2000.0)		P		Q
<i>n</i>	0.24681977	ω	270.16608		+0.75134950		−0.65646819
<i>a</i>	2.5169973	Ω	130.86565		+0.63530313		+0.69200341
<i>e</i>	0.1835194	<i>i</i>	5.10233		+0.17850451		+0.30030117
<i>P</i>	3.99	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1979 09 20	675	0.3−	0.9−	1998 05 22	704	(1.4−	2.5+)	1999 09 07	704	1.5−	0.4+
1979 09 21	675	0.6+	0.1−	1998 05 22	704	1.1+	0.5+	1999 09 07	704	1.0−	0.7−

1993 02 26	691	0.0	0.4+	1998 05 22	704	0.3+	1.1−	1999 09 07	704	0.9−	0.2−
1993 02 26	691	0.2+	0.1+	1998 05 24	704	0.2−	1.2+	1999 09 14	704	0.5−	0.7−
1993 02 26	691	0.3+	0.4+	1998 05 24	704	1.3−	1.1−	1999 09 14	704	0.1−	0.0
1997 02 12	411	0.3+	0.5+	1998 05 24	704	0.8+	0.8−	1999 09 14	704	0.7−	0.6−
1997 02 12	411	0.2−	0.6+	1998 05 24	704	0.3−	1.0+	1999 09 14	704	0.2−	0.9−
1997 02 13	411	0.2+	0.6+	1999 07 16	704	0.4−	0.2−	1999 09 14	704	0.1−	0.6−
1997 02 13	411	0.9−	0.3+	1999 07 16	704	0.4−	0.4+	1999 09 16	843	1.4+	0.8+
1997 02 16	411	0.3−	0.2−	1999 07 16	704	0.7−	0.8+	1999 09 16	843	1.6+	0.9+
1997 02 16	411	1.2+	1.5+	1999 07 16	704	1.7−	0.9+	1999 09 16	843	1.4+	1.0+
1997 02 26	411	0.2−	0.7+	1999 09 05	699	0.0	0.4+	1999 09 17	843	0.6+	0.8+
1997 02 26	411	0.8+	0.4+	1999 09 05	699	0.1−	0.3+	1999 09 17	843	0.1−	1.2+
1997 03 09	411(13.0−	0.6−)		1999 09 05	699	0.3+	0.4+	1999 09 17	843	0.7+	2.1+
1997 03 09	411(13.2−	2.0−)		1999 09 07	704	0.6−	0.3−				
1998 05 22	704	0.1+	1.3+	1999 09 07	704	0.2−	0.3−				

(11655)* 1997 CC₂₉ = 1992 HE₆ = 1993 OD₁₂ = 1998 KH₃₉

Discovered 1997 Feb. 7 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. G. V. Williams (*MPC* 31987)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	159.94505		(2000.0)		P		Q
<i>n</i>	0.17568849	ω	87.26677		−0.87623463		−0.48188213
<i>a</i>	3.1572370	Ω	63.92482		+0.44141994		−0.80396416
<i>e</i>	0.1018496	<i>i</i>	0.10061		+0.19329074		−0.34846986
<i>P</i>	5.61	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1992 04 25	809	(4.1−	0.7−)	1997 02 18	327	0.9+	0.4+	1998 05 30	428	0.5−	0.2−
1992 04 25	809	1.9−	0.8−	1998 05 22	704	0.7−	0.7+	1998 06 18	428	0.2+	0.8−
1992 04 25	809	(2.0−	1.5−)	1998 05 22	704	0.5−	1.3+	1998 06 18	428	0.4−	0.9−
1993 07 12	809	0.7+	0.2+	1998 05 22	704	0.1+	0.4+	1999 07 13	704	0.2−	0.1+
1993 07 12	809	0.4+	0.0	1998 05 22	704	0.6+	1.2+	1999 07 13	704	0.7−	0.0
1993 07 12	809	0.2−	0.4+	1998 05 24	704	0.8−	0.4−	1999 07 13	704	0.2−	0.5+
1993 07 19	809	0.6+	1.8−	1998 05 24	704	1.0−	0.5+	1999 07 13	704	0.1−	0.0
1993 07 19	809	0.4+	1.3−	1998 05 24	704	0.3−	1.4−	1999 07 13	704	1.0−	0.0
1993 07 19	809	0.5+	0.7−	1998 05 24	704	0.4+	0.9−	1999 08 08	691	0.1−	0.6+
1997 02 07	327	0.1+	0.4+	1998 05 24	704	0.7−	0.4−	1999 08 08	691	0.1−	0.3+
1997 02 07	327	0.5+	0.0	1998 05 27	428	1.4+	1.0+	1999 08 08	699	0.4−	0.6+
1997 02 07	327	0.9−	0.1+	1998 05 27	428	1.2+	0.9+	1999 08 08	691	0.2−	0.2+
1997 02 14	327	0.6−	0.5+	1998 05 28	428	1.7+	1.0+	1999 08 08	699	0.8−	0.7+
1997 02 14	327	0.1+	0.2+	1998 05 29	428	0.0	0.3+	1999 08 08	699	0.8+	0.1+
1997 02 14	327	0.9+	0.5+	1998 05 29	428	0.2+	0.2−	1999 09 07	704	0.1+	0.5+
1997 02 18	327	0.7+	0.1+	1998 05 29	428	0.3+	0.1−	1999 09 07	704	0.4+	1.0+
1997 02 18	327	0.0	0.1+	1998 05 30	428	0.2−	0.1−	1999 09 07	704	0.9−	0.1+

(11656)* 1997 EL₆ = 1998 KM₃₂

Discovered 1997 Mar. 6 at Kletř.

Id. G. V. Williams (*MPC* 31988)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	281.92412		(2000.0)		P		Q
<i>n</i>	0.17069888	ω	26.70866		+0.79835717		−0.60205376
<i>a</i>	3.2184661	Ω	10.33657		+0.53925301		+0.70550622
<i>e</i>	0.0612438	<i>i</i>	4.00563		+0.26801496		+0.37388800
<i>P</i>	5.77	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1994 11 09	691	0.2−	0.7+	1997 04 02	046	0.5+	0.1+	1999 07 16	704	0.1+	0.1+
1994 11 09	691	0.5−	0.8+	1997 04 02	046	0.6+	0.0	1999 08 03	046	0.1−	0.7−
1994 11 09	691	0.0	0.1−	1997 04 02	046	0.6+	0.2−	1999 08 03	046	0.0	0.9−
1997 03 06	046	0.4−	0.1+	1998 05 22	704	0.6−	0.5+	1998 08 03	046	0.3−	0.6−
1997 03 06	046	0.5−	0.0	1998 05 22	704	0.4−	0.6+	1999 08 05	046	0.5+	0.3−
1997 03 06	046	0.5−	0.3+	1998 05 22	704	0.3−	1.5−	1999 08 05	046	0.7−	0.2−
1997 03 06	046	0.5−	0.0	1998 05 22	704	0.5−	0.8+	1999 08 05	046	0.7−	0.1−
1997 03 07	046	0.5−	0.1−	1998 05 24	704	1.6+	0.6−	1999 08 12	699	0.5+	0.3+
1997 03 07	046	0.4−	0.2−	1998 05 24	704	0.4+	0.8−	1999 08 12	699	0.1−	0.6−

1997 03 07	046	0.0	0.0	1998 05 24	704	1.1+	1.4+	1999 08 12	699	0.1-	0.0
1997 03 08	046	0.7-	0.2+	1998 05 24	704	1.5-	0.1-	1999 09 03	699	0.4-	1.0-
1997 03 08	046	0.8-	0.2+	1998 05 24	704	1.0+	1.1+	1999 09 03	699	1.0+	0.3-
1997 03 08	046	1.0-	0.3+	1998 06 02	046	0.0	0.0	1999 09 03	699	1.0-	1.4+
1997 03 10	046	0.2-	0.2-	1998 06 02	046	0.4-	0.2-	1999 09 09	046	0.1-	1.0+
1997 03 10	046	0.4-	0.3-	1998 06 02	046	0.0	0.1-	1999 09 09	046	0.4+	0.4-
1997 03 10	046	0.3-	0.1-	1999 07 14	704	0.5+	0.1+	1999 09 10	046	0.1-	0.1-
1997 03 12	046	0.4+	0.3-	1999 07 14	704	0.3+	0.5+	1999 09 10	046	0.6-	0.2-
1997 03 12	046	0.0	0.0	1999 07 14	704	0.1-	0.3+	1999 09 10	046	0.6-	0.8-
1997 03 12	046	0.5+	0.0	1999 07 14	704	0.4+	0.0	1999 09 11	704	0.2-	0.4+
1997 04 01	046	1.3+	0.4+	1999 07 14	704	0.3+	0.4+	1999 09 11	704	0.7-	0.2+
1997 04 01	046	1.0+	0.2+	1999 07 16	704	1.5+	0.4+	1999 09 11	704	0.3-	0.6+
1997 04 01	046	1.4+	0.1+	1999 07 16	704	1.5+	0.1+	1999 09 11	704	0.9-	0.2+

(11657)* 1997 EN₇ = 1985 RU₄ = 1998 HO₄₄

Discovered 1997 Mar. 5 by A. Galád and A. Pravda at the Astronomical and Geophysical Observatory, Modra.

Id. A. Doppler (*MPC* 32956)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	16.24176		(2000.0)		P		Q	
n	0.28454531	ω	159.55625		+0.95203200		+0.30599172	
a	2.2892950	Ω	182.62846		-0.28655428		+0.88918351	
e	0.1920968	i	2.54387		-0.10733928		+0.34017899	
P	3.46	H	14.6		G	0.15	U	2

Residuals in seconds of arc

1985 09 15	809	1.4+	0.1-	1997 03 07	118	0.7-	0.0	1998 04 21	704	0.3+	0.0
1985 09 15	809	1.5+	0.2-	1997 03 07	118	0.8-	0.2+	1998 04 21	704	0.0	0.5+
1985 09 15	809	1.8+	0.3-	1997 03 09	118	0.4+	0.4-	1998 04 21	704	0.6+	0.4-
1985 09 16	809	0.1-	0.4-	1997 03 09	118	0.1+	0.5-	1998 04 21	704	0.9-	0.5-
1985 09 16	809	0.3+	0.3-	1997 03 10	118	0.2-	0.6+	1998 04 21	704	0.8+	0.7-
1985 09 16	809	0.5+	0.3-	1997 03 10	118	0.3-	0.7+	1998 04 22	704	1.0+	0.8+
1985 09 18	809	0.9-	0.3-	1997 03 10	118	0.0	0.6+	1998 04 22	704	1.1+	1.1-
1985 09 18	809	0.6-	0.3-	1998 03 25	704	0.4-	2.0+	1998 04 22	704	0.6+	0.5+
1985 09 18	809	0.1-	0.1-	1998 03 25	704	0.4-	0.4+	1998 04 22	704	0.9-	1.5-
1985 09 20	809	1.6-	0.1-	1998 03 25	704	0.8-	0.4-	1998 04 22	704	0.7+	0.5-
1985 09 20	809	1.2-	0.2-	1998 03 25	704	0.1+	1.8+	1999 06 13	703	0.0	1.0+
1985 09 20	809	0.9-	0.1-	1998 03 25	704	0.4-	0.8-	1999 06 13	703	0.3+	0.7+
1985 09 21	809	0.0	0.7+	1998 03 29	704	0.1-	1.6+	1999 06 13	703	0.0	1.2-
1985 09 21	809	0.1+	0.7+	1998 03 29	704	0.1-	0.1-	1999 06 13	703	1.1-	0.6+
1985 09 21	809	0.3+	0.8+	1998 03 29	704	(0.3+	2.2+)	1999 08 25	118	0.2-	0.2+
1985 09 22	809	0.3-	0.1+	1998 03 29	704	0.5-	0.1+	1999 08 25	118	0.1+	0.1+
1985 09 22	809	0.1+	0.2-	1998 04 20	704	0.0	0.6+	1999 08 25	118	0.2+	0.2+
1997 03 05	118	0.2+	0.4-	1998 04 20	704	(0.9-	2.8-)	1999 09 05	118	0.3-	0.1+
1997 03 05	118	0.1+	0.2-	1998 04 20	704	1.1-	1.4-	1999 09 05	118	0.2+	0.4+
1997 03 05	118	1.1+	0.4-	1998 04 20	704	1.1+	0.1-	1999 09 05	118	0.0	0.0
1997 03 07	118	0.3-	0.3-	1998 04 20	704	0.5-	0.1+				

(11658)* 1997 EQ₁₇ = 1980 FP₉ = 1992 LB

Discovered 1997 Mar. 1 by S. Ueda and H. Kaneda at Kushiro.

Id. G. V. Williams (*MPC* 29644)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	138.88595		(2000.0)		P		Q
n	0.17488037	ω	23.47418		-0.97935272		+0.17319742
a	3.1669558	Ω	165.30545		-0.17392392		-0.98475674
e	0.1409867	i	24.26939		+0.10304719		-0.01602557
P	5.64	H	12.7	G	0.15	U	1

Residuals in seconds of arc

1980 03 16	095	(4.7-	2.8-)	1998 06 23	704	0.4-	0.1+	1999 08 22	699	0.3+	1.4+
1992 06 01	675	0.9-	0.9-	1998 06 23	704	1.0-	0.6+	1999 09 07	704	0.1-	0.3-
1992 06 01	675	0.4-	1.8-	1998 06 23	704	0.6-	1.3+	1999 09 07	704	0.2-	0.3-
1992 06 02	675	1.0+	0.9-	1998 06 23	704	0.2+	0.0	1999 09 07	704	0.0	0.7-
1997 03 01	399	0.6+	1.1+	1998 06 23	704	(4.3-	4.0+)	1999 09 07	704	0.1-	0.2-
1997 03 01	399	0.5-	0.1+	1998 06 27	704	1.1+	0.1+	1999 09 07	704	0.6-	0.5-

1997 03 03	399	(0.5+	2.3+)	1998 06 27	704	0.5+	1.5+	1999 09 09	704	0.0	0.2+
1997 03 03	399	1.1-	0.4+	1998 06 27	704	0.4+	0.3-	1999 09 09	704	0.4+	0.1-
1997 03 08	399	0.2-	1.2-	1998 06 27	704	0.3+	0.7-	1999 09 09	704	0.1+	0.7-
1997 03 08	399	0.4-	0.1-	1998 06 27	704	0.0	0.7-	1999 09 09	704	0.6-	0.6-
1997 04 02	552	0.7+	0.7-	1998 07 04	560	0.5-	0.3+	1999 09 09	704	0.4-	0.7-
1997 04 02	552	0.5+	0.8-	1998 07 04	560	0.6-	0.1-	1999 09 14	704	0.4+	0.4-
1997 04 03	552	0.2+	0.1-	1998 07 04	560	0.5+	0.6+	1999 09 14	704	0.9-	0.5+
1997 04 03	552	0.3+	0.1-	1998 08 18	682	0.1+	0.6-	1999 09 14	704	0.1-	0.5-
1998 06 04	704	(2.1-	2.3+)	1998 08 18	682	0.2+	0.5-	1999 09 14	704	0.2+	0.1+
1998 06 04	704	0.0	0.5+	1998 08 18	682	0.5+	0.9-	1999 09 14	704	0.2-	0.0
1998 06 04	704	0.6+	0.9+	1998 08 22	699	0.1+	0.6+				
1998 06 04	704	0.4+	0.0	1998 08 22	699	0.6+	0.5+				

(11659)* 1997 EX₄₁ = 1995 WQ₃₀ = 1998 MD₂₀

Discovered 1997 Mar. 10 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPC* 32957)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	100.20439		(2000.0)		P		Q
n	0.21363952	ω	12.15979		-0.41148587		+0.91045358
a	2.7712879	Ω	233.55645		-0.84050915		-0.39684020
e	0.0159552	i	2.98399		-0.35245389		-0.11658533
P	4.61	H	13.4	G	0.15	U	1

Residuals in seconds of arc

1993 04 26	691	0.3+	0.2-	1996 01 24	691	0.7-	0.2+	1999 08 12	699	0.3+	0.2+
1993 04 26	691	0.5+	0.3-	1997 03 10	704	0.3+	0.3-	1999 08 12	699	(2.5+	0.2-)
1993 04 26	691	0.7+	0.4-	1997 03 10	704	0.1-	0.6-	1999 09 07	704	0.1+	0.4-
1994 06 09	691	0.4+	0.5+	1997 03 11	704	0.1+	0.3-	1999 09 07	704	0.9+	0.2-
1994 06 09	691	0.4+	0.5+	1997 03 11	704	1.4+	1.0-	1999 09 07	704	0.8+	0.4-
1994 06 09	691	0.6+	0.6+	1997 03 12	704	0.0	0.2-	1999 09 07	704	0.4+	0.1+
1995 11 19	691	0.6-	0.1+	1997 03 12	704	0.4+	0.7-	1999 09 07	704	0.7+	0.4+
1995 11 19	691	0.6-	0.2+	1998 06 24	704	0.9-	0.3+	1999 09 09	704	0.8+	0.2-
1995 11 19	691	0.6-	0.1+	1998 06 24	704	0.4+	0.9+	1999 09 09	704	0.1+	0.3-
1995 11 27	691	0.4-	0.6+	1998 06 24	704	1.0-	0.5+	1999 09 09	704	0.1+	0.4-
1995 11 27	691	0.3-	0.2+	1998 06 24	704	(2.9-	0.8+)	1999 09 09	704	0.6+	0.6-
1995 11 27	691	0.3-	0.1+	1998 06 24	704	0.5-	1.3+	1999 09 09	704	1.0+	0.4-
1995 12 18	691	0.6-	0.6+	1998 06 26	704	1.9-	0.1+	1999 09 16	704	(2.9+	0.6+)
1995 12 18	691	0.6-	0.1+	1998 06 26	704	0.9-	0.3+	1999 09 16	704	0.0	0.1-
1995 12 18	691	0.6-	0.1+	1998 06 26	704	0.0	0.4+	1999 09 16	704	0.1+	0.1-
1996 01 24	691	0.4-	0.3+	1998 06 26	704	0.5-	1.5-	1999 09 16	704	0.2+	0.2-
1996 01 24	691	0.7-	0.0	1999 08 12	699	0.4-	0.8+				

(11660)* 1997 FL₂ = 1988 XP₅

Discovered 1997 Mar. 31 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 34872), A. Gnädig (*ibid.*), M. E. Sansaturio (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	292.77036		(2000.0)		P		Q
n	0.25657935	ω	282.23910		+0.53604608		-0.84330900
a	2.4527592	Ω	135.27598		+0.79425523		+0.48834933
e	0.1775063	i	3.13872		+0.28603012		+0.22437660
P	3.84	H	14.4	G	0.15	U	1

Residuals in seconds of arc

1951 02 04	675	1.3-	1.0-	1997 03 13	688	0.3-	0.3-	1999 09 07	704	0.1-	0.2-
1951 02 04	675	1.3+	0.4+	1997 03 13	688	0.2+	0.2-	1999 09 07	704	0.5-	0.5-
1979 06 24	413	0.4-	0.9-	1997 03 13	688	0.2+	0.6-	1999 09 08	106	0.3+	0.2+
1988 12 10	888	(1.4+	5.9+)	1997 03 13	688	0.2-	0.3-	1999 09 08	106	0.0	0.2-
1988 12 10	888	(0.8+	5.5+)	1997 03 31	704	1.0+	0.6-	1999 09 08	106	0.0	0.6+
1991 08 02	413	0.5-	0.7-	1997 03 31	704	0.9+	0.0	1999 09 09	704	0.0	0.3-
1991 08 02	413	0.1-	0.3-	1997 04 01	704	(0.9-	3.0+)	1999 09 09	704	0.1-	0.5-
1996 11 12	691	1.1-	0.4+	1997 04 01	704	0.2-	1.2-	1999 09 09	704	0.0	0.5-
1996 11 12	691	1.1-	0.4+	1997 04 01	704	(0.6+	2.1-)	1999 09 09	704	0.3+	0.4-
1996 11 12	691	1.1-	0.4+	1997 04 01	704	0.5+	0.3+	1999 09 09	704	0.1+	0.8-

1997 01 02	691	0.2−	0.3−	1999 08 08	699	0.7+	1.9+	1999 09 13	704	0.6+	0.5−
1997 01 02	691	0.2−	0.4−	1999 08 08	699	0.5+	0.9+	1999 09 13	704	0.6+	0.8−
1997 01 02	691	0.1+	0.1−	1999 08 08	699	0.5−	0.5+	1999 09 13	704	0.4−	1.2+
1997 02 06	910	0.1+	0.0	1999 09 07	704	0.5+	0.1+	1999 09 13	704	0.4−	0.6−
1997 02 06	910	0.1+	0.1−	1999 09 07	704	0.1−	0.2−	1999 09 13	704	0.0	1.6−
1997 02 07	910	0.0	0.3−	1999 09 07	704	0.0	0.2−				

(11661)* 1997 FK₄ = 1997 GW₂₀ = 1985 SN₄ = 1992 DT

Discovered 1997 Mar. 31 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (d, *MPC* 30432), B. G. Marsden (*MPC* 30766)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21183031	ω	61.21420	+0.42011415	−0.90740966		
<i>a</i>	2.7870450	Ω	3.98873	+0.77057083	+0.35055742		
<i>e</i>	0.1435629	<i>i</i>	8.74373	+0.47929604	+0.23176972		
<i>P</i>	4.65	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1985 09 20	095	0.4+	0.3−	1997 04 06	704	0.5−	0.3−	1999 09 07	704	0.6+	0.3−
1992 02 25	399	0.7−	0.2+	1997 04 06	704	0.8+	0.3−	1999 09 07	704	0.0	0.3−
1992 02 25	399	0.1−	1.2−	1997 04 07	704	0.8−	0.0	1999 09 07	704	0.2+	0.6−
1992 02 26	399	1.6−	1.6−	1997 04 07	704	0.4−	0.6−	1999 09 07	704	0.1+	1.1−
1992 02 26	399	0.8−	1.5−	1999 07 16	704	0.7−	1.0−	1999 09 07	704	0.1−	0.9−
1997 03 11	809	0.3+	1.1+	1999 07 16	704	0.4+	0.9−	1999 09 09	365	0.1+	0.0
1997 03 11	809	0.5+	0.6+	1999 07 16	704	0.6+	0.9−	1999 09 09	365	0.8+	0.2+
1997 03 11	809	0.5+	0.2+	1999 07 16	704	0.2+	0.5−	1999 09 12	365	0.2−	0.2−
1997 03 13	809	(2.5−	0.8−)	1999 07 16	704	1.0−	0.1−	1999 09 12	365	0.2−	0.2−
1997 03 13	809	1.9−	0.5−	1999 08 12	699	1.4+	0.3+	1999 09 14	704	0.2+	0.1−
1997 03 13	809	(2.1−	0.4−)	1999 08 12	699	0.3−	0.5+	1999 09 14	704	0.2+	0.3−
1997 03 31	704	0.2−	0.8−	1999 08 12	699	1.0+	0.6+	1999 09 14	704	0.1+	0.8−
1997 03 31	704	1.7−	1.2+	1999 08 22	703	0.3+	0.5+	1999 09 14	704	0.0	0.7−
1997 04 03	704	0.9+	0.4−	1999 08 22	703	0.2+	0.2+	1999 09 14	704	0.0	0.4−
1997 04 03	704	0.7+	1.2−	1999 08 22	703	0.6+	0.0	1999 09 14	703	0.1+	0.3+
1997 04 03	704	0.1−	1.3−	1999 08 22	703	0.0	0.8−	1999 09 14	703	0.0	0.4+
1997 04 03	704	0.2+	0.0	1999 08 22	699	0.0	0.1+	1999 09 14	703	0.2+	0.5+
1997 04 05	704	0.9+	0.1+	1999 08 22	699	0.3−	0.1−	1999 09 14	703	0.6−	0.3+
1997 04 05	704	0.2+	0.4+	1999 08 22	699	0.5−	0.4+				

(11662)* 1997 GL₂₃ = 1978 WG₁₅

Discovered 1997 Apr. 6 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 29934)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18087986	ω	39.94508	−0.05245337	−0.99610247		
<i>a</i>	3.0965344	Ω	53.17759	+0.89210771	−0.07865111		
<i>e</i>	0.1466903	<i>i</i>	5.08221	+0.44876773	+0.03992338		
<i>P</i>	5.45	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1978 11 30	675	0.5−	0.8+	1997 04 08	704	0.2−	0.2−	1997 05 05	704	0.8+	0.4−
1978 12 01	675	0.1−	1.2+	1997 04 08	704	0.7−	0.4+	1999 08 12	699	0.2+	0.3−
1994 10 09	691	0.9−	1.3+	1997 04 30	704	0.1−	0.2+	1999 08 12	699	0.1−	0.5−
1994 10 09	691	0.1+	0.2+	1997 04 30	704	0.2+	0.3+	1999 08 12	699	0.1+	0.4−
1994 10 09	691	0.1+	0.2+	1997 04 30	704	0.7−	0.0	1999 09 07	699	0.6+	0.1−
1997 04 06	704	0.4+	0.2+	1997 04 30	704	0.1+	0.2+	1999 09 07	699	0.6+	0.4−
1997 04 06	704	0.8−	1.0+	1997 04 30	704	0.1−	0.5+	1999 09 07	699	0.3−	1.2−
1997 04 07	809	0.5+	0.3+	1997 05 01	704	0.4+	1.0+	1999 09 09	704	0.3−	1.0+
1997 04 07	809	0.3+	0.8−	1997 05 01	704	0.0	0.5+	1999 09 09	704	0.5+	0.3+
1997 04 07	704	0.5−	1.2+	1997 05 01	704	0.8+	0.0	1999 09 09	704	0.0	0.7+
1997 04 07	809	0.0	0.3−	1997 05 01	704	0.1+	0.2−	1999 09 09	704	1.4+	1.0+
1997 04 07	704	0.1−	1.4+	1997 05 05	704	0.5+	0.6−	1999 09 13	704	1.1−	0.3+
1997 04 08	809	0.6−	0.4+	1997 05 05	704	0.0	0.2−	1999 09 13	704	0.5−	0.4−

1997 04 08	809	0.5+	0.1+	1997 05 05	704	0.7+	0.0	1999 09 13	704	0.5−	0.4+
1997 04 08	809	0.4+	0.5−	1997 05 05	704	0.2−	0.3−	1999 09 13	704	1.0−	0.0

(11663)* 1997 GO₂₄ = 1989 SP₇ = 1990 XZ₁

Discovered 1997 Apr. 7 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Gnädig (*MPC* 31114)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.08387129	ω	88.05052	+0.67372093	+0.71675657		
<i>a</i>	5.1688490	Ω	226.09832	−0.73744086	+0.63635597		
<i>e</i>	0.1269793	<i>i</i>	14.45752	−0.04776069	+0.28515101		
<i>P</i>	11.75	<i>H</i>	11.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1984 03 06	413	0.1−	1.1−	1997 05 01	704	0.0	0.1+	1998 06 19	704	0.8+	1.0+
1984 03 06	413	0.4−	0.7−	1997 05 01	704	0.0	0.1−	1998 06 19	704	0.1+	0.9+
1984 04 05	413	0.3−	0.1+	1997 05 01	704	0.3−	0.1+	1998 06 19	704	0.7+	0.5+
1984 04 05	413	0.1−	0.1−	1997 05 01	704	0.2−	0.2−	1998 06 19	704	1.1+	0.1−
1989 09 28	675	0.8+	2.4−	1997 05 07	704	0.2+	0.2−	1999 07 13	704	0.1+	0.6−
1989 09 28	675	0.7+	1.4−	1997 05 07	704	0.2+	0.5−	1999 07 13	704	0.1+	0.4−
1990 12 10	372	0.7−	0.2+	1997 05 07	704	0.5+	0.5−	1999 07 13	704	0.1−	0.4−
1990 12 10	372	(3.3−	0.9+)	1997 05 07	704	0.3+	1.2−	1999 07 13	704	0.1−	0.7−
1997 04 06	704	0.6+	0.6−	1998 05 22	704	0.1−	0.2+	1999 07 13	704	0.1−	0.1−
1997 04 06	704	0.5+	0.1+	1998 05 22	704	1.2−	0.7+	1999 07 16	118	0.1−	0.3−
1997 04 06	704	0.5+	1.7−	1998 05 22	704	0.4−	0.1−	1999 07 16	118	0.2−	0.3−
1997 04 06	704	0.3+	1.0+	1998 05 22	704	0.4+	0.3−	1999 07 22	704	0.7+	0.3−
1997 04 07	704	0.7+	0.4−	1998 05 22	704	(5.6−	1.9−)	1999 07 22	704	0.5+	0.3−
1997 04 07	704	0.2+	0.9−	1998 05 24	704	0.1−	0.9−	1999 07 22	704	0.3+	0.4−
1997 04 08	704	0.3−	0.1+	1998 05 24	704	0.6−	0.4+	1999 07 22	704	0.6+	0.4−
1997 04 08	704	0.5−	0.2−	1998 05 24	704	0.3−	0.8+	1999 07 22	704	0.2+	0.4−
1997 04 30	704	0.3−	0.4−	1998 05 24	704	0.2+	0.6+	1999 09 08	704	0.4−	1.1+
1997 04 30	704	0.0	0.0	1998 05 24	704	1.9−	0.2−	1999 09 08	704	0.3+	0.6+
1997 04 30	704	0.1−	0.3−	1998 05 26	704	0.2+	1.9+	1999 09 08	704	0.7−	0.8+
1997 04 30	704	0.6−	0.9+	1998 05 26	704	0.9−	0.9−	1999 09 08	704	0.3+	0.1−
1997 04 30	704	0.1−	0.3−	1998 05 26	704	1.1−	0.2−	1999 09 08	704	0.3−	0.7−
1997 05 01	704	0.1+	0.5−	1998 06 19	704	0.6+	0.9+				

(11664)* 1997 GX₂₄ = 1991 FT₃

Discovered 1997 Apr. 4 by K. Endate and K. Watanabe at Kitami.

Id. S. Nakano (*MPC* 30085)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17457251	ω	67.22610	−0.99441474	+0.09685526		
<i>a</i>	3.1706780	Ω	118.30975	−0.10552181	−0.92034575		
<i>e</i>	0.0915200	<i>i</i>	2.73003	+0.00211719	−0.37892315		
<i>P</i>	5.65	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1991 03 22	809	0.5−	0.0	1998 06 26	809	1.3+	1.0−	1999 09 07	704	0.5−	0.2+
1991 03 22	809	0.2−	0.5−	1998 06 26	809	0.9+	1.0−	1999 09 07	704	0.3+	0.2+
1991 03 22	809	0.2+	0.7−	1998 06 26	704	0.2−	0.2+	1999 09 08	704	0.1−	0.3+
1991 03 23	809	0.2+	1.1+	1998 06 26	704	1.7−	1.0+	1999 09 08	704	0.1+	0.3−
1991 03 23	809	0.3+	1.2+	1998 06 26	704	(1.0−	3.1+)	1999 09 08	704	0.3−	0.5−
1991 03 23	809	0.9+	1.3+	1998 06 26	704	0.3+	1.8+	1999 09 08	704	0.2−	0.2+
1997 04 04	400	0.5+	0.0	1998 06 27	809	0.6−	1.2−	1999 09 09	704	0.1+	0.0
1997 04 04	400	0.9+	0.8+	1998 06 27	809	0.2−	0.9−	1999 09 09	704	0.1+	0.2+
1997 04 09	400	0.0	0.8−	1998 06 27	809	0.7−	0.7−	1999 09 09	704	0.1−	0.1−
1997 04 09	400	0.5−	0.7−	1998 07 26	704	1.0+	0.8+	1999 09 09	704	0.2−	0.0
1997 04 10	400	0.6−	0.6+	1998 07 26	704	(2.6+	0.8−)	1999 09 09	704	0.3+	0.3−
1997 04 10	400	0.4−	0.2−	1998 07 26	704	0.2−	0.2+	1999 09 14	704	1.5+	0.8−
1997 04 15	400	0.2−	0.7+	1998 07 26	704	0.3+	0.5−	1999 09 14	704	0.7+	1.1−
1997 04 15	400	0.3−	0.3−	1999 08 22	703	0.6−	0.4+	1999 09 14	704	0.7+	0.5−
1997 05 03	400	0.3+	0.7−	1999 08 22	703	0.7−	0.4+	1999 09 14	704	0.6+	0.4−
1997 05 03	400	0.1−	0.5−	1999 08 22	703	1.0−	0.6+	1999 09 14	704	1.0+	1.1−

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1998 06 24	704	0.6−	0.5+	1999 08 22	703	0.0	1.0+	1999 09 14	703	0.2−	0.7−
1998 06 24	704	0.4−	0.5+	1999 09 05	699	0.9−	1.4+	1999 09 14	703	0.3−	0.1+
1998 06 24	704	1.7+	0.3+	1999 09 05	699	1.1−	1.6+	1999 09 14	703	0.2−	0.2−
1998 06 24	704	1.7−	1.5+	1999 09 07	704	0.1−	0.1+	1999 09 14	703	0.5+	0.3+
1998 06 24	704	0.6−	0.3−	1999 09 07	704	0.1+	0.3+				
1998 06 26	809	1.2+	0.7−	1999 09 07	704	0.2−	0.2+				

(11665)* 1997 GL₂₈

Discovered 1997 Apr. 14 by P. G. Comba at Prescott.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	178.12505		(2000.0)	P	Q
<i>n</i>	0.16768622	ω	310.07136	−0.95206874	−0.26100464
<i>a</i>	3.2569004	Ω	215.64750	+0.28785024	−0.94088599
<i>e</i>	0.1625857	<i>i</i>	15.88385	−0.10347635	−0.21589377
<i>P</i>	5.88	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1994 10 26	691	0.8+	0.7+	1997 05 28	684	0.2−	0.4+	1998 06 21	684	0.1+	0.6+
1994 10 26	691	0.5−	0.1−	1997 05 28	684	0.4−	0.3−	1998 06 21	684	0.3−	0.4−
1994 10 26	691	0.3−	0.6−	1997 06 09	684	0.7+	0.4+	1999 08 09	684	0.5−	0.5−
1997 04 14	684	0.4−	0.3+	1997 06 09	684	0.7+	0.2+	1999 08 09	684	0.5+	0.6+
1997 04 14	684	0.4−	0.0	1997 06 09	684	0.5+	0.2+	1999 08 11	684	0.9+	0.4−
1997 04 15	684	0.1−	0.1−	1997 07 01	684	0.1−	0.2+	1999 08 11	684	0.0	0.0
1997 04 15	684	0.0	0.2−	1997 07 01	684	0.1+	0.2+	1999 09 03	684	0.0	0.3−
1997 04 27	684	0.0	0.2−	1997 07 01	684	0.3+	0.4+	1999 09 04	684	0.1−	0.5+
1997 04 27	684	0.7+	0.1+	1998 05 29	684	1.1+	0.8−	1999 09 04	684	0.4−	0.6−
1997 05 03	684	0.3−	0.6−	1998 05 29	684	0.8+	0.2+	1999 09 04	684	0.1−	0.4+
1997 05 03	684	0.2−	0.3−	1998 06 20	684	1.7−	0.2+				
1997 05 03	684	0.5−	0.6−	1998 06 20	684	0.2−	0.1+				

(11666)* 1997 MD₈ = 1990 SO₁₃

Discovered 1997 June 29 by Spacewatch at Kitt Peak.

Id. S. Nakano (*MPC* 32254)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	333.29679		(2000.0)	P	Q
<i>n</i>	0.26420917	ω	336.22015	−0.96528987	−0.26115655
<i>a</i>	2.4053085	Ω	188.64346	+0.24327580	−0.89405997
<i>e</i>	0.1600320	<i>i</i>	1.36043	+0.09503874	−0.36394233
<i>P</i>	3.73	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1951 02 04	675	0.3+	0.3−	1996 03 20	691	0.5−	1.2+	1998 11 10	704	1.2−	0.7−
1951 02 04	675	0.1−	0.1+	1997 06 29	691	0.4+	0.1+	1998 11 11	704	0.2−	0.1−
1990 09 23	809	0.4+	0.9−	1997 06 29	691	0.3+	0.5+	1998 11 11	704	1.2−	0.4−
1990 09 23	809	0.6+	0.8−	1997 06 29	691	0.4+	0.8+	1998 11 11	704	0.4+	0.2−
1990 09 23	809	1.0+	0.8−	1997 07 06	691	0.0	0.5+	1998 11 18	704	0.3+	0.1+
1990 09 24	809	1.3−	0.6−	1997 07 06	691	0.2+	0.2+	1998 11 18	704	0.5+	0.4−
1990 09 24	809	1.1−	0.7−	1997 07 06	691	0.2+	0.2+	1998 11 18	704	0.8+	0.1−
1990 09 24	809	0.7−	0.6−	1997 07 10	691	0.2−	0.4+	1998 11 18	704	1.4+	0.1−
1990 09 24	809	0.4−	0.4−	1997 07 10	691	0.2−	0.3+	1998 11 18	704	0.3−	0.4−
1990 09 24	809	0.0	0.5−	1997 07 10	691	0.2+	0.3+	1998 12 08	704	0.7+	0.8+
1990 09 24	809	0.5+	0.4−	1998 10 29	704	0.1−	0.1−	1998 12 08	704	0.6+	0.7−
1994 10 15	381	0.1−	0.1+	1998 10 29	704	0.6−	0.4+	1998 12 08	704	1.4−	0.6+
1994 10 15	381	0.0	0.1+	1998 10 29	704	0.5+	0.6−	1998 12 08	704	0.1−	1.2+
1996 03 19	566	0.2+	0.9−	1998 10 29	704	0.4+	0.2+	1998 12 08	704	0.5−	0.5+
1996 03 19	566	0.0	0.8−	1998 10 29	704	(3.1−	1.6+)	1998 12 15	120	1.4+	0.4+
1996 03 19	566	0.1+	0.8−	1998 11 10	704	0.1+	0.1+	1998 12 15	120	0.0	1.1+
1996 03 20	691	0.5−	0.1+	1998 11 10	704	1.1+	0.4+	1998 12 22	120	0.5−	0.3+
1996 03 20	691	0.3−	0.2+	1998 11 10	704	1.6−	1.1+	1998 12 22	120	0.5+	0.6−

(11667)* 1997 UB₁

Discovered 1997 Oct. 19 by L. Tesi and A. Boattini at San Marcello Pistoiese.

M.P.C. 35875

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	265.05828		(2000.0)	P	Q
<i>n</i>	0.27898663	ω	260.94856	+0.39379000	+0.91812512
<i>a</i>	2.3196037	Ω	32.35584	−0.80735991	+0.36858933
<i>e</i>	0.1550708	<i>i</i>	4.76418	−0.43943078	+0.14556159
<i>P</i>	3.53	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1982 07 09	413	0.0	0.1+	1997 10 26	104	0.6−	0.5−	1997 12 05	104	0.0	0.3+
1982 07 09	413	0.8+	0.3+	1997 10 26	104	0.9−	0.5−	1997 12 05	104	0.1−	0.2+
1990 11 10	675	0.1+	0.3−	1997 10 28	691	0.3−	0.2−	1997 12 14	104	0.2+	0.2+
1990 11 10	675	1.2+	0.1+	1997 10 28	691	0.1−	0.4−	1997 12 14	104	0.6+	0.3+
1992 02 23	691	1.1−	0.9−	1997 10 28	691	0.3−	0.4−	1997 12 14	104	0.6+	0.3+
1992 02 23	691	1.2−	0.2−	1997 11 01	691	0.8−	0.6−	1997 12 14	104	0.7+	0.2+
1992 02 23	691	1.0−	0.3+	1997 11 01	691	0.1−	0.1+	1997 12 27	104	0.9−	0.8+
1996 04 21	566	0.0	0.3+	1997 11 01	691	0.7−	0.1−	1997 12 27	104	0.4+	0.5+
1996 04 21	566	0.3+	0.2+	1997 11 02	104	0.4−	0.9+	1997 12 27	104	0.9+	0.6+
1996 04 21	566	0.2+	0.5+	1997 11 02	104	0.4−	0.1+	1999 01 19	104	0.5−	1.0−
1997 10 19	104	0.4−	0.5+	1997 11 02	104	0.4−	0.2+	1999 01 19	104	0.0	0.9−
1997 10 19	104	0.2−	0.1+	1997 11 02	104	0.1−	0.3+	1999 01 20	104	0.6+	0.4+
1997 10 19	104	0.3−	0.4−	1997 11 03	704	1.1+	0.2−	1999 01 20	104	0.3+	0.6−
1997 10 22	104	0.3−	0.5−	1997 11 03	704	1.3−	0.5+	1999 02 12	699	0.3+	1.2+
1997 10 22	104	1.5+	0.7−	1997 11 03	704	0.3+	0.1+	1999 02 12	699	0.5+	0.4+
1997 10 22	104	1.0+	0.5−	1997 11 03	704	1.8+	0.9+	1999 02 12	699	0.1−	0.4−
1997 10 25	104	0.7+	0.8+	1997 11 16	104	0.3−	0.1−	1999 02 13	704	(0.6−	2.5−)
1997 10 25	104	0.6+	0.4+	1997 11 16	104	0.3−	0.1−	1999 02 13	704	1.1−	1.4−
1997 10 25	104	0.7+	0.2+	1997 11 16	104	0.2−	0.0	1999 02 13	704	0.0	0.1−
1997 10 25	104	0.6+	0.2+	1997 11 19	557	0.7−	0.3−	1999 02 13	704	1.5+	1.1+
1997 10 26	104	0.9−	0.5−	1997 11 20	557	0.3−	0.1+	1999 02 13	704	0.9+	1.7+
1997 10 26	104	0.7−	0.6−	1997 12 05	104	1.2−	0.0				

(11668)* 1997 VV₁

Discovered 1997 Nov. 3 by P. Pravec at Ondřejov.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	38.51041		(2000.0)	P	Q
<i>n</i>	0.08256892	ω	12.75771	+0.83834994	−0.54439874
<i>a</i>	5.2230595	Ω	20.30277	+0.49271906	+0.73453404
<i>e</i>	0.1419582	<i>i</i>	4.67389	+0.23323232	+0.40507993
<i>P</i>	11.94	<i>H</i>	11.6	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1989 12 08	675	0.2+	1.1+	1997 12 30	557	0.4+	0.0	1998 11 10	704	(0.9+	2.5-)
1989 12 08	675	0.4+	0.6+	1997 12 30	557	0.1+	0.0	1998 11 10	699	1.5+	0.2-
1992 04 24	691	0.3-	1.1-	1997 12 30	557	0.2+	0.5-	1998 11 11	704	0.7+	0.3-
1992 04 24	691	0.1-	0.4-	1998 01 10	557	0.2+	1.0-	1998 11 11	704	0.5+	0.3+
1992 04 24	691	(0.6-	2.2-)	1998 01 10	557	0.0	0.5-	1998 11 11	704	0.4-	0.0
1993 05 23	413	(7.8+	3.2-)	1998 01 31	557	1.0-	0.0	1998 11 11	704	0.5-	0.3-
1993 05 23	413	(10.1+	2.8-)	1998 01 31	557	0.0	0.1+	1998 11 18	704	0.4+	0.1+
1997 10 29	595	0.1-	1.0+	1998 08 17	557	0.6-	0.7-	1998 11 18	704	1.2+	0.8-
1997 10 29	595	(2.1-	0.8+)	1998 08 17	557	0.3-	0.3-	1998 11 18	704	0.5-	1.1+
1997 10 30	704	0.9+	1.3+	1998 08 17	557	0.4+	0.3-	1998 11 18	704	(0.9-	3.4+)
1997 10 30	704	0.3+	0.7+	1998 08 18	557	0.1-	0.4-	1998 11 18	704	0.6+	1.8+
1997 10 30	704	0.7-	0.5-	1998 08 18	557	0.2+	0.1-	1998 12 14	704	0.3-	1.7-
1997 10 30	704	0.7-	0.1-	1998 09 30	557	0.2-	0.1+	1998 12 14	704	(2.7-	0.3+)
1997 11 01	595	0.2-	0.3+	1998 09 30	557	0.2-	0.3+	1998 12 14	704	(1.0+	2.1-)
1997 11 01	595	0.3-	0.1+	1998 10 20	557	0.3-	0.2+	1998 12 14	704	0.0	0.0
1997 11 03	557	0.3+	0.1+	1998 10 20	557	0.7-	0.5+	1998 12 14	704	1.2-	0.8+
1997 11 03	557	0.0	0.1+	1998 10 29	704	0.1-	0.9-	1999 09 12	557	0.3-	0.1+
1997 11 04	557	0.0	0.3+	1998 10 29	704	0.5-	0.4+	1999 09 12	557	0.7+	0.2-
1997 11 04	557	0.2-	0.0	1998 10 29	704	0.3-	0.2+	1999 09 13	557	0.0	0.5+
1997 11 04	557	0.5+	0.1+	1998 10 29	704	0.6+	1.7-	1999 09 13	557	0.1-	0.4+
1997 11 05	557	0.5-	0.2-	1998 10 29	704	0.5+	0.4-	1999 09 13	557	0.1-	0.1+
1997 11 05	557	0.1+	0.2-	1998 11 10	699	1.0+	0.4+	1999 09 13	557	0.3-	0.5+
1997 11 05	557	0.4-	0.5-	1998 11 10	704	0.4-	0.3+	1999 09 18	703	0.9-	0.6-
1997 11 19	557	0.2-	0.4+	1998 11 10	704	0.4-	1.0-	1999 09 18	703	0.1-	0.3-

1997 11 19 557 0.1- 0.3- 1998 11 10 704 0.3+ 0.2+ 1999 09 18 703 0.1+ 0.8-
 1997 11 19 557 0.0 0.2- 1998 11 10 699 0.9+ 0.4+ 1999 09 18 703 0.2+ 0.5+

(11669)* 1997 XY₈

Discovered 1997 Dec. 7 by the OCA-DLR Asteroid Survey at Caussols.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	212.31350		(2000.0)	P	Q
<i>n</i>	0.25838997	ω	19.88631	-0.04692265	-0.99866840
<i>a</i>	2.4412876	Ω	72.80784	+0.91340801	-0.05158510
<i>e</i>	0.0918269	<i>i</i>	1.28601	+0.40433164	+0.00063827
<i>P</i>	3.81	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1992 10 02	691	0.0	0.2+	1998 03 20	704	1.4+	0.3-	1998 04 19	704	0.5-	0.5-
1992 10 02	691	0.1+	0.0	1998 03 20	704	0.0	1.0-	1998 04 19	704	0.6-	0.8-
1992 10 02	691	0.0	0.0	1998 03 20	704	0.4-	0.4-	1998 04 20	704	(2.7-	0.2+)
1994 03 05	691	0.0	0.5+	1998 03 22	704	0.6+	0.3+	1998 04 20	704	0.1-	1.0+
1994 03 05	691	0.1+	0.5+	1998 03 22	704	0.6+	0.1+	1998 04 20	704	1.2-	0.1+
1994 03 05	691	0.2+	0.5+	1998 03 22	704	0.1+	0.7-	1998 04 20	704	0.9+	0.6+
1997 12 07	910	(2.5-	0.1+)	1998 03 22	704	0.3+	0.3-	1999 06 08	691	0.5+	0.2+
1997 12 07	910	(2.8-	0.5+)	1998 03 22	704	0.3-	1.4-	1999 06 08	691	0.3+	0.0
1997 12 07	910	(3.0-	0.8+)	1998 03 25	566	0.4+	0.3-	1999 06 08	691	0.3+	0.4+
1997 12 08	910	(2.5-	0.5+)	1998 03 25	566	0.1-	0.1-	1999 06 14	691	(2.3+	1.6+)
1997 12 08	910	(2.5-	0.6+)	1998 03 25	566	0.0	0.5-	1999 06 14	691	0.2+	0.8-
1997 12 08	910	(3.0-	0.8+)	1998 03 28	704	0.0	1.1-	1999 06 14	691	0.1+	0.3-
1998 01 30	910	0.8-	0.9+	1998 03 28	704	0.8-	0.3+	1999 07 16	704	0.4-	0.9+
1998 01 30	910	0.6-	0.7+	1998 03 28	704	0.4+	1.6-	1999 07 16	704	0.0	0.4+
1998 01 30	910	0.0	0.9+	1998 03 28	704	0.8-	0.4-	1999 07 16	704	0.3-	0.2-
1998 02 27	910	0.5+	0.5+	1998 03 28	704	0.6-	1.5+	1999 07 16	704	0.2+	0.0
1998 02 27	910	0.5+	0.5+	1998 03 29	704	0.2-	1.0+	1999 07 16	704	0.5-	0.9+
1998 02 27	910	0.5+	0.5+	1998 03 29	704	(3.5+	0.9-)	1999 08 14	426	0.0	0.3+
1998 02 27	910	0.0	0.3+	1998 03 29	704	0.9-	0.3+	1999 08 14	426	0.1-	0.5-
1998 02 27	910	0.2+	0.3+	1998 03 29	704	0.2+	0.1-	1999 08 14	426	0.5-	0.1-
1998 02 28	910	0.4+	0.4+	1998 03 29	704	0.2+	0.6+	1999 08 15	426	0.6-	0.3+
1998 03 20	704	0.4+	0.0	1998 04 19	704	0.2-	0.1+	1999 08 15	426	0.4+	0.2+
1998 03 20	704	0.6+	0.8-	1998 04 19	704	0.7-	0.6-				

(11670)* 1998 AU₉ = 1981 EQ₁ = 1992 EA₁₇

Discovered 1998 Jan. 6 by M. W. Buie at the Anderson Mesa Station of the

Lowell Observatory.

Id. G. V. Williams (*MPC* 31989)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	47.32716		(2000.0)	P	Q
<i>n</i>	0.18079246	ω	239.39994	-0.11973076	+0.99278620
<i>a</i>	3.0975323	Ω	23.72597	-0.90540851	-0.10657161
<i>e</i>	0.1177864	<i>i</i>	0.90181	-0.40730820	-0.05493680
<i>P</i>	5.45	<i>H</i>	12.9	<i>G</i> 0.15	<i>U</i> 0

Residuals in seconds of arc

1981 03 08	809	0.1+	0.5+	1998 04 30	699	0.0	0.2-	1999 07 16	704	0.5-	0.4-
1981 03 08	809	0.3+	0.2+	1998 04 30	699	0.6+	0.4+	1999 07 16	704	0.8-	0.7-
1981 03 08	809	0.7+	0.4-	1998 04 30	699	0.5+	0.2+	1999 07 16	704	0.1-	0.1-
1992 03 01	809	1.1-	1.2+	1998 05 01	704	0.0	0.1-	1999 07 20	699	0.1-	0.7+
1992 03 03	809	1.1-	0.3-	1998 05 01	704	0.4+	0.2+	1999 07 20	699	0.1+	0.1-
1992 03 06	809	0.1-	0.7+	1998 05 01	699	0.5+	0.1+	1999 07 20	699	0.5-	0.2+
1997 03 13	688	0.1+	0.2-	1998 05 01	704	0.6-	0.1+	1999 09 07	704	0.4-	0.1-
1997 03 13	688	0.4+	0.2-	1998 05 01	699	0.6+	0.1-	1999 09 07	704	0.4-	0.3+
1997 03 13	688	0.1+	0.1+	1998 05 01	699	0.3+	0.1-	1999 09 07	704	0.1-	0.1-
1997 03 13	688	0.1+	0.2+	1998 05 01	704	0.3+	0.0	1999 09 07	704	0.2-	0.1-
1998 01 06	688	0.7+	0.3+	1998 05 01	704	0.7+	0.2-	1999 09 07	704	0.1-	0.3-
1998 01 06	688	0.8+	0.1+	1998 05 18	699	0.1+	0.4-	1999 09 13	699	0.0	0.1-
1998 01 06	688	1.0+	0.7+	1998 05 18	699	0.0	0.6-	1999 09 13	704	0.2+	0.3-
1998 01 06	688	0.8+	0.3+	1998 05 18	699	0.7+	0.7-	1999 09 13	704	0.3+	0.2+
1998 01 08	688	0.3+	0.4+	1998 05 22	704	0.5+	0.5-	1999 09 13	699	0.9+	0.6+
1998 01 08	688	1.0+	0.4+	1998 05 22	704	0.8+	0.7-	1999 09 13	704	0.2+	0.3+

1998 01 08	688	0.9+	0.3-	1998 05 22	704	0.4-	0.6+	1999 09 13	704	0.5+	0.6-
1998 04 21	704	1.5-	0.4-	1998 05 22	704	0.5+	1.0+	1999 09 13	704	0.3+	0.2-
1998 04 21	704	1.2-	0.0	1998 05 22	704	0.7+	1.0+	1999 09 13	699	0.0	0.7+
1998 04 21	704	1.2-	0.3-	1999 07 13	106	0.1+	0.0	1999 09 13	106	0.2-	0.8+
1998 04 21	704	1.9-	0.3-	1999 07 13	106	0.1+	0.1-	1999 09 13	106	0.4+	0.3-
1998 04 21	704	(2.1-	0.4-)	1999 07 13	106	0.5-	0.4+	1999 09 13	106	0.2+	0.4+
1998 04 22	704	0.7-	0.2-	1999 07 13	704	0.0	0.0	1999 09 19	691	0.5+	0.7+
1998 04 22	704	0.8-	0.3-	1999 07 13	704	0.2-	0.6+	1999 09 19	691	0.5+	0.7+
1998 04 22	704	0.6-	0.0	1999 07 13	704	0.2-	0.7-	1999 09 19	691	0.6+	0.6+
1998 04 22	704	0.6-	0.0	1999 07 13	704	0.4-	0.3-				
1998 04 22	704	0.2+	0.0	1999 07 13	704	0.8-	1.0-				

(11671)* 1998 BG₄ = 1976 GZ

Discovered 1998 Jan. 21 by Y. Shimizu and T. Urata at the Nachi-Katsuura

Observatory.

Id. S. Nakano (*MPC* 35616)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	89.23401		(2000.0)	P	Q
<i>n</i>	0.26649056	ω	184.54265	-0.85861554	+0.51254538
<i>a</i>	2.3915612	Ω	26.29662	-0.46969519	-0.77976479
<i>e</i>	0.1479034	<i>i</i>	1.13193	-0.20534310	-0.35953318
<i>P</i>	3.70	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1976 04 01	095	0.2+	0.2-	1998 01 26	886	0.3+	0.6+	1998 03 15	385	0.2+	0.4+
1992 09 30	691	0.9-	0.4-	1998 01 28	566	0.8+	0.3-	1998 03 15	385	1.8-	1.5+
1992 09 30	691	0.7-	0.3-	1998 01 28	566	0.9+	0.2-	1999 07 13	704	1.8-	1.6-
1992 09 30	691	0.8-	0.2-	1998 01 28	566	1.2+	0.3-	1999 07 13	704	0.2-	0.4-
1996 10 08	566	0.6+	0.2+	1998 01 30	385	0.7+	1.0-	1999 07 13	704	0.6-	0.2+
1996 10 08	566	1.0+	0.7+	1998 01 30	385	0.1-	0.2-	1999 07 13	704	0.6-	0.6+
1996 10 08	566	0.4+	0.2+	1998 02 02	886	1.2-	0.6+	1999 08 02	888	0.1+	0.6+
1996 11 06	691	0.2+	0.2-	1998 02 02	886	0.2+	0.4+	1999 08 02	888	0.3+	0.2-
1996 11 06	691	0.5+	0.3-	1998 02 05	886	0.4-	0.4+	1999 08 02	888	0.4-	0.1-
1996 11 06	691	0.3+	0.3-	1998 02 05	886	0.9-	0.3-	1999 08 03	888	0.6+	0.6+
1997 11 08	910	1.8-	0.5+	1998 02 06	886	1.0+	0.0	1999 08 03	888	0.0	0.4-
1997 11 08	910	2.0-	1.1+	1998 02 06	886	1.5-	0.5-	1999 08 07	699	0.7+	0.3+
1997 11 08	910	1.7-	0.5+	1998 03 01	699	0.1-	0.8-	1999 08 07	699	0.4-	0.3-
1998 01 21	905	0.3+	2.0+	1998 03 01	699	1.0+	0.5-	1999 08 07	699	0.7+	0.3-
1998 01 21	905	0.4+	0.0	1998 03 01	699	0.2-	0.6-	1999 09 07	691	0.7+	0.0
1998 01 24	385	0.7+	0.0	1998 03 03	699	0.1-	1.0-	1999 09 07	691	0.7+	0.1+
1998 01 24	385	0.7+	0.1-	1998 03 03	699	0.5+	0.5-	1999 09 07	691	0.6+	0.4+
1998 01 26	886	0.5-	0.0	1998 03 03	699	0.0	0.8-				

(11672)* 1998 BC₁₅ = 1953 QV = 1996 VP₁₁

Discovered 1998 Jan. 24 at Haleakala by the JPL Near-Earth Asteroid

Tracking program.

Id. G. V. Williams (*MPC* 31400)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	60.70607		(2000.0)	P	Q
<i>n</i>	0.27712037	ω	316.63186	-0.52265558	+0.84629428
<i>a</i>	2.3300063	Ω	281.60645	-0.75064879	-0.51411295
<i>e</i>	0.1897342	<i>i</i>	6.03814	-0.40417513	-0.13954881
<i>P</i>	3.56	<i>H</i>	14.7	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1953 08 16	675	0.1-	0.3-	1998 02 24	566	0.3-	0.2+	1999 09 07	704	0.5+	0.8-
1953 08 16	675	0.5+	0.5-	1998 02 24	566	0.4-	0.3+	1999 09 07	704	0.5+	0.1+
1996 11 04	691	0.2-	0.3-	1998 04 14	704	1.5-	0.2-	1999 09 07	704	0.0	1.0-
1996 11 04	691	0.0	0.1-	1998 04 14	704	0.4-	0.5+	1999 09 08	704	0.4+	0.0
1996 11 04	691	0.4-	0.1+	1998 04 14	704						

1997 10 03	691	0.6+	0.1+	1999 07 13	704	0.0	0.1+	1999 09 08	703	0.4+	0.7−
1998 01 18	910	1.3+	0.4+	1999 07 23	704	0.3−	0.3−	1999 09 08	703	0.7+	1.3−
1998 01 18	910	1.4+	0.3+	1999 07 23	704	0.1−	0.6−	1999 09 09	704	0.6+	0.3+
1998 01 18	910	0.5+	0.2+	1999 07 23	704	0.4−	0.2+	1999 09 09	704	0.3+	0.2−
1998 01 24	566	0.3−	0.1+	1999 09 04	703	0.1+	0.0	1999 09 09	704	0.4−	0.3−
1998 01 24	566	0.5−	0.0	1999 09 04	703	0.5+	0.4+	1999 09 09	704	0.1+	0.4−
1998 01 24	566	0.7−	0.2+	1999 09 04	703	0.3−	0.7+	1999 09 09	704	1.0−	0.1+
1998 01 28	566	0.5+	0.0	1999 09 04	703	0.7−	1.2+	1999 09 13	704	0.3+	0.5+
1998 01 28	566	0.3+	0.4−	1999 09 05	703	0.1−	0.5−	1999 09 13	704	0.3+	0.1−
1998 01 28	566	0.6+	0.5−	1999 09 05	703	0.2−	1.7+	1999 09 13	704	0.1−	0.6+
1998 02 23	566	0.6−	1.1−	1999 09 05	703	0.3−	0.1+	1999 09 13	704	0.6+	0.0
1998 02 23	566	0.6−	0.4−	1999 09 05	703	0.3−	0.2+	1999 09 13	704	0.4−	0.7−
1998 02 23	566	0.6−	0.4−	1999 09 07	704	0.3+	0.2+				
1998 02 24	566	0.3−	0.2+	1999 09 07	704	0.0	0.1−				

(11673)* 1998 BJ₁₉

Discovered 1998 Jan. 26 at Farra d'Isonzo.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29713435	<i>ω</i>	63.82331	−0.74923128	+0.66212790		
<i>a</i>	2.2241674	<i>Ω</i>	157.62846	−0.62123829	−0.69448537		
<i>e</i>	0.0875259	<i>i</i>	2.32850	−0.22959850	−0.28156121		
<i>P</i>	3.32	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1995 04 22	033	0.0	0.0	1998 04 21	595	0.2+	0.8−	1999 09 06	699	0.1−	0.2+
1995 04 22	033	0.0	0.0	1998 04 23	595	0.5+	0.3−	1999 09 06	699	0.3−	0.8+
1996 09 13	566	0.1−	0.8−	1998 04 23	595	0.3−	0.5+	1999 09 07	704	0.6+	0.3+
1996 09 13	566	0.5+	0.1−	1999 07 16	704	0.1−	0.6+	1999 09 07	704	0.6+	0.5−
1996 09 13	566	0.1+	0.5−	1999 07 16	704	0.3−	0.2−	1999 09 07	704	0.9+	0.2+
1998 01 26	595	0.5+	0.4+	1999 07 16	704	1.6−	0.2+	1999 09 07	704	0.7+	0.6+
1998 01 26	595	0.1+	0.4+	1999 07 24	595	0.8−	0.2−	1999 09 07	704	0.7+	1.3+
1998 01 27	595	0.4+	0.4+	1999 07 24	595	0.3−	0.2−	1999 09 09	704	0.2+	0.1−
1998 01 27	595	0.3+	0.2+	1999 07 25	595	0.6−	0.5+	1999 09 09	704	0.1+	0.3−
1998 01 27	595	0.2+	0.3+	1999 07 25	595	0.2−	0.1+	1999 09 09	704	0.1+	0.3−
1998 01 31	595	0.8−	0.4+	1999 08 06	595	0.4+	0.7−	1999 09 09	704	0.6+	0.0
1998 01 31	595	0.6−	0.2+	1999 08 06	595	0.1+	0.8−	1999 09 09	704	0.1+	0.1+
1998 02 14	595	0.7−	0.6+	1999 08 06	595	0.5−	0.9−	1999 09 13	704	0.7+	0.7+
1998 02 14	595	0.0	0.3+	1999 08 07	595	0.2−	0.2−	1999 09 13	704	0.5+	0.2−
1998 02 15	595	0.0	0.6+	1999 08 07	106	0.1+	0.3−	1999 09 13	704	0.0	0.8−
1998 02 15	595	0.1−	0.2+	1999 08 07	595	0.2−	0.5−	1999 09 13	704	1.2+	0.5−
1998 02 15	595	0.1−	0.1+	1999 08 08	106	0.1+	0.6−	1999 09 13	691	0.1−	0.5+
1998 03 06	595	0.6+	0.2−	1999 08 08	106	0.7−	0.5+	1999 09 13	704	0.9−	1.1−
1998 03 06	595	0.2−	0.3−	1999 09 04	703	0.5+	2.0+	1999 09 13	691	0.2+	0.3+
1998 03 25	595	0.5+	0.0	1999 09 04	703	0.8−	0.5+	1999 09 13	691	0.0	0.2+
1998 03 25	595	0.0	0.3−	1999 09 04	703	0.9−	0.8+	1999 09 19	691	0.1+	0.5+
1998 03 26	595	0.2+	0.2+	1999 09 04	703	1.2−	0.5+	1999 09 19	691	0.8+	0.0
1998 04 21	595	0.6+	0.1−	1999 09 06	699	0.0	0.5+	1999 09 19	691	0.0	0.7+

(11674)* 1998 BN₂₅ = 1992 GG₁

Discovered 1998 Jan. 28 by T. Kobayashi at Oizumi.

Id. G. V. Williams (*MPC* 31266)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.31199068	<i>ω</i>	348.20771	+0.64261262	+0.76611452		
<i>a</i>	2.1529881	<i>Ω</i>	321.77775	−0.70153447	+0.58263574		
<i>e</i>	0.0371460	<i>i</i>	1.00412	−0.30805586	+0.27130081		
<i>P</i>	3.16	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1992 04 03	303	1.4−	0.1−	1998 02 02	411	0.3−	0.0	1999 06 13	703	0.1+	0.1−
1992 04 03	303	0.2+	0.7−	1998 02 04	611	0.0	0.6−	1999 06 13	703	0.1+	0.9+
1992 04 03	303	(4.2+	0.9−)	1998 02 04	611	0.5+	0.2−	1999 06 13	703	0.2−	1.1+
1992 04 04	303	0.5+	0.7−	1998 02 04	611	1.2−	0.8+	1999 07 13	704	0.1+	0.3−
1992 04 04	303	0.6+	0.5−	1998 02 05	611	0.4−	2.0−	1999 07 13	704	0.4−	0.1−

1992 04 04	303	0.1−	0.3−	1998 02 05	611	1.2−	1.0−	1999 07 13	704	0.5−	0.3−
1992 04 07	691	0.5−	0.4−	1998 02 05	611	0.3+	0.5−	1999 07 13	704	0.5−	0.3−
1992 04 07	691	0.4−	0.3−	1998 02 05	611	1.2+	1.2+	1999 07 13	704	0.4−	0.5−
1992 04 07	691	0.3−	0.2+	1998 02 18	411	0.3+	0.5+	1999 07 15	367	0.0	0.2−
1995 03 27	691	0.1+	0.3−	1998 02 18	411	0.2+	0.7+	1999 07 15	367	0.1+	0.3−
1995 03 27	691	0.2−	0.1−	1998 02 26	566	0.8+	0.9+	1999 07 15	367	0.3+	0.4−
1995 03 27	691	0.2+	0.2−	1998 02 26	566	0.5+	0.9+	1999 07 16	704	0.1+	0.2+
1996 09 16	566	0.4−	0.2−	1998 02 26	566	0.7+	0.6+	1999 07 16	704	0.0	0.5+
1996 09 16	566	0.3+	0.3+	1998 03 03	704	0.3+	0.5+	1999 07 16	704	0.0	0.3+
1996 09 16	566	0.5−	0.2−	1998 03 03	704	0.4+	0.6+	1999 07 20	699	0.6−	1.4+
1996 09 16	566	0.4+	0.1+	1998 03 03	704	0.3+	0.3+	1999 07 20	699	0.0	1.5+
1996 09 16	566	0.2−	0.0	1998 03 03	704	0.5+	0.1+	1999 07 20	699	0.3+	1.4+
1996 09 16	566	0.3+	0.3+	1998 03 03	704	0.1−	0.3+	1999 08 07	699	0.1+	0.7+
1998 01 26	566	0.1−	0.4+	1998 03 04	704	0.9+	0.9+	1999 08 07	699	0.2−	0.5+
1998 01 26	566	0.1+	0.2+	1998 03 04	704	0.2+	1.4+	1999 08 07	699	0.5−	0.7+
1998 01 26	566	0.0	0.0	1998 03 04	704	0.2+	0.6+	1999 09 03	699	0.4−	0.6−
1998 01 28	411	0.1−	0.5−	1998 03 04	704	0.2−	0.0	1999 09 03	699	0.1+	0.1−
1998 01 28	411	0.0	0.4−	1998 03 04	704	0.0	0.4+	1999 09 03	699	0.1−	0.3+
1998 01 29	411	0.8−	0.2+	1998 03 04	411	1.2−	1.0+	1999 09 13	106	0.1+	0.1+
1998 01 29	411	0.7+	0.0	1998 03 04	411	0.0	0.5+	1999 09 13	106	0.0	1.0−
1998 02 02	411	0.0	0.1+	1999 06 13	703	0.3+	0.1−	1999 09 13	106	0.4+	0.4−

(11675)* 1998 CP₂ = 1981 LG = 1991 CU₄ = 1996 TM₈

Discovered 1998 Feb. 15 by P. Antonini at Bedoin.

Id. G. V. Williams (*MPC* 31557)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28181451	<i>ω</i>	28.69136	−0.86375654	+0.50390841		
<i>a</i>	2.3040602	<i>Ω</i>	181.56856	−0.46886138	−0.80438767		
<i>e</i>	0.1619032	<i>i</i>	2.04052	−0.18464462	−0.31470112		
<i>P</i>	3.50	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1981 06 04	688	0.3−	0.0	1998 02 25	132	0.3−	0.1−	1999 08 07	699	0.5−	0.2+
1981 06 04	688	0.2+	0.7−	1998 02 25	132	0.2−	0.3+	1999 08 08	699	0.8−	0.6+
1981 06 09	688	0.6−	1.9−	1998 03 13	958	1.5+	0.5+	1999 08 08	699	0.3+	1.3+
1981 06 09	688	0.6−	1.2−	1998 03 13	958	(5.0+	2.2+)	1999 08 08	699	0.2+	0.6+
1991 02 09	675	1.2+	0.9−	1998 03 14	958	(3.6+	0.6+)	1999 09 06	699	0.5−	0.9+
1991 02 09	675	0.2+	0.5−	1998 03 26	958	0.5+	0.7+	1999 09 06	699	0.8−	0.9+
1996 10 09	566	0.2−	0.6−	1998 03 26	958	0.8+	0.7+	1999 09 06	699	1.8−	0.6+
1996 10 09	566	0.2−	0.5−	1998 03 27	958	1.2+	0.0	1999 09 07	704	1.4−	0.9+
1996 10 09	566	0.0	0.6−	1998 03 27	958	0.7+	0.7−	1999 09 07	704	0.6−	1.0−
1996 10 13	566	(1.0+	2.5−)	1998 04 21	627	0.1+	0.8+	1999 09 07	704	0.4+	0.0
1996 10 13	566	0.7+	0.8−	1998 04 21	627	0.1−	0.8+	1999 09 07	704	0.2−	0.5−
1996 10 13	566	0.1+	1.0−	1998 04 21	627	0.2−	0.8+	1999 09 07	704	0.6+	0.6−
1998 02 15	132	0.1−	0.2−	1999 07 13	704	0.9+	0.5+	1999 09 09	704	0.7−	0.2+
1998 02 16	132	0.1+	0.1−	1999 07 13	704	0.8+	0.0	1999 09 09	704	0.6+	1.4−
1998 02 17	132	0.9−	0.3−	1999 07 13	704	1.4+	0.1−	1999 09 09	704	0.3−	0.8−
1998 02 17	132	0.0	0.3−	1999 07 13	704	0.6+	0.3+	1999 09 09	704	0.6+	0.4−
1998 02 17	132	0.2−	0.4+	1999 07 16	704	0.9+	0.5+	1999 09 09	704	0.4−	1.3−
1998 02 18	132	0.1−	0.5−	1999 07 16	704	1.6+	0.4+	1999 09 13	704	0.1−	0.4−
1998 02 18	132	(2.1+	1.9−)	1999 07 16	704	0.5+	0.6+	1999 09 13	704	0.0	0.1−
1998 02 18	132	0.4−	0.2−	1999 07 16	704	0.6+	0.4+	1999 09 13	704	0.7+	1.4−
1998 02 23	958	(4.0−	0.3−)	1999 07 21	699	0.3−	1.5+	1999 09 13	704	0.3+	0.1−
1998 02 23	958	(1.6−	6.8−)	1999 07 21	699	0.6−	1.5+	1999 09 13	704	0.1+	0.4−
1998 02 25	132	1.2−	0.9+	1999 08 07	699	1.1−	0.5+				
1998 02 25	132	0.9−	0.6+	1999 08 07	699	1.2−	1.0+				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Nakano						
<i>M</i>	102.19489		(2000.0)		P		Q				
<i>n</i>	0.26543810	ω	256.99450		-0.88017453		+0.47399261				
<i>a</i>	2.3978787	Ω	311.29320		-0.42158425		-0.80486450				
<i>e</i>	0.1151642	<i>i</i>	1.90497		-0.21808146		-0.35710522				
<i>P</i>	3.71	<i>H</i>	14.9		<i>G</i>	0.15	<i>U</i>	1			
Residuals in seconds of arc											
1976 05 02	095	0.4+	1.1+	1998 03 03	704	1.1-	0.0	1998 03 22	704	0.4+	0.5-
1992 10 03	691	0.1-	0.1+	1998 03 04	704	(3.6-	0.9+)	1998 04 03	888	0.9-	1.3-
1992 10 03	691	0.1+	0.1-	1998 03 04	704	(2.5-	0.5-)	1998 04 03	888	0.1-	0.4-
1992 10 03	691	0.2+	0.1+	1998 03 04	704	(2.4-	0.4-)	1999 07 21	699	(2.9+	0.2+)
1994 01 07	691	0.3-	0.1-	1998 03 04	704	2.0-	0.0	1999 07 21	699	0.3-	2.1+
1994 01 07	691	0.5+	0.1-	1998 03 06	886	0.0	0.8+	1999 07 21	699	0.4+	1.2-
1994 01 07	691	0.6-	0.3-	1998 03 06	886	0.6-	0.1-	1999 08 02	888	0.6-	0.2+
1998 02 06	888	0.0	0.3-	1998 03 17	888	0.0	0.3-	1999 08 08	888	0.1+	0.1-
1998 02 06	888	0.1+	0.3-	1998 03 17	888	0.2-	0.6-	1999 08 08	888	0.4-	0.0
1998 02 06	888	0.1-	0.2+	1998 03 17	888	0.4-	0.4-	1999 09 07	704	0.6+	0.9-
1998 02 10	888	1.0+	0.1-	1998 03 20	704	0.5-	0.2-	1999 09 07	704	0.4+	1.0-
1998 02 10	888	0.3+	0.6-	1998 03 20	704	0.7-	0.4-	1999 09 07	704	0.5+	0.2-
1998 03 02	888	0.3+	0.1+	1998 03 20	704	0.7+	0.1-	1999 09 07	704	0.6+	0.2-
1998 03 02	888	0.1-	0.2-	1998 03 20	704	(2.7-	0.3-)	1999 09 07	704	1.0+	1.1-
1998 03 02	888	0.3+	0.0	1998 03 20	704	1.1-	0.3+	1999 09 09	704	0.2+	0.4-
1998 03 03	704	0.4+	0.1-	1998 03 22	704	0.5+	0.1+	1999 09 09	704	0.6+	0.9-
1998 03 03	704	0.1+	0.1+	1998 03 22	704	0.8+	0.1-	1999 09 09	704	0.2-	0.7-
1998 03 03	704	0.3+	0.4-	1998 03 22	704	0.3+	0.3-	1999 09 09	704	0.5-	0.8-
1998 03 03	704	0.3+	0.0	1998 03 22	704	0.2-	0.2-	1999 09 09	704	0.7-	0.5-

(11677)* 1998 DY₄ = 1979 OZ = 1982 JY₃ = 1992 MQ

Discovered 1998 Feb. 22 at Haleakala by the JPL Near-Earth Asteroid Tracking program.

Id. G. V. Williams (*MPC* 31740)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5							Williams				
<i>M</i>	40.80061	(2000.0)			P		Q				
<i>n</i>	0.29849673	ω	136.85899		+0.14834752		+0.98582931				
<i>a</i>	2.2173946	Ω	141.47639		-0.93809631		+0.16534414				
<i>e</i>	0.1296355	<i>i</i>	7.22365		-0.31299892		-0.02831764				
<i>P</i>	3.30	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	1				
Residuals in seconds of arc											
1979 07 24	675	1.0-	0.1-	1998 02 27	566	1.4+	0.0	1999 08 08	699	0.5+	0.9+
1979 07 24	413	1.1+	1.0-	1998 02 27	098	1.5-	0.1-	1999 08 08	682	0.1-	0.2-
1979 07 25	675	0.3+	0.2+	1998 02 28	098	0.8+	0.3+	1999 09 07	704	0.1-	0.2+
1979 07 26	675	0.6+	0.0	1998 03 03	704	0.8+	0.3+	1999 09 07	704	0.0	0.3+
1982 05 15	095	1.2-	0.5-	1998 03 03	704	0.1+	0.0	1999 09 07	704	0.0	0.4+
1992 06 23	413	1.4-	0.7-	1998 03 03	704	(0.4+	2.9+)	1999 09 07	704	0.3+	0.2+
1992 06 23	413	0.8+	0.6+	1998 03 03	704	0.8+	0.5+	1999 09 07	704	0.0	0.2-
1993 12 10	691	0.2-	0.2-	1998 03 03	704	0.1+	0.2+	1999 09 08	106	0.1+	0.5+
1993 12 10	691	0.4-	0.3-	1998 03 04	704	0.3+	0.2-	1999 09 08	106	0.2+	0.3+
1993 12 10	691	0.1-	0.2-	1998 03 04	704	0.7+	0.4-	1999 09 08	106	0.1-	0.1-
1995 03 31	691	0.0	0.2+	1998 03 04	704	0.3+	0.4-	1999 09 09	704	0.5+	0.1-
1995 03 31	691	0.5+	0.3+	1998 03 04	704	0.3-	0.0	1999 09 09	704	0.3+	0.1+
1995 03 31	691	0.5+	0.1-	1998 04 21	910	0.4-	0.5+	1999 09 09	704	0.3+	0.3-
1998 02 22	566	0.5-	0.3-	1998 04 21	910	0.4-	0.2+	1999 09 09	704	0.2+	0.3-
1998 02 22	566	0.2-	0.1+	1998 04 21	910	1.1-	0.4+	1999 09 09	704	0.1+	0.3+
1998 02 22	566	0.3-	0.2-	1999 08 07	699	0.1-	0.9+	1999 09 13	704	0.0	0.1+
1998 02 23	566	0.5-	0.3+	1999 08 07	699	0.3-	0.5+	1999 09 13	704	0.1-	0.5-
1998 02 23	566	0.7-	0.1+	1999 08 07	699	0.1-	0.4+	1999 09 13	704	0.3-	1.4-
1998 02 23	566	0.9-	0.3-	1999 08 08	699	0.2+	0.9+	1999 09 13	704	0.0	1.1-
1998 02 27	566	0.8+	0.2-	1999 08 08	682	0.8-	0.8-	1999 09 13	704	0.3-	0.5-
1998 02 27	566	0.7+	0.2-	1999 08 08	699	0.5-	0.9+				

(11678)* 1998 DT₁₀ = 1971 DQ₁ = 1991 NA₆Discovered 1998 Feb. 25 by I. P. Griffin at the BCC Observatory, Cocoa.
Id. G. V. Williams (*MPC* 31408)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams						
<i>M</i>	102.45667	(2000.0)			P		Q				
<i>n</i>	0.25530847	ω	307.25404		-0.89701429		+0.44040535				
<i>a</i>	2.4608921	Ω	258.90345		-0.39245668		-0.83264976				
<i>e</i>	0.1787759	<i>i</i>	2.19181		-0.20333008		-0.33576405				
<i>P</i>	3.86	<i>H</i>	14.0		<i>G</i>	0.15	<i>U</i>	1			
Residuals in seconds of arc											
1971 02 18	095	0.4+	1.2+	1998 03 03	699	0.6-	0.4+	1998 04 13	758	1.6+	0.4+
1991 07 10	809	0.1+	0.7+	1998 03 04	758	0.3-	0.1+	1998 04 13	758	0.5+	0.3+
1991 07 10	809	0.4+	0.6+	1998 03 04	758	0.3+	0.2-	1998 04 14	758	1.2+	0.4-
1991 07 10	809	0.9+	0.4+	1998 03 04	704	(2.9-	0.0)	1998 04 14	758	1.9+	1.2+
1991 07 11	809	0.5-	0.2-	1998 03 04	704	(3.3-	0.1-)	1998 04 23	758	1.7-	1.2-
1991 07 11	809	0.1-	0.3-	1998 03 04	704	(2.9-	0.3+)	1998 04 23	758	1.5-	0.7-
1991 07 11	809	0.3+	0.1-	1998 03 04	704	(3.1-	0.2+)	1998 04 23	758	0.4+	0.4-
1991 07 11	809	0.8+	0.1-	1998 03 04	704	(3.1-	0.1+)	1998 04 23	758	1.0-	0.5-
1991 07 11	809	1.2+	0.1+	1998 03 05	758	0.6-	1.0+	1998 04 24	758	1.8-	1.7-
1991 07 11	809	1.3+	0.0	1998 03 05	758	0.2-	0.3+	1998 04 24	758	0.8-	0.6-
1991 07 12	809	0.9-	0.1-	1998 03 08	327	0.3-	0.5+	1998 04 30	566	0.1-	0.5-
1991 07 12	809	0.6-	0.1-	1998 03 08	327	0.3-	0.3+	1998 04 30	566	0.4+	1.1-
1991 07 12	809	0.5-	0.1-	1998 03 08	327	0.3-	0.2+	1998 04 30	566	0.2-	0.9-
1991 07 15	809	0.8-	0.1-	1998 03 11	758	0.6-	1.7+	1998 05 15	758	0.4+	0.1-
1991 07 15	809	0.4-	0.0	1998 03 11	758	1.1-	0.9+	1998 05 15	758	0.5+	0.1+
1991 07 15	809	0.2-	0.2+	1998 03 16	758	0.5-	0.3-	1999 07 16	704	0.2+	1.0-
1991 07 16	809	0.9-	1.6+	1998 03 16	758	1.2+	0.1-	1999 07 16	704	0.7+	0.5+
1991 07 16	809	0.7-	1.8+	1998 03 17	758	0.3-	0.1-	1999 07 16	704	0.6-	0.4-
1991 07 16	809	0.3-	1.9+	1998 03 17	758	0.5-	0.5+	1999 07 16	704	0.4-	0.2-
1998 02 25	758	1.8+	1.1+	1998 03 17	758	0.6-	0.2+	1999 08 07	699	0.0	0.3+
1998 02 25	758	0.1-	0.7+	1998 03 20	704	0.4+	0.7-	1999 08 07	699	0.3+	0.0
1998 02 26	758	0.2+	0.2+	1998 03 20	704	0.5+	0.5-	1999 08 07	699	0.6-	0.3+
1998 02 26	758	0.5+	0.2-	1998 03 20	704	0.1-	0.0	1999 08 07	467	0.5+	0.3+
1998 02 26	758	0.2+	0.3+	1998 03 20	704	0.4-	0.4+	1999 08 07	467	0.4+	0.1+
1998 02 26	699	0.7+	0.8+	1998 03 20	704	0.1-	0.5+	1999 08 08	467	0.3-	0.1-
1998 02 26	699	1.0+	0.1+	1998 03 21	758	0.1-	0.5+	1999 08 08	467	0.2-	0.0
1998 02 26	699	0.7+	0.7+	1998 03 21	758	1.3-	0.4+	1999 08 08	467	0.6-	0.3-
1998 02 26	566	1.0+	0.6+	1998 03 21	758	1.3-	0.2-	1999 08 22	703	0.5-	0.0
1998 02 26	566	0.2-	2.0-	1998 03 25	758	0.7-	0.3-	1999 08 22	703	0.1-	0.6-
1998 02 26	566	(0.1+	2.1-)	1998 03 25	758	0.5-	0.5-	1999 08 22	703	0.3+	0.1+
1998 02 26	566	(1.1+	2.5-)	1998 03 26	758	0.6-	0.2-	1999 08 22	703	0.4-	0.1-
1998 02 26	566	1.2+	0.6+	1998 03 26	758	0.4+	0.0	1999 08 22	703	0.7-	0.6+
1998 02 26	566	(0.3-	2.4-)	1998 03 26	758	0.2-	0.1-	1999 08 22	703	0.2-	0.5-
1998 02 27	758	0.7+	0.6+	1998 03 27	758	1.4-	0.2+	1999 08 22	703	0.5-	0.7+
1998 02 27	758	0.4+	0.2+	1998 03 27	758	0.2-	0.3-	1999 08 22	703	0.4-	0.1+
1998 02 27	758	0.8+	0.2-	1998 03 27	758	0.3-	0.7-	1999 08 24	467	0.5-	0.2+
1998 02 28	758	0.9+	0.3+	1998 03 27	566	1.5-	1.3-	1999 08 24	467	0.6+	0.0
1998 02 28	758	0.6+	0.2+	1998 03 27	566	1.9-	1.4-	1999 08 24	467	0.0	0.6+
1998 02 28	758	1.2+	0.2+	1998 03 27	566	1.8-	1.8-	1999 09 04	467	1.0+	0.1-
1998 03 01	758	0.1-	0.0	1998 03 28	758	0.4+	0.1+	1999 09 04	467	0.3+	0.6-
1998 03 01	758	1.4-	0.5+	1998 03 28	758	1.1-	0.2-	1999 09 04	467	0.0	0.3+
1998 03 01	758	1.4+	0.3+	1998 03 28	758	0.1+	0.1+	1999 09 07	704	0.3+	0.4+
1998 03 02	758	1.4+	0.3+	1998 03 29	758	0.5+	0.1-	1999 09 07	704	0.1-	0.1-
1998 03 02	758	1.7+	0.2-	1998 03 29	758	0.4+	0.1-	1999 09 07	704	0.3-	0.4+
1998 03 02	758	0.1-	0.1-	1998 03 30	758	0.2-	0.5-	1999 09 07	704	0.7-	0.3+
1998 03 03	758	0.1-	1.1+	1998 03 30	758	0.7-	0.1-	1999 09 07	704	0.0	0.3+
1998 03 03	758	0.0	1.0+	1998 03 31	758	1.0-	0.1+	1999 09 09	704	0.3-	0.1-
1998 03 03	704	0.7+	0.3+	1998 03 31	758	0.1+	0.4+	1999 09 09	704	0.5+	1.0-
1998 03 03	704	0.3-	0.4-	1998 03 31	758	0.8-	0.3-	1999 09 09	704	0.7+	0.1-
1998 03 03	704	0.7+	0.2-	1998 04 04	758	0.3+	0.3-	1999 09 09	704	0.5+	0.7-
1998 03 03	704	0.4+	0.7-	1998 04 04	758	0.2+	0.0	1999 09 09	704	0.9+	0.8+
1998 03 03	704	0.1-	0.8+	1998 04 04	758	0.7+	0.5-	1999 09 13	704	0.7+	0.5-
1998 03 03	699	0.4+	0.1+	1998 04 05	758	0.1-	1.2-	1999 09 13	704	0.2+	0.5-
1998 03 03	699	0.1-	0.3+	1998 04 05	758	0.5-	0.5-	1999 09 13	704	0.4-	2.0-

1999 SEPT. 28

M.P.C. 35879

Id. G. V. Williams (*MPC* 31741)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	126.19670		(2000.0)	P		Q	
<i>n</i>	0.31239386	ω	329.93822	-0.95207107	+0.30409915		
<i>a</i>	2.1511353	Ω	227.80387	-0.27103514	-0.88861998		
<i>e</i>	0.0773697	<i>i</i>	2.54758	-0.14177668	-0.34333400		
<i>P</i>	3.16	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1992 04 04	809	0.6+	0.6-	1998 02 26	566	0.4-	0.0	1999 09 05	699	0.2+	0.3-
1992 04 04	809	0.3-	0.3-	1998 02 27	566	0.3-	0.8-	1999 09 05	699	0.5-	0.3+
1992 04 04	809	0.1-	0.8-	1998 02 27	566	0.4-	0.7-	1999 09 05	699	1.0-	0.7+
1992 04 06	809	0.3+	0.2+	1998 02 27	566	0.3-	0.7-	1999 09 07	704	0.0	0.4-
1992 04 06	809	0.1+	0.6-	1998 03 03	704	0.2+	0.8-	1999 09 07	704	0.5+	0.5-
1992 04 06	809	0.3-	0.4-	1998 03 03	704	0.0	0.7-	1999 09 07	704	1.0+	0.2-
1992 04 25	809	0.2+	0.3+	1998 03 03	704	0.4+	0.5-	1999 09 07	704	0.2+	0.1+
1992 04 25	809	0.4-	0.1-	1998 03 03	704	0.4+	0.2+	1999 09 07	704	1.0+	0.2-
1992 04 25	809	0.9-	0.1-	1998 03 03	704	0.3+	0.1-	1999 09 09	704	0.0	0.6-
1996 09 14	566	0.0	0.9-	1998 03 04	704	0.4+	0.6-	1999 09 09	704	0.6+	0.9-
1996 09 14	566	0.6+	1.0-	1998 03 04	704	0.3-	0.2+	1999 09 09	704	0.0	0.9-
1996 09 14	566	1.1+	0.8-	1998 03 04	704	0.3+	0.1+	1999 09 09	704	0.4+	0.7-
1998 01 24	566	0.1-	0.0	1998 03 04	704	0.7+	0.6-	1999 09 09	704	0.4+	0.6-
1998 01 24	566	0.1-	0.0	1998 03 04	704	1.0+	0.9+	1999 09 14	704	0.5+	0.4-
1998 01 24	566	0.4-	0.1-	1998 08 08	699	0.4-	0.3+	1999 09 14	704	0.7-	0.3+
1998 02 25	566	0.9-	0.7-	1999 08 08	699	0.5+	0.2-	1999 09 14	704	0.3-	1.2-
1998 02 25	566	1.0-	0.7-	1999 08 08	699	0.2+	0.0	1999 09 14	704	0.0	0.9-
1998 02 25	566	0.8-	0.7-	1999 08 22	699	0.1+	0.5+	1999 09 14	704	0.1-	0.5-
1998 02 26	566	0.4-	0.1+	1999 08 22	699	0.3-	0.2+				
1998 02 26	566	0.2-	0.1-	1999 08 22	699	0.6-	0.5+				

(11680)* 1998 DT₁₁ = 1999 NX₁₁

Discovered 1998 Feb. 24 at Haleakala by the JPL Near-Earth Asteroid Tracking program.

Id. G. V. Williams (*MPC* 35316)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	95.85589		(2000.0)	P		Q	
<i>n</i>	0.24082473	ω	60.56961	-0.87652892	+0.47884476		
<i>a</i>	2.5585977	Ω	147.96754	-0.46743651	-0.82244873		
<i>e</i>	0.1813309	<i>i</i>	5.30487	-0.11489197	-0.30705990		
<i>P</i>	4.09	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1991 09 08	691	0.4-	0.1-	1998 03 20	704	0.4-	0.6+	1999 07 13	704	0.3+	0.4-
1991 09 08	691	0.1+	0.4+	1998 03 20	704	0.4-	0.3+	1999 07 16	704	0.2+	0.5+
1991 09 08	691	0.6-	0.2-	1998 03 20	704	0.5-	0.1-	1999 07 16	704	0.0	0.6-
1992 11 18	691	0.3+	0.3-	1998 03 20	704	0.6-	0.4+	1999 07 16	704	0.0	0.9-
1992 11 18	691	0.1+	0.2+	1998 03 20	704	1.0-	0.2+	1999 08 07	699	0.4+	1.1+
1992 11 18	691	0.2+	0.2-	1998 03 22	704	0.3+	0.0	1999 08 07	699	0.7+	0.5+
1994 03 05	691	0.0	0.7-	1998 03 22	704	0.2-	0.5+	1999 08 07	699	0.2+	1.8+
1994 03 05	691	0.1+	0.6-	1998 03 22	704	0.1+	0.1+	1999 09 06	699	0.5+	1.1+
1994 03 05	691	0.1-	0.5-	1998 03 22	704	0.0	0.4+	1999 09 06	699	0.2-	0.8+
1998 02 24	566	0.4+	1.0-	1998 03 22	704	1.0-	0.5-	1999 09 06	699	0.5-	0.6+
1998 02 24	566	0.6+	1.1-	1998 03 24	566	0.3-	0.0	1999 09 07	704	0.3+	0.1-
1998 02 24	566	0.4+	1.2-	1998 03 24	566	0.3-	0.0	1999 09 07	704	0.7-	0.1+
1998 02 25	809	0.3-	0.2-	1998 03 24	566	0.3-	0.1+	1999 09 07	704	0.0	0.1+
1998 02 25	809	1.9+	0.9-	1998 03 26	704	0.4+	0.1+	1999 09 07	704	0.3-	0.2-
1998 02 25	809	1.5+	0.3-	1998 03 26	704	0.2+	0.9+	1999 09 07	704	0.1-	0.4+
1998 02 25	566	0.1+	0.4+	1998 03 26	704	0.8-	0.3+	1999 09 08	704	0.4+	0.2+
1998 02 25	566	0.2+	0.4+	1998 04 05	699	0.1-	0.2+	1999 09 08	704	0.7+	0.2-
1998 02 25	566	0.1+	0.5+	1998 04 05	699	1.1+	1.1-	1999 09 08	704	0.7-	0.8+
1998 02 26	809	(3.0+	2.0+)	1998 04 05	699	0.7+	0.0	1999 09 08	704	1.0+	0.8-
1998 02 26	809	(3.3+	1.2+)	1998 04 28	699	0.2-	0.2-	1999 09 09	704	0.1+	0.4-
1998 02 26	809	(3.1+	1.6+)	1998 04 28	699	0.5-	0.5+	1999 09 09	704	0.5+	0.0
1998 02 27	566	0.3-	0.5+	1998 04 28	699	0.3-	0.1+	1999 09 09	704	0.8-	0.4-
1998 02 27	566	0.0	0.4+	1998 04 28	566	0.1+	0.1-	1999 09 09	704	0.1+	0.7-

1998 02 27	566	0.0	0.4+	1998 04 28	566	0.2+	0.1+	1999 09 09	704	0.8-	0.4-
1998 03 03	704	0.1-	0.1+	1998 04 28	566	0.5+	0.3+	1999 09 13	704	0.9-	0.6-
1998 03 03	704	0.2-	0.4-	1999 07 13	704	1.1+	0.3-	1999 09 13	704	0.5-	0.3+
1998 03 03	704	0.2-	0.4+	1999 07 13	704	0.9+	0.9-	1999 09 13	704	0.1-	0.6+
1998 03 03	704	0.1-	0.7+	1999 07 13	704	0.3-	0.5-	1999 09 13	704	0.3-	0.2-
1998 03 03	704	0.5-	0.9+	1999 07 13	704	0.3+	0.9-	1999 09 13	704	1.1-	0.0

(11681)* 1998 EP₆ = 1943 GD = 1980 UP₁ = 1985 DW₃ = 1986 RY₈

Discovered 1998 Mar. 1 by the OCA-DLR Asteroid Survey at Caussols.

Id. G. V. Williams (*MPC* 31565)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	148.92391		(2000.0)	P		Q	
<i>n</i>	0.30440418	ω	215.14665	-0.99978931	+0.00370459		
<i>a</i>	2.1886130	Ω	325.04893	+0.00520707	-0.90563205		
<i>e</i>	0.1031501	<i>i</i>	2.01965	-0.01985505	-0.42404819		
<i>P</i>	3.24	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1943 04 03	062	1.3+	0.4-	1998 03 04	704	(4.4-	1.8+)	1998 04 01	704	0.7-	0.2+
1943 04 03	062	1.0-	0.4-	1998 03 05	910	1.1+	0.2-	1998 04 04	699	0.6+	0.3-
1980 10 31	675	0.3+	0.4-	1998 03 06	910	1.2+	0.2-	1998 04 04	699	0.5+	0.1+
1980 11 02	675	0.7+	0.3+	1998 03 06	910	1.0+	0.3-	1998 04 04	699	0.3+	0.2-
1985 02 20	675	(0.4+	2.9-)	1998 03 20	704	0.8-	0.4-	1999 08 07	691	0.2-	0.1+
1985 02 22	675	1.5-	0.6+	1998 03 20	704	0.6-	0.2+	1999 08 07	691	0.1+	0.2+
1985 02 23	675	0.6-	0.7+	1998 03 20	704	0.4+	0.3-	1999 08 07	691	0.1+	0.2+
1986 09 08	095	1.4-	0.9-	1998 03 20	704	0.4+	0.3-	1999 09 05	699	0.0	0.7+
1996 09 10	566	0.4-	0.1+	1998 03 20	704	0.6+	0.3-	1999 09 05	699	0.2+	0.8+
1996 09 10	566	0.2-	0.2+	1998 03 22	704	0.8-	0.2+	1999 09 05	699	0.3+	0.6+
1996 09 10	566	0.5-	0.5+	1998 03 22	704	0.2+	0.5+	1999 09 07	704	0.1+	0.1+
1998 02 26	566	0.6+	0.4-	1998 03 22	704	0.8-	0.3+	1999 09 07	704	0.0	0.2+
1998 02 26	566	0.3+	0.1-	1998 03 22	704	(0.5-	3.7+)	1999 09 07	704	0.3+	0.1+
1998 02 26	566	0.5+	0.3-	1998 03 22	704	1.0-	0.0	1999 09 07	704	0.1-	0.2-
1998 03 01	910	1.2+	0.0	1998 03 26	704	0.7-	0.2+	1999 09 09	704	0.1-	0.4-
1998 03 01	910	1.3+	0.2+	1998 03 26	704	1.4-	0.5+	1999 09 09	704	0.3-	0.2-
1998 03 01	910	1.2+	0.0	1998 03 26	704	0.1+	0.0	1999 09 09	704	0.7-	0.9-
1998 03 03	704	(0.5+	3.8+)	1998 03 29	704	0.5-	0.5-	1999 09 09	704	0.3+	0.4-
1998 03 03	704	0.2-	0.2+	1998 03 29	704	0.3+	1.3+	1999 09 09	704	0.2-	0.7+
1998 03 03	704	0.8-	0.6+	1998 03 29	704	(2.3+	3.0+)	1999 09 14	704	0.3+	0.1+
1998 03 03	704	0.4-	0.2+	1998 03 29	704	1.2-	0.5+	1999 09 14	704	0.1+	0.4+
1998 03 03	704	0.9-	0.2+	1998 03 29	704	0.1+	0.4+	1999 09 14	704	0.1-	0.0
1998 03 04	704	(2.6-	0.1-)	1998 04 01	704	0.8+	0.5-	1999 09 14	704	0.1+	0.5+
1998 03 04	704	(2.6-	0.8+)	1998 04 01	704	0.4+	0.1+	1999 09 14	704	0.0	0.1+
1998 03 04	704	(2.8-	0.2+)	1998 04 01	704	0.1+	0.3+				
1998 03 04	704	(2.7-	4.9-)	1998 04 01	704	0.1+	0.4-				

(11682)* 1998 EX₆ = 1953 KF = 1983 EP₁

Discovered 1998 Mar. 3 by H. Abe at Yatsuka.

Id. S. Nakano (*MPC* 31565)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	79.43908		(2000.0)	P		Q	
<i>n</i>	0.26066784	ω	166.79021	-0.44510553	+0.89397553		
<i>a</i>	2.4270446	Ω	76.75949	-0.82635136	-0.38774681		
<i>e</i>	0.1689041	<i>i</i>	3.05358	-0.34499926	-0.22463338		
<i>P</i>	3.78	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1953 05 18	675	0.2-	0.1-	1998 03 18	402	0.1-	0.3+	1998 04 03	809	(1.2+	2.2+)
1953 05 18	675	0.4+	0.5+	1998 03 18	402	0.0	0.3+	1998 04 03	809	0.6+	1.2+
1983 03 11	381	0.5-	0.3-	1998 03 18	402	0.1-	0.3+	1998 04 18	704	1.4+	0.1-
1983 03 11	381	0.2-	0.4-	1998 03 20	704	0.6-	0.2-	1998 04 18	704	1.2-	1.3+
1992 11 20	691	0.8+	0.7+	1998 03 20	704	0.9-	0.3-	1998 04 18	704	0.0	0.6+
1992 11 20	691	0.6-	0.8+	1998 03 20	704	1.0-	0.4+	1998 04 18	704	(3.3-	3.4+)
1992 11 20	691	0.7-	0.6+	1998 03 20	704	0.4+	0.4+	1998 04 19	367	0.1+	0.8+
1997 02 04	691	0.1+	0.1-	1998 03 20	704	(2.1-	2.8+)	1998 04 19	367	0.4+	0.5+
1997 02 04	691	0.4-	0.0	1998 03 24	704	0.2+	0.4+	1998 05 14	704	0.5+	0.2+

1997 02 04	691	0.2−	0.0	1998 03 24	704	0.0	0.2−	1998 05 14	704	1.0+	0.4+
1998 02 26	566	0.6−	0.2+	1998 03 24	704	0.5+	0.8−	1998 05 14	704	0.1+	0.5+
1998 02 26	566	0.5−	0.1+	1998 03 24	704	0.5+	0.1+	1998 05 14	704	0.1−	1.4+
1998 02 26	566	0.7−	0.4+	1998 03 25	704	0.2+	0.5−	1998 08 15	428	0.3−	0.0
1998 02 27	809	1.3+	0.5−	1998 03 25	704	0.2+	0.3+	1998 08 15	428	0.8+	0.0
1998 02 27	809	0.4+	0.8−	1998 03 25	704	0.0	0.6−	1999 09 07	704	0.2+	0.3−
1998 02 27	809	0.9+	0.5−	1998 03 25	704	0.1+	0.3−	1999 09 07	704	0.2+	0.0
1998 02 28	809	0.3+	0.6+	1998 03 25	704	0.8−	0.1−	1999 09 07	704	0.4+	0.1+
1998 02 28	809	0.4−	0.3+	1998 03 25	402	0.2+	0.3−	1999 09 07	704	0.2−	1.0−
1998 02 28	809	0.0	0.3+	1998 03 25	402	0.3+	0.7−	1999 09 07	704	0.0	0.5−
1998 03 01	809	1.2+	1.4−	1998 03 25	402	0.1−	0.4−	1999 09 09	704	0.4+	0.1+
1998 03 01	809	1.1+	1.9−	1998 03 26	704	0.8−	1.0−	1999 09 09	704	0.2−	0.9−
1998 03 01	809	0.8+	1.9−	1998 03 26	704	0.1−	0.4−	1999 09 09	704	0.3−	1.3−
1998 03 02	809	(2.5+ 1.3−)		1998 03 26	704	0.9−	0.0	1999 09 09	704	(0.6− 2.4−)	
1998 03 02	809	0.6+	1.1−	1998 03 26	566	0.2−	0.2−	1999 09 09	704	(0.6− 2.4−)	
1998 03 02	809	0.4+	1.1−	1998 03 26	566	0.2−	0.2−	1999 09 11	699	0.3−	0.0
1998 03 03	367	1.2−	0.0	1998 03 26	566	0.2−	0.2−	1999 09 11	699	0.0	0.2+
1998 03 03	367	1.2−	0.1+	1998 03 31	402	0.1−	0.1+	1999 09 11	699	0.5−	0.5+
1998 03 06	367	0.2+	0.5+	1998 03 31	402	0.0	0.2+	1999 09 14	704	1.1+	0.7−
1998 03 06	367	1.3−	0.4+	1998 03 31	402	0.1+	0.0	1999 09 14	704	(3.2+ 0.3−)	
1998 03 15	367	0.5−	0.3+	1998 04 02	809	(2.2+ 5.8+)		1999 09 14	704	0.3−	0.8−
1998 03 15	367	0.2−	0.6+	1998 04 02	809	(1.5+ 6.1+)		1999 09 14	704	0.5+	0.0
1998 03 15	411	0.3−	0.6+	1998 04 02	809	(1.6+ 5.2+)		1999 09 14	704	0.7+	0.2−
1998 03 15	411	0.4−	0.6+	1998 04 03	809	(1.4+ 2.7+)					

(11683)* 1998 FO₁₁ = 1991 RV₃₇

Discovered 1998 Mar. 22 by Y. Shimizu and T. Urata at the Nachi-Katsuura Observatory.

Id. S. Nakano (*MPC* 34908), A. Gnädig (*ibid.*), M. E. Sansaturio (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	108.79713		<i>P</i>		<i>Q</i>	
<i>n</i>	0.23249767	ω	18.77097	−0.94943153	+0.31396842	
<i>a</i>	2.6193306	Ω	179.51523	−0.30907878	−0.93354656	
<i>e</i>	0.0511274	<i>i</i>	12.97955	−0.05522757	−0.17295855	
<i>P</i>	4.24	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1954 12 21	675	1.1+	0.2+	1998 03 29	704	0.8−	0.8+	1998 04 28	566	0.2−	0.1+
1954 12 21	675	1.0−	0.2+	1998 03 29	888	0.2+	0.0	1998 05 03	566	0.8+	1.0−
1982 08 18	413	1.0−	0.5+	1998 03 29	888	0.0	0.0	1998 05 03	566	0.7+	0.2+
1982 08 18	413	0.9+	0.0	1998 03 29	888	0.1−	0.0	1998 05 03	566	0.2+	1.1−
1991 09 15	675	0.3−	1.3−	1998 04 03	886	0.7+	0.3+	1998 05 21	385	0.5−	0.2+
1991 09 15	675	0.5+	1.6−	1998 04 03	886	0.9+	0.3+	1998 05 21	385	0.2+	0.4+
1998 03 20	704	0.4−	0.2+	1998 04 19	704	0.4+	0.5−	1999 07 13	704	0.3+	0.2+
1998 03 20	704	0.7−	0.5+	1998 04 19	704	0.0	0.2−	1999 07 13	704	0.1−	0.3+
1998 03 20	704	0.6+	0.4+	1998 04 19	704	0.8−	1.5−	1999 07 13	704	0.1+	0.5+
1998 03 20	704	(2.2+ 1.7+)		1998 04 19	704	0.4−	0.5−	1999 07 13	704	0.3+	0.2−
1998 03 20	704	(0.3+ 2.5+)		1998 04 19	886	0.2+	0.8−	1999 07 13	704	0.4+	0.1+
1998 03 22	704	0.4+	0.0	1998 04 19	886	(2.3− 0.3−)		1999 07 22	704	0.5+	0.1+
1998 03 22	704	0.0	0.6+	1998 04 20	704	0.1+	0.9−	1999 07 22	704	0.5+	0.2−
1998 03 22	704	0.3+	0.3+	1998 04 20	704	(6.3− 0.4+)		1999 07 22	704	0.3+	0.5−
1998 03 22	704	0.1−	0.3+	1998 04 20	704	0.2+	0.2−	1999 07 22	704	0.2+	0.1+
1998 03 22	704	0.0	1.0+	1998 04 20	704	0.1+	0.1−	1999 07 22	704	0.5+	0.1+
1998 03 22	905	0.4+	0.3−	1998 04 20	704	0.0	0.9−	1999 08 14	946	0.1−	0.5+
1998 03 22	905	0.6−	0.9+	1998 04 20	888	0.1−	0.3+	1999 08 14	946	0.9+	0.1+
1998 03 25	888	0.2−	0.3+	1998 04 20	888	0.0	0.3+	1999 09 08	704	0.1−	0.3+
1998 03 25	888	0.0	0.1+	1998 04 20	888	0.1+	0.1+	1999 09 08	704	0.4−	0.3+
1998 03 25	888	0.0	0.0	1998 04 22	704	0.0	0.1+	1999 09 08	704	0.2−	0.4−
1998 03 28	704	0.3+	0.3+	1998 04 22	704	0.7+	0.1−	1999 09 08	704	0.4−	0.1+
1998 03 28	704	0.3+	0.1−	1998 04 22	704	0.1−	0.0	1999 09 09	704	0.2+	0.2+
1998 03 28	704	0.5−	0.4−	1998 04 22	704	0.1−	0.9−	1999 09 09	704	0.2+	0.3+
1998 03 28	704	0.1+	0.0	1998 04 22	704	0.4−	0.2−	1999 09 09	704	0.1−	0.2−
1998 03 28	704	0.9−	0.3−	1998 04 22	888	0.4+	0.1−	1999 09 14	704	0.4−	1.2+
1998 03 29	704	0.4−	0.1+	1998 04 22	888	0.0	0.4−	1999 09 14	704	0.9−	1.1+
1998 03 29	704	0.9−	0.2+	1998 04 22	888	0.0	0.1−	1999 09 14	704	1.0−	1.4−

1998 03 29	704	0.1−	0.1+	1998 04 28	566	0.3+	0.0	1999 09 14	704	0.8−	0.6−
1998 03 29	704	0.8−	0.7+	1998 04 28	566	0.5+	0.2+				

(11684)* 1998 FY₁₁ = 1982 SP₃ = 1986 PJ₆

Discovered 1998 Mar. 24 at Haleakala by the JPL Near-Earth Asteroid

Tracking program.

Id. G. V. Williams (*MPC* 31569)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	66.31869		<i>P</i>		<i>Q</i>	
<i>n</i>	0.22845899	ω	86.80846	−0.39627011	+0.91674121	
<i>a</i>	2.6501099	Ω	159.61633	−0.88945603	−0.36965643	
<i>e</i>	0.1505778	<i>i</i>	8.34530	−0.22767955	−0.15145849	
<i>P</i>	4.31	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i> 1

Residuals in seconds of arc

1982 09 24	033	0.4+	0.2−	1998 03 25	566	0.1+	0.3−	1999 08 09	106	0.2−	0.1+
1982 09 24	033	0.2−	0.9−	1998 03 26	566	0.2−	0.7+	1999 08 22	703	0.1−	0.4+
1986 08 12	095	0.1+	0.4+	1998 03 26	566	0.1−	0.7+	1999 08 22	703	0.3+	0.1−
1998 02 23	566	(1.5+ 2.0−)		1998 03 26	566	0.2−	0.9+	1999 08 22	703	0.0	0.0
1998 02 23	566	1.2+	1.8−	1998 03 26	557	0.2−	0.3+	1999 08 22	703	0.1+	0.1−
1998 02 23	566	(1.5+ 2.0−)		1998 03 26	557	0.1−	0.6+	1999 08 22	703	0.1+	0.1+
1998 03 20	704	0.5−	0.9+	1998 03 28	704	0.4+	0.3+	1999 08 22	703	0.2+	0.2+
1998 03 20	704	0.1+	1.0+	1998 03 28	704	0.1+	0.1+	1999 08 22	703	0.3−	0.6−
1998 03 20	704	0.1+	1.6+	1998 03 28	704	0.0	0.1−	1999 08 22	703	0.5+	0.8−
1998 03 20	704	0.6+	1.3+	1998 03 28	704	0.6+	0.3−	1999 09 07	704	0.1−	0.6−
1998 03 20	704	(0.4+ 2.1+)		1998 03 28	704	1.3−	0.8−	1999 09 07	704	0.1−	0.6−
1998 03 24	704	0.1+	0.0	1998 03 28	557	0.4−	1.1+	1999 09 07	704	0.1−	0.6−
1998 03 24	704	0.1−	0.3−	1998 03 28	557	0.8−	0.5−	1999 09 07	704	0.3−	0.7−
1998 03 24	704	1.7+	0.7+	1998 04 04	699	0.0	0.7+	1999 09 07	704	0.4−	0.3−
1998 03 24	704	0.1−	0.0	1998 04 04	699	0.6+	0.1+	1999 09 09	704	0.0	0.6−
1998 03 24	704	0.3+	0.5+	1998 04 04	699	0.6+	0.3+	1999 09 09	704	0.1−	0.1−
1998 03 24	704	0.2−	0.4+	1998 04 19	704	1.1+	0.8−	1999 09 09	704	0.1+	0.0
1998 03 24	704	0.7−	0.0	1998 04 19	704	1.2+	0.1−	1999 09 09	704	0.2−	0.1+
1998 03 24	704	0.8−	0.4−	1998 04 19	704	0.2+	0.7−	1999 09 09	704	0.5−	0.2−
1998 03 24	704	1.0−	0.2+	1998 04 19	704	0.5+	0.3−	1999 09 13	704	0.2−	0.0
1998 03 24	704	1.1−	0.3+	1998 04 19	704	0.7−	0.8−	1999 09 13	704	0.8−	0.0
1998 03 24	566	0.1+	0.0	1998 04 29	566	0.5−	1.4−	1999 09 13	704	0.5−	0.4+
1998 03 24	566	0.1−	0.0	1998 04 29	566	0.2−	1.3−	1999 09 13	704	0.0	0.3+
1998 03 24	566	0.1−	0.1−	1998 04 29	566	0.3−	1.3−	1999 09 13	704	0.2−	0.3+
1998 03 25	566	0.2+	0.3−	1999 08 07	699	0.3+	1.0+	1999 09 26	699	0.2+	0.2+
1998 03 25	566	0.0	0.2−	1999 08 07	699	0.2−	0.3+	1999 09 26	699	1.1+	1.0+
1998 03 25	566	0.0	0.2−	1999 08 07	699	0.5−	0.5+	1999 09 26	699	0.9+	1.6+
1998 03 25	566	0.1+	0.4−	1999 08 09	106	0.5+	0.3+				
1998 03 25	566	0.3+	0.3−	1999 08 09	106	0.4+	0.0				

(11685)* 1998 FW₁₉ = 1996 XL₉

Discovered 1998 Mar. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31748)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	27.66095		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.27013911	ω	311.70070	+0.28511042	+0.95775867
a	2.3699785	Ω	334.79072	-0.85113832	+0.23496450
e	0.0955670	i	5.05850	-0.44076707	+0.16580115
P	3.65	H	14.8	G 0.15	U 2

1996 12 15	691	1.2-	0.7+	1998 03 22	704	0.4+	0.6-	1999 09 08	691	0.2-	0.0
1996 12 15	691	0.5+	0.0	1998 03 22	704	0.4+	0.5-	1999 09 08	691	0.3-	0.2+
1996 12 15	691	0.8+	0.0	1998 03 22	704	0.3+	0.1+	1999 09 08	691	0.4-	0.3+
1998 02 27	566	0.5+	0.1+	1998 03 22	704	0.7-	1.9-	1999 09 13	704	1.7+	0.8+
1998 02 27	566	0.4+	0.1+	1999 07 13	704	0.2+	0.2-	1999 09 13	704	1.0+	1.2+
1998 02 27	566	0.3+	0.2+	1999 07 13	704	0.5-	0.6-	1999 09 13	699	1.1+	0.2-
1998 03 03	704	0.0	0.5+	1999 07 13	704	0.8-	0.4-	1999 09 13	704	0.1+	0.2+
1998 03 03	704	1.2+	0.9-	1999 07 13	704	0.3-	0.2-	1999 09 13	699	0.1-	0.1+
1998 03 03	704	0.4+	0.7+	1999 07 13	704	1.2-	0.2-	1999 09 13	699	0.9-	0.2-
1998 03 03	704	0.3+	0.2+	1999 07 16	704	0.5-	0.5-	1999 09 19	691	0.4-	0.2+
1998 03 04	704	1.8-	0.6+	1999 07 16	704	0.1-	1.0-	1999 09 19	691	0.1+	0.4+
1998 03 04	704	1.2-	0.5+	1999 07 16	704	1.4-	0.6+	1999 09 19	691	0.1+	0.3+

(11686)* 1998 FU₃₆ = 1985 CQ = 1985 FU₂ = 1993 TG₃

Discovered 1998 Mar. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 32257)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			Williams		
248.69493			(2000.0)		
			<i>P</i>	<i>Q</i>	
<i>n</i>	0.30342852	ω	64.90564	+0.32779698	-0.94469128
<i>a</i>	2.1933021	Ω	5.98762	+0.82703564	+0.28163154
<i>e</i>	0.1225921	<i>i</i>	5.70505	+0.45668499	+0.16805375
<i>P</i>	3.25	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1985 02 13	691	0.7-	1.0-	1998 03 20	704	0.1-	0.3+	1998 03 29	704	0.8-	0.3-
1985 02 13	691	0.7-	1.8-	1998 03 20	704	0.6+	0.0	1998 03 29	704	0.8-	0.0
1985 02 13	691	0.7-	1.0-	1998 03 20	704	0.9+	0.7-	1998 03 29	704	0.2-	0.0
1985 03 22	801	(5.6-	0.3+)	1998 03 20	704	1.1+	0.2-	1998 04 19	704	0.1-	0.9+
1993 10 11	400	1.5+	0.5-	1998 03 20	704	1.9+	1.6-	1998 04 19	704	0.5+	1.6+
1993 10 11	400	(3.3+	1.1-)	1998 03 22	704	0.1-	0.1+	1998 04 19	704	0.6-	1.2+
1993 10 13	675	1.2-	1.5-	1998 03 22	704	0.4+	0.7+	1998 04 19	704	0.7+	0.7+
1993 10 13	675	(0.4+	3.1-)	1998 03 22	704	0.5-	0.5+	1998 04 19	704	0.9+	0.4+
1993 10 15	691	0.2-	0.4-	1998 03 22	704	1.1-	0.6+	1999 07 14	704	0.8-	0.6-
1993 10 15	691	0.5+	0.5-	1998 03 22	704	0.5-	0.4+	1999 07 14	704	0.2-	0.9-
1993 10 15	675	0.8+	1.8-	1998 03 26	566	0.3-	0.8-	1999 07 14	704	0.2-	0.7-
1993 10 15	691	0.4+	0.4-	1998 03 26	566	0.3-	1.2-	1999 07 16	704	0.0	0.2+
1993 10 19	400	0.7+	0.6-	1998 03 26	566	1.1-	1.0-	1999 07 16	704	0.2-	0.9-
1993 10 19	400	(3.3-	5.5-)	1998 03 28	704	0.2+	0.6-	1999 07 16	704	0.1+	0.7-
1998 02 26	566	0.7-	1.2-	1998 03 28	704	0.0	0.3+	1999 07 16	704	0.3-	1.7-
1998 02 26	566	0.5-	1.2-	1998 03 28	704	0.2-	0.4-	1999 07 16	704	0.1+	0.7-
1998 02 26	566	0.4-	1.0-	1998 03 28	704	0.1-	0.3-	1999 09 11	704	1.1+	0.3-
1998 03 08	699	1.2-	0.7-	1998 03 28	704	0.2+	0.1+	1999 09 11	704	1.7+	0.9+
1998 03 08	699	0.4+	1.3-	1998 03 29	704	0.4-	0.1-	1999 09 11	704	1.2+	1.2-
1998 03 08	699	0.2+	0.4-	1998 03 29	704	0.8-	0.6+	1999 09 11	704	0.3+	0.8+

(11687)* 1998 FM₄₀ = 1978 PV = 1995 UL₄₅

Discovered 1998 Mar. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 32258)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			Williams		
37.23601			(2000.0)		
			<i>P</i>	<i>Q</i>	
<i>n</i>	0.23802123	ω	28.90011	+0.29433569	+0.95550600
<i>a</i>	2.5786492	Ω	258.22315	-0.88059734	+0.26327801
<i>e</i>	0.2316996	<i>i</i>	1.13313	-0.37136885	+0.13301494
<i>P</i>	4.14	<i>H</i>	14.3	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1978 08 08	095	0.2-	1.2+	1998 03 29	704	0.3+	0.1+	1999 09 07	704	0.6+	0.0
1992 12 17	691	0.8-	0.5-	1998 03 29	704	0.5+	0.4-	1999 09 07	704	0.3+	0.3+
1992 12 17	691	0.8+	0.2+	1998 04 01	704	0.0	1.5-	1999 09 07	704	0.2+	0.4-
1992 12 17	691	0.3+	0.7-	1998 04 01	704	0.2+	0.7+	1999 09 09	704	0.2+	0.2-
1995 10 01	691	0.1-	0.2-	1998 04 01	704	0.5-	0.4+	1999 09 09	704	0.0	0.3-
1995 10 01	691	0.5-	0.1-	1998 04 01	704	1.4+	0.6+	1999 09 09	704	0.1-	0.1-
1995 10 01	691	0.3-	0.3-	1998 04 01	704	0.9-	1.1-	1999 09 09	704	0.3+	0.1+

1995 10 20	010	1.3-	0.8+	1998 04 19	704	0.7-	0.9-	1999 09 09	704	0.1+	0.2-
1995 10 20	010	0.2+	2.0+	1998 04 19	704	0.7-	1.2-	1999 09 09	704	0.0	0.2-
1995 10 20	010	0.1-	0.9+	1998 04 19	704	0.4-	1.3+	1999 09 09	704	0.1+	0.1-
1995 10 23	010	(1.0+	2.5-)	1998 04 19	704	0.5+	0.4+	1999 09 09	704	0.0	0.4-
1995 10 23	010	(0.8-	3.8-)	1998 04 19	704	0.6-	1.0+	1999 09 09	704	0.1-	0.1+
1995 10 23	010	(1.8+	2.2-)	1999 07 16	704	0.2-	0.2-	1999 09 09	704	0.0	0.3-
1998 03 20	704	0.1-	0.5-	1999 07 16	704	0.8+	0.3-	1999 09 09	704	0.3-	0.1-
1998 03 20	704	0.3-	0.9+	1999 07 16	704	0.4+	0.2+	1999 09 09	704	0.1-	0.3+
1998 03 20	704	0.9-	0.6-	1999 07 16	704	0.4+	0.8-	1999 09 09	704	0.1-	0.5-
1998 03 20	704	0.6-	0.0	1999 07 16	704	0.2-	0.1-	1999 09 09	704	0.0	0.2-
1998 03 22	704	1.1+	1.5+	1999 08 22	699	0.6+	0.2+	1999 09 09	704	0.5+	0.1-
1998 03 22	704	1.0-	0.9+	1999 08 22	699	0.8-	1.9+	1999 09 09	704	0.3+	0.1-
1998 03 22	704	1.1+	0.4-	1999 08 22	699	0.7+	1.3+	1999 09 09	704	0.4+	0.4-
1998 03 22	704	0.4+	1.1-	1999 09 07	691	0.3-	0.2-	1999 09 09	704	0.0	0.2-
1998 03 22	704	0.2+	0.8-	1999 09 07	691	0.3-	0.6-	1999 09 09	704	0.5-	0.7-
1998 03 29	704	0.3+	0.4-	1999 09 07	691	0.3-	0.4-	1999 09 09	704	0.5-	1.2-
1998 03 29	704	0.7+	0.4+	1999 09 07	704	0.2+	0.3-				
1998 03 29	704	0.8-	0.1+	1999 09 07	704	0.4+	0.5-				

(11688)* 1998 FG₅₃ = 1978 RU₆

Discovered 1998 Mar. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31570)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			Williams		
52.51839			(2000.0)		
			<i>P</i>	<i>Q</i>	
<i>n</i>	0.28201351	ω	298.44269	+0.14017661	+0.98986942
<i>a</i>	2.3029761	Ω	339.57822	-0.88430846	+0.11491329
<i>e</i>	0.0365849	<i>i</i>	3.70737	-0.44536396	+0.08338740
<i>P</i>	3.49	<i>H</i>	14.7	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1978 09 02	809	0.3-	0.2-	1998 03 22	704	0.1-	0.9+	1998 04 19	704	0.1+	0.6-
1978 09 02	809	0.3-	0.5-	1998 03 22	704	1.7-	1.4+	1998 04 19	704	0.4-	0.4-
1978 09 02	809	0.1+	0.0	1998 03 28	704	0.2-	0.6-	1999 08 13	747	0.4+	0.6+
1978 09 02	809	0.4-	0.4+	1998 03 28	704	0.2-	0.9+	1999 08 13	747	0.5-	0.9+
1978 09 02	809	0.1-	0.2-	1998 03 28	704	0.0	0.4+	1999 08 22	699	0.1-	0.7+
1978 09 06	809	1.0+	0.5+	1998 03 28	704	0.6+	1.3+	1999 08 22	699	0.1+	1.0+
1994 01 21	691	0.3-	0.5-	1998 03 28	704	0.0	1.1+	1999 08 22	699	0.7+	0.2+
1994 01 21	691	0.3+	0.1+	1998 03 29	704	0.6+	0.2+	1999 09 07	704	(0.4+	3.3-)
1994 01 21	691	(0.5-	2.6-)	1998 03 29	704	1.6+	0.1+	1999 09 07	704	0.2+	1.2-
1998 02 24	566	0.0	0.2+	1998 03 29	704	0.8+	0.2+	1999 09 07	704	0.1-	0.6+
1998 02 24	566	0.1+	0.2+	1998 03 29	704	0.2+	0.8-	1999 09 09	704	0.4+	0.2+
1998 02 24	566	0.1-	0.1-	1998 03 29	704	0.5+	0.7-	1999 09 09	704	0.5-	0.3-
1998 03 04	704	(3.2-	0.2+)	1998 04 01	704	0.4+	0.1+	1999 09 09	704	0.4+	0.5+
1998 03 04	704	(2.7-	0.3+)	1998 04 01	704	0.8+	0.1-	1999 09 09	704	1.0+	0.1+
1998 03 04	704	(3.1-	1.0+)	1998 04 01	704	0.2-	0.4+	1999 09 09	704	0.1+	0.1+
1998 03 04	704	(3.1-	0.2-)	1998 04 01	704	1.0+	0.3+	1999 09 09	704	0.1+	0.3+
1998 03 04	704	(2.5-	0.8+)	1998 04 01	704	0.5+	0.5-	1999 09 09	704	0.3+	0.0
1998 03 20	704	0.5-	0.5+	1998 04 18	704	0.2+	0.3-	1999 09 09	704	0.1+	0.0
1998 03 20	704	0.4-	0.1+	1998 04 18	704	0.1+	0.2-	1999 09 09	704	0.5-	0.3+
1998 03 20	704	0.1-	0.1+	1998 04 18	704	0.0	1.3-	1999 09 09	704	1.0-	0.2-
1998 03 20	704	0.6-	0.1-	1998 04 18	704	0.6-	1.1-	1999 09 14	704	0.1+	0.2+
1998 03 20	704	0.6-	0.2+	1998 04 18	704	0.1-	0.3+	1999 09 14	704	0.7-	0.1-
1998 03 22	704	0.1-	0.6-	1998 04 19	704	0.3-	0.4-	1999 09 14	704	0.4-	0.6-
1998 03 22	704	0.1-	0.4-	1998 04 19	704	0.9-	0.8-	1999 09 14	704	0.1-	0.0
1998 03 22	704	0.1+	0.7+	1998 04 19	704	0.4-	0.6-	1999 09 14	704	0.5-	0.1+

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	90.87061		(2000.0)	P	Q
<i>n</i>	0.24144774	ω	47.07429	-0.78322017	+0.62045919
<i>a</i>	2.5541944	Ω	171.01715	-0.61845260	-0.77085850
<i>e</i>	0.0384348	<i>i</i>	14.82728	-0.06389476	-0.14424825
<i>P</i>	4.08	<i>H</i>	13.9	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1979 09 20	675	0.1-	0.0	1998 03 22	704	0.1-	0.2+	1999 07 22	704	0.1+	0.2-
1979 09 21	675	0.1+	0.3-	1998 03 24	566	0.8+	0.7-	1999 07 22	704	0.0	0.1+
1997 01 28	327	0.1-	0.1-	1998 03 24	566	0.7+	0.6-	1999 07 22	704	0.7+	0.5-
1997 01 28	327	0.2+	0.2-	1998 03 24	566	0.8+	0.9-	1999 07 22	704	0.3+	0.3-
1997 01 28	327	0.5+	0.1-	1998 04 19	704	0.2-	0.1+	1999 09 08	704	0.1-	0.3+
1997 01 28	327	0.2-	0.1-	1998 04 19	704	0.5-	0.9+	1999 09 08	704	0.4+	0.4+
1998 02 24	566	0.5-	0.3+	1998 04 19	704	0.1+	0.2+	1999 09 08	704	0.6+	0.3-
1998 02 24	566	0.6-	0.3-	1998 04 19	704	0.8-	0.2+	1999 09 08	704	0.0	0.3+
1998 02 24	566	0.6-	0.0	1998 04 20	704	0.1+	0.7+	1999 09 09	704	0.1-	0.3-
1998 03 20	704	0.8-	0.2-	1998 04 20	704	0.1-	0.4+	1999 09 09	704	0.6-	0.0
1998 03 20	704	0.1+	0.1-	1998 04 20	704	0.5+	0.9+	1999 09 09	704	1.4-	0.1+
1998 03 20	704	0.2+	0.6-	1998 04 20	704	0.0	1.4+	1999 09 09	704	0.2-	0.1+
1998 03 20	704	0.5-	0.9-	1998 04 20	704	0.2+	1.1+	1999 09 09	704	0.3+	0.2-
1998 03 20	704	0.6+	1.4-	1999 07 12	704	0.3+	0.5-	1999 09 14	704	0.2+	0.4+
1998 03 22	704	0.0	0.2+	1999 07 12	704	0.5+	0.7-	1999 09 14	704	0.6-	0.4+
1998 03 22	704	0.1-	0.1-	1999 07 12	704	0.5+	0.6-	1999 09 14	704	0.3-	0.3+
1998 03 22	704	0.1-	0.4-	1999 07 12	704	0.2-	0.7-	1999 09 14	704	0.8-	0.7+
1998 03 22	704	0.0	0.4-	1999 07 22	704	0.1-	0.0	1999 09 14	704	0.2+	0.4+

(11690)* 1998 FV₆₀ = 1991 FD₄

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

Research Team at Socorro.

Id. G. V. Williams (*MPC* 31997)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	94.71351		(2000.0)	P	Q
<i>n</i>	0.28693691	ω	235.52255	-0.42863053	+0.90332400
<i>a</i>	2.2765565	Ω	9.14321	-0.79043908	-0.36594058
<i>e</i>	0.0792573	<i>i</i>	6.06229	-0.43758647	-0.22381521
<i>P</i>	3.43	<i>H</i>	14.5	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1991 03 23	809	0.4+	0.6+	1998 03 29	704	0.4-	0.2+	1999 08 22	703	0.1-	1.0-
1991 03 23	809	0.5+	0.6+	1998 03 29	704	0.4-	0.8+	1999 08 22	699	0.4+	0.4+
1991 03 23	809	1.0+	0.7+	1998 03 29	704	0.4-	0.5+	1999 08 22	703	0.2+	0.7-
1991 03 24	809	0.5-	0.4-	1998 04 01	704	0.0	0.3-	1999 08 22	699	0.2-	0.4+
1991 03 24	809	0.4-	0.2-	1998 04 01	704	0.0	0.0	1999 09 07	704	0.1-	0.4+
1991 03 24	809	0.4-	0.2-	1998 04 01	704	0.8+	0.2+	1999 09 07	704	0.0	0.4+
1996 12 14	691	0.0	0.3+	1998 04 01	704	0.0	0.1+	1999 09 07	704	0.0	0.2+
1996 12 14	691	0.0	0.1+	1998 04 01	704	0.1-	1.1-	1999 09 07	704	0.1-	0.6+
1996 12 14	691	0.4-	0.6+	1998 04 19	704	0.2+	0.1+	1999 09 07	704	0.1+	0.4+
1998 03 08	699	0.2-	0.1+	1998 04 19	704	0.6-	0.4-	1999 09 08	704	0.8+	0.1-
1998 03 08	699	0.2-	0.1+	1998 04 19	704	0.3-	0.1+	1999 09 08	704	0.4+	0.1+
1998 03 08	699	0.1+	0.7+	1998 04 19	704	0.3-	0.0	1999 09 08	704	0.4-	0.1-
1998 03 20	704	0.1+	0.1-	1998 04 19	704	0.6+	0.5-	1999 09 08	704	0.3-	0.0
1998 03 20	704	0.8+	0.8-	1998 04 20	704	0.6+	0.3-	1999 09 08	704	0.1-	0.5-
1998 03 20	704	0.3+	0.1-	1998 04 20	704	0.8+	0.5-	1999 09 08	704	0.2-	0.5+
1998 03 20	704	0.1-	0.2-	1998 04 20	704	0.0	0.3-	1999 09 08	704	0.3+	0.1+
1998 03 20	704	0.1-	0.0	1998 04 20	704	0.1+	0.5-	1999 09 08	704	0.2+	0.5+
1998 03 22	704	1.4+	0.2-	1998 04 20	704	0.1+	0.6-	1999 09 08	704	0.6-	0.1+
1998 03 22	704	0.7-	0.2+	1998 05 02	699	0.1+	1.3+	1999 09 08	704	0.3-	0.4+
1998 03 22	704	0.1+	0.2+	1998 05 02	699	0.1-	0.6+	1999 09 14	704	0.1+	0.4-
1998 03 22	704	0.2-	0.6+	1998 05 02	699	0.6+	0.7+	1999 09 14	704	0.1-	0.1-
1998 03 22	704	0.3-	1.1+	1999 08 22	703	0.4-	0.3-	1999 09 14	704	0.9+	0.0
1998 03 28	704	0.3+	0.0	1999 08 22	699	0.3+	0.4+	1999 09 14	704	0.0	0.1+
1998 03 28	704	0.6-	0.5+	1999 08 22	703	0.6-	0.4+	1999 09 14	704	0.1+	0.2-
1998 03 28	704	0.3-	0.3-	1999 08 22	703	0.9-	0.3+	1999 09 14	703	0.3-	0.1+
1998 03 28	704	0.6-	0.0	1999 08 22	703	0.5-	0.1+	1999 09 14	703	0.2-	0.7+

1998 03 29	704	0.0	1.7+	1999 08 22	703	0.0	0.9-	1999 09 14	703	0.6-	0.5+
1998 03 29	704	0.5+	0.4-	1999 08 22	703	0.1-	0.4+	1999 09 14	703	0.0	0.4+

(11691)* 1998 FO₆₆ = 1986 WM₆ = 1989 SF₁₁

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

Research Team at Socorro.

Id. G. V. Williams (*MPC* 31757)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	262.50703		(2000.0)	P	Q
<i>n</i>	0.28759156	ω	254.74962	+0.47076900	-0.88223254
<i>a</i>	2.2731004	Ω	167.16019	+0.82027151	+0.43496776
<i>e</i>	0.1181016	<i>i</i>	1.67709	+0.32485565	+0.18019100
<i>P</i>	3.43	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1986 11 28	010	(5.1-	1.8-)	1998 03 22	704	1.0-	1.1+	1998 04 20	704	0.2-	1.7-
1986 11 28	010	(1.0-	2.8-)	1998 03 25	704	0.1-	0.9+	1998 04 22	704	1.1+	0.0
1986 11 28	010	0.1+	2.0-	1998 03 25	704	0.7+	0.8+	1998 04 22	704	1.1+	0.7-
1989 09 29	809	0.2+	0.6-	1998 03 25	704	0.7+	0.3-	1998 04 22	704	0.6-	1.2-
1989 09 29	809	0.8+	0.5-	1998 03 25	704	0.9+	0.2-	1998 04 22	704	0.4+	0.5-
1989 09 29	809	1.5+	0.3-	1998 03 28	704	1.1-	0.7+	1998 04 22	704	0.2-	0.8+
1989 09 29	809	0.6+	0.9+	1998 03 28	704	0.5+	0.7+	1999 07 13	704	0.2+	0.1-
1989 09 29	809	0.3-	0.0	1998 03 28	704	0.5+	0.4+	1999 07 13	704	0.1+	0.6+
1989 09 29	809	1.2-	0.2-	1998 03 28	704	0.7+	0.1+	1999 07 13	704	0.1+	0.2+
1989 10 01	809	0.9-	0.6+	1998 03 28	704	0.7-	0.5-	1999 07 13	704	0.7+	0.1-
1989 10 01	809	0.6-	0.4+	1998 03 29	704	0.2+	0.7-	1999 07 13	704	0.2-	0.2-
1989 10 01	809	0.4-	0.2+	1998 03 29	704	0.3+	0.3+	1999 07 20	699	1.0-	0.2-
1996 10 04	098	0.4-	1.6+	1998 03 29	704	0.3+	1.0+	1999 07 20	699	1.0+	0.6-
1996 10 04	098	0.7-	1.4+	1998 03 29	704	0.7+	1.3+	1999 07 20	699	0.9+	0.5+
1998 03 20	704	0.0	0.2+	1998 03 29	704	0.8-	0.6+	1999 08 07	699	1.2+	1.2-
1998 03 20	704	0.4-	0.3-	1998 04 19	704	1.5+	1.2-	1999 08 07	699	0.1+	0.6-
1998 03 20	704	0.4-	1.1+	1998 04 19	704	1.0+	0.6-	1999 08 08	699	0.6+	0.5-
1998 03 20	704	1.6-	0.2-	1998 04 19	704	0.3+	1.6+	1999 08 08	699	0.8+	0.7-
1998 03 22	704	0.4-	0.0	1998 04 19	704	0.3-	0.9-	1999 08 08	699	1.5-	0.9+
1998 03 22	704	1.3-	0.5-	1998 04 20	704	0.0	0.6-	1999 09 07	704	1.5-	0.4+
1998 03 22	704	1.0-	0.1+	1998 04 20	704	(2.1+	0.8-)	1999 09 07	704	0.9-	0.1-
1998 03 22	704	0.1-	0.2-	1998 04 20	704	0.2+	0.3+	1999 09 07	704	0.5-	0.3+

(11692)* 1998 FV₆₇ = 1977 JQ = 1989 TO₃

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

Research Team at Socorro.

Id. G. V. Williams (*MPC* 31757)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	52.61931		(2000.0)	P	Q
<i>n</i>	0.18566217	ω	106.88862	-0.29020912	+0.95618714
<i>a</i>	3.0431295	Ω	146.16441	-0.90223249	-0.25996729
<i>e</i>	0.2099625	<i>i</i>	3.96825	-0.31899091	-0.13462231
<i>P</i>	5.31	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1977 05 15	095	(6.7+	2.0+)	1998 03 29	704	0.5-	0.2+	1998 05 16	704	1.4-	1.2-
1989 10 07	809	0.3+	0.1-	1998 03 29	704	0.7-	0.6+	1998 05 16	704	(2.0-	0.5+)
1989 10 07	809	0.6+	0.7+	1998 03 29	704	0.9+	0.8+	1999 08 07	699	0.6-	0.0
1989 10 07	809	0.3-	0.3+	1998 03 29	704	0.2+	1.3+	1999 08 07	699	0.3-	0.6+
1989 10 08	809	0.6-	0.8-	1998 03 29	704	0.1+	0.5+	1999 08 07	699	0.0	0.2-
1989 10 08	809	0.1+	0.3-	1998 04 20	704	0.3-	0.3-	1999 08 08	699	2.0+	0.7-
1989 10 08	809	0.2-	0.5+	1998 04 20	704	0.3+	0.4+	1999 08 08	699	0.1-	0.5+
1995 12 14	691	0.5+	0.2-	1998 04 20	704	0.7+	0.1-	1999 08 08	699	0.5+	0.0
1995 12 14	691	0.9-	0.6-	1998 04 20	704	0.5+	0.8-	1999 08 08	691	0.1+	0.0
1995 12 14	691	0.7+	0.2-	1998 04 20	704	0.2+	0.1-	1999 08 08	691	0.0	0.1-
1998 03 20	704	0.3+	0.5+	1998 04 22	704	0.5+	0.3-	1999 08 08	691	0.1+	0.0
1998 03 20	704	0.6+	0.1+	1998 04 22	704	0.3+	0.4-	1999 08 22	703	0.0	0.2-
1998 03 20	704	1.6+	0.2+	1998 04 22	704	0.6-	0.0	1999 08 22	703	0.1-	0.2+
1998 03 20	704	1.1+	0.3-	1998 04 22	704	0.0	0.0	1999 08 22	703	0.0	0.4+
1998 03 20	704	(3.1+	0.4-)	1998 04 22	704	0.8+	0.2-	1999 08 22	703	0.0	1.0+

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1998 03 22	704	1.8−	0.3+	1998 04 28	699	0.4+	0.3+	1999 09 07	704	0.9−	0.4+
1998 03 22	704	0.8−	0.3+	1998 04 28	699	0.5+	0.0	1999 09 07	704	0.4−	0.7+
1998 03 22	704	0.5−	0.3−	1998 04 28	699	1.0+	0.8+	1999 09 07	704	0.1−	0.2+
1998 03 22	704	0.2+	0.7−	1998 04 30	699	0.2+	0.5+	1999 09 07	704	0.0	0.0
1998 03 24	699	0.6−	0.1+	1998 04 30	699	0.9+	0.2−	1999 09 07	704	0.6−	0.1−
1998 03 24	699	0.5−	0.9+	1998 04 30	699	0.6+	0.6−	1999 09 09	704	0.7−	0.3−
1998 03 24	699	0.4−	0.1−	1998 05 01	699	0.2−	0.2−	1999 09 09	704	0.0	0.5−
1998 03 25	704	0.6−	0.7−	1998 05 01	699	0.2+	0.3−	1999 09 09	704	0.4+	0.1−
1998 03 25	704	0.8−	0.3−	1998 05 01	699	0.6+	0.3+	1999 09 09	704	0.3−	0.1−
1998 03 25	704	0.2−	0.8−	1998 05 01	691	0.1+	0.2+	1999 09 09	704	0.2−	0.3−
1998 03 25	704	0.8−	0.6−	1998 05 01	691	0.2+	0.2−	1999 09 13	704	0.2+	0.2−
1998 03 25	704	1.3−	0.6+	1998 05 01	691	0.1+	0.1−	1999 09 13	704	0.2−	0.3+
1998 03 25	566	0.6−	0.2−	1998 05 16	704	0.6+	0.1−	1999 09 13	704	0.5+	0.6−
1998 03 25	566	0.3−	0.2−	1998 05 16	704	(0.1−	2.3−)	1999 09 13	704	0.4+	1.1−
1998 03 25	566	0.4−	0.1+	1998 05 16	704	0.8−	0.7−	1999 09 13	704	0.4+	0.4−

(11693)* 1998 FE₆₉ = 1953 GZ₁ = 1989 YZ₂ = 1990 BS₅

Discovered 1998 Mar. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31758), S. Nakano (d, *ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	97.83933		<i>P</i>		<i>Q</i>	
<i>n</i>	0.26310713	ω	235.85024	−0.56535213	+0.82484965	
<i>a</i>	2.4120204	Ω	359.72286	−0.74561272	−0.51112511	
<i>e</i>	0.1015664	<i>i</i>	1.87393	−0.35275862	−0.24160749	
<i>P</i>	3.75	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i> 1

Residuals in seconds of arc

1953 04 07	210	0.0	0.1+	1998 03 25	704	0.4−	1.9+	1998 05 01	699	0.0	0.2−
1953 04 08	210	(3.2+	2.5+)	1998 03 28	704	0.5−	0.2−	1998 05 16	704	(2.5+	0.0)
1989 12 30	413	0.2−	0.4−	1998 03 28	704	0.0	0.1+	1998 05 16	704	2.1+	0.4+
1989 12 30	413	0.3+	1.3+	1998 03 28	704	0.2+	0.1+	1998 05 16	704	1.4+	2.0+
1989 12 31	413	0.7+	0.1−	1998 03 28	704	0.6+	1.2+	1998 08 22	703	0.4+	0.1+
1989 12 31	413	1.2+	0.4−	1998 03 28	704	0.5+	0.2−	1999 08 22	703	0.0	0.3+
1990 01 21	372	(3.6−	1.3−)	1998 04 01	704	0.4+	0.1+	1999 08 22	703	0.3+	0.9+
1990 01 21	372	1.0−	1.9+	1998 04 01	704	0.2+	0.7+	1999 08 22	703	0.3+	1.3+
1998 03 20	704	0.8+	0.9−	1998 04 01	704	0.1+	0.3+	1999 08 22	699	0.9+	0.6+
1998 03 20	704	0.6−	0.3+	1998 04 01	704	0.1+	0.1−	1999 08 22	699	0.2+	0.0
1998 03 20	704	0.3−	0.6+	1998 04 01	704	1.1+	0.1+	1999 08 22	699	0.2+	0.3+
1998 03 20	704	1.0−	1.1+	1998 04 18	704	0.9+	0.3−	1999 09 07	704	0.4−	0.1−
1998 03 20	704	1.0−	1.1+	1998 04 18	704	0.9−	0.3−	1999 09 07	704	0.1−	0.1+
1998 03 22	704	0.1−	0.1−	1998 04 18	704	0.5−	0.8−	1999 09 07	704	0.5+	0.2+
1998 03 22	704	0.1+	0.6−	1998 04 18	704	0.9−	0.6−	1999 09 07	704	0.2+	0.1+
1998 03 22	704	0.1+	0.2−	1998 04 18	704	1.2−	0.1−	1999 09 09	704	0.0	0.5+
1998 03 22	704	0.1+	1.4−	1998 04 20	704	0.4+	0.1+	1999 09 09	704	0.3−	0.4+
1998 03 22	704	0.8−	0.6−	1998 04 20	704	0.4−	0.0	1999 09 09	704	0.1+	0.0
1998 03 22	699	0.2+	0.1+	1998 04 20	704	0.2+	0.3+	1999 09 09	704	1.0−	0.4−
1998 03 22	699	1.0+	0.1+	1998 04 20	704	0.9+	0.2+	1999 09 09	704	0.8−	0.6−
1998 03 22	699	0.1−	0.3−	1998 04 20	704	0.4−	0.2−	1999 09 11	699	0.1+	0.5+
1998 03 24	699	0.1+	0.1−	1998 04 22	704	0.7−	0.0	1999 09 11	699	0.1−	0.9+
1998 03 24	699	0.4+	0.3+	1998 04 22	704	0.3−	0.0	1999 09 11	699	0.0	0.1+
1998 03 24	699	0.0	0.3−	1998 04 22	704	0.3+	0.1+	1999 09 14	704	0.7−	0.0
1998 03 25	704	0.2+	0.2−	1998 04 22	704	0.4−	0.1+	1999 09 14	704	0.1−	0.5−
1998 03 25	704	0.3−	0.1+	1998 04 22	704	0.4−	0.3+	1999 09 14	704	0.3−	0.1−
1998 03 25	704	0.0	0.3−	1998 05 01	699	0.2−	0.4−	1999 09 14	704	0.4−	0.4−
1998 03 25	704	0.1−	0.4+	1998 05 01	699	0.3+	0.5−	1999 09 14	704	0.9−	0.1+

(11694)* 1998 FO₇₀ = 1978 RK₁₄ = 1982 XC₄

Discovered 1998 Mar. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31759)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	238.73183		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.27840987	ω	279.21125	+0.11716730	−0.99295125
<i>a</i>	2.3228061	Ω	164.02699	+0.93477070	+0.10418690
<i>e</i>	0.1029306	<i>i</i>	3.72506	+0.33537377	+0.05650579
<i>P</i>	3.54	<i>H</i>	14.9	<i>G</i>	0.15 <i>U</i> 1

Residuals in seconds of arc

1978 09 06	809	0.5−	0.4−	1998 03 24	699	0.5+	0.3+	1998 04 20	704	0.4−	0.7−
1982 12 13	381	0.7−	1.3+	1998 03 25	704	0.2+	0.4−	1998 04 20	704	1.1+	1.4+
1982 12 14	381	1.0+	1.7+	1998 03 25	704	0.5+	0.4+	1998 04 20	704	1.5−	0.0
1982 12 14	381	0.8−	0.5−	1998 03 25	704	0.0	0.4−	1998 04 22	704	0.2+	0.6−
1992 07 31	809	0.8+	0.9+	1998 03 25	704	0.1−	0.2+	1998 04 22	704	1.0−	1.2+
1992 07 31	809	0.2−	0.1+	1998 03 25	704	0.0	0.1−	1998 04 22	704	1.0+	0.6−
1992 07 31	809	1.1+	0.2+	1998 03 28	704	0.8+	0.4+	1998 04 22	704	0.4+	0.5+
1998 03 20	704	1.0−	0.5+	1998 03 28	704	0.9+	0.0	1998 04 22	704	0.0	0.5+
1998 03 20	704	0.2−	0.2−	1998 03 28	704	1.3−	0.2+	1999 07 13	704	0.2+	0.1−
1998 03 20	704	1.0−	0.9+	1998 03 28	704	0.1+	0.3+	1999 07 13	704	0.4+	0.1−
1998 03 20	704	1.1+	1.0+	1998 03 28	704	0.7−	0.9−	1999 07 13	704	0.3−	0.2−
1998 03 20	704	0.8+	1.7+	1998 03 29	704	0.1−	0.0	1999 07 13	704	0.2−	0.4−
1998 03 22	704	1.1+	1.1−	1998 03 29	704	0.6−	0.5+	1999 08 08	699	1.6−	0.7−
1998 03 22	704	0.9+	0.0	1998 03 29	704	0.8−	0.6+	1999 08 08	699	0.1+	0.9+
1998 03 22	704	0.1−	0.2+	1998 03 29	704	0.1−	0.1−	1999 08 08	699	0.4−	1.4+
1998 03 22	704	1.6+	1.6−	1998 03 29	704	0.3+	0.8−	1999 09 07	704	0.3−	0.1+
1998 03 24	699	1.5−	0.4−	1998 04 20	704	0.7+	0.3−	1999 09 07	704	0.2+	0.3+
1998 03 24	699	1.6−	1.7−	1998 04 20	704	1.1+	1.5+	1999 09 07	704	(1.1−	2.6+)

(11695)* 1998 FA₇₄ = 1976 UL₁₉ = 1996 TH₆₅

Discovered 1998 Mar. 22 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPC* 31761)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	195.34403		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.29512576	ω	115.67807	−0.77334802	−0.63213196
<i>a</i>	2.2342476	Ω	25.20268	+0.53328277	−0.68989467
<i>e</i>	0.0680979	<i>i</i>	6.52575	+0.34284447	−0.35278113
<i>P</i>	3.34	<i>H</i>	14.9	<i>G</i>	0.15 <i>U</i> 2

Residuals in seconds of arc

1976 10 24	381	1.3+	0.7+	1998 03 25	704	0.5−	0.3−	1998 05 01	699	0.1+	0.3+
1976 10 24	381	1.2−	0.9−	1998 03 25	704	0.4+	0.6+	1998 05 01	699	0.8+	0.2+
1996 10 14	327	0.4+	0.3+	1998 03 25	704	0.9−	0.3+	1998 05 16	704	1.2+	0.4−
1996 10 14	327	0.0	0.1+	1998 03 29	704	0.4+	0.0	1998 05 16	704	(2.1+	2.8−)
1996 10 14	327	0.4−	0.1+	1998 03 29	704	0.2+	0.7+	1998 05 16	704	0.9+	1.1−
1996 10 18	566	0.9+	0.2−	1998 03 29	704	0.0	0.0	1998 05 16	704	0.9−	0.1+
1996 10 18	566	0.2+	0.3−	1998 03 29	704	0.5+	0.1−	1998 05 16	704	(0.4−	2.3−)
1996 10 18	566	0.3+	0.3+	1998 03 29	704	0.0	0.3−	1999 08 12	699	0.9+	0.8−
1996 11 06	691	0.5−	0.1+	1998 04 18	704	0.4−	0.1−	1999 08 12	699	0.6+	1.2−
1996 11 06	691	0.3−	0.1−	1998 04 18	704	0.5−	0.2+	1999 08 12	699	0.8−	0.3+
1996 11 06	691	0.5−	0.1−	1998 04 18	704	1.0−	0.0	1999 09 07	699	1.5−	0.5+
1998 03 22	704	0.0	0.2−	1998 04 18	704	0.5−	0.8−	1999 09 07	699	1.7−	1.4+
1998 03 22	704	0.6+	0.5−	1998 04 18	704	1.8−	0.5+	1999 09 09	704	0.4+	0.0
1998 03 22	704	0.8+	0.4−	1998 04 20	704	0.7−	0.1+	1999 09 09	704	0.1−	0.5+
1998 03 22	704	1.4+	0.7−	1998 04 20	704	0.4+	0.7−	1999 09 09	704	0.9+	0.5+
1998 03 22	704	0.1−	0.8−	1998 04 20	704	0.4−	0.4+	1999 09 09	704	0.7+	0.0
1998 03 22	699	0.6−	1.2+	1998 04 20	704	0.3+	0.3+	1999 09 09	704	0.2+	0.5+
1998 03 22	699	0.9−	0.2+	1998 04 20	704	1.5−	0.3+	1999 09 13	704	0.4+	0.9−
1998 03 22	699	0.5+	0.9+	1998 04 22	704	0.0	0.2−	1999 09 13	704	0.2−	0.6−
1998 03 25	699	0.8+	0.2+	1998 04 22	704	0.0	0.4−	1999 09 13	704	0.2+	0.3+
1998 03 25	699	1.0+	0.3−	1998 04 22	704	0.4+	0.1−	1999 09 13	704	0.0	0.5+
1998 03 25	699	1.0+	0.3+	1998 04 22	704	0.4−	0.3+	1999 09 13	704	0.3−	0.3−
1998 03 25	704	0.0	0.1−	1998 04 22	704	0.1+	0.3+				
1998 03 25	704	0.2+	0.2+	1998 05 01	699	0.4−	0.2+				

(11696)* 1998 FD₇₄ = 1985 GG₁ = 1988 BS₁

Discovered 1998 Mar. 22 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPC* 31762)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		151.96036		(2000.0)		P		Q	
<i>n</i>	0.30083054	ω	120.99159	−0.99011737	+0.12859928				
<i>a</i>	2.2059116	Ω	66.44790	−0.14019082	−0.89690706				
<i>e</i>	0.1442292	<i>i</i>	3.49886	−0.00375849	−0.42310749				
<i>P</i>	3.28	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	2		

Residuals in seconds of arc

1985 04 15	688	0.6+	0.0	1998 03 25	699	0.5+	0.6−	1998 04 22	704	1.0−	1.3+
1985 04 15	688	0.8+	0.5−	1998 03 25	699	0.4+	0.9−	1998 04 22	704	0.5−	0.3+
1985 05 21	688	0.2−	0.8+	1998 03 28	704	1.2+	0.6+	1998 04 22	704	0.7−	0.6+
1985 05 21	688	0.8−	1.2+	1998 03 28	704	0.4+	0.3−	1998 05 16	704	0.7+	0.1+
1988 01 23	511	(4.6−	2.0+)	1998 03 28	704	0.5−	0.2−	1998 05 16	704	(3.4+	2.6+)
1988 01 23	511	1.3+	1.7+	1998 03 28	704	0.2+	0.4−	1998 05 16	704	1.7−	0.3−
1996 10 11	566	0.1+	0.1−	1998 03 28	704	0.2−	0.5−	1998 05 16	704	1.4+	0.7+
1996 10 11	566	0.8−	1.0−	1998 03 28	704	0.6+	0.4+	1998 05 16	704	0.0	1.3−
1996 10 11	566	0.8−	1.1−	1998 03 28	704	0.3−	0.6−	1998 05 19	691	0.7−	0.1−
1998 03 22	704	(2.6+	1.0−)	1998 03 28	704	0.2+	0.1−	1998 05 19	691	0.5−	0.8−
1998 03 22	704	0.2+	0.3−	1998 03 28	704	1.1−	0.9−	1998 05 19	691	0.4−	0.7−
1998 03 22	704	1.2+	0.1+	1998 03 28	704	0.9+	0.3−	1999 08 12	699	1.3+	0.9+
1998 03 22	704	0.0	1.0−	1998 03 29	704	0.1+	0.1+	1999 08 12	699	0.4−	0.0
1998 03 22	704	(3.3−	0.7+)	1998 03 29	704	0.1−	0.5+	1999 08 12	699	0.5+	0.4+
1998 03 22	699	0.3−	0.2−	1998 03 29	704	0.8+	0.0	1999 08 22	703	0.3+	0.2+
1998 03 22	699	0.1−	0.9−	1998 03 29	704	0.2+	0.1−	1999 08 22	703	0.3−	0.2+
1998 03 22	699	0.4−	0.6−	1998 03 29	704	0.6−	0.8+	1999 08 22	703	0.5+	0.1−
1998 03 24	704	1.0+	1.1−	1998 04 04	691	0.2−	0.0	1999 08 22	703	0.6−	0.3−
1998 03 24	704	1.2−	0.2−	1998 04 04	691	0.3−	0.0	1999 09 07	704	0.5+	0.8−
1998 03 24	704	0.2−	0.3+	1998 04 04	691	0.5−	0.3−	1999 09 07	704	0.4+	0.0
1998 03 24	704	1.7−	0.8−	1998 04 19	704	0.1+	0.4+	1999 09 07	704	0.4+	0.0
1998 03 24	704	1.1−	0.8−	1998 04 19	704	0.2+	0.8+	1999 09 07	704	0.0	0.5−
1998 03 24	566	0.3+	0.5−	1998 04 19	704	0.0	1.1+	1999 09 07	704	0.5+	0.0
1998 03 24	566	0.3+	0.5−	1998 04 19	704	0.1−	0.6+	1999 09 11	699	0.7+	0.3+
1998 03 24	566	0.1+	0.4−	1998 04 20	704	0.0	0.4+	1999 09 11	699	0.8+	0.9+
1998 03 25	704	(3.2+	0.6−)	1998 04 20	704	0.2+	0.4+	1999 09 11	699	0.0	0.3+
1998 03 25	704	(0.9−	2.4−)	1998 04 20	704	1.0+	0.2+	1999 09 14	704	0.2−	0.8−
1998 03 25	704	(2.1+	2.1+)	1998 04 20	704	0.3+	0.4+	1999 09 14	704	0.3−	0.0
1998 03 25	704	0.1−	1.7−	1998 04 20	704	0.1+	1.1+	1999 09 14	704	0.1−	0.8−
1998 03 25	704	1.4−	0.2−	1998 04 22	704	0.3−	0.5+	1999 09 14	704	0.5−	0.9−
1998 03 25	699	1.1+	0.7−	1998 04 22	704	0.2−	1.4+	1999 09 14	704	0.1−	0.5−

(11697)* 1998 FX₉₈ = 3098 P-L

Discovered 1998 Mar. 31 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31764)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		188.60925		(2000.0)		P		Q	
<i>n</i>	0.27499209	ω	212.90396	−0.57496153	−0.81087547				
<i>a</i>	2.3420127	Ω	272.42053	+0.77228417	−0.49383519				
<i>e</i>	0.0597869	<i>i</i>	6.26836	+0.27017847	−0.31401874				
<i>P</i>	3.58	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	1		

Residuals in seconds of arc

1960 09 24	675	0.0	0.0	1998 03 26	566	0.5+	0.2+	1998 04 18	704	0.2−	1.6+
1960 09 25	675	0.3−	0.1−	1998 03 26	566	0.7+	0.3+	1998 04 19	704	0.2−	0.8−
1960 09 26	675	0.9+	0.3+	1998 03 26	566	1.0+	0.1−	1998 04 19	704	0.8−	0.5−
1960 09 27	675	1.0+	0.2+	1998 03 31	704	0.8+	0.4−	1998 04 19	704	0.7−	0.1+
1960 09 28	675	0.8+	0.1+	1998 03 31	704	0.7+	0.6−	1998 04 19	704	1.1−	0.1+
1960 09 29	675	1.0−	0.6−	1998 03 31	704	0.3+	0.9+	1998 04 19	704	0.7−	0.7+
1960 09 29	675	1.1−	0.4−	1998 03 31	704	1.0+	0.2+	1999 07 13	704	0.6+	0.5−
1994 01 14	691	0.2+	0.3+	1998 03 31	704	0.5+	0.1+	1999 07 13	704	2.0+	1.9−

1994 01 14	691	0.0	0.3+	1998 04 01	704	0.1+	1.0−	1999 07 13	704	0.6−	0.5−
1994 01 14	691	0.1+	0.2+	1998 04 01	704	0.3−	0.2+	1999 07 13	704	0.4−	0.4−
1996 11 05	691	0.0	0.1+	1998 04 01	704	0.6−	0.1−	1999 08 08	699	0.7−	1.6+
1996 11 05	691	0.3−	0.2+	1998 04 01	704	0.6−	0.1+	1999 08 08	699	0.1−	0.7+
1996 11 05	691	0.2−	0.2+	1998 04 01	704	0.8−	0.6+	1999 08 08	699	0.7−	1.7+
1998 02 26	566	0.3−	0.4−	1998 04 18	704	0.2+	0.4+	1999 09 05	699	0.4−	0.2+
1998 02 26	566	0.4−	0.3−	1998 04 18	704	0.2−	0.4−	1999 09 05	699	0.2+	0.0
1998 02 26	566	0.1+	0.3−	1998 04 18	704	1.0+	0.4+	1999 09 05	699	0.1−	0.8+

(11698)* 1998 FZ₁₀₂ = 1994 AM₁₅

Discovered 1998 Mar. 31 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31764)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		156.55396		(2000.0)		P		Q	
<i>n</i>	0.27613991	ω	193.34685	−0.95690144	−0.28458343				
<i>a</i>	2.3355183	Ω	329.92397	+0.27593096	−0.82876578				
<i>e</i>	0.1244746	<i>i</i>	6.63397	+0.09056349	−0.48182938				
<i>P</i>	3.57	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	2		

Residuals in seconds of arc

1992 09 02	809	0.5+	0.5+	1998 04 01	704	0.2−	0.6+	1999 09 03	691	0.3+	0.9−
1992 09 02	809	0.6−	0.2−	1998 04 01	704	0.1+	0.0	1999 09 03	691	0.3+	0.9−
1992 09 02	809	0.8−	0.4+	1998 04 01	704	0.6+	0.2−	1999 09 03	691	0.5+	1.9−
1992 09 23	809	0.9+	0.3+	1998 04 01	704	1.0+	0.2−	1999 09 06	699	0.2−	1.0+
1992 09 23	809	0.8−	0.2−	1998 04 01	704	1.0+	0.9−	1999 09 06	699	0.2+	0.9−
1992 09 23	809	0.3−	0.9−	1998 04 18	704	0.5+	0.5+	1999 09 06	699	0.4−	1.1+
1994 01 08	675	0.3−	1.9−	1998 04 18	704	0.8−	0.8−	1999 09 07	704	0.1−	1.0−
1994 01 08	675	0.1+	1.9−	1998 04 18	704	0.0	0.8−	1999 09 07	704	0.7+	0.1+
1994 01 09	675	0.6+	0.1−	1998 04 18	704	0.1−	0.4+	1999 09 07	704	0.1+	1.4−
1994 01 09	675	0.6+	0.9−	1998 04 19	704	0.3+	0.4+	1999 09 07	704	0.0	0.0
1996 11 05	691	1.3−	0.2+	1998 04 19	704	0.5+	0.1−	1999 09 07	704	0.2+	0.5−
1996 11 05	691	1.4−	0.1+	1998 04 19	704	0.9−	0.6−	1999 09 09	704	0.2+	0.1+
1996 11 05	691	0.7−	0.4+	1998 04 19	704	0.9+	0.5+	1999 09 09	704	0.1−	0.3+
1998 03 25	566	0.8−	0.0	1998 04 19	704	0.0	0.6+	1999 09 09	704	0.8+	0.1+
1998 03 25	566	1.0−	0.0	1999 07 21	699	0.4−	0.6−	1999 09 13	704	1.2+	1.2−
1998 03 25	566	0.8−	0.0	1999 07 21	699	0.3−	1.3+	1999 09 13	704	0.6+	0.2+
1998 03 31	704	0.3−	0.3+	1999 07 21	699	0.7+	0.0	1999 09 13	704	0.1+	0.2+
1998 03 31	704	0.6−	0.5−	1999 08 08	699	0.3+	0.5+	1999 09 13	704	0.7+	0.3−
1998 03 31	704	0.5−	0.3−	1999 08 08	699	0.5+	0.6−				
1998 03 31	704	0.9−	0.8−	1999 08 08	699	0.2+	0.5−				

(11699)* 1998 FL₁₀₅ = 1981 UA₁₈ = 1983 CM₃ = 1987 JL = 1994 CM₂₀

Discovered 1998 Mar. 31 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31766)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		101.12531		(2000.0)		P		Q	
<i>n</i>	0.26434202	ω	283.23443	−0.71186603	+0.69821333				
<i>a</i>	2.4045026	Ω	301.11103	−0.60521310	−0.66461461				
<i>e</i>	0.0825571	<i>i</i>	5.07895	−0.35631988	−0.26605556				
<i>P</i>	3.73	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1		

Residuals in seconds of arc

1981 10 24	095	(3.1+	4.1+)	1998 04 01	704	0.6+	0.0	1999 08 19	470	0.9−	0.1+
1983 02 10	809	1.6−	0.8−	1998 04 01	704	0.4−	0.1−	1999 09 07	704	0.5−	0.0
1983 02 10	809	1.2−	0.6−	1998 04 18	704	1.1−	0.9−	1999 09 07	704	0.2−	0.1−
1983 02 10	809	0.7−	0.4−	1998 04 18	704	0.5−	0.6+	1999 09 07	704	0.1−	0.1−
1987 05 04	413	0.5−	1.3−	1998 04 18	704	0.0	0.3+	1999 09 07	704	0.3−	0.2−
1987 05 04	413	0.8+	1.3−	1998 04 18	704	0.0	0.1−	1999 09 07	704	0.2−	0.3−
1987 05 04	413	0.8+	1.0−	1998 04 18	704	0.8+	0.5+	1999 09 08	704	0.1−	0.2−
1987 05 04	413	0.1−	0.2−	1998 04 19	704	0.7+	0.2−	1999 09 08	704	0.3−	0.3−
1994 02 11	400	0.0	0.0	1998 04 19	704	0.7+	0.0	1999 09 08	704	0.3−	0.2+
1994 02 11	400	0.9+	0.5+	1998 04 19	704	0.5+	1.4+	1999 09 09	704	0.2+	0.1+
1997 01 25	327	0.7+	0.1−	1998 04 19	704	0.5+	0.3+	1999 09 09	704	0.1+	0.0

1997 01 25	327	0.3+	0.3+	1998 04 19	704	0.0	0.0	1999 09 09	704	0.1-	0.2-
1997 01 25	327	0.7+	0.0	1998 04 20	704	0.2-	1.0+	1999 09 09	704	0.0	0.1+
1998 03 26	566	0.3+	0.5-	1998 04 20	704	0.0	0.3+	1999 09 09	704	0.1+	0.0
1998 03 26	566	0.5+	0.3-	1998 04 20	704	0.1+	0.1+	1999 09 09	704	0.2+	0.2-
1998 03 26	566	0.3+	0.2-	1998 04 20	704	0.2-	1.7+	1999 09 09	704	1.8-	0.8-
1998 03 31	704	0.3+	0.6-	1998 04 20	704	0.5-	0.8+	1999 09 09	704	0.5+	0.2+
1998 03 31	704	0.7-	1.5+	1998 06 18	704	0.3+	0.8+	1999 09 09	704	0.1-	0.3+
1998 03 31	704	0.9-	0.2+	1998 06 18	704	0.1+	1.8+	1999 09 14	704	0.8+	0.0
1998 03 31	704	1.6-	0.3-	1998 06 18	704	0.4+	0.2+	1999 09 14	704	0.6+	0.1+
1998 04 01	704	0.4+	0.8-	1998 06 18	704	1.0+	1.7-	1999 09 14	704	0.7+	0.1+
1998 04 01	704	0.8+	0.4-	1999 08 18	470	0.9-	0.2+	1999 09 14	704	0.9+	0.0
1998 04 01	704	0.4+	0.4-	1999 08 19	470	0.4-	0.3+	1999 09 14	704	1.1+	0.3-

(11700)* 1998 FT₁₁₅ = 1983 CV₁ = 1988 EX₂ = 1990 TG₁₀

Discovered 1998 Mar. 31 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31767)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.20403020	<i>ω</i>	290.14994	-0.59476244	+0.80153198		
<i>a</i>	2.8576328	<i>Ω</i>	303.20191	-0.70730151	-0.55821560		
<i>e</i>	0.1885436	<i>i</i>	4.22717	-0.38207619	-0.21434045		
<i>P</i>	4.83	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1983 02 04	046	1.0-	0.8-	1998 04 01	704	0.5-	0.2+	1999 08 09	106	0.3-	0.5-
1983 02 04	046	(3.5-	2.7-)	1998 04 01	704	0.2-	0.5+	1999 08 09	106	0.1-	0.2+
1988 03 13	808	1.1+	1.6-	1998 04 01	704	0.7-	0.2+	1999 08 09	106	0.4+	0.6+
1988 03 13	808	0.7-	2.1+	1998 04 18	704	0.6+	0.2-	1999 08 22	699	0.6+	0.2+
1990 10 10	033	0.5+	0.2-	1998 04 18	704	0.4+	0.1+	1999 08 22	703	0.0	0.4+
1990 10 11	033	0.5+	0.2-	1998 04 18	704	0.9+	0.1+	1999 08 22	703	0.0	0.4+
1990 10 11	033	0.5+	0.1+	1998 04 18	704	0.2-	0.1-	1999 08 22	699	0.2-	1.3+
1990 10 12	033	0.5+	0.1-	1998 04 19	704	0.5+	0.0	1999 08 22	703	0.0	0.9+
1990 10 13	033	0.2+	1.0-	1998 04 19	704	0.8+	0.3+	1999 08 22	703	0.2-	0.1+
1990 10 14	033	0.3-	0.5-	1998 04 19	704	(1.3+	2.4-)	1999 08 22	699	0.3-	0.4+
1998 03 24	699	0.1+	0.2+	1998 04 19	704	1.9-	1.5-	1999 09 05	699	0.3-	0.6+
1998 03 24	699	0.3-	0.3+	1998 04 20	704	1.1+	0.1-	1999 09 05	699	0.7-	0.8+
1998 03 24	699	0.4+	0.4-	1998 04 20	704	0.1+	1.1-	1999 09 05	699	0.6-	0.7+
1998 03 25	704	0.5+	0.4-	1998 04 20	704	0.9+	0.5+	1999 09 07	704	0.1-	0.4-
1998 03 25	704	0.1-	0.5-	1998 04 20	704	0.6+	0.4-	1999 09 07	704	0.7+	0.9-
1998 03 25	704	0.1+	0.0	1998 04 20	704	0.2+	0.4+	1999 09 07	704	0.4-	1.3-
1998 03 25	704	1.0-	0.3+	1998 04 22	704	(0.7+	3.6+)	1999 09 07	704	0.0	0.9-
1998 03 25	704	0.9-	0.7+	1998 04 22	704	0.3-	0.3+	1999 09 07	704	0.0	0.3-
1998 03 26	566	0.3-	0.2-	1998 04 22	704	0.2-	0.2-	1999 09 09	704	0.0	0.2-
1998 03 26	566	0.1-	0.1-	1998 04 22	704	1.2+	0.7+	1999 09 09	704	0.4+	0.1-
1998 03 26	566	0.3-	0.1+	1998 04 22	704	1.8-	0.8+	1999 09 09	704	(2.4+	1.0-)
1998 03 31	704	0.1+	0.4+	1998 05 02	566	0.5+	1.0-	1999 09 09	704	0.4-	0.8-
1998 03 31	704	1.2-	0.6-	1998 05 02	566	0.3+	1.0-	1999 09 09	704	0.1+	0.5-
1998 03 31	704	0.5-	0.2+	1998 05 02	566	1.2+	1.4-	1999 09 14	704	0.3+	0.1-
1998 03 31	704	(0.6-	3.6+)	1998 06 18	704	0.8+	0.2-	1999 09 14	704	0.5+	0.8-
1998 03 31	704	0.3-	0.4-	1998 06 18	704	0.3+	0.1+	1999 09 14	704	0.1+	0.8-
1998 04 01	704	0.5-	0.2-	1998 06 18	704	(1.8+	3.0+)	1999 09 14	704	0.4+	0.6-
1998 04 01	704	1.1-	0.1+	1998 06 18	704	(2.4+	0.0)	1999 09 14	704	0.0	0.4-

(11701)* 1998 FY₁₁₆ = 1950 NP₁ = 1981 NA₁ = 1986 TP₄ = 1990 SE₁₈

Discovered 1998 Mar. 31 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Gnädig (*MPC* 32261)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.22231075	<i>ω</i>	22.10188	+0.47516175	+0.87521792		
<i>a</i>	2.6987485	<i>Ω</i>	276.36952	-0.82032631	+0.40337793		
<i>e</i>	0.1469821	<i>i</i>	5.23259	-0.31825470	+0.26698284		
<i>P</i>	4.43	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1950 07 15	760	0.3-	1.8-	1998 04 18	704	(1.0+	2.1-)	1999 09 05	703	0.4+	0.4-
1950 07 15	760	0.0	0.6+	1998 04 18	704	0.2-	1.3-	1999 09 05	703	0.4-	0.1+
1981 07 02	805	0.5+	1.2+	1998 04 18	704	0.6-	0.1-	1999 09 05	703	0.8-	0.4+
1981 07 02	805	0.6+	0.0	1998 04 20	704	0.1+	0.2-	1999 09 05	703	1.4-	0.9+
1986 10 09	033	0.0	0.4+	1998 04 20	704	0.4+	0.0	1999 09 08	704	0.1+	0.2-
1986 10 10	033	0.3+	0.9+	1998 04 20	704	0.5-	0.3+	1999 09 08	704	0.5-	0.5+
1990 09 16	675	0.9+	1.9-	1998 04 20	704	0.6+	0.4-	1999 09 08	704	0.7+	1.0-
1990 09 16	675	(1.2-	5.5-)	1998 04 20	704	0.4-	0.6-	1999 09 08	704	0.1+	0.3+
1998 03 25	704	1.3-	0.4+	1998 04 30	699	0.5+	0.5+	1999 09 09	704	0.3-	0.0
1998 03 25	704	1.5-	0.6+	1998 04 30	699	0.1+	0.1+	1999 09 09	704	0.5-	0.1-
1998 03 25	704	1.6-	0.9+	1998 04 30	699	0.3+	0.6+	1999 09 09	704	0.1+	0.2-
1998 03 25	704	0.6-	0.7+	1998 05 03	566	0.4+	0.3-	1999 09 09	704	0.2-	0.2+
1998 03 25	704	0.8-	1.0+	1998 05 03	566	0.2+	0.1+	1999 09 09	704	0.5-	0.2+
1998 03 31	704	0.9+	0.1-	1998 05 03	566	0.4-	0.2-	1999 09 10	704	0.5+	0.6-
1998 03 31	704	0.2-	0.5-	1998 05 16	704	1.1+	0.6-	1999 09 10	704	0.1+	0.0
1998 03 31	704	0.7+	0.2-	1998 05 16	704	0.7+	0.5-	1999 09 10	704	0.1-	0.3-
1998 03 31	704	0.4-	0.6-	1998 05 16	704	0.2+	1.1+	1999 09 10	704	0.5-	0.4-
1998 03 31	704	0.2+	1.5+	1998 05 16	704	1.1+	0.4-	1999 09 14	704	0.3-	0.0
1998 04 01	704	0.2-	0.2-	1998 05 16	704	1.0+	1.0-	1999 09 14	704	0.4-	0.1+
1998 04 01	704	0.3+	0.1+	1999 08 12	106	0.5-	0.6+	1999 09 14	704	0.3+	1.0+
1998 04 01	704	0.3-	0.1+	1999 08 12	106	0.3-	0.1+	1999 09 14	704	0.1+	0.3-
1998 04 01	704	0.1+	0.6+	1999 08 12	106	0.2-	0.3+	1999 09 14	704	0.1-	0.6-
1998 04 01	704	0.1-	0.9+	1999 08 19	470	1.1+	0.7+				
1998 04 18	704	0.7+	0.8-	1999 08 19	470	1.1+	0.6+				

(11702)* 1998 FE₁₁₇ = 1987 DZ₂ = 1992 OC₂

Discovered 1998 Mar. 31 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31768)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.28037760	<i>ω</i>	90.89018	+0.59843083	-0.79999787		
<i>a</i>	2.3119255	<i>Ω</i>	322.24200	+0.70398836	+0.55092898		
<i>e</i>	0.1189494	<i>i</i>	4.06480	+0.38246690	+0.23765664		
<i>P</i>	3.52	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1987 02 23	010	0.7+	0.2-	1998 03 28	428	0.8-	0.5-	1998 04 20	704	1.2+	0.8+
1987 02 23	010	0.5-	0.4-	1998 03 29	428	0.4-	0.2+	1998 04 20	704	0.3+	0.6-
1992 07 24	809	0.8+	0.0	1998 03 31	704	0.6-	0.5-	1998 04 20	704	0.2+	1.0-
1992 07 24	809	0.6-	0.2-	1998 03 31	704	0.0	0.7+	1998 04 20	704	0.2+	0.1-
1992 07 24	809	0.8-	1.2-	1998 03 31	704	1.4-	0.1-	1998 04 20	704	0.6-	1.1-
1992 07 26	809	0.9+	0.8-	1998 03 31	704	0.4-	0.8+	1998 04 22	704	1.6+	0.1-
1992 07 26	809	0.6+	0.5-	1998 03 31	704	(5.8-	1.5-)	1998 04 22	704	1.0+	0.9-
1992 07 26	809	0.2-	0.8-	1998 04 01	704	0.1-	0.2-	1998 04 22	704	0.7+	0.6-
1992 07 30	809	0.9-	0.7-	1998 04 01	704	0.2-	0.2+	1998 04 22	704	0.6-	0.8+
1992 07 30	809	0.2+	0.3-	1998 04 01	704	(2.3-	0.4+)	1998 04 22	704	0.3+	0.5-
1992 07 30	809	1.0+	0.3+	1998 04 01	704	1.9-	0.8-	1999 07 14	704	1.6+	0.5+
1994 01 09	691	0.1+	0.1+	1998 04 01	704	0.3+	0.3+	1999 07 14	704	0.7+	0.6-
1994 01 09	691	0.5-	0.0	1998 04 03	428	0.5-	0.2-	1999 07 14	704	0.3+	0.0
1994 01 09	691	0.1-	0.0	1998 04 03	428	(2.1-	0.1-)	1999 07 14	704	0.2-	0.1-
1998 03 20	704	(1.3+	2.3+)	1998 04 18	704	0.2+	0.3-	1999 07 20	699	0.3+	0.5+
1998 03 20	704	0.1-	0.6+	1998 04 18	704	0.4+	1.4+	1999 07 20	699	1.3-	0.9+
1998 03 20	704	1.8+	1.1+	1998 04 18	704	0.1+	0.8-	1999 07 20	699	0.8-	0.4-
1998 03 20	704	(0.4-	3.2+)	1998 04 18	704	0.6+	0.2+	1999 08 07	699	0.4-	0.4-
1998 03 25	704	0.6-	0.7-	1998 04 19	704	0.5+	0.4+	1999 08 07	699	0.2-	0.1+
1998 03 25	704	0.3-	0.7-	1998 04 19	704	1.1+	0.6+	1999 08 07	699	0.5-	0.2-
1998 03 25	704	0.1+	0.0	1998 04 19	704	0.3-	0.8+	1999 09 11	704	0.4+	0.7+
1998 03 25	704	0.6-	0.5-	1998 04 19	704	0.7+	1.7+	1999 09 11	704	0.3-	1.1+
1998 03 25	704	0.1+	0.1+	1998 04 19	428	0.1+	0.2-	1999 09 11	704	0.3-	0.3+
1998 03 28	428	1.2-	0.1-	1998 04 19	428	0.4-	0.6+	1999 09 11	704	0.0	1.8+

Id. G. V. Williams (*MPC* 32005)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23446468	ω	147.96248	+0.37491712	+0.92692092		
<i>a</i>	2.6046603	Ω	144.04959	−0.85619321	+0.35280875		
<i>e</i>	0.0800520	<i>i</i>	1.55789	−0.35548606	+0.12784206		
<i>P</i>	4.20	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1994 04 12	691	0.6−	0.8+	1998 03 22	704	0.5+	1.0−	1998 04 19	704	1.4−	1.1−
1994 04 12	691	0.9+	0.8+	1998 03 22	704	0.3+	0.4−	1998 04 20	704	0.0	0.5−
1994 04 12	691	0.6+	1.0+	1998 03 22	704	0.4+	1.2+	1998 04 20	704	1.9+	1.9−
1995 09 26	691	0.3−	0.1−	1998 03 25	566	0.4+	0.0	1998 04 20	704	1.0−	1.7+
1995 09 26	691	0.0	0.2−	1998 03 25	566	0.6+	0.1+	1998 04 20	704	0.3−	0.7−
1995 09 26	691	0.0	0.0	1998 03 25	566	0.1−	0.2+	1998 04 20	704	0.9−	0.8+
1995 10 02	691	0.2+	0.1−	1998 03 28	704	0.1+	1.5−	1999 07 13	704	0.2+	0.1−
1995 10 02	691	0.4+	0.1−	1998 03 28	704	0.8−	0.6+	1999 07 13	704	0.0	0.2−
1995 10 02	691	0.1+	0.3−	1998 03 28	704	0.7+	0.1+	1999 07 13	704	0.3+	0.3−
1998 01 28	910	1.1−	0.0	1998 03 28	704	0.8+	0.9+	1999 07 13	704	0.2−	0.7−
1998 01 28	910	0.9−	0.3−	1998 03 28	704	0.5+	0.4−	1999 07 13	704	0.3−	0.9−
1998 01 28	910	0.8−	0.3−	1998 03 29	704	0.1+	0.1+	1999 08 07	699	0.6+	0.9+
1998 03 20	704	1.2−	0.6+	1998 03 29	704	1.3+	0.9−	1999 08 07	699	0.5+	0.5+
1998 03 20	704	0.8−	1.2+	1998 03 29	704	0.4+	0.9−	1999 09 07	704	0.9−	0.3−
1998 03 20	704	0.7−	0.4+	1998 03 29	704	0.7+	0.7−	1999 09 07	704	0.3−	0.4+
1998 03 20	704	0.7−	0.3+	1998 03 29	704	0.9+	0.7−	1999 09 07	704	0.4−	0.4+
1998 03 20	704	0.9−	1.6+	1998 04 19	704	0.2−	0.9−	1999 09 07	704	0.2+	0.1+
1998 03 22	704	0.1−	0.4−	1998 04 19	704	0.5−	0.8+	1999 09 07	704	0.3+	0.4−
1998 03 22	704	0.9+	1.1−	1998 04 19	704	0.5−	0.8−				

(11704)* 1998 FZ₁₃₀ = 1988 RB₄ = 1994 CS₁₅

Discovered 1998 Mar. 22 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 32262)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26979376	ω	303.15483	+0.69103714	+0.72246274		
<i>a</i>	2.3720005	Ω	10.65037	−0.61552738	+0.60463607		
<i>e</i>	0.1271377	<i>i</i>	7.05497	−0.37893762	+0.33535475		
<i>P</i>	3.65	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1988 09 09	033	0.6+	0.5−	1998 03 25	704	0.5−	0.2−	1999 09 07	704	0.2+	0.6+
1988 09 10	033	0.2+	0.6−	1998 03 25	704	(2.1−	0.4+)	1999 09 07	704	0.3−	0.3+
1988 09 10	033	0.2−	1.5−	1998 03 29	704	1.2+	1.0−	1999 09 07	704	0.6−	0.5+
1988 09 11	033	0.6+	0.5+	1998 03 29	704	0.7+	0.1+	1999 09 07	704	0.2−	0.4+
1994 02 08	809	0.5+	0.0	1998 03 29	704	0.6−	0.3+	1999 09 08	699	0.7−	0.7+
1994 02 08	809	1.2−	0.5−	1998 03 29	704	0.3−	0.2−	1999 09 09	704	0.2+	0.4+
1994 02 08	809	1.1−	0.8−	1998 03 29	704	0.1−	0.2−	1999 09 09	704	0.1+	0.3+
1994 02 10	809	(1.2+ 2.3+)		1998 04 01	704	1.4−	0.2+	1999 09 09	704	0.5+	0.1−
1994 02 10	809	(1.2+ 2.6+)		1998 04 01	704	0.9−	1.6+	1999 09 09	704	0.1−	0.1+
1994 02 10	809	(1.1+ 2.9+)		1998 04 01	704	0.2+	0.9−	1999 09 09	704	0.0	0.2+
1994 02 13	809	1.8+	1.2+	1998 04 01	704	0.6+	0.1−	1999 09 11	120	0.8−	0.1+
1994 02 13	809	0.7+	1.4+	1998 04 01	704	0.7−	0.6+	1999 09 11	120	0.6−	0.3+
1994 02 13	809	1.6+	1.9+	1998 04 22	704	0.4+	1.6+	1999 09 16	691	0.7−	0.4+
1998 03 22	704	0.4+	0.3+	1998 04 22	704	1.1+	0.6+	1999 09 16	691	0.7−	0.2+
1998 03 22	704	(2.8+ 0.7−)		1998 04 22	704	(0.5−	2.0+)	1999 09 16	691	0.4−	0.4+
1998 03 22	704	1.0+	0.7+	1998 04 22	704	1.5+	1.1−	1999 09 18	691	0.3+	0.2+
1998 03 22	704	0.0	1.2+	1999 08 22	699	1.6−	1.2+	1999 09 18	691	0.4+	0.2+
1998 03 22	704	(3.1− 0.3−)		1999 08 22	699	0.1+	1.1+	1999 09 18	691	0.4+	0.2+
1998 03 25	704	0.1−	0.8+	1999 08 22	699	0.7−	1.5+				
1998 03 25	704	0.5−	0.3+	1999 09 07	704	0.1−	0.2−				

(11705)* 1998 GN₇ = 1950 YC = 1990 KZ = 1993 DD

Discovered 1998 Apr. 2 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31771)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22971532	ω	222.67298	+0.97953060	+0.08996279		
<i>a</i>	2.6404386	Ω	131.23938	−0.04466054	+0.96940538		
<i>e</i>	0.1903214	<i>i</i>	13.85536	−0.19627848	+0.22838542		
<i>P</i>	4.29	<i>H</i>	12.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1950 12 16	672	0.4+	1.2+	1998 04 03	704	0.1+	0.2−	1998 06 22	699	1.0+	0.2−
1950 12 16	672	0.3+	0.9+	1998 04 03	704	0.2+	0.3+	1998 06 22	699	0.1+	0.9+
1990 05 20	095	(5.0−	2.2+)	1998 04 22	566	0.7+	0.6+	1999 06 12	703	0.2+	0.6−
1990 05 20	095	(3.4−	1.5+)	1998 04 22	566	0.5+	0.7+	1999 06 12	703	0.5−	0.0
1990 05 21	675	(2.4−	5.4−)	1998 04 22	566	0.5+	0.6+	1999 06 12	703	0.8−	0.4+
1990 05 21	675	(0.8−	2.5−)	1998 04 24	704	1.1+	0.3+	1999 06 12	703	1.2−	0.6+
1990 05 23	675	(1.7−	2.4−)	1998 04 24	704	0.2+	0.2+	1999 07 13	704	0.5−	0.0
1990 05 23	675	(3.0−	2.5−)	1998 04 24	704	0.6+	0.0	1999 07 13	704	0.1−	0.1+
1990 05 24	095	(3.1−	1.5−)	1998 04 24	704	0.6+	0.0	1999 07 13	704	0.3−	0.0
1990 05 24	095	(1.1−	3.5−)	1998 04 24	704	0.9−	0.2+	1999 07 13	704	0.2−	0.2+
1993 02 17	372	(1.6−	3.0−)	1998 04 27	566	0.1−	0.1−	1999 07 13	704	0.5−	0.0
1993 02 17	372	0.3+	0.9+	1998 04 27	566	0.4−	0.7−	1999 07 13	106	0.2−	1.0−
1993 02 19	372	0.7−	0.8+	1998 04 27	566	0.0	0.6−	1999 07 13	106	0.4−	0.7−
1993 02 19	372	0.1+	1.6−	1998 04 30	566	1.3−	0.5−	1999 07 13	106	1.4−	0.2+
1998 03 24	704	0.5−	0.6−	1998 04 30	566	1.2−	0.7−	1999 07 23	704	0.6+	0.1−
1998 03 24	704	0.1+	0.2+	1998 04 30	566	1.3−	0.5−	1999 07 23	704	0.6+	0.3+
1998 03 24	704	0.2+	0.1−	1998 05 16	704	0.5+	0.4−	1999 07 23	704	0.7+	0.2−
1998 03 24	704	0.3+	0.7−	1998 05 16	704	1.2+	0.9−	1999 07 23	704	0.7+	0.0
1998 03 24	704	0.3−	0.3−	1998 05 16	704	0.7+	1.0−	1999 07 23	704	0.5+	0.1+
1998 04 02	704	0.2−	0.3−	1998 05 16	704	1.3−	0.6+	1999 09 11	704	1.0−	0.3+
1998 04 02	704	0.4−	0.4+	1998 05 16	704	0.9+	0.6−	1999 09 11	704	0.9+	0.3+
1998 04 02	704	0.2−	0.5+	1998 06 21	699	0.0	0.5+	1999 09 11	704	1.0+	0.0
1998 04 03	704	0.0	0.0	1998 06 21	699	0.2−	0.2+	1999 09 11	704	0.8+	0.2+
1998 04 03	704	0.3+	0.8+	1998 06 21	699	0.4−	0.2−	1999 09 11	704	1.5+	0.2+
1998 04 03	704	0.3−	0.5+	1998 06 22	699	0.1−	0.1+				

(11706)* 1998 HV₄ = 1990 TG₁₄

Discovered 1998 Apr. 20 at Višnjan.

Id. G. V. Williams (*MPC* 32007)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.19859438	ω	211.53969	−0.47969318	+0.87725719		
<i>a</i>	2.9095428	Ω	29.80574	−0.79742916	−0.42743544		
<i>e</i>	0.0557610	<i>i</i>	2.04389	−0.36606172	−0.21844625		
<i>P</i>	4.96	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1989 07 05	675	0.6+	2.0+	1998 04 21	120	0.3+	0.9+	1998 05 18	699	0.5+	1.1−
1989 07 05	675	1.0−	0.2+	1998 04 21	120	0.2−	0.6+	1998 05 18	699	0.5−	0.2−
1990 10 14	033	0.3−	0.0	1998 04 22	704	0.0	0.0	1998 05 22	699	0.9+	0.2+
1990 10 14	033	0.6−	0.5−	1998 04 22	704	0.7−	0.0	1998 05 22	699	0.2−	0.2−
1990 10 14	033	0.1+	0.4+	1998 04 22	704	0.4+	0.7−	1998 05 22	699	(2.3+ 1.0−)	
1991 12 13	691	0.2+	0.0	1998 04 22	704	0.2+	1.0−	1999 07 14	704	0.4−	0.7−
1991 12 13	691	0.0	0.4+	1998 04 22	704	0.1+	0.5−	1999 07 14	704	0.2+	1.3−
1991 12 13	691	0.0	0.7+	1998 04 23	120	0.3+	1.0+	1999 07 14	704	0.2−	1.2−
1995 11 21	691	0.3+	0.9+	1998 04 23	120	0.8−	0.7+	1999 07 14	704	0.3−	1.0−
1995 11 21	691	0.0	0.6+	1998 04 30	699	0.1−	0.8−	1999 07 14	704	0.6−	1.3−
1995 11 21	691	0.2−	0.5+	1998 04 30	699	0.0	0.4−	1999 08 13	699	0.7−	0.2−
1998 04 20	120	0.6+	0.4+	1998 04 30	699	0.4+	0.4−	1999 08 13	699	0.7−	0.1−
1998 04 20	120	0.1−	0.1−	1998 05 01	704	0.3−	0.9−	1999 08 13	699	0.3−	0.3+
1998 04 20	120	0.1−	0.6−	1998 05 01	704	0.3−	0.0	1999 09 07	691	0.5+	0.1+
1998 04 21	704	0.0	0.7+	1998 05 01	699	0.9+	0.5−	1999 09 07	691	0.1+	0.3+
1998 04 21	704	0.6+	0.6+	1998 05 01	704	0.3+	0.1+	1999 09 11	704	0.1+	0.0
1998 04 21	704	1.1−	1.1+	1998 05 01	699	1.0+	0.5−	1999 09 11	704	0.2+	0.9+
1998 04 21	704	1.2−	1.1+	1998 05 01	699	0.7+	0.5−	1999 09 11	704	0.5+	1.5+
1998 04 21	704	1.0−	0.6+	1998 05 01	704	0.4−	0.1−	1999 09 11	704	1.0+	1.0+

1998 04 21 120 0.4+ 1.0+ 1998 05 01 704 0.2+ 0.8+ 1999 09 11 704 1.1+ 1.1+
 1998 04 21 120 0.8+ 0.1+ 1998 05 18 699 0.4+ 1.3+

(11707)* 1998 HW₁₇ = 1986 UG₁ = 1989 RC₃ = 1994 BG₅

Discovered 1998 Apr. 18 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Gnädig (*MPC* 32008)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	329.33038	(2000.0)	P	Q	
<i>n</i>	0.29870927	ω	63.76614	+0.96869779	-0.24355996
<i>a</i>	2.2163427	Ω	310.29115	+0.19934558	+0.87842417
<i>e</i>	0.1617473	<i>i</i>	3.60725	+0.14793891	+0.41115633
<i>P</i>	3.30	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1986 10 29	054	1.4-	0.2-	1998 03 29	704	0.2+	0.2+	1998 04 22	704	0.2-	0.6-
1986 10 29	054	1.6-	1.0+	1998 03 29	704	0.3-	0.6+	1999 08 06	682	0.4+	0.2+
1989 09 05	511	0.4+	1.5-	1998 03 29	704	0.7-	0.6+	1999 08 06	682	1.7+	0.6+
1989 09 05	511	1.8+	2.3-	1998 04 01	704	0.7+	0.5+	1999 08 07	682	0.2-	0.0
1989 09 05	511	2.2+	1.4+	1998 04 01	704	0.0	0.7+	1999 08 07	682	0.4-	0.0
1994 01 18	033	0.2+	0.6-	1998 04 01	704	0.2+	0.1+	1999 08 08	682	0.8-	0.3+
1994 01 18	033	0.9-	0.2-	1998 04 01	704	(0.2+	2.2+)	1999 08 08	682	0.5+	1.1-
1994 01 19	033(35.2-	34.0-)		1998 04 01	704	0.3-	1.3+	1999 09 07	704	0.2-	0.6+
1996 10 26	327	1.3+	0.1-	1998 04 18	704	(0.3+	2.5+)	1999 09 07	704	0.0	0.4+
1996 10 26	327	1.0+	0.1-	1998 04 18	704	0.5-	1.1+	1999 09 07	704	0.1-	0.7+
1996 10 26	327	1.3+	0.2+	1998 04 18	704	0.1-	0.1-	1999 09 07	704	0.1-	0.4+
1998 03 24	699	0.6-	0.7+	1998 04 18	704	0.2-	0.7+	1999 09 07	704	0.1+	0.7+
1998 03 24	699	0.5+	0.1-	1998 04 19	704	1.7+	0.7+	1999 09 09	704	0.3-	0.4+
1998 03 24	699	0.2-	0.2-	1998 04 19	704	1.3+	1.1+	1999 09 09	704	0.2+	0.2+
1998 03 25	704	0.5-	0.4+	1998 04 19	704	0.9+	1.2+	1999 09 09	704	0.4-	0.1-
1998 03 25	704	0.3+	0.5-	1998 04 19	704	0.0	0.8-	1999 09 09	704	0.1+	0.5-
1998 03 25	704	0.6-	0.2-	1998 04 20	704	0.9+	0.3+	1999 09 09	704	0.4-	0.2-
1998 03 25	704	1.3-	0.3+	1998 04 20	704	1.3+	0.0	1999 09 12	106	0.6-	0.4-
1998 03 28	704	0.4-	0.0	1998 04 20	704	0.6+	0.5+	1999 09 12	106	0.7-	0.0
1998 03 28	704	0.5-	0.5+	1998 04 20	704	0.6+	0.4-	1999 09 12	106	0.1-	0.8-
1998 03 28	704	0.1-	1.4-	1998 04 20	704	1.5-	0.4-	1999 09 14	704	0.5-	0.2+
1998 03 28	704	0.9-	0.1-	1998 04 22	704	0.1-	1.3-	1999 09 14	704	0.5-	0.0
1998 03 28	704	1.2-	1.6-	1998 04 22	704	0.3+	0.8+	1999 09 14	704	0.4-	0.1-
1998 03 29	704	0.2-	0.5+	1998 04 22	704	1.5+	1.0-	1999 09 14	704	0.5-	0.4+
1998 03 29	704	0.9-	0.3-	1998 04 22	704	1.0+	0.8-	1999 09 14	704	0.5-	0.3+

(11708)* 1998 HT₁₉ = 1993 TX₁₁ = 1996 TZ₅₄

Discovered 1998 Apr. 18 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 32264)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	311.98330	(2000.0)	P	Q	
<i>n</i>	0.31596839	ω	168.99296	+0.90767308	-0.41889457
<i>a</i>	2.1348808	Ω	215.80665	+0.38164334	+0.84927649
<i>e</i>	0.1171490	<i>i</i>	2.51086	+0.17457931	+0.32133594
<i>P</i>	3.12	<i>H</i>	15.6	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1992 04 23	691	0.4-	0.7-	1998 03 28	704	(2.4-	3.0+)	1999 08 22	703	0.6-	0.7-
1992 04 23	691	0.1-	0.7-	1998 03 29	704	0.1-	1.3-	1999 08 22	703	0.2-	0.5-
1992 04 23	691	0.3-	1.1-	1998 03 29	704	1.3+	1.6+	1999 08 22	703	0.1-	0.2-
1993 10 13	675	0.3-	0.1-	1998 03 29	704	0.6+	0.5+	1999 08 22	699	0.5-	0.3+
1993 10 13	675	0.3+	0.6-	1998 03 29	704	0.4+	0.9+	1999 08 22	703	0.6+	0.3+
1993 10 15	675	0.6+	0.1-	1998 03 29	704	1.0-	0.1-	1999 08 22	699	0.8-	0.1+
1993 10 15	565	(1.9+	2.3+)	1998 04 01	704	0.2-	0.3+	1999 09 07	704	0.5+	0.0
1993 10 15	565	(2.9-	0.5-)	1998 04 01	704	0.9+	1.0+	1999 09 07	704	0.1+	0.1+
1996 10 10	327	0.1-	0.2-	1998 04 01	704	0.5-	1.8-	1999 09 07	704	0.1-	0.3-
1996 10 10	327	0.0	0.5-	1998 04 01	704	0.8-	0.6+	1999 09 07	704	0.0	0.8+
1996 10 10	327	0.0	1.0-	1998 04 18	704	0.2-	0.6-	1999 09 07	704	0.1+	0.2-
1996 10 14	327	0.4-	0.7-	1998 04 18	704	1.1+	0.2-	1999 09 09	704	0.1-	0.1+

1996 10 14	327	0.3+	0.2+	1998 04 18	704	0.2-	1.6-	1999 09 09	704	0.2+	0.5+
1996 10 14	327	0.6+	0.1-	1998 04 18	704	0.4+	0.3-	1999 09 09	704	0.6+	0.7+
1998 03 22	704	0.5-	0.5+	1998 04 19	704	0.6+	1.8-	1999 09 09	704	0.4-	0.9+
1998 03 22	704	0.0	0.7+	1998 04 19	704	(2.6+	0.7+)	1999 09 09	704	0.7+	1.7+
1998 03 22	704	0.2-	0.0	1998 04 19	704	0.3+	0.9-	1999 09 13	704	0.2+	1.0-
1998 03 22	704	0.4+	1.2-	1998 04 19	704	(2.1+	2.1-)	1999 09 13	704	0.1+	0.4-
1998 03 22	704	1.8-	0.4+	1998 04 19	704	0.0	0.0	1999 09 13	704	0.1-	0.6-
1998 03 28	704	0.2-	0.3-	1999 08 07	699	0.4+	0.3+	1999 09 13	704	0.2+	0.5-
1998 03 28	704	1.1-	0.8+	1999 08 07	699	0.2-	0.4+	1999 09 13	704	0.5-	1.0-
1998 03 28	704	0.5+	1.1+	1999 08 07	699	0.3+	0.4+				
1998 03 28	704	0.3+	1.5+	1999 08 22	699	0.7-	0.3+				

(11709)* 1998 HF₂₀ = 1978 US₇

Discovered 1998 Apr. 27 by P. G. Comba at Prescott.

Id. B. G. Marsden (*MPC* 32009)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Marsden			
<i>M</i>	60.52989	(2000.0)	P	Q	
<i>n</i>	0.23431904	ω	97.43399	+0.35743433	+0.93387028
<i>a</i>	2.6057395	Ω	193.52525	-0.87475619	+0.33053269
<i>e</i>	0.1062109	<i>i</i>	2.76201	-0.32717322	+0.13650803
<i>P</i>	4.21	<i>H</i>	14.7	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1978 10 27	675	0.9-	0.1+	1998 05 05	699	0.4-	0.4-	1998 05 24	699	0.2-	0.4+
1978 10 28	675	0.3+	0.1-	1998 05 05	699	1.3-	1.3+	1998 05 24	704	0.6+	0.2-
1978 10 29	675	0.5+	0.2+	1998 05 05	699	0.1-	0.5+	1998 05 24	699	0.2+	1.3+
1995 11 17	327	0.1+	0.0	1998 05 17	684	0.3-	0.1+	1998 05 24	699	0.5-	0.1+
1995 11 17	327	0.3+	0.0	1998 05 17	684	0.1-	0.1+	1998 05 24	704	0.6+	1.6-
1995 11 17	327	0.1+	0.3-	1998 05 18	684	0.2+	0.1-	1998 05 24	704	0.7-	1.0-
1997 03 02	691	0.2-	0.1-	1998 05 18	684	0.0	0.2-	1998 06 15	684	0.0	0.3-
1997 03 02	691	0.0	0.1-	1998 05 22	704	0.8+	0.6+	1998 06 15	684	0.1+	0.1-
1997 03 02	691	0.0	0.1+	1998 05 22	704	0.7-	0.8-	1999 08 07	557	0.4-	0.9+
1998 04 27	684	0.7+	0.1+	1998 05 22	704	0.9-	0.7-	1999 08 07	557	0.2+	0.7+
1998 04 27	684	0.5+	0.4+	1998 05 22	704	0.2-	0.5-	1999 08 07	557	0.4-	0.6+
1998 04 28	684	0.3+	0.1-	1998 05 22	699	0.2-	0.5+	1999 08 08	557	0.5-	0.7+
1998 04 28	684	0.2+	0.1-	1998 05 22	704	0.5-	0.2+	1999 09 14	684	0.3+	0.7-
1998 05 01	684	0.1-	0.4+	1998 05 22	699	0.6+	0.9+	1999 09 14	684	0.2+	0.4-
1998 05 01	684	0.8+	0.1+	1998 05 22	699	0.7+	0.4+	1999 09 16	684	0.3+	0.7-
1998 05 02	684	0.1-	0.5-	1998 05 24	704	0.6+	0.6-	1999 09 16	684	0.0	0.8-
1998 05 02	684	0.3-	0.8-	1998 05 24	704	0.2-	0.3-				

(11710)* 1998 HS₃₄ = 1990 BD₁ = 1996 TC₁₁

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

Research Team at Socorro.

Id. G. V. Williams (*MPC* 32011)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	174.14180	(2000.0)	P	Q	
<i>n</i>	0.25923500	ω	41.80096	-0.80206720	-0.59475864
<i>a</i>	2.4359795	Ω	101.62349	+0.53219783	-0.75303584
<i>e</i>	0.0763309	<i>i</i>	3.17894	+0.27102341	-0.28142350
<i>P</i>	3.80	<i>H</i>	14.7	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1990 01 24	875	1.3-	1.0-	1998 03 29	704	1.2-	0.0	1998 05 16	704	1.7+	0.6+
1990 01 25	875	1.1+	0.4+	1998 03 29	704	0.2-	0.1+	1998 05 16	704	(1.6+	2.7-)
1996 10 14	721	0.5-	0.7+	1998 03 29	704	0.1+	0.6+	1998 05 16	691	0.8+	0.0
1996 10 14	721	0.1-	0.3-	1998 03 29	704	0.4-	0.3+	1998 05 16	704	(1.7+	2.4+)
1996 10 16	721	0.0	0.0	1998 04 20	704	0.5-	1.0-	1998 05 16	691	0.6+	0.

1998 03 25	699	1.0−	0.5+	1998 04 22	704	0.4+	0.7−	1999 09 07	704	0.1−	0.5+
1998 03 25	699	0.2+	0.4+	1998 04 28	699	0.3−	0.4−	1999 09 07	704	0.1−	0.9+
1998 03 25	704	0.1−	0.3−	1998 04 28	699	0.4+	0.1−	1999 09 07	704	0.4−	0.1−
1998 03 25	704	0.1+	0.0	1998 04 28	699	0.2−	0.3+	1999 09 07	704	0.0	1.2+
1998 03 25	704	0.1+	0.4−	1998 04 30	699	0.3+	1.1−	1999 09 07	704	0.2−	0.5−
1998 03 25	704	0.2+	0.8+	1998 04 30	699	0.5+	0.3−	1999 09 11	704	0.6+	0.2−
1998 03 25	704	(2.3−	0.6−)	1998 04 30	699	1.0+	0.4−	1999 09 11	704	0.3−	0.1+
1998 03 26	566	1.4−	0.1+	1998 05 01	699	0.4+	0.2−	1999 09 11	704	0.8+	0.4+
1998 03 26	566	1.7−	0.2−	1998 05 01	699	0.2+	0.2−	1999 09 11	704	0.9+	0.4+
1998 03 26	566	1.2−	0.1+	1998 05 01	699	0.3+	0.4−	1999 09 11	704	0.6+	0.7+
1998 03 29	704	0.6−	0.1+	1998 05 16	691	0.8+	0.3−				

(11711)* 1998 HV₅₀ = 1981 WW₅ = 1994 EN₂

Discovered 1998 Apr. 25 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPC* 32014)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		17.18895		(2000.0)		P		Q	
<i>n</i>		0.27031339	ω	54.23338		+0.84790074		+0.52774319	
<i>a</i>		2.3689597	Ω	273.86306		−0.50128563		+0.76706936	
<i>e</i>		0.1080983	<i>i</i>	2.90196		−0.17256029		+0.36481739	
<i>P</i>		3.65	<i>H</i>	14.0		<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1981 11 24	095	0.2−	1.4+	1998 04 01	704	0.1−	1.0+	1998 05 16	704	0.3−	0.6+
1992 11 24	691	0.6−	0.2+	1998 04 20	704	0.1+	0.5+	1998 05 16	704	1.3+	1.3+
1992 11 24	691	0.7−	0.1−	1998 04 20	704	0.3−	1.8−	1998 05 16	704	0.1+	1.8+
1992 11 24	691	0.4−	0.2−	1998 04 20	704	0.1+	0.1−	1999 07 23	704	0.2+	0.0
1994 03 09	675	0.4−	1.1−	1998 04 20	704	0.1−	0.3−	1999 07 23	704	0.2+	0.3+
1994 03 09	675	0.8+	1.3−	1998 04 20	704	1.7−	2.0−	1999 07 23	704	0.2+	0.1+
1994 03 11	675	1.7+	0.6−	1998 04 21	704	0.5+	0.3+	1999 07 23	704	0.4+	0.2−
1994 03 11	675	0.7−	0.6+	1998 04 21	704	0.6+	0.3+	1999 07 23	704	0.7+	0.2+
1998 03 25	704	0.4−	0.3−	1998 04 21	704	0.1+	0.2−	1999 09 07	704	0.3+	0.3+
1998 03 25	699	0.3+	0.3+	1998 04 21	704	0.1+	0.2+	1999 09 07	704	0.1+	0.2+
1998 03 25	699	0.2−	0.5+	1998 04 21	704	0.2+	0.7−	1999 09 07	704	0.2+	0.0
1998 03 25	704	0.4+	0.5+	1998 04 22	704	0.0	0.3+	1999 09 07	704	0.1+	0.2+
1998 03 25	699	0.5+	0.5+	1998 04 22	704	0.1−	0.4+	1999 09 07	704	0.5−	0.2−
1998 03 25	704	0.8+	0.8+	1998 04 22	704	0.5−	0.1+	1999 09 08	699	0.4−	0.2−
1998 03 25	704	0.4−	0.9−	1998 04 22	704	0.8−	0.3−	1999 09 08	704	1.8+	0.6−
1998 03 25	704	0.1−	0.6+	1998 04 22	704	0.7−	0.1+	1999 09 08	704	0.1+	0.0
1998 03 29	704	0.0	0.2+	1998 04 25	699	0.1+	0.1−	1999 09 08	704	0.3−	0.2−
1998 03 29	704	0.1+	0.5+	1998 04 25	699	0.4−	0.1+	1999 09 08	699	0.4−	0.2−
1998 03 29	704	0.3−	0.9+	1998 04 25	699	0.7−	0.2−	1999 09 08	704	0.0	0.2−
1998 03 29	704	0.3+	0.4−	1998 04 30	699	0.1−	0.1+	1999 09 08	704	0.3−	0.2−
1998 03 29	704	0.5−	0.7−	1998 04 30	699	0.1+	0.2+	1999 09 08	699	0.3−	0.1+
1998 04 01	704	0.1−	0.3+	1998 04 30	699	0.4−	0.5−	1999 09 11	106	0.1−	0.2−
1998 04 01	704	1.7+	0.1−	1998 05 16	704	0.2−	0.7−	1999 09 11	106	0.1−	0.5+
1998 04 01	704	0.2−	0.2+	1998 05 16	704	0.7+	0.2−	1999 09 11	106	0.2−	0.6+

(11712)* 1998 HB₅₁ = 1987 XA = 1990 HF₆

Discovered 1998 Apr. 25 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPC* 32014)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		276.80446		(2000.0)		P		Q	
<i>n</i>		0.23419671	ω	356.96684		+0.46151151		−0.88565476	
<i>a</i>		2.6066468	Ω	65.54355		+0.81510933		+0.40054979	
<i>e</i>		0.0909877	<i>i</i>	3.22522		+0.35014841		+0.23489468	
<i>P</i>		4.21	<i>H</i>	14.1		<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1987 12 12	567	0.3+	0.2−	1998 04 28	809	(5.3+	1.3+)	1999 08 13	699	0.3+	0.5+
1987 12 12	567	0.8−	1.1+	1998 05 05	699	0.5−	0.4+	1999 08 13	699	0.3−	0.7+
1990 04 29	413	0.2+	0.8−	1998 05 05	699	0.1+	0.5+	1999 08 13	699	0.3−	0.1−
1990 05 01	413	0.2+	0.8−	1998 05 05	699	0.4−	0.4+	1999 09 07	699	0.3+	0.2+

1990 05 02	413	0.2+	0.9−	1998 05 22	704	0.3+	0.2+	1999 09 07	699	0.4+	0.2−
1997 02 02	691	0.2+	0.8+	1998 05 22	704	0.9−	0.3−	1999 09 07	699	0.1−	0.2+
1997 02 02	691	0.2+	0.1−	1998 05 22	704	0.7+	0.3−	1999 09 07	704	0.1+	0.1−
1997 02 02	691	0.2+	0.4+	1998 05 22	704	0.4+	0.4+	1999 09 07	704	0.1+	0.2−
1998 04 25	809	0.0	0.4+	1998 05 24	704	0.1−	1.0+	1999 09 07	704	0.1−	0.1+
1998 04 25	809	0.1−	1.1−	1998 05 24	704	1.0+	0.5−	1999 09 07	704	0.2+	0.2+
1998 04 25	809	0.7+	0.1+	1998 05 24	704	0.0	0.6+	1999 09 07	704	0.8+	0.5+
1998 04 25	699	(0.0	2.3+)	1998 05 24	704	0.2−	0.9−	1999 09 13	704	0.2−	0.5−
1998 04 25	699	0.0	1.4+	1998 05 24	704	0.7−	0.9+	1999 09 13	704	0.3+	0.7−
1998 04 25	699	(0.9+	2.3+)	1999 08 08	699	0.6−	1.1+	1999 09 13	704	0.3−	0.4−
1998 04 28	809	(3.7+	0.0)	1999 08 08	699	0.5−	0.4+	1999 09 13	704	0.4−	0.0
1998 04 28	809	(4.4+	0.8+)	1999 08 08	699	0.3−	0.7+	1999 09 13	704	0.3−	0.0

(11713)* 1998 HG₅₁ = 1989 CU₃

Discovered 1998 Apr. 25 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPC* 32014)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		263.25633		(2000.0)		P		Q	
<i>n</i>		0.24432108	ω	214.17566		+0.37811968		−0.91929830	
<i>a</i>		2.5341292	Ω	213.98079		+0.88702025		+0.39352301	
<i>e</i>		0.1226833	<i>i</i>	11.26277		+0.26499167		−0.00550244	
<i>P</i>		4.03	<i>H</i>	13.8		<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1989 02 05	809	1.3+	0.1−	1998 05 01	704	0.1+	0.6+	1999 07 12	704	0.3+	0.1+
1989 02 05	809	0.1−	0.2+	1998 05 01	704	0.3+	0.6−	1999 07 12	704	0.3+	0.2−
1989 02 05	809	0.1−	0.8−	1998 05 01	704	(3.2−	0.6−)	1999 07 12	704	0.1+	0.1+
1989 02 07	809	1.0−	1.6−	1998 05 01	704	0.0	0.6+	1999 07 12	704	0.2+	0.6+
1989 02 07	809	0.9−	2.0−	1998 05 01	704	0.4−	0.5+	1999 07 12	704	0.0	0.1−
1989 02 07	809	(0.6+	3.0−)	1998 05 05	699	0.9−	0.5−	1999 07 22	704	0.8+	0.5−
1994 05 15	691	0.0	0.4−	1998 05 05	699	0.1+	0.4−	1999 07 22	704	0.7+	0.0
1994 05 15	691	0.4−	0.1−	1998 05 05	699	0.4−	0.2−	1999 07 22	704	0.5+	0.0
1994 05 15	691	0.5−	0.2−	1998 05 18	699	0.3+	0.1−	1999 07 22	704	0.3+	0.3−
1994 06 11	691	0.6−	0.5−	1998 05 18	699	0.1−	0.1+	1999 07 22	704	0.6+	0.0
1994 06 11	691	0.2+	0.2+	1998 05 18	699	0.6+	0.4−	1999 09 08	704	0.8−	0.3+
1994 06 11	691	0.0	0.2−	1998 05 22	699	0.9+	0.2−	1999 09 08	704	0.1+	0.7−
1995 07 28	691	0.1+	0.0	1998 05 22	699	0.6−	0.5−	1999 09 08	704	0.6+	1.1−
1995 07 28	691	0.4+	0.0	1998 05 22	699	0.8+	0.8+	1999 09 09	704	0.6−	0.3+
1995 07 28	691	0.2+	0.1+	1998 05 24	704	0.0	0.4+	1999 09 09	704	0.2−	0.3−
1998 04 22	704	0.8−	1.2−	1998 05 24	704	0.8−	0.1+	1999 09 09	704	0.5−	0.5−
1998 04 22	704	0.4−	0.5+	1998 05 24	704	0.1−	0.6+	1999 09 09	704	0.1−	0.7−
1998 04 22	704	0.7−	0.6+	1998 05 24	704	0.4+	0.8+	1999 09 09	704	1.2−	0.3+
1998 04 22	704	(5.7−	0.9−)	1998 05 24	704	0.4+	0.1−	1999 09 14	704	0.3−	0.5−
1998 04 25	699	0.4+	0.9−	1998 05 28	699	0.8+	0.1−	1999 09 14	704	0.1+	0.3−
1998 04 25	699	0.3−	0.1−	1998 05 28	699	0.3−	0.0	1999 09 14	704	0.0	0.4−
1998 04 25	699	0.5+	0.2+	1998 05 28	699	0.9+	0.4−	1999 09 14	704	0.3−	0.4−

(11714)* 1998 HQ₅₁ = 1977 RX₈ = 1986 TH₅ = 1986 TW₁₀ = 1986 UR₁

Discovered 1998 Apr. 28 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. A. Gnädig (*MPC* 32267)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		20.17455		(2000.0)		P		Q	
<i>n</i>		0.22527756	ω	133.91876		+0.68599312		+0.72760782	

1986 10 27	010(20.0– 0.4+)	1998 04 20	704 (6.0– 1.9–)	1999 08 22	106 0.0 0.1+
1986 10 27	010(16.7– 2.5+)	1998 04 22	704 0.7– 0.7–	1999 08 23	106 0.3+ 0.1–
1995 10 28	327 0.8– 0.1+	1998 04 22	704 0.3– 0.5+	1999 08 23	106 0.1+ 0.4+
1995 10 28	327 0.3– 0.6+	1998 04 22	704 0.0 0.0	1999 09 07	704 0.5+ 0.1–
1995 10 28	327 1.0+ 0.5+	1998 04 22	704 0.2+ 0.2+	1999 09 07	704 0.0 0.3–
1998 03 22	704 0.4+ 1.2+	1998 04 22	704 0.9– 0.7+	1999 09 07	704 0.3+ 0.4–
1998 03 22	704 0.7+ 0.9+	1998 04 24	699 0.4+ 0.8–	1999 09 07	704 0.2+ 0.4–
1998 03 22	704 1.0– 0.1–	1998 04 24	699 0.4+ 0.1+	1999 09 07	704 0.3+ 1.5–
1998 03 22	704 0.1– 0.1–	1998 04 24	699 0.6+ 0.4–	1999 09 08	691 0.5– 0.3–
1998 03 22	704 0.1– 0.9–	1998 04 28	699 0.8+ 0.4+	1999 09 08	691 0.3– 0.3–
1998 03 25	704 2.0– 0.6–	1998 04 28	699 0.6+ 0.7–	1999 09 08	691 0.3– 0.3–
1998 03 25	704 1.3– 1.1+	1998 04 28	699 1.2+ 0.6–	1999 09 09	704 0.3+ 0.1–
1998 03 25	704 2.0– 0.2+	1998 04 30	699 0.8+ 0.6–	1999 09 09	704 0.2+ 0.1+
1998 03 25	704 1.8– 0.8+	1998 04 30	699 0.2+ 0.1+	1999 09 09	704 0.2+ 0.1–
1998 03 25	704 1.1– 0.4–	1998 04 30	699 0.3+ 0.9–	1999 09 09	704 0.2+ 0.5–
1998 04 19	704 0.4+ 0.0	1998 05 01	699 0.2+ 0.1–	1999 09 09	704 0.5– 0.3–
1998 04 19	704 0.9+ 0.2–	1998 05 01	699 1.1+ 0.0		
1998 04 19	704 0.2+ 1.0+	1998 05 01	699 0.5+ 1.1+		

(11715)* 1998 HA₇₅ = 1997 YX₁₀ = 1978 TU₉ = 1985 RC₆ = 1991 JY₅

Discovered 1998 Apr. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 32015)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	321.72073	(2000.0)	P	Q
<i>n</i>	0.28123577	ω 216.15375	+0.90872399	–0.41732842
<i>a</i>	2.3072200	Ω 168.50492	+0.39134353	+0.84553121
<i>e</i>	0.0761798	<i>i</i> 2.18447	+0.14515839	+0.33303747
<i>P</i>	3.50	<i>H</i> 14.1	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1978 10 08	095 1.4+ 1.0–	1998 04 22	704 0.4– 0.6+	1999 09 07	704 0.2– 0.7+
1985 09 15	095 0.6– 1.8–	1998 04 22	704 0.5– 0.4+	1999 09 07	704 0.3– 0.0
1985 09 20	095 0.1– 0.1–	1998 04 29	566 0.2– 0.3+	1999 09 07	704 0.2– 0.3+
1991 05 05	372 (3.8– 0.2–)	1998 04 29	566 0.2– 0.1+	1999 09 08	704 0.4+ 0.3+
1991 05 05	372 (0.2+ 3.8+)	1998 04 29	566 0.5– 0.2+	1999 09 08	704 0.3– 0.2+
1995 07 16	327 0.0 0.3–	1998 05 16	704 0.6+ 0.1–	1999 09 08	704 0.0 0.1+
1995 07 16	327 0.5– 0.7–	1998 05 16	704 0.3– 0.1+	1999 09 08	704 0.1+ 0.3+
1995 07 16	327 0.1– 1.0–	1998 05 16	704 (2.5+ 0.6–)	1999 09 09	704 0.2– 0.1–
1995 07 16	327 0.0 0.5–	1998 05 16	704 1.0+ 0.4+	1999 09 09	704 0.4– 0.3+
1995 07 16	327 0.5+ 0.9–	1998 05 16	704 0.3– 1.3–	1999 09 09	704 0.2+ 0.5+
1997 12 27	327 0.4+ 0.7+	1998 05 25	699 0.4+ 0.3–	1999 09 09	704 0.2+ 0.0
1997 12 27	327 0.4– 0.9+	1998 05 25	699 0.2+ 0.1–	1999 09 09	704 0.4+ 1.1+
1997 12 27	327 0.5– 0.9+	1998 05 25	699 0.7+ 0.2+	1999 09 11	699 0.2+ 0.5+
1997 12 29	327 0.7+ 1.1+	1999 07 16	704 0.0 0.0	1999 09 11	699 0.0 0.3+
1997 12 29	327 1.1+ 1.0+	1999 07 16	704 0.4+ 0.5–	1999 09 11	699 0.4+ 0.4+
1997 12 29	327 0.5+ 1.1+	1999 07 16	704 0.4+ 0.4–	1999 09 13	106 0.3– 1.0+
1998 04 21	704 0.2– 0.2–	1999 07 16	704 0.2– 0.2–	1999 09 13	106 1.2– 0.2+
1998 04 21	704 0.3+ 0.0	1999 07 16	704 0.1+ 0.3+	1999 09 13	106 0.1+ 0.3+
1998 04 21	704 0.2– 0.6+	1999 09 06	691 0.7– 0.1+	1999 09 14	704 0.1+ 0.3+
1998 04 21	704 0.1– 0.7+	1999 09 06	691 0.8– 0.1+	1999 09 14	704 0.4– 0.7+
1998 04 22	704 0.0 0.5+	1999 09 06	691 0.7– 0.1–	1999 09 14	704 0.2+ 0.3+
1998 04 22	704 1.0+ 0.5+	1999 09 07	704 0.1– 0.5+	1999 09 14	704 0.2+ 0.3+
1998 04 22	704 0.1+ 0.3+	1999 09 07	704 0.2– 0.7+	1999 09 14	704 0.1– 0.2+

(11716)* 1998 HY₇₉ = 1995 WT₂₅

Discovered 1998 Apr. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Gnädig (*MPC* 32268)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	21.07500	(2000.0)	P	Q
<i>n</i>	0.23011803	ω 338.88635	+0.80776681	+0.58934691
<i>a</i>	2.6373572	Ω 344.97960	–0.53310334	+0.72049907
<i>e</i>	0.1888217	<i>i</i> 2.99202	–0.25162195	+0.36544673
<i>P</i>	4.28	<i>H</i> 14.7	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1993 02 17	691 0.1– 0.3+	1998 04 21	704 0.1+ 0.1+	1998 05 23	691 0.8– 1.2+
1993 02 17	691 0.2– 0.4+	1998 04 21	704 1.0+ 0.5–	1998 05 30	691 0.6– 1.0+
1993 02 17	691 0.0 0.5+	1998 04 21	704 (0.2+ 2.8+)	1998 05 30	691 0.4– 0.9+
1993 02 17	691 0.2+ 0.2+	1998 04 21	704 0.0 1.0–	1998 05 30	691 1.1+ 0.7+
1993 02 17	691 0.0 0.3+	1998 04 21	704 1.9– 0.6–	1999 08 13	699 1.0– 0.5+
1993 02 17	691 0.0 0.1+	1998 04 22	704 0.3+ 1.1–	1999 08 13	699 0.5– 0.2–
1995 11 18	691 0.3– 0.1+	1998 04 22	704 0.1– 0.8–	1999 08 13	699 0.1+ 0.4+
1995 11 18	691 0.1+ 0.3+	1998 04 22	704 0.7+ 0.5–	1999 09 05	699 0.1– 0.2–
1995 11 24	691 0.1– 0.2+	1998 04 22	704 0.9+ 0.2–	1999 09 05	699 0.4+ 0.2–
1995 11 24	691 0.5+ 0.0	1998 04 22	704 0.7+ 0.0	1999 09 05	699 0.2+ 0.2–
1995 11 24	691 0.3+ 0.0	1998 04 25	699 0.1– 0.4+	1999 09 18	703 0.2+ 0.3+
1997 02 03	566 0.1+ 0.4–	1998 04 25	699 0.9– 0.2–	1999 09 18	703 0.2+ 0.0
1997 02 03	566 0.0 0.4+	1998 04 25	699 0.1– 0.1–	1999 09 18	703 0.1– 0.1–
1997 02 03	566 0.0 0.2–	1998 05 23	691 1.0+ 1.5+	1999 09 18	703 0.4– 0.5+

(11717)* 1998 HU₉₄ = 1982 RA₂ = 1989 YK₉ = 1992 GZ₁ = 1992 HV₅

Discovered 1998 Apr. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. S. Nakano (d. *MPC* 22572), G. V. Williams (*MPC* 32017)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	346.18093	(2000.0)	P	Q
<i>n</i>	0.16993741	ω 306.26178	+0.84737822	+0.53094545
<i>a</i>	3.2280733	Ω 21.67141	–0.48102070	+0.77304324
<i>e</i>	0.1318476	<i>i</i> 1.06456	–0.22487604	+0.34713264
<i>P</i>	5.80	<i>H</i> 12.8	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1982 09 15	046 (3.2+ 1.9–)	1995 12 25	566 0.4+ 0.3+	1998 05 22	704 0.2+ 1.9+
1982 09 15	046 (2.3+ 3.3–)	1995 12 25	566 0.3+ 0.1+	1998 05 22	699 0.5– 0.2+
1982 09 16	095 1.2– 0.3–	1998 04 21	704 0.9– 0.1–	1998 05 22	704 0.4+ 1.1+
1982 09 16	046 (0.4+ 2.3–)	1998 04 21	704 (3.1+ 0.0)	1998 05 24	704 0.1+ 0.3–
1982 09 16	046 (2.7+ 3.6–)	1998 04 21	704 (4.2– 1.5–)	1998 05 24	704 1.0+ 0.1–
1982 09 17	046 (0.6– 3.9–)	1998 04 21	704 0.5– 0.1–	1998 05 24	704 0.2+ 1.0–
1982 09 17	046 (0.9– 4.0–)	1998 04 21	704 0.2+ 0.0	1998 05 24	704 0.7– 0.2+
1989 12 28	511 (2.6– 1.5–)	1998 04 22	704 0.7– 1.3+	1999 07 14	704 0.3+ 0.0
1989 12 28	511 1.2– 1.1–	1998 04 22	704 0.4+ 0.7+	1999 07 14	704 0.4+ 0.3+
1992 04 04	809 1.8+ 0.3–	1998 04 22	704 0.1– 1.5–	1999 07 14	704 0.3+ 0.3+
1992 04 04	809 1.8+ 1.2–	1998 04 22	704 0.4– 0.8–	1999 07 14	704 0.3+ 0.1–
1992 04 04	809 1.4+ 2.0–	1998 04 22	704 1.6– 0.2–	1999 07 14	704 0.2+ 0.4+
1992 04 06	809 (1.3+ 2.5–)	1998 04 25	699 0.0 0.3+	1999 07 16	704 0.5+ 0.1+
1992 04 06	809 (1.2+ 2.2–)	1998 04 25	699 0.4– 0.3+	1999 07 16	704 0.2+ 0.3+
1992 04 06	809 (1.3+ 3.6–)	1998 04 25	699 0.6– 0.1–	1999 07 16	704 0.2+ 0.0
1992 04 25	809 0.0 1.2+	1998 05 01	704 0.7– 0.0	1999 07 20	699 0.0 0.1+
1992 04 25	809 0.1– 0.3+	1998 05 01	704 0.4– 0.2–	1999 07 20	699 0.8– 0.2+
1992 04 25	809 0.5+ 0.3–	1998 05 01	704 0.8+ 0.5–	1999 07 20	699 0.4– 0.0
1992 04 25	691 0.2+ 0.4+	1998 05 01	704 1.1– 0.3–	1999 09 03	699 0.6+ 0.0
1992 04 25	691 0.3+ 0.5+	1998 05 01	704 0.9– 0.3–	1999 09 03	699 0.7– 0.2–
1992 04 25	691 0.2+ 0.1+	1998 05 22	704 0.2– 0.2+	1999 09 03	699 1.4– 0.0
1994 10 08	691 0.1– 0.0	1998 05 22	704 0.0 0.5+	1999 09 07	704 1.4+ 0.9–
1994 10 08	691 0.2+ 0.3+	1998 05 22	704 0.1– 0.6+	1999 09 07	704 0.4+ 0.5–
1994 10 08	691 0.1+ 0.2+	1998 05 22	699 0.5– 0.2–	1999 09 07	704 0.9+ 0.1+
1995 12 25	566 0.4+ 0.1+	1998 05 22	699 0.4+ 0.2–	1999 09 07	704 0.6– 0.1+

(11718)* 1998 HD₉₅ = 1986 WG₂ = 1993 FB₁₆

Discovered 1998 Apr. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 32018)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	322.41499		(2000.0)	P	Q
<i>n</i>	0.21630075	ω	293.25883	+0.98214253	-0.16943106
<i>a</i>	2.7485102	Ω	76.57500	+0.18811985	+0.89049606
<i>e</i>	0.1921966	<i>i</i>	4.82341	-0.00263941	+0.42226756
<i>P</i>	4.56	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1986 11 30	046	0.1+	0.5+	1998 04 22	704	(0.8+	2.1-)	1999 07 14	704	0.4-	0.7+
1986 11 30	046	0.4-	0.7+	1998 04 28	566	0.6-	1.1-	1999 07 14	704	0.3-	0.2-
1993 03 17	809	0.4+	0.1+	1998 04 28	566	1.4-	0.7-	1999 07 14	704	0.1+	0.7-
1993 03 18	809	0.1+	0.4+	1998 04 28	566	0.4-	1.0-	1999 07 14	704	1.0-	0.7+
1993 03 23	809	0.4+	0.4+	1998 05 01	704	1.4+	0.1-	1999 07 14	704	0.6-	0.1-
1995 10 25	691	0.3-	0.3+	1998 05 01	704	0.5-	0.2-	1999 07 16	704	0.6+	0.5+
1995 10 25	691	0.3-	0.3+	1998 05 01	704	0.9+	0.3+	1999 07 16	704	0.1+	1.0+
1995 10 25	691	0.3-	0.2+	1998 05 01	704	0.6-	1.2+	1999 07 16	704	0.2-	0.1-
1995 11 16	808	1.4+	0.6+	1998 05 22	704	0.6-	1.1+	1999 09 11	699	0.0	0.3-
1995 11 16	808	0.4-	1.8-	1998 05 22	704	0.7+	1.0-	1999 09 11	699	0.2-	0.5+
1998 04 21	704	1.5+	0.7-	1998 05 22	704	(2.4-	1.4+)	1999 09 11	704	1.2+	0.5+
1998 04 21	704	0.5-	1.4-	1998 05 22	704	(3.6-	1.5+)	1999 09 11	704	0.4+	0.1+
1998 04 21	704	1.1+	0.2+	1998 05 24	704	1.4+	1.8-	1999 09 11	699	0.1+	0.4-
1998 04 21	704	0.5-	1.4+	1998 05 24	704	0.0	1.7+	1999 09 11	704	0.1+	1.1-
1998 04 22	704	1.1+	0.3-	1998 05 24	704	1.3-	1.6+	1999 09 11	704	0.0	0.1-
1998 04 22	704	0.9-	0.5+	1998 05 24	704	1.1-	0.1+	1999 09 11	704	0.2-	0.2-
1998 04 22	704	0.2+	0.2-	1998 05 24	704	0.1+	0.4-				

(11719)* 1998 HT₉₈ = 1990 RT₇ = 1994 NB₁₀

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Research Team at Socorro.

Id. A. Gnädig (*MPC* 32269)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	134.45865		(2000.0)	P	Q
<i>n</i>	0.21378877	ω	120.83330	-0.99707122	+0.07069999
<i>a</i>	2.7699980	Ω	63.23492	-0.07643539	-0.90839812
<i>e</i>	0.0385824	<i>i</i>	1.87176	-0.00257025	-0.41208539
<i>P</i>	4.61	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1990 09 14	809	0.0	0.7-	1998 04 22	704	0.1+	0.1-	1998 05 24	704	(0.6+	2.2-)
1990 09 14	809	0.3+	0.4-	1998 04 22	704	0.6+	0.4+	1998 05 24	704	0.5-	0.8-
1990 09 14	809	0.5+	0.7-	1998 04 22	704	0.2+	0.0	1999 07 13	704	0.6-	0.4+
1990 09 15	809	0.4-	0.9-	1998 04 22	704	1.0-	0.1-	1999 07 13	704	0.3-	0.0
1990 09 15	809	0.1+	0.8-	1998 04 22	704	0.9-	0.2+	1999 07 13	704	0.6-	0.2-
1990 09 15	809	0.4+	1.2-	1998 05 01	704	0.4-	0.7-	1999 07 13	704	0.5-	0.3-
1993 03 19	691	0.6+	0.0	1998 05 01	704	0.7+	0.1+	1999 07 13	704	0.7-	0.1+
1993 03 19	691	0.0	0.0	1998 05 01	704	0.1-	0.3-	1999 08 07	699	0.1-	1.4+
1993 03 19	691	0.1+	0.0	1998 05 01	704	0.4+	0.3+	1999 08 07	699	0.2+	1.2+
1994 07 08	809	1.5-	0.3+	1998 05 02	327	0.2+	0.5-	1999 08 07	699	0.9-	0.4-
1994 07 08	809	0.1-	0.1-	1998 05 02	327	0.2+	0.3-	1999 09 07	704	0.0	0.5+
1994 07 08	809	0.4-	1.3+	1998 05 02	327	0.4+	0.5-	1999 09 07	704	0.2-	0.7+
1994 07 09	809	0.8+	0.0	1998 05 22	704	0.3+	0.1+	1999 09 07	704	0.1+	0.2-
1994 07 09	809	0.5+	0.2+	1998 05 22	704	0.9-	0.2+	1999 09 07	704	0.4+	1.2+
1994 07 09	809	1.2+	0.9+	1998 05 22	704	0.0	0.8-	1999 09 07	704	0.2-	1.0+
1998 04 21	704	0.3+	0.2-	1998 05 22	704	0.1+	0.8-	1999 09 13	704	0.9+	1.3-
1998 04 21	704	0.2-	0.4+	1998 05 22	704	0.6-	0.0	1999 09 13	704	0.7+	0.3-
1998 04 21	704	0.9-	0.3+	1998 05 24	704	0.8+	0.3+	1999 09 13	704	0.2-	1.9-
1998 04 21	704	0.5-	0.6+	1998 05 24	704	1.1+	1.5-	1999 09 13	704	1.0+	0.5+
1998 04 21	704	0.6-	0.5+	1998 05 24	704	1.4-	0.1+	1999 09 13	704	0.9+	0.6-

(11720)* 1998 HZ₉₉ = 1977 EC₃ = 1989 CY₇

Discovered 1998 Apr. 21 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPC* 32020)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	110.17585		(2000.0)	P	Q
<i>n</i>	0.24060233	ω	72.05918	-0.73145621	+0.68031563
<i>a</i>	2.5601741	Ω	150.75623	-0.65598579	-0.68351624
<i>e</i>	0.0540174	<i>i</i>	5.43678	-0.18615708	-0.26453014
<i>P</i>	4.10	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1977 03 12	381	0.1-	0.6+	1998 04 30	566	0.1+	0.0	1999 09 09	704	0.2-	0.1-
1977 03 12	381	0.4-	0.0	1998 04 30	566	0.3+	0.1-	1999 09 09	704	0.8-	0.3+
1977 03 15	381	0.0	0.2-	1998 04 30	566	0.2-	0.0	1999 09 09	704	0.4-	0.6-
1977 03 15	381	1.3+	0.7+	1998 04 30	566	0.0	0.1-	1999 09 09	704	0.1+	0.5-
1989 02 05	888	0.0	0.2-	1998 04 30	566	0.2+	0.2+	1999 09 10	704	0.9+	1.6-
1989 02 05	888	(1.2-	2.6-)	1998 04 30	566	0.1+	0.2+	1999 09 10	704	0.5+	0.1+
1995 08 29	809	(3.0-	2.8-)	1998 04 30	566	0.0	0.0	1999 09 10	704	0.5+	0.5+
1995 09 19	809	1.4-	1.5+	1998 04 30	566	0.2+	0.0	1999 09 10	704	0.3+	1.0-
1995 09 20	809	1.9-	1.3+	1998 05 22	704	0.2+	0.3-	1999 09 10	704	0.1-	0.3+
1995 09 23	809	(6.1+	1.5-)	1998 05 22	704	0.3+	0.7+	1999 09 10	704	0.4+	0.2-
1998 04 21	704	0.0	0.2+	1998 05 22	704	(0.0	3.1-)	1999 09 10	704	0.5+	0.3-
1998 04 21	704	0.3-	0.3-	1998 05 22	704	1.6-	0.2+	1999 09 10	704	0.1-	0.3-
1998 04 21	704	0.1-	0.4-	1998 05 22	704	0.4-	0.8+	1999 09 11	704	0.0	0.3-
1998 04 21	704	0.1+	0.1+	1998 05 24	704	0.4+	0.4-	1999 09 11	704	0.0	0.2-
1998 04 21	704	0.4-	0.3+	1998 05 24	704	0.6+	0.9-	1999 09 11	704	0.1-	0.2+
1998 04 22	704	0.2+	0.2+	1998 05 24	704	0.5-	0.4+	1999 09 11	704	0.2+	0.3-
1998 04 22	704	0.6+	0.0	1998 05 24	704	0.6-	0.4-	1999 09 11	704	0.2-	0.3-
1998 04 22	704	0.8+	0.1+	1998 05 24	704	0.4-	0.2+	1999 09 11	704	0.0	0.5-
1998 04 22	704	0.0	0.3-	1999 08 12	699	0.6+	1.1+	1999 09 11	704	0.0	0.2+
1998 04 22	704	0.3-	0.1+	1999 08 12	699	(0.4+	2.2+)	1999 09 11	704	0.2-	0.1-
1998 04 25	699	0.2-	0.1-	1999 08 12	699	0.7+	1.4+	1999 09 11	704	0.2-	0.2+
1998 04 25	699	0.6+	0.5+	1999 09 07	704	0.2+	0.1+	1999 09 11	704	0.1+	0.0
1998 04 25	699	0.2+	0.3+	1999 09 07	704	0.1+	0.3-	1999 09 11	704	0.1-	0.1-
1998 04 30	566	0.2+	0.2-	1999 09 07	704	0.2-	0.2+	1999 09 11	704	0.0	0.4+
1998 04 30	566	0.1-	0.0	1999 09 07	704	0.2+	0.1+	1999 09 11	704	0.1-	0.2+
1998 04 30	566	0.1+	0.0	1999 09 07	704	0.2+	0.0	1999 09 11	704	0.5-	0.2+
1998 04 30	566	0.4-	0.3-	1999 09 09	704	0.5+	0.1+				

(11721)* 1998 HE₁₀₀ = 1976 SJ₃ = 1985 QC₁ = 1990 TV₂ = 1993 FC₇₉

Discovered 1998 Apr. 21 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Gnädig (*MPC* 32269)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	355.10061		(2000.0)	P	Q
<i>n</i>	0.21320887	ω	156.52049	+0.96623179	+0.25653290
<i>a</i>	2.7750184	Ω	188.72098	-0.25440638	+0.93482327
<i>e</i>	0.1761841	<i>i</i>	9.19477	-0.04090861	+0.24555310
<i>P</i>	4.62	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1976 09 24	095	1.9-	1.4+	1998 05 01	704	0.4+	0.3-	1999 09 07	704	0.1-	0.2-
1976 09 29	095	1.2+	1.5+	1998 05 01	704	0.5+	0.7-	1999 09 07	704	0.4-	0.2-
1985 08 16	675(31.2-	0.0	)	1998 05 01	704	0.4+	0.7-	1999 09 07	704	0.4-	0.3-
1985 08 16	675(29.1-	1.3+)		1998 05 01	704	0.8+	1.3-	1999 09 07	704	0.2-	0.5-
1985 08 17	675	(1.5+	9.9-)	1998 05 01	704	1.1-	0.6-	1999 09 08	106	0.2+	0.2-
1985 08 17	675	(4.1+	7.7-)	1998 05 22	704	0.6-	0.4+	1999 09 08	106	0.2+	0.0
1990 10 14	675	0.0	1.0+	1998 05 22	704	1.0+	0.2-	1999 09 08	106	0.3+	0.3-
1990 10 14	675	1.4-	1.3+	1998 05 22	704	1.0+	0.8+	1999 09 09	704	0.1+	0.1-
1990 10 16	675	0.4+	0.5+	1998 05 22	704	0.3+	0.4+	1999 09 09	704	0.1-	0.4-
1990 10 16	675	0.1-	1.4+	1998 05 22	704	0.4-	0.3+	1999 09 09	704	0.2-	0.1-
1993 03 21	809	0.0	1.5+	1998 05 24	704	0.2+	0.8+	1999 09 09	704	0.3+	0.0
1993 03 22	809	1.3+	0.1+	1998 05 24	704	0.9-	0.8+	1999 09 09	704	0.2+	0.6+
1993 04 18	413	(2.3+	2.2-)	1998 05 24	704	1.4-	0.2-	1999 09 14	704	0.4+	0.2-
1998 04 21	704	0.1+	0.5-	1998 05 24	704	0.2+	0.1+	1999 09 14	704	0.3+	0.1-
1998 04 21	704	0.1+	0.9+	1998 05 24	704	0.5+	0.5-	1999 09 14	704	0.1+	0.4-
1998 04 21	704	0.1-	0.0	1999 08 09	106	0.0	0.4+	1999 09 14	704	0.1+	0.4-
1998 04 21	704	0.3+	0.9-	1999 08 09	106	0.2+	0.1+	1999 09 14	704	0.0	0.6-

1998 04 21	704	0.9−	0.5+	1999 08 09	106	0.0	0.4+	1999 09 14	703	0.4−	0.0
1998 04 22	704	0.1+	0.9+	1999 09 05	703	0.7+	0.5+	1999 09 14	703	0.2−	0.1+
1998 04 22	704	0.5+	1.7+	1999 09 05	703	0.2+	0.1−	1999 09 14	703	0.3−	0.1−
1998 04 22	704	0.1+	0.4+	1999 09 05	703	0.1−	0.7+	1999 09 14	703	0.5−	0.1+
1998 04 22	704	0.4−	0.3+	1999 09 05	703	1.2+	0.5−				
1998 04 22	704	1.1−	1.6+	1999 09 07	704	0.5−	0.6−				

(11722)* 1998 HR₁₁₅ = 1997 EO₃₈

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

Id. G. V. Williams (*MPC* 32271)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	350.15668		(2000.0)		P		Q
n	0.19089607	ω	179.18266		+0.81390171		+0.57012019
a	2.9872487	Ω	145.28063		−0.53416829		+0.81005164
e	0.0984612	i	11.33298		−0.22853501		+0.13703762
P	5.16	H	13.0	G	0.15	U	1

Residuals in seconds of arc

1992 03 01	809	0.1+	1.0+	1998 04 24	704	0.6−	0.5−	1998 05 28	704	0.4−	0.9−
1992 04 04	809	0.0	0.6−	1998 04 24	704	0.3−	0.4+	1999 07 13	704	0.2+	0.4+
1997 03 05	704	0.3−	0.2+	1998 05 23	704	0.3+	0.4+	1999 07 13	704	0.2−	0.2−
1997 03 05	704	0.5+	0.8+	1998 05 23	704	0.9+	0.3+	1999 07 13	704	0.3−	0.2+
1997 03 06	704	0.2−	0.4+	1998 05 23	704	0.1−	0.1+	1999 07 13	704	0.1−	0.6+
1997 03 06	704	0.1+	0.5−	1998 05 23	704	0.9+	0.9+	1999 07 13	704	0.3−	0.5+
1998 04 23	704	0.4−	0.6+	1998 05 23	704	0.8−	0.7+	1999 07 23	704	0.4+	0.3+
1998 04 23	704	0.2+	0.6−	1998 05 27	699	0.3+	0.3+	1999 07 23	704	0.0	0.2−
1998 04 23	704	0.7−	0.7−	1998 05 27	699	1.0+	0.3+	1999 07 23	704	0.5+	0.0
1998 04 23	704	0.3−	0.8−	1998 05 27	699	1.6+	0.2+	1999 09 13	704	0.8+	0.5+
1998 04 23	704	1.4−	0.2−	1998 05 28	704	0.2+	1.1+	1999 09 13	704	0.9−	0.7+
1998 04 24	704	0.1−	0.5−	1998 05 28	704	0.3−	1.0−	1999 09 13	704	0.2−	0.7−
1998 04 24	704	1.1−	0.4−	1998 05 28	704	1.0+	0.0	1999 09 13	704	0.0	1.3−
1998 04 24	704	0.1+	0.3−	1998 05 28	704	(0.5+	2.1−)				

(11723)* 1998 HT₁₂₅ = 1976 DH₁ = 1988 RO₁₄

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

Id. G. V. Williams (*MPC* 32023, *MPC* 35336), A. Doppler (*MPC* 35336)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	150.05894		(2000.0)		$\mathbf{P}$		$\mathbf{Q}$	
n	0.27483272	ω	71.92680		−0.95036047		+0.30456239	
a	2.3429180	Ω	125.75833		−0.30682603		−0.88329478	
e	0.1430152	i	4.50168		−0.05169872		−0.35641561	
P	3.59	H	14.0		G	0.15	U	2

Residuals in seconds of arc

1976 02 27	033	1.2−	1.1+	1998 04 24	704	0.9+	0.4−	1998 06 27	699	0.2−	0.3−
1976 03 01	033	1.3+	0.4+	1998 04 24	704	0.8+	0.1−	1998 06 27	699	0.7−	0.3+
1976 03 02	033	0.4+	0.1+	1998 04 24	704	0.2−	0.6−	1998 06 27	699	0.7−	0.9+
1976 03 03	033	2.1−	1.4+	1998 05 01	704	1.0+	0.2+	1999 08 22	699	0.9−	0.4+
1976 03 03	033	1.5+	0.9−	1998 05 01	704	0.9+	0.1+	1999 08 22	699	0.5−	0.9+
1988 09 10	809	(2.5−	4.0−)	1998 05 01	704	0.7−	0.2+	1999 08 22	699	0.2−	0.3+
1988 09 10	809	(1.4−	3.1−)	1998 05 01	704	0.4+	0.3−	1999 09 07	704	0.4−	0.6+
1988 09 10	809	0.2−	2.1−	1998 05 05	699	0.2+	0.3+	1999 09 07	704	0.2+	0.8+
1988 09 10	809	0.9+	1.9−	1998 05 05	699	0.7+	0.2+	1999 09 07	704	0.2−	0.8+
1988 09 10	809	1.9+	0.5−	1998 05 05	699	0.1+	0.4−	1999 09 07	704	0.5−	0.0
1988 09 10	809	(2.8+	0.8+)	1998 05 22	704	0.0	0.1+	1999 09 07	704	0.3+	1.2+
1994 02 11	675	(2.1+	2.4−)	1998 05 22	704	0.5−	0.3−	1999 09 08	704	0.1+	0.3+
1994 02 11	675	(2.2+	2.3−)	1998 05 22	704	0.3−	0.0	1999 09 08	704	0.2+	0.4+
1996 12 09	691	0.5+	0.3−	1998 05 22	704	1.1−	0.0	1999 09 08	704	0.1−	1.3+
1996 12 09	691	0.3+	0.3−	1998 05 22	704	0.7−	0.7+	1999 09 08	704	0.3−	0.9+
1996 12 09	691	0.3+	0.1−	1998 05 24	704	0.3+	1.0+	1999 09 14	704	0.4−	0.3+
1998 04 23	704	0.6+	0.1+	1998 05 24	704	0.2+	0.5−	1999 09 14	704	0.6−	0.0
1998 04 23	704	0.5+	0.3−	1998 05 24	704	0.2+	0.8+	1999 09 14	704	0.8−	0.4−

1998 04 23	704	0.1−	0.9−	1998 05 24	704	0.4−	0.4+	1999 09 14	704	0.5−	0.1−
1998 04 23	704	0.0	0.2−	1998 05 24	704	0.7−	1.1+	1999 09 14	704	0.3−	0.5−

(11724)* 1998 HH₁₄₆ = 1974 DM = 1976 YF₇

Discovered 1998 Apr. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 32025)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	235.31062		(2000.0)		P		Q
n	0.29223663	ω	14.31192		−0.36250996		−0.93026147
a	2.2489491	Ω	96.96703		+0.84937323		−0.35475294
e	0.0951497	i	3.26708		+0.38360350		−0.09361594
P	3.37	H	14.6	G	0.15	U	1

Residuals in seconds of arc

1974 02 19	029	1.1+	0.6+	1998 05 01	704	1.3+	0.4+	1999 09 08	703	0.0	0.3+
1974 02 20	029	0.1−	0.4+	1998 05 01	704	0.8−	0.7+	1999 09 08	703	0.4+	0.3−
1974 02 23	029	0.7−	0.8+	1998 05 22	704	1.1+	0.3−	1999 09 08	703	0.1−	0.1+
1976 12 20	095	0.5+	2.1−	1998 05 22	704	1.3+	0.7−	1999 09 08	703	0.2+	0.9+
1994 01 04	691	0.6−	0.8+	1998 05 22	704	1.0+	0.9+	1999 09 09	704	0.1+	0.1+
1994 01 04	691	0.3+	0.9+	1998 05 22	704	0.5+	0.6−	1999 09 09	704	0.1+	0.2−
1994 01 04	691	0.5+	0.8+	1998 05 22	704	0.3+	0.7+	1999 09 09	704	0.0	0.4+
1996 12 04	327	0.3+	1.0+	1998 05 24	704	1.1−	1.5−	1999 09 09	704	0.2−	0.2−
1996 12 04	327	0.8−	0.6+	1998 05 24	704	(0.1−	2.2−)	1999 09 09	704	1.3−	0.4+
1996 12 04	327	0.1−	0.4+	1998 05 24	704	0.5+	0.1−	1999 09 10	704	0.4−	0.0
1996 12 04	327	0.1+	0.6+	1998 05 24	704	(2.4+	1.7−)	1999 09 10	704	0.3−	0.2+
1998 04 21	704	1.0−	0.5−	1998 05 24	704	(2.6−	0.8−)	1999 09 10	704	0.3+	0.8+
1998 04 21	704	0.6−	0.2+	1998 05 28	699	0.3+	0.1+	1999 09 10	704	0.2+	0.1+
1998 04 21	704	0.9−	0.6+	1998 05 28	699	0.5+	0.3+	1999 09 11	704	0.3−	0.2+
1998 04 21	704	0.1−	1.2+	1998 05 28	699	0.8+	0.3+	1999 09 11	704	0.0	0.8+
1998 04 21	704	0.2−	1.4+	1999 08 12	699	0.2−	0.8+	1999 09 11	704	0.6+	0.4+
1998 04 22	704	0.4−	0.4+	1999 08 12	699	0.2+	0.2−	1999 09 11	704	0.4−	0.1−
1998 04 22	704	0.1+	0.4−	1999 08 12	699	0.8+	0.0	1999 09 11	704	0.5−	0.4+
1998 04 22	704	0.3−	0.1−	1999 09 07	699	0.3+	0.1+	1999 09 13	704	0.3+	0.4+
1998 04 22	704	0.7−	0.0	1999 09 07	699	0.3−	0.6+	1999 09 13	704	0.4−	0.7−
1998 04 22	704	0.3−	0.8−	1999 09 07	704	0.3+	1.2−	1999 09 13	704	0.1−	0.4+
1998 05 01	704	0.0	0.2+	1999 09 07	704	0.2−	0.2−	1999 09 13	704	0.4−	0.5+
1998 05 01	704	0.3+	0.2+	1999 09 07	704	0.0	0.3−				
1998 05 01	704	0.1+	0.2+	1999 09 07	704	0.3−	1.0−				

(11725)* 1998 HM₁₄₆ = 1997 AE₉

Discovered 1998 Apr. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Gnädig (*MPC* 32273)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	334.01169		(2000.0)		P		Q	
n	0.20949892	ω	202.09646		+0.98625248		+0.16420726	
a	2.8076838	Ω	148.43477		−0.14583221		+0.91755068	
e	0.0509694	i	2.02466		−0.07771111		+0.36212805	
P	4.70	H	14.2		G	0.15	U	1

Residuals in seconds of arc

1993 04 18	413	0.0	0.0	1998 05 22	704	0.8−	1.0+	1999 09 07	704	0.4−	0.7−
1997 01 02	691	0.2+	0.1+	1998 05 22	704	(2.6+	2.5−)	1999 09 07	704	0.4−	0.4−
1997 01 02	691	0.0	0.0	1998 05 22	704	1.5+	1.5−	1999 09 07	704	0.7−	1.0−
1997 01 02	691	0.1+	0.0	1998 05 24	704	(2.2+	0.9+)	1999 09 07	704	0.1−	0.2−
1997 01 10	691	0.1−	0.2−	1998 05 24	704	(0.7+	2.3−)	1999 09 07	704	0.1−	0.1−
1997 01 10	691	0.1−	0.2−	1998 05 24	704	0.8−	1.0−	1999 09 09	704	0.5+	0.2−
1997 01 10	691	0.3−	0.2+	1998 05 24	704	(2.2+	0.2+)	1999 09 09	704	0.1+	0.3−
1998 04 21	704	0.3−	0.1−	1998 05 24	704	0.6+	1.5+	1999 09 09	704	0.2+	0.1−
1998 04 21	704	0.4−	0.4−	1999 07 13	704	0.7+	0.1−	1999 09 09	704	0.4−	0.1−
1998 04 21	704	0.2+	0.2+	1999 07 13	704	0.0	0.7+	1999 09 09	704	0.5−	0.4+
1998 04 21	704	0.5+	0.9+	1999 07 13	704	0.6+	0.5+	1999 09 10	621	0.3+	0.0
1998 04 22	704	0.9−	0.8−	1999 07 13	704	1.4+	0.7−	1999 09 10	621	0.1+	0.2−
1998 04 22	704	0.4−	1.5+	1999 07 13	704	0.4−	0.8+	1999 09 10	621	0.3+	0.2−

1998 04 22	704	1.2−	0.6+	1999 07 16	704	0.7+	0.5+	1999 09 11	621	0.1+	0.2−
1998 04 22	704	1.7−	1.0−	1999 07 16	704	0.0	0.1+	1999 09 11	621	0.2+	0.3−
1998 05 01	704	0.8+	0.3−	1999 07 16	704	0.0	1.6−	1999 09 11	621	0.1−	0.3−
1998 05 01	704	0.1+	0.2−	1999 07 20	699	1.1−	1.0+	1999 09 13	704	0.3+	0.1−
1998 05 01	704	0.4+	0.2−	1999 07 20	699	0.2+	1.1+	1999 09 13	704	0.2−	0.1+
1998 05 01	704	0.9+	0.2−	1999 07 20	699	0.0	1.6+	1999 09 13	704	0.2−	0.9−
1998 05 01	704	(3.5−	0.1−)	1999 08 07	699	0.8+	1.0+	1999 09 13	704	0.4−	1.0−
1998 05 22	704	0.9+	1.0−	1999 08 07	699	1.1−	0.5+	1999 09 13	704	0.3−	0.2−
1998 05 22	704	0.2+	0.1−	1999 08 07	699	0.1−	0.0				

(11726)* 1998 JA = 1976 GJ₆ = 1977 QJ₄ = 1981 FZ = 1997 CL₁₈

Discovered 1998 May 1 by R. Linderholm at Lime Creek.

Id. G. V. Williams (*MPC* 32027)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	60.63231		(2000.0)	<i>P</i>	<i>Q</i>		
<i>n</i>	0.18178308	<i>ω</i>	125.00184	−0.00436061	+0.99666703		
<i>a</i>	3.0862687	<i>Ω</i>	144.47896	−0.95708636	+0.01944562		
<i>e</i>	0.1402386	<i>i</i>	8.05982	−0.28977006	−0.07922562		
<i>P</i>	5.42	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1976 04 02	095	0.8+	0.5+	1998 05 26	704	1.6−	0.9+	1998 07 01	699	0.3+	0.7+
1977 08 18	095	(2.2+	3.8+)	1998 05 26	704	0.0	0.2−	1998 07 15	699	0.6−	0.6+
1981 03 27	046	0.5−	1.1+	1998 05 26	704	1.1−	0.3+	1998 07 15	699	0.8−	0.5+
1981 03 27	046	(1.0−	2.6+)	1998 05 26	704	0.6−	0.9+	1998 07 15	699	0.3−	0.4+
1981 03 29	046	0.8−	2.1−	1998 05 26	120	0.5+	0.1−	1999 07 07	721	0.8−	0.8−
1981 03 29	046	(1.4+	2.9−)	1998 05 26	120	0.3+	0.4−	1999 07 07	721	0.5−	0.7−
1997 02 07	691	0.5+	0.2−	1998 05 26	120	0.0	0.2−	1999 07 10	721	0.4−	0.2−
1997 02 07	691	0.6+	0.6−	1998 06 03	704	0.4+	0.2−	1999 07 10	721	0.4−	0.0
1997 02 07	691	0.6+	0.3−	1998 06 03	704	0.2−	0.1+	1999 07 16	704	0.1−	0.3−
1997 02 11	691	0.2+	0.3−	1998 06 03	704	0.2+	0.2−	1999 07 16	704	0.0	0.7−
1997 02 11	691	0.1+	0.4−	1998 06 03	704	0.2−	0.0	1999 07 16	704	1.0+	1.5−
1997 02 11	691	0.3+	0.2−	1998 06 03	704	0.8−	0.3−	1999 09 07	704	0.2+	0.3+
1997 03 29	327	0.8−	0.1+	1998 06 13	120	0.0	0.1+	1999 09 07	704	0.1−	0.1−
1997 03 29	327	1.0−	0.3−	1998 06 13	120	0.4+	0.3+	1999 09 07	704	0.3+	0.1+
1997 03 29	327	0.7−	0.0	1998 06 13	120	0.8+	0.0	1999 09 07	704	0.3+	0.8−
1998 05 01	721	0.5+	0.0	1998 06 13	120	1.1+	0.2+	1999 09 07	704	0.5−	0.8−
1998 05 01	721	0.3+	0.1−	1998 06 19	704	0.6+	0.7−	1999 09 09	704	0.2−	0.5+
1998 05 02	721	0.0	0.8−	1998 06 19	704	0.0	0.2−	1999 09 09	704	0.1−	0.6+
1998 05 02	721	0.3+	0.4−	1998 06 19	704	0.0	1.1−	1999 09 09	704	(2.3−	0.8−)
1998 05 23	704	0.4+	0.0	1998 06 19	704	0.0	0.5−	1999 09 13	118	0.2+	0.5+
1998 05 23	704	0.8+	0.0	1998 06 19	704	0.6+	0.8−	1999 09 13	118	0.2+	0.5+
1998 05 23	704	0.5+	0.3−	1998 06 26	721	0.2+	0.3−	1999 09 14	704	0.5+	0.6+
1998 05 23	704	1.5−	0.4+	1998 06 26	721	0.0	0.4−	1999 09 14	704	0.1−	0.1+
1998 05 23	704	0.5−	0.1+	1998 06 26	699	0.1−	0.1+	1999 09 14	704	0.2−	0.2−
1998 05 25	699	0.2+	0.0	1998 06 26	699	0.1−	0.3−	1999 09 14	704	0.7+	0.0
1998 05 25	699	0.1−	0.3+	1998 06 26	699	0.0	0.2−	1999 09 14	704	0.3+	0.5−
1998 05 25	699	0.5+	0.7+	1998 07 01	699	0.6−	0.8+				
1998 05 26	704	0.0	0.5−	1998 07 01	699	0.1+	0.6+				

(11727)* 1998 JM₁ = 1988 TT₃ = 1990 DL₄

Discovered 1988 May 1 at Haleakala by the JPL Near-Earth Asteroid

Tracking program.

Id. A. Gnädig (*MPC* 32275)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	334.55555		(2000.0)	<i>P</i>	<i>Q</i>		
<i>n</i>	0.26804880	<i>ω</i>	57.08845	+0.95707973	−0.28909152		
<i>a</i>	2.3822837	<i>Ω</i>	319.70445	+0.25413623	+0.87127810		
<i>e</i>	0.0492175	<i>i</i>	1.82558	+0.13933113	+0.39661134		
<i>P</i>	3.68	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1988 10 03	046	0.9−	2.1−	1998 04 22	704	0.3−	1.1−	1998 05 24	704	1.6+	1.6−
1988 10 03	046	2.3+	0.6−	1998 05 01	704	0.3−	0.1−	1998 05 24	704	1.1+	1.5−
1990 02 28	809	0.4−	0.1+	1998 05 01	704	0.1+	1.1+	1999 07 16	704	0.7−	0.8−

1990 02 28	809	0.2+	0.0	1998 05 01	704	0.7−	0.9+	1999 07 16	704	0.1−	0.9−
1990 02 28	809	0.8+	0.3−	1998 05 01	704	0.4−	0.6+	1999 07 16	704	0.4+	0.4+
1990 03 01	809	0.5−	1.0+	1998 05 01	704	1.5−	1.0+	1999 07 16	704	0.2−	0.4+
1990 03 01	809	0.0	0.7+	1998 05 01	566	0.3−	0.2+	1999 09 07	704	0.3+	0.2+
1990 03 01	809	0.4+	0.6+	1998 05 01	566	0.5−	0.2+	1999 09 07	704	0.0	0.3+
1990 03 02	809	0.0	0.5−	1998 05 01	566	0.7−	0.2+	1999 09 07	704	0.1−	0.5+
1990 03 02	809	0.2+	0.7−	1998 05 02	566	0.7−	0.1−	1999 09 07	704	0.1+	0.2+
1990 03 02	809	0.4+	0.7−	1998 05 02	566	0.7−	0.0	1999 09 07	704	0.2−	0.2+
1990 03 04	809	0.1−	0.1−	1998 05 02	566	0.9−	0.1+	1999 09 09	704	0.0	0.4+
1990 03 04	809	0.1−	0.1−	1998 05 22	704	(2.1+	1.5+)	1999 09 09	704	0.1+	0.1+
1990 03 04	809	0.0	0.1−	1998 05 22	704	1.3−	0.2+	1999 09 09	704	0.3−	0.2+
1992 11 25	691	0.4−	0.2+	1998 05 22	704	0.6+	0.2+	1999 09 09	704	0.1−	0.5+
1992 11 25	691	0.3−	0.1+	1998 05 22	704	1.5+	0.8+	1999 09 09	704	0.0	0.2+
1992 11 25	691	0.6−	0.1+	1998 05 22	704	0.9+	1.3+	1999 09 16	704	0.8+	0.3+
1998 04 22	704	0.0	0.2+	1998 05 24	704	0.9+	0.5−	1999 09 16	704	0.0	0.4+
1998 04 22	704	0.4−	0.0	1998 05 24	704	0.2+	0.8−	1999 09 16	704	0.5+	0.1+
1998 04 22	704	0.3+	0.1+	1998 05 24	704	1.0+	1.1−	1999 09 16	704	1.2−	0.2+

(11728)* 1998 JC₂ = 1997 EQ₃₄

Discovered 1998 May 1 at Haleakala by the JPL Near-Earth Asteroid

Tracking program.

Id. G. V. Williams (*MPC* 32028)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	69.21127		(2000.0)	<i>P</i>	<i>Q</i>		
<i>n</i>	0.20330273	<i>ω</i>	156.30963	−0.21740592	+0.97449878		
<i>a</i>	2.8644455	<i>Ω</i>	101.09653	−0.90434268	−0.17968237		
<i>e</i>	0.0143312	<i>i</i>	3.24568	−0.36728597	−0.13441124		
<i>P</i>	4.85	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1992 01 26	691	0.3+	0.2+	1998 05 22	704	0.5−	0.2−	1998 05 31	426	0.3−	0.5+
1992 01 26	691	0.4+	0.4−	1998 05 22	704	0.8−	0.7+	1998 05 31	426	0.2+	0.4−
1992 01 26	691	0.7+	0.4+	1998 05 22	704	0.5−	0.8−	1998 06 16	704	0.5−	0.6+
1995 10 20	691	0.2−	0.4−	1998 05 22	704	0.6+	1.3−	1998 06 16	704	0.1−	0.3+
1995 10 20	691	1.1−	0.6−	1998 05 22	699	(2.5+	4.6−)	1998 06 16	704	0.4+	0.5+
1995 10 20	691	1.2−	0.8−	1998 05 22	699	0.7+	0.1−	1998 06 16	704	1.3+	1.0+
1997 03 04	704	0.4−	1.8+	1998 05 22	699	0.9−	0.2+	1998 06 16	704	(3.3−	3.9+)
1997 03 04	704	0.7+	1.4+	1998 05 23	699	0.4+	0.1−	1999 07 21	699	0.1−	0.1+
1997 03 05	704	(1.4+	2.0−)	1998 05 23	699	0.1−	0.6+	1999 07 21	699	0.8−	1.6+
1997 03 05	704	0.2+	0.0	1998 05 23	699	1.3+	0.1+	1999 07 21	699	0.0	0.3+
1997 03 06	704	0.4+	0.1+	1998 05 24	704	0.1+	0.2−	1999 08 08	699	0.3+	0.3+
1997 03 06	704	0.9+	0.0	1998 05 24	704	0.9−	0.3+	1999 08 08	699	0.5+	0.3+
1998 05 01	566	0.1+	0.5−	1998 05 24	699	1.3+	0.5+	1999 08 08	699	0.9+	0.7−
1998 05 01	566	0.5−	0.1+	1998 05 24	704	0.5+	0.1−	1999 09 07	699	1.0+	1.2+
1998 05 01	566	1.6+	0.1+	1998 05 24	699	0.1+	0.8+	1999 09 07	699	0.7−	0.5+
1998 05 02	566	1.1−	0.8+	1998 05 24	704	0.2−	1.6−	1999 09 07	704	0.1+	0.2−
1998 05 02	566	0.5−	0.0	1998 05 24	699	0.3−	0.7+	1999 09 07	699	0.2−	0.6+
1998 05 02	566	0.7−	0.0	1998 05 24	704	1.2−	1.7−	1999 09 07	704	0.2+	0.2+
1998 05 05	699	0.2−	0.4+	1998 05 26	426	0.1−	0.1−	1999 09 07	704	0.1−	0.5+
1998 05 05	699	0.9−	0.9−	1998 05 26	426	0.5+	0.0	1999 09 07	704	0.0	0.1+
1998 05 05	699	0.3−	0.8+	1998 05 26	426	0.8−	0.8−	1999 09 07	704	0.1−	0.1−

Residuals in seconds of arc

1953 03 16	024	0.3−	2.0−	1998 05 07	120	0.6+	0.3+	1999 07 16	704	0.7+	0.1+
1953 03 20	024	1.0−	0.5−	1998 05 22	704	0.3−	0.3+	1999 07 16	704	1.2+	0.9−
1992 03 23	400	0.2−	1.6−	1998 05 22	704	0.6+	0.4+	1999 07 16	704	0.0	1.2−
1992 03 23	400	1.1+	1.0−	1998 05 22	704	0.1−	0.0	1999 07 21	699	0.7−	0.4+
1992 03 24	400	0.1−	0.2+	1998 05 22	704	0.9−	0.3−	1999 07 21	699	0.1−	0.3−
1992 03 24	400	(2.6+	0.0)	1998 05 22	704	0.6−	0.5−	1999 07 21	699	0.2+	0.3+
1992 03 26	399	0.3+	0.5−	1998 05 22	699	0.0	0.9+	1999 09 06	699	0.1−	0.3+
1992 03 26	399	0.9−	0.4+	1998 05 22	699	0.3+	0.8+	1999 09 06	699	0.7−	0.2+
1992 03 28	400	(4.8+	2.9+)	1998 05 22	699	0.3−	0.9+	1999 09 06	699	0.0	0.0
1992 03 28	400	(5.4+	0.8+)	1998 05 24	704	0.0	0.3−	1999 09 07	704	0.0	0.1−
1997 01 15	599	0.0	0.1+	1998 05 24	704	0.2+	0.1−	1999 09 07	704	0.3+	0.2+
1997 01 15	599	0.5−	0.1+	1998 05 24	704	0.5−	0.4+	1999 09 07	704	0.2+	0.4−
1997 01 15	599	0.3−	0.3−	1998 05 24	704	0.1+	1.1+	1999 09 07	704	0.0	0.1+
1998 04 22	704	0.1+	0.7−	1998 05 24	704	0.4+	0.3+	1999 09 07	704	0.1−	0.0
1998 04 22	704	0.4+	0.5−	1998 06 16	704	0.2+	0.7+	1999 09 13	704	0.1+	0.4−
1998 04 22	704	0.0	0.4−	1998 06 16	704	(0.5+	2.5+)	1999 09 13	704	0.2−	0.4−
1998 04 22	704	0.1−	0.0	1998 06 16	704	0.7+	0.8+	1999 09 13	704	0.1−	0.7−
1998 04 22	704	0.2−	0.3+	1998 06 16	704	1.3−	1.4−	1999 09 13	704	0.6+	1.2−
1998 05 07	120	0.9+	0.0	1998 06 16	704	(4.5−	2.5−)	1999 09 13	704	0.3+	0.4−

(11730)* 1998 KO₃₁ = 4310 T-2

Discovered 1998 May 22 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 32278)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	200.77872		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.26411512	ω	0.56601	−0.84816289	−0.52823770
a	2.4058795	Ω	147.44798	+0.48573166	−0.80549566
e	0.0691260	i	4.24279	+0.21138703	−0.26859201
P	3.73	H	14.6	G 0.15	U 1

Residuals in seconds of arc

1973 09 29	675	0.9−	2.0−	1998 06 03	704	1.8+	0.9+	1999 09 07	704	0.0	0.5−
1973 09 29	675	1.2+	0.8−	1998 06 03	704	1.2−	0.3+	1999 09 07	704	0.2−	0.2+
1973 09 30	675	0.6+	1.2+	1998 06 03	704	(4.4−	1.6+)	1999 09 07	704	0.1−	0.8−
1973 09 30	675	0.1+	0.2−	1998 06 22	691	1.3−	0.3−	1999 09 07	704	0.2+	1.0−
1973 10 05	675	0.6+	0.4+	1998 06 22	691	1.2−	0.1−	1999 09 07	704	0.0	0.1−
1973 10 05	675	0.9−	0.7−	1998 06 22	691	1.2−	0.0	1999 09 08	643	0.9+	0.4+
1992 11 16	691	0.1−	1.2+	1998 06 26	699	0.6+	0.2−	1999 09 08	643	1.1+	1.0+
1992 11 16	691	0.3−	1.0+	1998 06 26	699	0.8−	0.1−	1999 09 09	704	2.2+	2.0−
1992 11 16	691	0.4−	0.9+	1998 06 26	699	0.8−	0.9+	1999 09 09	704	0.7+	1.0−
1998 05 22	704	1.2+	0.1−	1998 06 29	691	0.7−	0.3−	1999 09 09	704	0.1−	0.7−
1998 05 22	704	0.5+	0.4−	1998 06 29	691	0.8−	0.3−	1999 09 09	704	0.5−	1.1−
1998 05 22	704	0.5+	0.1−	1998 06 29	691	0.7−	0.1−	1999 09 09	704	0.3−	0.8−
1998 05 22	704	0.7+	0.0	1998 07 15	691	0.1+	0.8−	1999 09 13	046	0.4−	0.4+
1998 05 22	704	0.6+	0.7+	1998 07 15	691	0.0	0.0	1999 09 13	046	0.4−	0.3+
1998 05 24	699	0.0	0.1+	1998 07 15	691	0.1+	0.3−	1999 09 13	046	0.4−	0.1−
1998 05 24	704	0.8−	0.4+	1999 08 22	703	0.7−	0.4+	1999 09 14	704	0.3−	0.1−
1998 05 24	699	0.8+	0.7+	1999 08 22	703	0.1+	1.2+	1999 09 14	704	0.3−	0.4−
1998 05 24	699	0.2+	0.5−	1999 08 22	703	0.2−	0.3+	1999 09 14	704	0.2+	0.2−
1998 05 24	704	0.9+	0.6+	1999 08 22	703	0.1+	0.1+	1999 09 14	704	0.5−	0.4−
1998 05 24	704	0.7+	0.7+	1999 09 04	643	0.1+	0.5+	1999 09 14	704	0.0	0.3+
1998 05 24	704	0.8+	0.6+	1999 09 04	643	0.1−	0.1−	1999 09 14	046	0.1−	0.5+
1998 05 24	704	0.6−	1.5+	1999 09 05	699	1.0−	1.6+	1999 09 14	046	0.1−	0.5+
1998 06 03	704	0.2+	1.5−	1999 09 05	699	0.3−	1.2+	1999 09 14	046	0.1−	0.4+
1998 06 03	704	(0.9+	2.4−)	1999 09 05	699	0.3−	1.9+				

(11731)* 1998 KF₄₇ = 1979 BP₂ = 1986 GW₂ = 1991 EU₁

Discovered 1998 May 22 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. S. Nakano (*MPC* 32485)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	69.86725		(2000.0)		P	Q	
n	0.17064077	ω	136.00689		−0.18870717	+0.98136782	
a	3.2191967	Ω	123.08414		−0.91249870	−0.16162136	
e	0.1516100	i	2.47279		−0.36295416	−0.10390253	
P	5.78	H	12.8	G	0.15	U	1

Residuals in seconds of arc

1979 01 27	675	0.4+	0.3+	1998 06 03	704	0.2−	0.6−	1999 09 07	704	0.6−	0.6−
1979 01 29	675	0.6+	0.1+	1998 06 03	704	0.9+	0.2+	1999 09 07	704	0.3−	0.2−
1986 04 04	095	1.2−	1.4−	1998 06 03	704	0.0	0.2+	1999 09 07	704	0.9−	0.1−
1991 03 06	809	0.3−	0.0	1998 06 03	704	1.2−	0.6+	1999 09 07	704	0.6−	0.0
1991 03 06	809	0.1−	0.1−	1998 06 24	704	0.1+	1.3+	1999 09 09	704	0.3+	0.1+
1991 03 06	809	0.3+	0.4−	1998 06 24	704	0.0	1.3+	1999 09 09	704	0.2+	0.2−
1991 03 09	809	0.3−	0.5+	1998 06 24	704	0.5+	0.6+	1999 09 09	704	0.4+	0.1−
1991 03 09	809	0.2+	0.7+	1998 06 24	704	0.4+	0.8+	1999 09 09	704	0.3+	0.1+
1991 03 09	809	0.0	0.7+	1998 06 24	704	0.7−	0.1+	1999 09 09	704	0.1+	0.3+
1998 05 22	704	0.4−	0.4+	1998 06 26	704	0.7+	0.0	1999 09 11	699	0.1−	0.5+
1998 05 22	704	0.4−	0.2−	1998 06 26	704	0.2−	0.0	1999 09 11	699	0.4+	0.4+
1998 05 22	704	0.3+	0.3+	1998 06 26	704	0.7+	0.1+	1999 09 11	699	0.2+	0.5+
1998 05 22	704	0.5−	1.4−	1998 06 26	704	1.0+	0.6−	1999 09 14	704	0.2−	0.0
1998 05 22	704	(1.9−	2.4−)	1998 06 26	704	0.6−	0.1−	1999 09 14	704	0.3+	0.1+
1998 05 24	704	0.1+	0.4+	1999 08 08	682	0.7−	0.7−	1999 09 14	704	0.4−	0.3−
1998 05 24	704	1.2+	1.3−	1999 08 08	682	0.1−	0.2−	1999 09 14	704	0.1−	0.2+
1998 05 24	704	1.7−	1.1−	1999 08 08	682	2.1+	0.1+	1999 09 14	704	0.2−	0.0
1998 05 24	704	1.3+	0.5+	1999 09 07	704	0.2−	0.4−				

(11732)* 1998 KX₄₈ = 1981 AB₁ = 1995 WF₄₃

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

Id. G. V. Williams (*MPC* 32034, unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	62.57240		(2000.0)	P	Q
n	0.18885123	ω	142.77511	−0.17546637	+0.96980451
a	3.0087736	Ω	116.54883	−0.94267683	−0.11590210
e	0.0507043	i	10.91484	−0.28385199	−0.21458314
P	5.22	H	12.6	G 0.15	U 1

Residuals in seconds of arc

1981 01 11	801	0.6+	0.8−	1998 05 23	704	0.5−	0.7−	1998 08 27	426	0.4−	0.0
1992 03 01	809	2.0−	1.0−	1998 05 23	704	0.5+	1.0−	1998 08 27	426	0.0	0.3+
1992 03 04	809	(0.9+	4.4−)	1998 05 24	704	0.3+	0.1−	1998 08 27	426	0.6−	0.3+
1995 11 30	372	1.1−	0.8−	1998 05 24	704	0.4+	0.2−	1998 09 01	426	0.6−	0.3+
1995 11 30	372	0.6+	0.3−	1998 05 24	704	1.5+	1.0−	1998 09 01	426	0.7−	0.1+
1995 12 02	372	0.8+	0.5−	1998 05 24	704	0.8+	0.4−	1998 09 01	426	0.2−	0.1+
1995 12 02	372	0.7+	0.6−	1998 05 24	704	0.3−	0.1−	1999 07 16	704	0.0	0.3+
1998 05 05	699	0.4−	0.7+	1998 05 26	704	0.0	0.2−	1999 07 16	704	0.4+	0.2−
1998 05 05	699	0.1+	0.1+	1998 05 26	704	0.3+	0.2−	1999 07 16	704	0.1+	0.6−
1998 05 05	699	0.4−	0.2+	1998 05 26	704	0.7+	0.6−	1999 07 16	704	0.5−	0.8−
1998 05 06	566	0.6−	0.0	1998 05 26	704	0.0	0.4+	1999 09 08	703	0.1+	0.1−
1998 05 06	566	0.3−	0.1+	1998 06 03	704	0.4+	0.2+	1999 09 08	703	0.0	0.6−
1998 05 06	566	0.9−	0.3−	1998 06 03	704	0.7−	1.0+	1999 09 08	703	0.3−	1.1−
1998 05 22	566	0.0	0.3−	1998 06 03	704	0.4−	0.4+	1999 09 08	703	0.5+	1.2−
1998 05 22	566	0.1+	0.1−	1998 06 03	704	0.2+	0.2−	1999 09 11	704	0.2+	0.1−
1998 05 22	566	0.2−	0.1+	1998 06 03	704	0.2−	0.6−	1999 09 11	704	0.1−	0.3+
1998 05 23	704	0.9+	0.1+	1998 06 28	699	0.3−	0.6+	1999 09 11	704	0.1+	0.2+
1998 05 23	704	0.7+	0.9−	1998 06 28	699	0.6−	0.7+	1999 09 11	704	0.1−	0.4+
1998 05 23	704	0.6+	1.3−	1998 06 28	699	0.0	1.0+	1999 09 11	704	0.0	0.5+

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams						
M	168.77917		(2000.0)		P		Q				
n	0.17578722	ω	331.12022		−0.88467916		−0.46618717				
a	3.1560547	Ω	181.11085		+0.45491549		−0.86159411				
e	0.0165664	i	10.42747		+0.10195434		−0.20081114				
P	5.61	H	12.7	G	0.15	U	1				
Residuals in seconds of arc											
1977 09 09	675	0.4+	0.6−	1998 05 26	704	0.9+	0.1+	1999 07 23	704	0.0	0.2+
1977 09 10	675	0.1+	1.0−	1998 05 26	704	0.1+	0.1+	1999 07 23	704	0.2−	0.2−
1994 10 06	691	0.4−	0.0	1998 05 26	704	0.6−	0.2−	1999 09 04	703	0.8−	0.1−
1994 10 06	691	0.2−	0.2−	1998 06 03	704	0.1−	0.3−	1999 09 04	703	0.6−	0.6+
1997 04 28	704	0.2−	0.9−	1998 06 03	704	0.4−	0.4+	1999 09 04	703	0.2−	0.3−
1997 04 28	704	0.1−	0.8−	1998 06 03	704	0.5−	0.9−	1999 09 04	703	0.5+	0.3−
1997 04 28	704	0.1+	0.5−	1998 06 03	704	1.0−	1.6+	1999 09 06	699	0.0	0.4+
1997 04 28	704	0.1−	0.3−	1998 06 03	704	(1.0−	5.5+)	1999 09 06	699	0.0	0.6+
1997 04 28	704	(2.9−	0.2+)	1998 06 19	704	0.1−	0.3+	1999 09 06	699	0.4−	0.3+
1998 05 06	566	0.8−	0.7−	1998 06 19	704	0.1−	0.5+	1999 09 09	704	0.4+	0.7−
1998 05 06	566	1.8−	0.6−	1998 06 19	704	0.0	0.4−	1999 09 09	704	0.2+	1.3+
1998 05 06	566	0.4−	1.2−	1998 06 19	704	0.8+	0.7−	1999 09 09	704	0.8+	0.0
1998 05 23	704	0.3+	0.2+	1998 06 19	704	0.1+	0.2−	1999 09 09	704	1.1+	0.2−
1998 05 23	704	0.6+	0.8+	1999 07 13	704	0.0	0.6+	1999 09 09	704	0.7+	0.8−
1998 05 23	704	0.8+	0.5+	1999 07 13	704	0.1+	0.2+	1999 09 14	704	0.0	0.2−
1998 05 23	704	0.1+	0.5+	1999 07 13	704	0.2+	0.3+	1999 09 14	704	0.2−	0.6−
1998 05 23	704	0.4−	0.1+	1999 07 13	704	0.0	0.8+	1999 09 14	704	0.3+	1.0−
1998 05 26	704	0.8+	0.2−	1999 07 13	704	0.4−	0.1−	1999 09 14	704	0.1−	0.5−
1998 05 26	704	1.1+	0.1+	1999 07 23	704	0.3−	0.1−	1999 09 14	704	0.2−	0.3−

(11734)* 1998 KM₅₅ = 1948 WO = 1976 JF₁ = 1978 TZ₂ = 1991 XM₂

Discovered 1998 May 23 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPC* 32284)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5							Williams				
M	228.40704		(2000.0)		P		Q				
n	0.22874140		ω	253.73309	−0.41675308		−0.89743073				
a	2.6479282		Ω	221.86096	+0.89464546		−0.37673965				
e	0.1302690		i	12.52230	+0.16101667		−0.22953282				
P	4.31		H	12.4	G	0.15	U		1		
Residuals in seconds of arc											
1948 11 24	012	0.1−	0.6−	1998 05 26	704	0.5+	0.5−	1999 09 08	704	0.3+	0.5+
1948 11 25	012	(6.4+	3.5+)	1998 05 26	704	0.0	1.4−	1999 09 08	704	0.2+	0.3+
1948 11 27	012	(1.3+	4.4+)	1998 05 26	704	0.0	0.0	1999 09 08	704	0.4−	0.2+
1976 05 02	095	0.6+	2.3+	1998 06 19	704	0.2−	0.0	1999 09 08	704	0.1+	0.2+
1978 10 04	095	0.5+	1.2−	1998 06 19	704	0.0	0.2+	1999 09 10	704	0.2−	0.7−
1991 12 04	399	1.1−	1.2−	1998 06 19	704	0.2+	0.8−	1999 09 10	704	0.4+	0.3+
1991 12 04	399	0.8−	0.6−	1998 06 19	704	0.1−	0.2+	1999 09 10	704	0.1−	0.4+
1991 12 07	399	0.4+	0.6−	1998 06 19	704	0.6−	0.2+	1999 09 10	704	0.3+	0.6+
1991 12 07	399	0.9+	0.3+	1998 06 25	704	1.2−	1.1−	1999 09 10	106	0.0	0.4+
1995 12 16	327	0.3−	0.7+	1998 06 25	704	0.1+	0.7−	1999 09 10	106	0.1−	0.3+
1995 12 16	327	0.4+	0.5+	1998 06 25	704	0.5+	0.6−	1999 09 10	106	0.5−	0.0
1995 12 16	327	0.2+	0.5+	1998 06 25	704	0.2−	0.8−	1999 09 16	704	0.1+	0.1−
1998 05 23	704	0.9+	0.5−	1998 06 25	704	0.3−	0.3+	1999 09 16	704	0.0	0.6−
1998 05 23	704	0.6+	0.6+	1999 07 22	704	0.8+	0.2−	1999 09 16	704	0.2+	0.1−
1998 05 23	704	(3.7+	2.6+)	1999 07 22	704	0.0	0.6+	1999 09 16	704	0.1+	0.1−
1998 05 23	704	0.2−	1.2+	1999 07 22	704	0.2−	0.1−	1999 09 16	704	0.2−	0.1+
1998 05 26	704	1.6+	0.9−	1999 07 22	704	0.2−	0.1−				
1998 05 26	704	1.5−	0.3−	1999 07 22	704	1.4−	0.9+				

(11735)* 1998 KN₅₆ = 1992 EY₁₆

Discovered 1998 May 22 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPC* 32035)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams					
M	354.05156		(2000.0)		P		Q				
n	0.18877122	ω	335.96849		+0.85805166		+0.51350769				
a	3.0096237	Ω	353.11918		−0.46036822		+0.76256386				
e	0.1267755	i	3.61941		−0.22761468		+0.39345420				
P	5.22	H	13.8	G	0.15	U	1				
Residuals in seconds of arc											
1992 03 01	809	0.5−	0.2+	1998 05 01	704	0.1+	1.3+	1999 07 13	704	0.7−	0.2+
1992 03 03	809	0.8−	0.4−	1998 05 22	704	0.2−	1.1−	1999 07 13	704	0.2−	0.9−
1992 03 06	809	1.4+	0.5+	1998 05 22	704	0.9+	1.4−	1999 07 13	704	0.4−	0.3−
1997 01 31	691	0.4−	0.1+	1998 05 22	704	0.5+	0.6−	1999 08 07	699	0.3+	1.3+
1997 01 31	691	0.5+	0.3+	1998 05 22	704	1.2−	0.1+	1999 08 07	699	0.9+	0.9+
1997 01 31	691	0.6−	0.1+	1998 05 23	704	(0.5+	2.2−)	1999 08 07	699	0.4−	1.2+
1997 02 06	691	0.1+	0.1+	1998 05 23	704	0.7+	0.8+	1999 08 15	718	0.3−	0.3−
1997 02 06	691	0.2+	0.0	1998 05 23	704	1.1−	0.7−	1999 08 15	718	0.2+	1.4−
1997 02 06	691	0.4+	0.2−	1998 05 23	704	1.1+	0.2+	1999 09 06	699	0.4−	0.9−
1998 04 21	704	0.8−	0.3−	1998 05 23	704	(5.4−	1.4−)	1999 09 06	699	0.4−	0.7−
1998 04 21	704	0.1−	1.3+	1998 05 24	704	1.2+	0.1−	1999 09 06	699	0.7+	0.1+
1998 04 21	704	(0.3+	3.0+)	1998 05 24	704	0.4−	1.9−	1999 09 07	704	0.5+	0.3+
1998 04 21	704	(3.0−	0.1+)	1998 05 24	704	(2.7−	0.8+)	1999 09 07	704	0.1−	0.4−
1998 04 21	704	0.6+	1.7+	1998 05 24	704	0.6−	0.3+	1999 09 07	704	0.1−	0.2−
1998 05 01	704	1.3−	0.4−	1998 05 24	704	0.7−	1.1−	1999 09 07	704	0.7−	0.0
1998 05 01	704	1.0+	0.2+	1999 07 13	704	1.0+	0.9+	1999 09 07	704	0.2−	0.5+
1998 05 01	704	0.1+	1.3+	1999 07 13	704	0.1−	0.5+				

(11736)* 1998 QS₁ = 1982 HM = 1989 AD₉ = 1996 CD

Discovered 1998 Aug. 19 by L. Šarounová at Ondřejov.

Id. G. V. Williams (*MPC* 32690)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams					
M	249.33567	(2000.0)		P		Q					
n	0.26330215	ω	102.03244	−0.99572471		−0.07340844					
a	2.4108292	Ω	73.77740	+0.04389320		−0.91009648					
e	0.1455414	i	3.34751	+0.08127536		−0.40784261					
P	3.74 <th>H</th> <td>13.9<th>G</th><td>0.15<th>U</th><td>1<td colspan="4"></td></td></td></td>	H	13.9 <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											
1982 04 18	688	(3.9+	3.3−)	1997 04 11	809	(2.9+	2.2+)	1998 09 14	704	0.0	1.2−
1982 04 18	688	0.4+	1.9−	1997 04 11	809	(3.3+	1.6+)	1998 09 14	704	0.7−	0.0
1989 01 15	399	0.7−	0.9−	1997 04 11	809	(3.1+	1.7+)	1998 09 14	704	0.3−	0.3−
1989 01 15	399	0.6−	1.0−	1997 04 12	809	0.5+	0.6+	1998 09 18	704	0.5−	0.5+
1989 01 15	399	0.6−	0.8−	1997 04 12	809	0.6+	1.3+	1998 09 18	704	1.0−	0.7−
1989 01 15	399	0.6−	0.3−	1997 04 12	809	0.7+	0.7+	1998 09 18	704	0.6+	0.7−
1993 02 23	808	(0.8+	2.4−)	1998 08 19	557	0.4−	0.3−	1998 09 18	704	1.1+	1.2+
1993 02 23	808	1.5−	1.1−	1998 08 19	557	0.4−	0.3−	1998 09 18	704	1.0+	0.5+
1996 02 01	327	0.1+	0.6+	1998 08 19	557	0.2−	0.2+	1998 09 24	557	0.6−	0.0
1996 02 01	327	0.2+	0.2+	1998 08 20	557	0.0	0.1−	1998 09 24	557	0.0	0.3−
1996 02 01	327	0.6+	0.5+	1998 08 20	557	0.1+	0.1−	1998 09 24	557	0.3−	0.0
1996 02 02	327	0.4+	0.1+	1998 08 23	704	0.6+	0.2−	1998 09 24	557	0.7+	0.2−
1996 02 02	327	1.3+	0.2−	1998 08 23	704	(0.4+	2.9−)	1999 08 24	557	0.3+	0.0
1996 02 02	327	0.1+	0.7−	1998 08 23	704	(2.1−	0.9−)	1999 08 24	557	0.6+	0.1−
1996 02 04	327	0.2−	0.5+	1998 08 23	704	0.3−	0.9−	1999 08 25	557	0.0	0.2+
1996 02 04	327	0.3+	0.2+	1998 08 23	704	0.2−	0.7−	1999 08 25	557	0.0	0.1+
1996 02 04	327	0.3+	0.6+	1998 08 25	557	0.2−	0.3−	1999 08 25	557	0.1+	0.4+
1996 02 08	327	0.4−	0.6+	1998 08 25	557	0.1−	0.3−	1999 09 06	557	0.6+	0.0
1996 02 08	327	0.0	0.5+	1998 08 27	557	0.1−	0.3−	1999 09 06	557	0.4+	0.5−
1996 02 08	327	0.3−	0.8+	1998 08 27	557	0.1−	0.3−	1999 09 10	557	0.2−	0.1+
1996 02 11	327	1.0−	1.8+	1998 09 13	557	0.0	0.1−	1999 09 10	557	0.1−	0.0
1996 02 11	327	0.3−	0.5+	1998 09 13	557	0.0	0.2−	1999 09 10	557	0.1+	0.0
1996 02 11	327	0.4−	0.9+	1998 09 14	704	1.3+	1.0+				

1999 SEPT. 28

M.P.C. 35895

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams					
M	305.33103		(2000.0)		P		Q				
n	0.26022924		ω	279.52837		−0.51972650		−0.85396422			
a	2.4297708		Ω	201.84157		+0.80791104		−0.48172562			
e	0.0262430		i	3.86678		+0.27778429		−0.19668639			
P	3.79		H	13.7		G	0.15		U	2	
Residuals in seconds of arc											
1982 05 15	675	0.2+	0.5−	1998 08 17	704	(1.8+	2.7+)	1998 09 15	699	0.4−	0.7+
1982 05 16	675	2.2−	0.7−	1998 08 23	704	0.2−	0.5+	1998 09 18	704	(3.1−	0.6−
1982 05 17	675	1.8+	0.1+	1998 08 23	704	0.1+	0.5−	1998 09 18	704	0.3−	0.5−
1993 03 19	809	1.4+	0.1+	1998 08 23	704	0.1−	1.7+	1998 09 18	704	0.8+	0.5−
1993 04 17	413	0.8−	0.4+	1998 08 23	704	1.4+	1.6+	1998 09 18	704	(3.0−	0.4−
1993 04 18	691	0.0	0.6−	1998 09 14	704	0.8−	0.3−	1998 09 26	327	0.4+	0.6−
1993 04 18	691	0.8−	0.6−	1998 09 14	704	0.3−	0.7−	1998 09 26	327	0.6+	0.9−
1995 11 26	292	0.8+	0.1−	1998 09 14	704	0.0	0.5−	1998 09 26	327	0.4+	0.2−
1995 11 26	292	1.0−	0.5−	1998 09 14	704	0.0	1.9−	1998 12 09	704	0.7+	0.1+
1998 08 17	704	0.0	0.4+	1998 09 14	704	0.2−	0.9−	1998 12 09	704	1.7+	1.0+
1998 08 17	704	0.0	1.4+	1998 09 15	699	1.7−	0.2+	1998 12 09	704	0.5−	1.8−
1998 08 17	704	0.3+	0.8+	1998 09 15	699	0.7−	0.3−				

(11738)* 1998 RK₇₂

Discovered 1998 Sept. 14 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams					
<i>M</i>	117.83895	(2000.0)		P		Q					
<i>n</i>	0.17361785	ω	171.94628	+0.30737067		+0.95096030					
<i>a</i>	3.1822904	Ω	115.94895	−0.87519759		+0.29678601					
<i>e</i>	0.1566387	<i>i</i>	2.20581	−0.37356720		+0.08713534					
<i>P</i>	5.68	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i>	1				
Residuals in seconds of arc											
1992 09 03	095	0.9−	0.2−	1998 08 28	704	(4.3−	0.1−)	1998 09 27	704	0.0	0.3+
1992 09 03	095	0.7+	0.5+	1998 09 14	704	0.2−	0.3+	1998 10 19	699	0.1+	0.7+
1995 01 07	691	0.6+	0.1−	1998 09 14	704	0.2−	0.9−	1998 10 19	699	0.4+	0.4+
1995 01 07	691	0.1+	0.2+	1998 09 14	704	0.3−	1.4−	1998 10 19	699	0.4+	0.5+
1995 01 07	691	0.1+	0.1+	1998 09 17	699	0.0	0.0	1998 10 28	704	0.3+	0.1+
1995 01 29	691	0.1−	0.4−	1998 09 17	699	0.1+	0.2−	1998 10 28	704	0.0	0.4−
1995 01 29	691	0.4−	0.3−	1998 09 17	699	0.2+	0.1−	1998 10 28	704	0.9−	1.3−
1995 01 29	691	0.4−	0.3−	1998 09 18	704	0.0	0.3+	1998 10 28	704	1.1−	0.5−
1996 03 21	566	0.3+	0.7+	1998 09 18	704	0.1−	0.0	1998 10 29	704	0.8+	0.0
1996 03 21	566	0.7+	0.2+	1998 09 18	704	0.4−	0.1−	1998 10 29	704	0.3+	0.8+
1996 03 21	566	0.2+	0.6+	1998 09 18	704	1.0−	0.1−	1998 10 29	704	0.4−	0.1+
1996 04 21	566	0.1+	0.4+	1998 09 18	704	1.0−	0.5+	1998 10 29	704	0.6−	0.3+
1996 04 21	566	0.2+	0.5+	1998 09 26	704	0.4+	0.4−	1998 10 29	704	0.8−	1.0+
1996 04 21	566	0.3−	0.7+	1998 09 26	704	0.6+	0.1+	1998 11 06	699	0.6−	0.2+
1998 08 02	699	0.1−	0.4−	1998 09 26	704	0.0	0.5+	1998 11 06	699	0.2−	0.1−
1998 08 02	699	0.4−	0.0	1998 09 26	704	0.3−	0.2+	1998 11 06	699	0.2−	0.8−
1998 08 02	699	1.0+	0.0	1998 09 26	704	0.3+	0.3+	1998 11 25	699	0.3−	0.2+
1998 08 28	704	(2.2+	2.5−)	1998 09 27	704	0.6+	0.2+	1998 11 25	699	0.6+	0.5−
1998 08 28	704	(2.8+	0.8−)	1998 09 27	704	0.1−	0.8+	1998 11 25	699	0.5+	0.3+
1998 08 28	704	0.8−	0.8+	1998 09 27	704	1.1+	0.6+				
1998 08 28	704	1.2+	1.0−	1998 09 27	704	0.4+	0.7+				

(11739)* 1998 SG₂₇ = 1998 QC₆₅ = 1976 YA₂ = 1984 YO₄

Discovered 1998 Sept. 25 by W. R. Cooney and P. Collier at the Baton Rouge Observatory.

Id. S. Nakano (*MPC* 33021)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Nakano				
M	5.07418		(2000.0)		P		Q		
n	0.12584024	ω	115.82564		+0.88081007		−0.42463653		
a	3.9438739	Ω	269.91490		+0.32350323		+0.86271684		
e	0.2533128	i	12.08848		+0.34571562		+0.27459693		
P	7.83	H	12.3	G	0.15		U	1	
Residuals in seconds of arc									
1976 12 16	095	(1.0+	2.6−)	1998 09 25	747	0.0	0.5−	1998 10 11	747 0.0 0.3+
1976 12 20	095	0.0	0.6−	1998 09 25	747	0.3+	0.2+	1998 11 18	747 0.4+ 0.1+
1984 12 28	095	0.8−	2.1−	1998 09 25	747	0.3+	0.1−	1998 11 18	747 0.2− 0.4+
1998 06 19	699	0.4−	0.5+	1998 09 25	747	0.1−	0.6−	1998 11 18	747 0.2+ 0.1−
1998 06 19	699	0.2−	0.5−	1998 09 25	747	0.1+	0.5−	1998 11 18	747 0.1+ 0.2+
1998 06 19	699	0.6−	0.4+	1998 09 26	747	0.7+	0.1−	1998 11 19	747 1.4− 0.1+
1998 08 24	704	0.2+	0.1−	1998 09 26	747	0.2+	0.1+	1998 11 19	747 1.2+ 0.0
1998 08 24	704	0.8−	0.1−	1998 09 26	747	0.1−	0.7−	1999 08 13	747 0.3− 0.4+
1998 08 24	704	0.7−	0.4+	1998 09 26	426	0.0	0.4−	1999 08 13	747 0.4− 0.4+
1998 08 24	704	0.5+	0.4−	1998 09 26	426	0.5−	0.8−	1999 08 13	747 0.2− 0.4+
1998 08 24	704	0.3+	1.4−	1998 09 27	747	0.5+	0.2−	1999 08 13	747 0.1− 0.7+
1998 08 27	704	0.3+	0.4+	1998 09 27	747	0.2+	0.3−	1999 08 13	747 0.1− 0.5+
1998 08 27	704	0.3+	0.6−	1998 09 27	735	0.1−	0.2−	1999 08 13	747 0.3− 0.5+
1998 08 27	704	0.2+	0.5−	1998 09 27	735	0.1−	0.1−	1999 08 14	747 0.3+ 0.1+
1998 08 27	704	0.2−	0.3−	1998 09 29	429	0.2+	0.2−	1999 08 14	747 0.3− 0.3+
1998 08 27	704	0.4−	0.6−	1998 09 29	429	0.0	0.3+	1999 08 14	747 0.4− 0.6+
1998 09 21	699	0.1+	0.9+	1998 10 09	747	0.1+	0.1+	1999 09 03	704 0.9+ 0.2+
1998 09 21	699	0.2−	1.3+	1998 10 09	747	0.2+	0.1+	1999 09 03	704 0.1+ 0.8−
1998 09 21	699	0.4+	1.3+	1998 10 11	747	0.2+	0.0	1999 09 03	704 0.3+ 0.1−

(11740)* 1998 UK₆ = 1995 JA

Discovered 1998 Oct. 22 by the OCA-DLR Asteroid Survey at Caussols.

Id. G. V. Williams (*MPC* 33970)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams					
M	86.65649		(2000.0)		P		Q				
n	0.19882681		ω 229.79941		+0.23240148		−0.97255643				
a	2.9072748		Ω 206.76827		+0.89969181		+0.21930351				
e	0.0157019		i 1.41417		+0.36951886		+0.07771724				
P	4.96		H 13.9		G	0.15	U		1		
Residuals in seconds of arc											
1994 01 30	010	0.7−	1.3−	1997 09 28	691	0.0	0.0	1999 01 14	691	0.1+	0.5−
1994 01 30	010	1.1−	1.5+	1997 09 28	691	0.1−	0.2−	1999 01 18	704	0.4+	1.0+
1995 05 01	557	0.9+	0.5−	1997 11 03	704	0.6+	0.4−	1999 01 18	704	0.8−	0.5+
1995 05 01	557	0.5+	0.0	1997 11 03	704	1.4+	0.1+	1999 01 18	704	1.9−	0.2+
1995 05 02	557	0.6+	0.2−	1997 11 03	704	1.4+	0.9+	1999 01 18	704	0.1−	1.3−
1995 05 02	557	0.5+	0.1−	1997 11 03	704	0.3+	0.1−	1999 02 12	704	0.0	0.4−
1995 05 02	557	0.7+	0.2−	1997 11 03	704	0.1+	0.4+	1999 02 12	704	0.6+	0.2−
1995 05 02	557	0.3+	0.4−	1998 10 22	910	1.3−	0.3+	1999 02 12	704	0.6+	0.2−
1996 07 15	566	(1.4+	2.1+)	1998 10 22	910	1.2−	0.7+	1999 02 12	704	0.0	0.2−
1996 07 15	566	1.1−	1.5−	1998 10 22	910	1.0−	0.7+	1999 02 12	704	0.3−	1.0+
1996 07 15	566	0.8−	1.0−	1998 10 23	910	0.4+	0.1+	1999 02 16	704	1.0+	1.3−
1996 07 21	566	0.7−	0.8−	1998 10 23	910	0.5+	0.1+	1999 02 16	704	0.4+	0.3+
1996 07 21	566	0.6−	0.7−	1998 10 23	910	0.6+	0.0	1999 02 16	704	0.7−	0.2+
1996 07 21	566	0.0	0.9+	1999 01 14	691	0.1+	0.2−	1999 02 16	704	0.2+	2.0−
1997 09 28	691	0.1+	0.1−	1999 01 14	691	0.0	0.1−	1999 02 16	704	0.7−	0.3+

Residuals in seconds of arc

1982 10 20	033	0.3+	0.7-	1997 12 08	327	0.6-	0.4-	1999 02 10	704	0.3+	0.4-
1994 01 11	691	0.3+	0.6-	1997 12 08	327	0.5-	0.1+	1999 02 10	704	0.0	0.2+
1994 01 11	691	0.0	0.3-	1997 12 08	327	0.2-	0.2+	1999 02 10	704	0.2+	0.1-
1994 01 11	691	0.8-	0.4-	1998 11 25	691	0.8+	0.5-	1999 02 10	704	0.3+	0.3-
1995 05 26	691	0.2-	0.4-	1998 11 25	691	0.8+	0.6-	1999 02 10	704	0.8+	0.4-
1995 05 26	691	1.4-	2.1+	1998 11 25	691	0.7+	0.7-	1999 02 12	699	1.3+	0.6+
1995 05 26	691	1.4+	0.6+	1999 01 10	411	0.5-	0.2+	1999 02 12	699	1.0+	1.1+
1995 05 27	691	0.2+	0.5-	1999 01 10	411	0.4+	0.5-	1999 02 12	699	1.5+	0.5+
1995 05 27	691	0.3+	0.5-	1999 01 11	411	1.2-	0.7-	1999 02 13	704	0.2-	0.2-
1995 05 27	691	0.1+	0.6-	1999 01 11	411	(2.5-	2.5-)	1999 02 13	704	0.8-	0.4+
1997 10 13	327	0.7-	0.6-	1999 01 18	411	0.2+	0.5-	1999 02 13	704	0.6-	1.1+
1997 10 13	327	0.6-	0.4-	1999 01 18	411	1.0-	0.1-	1999 02 13	704	0.2+	0.4+
1997 10 13	327	0.3-	0.6-	1999 01 19	704	0.2-	1.0-	1999 02 13	704	0.9-	0.4+
1997 11 06	704	(4.2-	0.3+)	1999 01 19	704	1.1+	1.7+	1999 02 19	566	0.3-	0.2-
1997 11 06	704	(4.0-	0.5+)	1999 01 19	704	2.0+	0.2-	1999 02 19	566	0.6-	0.3-
1997 11 06	704	(4.7-	0.5-)	1999 01 19	704	1.1-	0.7+	1999 02 19	566	0.7-	0.2-
1997 11 06	704	(3.7-	0.6-)	1999 01 19	704	0.9-	0.4+	1999 02 24	699	0.2+	0.4+
1997 11 06	704	(4.7-	0.6-)	1999 01 28	411	0.7-	0.2-	1999 02 24	699	0.3+	0.2+
1997 11 26	566	0.9+	1.2+	1999 01 28	411	0.4-	0.6-	1999 02 24	699	(2.3+	0.2+)
1997 11 26	566	0.6+	1.1+	1999 02 07	411	0.7-	0.6-				
1997 11 26	566	0.3+	1.5+	1999 02 07	411	0.7-	0.0				

(11742)* 1999 JZ₅

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

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	15.96275		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$		
n	0.21106581	ω	127.01976	-0.62192256	+0.77735479		
a	2.7937709	Ω	104.25324	-0.74586989	-0.55128092		
e	0.0152929	i	5.59581	-0.23851715	-0.30299979		
P	4.67	H	13.8	G	0.15	U	1

Residuals in seconds of arc

1952 01 30	675	0.8-	0.6-	1999 05 12	385	0.3+	0.1+	1999 05 18	704	0.6+	0.1-
1952 01 30	675	1.0+	1.1+	1999 05 12	385	0.3+	0.6-	1999 05 19	704	(0.6-	2.2+)
1954 11 24	675	0.4+	0.5-	1999 05 12	385	0.0	0.0	1999 05 19	704	1.1-	0.9+
1954 11 24	675	0.0	0.6-	1999 05 13	704	0.1-	0.4-	1999 05 19	704	0.3-	0.4-
1984 01 26	675	0.2-	1.9-	1999 05 13	704	0.5+	0.1+	1999 05 19	704	0.8-	0.2+
1998 01 07	699	0.1+	0.3+	1999 05 13	704	0.5-	0.1-	1999 05 20	385	0.2-	0.2+
1998 01 07	699	0.3-	0.3-	1999 05 13	704	0.3+	0.2+	1999 05 20	385	0.4-	0.1+
1998 01 07	699	0.7-	0.8+	1999 05 13	704	0.2+	0.2+	1999 05 20	385	0.9-	0.2+
1998 03 01	327	0.3+	0.2+	1999 05 14	704	0.9+	0.1-	1999 05 20	888	0.2+	0.1-
1998 03 01	327	0.5+	0.0	1999 05 14	704	0.6-	0.2-	1999 05 20	888	0.0	0.1-
1998 03 01	327	0.2+	0.0	1999 05 14	704	0.2+	1.1+	1999 06 04	703	0.2-	1.1+
1999 05 07	905	0.4+	0.3-	1999 05 14	704	1.3-	0.4-	1999 06 04	703	0.1-	0.3-
1999 05 07	905	0.4+	0.3+	1999 05 17	704	0.8+	0.4-	1999 06 04	703	0.2+	0.2+
1999 05 10	704	(2.0-	0.7+)	1999 05 17	704	0.9+	0.5+	1999 06 04	703	1.1-	0.0
1999 05 10	704	1.6-	1.3+	1999 05 17	704	0.5-	0.3-	1999 06 14	704	0.7+	0.4-
1999 05 10	704	0.9-	0.3-	1999 05 17	704	0.2-	0.1+	1999 06 14	704	0.4+	1.6-
1999 05 10	704	0.1-	1.2-	1999 05 17	704	0.5+	0.2+	1999 06 14	704	0.4+	1.1-
1999 05 10	704	0.5-	0.6+	1999 05 18	704	0.2+	0.7+	1999 06 14	704	0.4+	1.6-
1999 05 10	699	0.6+	0.3-	1999 05 18	704	0.0	0.3-	1999 06 14	704	0.0	1.5-
1999 05 10	699	0.5+	0.4+	1999 05 18	704	0.2+	0.1+				
1999 05 10	699	0.6+	0.9+	1999 05 18	704	0.4+	0.6+				

(11743)* 1999 JP₁₃₀ = 1975 VX = 1986 XVDiscovered 1999 May 13 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.
Id. A. Doppler (MPC 35655)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	171.74270		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.27041985	ω	322.26912	+0.31307331	-0.94831173
a	2.3683380	Ω	109.43364	+0.88419973	+0.27110349
e	0.1881651	i	3.15276	+0.34666402	+0.16494778
P	3.64	H	14.8	G 0.15	U 2

Residuals in seconds of arc

1975 11 01	095	0.9-	0.6-	1997 12 04	704	1.4+	0.1-	1999 05 13	704	0.2+	0.5-
1986 12 02	688	0.7+	0.0	1997 12 04	704	(2.2-	1.2+)	1999 05 18	704	1.0-	0.6-
1986 12 02	688	0.9+	0.6+	1997 12 04	704	1.9-	0.1+	1999 05 18	704	1.3-	1.5+
1993 10 15	010	0.0	1.2+	1998 01 26	704	0.4+	0.2-	1999 05 18	704	0.4+	0.8+
1993 10 15	010	0.8-	0.9+	1998 01 26	704	0.0	0.5+	1999 06 04	703	0.2+	1.1+
1993 10 15	010	0.6+	0.1-	1998 01 26	704	(2.2+	0.0)	1999 06 04	703	0.0	1.3-
1995 04 06	691	0.1-	0.3-	1998 01 26	704	0.3-	0.7+	1999 06 04	703	0.0	0.8+
1995 04 06	691	0.1-	0.3+	1998 01 26	704	0.7+	1.2+	1999 06 04	703	1.8-	0.7-
1995 04 06	691	0.3-	0.1-	1999 05 08	699	0.2+	0.4-	1999 06 14	704	0.2+	0.6-
1995 04 22	691	0.2+	0.3-	1999 05 08	699	0.7+	1.4+	1999 06 14	704	0.7+	0.4+
1995 04 22	691	0.4+	0.4-	1999 05 08	699	0.5-	1.1+	1999 06 14	704	0.7+	0.3+
1995 04 22	691	0.5+	0.3-	1999 05 13	704	0.5+	0.6+	1999 06 14	704	1.0+	1.5+
1997 12 04	704	1.6-	0.6-	1999 05 13	704	0.1-	1.1-	1999 06 14	704	0.1+	0.5-
1997 12 04	704	0.0	0.5+	1999 05 13	704	0.0	0.5+				

(11744)* 1999 NQ₂ = 1992 SZ₂₄ = 3550 P-L

Discovered 1999 July 9 by T. Urata at the Nihondaira Observatory.

Id. G. V. Williams (MPC 35397)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	356.87994		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$		
n	0.27700272	ω	20.74904	+0.85887199	+0.50868081		
a	2.3306659	Ω	308.53214	-0.48004973	+0.75871561		
e	0.2211939	i	4.38838	-0.17858095	+0.40693298		
P	3.56	H	14.8	G	0.15	U	2

Residuals in seconds of arc

1960 10 22	675	0.3-	0.3+	1998 03 29	704	1.6-	0.7+	1999 09 07	704	0.3+	0.4+
1960 10 24	675	0.2-	0.4+	1999 07 09	385	0.2+	1.1-	1999 09 07	704	0.2+	0.1-
1960 10 26	675	0.2+	0.4-	1999 07 09	385	0.1-	1.0-	1999 09 07	704	0.0	0.1+
1992 09 30	675	0.1-	0.7-	1999 07 09	385	0.2+	0.7-	1999 09 09	704	0.2+	0.3+
1992 09 30	675	0.5+	0.5-	1999 07 14	385	0.4+	0.2-	1999 09 09	704	0.0	0.0
1992 10 03	675	0.1+	0.2+	1999 07 14	385	1.0+	0.1+	1999 09 09	704	0.2+	0.8-
1992 10 03	675	0.4+	0.1-	1999 07 14	385	0.3-	0.3-	1999 09 09	704	0.4+	0.1-
1998 03 20	704	1.1-	0.0	1999 07 21	699	0.6+	0.0	1999 09 09	704	0.2-	0.6-
1998 03 20	704	0.6+	0.5+	1999 07 21	699	0.5-	0.4+	1999 09 14	704	0.4+	0.2-
1998 03 20	704	0.6+	1.0-	1999 07 21	699	0.2+	0.7+	1999 09 14	704	0.2-	1.3-
1998 03 20	704	0.9+	1.9-	1999 08 07	699	0.7-	1.1+	1999 09 14	704	0.2-	0.0
1998 03 29	704	(1.8-	2.5-)	1999 08 07	699	0.7-	1.5+	1999 09 14	704	0.1-	0.0
1998 03 29	704	0.3+	0.4+	1999 08 07	699	0.6-	1.3+	1999 09 14	704	0.3-	0.2-
1998 03 29	704	1.7-	1.0-	1999 09 07	704	0.3+	0.3-				
1998 03 29	704	0.7+	0.1-	1999 09 07	704	0.3-	0.4-				

(11745)* 1999 NH₃ = 1977 RR₁ = 1986 QZ₄ = 1986 RR₁₂ = 1986 SF₂

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

Research Team at Socorro.

Id. G. V. Williams (MPC 35658)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	333.99336		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.22182369	ω	178.40146	+0.92706655	+0.36497419
a	2.7026974	Ω	159.53520	-0.34662325	+0.92153607
e	0.1771162	i	14.18563	-0.14282835	+0.13253346
P	4.44	H	12.7	G 0.15	U 2

Residuals in seconds of arc

1977 09 08	095	0.1-	0.7+	1998 04 24	704	1.0-	0.6+	1999 07 22	704	0.2-	0.1-
1986 08 18	095	0.5-	1.6+	1999 07 13	704	0.0	0.1+	1999 07 22	704	0.2-	0.1+

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M.P.C. 35897

1986 09 09	095	0.6−	1.0−	1999 07 13	704	1.0+	0.4−	1999 07 22	704	0.5+	1.0+
1986 09 29	095	1.0+	0.4+	1999 07 13	704	0.1−	0.1+	1999 07 22	704	0.9−	0.9−
1998 04 04	699	0.0	0.2+	1999 07 13	704	0.0	0.1−	1999 07 22	704	0.3−	0.1−
1998 04 04	699	0.8+	0.4+	1999 07 13	704	0.3+	0.4−	1999 08 21	138	0.0	0.0
1998 04 04	699	0.9+	0.0	1999 07 14	704	0.1+	0.3+	1999 08 21	138	0.4−	0.2−
1998 04 24	704	0.0	0.1+	1999 07 14	704	0.1−	0.2−	1999 08 21	138	0.4−	0.1+
1998 04 24	704	0.7−	0.2+	1999 07 14	704	0.7+	0.3+	1999 09 10	106	0.1−	0.5−
1998 04 24	704	0.1−	0.5−	1999 07 14	704	0.6−	0.2−	1999 09 10	106	0.3+	0.4−
1998 04 24	704	0.3+	0.4+	1999 07 14	704	0.1−	0.3−	1999 09 10	106	0.5+	0.9+

(11746)* 1999 NG₄ = 1989 NV

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

Id. A. Gnädig (*MPC* 35658)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	28.49737	(2000.0)	P	Q	
<i>n</i>	0.29995420	ω	29.20641	+0.13879237	+0.98975911
<i>a</i>	2.2102060	Ω	248.78843	−0.91540873	+0.11536422
<i>e</i>	0.1842231	<i>i</i>	2.05137	−0.37784061	+0.08407143
<i>P</i>	3.29	<i>H</i>	15.1	<i>G</i>	0.15 <i>U</i> 1

Residuals in seconds of arc

1989 07 01	675	0.5−	2.3−	1998 03 31	910	1.3−	0.6+	1999 08 12	699	0.1−	0.4+
1989 07 01	675	0.6+	0.4−	1998 03 31	910	1.0−	0.6+	1999 08 12	699	0.1−	0.4+
1989 07 04	675	0.5+	0.4+	1999 06 25	699	0.0	0.4+	1999 09 04	703	0.3−	0.3−
1989 07 04	675	0.2−	0.5−	1999 06 25	699	0.0	0.1+	1999 09 04	703	0.3+	0.1+
1996 09 15	566	0.3+	0.7−	1999 06 25	699	0.3−	0.6+	1999 09 04	703	0.6−	0.3+
1996 09 15	566	0.6+	1.2−	1999 07 13	704	0.4+	0.1−	1999 09 04	703	0.9−	0.4+
1996 09 15	566	0.4+	0.7−	1999 07 13	704	0.4+	0.4−	1999 09 07	704	0.0	0.5+
1996 10 06	691	0.1−	0.3−	1999 07 13	704	0.1−	0.3+	1999 09 07	704	0.4+	0.3+
1996 10 06	691	0.1−	0.4−	1999 07 13	704	0.4+	0.9−	1999 09 07	704	0.8+	0.6+
1996 10 06	691	0.5−	0.2−	1999 07 13	704	1.2−	0.6−	1999 09 07	704	0.4+	0.3+
1996 10 18	566	0.2+	0.1−	1999 07 14	704	0.0	0.2−	1999 09 07	704	0.0	0.5+
1996 10 18	566	0.1−	0.1−	1999 07 14	704	0.6−	0.1+	1999 09 09	704	0.0	0.7+
1996 10 18	566	0.2+	0.2−	1999 07 14	704	1.0−	0.3−	1999 09 09	704	0.0	0.3+
1997 10 09	691	1.2−	0.5−	1999 07 14	704	0.1+	0.8+	1999 09 09	704	1.2+	0.1−
1997 10 09	691	1.2+	0.3+	1999 07 14	704	0.8−	0.4−	1999 09 09	704	0.8+	0.3+
1997 10 09	691	0.1−	0.0	1999 07 23	704	0.1+	0.1+	1999 09 09	704	0.1+	0.5+
1998 01 30	910	1.0+	0.3+	1999 07 23	704	0.1−	0.2+	1999 09 13	699	0.1−	0.1+
1998 01 30	910	1.0+	0.4+	1999 07 23	704	0.2−	0.2+	1999 09 13	699	0.4−	0.1−
1998 01 30	910	1.1+	0.3+	1999 07 23	704	0.6−	0.5+	1999 09 13	699	0.1−	0.7+
1998 03 31	910	1.1−	0.8+	1999 08 12	699	0.1+	0.3+				

(11747)* 1999 NQ₉ = 1986 WK₉ = 1993 FE₄₂ = 1998 KN₁

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

Id. A. Doppler (*MPC* 35660)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	172.22615	(2000.0)	P	Q	
<i>n</i>	0.21153039	ω	331.29508	−0.83574924	−0.54909834
<i>a</i>	2.7896788	Ω	175.39441	+0.51235010	−0.78225160
<i>e</i>	0.0311494	<i>i</i>	2.69283	+0.19753629	−0.29423366
<i>P</i>	4.66	<i>H</i>	14.0	<i>G</i>	0.15 <i>U</i> 1

Residuals in seconds of arc

1986 11 30	381	(2.6+	1.1+)	1998 05 01	704	0.4−	0.4−	1999 07 13	704	0.6−	0.4−
1986 11 30	381	(3.3−	0.7+)	1998 05 01	704	0.1+	0.1+	1999 07 13	704	1.1−	0.5−
1986 12 01	381	0.4−	0.7−	1998 05 01	704	0.3+	0.2+	1999 07 13	704	0.2+	0.6−
1986 12 01	381	0.2+	0.5+	1998 05 02	566	0.2−	0.6−	1999 07 16	704	0.1−	0.4−
1993 03 19	809	0.2−	0.1+	1998 05 02	566	0.3−	0.5−	1999 07 16	704	0.2−	0.4−
1993 03 20	809	0.6+	1.0−	1998 05 02	566	0.5−	0.3−	1999 07 16	704	0.7+	0.7−
1993 03 24	809	1.3+	0.6−	1998 05 18	699	0.8+	0.5+	1999 07 21	699	0.4−	0.7+
1993 04 21	413	1.1−	0.8+	1998 05 18	699	0.8+	0.8+	1999 07 21	699	0.5−	0.3−
1995 09 22	691	0.0	0.0	1998 05 18	699	1.0+	0.2+	1999 07 21	699	0.1+	0.1+
1995 09 22	691	0.2−	0.0	1998 05 22	704	0.1−	0.3−	1999 09 04	703	1.3+	1.3+

1995 09 22	691	0.2−	0.0	1998 05 22	704	0.3−	0.2+	1999 09 04	703	1.2−	1.0−
1997 02 15	327	0.9+	0.1−	1998 05 22	704	0.1−	0.4+	1999 09 04	703	0.8+	0.9+
1997 02 15	327	0.5−	1.3−	1998 05 22	704	0.9−	1.3+	1999 09 04	703	0.5+	0.3+
1997 02 15	327	0.3−	1.0+	1998 05 22	699	0.6+	0.3+	1999 09 07	704	1.2+	1.0−
1998 04 22	704	0.4−	0.7−	1998 05 22	699	0.1+	0.1−	1999 09 07	704	0.6+	0.7+
1998 04 22	704	0.2−	0.3+	1998 05 22	699	0.6+	0.5+	1999 09 07	704	1.3+	0.9+
1998 04 22	704	0.1−	0.6−	1999 07 12	595	1.0−	0.6−	1999 09 07	704	(1.5+	2.1+)
1998 04 22	704	0.4−	0.2−	1999 07 13	595	0.9−	0.3−	1999 09 09	704	(0.9+	3.5−)
1998 04 22	704	0.6−	0.4−	1999 07 13	595	1.6−	0.5+	1999 09 09	704	1.5+	1.0−
1998 05 01	704	0.4−	0.1−	1999 07 13	704	1.2−	0.9+	1999 09 09	704	0.9+	0.8+
1998 05 01	704	0.1−	0.0	1999 07 13	704	0.7+	1.1−	1999 09 09	704	(1.9+	2.1+)

(11748)* 1999 NT₁₀ = 1988 RC₁ = 1988 SV = 1991 GP₁₂

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

Id. G. V. Williams (*MPC* 35399)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	19.73031	(2000.0)	P	Q	
<i>n</i>	0.26550741	ω	347.67590	+0.30255964	+0.94477119
<i>a</i>	2.3974614	Ω	299.81761	−0.86169209	+0.21465431
<i>e</i>	0.2431961	<i>i</i>	8.34747	−0.40736274	+0.24765080
<i>P</i>	3.71	<i>H</i>	14.8	<i>G</i>	0.15 <i>U</i> 1

Residuals in seconds of arc

1988 09 08	054	0.5−	0.3+	1999 07 13	704	0.6+	0.2+	1999 09 04	703	0.8−	0.2−
1988 09 16	054	0.5+	0.1−	1999 07 13	704	1.4+	0.1+	1999 09 04	703	0.4−	0.2−
1991 04 13	413	0.3+	0.2−	1999 07 13	704	0.8+	0.4+	1999 09 08	703	0.4−	0.4−
1991 04 13	413	0.5−	0.4+	1999 07 16	704	0.4+	0.1+	1999 09 08	703	0.3−	0.3−
1991 05 07	413	0.9+	0.1+	1999 07 16	704	0.5+	0.0	1999 09 08	703	0.3−	0.1+
1991 05 07	413	0.7−	0.2+	1999 07 16	704	0.6+	0.4−	1999 09 08	703	0.1+	0.2−
1994 01 18	691	0.1−	0.3−	1999 07 21	699	0.1−	0.1−	1999 09 09	704	1.0+	0.3−
1994 01 18	691	0.0	0.1−	1999 07 21	699	0.7−	0.2−	1999 09 09	704	0.4+	0.1−
1994 01 18	691	0.2+	0.1−	1999 07 21	699	0.0	0.3−	1999 09 09	704	0.1+	0.3−
1999 06 25	699	1.0−	0.3+	1999 08 12	699	0.4−	0.2+	1999 09 09	704	0.3+	0.1+
1999 06 25	699	0.2+	0.7+	1999 08 12	699	0.4−	0.1+	1999 09 09	704	0.4−	0.3−
1999 06 25	699	0.0	0.2−	1999 08 12	699	0.5−	0.5+	1999 09 11	106	0.6−	0.3+
1999 07 13	704	0.4+	0.2−	1999 09 04	703	0.9−	0.1−	1999 09 11	106	0.0	0.4+
1999 07 13	704	0.9+	0.1−	1999 09 04	703	0.0	0.1−	1999 09 11	106	0.6−	0.2+

(11749)* 1999 NZ₁₀ = 1974 RW = 1982 DJ₁ = 1992 EL₂₇ = 1998 KU₂₁

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

Id. A. Doppler (*MPC* 35661)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	330.89922	(2000.0)	P	Q	
<i>n</i>	0.19533197	ω	56.67889	+0.99548249	+0.09407337
<i>a</i>	2.9418498	Ω	297.92017	−0.09122474	+0.91020917
<i>e</i>	0.0694292	<i>i</i>	0.83248	−0.02631836	+0.40332302
<i>P</i>	5.05	<i>H</i>	13.5	<i>G</i>	0.15 <i>U</i> 1

Residuals in seconds of arc

1974 09 11	095	1.0−	1.7+	1998 05 22	699	0.1+	0.5+	1999 09 06	699	0.4−	0.1−
1982 02 23	801	1.6+	0.5+	1998 05 22	699	0.9−	0.4−	1999 09 06	699	0.1−	0.1+
1992 03 04	809	0.8−	1.4+	1998 05 22	699	0.1+	0.2+	1999 09 07	704	0.1−	0.1+
1992 03 07	809	0.4−	0.6+	1998 05 24	704	0.1−	0.8−	1999 09 07	704	0.4−	0.3+
1992 04 06	809	0.1+	0.7+	1998 05 24	704	0.7−	0.1−	1999 09 07	704	0.4+	0.2−
1995 12 09	112	0.5+	0.3−	1998 05 24	704	1.2−	0.3+	1999 09 07	704	0.1+	0.3+
1995 12 09	112	1.2−	1.4−	1998 05 24	704	0.4+	1.3+	1999 09 07	704	0.4+	0.1+
1995 12 09	112	0.5+	0.2−	1998 05 24	704	1.6−	1.0+	1999 09 09	704	0.1−	0.0
1997 02 18	327	0.3−	0.1+	1999 07 13	704	0.5+	0.0	1999 09 09	704	0.2−	0.4+
1997 02 18	327	1.2+	0.2+	1999 07 13	704	0.0	0.4+	1999 09 09	704	0.4−	0.1+
1997 02 18	327	0.9+	0.2+	1999 07 13	704	0.1−	0.3+	1999 09 09	704	0.5−	0.8+
1997 03 11	327	0.4+	0.6+	1999 07 13	704	0.1−	0.1−	1999 09 09	704	0.7−	0.7+
1997 03 11	327	0.1+	0.7+	1999 07 13	704	0.9−	0.6−	1999 09 13	699	0.2−	0.2+
1997 03 11	327	0.2+	0.7+	1999 07 16	704	0.7+	0.2+	1999 09 13	704	0.4+	0.5−

1998 04 22	704	0.6+	0.3-	1999 07 16	704	0.7+	0.4-	1999 09 13	704	0.3-	0.1-
1998 04 22	704	0.7-	0.3-	1999 07 16	704	0.1+	0.7+	1999 09 13	699	0.3-	0.4+
1998 04 22	704	0.1+	1.6-	1999 07 20	699	0.0	0.0	1999 09 13	704	0.3+	0.8-
1998 04 22	704	1.0-	1.5-	1999 07 20	699	0.3+	0.6+	1999 09 13	704	0.2-	1.5-
1998 05 22	704	0.9+	0.8+	1999 07 20	699	1.4+	0.5+	1999 09 13	699	0.1-	0.4+
1998 05 22	704	1.0+	0.8-	1999 08 07	699	0.1-	0.5+	1999 09 13	118	0.2-	0.1-
1998 05 22	704	0.6+	0.2+	1999 08 07	699	0.3-	0.6+	1999 09 13	118	0.2-	0.2+
1998 05 22	704	0.8+	1.2-	1999 08 07	699	0.2+	0.3-	1999 09 13	118	0.2-	0.2+
1998 05 22	704	0.2+	0.6+	1999 09 06	699	0.4+	0.0				

(11750)* 1999 NM₃₃ = 1977 UW₂ = 1992 RP₄ = 1998 KL₂₁

Discovered 1999 July 14 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPC* 35664)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	357.51082		(2000.0)	P	Q		
<i>n</i>	0.12532408	ω	328.31929	+0.45830466	+0.88845372		
<i>a</i>	3.9546953	Ω	328.93856	-0.80515504	+0.40327862		
<i>e</i>	0.0738724	<i>i</i>	2.73656	-0.37640697	+0.21912631		
<i>P</i>	7.86	<i>H</i>	12.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1977 10 18	675	0.4-	0.4+	1998 05 22	704	0.3-	0.3-	1999 06 15	704	0.3-	0.0
1977 10 19	675	0.1-	0.4+	1998 05 22	704	0.1-	1.3-	1999 07 14	704	1.1-	0.5+
1992 09 02	809	1.0+	1.0-	1998 05 22	704	0.9-	0.1-	1999 07 14	704	0.9+	0.2+
1992 09 02	809	0.8+	1.3-	1998 05 22	704	0.7-	1.3+	1999 07 14	704	0.4+	0.3+
1992 09 02	809	0.3+	1.5-	1998 05 22	704	0.1-	1.6-	1999 07 14	704	0.2+	0.4+
1992 09 03	809	0.5+	1.3-	1998 05 24	704	0.2-	0.1+	1999 07 16	704	0.7+	0.0
1998 04 22	704	1.5+	0.5+	1998 05 24	704	1.1+	1.4-	1999 07 16	704	0.5+	0.6+
1998 04 22	704	0.4-	1.1-	1998 05 24	704	1.3-	0.3+	1999 07 16	704	0.3+	0.0
1998 04 22	704	0.5+	0.2-	1998 05 24	704	0.3+	0.1-	1999 07 16	704	1.0+	0.0
1998 04 22	704	0.2-	0.2+	1999 06 15	704	0.4-	0.4+	1999 08 12	704	0.2-	0.8+
1998 05 05	699	(0.5+ 2.2-)		1999 06 15	704	1.0-	0.1+	1999 08 12	704	0.1+	1.2+
1998 05 05	699	0.1-	0.2+	1999 06 15	704	0.5-	0.1+	1999 08 12	704	0.2-	0.5+
1998 05 05	699	0.2-	0.4-	1999 06 15	704	0.6-	0.0	1999 08 12	704	0.9-	0.4+

(11751)* 1999 NK₃₇ = 1983 CJ₃ = 1987 FH = 1987 HQ₂ = 1994 CZ₁₈

Discovered 1999 July 14 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (*MPC* 35665), G. V. Williams (d, *ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	93.34801		(2000.0)	P	Q		
<i>n</i>	0.26226430	ω	225.05952	-0.90192658	+0.43170240		
<i>a</i>	2.4171852	Ω	340.50527	-0.38475684	-0.81651630		
<i>e</i>	0.1078607	<i>i</i>	2.18227	-0.19619026	-0.38331993		
<i>P</i>	3.76	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1983 02 10	809	0.2-	0.4-	1994 02 14	033	0.9+	0.3+	1999 07 20	699	0.3-	0.6+
1983 02 10	809	0.6-	0.3+	1994 02 15	033	0.3+	0.9+	1999 07 20	699	0.2-	0.7+
1983 02 10	809	0.6-	0.1+	1994 02 16	033	0.1+	1.1+	1999 08 07	699	1.0-	0.1-
1983 02 14	809	1.4+	0.2+	1999 06 22	703	0.9-	0.1-	1999 08 07	699	1.2-	0.2-
1983 02 14	809	1.3+	0.1+	1999 06 22	703	0.2-	0.3-	1999 08 07	699	0.9-	0.4-
1983 02 14	809	1.7+	0.0	1999 06 22	703	0.7-	0.7+	1999 09 03	699	0.3-	0.6+
1983 02 18	809	0.7-	0.7-	1999 06 22	703	0.7-	1.0+	1999 09 03	699	0.9+	0.5+
1983 02 18	809	0.1-	0.9-	1999 07 14	704	0.7+	0.3+	1999 09 03	699	0.1-	0.1+
1983 02 18	809	0.2+	0.9-	1999 07 14	704	0.7+	0.2+	1999 09 07	704	1.2+	0.2-
1987 03 27	688	0.5+	0.1+	1999 07 14	704	0.5+	0.4+	1999 09 07	704	0.1-	0.4-
1987 03 27	688	2.1-	0.8+	1999 07 14	704	0.8+	0.4-	1999 09 07	704	1.0+	0.5-
1987 04 20	220(65.6- 51.7+)			1999 07 14	704	0.7+	0.7-	1999 09 07	704	0.2+	0.4-
1987 04 21	220	1.1-	0.3+	1999 07 16	704	0.5+	0.6+	1999 09 11	704	1.8+	0.1-
1992 10 03	675	0.5-	0.2+	1999 07 16	704	0.3+	0.1-	1999 09 11	704	1.1-	0.5-
1992 10 03	675	1.2-	1.3-	1999 07 16	704	0.4+	0.2-	1999 09 11	704	0.2+	0.0
1994 02 14	033	1.4-	0.5+	1999 07 20	699	0.4-	1.3+				

(11752)* 1999 OU₃ = 1977 DK₁ = 1990 KR₁ = 1998 FR₈₈

Discovered 1999 July 23 by T. Okuni at Nanyou.

Id. G. V. Williams (*MPC* 35669)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	43.50252		(2000.0)	P	Q		
<i>n</i>	0.23720853	ω	129.63574	-0.02149701	+0.98605030		
<i>a</i>	2.5845356	Ω	138.21578	-0.97629862	+0.01485767		
<i>e</i>	0.1645472	<i>i</i>	14.34184	-0.21535756	-0.16578314		
<i>P</i>	4.16	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 02 18	381	0.0	0.1-	1998 03 26	704	0.5-	0.2-	1999 08 13	699	0.0	0.5+
1977 02 18	381	1.4-	1.2+	1998 03 26	704	0.4-	0.3-	1999 08 13	699	0.3+	0.0
1977 02 19	381	1.5+	0.4-	1998 03 26	704	1.0-	0.0	1999 08 13	699	0.1-	0.5+
1977 02 19	381	0.2-	0.1+	1999 07 16	704	0.0	0.5-	1999 08 15	358	1.2-	1.5-
1990 05 20	033	0.1+	0.5+	1999 07 16	704	0.1+	0.2+	1999 08 15	358	0.1+	0.5+
1990 05 20	033	0.4+	0.2+	1999 07 16	704	0.2+	0.7-	1999 09 07	704	0.1+	0.8-
1998 02 25	566	1.2+	0.6-	1999 07 21	699	0.2-	0.5+	1999 09 07	704	0.4+	0.3+
1998 02 25	566	1.4+	0.4-	1999 07 21	699	0.9+	1.4+	1999 09 07	704	0.2-	0.1+
1998 02 25	566	1.3+	0.4-	1999 07 21	699	0.1+	0.7+	1999 09 07	704	0.3+	0.2+
1998 03 24	704	0.4-	0.4-	1999 07 23	358	0.0	0.1+	1999 09 07	704	0.0	1.2-
1998 03 24	704	0.1-	0.1+	1999 07 23	358	(1.7+ 2.5-)		1999 09 08	703	0.3-	0.5-
1998 03 24	704	0.4-	0.6-	1999 07 24	358	(2.5- 2.7+)		1999 09 08	703	0.3-	0.3-
1998 03 24	704	0.2-	1.0-	1999 07 24	358	(2.5- 0.2-)		1999 09 08	703	0.7-	0.7-
1998 03 25	704	0.7-	0.6-	1999 07 26	358	1.0+	0.3+	1999 09 08	703	0.3+	0.1-
1998 03 25	704	0.1-	0.2+	1999 07 26	358	0.3-	1.2-	1999 09 11	704	0.3+	0.1+
1998 03 25	704	0.5-	0.5+	1999 07 26	358	(0.0 2.5-)		1999 09 11	704	0.4+	0.3+
1998 03 25	704	0.4+	0.3+	1999 08 08	699	0.0	0.7+	1999 09 11	704	0.0	0.2+
1998 03 25	704	0.1+	0.5+	1999 08 08	699	0.4-	1.0+	1999 09 11	704	0.3+	0.1+
1998 03 25	566	0.1-	0.2-	1999 08 08	699	0.2-	0.5+	1999 09 11	704	0.4+	0.5-
1998 03 25	566	0.4-	0.2-	1999 08 08	358	0.7-	0.8-				
1998 03 25	566	0.3-	0.0	1999 08 08	358	0.4-	1.0-				

(11753)* 2064 P-L = 1989 WV₄

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* 16033)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Nakano			
<i>M</i>	194.56895		(2000.0)	P	Q		
<i>n</i>	0.17411318	ω	196.19934	-0.71406711	-0.69800532		
<i>a</i>	3.1762520	Ω	299.40547	+0.64896956	-0.63114410		
<i>e</i>	0.1001596	<i>i</i>	3.54203	+0.26257698	-0.33829824		
<i>P</i>	5.66	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1960 09 24	675	0.0	0.2-	1989 11 29	033	0.3-	0.4+	1999 08 17	691	0.2-	0.4-
1960 09 26	675	0.2+	1.2-	1989 11 29	033	0.6-	0.2+	1999 09 07	704	0.7+	0.6+
1960 09 28	675	0.7-	0.0	1989 12 03	033	1.8+	1.1+	1999 09 07	704	0.3+	0.0
1960 09 28	675	0.5-	0.8-	1994 10 12	595	0.1-	0.0	1999 09 07	704	0.2-	1.0+
1960 09 29	675	0.4+	0.3+	1994 10 13	595	0.5-	0.5-	1999 09 07	704	0.9-	0.0
1960 10 17	675	0.6+	0.4+	1994 10 13	595	0.9+	0.5-	1999 09 09	704	0.5+	0.9+
1960 10 22	675	0.5+	0.7-	1994 10 13	595	0.2+	1.0+	1999 09 09	704	0.3-	0.2-
1960 10 25	675	0.4+	0.3-	1994 11 07	675	0.6-	0.0	1999 09 09	704	0.9-	0.3+
1960 10 26	675	0.5+	0.4-	1994 11 07	675	(3.4- 1.7-)		1999 09 09	704	0.2+	1.0+
1989 11 28	033	1.9-	0.5-	1999 08 17	691	0.4-	0.6-				
1989 11 28	033	0.7+	0.8+	1999 08 17	691	0.0	0.2-				

(11754)* 2560 P-L = 1994 QH

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* 23985)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	10.25055		(2000.0)	P	Q				
<i>n</i>	0.20102072	ω	145.10094	+0.85678528	+0.51567172				
<i>a</i>	2.8860831	Ω	183.85737	-0.47736791	+0.79219495				
<i>e</i>	0.0599428	<i>i</i>	1.09609	-0.19503553	+0.32635844				
<i>P</i>	4.90	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	1		
Residuals in seconds of arc									
1960 09 24	675	(0.0	2.6+)	1994 10 01	587	0.6-	0.6-	1999 09 07	704 0.1+ 0.2-
1960 09 26	675	0.0	1.5+	1994 10 01	587	(0.3-	2.1-)	1999 09 08	704 0.7+ 0.1+
1960 09 28	675	0.7+	1.1+	1994 10 04	587	0.0	0.3+	1999 09 08	704 0.3- 0.2+
1960 09 29	675	1.0+	0.3+	1994 10 04	587	0.6+	0.9+	1999 09 08	704 0.1+ 0.3-
1960 10 22	675	0.8-	0.5-	1994 10 05	587	0.0	0.3-	1999 09 08	704 0.4+ 0.3-
1960 10 25	675	0.1+	1.3-	1994 10 05	587	1.2+	0.0	1999 09 08	704 0.3+ 0.2-
1960 10 26	675	1.0-	0.8-	1997 03 04	691	0.0	0.3+	1999 09 08	691 0.1+ 0.2+
1994 08 10	809	(0.4+	3.3+)	1997 03 04	691	0.3-	0.0	1999 09 08	691 0.2+ 0.1+
1994 08 10	809	(0.1-	2.7+)	1997 03 04	691	0.2-	0.2+	1999 09 09	704 0.2+ 0.2+
1994 08 10	809	(0.1-	3.1+)	1997 03 11	691	0.2+	0.1+	1999 09 09	704 0.4- 0.4+
1994 08 11	809	(0.8+	3.3+)	1997 03 11	691	0.0	0.1+	1999 09 09	704 0.2+ 0.1+
1994 08 11	809	(0.9+	3.8+)	1997 03 11	691	0.4+	0.4+	1999 09 09	704 0.1- 0.1+
1994 08 11	809	(0.2+	4.3+)	1998 05 24	704	1.5+	0.9+	1999 09 09	704 0.5+ 0.2+
1994 08 26	587	0.5+	0.5-	1998 05 24	704	0.2+	1.2-	1999 09 09	120 1.7- 0.3-
1994 08 26	587	0.4-	0.1-	1998 05 24	704	0.3+	0.1+	1999 09 09	120 1.1- 0.1-
1994 08 27	587	0.9-	0.8-	1998 05 24	704	0.4+	1.1-	1999 09 11	699 0.7+ 1.4+
1994 08 27	587	1.2-	0.9-	1998 05 24	704	0.8-	1.0-	1999 09 11	699 0.1- 0.1+
1994 08 27	587	0.8-	0.8-	1998 06 03	704	0.5+	1.4+	1999 09 11	699 0.2+ 0.7+
1994 08 29	587	0.6-	0.5+	1998 06 03	704	1.1-	1.0+	1999 09 14	704 0.1+ 0.0
1994 08 29	587	0.3-	0.7-	1998 06 03	704	0.5-	0.2+	1999 09 14	704 0.2+ 0.5-
1994 09 03	809	(2.0+	2.4+)	1998 06 03	704	(0.2+	2.5-)	1999 09 14	704 0.1- 0.1-
1994 09 03	809	(1.9+	2.8+)	1999 08 12	699	0.1-	0.5+	1999 09 14	704 0.3+ 0.8-
1994 09 03	809	(2.1+	1.8+)	1999 08 12	699	0.5-	0.5+	1999 09 14	704 0.3+ 0.6-
1994 09 03	587	1.1+	0.1-	1999 08 12	699	0.8+	0.6-	1999 09 14	703 0.1- 0.5+
1994 09 03	587	0.5+	0.6-	1999 09 04	691	0.0	0.3+	1999 09 14	703 0.3- 0.1+
1994 09 04	809	0.1-	0.7+	1999 09 04	691	0.2+	0.3+	1999 09 14	703 0.1- 0.1+
1994 09 04	809	0.9-	1.0+	1999 09 04	691	0.2+	0.2+	1999 09 14	703 0.0 0.8+
1994 09 04	809	0.2-	0.5+	1999 09 07	704	0.2-	0.5-	1999 09 17	691 0.1- 0.0
1994 09 09	587	0.1-	0.5-	1999 09 07	704	0.5+	0.1-	1999 09 17	691 0.3- 0.4+
1994 09 09	587	0.0	0.1-	1999 09 07	704	0.1-	0.4-	1999 09 17	691 0.3- 0.4+
1994 10 01	587	1.4+	0.0	1999 09 07	704	0.1+	0.8-		

(11755)* 2691 P-L = 1999 CW₂₀

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* 33995), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	335.13757		(2000.0)	P	Q				
<i>n</i>	0.26797141	ω	191.75199	-0.71107523	+0.70260212				
<i>a</i>	2.3827423	Ω	32.93657	-0.64102545	-0.63210315				
<i>e</i>	0.1562057	<i>i</i>	2.83327	-0.28889167	-0.32679639				
<i>P</i>	3.68	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	2		
Residuals in seconds of arc									
1960 09 24	675	0.1+	0.9+	1997 10 30	704	0.2+	0.1+	1999 02 11	699 0.7+ 0.3+
1960 09 26	675	0.2-	0.2+	1999 01 19	704	0.1+	0.1-	1999 02 11	699 0.3- 0.9+
1960 09 28	675	0.2-	1.4+	1999 01 19	704	0.1-	1.5-	1999 02 11	699 0.4+ 0.8+
1960 10 17	675	1.1-	0.3+	1999 01 19	704	0.3-	0.2+	1999 02 13	704 0.7+ 1.1+
1960 10 25	675	0.1-	0.7+	1999 01 19	704	0.9-	0.1+	1999 02 13	704 1.1- 1.2-
1960 10 26	675	0.3-	0.4+	1999 01 19	704	1.1-	0.7+	1999 02 13	704 1.3+ 0.5-
1992 04 09	691	0.4-	0.7-	1999 01 22	699	0.1+	1.1+	1999 02 13	704 0.1- 0.3+
1992 04 09	691	0.6-	1.1-	1999 01 22	699	0.8+	0.1-	1999 02 13	704 1.3+ 0.8-
1992 04 09	691	0.5-	1.1-	1999 01 22	699	1.7-	0.2-	1999 02 18	566 0.4- 0.4+
1997 10 30	704	0.1+	2.0-	1999 02 10	704	0.2+	0.4-	1999 02 18	566 0.2- 0.2+
1997 10 30	704	0.9+	1.8-	1999 02 10	704	0.1-	0.5+	1999 02 18	566 0.6- 0.3+
1997 10 30	704	1.7+	1.6-	1999 02 10	704	1.0+	0.1-		
1997 10 30	704	0.1-	1.3-	1999 02 10	704	0.9+	0.3+		

(11756)* 2779 P-L = 1997 SB₂₅

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. T. Urata (*MPC* 31131)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	215.35255		(2000.0)	P	Q				
<i>n</i>	0.29337403	ω	303.43205	+0.99598413	+0.08424645				
<i>a</i>	2.2431326	Ω	51.75378	-0.06383828	+0.90555683				
<i>e</i>	0.1803453	<i>i</i>	2.21115	-0.06277169	+0.41577561				
<i>P</i>	3.36	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	2		
Residuals in seconds of arc									
1960 09 24	675	0.8+	0.1+	1997 10 08	376	0.3-	0.3-	1997 12 26	566 1.1+ 0.0
1960 09 26	675	0.1+	0.4+	1997 10 21	886	1.0-	0.1+	1997 12 26	566 1.3+ 0.0
1960 09 28	675	1.1-	0.4-	1997 10 21	886	1.2-	0.2-	1997 12 26	566 0.8+ 0.3+
1960 09 29	675	0.4-	0.1+	1997 10 22	886	0.3-	0.4-	1997 12 26	566 0.6+ 0.3+
1960 10 25	675	0.5+	0.1+	1997 10 22	886	0.7-	0.5+	1997 12 26	566 0.7+ 0.4+
1960 10 26	675	0.1+	0.7-	1997 10 30	566	1.4-	0.5+	1999 02 18	699 0.1+ 0.1+
1990 09 23	413	0.8+	1.1+	1997 10 30	566	1.0-	0.4+	1999 02 18	699 0.8+ 0.9+
1990 09 23	413	0.0	1.1+	1997 10 30	566	1.0-	0.3+	1999 02 18	699 0.1+ 1.2+
1996 04 19	691	0.3-	0.6-	1997 12 05	385	0.5+	0.1+	1999 03 20	704 (0.0 3.9+)
1996 04 19	691	0.3-	0.3-	1997 12 05	385	0.1-	0.1+	1999 03 20	704 1.1- 1.5+
1996 04 19	691	0.6-	0.1-	1997 12 19	426	0.1+	0.9-	1999 03 20	704 (2.2+ 3.4+)
1997 09 28	905	0.4+	0.2+	1997 12 19	426	0.0	0.0	1999 03 23	704 1.0+ 0.2-
1997 09 28	905	(2.2-	0.5+)	1997 12 21	426	0.7-	0.1-	1999 03 23	704 1.3+ 0.3+
1997 09 30	905	1.5+	0.5+	1997 12 21	426	0.3-	0.2-	1999 03 23	704 0.4+ 0.6+
1997 09 30	905	1.4-	0.3-	1997 12 26	566	1.6+	0.1-	1999 03 23	704 0.3- 0.0
1997 10 06	905	0.2+	0.5+	1997 12 26	566	1.3+	0.3-	1999 03 23	704 0.3+ 0.8+
1997 10 06	905	0.0	0.6+	1997 12 26	566	1.3+	0.4-		
1997 10 08	376	1.0-	0.3-	1997 12 26	566	1.6+	0.1-		

(11757)* 2799 P-L = 5180 T-3

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. H. Kaneda (*MPC* 16034)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	343.20773		(2000.0)	P	Q				
<i>n</i>	0.17672242	ω	164.03836	+0.98097532	+0.18732827				
<i>a</i>	3.1449105	Ω	185.91887	-0.18126931	+0.97780942				
<i>e</i>	0.2373586	<i>i</i>	29.60712	+0.06949003	-0.09379159				
<i>P</i>	5.58	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	2		
Residuals in seconds of arc									
1960 09 24	675	1.5-	1.6+	1977 10 21	675	1.7-	0.3+	1999 08 11	704 0.6+ 0.5+
1960 09 24	675	0.0	1.2-	1977 10 22	675	0.0	0.3+	1999 09 10	704 0.5+ 0.7-
1960 09 26	675	0.3-	0.2+	1988 09 11	675	0.9+	1.9-	1999 09 10	704 0.6- 0.6-
1960 09 26	675	0.7+	0.8+	1988 09 11	675	0.4-	0.2+	1999 09 10	704 0.4- 0.3+
1960 09 28	675	0.1-	1.0+	1993 06 13	658	0.7+	0.1-	1999 09 11	704 0.6- 0.1+
1960 09 28	675	0.4+	0.7+	1993 06 13	658	0.4+	0.2-	1999 09 11	704 0.1+ 0.9-
1960 09 29	675	0.3+	0.9+	1993 06 13	658	0.1+	0.5-	1999 09 11	704 0.0 0.4+
1977 10 12	675	1.0+	1.7-	1993 07 17	658	0.2-	0.6-	1999 09 11	704 0.1- 0.3-
1977 10 12	675	(0.0 2.8-)		1993 07 17	658	0.3-	0.1-	1999 09 11	704 0.2- 0.1+
1977 10 16	675	0.0	1.0-	1993 07 17	658	0.2+	0.3-	1999 09 11	118 0.0 0.7+
1977 10 16	675	0.3-	2.0-	1993 07 17	658	0.4+	0.1-	1999 09 11	118 0.3- 0.6+
1977 10 17	675	1.4+	0.6-	1999 08 11	704	0.3-	0.6+	1999 09 12	118 0.3+ 0.3+
1977 10 17	675	1.1+	0.8-	1999 08 11	704	0.1+	0.3+	1999 09 12	118 0.3- 0.6+
1977 10 21	675	0.5-	1.4+	1999 08 11	704	0.4-	0.1-		

(11758)* 4035 P-L = 1993 NT

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* 25435)

M.P.C. 35900

1999 SEPT. 28

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	11.39616		(2000.0)	P	Q
<i>n</i>	0.17581476	ω	35.94349	+0.71882963	+0.69243234
<i>a</i>	3.1557250	Ω	280.10852	-0.65158521	+0.64008073
<i>e</i>	0.1386716	<i>i</i>	3.60010	-0.24232349	+0.33291757
<i>P</i>	5.61	<i>H</i>	13.4	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1960 09 24	675	0.4-	0.1-	1998 04 30	566	0.6-	0.3-	1999 08 22	699	0.2-	0.1-
1960 09 25	675	0.6-	0.2+	1998 04 30	566	0.1+	0.3-	1999 09 05	699	0.4+	1.6+
1960 09 26	675	0.1-	0.5-	1998 04 30	566	0.4+	0.1+	1999 09 05	699	0.1+	0.3+
1960 09 28	675	0.0	0.5-	1998 05 01	704	0.3+	1.0-	1999 09 05	699	0.2-	0.5+
1960 10 22	675	0.0	1.0+	1998 05 01	704	0.5+	0.6-	1999 09 07	704	0.5+	1.1-
1960 10 24	675	0.2+	0.9+	1998 05 01	704	0.2-	0.3-	1999 09 07	704	0.6+	0.9-
1960 10 26	675	0.1+	0.9+	1998 05 01	704	(1.4+	2.7-)	1999 09 07	704	0.1+	0.3-
1993 07 12	809	0.9-	0.4+	1998 05 22	704	0.7+	1.1-	1999 09 07	704	0.4+	0.9-
1993 07 12	809	0.8-	0.3-	1998 05 22	704	0.5+	0.5+	1999 09 07	704	0.7+	0.9-
1993 07 12	809	1.2-	0.1-	1998 05 22	704	0.2+	1.1-	1999 09 09	704	0.4+	0.8-
1993 07 19	809	1.3-	1.1+	1998 05 22	704	0.1-	0.2-	1999 09 09	704	0.5+	0.9-
1993 07 19	809	1.2-	0.5+	1998 05 22	704	(0.4-	2.1-)	1999 09 09	704	0.3+	0.5-
1993 07 19	809	1.6-	0.7+	1998 05 24	704	0.6-	0.5+	1999 09 09	704	0.0	0.9-
1993 07 23	809	1.7+	1.7+	1998 05 24	704	0.7-	0.5+	1999 09 09	704	0.1+	0.3-
1993 07 23	809	(1.0+	2.6+)	1998 05 24	704	0.3-	0.4+	1999 09 12	106	0.0	0.2+
1993 07 23	809	1.5+	1.7+	1998 05 24	704	0.4+	0.3+	1999 09 12	106	0.1+	0.0
1993 07 26	809	1.4+	0.2-	1998 05 24	704	0.9-	0.2-	1999 09 12	106	0.3+	0.3+
1993 07 26	809	0.3+	0.0	1998 06 16	704	0.2-	1.5-	1999 09 14	704	0.1-	0.7-
1993 07 26	809	0.7+	0.1+	1998 06 16	704	1.0+	0.2-	1999 09 14	704	0.0	0.4-
1998 04 22	704	0.9-	0.4-	1998 06 16	704	0.4+	0.9+	1999 09 14	704	0.4-	0.2+
1998 04 22	704	0.6+	0.5+	1998 06 16	704	1.4-	0.2+	1999 09 14	704	0.3-	0.4-
1998 04 22	704	(0.0	2.1+)	1999 08 22	699	0.2+	0.4+	1999 09 14	704	0.8-	0.6-
1998 04 22	704	(5.8-	2.2-)	1999 08 22	699	0.0	0.0				

(11759)* 4075 P-L = 1981 EC₄₁

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. H. Oishi (*MPC* 12688)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	44.47858		(2000.0)	P	Q
<i>n</i>	0.26082559	ω	108.86383	+0.24873095	-0.96854839
<i>a</i>	2.4260658	Ω	326.73135	+0.88388094	+0.22986883
<i>e</i>	0.0964702	<i>i</i>	0.71557	+0.39609014	+0.09525932
<i>P</i>	3.78	<i>H</i>	15.6	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1960 09 24	675	0.6-	0.6+	1996 02 15	566	(2.8+	0.6+)	1998 11 10	704	0.4+	0.7-
1960 09 25	675	0.2-	0.1-	1996 02 15	566	1.1+	0.3+	1998 11 10	704	0.1-	0.8-
1960 09 26	675	0.2-	0.7+	1998 10 19	699	0.2+	0.3-	1998 11 10	704	1.4-	1.3+
1960 09 28	675	1.3+	0.4-	1998 10 19	699	0.4+	0.4+	1998 11 11	704	0.4-	0.3+
1960 10 17	675	0.3+	0.7+	1998 10 19	699	0.0	0.4-	1998 11 11	704	0.1+	0.3-
1960 10 22	675	0.3-	0.4+	1998 10 23	327	0.1-	0.2-	1998 11 11	704	0.9+	0.7-
1960 10 26	675	0.6-	0.4-	1998 10 23	327	0.0	0.3-	1998 11 11	704	0.6-	0.4+
1981 03 02	413	1.5-	0.4+	1998 10 23	327	0.1-	0.1-	1998 11 11	704	1.6+	1.0+
1981 03 11	413	(2.6-	0.4-)	1998 10 23	327	0.1+	0.4-	1998 11 11	704	0.1-	0.3-
1981 03 15	413	0.4-	0.7-	1998 10 23	327	0.1+	0.1+	1998 11 11	704	0.4-	0.4-
1981 03 15	413	0.2+	1.1-	1998 10 23	327	0.0	0.6-	1998 11 20	699	0.8-	0.1-
1994 10 06	691	0.3+	0.1-	1998 10 29	691	0.3-	0.3-	1998 11 20	699	0.7+	0.1-
1994 10 06	691	0.2+	0.0	1998 10 29	691	0.3-	0.2-	1998 11 20	699	0.8-	0.9+
1994 10 06	691	0.0	0.7-	1998 10 29	691	0.3-	0.2-				
1996 02 15	566	0.4+	0.7+	1998 11 10	704	1.0+	1.0+				

(11760)* 4090 P-L = 1996 AX₅ = 1997 GN₁₄

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. B. G. Marsden (*MPC* 30774)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	285.31859		(2000.0)	P	Q
<i>n</i>	0.17560703	ω	78.72569	+0.57010396	-0.82090588
<i>a</i>	3.1582132	Ω	336.42300	+0.71781977	+0.51729648
<i>e</i>	0.0986303	<i>i</i>	4.74559	+0.39964515	+0.24190474
<i>P</i>	5.61	<i>H</i>	13.9	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1960 09 24	675	0.6-	0.6-	1997 04 03	704	0.5-	0.4-	1999 08 22	703	0.8-	0.9+
1960 09 25	675	0.3+	1.0+	1997 04 03	704	0.3+	0.6-	1999 08 22	703	0.4-	0.4+
1960 09 26	675	0.4+	0.6+	1997 04 05	704	0.5+	0.5-	1999 09 07	704	0.1+	0.4-
1960 09 28	675	1.0+	1.7+	1997 04 05	704	0.1-	0.6+	1999 09 07	704	0.0	0.8-
1960 10 17	675	1.0-	0.7-	1997 04 07	704	0.6+	0.6+	1999 09 07	704	0.4-	0.1-
1960 10 22	675	0.3-	0.6-	1997 04 07	704	0.9+	0.4-	1999 09 07	704	0.0	0.2-
1960 10 24	675	0.8-	0.4+	1999 08 08	699	0.2+	1.1+	1999 09 07	704	0.2-	0.2+
1960 10 26	675	0.0	0.0	1999 08 08	699	1.0+	0.2+	1999 09 09	704	0.0	0.6+
1996 01 12	691	0.1+	0.1+	1999 08 08	699	0.3-	0.0	1999 09 09	704	0.4-	0.6-
1996 01 12	691	0.1+	0.1+	1999 08 08	691	0.2+	0.0	1999 09 09	704	0.7+	1.2-
1996 01 12	691	0.1+	0.5+	1999 08 08	691	0.0	0.2+	1999 09 09	704	0.1+	1.1-
1996 01 18	691	0.0	0.2+	1999 08 08	691	0.3+	0.2+	1999 09 13	704	0.0	0.0
1996 01 18	691	0.0	0.0	1999 08 21	691	0.1-	0.4+	1999 09 13	704	0.5+	0.6+
1996 01 18	691	0.0	0.4+	1999 08 21	691	0.3-	0.3+	1999 09 13	704	0.6-	0.4+
1997 03 11	809	0.9+	1.1+	1999 08 21	691	0.2-	0.3+	1999 09 13	704	0.6+	0.2-
1997 03 11	809	1.0-	1.7+	1999 08 22	703	0.3-	0.3+	1999 09 13	704	0.4-	0.7-
1997 03 11	809	0.6-	0.3+	1999 08 22	703	0.2+	0.4+				

(11761)* 4868 P-L = 1962 CE₁ = 1997 TT₁₁ = 1998 XT₄₈ = 1999 BG₂₁

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. A. Milani (*MPC* 34265), G. V. Williams (*MPC* 34565)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	41.07446		(2000.0)	P	Q
<i>n</i>	0.18527340	ω	79.98086	-0.18465970	-0.98273612
<i>a</i>	3.0473850	Ω	20.67105	+0.88855291	-0.17190684
<i>e</i>	0.1827671	<i>i</i>	1.85454	+0.41996966	-0.06839408
<i>P</i>	5.32	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1960 09 24	675	0.4+	0.5-	1997 10 08	691	0.1+	0.0	1998 12 17	704	0.1+	0.4-
1960 09 24	675	0.2-	0.3+	1997 10 09	691	0.3-	0.7+	1998 12 17	704	0.3+	0.9+
1960 09 26	675	0.2+	0.6+	1997 10 09	691	0.5-	0.2+	1998 12 17	704	1.2-	1.0-
1960 09 26	675	0.0	0.9-	1997 10 09	691	0.3-	0.1+	1999 01 16	704	(2.7+	0.0)
1960 09 28	675	0.2+	0.3-	1997 10 23	691	0.3+	0.4+	1999 01 16	704	1.4-	0.0
1960 09 28	675	0.0	0.4-	1997 10 23	691	0.1-	0.2-	1999 01 16	704	0.4+	0.1+
1962 02 10	033	1.0-	0.6+	1997 10 23	691	0.1-	0.2+	1999 01 16	704	(3.9-	1.2+)
1962 02 10	033	1.3+	0.6+	1998 12 14	704	0.1-	0.8+	1999 01 19	704	0.2-	0.8-
1997 10 07	691	0.1+	0.3+	1998 12 14	704	0.5-	1.1+	1999 01 19	704	1.8+	1.2-
1997 10 07	691	0.3-	0.2-	1998 12 14	704	0.5+	0.9-	1999 01 19	704	0.3+	1.3-
1997 10 07	691	0.3+	0.1+	1998 12 14	704	0.2-	0.6+	1999 01 19	704	(0.3+	3.1+)
1997 10 08	691	0.0	0.1-	1998 12 17	704	0.1-	0.7+				
1997 10 08	691	0.1+	0.2+	1998 12 17	704	0.4+	0.8+				

(11762)* 6044 P-L = 1998 GB₁

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. T. Urata (*MPC* 31573)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	42.96740		(2000.0)	P	Q
<i>n</i>	0.19924420	ω	303.95850	-0.14736032	+0.98896519
<i>a</i>	2.9032131	Ω	317.55922	-0.89984312	-0.14045208
<i>e</i>	0.0237475	<i>i</i>	1.29553	-0.41056948	-0.04712818
<i>P</i>	4.95	<i>H</i>	13.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1960 09 24	675	0.6−	0.5+	1998 03 29	704	(2.7+	0.9+)	1998 04 22	704	(3.5−	0.7−)
1960 09 25	675	0.6+	1.5+	1998 04 01	704	1.0+	0.0	1998 04 22	704	1.0−	0.1+
1960 09 26	675	0.6+	0.2−	1998 04 01	704	1.1+	0.3+	1998 04 22	704	0.6−	0.1−
1960 09 28	675	0.4+	0.8+	1998 04 01	704	0.4+	0.3+	1998 04 22	704	1.2−	0.0
1960 10 17	675	1.4−	0.2+	1998 04 01	704	0.5+	0.5+	1998 05 16	704	0.1−	0.1−
1960 10 22	675	0.7−	0.5−	1998 04 01	704	(2.7−	0.8−)	1998 05 16	704	0.3+	1.0+
1960 10 24	675	0.5−	0.0	1998 04 03	385	0.7+	0.1+	1998 05 16	704	0.6+	1.3+
1960 10 26	675	0.2+	0.5+	1998 04 03	385	0.6+	0.4+	1998 05 16	704	1.1−	1.3−
1991 12 31	691	0.1+	0.1+	1998 04 04	699	0.5+	0.4+	1998 05 16	704	1.7−	0.3−
1991 12 31	691	0.1−	1.0+	1998 04 04	699	0.8+	0.5+	1999 07 14	704	0.4+	0.1+
1991 12 31	691	0.2+	0.3+	1998 04 04	699	0.1+	0.8+	1999 07 14	704	0.2+	0.2−
1998 03 25	704	0.9+	0.2+	1998 04 04	888	0.2+	0.3+	1999 07 14	704	0.1−	0.3+
1998 03 25	704	0.3+	0.3+	1998 04 04	888	0.6+	0.0	1999 07 14	704	0.1+	0.4+
1998 03 25	704	0.6+	0.5+	1998 04 04	888	0.4+	0.1+	1999 07 16	704	0.4+	0.1+
1998 03 25	704	1.2+	0.4−	1998 04 21	704	0.7−	0.4−	1999 07 16	704	0.2+	0.5+
1998 03 25	704	0.3+	1.5−	1998 04 21	704	0.9−	0.8−	1999 07 16	704	0.1+	0.2+
1998 03 29	704	0.1−	0.6+	1998 04 21	704	0.9−	1.0−	1999 07 16	704	0.1−	0.8+
1998 03 29	704	0.7+	0.0	1998 04 21	704	0.9−	0.7−	1999 08 07	699	1.2−	0.4−
1998 03 29	704	0.9−	0.4+	1998 04 21	704	0.6−	1.0−	1999 08 07	699	0.0	0.8−
1998 03 29	704	0.1−	1.8+	1998 04 22	704	0.0	0.2−	1999 08 07	699	0.2−	0.4−

(11763)* 6303 P-L = 1992 EO₁₇

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			
<i>M</i>	284.19202	(2000.0)	P		Q	
<i>n</i>	0.20183384	ω	242.98693	+0.41360541	−0.91045449	
<i>a</i>	2.8783265	Ω	182.58353	+0.84872205	+0.38626884	
<i>e</i>	0.0177049	<i>i</i>	2.26749	+0.32954733	+0.14788169	
<i>P</i>	4.88	<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−	0.7−	1992 03 09	809	1.4−	0.7−	1999 08 22	703	0.9−	1.3+
1960 09 25	675	0.8+	0.2−	1992 04 07	809	0.3+	1.1−	1999 08 22	703	0.2−	1.1+
1960 09 26	675	0.7+	0.8−	1994 08 12	809	0.0	0.8−	1999 08 22	703	0.3+	1.5+
1960 09 28	675	0.4+	0.7−	1994 08 12	809	0.9−	1.3−	1999 08 22	703	0.6−	1.6+
1960 10 17	675	0.4+	1.8−	1994 08 12	809	0.3+	0.7−	1999 09 09	704	0.4+	0.7+
1960 10 22	675	0.4−	0.7+	1994 08 13	809	(2.3+	0.6+)	1999 09 09	704	0.4−	0.1+
1960 10 22	675	0.2+	0.7−	1994 08 13	809	1.8+	0.3+	1999 09 09	704	0.1+	0.3−
1960 10 24	675	0.3+	0.6+	1994 08 13	809	0.8+	0.4+	1999 09 09	704	1.1−	0.5−
1960 10 25	675	0.6−	0.7−	1994 09 05	809	(2.3−	2.3−)	1999 09 09	704	1.4−	0.2−
1960 10 26	675	0.1−	1.1+	1994 09 05	809	(1.6−	3.2−)	1999 09 14	704	0.4+	0.0
1960 10 26	675	0.2−	0.6−	1994 09 05	809	(1.9−	3.5−)	1999 09 14	704	0.8+	0.2+
1992 03 01	809	0.3+	0.1+	1994 09 06	809	0.7+	1.4−	1999 09 14	704	0.2−	0.3+
1992 03 03	809	1.2+	0.4−	1994 09 06	809	0.1−	1.4−	1999 09 14	704	0.1−	1.7+
1992 03 05	809	1.1−	0.0	1994 09 06	809	0.4−	1.0−				

(11764)* 6531 P-L = 3007 T-2

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. C. J. van Houten (*MPC* 14961)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams			
<i>M</i>	312.79234	(2000.0)	P		Q	
<i>n</i>	0.30305581	ω	19.67026	+0.80757174	−0.58930801	
<i>a</i>	2.1951000	Ω	16.50174	+0.52951421	+0.70708365	
<i>e</i>	0.0689212	<i>i</i>	4.70987	+0.25969712	+0.39083089	
<i>P</i>	3.25	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1960 09 24	675	0.5−	0.1+	1998 03 25	704	0.4+	0.5−	1998 04 22	704	0.2−	1.3−
1960 09 26	675	0.4+	1.1+	1998 03 25	704	0.5+	0.0	1998 04 22	704	0.2−	0.9−
1960 09 27	675	0.0	0.2+	1998 03 25	704	0.2+	0.2−	1998 04 22	704	0.3−	0.1+

1960 09 28	675	0.2+	0.4+	1998 03 25	704	0.3+	0.1−	1998 04 25	699	1.2+	0.1+
1960 10 17	675	0.7+	0.9+	1998 03 25	704	0.2−	0.7−	1998 04 25	699	0.0	0.7−
1960 10 17	675	0.2+	0.6+	1998 03 29	704	0.4−	0.0	1998 04 25	699	0.4+	0.8−
1960 10 22	675	0.5−	0.9+	1998 03 29	704	0.4−	0.2+	1998 05 16	704	0.6+	0.4+
1960 10 24	675	0.5−	0.9+	1998 03 29	704	0.0	0.2+	1998 05 16	704	1.0−	0.4+
1960 10 26	675	0.0	0.6+	1998 03 29	704	0.4+	0.5−	1998 05 16	704	1.8+	1.3+
1973 09 19	675	0.7+	0.8−	1998 03 29	704	0.4−	0.8−	1998 05 16	704	1.8−	0.5+
1973 09 19	675	0.6−	0.1+	1998 04 01	704	0.2+	0.6+	1999 07 16	704	0.7+	0.4−
1973 09 20	675	1.7+	1.7−	1998 04 01	704	0.5−	0.7+	1999 07 16	704	0.0	0.3−
1973 09 24	675	(1.1−	3.0−)	1998 04 01	704	0.3−	0.6+	1999 07 16	704	0.8+	0.3+
1973 09 24	675	0.6+	2.0−	1998 04 01	704	0.4−	0.2+	1999 07 16	704	0.4+	0.5+
1973 09 25	675	1.1+	1.8−	1998 04 01	704	0.2+	0.4+	1999 09 05	699	0.4−	1.5+
1973 09 25	675	0.7+	2.1−	1998 04 20	704	0.0	0.1−	1999 09 05	699	0.1+	1.7+
1973 09 29	675	0.0	0.8−	1998 04 20	704	1.4−	0.1−	1999 09 05	699	0.4−	1.4+
1973 09 30	675	0.7−	0.4+	1998 04 20	704	0.1+	0.7−	1999 09 07	704	0.4+	0.1+
1973 09 30	675	1.4−	0.8−	1998 04 20	704	0.5−	0.2−	1999 09 07	704	0.0	0.1−
1973 10 04	675	0.5+	1.6−	1998 04 20	704	0.5−	0.8−	1999 09 07	704	0.2−	0.5−
1973 10 04	675	0.3+	1.5−	1998 04 21	704	0.7−	0.0	1999 09 07	704	0.0	0.2+
1996 10 18	566	0.3+	0.8−	1998 04 21	704	0.1−	0.4+	1999 09 07	704	0.3−	0.3−
1996 10 18	566	0.4+	0.7−	1998 04 21	704	0.2−	0.5+	1999 09 14	704	0.5−	0.2+
1996 10 18	566	0.3+	0.8−	1998 04 21	704	0.4−	0.8−	1999 09 14	704	0.2−	0.3+
1998 03 25	699	1.2+	0.1−	1998 04 21	704	0.2−	0.3−	1999 09 14	704	0.4−	0.6+
1998 03 25	699	0.5+	0.7−	1998 04 22	704	1.3−	0.1+	1999 09 14	704	0.4−	0.3+
1998 03 25	699	1.3+	0.1−	1998 04 22	704	0.2+	0.2−	1999 09 14	704	0.6−	0.2+

(11765)* 9057 P-L = 1978 UG₆

Discovered 1960 Oct. 17 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>	97.87019	(2000.0)	P		Q	
<i>n</i>	0.27680581	ω	270.51305	−0.72511250	+0.68735433	
<i>a</i>	2.3317711	Ω	312.90884	−0.60686585	−0.66659125	
<i>e</i>	0.1082400	<i>i</i>	3.27972	−0.32546229	−0.28844432	
<i>P</i>	3.56	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i> 1

Residuals in seconds of arc

1960 09 24	675	0.0	1.2−	1998 03 02	910	0.7+	0.2−	1998 04 04	699	1.9+	1.4+
1960 10 17	675	1.2+	0.4−	1998 03 03	704	0.2+	0.5−	1998 04 04	699	0.0	0.6+
1960 10 22	675	0.7+	0.7−	1998 03 03	704	0.9+	0.2−	1999 08 08	699	0.2−	0.4+
1960 10 24	675	0.6+	1.3−	1998 03 03	704	1.0+	0.6−	1999 08 08	699	0.4−	0.1−
1960 10 26	675	0.1−	0.0	1998 03 03	704	0.6+	0.7−	1999 08 08	699	0.8−	0.0
1978 10 27	675	0.7−	0.5−	1998 03 03	704	0.1+	1.0−	1999 08 22	699	1.4−	0.9+
1978 10 28	675	0.2+	0.5+	1998 03 04	704	(2.2−	0.2−)	1999 08 22	699	0.1+	2.0+
1978 10 29	675	0.8−	0.8−	1998 03 04	704	(2.6−	0.1−)	1999 09 05	699	0.3−	0.5+
1989 11 02	675	0.1−	1.1+	1998 03 04	704	(2.5−	0.3+)	1999 09 05	699	0.7−	0.6+
1989 11 02	675	0.8+	0.2+	1998 03 04	704	(2.9−	0.4+)	1999 09 05	699	0.9−	0.4+
1989 11 05	675	0.4+	0.7+	1998 03 04	704	(2.4−	0.1−)	1999 09 07	704	0.2−	0.2−
1989 11 05	675	0.8−	0.8+	1998 03 20	704	0.3−	0.7−	1999 09 07	704	0.5−	0.5−
1989 11 22	675	0.5−	0.4+	1998 03 20	704	0.7−	0.4+	1999 09 07	704	0.0	0.3+
1989 11 22	675	0.4+	0.0	1998 03 20	704	0.6−	0.4+	1999 09 07	704	0.2−	0.3+
1998 02 19	699	0.5−	1.5+	1998 03 20	704	0.3−	0.4+	1999 09 07	704	0.0	0.5+
1998 02 19	699	0.6−	0.0	1998 03 20	704	1.4−	0.7+	1999 09 09	704	0.1−	0.4−

Id. T. Kobayashi (*MPC* 15571)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17654748	ω	22.64750	+0.99069803	−0.13426183		
<i>a</i>	3.1469876	Ω	345.01765	+0.10798987	+0.87480172		
<i>e</i>	0.1512399	<i>i</i>	4.91786	+0.08279854	+0.46550586		
<i>P</i>	5.58	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1954 08 04	675	0.2+	0.5+	1994 11 29	675	1.0−	0.1−
1954 08 04	675	0.1−	0.4−	1994 11 29	675	0.1−	0.3−
1955 10 23	675	0.0	0.7+	1998 05 22	704	(3.5−	0.9−)
1955 10 23	675	0.7+	0.1−	1998 05 22	704	0.0	0.7+
1960 10 17	675	0.4−	0.2+	1998 05 22	704	0.4−	0.9+
1960 10 22	675	0.8−	0.8+	1998 05 22	704	0.8+	0.3+
1960 10 24	675	0.5−	0.3−	1999 07 16	704	0.9+	0.1−
1960 10 26	675	0.7−	0.1−	1999 07 16	704	0.2+	0.5−
1977 09 09	095	0.7+	1.7+	1999 07 16	704	0.1+	1.7−
1988 09 14	807	0.1+	0.6−	1999 07 20	699	1.3−	1.0+
1988 09 15	807	0.8+	0.6−	1999 07 20	699	0.9+	1.0+
1988 10 06	807	1.7+	0.9−	1999 08 07	699	0.1−	1.2+
1988 10 07	807	0.1+	1.4−	1999 08 07	699	0.2−	1.4+
1994 10 03	675	0.4−	1.2+	1999 08 07	699	0.1+	0.7+
1994 10 03	675	0.0	0.6+	1999 09 06	699	0.1+	0.1+

(11767)* 3224 T-1 = 1998 DW₁₅

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* 31774)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29165479	ω	114.15807	−0.43138374	−0.90216301		
<i>a</i>	2.2519391	Ω	1.40915	+0.77409276	−0.37193853		
<i>e</i>	0.0520696	<i>i</i>	7.37964	+0.46334487	−0.21854895		
<i>P</i>	3.38	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	2
Residuals in seconds of arc							
1971 03 24	675	0.3−	0.0	1998 03 22	704	0.5+	1.5+
1971 03 25	675	0.2−	1.6−	1998 03 22	704	0.1−	0.1−
1971 03 26	675	0.1−	0.1−	1998 03 22	704	0.1+	0.6+
1971 03 26	675	1.5−	1.0−	1998 03 22	704	0.6−	0.5+
1971 03 27	675	0.5+	1.2−	1998 03 22	704	1.4−	0.8+
1971 04 02	675	0.6+	0.6−	1998 03 28	704	0.1+	0.7+
1971 04 16	675	0.7−	0.0	1998 03 28	704	0.5−	0.3+
1971 04 16	675	0.7−	1.8−	1998 03 28	704	0.2−	1.0+
1971 05 13	675	0.4+	0.9+	1998 03 28	704	0.2−	1.2+
1971 05 14	675	1.2−	0.4+	1998 03 28	704	0.1−	0.2+
1996 10 11	566	0.3+	0.2−	1998 04 01	704	0.3−	0.4+
1996 10 11	566	0.2−	0.1−	1998 04 01	704	0.5−	0.3+
1996 10 11	566	0.0	0.0	1998 04 01	704	0.2−	0.8+
1998 02 23	566	0.8+	0.6−	1998 04 01	704	0.2−	0.6−
1998 02 23	566	1.1+	0.6−	1998 04 01	704	0.4−	0.4+
1998 02 23	566	1.1+	0.9−	1998 04 18	704	0.3+	0.3+
1998 02 27	566	1.0+	0.4−	1998 04 18	704	0.7+	0.8+
1998 02 27	566	1.1+	0.9−	1998 04 18	704	1.2−	0.1−
1998 02 27	566	1.1+	0.3−	1998 04 18	704	(2.3−	0.4−)

(11768)* 4107 T-1 = 1996 TD₁₂

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

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17491442	ω	84.48501	−0.10097465	−0.99437300		
<i>a</i>	3.1665448	Ω	11.45936	+0.83698499	−0.10231302		
<i>e</i>	0.0586613	<i>i</i>	9.28013	+0.53782920	−0.02746599		
<i>P</i>	5.63	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1971 03 24	675	0.3+	0.8−	1996 10 07	809	(3.1+	0.9+)
1971 03 26	675	0.7+	0.2−	1996 10 08	809	(2.1+	1.5+)
1971 03 26	675	0.4−	1.6−	1996 10 08	809	(2.8+	1.6+)
1971 03 27	675	1.6+	2.2−	1996 10 08	809	(4.1+	1.9+)
1971 04 02	675	0.3−	0.5−	1996 10 08	566	0.2+	0.8−
1971 04 02	675	1.0−	1.5+	1996 10 08	566	0.1+	0.8−
1971 04 16	675	1.8−	0.6−	1996 10 08	566	0.0	0.8−
1971 04 16	675	1.2+	0.2−	1996 10 10	809	(5.6+	0.1+)
1971 04 16	675	0.3−	0.8+	1996 10 10	809	(5.0+	0.0)
1971 04 16	675	0.3−	0.2−	1996 10 10	809	(4.9+	0.1+)
1971 05 13	675	0.9−	0.6+	1996 10 17	566	0.8−	0.9−
1971 05 14	675	0.9−	0.7+	1996 10 17	566	0.9−	0.2−
1996 09 10	566	0.7+	0.3+	1996 10 17	566	0.9+	0.4+
1996 09 10	566	0.4+	0.3+	1997 12 06	704	0.4−	1.1−
1996 09 10	566	0.9+	0.1+	1997 12 06	704	1.0−	1.0−
1996 10 07	809	0.3+	0.4−	1997 12 06	704	0.7+	1.7+
1996 10 07	809	(2.9+	0.6+)	1997 12 06	704	0.6+	0.3+

(11769)* 2199 T-2 = 1997 LC₁₁

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. A. Gnädig (*MPC* 32292)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23531834	ω	55.01334	−0.54587870	+0.83786234		
<i>a</i>	2.5983573	Ω	181.90459	−0.78507645	−0.51222550		
<i>e</i>	0.0370162	<i>i</i>	3.06046	−0.29269680	−0.18871073		
<i>P</i>	4.19	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1973 09 19	675	2.1+	0.3+	1997 05 04	809	1.3+	0.2+
1973 09 19	675	0.4−	1.9−	1997 05 04	809	(3.2+	1.3−)
1973 09 20	675	1.3−	1.2−	1997 05 04	809	(2.5+	0.2−)
1973 09 24	675	1.6−	0.0	1997 06 07	809	0.2−	0.3+
1973 09 24	675	1.2−	1.2+	1997 06 07	809	0.4−	0.5+
1973 09 25	675	0.6−	1.5−	1997 06 07	809	1.0−	0.3−
1973 09 25	675	2.0+	0.9−	1997 06 08	809	0.5+	0.3+
1973 09 29	675	0.1−	0.1−	1997 06 08	809	0.5+	0.6+
1973 09 29	675	0.0	0.6+	1997 06 08	809	0.3−	0.4+
1973 09 30	675	0.1+	0.3−	1998 08 27	691	0.1−	0.1−
1973 09 30	675	1.4−	0.5−	1998 08 27	691	0.1+	0.3+
1973 10 04	675	0.8+	0.6+	1998 08 27	691	0.1−	0.1−
1973 10 04	675	0.9+	0.7−	1998 09 14	704	(0.9−	2.4+)
1973 10 05	675	2.0+	1.3−	1998 09 14	704	1.4+	1.2−
1973 10 05	675	0.8+	0.3−	1998 09 14	704	0.2+	0.1+
1995 12 18	691	0.8+	1.1+	1998 09 14	704	1.1−	1.9+
1995 12 18	691	0.1+	1.6+	1998 09 15	691	0.2−	0.8+
1995 12 18	691	0.1−	1.1+	1998 09 15	691	0.2−	0.5+

(11770)* 3163 T-2 = 1990 RU₁₇ = 1996 TL₈

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* 28083, *MPC* 34568)

1999 SEPT. 28

M.P.C. 35903

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	18.38916		(2000.0)	P			Q				
<i>n</i>	0.17393689	ω	110.63362	−0.99380111			+0.09376231				
<i>a</i>	3.1783978	Ω	74.78400	−0.11009967			−0.90454383				
<i>e</i>	0.1340888	<i>i</i>	3.54903	+0.01540807			−0.41594361				
<i>P</i>	5.67	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	2				
Residuals in seconds of arc											
1973 09 19	675	0.5+	0.5+	1996 10 13	566	0.3+	0.2+	1999 03 23	704	0.2−	0.7−
1973 09 19	675	0.3−	1.6+	1996 10 13	566	0.6−	0.1+	1999 03 23	704	0.1−	1.1−
1973 09 20	675	0.5+	1.0−	1996 10 13	566	0.8−	0.6+	1999 03 23	704	0.4−	1.1−
1973 09 24	675	1.6−	0.6−	1997 12 04	704	(1.3+	3.3−)	1999 04 06	704	0.6−	0.1−
1973 09 24	675	0.4+	1.0−	1997 12 04	704	1.4−	0.1+	1999 04 06	704	1.6−	0.1−
1973 09 25	675	0.5+	1.5−	1997 12 04	704	1.4+	0.0	1999 04 06	704	0.3+	0.8−
1973 09 25	675	0.9−	0.8−	1997 12 04	704	0.4−	0.1+	1999 04 06	704	0.7−	1.1−
1973 09 29	675	1.1+	0.4−	1999 01 13	699	0.4−	0.4+	1999 04 06	704	0.1+	0.1+
1973 09 29	675	0.0	1.2−	1999 01 13	699	0.1+	0.3+	1999 04 12	704	0.1−	0.3−
1973 09 30	675	2.0+	1.4−	1999 01 13	699	0.5+	0.3+	1999 04 12	704	0.8+	0.1+
1973 09 30	675	0.4−	2.3−	1999 02 20	699	0.1−	0.5−	1999 04 12	704	0.4+	0.3−
1973 10 04	675	1.6+	1.2−	1999 02 20	699	0.1−	0.9+	1999 04 12	704	0.3−	0.5+
1973 10 04	675	(0.7+	3.1−)	1999 02 20	699	0.9+	0.2−	1999 04 12	704	1.3−	0.6−
1973 10 05	675	1.2+	1.9−	1999 03 20	704	0.5−	0.6−	1999 04 15	704	0.1+	1.0−
1973 10 05	675	1.2+	1.1−	1999 03 20	704	1.1−	0.7−	1999 04 15	704	0.7−	0.9−
1990 09 14	809	(5.4−	0.3−)	1999 03 20	704	0.9−	0.7−	1999 04 15	704	0.1−	0.7−
1990 09 14	809	(9.8−	0.2+)	1999 03 20	704	0.4−	0.5−	1999 04 15	704	0.8+	0.5−
1990 09 14	809	(11.0−	1.9−)	1999 03 23	699	0.0	0.3−	1999 04 15	704	1.6+	1.1+
1996 10 09	566	1.4+	0.1+	1999 03 23	699	0.2+	0.8−	1999 04 16	704	(0.1+	2.2−)
1996 10 09	566	0.1−	0.0	1999 03 23	699	0.1−	0.9−	1999 04 16	704	0.0	1.7+
1996 10 09	566	0.3−	0.0	1999 03 23	704	0.3−	0.9−	1999 04 16	704	(0.3−	3.4−)

(11771)* 4136 T-2 = 1987 KS₁ = 1988 RD₄

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* 14969), G. V. Williams (*MPC* 32734)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Green

<i>M</i>	84.78830		(2000.0)	P			Q		
<i>n</i>	0.19824833	ω	306.04579		+0.92586723		+0.37134256		
<i>a</i>	2.9129276	Ω	32.32191		-0.29086354		+0.81839212		
<i>e</i>	0.2186211	<i>i</i>	7.50313		-0.24118098		+0.43856475		
<i>P</i>	4.97	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	2		
Residuals in seconds of arc									
1973 09 19	675	0.2+	1.2-	1993 10 12	675	0.5+	0.5-	1998 10 10	699 0.0 0.5+
1973 09 19	675	0.2-	0.1+	1993 10 12	675	0.3-	0.1+	1998 10 10	699 0.1- 0.6+
1973 09 20	675	2.2-	0.0	1996 03 21	691	0.2+	0.2-	1998 10 10	699 0.1- 0.7+
1973 09 24	675	0.5+	0.9+	1996 03 21	691	(2.4-	0.6+)	1998 10 14	704 0.4- 0.0
1973 09 24	675	0.7-	0.6+	1996 03 21	691	(5.0+	5.0-)	1998 10 14	704 0.5- 0.4+
1973 09 25	675	1.0-	0.7-	1998 09 18	704	0.2+	0.9+	1998 10 14	704 0.0 0.3-
1973 09 25	675	0.7+	0.2+	1998 09 18	704	0.6+	0.7+	1998 10 14	704 1.0- 0.3-
1973 09 29	675	2.1+	1.8-	1998 09 18	704	0.1+	0.6+	1998 10 14	704 0.6- 1.0-
1973 09 29	675	1.4+	2.1-	1998 09 18	704	0.4-	0.9+	1998 10 15	704 0.3- 0.1-
1973 09 30	675	0.5+	0.2-	1998 09 18	704	0.3-	1.1+	1998 10 15	704 0.5+ 0.1-
1973 09 30	675	1.3+	0.5-	1998 09 19	699	0.2+	0.7+	1998 10 15	704 0.5- 0.1-
1973 10 04	675	0.7+	1.9-	1998 09 19	699	0.3+	0.7+	1998 10 15	704 0.3+ 0.4-
1973 10 04	675	1.2+	1.4-	1998 09 19	699	0.4+	0.8+	1998 10 15	704 0.8- 0.1+
1973 10 05	675	0.7+	0.3-	1998 09 26	704	0.0	0.2+	1998 10 15	120 (2.4+ 0.9+)
1973 10 05	675	0.3-	0.3-	1998 09 26	704	0.4-	0.6+	1998 10 15	120 (2.2+ 0.3+)
1987 05 30	413	0.0	1.2+	1998 09 26	704	0.5-	0.1-	1998 10 19	699 0.2- 0.4+
1987 05 30	413	0.7+	0.8+	1998 09 26	704	0.2+	0.4+	1998 10 19	699 0.5- 0.4+
1988 09 09	033	1.0+	0.0	1998 09 26	704	0.7-	0.2-	1998 10 19	699 0.4- 0.1+
1988 09 09	033	0.2-	0.3-	1998 09 27	704	0.5-	0.6+	1998 10 28	704 0.2- 1.0-
1988 09 10	033	1.3+	0.6-	1998 09 27	704	0.6-	0.2+	1998 10 28	704 0.4+ 0.4-
1993 09 21	675	1.2-	1.0+	1998 09 27	704	0.4+	0.2+	1998 10 28	704 0.2- 0.4-
1993 09 21	675	0.9-	0.4+	1998 09 27	704	0.5+	1.4+	1998 10 28	704 0.6- 0.4+
1993 09 23	675	0.6-	0.5+	1998 09 27	704	0.6+	0.3-	1998 10 28	704 0.2- 0.8+

(11772)* 4210 T-2 = 1954 HB = 1994 NQ₁

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. B. G. Marsden (*MPC* 23988)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	159.08093		(2000.0)		P		Q				
<i>n</i>	0.22630831	ω	40.69909		-0.99256139		+0.11126104				
<i>a</i>	2.6668733	Ω	145.59426		-0.12137014		-0.93613209				
<i>e</i>	0.1133042	<i>i</i>	5.01811		+0.00954807		-0.33358311				
<i>P</i>	4.36	<i>H</i>	14.1		<i>G</i>	0.15	<i>U</i>	2			
Residuals in seconds of arc											
1954 04 23	024	0.9+	0.5-	1994 07 05	010	0.6+	1.5-	1998 06 26	704	1.3-	1.4-
1973 09 19	675	0.7+	1.5-	1994 07 05	010	(1.1+	2.6-)	1998 06 26	704	1.6-	0.8-
1973 09 19	675	(0.1-	4.0-)	1994 07 08	010	0.5+	1.7+	1999 08 22	703	(1.4+	2.1+)
1973 09 20	675	1.7-	0.7-	1994 07 08	010	1.8+	0.2+	1999 08 22	703	(0.6-	2.4+)
1973 09 24	675	0.4+	0.6-	1994 07 08	010	(2.3+	0.4+)	1999 08 22	703	(0.2-	2.0+)
1973 09 24	675	0.7+	1.5-	1994 07 14	010	0.3+	1.6+	1999 08 22	703	0.2-	1.7+
1973 09 25	675	0.8-	1.2-	1994 07 14	010	1.5+	0.1+	1999 09 07	704	0.3+	0.4+
1973 09 25	675	0.8-	1.2+	1994 07 14	010	1.6+	1.2-	1999 09 07	704	0.1+	0.4+
1973 09 29	675	0.7-	0.4+	1997 04 07	566	0.9+	1.0-	1999 09 07	704	0.6+	0.4+
1973 09 29	675	0.6-	1.1-	1997 04 07	566	0.1+	0.4-	1999 09 07	704	0.4+	0.3-
1973 09 30	675	0.5-	0.9+	1997 04 07	566	0.2-	0.6-	1999 09 07	704	0.3+	0.1-
1973 09 30	675	0.8+	0.1+	1998 05 24	704	0.2+	0.3+	1999 09 14	704	0.0	0.2+
1973 10 04	675	1.1+	0.3-	1998 05 24	704	1.4-	0.7-	1999 09 14	704	0.3+	0.6+
1973 10 04	675	0.1+	1.1-	1998 05 24	704	0.5-	2.0+	1999 09 14	704	0.2-	0.4+
1973 10 05	675	1.4-	0.9-	1998 05 24	704	(2.3-	1.5+)	1999 09 14	704	0.2-	0.1+
1973 10 05	675	0.2+	0.1+	1998 06 26	704	0.5-	0.2+	1999 09 14	704	0.7-	0.2+
1994 07 05	010	(0.8+	3.2-)	1998 06 26	704	0.6-	0.5-				

(11773)* 1021 T-3 = 1998 FO₁₀₁

Discovered 1977 Oct. 17 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPC* 31776)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	71.19316		(2000.0)		P		Q			
<i>n</i>	0.21765971	ω	264.90620		-0.61283878		+0.78698682			
<i>a</i>	2.7370581	Ω	326.96004		-0.66329489		-0.56134156			
<i>e</i>	0.1267072	<i>i</i>	7.51175		-0.42949799		-0.25602228			
<i>P</i>	4.53	<i>H</i>	13.8		<i>G</i>	0.15	<i>U</i>	1		
Residuals in seconds of arc										
1977 10 07	675	0.2-	0.9-	1998 03 31	699	0.6+	0.2-	1999 07 14	704 0.0 1.1-	
1977 10 11	675	0.2+	1.8+	1998 03 31	704	0.8+	0.4+	1999 07 14	704 0.3+	0.4-
1977 10 11	675	0.3-	1.8+	1998 04 01	704	0.7+	0.4+	1999 07 20	699 1.0-	1.2+
1977 10 12	675	1.4+	0.3+	1998 04 01	704	0.2+	0.1+	1999 07 20	699 0.3-	0.3-
1977 10 12	675	0.1-	0.5-	1998 04 01	704	0.4+	0.7+	1999 07 20	699 1.5-	0.6-
1977 10 16	675	0.5-	0.1-	1998 04 01	704	0.6-	0.9+	1999 08 07	699 0.4+	0.1-
1977 10 16	675	0.6-	0.3+	1998 04 01	704	0.4-	1.3+	1999 08 07	699 0.4+	0.0
1977 10 17	675	0.3-	0.9-	1998 04 19	704	0.6-	0.8-	1999 08 07	699 0.4-	0.1+
1977 10 17	675	0.1-	0.6-	1998 04 19	704	1.2+	0.5-	1999 09 07	704 0.3+	0.4+
1993 01 29	691	0.1-	0.1-	1998 04 19	704	(0.5-	2.2+)	1999 09 07	704 0.6+	0.7+
1993 01 29	691	0.1-	0.0	1998 04 19	704	0.5-	0.7+	1999 09 07	704 0.0	0.5+
1993 01 29	691	0.3-	0.0	1998 04 19	704	1.0-	0.1-	1999 09 07	704 0.4+	0.8+
1998 03 31	704	1.0+	0.1-	1998 04 29	566	0.7-	0.8-	1999 09 13	704 0.3-	0.4+
1998 03 31	704	0.7+	0.1+	1998 04 29	566	0.6-	0.8-	1999 09 13	704 0.4+	0.4+
1998 03 31	704	0.5+	0.0	1998 04 29	566	0.9-	0.8-	1999 09 13	704 0.1-	1.1+
1998 03 31	699	0.4+	0.7+	1999 07 14	704	0.8+	0.5-	1999 09 13	704 0.3-	0.6+
1998 03 31	699	0.8-	0.4+	1999 07 14	704	0.4-	0.8-			
1998 03 31	704	1.0+	0.5+	1999 07 14	704	0.4+	0.9-			

Id. K. Hurukawa (*MPC* 12802)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	1.22685		(2000.0)		P		Q				
n	0.17586052	ω	335.96337		+0.82085101		+0.56934370				
a	3.1551777	Ω	348.98480		−0.47806407		+0.64152444				
e	0.1352889	i	13.71219		−0.31250337		+0.51409546				
P	5.60	H	13.4		G	0.15	U	1			
Residuals in seconds of arc											
1954 07 29	675	0.8+	0.4−	1977 10 17	675	0.3−	0.2+	1999 08 13	699	0.6−	0.4−
1954 07 29	675	0.1−	1.8−	1977 10 17	675	0.6−	1.3+	1999 09 07	699	0.8−	0.2+
1960 09 24	675	0.7+	0.1+	1977 10 22	675	0.4−	2.2−	1999 09 07	699	0.1−	0.3−
1960 09 25	675	0.8+	0.3−	1977 10 22	675	0.5+	2.1−	1999 09 07	704	0.1−	0.0
1960 09 25	675	0.2+	0.6−	1988 08 18	511	(3.0−	1.0+)	1999 09 07	699	0.4−	0.3+
1960 09 26	675	0.2+	0.6−	1988 08 18	511	(3.4−	1.1+)	1999 09 07	704	0.2−	0.2−
1960 09 26	675	0.3+	0.4−	1988 09 12	675	(3.9−	1.7−)	1999 09 07	704	0.1−	0.4+
1960 09 28	675	0.6+	0.8−	1988 09 12	675	(4.5−	2.4−)	1999 09 07	704	0.2−	0.1+
1960 09 28	675	0.5+	0.1−	1988 09 15	675	0.5−	1.2−	1999 09 07	704	0.2−	0.6+
1977 10 07	675	0.5+	0.9−	1988 09 15	675	(2.0−	3.3−)	1999 09 13	704	0.1−	0.2+
1977 10 11	675	1.4+	1.0+	1988 09 16	675	0.7−	0.7+	1999 09 13	704	0.3−	0.8+
1977 10 11	675	0.2−	2.2+	1988 09 16	675	0.2−	0.8+	1999 09 13	704	0.1+	0.3+
1977 10 12	675	0.2−	0.5+	1994 10 01	675	0.0	0.2−	1999 09 13	704	0.2+	0.3−
1977 10 12	675	0.7+	0.5+	1994 10 01	675	0.5−	0.7−	1999 09 13	704	0.7+	1.2+
1977 10 16	675	1.6−	0.4+	1999 08 13	699	1.0+	0.6−				
1977 10 16	675	1.0−	0.8+	1999 08 13	699	0.1+	1.2+				

(11775)* 3224 T-3 = 1993 TE₁₅

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* 22967)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	263.64348		(2000.0)		P		Q				
<i>n</i>	0.30771042	ω	245.41794		+0.63674466		−0.77092466				
<i>a</i>	2.1729075	Ω	165.00231		+0.72700869		+0.59366480				
<i>e</i>	0.0294731	<i>i</i>	3.37000		+0.25693309		+0.23073203				
<i>P</i>	3.20 <th><i>H</i></th> <td>15.5</td> <th><i>G</i></th> <td>0.15<th><i>U</i></th><td>1</td><th></th><th></th></td>	<i>H</i>	15.5	<i>G</i>	0.15 <th><i>U</i></th> <td>1</td> <th></th> <th></th>	<i>U</i>	1				
Residuals in seconds of arc											
1977 10 07	675	0.2+	0.4−	1993 10 11	809	(2.2+	4.0+)	1998 03 03	704	0.2+	0.7−
1977 10 11	675	2.1−	0.9+	1993 10 11	809	(2.0+	3.5+)	1998 03 03	704	0.5−	0.4−
1977 10 11	675	0.5−	0.7+	1993 10 20	809	(1.9+	3.7+)	1998 03 03	704	0.6+	0.3−
1977 10 12	675	0.5−	0.3+	1993 10 20	809	(2.5+	2.9+)	1998 03 03	704	0.5+	0.7−
1977 10 12	675	1.7−	0.1−	1993 10 20	809	(2.7+	3.4+)	1998 03 03	704	0.8+	0.9−
1977 10 16	675	1.3+	2.0−	1996 08 15	824	0.3+	0.4−	1998 03 04	809	0.2−	2.0+
1977 10 16	675	0.5−	0.6+	1996 08 15	824	0.3−	0.2−	1998 03 04	809	0.3−	0.5+
1977 10 16	675	0.9+	0.7−	1996 08 15	824	0.2−	0.2−	1998 03 04	809	1.2−	1.2+
1977 10 16	675	0.3−	0.8+	1996 08 15	824	0.3−	0.0	1998 03 04	704	0.3−	0.7−
1977 10 17	675	0.4+	0.2−	1996 08 15	816	0.0	0.5+	1998 03 04	704	0.4+	0.3−
1977 10 17	675	0.1−	0.9+	1996 08 15	816	0.1+	0.4+	1998 03 04	704	1.5−	0.2+
1977 10 17	675	0.0	0.4−	1996 08 15	816	0.0	0.5+	1998 03 04	704	0.6−	1.2−
1977 10 17	675	0.2−	0.1−	1996 08 15	816	0.1+	0.6+	1998 03 04	704	(2.0−	0.4−)
1977 10 21	675	(1.6+	3.5−)	1998 01 26	566	1.2−	0.2−	1999 07 13	704	0.0	0.4+
1977 10 21	675	0.9+	0.9+	1998 01 26	566	0.1−	0.5−	1999 07 13	704	0.1+	1.1−
1977 10 21	675	(2.7+	3.8−)	1998 01 26	566	0.5−	0.4−	1999 07 13	704	0.5+	0.4−
1977 10 21	675	0.6+	1.5+	1998 02 06	809	(3.8+	0.2+)	1999 07 13	704	0.2−	1.6−
1977 10 22	675	0.6−	2.0−	1998 02 06	809	(3.0+	0.1+)	1999 07 13	704	0.4+	1.1−
1977 10 22	675	(3.2+	1.5−)	1998 02 06	809	(2.7+	0.6−)	1999 08 07	699	0.3−	0.5+
1977 10 22	675	(2.9+	2.9−)	1998 02 07	809	(3.1+	0.3+)	1999 08 07	699	0.1+	1.0+
1977 10 22	675	2.2+	1.0−	1998 02 07	809	(2.9+	0.1−)	1999 08 08	699	0.6−	1.3+
1993 10 09	809	(2.4+	4.4+)	1998 02 07	809	1.5+	0.3+	1999 08 08	699	0.0	1.0+
1993 10 09	809	(2.1+	3.9+)	1998 03 03	809	1.1+	1.1+	1999 08 08	699	0.1+	0.4−
1993 10 09	809	(1.8+	4.1+)	1998 03 03	809	0.7+	0.8+				
1993 10 11	809	(3.6+	3.3+)	1998 03 03	809	1.0+	1.4+				

(11776)* 3460 T-3 = 1998 HT₉₂

Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. A. Gnädig (*MPC* 33061)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	311.04206		(2000.0)		P		Q				
n	0.17375521	ω	75.36177		+0.99982469		−0.01719161				
a	3.1806129	Ω	285.62287		+0.01279436		+0.91657032				
e	0.1708523	i	0.44140		+0.01367112		+0.39950382				
P	5.67	H	13.3	G	0.15	U	1				
Residuals in seconds of arc											
1977 10 07	675	0.1−	1.3−	1995 12 21	566	1.3+	0.6+	1999 06 15	704	0.2−	0.4−
1977 10 11	675	0.7+	1.1−	1995 12 21	566	0.5+	0.7+	1999 06 15	704	0.4−	0.4−
1977 10 11	675	0.0	1.0+	1995 12 21	566	0.7+	0.6+	1999 06 15	704	0.7+	0.6−
1977 10 12	675	1.1+	1.2−	1998 04 21	704	0.3−	0.2−	1999 06 15	704	1.8+	1.8+
1977 10 12	675	1.5+	0.9−	1998 04 21	704	0.4−	0.6+	1999 07 14	704	0.1−	0.1−
1977 10 16	675	0.0	1.4−	1998 04 21	704	(0.2−	3.3−)	1999 07 14	704	0.4+	0.2+
1977 10 16	675	0.5+	0.4+	1998 04 21	704	0.1−	1.2+	1999 07 14	704	0.0	0.1−
1977 10 17	675	1.0−	0.7−	1998 04 22	704	(0.2+	2.1−)	1999 07 14	704	0.2+	0.1+
1977 10 17	675	0.1−	1.2−	1998 04 22	704	0.8−	1.3−	1999 07 14	704	0.0	0.5+
1977 10 21	675	1.2−	1.4+	1998 04 22	704	0.5+	0.8−	1999 07 16	704	0.1+	0.5+
1977 10 21	675	1.1−	0.7+	1998 04 22	704	(1.1−	3.4−)	1999 07 16	704	0.5+	0.2+
1977 10 22	675	1.9+	0.4−	1998 05 01	704	0.2+	0.8−	1999 07 16	704	0.4+	0.6+
1977 10 22	675	0.6+	0.2+	1998 05 01	704	0.5−	0.3−	1999 07 16	704	0.1+	0.3+
1994 09 28	691	1.5−	0.1+	1998 05 01	704	1.2−	0.2−	1999 07 16	704	0.2+	0.4+
1994 09 28	691	1.4−	0.4+	1998 05 01	704	1.5−	0.1+				
1994 09 28	691	1.2−	0.3+	1998 05 01	704	(2.2−	0.3+)				

(11777)* 3526 T-3 = 1991 GH₇

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* 25437)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	34.86079		(2000.0)			P		Q			
n	0.26607900	ω	273.01059			+0.19182382		+0.98141333			
a	2.3940267	Ω	8.05521			−0.88378380		+0.17522281			
e	0.2063043	i	2.29572			−0.42676671		+0.07826142			
P	3.70	H	16.1	G	0.15	U	1				
Residuals in seconds of arc											
1977 10 07	675	0.6+	2.3−	1991 04 10	809	0.6+	0.3−	1999 09 07	704	0.5+	0.0
1977 10 11	675	0.7+	0.0	1991 04 15	675	1.5−	1.5+	1999 09 07	704	0.8−	1.4−
1977 10 11	675	1.3+	0.4−	1991 04 15	675	(2.7−	0.6−)	1999 09 07	704	0.3+	0.2+
1977 10 12	675	0.3−	0.1+	1991 04 19	809	0.0	0.2−	1999 09 07	704	0.1−	0.5−
1977 10 12	675	1.2+	0.6+	1991 04 19	809	(2.4−	0.1−)	1999 09 09	704	0.2−	0.6−
1977 10 16	675	(0.2−	3.1−)	1991 04 19	809	(3.3−	0.1+)	1999 09 09	704	0.1−	0.3−
1977 10 16	675	0.6−	2.3−	1991 04 19	675	0.1−	1.7−	1999 09 09	704	0.2−	0.5−
1977 10 17	675	0.2−	0.2−	1991 04 19	675	(4.5−	1.0−)	1999 09 09	704	0.3−	0.2+
1977 10 17	675	0.4−	1.0−	1991 05 17	675	1.1−	0.0	1999 09 09	704	0.6−	0.1+
1977 10 21	675	0.2−	0.7+	1991 05 17	675	1.8−	1.4−	1999 09 13	704	0.2+	0.1−
1977 10 21	675	(2.8−	0.5+)	1998 02 28	691	0.1+	0.2+	1999 09 13	704	0.6−	0.4−
1991 04 08	809	0.6+	0.3+	1998 02 28	691	0.1−	0.7−	1999 09 13	704	0.4−	0.1−
1991 04 08	809	0.6+	0.0	1998 02 28	691	0.2−	0.3−	1999 09 13	704	0.1−	0.5+
1991 04 08	809	1.5−	1.2−	1999 08 12	699	0.9+	0.9+	1999 09 13	704	0.2+	0.5+
1991 04 10	809	1.6+	0.5−	1999 08 12	699	0.5+	0.4+				
1991 04 10	809	0.6+	0.4−	1999 08 12	699	0.6+	1.4+				

1999 SEPT. 28

M.P.C. 35905

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	232.31075		(2000.0)	P	Q
<i>n</i>	0.31028889	ω	41.32466	-0.30003723	-0.95163075
<i>a</i>	2.1608531	Ω	66.23017	+0.85512772	-0.29904983
<i>e</i>	0.0621510	<i>i</i>	4.14539	+0.42276972	-0.07048485
<i>P</i>	3.18	<i>H</i>	15.1	<i>G</i>	0.15

Residuals in seconds of arc

1977 10 07	675	1.6+	2.0-	1998 03 29	704	0.8-	0.2-	1999 09 08	703	1.0-	0.6-
1977 10 11	675	0.4+	0.9-	1998 04 20	704	0.4+	0.4-	1999 09 08	703	1.0-	0.0
1977 10 11	675	0.5+	0.8-	1998 04 20	704	0.8+	0.6-	1999 09 08	703	1.5-	0.1-
1977 10 12	675	0.3+	2.1-	1998 04 20	704	0.5+	0.0	1999 09 08	703	0.3-	0.4+
1977 10 12	675	1.2+	2.3-	1998 04 20	704	0.5+	0.7-	1999 09 09	704	1.1+	0.6+
1977 10 16	675	0.1+	0.3-	1998 04 20	704	0.8-	0.7-	1999 09 09	704	0.0	0.6-
1977 10 16	675	1.2-	0.1+	1998 04 22	704	0.2+	0.9-	1999 09 09	704	1.2+	0.9-
1977 10 17	675	1.1+	2.0-	1998 04 22	704	0.4+	0.5-	1999 09 09	704	0.9+	0.4-
1977 10 17	675	1.0-	1.9-	1998 04 22	704	0.8+	0.9-	1999 09 09	704	0.8+	0.0
1977 10 21	675	1.6+	1.2-	1998 04 22	704	0.2+	0.6+	1999 09 09	704	0.3+	0.1+
1977 10 21	675	(2.8+	0.5-)	1998 04 22	704	0.1+	0.9-	1999 09 09	704	1.5+	0.2+
1977 10 22	675	(2.3+	3.4-)	1998 04 28	699	0.8+	1.0-	1999 09 09	704	0.3+	0.4+
1977 10 22	675	2.0+	1.6-	1998 04 28	699	0.9+	1.6-	1999 09 09	704	0.2+	0.3-
1995 05 29	691	(2.7+	0.3+)	1998 04 28	699	0.8+	0.5-	1999 09 09	704	0.9+	0.4-
1995 05 29	691	1.0+	0.4+	1998 04 28	691	0.3-	0.6-	1999 09 10	704	0.6+	0.3-
1995 05 29	691	1.1+	0.4+	1998 04 28	691	0.4-	0.6-	1999 09 10	704	0.5+	0.6-
1998 03 24	704	0.5-	0.5-	1998 04 28	691	0.6-	0.6-	1999 09 10	704	0.4+	0.7-
1998 03 24	704	1.3-	0.1-	1998 04 30	699	0.1+	0.2-	1999 09 10	704	0.2+	0.2-
1998 03 24	704	0.6-	0.4-	1998 04 30	699	0.0	0.1-	1999 09 10	704	1.1+	0.9+
1998 03 24	704	1.3-	0.3-	1998 04 30	699	0.0	0.6+	1999 09 10	704	1.0-	0.1+
1998 03 24	704	1.2-	0.7+	1998 05 01	699	0.1+	0.2-	1999 09 11	704	0.2+	0.3-
1998 03 25	704	1.4-	0.2-	1998 05 01	699	0.8-	0.9-	1999 09 11	704	0.3-	0.4-
1998 03 25	704	0.6-	0.6-	1998 05 01	699	0.5-	1.0+	1999 09 11	704	0.2-	0.9-
1998 03 25	704	(4.9-	2.5-)	1998 05 03	691	0.6-	0.7-	1999 09 11	704	0.2+	0.7-
1998 03 25	704	0.4-	0.4+	1998 05 03	691	0.4-	0.6-	1999 09 11	704	0.0	0.2-
1998 03 25	704	1.0-	1.2+	1998 05 03	691	0.7-	0.6-	1999 09 11	704	0.2+	0.1-
1998 03 28	704	0.2-	1.0-	1998 05 16	704	0.1-	0.3+	1999 09 11	704	0.6+	0.1-
1998 03 28	704	0.4-	0.5-	1998 05 16	704	1.1+	1.4-	1999 09 11	704	0.2+	0.1+
1998 03 28	704	0.2+	0.7-	1998 05 16	704	(0.4-	2.7-)	1999 09 11	704	0.3-	0.5-
1998 03 28	704	1.0-	1.0-	1999 08 12	699	0.4-	0.1+	1999 09 11	704	0.4+	0.1+
1998 03 28	704	0.2-	1.2-	1999 08 12	699	0.7-	0.0	1999 09 13	704	0.1+	0.0
1998 03 29	704	0.4-	1.6-	1999 08 12	699	0.4-	0.5+	1999 09 13	704	0.0	0.0
1998 03 29	704	1.3-	0.5-	1999 09 07	699	1.5-	0.4+	1999 09 13	704	0.1+	0.5-
1998 03 29	704	0.2+	0.2-	1999 09 07	699	0.7-	0.2+	1999 09 13	704	0.1-	0.3-
1998 03 29	704	0.6-	0.0	1999 09 07	699	0.8-	1.1+	1999 09 13	704	0.2-	0.3-

(11779)* 4197 T-3 = 1992 ED₆

Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. T. Kobayashi (MPC 23989)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	66.67535		(2000.0)	P	Q
<i>n</i>	0.23223546	ω	289.83810	+0.99703922	+0.00735988
<i>a</i>	2.6213018	Ω	69.80100	+0.02573012	+0.90609617
<i>e</i>	0.1129505	<i>i</i>	4.67810	-0.07246215	+0.42300776
<i>P</i>	4.24	<i>H</i>	14.3	<i>G</i>	0.15

Residuals in seconds of arc

1977 10 07	675	0.2-	1.2-	1997 04 11	704	0.6-	1.7-	1998 09 14	704	0.1+	0.1+
1977 10 11	675	1.5+	0.8-	1997 04 11	704	0.8-	0.1+	1998 09 14	704	0.3-	0.0
1977 10 11	675	1.2+	0.2+	1997 05 03	809	(0.8-	2.3+)	1998 09 18	704	0.8+	0.3+
1977 10 12	675	0.4-	0.6-	1997 05 03	809	0.7-	0.6+	1998 09 18	704	0.0	0.7-
1977 10 12	675	0.5-	0.2-	1997 05 03	809	(0.7-	2.8+)	1998 09 18	704	0.9-	0.6-
1977 10 16	675	0.1-	1.4+	1997 05 04	809	0.4-	1.8+	1998 09 18	704	0.1-	0.0
1977 10 16	675	0.9+	0.9+	1997 05 04	809	0.1+	1.5+	1998 09 18	704	0.3-	0.7-
1977 10 17	675	0.1-	1.6-	1997 05 04	809	(0.5-	2.5+)	1998 09 25	704	(2.5+	0.3+)
1977 10 17	675	0.1-	0.3-	1997 05 07	704	0.9+	1.4-	1998 09 25	704	(4.3+	0.5-)

1977 10 21	675	0.2-	0.2+	1997 05 07	704	0.9+	1.0-	1998 09 25	704	(4.0+	0.9-)
1977 10 21	675	0.6-	0.5+	1997 05 07	704	0.3-	1.5-	1998 09 25	704	(4.0+	1.1-)
1977 10 22	675	0.6-	0.5-	1997 05 07	704	0.0	0.8-	1998 09 25	704	(4.0+	1.2-)
1977 10 22	675	0.8+	1.3-	1998 08 23	704	1.5-	0.2+	1998 09 27	704	1.3+	0.3-
1992 03 01	809	0.5-	0.3-	1998 08 23	704	0.8-	0.4+	1998 09 27	704	1.2+	0.6-
1992 03 02	809	0.2+	0.1+	1998 08 23	704	1.2-	0.1+	1998 09 27	704	0.5+	0.1+
1992 03 05	809	0.1+	0.4-	1998 08 23	704	0.6-	1.0+	1998 09 27	704	1.6+	0.4+
1992 03 07	809	0.0	0.3+	1998 08 23	704	0.3-	0.3-	1998 09 27	704	1.4+	0.0
1997 04 11	704	0.7-	1.0-	1998 09 14	704	0.6-	0.2+				
1997 04 11	704	0.5+	0.1-	1998 09 14	704	0.6-	1.0+				

1977 DA₄ = 1992 EQ₃ = 1999 RR₈₆

Id. G. V. Williams, M. E. Sansaturio, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	302.87367		(2000.0)	P	Q
<i>n</i>	0.20095159	ω	342.22922	+0.62689311	-0.77731319
<i>a</i>	2.8867450	Ω	68.91593	+0.72151120	+0.55363734
<i>e</i>	0.0578886	<i>i</i>	3.24481	+0.29398402	+0.29878068
<i>P</i>	4.90	<i>H</i>	13.4	<i>G</i>	0.15

Residuals in seconds of arc

1977 02 18	381	0.9+	0.3+	1999 08 12	699	0.3+	0.7+	1999 09 07	704	0.8+	0.2-
1977 02 18	381	0.4+	0.4+	1999 08 12	699	0.3-	1.1+	1999 09 07	704	0.7+	0.2-
1977 02 19	381	0.6+	0.2-	1999 08 22	703	1.0-	0.4-	1999 09 14	704	0.2+	0.4-
1977 02 19	381	0.8-	0.4+	1999 08 22	703	0.8-	0.5+	1999 09 14	704	0.1-	0.6-
1977 03 12	381	1.1-	0.7+	1999 08 22	703	0.2-	0.3+	1999 09 14	704	0.2-	0.1-
1977 03 12	381	0.2-	2.0-	1999 08 22	703	0.6+	0.1-	1999 09 14	704	0.1-	0.5-
1992 03 08	399	0.3+	0.3+	1999 09 05	699	0.0	0.4+	1999 09 14	704	0.0	0.2-
1992 03 08	399	0.1+	0.7+	1999 09 05	699	0.1+	0.2+	1999 09 14	703	0.1-	0.3+
1999 07 16	704	0.4-	0.1-	1999 09 05	699	0.4-	1.0+	1999 09 14	703	0.1-	0.0
1999 07 16	704	0.5+	1.1-	1999 09 07	704	0.2+	1.2-	1999 09 14	703	0.3-	1.2+
1999 07 16	704	0.3+	0.8-	1999 09 07	704	0.4+	0.5-	1999 09 14	703	0.9-	1.0+
1999 08 12	699	0.5-	0.4+	1999 09 07	704	0.9+	0.4-				

1978 SH₇ = 1999 RN₁₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	328.16898		(2000.0)	P	Q
<i>n</i>	0.23258753	ω	28.68612	+0.95865660	-0.28378939
<i>a</i>	2.6186559	Ω	347.74579	+0.23852742	+0.84161897
<i>e</i>	0.2404973	<i>i</i>	5.67884	+0.15518439	+0.45950091
<i>P</i>	4.24	<i>H</i>	14.7	<i>G</i>	0.15

Residuals in seconds of arc

1978 09 26	095	0.9-	0.1+	1998 04 21	704	0.2+	0.6-	1999 09 07	704	0.6+	1.1+
1978 10 02	095	0.5+	1.3+	1999 07 21	699	0.6+	0.9-	1999 09 09	704	0.1-	0.0
1978 10 08	095	0.9-	0.3+	1999 07 21	699	0.5-	0.3-	1999 09 09	704	0.6-	0.0
1978 11 28	675	0.0	0.8+	1999 07 21	699	0.1+	0.3-	1999 09 09	704	0.3-	1.2-
1978 11 29	675	0.2+	0.0	1999 09 03	699	0.2+	0.5+	1999 09 09	704	0.1+	0.6-
1997 02 08	566	0.6-	0.0	1999 09 03	699	0.1-	0.3+	1999 09 09	704	0.4-	1.1-
1997 02 08	566	0.5-	0.0	1999 09 03	699	0.8-	1.4+	1999 09 13	704	0.0	0.0
1997 02 08	566	0.7+	0.2-	1999 09 07	704	0.3+	0.2-	1999 09 13	704	0.1+	0.4-
1998 04 21	704	0.1-	1.6+	1999 09 07	704	0.4+	0.3-	1999 09 13	704	0.2-	0.2+
1998 04 21	704	0.3-	1.2+	1999 09 07	704	0.2+	0.1+	1999 09 13	704	0.5+	0.2-
1998 04 21	704	1.6+	0.7+	1999 09 07	704	0.6+	0.2+	1999 09 13	704	0.0	0.2+

1978 UA₅ = 1999 RA₁₅₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	322.19798		(2000.0)	P	Q
<i>n</i>	0.27965643	ω	32.07224	+0.90441450	-0.426623

Residuals in seconds of arc

1978 10 27	675	0.2−	0.3−	1994 03 10	691	(8.8−	0.3−)	1999 09 09	704	1.0−	0.4+
1978 10 28	675	0.2+	0.2+	1994 03 10	691	0.4−	0.2−	1999 09 09	704	0.6+	0.4−
1978 10 29	675	0.0	0.5+	1999 09 07	704	0.6+	0.2−	1999 09 09	704	0.2−	0.2+
1978 11 28	675	0.6+	0.7−	1999 09 07	704	0.6+	0.2+	1999 09 14	704	0.7+	0.7+
1978 11 29	675	0.5−	0.1+	1999 09 07	704	0.0	0.7−	1999 09 14	704	0.1+	0.4+
1994 03 06	691	0.1+	0.6−	1999 09 07	704	0.4+	0.5−	1999 09 14	704	0.0	0.5+
1994 03 06	691	0.7+	0.2+	1999 09 07	704	0.1−	0.4−	1999 09 14	704	0.1+	0.3−
1994 03 06	691	0.2−	1.2−	1999 09 09	704	0.6−	0.5−	1999 09 14	704	0.3−	0.2−
1994 03 10	691	1.0−	0.1+	1999 09 09	704	0.4−	0.6−				

1978 VM₁₁ = 1984 HZ

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	290.96764		(2000.0)	P	Q
<i>n</i>	0.23915091	ω	94.05140	−0.97501914	−0.20115366
<i>a</i>	2.5705222	Ω	74.36326	+0.14425606	−0.89595680
<i>e</i>	0.2110684	<i>i</i>	5.61407	+0.16890196	−0.39597806
<i>P</i>	4.12	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1978 11 05	675	0.3−	0.8−	1978 11 29	675	0.8+	0.5+	1998 10 15	327	0.3+	0.6−
1978 11 06	675	1.0+	0.5+	1978 11 30	675	0.8−	0.7−	1998 10 15	327	0.6−	0.0
1978 11 08	675	0.7−	0.4+	1984 04 21	675	0.0	0.0	1998 10 15	327	0.3+	0.5+

1979 MP₈ = 1979 OM₄ = 1999 SJ₁Id. H. Oishi (d, *MPC* 11826), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	125.15569		(2000.0)	P	Q
<i>n</i>	0.25545737	ω	313.82384	−0.59029579	+0.80445664
<i>a</i>	2.4599357	Ω	279.88357	−0.71991302	−0.56185990
<i>e</i>	0.1342381	<i>i</i>	3.86093	−0.36507002	−0.19277700
<i>P</i>	3.86	<i>H</i>	15.5	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1979 06 25	413	0.0	0.6+	1991 10 05	691	0.3−	0.2−	1999 09 17	621	0.1−	0.1+
1979 06 29	413	0.0	0.6−	1991 10 05	691	0.0	0.2−	1999 09 18	621	0.5−	0.5−
1979 07 24	675	1.2+	0.8+	1999 09 17	621	0.1−	0.3+	1999 09 18	621	0.2−	0.0
1979 07 24	413	1.0−	1.6−	1999 09 17	621	0.0	0.1+	1999 09 18	621	0.0	0.2+
1979 07 25	675	0.1−	0.8+	1999 09 17	621	0.2+	0.1+	1999 09 18	621	0.5+	0.4+
1991 10 05	691	0.3+	0.3+	1999 09 17	621	0.3+	0.5−				

1979 MT₈ = 1999 RR₁₃₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	228.81213		(2000.0)	P	Q
<i>n</i>	0.20177281	ω	246.23853	−0.35967584	−0.93119381
<i>a</i>	2.8789069	Ω	224.98165	+0.88370131	−0.31957004
<i>e</i>	0.1086501	<i>i</i>	4.80867	+0.29950842	−0.17536554
<i>P</i>	4.88	<i>H</i>	13.4	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1979 06 23	413	1.6−	1.0−	1992 03 08	809	0.6+	0.4−	1999 09 09	704	0.0	0.4−
1979 06 24	413	0.1−	0.7−	1992 04 07	809	1.1+	0.5+	1999 09 09	704	1.0−	0.3−
1979 06 25	413	1.3+	0.4−	1999 09 07	704	0.1+	0.4+	1999 09 09	704	0.2−	0.3−
1979 06 29	413	(3.4+	0.1−)	1999 09 07	704	0.1−	0.2+	1999 09 14	704	(1.6+	2.2−)
1979 07 26	675	1.2−	0.3−	1999 09 07	704	0.2+	0.1−	1999 09 14	704	0.5+	0.8−
1979 07 27	675	0.2+	0.2+	1999 09 07	704	0.2+	0.5−	1999 09 14	704	0.6+	1.3+
1979 07 28	413	1.3+	2.0+	1999 09 09	704	0.6−	0.8+				
1992 03 05	809	1.5−	0.3+	1999 09 09	704	0.3+	0.0				

1981 DU = 1999 RG₁₁₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	19.10847		(2000.0)	P	Q
<i>n</i>	0.28530959	ω	39.12884	+0.44627148	+0.88797910
<i>a</i>	2.2852048	Ω	257.63211	−0.84695077	+0.37901782
<i>e</i>	0.1597671	<i>i</i>	6.52872	−0.28899163	+0.26045848
<i>P</i>	3.45	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1981 02 09	413	1.4−	0.5+	1981 04 08	413	1.3+	1.2−	1999 09 08	704	0.2+	0.5+
1981 02 12	413	1.9−	0.9−	1981 04 09	413	1.2−	0.3+	1999 09 08	704	0.1+	0.3+
1981 02 28	413	0.4−	0.4+	1981 04 09	413	0.9+	1.1−	1999 09 08	704	0.5−	0.0
1981 02 28	413	0.9+	0.2−	1981 05 03	413	0.2−	1.3−	1999 09 09	704	0.2+	0.1+
1981 03 06	413	1.4−	1.9+	1999 07 13	704	0.0	0.3−	1999 09 09	704	0.7−	0.3−
1981 03 06	413	2.1+	0.1−	1999 07 13	704	0.2+	0.5−	1999 09 09	704	0.1−	0.0
1981 03 08	413	1.4−	0.5+	1999 07 13	704	0.5+	0.0	1999 09 09	704	0.1−	0.1−
1981 03 08	413	1.3+	0.4−	1999 07 13	704	0.0	0.4+	1999 09 09	704	0.1−	0.0
1981 03 12	413	0.8−	1.0+	1999 07 13	704	0.0	0.3+	1999 09 14	704	0.4+	0.4−
1981 03 12	413	1.8+	0.1−	1999 07 23	704	0.2+	0.1−	1999 09 14	704	0.1−	0.3+
1981 04 07	413	1.0+	0.3+	1999 07 23	704	0.0	0.2−	1999 09 14	704	0.2−	0.0
1981 04 07	413	(3.6+	2.7−)	1999 07 23	704	0.1−	0.1−	1999 09 14	704	0.3−	0.1+
1981 04 08	413	0.7−	1.2+	1999 09 08	704	0.6+	0.3+	1999 09 14	704	0.6−	0.3+

1981 DD₁ = 1999 RE₂₀₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	273.31975		(2000.0)	P	Q
<i>n</i>	0.24437747	ω	126.83290	−0.17278624	−0.97807519
<i>a</i>	2.5337393	Ω	332.42695	+0.80470555	−0.07212034
<i>e</i>	0.1213822	<i>i</i>	14.54519	+0.56797350	−0.19536527
<i>P</i>	4.03	<i>H</i>	14.6	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1981 02 09	413	0.5+	0.1−	1981 04 08	413	0.9+	1.5+	1999 09 08	704	0.2+	0.3−
1981 02 12	413	0.4+	1.3+	1981 04 08	413	2.7+	0.7−	1999 09 08	704	0.4−	0.3+
1981 02 28	413	1.5−	0.4−	1981 04 09	413	1.8−	0.4−	1999 09 08	704	0.6−	0.6−
1981 02 28	413	2.3+	0.1+	1981 04 09	413	1.4+	0.7−	1999 09 18	704	0.3−	0.5−
1981 03 06	413	2.5−	0.7+	1981 05 02	413	0.6+	1.0+	1999 09 18	704	0.1−	0.2−
1981 03 06	413	1.0+	1.2−	1981 05 02	413	1.9−	0.4−	1999 09 18	704	0.1+	0.3+
1981 03 08	413	0.3−	0.1−	1999 09 08	704	0.7+	0.2+	1999 09 18	704	0.2+	0.6+
1981 03 12	413	2.0−	0.7−	1999 09 08	704	0.3+	0.1−				

1981 DN₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	5.64429		(2000.0)	P	Q
<i>n</i>	0.24101383	ω	53.18100	+0.99043588	−0.01746711
<i>a</i>	2.5572591	Ω	307.41188	−0.05204994	+0.87136071
<i>e</i>	0.2062101	<i>i</i>	9.92214	+0.12777941	+0.49033194
<i>P</i>	4.09	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1981 02 09	413	0.4+	1.3+	1981 03 12	413	1.7+	0.5−	1981 05 03	413	0.7+	1.5−
1981 02 12	413	0.3+	0.5−	1981 04 08	413	1.0−	1.1+	1999 08 21	739	0.2+	0.0
1981 02 28	413	1.1−	0.6+	1981 04 08	413	1.1+	0.3+	1999 08 21	739	0.0	0.1−
1981 02 28	413	1.5+	0.3−	1981 04 09	413	1.1−	0.8+	1999 09 04	739	1.3+	0.5−
1981 03 06	413	1.8−	1.0−	1981 04 09	413	1.2+	0.2−	1999 09 04	739	0.9−	0.0
1981 03 08	413	0.6−	0.8−	1981 05 01	413	2.0−	1.9+	1999 09 04	739	0.4−	0.7+
1981 03 08	413	1.3+	1.5−	1981 05 01	413	0.2−	0.3+	1999 09 04	739	0.3−	0.0
1981 03 12	413	0.3−	0.2+	1981 05 02	413	(3.1+	1.8−)				

1999 SEPT. 28

M.P.C. 35907

1981 DS₂ = 1999 RY₁₉₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	22.02955	(2000.0)	P		Q	
<i>n</i>	0.23700124	ω	28.57920	+0.75258103	+0.63680265	
<i>a</i>	2.5860424	Ω	290.87037	-0.63314802	+0.62980514	
<i>e</i>	0.0759265	<i>i</i>	10.33567	-0.18095687	+0.44477846	
<i>P</i>	4.16	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1981 02 04	413	0.5+	0.2-	1981 05 02	413	1.6-	1.2-	1999 09 08	704	0.6+	0.0
1981 02 09	413	(1.4-	6.8-)	1999 07 23	704	0.6-	0.2+	1999 09 08	704	0.4+	0.3-
1981 02 28	413	0.2-	0.4+	1999 07 23	704	0.2-	0.2+	1999 09 08	704	0.0	0.4-
1981 02 28	413	1.8+	0.7-	1999 07 23	704	0.8-	0.0	1999 09 08	704	0.4+	0.2-
1981 03 06	413	0.2-	1.1-	1999 07 23	704	0.6+	0.4-	1999 09 08	704	0.4+	0.4-
1981 03 08	413	0.1+	0.3+	1999 07 23	704	0.3-	1.0+	1999 09 16	704	0.9-	0.0
1981 03 08	413	0.3-	1.0-	1999 09 07	703	0.6-	0.3-	1999 09 16	704	0.5+	0.0
1981 03 12	413	1.2-	1.4+	1999 09 07	703	0.2-	0.2+	1999 09 16	704	0.1+	0.1-
1981 03 12	413	1.2+	1.3+	1999 09 07	703	0.2-	0.1+	1999 09 16	704	0.6+	0.2-
1981 05 02	413	0.3-	0.5+	1999 09 07	703	0.1-	0.6+				

1981 DY₂ = 1999 RW₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	287.50570	(2000.0)	P		Q	
<i>n</i>	0.24272548	ω	97.33153	+0.24304275	-0.95899792	
<i>a</i>	2.5452228	Ω	336.94695	+0.67608816	+0.27524495	
<i>e</i>	0.1326746	<i>i</i>	21.85728	+0.69558251	+0.06755151	
<i>P</i>	4.06	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1981 02 09	413	1.4-	0.2-	1999 09 08	699	0.2+	0.2+	1999 09 10	704	0.4+	0.6-
1981 02 12	413	1.7+	0.1+	1999 09 08	699	0.1-	1.1+	1999 09 10	704	0.7+	0.4-
1981 02 28	413	0.7-	1.0-	1999 09 08	704	0.2+	0.4-	1999 09 16	704	0.2+	0.4-
1981 03 06	413	1.0+	0.2+	1999 09 08	704	0.4+	0.3-	1999 09 16	704	0.7+	0.4-
1981 03 08	413	1.1-	0.8+	1999 09 08	704	0.0	0.2-	1999 09 16	704	0.5-	0.9-
1981 03 08	413	0.2+	0.3-	1999 09 08	699	0.2-	0.6-	1999 09 18	704	0.5-	0.1-
1999 08 12	699	1.0+	1.7-	1999 09 08	704	0.1-	0.6-	1999 09 18	704	0.3+	1.3+
1999 08 12	699	0.6-	0.2+	1999 09 09	704	0.0	0.3-	1999 09 18	704	0.3+	0.8+
1999 08 12	699	0.9-	1.5+	1999 09 09	704	0.1-	0.7-	1999 09 18	704	0.7+	0.1-
1999 09 07	703	0.2+	0.3+	1999 09 09	704	0.4+	0.7-	1999 09 18	704	0.4+	0.5+
1999 09 07	703	0.2-	0.7+	1999 09 09	704	0.4+	0.1+	1999 09 18	704	0.0	0.0
1999 09 07	703	0.0	0.8+	1999 09 09	704	0.2-	0.3-	1999 09 18	704	1.1-	0.7+
1999 09 07	703	1.7-	1.3+	1999 09 10	704	0.1+	1.1-				

1981 DR₃ = 1999 RF₁₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	312.72458	(2000.0)	P		Q	
<i>n</i>	0.24084042	ω	106.65666	+0.82277100	-0.55213599	
<i>a</i>	2.5584865	Ω	287.04558	+0.45274834	+0.78013983	
<i>e</i>	0.1855273	<i>i</i>	8.11044	+0.34360852	+0.29415589	
<i>P</i>	4.09	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1981 02 09	413	1.1+	1.6+	1999 06 20	703	1.6-	0.6-	1999 09 09	704	0.2+	1.1-
1981 02 28	413	(5.0+	1.0+)	1999 06 20	703	0.6+	0.5-	1999 09 09	704	0.5+	0.4-
1981 03 07	413	(3.5-	0.5+)	1999 06 20	703	0.2-	0.7+	1999 09 14	704	0.1-	0.5-
1981 03 07	413	0.6+	0.3-	1999 09 08	704	0.4-	1.3-	1999 09 14	704	0.9-	0.4+
1981 03 08	413	0.2+	0.5-	1999 09 08	704	0.7+	0.5+	1999 09 14	703	0.1-	0.1+
1981 03 10	413	(2.8-	0.3+)	1999 09 08	699	0.8+	0.2+	1999 09 14	704	0.2-	0.2+
1981 03 10	413	1.5-	0.3-	1999 09 08	704	0.4+	0.1-	1999 09 14	703	0.3-	0.5+
1981 04 09	413	0.0	0.2+	1999 09 08	699	0.1+	0.6+	1999 09 14	704	0.4-	0.6+
1981 04 09	413	1.2-	0.2-	1999 09 08	699	0.3-	0.1+	1999 09 14	703	0.1-	0.3+
1981 05 02	413	1.4+	1.8-	1999 09 09	704	0.3+	0.3-	1999 09 14	704	0.2-	0.5+
1981 05 03	413	0.7-	1.1+	1999 09 09	704	0.1-	0.6-	1999 09 14	703	0.4+	0.2+
1999 06 20	703	0.2-	1.0+	1999 09 09	704	0.8+	0.5-				

1981 DT₃ = 1999 RZ₁₂₀

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	326.48598	(2000.0)	P		Q	
<i>n</i>	0.18352041	ω	79.96280	+0.97227751	-0.17481646	
<i>a</i>	3.0667601	Ω	289.97419	+0.08936401	+0.89151222	
<i>e</i>	0.1408817	<i>i</i>	9.51067	+0.21607988	+0.41790569	
<i>P</i>	5.37	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1981 02 08	413	0.8-	2.3-	1999 07 13	704	0.4+	1.1-	1999 09 09	704	0.7-	0.2+
1981 02 28	413	0.4+	0.8+	1999 07 13	704	0.7-	1.3-	1999 09 09	704	0.3-	0.0
1981 03 06	413	(4.2+	1.8+)	1999 07 13	704	0.3+	0.9+	1999 09 09	704	0.6+	0.1-
1981 03 08	413	1.2+	0.0	1999 07 13	704	0.3+	0.3-	1999 09 09	704	0.2+	0.1-
1981 03 08	413	2.0-	0.8+	1999 07 13	704	0.6-	1.7+	1999 09 14	704	0.4+	0.3-
1981 03 12	413	0.2-	0.2-	1999 09 06	699	0.4-	0.6+	1999 09 14	704	0.0	0.2-
1981 03 12	413	2.2+	0.0	1999 09 06	699	0.3-	0.4-	1999 09 14	704	0.2+	0.2-
1981 05 01	413	1.2+	1.3-	1999 09 06	699	0.2+	0.5+	1999 09 14	704	0.1-	0.0
1981 05 02	413	2.2-	1.8+	1999 09 09	704	1.0+	0.0	1999 09 14	704	0.3-	0.0

1981 EU₂ = 1999 RF₁₅₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	9.68506	(2000.0)	P		Q	
<i>n</i>	0.18339434	ω	9.58953	+0.82445560	+0.54990465	
<i>a</i>	3.0681654	Ω	316.16417	-0.53118119	+0.67041947	
<i>e</i>	0.0844935	<i>i</i>	11.13106	-0.19524216	+0.49813915	
<i>P</i>	5.37	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1981 02 02	413	0.7-	0.4-	1981 03 12	413	1.0+	0.2+	1999 09 09	704	0.0	0.5+
1981 02 14	413	1.0+	0.0	1981 03 12	413	0.0	0.6+	1999 09 09	704	0.4-	0.0
1981 03 02	413	0.5+	0.4-	1981 04 09	413	1.4+	0.2-	1999 09 14	704	0.3-	0.0
1981 03 07	413	1.5-	1.3+	1981 04 29	413	0.1+	2.2-	1999 09 14	704	0.1+	0.3-
1981 03 07	413	3.3+	0.6-	1999 09 09	704	0.4-	0.9+	1999 09 14	704	0.2+	1.3-
1981 03 10	413	1.1-	1.3+	1999 09 09	704	0.6-	0.9+	1999 09 14	704	1.1+	0.7-
1981 03 10	413	3.5-	0.6+	1999 09 09	704	0.0	0.4+				

1981 EG₃ = 1999 RL₁₀₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	39.34744	(2000.0)	P		Q	
<i>n</i>	0.18444817	ω	32.83074	+0.55914385	+0.81491547	
<i>a</i>	3.0564678	Ω	271.60571	-0.78977143	+0.46756742	
<i>e</i>	0.0481948	<i>i</i>	8.77810	-0.25222855	+0.34248138	
<i>P</i>	5.34	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1981 02 02	413	0.1+	0.9-	1981 04 09	413	2.1-	0.9+	1999 09 09	704	1.0-	0.9+
1981 02 14	413	1.3+	0.4-	1981 04 09	413	0.2-	1.0-	1999 09 09	704	0.0	0.7+
1981 03 02	413	(3.6-	1.9+)	1981 04 30	413	0.4-	0.4-	1999 09 09	704	0.1+	0.3+
1981 03 07	413	0.7-	0.5+	1981 05 02	413	0.2+	0.1+	1999 09 09	704	0.3+	0.1-
1981 03 07	413	0.4-	0.2-	1999 09 08	704	0.4+	0.4-	1999 09 18	704	0.4+	0.8-
1981 03 10	413	0.4+	0.6+	1999 09 08	704	0.9-	0.3-	1999 09 18	704	0.8+	0.8-
1981 03 10	413	1.7+	0.2+	1999 09 08	704	0.6-	0.2+	1999 09 18	704	0.4+	0.1+
1981 03 12	413	0.8-	0.7+	1999 09 08	704	0.3+	0.6+	1999 09 18	704	0.5+	0.1-
1981 03 12	413	0.9+	0.5-	1999 09 09	704	0.1-	0.3+	1999 09 18	704	0.5-	0.7-

1981 EO₃ = 1999 RO₂₀₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	30.59072	(2000.0)	P		Q	
<i>n</i>	0.23485815	ω	342.90010	+0.61706186	+0.77234059	
<i>a</i>	2.6017503	Ω	324.77385	-0.68796145	+0.43647547	
<i>e</i>	0.2015908	<i>i</i>	15.15008	-0.38202579	+0.46149666	
<i>P</i>	4.20	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1981 02 02	413	1.4–	1.5–	1981 03 10	413	3.9+	0.1+	1999 09 08	704	0.6+	0.0
1981 02 14	413	(5.5+	1.9–)	1981 03 12	413	2.1–	0.7+	1999 09 08	704	0.1–	0.2–
1981 03 02	413	2.0–	0.4+	1981 04 09	413	2.9+	0.9–	1999 09 18	704	0.4–	0.2+
1981 03 02	413	0.9+	0.1–	1981 04 30	413	1.2–	1.5–	1999 09 18	704	0.4–	0.1–
1981 03 07	413	1.5–	1.0+	1999 09 08	704	0.7+	0.2–	1999 09 18	704	0.4–	0.0
1981 03 07	413	0.4+	0.0	1999 09 08	704	0.3–	0.4+	1999 09 18	704	0.0	0.1–
1981 03 10	413	0.2–	1.2+	1999 09 08	704	0.8+	0.2+	1999 09 18	704	0.2–	0.4–

1981 EN₆ = 1999 RR₁₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	26.06309		(2000.0)	P	Q
n	0.28361401	ω	15.28276	+0.25534346	+0.96058669
a	2.2943038	Ω	269.60577	−0.89819039	+0.19361227
e	0.2070197	i	6.30837	−0.35784597	+0.19946806
P	3.48	H	16.0	G 0.15	U 5

Residuals in seconds of arc

1981 02 09	413	0.0	0.7+	1981 04 09	413	0.4+	0.9–	1999 09 09	704	0.3–	0.0
1981 03 06	413	2.0–	1.5+	1981 04 09	413	0.1+	0.5+	1999 09 14	704	0.4+	0.0
1981 03 08	413	1.0–	0.1+	1981 05 03	413	1.3+	0.7–	1999 09 14	704	0.2+	0.1+
1981 03 12	413	1.1–	0.7+	1999 09 09	704	0.1–	0.5–	1999 09 14	704	0.3+	0.4–
1981 03 12	413	4.0+	1.1–	1999 09 09	704	0.5–	0.1–	1999 09 14	704	1.2–	1.7+
1981 04 07	413	3.3–	2.1+	1999 09 09	704	0.4+	0.1+				
1981 04 07	413	2.0+	2.2–	1999 09 09	704	0.5+	0.5–				

1981 EN₁₀ = 1999 RK₅₇

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Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	26.76417		(2000.0)	P	Q
n	0.22849337	ω	295.07675	+0.15078668	+0.98598780
a	2.6498441	Ω	343.12842	−0.79510354	+0.07807049
e	0.2749291	i	14.23245	−0.58742978	+0.14742137
P	4.31	H	14.6	G 0.15	U 4

Residuals in seconds of arc

1981 02 12	413	1.4+	0.8+	1981 04 06	413	(6.4–	0.3–)	1999 09 07	704	0.2–	0.4+
1981 02 13	413	2.3+	0.1–	1981 04 06	413	0.8+	0.5–	1999 09 07	704	0.2+	0.4+
1981 03 01	413	2.1–	0.2+	1999 08 13	699	0.1–	0.1–	1999 09 07	704	0.1+	0.6+
1981 03 01	413	0.9–	0.9–	1999 08 13	699	0.2–	0.3–	1999 09 13	704	0.0	0.2–
1981 03 07	413	0.4+	0.2–	1999 08 13	699	0.1+	0.2–	1999 09 13	704	0.6–	0.4–
1981 03 07	413	0.8+	0.6+	1999 09 07	699	0.1–	0.4+	1999 09 13	704	0.0	0.7–
1981 03 11	413	0.4–	0.3–	1999 09 07	699	1.2+	0.5+	1999 09 13	704	0.6–	0.5–
1981 03 11	413	0.4–	0.3–	1999 09 07	704	0.0	0.1+	1999 09 13	704	0.2–	0.1–
1981 03 15	413	1.3–	0.6+	1999 09 07	699	0.0	0.7+				
1981 03 15	413	0.1+	0.6+	1999 09 07	704	0.1+	0.4–				

1981 EQ₁₁ = 1999 RB₄₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	320.68261		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.29008017	ω	101.60368	+0.99425269	−0.07478934
a	2.2600811	Ω	262.71968	+0.03941360	+0.92098034
e	0.1254156	i	4.42916	+0.09953971	+0.38236340
P	3.40	H	15.6	G 0.15	U 2

Residuals in seconds of arc

1981 02 02	413	1.2+	0.8+	1997 01 12	566	0.5+	0.7–	1999 07 13	704	1.5–	0.6–
1981 02 14	413	1.7+	1.0–	1997 01 12	566	0.4–	0.6–	1999 09 07	704	0.7+	0.0
1981 03 07	413	1.9–	1.5+	1997 01 12	566	0.1+	0.4–	1999 09 07	704	0.6+	1.2+
1981 03 11	413	(3.2–	1.5+)	1998 04 19	704	1.5–	0.0	1999 09 07	704	0.3+	0.4+
1981 03 11	413	1.3+	0.4–	1998 04 19	704	(1.3–	2.5+)	1999 09 07	704	0.5+	0.6+
1981 03 15	413	1.4–	0.5+	1998 04 19	704	0.2+	0.6–	1999 09 09	704	1.3+	0.5–
1981 03 15	413	0.1+	0.5+	1998 04 19	704	0.9+	0.9–	1999 09 09	704	0.9+	0.3–
1981 04 06	413	(3.7–	2.2+)	1999 07 13	704	1.8–	0.6+	1999 09 09	704	0.6+	0.1+
1981 04 06	413	0.1–	0.1–	1999 07 13	704	0.6–	0.3–	1999 09 09	704	0.9+	0.3–

1981 04 29	413	0.2+	1.8–	1999 07 13	704	0.4–	0.5–
1981 05 02	413	0.7–	0.2–	1999 07 13	704	0.8–	1.3–

1981 EA₁₈ = 1999 RG₁₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	208.55063		(2000.0)	P	Q
n	0.18586969	ω	319.38821	−0.65082591	−0.75859819
a	3.0408640	Ω	171.06343	+0.73787089	−0.64157839
e	0.0606699	i	11.47132	+0.17880770	−0.11360439
P	5.30	H	14.1	G 0.15	U 5

Residuals in seconds of arc

1981 02 09	413	0.0	0.7–	1981 05 03	413	0.3–	0.3–	1999 09 09	704	0.1+	0.3–
1981 03 02	413	0.9–	1.2+	1999 09 07	704	0.9+	0.5–	1999 09 09	704	0.7+	1.0+
1981 03 07	413	0.2–	0.3+	1999 09 07	704	0.4+	0.4–	1999 09 09	704	0.8–	0.5+
1981 03 07	413	0.5+	1.1–	1999 09 07	704	0.8–	0.6–	1999 09 14	704	0.3+	1.2+
1981 03 11	413	1.1+	0.1–	1999 09 07	704	0.5–	0.5–	1999 09 14	704	0.1–	1.1–
1981 03 16	413	(5.1+	2.7–)	1999 09 07	704	0.2+	0.4+	1999 09 14	704	0.7+	0.1+
1981 03 29	413	0.2–	0.2+	1999 09 09	704	0.7–	0.2+	1999 09 14	704	0.5–	0.1+
1981 05 02	413	0.1–	0.3+	1999 09 09	704	0.1+	0.2–				

1981 EV₂₁ = 1999 RB₁₈₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	278.81642		(2000.0)	P	Q
n	0.18903801	ω	79.39202	+0.25754265	−0.96616415
a	3.0067914	Ω	355.60744	+0.79892002	+0.22112030
e	0.1176950	i	10.60339	+0.54350583	+0.13278798
P	5.21	H	14.6	G 0.15	U 4

Residuals in seconds of arc

1981 02 09	413	0.0	1.0–	1999 09 07	704	1.1+	0.1+	1999 09 11	704	0.6+	0.7–
1981 02 13	413	0.3+	1.2–	1999 09 07	704	0.5–	0.2+	1999 09 11	704	0.2+	1.0–
1981 03 02	413	(3.3–	0.1+)	1999 09 07	704	0.3–	0.5+	1999 09 11	704	0.2–	0.1+
1981 03 07	413	0.2–	0.0	1999 09 07	704	0.9–	0.4–	1999 09 13	704	0.7+	0.8+
1981 03 11	413	(4.6+	1.4–)	1999 09 09	704	1.4–	1.2+	1999 09 13	704	0.2–	0.3+
1981 03 16	413	2.3–	0.1–	1999 09 09	704	0.5–	0.9+	1999 09 13	704	0.3+	0.3+
1981 03 29	413	2.0+	0.7–	1999 09 09	704	1.4–	0.4–	1999 09 13	704	0.5+	0.1–
1981 04 08	413	2.0–	0.0	1999 09 11	704	0.1–	0.1+	1999 09 13	704	0.1+	0.3–
1981 04 08	413	(5.0–	0.1–)	1999 09 11	704	0.0	1.3+	1999 09 13	704	0.9+	0.3+
1981 04 11	413	(4.8+	2.2–)	1999 09 11	704	0.2+	0.9+	1999 09 13	704	0.1–	0.2–
1981 04 11	413	0.5–	0.8–	1999 09 11	704	0.8+	1.0+	1999 09 13	704	0.6–	0.2+
1981 04 30	413	1.5–	1.2–	1999 09 11	704	1.3+	0.1–	1999 09 13	704	0.3+	0.4–
1981 05 02	413	1.9+	1.4+	1999 09 11	704	0.8–	1.3–	1999 09 14	704	0.8–	0.2–
1994 09 27	691	0.0	0.2–	1999 09 11	704	0.6+	0.2–	1999 09 14	704	1.0+	1.5–
1994 09 27	691	0.3+	0.6–	1999 09 11	704	0.5+	0.1+	1999 09 14	704	0.3–	0.5–
1994 09 27	691	0.6+	0.6–	1999 09 11	704	0.2–	1.1–	1999 09 14	704	0.3+	1.6–

1981 EF₂₉ = 1999 RF₁₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	29.27639		(2000.0)	P	Q
n	0.17964069	ω	321.44885	+0.34462922	+0.93794154
a	3.1107581	Ω	328.65554	−0.84179100	+0.29053747
e	0.1248181	i	4.26469	−0.41547396	+0.18935058
P	5.49	H	14.4	G 0.15	U 3

Residuals in seconds of arc

1981 02 09	413	1.3–	0.2+	1981 04 12	413	2.2+	1.4–	1999 08 22	703	0.1+	1.5–
1981 03 01	413	0.7+	0.6–	1981 04 30	413	0.8–	0.3–	1999 08 22	703	0.5+	0.6–
1981 03 01	413	2.3+	0.1–	1981 05 02	413	0.5–	0.1+	1999 09 07	704	1.1+	0.1+
1981 03 02	413	(4.1+	0.4+)	1981 05 03	413	0.7–	0.2–	1999 09 07	704	0.1+	0.1+
1981 03 03	413	1.5+	0.7–	1981 05 01	704	0.1–	1.1+	1999 09 07	704	0.3+	1.0+
1981 03 07	413	1.9–	0.4+	1981 05 01	704	0.2–	0.5–	1999 09 07	704	1.1+	0.6–
1981 03 07	413	0.5–	0.1+	1981 05 01	704	0.2–	0.5+	1999 09 07	704	0.1+	0.1–
1981 03 07	413	0.3–	0.0	1981 05 01	704	1.3+	1.6+	1999 09 09	704	0.2–	0.4+
1981 03 11	413	(3.9–	2.8+)	1999 08 08	699	0.2–	1.1–	1999 09 09	704	0.2+	0.7–

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1981 03 11	413	1.3+	0.1+	1999 08 08	699	0.1-	0.2-	1999 09 09	704	0.5-	0.4+
1981 03 15	413	1.2-	0.7-	1999 08 08	699	0.7-	0.6-	1999 09 09	704	(2.1-	0.4-)
1981 03 15	413	1.7-	0.6+	1999 08 21	691	0.2-	0.1-	1999 09 13	704	0.2-	0.6+
1981 04 05	413	0.9-	0.6+	1999 08 21	691	0.0	0.2-	1999 09 13	704	0.2-	0.7-
1981 04 07	413	0.4-	0.8-	1999 08 21	691	0.2-	0.5-	1999 09 13	704	0.1+	0.1+
1981 04 07	413	1.3+	1.5-	1999 08 22	703	0.4+	0.4+	1999 09 13	704	0.2-	0.1+
1981 04 12	413	1.7-	0.5-	1999 08 22	703	0.2-	0.6-	1999 09 13	704	0.0	1.4+

1981 EC₃₀ = 1999 RE₆₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18377304	ω	196.27969	-0.94428955	-0.27675591		
<i>a</i>	3.0639489	Ω	325.98037	+0.32614361	-0.71432133		
<i>e</i>	0.0191897	<i>i</i>	18.56330	+0.04413156	-0.64276839		
<i>P</i>	5.36	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1981 02 02	413	1.2-	1.0-	1981 03 12	413	1.7-	0.5+	1999 09 07	704	0.2+	0.3-
1981 03 02	413	0.0	0.6-	1981 03 12	413	1.2-	0.3+	1999 09 07	704	1.3+	0.0
1981 03 07	413	0.7-	0.3+	1981 04 30	413	1.4+	1.4-	1999 09 09	704	0.8+	0.8+
1981 03 07	413	0.5+	0.4-	1999 09 07	704	1.2-	0.7+	1999 09 09	704	0.5+	0.2+
1981 03 10	413	0.7+	1.9+	1999 09 07	704	0.7-	0.0	1999 09 09	704	0.5+	0.4-
1981 03 10	413	1.9+	0.1-	1999 09 07	704	0.6-	0.1-	1999 09 09	704	0.4-	1.1-

1981 ET₃₃ = 1999 RJ₁₄₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17894924	ω	358.23985	+0.41434953	+0.90884411		
<i>a</i>	3.1187661	Ω	296.23601	-0.83435978	+0.35820235		
<i>e</i>	0.1751025	<i>i</i>	3.07607	-0.36353573	+0.21376028		
<i>P</i>	5.51	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1981 03 01	413	(5.1+	1.3-)	1998 05 01	704	(7.7-	3.4+)	1999 09 09	704	0.6-	0.3+
1981 03 11	413	0.2+	0.2-	1999 09 07	704	0.1+	0.4-	1999 09 09	704	0.9+	0.6+
1981 03 15	413	0.7-	0.9+	1999 09 07	704	0.2-	0.3+	1999 09 09	704	1.9+	1.0+
1981 05 02	413	0.2-	0.2-	1999 09 07	704	0.0	0.6+	1999 09 14	704	0.5+	0.5-
1981 05 03	413	1.1+	0.0	1999 09 07	704	0.3+	0.5+	1999 09 14	704	0.1-	0.1-
1998 05 01	704	0.9-	0.3+	1999 09 07	704	0.0	0.3+	1999 09 14	704	0.0	1.2-
1998 05 01	704	0.8+	0.6-	1999 09 09	704	1.3-	0.0	1999 09 14	704	1.3-	0.7-
1998 05 01	704	(0.5-	2.3-)	1999 09 09	704	0.1-	0.3-	1999 09 14	704	0.3-	0.1+

1981 EC₃₅ = 1999 RZ₄₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28473188	ω	117.73642	+0.11035897	+0.99323420		
<i>a</i>	2.2882949	Ω	158.50838	-0.94308911	+0.11612807		
<i>e</i>	0.1550996	<i>i</i>	5.66247	-0.31369385	+0.00029706		
<i>P</i>	3.46	<i>H</i>	15.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1981 02 13	413	0.8+	0.8-	1999 07 13	704	0.2+	0.2-	1999 09 09	704	0.0	0.1+
1981 03 02	413	(3.9+	3.6-)	1999 07 13	704	0.3-	0.0	1999 09 09	704	0.0	0.2-
1981 03 03	413	0.8-	0.1+	1999 07 21	699	0.6-	0.3+	1999 09 09	704	1.5+	0.6-
1981 03 03	413	1.5-	1.0+	1999 07 21	699	1.0+	0.2-	1999 09 13	691	0.0	0.7+
1981 03 07	413	0.5-	0.1-	1999 07 21	699	0.4-	0.3-	1999 09 13	691	0.3-	0.5+
1981 03 07	413	0.1+	0.1+	1999 07 23	704	0.3-	0.2-	1999 09 13	691	0.3-	0.5+
1981 05 02	413	1.3+	0.0	1999 07 23	704	0.2+	0.3-	1999 09 19	691	0.3-	0.8-
1981 05 03	413	0.9+	1.2-	1999 07 23	704	1.0-	1.5+	1999 09 19	691	0.2-	1.0-
1999 07 13	704	0.1-	0.1-	1999 09 07	704	0.3+	0.1-	1999 09 19	691	(0.4-	3.3-)
1999 07 13	704	0.1+	0.2-	1999 09 07	704	0.5-	0.4+				
1999 07 13	704	0.1-	0.4+	1999 09 07	704	1.3+	0.6-				

1981 EM₃₅ = 1999 RK₁₇₁

Id. G. V. Williams, E. Bowell

M.P.C. 35909

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28712979	ω	267.38696	-0.02076804	+0.99978084		
<i>a</i>	2.2755369	Ω	1.43104	-0.87015836	-0.01677527		
<i>e</i>	0.1529869	<i>i</i>	6.06685	-0.49233435	-0.01252471		
<i>P</i>	3.43	<i>H</i>	15.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1981 02 09	413	0.1+	0.5-	1981 04 07	413	1.1-	0.0	1999 09 09	704	0.1-	0.3-
1981 02 13	413	0.1+	0.0	1981 04 07	413	(4.3+	1.4-)	1999 09 09	704	0.0	0.6+
1981 03 02	413	(2.6-	1.0+)	1981 04 08	413	1.6-	0.8+	1999 09 09	704	0.9-	0.2-
1981 03 02	413	(3.5+	0.2-)	1981 04 08	413	0.4+	0.4-	1999 09 09	704	0.7-	0.3-
1981 03 03	413	1.5+	0.8-	1981 04 11	413	1.7-	0.7+	1999 09 09	704	1.2-	0.9-
1981 03 07	413	0.3-	0.8+	1981 04 11	413	1.2+	0.6-	1999 09 11	699	0.1-	0.1+
1981 03 07	413	1.6+	0.6+	1981 04 30	413	0.4+	0.2+	1999 09 11	699	0.3-	0.2+
1981 03 11	413	1.4-	0.2-	1981 05 02	413	0.7+	0.3-	1999 09 11	699	0.7+	0.0
1981 03 11	413	0.7+	0.6-	1999 09 07	704	0.2+	0.1-	1999 09 14	704	0.4+	0.1+
1981 03 16	413	2.1-	0.5+	1999 09 07	704	0.0	0.4-	1999 09 14	704	0.4+	0.3-
1981 03 16	413	0.6+	0.2+	1999 09 07	704	0.3+	0.4+	1999 09 14	704	0.8+	0.1+
1981 03 29	413	0.2+	0.1-	1999 09 07	704	0.2-	0.2-	1999 09 14	704	0.6+	0.4+
1981 03 29	413	0.9+	0.2-	1999 09 07	704	0.1+	0.6+	1999 09 14	704	0.0	0.4+

1981 EE₃₉ = 1999 RF₆₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18643353	ω	210.75934	+0.94968572	-0.31209261		
<i>a</i>	3.0347298	Ω	167.34354	+0.30623851	+0.90761119		
<i>e</i>	0.0738376	<i>i</i>	6.91179	+0.06568871	+0.28078484		
<i>P</i>	5.29	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1981 02 02	413	1.6+	1.0-	1981 05 03	413	1.0+	0.2-	1999 09 07	704	0.9+	0.3+
1981 03 02	413	0.4-	0.3-	1994 09 30	691	0.1+	0.1-	1999 09 07	704	0.6+	0.3+
1981 03 02	413	(4.4+	4.4-)	1994 09 30	691	0.2-	0.2-	1999 09 09	704	0.0	0.1+
1981 03 07	413	1.9-	0.8+	1994 09 30	691	0.2+	0.0	1999 09 09	704	0.8-	0.2-
1981 03 11	413	(3.6+	1.5-)	1999 09 07	704	0.4-	0.7-	1999 09 09	704	0.1+	0.5-
1981 03 11	413	1.7-	0.2-	1999 09 07	704	0.1+	0.2+	1999 09 09	704	0.4-	0.0
1981 05 02	413	1.6+	0.6-	1999 09 07	704	0.7-	0.4+	1999 09 09	704	0.8+	0.9-

1981 EJ₄₅ = 1999 RH₁₄₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18070880	ω	39.88800	+0.73100053	+0.67781023		
<i>a</i>	3.0984883	Ω	277.25145	-0.64458756	+0.64799513		
<i>e</i>	0.1606155	<i>i</i>	4.55687	-0.22393102	+0.34738395		
<i>P</i>	5.45	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1981 02 14	413	0.1-	0.3+	1999 09 07	704	1.0+	0.6-	1999 09 09	704	0.2+	1.2+
1981 03 01	413	(9.7+	1.9-)	1999 09 07	704	0.1+	0.1-	1999 09 14	704	0.5-	0.1-
1981 03 08	413	0.5-	0.8+	1999 09 09	704	0.9-	0.8-	1999 09 14	704	0.2-	0.6+
1981 03 12	413	0.7+	1.0-	1999 09 09	704	0.1+	0.6-	1999 09 14	704	0.1-	0.5-
1999 09 07	704	0.6-	0.6+	1999 09 09	704	0.4+	0.2-	1999 09 14	704	0.0	0.4+
1999 09 07	704	0.0	0.7+	1999 09 09	704	0.4+	0.0	1999 09 14	704	0.1+	0.5-

1984 JE = 1979 VV₁ = 1989 VB₅ = 1996 TR₁₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28913054	ω	112.89075	-0.71481643	-0.69676851		
<i>a</i>	2.2650271	Ω	23.08230	+0.57291235	-0.63234892		
<i>e</i>	0.1767752	<i>i</i>	8.74273	+0.40100987	-0.33859783		
<i>P</i>	3.41	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1979 11 14	095	0.2+	0.4+	1996 10 05	327	0.5+	0.6+	1999 09 07	704	0.3+	0.0
1984 04 26	809	0.1-	0.5-	1996 10 05	327	0.5-	0.3+	1999 09 07	704	0.7-	0.5+
1984 04 26	809	0.6-	0.7-	1996 10 13	327	0.4-	0.1-	1999 09 07	704	0.1+	0.2-
1984 04 27	809	0.2-	0.3-	1996 10 13	327	0.6-	0.2-	1999 09 14	704	0.3-	0.1-
1984 04 27	809	0.3+	0.1+	1996 10 13	327	0.0	0.4+	1999 09 14	704	0.4-	0.4-
1984 04 30	809	0.8+	0.4-	1996 10 26	327	0.5+	0.1+	1999 09 14	704	0.5-	0.4-
1984 04 30	809	1.6+	0.1+	1996 10 26	327	0.2+	1.0+	1999 09 14	704	0.8-	0.0
1984 05 02	046	(2.8+ 3.2-)		1996 10 26	327	0.2-	0.5+	1999 09 14	704	0.7-	0.0
1984 05 02	046	(2.9+ 2.9-)		1999 08 22	699	0.2+	0.3+	1999 09 15	046	0.3+	0.2+
1984 05 05	809	0.6-	1.0+	1999 08 22	699	0.1-	0.3+	1999 09 15	046	0.2+	0.2+
1984 05 05	809	1.1-	1.3+	1999 08 22	699	0.5+	0.1+	1999 09 15	046	0.2+	0.2+
1989 11 03	675	1.0-	0.9-	1999 09 05	699	0.2+	0.8+	1999 09 16	046	0.2+	0.1+
1989 11 03	675	1.4+	2.3-	1999 09 05	699	0.2+	0.3+	1999 09 16	046	0.2+	0.3+
1989 11 04	675	0.7+	0.7-	1999 09 05	699	0.0	0.2+	1999 09 16	046	0.5+	0.2+
1989 11 04	675	0.4+	0.1+	1999 09 07	704	0.1+	0.6-				
1996 10 05	327	0.6-	0.7+	1999 09 07	704	0.2-	0.2-				

1984 SF₃ = 1954 UZ = 1997 UB₅ = 1999 FT₈

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22881586	ω	287.76832	+0.29463216		-0.95507920	
<i>a</i>	2.6473537	Ω	145.04555	+0.89647836		+0.26469781	
<i>e</i>	0.1548994	<i>i</i>	3.18869	+0.33093571		+0.13326209	
<i>P</i>	4.31	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1954 10 22	760	(6.1- 0.1-)	1995 04 25	691	0.1+	0.2-	1999 03 19	704	0.7+	0.3-
1954 10 22	760	2.1+ 1.4-	1997 10 03	910	0.9+	0.8+	1999 03 19	699	0.3+	0.6+
1954 10 22	760	0.7- 0.6-	1997 10 04	910	0.9+	0.8+	1999 03 19	704	0.3-	0.0
1984 09 28	809	1.0- 0.4+	1997 10 04	910	1.1+	0.7+	1999 03 19	699	0.3+	0.3+
1984 09 28	809	1.1- 0.7+	1997 10 21	327	0.0	0.4-	1999 03 20	704	0.6-	0.5+
1984 09 28	809	1.1- 0.8+	1997 10 21	327	0.2-	0.5-	1999 03 20	704	1.3-	0.2+
1984 09 28	688	(1.6+ 2.8-)	1997 10 21	327	0.1-	0.4-	1999 03 20	704	0.4+	0.4-
1984 09 28	688	(2.3+ 2.9-)	1997 10 23	327	0.4+	1.0-	1999 03 20	704	0.5+	0.4-
1984 09 29	809	0.6- 0.3+	1997 10 23	327	0.1+	0.1-	1999 03 20	704	0.5-	0.3-
1984 09 29	809	0.5- 0.3+	1997 10 23	327	0.3-	0.2-	1999 03 23	699	0.3-	1.0-
1984 09 29	809	0.2- 0.2+	1999 02 18	699	0.5+	0.5+	1999 03 23	699	0.4-	0.4+
1984 09 30	809	0.3- 0.9+	1999 02 18	699	0.2+	0.8+	1999 03 23	699	0.5+	0.2+
1984 09 30	809	0.2- 1.0+	1999 02 18	699	0.1-	0.8+	1999 04 08	402	0.2-	0.6+
1984 09 30	809	0.4- 1.0+	1999 03 19	704	0.3-	0.6+	1999 04 08	402	0.3-	0.3+
1995 04 25	691	0.6+ 0.3-	1999 03 19	699	0.2+	1.3+				
1995 04 25	691	1.1+ 0.1-	1999 03 19	704	0.5+	0.1-				

1988 BM₄ = 1999 RC₈₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23246999	ω	182.23409	+0.31414103		-0.94701219	
<i>a</i>	2.6195385	Ω	249.46259	+0.87214073		+0.31573007	
<i>e</i>	0.2034707	<i>i</i>	4.10026	+0.37508128		+0.05901211	
<i>P</i>	4.24	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1988 01 22	809	0.6-	0.0	1988 01 28	809	0.7-	0.1-	1999 09 07	704	0.2-	0.2+
1988 01 22	809	0.5-	0.0	1988 01 28	809	0.0	0.2-	1999 09 07	704	0.7+	0.5+
1988 01 22	809	0.0	0.1-	1988 01 30	809	(3.0- 0.6-)		1999 09 07	704	0.9+	0.4+
1988 01 23	809	0.1-	0.1-	1999 07 23	704	0.5-	0.7-	1999 09 07	704	0.6+	1.0+
1988 01 23	809	0.0	0.1-	1999 07 23	704	0.7+	1.1-	1999 09 09	704	0.3-	0.2-
1988 01 24	809	0.7+	0.1-	1999 07 23	704	0.0	0.1+	1999 09 09	704	0.0	0.2-
1988 01 24	809	0.7+	0.1-	1999 07 23	704	0.4+	0.3+	1999 09 09	704	0.4-	0.3-
1988 01 24	809	0.6+	0.0	1999 07 23	704	0.4-	1.0+	1999 09 09	704	0.7-	0.6-
1988 01 26	809	0.2+	0.4+	1999 09 04	703	0.8-	0.3+	1999 09 09	704	0.8-	0.8-
1988 01 26	809	0.1+	0.4+	1999 09 04	703	0.3-	0.1-	1999 09 16	704	0.4+	0.4+
1988 01 27	809	0.2-	0.0	1999 09 04	703	0.3-	0.6-	1999 09 16	704	0.4+	0.3+

1988 01 27	809	0.4+	0.0	1999 09 04	703	0.0	0.5-	1999 09 16	704	0.2+	0.4+
1988 01 28	809	0.6-	0.2-	1999 09 07	704	0.4+	0.0				

1988 DE₃ = 1999 RE₁₀₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22566656	ω	145.58282	+0.13747187		-0.97754883	
<i>a</i>	2.6719269	Ω	296.04762	+0.86412386		+0.19716235	
<i>e</i>	0.1613785	<i>i</i>	10.23812	+0.48413990		-0.07433227	
<i>P</i>	4.37	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1988 02 22	413	1.0-	0.7+	1999 09 07	703	0.9-	0.3+	1999 09 09	704	0.9+	0.6-
1988 02 22	413	1.1+	0.0	1999 09 07	703	1.7-	0.6+	1999 09 09	704	0.1-	0.1+
1988 02 23	413	0.7+	0.0	1999 09 07	703	0.4+	0.3+	1999 09 09	704	0.7-	0.3-
1988 02 23	413	0.4+	0.7-	1999 09 07	703	0.4-	0.1-	1999 09 09	704	1.1+	0.0
1988 02 25	413	1.7-	0.3+	1999 09 08	704	0.4+	0.1-	1999 09 09	704	0.3+	0.4-
1988 02 25	413	1.3+	0.5-	1999 09 08	704	0.4+	0.1-	1999 09 16	704	0.4-	0.3+
1988 03 10	413	1.0-	0.0	1999 09 08	704	0.1+	0.1+	1999 09 16	704	0.5+	0.0
1988 03 10	413	0.2+	0.3+	1999 09 08	704	0.2-	0.1+	1999 09 16	704	0.4+	0.0

1988 PQ = 1999 RF₁₅₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27077472	ω	1.37655	+0.50950226		+0.85852060	
<i>a</i>	2.3662682	Ω	299.25721	-0.79009774		+0.44013296	
<i>e</i>	0.1609597	<i>i</i>	3.80382	-0.34081227		+0.26310711	
<i>P</i>	3.64	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1988 08 11	413	0.4+	0.4+	1998 03 29	704	0.0	0.1+	1999 09 09	704	0.0	0.3-
1988 08 11	413	0.1+	0.9+	1998 08 22	699	0.0	0.3-	1999 09 09	704	0.0	0.2+
1988 08 13	413	(3.3+ 0.6+)		1998 08 22	699	0.4-	0.2+	1999 09 09	704	0.4-	0.1+
1988 08 14	413	1.5-	0.3-	1998 08 22	699	0.5-	0.1-	1999 09 09	704	0.0	0.4-
1988 08 16	413	0.4+	0.1-	1999 09 07	704	0.6+	0.3-	1999 09 09	704	0.0	0.6-
1988 08 19	413	0.2+	0.9-	1999 09 07	704	0.2+	0.3+	1999 09 14	704	0.4-	0.2-
1988 08 20	413	(5.5- 1.1-)		1999 09 07	704	0.3+	0.3-	1999 09 14	704	0.4+	0.2+
1988 10 09	413	(4.4+ 0.7+)		1999 09 07	704	0.0	0.5-	1999 09 14	704	0.5-	0.1+
1988 10 09	413	0.6+	0.1+	1999 09 07	704	0.2+	0.3-	1999 09 14	704	0.4+	0.2-
1998 03 29	704	0.1+	0.7+	1999 09 08	699	0.3-	0.6+	1999 09 14	704	0.1+	0.8-
1998 03 29	704	0.3-	0.7-	1999 09 08	699	0.2-	1.5+				
1998 03 29	704	0.3-	1.1-	1999 09 08	699	1.2+	0.3+				

1988 PE₄ = 1999 RZ₅₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26637821	ω	192.83169	+0.80375984		+0.59382824	
<i>a</i>	2.3922336	Ω	130.67785	-0.54150989		+0.75564394	
<i>e</i>	0.2131568	<i>i</i>	2.76472	-0.24644909		+0.27635168	
<i>P</i>	3.70	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1988 08 14	033	1.2+	1.6-	1988 10 07	675	0.7-	0.7+	1999 09 07	704	0.

1988 QZ = 1999 RA₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	349.04996	(2000.0)	P		Q	
<i>n</i>	0.26728878	ω	8.99769	+0.96471431	+0.24811711	
<i>a</i>	2.3867975	Ω	336.06961	-0.25306657	+0.78137219	
<i>e</i>	0.3403512	<i>i</i>	12.54645	-0.07268841	+0.57262151	
<i>P</i>	3.69	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i> 3
Residuals in seconds of arc						
1988 08 16	675	0.9+	0.3+	1999 09 08	704	0.1+ 0.6+ 1999 09 09 704 0.3- 0.3+
1988 08 16	675	0.5+	0.3+	1999 09 08	704	0.5+ 0.2+ 1999 09 09 704 0.7+ 0.2+
1988 09 11	675	0.1-	2.2-	1999 09 08	704	0.2+ 0.3+ 1999 09 09 704 0.2+ 0.2-
1988 09 11	675	0.2+	0.9-	1999 09 08	704	0.1+ 0.2- 1999 09 09 704 0.1- 0.3+
1988 09 13	675	0.6+	0.8-	1999 09 08	704	0.1+ 0.4- 1999 09 09 704 0.3- 0.3-
1988 10 08	675	0.3+	0.2+	1999 09 09	704	0.1- 0.1+ 1999 09 09 704 0.1- 0.8-
1988 10 08	675	0.1-	0.7+	1999 09 09	704	0.0 0.2- 1999 09 13 704 0.4- 0.2+
1988 11 07	675	0.2-	0.1-	1999 09 09	704	0.1- 0.3+ 1999 09 13 704 0.5- 0.3+
1988 11 07	675	0.8-	0.6+	1999 09 09	704	0.2- 0.0 1999 09 13 704 0.2- 0.4+
1999 09 07	704	0.0	0.2-	1999 09 09	704	0.2- 0.8+ 1999 09 13 704 0.6- 0.1-
1999 09 07	704	0.3+	0.4-	1999 09 09	704	0.4- 0.4+ 1999 09 13 704 0.4- 0.5+
1999 09 07	704	0.1-	0.0	1999 09 09	704	0.4+ 0.1- 1999 09 13 106 1.2- 1.0+
1999 09 07	704	0.1+	0.3-	1999 09 09	704	0.1- 0.4+ 1999 09 13 106 0.7- 1.1+
1999 09 07	704	0.0	0.5-	1999 09 09	704	0.3+ 0.0 1999 09 13 106 1.6+ 1.2-

1988 RT₃ = 1999 RE₁₇₁

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	333.13487	(2000.0)	P		Q	
<i>n</i>	0.26782209	ω	11.20384	+0.94623282	-0.32343558	
<i>a</i>	2.3836279	Ω	7.67429	+0.29337616	+0.85055560	
<i>e</i>	0.2304400	<i>i</i>	2.46055	+0.13628598	+0.41466202	
<i>P</i>	3.68	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i> 3
Residuals in seconds of arc						
1988 09 08	033	0.0	0.3+	1988 11 04	807	0.1- 0.1- 1999 09 09 704 0.6- 0.2+
1988 09 09	033	0.6+	0.3-	1988 11 06	807	0.4- 0.3+ 1999 09 09 704 0.8- 0.3+
1988 09 09	033	0.1-	0.1-	1988 06 01	691	0.5- 1.1- 1999 09 09 704 0.2- 0.2+
1988 09 10	033	0.1-	0.3-	1988 06 01	691	0.4- 0.7- 1999 09 09 704 0.7- 0.0
1988 09 10	033	0.8-	1.7-	1988 06 01	691	0.0 0.4- 1999 09 11 699 0.3- 0.7+
1988 09 11	033	0.2+	0.8+	1999 08 12	699	0.1- 0.5+ 1999 09 11 699 0.3- 0.4-
1988 09 11	675	0.2+	1.4-	1999 08 12	699	0.1- 0.4+ 1999 09 11 699 0.3- 0.1+
1988 09 11	675	0.1+	1.3-	1999 08 12	699	0.5+ 0.5+ 1999 09 14 704 0.1- 1.1+
1988 09 15	675	1.1+	1.3-	1999 09 07	704	0.4+ 0.0 1999 09 14 704 0.0 0.5+
1988 09 15	675	0.4-	1.0-	1999 09 07	704	0.2+ 0.1- 1999 09 14 704 0.3- 0.8+
1988 09 18	807	0.3+	0.0	1999 09 07	704	0.8+ 0.1- 1999 09 14 704 0.0 0.5+
1988 10 04	807	0.7+	0.1-	1999 09 07	704	0.3- 0.6- 1999 09 14 704 0.1+ 0.8+
1988 10 05	807	(2.7+ 0.0)		1999 09 07	704	0.4- 0.2-
1988 10 08	807	1.9+	0.3-	1999 09 09	704	0.3- 0.4+

1988 RO₆ = 1999 RF₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	327.23875	(2000.0)	P		Q	
<i>n</i>	0.27209404	ω	32.56137	+0.92277245	-0.38488905	
<i>a</i>	2.3586131	Ω	350.02228	+0.32632521	+0.80638706	
<i>e</i>	0.1344736	<i>i</i>	6.21114	+0.20494599	+0.44899926	
<i>P</i>	3.62	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i> 5
Residuals in seconds of arc						
1988 09 07	809	0.5+	0.3+	1999 09 07	704	0.0 0.3+ 1999 09 10 704 0.6- 0.5+
1988 09 07	809	1.1+	0.3+	1999 09 07	704	0.4+ 0.2+ 1999 09 10 704 0.4- 0.3-
1988 09 07	809	1.6+	0.5+	1999 09 07	704	0.3+ 0.6+ 1999 09 11 699 0.2+ 0.6+
1988 09 08	809	0.1-	0.6-	1999 09 08	704	0.4- 0.4+ 1999 09 11 704 0.1- 0.2+
1988 09 08	809	0.2+	0.6-	1999 09 08	704	0.4- 0.2- 1999 09 11 704 0.2- 0.5-
1988 09 08	809	0.5+	0.5-	1999 09 08	704	0.1+ 0.5+ 1999 09 11 704 0.0 0.3+
1988 09 09	809	1.2-	0.8-	1999 09 09	704	0.4- 0.6+ 1999 09 11 704 0.0 0.8-

1988 09 09	809	1.2-	0.8-	1999 09 09	704	0.1-	0.3+	1999 09 11	699	0.3+	0.4+
1988 09 09	809	1.0-	0.5-	1999 09 09	704	0.1-	0.1+	1999 09 11	704	0.0	0.0
1988 09 11	809	0.1-	0.2+	1999 09 09	704	0.0	0.1+	1999 09 11	704	0.3+	0.6-
1988 09 11	809	0.6+	0.1+	1999 09 09	704	0.3-	0.3-	1999 09 11	704	0.0	0.1+
1988 09 11	809	1.2+	0.1+	1999 09 09	704	0.2-	0.0	1999 09 11	704	0.7+	0.9-
1988 09 14	809	0.9-	0.2+	1999 09 09	704	0.2+	0.4+	1999 09 11	699	0.4+	0.4+
1988 09 14	809	0.8-	0.1+	1999 09 09	704	0.5-	0.1-	1999 09 11	704	0.1+	0.0
1988 09 14	809	0.7-	0.1+	1999 09 09	704	0.2-	0.2-	1999 09 11	704	0.3+	0.7-
1988 09 16	809	0.2-	0.8+	1999 09 09	704	0.2-	0.1+	1999 09 14	704	0.2+	0.2+
1988 09 16	809	0.0	0.7+	1999 09 10	704	0.5-	0.1+	1999 09 14	704	0.7+	0.7-
1988 09 16	809	0.3+	0.5+	1999 09 10	704	0.1-	0.3+	1999 09 14	704	0.7+	0.5-
1999 09 07	704	0.1-	0.2+	1999 09 10	704	0.6-	0.2-	1999 09 14	704	1.0+	0.7-
1999 09 07	704	0.3-	0.1-	1999 09 10	704	0.4-	0.1-				

1988 RM₈ = 1999 RV₁₇₁

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	331.31870	(2000.0)	P		Q	
<i>n</i>	0.26784231	ω	12.41099	+0.93402494	-0.35697633	
<i>a</i>	2.3835079	Ω	8.53705	+0.31988178	+0.81986363	
<i>e</i>	0.2327574	<i>i</i>	4.96878	+0.15897503	+0.44765112	
<i>P</i>	3.68	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i> 2
Residuals in seconds of arc						
1988 09 10	675	0.9+	0.8-	1997 01 09	691	0.2+ 0.3+ 1999 09 07 704 0.1+ 0.5-
1988 09 10	675	1.5+	1.1-	1997 01 09	691	0.1- 0.1- 1999 09 07 704 0.2+ 0.3+
1988 09 11	071	0.8-	2.2+	1997 01 09	691	0.2+ 0.0 1999 09 07 704 0.0 0.3+
1988 09 11	071	0.5+	1.7+	1998 05 01	704	0.4+ 1.0- 1999 09 09 704 0.0 0.5+
1988 09 12	675	2.0-	0.4-	1998 05 01	704	1.9- 0.7- 1999 09 09 704 0.4+ 0.4+
1988 09 12	675	1.9-	1.1-	1998 05 01	704	0.3+ 0.5- 1999 09 09 704 0.3- 0.1-
1988 09 15	675	0.3+	0.3-	1998 05 01	704	(3.2- 0.2-) 1999 09 09 704 0.3- 0.3+
1988 09 15	675	0.6-	0.5-	1999 07 16	704	0.3+ 0.8- 1999 09 09 704 1.1- 0.6-
1988 09 16	807	2.1+	0.1+	1999 07 16	704	0.0 0.2+ 1999 09 14 704 0.0 0.3+
1988 09 18	807	1.5+	0.7-	1999 07 16	704	0.1+ 0.9- 1999 09 14 704 0.2- 0.4+
1988 10 04	807	0.3-	0.2-	1999 08 12	699	0.3- 0.6+ 1999 09 14 704 0.3- 0.1+
1988 10 05	807	0.9+	0.9-	1999 08 12	699	0.1- 0.6+ 1999 09 14 704 0.2- 0.8+
1988 10 08	807	0.4+	1.3-	1999 08 12	699	0.4- 0.6+ 1999 09 14 704 0.0 0.5+
1988 11 04	807	0.6+	0.0	1999 09 07	704	0.0 0.0
1988 11 06	807	0.8-	1.4-	1999 09 07	704	0.3+ 0.2+

1988 RU₉ = 1988 RS₁₁ = 1999 RE₃₂

Id. S. Nakano (MPC 16003), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	297.98094	(2000.0)	P		Q	
<i>n</i>	0.17960248	ω	244.00928	+0.61261526	-0.78829872	
<i>a</i>	3.1111993	Ω	167.69792	+0.78658463	+0.60096413	
<i>e</i>	0.0875436	<i>i</i>	15.61132	+0.07737676	+0.13201227	
<i>P</i>	5.49	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i> 5
Residuals in seconds of arc						
1988 09 08	809	0.9+	0.7+	1999 09 09	704	0.3+ 0.2- 1999 09 10 704 0.2+ 0.4+
1988 09 08	809	0.5-	0.1-	1999 09 09	704	0.0 0.2- 1999 09 10 704 0.1- 0.4+
1988 09 08	809	2.0-	0.9-	1999 09 09	704	0.3+ 0.2+ 1999 09 10 704 0.2- 0.3-
1988 09 14	807	0.7+	0.1-	1999 09 09	704	0.3+ 0.3+ 1999 09 10 120 0.6- 0.4-
1988 09 15	807	0.9+	0.3+	1999 09 09	704	0.1+ 0.4- 1999 09 10 120 1.6+ 0.1+
1999 09 07	704	0.0	0.2+	1999 09 09	704	0.3- 0.1+ 1999 09 11 120 1.5+ 0.3-
1999 09 07	704	0.0	0.1-	1999 09 09	704	0.5- 0.0 1999 09 11 120 0.3- 0.4-
1999 09 07	704	0.3+	0.4-	1999 09 09	704	0.7+ 0.4- 1999 09 14 704 0.6- 0.1-
1999 09 07	704	0.1-	0.4-	1999 09 09	704	0.6+ 0.6+ 1999 09 14 704 0.0 0.2-
1999 09 07	704	0.0	0.2-	1999 09 09	704	1.3+ 0.8+ 1999 09 14 704 0.2- 1.2-
1999 09 08	691	0.0	0.1+	1999 09 09	120	0.0 0.3+ 1999 09 14 704 0.3- 0.5-
1999 09 08	691	0.0	0.1-	1999 09 09	120	0.3- 0.5+ 1999 09 14 704 0.4- 0.8-
1999 09 08	691	0.2-	0.0	1999 09 10	704	0.2- 0.5- 1999 09 14 703 0.0 0.7+
1999 09 09	704	0.1+	0.2-	1999 09 10	704	0.2- 0.1+ 1999 09 14 703 0.4- 0.6+
1999 09 09	704	0.2+	0.3+	1999 09 10	704	0.2- 0.0 1999 09 14 703 0.5- 0.8+
1999 09 09	704	0.4-	0.2-	1999 09 10	704	0.2- 0.4- 1999 09 14 703 0.6- 0.2+

M.P.C. 35912

1999 09 09 704 0.2− 0.2+ 1999 09 10 704 0.1− 0.3+
 1999 09 09 704 0.3− 0.4+ 1999 09 10 704 0.1− 0.3+

1988 RZ₁₀ = 1972 TG₁₀ = 1999 RE₆₇

Id. G. V. Williams, M. E. Sansaturio E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	23.74254	(2000.0)		P		Q	
<i>n</i>	0.17984568	ω	156.67675	+0.65410841		+0.75559858	
<i>a</i>	3.1083939	Ω	154.13359	−0.70595027		+0.62636721	
<i>e</i>	0.0568068	<i>i</i>	4.57879	−0.27161812		+0.19166351	
<i>P</i>	5.48	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1972 10 09	033	1.0−	0.2−	1988 10 08	807	0.2+	0.6−	1999 09 07	704	0.7−	1.0+
1972 10 09	033	1.0+	0.5+	1988 10 08	807	0.4+	0.2−	1999 09 07	704	0.1−	0.1+
1972 10 09	033	0.1−	0.1+	1988 11 03	807	0.3−	0.3−	1999 09 07	699	0.3+	0.7+
1988 09 14	807	0.1+	0.4−	1988 11 05	807	0.7−	0.1+	1999 09 07	704	0.3+	0.5+
1988 09 15	807	0.3+	0.3−	1997 04 09	704	0.1+	0.8+	1999 09 09	704	0.9+	0.3−
1988 09 16	807	0.7+	0.0	1997 04 09	704	0.1+	0.1−	1999 09 09	704	0.3+	0.5−
1988 10 04	807	0.1+	0.1−	1999 09 07	699	1.3−	0.7+	1999 09 09	704	0.0	0.2−
1988 10 05	807	0.1−	0.1−	1999 09 07	704	0.6+	0.6+	1999 09 09	704	0.3−	0.7−
1988 10 07	807	0.5−	0.1−	1999 09 07	699	0.4−	0.1+	1999 09 09	704	0.1−	0.3+

1988 RC₁₁ = 1999 RK₁₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	277.05821	(2000.0)		P		Q	
<i>n</i>	0.17718944	ω	304.78158	+0.33105201		−0.94311272	
<i>a</i>	3.1393820	Ω	125.85676	+0.87765493		+0.29579570	
<i>e</i>	0.1675482	<i>i</i>	2.17134	+0.34659255		+0.15180018	
<i>P</i>	5.56	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1988 09 14	807	0.3−	0.1−	1997 05 07	566	0.5−	0.2−	1999 09 07	704	0.3−	0.2−
1988 09 15	807	0.7−	0.1−	1997 05 07	566	0.4−	0.6+	1999 09 07	704	0.2+	0.5−
1988 10 05	807	0.1+	0.3−	1999 08 03	691	0.1−	0.1+	1999 09 07	704	0.7−	0.4−
1988 10 08	807	0.3+	0.7−	1999 08 03	691	0.1−	0.1−	1999 09 09	704	1.1−	1.1+
1988 11 03	807	0.4−	0.2+	1999 08 03	691	0.2−	0.2+	1999 09 09	704	0.4−	0.2+
1988 11 05	807	0.5+	0.3−	1999 08 07	699	0.2+	0.1−	1999 09 09	704	0.7+	0.1−
1993 07 13	809	(2.4+	0.1+)	1999 08 07	699	0.4−	0.9−	1999 09 09	704	1.5+	0.1−
1993 07 13	809	1.4+	0.2−	1999 08 07	699	0.2+	0.3+	1999 09 09	704	0.2−	0.1+
1993 07 13	809	0.8+	0.4−	1999 08 08	699	0.4−	0.7+	1999 09 13	704	0.1+	0.1−
1996 02 15	566	0.3+	0.0	1999 08 08	699	0.1−	0.8+	1999 09 13	704	1.1+	0.7−
1996 02 15	566	0.1+	0.0	1999 08 08	699	0.3−	1.6+	1999 09 13	704	1.1−	0.3−
1996 02 15	566	0.3+	0.0	1999 09 07	704	0.0	0.5+	1999 09 13	704	0.6+	0.2−
1997 05 07	566	0.2−	0.1+	1999 09 07	704	0.6−	0.6−	1999 09 13	704	0.3+	0.3+

1988 VA₁ = 1999 RM₁₉₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	322.94737	(2000.0)		P		Q	
<i>n</i>	0.26417080	ω	125.31697	+0.83208897		−0.52596040	
<i>a</i>	2.4055414	Ω	267.02708	+0.43424473		+0.81524274	
<i>e</i>	0.2674205	<i>i</i>	10.15358	+0.34504994		+0.24237355	
<i>P</i>	3.73	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1988 11 03	054	1.0+	1.3+	1999 07 22	704	0.4+	0.4+	1999 09 08	704	0.4+	0.5+
1988 11 03	054	0.0	0.6+	1999 07 22	704	0.4−	0.2−	1999 09 08	704	0.5+	0.3+
1988 11 04	054	0.2+	0.4+	1999 07 22	704	0.2−	0.3−	1999 09 16	704	0.3+	0.1−
1988 11 07	054	0.4+	1.0+	1999 09 08	699	0.8−	0.3+	1999 09 16	704	0.0	0.6−
1988 11 07	054	0.2−	0.3−	1999 09 08	699	1.1−	0.4+	1999 09 16	704	0.4−	0.3−
1988 11 09	054	0.3+	0.2+	1999 09 08	699	0.1+	0.5−	1999 09 16	704	0.5+	0.6−
1988 11 13	054	1.7−	1.5−	1999 09 08	704	0.1+	0.1−				
1988 11 13	054	0.0	1.5−	1999 09 08	704	0.7+	0.5+				

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1988 VW₂ = 1996 TD₆₈

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	229.02111	(2000.0)		P		Q	
<i>n</i>	0.24359075	ω	168.91776	+0.54020642		−0.84068370	
<i>a</i>	2.5391919	Ω	248.37449	+0.76894969		+0.51135880	
<i>e</i>	0.3044268	<i>i</i>	2.32968	+0.34189677		+0.17822203	
<i>P</i>	4.05	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1988 11 08	399	0.8+	1.2+	1988 11 14	399	(3.9+	1.0+)	1996 10 16	399	0.6−	0.5+
1988 11 08	399	1.1+	0.6−	1988 11 14	399	(3.4+	1.5−)	1996 11 02	327	0.3−	0.2−
1988 11 11	399	0.8−	0.2+	1996 10 09	399	0.0	0.3−	1996 11 02	327	0.0	0.1+
1988 11 11	399	1.4−	2.2−	1996 10 09	399	0.2+	0.4−	1996 11 02	327	0.3+	0.1+
1988 11 11	399	1.6+	0.6−	1996 10 10	399	0.9+	1.2+	1998 04 28	691	0.3+	0.7+
1988 11 11	399	1.1−	1.3+	1996 10 10	399	0.2+	0.2+	1998 04 28	691	0.3−	0.7+
1988 11 14	399	0.3−	0.7+	1996 10 16	399	1.0−	0.0	1998 04 28	691	0.6+	0.2+

1989 SB₁ = 1999 RU₉₈

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	251.73935	(2000.0)		P		Q	
<i>n</i>	0.29361373	ω	120.35874	−0.43501030		−0.90038109	
<i>a</i>	2.2419116	Ω	355.39976	+0.78313503		−0.37342647	
<i>e</i>	0.0911168	<i>i</i>	6.40034	+0.44437097		−0.22330823	
<i>P</i>	3.36	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1989 09 28	675	0.0	0.2+	1989 10 24	400	1.0−	0.7−	1999 09 07	704	0.9−	0.4−
1989 09 28	675	1.7−	0.8+	1989 10 24	400	0.4−	1.3−	1999 09 09	704	0.3−	0.2−
1989 09 28	400	(0.3+	3.0−)	1999 08 13	699	0.3+	1.1−	1999 09 09	704	0.0	0.0
1989 09 28	400	(6.2+	4.0−)	1999 08 13	699	0.3+	0.0	1999 09 09	704	0.3−	0.8−
1989 09 28	400	(2.1+	3.5−)	1999 08 13	699	0.4−	0.2+	1999 09 09	704	0.1+	0.5+
1989 09 29	675	1.0−	0.8−	1999 09 05	699	0.4+	1.7+	1999 09 09	704	0.4−	0.1+
1989 09 29	675	0.1−	0.6+	1999 09 05	699	1.1+	0.7−	1999 09 18	703	0.1−	0.1+
1989 10 09	400	1.1+	1.5+	1999 09 05	699	0.3−	0.2+	1999 09 18	703	0.2−	0.2+
1989 10 09	400	1.2+	0.4−	1999 09 07	704	0.5+	0.3−	1999 09 18	703	0.3+	0.0
1989 10 09	400	1.7+	0.5+	1999 09 07	704	0.2−	0.1+	1999 09 18	703	0.5+	0.1−

1989 XW₁ = 1999 RM₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	296.82176	(2000.0)		P		Q	
<i>n</i>	0.18614675	ω	242.58760	+0.61285309		−0.78956809	
<i>a</i>	3.0378459	Ω	169.44035	+0.77205994		+0.58981386	
<i>e</i>	0.1098773	<i>i</i>	9.90296	+0.16832865		+0.16941618	
<i>P</i>	5.29	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1989 11 06	809	1.0+	0.6+	1999 09 07	704	0.7−	0.2+	1999 09 11	678	1.0−	1.5−
1989 11 06	809	0.3−	1.0+	1999 09 07	704	0.4−	0.3+	1999 09 11	678	(2.3−	0.7+)
1989 11 06	809	0.9+	1.2+	1999 09 07	704	0.4−	0.3−	1999 09 11	678	1.0−	0.8−
1989 12 02	809	0.3−	0.9−	1999 09 07	704	0.0	0.5+	1999 09 11	678	0.5+	0.7+
1989 12 02	809	0.2−	0.8−	1999 09 08	704	0.6−	0.0	1999 09 13	678	1.7+	1.2+
1989 12 02	809	0.7−	0.5−	1999 09 08	704	0.4−	0.8−	1999 09 13	678	1.6+	0.1+
1989 12 03	809	0.8+	0.0	1999 09 08	704	0.4−	0.2+	1999 09 13	678	(2.2−	0.3−)
1989 12 03	809	0.3−	0.1+	1999 09 08	704	0.2+	0.1−	1999 09 14	704	(1.3−	2.8+)
1989 12 03	809	1.1−	0.5−	1999 09 09	704	0.5+	0.2+	1999 09 14	704	0.3+	0.9+
1999 08 08	699	0.4+	0.2+	1999 09 09	704	0.7−	0.2−	1999 09 14	704	0.3+	0.6+
1999 08 08	699	0.3+	0.1−	1999 09 09	704	0.4+	0.8−	1999 09 14	704	0.1+	0.3+
1999 08 08	699	0.3−	1.2+	1999 09 09	704	0.3+	0.8−	1999 09 14	704	0.5+	0.4−
1999 09 07	704	0.7−	0.2−	1999 09 09	704	0.2−	0.7−				

1990 ES₆ = 1978 XR = 1998

1999 SEPT. 28

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5									
Williams					Williams				
<i>M</i>	83.58106		(2000.0)		P		Q		
<i>n</i>	0.19948159	ω	194.66935		+0.77753619		−0.62875482		
<i>a</i>	2.9009094	Ω	204.29805		+0.57942543		+0.72267103		
<i>e</i>	0.0555347	<i>i</i>	1.42589		+0.24434328		+0.28707832		
<i>P</i>	4.94	<i>H</i>	13.0		<i>G</i>	0.15	<i>U</i>	6	
Residuals in seconds of arc									
1978 12 03	675	0.3+	0.1+	1990 03 03	809	0.8+	0.1+	1998 12 16	704 0.1+ 0.4−
1978 12 03	675	0.3−	0.5+	1990 03 06	809	0.1+	0.9+	1998 12 16	704 1.4− 0.3+
1978 12 05	675	1.1+	1.9+	1990 03 06	809	0.2+	1.1+	1998 12 16	704 0.2− 1.1+
1978 12 06	675	0.7−	0.5−	1990 03 06	809	0.2+	1.0+	1998 12 16	704 0.7− 0.5+
1978 12 06	675	0.9−	0.0	1998 12 15	704	0.5−	1.3−	1998 12 22	704 1.1+ 0.2+
1990 03 02	809	0.7−	0.9−	1998 12 15	704	0.5−	0.4−	1998 12 22	704 1.3+ 0.0
1990 03 02	809	0.4−	1.0−	1998 12 15	704	0.6−	0.1−	1998 12 22	704 0.5+ 0.5−
1990 03 02	809	0.3−	0.9−	1998 12 15	704	0.3+	0.0	1998 12 22	704 0.6+ 0.3−
1990 03 03	809	0.2+	0.4+	1998 12 15	704	0.6−	0.6−		
1990 03 03	809	0.4+	0.1+	1998 12 16	704	0.8+	0.6−		

1990 GD = 1995 SD₄₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5									
Williams					Williams				
<i>M</i>	102.64889		(2000.0)		P		Q		
<i>n</i>	0.25716343	ω	252.89366		−0.43552126		+0.89995750		
<i>a</i>	2.4490440	Ω	351.20836		−0.76832676		−0.38318162		
<i>e</i>	0.1039753	<i>i</i>	7.49746		−0.46903648		−0.20796235		
<i>P</i>	3.83	<i>H</i>	14.4		<i>G</i>	0.15	<i>U</i>	6	
Residuals in seconds of arc									
1990 04 15	809	0.2+	0.5+	1995 08 28	809	0.4−	0.0	1995 09 22	809 1.9+ 0.6−
1990 04 16	809	0.4−	0.6+	1995 08 28	809	(2.2+ 3.3−)		1995 09 22	691 0.8− 0.3+
1990 04 16	809	0.8−	0.7+	1995 08 29	809	(2.2+ 3.0−)		1995 09 22	691 0.8− 0.5+
1990 04 16	809	1.8+	1.0−	1995 09 01	809	0.6−	0.1−	1995 09 22	691 0.5− 0.4+
1990 04 17	809	0.4+	0.3−	1995 09 17	809	0.1−	0.1−	1995 09 23	809 1.9+ 1.0−
1990 04 17	809	1.1−	0.5−	1995 09 18	809	0.4+	0.1−	1995 09 24	809 (2.3+ 1.1−)
1995 08 25	809	0.3+	0.5+	1995 09 18	809	0.7−	0.3−	1995 09 27	691 0.3− 0.2−
1995 08 25	809	0.2+	0.3+	1995 09 19	809	0.3−	0.1+	1995 09 27	691 0.8− 0.4+
1995 08 26	809	0.8+	0.2+	1995 09 20	809	0.0	0.0	1995 09 27	691 0.1− 0.4+
1995 08 27	809	0.0	0.7−	1995 09 22	809	0.0	0.2+		

1990 QY₅ = 1999 RB₁₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5									
Williams					Williams				
<i>M</i>	358.45514		(2000.0)		P		Q		
<i>n</i>	0.22431644	ω	26.27812		+0.99504640		+0.00621001		
<i>a</i>	2.6826374	Ω	332.80604		−0.06151593		+0.82247763		
<i>e</i>	0.1882990	<i>i</i>	12.53900		+0.07809261		+0.56876355		
<i>P</i>	4.39	<i>H</i>	13.9		<i>G</i>	0.15	<i>U</i>	3	
Residuals in seconds of arc									
1990 08 16	809	0.4+	1.6+	1990 09 19	675	0.8+	0.3−	1999 09 08	704 0.2+ 0.2−
1990 08 16	809	0.5+	1.1+	1999 07 23	704	0.5−	0.1−	1999 09 08	704 0.3+ 0.0
1990 08 16	809	0.4+	0.9+	1999 07 23	704	0.3+	0.1+	1999 09 09	704 0.3+ 0.2−
1990 08 18	809	0.1+	0.9−	1999 07 23	704	0.1−	0.3−	1999 09 09	704 0.0 0.4−
1990 08 18	809	0.2−	0.8−	1999 07 23	704	0.8+	0.6−	1999 09 09	704 0.1− 0.1−
1990 08 18	809	0.3−	0.1+	1999 07 23	704	0.4+	0.4−	1999 09 09	704 0.2+ 0.6−
1990 08 22	675	1.4−	1.5+	1999 09 06	703	0.8−	0.0	1999 09 09	704 0.2− 0.3−
1990 08 22	675	1.2−	1.6−	1999 09 06	703	0.4−	0.4+	1999 09 18	704 0.1+ 0.3+
1990 08 29	675	1.0−	1.1−	1999 09 06	703	1.0−	0.4+	1999 09 18	704 0.5− 0.2+
1990 08 29	675	1.3−	0.8−	1999 09 06	703	1.6+	1.3+	1999 09 18	704 0.4− 0.2+
1990 09 16	675	1.1+	0.4+	1999 09 08	704	0.1+	0.1+	1999 09 18	704 0.4− 0.0
1990 09 16	675	0.5+	0.1+	1999 09 08	704	0.2+	0.0		
1990 09 19	675	1.8+	0.2−	1999 09 08	704	0.3+	0.2+		

1990 RN₈ = 1999 RN₂₇

Id. G. V. Williams, E. Bowell

M.P.C. 35913

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5									
Williams					Williams				
<i>M</i>	323.77159		(2000.0)		P		Q		
<i>n</i>	0.22093372	ω	220.52945		+0.87515183		−0.48372633		
<i>a</i>	2.7099506	Ω	168.38500		+0.45670688		+0.81843484		
<i>e</i>	0.0897232	<i>i</i>	3.09419		+0.15977513		+0.31011812		
<i>P</i>	4.46	<i>H</i>	14.3		<i>G</i>	0.15	<i>U</i>	4	
Residuals in seconds of arc									
1990 08 16	809	1.3+	0.1−	1999 08 22	703	0.1−	0.2+	1999 09 08	120 1.0+ 0.2−
1990 08 16	809	1.2+	0.1−	1999 08 22	703	0.4−	0.2+	1999 09 09	120 0.9− 0.5−
1990 08 16	809	0.6+	1.7−	1999 08 22	703	0.5−	0.3+	1999 09 09	120 0.0 0.4−
1990 08 20	809	0.5−	0.4+	1999 08 22	703	0.5−	0.0	1999 09 09	704 0.6+ 0.1−
1990 08 20	809	0.0	0.9+	1999 08 22	703	0.6−	0.1+	1999 09 09	704 0.1+ 0.1−
1990 08 20	809	1.0−	1.0+	1999 08 22	703	1.8+	0.3−	1999 09 09	704 0.2− 0.2−
1990 09 15	809	0.8−	0.2−	1999 08 22	699	0.2+	0.5+	1999 09 09	704 0.1+ 0.0
1990 09 15	809	0.6−	0.3−	1999 08 22	699	0.0	0.2−	1999 09 09	704 0.3+ 0.5+
1990 09 15	809	0.2−	0.3−	1999 08 22	699	0.4−	1.3+	1999 09 11	699 0.6+ 0.7+
1990 09 16	809	0.1+	0.5−	1999 09 07	704	0.2+	0.4−	1999 09 11	699 0.0 0.8+
1990 09 16	809	0.4+	0.5−	1999 09 07	704	0.2+	0.1−	1999 09 11	699 0.2+ 0.4+
1990 09 16	809	0.2+	0.6−	1999 09 07	704	0.3−	0.1−	1999 09 14	704 0.6− 0.3+
1990 08 12	699	0.4+	0.5−	1999 09 07	704	0.2−	0.6−	1999 09 14	704 0.3+ 0.6−
1999 08 12	699	0.9−	0.6+	1999 09 07	704	0.3−	0.0	1999 09 14	704 0.0 0.3+
1999 08 12	699	0.2+	0.5+	1999 09 07	120	0.6−	0.4−	1999 09 14	704 0.2− 0.2−
1999 08 22	703	0.1+	0.2+	1999 09 08	120	0.9+	0.9+	1999 09 14	704 0.4− 0.5−
1999 08 22	703	0.5−	0.1+	1999 09 08	120	0.0	0.2−		

1990 SS

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5									
Marsden					Marsden				
<i>M</i>	299.81276		(2000.0)		P		Q		
<i>n</i>	0.44344863	ω	115.86282		−0.43684475		−0.89953688		
<i>a</i>	1.7031014	Ω	0.04232		+0.65943146		−0.32042722		
<i>e</i>	0.4747700	<i>i</i>	19.40876		+0.61181436		−0.29691715		
<i>P</i>	2.22	<i>H</i>	18.7		<i>G</i>	0.15	<i>U</i>	1	
Residuals in seconds of arc									
1990 09 25	691	0.1+	0.0	1990 10 09	691	0.8+	0.1−	1991 04 11	413 0.8+ 1.0−
1990 09 25	691	0.7+	0.4+	1990 10 22	691	0.9+	0.6+	1991 04 12	801 1.6+ 0.0
1990 09 25	691	0.4+	0.3+	1990 10 22	691	0.4+	0.4+	1991 04 12	801 1.1− 1.1+
1990 09 26	691	0.9+	0.3−	1990 10 22	691	1.2+	0.2−	1991 04 18	691 0.5− 1.1−
1990 09 26	691	0.7+	0.1−	1990 11 14	691	0.5+	0.6−	1991 04 18	691 0.6− 1.3−
1990 09 26	691	(2.1+ 0.7−)		1990 11 14	691	0.4+	0.7−	1991 04 18	691 1.2− 1.3−
1990 09 27	691	0.4−	1.0−	1991 03 15	691	0.7−	0.6−	Y 1999 09 13	046 0.0 0.2+
1990 09 27	691	0.4−	1.1−	1991 03 16	801	0.6+	1.2−	1999 09 13	046 1.4− 0.6−
1990 09 27	691	0.2−	1.0−	1991 03 16	801	0.8+	0.7−	1999 09 13	046 0.2+ 0.2−
1990 09 27	691	0.3−	1.2−	1991 03 20	801	0.2+	0.2+	1999 09 13	046 (2.2+ 0.3+)
1990 09 28	691	0.1+	1.0−	1991 03 20	801	0.2+	0.1−	1999 09 13	046 0.2− 1.4+
1990 09 28	691	0.3−	0.5−	1991 03 22	568	0.5−	1.5+	1999 09 13	046 0.8+ 0.3−
1990 09 28	691	0.3+	0.9−	1991 04 05	691	0.1+	0.5−	1999 09 13	046 0.5+ 0.3+
1990 09 28	691	0.3+	0.6−	1991 04 05	691	0.6−	0.7−	1999 09 14	046 0.4− 0.8+
1990 09 28	691	0.3+	0.7−	1991 04 05	691	0.2−	0.1−	1999 09 14	046 1.4− 1.2+
1990 09 28	691	1.4+	0.4−	1991 04 10	413	0.4+	1.7+	1999 09 14	046 0.2− 0.9+
1990 10 09	691	0.1−	0.4−	1991 04 10	413	(2.6+ 1.8−)		1999 09 14	046 0.5− 1.1+
1990 10 09	691	0.6+	0.0	1991 04 11	413	(2.0+ 3.5−)		1999 09 14	046 0.2− 0.3+

1990 SE₈ = 1999 RP₁₁₅

M.P.C. 35914

1990 09 14	809	0.4+	1.3+	1998 06 29	691	0.1−	0.2+	1999 09 07	704	0.1−	1.0−
1990 09 22	809	0.6+	0.7+	1998 06 29	691	0.1−	0.3−	1999 09 09	704	0.3−	0.1+
1990 09 22	809	0.2−	0.3+	1998 06 29	691	0.5−	0.3−	1999 09 09	704	0.3+	0.1−
1990 09 22	809	0.5+	0.4−	1999 08 03	691	0.3+	0.4+	1999 09 09	704	0.1+	0.4+
1990 09 25	809	0.9−	1.3−	1999 08 03	691	0.1+	0.3+	1999 09 09	704	0.5−	0.4−
1990 09 25	809	0.3−	1.1−	1999 08 03	691	0.0	0.2+	1999 09 09	704	0.0	0.6+
1990 09 25	809	0.2+	0.9−	1999 08 22	703	1.0+	2.0+	1999 09 13	704	0.3−	0.6−
1997 02 03	566	0.4−	0.4−	1999 08 22	703	1.4−	1.4−	1999 09 13	704	1.1+	0.9−
1997 02 03	566	0.6+	0.2−	1999 08 22	703	(1.0+	2.7+)	1999 09 13	704	1.1+	0.2+
1997 02 03	566	0.6−	0.5−	1999 08 22	703	1.7−	1.7−	1999 09 13	704	0.5−	0.1−
1998 06 16	691	0.5+	0.1+	1999 09 07	704	0.5+	1.4+	1999 09 13	704	0.7+	1.0−

1990 SO₈ = 1999 RF₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	322.64818		(2000.0)	P	Q
<i>n</i>	0.21921574	ω	274.92908	+0.70616071	−0.70475666
<i>a</i>	2.7240907	Ω	129.90190	+0.67976427	+0.64782934
<i>e</i>	0.2365317	<i>i</i>	5.10252	+0.19813528	+0.28919749
<i>P</i>	4.50	<i>H</i>	15.3	<i>G</i>	0.15
				<i>U</i>	6

Residuals in seconds of arc

1990 09 14	809	0.1+	0.5−	1990 09 25	809	1.1−	0.5+	1999 09 07	704	0.1−	0.4+
1990 09 14	809	1.2+	0.4−	1999 09 05	699	0.5−	0.4+	1999 09 08	704	0.1+	1.0+
1990 09 14	809	0.8−	2.3−	1999 09 05	699	0.6+	1.2−	1999 09 08	704	0.2−	1.1+
1990 09 22	809	0.1+	0.1−	1999 09 05	699	0.2−	0.3−	1999 09 08	704	0.0	0.4+
1990 09 22	809	0.7+	0.4−	1999 09 07	704	0.3−	0.0	1999 09 08	704	0.2+	0.4+
1990 09 22	809	2.1+	0.5−	1999 09 07	704	0.2+	0.0	1999 09 08	704	0.1−	0.8+
1990 09 25	809	1.0−	0.4+	1999 09 07	704	0.2−	0.4−				
1990 09 25	809	0.5−	0.9+	1999 09 07	704	0.4−	0.2−				

1990 SV₉ = 1992 DU₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	321.08518		(2000.0)	P	Q
<i>n</i>	0.31589527	ω	195.97265	+0.92724568	+0.37259266
<i>a</i>	2.1352102	Ω	142.08453	−0.33657123	+0.87293838
<i>e</i>	0.1098204	<i>i</i>	3.47856	−0.16411962	+0.31488614
<i>P</i>	3.12	<i>H</i>	16.1	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1990 09 22	809	0.6−	0.3−	1992 02 23	691	0.9−	0.0	1993 10 21	691	0.5−	0.7+
1990 09 22	809	1.0−	0.7−	1992 03 06	809	1.3+	0.2+	1993 10 21	691	0.3−	0.8+
1990 09 22	809	0.4−	0.5−	1992 03 11	691	0.1+	1.2−	1993 10 21	691	0.3−	0.6+
1990 09 25	809	0.9+	0.2+	1992 03 11	691	0.0	0.9−	1998 03 24	910	0.5−	0.3−
1990 09 25	809	1.2+	0.5−	1992 03 11	691	0.0	0.8−	1998 03 24	910	0.2+	0.5−
1990 09 25	809	0.8+	0.6−	1993 08 15	691	0.2+	0.4−	1998 03 24	910	0.2+	0.3−
1992 02 23	691	1.1−	0.4−	1993 08 15	691	0.8+	1.6−				
1992 02 23	691	0.6−	0.1+	1993 08 15	691	0.1+	0.4−				

1990 TJ₁₅ = 1999 RW₁₀₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	332.90834		(2000.0)	P	Q
<i>n</i>	0.21321649	ω	69.92080	+0.94592075	−0.30472297
<i>a</i>	2.7749523	Ω	307.65851	+0.21937502	+0.85353374
<i>e</i>	0.1776763	<i>i</i>	8.07873	+0.23897393	+0.42263940
<i>P</i>	4.62	<i>H</i>	13.0	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1990 10 13	095	0.3+	1.5+	1999 08 22	699	0.5−	0.3−	1999 09 09	704	0.5+	0.6+
1990 10 13	095	0.9−	1.6+	1999 08 22	699	0.0	0.1−	1999 09 09	704	0.5+	0.0
1990 10 17	095	(2.1−	2.3+)	1999 09 05	703	0.2−	0.3−	1999 09 09	704	0.2−	0.1+
1990 10 17	095	(2.6−	0.6−)	1999 09 05	703	0.4−	0.0	1999 09 09	704	0.0	0.0
1990 11 14	095	0.5−	1.0−	1999 09 05	703	0.4−	0.4+	1999 09 09	704	0.0	0.0
1990 11 14	095	1.0+	1.4−	1999 09 05	703	0.8−	0.3+	1999 09 16	704	0.7+	0.3−
1999 07 23	704	0.3−	0.1+	1999 09 08	704	1.1−	0.6+	1999 09 16	704	0.9+	0.6−

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1999 07 23	704	0.0	0.3−	1999 09 08	704	0.2+	0.1−	1999 09 16	704	1.0+	0.6−
1999 07 23	704	0.1−	0.6+	1999 09 08	704	0.1−	0.1+	1999 09 16	704	0.5+	0.9−
1999 08 22	699	0.3−	0.2−	1999 09 08	704	0.5+	0.0				

1991 DG₁ = 1962 YA = 1999 RK₁₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	253.34339		(2000.0)	P	Q
<i>n</i>	0.18137585	ω	272.03757	+0.06247582	−0.99801025
<i>a</i>	3.0908866	Ω	174.35935	+0.94663939	+0.05655650
<i>e</i>	0.1619585	<i>i</i>	4.96318	+0.31618132	+0.02787295
<i>P</i>	5.43	<i>H</i>	13.2	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1962 12 30	760	0.3−	0.3−	1991 03 14	809	0.4−	0.3−	1999 09 09	704	0.6−	0.0
1962 12 30	760	0.3+	0.2+	1991 03 14	809	0.4+	0.2−	1999 09 09	704	0.7+	0.3+
1991 02 12	372	(4.6−	1.4+)	1991 03 14	809	1.2+	0.2−	1999 09 09	704	0.0	0.1−
1991 02 12	372	0.2−	1.3+	1999 09 07	704	0.0	0.4+	1999 09 09	704	0.7−	0.9−
1991 02 18	675	0.9−	0.4−	1999 09 07	704	0.8+	0.0	1999 09 13	704	0.1+	0.5−
1991 02 18	675	0.4−	0.4+	1999 09 07	704	0.2+	0.3−	1999 09 13	704	0.1+	0.9−
1991 02 19	675	0.2−	0.0	1999 09 07	704	0.3−	0.5+	1999 09 13	704	0.2−	0.7+
1991 02 19	372	(3.4+	3.6−)	1999 09 07	704	0.7+	0.5+	1999 09 13	704	0.0	0.3+
1991 02 19	372	0.5+	1.1−	1999 09 09	704	0.6−	0.5−				

1991 GA₂ = 1999 SG₁

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	18.02956		(2000.0)	P	Q
<i>n</i>	0.25998879	ω	115.60989	+0.51946539	+0.85349122
<i>a</i>	2.4312688	Ω	186.18621	−0.85446648	+0.51921220
<i>e</i>	0.2535979	<i>i</i>	22.55486	+0.00653765	+0.04440068
<i>P</i>	3.79	<i>H</i>	13.9	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1991 04 15	675	0.3−	0.4+	1991 06 06	675	0.8+	0.5−	1999 09 18	704	0.7+	0.3−
1991 04 17	675	0.5−	1.6−	1991 06 08	675	0.5−	0.5−	1999 09 18	704	0.7+	0.1−
1991 04 19	675	0.9+	0.8+	1999 09 12	699	0.3−	0.3−	1999 09 18	704	0.5+	0.1+
1991 05 13	675	0.1−	0.1−	1999 09 12	699	0.4−	0.1+	1999 09 18	704	0.0	0.2−
1991 05 13	675	0.3−	0.3+	1999 09 12	699	1.4−	0.1+	1999 09 22	704	0.5−	0.3+
1991 05 15	675	0.5−	1.0+	1999 09 16	704	0.5+	0.0	1999 09 22	704	0.4−	0.4−
1991 05 15	675	0.3+	0.3+	1999 09 16	704	0.3+	0.4+	1999 09 22	704	0.0	0.0
1991 06 06	675	0.3+	0.2−	1999 09 16	704	0.5+	0.6+	1999 09 22	704	0.3−	0.3−

1991 VN₃

Id. M. W. Buie (1997 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	309.72028		(2000.0)	P	Q
<i>n</i>	0.23677087	ω	358.68335	+0.55737521	−0.82421042
<i>a</i>	2.5877195	Ω	57.43273	+0.76283030	+0.46080509
<i>e</i>	0.3232206	<i>i</i>	6.81809	+0.32775419	+0.32914413
<i>P</i>	4.16	<i>H</i>	14.7	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1991 11 03	675	0.4−	0.5−	1991 12 12	385	0.6+	0.2+	1991 12 29	385	1.1−	0.0
1991 11 03	675	0.3+	0.2−	1991 12 12	385	1.0−	1.0+	1997 05 08	688	0.3+	0.8−
1991 11 05	675	0.4+	0.7+	1991 12 13	385	0.4+	0.1+	1997 05 08	688	0.5−	0.6−
1991 11 05	675	0.4+	0.5−	1991 12 13	385	1.1+	0.8+	1997 05 08	688	0.4−	0.2−
1991 11 30	402	0.0	2.0−	1991 12 28	385	0.6−	0.4−	1997 05 08	688	0.1−	0.3+
1991 11 30	402	0.1+	1.2−	1991 12 28	385	0.5−	1.5+				

1992 DT₂ = 1994 RV₂₁ = 1999 RK₁₁₄

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Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	130.79903		(2000.0)	P			Q				
<i>n</i>	0.19541231	ω	60.86694	−0.92609479			+0.37590951				
<i>a</i>	2.9410435	Ω	141.18860	−0.36157355			−0.85984621				
<i>e</i>	0.0317128	<i>i</i>	2.95005	−0.10776363			−0.34548015				
<i>P</i>	5.04	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	3				
Residuals in seconds of arc											
1992 02 23	691	0.7+	1.1−	1992 03 11	691	0.8−	0.1−	1999 09 07	704	0.2−	1.1+
1992 02 23	691	0.6+	0.1+	1992 04 06	809	0.1+	0.7−	1999 09 07	704	1.0+	0.5−
1992 02 23	691	0.5+	0.4−	1994 09 05	809	(2.0+	2.0+)	1999 09 07	704	0.3+	1.0+
1992 03 06	809	0.6−	0.5+	1994 09 05	809	1.1+	0.1−	1999 09 07	704	0.4+	1.3+
1992 03 06	691	0.9−	0.2−	1994 09 05	809	1.1−	0.1−	1999 09 09	704	0.8+	0.4−
1992 03 06	691	(2.7−	0.1+)	1994 09 06	809	0.8+	1.3−	1999 09 09	704	0.2−	0.0
1992 03 06	691	0.6−	0.5+	1994 09 06	809	(0.5+	2.2−)	1999 09 09	704	0.3−	0.1−
1992 03 08	809	1.0+	0.0	1994 09 06	809	0.2+	1.2−	1999 09 09	704	0.5−	0.6+
1992 03 09	809	1.0+	0.1−	1997 02 16	691	0.1+	0.3+	1999 09 13	704	0.5−	0.2−
1992 03 11	691	1.1−	0.2+	1997 02 16	691	0.1+	0.4+	1999 09 13	704	0.4−	0.2−
1992 03 11	691	0.2−	0.0	1997 02 16	691	0.1+	0.1+	1999 09 13	704	1.2−	0.1−

1992 EO = 1976 GH₅ = 1988 SW₃ = 1999 RN₃₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	66.22351		(2000.0)		P		Q			
<i>n</i>	0.18106406	ω	252.13491		-0.13612397		+0.98969768			
<i>a</i>	3.0944340	Ω	10.34777		-0.78945258		-0.08130569			
<i>e</i>	0.2719762	<i>i</i>	14.30141		-0.59852726		-0.11784691			
<i>P</i>	5.44	<i>H</i>	12.3		<i>G</i>	0.15	<i>U</i>	3		
Residuals in seconds of arc										
1976 04 02	095	0.2-	0.2-	1992 03 10	372	0.8-	0.6+	1999 09 10	120	0.3+ 0.3-
1988 09 16	095	(2.8-	1.0+)	1992 03 11	372	1.0+	0.9-	1999 09 10	120	0.0 0.4-
1988 09 16	095	(4.2+	1.0-)	1992 03 11	372	1.5-	0.0	1999 09 11	120	0.3+ 0.1-
1992 02 28	675	0.4-	1.1+	1999 09 08	699	0.2-	0.6+	1999 09 11	120	0.3- 0.1-
1992 02 28	675	0.1-	0.8-	1999 09 08	699	0.2-	0.9+	1999 09 12	120	0.2+ 0.1+
1992 03 06	372	0.6+	0.7+	1999 09 08	699	0.2+	1.0+	1999 09 12	120	0.4- 0.3-
1992 03 06	372	1.9+	0.6-	1999 09 09	120	0.4+	0.4-	1999 09 12	120	0.1- 0.2-
1992 03 07	372	0.1-	0.4-	1999 09 09	120	0.4+	0.2-	1999 09 13	120	0.3- 0.2-
1992 03 07	372	0.8-	0.2-	1999 09 10	120	0.5-	0.2-	1999 09 13	120	0.0 0.1+
1992 03 10	372	0.2+	0.4+	1999 09 10	120	0.4+	0.4-			

1992 EH₁₈ = 1999 RE₁₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	253.21072		(2000.0)		P		Q			
<i>n</i>	0.20232440	ω	251.93142		+0.10460146		-0.99402974			
<i>a</i>	2.8736721	Ω	192.18999		+0.95898385		+0.10908306			
<i>e</i>	0.1141427	<i>i</i>	8.45286		+0.26345494		-0.00239864			
<i>P</i>	4.87	<i>H</i>	13.5		<i>G</i>	0.15	<i>U</i>	4		
Residuals in seconds of arc										
1992 01 28	691	0.5+	0.4-	1992 04 04	691	0.0	0.1-	1999 09 09	704	0.1+ 0.2+
1992 01 28	691	0.7+	0.4-	1992 04 07	809	1.7-	0.6+	1999 09 09	704	0.3+ 0.0
1992 01 28	691	0.1+	0.2-	1999 07 13	704	0.2+	0.3+	1999 09 09	704	1.0+ 0.0
1992 02 28	675	0.1-	0.5-	1999 07 13	704	1.1+	1.0-	1999 09 14	704	1.0+ 0.3+
1992 02 28	675	0.9+	0.2+	1999 07 13	704	0.1+	0.6+	1999 09 14	704	0.5+ 0.4-
1992 03 03	809	(2.3-	1.2+)	1999 07 13	704	1.0-	0.5+	1999 09 14	704	0.5- 0.2+
1992 03 05	809	1.2-	0.6+	1999 07 23	704	1.1-	0.5-	1999 09 14	704	0.4- 0.4-
1992 03 08	809	0.2+	0.4-	1999 07 23	704	0.7-	0.5-	1999 09 14	704	0.1+ 0.1+
1992 04 04	691	0.5+	0.0	1999 07 23	704	0.7-	0.3+			
1992 04 04	691	0.1-	0.1-	1999 09 09	704	0.2+	0.3-			

1992 KJ = 1997 XQ₁₃ = 1999 RQ₁₅₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	71.56599		(2000.0)			P		Q			
n	0.30022389	ω	47.33082			-0.41480331		+0.90976498			
a	2.2088822	Ω	198.18199			-0.84936650		-0.39356826			
e	0.1562098	i	2.99548			-0.32636601		-0.13202917			
P	3.28	H	14.5	G	0.15	U	1				
Residuals in seconds of arc											
1992 05 28	894	1.4+	0.2-	1997 12 01	327	0.4+	0.2-	1999 09 07	704	0.2-	0.2-
1992 05 28	894	0.7+	0.9-	1997 12 01	327	0.1-	0.3-	1999 09 07	704	0.5-	0.2-
1992 06 02	894	0.1+	0.6+	1997 12 01	327	0.1-	0.1+	1999 09 07	704	0.0	0.1+
1992 06 02	894	1.2-	1.2+	1997 12 29	327	0.4-	0.2-	1999 09 09	704	0.3-	0.3+
1992 06 03	809	0.5-	0.2-	1997 12 29	327	0.4-	0.1+	1999 09 09	704	0.2+	0.1-
1992 06 03	809	1.1-	0.3-	1997 12 29	327	0.0	0.3+	1999 09 09	704	0.4-	0.5+
1992 06 03	809	0.5-	0.5-	1998 03 19	104	0.6+	0.3+	1999 09 09	704	0.3+	0.4+
1992 06 09	809	(2.3+	1.2-)	1998 03 19	104	0.4+	0.7+	1999 09 09	704	0.2-	0.1+
1992 06 09	809	0.8+	0.2-	1999 08 22	699	0.8-	1.0+	1999 09 14	704	0.2+	0.1-
1992 06 09	809	0.3+	0.9-	1999 08 22	699	0.1+	1.4+	1999 09 14	704	0.1+	0.1-
1996 10 07	691	0.2+	0.6-	1999 08 22	699	0.7-	0.5+	1999 09 14	704	0.7+	0.4-
1996 10 07	691	0.3+	0.9-	1999 09 07	704	0.0	0.4-	1999 09 14	704	0.1-	0.1+
1996 10 07	691	0.2+	0.8-	1999 09 07	704	0.1+	0.1+	1999 09 14	704	0.6+	0.4-

1992 OF₂ = 1999 RK₁₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	355.66701		(2000.0)		P		Q				
<i>n</i>	0.28420321	ω	16.81296		+0.87095140		+0.48650413				
<i>a</i>	2.2911317	Ω	313.86815		-0.46111462		+0.76073839				
<i>e</i>	0.1351408	<i>i</i>	5.49003		-0.16975561		+0.42964035				
<i>P</i>	3.47	<i>H</i>	15.7		<i>G</i>	0.15	<i>U</i>	4			
Residuals in seconds of arc											
1992 07 24	809	1.3+	0.7-	1997 12 31	691	0.4-	0.3+	1999 09 07	704	0.1+	0.8-
1992 07 24	809	0.1+	0.9-	1999 08 08	699	1.4-	0.4+	1999 09 07	704	0.3+	1.9-
1992 07 24	809	0.2-	1.4-	1999 08 08	699	0.1+	0.9+	1999 09 09	704	0.2+	0.6+
1992 07 26	809	0.5+	0.7-	1999 08 08	699	0.7-	1.0+	1999 09 09	704	0.5+	0.2-
1992 07 26	809	0.1+	0.1+	1999 08 22	703	0.1-	0.1-	1999 09 09	704	0.4-	0.5+
1992 07 26	809	0.4+	0.4-	1999 08 22	703	0.2-	0.5+	1999 09 13	704	0.5+	0.6-
1992 07 30	809	0.5-	1.5+	1999 08 22	703	0.4-	0.9+	1999 09 13	704	0.9+	0.3+
1992 07 30	809	0.5-	0.6+	1999 08 22	703	0.0	1.3+	1999 09 13	704	0.4+	0.5-
1992 07 30	809	0.4-	0.1+	1999 09 07	704	0.1+	0.1-	1999 09 13	704	0.1-	0.5+
1997 12 31	691	0.8+	0.1+	1999 09 07	704	0.3-	1.4-	1999 09 13	704	0.1+	0.4+
1997 12 31	691	0.1-	0.2+	1999 09 07	704	0.3-	0.4+				

1992 PM₂ = 1999 RR₁₉₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	14.00891		(2000.0)		P		Q				
n	0.28597945	ω	72.49609		+0.72394587		+0.68589716				
a	2.2816350	Ω	244.12586		-0.65996705		+0.65745240				
e	0.1870835	i	4.70526		-0.20086280		+0.31193178				
P	3.45	H	14.9		G	0.15	U	4			
Residuals in seconds of arc											
1992 07 31	675	0.6+	0.1-	1992 08 07	675	0.6-	1.0-	1999 09 04	703	0.2-	1.2+
1992 07 31	675	0.2-	0.5+	1992 08 23	675	0.1-	0.2+	1999 09 04	703	0.3-	1.1+
1992 08 02	675	1.1-	0.5-	1992 08 28	675	1.2-	0.1+	1999 09 08	704	0.9+	0.1+
1992 08 02	675	0.3+	0.3+	1992 08 28	675	1.7+	0.6+	1999 09 08	704	0.6+	0.3-
1992 08 06	675	0.3-	0.3+	1995 05 30	691	0.5+	0.1+	1999 09 08	704	0.6+	0.6-
1992 08 06	675	1.0+	0.3-	1995 05 30	691	0.4-	0.2+	1999 09 16	704	0.5-	0.2+
1992 08 06	675	0.1-	0.4+	1995 05 30	691	(6.4+	2.2+)	1999 09 16	704	0.5-	0.3-
1992 08 06	675	0.3+	0.9-	1999 09 04	703	0.1+	0.4-	1999 09 16	704	0.7-	0.7-
1992 08 07	675	0.1-	0.2+	1999 09 04	703	0.1+	0.2+	1999 09 16	704	0.2-	0.1-

1992 RN = 1980 BJ₆ = 1999 RF₄₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	24.72247	(2000.0)	P		Q	
<i>n</i>	0.27497618	ω	299.27189	+0.13333112	+0.98967070	
<i>a</i>	2.3421030	Ω	338.20092	-0.85295683	+0.08752338	
<i>e</i>	0.2311718	<i>i</i>	8.15477	-0.50466569	+0.11354099	
<i>P</i>	3.58	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1980 01 23	095	1.1+	1.0+	1992 10 21	675	1.1+	1.1+	1999 08 13	699	0.2-	0.2-
1992 08 30	095	1.5-	1.5-	1992 10 21	675	1.1+	0.3-	1999 08 13	699	0.5-	0.1-
1992 08 30	095	2.0-	0.7-	1998 01 25	566	0.8-	0.8-	1999 09 07	691	0.1+	0.0
1992 09 03	095	1.2+	0.2+	1998 01 25	566	0.4-	0.7-	1999 09 07	691	0.1-	0.2+
1992 09 03	095	1.1-	1.8+	1998 01 25	566	0.6-	0.8-	1999 09 07	704	0.5+	0.1-
1992 09 04	894	0.9+	1.0-	1999 07 14	704	0.5+	0.2-	1999 09 07	704	0.5+	0.1+
1992 09 04	894	0.2+	0.5+	1999 07 14	704	0.1+	0.1+	1999 09 07	704	0.2+	0.3-
1992 09 05	894	1.3-	0.4-	1999 07 14	704	0.3-	0.1-	1999 09 07	704	0.1-	0.9+
1992 09 05	894	1.0+	1.3-	1999 07 14	704	0.6-	0.1-	1999 09 13	704	0.6+	0.6-
1992 09 27	894	1.3+	1.3+	1999 07 14	704	0.7-	0.3+	1999 09 13	704	1.0+	0.1+
1992 09 27	894	0.6-	0.5-	1999 08 13	703	0.2+	1.0-	1999 09 13	704	0.7+	0.1+
1992 09 29	095	(1.6-	4.7+)	1999 08 13	703	0.7-	0.8-	1999 09 13	704	0.8+	0.2+
1992 09 29	095	0.7-	0.9+	1999 08 13	703	(2.3-	0.3-)	1999 09 13	704	0.2+	0.7+
1992 10 06	894	(3.8-	1.1-)	1999 08 13	703	(2.7-	0.1+)				
1992 10 06	894	(1.6-	2.1-)	1999 08 13	699	0.3-	0.1-				

1992 RU = 1953 SN = 1999 RN₁₄₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	330.33320	(2000.0)	P		Q	
<i>n</i>	0.27852378	ω	226.93484	+0.95127685	-0.30652711	
<i>a</i>	2.3221728	Ω	150.86817	+0.29905826	+0.89087748	
<i>e</i>	0.2562293	<i>i</i>	3.93039	+0.07507668	+0.33522894	
<i>P</i>	3.54	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1953 09 17	675	0.3+	0.4+	1992 09 28	033	1.3-	0.8+	1999 09 09	704	0.4-	0.4-
1953 09 17	675	0.4-	0.2-	1999 07 16	704	0.4-	0.5-	1999 09 09	704	0.1-	0.7-
1992 09 02	033	1.4-	0.0	1999 07 16	704	0.0	0.3-	1999 09 09	704	0.1-	0.8-
1992 09 04	033	1.2-	0.2-	1999 07 16	704	0.3-	0.4-	1999 09 09	704	0.5-	1.0-
1992 09 04	033	1.0+	1.3-	1999 07 16	704	0.8+	1.2+	1999 09 09	704	0.7-	1.0-
1992 09 06	033	0.2+	0.0	1999 08 07	699	0.1+	0.4+	1999 09 13	704	0.3-	0.2+
1992 09 07	033	(2.7-	0.5+)	1999 08 07	699	0.4-	0.6+	1999 09 13	704	0.2+	0.0
1992 09 21	033	1.7+	1.5-	1999 08 07	699	0.5-	0.5+	1999 09 13	704	0.4-	0.4-
1992 09 22	033	0.2-	0.6+	1999 09 07	704	0.3+	0.1+	1999 09 13	704	0.0	0.1-
1992 09 23	033	1.1+	0.2-	1999 09 07	704	0.2+	0.2+	1999 09 13	704	0.1-	0.4-
1992 09 24	033	0.9+	0.0	1999 09 07	704	0.2+	0.5+	1999 09 14	682	0.7+	0.5+
1992 09 26	033	0.6-	0.7+	1999 09 07	704	0.7+	0.3-	1999 09 14	682	0.5-	0.8+
1992 09 27	033	0.5-	1.0+	1999 09 07	704	1.7+	0.6+	1999 09 14	682	0.1-	0.7+

1992 RT₅ = 1999 RQ₁₆₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	36.55155	(2000.0)	P		Q	
<i>n</i>	0.27982272	ω	272.27939	+0.19588463	+0.98039608	
<i>a</i>	2.3149808	Ω	9.10097	-0.83774940	+0.17858297	
<i>e</i>	0.2031157	<i>i</i>	7.73083	-0.50971085	+0.08325653	
<i>P</i>	3.52	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1992 09 02	809	(0.1+	3.1-)	1999 09 07	704	0.4+	0.0	1999 09 09	704	0.2+	0.2+
1992 09 02	809	(0.7+	2.7-)	1999 09 07	699	1.5+	0.5+	1999 09 09	704	0.5-	0.4-
1992 09 02	809	(0.1+	2.5-)	1999 09 07	704	0.1-	0.3+	1999 09 10	704	0.7+	0.6+
1992 09 03	809	0.3-	2.0-	1999 09 07	704	0.5-	0.5+	1999 09 10	704	1.1+	1.2+
1992 09 22	809	0.3+	0.6+	1999 09 07	699	0.1-	0.1+	1999 09 10	704	0.0	0.4-
1992 09 22	809	0.0	0.0	1999 09 07	704	0.0	0.3+	1999 09 11	704	0.3-	0.3+
1992 09 22	809	0.8+	0.5+	1999 09 07	704	0.3-	1.0+	1999 09 11	704	0.3+	0.1+
1992 09 23	809	1.1-	0.0	1999 09 08	703	0.9-	0.0	1999 09 11	704	0.1-	0.1-

1992 09 23	809	0.3+	0.3+	1999 09 08	703	0.1+	0.1+	1999 09 11	704	0.2+	0.2+
1992 09 23	809	0.2+	0.3+	1999 09 08	703	0.2+	0.3-	1999 09 11	704	0.0	0.3+
1996 10 07	327	0.0	0.2+	1999 09 08	703	0.9-	0.3-	1999 09 13	704	0.3-	0.4-
1996 10 07	327	0.1-	0.2-	1999 09 09	704	0.9-	0.8-	1999 09 13	704	0.4-	0.9-
1996 10 07	327	0.0	0.0	1999 09 09	704	0.6-	0.0	1999 09 13	704	0.4+	0.2-
1999 09 07	699	0.5+	0.0	1999 09 09	704	0.6-	0.5-	1999 09 13	704	0.7+	1.4-

1992 SY₁₂ = 1999 RW₁₈₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	326.11843	(2000.0)	P		Q	
<i>n</i>	0.27850868	ω	24.64813	+0.86807777	-0.49618870	
<i>a</i>	2.3222567	Ω	5.17963	+0.42241649	+0.72198417	
<i>e</i>	0.2103360	<i>i</i>	9.83441	+0.26077825	+0.48221950	
<i>P</i>	3.54	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1992 09 27	046	(8.3+	0.6+)	1998 04 29	566	0.0	0.1+	1999 09 09	704	0.2-	0.0
1992 09 27	046	(10.3+	1.9-)	1998 04 29	566	0.2+	0.1+	1999 09 09	704	0.1-	0.2+
1992 09 28	400	1.0+	0.3-	1998 04 29	566	0.2-	0.2-	1999 09 09	704	0.1+	0.1+
1992 09 28	400	0.5+	0.2+	1999 09 05	699	0.8+	0.8+	1999 09 11	699	0.3+	0.1-
1992 10 01	400	0.3-	0.1-	1999 09 05	699	0.4+	0.8+	1999 09 11	699	0.1-	0.4+
1992 10 01	400	0.9-	1.5-	1999 09 05	699	0.8+	0.0	1999 09 11	699	0.5-	0.2+
1992 10 02	675	0.7-	0.4-	1999 09 07	704	0.3+	0.1-	1999 09 14	704	0.3-	0.2-
1992 10 02	675	0.3-	0.2+	1999 09 07	704	0.2+	0.1+	1999 09 14	704	0.4-	0.1-
1992 10 02	400	0.1+	0.0	1999 09 07	704	0.3+	0.2-	1999 09 14	704	0.2-	0.4-
1992 10 02	400	0.6+	1.2+	1999 09 07	704	0.1+	0.4-	1999 09 14	704	0.2-	0.1-
1992 10 28	400	0.1-	0.2+	1999 09 09	704	0.5-	0.4-	1999 09 14	704	0.5-	0.0
1992 10 28	400	0.3+	0.3+	1999 09 09	704	0.5-	0.3-				

1992 SA₁₇ = 1999 PA₁

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	256.23948	(2000.0)	P		Q	
<i>n</i>	0.28654528	ω	249.94970	-0.40216690	-0.91552854	
<i>a</i>	2.2786304	Ω	223.76696	+0.84444761	-0.36739967	
<i>e</i>	0.0790926	<i>i</i>	0.68939	+0.35379375	-0.16378329	
<i>P</i>	3.44	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i> 6

Residuals in seconds of arc

1992 09 21	033	0.9+	0.6+	1999 08 07	557	0.3-	0.2+	1999 08 14	557	0.4+	0.3+
1992 09 21	033	0.8+	1.2-	1999 08 07	557	0.6-	0.5+	1999 08 20	557	0.0	0.2+
1992 09 22	033	0.0	0.5-	1999 08 07	557	0.6-	0.1+	1999 08 20	557	0.1-	0.3+
1992 09 24	033	0.0	0.9+	1999 08 08	557	0.3+	0.3+	1999 08 21	557	0.0	0.4-
1992 09 24	033	0.5-	0.7+	1999 08 09	557	0.6-	0.3+	1999 08 22	557	0.1+	0.2+
1992 09 26	033	0.2+	0.3-	1999 08 09	557	0.2-	0.4-	1999 08 22	557	0.3+	0.5-
1992 09 27	033	0.2-	0.6-	1999 08 14	557	0.9+	0.5-	1999 09 03	557	0.3-	0.1+
1992 09 28	033	0.9-	0.4-	1999 08 14	557	0.7+	0.5+	1999 09 03	557	0.3-	0.1-

1992 WQ₁ = 1999 NB₅₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	229.70847	(2000.0)	P		Q	
<i>n</i>	0.23897867	ω	175.04560	+0.49686755	-0.79982943	
<i>a</i>	2.5717572	Ω	244.79010	+0.78288279	+0.58054302	
<i>e</i>	0.0531490	<i>i</i>	21.85090	+0.37445583	-0.15245550	
<i>P</i>	4.12	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1992 11 18	877	0.1+	0.3-	1992 11 25	675	0.6+	0.1-	1999 06 14	704	0.1-	0.5-
1992 11 18	877	1.0+	0.1-	1992 11 28	675	0.1-	0.3-	1999 07 13	704	0.4+	0.2+
1992 11 21	877	1.4+	0.7+	1992 11 28	675	0.1+	0.0	1999 07 13	704	0.1+	0.0
1992 11 21	877	0.8+	0.3+	1992 12 04	877	(0.0	5.0+)	1999 07 13	704	0.4+	0.2+
1992 11 22	877	0.9-	0.5-	1992 12 04	877	(2.6+	7.0+)	1999 07 13	704	0.6+	0.8+
1992 11 22	877	1.6-	0.7-	1999 06 14	704	0.5-	0.5-	1999 07 13	704	0.6+	0.3+
1992 11 23	877	0.8-	1.0+	1999 06 14	704	0.6+	0.0	1999 07 22	704	0.2+	0.0

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1992 11 23	877	1.0−	0.6+	1999 06 14	704	0.3−	0.4+	1999 07 22	704	0.2+	0.2−
1992 11 25	675	0.4+	0.5−	1999 06 14	704	0.6−	0.1+	1999 07 22	704	1.5−	0.9−

1992 WV₁ = 1999 RX₁₅₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	284.76511		(2000.0)		P	Williams	Q	
<i>n</i>	0.26749822	ω	13.93708	+0.30516545	−0.95074119			
<i>a</i>	2.3855515	Ω	58.32007	+0.86747257	+0.25393616			
<i>e</i>	0.1894053	<i>i</i>	3.66878	+0.39289360	+0.17778532			
<i>P</i>	3.68	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	5	

Residuals in seconds of arc

1992 10 25	675	0.3−	0.4−	1999 09 07	704	0.6+	0.2−	1999 09 09	704	0.2−	0.4+
1992 10 25	675	1.1+	0.0	1999 09 07	704	0.5+	0.3−	1999 09 09	704	0.4+	0.6+
1992 11 16	399	0.3−	0.1−	1999 09 07	699	0.1+	0.4+	1999 09 09	704	0.1+	0.4−
1992 11 16	399	1.3−	1.0+	1999 09 07	704	0.3−	0.2+	1999 09 09	704	0.2−	0.6+
1992 11 17	400	0.2+	1.1−	1999 09 07	704	0.2+	0.2−	1999 09 09	704	1.0+	0.5−
1992 11 17	400	1.4+	0.7−	1999 09 07	699	0.0	0.1+	1999 09 13	704	0.3−	1.1−
1992 11 18	399	0.8−	1.5+	1999 09 07	704	0.1−	1.0−	1999 09 13	704	0.4+	0.3−
1992 11 18	399	0.4−	0.5−	1999 09 08	703	0.9−	0.0	1999 09 13	704	0.0	0.5+
1992 11 27	399	1.2+	1.4−	1999 09 08	703	0.4−	0.1+	1999 09 13	704	0.3−	0.6−
1992 11 27	399	0.7−	1.6+	1999 09 08	703	0.6−	0.2+				
1999 09 07	699	0.3+	0.2+	1999 09 08	703	0.6−	1.5+				

1993 BG₃ = 1984 EB₁ = 1999 RB₅₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	88.26057		(2000.0)		P	Williams	Q	
<i>n</i>	0.21188181	ω	72.89273	−0.84462489	+0.52714369			
<i>a</i>	2.7865933	Ω	138.78799	−0.52909203	−0.79530684			
<i>e</i>	0.2148014	<i>i</i>	8.15210	−0.08167262	−0.29934355			
<i>P</i>	4.65	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	1	

Residuals in seconds of arc

1984 03 09	688	(3.0+	4.2−)	1993 02 17	809	(3.8−	0.4−)	1999 07 16	704	0.3−	0.5−
1984 03 09	688	0.5−	1.5−	1993 02 21	400	1.3−	1.2+	1999 08 07	699	0.4−	1.0+
1993 01 22	809	0.7+	1.1−	1993 02 21	400	0.4−	0.2−	1999 08 07	699	1.0−	0.1+
1993 01 22	809	0.6+	1.3−	1998 01 28	566	0.2−	0.3−	1999 08 07	699	0.4−	0.1−
1993 01 22	809	0.0	0.9−	1998 01 28	566	0.4−	0.6−	1999 09 07	704	0.2−	0.8−
1993 01 23	400	(2.4−	4.4+)	1998 01 28	566	0.4−	0.5−	1999 09 07	704	0.0	0.4−
1993 01 23	400	(2.9−	3.9+)	1998 02 27	566	0.1+	0.6+	1999 09 07	704	0.1+	0.4−
1993 01 24	400	(3.4−	0.3+)	1998 02 27	566	0.1+	0.2+	1999 09 07	704	0.6+	0.5−
1993 01 24	400	1.6−	0.4+	1998 02 27	566	0.1−	0.2+	1999 09 07	704	0.1−	1.2−
1993 01 28	809	0.9+	0.1+	1998 04 29	566	0.3+	0.4−	1999 09 13	704	0.8+	0.9−
1993 01 28	809	0.8+	0.3−	1998 04 29	566	0.1+	0.1−	1999 09 13	704	0.5+	0.5−
1993 01 28	809	0.2−	1.1−	1998 04 29	566	0.1−	0.4−	1999 09 13	704	0.4+	1.4−
1993 02 17	809	(2.3−	1.6−)	1999 07 16	704	0.4+	0.3−	1999 09 13	704	0.2+	0.5+
1993 02 17	809	(2.9−	1.5−)	1999 07 16	704	0.7+	0.3−	1999 09 13	704	0.0	0.5−

1993 CS₁ = 1999 RX₆₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	220.23628		(2000.0)		P	Williams	Q	
<i>n</i>	0.24025687	ω	94.47656	−0.56884124	−0.82221374			
<i>a</i>	2.5626277	Ω	30.21943	+0.73829543	−0.52099483			
<i>e</i>	0.1698642	<i>i</i>	2.23192	+0.36240792	−0.22919196			
<i>P</i>	4.10	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	5	

Residuals in seconds of arc

1993 02 10	399	0.0	0.2−	1993 02 23	010	1.2−	1.3−	1999 09 07	704	0.4+	0.5−
1993 02 10	399	0.1−	0.4−	1995 08 26	809	0.6−	0.0	1999 09 07	704	0.0	1.1−
1993 02 13	399	(4.3−	1.8+)	1995 08 27	809	0.3+	0.1−	1999 09 09	704	1.3+	0.5+
1993 02 13	399	(3.2−	1.7+)	1995 08 30	809	0.5+	0.2−	1999 09 09	704	0.2+	0.3+
1993 02 21	399	0.9+	1.2+	1999 09 07	704	0.9−	1.4+	1999 09 09	704	0.8−	0.9+
1993 02 21	399	0.7+	1.5+	1999 09 07	704	0.4+	0.4−	1999 09 09	704	0.3+	0.8+
1993 02 22	010	0.4−	0.7−	1999 09 07	704	1.0−	1.3−				

1993 FQ₂₀ = 1999 RF₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	283.11864		(2000.0)		P	Williams	Q	
<i>n</i>	0.24340049	ω	317.49321	−0.04066541	−0.99780995			
<i>a</i>	2.5405149	Ω	134.76303	+0.93533868	−0.05637854			
<i>e</i>	0.1879450	<i>i</i>	4.21361	+0.35140841	+0.03459416			
<i>P</i>	4.05	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	5	

Residuals in seconds of arc

1993 03 19	809	0.9−	0.4−	1999 09 07	704	0.6+	0.9−	1999 09 09	704	0.0	0.2−
1993 03 20	809	0.8+	0.4−	1999 09 07	704	0.3−	0.5−	1999 09 09	704	0.0	0.1+
1993 03 23	809	(1.1+	2.3+)	1999 09 08	704	1.8−	0.6−	1999 09 09	704	0.3−	0.5+
1993 03 24	691	0.2−	0.3+	1999 09 08	704	0.5−	0.2+	1999 09 09	704	0.1+	0.1+
1993 03 24	691	0.4−	0.4+	1999 09 08	704	0.1−	0.0	1999 09 14	704	0.2+	0.2+
1993 03 24	691	0.8+	0.3−	1999 09 08	704	0.3−	0.0	1999 09 14	704	0.1−	0.6+
1993 04 16	413	0.1−	0.4+	1999 09 08	704	0.7+	0.7−	1999 09 14	704	0.2+	0.2+
1999 09 07	704	0.7+	0.6+	1999 09 08	888	0.7−	0.7−	1999 09 14	704	0.6+	0.2+
1999 09 07	704	0.3−	1.4+	1999 09 08	888	0.2+	0.7−	1999 09 14	704	0.0	0.6+
1999 09 07	704	0.9+	0.8−	1999 09 09	704	0.1−	0.2+				

1993 HY₅ = 1999 RX₄₀

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	41.31883		(2000.0)		P	Williams	Q	
<i>n</i>	0.36685508	ω	128.95781	+0.50658058	+0.85973221			
<i>a</i>	1.9325898	Ω	170.76811	−0.86168028	+0.50743696			
<i>e</i>	0.0354515	<i>i</i>	23.93614	−0.02971887	−0.05803676			
<i>P</i>	2.69	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	3	

Residuals in seconds of arc

1993 04 19	675	0.1+	1.4+	1999 07 23	704	0.5+	0.3+	1999 09 14	704	0.1−	0.4−
1993 04 19	675	1.5−	0.4−	1999 07 23	704	0.4+	0.4+	1999 09 14	704	0.1−	0.3−
1993 04 19	675	0.5+	0.5−	1999 07 23	704	0.5+	0.3+	1999 09 14	704	0.2−	0.4−
1993 05 23	675	0.5−	0.6+	1999 07 23	704	0.5+	0.2+	1999 09 14	704	0.1−	0.4−
1993 05 23	675	0.3+	1.1−	1999 07 23	704	0.8+	0.6+	1999 09 14	704	0.5−	0.5−
1993 05 24	675	0.9+	0.1−	1999 09 07	704	0.2+	0.4+	1999 09 14	703	0.0	0.1+
1993 05 26	675	0.6+	0.8−	1999 09 07	704	0.0	0.4+	1999 09 14	703	0.5−	0.1−
1998 03 19	699	0.3−	0.6−	1999 09 07	704	0.0	0.1+	1999 09 14	703	0.4−	0.5−
1998 03 19	699	0.1+	0.3+	1999 09 07	704	0.2+	0.4+	1999 09 14	703	0.1−	0.8−
1998 03 19	699	0.2+	0.1−	1999 09 07	704	0.1+	0.1+				

1993 OF₉ = 1983 RQ₇ = 1984 WM₂Id. G. V. Williams (*MPC* 22959, unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	106.04670		(2000.0)		P	Williams	Q	
<i>n</i>	0.18791156	ω	299.27660	−0.47699670	+0.86893551			
<i>a</i>	3.0187956	Ω	301.64681	−0.74297188	−0.47888706			
<i>e</i>	0.0431603	<i>i</i>	8.92043	−0.46953906	−0.12497310			
<i>P</i>	5.25	<i>H</i>	12.4	<i>G</i>	0.15	<i>U</i>	1	

Residuals in seconds of arc

1983 09 11	095	1.8−	0.4−	1999 07 23	704	0.7+	0.7−	1999 09 09	704	0.2−	0.6+
1984 11 20	675	0.8+	0.8−	1999 07 23	704	1.4+	0.8−	1999 09 10	704	0.6+	0.2+
1984 11 21	675	1.0+	0.9−	1999 07 23	704	0.1+	0.9+	1999 09 10	704	0.4−	0.2−
1991 01 19	675	0.1−	0.5+	1999 09 08	699	1.0−	0.3+	1999 09 10	704	0.0	0.4+
1991 01 19	675	1.2+	0.2−	1999 09 08	704	0.2−	0.6+	1999 09 10	704	0.1+	0.3+
1991 02 07	675	1.8−	0.5−	1999 09 08	699	0.3−	0.3+	1999 09 10	704	0.1+	0.1+
1993 07 20	809	(0.6−	2.4+)	1999 09 08	704	0.1−	0.4+	1999 09 11	704	0.3+	0.4+
1993 07 20	809	(0.6−	2.6+)	1999 09 08	704	0.5−	0.0	1999 09 11	704	0.0	0.3+
1993 07 20	809	(0.7−	2.4+)	1999 09 08	704	0.6−	0.1+	1999 09 11	704	0.2+	0.1+
1993 07 24	809	0.2+	0.5+	1999 09 08	699	0.6−	0.2+	1999 09 11	704	0.1−	0.0
1993 07 26	809	(2.0+	1.4−)	1999 09 08	704	0.5−	0.2+	1999 09 11	704	0.2+	0.3+
1993 07 26	809	1.3+	0.6−	1999 09 08	012	0.4−	0.2−	1999 09 15	012	0.1+	0.2−
1993 07 26	809	1.0+	0.4−	1999 09 08	012	0.4−	0.2−	1999 09 15	012	0.1+	0.1−
1998 05 28	704	1.5−	0.0	1999 09 08	012	0.5−	0.3−	1999 09 15	012	0.0	0.2−

M.P.C. 35918

1998 05 28	704	0.1+	0.1−	1999 09 08	012	0.2−	0.3−	1999 09 15	012	0.0	0.3−
1998 05 28	704	0.5−	0.3−	1999 09 08	012	0.5−	0.2−	1999 09 15	012	0.0	0.4−
1998 05 28	704	1.1+	0.5−	1999 09 09	704	0.4−	0.2−	1999 09 16	704	0.4+	0.2−
1998 05 28	704	(6.3−	1.7+)	1999 09 09	704	0.2+	0.2+	1999 09 16	704	1.1+	0.2−
1999 07 23	704	0.3+	0.9−	1999 09 09	704	0.1+	0.3+	1999 09 16	704	0.3+	0.1+
1999 07 23	704	0.7+	0.2−	1999 09 09	704	0.4−	0.1+	1999 09 16	704	0.3+	0.2−

1993 OY₉ = 1999 RK₂₀₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
<i>M</i>	300.09993			(2000.0)		P			Q		
<i>n</i>	0.19093859	ω	126.51144			+0.38625565			−0.91187885		
<i>a</i>	2.9868053	Ω	300.20505			+0.78657098			+0.40426027		
<i>e</i>	0.0952785	<i>i</i>	9.24641			+0.48178072			+0.07106752		
<i>P</i>	5.16	<i>H</i>	13.1		<i>G</i>	0.15		<i>U</i>	5		
Residuals in seconds of arc											
1993 07 13	809	0.6−	0.5−	1993 07 26	809	2.1+	0.0	1999 09 08	704	0.2−	0.2+
1993 07 13	809	0.3−	0.2+	1993 07 26	809	0.1+	0.2+	1999 09 18	704	0.0	0.1+
1993 07 13	809	0.4−	0.3−	1993 07 26	809	0.4+	0.6+	1999 09 18	704	0.1+	0.3−
1993 07 20	809	0.9−	0.4+	1999 09 08	704	0.2+	0.3+	1999 09 18	704	0.0	0.3+
1993 07 20	809	0.3−	0.1−	1999 09 08	704	0.0	0.0	1999 09 18	704	0.1+	0.1+
1993 07 20	809	0.7−	0.2+	1999 09 08	704	0.2−	0.3−	1999 09 18	704	0.2+	0.2−
1993 07 24	809	0.6+	0.7−	1999 09 08	704	0.2−	0.2−				

1993 QM₄ = 1998 WX₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
<i>M</i>	39.84945			(2000.0)		P			Q		
<i>n</i>	0.22597240	ω	72.38791			+0.11698555			−0.99311248		
<i>a</i>	2.6695155	Ω	10.90003			+0.89769839			+0.10295094		
<i>e</i>	0.0590119	<i>i</i>	1.96364			+0.42479639			+0.05593484		
<i>P</i>	4.36	<i>H</i>	14.1		<i>G</i>	0.15		<i>U</i>	4		
Residuals in seconds of arc											
1993 08 15	809	0.4+	0.4+	1996 03 24	809	(2.8+	0.7+)	1998 11 24	704	0.1−	1.5−
1993 08 15	809	0.0	0.9+	1996 03 24	809	0.8+	0.2+	1998 11 24	704	0.6−	1.0−
1993 08 15	809	0.6−	0.2+	1996 03 24	809	0.4−	0.8+	1998 11 25	699	0.5+	0.8+
1993 08 18	010	0.2−	0.8−	1998 11 09	327	0.6−	0.5+	1998 11 25	699	0.0	0.4+
1993 08 19	010	1.6+	1.7−	1998 11 09	327	0.5−	0.7+	1998 11 25	699	0.2+	0.5+
1993 08 19	010	(0.9+	2.8−)	1998 11 09	327	0.1−	0.4+	1998 12 11	699	0.5+	0.4−
1993 08 19	010	(1.0+	2.6−)	1998 11 21	704	0.5+	0.9−	1998 12 11	699	0.7−	1.5+
1993 08 20	809	(2.3+	0.9+)	1998 11 21	704	0.5+	0.9−	1998 12 11	699	0.5−	0.2+
1993 08 20	809	0.6+	0.7+	1998 11 21	704	0.7−	1.4−	1998 12 14	704	0.7−	0.9+
1993 08 20	809	1.1+	0.9+	1998 11 21	704	(0.2+	3.5−)	1998 12 14	704	0.3+	0.6+
1993 08 24	809	0.5−	0.3+	1998 11 21	704	(0.2−	2.6−)	1998 12 14	704	1.3+	0.6−
1993 08 24	809	1.2−	0.0	1998 11 24	704	0.4+	0.1−	1998 12 14	704	(2.7−	1.2+)
1993 08 24	809	1.4−	0.4−	1998 11 24	704	0.7+	0.1+	1998 12 14	704	0.8−	1.0+

1993 QH₈ = 1992 LF₂ = 1999 RK₉₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
<i>M</i>	69.22935			(2000.0)		P			Q		
<i>n</i>	0.17159078	ω	193.85069			+0.10518065			+0.99332335		
<i>a</i>	3.2073037	Ω	82.20253			−0.90777767			+0.11536185		
<i>e</i>	0.1263132	<i>i</i>	2.74159			−0.40605017			−0.00060217		
<i>P</i>	5.74	<i>H</i>	13.3		<i>G</i>	0.15		<i>U</i>	4		
Residuals in seconds of arc											
1992 06 03	809	0.5+	0.6+	1993 08 20	809	1.3+	0.0	1999 09 07	704	0.8−	0.1−
1992 06 03	809	0.0	0.3+	1993 08 24	809	0.5+	2.0−	1999 09 07	704	0.2−	0.1−
1992 06 03	809	0.3−	0.2+	1993 08 24	809	0.5+	1.8−	1999 09 07	704	1.2−	0.4−
1993 08 15	809	1.3−	0.2+	1993 08 24	809	0.1−	1.7−	1999 09 14	704	0.5−	0.9+
1993 08 15	809	1.1−	0.2+	1993 09 21	675	0.8−	0.6+	1999 09 14	704	0.3+	0.0
1993 08 15	809	2.2−	0.5−	1993 09 21	675	0.1+	2.0+	1999 09 14	704	0.0	0.7+
1993 08 20	809	1.9+	0.3−	1999 09 07	704	0.7−	0.2+	1999 09 14	704	0.9+	0.8+
1993 08 20	809	2.2+	0.7+	1999 09 07	704	0.4+	0.5+	1999 09 14	704	0.5+	0.3+

1999 SEPT. 28

1993 SE₃ = 1990 UU₁₃ = 1998 FD₁₃₂

Id. A. Doppler											
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
<i>M</i>	306.86131			(2000.0)		P			Q		
<i>n</i>	0.31597579	ω	160.97623			+0.96362099			−0.26600401		
<i>a</i>	2.1348474	Ω	214.48398			+0.23887633			+0.90080386		
<i>e</i>	0.1502145	<i>i</i>	2.63295			+0.11988613			+0.34321172		
<i>P</i>	3.12	<i>H</i>	15.4		<i>G</i>	0.15		<i>U</i>	3		
Residuals in seconds of arc											
1990 10 27	399	0.1−	1.0−	1993 09 22	809	0.7−	0.4+	1998 03 20	704	0.5+	0.1+
1990 10 27	399	0.2+	0.5−	1993 09 23	675	0.0	0.3+	1998 03 26	704	0.2−	1.1−
1993 09 18	033	1.5−	0.1−	1993 09 23	675	0.2+	0.3+	1998 03 26	704	0.3−	0.3+
1993 09 18	033	0.9+	0.0	1998 02 28	809	0.7+	1.4+	1998 03 26	704	1.6−	0.5+
1993 09 19	675	0.4+	0.1+	1998 03 02	910	0.4+	0.8−	1999 07 13	704	0.4+	0.2+
1993 09 19	675	0.5+	0.1−	1998 03 02	910	0.2+	1.0−	1999 07 13	704	0.6+	0.1+
1993 09 19	400	0.1+	0.0	1998 03 02	910	0.2+	1.0−	1999 07 13	704	0.1+	0.1−
1993 09 19	400	1.7+	1.4−	1998 03 02	809	(6.2−	3.2+)	1999 07 13	704	0.3+	0.4−
1993 09 20	033	1.1+	0.6−	1998 03 20	704	0.8+	1.7+	1999 07 13	704	0.3+	0.1−
1993 09 22	033	0.7−	0.1+	1998 03 20	704	(0.0	2.1−)	1999 07 21	699	0.5−	0.3+
1993 09 22	809	0.7−	0.8+	1998 03 20	704	0.4+	1.3−	1999 07 21	699	0.9−	0.8−
1993 09 22	809	1.0−	1.0+	1998 03 20	704	1.5−	0.4−	1999 07 21	699	0.3−	0.4−

1993 TF₃₄ = 1999 NX₂₈

Id. A. Doppler											
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
<i>M</i>	305.36679			(2000.0)		P			Q		
<i>n</i>	0.30989786	ω	272.55181			+0.96057863			−0.27330059		
<i>a</i>	2.1626704	Ω	103.31250			+0.27131752			+0.88162255		
<i>e</i>	0.1394518	<i>i</i>	3.00096			+0.06062591			+0.38477067		
<i>P</i>	3.18	<i>H</i>	15.2		<i>G</i>	0.15		<i>U</i>	2		
Residuals in seconds of arc											
1993 10 09	809	0.1+	0.3+	1995 03 26	691	(5.7+	0.0)	1998 03 29	704	(2.9−	0.3−)
1993 10 09	809	1.0−	0.0	1998 02 28	809	(1.3−	3.8−)	1998 03 29	704	1.6+	1.6−
1993 10 09	809	0.7−	1.2+	1998 02 28	809	(1.7−	3.8−)	1999 07 14	704	0.3+	0.3−
1993 10 11	809	1.4+	0.2−	1998 02 28	809	(3.7−	3.1−)	1999 07 14	704	0.4−	0.1−
1993 10 11	809	1.3+	0.5−	1998 03 22	704	0.8−	0.6+	1999 07 14	704	0.0	0.4+
1993 10 11	809	1.0+	0.2−	1998 03 22	704	1.1+	0.1−	1999 07 14	704	0.5−	0.3+
1993 10 11	809	(1.9−	3.3−)	1998 03 22	704	0.7−	0.7−	1999 07 14	704	0.1+	0.6+
1993 10 11	809	(2.2−	2.3−)	1998 03 22	704	1.8−	0.1+	1999 07 16	704	0.5−	0.1−
1993 10 11	809	(2.6−	2.5−)	1998 03 22	704	(5.0−	0.3+)	1999 07 16	704	0.2−	0.2+
1993 10 21	809	0.5−	0.4−	1998 03 26	704	0.5+	1.0+	1999 07 16	704	0.0	0.5−
1993 10 21	809	0.1−	0.6−	1998 03 26	704	0.4+	0.3−	1999 07 16	704	0.4+	1.2−
1993 10 21	809	0.9−	1.0−	1998 03 26	704	(2.7−	2.6+)	1999 07 22	704	0.0	1.0−
1995 03 26	691	0.4−	0.7−	1998 03 29	704	0.3−	0.1−	1999 07 22	704	0.6+	0.5+
1995 03 26	691	0.3−	1.0−	1998 03 29	704	0.1−	0.9+	1999 07 22	704	0.3+	0.4+

1994 AT = 1999 RJ₁₈₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
<i>M</i>	288.10819			(2000.0)		P			Q		

1999 SEPT. 28

1994 01 14	411	(0.2– 2.3+)	1999 09 07	704	0.2– 0.3+	1999 09 11	699	0.3+ 0.6+
1994 01 14	411	0.1– 0.7–	1999 09 07	704	0.1– 0.5–	1999 09 14	704	0.2– 0.7+
1994 01 14	411	0.8+ 0.9+	1999 09 07	704	0.1+ 1.3–	1999 09 14	704	0.5– 0.3–
1994 02 01	411	(0.3– 3.9–)	1999 09 07	704	0.0 0.4–	1999 09 14	704	1.2– 0.3–
1994 02 01	411	0.2– 1.9–	1999 09 07	704	0.0 0.2+	1999 09 14	704	0.4– 0.1+

1994 BG₄ = 1999 RD₁₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26854598	<i>ω</i>	305.76459	−0.79051928	+0.60342173		
<i>a</i>	2.3793424	<i>Ω</i>	271.58200	−0.52265812	−0.75381135		
<i>e</i>	0.0706395	<i>i</i>	6.01202	−0.31922995	−0.26009741		
<i>P</i>	3.67	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 01 16	010	0.9+ 1.0+	1998 04 28	566	0.5– 0.1–	1999 09 08	703	0.3– 0.3–
1994 01 16	010	1.8+ 0.6+	1998 04 28	566	0.3– 0.1–	1999 09 08	703	0.7– 0.1–
1994 01 17	010	0.1– 1.4+	1998 04 28	566	0.0 0.1–	1999 09 09	704	0.2+ 0.3–
1994 01 17	010	0.6+ 0.3+	1999 07 13	704	0.4+ 0.3+	1999 09 09	704	0.9+ 0.3–
1994 01 17	010	0.5– 1.2+	1999 07 13	704	0.8– 0.1+	1999 09 09	704	0.1+ 0.0
1994 01 30	010	0.2– 0.6–	1999 07 13	704	0.1+ 0.0	1999 09 09	704	0.4+ 0.9–
1994 01 30	010	1.2– 1.4–	1999 07 13	704	0.3– 0.7+	1999 09 09	704	0.6– 0.5+
1994 01 31	010	0.7+ 1.0–	1999 07 13	704	0.7– 0.0	1999 09 14	704	0.5+ 0.4–
1994 01 31	010	0.8– 0.3+	1999 09 06	699	0.3– 0.8+	1999 09 14	704	1.3+ 1.2–
1994 01 31	010	0.9– 1.4–	1999 09 06	699	0.9– 1.3+	1999 09 14	704	1.2+ 0.8–
1998 03 31	699	0.1+ 0.1–	1999 09 06	699	0.9– 0.6+	1999 09 14	704	0.7+ 1.5–
1998 03 31	699	0.6– 0.2+	1999 09 08	703	0.3– 0.9+	1999 09 14	704	0.8+ 0.1–
1998 03 31	699	1.0+ 0.2+	1999 09 08	703	0.9– 0.7+			

1994 CY₁ = 1982 YP = 1988 PT₃ = 1999 RJ₁₁₀

Id. G. V. Williams, S. Nakano, T. B. Spahr

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27718582	<i>ω</i>	299.85631	−0.48228394	+0.86788038		
<i>a</i>	2.3296394	<i>Ω</i>	300.83708	−0.74825868	−0.47882426		
<i>e</i>	0.0848937	<i>i</i>	7.97348	−0.45553391	−0.13232902		
<i>P</i>	3.56	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1982 12 22	511	0.2+ 0.5+	1999 07 23	704	0.2– 0.2+	1999 09 08	704	0.1– 0.3+
1982 12 23	511	(34.9+ 17.3+)	1999 07 23	704	0.4– 0.0	1999 09 08	704	0.4– 0.8–
1988 08 11	413	0.2+ 0.5–	1999 07 23	704	0.5– 1.4+	1999 09 09	704	0.5+ 0.0
1988 08 11	413	(4.6+ 0.1+)	1999 09 05	703	0.3– 0.2–	1999 09 09	704	0.7+ 0.5–
1994 02 08	400	(2.2– 2.7–)	1999 09 05	703	0.5– 0.4+	1999 09 09	704	0.4+ 0.1–
1994 02 08	400	0.8+ 0.0	1999 09 05	703	0.7+ 0.4+	1999 09 09	704	0.4+ 0.4–
1994 02 11	400	1.4– 1.2–	1999 09 05	703	1.5+ 0.7+	1999 09 09	704	0.2+ 0.5–
1994 02 11	400	0.4+ 0.3–	1999 09 06	703	(0.3+ 2.0+)	1999 09 18	704	0.0 0.1–
1994 03 07	400	(0.3+ 3.4+)	1999 09 06	703	1.3– 0.6+	1999 09 18	704	0.1– 0.5–
1994 03 07	400	0.2– 0.9+	1999 09 06	703	0.1– 1.6+	1999 09 18	704	0.0 0.1–
1994 03 12	400	(1.7– 3.7+)	1999 09 06	703	(5.4– 4.3–)	1999 09 18	704	0.4– 0.5–
1994 03 12	400	(2.2– 2.8+)	1999 09 08	704	0.2– 0.2–	1999 09 18	704	0.0 0.4–
1999 07 23	704	0.1– 0.2–	1999 09 08	704	0.4– 0.4–			
1999 07 23	704	0.5+ 0.3–	1999 09 08	704	0.0 0.1–			

1994 PQ₁₀

Id. E. Bowell (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20519240	<i>ω</i>	303.62748	+0.13585409	−0.99003442		
<i>a</i>	2.8468322	<i>Ω</i>	138.51447	+0.92651285	+0.11370123		
<i>e</i>	0.0112499	<i>i</i>	3.20954	+0.35088118	+0.08308960		
<i>P</i>	4.80	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4

M.P.C. 35919

Residuals in seconds of arc

1992 02 28	691	0.1– 0.4–	1994 09 06	809	0.9– 1.7–	1999 09 07	704	0.9– 1.4–
1992 02 28	691	0.1– 0.4–	1994 09 06	809	0.5– 1.5–	1999 09 09	704	0.6– 0.2–
1992 02 28	691	0.2– 0.3–	1999 08 12	699	1.1+ 0.8–	1999 09 09	704	1.2– 0.2–
1994 08 10	809	0.1+ 0.0	1999 08 12	699	0.5+ 0.9+	1999 09 09	704	0.1– 0.7–
1994 08 10	809	0.4– 0.1–	1999 08 12	699	1.2+ 1.8+	1999 09 09	704	0.8– 0.8–
1994 08 10	809	0.4– 0.5+	1999 08 22	703	0.3+ 0.6–	1999 09 09	704	0.8– 0.7–
1994 08 11	809	0.1+ 0.6+	1999 08 22	703	0.4+ 0.5–	1999 09 11	699	1.3+ 0.7+
1994 08 11	809	0.6+ 0.2+	1999 08 22	703	0.6+ 0.2+	1999 09 11	699	0.3+ 0.3+
1994 08 11	809	0.0 1.2+	1999 08 22	703	1.0+ 0.9+	1999 09 11	699	0.8+ 0.8+
1994 09 03	809	1.2+ 0.8+	1999 09 05	699	0.1+ 0.5+	1999 09 14	704	0.2+ 0.2+
1994 09 03	809	0.9+ 0.1–	1999 09 05	699	0.7– 0.3+	1999 09 14	704	0.2+ 0.4–
1994 09 03	809	0.0 0.1–	1999 09 05	699	0.1+ 0.4+	1999 09 14	704	0.1– 0.0
1994 09 04	809	0.6+ 0.2–	1999 09 07	704	0.8– 0.3+	1999 09 14	704	0.1– 0.4+
1994 09 04	809	0.2– 0.3–	1999 09 07	704	0.7– 0.1+	1999 09 14	704	0.3+ 0.1+
1994 09 04	809	0.1+ 0.1–	1999 09 07	704	0.7– 0.5–			
1994 09 06	809	0.4– 1.4–	1999 09 07	704	1.0– 0.4+			

1994 PF₁₅ = 1994 PB₃₂ = 1999 RL₁₂₀Id. G. V. Williams (d, *MPC* 24886; unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	34.92759	<i>ω</i>	322.97927	+0.26326931	+0.95934036		
<i>a</i>	2.9751613	<i>Ω</i>	321.98239	−0.84082561	+0.17646374		
<i>e</i>	0.0716720	<i>i</i>	9.51017	−0.47297100	+0.22028760		
<i>P</i>	5.13	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1994 08 10	809	1.7– 1.4+	1994 09 01	691	1.2– 0.6+	1999 08 07	699	0.6+ 0.4+
1994 08 10	809	1.0– 1.8+	1994 09 01	691	1.3– 0.6+	1999 08 07	699	0.0 1.0+
1994 08 10	809	1.7– 1.6+	1994 09 05	809	1.2+ 0.6+	1999 09 07	704	1.0– 1.3–
1994 08 11	809	(1.1+ 2.1+)	1994 09 05	809	0.9+ 0.0	1999 09 07	704	0.2– 0.2–
1994 08 11	809	(0.9+ 2.3+)	1994 09 05	809	0.2+ 0.3–	1999 09 07	704	0.6– 0.7–
1994 08 11	809	0.4– 1.8+	1994 09 06	809	1.5+ 1.3+	1999 09 09	704	0.2– 0.2–
1994 08 12	809	(1.5+ 2.4–)	1994 09 06	809	0.9– 0.9–	1999 09 09	704	1.0– 0.3+
1994 08 12	809	(0.7+ 2.2–)	1994 09 06	809	0.1– 1.1–	1999 09 09	704	0.6+ 0.4+
1994 08 12	809	1.4+ 1.9–	1999 08 03	691	0.1+ 0.3–	1999 09 13	704	0.1– 0.1+
1994 08 13	809	1.5+ 1.8–	1999 08 03	691	0.2+ 0.1–	1999 09 13	704	0.2+ 0.7+
1994 08 13	809	1.4+ 2.0–	1999 08 03	691	0.0 0.1–	1999 09 13	704	0.2+ 0.3+
1994 08 13	809	0.2+ 1.7–	1999 08 07	699	1.1+ 0.0			

1994 PV₁₈ = 1999 RY₁₅₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	275.16720	<i>ω</i>	124.40523	+0.28371176	−0.95845353		
<i>a</i>	2.9143306	<i>Ω</i>	309.08513	+0.86680644	+0.26952704		
<i>e</i>	0.0855091	<i>i</i>	2.18334	+0.41006614	+0.09339167		
<i>P</i>	4.98	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1994 08 12	809	0.6– 0.1+	1994 09 06	809	0.8– 1.1+	1999 09 09	704	0.3– 0.1–
1994 08 12	809	0.2+ 0.2+	1994 09 06	809	1.4– 0.7+	1999 09 09	704	0.7+ 0.9–
1994 08 12	809	0.1– 0.9–	1999 08 17	691	1.1+ 0.5+	1999 09 09	704	0.5– 0.5–
1994 08 13	809	1.0+ 0.2–	1999 08 17	691	1.1+ 0.4+	1999 09 09	704	0.3– 1.0–
1994 08 13	809	(2.3+ 0.8–)	1999 08 17	691	1.0+ 0.4+	1999 09 14	704	0.1+ 0.3–
1994 08 13	809	1.4+ 0.5–	1999 09 07	704	0.6– 0.9–	1999 09 14	704	0.8– 0.0
1994 09 05	809	0.4– 0.4+	1999 09 07	704	0.5– 0.4–	1999 09 14	704	0.8+ 1.0+
1994 09 05	809	0.1+ 0.9+	1999 09 07	704	0.3– 1.0–	1999 09 14	704	1.1+ 0.6–
1994 09 05	809	1.1– 0.2+	1999 09 07	704	0.8– 0.4–			
1994 09 06	809	0.1+ 1.7+	1999 09 07	704	0.2– 0.2+			

1994 PM₂₀ = 1999 RY₁₄₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	317.88721	(2000.0)	P		Q	
<i>n</i>	0.19484028	ω	209.98032	+0.91456967	-0.40441534	
<i>a</i>	2.9467970	Ω	173.87149	+0.37684150	+0.84924186	
<i>e</i>	0.1173055	<i>i</i>	1.74362	+0.14680874	+0.33946500	
<i>P</i>	5.06	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i> 6

Residuals in seconds of arc

1994 08 12	809	(8.5+ 2.8+)	1994 09 06	809	1.0- 0.1-	1999 09 09	704	0.2- 0.2+
1994 08 12	809	(8.7+ 2.4+)	1994 09 06	809	0.9- 0.5+	1999 09 09	704	0.5- 0.7+
1994 08 12	809	(8.0+ 3.0+)	1994 09 06	809	0.8- 0.1-	1999 09 09	704	0.4- 1.8+
1994 08 13	809	(9.1+ 2.5+)	1999 09 07	704	0.1- 0.5-	1999 09 13	704	0.5+ 0.5+
1994 08 13	809	(7.9+ 2.7+)	1999 09 07	704	0.3+ 0.6-	1999 09 13	704	0.6+ 1.8-
1994 08 13	809	(8.3+ 3.2+)	1999 09 07	704	0.5- 0.5-	1999 09 13	704	0.4- 0.5+
1994 09 05	809	1.3+ 0.3+	1999 09 07	704	0.0 0.1-	1999 09 13	704	0.0 0.3-
1994 09 05	809	0.7+ 0.0	1999 09 07	704	1.1+ 0.0			
1994 09 05	809	0.6+ 0.6-	1999 09 09	704	0.3- 0.1-			

1994 PG₂₂ = 1999 RE₂₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	99.35769	(2000.0)	P		Q	
<i>n</i>	0.21253748	ω	273.49202	-0.25239991	+0.96520009	
<i>a</i>	2.7808594	Ω	341.44785	-0.78025336	-0.24484293	
<i>e</i>	0.1054240	<i>i</i>	12.42049	-0.57227526	-0.09187344	
<i>P</i>	4.64	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1994 08 12	809	0.8+ 0.0	1994 09 05	809	0.1- 1.2-	1999 09 08	704	0.5- 1.4+
1994 08 12	809	1.5- 1.0+	1994 09 06	809	0.1- 1.2+	1999 09 18	704	0.5+ 0.2-
1994 08 12	809	0.6- 0.9-	1994 09 06	809	0.2- 0.7+	1999 09 18	704	0.4- 0.5-
1994 08 13	809	0.6+ 0.4-	1994 09 06	809	1.0+ 0.8+	1999 09 18	704	0.5+ 0.4+
1994 08 13	809	0.6+ 0.2-	1999 09 08	704	0.2- 0.1+	1999 09 18	704	0.1- 0.6-
1994 08 13	809	0.4- 0.1-	1999 09 08	704	0.4+ 0.0	1999 09 18	704	0.3- 0.3-
1994 09 05	809	0.4- 0.6-	1999 09 08	704	0.1- 0.3-			
1994 09 05	809	0.3+ 0.5-	1999 09 08	704	0.2+ 0.0			

1994 PN₂₂ = 1994 RW₂₁ = 1997 ES₅₁ = 1999 RA₁₅Id. S. Nakano (d, *MPC* 27543), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	295.31993	(2000.0)	P		Q	
<i>n</i>	0.19723328	ω	54.49283	+0.59535408	-0.80346329	
<i>a</i>	2.9229132	Ω	358.96886	+0.72748474	+0.53932979	
<i>e</i>	0.0956622	<i>i</i>	1.65682	+0.34105642	+0.25213116	
<i>P</i>	5.00	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1994 08 12	809	1.3+ 1.6-	1999 09 09	704	0.3- 0.2+	1999 09 11	704	0.3- 0.1+
1994 08 12	809	0.7+ 1.1-	1999 09 09	704	0.3+ 0.0	1999 09 11	704	0.3- 0.1+
1994 08 12	809	0.4+ 0.9-	1999 09 09	704	0.1- 0.2+	1999 09 11	704	0.7- 0.0
1994 08 13	809	(2.9+ 0.1-)	1999 09 09	704	0.2+ 0.4+	1999 09 11	704	0.2+ 0.1-
1994 08 13	809	1.6+ 0.4-	1999 09 09	704	0.5+ 0.1+	1999 09 11	704	0.1- 0.1-
1994 08 13	809	0.9+ 0.4-	1999 09 09	704	0.7- 0.4+	1999 09 11	704	0.2- 0.8+
1994 09 05	809	0.3- 1.7-	1999 09 09	704	0.3+ 0.4+	1999 09 11	704	0.8- 0.4+
1994 09 05	809	0.2- 1.1-	1999 09 09	704	0.2+ 0.3+	1999 09 11	704	0.4- 0.3+
1994 09 05	809	(2.6- 1.8-)	1999 09 09	704	0.2+ 0.7+	1999 09 11	704	0.1- 0.0
1994 09 06	809	0.1- 0.3-	1999 09 09	704	0.7+ 0.5+	1999 09 11	704	0.4- 0.5-
1994 09 06	809	0.0 0.3-	1999 09 09	704	0.5- 0.0	1999 09 11	704	0.5- 0.1-
1994 09 06	809	0.4- 0.6-	1999 09 09	704	0.3- 0.3+	1999 09 11	704	0.6- 0.1-
1997 03 05	809	1.6+ 0.5+	1999 09 09	704	0.0 0.6+	1999 09 11	704	0.3+ 0.1+
1997 03 05	809	1.6+ 0.4+	1999 09 09	704	0.4- 0.0	1999 09 11	704	0.1- 0.3-
1997 03 05	809	1.0+ 0.6+	1999 09 09	704	0.2- 0.0	1999 09 11	704	0.2- 0.3-
1997 03 06	809	1.4- 0.2-	1999 09 09	120	0.1+ 0.8+	1999 09 11	704	0.2- 0.1+
1997 03 06	809	1.2- 0.5+	1999 09 09	120	1.2- 0.2+	1999 09 11	704	0.1- 0.2+
1997 03 06	809	0.8- 0.0	1999 09 09	120	0.0 0.3+	1999 09 11	704	0.1+ 0.2+

1999 09 07	704	0.2- 0.2+	1999 09 10	704	1.0+ 0.2+	1999 09 11	704	0.1- 0.3+
1999 09 07	704	0.2- 0.6+	1999 09 10	704	0.0 0.2-	1999 09 11	704	0.4+ 0.1-
1999 09 07	704	0.3- 0.2-	1999 09 10	704	0.0 0.7+	1999 09 11	704	0.4+ 0.2-
1999 09 07	704	0.1- 0.0	1999 09 10	704	0.3- 0.6+	1999 09 11	704	0.4- 0.2-
1999 09 07	704	0.6- 0.1+	1999 09 10	704	0.8- 0.3+	1999 09 11	704	0.5- 0.6-
1999 09 08	704	0.8+ 0.8+	1999 09 10	704	0.8+ 0.1+	1999 09 11	704	0.6- 0.3-
1999 09 08	704	0.2- 0.3+	1999 09 10	704	0.4- 0.3+	1999 09 11	704	0.0 0.6-
1999 09 08	704	0.1+ 0.4+	1999 09 10	704	0.3- 0.0	1999 09 11	704	0.4+ 0.6-
1999 09 08	704	0.9+ 1.0+	1999 09 10	704	0.2- 0.3+	1999 09 11	704	0.3+ 0.2+
1999 09 08	704	0.6- 0.1+	1999 09 10	704	0.5- 0.2-	1999 09 11	704	0.2+ 0.1+
1999 09 08	704	0.2- 0.5+	1999 09 10	704	0.4- 0.7+	1999 09 11	704	0.2+ 0.3-
1999 09 08	704	0.1- 0.8+	1999 09 10	704	0.4- 0.4+	1999 09 11	704	0.4+ 0.6-
1999 09 08	704	0.1- 0.2+	1999 09 10	704	0.1- 0.1-	1999 09 11	704	0.0 0.3-
1999 09 08	704	0.3+ 0.2+	1999 09 10	704	0.1+ 0.9-	1999 09 11	704	0.1- 0.1+
1999 09 08	704	0.2- 0.6+	1999 09 10	704	0.0 0.7+	1999 09 11	704	0.0 0.5-
1999 09 08	704	0.7- 0.1-	1999 09 10	704	0.5- 0.2+	1999 09 11	704	0.0 0.0
1999 09 08	704	0.0 1.0+	1999 09 10	704	0.4+ 0.9-	1999 09 11	704	0.2- 0.1-
1999 09 08	120	0.6- 0.3+	1999 09 10	704	0.3- 0.7+	1999 09 11	704	0.3+ 0.5-
1999 09 08	120	0.1- 0.0	1999 09 10	704	0.4- 0.4+	1999 09 11	704	0.3+ 0.2-
1999 09 08	120	0.2- 0.2+	1999 09 10	704	0.2- 0.1+	1999 09 11	704	0.4+ 0.6-
1999 09 09	704	0.2+ 0.2+	1999 09 10	704	0.4+ 0.2+	1999 09 11	704	0.0 0.1-
1999 09 09	704	0.3+ 0.4+	1999 09 10	704	0.2+ 0.5+	1999 09 11	704	0.3+ 0.0
1999 09 09	704	0.2+ 0.3+	1999 09 10	704	0.4+ 0.2+	1999 09 11	704	0.7+ 0.1-
1999 09 09	704	0.4- 0.0	1999 09 10	704	0.1- 1.0+	1999 09 11	704	0.3+ 0.0
1999 09 09	704	0.2- 0.2+	1999 09 10	704	0.5+ 0.3-	1999 09 11	704	0.3+ 1.1-
1999 09 09	704	0.4+ 0.2-	1999 09 10	704	0.2- 0.1+	1999 09 11	704	0.0 0.0
1999 09 09	704	0.3- 0.3+	1999 09 10	704	0.0 0.4+	1999 09 11	704	0.1- 0.0
1999 09 09	704	0.4+ 0.2-	1999 09 10	704	0.4- 0.0	1999 09 11	704	0.2+ 0.5-
1999 09 09	704	0.1+ 0.3+	1999 09 10	704	0.1+ 0.4+	1999 09 11	704	0.4+ 0.2-
1999 09 09	704	0.3- 0.3-	1999 09 10	704	0.3- 0.5+	1999 09 11	704	0.3+ 0.7-
1999 09 09	704	0.1- 0.3-	1999 09 10	704	0.0 0.7+	1999 09 11	704	0.1+ 0.6-
1999 09 09	704	0.3+ 0.5-	1999 09 10	704	1.2- 0.2-	1999 09 11	704	0.4+ 0.2-
1999 09 09	704	0.4+ 0.2+	1999 09 10	704	1.1- 0.1-	1999 09 11	704	0.5+ 0.4-
1999 09 09	704	0.1+ 0.3+	1999 09 10	704	(2.7- 0.7+)	1999 09 11	704	0.1+ 0.3+
1999 09 09	704	0.1+ 0.3+	1999 09 10	704	1.1+ 0.3-	1999 09 11	704	0.3+ 0.4-
1999 09 09	704	0.2- 0.1+	1999 09 10	704	0.6+ 0.0	1999 09 11	704	0.2+ 0.5-
1999 09 09	704	0.3+ 0.1-	1999 09 10	704	0.4+ 0.5+	1999 09 11	704	0.0 0.5-
1999 09 09	704	0.5- 0.1-	1999 09 10	704	0.8+ 1.8-	1999 09 11	704	0.3- 0.2-
1999 09 09	704	0.4- 0.1+	1999 09 10	704	0.6+ 0.7+	1999 09 11	704	0.1+ 0.4-
1999 09 09	704	0.7+ 0.3-	1999 09 10	704	0.8+ 0.3+	1999 09 14	704	0.1+ 0.2-
1999 09 09	704	0.1+ 0.3+	1999 09 10	704	0.3+ 0.7+	1999 09 14	704	0.1- 0.4-
1999 09 09	704	0.3+ 0.3+	1999 09 10	704	0.4- 0.2+	1999 09 14	704	0.1- 0.2+
1999 09 09	704	0.7- 0.3+	1999 09 11	704	0.6- 0.3+	1999 09 14	704	0.4+ 0.4-
1999 09 09	704	0.2- 0.2-	1999 09 11	704	0.4- 0.3+	1999 09 14	704	0.2+ 0.9-
1999 09 09	704	0.3- 0.0	1999 09 11	704	0.7- 0.0			

1994 PA₂₅ = 1999 RC₇₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	340.01642	(2000.0)	P		Q	
<i>n</i>	0.20081942	ω	342.44379	+0.99985727	+0.01305289	
<i>a</i>	2.8880114	Ω	16.81918	-0.00717182	+0.90277177	
<i>e</i>	0.0817621	<i>i</i>	2.12445	-0.01529697	+0.42992180	
<i>P</i>	4.91	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i> 6

Residuals in seconds of arc

1994 08 12	809	1.2- 0.1-	1994 09 05	809	0.3+ 0.3+	1999 09 07	704	0.3+ 1.0-
1994 08 12	809	1.4- 0.4-	1994 09 05	809	0.2+ 0.1-	1999 09 07	704	0.4- 0.2+
1994 08 12	809	1.1- 0.3+	1994 09 06	809	1.0+ 0.5-	1999 09 13	704	1.0- 0.5+
1994 08 13	809	1.0+ 1.0+	1994 09 06	809	0.1- 1.8-	1999 09 13	704	0.6- 0.4+
1994 08 13	809	0.5+ 0.2+	1994 09 06	809	0.2+ 0.9-	1999 09 13	704	0.0 0.6-
1994 08 13	809	0.1- 0.4+	1999 09 07	704	1.3+ 1.1-	1999 09 13	704	0.7- 0.3+
1994 09 05	809	1.1+ 0.6+	1999 09 07	704	0.5+ 0.7+	1999 09 13	704	0.2+ 1.6+

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M.P.C. 35921

1994 PH₂₆ = 1999 RP₁₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	247.28783		(2000.0)	P	Q
<i>n</i>	0.20025886	ω	37.68645	-0.00489318	-0.99928804
<i>a</i>	2.8933983	Ω	52.62477	+0.90564345	-0.02029090
<i>e</i>	0.0298625	<i>i</i>	2.69821	+0.42401179	+0.03180720
<i>P</i>	4.92	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1994 08 12	809	1.4+	0.6-	1994 09 06	809	0.3+	0.2-	1999 09 09	704	0.1-	0.0
1994 08 12	809	0.2-	0.6-	1994 09 06	809	0.3-	0.1-	1999 09 09	704	0.5+	0.0
1994 08 12	809	0.0	0.7-	1994 09 06	809	0.2+	0.4+	1999 09 09	704	0.1-	0.3-
1994 08 13	809	0.1+	0.1+	1994 09 09	675	0.7-	0.2+	1999 09 13	704	0.2-	0.5-
1994 08 13	809	0.1-	0.4+	1994 09 09	675	1.0+	0.2-	1999 09 13	704	0.5-	0.1+
1994 08 13	809	0.7-	0.5-	1999 09 07	704	0.4-	1.7+	1999 09 13	704	0.3-	0.5-
1994 09 05	809	0.2-	1.4+	1999 09 07	704	0.4+	0.6+	1999 09 13	704	0.7+	0.0
1994 09 05	809	0.3-	0.4+	1999 09 07	704	0.5+	0.1-	1999 09 13	704	0.2+	1.0-
1994 09 05	809	0.7-	1.0+	1999 09 07	704	0.5-	1.2-				

1994 PJ₂₇ = 1998 SM₁₀₅Id. G. V. Williams (*MPC* 32939)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Doppler

<i>M</i>	166.41996		(2000.0)	P	Q
<i>n</i>	0.26345861	ω	165.79974	-0.12123882	+0.99111019
<i>a</i>	2.4098746	Ω	97.21522	-0.91601818	-0.09044948
<i>e</i>	0.1936492	<i>i</i>	3.16580	-0.38237657	-0.09756785
<i>P</i>	3.74	<i>H</i>	15.8	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1994 08 12	809	0.3+	0.2-	1994 09 05	809	0.2-	0.8-	1998 09 26	704	0.1-	1.3+
1994 08 12	809	0.1+	0.8-	1994 09 06	809	0.4-	1.6+	1998 09 26	704	1.0+	0.7-
1994 08 12	809	0.6+	0.6-	1994 09 06	809	0.8-	1.3+	1998 09 27	704	0.6-	0.2-
1994 08 13	809	1.0-	0.6+	1994 09 06	809	0.0	0.5+	1998 09 27	704	0.1+	0.2-
1994 08 13	809	0.2-	0.0	1994 09 09	675	1.8+	0.8-	1998 09 27	704	0.5-	0.7+
1994 08 13	809	0.4+	0.5+	1994 09 09	675	0.6-	0.3+	1998 09 27	704	0.5-	0.2-
1994 09 05	809	0.7+	0.2-	1998 09 26	704	0.5-	1.1+	1998 09 27	704	0.6+	1.5-
1994 09 05	809	0.8-	1.0-	1998 09 26	704	0.5+	0.5-				

1994 PT₂₈ = 1999 RZ₅₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	274.52252		(2000.0)	P	Q
<i>n</i>	0.19598591	ω	332.33012	+0.49494306	-0.86760492
<i>a</i>	2.9353022	Ω	87.96873	+0.80581303	+0.43767717
<i>e</i>	0.0555715	<i>i</i>	2.74644	+0.32511033	+0.23600931
<i>P</i>	5.03	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1994 08 12	809	0.9+	0.3+	1994 09 05	809	0.9+	1.1+	1999 09 07	704	0.4+	0.3+
1994 08 12	809	0.2-	1.2+	1994 09 05	809	1.1+	0.2-	1999 09 07	704	0.6+	0.0
1994 08 12	809	1.6-	0.9+	1994 09 06	809	0.6-	0.1-	1999 09 07	704	0.8+	0.4-
1994 08 13	809	0.3+	0.5-	1994 09 06	809	0.9-	0.5+	1999 09 13	704	0.2-	0.6+
1994 08 13	809	0.2+	0.9-	1994 09 06	809	0.7-	0.0	1999 09 13	704	0.7-	0.7-
1994 08 13	809	0.7-	1.0-	1999 09 07	704	1.2-	0.9-	1999 09 13	704	0.6+	0.2+
1994 09 05	809	1.0+	0.6-	1999 09 07	704	0.3+	0.1-	1999 09 13	704	0.4-	0.3+

1994 PG₃₅ = 1999 RY₁₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	299.76690		(2000.0)	P	Q
<i>n</i>	0.20312860	ω	151.88934	+0.70282301	-0.71117319
<i>a</i>	2.8660823	Ω	253.45133	+0.64939423	+0.65089704
<i>e</i>	0.0701581	<i>i</i>	0.98677	+0.29039105	+0.26564212
<i>P</i>	4.85	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1992 03 02	809	0.1+	0.3+	1994 09 04	809	0.6-	1.6-	1999 09 09	704	0.2-	0.2-
1994 08 10	809	0.7-	0.3+	1994 09 04	809	0.3-	0.3-	1999 09 09	704	0.4+	0.1+
1994 08 10	809	0.2+	0.6-	1999 08 17	691	(2.1-	4.9-)	1999 09 09	704	0.1+	0.1-
1994 08 10	809	0.1-	0.5-	1999 08 17	691	0.3+	0.0	1999 09 09	704	0.5-	0.1-
1994 08 11	809	0.4-	1.2+	1999 08 17	691	0.4+	0.1+	1999 09 14	704	0.3-	0.3+
1994 08 11	809	0.1+	0.4+	1999 09 07	704	0.1+	0.4+	1999 09 14	704	0.0	0.4+
1994 08 11	809	0.8+	1.2+	1999 09 07	704	0.4+	0.3+	1999 09 14	704	0.9+	0.8-
1994 09 01	691	0.2+	0.0	1999 09 07	704	0.4-	0.6-	1999 09 14	704	0.0	0.6+
1994 09 01	691	0.1+	0.0	1999 09 07	704	0.4-	0.2-	1999 09 14	704	0.6-	0.4+
1994 09 01	691	0.2+	0.3-	1999 09 07	704	0.2+	0.3-				
1994 09 04	809	0.7+	0.2-	1999 09 09	704	0.7-	0.4+				

1994 PB₃₈ = 1999 RJ₁₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	293.71563		(2000.0)	P	Q
<i>n</i>	0.19261387	ω	73.02821	+0.79619504	-0.59684620
<i>a</i>	2.9694614	Ω	323.44281	+0.47212619	+0.71544796
<i>e</i>	0.1051406	<i>i</i>	9.59081	+0.37837854	+0.36319254
<i>P</i>	5.12	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1994 08 10	809	0.1+	1.3-	1999 07 13	704	0.4-	0.2+	1999 09 09	704	0.7+	1.4-
1994 08 10	809	1.1-	1.4-	1999 07 13	704	0.6-	0.4+	1999 09 09	704	0.2-	0.0
1994 08 10	809	1.3-	1.2-	1999 07 13	704	1.1-	0.4+	1999 09 09	704	0.6+	0.3-
1994 08 11	809	0.7+	1.7-	1999 07 13	704	0.9+	1.7+	1999 09 09	704	1.0-	1.3+
1994 08 11	809	0.4-	1.9-	1999 08 07	699	1.0-	0.8+	1999 09 13	691	0.2-	0.2-
1994 08 11	809	0.2+	1.3-	1999 08 07	699	0.4-	0.4+	1999 09 13	691	0.3-	0.2-
1994 09 03	809	0.2+	1.3+	1999 08 07	699	0.0	1.5-	1999 09 13	704	0.4+	0.2-
1994 09 03	809	0.1-	1.1+	1999 09 08	704	1.1+	0.3-	1999 09 13	691	0.1-	0.2-
1994 09 03	809	1.1+	1.7+	1999 09 08	704	0.2-	0.2-	1999 09 13	704	0.3+	0.6-
1994 09 04	809	0.2-	1.8+	1999 09 08	704	0.7+	0.0	1999 09 13	704	0.0	0.3-
1994 09 04	809	0.4+	1.8+	1999 09 08	704	0.8+	0.2-	1999 09 13	704	0.0	0.1+
1994 09 04	809	0.4+	1.4+	1999 09 08	704	0.3+	0.3-				

1994 RH₁₇ = 1999 RG₁₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	337.82315		(2000.0)	P	Q
<i>n</i>	0.19997127	ω	48.96209	+0.99604709	-0.08788403
<i>a</i>	2.8961717	Ω	316.07526	+0.07489112	+0.90900424
<i>e</i>	0.0663883	<i>i</i>	1.06608	+0.04776518	+0.40741587
<i>P</i>	4.93	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1994 08 10	809	0.4+	0.5+	1999 09 09	704	0.4-	0.3+	1999 09 11	704	0.1+	0.0
1994 08 10	809	0.2+	0.4+	1999 09 09	704	0.1+	0.5-	1999 09 11	704	0.0	0.2+
1994 08 10	809	0.8-	0.5-	1999 09 09	704	0.2+	0.5+	1999 09 11	704	0.1-	0.2+
1994 09 03	809	1.1+	0.0	1999 09 09	704	0.9-	0.3+	1999 09 11	704	0.2-	0.4-
1994 09 03	809	0.0	0.4-	1999 09 10	704	0.0	0.2+	1999 09 11	704	0.5-	0.1-
1994 09 03	809	0.2+	0.3+	1999 09 10	704	0.4-	0.5-	1999 09 11	704	0.7-	0.1+
1994 09 04	809	0.6+	0.4+	1999 09 10	704	0.4-	0.7+	1999 09 11	704	0.1-	0.5-
1994 09 04	809	0.3-	0.3-	1999 09 10	704	0.3+	1.0-	1999 09 11	704	0.0	0.2+
1994 09 04	809	1.4-	0.4-	1999 09 10	704	0.5-	0.1-	1999 09 11	704	0.6-	0.0
1999 09 07	704	0.2+	0.6+	1999 09 10	704	0.3+	0.0	1999 09 11	704	0.7+	0.4-
1999 09 07	704	0.2+	0.6-	1999 09 10	704	0.0	0.1-	1999 09 11	704	0.4-	0.4-
1999 09 07	704	0.2+	1.0-	1999 09 10	704	0.6-	0.9-	1999 09 11	704	0.2+	0.2+
1999 09 08	704	0.7+	0.4-	1999 09 10	704	0.4-	0.4-	1999 09 14	703	0.5-	0.6+
1999 09 08	704	1.0+	0.3+	1999 09 11	704	0.2-	0.0	1999 09 14	703	0.8+	0.9+
1999 09 08	704	1.3+	0.1-	1999 09 11	704	0.0	0.4+	1999 09 14	703	0.3+	1.0+
1999 09 08	704	0.7-	0.4+	1999 09 11	704	0.8+	0.4+	1999 09 14	703	0.3+	0.1-

1994 RL₂₃ = 1998 ST₁₅₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	167.53056		(2000.0)	<i>P</i>	<i>Q</i>				
<i>n</i>	0.26053301	ω	125.31460	-0.13880854	+0.98662965				
<i>a</i>	2.4278818	Ω	136.45552	-0.94408618	-0.10579254				
<i>e</i>	0.1528757	<i>i</i>	7.12132	-0.29905430	-0.12397529				
<i>P</i>	3.78	<i>H</i>	16.0	<i>G</i>	0.15	<i>U</i>	6		
Residuals in seconds of arc									
1994 09 05	809	(0.1- 3.0+)	1998 09 15	910	0.5- 0.3+	1998 09 27	704	0.4- 1.1-	
1994 09 05	809	0.3- 1.0+	1998 09 15	910	0.5+ 0.4-	1998 09 27	704	0.6+ 1.0+	
1994 09 05	809	0.5- 0.4+	1998 09 15	910	0.3+ 0.2-	1998 09 27	704	1.1+ 0.8+	
1994 09 06	809	0.7+ 0.3-	1998 09 26	704	1.0- 0.8+	1998 09 27	704	1.6+ 0.0	
1994 09 06	809	0.9- 0.7-	1998 09 26	704	0.9- 0.0				
1994 09 06	809	0.9+ 0.4-	1998 09 26	704	1.3- 1.3-				

1994 SH₉ = 1999 RH₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	92.89454		(2000.0)	<i>P</i>	<i>Q</i>				
<i>n</i>	0.19605951	ω	231.08102	-0.19594751	+0.98043412				
<i>a</i>	2.9345676	Ω	27.63623	-0.88668614	-0.16895749				
<i>e</i>	0.0487870	<i>i</i>	2.32305	-0.41879860	-0.10100645				
<i>P</i>	5.03	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	5		
Residuals in seconds of arc									
1994 09 28	691	0.6+ 1.1+	1994 10 11	691	0.0 0.2-	1999 09 07	704	0.0 0.7-	
1994 09 28	691	0.2- 0.2-	1999 09 03	691	0.1- 0.1-	1999 09 07	704	0.3+ 0.4+	
1994 09 28	691	0.6- 0.2-	1999 09 03	691	0.1- 0.0	1999 09 08	691	0.1- 0.3-	
1994 10 04	691	0.1+ 0.1+	1999 09 03	691	0.1- 0.1-	1999 09 08	691	0.0 0.2-	
1994 10 04	691	0.1+ 0.3-	1999 09 07	704	0.1+ 0.1+	1999 09 08	691	0.2- 0.3-	
1994 10 11	691	0.1- 0.1+	1999 09 07	704	0.1+ 1.0+				
1994 10 11	691	0.0 0.2-	1999 09 07	704	0.0 0.0				

1994 TZ = 1999 RM₁₆₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	252.77697		(2000.0)	<i>P</i>	<i>Q</i>				
<i>n</i>	0.18410914	ω	281.78571	-0.14077589	-0.98997599				
<i>a</i>	3.0602188	Ω	176.25043	+0.96258780	-0.13955314				
<i>e</i>	0.0688875	<i>i</i>	10.02865	+0.23153159	-0.02173613				
<i>P</i>	5.35	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	3		
Residuals in seconds of arc									
1994 10 02	400	0.1+ 0.8-	1999 09 07	704	0.1+ 1.0-	1999 09 14	704	0.4+ 0.1+	
1994 10 02	400	1.3+ 0.8-	1999 09 07	704	0.7- 0.9+	1999 09 14	704	0.1- 0.0	
1994 10 03	400	(2.5- 0.6-)	1999 09 07	704	0.1- 0.1+	1999 09 14	704	0.1+ 0.2+	
1994 10 03	400	(2.4+ 1.2+)	1999 09 07	704	0.3+ 0.1+	1999 09 14	704	0.2- 0.1+	
1994 10 11	397	0.6- 0.9+	1999 09 07	704	0.2- 0.6-	1999 09 14	704	0.1- 0.1+	
1994 10 11	397	0.8- 0.4+	1999 09 09	704	0.7+ 0.8+	1999 09 18	691	0.2+ 0.2-	
1998 06 25	704	0.5+ 0.3+	1999 09 09	704	0.2+ 0.1-	1999 09 18	691	0.2+ 0.2-	
1998 06 25	704	0.1+ 1.0-	1999 09 09	704	0.3- 0.6+	1999 09 18	691	0.2+ 0.1-	
1998 06 25	704	0.1- 0.1-	1999 09 09	704	0.3- 0.1-				
1998 06 25	704	0.5- 0.7+	1999 09 09	704	0.5- 0.2-				

1994 VS₁ = 1999 RK₃₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	319.00899		(2000.0)	<i>P</i>	<i>Q</i>				
<i>n</i>	0.18248931	ω	19.15455	+0.52647367	-0.84838730				
<i>a</i>	3.0783011	Ω	39.13172	+0.76813993	+0.44674716				
<i>e</i>	0.1784299	<i>i</i>	5.03218	+0.36439885	+0.28399993				
<i>P</i>	5.40	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	5		
Residuals in seconds of arc									
1994 11 03	411	0.5+ 0.5+	1994 11 15	411	1.0- 0.4+	1999 09 13	120	0.5+ 0.1-	
1994 11 03	411	0.7+ 0.7-	1994 11 30	411	0.2- 0.1-	1999 09 13	120	0.7- 0.2-	
1994 11 08	411	0.2- 0.1+	1994 11 30	411	0.4+ 0.6+	1999 09 14	120	0.0 0.1-	

1994 11 08	411	0.4- 0.5-	1999 09 13	120	0.1- 0.0	1999 09 14	120	0.3- 0.1-
1994 11 15	411	0.1+ 0.4-	1999 09 13	120	0.8+ 0.8+	1999 09 15	120	0.4- 0.3-

1994 WZ₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	330.55156		(2000.0)	<i>P</i>	<i>Q</i>				
<i>n</i>	0.19396125	ω	324.97749	+0.43145427	-0.84871569				
<i>a</i>	2.9556935	Ω	97.68617	+0.88203391	+0.32569866				
<i>e</i>	0.5541129	<i>i</i>	17.97473	+0.18937632	+0.41665581				
<i>P</i>	5.08	<i>H</i>	17.8	<i>G</i>	0.15	<i>U</i>	2		
Residuals in seconds of arc									
1994 11 27	413	(0.3+ 4.0-)	1994 12 20	413	1.0- 0.2+	1994 12 27	360	0.3+ 1.0+	
1994 11 27	413	0.5- 1.6-	1994 12 21	413	0.3- 0.3-	1995 01 01	587	0.1+ 0.0	
1994 12 02	413	0.6+ 1.3+	1994 12 21	413	0.3- 0.4-	1995 01 01	587	0.2+ 0.3-	
1994 12 06	422	0.9+ 0.2-	1994 12 22	413	0.1+ 1.4-	1995 01 13	413	0.7+ 0.1+	
1994 12 06	422	1.5+ 0.5+	1994 12 22	413	0.1+ 1.0-	1995 01 13	413	0.6+ 0.2+	
1994 12 10	413	0.8+ 0.4+	1994 12 22	360	0.5- 1.4-	1995 01 15	413	0.9+ 0.4-	
1994 12 18	413	0.5- 0.8+	1994 12 22	360	0.2+ 0.8-	1995 01 15	413	0.6- 0.2-	
1994 12 18	413	0.6- 0.4+	1994 12 22	360	0.3+ 1.0-	1999 08 30	413	0.3+ 0.5-	
1994 12 18	413	0.1- 0.7+	1994 12 22	413	0.2+ 0.0	1999 08 30	413	0.1+ 0.4+	
1994 12 18	413	0.6- 0.9+	1994 12 22	413	0.0 0.0	1999 08 31	413	0.2- 0.0	
1994 12 19	413	1.0- 0.7+	1994 12 22	413	0.3+ 0.5-	1999 08 31	413	0.1- 0.1-	
1994 12 19	413	0.9- 0.6+	1994 12 27	360	0.2- 0.9+				
1994 12 20	413	0.8- 0.2+	1994 12 27	360	0.4+ 0.6+				

1994 WB₃ = 1999 RO₁

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	314.90077		(2000.0)	<i>P</i>	<i>Q</i>				
<i>n</i>	0.17998337	ω	305.56359	+0.55514326	-0.83084398				
<i>a</i>	3.1068083	Ω	110.67045	+0.77594636	+0.50047922				
<i>e</i>	0.1933285	<i>i</i>	2.38365	+0.29953833	+0.24334919				
<i>P</i>	5.48	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	4		
Residuals in seconds of arc									
1994 11 27	675	0.7+ 0.6+	1994 12 10	399	0.2- 0.3+	1999 09 04	888	0.2+ 0.5-	
1994 11 27	675	1.5- 0.3-	1994 12 10	399	1.1+ 0.3-	1999 09 06	888	0.1+ 0.5-	
1994 11 28	399	1.6- 0.3-	1997 05 07	704	1.6+ 0.2-	1999 09 06	888	0.1- 0.6-	
1994 11 28	399	(3.9- 0.5+)	1997 05 07	704	0.6- 0.3+	1999 09 07	704	0.1- 0.7+	
1994 11 29	399	(2.6+ 1.8+)	1997 05 07	704	0.5+ 1.1-	1999 09 07	704	0.0 1.2+	
1994 11 29	399	1.4+ 1.7+	1997 05 07	704	0.0 0.2+	1999 09 07	704	0.2+ 0.4-	
1994 12 09	399	0.2+ 0.7-	1997 05 07	704	1.7- 0.6+	1999 09 07	704	0.0 0.4+	
1994 12 09	399	0.0 1.0-	1999 09 04	888	0.2- 0.2+	1999 09 07	704	0.1- 0.7-	

1994 WX₄ = 1999 GQ₃₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Doppler

<i>M</i>	48.36939		(2000.0)	<i>P</i>	<i>Q</i>				
<i>n</i>	0.26745705	ω	73.48057	-0.95638643	-0.25385003				
<i>a</i>	2.3857962	Ω	91.63702	+0.18077136	-0.90297893				
<i>e</i>	0.1831750	<i>i</i>	8.31272	+0.22944869	-0.34668316				
<i>P</i>	3.69	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	4		
Residuals in seconds of arc									
1994 11 27	691	0.4- 0.2-	1994 12 31	411	0.4- 0.5+	1999 04 12	704	0.4- 0.4+	
1994 11 27	691	0.4+ 0.0	1995 01 01	411	0.5+ 0.7-	1999 04 16	704	0.5+ 0.1+	
1994 11 27	691	0.2- 0.5+	1995 01 01	411	0.4- 1.3-	1999 04 16	704	1.6+ 0.2-	
1994 11 28	691	0.3+ 0.6-	1999 04 12	704	0.6+ 0.2-	1999 04 16	704	1.8- 1.3-	
1994 11 28	691	0.0 0.1-	1999 04 12	704	0.7+ 0.8+	1999 04 16	704	0.7- 0.8-	
1994 11 28	691	0.3+ 0.3-	1999 04 12	704	0.9- 0.9+	1999 04 16	704	0.2+ 0.2-	
1994 12 31	411	0.0 1.9+	1999 04 12	704	0.2+ 0.2+				

1994 WU₇ = 1999 RV₂₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	51.67117	(2000.0)	P	Q
<i>n</i>	0.17128413	ω 144.26624	+0.37296149	+0.92554705
<i>a</i>	3.2111306	Ω 147.48868	-0.87700998	+0.37462437
<i>e</i>	0.0937709	<i>i</i> 6.97705	-0.30290793	+0.05494770
<i>P</i>	5.75	<i>H</i> 13.6	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1994 11 28	691	0.2-	0.0	1999 09 05	699	0.1-	0.8+	1999 09 09	704	0.5+	0.1+
1994 11 28	691	0.5-	0.2+	1999 09 07	704	0.3+	0.2+	1999 09 09	704	1.0-	0.4-
1994 11 28	691	0.1-	0.1+	1999 09 07	704	0.2+	0.1-	1999 09 09	704	0.2+	0.7-
1994 12 03	691	0.0	0.2+	1999 09 07	704	0.4+	0.6-	1999 09 09	704	0.6-	0.4-
1994 12 03	691	0.1+	0.1-	1999 09 07	704	0.0	0.6+	1999 09 09	704	0.1+	0.1-
1994 12 03	691	0.4+	0.1-	1999 09 07	704	0.0	0.7-	1999 09 14	703	0.4+	0.3+
1994 12 10	691	0.0	0.1-	1999 09 08	704	0.1+	0.6+	1999 09 14	703	0.8+	0.0
1994 12 10	691	0.5+	0.2+	1999 09 08	704	0.5+	0.0	1999 09 14	703	0.2-	0.3-
1994 12 10	691	0.2-	0.3-	1999 09 08	704	0.0	0.1-	1999 09 14	703	0.4+	0.3+
1999 09 05	699	0.7-	1.2+	1999 09 08	704	0.9-	0.2-				
1999 09 05	699	0.5-	0.6-	1999 09 08	704	0.2+	0.1+				

1994 XM₂ = 1999 RG₃₅

Id. B. G. Marsden, M. Tichý

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	11.89455	(2000.0)	P	Q
<i>n</i>	0.17673946	ω 262.53293	+0.96469235	+0.21865061
<i>a</i>	3.1447082	Ω 84.75421	-0.14284075	+0.90273168
<i>e</i>	0.0345758	<i>i</i> 8.47934	-0.22128080	+0.37049619
<i>P</i>	5.58	<i>H</i> 12.4	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1994 12 01	691	0.3+	0.2+	1994 12 10	691	0.2-	0.0	1999 09 12	046	0.3-	0.3-
1994 12 01	691	0.4-	0.2+	1994 12 10	691	0.1-	0.2-	1999 09 12	046	0.3-	0.1-
1994 12 01	691	0.0	0.6-	1999 09 12	046	0.4+	0.2+	1999 09 12	046	0.2-	0.1+
1994 12 08	691	0.0	0.4+	1999 09 12	046	0.1+	0.1+	1999 09 12	046	0.1-	0.1-
1994 12 08	691	0.0	0.2+	1999 09 12	046	0.2+	0.0	1999 09 12	046	0.2-	0.1-
1994 12 08	691	0.6+	0.1-	1999 09 12	046	0.1+	0.1+				
1994 12 10	691	0.1-	0.1-	1999 09 12	046	0.4+	0.2+				

1995 OA₄ = 1999 RE₁₆₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	181.19292	(2000.0)	P	Q
<i>n</i>	0.25880930	ω 201.75874	-0.94724355	-0.31977119
<i>a</i>	2.4386500	Ω 319.57155	+0.29880488	-0.85640697
<i>e</i>	0.1262168	<i>i</i> 1.92807	+0.11595392	-0.40535601
<i>P</i>	3.81	<i>H</i> 16.4	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1995 07 22	691	1.0+	0.1-	1995 08 03	691	0.0	0.3+	1999 09 14	691	0.1-	0.1+
1995 07 22	691	0.1-	0.1+	1995 08 03	691	0.3+	0.1+	1999 09 18	691	0.0	0.2-
1995 07 27	691	0.2-	0.3-	1995 08 03	691	0.3+	0.1+	1999 09 18	691	0.1+	0.3-
1995 07 27	691	0.3-	0.2+	1999 09 14	691	0.3-	0.2+	1999 09 18	691	0.4+	0.1-
1995 07 27	691	0.9-	0.4-	1999 09 14	691	0.2-	0.2+				

1995 SD = 1999 RN₄₁

Id. M. Tichý

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	341.08082	(2000.0)	P	Q
<i>n</i>	0.23806446	ω 302.96913	+0.98335510	+0.17365065
<i>a</i>	2.5783370	Ω 47.09257	-0.13258971	+0.88700796
<i>e</i>	0.1707385	<i>i</i> 4.18576	-0.12422847	+0.42785784
<i>P</i>	4.14	<i>H</i> 16.5	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1995 08 29	809	0.4-	1.3+	1995 09 19	046	0.6+	0.8+	1995 10 22	046	0.3+	0.2-
1995 08 31	809	0.5+	0.9-	1995 09 24	046	0.4+	0.2+	1999 09 14	046	0.3-	0.1-
1995 09 01	809	0.5-	0.7-	1995 09 24	046	0.2+	0.3+	1999 09 14	046	0.7-	0.4-
1995 09 16	046	0.0	0.2-	1995 09 28	046	0.8+	1.1-	1999 09 14	046	0.0	0.2+
1995 09 16	046	0.3+	0.9-	1995 09 28	046	0.9+	0.6-	1999 09 14	046	0.1+	0.0
1995 09 17	046	0.3+	0.2-	1995 09 28	046	0.1-	0.1+	1999 09 14	046	0.0	0.6+
1995 09 17	046	(0.8+	2.1-)	1995 10 15	046	0.0	0.4-	1999 09 15	046	0.2-	0.5-
1995 09 17	046	0.0	0.4+	1995 10 15	046	0.0	0.1+	1999 09 15	046	1.0+	0.1+
1995 09 17	046	0.4-	0.2+	1995 10 15	046	0.8-	0.3-	1999 09 15	046	0.4-	0.8-
1995 09 17	046	1.3-	0.4+	1995 10 16	046	0.5+	0.7+	1999 09 15	046	0.9+	0.1-
1995 09 17	046	0.7-	0.3+	1995 10 16	046	0.1+	0.3+	1999 09 15	046	0.4-	0.7-
1995 09 17	046	0.9-	0.5+	1995 10 16	046	1.0-	0.2-	1999 09 15	046	0.5+	0.3+
1995 09 19	046	0.4-	0.4+	1995 10 22	046	0.3+	0.1+	1999 09 15	046	0.4-	0.8+
1995 09 19	046	0.9+	0.0	1995 10 22	046	0.1+	0.3-				

1995 SM₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	343.39937	(2000.0)	P	Q
<i>n</i>	0.23041183	ω 270.21283	+0.99593252	+0.08788190
<i>a</i>	2.6351148	Ω 84.74544	-0.07267180	+0.91390273
<i>e</i>	0.0831647	<i>i</i> 1.14388	-0.05326559	+0.39630615
<i>P</i>	4.28	<i>H</i> 15.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1995 09 22	557	1.3-	0.6-	1995 10 22	557	0.2-	0.4+	1999 08 31	557	0.0	0.6-
1995 09 22	557	0.4+	0.3+	1995 10 22	557	0.1+	0.0	1999 09 01	557	0.0	0.1+
1995 09 25	557	0.0	0.1+	1995 10 22	557	0.7+	0.3-	1999 09 01	557	0.0	0.1+
1995 09 25	557	0.7+	0.2+	1995 10 22	557	0.5-	0.4+	1999 09 01	557	0.2+	0.4+
1995 09 25	557	0.2+	0.6-	1995 11 21	557	0.2+	0.8-	1999 09 07	704	0.1-	0.6-
1995 10 21	557	0.3-	0.1+	1995 11 21	557	0.3+	0.3-	1999 09 07	704	0.4+	0.3+
1995 10 21	557	0.1-	0.1+	1999 08 31	557	0.2-	0.4+	1999 09 07	704	0.2-	0.4+
1995 10 22	557	0.4-	0.9+	1999 08 31	557	0.4-	0.1+	1999 09 07	704	0.5+	0.7-

1995 SU₅ = 1998 QZ₈₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	171.41412	(2000.0)	P	Q
<i>n</i>	0.27000800	ω 28.38824	-0.61497192	+0.78684597
<i>a</i>	2.3707457	Ω 203.77721	-0.74560247	-0.60160502
<i>e</i>	0.1588446	<i>i</i> 7.38128	-0.25668366	-0.13764017
<i>P</i>	3.65	<i>H</i> 15.6	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1995 09 25	327	0.4+	0.0	1995 10 14	327	0.8-	0.8-	1998 08 24	704	0.5-	1.6-
1995 09 25	327	0.4+	0.2+	1995 10 14	327	0.1+	0.1+	1998 08 24	704	(2.6-	1.7-)
1995 09 25	327	0.6+	0.6-	1998 08 23	699	0.6+	0.1+	1998 08 27	704	1.3-	1.5+
1995 09 27	327	0.7-	0.6-	1998 08 23	699	0.3+	0.3-	1998 08 27	704	0.7+	0.9+
1995 09 27	327	0.8+	0.5+	1998 08 23	699	0.5-	0.9-	1998 08 27	704	1.0-	0.3+
1995 09 27	327	0.6-	0.5+	1998 08 24	704	0.9+	0.5+	1998 08 27	704	0.2-	1.0+
1995 09 27	327	0.3-	0.7+	1998 08 24	704	0.6+	0.8-	1998 08 27	704	0.4+	0.8-
1995 10 14	327	0.2+	0.0	1998 08 24	704	(0.1+	2.2+)				

1995 SM₁₅ = 1999 RD₁₅₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	345.98218	(2000.0)	P	Q
<i>n</i>	0.24082449	ω 359.47753	+0.98141446	+0.18981108
<i>a</i>	2.5585993	Ω 349.45281	-0.17550063	+0.82825127
<i>e</i>	0.0585350	<i>i</i> 8.87453	-0.07762212	+0.52723010
<i>P</i>	4.09	<i>H</i> 14.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1995 08 24	809	0.8+	0.3+	1995 09 23	691	0.6-	0.0	1999 09 09	704	0.3+	0.0
1995 08 25	809	0.5-	0.0	1995 09 23	691	0.4-	0.1+	1999 09 09	704	0.6+	0.1-
1995 08 25	809	0.1+	0.1+	1995 09 23	691	0.4-	0.1+	1999 09 09	704	0.9+	1.0-

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1995 08 26	809	0.3+	0.3-	1995 09 29	691	0.4-	0.0	1999 09 09	704	0.1-	1.3+
1995 09 01	809	0.3+	0.0	1995 09 29	691	0.3-	0.0	1999 09 09	704	0.4+	0.1-
1995 09 17	809	0.5-	0.6-	1995 09 29	691	0.0	0.2+	1999 09 13	704	0.2-	0.3-
1995 09 18	809	0.6+	0.3-	1999 09 07	704	0.0	0.3+	1999 09 13	704	0.4-	0.6-
1995 09 18	691	0.1+	0.1+	1999 09 07	704	0.2+	0.0	1999 09 13	704	0.2-	0.2-
1995 09 18	691	0.1-	0.2+	1999 09 07	704	0.5-	0.1+	1999 09 13	704	0.5-	0.4+
1995 09 18	691	0.1+	0.1+	1999 09 07	704	0.6-	0.5+				
1995 09 19	809	1.2+	0.2-	1999 09 07	704	0.2-	0.1+				

1995 ST₃₂ = 1999 RZ₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	337.45700	(2000.0)	<i>Q</i>
<i>n</i>	0.24304640	ω	185.42693
<i>a</i>	2.5429818	Ω	172.99249
<i>e</i>	0.1967129	<i>i</i>	1.96829
<i>P</i>	4.06	<i>H</i>	15.7
		<i>G</i>	0.15
		<i>U</i>	5

Residuals in seconds of arc

1995 09 21	691	0.1+	0.1+	1999 09 07	704	0.1+	0.0	1999 09 09	704	1.4+	1.2-
1995 09 21	691	0.3-	0.1-	1999 09 07	704	0.9+	0.3-	1999 09 09	704	0.1+	1.0-
1995 09 21	691	0.1-	0.2-	1999 09 07	704	0.1+	0.4+	1999 09 09	704	0.4-	0.4+
1995 09 26	691	0.2+	0.2-	1999 09 07	704	0.1-	0.1-	1999 09 09	704	0.1-	0.3-
1995 09 26	691	0.1+	0.1+	1999 09 08	704	0.3-	0.1-	1999 09 13	704	0.6+	0.1+
1995 09 26	691	0.0	0.1-	1999 09 08	704	1.0-	0.3+	1999 09 13	704	0.0	0.3+
1995 10 02	691	0.3+	0.0	1999 09 08	704	0.4-	0.2+	1999 09 13	704	0.7-	0.4+
1995 10 02	691	0.2-	0.1+	1999 09 08	704	0.4-	0.3-	1999 09 13	704	0.3-	1.3+
1995 10 02	691	0.1-	0.1+	1999 09 08	704	0.6-	0.9-	1999 09 13	704	0.6-	0.8+
1999 09 07	704	0.9+	1.2+	1999 09 09	704	0.6+	0.8-				

1995 SB₃₃ = 1999 RS₁₃₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	322.06437	(2000.0)	<i>Q</i>
<i>n</i>	0.24302009	ω	210.38803
<i>a</i>	2.5431654	Ω	167.68033
<i>e</i>	0.1514223	<i>i</i>	5.05204
<i>P</i>	4.06	<i>H</i>	16.0
		<i>G</i>	0.15
		<i>U</i>	4

Residuals in seconds of arc

1995 09 21	691	0.0	0.0	1997 03 10	691	0.2-	0.1+	1999 09 09	704	0.8-	0.2+
1995 09 21	691	0.1+	0.1-	1997 03 10	691	0.1-	0.0	1999 09 09	704	0.9+	0.7+
1995 09 21	691	0.4+	0.0	1997 03 10	691	0.3+	0.2+	1999 09 13	704	0.1+	0.4+
1995 09 26	691	0.8-	0.0	1999 08 22	703	0.1-	0.6-	1999 09 13	704	0.7-	0.7-
1995 09 26	691	0.2-	0.0	1999 08 22	703	1.2-	0.2+	1999 09 13	704	0.1-	0.3+
1995 09 26	691	0.1+	0.1-	1999 08 22	703	0.6+	0.5+	1999 09 13	704	0.2+	0.9+
1995 10 01	691	0.0	0.0	1999 08 22	703	0.9+	0.4+	1999 09 13	704	0.4-	0.5+
1995 10 01	691	0.3+	0.1+	1999 09 09	704	0.0	1.3-				
1995 10 01	691	0.2+	0.2-	1999 09 09	704	0.4+	0.9-				

1995 SU₃₇ = 1998 FV₁₁₄ = 1999 NO₃₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	128.86157	(2000.0)	<i>Q</i>
<i>n</i>	0.21363614	ω	176.81836
<i>a</i>	2.7713172	Ω	353.67747
<i>e</i>	0.1285080	<i>i</i>	13.54421
<i>P</i>	4.61	<i>H</i>	14.3
		<i>G</i>	0.15
		<i>U</i>	3

Residuals in seconds of arc

1995 08 26	809	0.4+	0.6+	1998 03 31	704	0.0	0.1+	1998 04 01	704	(7.5-	1.9+)
1995 09 19	809	0.6+	1.0-	1998 03 31	704	0.5-	0.5-	1999 07 14	704	0.3-	0.4+
1995 09 19	809	1.1+	0.7+	1998 03 31	704	0.1-	0.1-	1999 07 14	704	0.2+	0.5+
1995 09 24	691	0.9-	0.1-	1998 03 31	704	1.0+	0.4-	1999 07 14	704	0.3+	0.4-
1995 09 24	691	0.3-	0.1-	1998 03 31	704	0.3-	0.7+	1999 07 14	704	0.6-	0.8+
1995 09 24	691	0.3-	0.2-	1998 04 01	704	0.4-	0.2-	1999 07 14	704	0.3+	0.3+
1995 09 29	691	0.3-	0.1-	1998 04 01	704	0.2+	0.7+	1999 07 16	704	0.5+	0.5+

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1995 09 29	691	0.1-	0.0	1998 04 01	704	1.1-	0.0	1999 07 16	704	0.4+	1.0-
1995 09 29	691	0.2-	0.0	1998 04 01	704	1.2+	0.3-	1999 07 16	704	0.9-	1.0-

1995 SD₄₄ = 1999 RP₁₅₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	244.35460	(2000.0)	<i>Q</i>
<i>n</i>	0.22836272	ω	244.73204
<i>a</i>	2.6508546	Ω	214.96667
<i>e</i>	0.0544223	<i>i</i>	2.23573
<i>P</i>	4.32	<i>H</i>	15.0
		<i>G</i>	0.15
		<i>U</i>	6

Residuals in seconds of arc

1995 09 25	691	1.6-	0.2+	1995 10 23	010	0.5+	0.3+	1999 09 09	704	0.4+	1.2+
1995 09 25	691	0.9-	0.1+	1995 10 23	010	1.7+	0.2-	1999 09 09	704	0.8+	1.4+
1995 09 30	691	0.4-	0.0	1999 09 07	704	0.4+	1.5-	1999 09 14	704	0.6-	0.4-
1995 09 30	691	0.2-	0.0	1999 09 07	704	0.1-	0.3-	1999 09 14	704	0.3+	0.8+
1995 09 30	691	0.2-	0.0	1999 09 07	704	0.1+	0.7-	1999 09 14	704	0.3-	0.4+
1995 10 20	010	0.4+	0.5-	1999 09 07	704	0.4-	1.3-	1999 09 14	704	0.6-	0.2+
1995 10 20	010	0.3-	1.1-	1999 09 07	704	0.5-	0.3-	1999 09 14	704	0.6-	0.6+
1995 10 20	010	0.5+	0.2-	1999 09 09	704	0.3+	0.3+				
1995 10 23	010	0.5+	1.5+	1999 09 09	704	0.9+	0.4-				

1995 SL₄₉ = 1990 JU = 1998 FY₂₈

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	58.74805	(2000.0)	<i>Q</i>
<i>n</i>	0.22007802	ω	236.35209
<i>a</i>	2.7169705	Ω	0.43995
<i>e</i>	0.1136031	<i>i</i>	12.04692
<i>P</i>	4.48	<i>H</i>	14.5
		<i>G</i>	0.15
		<i>U</i>	3

Residuals in seconds of arc

1990 05 03	413	0.4+	0.4+	1995 09 27	691	0.0	0.5+	1998 03 22	704	1.6+	0.8-
1990 05 04	413	0.3-	0.6-	1995 09 27	691	0.4-	0.2+	1998 03 22	704	0.3+	0.7-
1995 08 25	809	0.7-	1.0+	1995 09 27	691	0.2+	0.2+	1998 03 22	704	0.4+	0.5-
1995 08 26	809	0.3-	0.9+	1998 02 27	809	0.7-	0.4-	1998 03 26	704	1.1+	1.0+
1995 09 19	809	0.4+	0.5-	1998 02 27	809	0.6-	0.9+	1998 03 26	704	0.3+	0.7+
1995 09 20	809	1.0+	0.4-	1998 02 27	809	1.5-	0.1+	1998 03 26	704	0.5-	0.6+
1995 09 22	809	(2.2-	2.1-)	1998 03 20	704	0.0	0.2-	1998 03 29	704	0.7+	0.1+
1995 09 22	691	0.4-	0.5+	1998 03 20	704	0.3-	0.9+	1998 03 29	704	0.2-	0.4-
1995 09 22	691	0.4-	0.3+	1998 03 20	704	0.1+	0.1-	1998 03 29	704	0.1+	0.9-
1995 09 22	691	0.4-	0.1+	1998 03 20	704	0.4-	0.3+	1998 03 29	704	0.7+	0.2+
1995 09 23	809	0.6-	0.5-	1998 03 20	704	0.2+	1.2+				
1995 09 23	809	(5.3+	0.9-)	1998 03 22	704	0.4+	0.0				

1995 SM₅₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden			
<i>M</i>	315.43670	(2000.0)	<i>Q</i>
<i>n</i>	0.00361060	ω	60.01583
<i>a</i>	42.0806897	Ω	21.01100
<i>e</i>	0.0899185	<i>i</i>	26.95819
<i>P</i>	273	<i>H</i>	5.3
		<i>G</i>	0.15
		<i>U</i>	6

Residuals in seconds of arc

1995 09 19	691	0.5+	0.0	1995 10 01	691	0.6+	0.1-	1995 11 20	691	0.1+	0.2-
1995 09 19	691	0.7+	0.2+	1995 10 01	691	0.7+	0.1+	1995 11 27	691	0.7-	0.7+
1995 09 19	691	0.5+	0.2+	1995 11 15	691	0.5-	0.1-	1995 11 27	691	0.6+	0.6-
1995 09 25	691	1.3-	0.2+	1995 11 15	691	0.3-	0.2-	1995 11 27	691	0.7+	0.1+
1995 09 25	691	1.1-	0.1+	1995 11 15	691	0.5-	0.4+	1999 08 06	807	0.3-	1.2+
1995 09 25	691	1.1-	0.1-	1995 11 20	691	0.2+	0.0	1999 08 07	807	0.1+	0.6-
1995 10 01	691	0.5+	0.4-	1995 11 20	691	0.2+	0.4-	1999 08 07	807	0.2+	0.6-

1995 TZ₁ = 1998 KR₆₂

Id. A. Doppler

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M.P.C. 35925

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	98.49056		(2000.0)	P			Q				
<i>n</i>	0.23105324	ω	199.45576	-0.46384969			+0.88120217				
<i>a</i>	2.6302358	Ω	43.04035	-0.79406936			-0.36788137				
<i>e</i>	0.2400569	<i>i</i>	7.68312	-0.39280698			-0.29689399				
<i>P</i>	4.27	<i>H</i>	14.9	<i>G</i>	0.15		<i>U</i>	3			
Residuals in seconds of arc											
1995 10 14	327	0.3+	0.5+	1998 05 01	704	1.0+	0.4-	1998 05 24	704	1.5+	0.7+
1995 10 14	327	0.5-	0.9-	1998 05 01	704	1.2+	0.3-	1998 05 24	704	0.6-	0.7+
1995 10 14	327	0.5+	0.0	1998 05 01	704	1.2+	0.8+	1998 05 24	704	0.8-	0.0
1995 10 15	327	0.5+	0.5+	1998 05 01	704	(2.4-	1.9-)	1998 05 24	704	0.2-	0.1+
1995 10 15	327	0.1-	0.2-	1998 05 17	844	0.8-	0.2-	1998 07 13	699	0.8+	0.8-
1995 10 15	327	0.3-	0.6-	1998 05 17	844	1.5-	0.5-	1998 07 13	699	0.8+	0.1-
1998 04 22	704	0.2+	0.3-	1998 05 17	844	1.1-	0.1-	1998 07 13	699	0.4-	0.7+
1998 04 22	704	0.2+	0.5+	1998 05 17	844	0.5-	0.1+	1999 09 09	704	0.1+	0.4-
1998 04 22	704	0.3+	0.3+	1998 05 17	844	1.2-	0.0	1999 09 09	704	0.8+	0.1+
1998 04 22	704	0.3+	0.6+	1998 05 22	704	0.3-	0.1+	1999 09 09	704	0.3-	0.9+
1998 04 22	704	0.5+	0.7+	1998 05 22	704	0.1-	0.8+	1999 09 09	704	0.2-	0.1-
1998 04 30	566	0.1-	1.2-	1998 05 22	704	(3.1+	0.5+)	1999 09 09	704	0.6-	0.2-
1998 04 30	566	0.4-	1.4-	1998 05 22	704	(2.7-	1.0-)				
1998 04 30	566	0.4+	0.9-	1998 05 24	704	0.2-	0.0				

1995 TY₂ = 1999 RR₈₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	351.52548		(2000.0)		P		Q				
<i>n</i>	0.24241418	ω	343.87983		+0.99040306		+0.13547589				
<i>a</i>	2.5474013	Ω	8.47622		-0.09717118		+0.82328115				
<i>e</i>	0.2003447	<i>i</i>	10.69361		-0.09828301		+0.55122992				
<i>P</i>	4.07	<i>H</i>	16.5	<i>G</i>	0.15	<i>U</i>	4				
Residuals in seconds of arc											
1995 10 15	691	0.1-	0.1-	1995 10 27	691	0.1-	0.3-	1999 09 07	704	0.7+	0.8+
1995 10 15	691	0.3-	0.1-	1995 10 27	691	0.5-	0.1+	1999 09 14	704	0.0	0.2-
1995 10 15	691	0.4+	0.1+	1995 10 27	691	0.1+	0.1-	1999 09 14	704	0.3+	0.0
1995 10 22	691	0.2+	0.2+	1999 09 07	704	0.2-	0.1-	1999 09 14	704	0.4+	0.2+
1995 10 22	691	0.1+	0.0	1999 09 07	704	0.2-	0.5-	1999 09 14	704	0.6-	0.4+
1995 10 22	691	0.3+	0.2+	1999 09 07	704	0.5-	0.7-				

1995 UG₁ = 1999 RF₃₅

Id. M. Tichý

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

M	344.49544		(2000.0)		P		Q			
n	0.23257558	ω	353.48399		+0.99978051		+0.00451622			
a	2.6187456	Ω	6.36562		+0.00769775		+0.82900040			
e	0.1238260	i	10.63302		-0.01948513		+0.55922977			
P	4.24	H	16.2		G	0.15	U	4		
Residuals in seconds of arc										
1995 10 22	046	0.2-	0.2-	1995 10 26	046	0.5-	0.0	1999 09 11	046	0.2+ 0.6-
1995 10 22	046	0.4+	0.5+	1995 10 26	046	0.2-	0.6-	1999 09 11	046	1.3+ 0.0
1995 10 22	046	0.3+	0.2+	1995 11 26	046	0.0	1.2-	1999 09 11	046	0.0 0.7-
1995 10 22	046	0.4+	0.1+	1995 11 26	046	0.3+	0.3-	1999 09 12	046	0.1+ 0.3+
1995 10 22	046	0.2-	0.5+	1995 11 26	046	0.3-	0.6-	1999 09 12	046	0.0 0.4+
1995 10 23	046	0.0	0.3+	1995 11 27	046	0.2+	0.7+	1999 09 12	046	0.3- 0.4+
1995 10 23	046	0.1+	0.1-	1995 11 27	046	0.0	1.1+	1999 09 12	046	0.5- 0.8+
1995 10 23	046	0.2-	0.2+	1995 11 27	046	0.3-	0.5+	1999 09 12	046	0.6- 0.2+
1995 10 23	046	0.5+	0.6-	1999 09 11	046	0.3+	0.4-			
1995 10 26	046	0.4-	0.5-	1999 09 11	046	0.5-	0.4-			

1995 UM₃ = 1999 RJ₁₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	313.02840		(2000.0)		P		Q				
n	0.21830535	ω	20.64052		+0.87216370		-0.48897014				
a	2.7316589	Ω	8.68114		+0.43327025		+0.75737776				
e	0.1126957	i	5.87500		+0.22717258		+0.43276684				
P	4.51	H	14.5		G	0.15	U	5			
Residuals in seconds of arc											
1995 10 17	358	1.8-	0.9-	1999 08 08	699	0.7+	0.1-	1999 09 09	704	0.7-	0.1+
1995 10 17	358	(3.0-	2.9-)	1999 08 08	699	1.1-	0.4-	1999 09 09	704	0.7+	1.2+
1995 10 20	358	1.5+	0.2+	1999 09 07	704	0.0	1.3+	1999 09 09	704	0.4-	0.6+
1995 10 20	358	1.4-	1.2+	1999 09 07	704	0.3+	0.7-	1999 09 13	704	0.2-	1.0-
1995 11 11	358	1.4+	0.5-	1999 09 07	704	0.4+	0.4-	1999 09 13	704	0.4-	0.6+
1995 11 11	358	0.5+	0.5+	1999 09 07	704	0.3+	0.8-	1999 09 13	704	0.4-	0.1-
1995 11 12	358	0.8-	0.4+	1999 09 07	704	0.3-	0.6-	1999 09 13	704	0.2+	0.3+
1995 11 12	358	0.5+	1.0-	1999 09 09	704	0.6+	0.2-	1999 09 13	704	0.3-	0.1+
1999 08 08	699	1.0+	0.1-	1999 09 09	704	0.2-	0.0				

1995 UM₁₂ = 1999 RD₁₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	16.86550		(2000.0)		P		Q				
<i>n</i>	0.22535742	ω	301.79271		+0.59666611		+0.80248321				
<i>a</i>	2.6743699	Ω	4.84247		-0.72285185		+0.53918254				
<i>e</i>	0.1228199	<i>i</i>	2.17370		-0.34853228		+0.25554431				
<i>P</i>	4.37	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	4				
Residuals in seconds of arc											
1995 10 17	691	0.4-	0.2+	1996 12 14	691	0.1+	0.5+	1999 09 09	704	0.0	1.2+
1995 10 17	691	0.1-	0.3+	1996 12 14	691	0.5+	0.4+	1999 09 09	704	0.2+	0.8+
1995 10 17	691	0.1+	0.1+	1996 12 14	691	0.5-	0.7-	1999 09 09	704	0.6-	0.3+
1995 10 22	691	0.0	0.0	1999 09 07	704	0.4-	1.7-	1999 09 09	704	1.5-	0.2+
1995 10 22	691	0.2-	0.0	1999 09 07	704	0.5-	0.6-	1999 09 13	704	0.7+	0.6-
1995 10 22	691	0.1-	0.0	1999 09 07	704	1.2+	0.4+	1999 09 13	704	0.1+	1.2-
1995 10 28	691	0.5+	0.2-	1999 09 07	704	0.2-	0.3-	1999 09 13	704	1.4+	1.2+
1995 10 28	691	0.3+	0.2-	1999 09 07	704	0.1+	0.7+				
1995 10 28	691	0.0	0.3-	1999 09 09	704	0.7-	0.4-				

1995 UK₄₅ = 1996 YQ = 1998 HF₈₀ = 1999 RF₁₆₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	47.74483		(2000.0)			P		Q			
n	0.23137036	ω	342.72404			+0.25289834		+0.96724061			
a	2.6278318	Ω	301.91999			-0.88455442		+0.22190841			
e	0.0795355	i	1.49143			-0.39192591		+0.12329748			
P	4.26	H	14.6			G	0.15	U	1		
Residuals in seconds of arc											
1995 09 26	691	0.2+	0.4+	1998 04 22	704	0.9+	0.0	1999 09 09	704	0.1-	0.1-
1995 09 26	691	0.1+	0.2+	1998 04 22	704	0.8+	0.6-	1999 09 09	704	0.4-	0.3-
1995 09 26	691	0.1+	0.3+	1998 04 22	704	0.8+	0.2-	1999 09 09	704	0.0	0.2-
1995 10 20	010	(1.0-	3.4+)	1998 05 01	704	0.1+	0.2+	1999 09 11	699	0.3-	0.2-
1995 10 20	010	(0.5+	2.8+)	1998 05 01	704	1.4-	0.0	1999 09 11	699	0.2-	0.8+
1995 10 20	010	(0.3-	2.8+)	1998 05 01	704	0.3-	0.2+	1999 09 11	699	0.4-	0.6+
1995 10 23	010	0.3-	0.4+	1998 05 01	704	0.7-	0.1+	1999 09 14	704	0.1-	0.4+
1995 10 23	010	0.0	1.1-	1998 05 01	704	0.7-	1.5+	1999 09 14	704	0.6+	0.1-
1995 10 23	010	0.3-	0.4+	1998 05 01	566	0.2+	0.7-	1999 09 14	704	0.0	0.0
1996 12 20	411	0.8+	0.4+	1998 05 01	566	0.7+	0.7-	1999 09 14	704	0.9+	0.5-
1996 12 20	411	0.2+	0.5+	1998 05 01	566	1.0+	0.6-	1999 09 14	704	0.1+	0.3-
1996 12 21	411	0.2-	0.1+	1998 05 26	691	0.2-	0.0	1999 09 14	703	0.2-	0.8+
1996 12 21	411	0.6-	0.2-	1998 05 26	691	0.7+	0.2+	1999 09 14	703	0.2-	0.5+
1998 04 21	704	0.2+	0.6+	1999 09 07	704	0.2+	0.4-	1999 09 14	703	0.4+	0.4+
1998 04 21	704	0.1-	0.2+	1999 09 07	704	0.1-	0.2+	1999 09 14	703	0.2-	0.6+
1998 04 21	704	0.6-	0.1-	1999 09 07	704	0.1-	0.3-	1999 09 18	691	0.2-	0.3+
1998 04 21	704	0.4+	0.4-	1999 09 07	704	0.3-	0.7-	1999 09 18	691	0.0	0.4+
1998 04 21	704	0.3-	0.7+	1999 09 07	704	0.4+	0.4-	1999 09 18	691	0.0	0.3+

1998 04 22 704 0.1+ 0.5+ 1999 09 09 704 0.3- 0.1-
 1998 04 22 704 1.0- 0.2+ 1999 09 09 704 0.2+ 1.0-

1995 VK₁ = 1999 RC₁₂₄

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	275.01672		(2000.0)	P	Q			
<i>n</i>	0.21878024	ω	101.96500	+0.21219529	-0.97714221			
<i>a</i>	2.7277045	Ω	335.77235	+0.88391748	+0.19754410			
<i>e</i>	0.0731694	<i>i</i>	1.80064	+0.41672899	+0.07854577			
<i>P</i>	4.51	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 4			

Residuals in seconds of arc

1991 12 27	691	0.1-	0.1+	1999 09 07	704	0.3-	0.5-	1999 09 10	704	0.1-	0.2-
1991 12 27	691	0.1+	0.4+	1999 09 07	704	0.1-	0.1-	1999 09 11	699	0.4+	1.0+
1991 12 27	691	0.2+	0.3+	1999 09 09	704	0.0	0.1-	1999 09 11	704	0.0	0.0
1995 11 15	400	0.7+	0.2+	1999 09 09	704	0.2+	0.1+	1999 09 11	704	0.2+	0.1+
1995 11 15	400	0.0	1.0+	1999 09 09	704	0.1-	0.2-	1999 09 11	704	0.2-	0.3+
1995 11 16	400	0.2-	0.0	1999 09 09	704	0.1-	0.1+	1999 09 11	704	0.0	0.2-
1995 11 16	400	0.2+	0.1-	1999 09 09	704	0.6-	0.3+	1999 09 11	699	0.3+	1.6+
1995 11 21	400	1.1-	0.1+	1999 09 09	704	0.1+	0.1-	1999 09 11	704	0.3-	0.2+
1995 11 21	400	0.2-	0.1-	1999 09 09	704	0.5-	0.6-	1999 09 11	704	0.1-	0.1+
1995 11 25	400	1.7+	1.5-	1999 09 09	704	0.1-	0.1+	1999 09 11	704	0.1+	0.1-
1995 11 25	400	1.5-	0.8+	1999 09 09	704	1.0+	0.4+	1999 09 11	704	0.3-	0.1-
1995 12 19	400	0.6+	0.0	1999 09 09	704	0.1+	0.1-	1999 09 11	699	0.6+	1.0+
1995 12 19	400	0.1+	1.3-	1999 09 10	704	0.2-	0.0	1999 09 11	704	0.3+	0.1+
1999 08 22	699	0.5-	0.1+	1999 09 10	704	0.2-	0.2-	1999 09 11	704	0.2+	0.1+
1999 08 22	699	0.3+	0.5+	1999 09 10	704	0.6-	0.4-	1999 09 14	704	0.5+	0.2-
1999 08 22	699	0.2+	0.7-	1999 09 10	704	0.3-	0.4-	1999 09 14	704	0.6+	0.0
1999 09 07	704	0.3-	0.4-	1999 09 10	704	0.6-	0.3+	1999 09 14	704	0.3+	0.2+
1999 09 07	704	0.1+	0.4-	1999 09 10	704	0.4-	0.6-	1999 09 14	704	0.5+	0.1+
1999 09 07	704	0.4-	0.4-	1999 09 10	704	0.4-	0.1+	1999 09 14	704	0.5+	0.4-

1995 VX₂ = 1994 GY₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	70.48077		(2000.0)	P	Q			
<i>n</i>	0.26461683	ω	103.90668	+0.58462611	+0.81121765			
<i>a</i>	2.4028375	Ω	201.88262	-0.75600582	+0.53946318			
<i>e</i>	0.1816088	<i>i</i>	1.80774	-0.29439345	+0.22562226			
<i>P</i>	3.72	<i>H</i>	16.4	<i>G</i> 0.15	<i>U</i> 3			

Residuals in seconds of arc

1994 04 06	691	0.8+	0.8-	1994 04 16	691	0.4-	0.4-	1995 11 19	691	0.7+	0.1+
1994 04 06	691	0.7+	0.5-	1994 04 16	691	0.3-	0.1+	1995 11 19	691	0.4+	0.1-
1994 04 06	691	0.5+	0.1-	1994 04 16	691	0.5-	0.2+	1995 11 19	691	0.1-	0.1+
1994 04 16	691	0.4-	0.3+	1995 09 27	691	0.2-	0.1-	1998 05 24	704	0.2+	0.1+
1994 04 16	691	0.3-	0.4-	1995 09 27	691	0.9+	0.2-	1998 05 24	704	(2.9+ 0.0)	
1994 04 16	691	0.3-	0.4+	1995 09 27	691	0.2-	0.3-	1998 05 24	704	0.2+	0.1+
1994 04 16	691	0.2-	0.1+	1995 11 14	691	0.5-	0.0	1998 05 24	704	0.5-	0.2-
1994 04 16	691	0.0	0.1+	1995 11 14	691	0.7-	0.1-				
1994 04 16	691	0.1+	0.3+	1995 11 14	691	0.0	0.3-				

1995 VH₁₁ = 1999 RL₇₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	357.98951		(2000.0)	P	Q			
<i>n</i>	0.22470388	ω	203.29050	+0.94104645	+0.33528691			
<i>a</i>	2.6795529	Ω	137.03686	-0.29908540	+0.88665153			
<i>e</i>	0.0886119	<i>i</i>	3.77583	-0.15804907	+0.31848352			
<i>P</i>	4.39	<i>H</i>	15.7	<i>G</i> 0.15	<i>U</i> 3			

Residuals in seconds of arc

1991 12 28	691	0.2+	1.0-	1998 05 01	704	0.8+	2.0+	1999 09 11	704	0.0	1.1-
1991 12 28	691	0.6+	0.4-	1998 05 01	704	0.9-	0.9-	1999 09 11	704	0.2+	0.3-
1995 11 15	691	0.2-	0.2+	1999 09 07	704	0.2-	0.9+	1999 09 11	704	0.2+	0.1+

1995 11 15	691	0.2-	0.0	1999 09 07	704	0.5-	0.7+	1999 09 11	704	1.0+	0.3+
1995 11 15	691	0.0	0.3+	1999 09 07	704	0.6-	0.1-	1999 09 11	704	0.8+	0.7+
1995 11 20	691	0.2+	0.1+	1999 09 07	704	0.7-	0.9-	1999 09 11	704	0.7+	0.7-
1995 11 20	691	0.2+	0.2+	1999 09 07	704	0.1-	0.4+	1999 09 11	704	0.1+	0.8-
1995 11 20	691	0.1-	0.1+	1999 09 09	704	0.6-	0.4-	1999 09 11	704	0.0	0.2+
1995 11 25	691	0.4-	0.2-	1999 09 09	704	0.3+	0.3+	1999 09 11	704	1.4+	0.4-
1995 11 25	691	0.3-	0.1-	1999 09 09	704	1.2+	1.3+	1999 09 11	704	0.5-	0.4+
1995 11 25	691	0.3-	0.3-	1999 09 11	704	0.3+	0.4-	1999 09 13	704	0.7-	0.2-
1998 05 01	704	0.4-	1.1-	1999 09 11	704	0.5-	0.9-	1999 09 13	704	0.4-	0.6-
1998 05 01	704	0.0	1.1-	1999 09 11	704	0.4+	0.9+	1999 09 13	704	0.9-	0.2-

1995 VU₁₁ = 1999 RK₁₄₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	14.69358		(2000.0)	P	Q			
<i>n</i>	0.23241591	ω	172.83838	+0.81600310	+0.57693750			
<i>a</i>	2.6199448	Ω	151.83148	-0.53403867	+0.77613669			
<i>e</i>	0.1776922	<i>i</i>	4.35004	-0.22122757	+0.25446997			
<i>P</i>	4.24	<i>H</i>	15.9	<i>G</i> 0.15	<i>U</i> 5			

Residuals in seconds of arc

1995 11 15	691	0.4+	0.4+	1999 08 22	703	0.8+	0.8-	1999 09 09	704	1.6-	0.8+
1995 11 15	691	0.5+	0.1-	1999 08 22	703	1.1-	0.1+	1999 09 09	704	0.6-	0.2-
1995 11 15	691	0.1+	0.1+	1999 08 22	703	1.3+	0.5-	1999 09 09	704	1.0-	0.6+
1995 11 19	691	0.3-	0.3-	1999 08 22	703	0.7-	0.9+	1999 09 09	704	0.4+	0.5+
1995 11 19	691	0.2-	0.2-	1999 09 08	704	0.3+	0.7-	1999 09 14	704	0.8+	0.6-
1995 11 19	691	0.3-	0.1+	1999 09 08	704	0.6-	0.1-	1999 09 14	704	0.5+	0.0
1995 11 25	691	0.1+	0.0	1999 09 08	704	0.8+	0.1+	1999 09 14	704	0.6+	0.2-
1995 11 25	691	0.1-	0.0	1999 09 08	704	0.4-	0.7-	1999 09 14	704	0.3+	0.1-
1995 11 25	691	0.2-	0.0	1999 09 09	704	0.4-	1.3+	1999 09 14	704	0.4+	0.4-

1995 VJ₁₆ = 1999 RY₁₃₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	1.83087		(2000.0)	P	Q			
<i>n</i>	0.21227353	ω	91.00916	+0.82569776	+0.56102833			
<i>a</i>	2.7831641	Ω	234.86648	-0.54197668	+0.75999230			
<i>e</i>	0.1620232	<i>i</i>	4.13082	-0.15647520	+0.32811419			
<i>P</i>	4.64	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 4			

Residuals in seconds of arc

1995 11 15	691	0.2+	0.3-	1995 12 18	691	0.0	0.1+	1999 09 07	704	0.1+	0.8+
1995 11 15	691	0.0	0.1+	1995 12 23	691	0.0	0.1+	1999 09 09	704	0.9-	0.1-
1995 11 15	691	0.1+	0.0	1995 12 23	691	0.0	0.1-	1999 09 09	704	0.5+	0.2-
1995 11 20	691	0.9-	0.1+	1995 12 23	691	0.0	0.2+	1999 09 09	704	1.0-	0.4-
1995 11 20	691	0.7+	1.3+	1996 01 24	691	0.0	0.2-	1999 09 09	704	0.0	0.4-
1995 11 20	691	0.2-	0.1-	1996 01 24	691	0.3-	0.4-	1999 09 14	704	0.6+	0.4-
1995 11 27	691	0.1+	0.4-	1996 01 24	691	0.3+	0.0	1999 09 14	704	0.3-	0.0
1995 11 27	691	0.0	0.3-	1999 09 07	704	0.6+	0.2+	1999 09 14	704	0.3+	0.3+
1995 11 27	691	0.1+	0.4-	1999 09 07	704	0.2+	0.6-	1999 09 14	704	0.0	0.4+
1995 12 18	691	0.3-	0.2+	1999 09 07	704	0.2-	0.1+				
1995 12 18	691	0.3+	0.1+	1999 09 07	704	0.1+	0.3+				

1995 WD₁

Id. E. Bowell (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	283.42654		(2000.0)	P	Q			
<i>n</i>	0.20510802	ω	216.19659	+0.61031786	-0.79206540			
<i>a</i>	2.8476129	Ω	196.20199	+0.73653557	+0.57298552			
<i>e</i>	0.1404989	<i>i</i>	2.46935	+0.29159469	+0.21052316			
<i>P</i>	4.81	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 3			

Residuals in seconds of arc

1995 11 16	399	1.0-	0.1+	1996 01 14	691	0.2+	0.7+	1999 07 21	699	0.3+	0.6-
1995 11 16	399	(3.7-	0.8-)	1996 01 14	691	0.1+	0.6+	1999 07 21	699	0.0	0.5-
1995 11 17	399	0.0	0.3-	1996 01 14	691	0.1+	0.6+	1999 07 21	699	0.7+	0.4+
1995 11 17	399	(4.0-	0.8-)	1998 05 24	704	0.5+	1.1+	1999 09 04	703	(2.3+	0.6+)

1995 11 21	399	(4.0− 1.0+)	1998 05 24	704	(3.0+ 0.8−)	1999 09 04	703	0.4+ 0.2+
1995 11 21	399	(7.2− 1.3−)	1998 05 24	704	0.1− 0.5+	1999 09 04	703	0.2+ 1.3+
1995 12 22	691	0.1− 0.5+	1998 05 24	704	0.1+ 1.6+	1999 09 04	703	1.0+ 1.5+
1995 12 22	691	0.1+ 0.5−	1999 07 13	704	0.1+ 0.0	1999 09 05	699	0.5− 1.1−
1995 12 22	691	0.3+ 0.6+	1999 07 13	704	0.5+ 0.0	1999 09 05	699	0.7− 0.7−
1995 12 28	691	0.1+ 0.2+	1999 07 13	704	0.3− 0.9−	1999 09 05	699	0.9− 0.5+
1995 12 28	691	0.1− 0.3+	1999 07 13	704	0.4− 0.2−			
1995 12 28	691	0.0 0.2+	1999 07 13	704	0.4− 0.4+			

1995 WD₇ = 1999 RG₁₉₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	329.99795		(2000.0)	P	Q
<i>n</i>	0.21501048	ω	115.41609	+0.96557717	−0.22279910
<i>a</i>	2.7594951	Ω	257.69126	+0.16037314	+0.91624008
<i>e</i>	0.1608560	<i>i</i>	7.89753	+0.20479549	+0.33296348
<i>P</i>	4.58	<i>H</i>	14.5	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1995 11 21	358	(0.7− 2.1+)	1995 12 19	358	1.1+ 0.4−	1999 09 09	704	0.1+ 0.6−
1995 11 21	358	(2.8− 0.7−)	1999 09 04	703	0.1− 0.4+	1999 09 09	704	0.4+ 0.6−
1995 11 22	358	0.9− 0.9−	1999 09 04	703	0.7− 0.5+	1999 09 09	704	0.7+ 0.9−
1995 11 22	358	(0.8− 2.8−)	1999 09 04	703	0.6− 0.2+	1999 09 09	704	0.4+ 0.8−
1995 11 30	896	0.2+ 0.2+	1999 09 04	703	0.9− 0.2−	1999 09 16	704	0.6+ 0.7−
1995 11 30	896	0.2− 0.2+	1999 09 08	699	(4.6− 0.0)	1999 09 16	704	0.5+ 0.1+
1995 12 01	900	0.4− 0.9+	1999 09 08	699	0.5− 1.0+	1999 09 16	704	0.2+ 0.5+
1995 12 01	900	0.1+ 0.3+	1999 09 08	699	1.0− 0.9+	1999 09 16	704	0.1+ 0.5+
1995 12 19	358	0.1+ 0.3−	1999 09 09	704	1.0+ 0.4−			

1995 WK₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	322.56198		(2000.0)	P	Q
<i>n</i>	0.21746778	ω	338.74875	+0.70406945	−0.70307612
<i>a</i>	2.7386683	Ω	66.33697	+0.66624092	+0.60532542
<i>e</i>	0.0023297	<i>i</i>	6.25863	+0.24578290	+0.37318240
<i>P</i>	4.53	<i>H</i>	12.6	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1988 03 18	675	0.2+ 0.3+	1995 11 28	411	0.7+ 0.1−	1995 12 21	411	0.5− 0.2+
1988 03 18	675	0.5+ 1.1+	1995 12 01	411	0.2+ 0.4−	1995 12 21	411	0.0 0.8+
1995 11 27	411	0.2− 0.1+	1995 12 01	411	0.5+ 0.4−	1999 09 15	106	0.4− 0.0
1995 11 27	411	0.1+ 0.4−	1995 12 09	411	0.0 0.8+	1999 09 15	106	0.4− 0.8+
1995 11 28	411	0.5− 0.1+	1995 12 09	411	0.1− 1.2−	1999 09 15	106	0.2− 0.9+

1995 WF₁₃ = 1999 ST

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	324.38895		(2000.0)	P	Q
<i>n</i>	0.22149799	ω	215.23068	+0.83824166	−0.54528916
<i>a</i>	2.7053462	Ω	177.80597	+0.51782550	+0.79411900
<i>e</i>	0.0255503	<i>i</i>	4.89050	+0.17090252	+0.26839290
<i>P</i>	4.45	<i>H</i>	17.0	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1995 11 16	691	0.3− 0.0	1995 11 21	691	0.3− 0.0	1999 09 16	691	0.4− 0.2+
1995 11 16	691	0.1+ 0.1−	1995 11 28	691	0.2− 0.2−	1999 09 16	691	0.4− 0.1+
1995 11 16	691	0.1− 0.0	1995 11 28	691	0.3+ 0.0	1999 09 18	691	0.4+ 0.1+
1995 11 21	691	0.1+ 0.2+	1995 11 28	691	0.4+ 0.0	1999 09 18	691	0.9+ 0.5−
1995 11 21	691	0.0 0.2+	1999 09 16	691	0.8− 0.0	1999 09 18	691	0.2+ 0.0

1995 WN₂₀ = 1998 SJ₁₀₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	237.57518		(2000.0)	P	Q
<i>n</i>	0.29235713	ω	94.74366	−0.78980220	+0.61172009
<i>a</i>	2.2483310	Ω	122.97750	−0.58181281	−0.72402665
<i>e</i>	0.0809261	<i>i</i>	3.06433	−0.19418120	−0.31872237
<i>P</i>	3.37	<i>H</i>	15.8	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1995 11 17	691	0.1+ 0.1−	1998 09 16	557	0.1− 0.3+	1998 09 26	704	0.6− 0.5−
1995 11 17	691	0.1− 0.1−	1998 09 16	557	0.2+ 0.4−	1998 09 27	704	0.8− 0.6+
1995 11 17	691	0.1+ 0.1+	1998 09 26	704	0.1+ 0.8−	1998 09 27	704	0.9− 0.4−
1995 11 23	691	0.2+ 0.2+	1998 09 26	704	1.1+ 0.9+	1998 09 27	704	(3.3− 0.3+)
1995 11 23	691	0.1− 0.1−	1998 09 26	704	0.3+ 1.0−			
1995 11 23	691	0.2− 0.0	1998 09 26	704	0.8+ 1.4+			

1995 XQ₄ = 1999 RL₁₈₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	332.05108		(2000.0)	P	Q
<i>n</i>	0.21255493	ω	253.84544	+0.97428465	−0.20954988
<i>a</i>	2.7807072	Ω	118.18697	+0.22531971	+0.90718995
<i>e</i>	0.0834917	<i>i</i>	5.39129	−0.00067580	+0.36482222
<i>P</i>	4.64	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1995 12 14	691	0.2+ 0.1−	1996 01 15	691	0.1+ 0.5+	1999 09 08	703	0.2− 0.3−
1995 12 14	691	0.3− 0.1−	1996 01 15	691	0.2+ 0.2+	1999 09 08	703	0.4− 1.0−
1995 12 14	691	0.3− 0.2−	1998 05 24	704	0.2+ 0.5−	1999 09 08	703	1.3− 0.4−
1995 12 20	691	0.1− 0.1+	1998 05 24	704	0.2+ 0.7+	1999 09 09	704	0.0 0.3−
1995 12 20	691	0.0 0.0	1998 05 24	704	0.2− 0.5+	1999 09 09	704	0.5+ 0.2+
1995 12 20	691	0.1+ 0.0	1998 05 24	704	(3.8− 0.4−)	1999 09 09	704	0.1+ 0.0
1995 12 27	691	0.2+ 0.1+	1999 09 07	704	0.1− 0.8+	1999 09 09	704	0.1+ 0.0
1995 12 27	691	0.2− 0.2+	1999 09 07	704	0.3+ 0.9+	1999 09 13	704	0.9+ 0.6+
1995 12 27	691	0.1− 0.1+	1999 09 07	704	0.2− 0.7−	1999 09 13	704	0.4+ 0.2+
1996 01 15	691	0.1− 0.2+	1999 09 08	703	0.1− 0.2+	1999 09 13	704	0.0 0.1−

1995 XC₅ = 1999 RU₃₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	348.62601		(2000.0)	P	Q
<i>n</i>	0.22703227	ω	186.02508	+0.99272367	−0.12041090
<i>a</i>	2.6612009	Ω	180.89246	+0.11290305	+0.93355085
<i>e</i>	0.1595924	<i>i</i>	3.55068	+0.04186425	+0.33761519
<i>P</i>	4.34	<i>H</i>	15.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1993 03 19	809	0.1− 1.0+	1995 12 27	691	0.4+ 0.0	1999 09 09	704	0.3+ 0.6−
1993 03 24	809	0.4+ 0.2−	1999 09 07	704	0.6+ 0.5−	1999 09 12	120	2.0− 0.6+
1995 12 14	691	0.2+ 0.1−	1999 09 07	704	0.4+ 0.0	1999 09 12	120	(2.9− 0.4+)
1995 12 14	691	0.3− 0.1+	1999 09 07	704	0.2+ 1.4−	1999 09 12	120	1.2− 0.8+
1995 12 14	691	0.1− 0.1−	1999 09 07	704	0.2− 0.7−	1999 09 13	120	0.6− 1.5+
1995 12 20	691	0.2− 0.1+	1999 09 07	704	0.6− 0.1+	1999 09 13	120	0.5+ 0.2−
1995 12 20	691	0.2− 0.0	1999 09 09	704	0.4+ 0.2−	1999 09 14	120	0.4− 1.1+
1995 12 20	691	0.1+ 0.1+	1999 09 09	704	1.0+ 1.4−	1999 09 14	120	0.4+ 0.6+
1995 12 27	691	0.1− 0.0	1999 09 09	704	0.4+ 0.7+			
1995 12 27	691	0.3+ 0.0	1999 09 09	704	0.4+ 0.2+			

1995 YL = 1999 RR₂₀₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	283.53509		(2000.0)	P	Q
<i>n</i>	0.21113054	ω	178.38933	−0.06295490	−0.99021348
<i>a</i>	2.7931999	Ω	275.20749	+0.91425806	−0.00717391
<i>e</i>	0.1897750	<i>i</i>	7.18487	+0.40021104	−0.13937644
<i>P</i>	4.67	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 5

M.P.C. 35928

Residuals in seconds of arc

1995 12 19	411	0.5+	0.2+	1996 01 09	411	0.2-	0.5+	1999 09 18	703	1.1-	0.5-
1995 12 19	411	0.2-	0.8+	1996 01 24	411	1.1-	0.5+	1999 09 18	704	0.2+	0.2+
1995 12 20	411	0.1+	0.4-	1996 01 24	411	0.1-	0.5-	1999 09 18	703	0.1+	0.0
1995 12 20	411	0.7+	0.4+	1999 09 08	704	0.2+	0.5-	1999 09 18	703	0.8-	0.4+
1995 12 26	411	1.2+	0.6+	1999 09 08	704	0.7+	0.9+	1999 09 18	704	0.3-	0.1-
1995 12 26	411	1.6+	0.6+	1999 09 08	704	0.0	0.1-	1999 09 18	703	0.0	0.2+
1995 12 30	411	0.5-	1.9-	1999 09 08	704	0.1-	0.5+	1999 09 18	704	0.1+	0.0
1995 12 30	411	1.7-	0.6-	1999 09 18	704	0.4-	0.6-				
1996 01 09	411	0.3-	0.1-	1999 09 18	704	1.4+	0.6-				

1995 YF₇ = 1999 RA₁₅₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	349.64201	(2000.0)		P	Q		
<i>n</i>	0.22361833	ω	207.54176	+0.98676350	+0.15854917		
<i>a</i>	2.6882178	Ω	143.28558	-0.13632972	+0.92478379		
<i>e</i>	0.2483388	<i>i</i>	3.26590	-0.08781800	+0.34588596		
<i>P</i>	4.41	<i>H</i>	16.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1995 12 16	691	0.2+	0.1+	1997 02 03	691	0.4+	0.3+	1999 09 09	704	0.1-	0.6+
1995 12 16	691	0.2-	0.1+	1999 09 07	704	0.1+	0.6-	1999 09 09	704	0.2-	0.3+
1995 12 16	691	0.0	0.3+	1999 09 07	704	0.1-	0.2-	1999 09 09	704	1.4+	0.2+
1995 12 22	691	0.1+	0.4-	1999 09 07	704	0.2-	0.6-	1999 09 09	704	0.1+	0.3+
1995 12 22	691	0.0	0.1-	1999 09 07	704	0.2-	0.3-	1999 09 13	704	0.0	0.1+
1995 12 22	691	0.0	0.1-	1999 09 07	704	0.2-	0.4-	1999 09 13	704	0.1+	0.8-
1995 12 27	691	0.0	0.0	1999 09 08	703	0.8-	0.9-	1999 09 13	704	0.2+	0.4+
1995 12 27	691	0.0	0.0	1999 09 08	703	0.6-	0.6+	1999 09 13	704	0.5+	0.1-
1995 12 27	691	0.0	0.1-	1999 09 08	703	0.5+	0.3+	1999 09 13	704	0.2-	0.3+
1997 02 03	691	(3.1-	6.9-)	1999 09 08	703	0.2-	1.3+				
1997 02 03	691	0.2-	0.3+	1999 09 09	704	0.3-	0.1-				

1996 BJ₂ = 1999 RS₁₀₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	267.74572	(2000.0)		P	Q		
<i>n</i>	0.18476833	ω	145.72125	+0.03993135	-0.99012157		
<i>a</i>	3.0529359	Ω	301.64538	+0.87774210	+0.09903511		
<i>e</i>	0.0563179	<i>i</i>	9.08388	+0.47746654	-0.09925386		
<i>P</i>	5.33	<i>H</i>	12.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 01 26	411	0.2+	0.1-	1998 06 24	704	0.7-	0.4+	1999 09 09	704	0.2+	0.1-
1996 01 26	411	0.4+	1.3+	1999 07 23	704	0.2-	0.1+	1999 09 09	704	0.2+	0.1-
1996 01 27	411	0.2-	0.5+	1999 07 23	704	0.2-	0.4-	1999 09 10	704	0.3+	0.0
1996 01 27	411	1.0+	0.5-	1999 07 23	704	0.4+	0.3+	1999 09 10	704	0.1+	0.3-
1996 01 29	411	0.5-	0.8+	1999 07 23	704	0.2-	0.8+	1999 09 10	704	0.2+	0.1-
1996 01 29	411	0.1+	0.0	1999 07 23	704	0.6-	1.0+	1999 09 11	704	0.2+	0.1-
1996 01 29	411	0.4+	0.6-	1999 09 08	704	0.5+	1.1-	1999 09 11	704	0.1+	0.2-
1996 02 12	411	0.4+	0.9-	1999 09 08	704	0.0	0.1-	1999 09 11	704	0.2+	0.1+
1996 02 12	411	0.4-	0.9+	1999 09 08	704	0.1+	0.3-	1999 09 11	704	0.1+	0.7+
1996 02 19	411	0.8-	0.5-	1999 09 08	704	0.1+	0.1-	1999 09 11	704	0.5+	0.7+
1996 02 19	411	0.2-	0.0	1999 09 08	704	0.1+	0.0	1999 09 16	704	1.2-	0.7+
1998 06 24	704	0.2+	0.2+	1999 09 09	704	0.8+	0.2-	1999 09 16	704	1.2-	0.2+
1998 06 24	704	0.3+	1.0-	1999 09 09	704	0.3+	0.2-	1999 09 16	704	1.3-	0.3-
1998 06 24	704	0.1-	1.0+	1999 09 09	704	0.4+	0.2-				

1996 BP₃

Id. E. Bowell (1994 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	302.76137	(2000.0)		P	Q		
<i>n</i>	0.18918455	ω	84.34197	+0.27239871	-0.96171743		
<i>a</i>	3.0052385	Ω	349.70095	+0.80304671	+0.24439655		
<i>e</i>	0.0996487	<i>i</i>	9.65189	+0.53001408	+0.12397545		
<i>P</i>	5.21	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	3

1999 SEPT. 28

Residuals in seconds of arc

1994 11 07	675	0.1-	0.4+	1996 01 27	691	0.0	0.2+	1996 02 12	411	0.2+	0.5-
1994 11 07	675	0.1+	0.5-	1996 01 27	691	0.1-	0.2-	1996 02 23	411	0.2+	0.4+
1996 01 15	691	0.0	0.4-	1996 01 27	691	0.1-	0.0	1996 02 23	411	0.8-	0.0
1996 01 15	691	0.2-	0.1-	1996 01 27	411	0.0	1.1+	1999 09 19	681	0.2+	0.4+
1996 01 15	691	0.0	0.2-	1996 01 27	411	0.6+	0.4-	1999 09 19	681	0.0	0.0
1996 01 21	691	0.2-	0.2-	1996 01 30	411	0.3-	0.8+	1999 09 20	681	0.0	0.2-
1996 01 21	691	0.2-	0.2-	1996 01 30	411	0.3+	0.0	1999 09 20	681	0.3-	0.0
1996 01 21	691	0.2-	0.2-	1996 02 12	411	0.8+	0.0				

1996 EG

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	340.93469	(2000.0)		P	Q		
<i>n</i>	0.17442826	ω	175.23839	+0.93208135	-0.35510494		
<i>a</i>	3.1724258	Ω	205.92237	+0.32671563	+0.90943126		
<i>e</i>	0.1055392	<i>i</i>	9.42519	+0.15646488	+0.21641457		
<i>P</i>	5.65	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 03 13	589	0.8-	0.5-	1996 04 19	589	1.3-	0.6+	1999 09 01	589	0.0	0.1-
1996 03 13	589	0.3-	0.4+	1996 04 20	589	0.7+	1.0-	1999 09 01	589	0.2+	0.2+
1996 03 13	589	1.1+	0.5+	1996 04 20	589	1.3-	0.4+	1999 09 02	589	0.4+	0.2-
1996 03 14	589	1.2+	1.0-	1996 04 20	589	1.0-	0.2-	1999 09 02	589	0.9+	0.0
1996 03 14	589	1.1+	0.8-	1996 05 08	589	0.0	0.3-	1999 09 02	589	0.1-	0.0
1996 03 19	589	0.1+	0.0	1996 05 08	589	0.9+	0.3-	1999 09 05	699	1.3-	0.9+
1996 03 19	589	0.7+	0.5+	1996 05 08	589	0.5-	0.4+	1999 09 05	699	0.2-	0.3+
1996 04 16	589	1.5-	0.3+	1996 05 08	589	0.3-	0.2+	1999 09 05	699	0.0	0.2-
1996 04 16	589	0.5+	1.2+	1996 05 20	589	1.0+	0.1+	1999 09 07	589	0.8+	0.3+
1996 04 16	589	1.0-	0.1+	1996 05 20	589	0.7+	0.1-	1999 09 07	589	0.0	0.4-
1996 04 16	589	1.1+	0.2+	1996 05 20	589	0.5+	0.1-	1999 09 07	589	0.4-	0.4+
1996 04 19	589	0.9-	0.8+	1996 05 20	589	0.7-	0.9-				
1996 04 19	589	0.2-	0.5-	1999 09 01	589	0.0	1.2-				

1996 HX₂₀ = 1997 TO₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	187.81380	(2000.0)		P	Q		
<i>n</i>	0.28656925	ω	176.91064	+0.91321407	-0.40474986		
<i>a</i>	2.2785033	Ω	207.11750	+0.37160606	+0.87465032		
<i>e</i>	0.1159100	<i>i</i>	5.92996	+0.16717957	+0.26676650		
<i>P</i>	3.44	<i>H</i>	16.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 04 18	809	1.0-	1.3-	1997 10 02	910	0.3-	0.1+	1997 10 30	704	0.6+	0.3-
1996 04 18	809	1.7-	0.8+	1997 10 03	910	0.4-	0.3+	1997 10 30	704	0.8-	0.5+
1996 04 18	809	1.0-	1.6-	1997 10 03	910	0.0	0.2-	1997 12 05	910	0.3-	0.3-
1996 04 20	809	0.1+	1.2+	1997 10 03	910	0.2+	0.2-	1997 12 05	910	0.2-	0.2-
1996 04 20	809	1.8+	0.8+	1997 10 03	910	0.2+	0.1-	1997 12 05	910	0.0	0.1-
1996 04 20	809	1.6+	0.9-	1997 10 30	704	1.1+	0.2-				
1997 10 02	910	0.5-	0.2+	1997 10 30	704	0.5+	0.2-				

1996 HZ₂₁ = 1998 VY₁₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	289.72107	(2000.0)		P	Q		
<i>n</i>	0.23188414	ω	142.94633	-0.98733857	-0.00312554		
<i>a</i>	2.6239488	Ω	37.82850	-0.08924123	-0.81563425		
<i>e</i>	0.0876721	<i>i</i>	14.98671	+0.13114326	-0.57855942		
<i>P</i>	4.25	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 04 17	327	0.0	0.1+	1996 04 25	327	0.8+	0.2+	1998 11 11	704	1.1+	0.8-
1996 04 17	327	0.2+	0.1-	1996 04 25	327	0.6+	0.1+	1998 11 11	704	0.0	0.4-
1996 04 17	327	0.8-	0.6-	1996 04 25	327	0.2-	0.1+	1998 11 11	704	0.2-	0.1+
1996 04 17	327	0.2-	0.2-	1996 04 25	327	0.8-	0.1-	1998 11 18	691	0.2-	0.3-

1996 04 20	327	1.0-	0.5+	1996 04 25	327	1.2+	0.5-	1998 11 18	691	0.2-	0.1-
1996 04 20	327	0.1-	0.3+	1998 11 10	704	1.6+	0.2+	1998 11 18	691	0.3-	0.1-
1996 04 20	327	0.1-	0.2+	1998 11 10	704	1.4-	0.6+				
1996 04 25	327	0.6+	0.0	1998 11 10	704	0.6-	1.0+				

1996 JW₁ = 1986 PP₆ = 1997 NP₈ = 1998 UG₃₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	86.53269	(2000.0)		P	Q		
<i>n</i>	0.17535172	ω	194.00204	+0.98494103	-0.17288682		
<i>a</i>	3.1612781	Ω	175.95314	+0.16014862	+0.90982892		
<i>e</i>	0.1379298	<i>i</i>	0.93211	+0.06514285	+0.37725519		
<i>P</i>	5.62	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1986 08 12	095	0.2-	0.8-	1997 07 14	910	0.5+	0.3+	1998 12 04	327	0.4-	0.8+
1994 01 18	691	(3.0+	1.6+)	1997 07 14	910	0.8+	0.3+	1998 12 04	327	0.5-	0.8+
1994 01 18	691	1.0+	0.2-	1998 10 27	327	0.3+	0.5+	1998 12 15	704	0.6+	1.0-
1994 01 18	691	0.7+	0.2-	1998 10 27	327	0.2+	0.3+	1998 12 15	704	0.1+	0.5-
1996 05 15	566	0.1-	1.7+	1998 10 27	327	0.2+	0.4+	1998 12 15	704	0.3-	0.1-
1996 05 15	566	0.2+	1.2+	1998 11 01	327	0.4+	0.1-	1998 12 15	704	(3.6-	1.3-)
1996 05 15	566	0.4+	1.7+	1998 11 01	327	0.3+	0.2-	1998 12 25	691	1.4-	0.4+
1996 05 22	566	0.2-	0.3+	1998 11 01	327	0.4+	0.2-	1998 12 25	691	1.3-	0.3+
1996 05 22	566	0.1-	1.3+	1998 11 02	327	0.3+	0.5-	1998 12 25	691	1.7-	0.4+
1996 05 22	566	0.1+	1.2+	1998 11 02	327	0.8+	0.3-	1999 01 05	699	0.5+	0.6+
1996 06 12	566	0.3-	1.2-	1998 11 02	327	0.6+	0.4+	1999 01 05	699	0.3+	0.5+
1996 06 12	566	0.5-	1.3-	1998 11 24	704	0.5-	0.2+	1999 01 05	699	0.2+	0.4+
1996 06 12	566	0.1-	1.0-	1998 11 24	704	0.2+	0.1-	1999 01 22	699	0.2-	1.3-
1997 07 13	910	0.3-	0.2+	1998 11 24	704	0.2-	0.8+	1999 01 22	699	0.5+	1.3-
1997 07 13	910	0.1-	0.2+	1998 11 24	704	1.5-	0.6+	1999 01 22	699	0.6+	0.2-
1997 07 13	910	0.3-	0.3+	1998 11 24	704	0.6-	0.9+				
1997 07 14	910	0.7+	0.3+	1998 12 04	327	0.1-	0.6+				

1996 JG₃ = 1997 SU₃₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	254.14611	(2000.0)		P	Q		
<i>n</i>	0.26763372	ω	167.71438	+0.39180798	+0.91896089		
<i>a</i>	2.3847462	Ω	125.33643	-0.84869595	+0.37975215		
<i>e</i>	0.0726848	<i>i</i>	3.14053	-0.35524878	+0.10629762		
<i>P</i>	3.68	<i>H</i>	16.2	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1996 05 09	691	0.9+	0.3+	1997 09 26	327	0.1-	0.3-	1999 01 18	691	0.2-	0.1+
1996 05 09	691	0.9+	0.2-	1997 09 26	327	1.7-	0.1+	1999 01 18	691	0.0	0.1+
1996 05 09	691	0.5+	0.4+	1997 10 04	910	0.7+	0.3+	1999 01 18	691	0.4+	0.7+
1996 05 15	691	0.6-	0.4+	1997 10 04	910	0.8+	0.5+	1999 01 21	910	0.2+	0.1-
1996 05 15	691	0.8-	0.3-	1997 10 04	910	0.6+	0.4+	1999 01 21	910	0.3-	0.7-
1996 05 15	691	0.8-	0.1-	1997 10 04	327	0.3+	0.2-	1999 01 21	910	0.0	0.3+
1997 09 26	327	1.2-	0.1+	1997 10 04	327	0.7+	0.2-				
1997 09 26	327	0.6-	0.4+	1997 10 04	327	0.3+	0.4-				

1996 JU₅ = 1999 FU₅₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Doppler			
<i>M</i>	258.67959	(2000.0)		P	Q		
<i>n</i>	0.28981781	ω	130.01599	+0.81028330	+0.58562217		
<i>a</i>	2.2614448	Ω	194.18236	-0.56139444	+0.76484590		
<i>e</i>	0.1464088	<i>i</i>	5.17109	-0.16815845	+0.26843513		
<i>P</i>	3.40	<i>H</i>	16.0	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 05 11	691	1.1+	0.2+	1996 06 08	809	0.3+	0.5+	1999 03 20	704	0.3+	0.1+
1996 05 11	691	0.8+	0.6+	1996 06 08	809	1.3+	0.3+	1999 03 20	704	1.4-	0.2-
1996 05 11	691	0.7+	0.7+	1996 06 10	809	0.7-	0.8-	1999 03 20	704	1.7-	0.5-
1996 05 16	691	1.4-	0.7-	1996 06 10	809	0.8-	0.5-	1999 03 23	704	1.1+	0.5-

1996 05 16	691	0.7-	0.8-	1996 06 10	809	0.2+	0.1+	1999 03 23	704	0.3-	0.6+
1996 05 16	691	1.2-	0.4-	1999 03 20	704	0.5+	1.8+	1999 03 23	704	0.1+	0.6-
1996 06 08	809	0.3+	0.9+	1999 03 20	704	0.1-	0.0	1999 03 23	704	1.4+	0.7-

1996 JK₁₃ = 1998 YR₁₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	165.52477	(2000.0)		P	Q		
<i>n</i>	0.20436891	ω	182.66147	+0.55673943	+0.82944107		
<i>a</i>	2.8544745	Ω	121.17301	-0.76115535	+0.53130177		
<i>e</i>	0.0532603	<i>i</i>	3.04721	-0.33269166	+0.17247012		
<i>P</i>	4.82	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1996 05 11	691	0.2+	0.3+	1996 06 10	809	0.1+	0.9-	1998 11 24	704	0.7+	0.4-
1996 05 11	691	0.1-	0.6+	1997 07 16	910	0.0	0.0	1998 11 24	704	0.3-	1.7-
1996 05 11	691	0.0	0.5+	1997 07 16	910	0.0	0.0	1998 11 24	704	0.7-	0.4-
1996 05 22	691	0.0	0.5-	1997 07 16	910	0.0	0.2+	1998 11 24	704	0.1+	0.4+
1996 05 22	691	0.2-	0.0	1998 11 11	699	0.3-	0.8+	1998 12 25	691	0.0	0.2+
1996 05 22	691	0.0	0.0	1998 11 11	699	0.6+	0.2+	1998 12 25	691	0.1+	0.2+
1996 06 08	809	(1.1-	3.1-)	1998 11 11	699	1.0-	0.3-	1998 12 25	691	0.1+	0.3+
1996 06 08	809	(0.6-	2.6-)	1998 11 23	699	0.1+	0.5+	1998 12 28	691	0.2-	0.0
1996 06 08	809	(1.1-	3.1-)	1998 11 23	699	0.7+	0.3-	1998 12 28	691	0.0	0.1+
1996 06 10	809	0.0	0.1-	1998 11 23	699	0.3+	0.2+	1998 12 28	691	0.1+	0.3+
1996 06 10	809	0.1+	0.3-	1998 11 24	704	0.4-	0.3-				

1996 JH₁₄ = 1998 TX₃₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	90.25891	(2000.0)		P	Q		
<i>n</i>	0.18424537	ω	289.67619	+0.95126607	+0.27209231		
<i>a</i>	3.0587102	Ω	54.79525	-0.17118956	+0.85737372		
<i>e</i>	0.0528228	<i>i</i>	10.22996	-0.25648975	+0.43689367		
<i>P</i>	5.35	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 05 12	691	0.1+	0.1-	1998 10 01	910	0.2+	0.2-	1998 11 10	704	0.4+	1.2-
1996 05 12	691	0.1-	0.2-	1998 10 11	699	0.6-	0.9-	1998 11 10	704	0.6-	1.9-
1996 05 12	691	0.2-	0.0	1998 10 11	699	0.0	0.3-	1998 11 10	704	0.1-	1.8+
1996 05 19	691	0.1+	0.2+	1998 10 11	699	0.4-	0.3+	1999 01 05	910	0.0	0.0
1996 05 19	691	0.0	0.2-	1998 10 20	699	0.4-	1.0+	1999 01 05	910	0.1+	0.1-
1996 05 19	691	0.1-	0.2-	1998 10 20	699	0.8+	1.1+	1999 01 05	910	0.1+	0.3+
1998 10 01	910	0.2+	0.1-	1998 10 20	699	0.3-	0.6+				
1998 10 01	910	0.3+	0.1-	1998 11 10	704	0.6+	0.7-				

1996 SJ₇ = 1999 RP₅₄

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	352.66626	(2000.0)		P	Q		
<i>n</i>	0.30709662	ω	293.54813	+0.88985466	+0.45606554		
<i>a</i>	2.1758019	Ω	39.32166	-0.41090784	+0.81327525		
<i>e</i>	0.1845967	<i>i</i>	1.15415	-0.19827616	+0.36136904		
<i>P</i>	3.21	<i>H</i>	16.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1992 05 01	691	0.1+	0.4-	1996 10 14	327	0.4+	0.5-	1999 09 07	704	0.3+	0.2-
1992 05 01	691	0.7-	0.0	1996 10 14	327	0.5+	0.3-	1999 09 07	704	0.1+	0.1-
1992 05 01	691	0.3+	0.6-	1996 10 14	327	0.7+	0.6-	1999 09 07	704	0.2+	0.3-
1996 09 23	358	0.2+	0.7-	1996 11 08	691	0.1-	0.3-	1999 09 07	704	0.3-	0.1-
1996 09 23	358	0.8+	1.3+	1996 11 08	691	0.0	0.3-	1999 09 13	699	0.5+	0.3-
1996 09 24	358	1.0	0.1+	1996 11 08	691	0.1-	0.2-	1999 09 13	704	0.8+	0.2+
1996 09 24	358	0.2+	1.2+	1998 04 03	691	0.0	0.1-	1999 09 13	699	0.8-	0.6+
1996 10 09	358	0.4+	0.5-	1998 04 03	691	0.1-	0.0	1999 09 13	704	1.4+	0.5-
1996 10 09	358	0.3+	1.4+	1998 04 03	691	0.1+	0.0	1999 09 13	704	0.7+	1.7-

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1996 10 10	358	0.2+	0.3+	1999 07 21	699	0.5-	0.2+	1999 09 13	704	0.2+	0.9-
1996 10 10	358	0.4+	0.9+	1999 07 21	699	1.0-	0.4+	1999 09 13	699	0.8-	0.6+
1996 10 12	566	1.1-	0.0	1999 07 21	699	0.7-	0.9+	1999 09 13	704	0.3+	0.5-
1996 10 12	566	1.2-	0.7+	1999 08 07	699	0.1-	0.2-	1999 09 16	691	0.4+	1.7-
1996 10 12	566	1.2-	0.4+	1999 08 07	699	0.8-	0.8+	1999 09 16	691	0.3+	0.1+
1996 10 13	358	1.2+	1.0-	1999 08 07	699	0.4-	1.0+	1999 09 16	691	0.3+	0.2+
1996 10 13	358	1.0-	0.5-	1999 09 07	704	0.2+	0.1-				

1996 TF = 1999 RM₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.31507286	<i>ω</i>	49.27622	+0.78444636	+0.61810763		
<i>a</i>	2.1389242	<i>Ω</i>	272.48408	-0.58326429	+0.70737093		
<i>e</i>	0.1372009	<i>i</i>	2.91814	-0.21082381	+0.34288382		
<i>P</i>	3.13	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 10 01	596	0.0	1.4-	1996 10 31	596	0.2-	0.4+	1999 09 08	704	0.3-	0.1-
1996 10 01	596	0.9+	1.8-	1996 10 31	596	0.5-	0.3-	1999 09 09	704	0.2-	0.0
1996 10 01	596	0.9+	1.0-	1999 08 22	699	0.2+	0.5+	1999 09 09	704	0.4-	0.7-
1996 10 02	596	0.4+	0.4-	1999 08 22	699	1.4-	0.3-	1999 09 09	704	0.2-	0.1+
1996 10 02	596	0.9-	0.7-	1999 08 22	699	0.2+	0.5+	1999 09 09	704	0.6+	0.2+
1996 10 12	596	0.1-	1.1+	1999 09 07	704	0.6-	0.2+	1999 09 09	704	0.9+	0.3-
1996 10 12	596	0.2+	1.1+	1999 09 07	704	0.2-	0.1-	1999 09 16	704	0.5-	0.1+
1996 10 12	596	0.1-	0.7+	1999 09 07	704	0.1-	0.2+	1999 09 16	704	0.7+	0.1+
1996 10 17	596	0.1+	0.4+	1999 09 07	704	0.1+	0.2+	1999 09 16	704	0.1+	0.5+
1996 10 17	596	0.0	0.5+	1999 09 07	704	0.1-	0.3+	1999 09 16	704	0.5+	0.3+
1996 10 17	596	0.2-	0.9+	1999 09 08	704	0.0	0.6-				
1996 10 31	596	0.4-	0.2-	1999 09 08	704	0.3+	0.4-				

1996 TX₃ = 1999 PD

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27768207	<i>ω</i>	241.99930	+0.13196686	+0.98932401		
<i>a</i>	2.3268631	<i>Ω</i>	35.75143	-0.86824265	+0.14545974		
<i>e</i>	0.0981563	<i>i</i>	6.07451	-0.47826714	+0.00891475		
<i>P</i>	3.55	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1996 10 08	566	0.2+	0.0	1998 01 26	566	0.1-	0.5-	1999 09 04	426	0.4-	0.7-
1996 10 08	566	0.1+	0.1+	1998 01 26	566	0.2-	0.1-	1999 09 04	426	0.2-	0.5+
1996 10 08	566	0.5+	0.1-	1998 01 26	566	0.1+	0.1-	1999 09 04	426	0.4-	0.1-
1996 10 09	566	0.5+	0.2+	1999 08 04	426	0.3+	0.2-	1999 09 06	426	0.4+	0.0
1996 10 09	566	0.1-	0.3+	1999 08 04	426	0.2+	0.1-	1999 09 06	426	0.1-	0.3-
1996 10 09	566	0.1-	0.2+	1999 08 04	426	0.3+	0.0	1999 09 06	426	0.0	0.2-
1996 10 13	566	0.4+	0.0	1999 08 05	426	0.1+	0.1-	1999 09 06	426	0.3-	0.5-
1996 10 13	566	0.0	0.1-	1999 08 05	426	0.1+	0.2-	1999 09 11	704	0.0	0.9+
1996 10 13	566	0.3-	0.1-	1999 08 05	426	0.1+	0.4-	1999 09 11	704	0.3-	0.5-
1996 10 13	566	0.6-	0.8-	1999 08 10	426	0.1+	0.1+	1999 09 11	704	0.6+	1.3+
1996 10 13	566	1.0-	0.2-	1999 08 10	426	0.0	0.1+	1999 09 11	704	0.1+	0.7+
1996 10 13	566	0.6+	0.3+	1999 09 04	426	0.9-	0.8-				

1996 TG₆ = 1999 RC₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28812377	<i>ω</i>	221.29126	-0.84821445	+0.52940286		
<i>a</i>	2.2703004	<i>Ω</i>	350.63248	-0.45591650	-0.74542326		
<i>e</i>	0.1286888	<i>i</i>	5.73841	-0.26957818	-0.40506392		
<i>P</i>	3.42	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 10 05	327	0.3+	0.3+	1996 11 02	327	0.1+	0.1+	1999 09 07	704	0.4+	0.3-
1996 10 05	327	0.1-	0.1+	1996 11 02	327	0.2-	0.1-	1999 09 08	704	0.9-	0.3-
1996 10 05	327	0.5-	0.0	1996 11 13	327	0.1+	0.1-	1999 09 08	704	0.5+	0.8+
1996 10 07	327	0.2+	0.2-	1996 11 13	327	0.1-	0.2-	1999 09 08	704	0.4+	0.0

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1996 10 07	327	0.1+	0.1-	1996 11 13	327	0.0	0.1-	1999 09 08	704	0.5+	0.4+
1996 10 07	327	0.2-	0.3+	1999 09 07	704	0.5-	0.6-	1999 09 08	704	0.2-	0.7+
1996 11 02	327	0.4+	0.1+	1999 09 07	704	0.1-	0.8-				

1996 TJ₆ = 1999 NH₅₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26905741	<i>ω</i>	32.56947	+0.11120195	+0.98473961		
<i>a</i>	2.3763263	<i>Ω</i>	244.12607	-0.94068584	+0.06085087		
<i>e</i>	0.1918545	<i>i</i>	8.55671	-0.32053749	+0.16304928		
<i>P</i>	3.66	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1996 10 05	327	0.0	0.1+	1998 02 23	566	0.0	0.5-	1999 09 08	704	0.5+	0.7-
1996 10 05	327	0.1+	0.1-	1999 05 21	704	0.9+	1.2-	1999 09 08	704	0.1+	0.4-
1996 10 05	327	0.2+	0.0	1999 05 21	704	1.6-	0.5-	1999 09 08	704	0.1+	1.6-
1996 10 07	327	0.1-	0.4-	1999 05 21	704	0.2-	0.0	1999 09 08	704	0.6+	0.7-
1996 10 07	327	0.0	0.6+	1999 05 21	704	0.9-	0.8+	1999 09 09	704	0.4-	0.6-
1996 10 07	327	0.2+	0.6+	1999 07 12	704	0.3+	0.3-	1999 09 09	704	1.3+	0.1+
1996 11 01	327	0.5-	0.3+	1999 07 12	704	0.3+	0.5+	1999 09 09	704	0.2+	0.7-
1996 11 01	327	0.0	0.7+	1999 07 12	704	0.4+	0.6+	1999 09 09	704	0.6+	0.0
1996 11 01	327	0.4+	0.3+	1999 07 12	704	0.2+	0.0	1999 09 14	704	0.0	0.1-
1996 12 14	691	0.2-	0.3-	1999 07 22	704	0.0	0.3+	1999 09 14	704	0.6-	0.2+
1996 12 14	691	0.0	0.2-	1999 07 22	704	0.1+	0.4+	1999 09 14	704	0.1-	0.2-
1996 12 14	691	0.1-	0.4-	1999 07 22	704	0.4-	0.5+	1999 09 14	704	0.4-	0.0
1998 02 23	566	0.5-	1.5-	1999 07 22	704	0.3-	0.4+	1999 09 14	704	0.4-	0.5-
1998 02 23	566	0.6-	1.1-	1999 07 22	704	0.1+	0.5+				

1996 TJ₁₁

Id. E. Bowell (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.30237123	<i>ω</i>	33.82209	+0.98361195	+0.17999605		
<i>a</i>	2.1984119	<i>Ω</i>	315.80460	-0.16855895	+0.89747692		
<i>e</i>	0.1585258	<i>i</i>	0.85793	-0.06399537	+0.40266189		
<i>P</i>	3.26	<i>H</i>	16.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1996 10 11	400	0.2+	1.2-	1998 03 29	704	0.6-	1.0-	1999 08 07	699	0.4+	0.3+
1996 10 11	400	0.4-	0.2+	1998 03 29	704	(0.0	3.8-)	1999 08 07	699	0.6-	0.1-
1996 10 11	566	0.4+	0.1+	1998 03 29	704	0.0	0.5-	1999 09 05	699	0.3-	0.5+
1996 10 11	566	0.1+	0.0	1998 03 29	704	(4.0-	0.4-)	1999 09 05	699	0.8-	0.2+
1996 10 11	566	0.2+	0.0	1999 07 13	704	0.3+	0.9-	1999 09 05	699	0.5+	0.0
1996 10 14	400	0.5+	0.8-	1999 07 13	704	0.5+	0.6-	1999 09 07	704	0.9-	0.6+
1996 10 14	400	0.8+	0.3-	1999 07 13	704	0.1-	1.1-	1999 09 07	704	0.3+	0.7-
1996 10 14	400	0.5-	0.9+	1999 07 13	704	0.3+	1.6-	1999 09 07	704	0.2-	1.3+
1996 10 21	400	0.4+	0.3+	1999 07 13	704	0.6-	0.9-	1999 09 07	704	0.8+	1.1+
1996 10 21	400	0.2-	0.4-	1999 07 20	699	0.4+	0.9+	1999 09 08	691	0.0	0.7-
1996 11 06	691	0.1-	0.1+	1999 07 20	699	0.1+	0.1-	1999 09 08	691	0.1-	0.4-
1996 11 06	691	0.3-	0.4-	1999 07 20	699	0.4-	1.1+	1999 09 08	691	0.3-	0.2-
1996 11 06	691	0.4-	0.2-	1999 08 07	699	0.7+	0.8+				

1996 TR₂₉ = 1999 RX₁₅₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29840626	<i>ω</i>	224.82232	+0.20963939	-0.97670594		
<i>a</i>	2.2178428	<i>Ω</i>	213.15577	+0.91893534	+0.21280813		
<i>e</i>	0.1028828	<i>i</i>	4.80278	+0.33407957	+0.02753574		
<i>P</i>	3.30	<i>H</i>	15.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 10 07	691	0.4+	0.2-	1998 04 22	704	0.8+	0.7-	1999 09 07	704	0.6+	0.6-
1996 10 07	691	0.6+	0.2-	1998 04 22	704	1.1-	0.4+	1999 09 07	704	0.1+	0.4-
1996 10 07	691	0.3-	0.1-	1998 04 22	704	0.4-	1.0-	1999 09 07	704	0.3+	0.0

1996 10 15	691	0.2−	0.2+	1998 04 22	704	(3.7−	0.0)	1999 09 07	704	0.0	0.2−
1996 10 15	691	0.5−	0.3+	1998 05 01	704	0.4−	0.7+	1999 09 09	704	0.1+	0.5+
1996 10 15	691	0.1−	0.2+	1998 05 01	704	0.3−	0.9+	1999 09 09	704	0.3+	0.1+
1996 11 02	327	0.2+	0.4−	1998 05 01	704	1.4+	0.7+	1999 09 09	704	0.1+	0.2+
1996 11 02	327	0.1−	0.2−	1998 05 01	704	0.3+	1.1−	1999 09 09	704	0.1−	1.0−
1996 11 02	327	0.1−	0.0	1998 05 01	704	1.1−	0.1−	1999 09 14	704	0.3−	0.6−
1996 11 02	327	0.3−	0.6−	1999 09 05	703	0.2−	1.3+	1999 09 14	704	0.1+	0.3+
1996 11 09	327	0.7+	0.0	1999 09 05	703	0.3+	0.1−	1999 09 14	704	0.2−	0.0
1996 11 09	327	0.7−	0.1+	1999 09 05	703	0.3+	1.0+	1999 09 14	704	0.6+	0.4−
1996 11 09	327	0.6+	0.4+	1999 09 05	703	1.4−	0.3+	1999 09 14	704	0.5−	1.0−
1998 04 22	704	0.6+	0.8−	1999 09 07	704	0.1−	0.3+				

1996 UK₄ = 1999 RZ₁₇₃

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	8.36253		(2000.0)	P	Q		Williams
<i>n</i>	0.31097902	ω	281.58382	+0.82281288	+0.56698016		
<i>a</i>	2.1576549	Ω	43.89151	−0.49711430	+0.75120762		
<i>e</i>	0.1187419	<i>i</i>	3.21570	−0.27542031	+0.33796540		
<i>P</i>	3.17	<i>H</i>	16.5	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 10 29	327	0.9−	0.2−	1996 11 09	327	0.3−	0.1+	1999 09 07	699	0.7+	0.9−
1996 10 29	327	0.6−	0.6+	1996 11 09	327	0.1+	0.2+	1999 09 07	704	0.6+	0.0
1996 10 29	327	0.4−	0.3−	1996 11 15	327	0.6−	0.2+	1999 09 07	704	0.1+	0.1+
1996 10 29	327	0.2+	0.1+	1996 11 15	327	0.0	0.0	1999 09 09	704	0.5+	0.1+
1996 11 01	327	0.7−	0.5−	1996 11 15	327	0.3+	0.1+	1999 09 09	704	0.1+	0.2−
1996 11 01	327	0.7+	0.0	1996 11 15	327	0.0	0.1−	1999 09 09	704	0.5−	0.8−
1996 11 01	327	0.5+	0.0	1996 11 29	327	0.4+	0.1+	1999 09 09	704	0.5−	0.7−
1996 11 01	327	0.0	0.5−	1996 11 29	327	0.2+	0.3−	1999 09 09	704	0.8−	1.2−
1996 11 01	327	0.7+	0.3+	1996 11 29	327	0.3−	0.2−	1999 09 13	704	0.1−	0.4+
1996 11 01	327	0.1+	0.5−	1999 09 07	699	0.9−	1.1+	1999 09 13	704	0.7+	0.1+
1996 11 02	327	0.6+	0.2+	1999 09 07	699	1.2+	1.4+	1999 09 13	704	0.6−	0.2−
1996 11 02	327	0.6+	0.7+	1999 09 07	704	0.2+	0.3+	1999 09 13	704	0.3−	0.5−
1996 11 02	327	0.8−	0.1−	1999 09 07	704	0.1+	0.1+	1999 09 13	704	0.0	1.0+
1996 11 09	327	0.5+	0.2+	1999 09 07	704	0.4−	0.1−				

1996 VT

Id. E. Bowell (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	34.41661		(2000.0)	P	Q		Williams
<i>n</i>	0.29523295	ω	45.47486	−0.00196222	+0.99956644		
<i>a</i>	2.2337068	Ω	224.43790	−0.92896939	−0.01269647		
<i>e</i>	0.1548448	<i>i</i>	2.40488	−0.37015136	+0.02656553		
<i>P</i>	3.34	<i>H</i>	16.4	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 10 11	566	0.9−	0.0	1996 11 04	684	0.3+	0.0	1999 07 13	704	0.3+	0.6−
1996 10 11	566	0.0	0.2−	1996 11 04	684	0.2+	0.1+	1999 07 13	704	0.5+	0.3−
1996 10 11	566	0.8+	0.3−	1996 11 05	684	0.1+	0.1+	1999 07 13	704	0.4−	0.5−
1996 11 02	684	0.2−	0.1−	1996 11 05	684	0.1−	0.1−	1999 07 21	699	0.1+	0.4+
1996 11 02	684	0.1−	0.1+	1999 07 13	704	0.3+	0.2−	1999 07 21	699	0.3−	0.6+
1996 11 02	684	0.0	0.3+	1999 07 13	704	0.1+	0.2−	1999 07 21	699	0.6−	0.7+

1996 VG₆ = 1978 WF₄

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	194.85013		(2000.0)	P	Q		Williams
<i>n</i>	0.27477882	ω	88.07783	−0.89119165	−0.43853057		
<i>a</i>	2.3432244	Ω	65.89617	+0.34898842	−0.82624309		
<i>e</i>	0.0460793	<i>i</i>	7.30430	+0.28980083	−0.35357219		
<i>P</i>	3.59	<i>H</i>	15.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1978 11 29	675	0.2+	0.0	1996 11 23	658	0.4−	0.2+	1998 05 24	704	1.6−	0.3−
1978 11 30	675	0.1−	0.3−	1998 04 22	704	0.1+	0.8−	1998 05 24	704	1.4+	1.0+
1996 11 12	599	0.2−	0.2−	1998 04 22	704	(1.0−	2.9+)	1999 09 08	703	0.4+	0.7+
1996 11 13	599	0.6−	0.6+	1998 04 22	704	1.3+	1.4+	1999 09 08	703	0.3+	0.7−
1996 11 13	599	0.4+	0.0	1998 04 22	704	0.4+	0.5−	1999 09 08	703	1.1−	0.5+
1996 11 13	599	0.3+	0.5+	1998 04 22	704	0.3−	1.1+	1999 09 08	703	(2.5−	0.2+)
1996 11 23	658	0.0	0.2+	1998 05 24	704	1.0−	1.1−				
1996 11 23	658	0.3+	0.3−	1998 05 24	704	0.1+	0.0				

1996 VU₁₇ = 1998 FF₄₆ = 1999 RJ₃₈

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	49.35840		(2000.0)	P	Q		Williams
<i>n</i>	0.30665539	ω	209.71958	+0.45251553	+0.89135317		
<i>a</i>	2.1778885	Ω	87.19709	−0.81278456	+0.42462830		
<i>e</i>	0.0922204	<i>i</i>	1.53860	−0.36689365	+0.15868312		
<i>P</i>	3.21	<i>H</i>	15.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1996 11 06	691	0.1+	0.3+	1998 03 20	704	1.4−	1.7−	1998 04 19	704	(3.7−	1.0+)
1996 11 06	691	0.1−	0.1+	1998 03 22	704	0.3−	0.4+	1999 09 05	699	0.3+	0.4−
1996 11 06	691	0.2−	0.1−	1998 03 22	704	0.9+	0.5−	1999 09 05	699	0.4+	0.3−
1996 11 12	691	0.2+	0.1−	1998 03 22	704	1.1−	0.1+	1999 09 05	699	0.1+	0.1+
1996 11 13	691	0.0	0.0	1998 03 22	704	0.3−	0.9+	1999 09 13	120	0.0	0.1+
1996 11 13	691	0.0	0.0	1998 03 22	704	0.1+	0.4+	1999 09 13	120	0.5−	0.7+
1998 03 20	704	0.0	0.2−	1998 04 19	704	0.2+	1.3+	1999 09 13	120	(7.3−	3.4−)
1998 03 20	704	0.4−	0.5−	1998 04 19	704	(1.8−	2.2+)	1999 09 14	120	0.2−	0.4−
1998 03 20	704	0.4+	0.3+	1998 04 19	704	0.7+	1.1−	1999 09 14	120	0.3+	0.6−
1998 03 20	704	0.6+	0.2−	1998 04 19	704	0.5+	0.0	1999 09 15	120	(2.2+	0.7−)

1996 VD₃₈ = 1999 JD₁₃₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	218.93146		(2000.0)	P	Q		Williams
<i>n</i>	0.22259036	ω	354.69281	+0.80415789	−0.59075315		
<i>a</i>	2.6964879	Ω	41.74904	+0.54894161	+0.69554362		
<i>e</i>	0.0370753	<i>i</i>	5.67845	+0.22802016	+0.40893739		
<i>P</i>	4.43	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 11 02	327	0.2−	0.3−	1996 11 15	327	0.3−	0.0	1999 05 13	704	(2.6−	0.5+)
1996 11 02	327	0.9−	0.3−	1996 11 15	327	0.6+	0.4−	1999 05 18	704	0.5+	0.6−
1996 11 02	327	0.4−	0.4+	1996 11 15	327	0.4+	0.1+	1999 05 18	704	1.2−	1.6−
1996 11 02	327	0.2+	0.1+	1996 11 15	327	0.4+	0.5+	1999 05 18	704	1.2+	0.3−
1996 11 09	327	0.0	0.2+	1999 05 13	704	1.1−	0.7−	1999 05 18	704	0.5−	0.6+
1996 11 09	327	0.3+	0.3−	1999 05 13	704	0.4−	1.2+				
1996 11 09	327	0.0	0.0	1999 05 13	704	1.5+	1.4+				

1996 WF = 1999 RW₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	303.62542		(2000.0)	P	Q		Williams
<i>n</i>	0.30299269	ω	18.01054	+0.70040852	−0.71360943		
<i>a</i>	2.1954048	Ω	27.53476	+0.65112898	+0.63094702		
<i>e</i>	0.1498983	<i>i</i>	1.70632	+0.29233364	+0.30441327		
<i>P</i>	3.25	<i>H</i>	16.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 09 10	327	0.4+	0.5+	1996 11 16	817	1.1−	0.0	1999 09 07	428	0.0	0.2−
1996 09 10	327	0.5−	1.1+	1996 11 16	817	0.0	0.3−	1999 09 07	428	1.1+	0.5+
1996 09 10	327	0.2+	0.1−	1996 11 17	817	0.4+	0.2−	1999 09 09	704	0.0	0.5−
1996 09 10	327	0.3+	0.9+	1996 11 17	817	0.2+	0.2+	1999 09 09	704	0.6+	1.0−
1996 10 04	691	0.7−	0.0	1996 11 18	817	0.1+	0.0	1999 09 09	704	0.0	0.4−
1996 10 04	691	0.8−	0.2+	1996 11 18	817	0.7+	0.1−	1999 09 09	704	0.3+	0.6−
1996 10 04	691	0.8−	0.2+	1996 11 28	817	0.4+	0.1+	1999 09 09	704	0.3+	0.0

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1996 10 10	691	0.8−	0.1−	1996 11 28	817	0.9+	0.5−	1999 09 09	428	0.6−	0.5−
1996 10 10	691	0.6−	0.0	1999 09 05	428	0.6−	0.9−	1999 09 09	428	0.9−	0.2−
1996 10 17	691	0.4+	0.0	1999 09 05	428	0.4−	0.0	1999 09 13	704	0.8+	0.5−
1996 10 17	691	0.4+	0.0	1999 09 07	699	0.2+	1.6+	1999 09 13	704	0.6+	0.3+
1996 10 17	691	0.3+	0.0	1999 09 07	699	0.8−	0.8+	1999 09 13	704	0.2−	0.3−
1996 11 16	817	0.3+	0.5−	1999 09 07	699	0.2+	0.9+	1999 09 13	704	0.1+	0.2−

1996 XK₁ = 1999 RE₄₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	308.87276		(2000.0)	P	Q	Williams	
<i>n</i>	0.27199835	ω	103.80850	+0.87220478	−0.48853941		
<i>a</i>	2.3591662	Ω	285.44091	+0.43849973	+0.80291105		
<i>e</i>	0.2073674	<i>i</i>	1.44161	+0.21674136	+0.34155978		
<i>P</i>	3.62	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1994 03 16	691	0.3−	0.9−	1996 12 28	411	0.2+	0.4+	1999 07 13	704	0.2+	0.8−
1994 03 16	691	0.4−	0.1−	1996 12 28	411	0.7+	0.3−	1999 09 07	704	0.2−	0.3−
1994 03 16	691	0.0	0.4−	1998 04 22	704	0.8+	0.7+	1999 09 07	704	0.1+	0.9+
1996 11 07	327	0.0	1.1−	1998 04 22	704	1.4+	0.8−	1999 09 07	704	0.6−	1.4+
1996 11 07	327	0.1−	0.4−	1998 04 22	704	0.6−	0.1−	1999 09 07	704	0.2−	0.1+
1996 11 07	327	0.2−	0.3−	1998 04 22	704	1.4−	0.6+	1999 09 13	704	0.7+	0.5+
1996 12 02	411	0.1+	0.2−	1998 04 22	704	(3.9−	1.2+)	1999 09 13	704	0.5+	1.0+
1996 12 02	411	0.1+	0.2−	1999 07 13	704	0.4+	1.1−	1999 09 13	704	0.4+	0.4+
1996 12 03	411	0.9−	0.8−	1999 07 13	704	0.0	0.8−	1999 09 13	704	0.8−	0.9−
1996 12 03	411	0.5−	0.3+	1999 07 13	704	0.6+	1.5−				
1996 12 08	411	0.0	0.2+	1999 07 13	704	0.2−	1.1−				

1996 XN₁ = 1999 RL₅₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	291.11569		(2000.0)	P	Q	Williams	
<i>n</i>	0.27434983	ω	330.55342	+0.56656561	−0.82139846		
<i>a</i>	2.3456664	Ω	84.86146	+0.76832281	+0.49780766		
<i>e</i>	0.2138723	<i>i</i>	3.77853	+0.29779770	+0.27837403		
<i>P</i>	3.59	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 12 02	411	0.1−	0.1−	1996 12 14	369	0.1−	0.7+	1999 09 07	704	0.5+	0.8−
1996 12 02	411	0.3+	0.2+	1996 12 14	369	0.3−	0.4+	1999 09 07	704	0.5−	0.3−
1996 12 03	411	0.4−	1.2−	1996 12 14	369	0.1−	0.4−	1999 09 07	704	0.0	0.4+
1996 12 03	411	0.7−	0.1−	1996 12 14	369	0.0	0.3+	1999 09 07	704	1.5−	0.3−
1996 12 08	369	1.1+	0.3+	1996 12 28	411	0.5+	0.8−	1999 09 11	704	1.4+	1.2+
1996 12 08	369	0.1−	0.4−	1996 12 28	411	0.7−	0.6−	1999 09 11	704	0.4+	0.6−
1996 12 08	411	0.1+	0.8+	1997 01 13	411	0.5+	1.0+	1999 09 11	704	0.3−	0.5+
1996 12 08	411	0.4+	0.2+	1997 01 13	411	0.5−	0.3−				

1996 XO₁ = 1999 RG₁₀₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	235.00438		(2000.0)	P	Q	Williams	
<i>n</i>	0.26080358	ω	192.27826	−0.45288489	−0.88730441		
<i>a</i>	2.4262023	Ω	284.70438	+0.82542710	−0.38035636		
<i>e</i>	0.0812805	<i>i</i>	5.16635	+0.33699462	−0.26080629		
<i>P</i>	3.78	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 12 02	411	0.3−	0.1−	1996 12 19	369	0.5+	0.9−	1999 09 09	704	0.1+	0.7−
1996 12 02	411	0.4+	0.3+	1996 12 28	411	0.3+	0.2+	1999 09 09	704	0.1+	0.8−
1996 12 03	411	0.2+	0.0	1996 12 28	411	0.7+	0.5+	1999 09 09	704	0.1−	0.3−
1996 12 03	411	0.1+	0.2−	1999 09 04	703	(1.7−	2.2+)	1999 09 09	704	0.5+	0.3+
1996 12 08	369	0.0	0.1+	1999 09 04	703	(2.3−	0.8+)	1999 09 10	704	0.8−	0.3+
1996 12 08	369	0.3+	0.2−	1999 09 04	703	(3.1−	3.9+)	1999 09 10	704	0.1−	0.4+
1996 12 08	411	0.4−	0.1+	1999 09 04	703	(1.8−	4.0+)	1999 09 10	704	0.3−	0.1−
1996 12 08	411	0.0	0.5+	1999 09 08	704	0.1+	0.4+	1999 09 11	704	0.6−	0.3−
1996 12 14	369	0.1+	0.5−	1999 09 08	704	1.4+	0.4+	1999 09 11	704	0.4−	0.3+
1996 12 14	369	0.4−	1.0+	1999 09 08	704	0.1−	0.3−	1999 09 11	704	0.4−	0.4+

1996 12 19	369	0.1+	0.1+	1999 09 08	704	0.3+	0.3−	1999 09 11	704	0.5−	0.4+
1996 12 19	369	1.1−	1.8−	1999 09 08	704	0.4+	0.2−	1999 09 11	704	0.0	0.2+
1996 12 19	369	0.3−	1.2+	1999 09 09	704	0.5+	0.1−				

1996 XA₃ = 1999 RW₁₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	291.03755		(2000.0)	P	Q	Williams	
<i>n</i>	0.28028529	ω	145.00737	+0.54987325	−0.82405096		
<i>a</i>	2.3124331	Ω	271.26628	+0.73185930	+0.55399476		
<i>e</i>	0.1772600	<i>i</i>	7.83609	+0.40251878	+0.11844754		
<i>P</i>	3.52	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 12 03	411	0.2+	1.5−	1996 12 30	327	0.4+	0.2+	1999 09 09	704	0.7−	0.1−
1996 12 03	411	0.4−	0.4−	1996 12 30	327	0.2+	0.5−	1999 09 14	704	0.7+	0.3+
1996 12 06	411	0.2+	0.8+	1999 09 08	704	0.1−	0.0	1999 09 14	704	0.6−	0.2−
1996 12 06	411	0.4+	0.5+	1999 09 08	704	0.2−	0.2−	1999 09 14	704	0.0	0.2−
1996 12 12	411	1.4−	0.1+	1999 09 08	704	0.2−	0.3−	1999 09 14	704	0.4−	0.4−
1996 12 12	411	0.4−	0.4+	1999 09 08	704	0.2+	0.4−	1999 09 14	704	0.5+	0.4+
1996 12 19	411	0.1+	0.1+	1999 09 08	704	1.3−	1.2+	1999 09 19	699	1.0+	0.0
1996 12 19	411	0.8−	1.0+	1999 09 09	704	0.0	0.1+	1999 09 19	699	0.4+	0.0
1996 12 28	411	0.3+	0.1−	1999 09 09	704	0.3−	0.0	1999 09 19	699	0.7+	0.2−
1996 12 28	411	0.7+	0.4−	1999 09 09	704	0.3−	0.5+				
1996 12 30	327	0.6+	0.1−	1999 09 09	704	0.5+	0.4−				

1996 XN₅ = 1999 RL₁₅₇

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	265.47359		(2000.0)	P	Q	Williams	
<i>n</i>	0.26965035	ω	19.34522	+0.03533726	−0.99807645		
<i>a</i>	2.3728415	Ω	68.65615	+0.90955218	+0.01100038		
<i>e</i>	0.1757586	<i>i</i>	3.13500	+0.41408468	+0.06101134		
<i>P</i>	3.66	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 12 07	411	0.1−	0.4+	1999 08 12	699	0.6+	0.1−	1999 09 09	704	0.8−	0.5−
1996 12 07	411	0.3+	0.4+	1999 08 12	699	1.2+	0.0	1999 09 09	704	0.3−	0.4+
1996 12 08	411	0.2−	0.4+	1999 09 07	704	0.2−	0.1+	1999 09 09	704	0.2−	0.7+
1996 12 08	411	0.1+	0.4+	1999 09 07	704	0.3−	0.2−	1999 09 13	704	0.4−	1.3−
1996 12 14	411	0.3−	0.1+	1999 09 07	704	0.5−	0.7−	1999 09 13	704	0.3+	0.6+
1996 12 14	411	0.3−	0.1+	1999 09 07	704	0.3−	1.7−	1999 09 13	704	0.7+	0.3+
1996 12 28	411	0.3+	1.0−	1999 09 07	704	0.5+	0.4−	1999 09 13	704	0.5+	1.1+
1996 12 28	411	0.3+	0.8−	1999 09 09	704	0.1−	0.4−				
1999 08 12	699	0.4−	0.9+	1999 09 09	704	0.3−	1.0+				

1996 XE₆ = 1999 RU₁₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	229.00632		(2000.0)	P	Q	Williams	
<i>n</i>	0.24426344	ω	185.44592	−0.22480306	−0.94906856		
<i>a</i>	2.5345279	Ω	277.68437	+0.90219728	−0.11714562		
<i>e</i>	0.1125357	<i>i</i>	12.87088	+0.36810820	−0.29248210		
<i>P</i>	4.04	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 12 07	411	0.7+	0.6−	1996 12 19	411	0.0	0.1−	1999 09 09	704	0.5+	0.2−
1996 12 07	411	0.5+	0.6+	1996 12 28	411	0.4−	0.5−	1999 09 09	704	0.5+	0.1+
1996 12 08	411	0.1+	0.2−	1996 12 28	411	0.0	0.0	1999 09 09	704	0.4+	1.1−
1996 12 08	411	0.1−	0.4−	1999 07 13	704	0.2+	0.3−	1999 09 14	704	0.3−	0.9+
1996 12 12	411	0.5−	0.1−	1999 07 13	704	0.4+	0.7−	1999 09 14	704	0.3−	1.0−
1996 12 12	411	0.1+	0.0	1999 07 13	704	0.7−	0.5−	1999 09 14	704	0.5−	0.2+
1996 12 14	411	0.1+	0.7+	1999 07 13	704	0.2−	0.4+	1999 09 14	704	0.2−	0.3+
1996 12 14	411	0.3−	0.7+	1999 07 13	704	0.3−	0.9+	1999 09 14	704	0.1+	0.1+
1996 12 19	411	0.2−	0.1−	1999 09 09	704	0.3+	0.8+				

1996 XK₇ = 1999 RZ₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	267.31486	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.27947675	ω 282.43411	+0.24945679	-0.96819651
<i>a</i>	2.3168910	Ω 153.09709	+0.90410922	+0.22576803
<i>e</i>	0.1883241	<i>i</i> 2.42595	+0.34692627	+0.10781610
<i>P</i>	3.53	<i>H</i> 15.1	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1996 12 01	691	0.1+	0.3+	1999 07 13	704	0.0	0.7-	1999 09 07	704	0.8-	0.2-
1996 12 01	691	0.1+	0.1+	1999 07 13	704	0.3+	0.2+	1999 09 07	704	0.6-	0.1+
1996 12 01	691	0.1+	0.2+	1999 07 13	704	0.6-	0.3+	1999 09 07	704	0.4-	0.0
1996 12 08	691	0.4-	0.2+	1999 07 13	704	0.2-	0.5-	1999 09 09	704	0.2+	0.0
1996 12 08	691	0.2-	0.2+	1999 08 07	699	0.6+	0.4-	1999 09 09	704	0.3-	0.4-
1996 12 08	691	0.1-	0.2-	1999 08 07	699	0.5+	0.6+	1999 09 09	704	0.3+	0.0
1996 12 09	691	0.0	0.4-	1999 08 07	699	0.3-	0.3-	1999 09 09	704	0.1-	0.7+
1996 12 09	691	0.3+	0.3-	1999 09 07	704	0.9+	0.3+				
1996 12 09	691	0.2+	0.2-	1999 09 07	704	0.5+	0.3+				

1996 XC₁₂ = 1999 RK₁₂₂

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Williams

<i>M</i>	302.66785	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.25946594	ω 101.28505	+0.72031206	-0.68786704
<i>a</i>	2.4345338	Ω 302.24967	+0.58803957	+0.67389866
<i>e</i>	0.1219025	<i>i</i> 6.06682	+0.36791303	+0.26962851
<i>P</i>	3.80	<i>H</i> 16.1	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1996 12 04	691	0.0	0.0	1996 12 11	691	0.0	0.1-	1999 09 09	704	0.0	0.2-
1996 12 04	691	0.4-	0.5+	1996 12 14	691	0.1-	0.3-	1999 09 09	704	1.1-	1.4+
1996 12 04	691	0.5+	0.2+	1996 12 14	691	0.2-	0.1-	1999 09 09	704	0.8+	0.2+
1996 12 09	691	0.1+	0.0	1996 12 14	691	0.2+	0.1-	1999 09 14	704	0.4+	1.8+
1996 12 09	691	0.0	0.0	1999 09 09	704	0.5-	1.5-	1999 09 14	704	0.4-	0.3-
1996 12 09	691	0.4-	0.2-	1999 09 09	704	0.6+	0.3-	1999 09 14	704	1.1+	0.4-
1996 12 11	691	0.0	0.2+	1999 09 09	704	0.0	0.1-				
1996 12 11	691	0.3+	0.0	1999 09 09	704	0.9-	0.8-				

1996 XY₁₇ = 1999 RQ₁₀₆

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Williams

<i>M</i>	299.12561	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.29913050	ω 164.25087	+0.55088170	-0.82918278
<i>a</i>	2.2142615	Ω 252.23344	+0.75456712	+0.54337118
<i>e</i>	0.1004387	<i>i</i> 5.71256	+0.35659194	+0.13116280
<i>P</i>	3.29	<i>H</i> 14.8	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1996 11 02	327	0.2-	0.0	1998 05 01	704	0.7+	0.8-	1999 09 08	699	1.2-	1.2+
1996 11 02	327	0.4+	0.3+	1998 05 22	704	0.0	0.8+	1999 09 08	704	0.4+	0.1-
1996 11 02	327	0.1-	0.2-	1998 05 22	704	0.3+	1.1-	1999 09 09	704	0.0	0.2+
1996 11 13	327	0.5+	0.1+	1998 05 22	704	0.6-	0.2+	1999 09 09	704	0.6-	0.4-
1996 11 13	327	0.4+	0.5+	1998 05 22	704	(4.1-	2.1-)	1999 09 09	704	0.0	0.4-
1996 11 13	327	0.4+	0.5+	1999 07 23	704	0.9+	0.5-	1999 09 09	704	0.2-	0.2-
1996 12 07	691	0.3-	0.3-	1999 07 23	704	0.3+	1.1-	1999 09 09	704	0.3-	0.2-
1996 12 07	691	0.3-	0.1-	1999 07 23	704	0.6+	1.1-	1999 09 10	704	0.2-	0.7+
1996 12 07	691	0.1-	0.3-	1999 07 23	704	0.3+	0.6-	1999 09 10	704	0.0	0.1+
1996 12 12	691	0.4+	0.3-	1999 07 23	704	0.5+	0.5-	1999 09 10	704	0.2-	0.1-
1996 12 12	691	0.2+	0.1-	1999 07 23	704	0.3+	0.3-	1999 09 10	704	0.5-	0.1+
1996 12 12	691	0.3+	0.2-	1999 07 23	704	0.0	0.9-	1999 09 11	704	0.2-	0.2+
1996 12 15	691	0.3-	0.2-	1999 07 23	704	0.0	0.2+	1999 09 11	704	0.3-	0.0
1996 12 15	691	1.3-	0.4-	1999 07 23	704	0.1-	0.4+	1999 09 11	704	0.1-	0.1-
1996 12 15	691	0.5-	0.2-	1999 07 23	704	0.2+	0.0	1999 09 11	704	0.1-	0.2+
1996 12 17	691	0.4+	0.3-	1999 09 08	699	0.6-	0.5-	1999 09 11	704	0.0	0.1+
1996 12 17	691	0.2+	0.2-	1999 09 08	704	0.6+	0.3+	1999 09 16	704	1.1+	0.1+
1998 05 01	704	0.2-	0.4+	1999 09 08	699	1.5-	1.3+	1999 09 16	704	0.4+	0.6+

1998 05 01	704	0.9-	0.7+	1999 09 08	704	0.1+	0.1-	1999 09 16	704	0.0	0.2-
1998 05 01	704	1.1-	0.4+	1999 09 08	704	0.4+	0.1-	1999 09 16	704	0.7+	0.6+
1998 05 01	704	1.7+	0.8-	1999 09 08	704	0.1+	0.2-				

1996 XU₁₉ = 1999 RG₈₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	232.21718	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.26233530	ω 238.70660	-0.60138447	-0.79872901
<i>a</i>	2.4167491	Ω 248.27469	+0.73987785	-0.54768214
<i>e</i>	0.1593196	<i>i</i> 1.18436	+0.30152527	-0.24915105
<i>P</i>	3.76	<i>H</i> 14.9	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1996 12 11	411	0.0	0.2-	1996 12 30	046	0.4+	0.4-	1999 09 07	704	0.2-	0.1+
1996 12 11	411	0.7-	0.1+	1996 12 30	046	0.1-	0.2-	1999 09 07	704	0.1-	0.2-
1996 12 12	411	0.3+	0.3+	1996 12 30	046	0.3-	0.3-	1999 09 07	704	0.6+	0.2+
1996 12 12	411	0.9+	0.2-	1997 01 08	046	0.5+	0.3+	1999 09 07	704	0.4+	0.1-
1996 12 19	411	0.8-	1.0+	1997 01 08	046	0.5+	0.2+	1999 09 14	704	0.0	0.3+
1996 12 19	411	0.1-	0.9+	1997 01 08	046	0.6+	0.1+	1999 09 14	704	0.2-	1.0-
1996 12 29	411	0.5-	0.6-	1997 01 08	046	0.4+	0.2+	1999 09 14	704	0.2-	0.2+
1996 12 29	411	0.4+	0.9-	1997 01 08	046	0.3+	0.1+	1999 09 14	704	0.1+	0.1-
1996 12 30	046	0.4+	0.7-	1997 01 13	411	1.2-	0.2+	1999 09 14	704	0.3-	0.4+
1996 12 30	046	0.1-	0.1-	1997 01 13	411	0.9-	0.1+				

1996 XD₂₂ = 1999 RJ₆₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	145.12960	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.21808848	ω 233.51250	-0.98959094	+0.09640485
<i>a</i>	2.7334695	Ω 311.75647	-0.03338349	-0.87598062
<i>e</i>	0.0886495	<i>i</i> 8.23465	-0.13998329	-0.47261406
<i>P</i>	4.52	<i>H</i> 14.5	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1996 12 08	691	0.1+	0.5+	1997 01 06	411	0.4-	0.1+	1999 09 07	704	0.1-	0.7-
1996 12 08	691	0.0	0.3+	1997 01 06	411	1.0-	0.4-	1999 09 07	704	0.8-	1.6+
1996 12 08	691	0.5+	1.0-	1997 01 07	411	0.2-	0.2-	1999 09 07	704	0.9-	1.2+
1996 12 13	691	0.4+	0.3+	1997 01 07	411	0.4+	0.3-	1999 09 14	704	1.9+	0.3-
1996 12 13	691	0.3+	0.3+	1999 09 07	704	0.2+	1.0-	1999 09 14	704	0.2+	0.0
1996 12 13	691	0.1+	0.4+	1999 09 07	704	0.7-	0.7-	1999 09 14	704	0.3+	0.2-

1996 XF₂₃ = 1999 RY₁₇₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	70.55688	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.27426382	ω 119.29569	-0.18379534	+0.97969647
<i>a</i>	2.3461568	Ω 139.85942	-0.93945397	-0.15110320
<i>e</i>	0.0894142	<i>i</i> 7.13641	-0.28921532	-0.13176738
<i>P</i>	3.59	<i>H</i> 15.5	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1992 09 23	691	0.0	0.4-	1996 12 13	691	0.1+	0.4+	1999 09 07	704	0.0	0.8-
1992 09 23	691	0.1+	0.2-	1996 12 13	691	0.0	0.2+	1999 09 07	704	0.3+	0.7-
1992 09 23	691	0.2+	0.4-	1996 12 13	691	0.0	0.2+	1999 09 09	704	0.9-	0.3+
1994 01 19	691	0.4-	1.8+	1996 12 17	691	0.4-	0.0	1999 09 09	704	0.8-	0.4+
1994 01 19	691	0.2-	1.0+	1996 12 17	691	0.6+	0.6+	1999 09 09	704	0.2+	2.0+
1994 01 19	691	1.5+	0.7+	1996 12 17	691	0.9+	0.5+	1999 09 09	704	0.6-	0.7+
1996 12 03	691	1.0-	1.7-	1998 04 19	704	1.0-	0.4+	1999 09 13	704	0.2+	0.5+
1996 12 03	691	0.9-	1.9-	1998 04 19	704	0.0	0.8+	1999 09 13	704	0.0	0.5+
1996 12 03	691	0.8-	1.6-	1998 04 19	704	0.8+	1.1+	1999 09 13	704	0.0	0.0
1996 12 12	691	0.6+	0.4+	1998 04 19	704	(1.8-	2.1-)	1999 09 13	704	0.0	1.2+
1996 12 12	691	0.7+	0.5+	1998 04 19	704	0.1+	1.9-	1999 09 13	704	0.2-	0.7+
1996 12 12	691	0.7+	0.5+	1999 09 07	704	0.7+	0.6-				

1996 YX = 1999 RT₂₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	306.50326		(2000.0)	P	Q	Williams		
<i>n</i>	0.28061903	ω	148.15792	+0.42957941	-0.89487580			
<i>a</i>	2.3105993	Ω	276.15326	+0.80085786	+0.43948436			
<i>e</i>	0.0807397	<i>i</i>	6.99457	+0.41723881	+0.07778691			
<i>P</i>	3.51	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	4	

Residuals in seconds of arc

1996 12 20	411	0.2+	0.2+	1997 01 07	411	0.6-	0.3-	1999 09 18	704	0.1+	0.3-
1996 12 20	411	0.4+	0.4+	1997 01 26	411	0.7-	0.3+	1999 09 18	704	0.1+	0.4+
1996 12 21	411	0.3+	0.0	1997 01 26	411	0.9+	0.3-	1999 09 18	704	0.0	0.6-
1996 12 21	411	0.6+	0.2-	1999 09 08	704	0.8+	0.5-	1999 09 18	704	0.6-	0.4+
1996 12 30	411	0.2-	0.1-	1999 09 08	704	0.9+	0.5-	1999 09 18	704	0.3-	0.1+
1996 12 30	411	0.1-	0.0	1999 09 08	704	0.4+	0.6+				
1997 01 07	411	0.8-	0.1+	1999 09 08	704	1.3-	0.4+				

1997 AD = 1999 RB₂₀₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	186.52623		(2000.0)	P	Q	Williams		
<i>n</i>	0.24509057	ω	236.76931	-0.97283384	-0.13668228			
<i>a</i>	2.5288223	Ω	294.75843	+0.21051339	-0.85811098			
<i>e</i>	0.1563227	<i>i</i>	11.87408	-0.09632462	-0.49493787			
<i>P</i>	4.02	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	4	

Residuals in seconds of arc

1997 01 02	411	0.4+	0.5-	1997 01 14	411	0.9-	0.2+	1999 09 08	704	0.6-	0.1-
1997 01 02	411	0.7+	0.6-	1997 01 14	411	1.0-	0.1-	1999 09 08	704	0.2+	0.3+
1997 01 03	411	0.5-	0.4+	1997 01 26	411	0.1+	0.1+	1999 09 08	704	0.2-	0.2+
1997 01 03	411	0.3-	0.4+	1997 01 26	411	0.4+	0.1-	1999 09 18	704	0.7+	0.0
1997 01 07	411	0.4+	0.0	1997 02 01	905	0.1+	0.6+	1999 09 18	704	0.4-	0.4-
1997 01 07	905	0.4-	0.1-	1997 02 01	905	0.1-	0.0	1999 09 18	704	0.4+	0.2+
1997 01 07	411	0.3-	0.2+	1997 02 04	385	0.7+	0.3-	1999 09 18	704	0.2+	0.6+
1997 01 07	905	0.1+	0.0	1997 02 04	385	0.0	0.4-	1999 09 18	704	0.3+	0.2+
1997 01 08	905	0.3+	0.7-	1999 09 08	704	0.5-	0.7-				
1997 01 08	905	0.3+	0.9+	1999 09 08	704	0.3-	0.3-				

1997 AV

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	296.65346		(2000.0)	P	Q	Williams		
<i>n</i>	0.28803364	ω	126.62906	+0.06983185	-0.99655444			
<i>a</i>	2.2707740	Ω	319.29575	+0.89194090	+0.08246542			
<i>e</i>	0.1242042	<i>i</i>	3.93485	+0.44672693	-0.00887129			
<i>P</i>	3.42	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4	

Residuals in seconds of arc

1997 01 02	411	0.2+	0.5+	1997 01 26	411	0.5+	0.1-	1999 09 06	739	0.9+	0.3-
1997 01 02	411	0.4+	0.2+	1997 01 26	411	0.7+	0.5+	1999 09 06	739	0.7-	0.4-
1997 01 03	411	0.2-	0.4+	1997 02 09	369	0.2+	1.5+	1999 09 06	739	0.1-	0.2+
1997 01 03	411	0.8-	0.4-	1997 02 09	369	0.5+	0.4-	1999 09 13	106	0.3+	0.6+
1997 01 09	411	0.6+	0.3-	1997 02 13	369	0.3-	1.0-	1999 09 13	106	0.5-	0.0
1997 01 09	411	0.3+	0.3-	1997 02 13	369	0.7-	0.7-	1999 09 13	106	0.1+	0.1-
1997 01 14	411	0.2-	0.2-	1997 02 13	369	0.8-	0.1+				
1997 01 14	411	0.4-	0.0	1999 09 06	739	0.1+	0.3-				

1997 AB₁ = 1999 RH₁₉₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	316.08981		(2000.0)	P	Q	Williams		
<i>n</i>	0.28205355	ω	311.34828	+0.80433080	-0.58991368			
<i>a</i>	2.3027582	Ω	84.92177	+0.56424249	+0.72081673			
<i>e</i>	0.2565072	<i>i</i>	4.09270	+0.18623203	+0.36390258			
<i>P</i>	3.49	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4	

Residuals in seconds of arc

1994 04 03	691	0.1-	0.5-	1997 01 12	107	(3.3+	0.6-)	1999 09 13	704	0.4+	0.0
1994 04 03	691	0.0	0.1+	1997 01 13	107	0.1-	0.2-	1999 09 13	704	0.2+	0.2+
1994 04 03	691	0.2-	0.1+	1997 01 13	107	0.1+	0.1-	1999 09 13	704	0.0	0.5-
1997 01 02	411	1.7-	0.8-	1997 01 13	107	0.2-	0.1-	1999 09 13	704	0.3+	0.3-
1997 01 02	411	1.1-	0.9-	1997 01 15	411	0.4+	0.8+	1999 09 13	704	0.5+	0.0
1997 01 03	411	0.2-	1.4+	1997 01 15	411	1.6+	0.2+	1999 09 14	704	0.0	0.6-
1997 01 03	411	0.5-	1.0+	1997 01 26	411	(1.8+	3.1-)	1999 09 14	704	0.0	0.5+
1997 01 03	411	0.0	0.2+	1997 01 26	411	0.8+	1.3-	1999 09 14	704	0.9-	0.0
1997 01 07	411	0.6+	0.3-	1999 09 07	699	0.9+	0.5+	1999 09 14	704	0.8-	0.2+
1997 01 07	411	0.2+	0.4-	1999 09 07	699	0.1-	0.3-	1999 09 14	704	0.7-	0.1-
1997 01 12	107	0.0	0.3+	1999 09 07	699	0.2+	0.1+				

1997 AE₁ = 1999 RY₁₄₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	194.03741		(2000.0)	P	Q	Williams		
<i>n</i>	0.22603495	ω	202.00948	-0.80078271	-0.57597947			
<i>a</i>	2.6690230	Ω	301.77393	+0.57430803	-0.66049644			
<i>e</i>	0.1091402	<i>i</i>	11.14337	+0.17005096	-0.48165558			
<i>P</i>	4.36	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4	

Residuals in seconds of arc

1997 01 02	411	0.2-	1.6-	1997 01 26	411	0.4+	0.4-	1999 09 09	704	0.4+	0.2+
1997 01 02	411	0.6-	0.5+	1997 01 26	411	0.6+	0.3+	1999 09 09	704	0.0	1.5-
1997 01 03	411	0.3+	0.5+	1999 09 04	703	0.4+	0.6-	1999 09 14	704	0.4+	0.3-
1997 01 03	411	0.4+	0.6+	1999 09 04	703	1.1+	0.6+	1999 09 14	704	0.6-	0.1+
1997 01 09	411	0.3+	0.4+	1999 09 04	703	0.5-	1.1+	1999 09 14	704	0.8-	0.0
1997 01 09	411	0.9-	0.2-	1999 09 04	703	0.3+	0.7+	1999 09 14	704	0.3-	0.4-
1997 01 14	411	0.5-	0.3-	1999 09 09	704	0.5-	0.7+	1999 09 14	704	0.2+	0.3-
1997 01 14	411	0.1+	0.2+	1999 09 09	704	0.1-	0.3-				

1997 AP₂ = 1999 RL₁₉₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	240.70800		(2000.0)	P	Q	Williams		
<i>n</i>	0.23899461	ω	333.59756	-0.28934518	-0.95536547			
<i>a</i>	2.5716428	Ω	133.15622	+0.89206262	-0.29171702			
<i>e</i>	0.0926398	<i>i</i>	4.68900	+0.34713635	-0.04666912			
<i>P</i>	4.12	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	3	

Residuals in seconds of arc

1991 10 03	691	0.5+	0.3-	1997 01 10	411	0.1+	0.0	1999 09 08	703	0.1+	0.4+
1991 10 03	691	0.1-	0.7-	1997 01 15	411	0.2-	0.4+	1999 09 08	703	0.5-	1.0+
1991 10 03	691	0.2+	0.8-	1997 01 15	411	0.2-	1.1+	1999 09 08	703	1.9+	0.5+
1996 11 12	691	0.1+	0.1+	1997 01 27	411	0.8+	0.0	1999 09 10	704	1.2-	0.5-
1996 11 12	691	(4.1+	12.4-)	1997 01 27	411	0.0	0.4-	1999 09 10	704	1.0+	0.1+
1996 11 12	691	(3.4-	3.1-)	1999 09 07	704	0.0	0.2-	1999 09 10	704	0.2-	0.0
1997 01 03	411	0.2-	0.1+	1999 09 07	704	0.0	0.3+	1999 09 13	704	0.2+	0.1-
1997 01 03	411	0.2-	0.1+	1999 09 07	704	0.4-	0.3-	1999 09 13	704	0.4+	0.6+
1997 01 04	411	0.3-	0.2+	1999 09 07	704	0.3-	0.2+	1999 09 13	704	0.2+	0.5+
1997 01 04	411	0.4-	0.8-	1999 09 07	704	0.7-	0.1-	1999 09 13	704	0.1-	0.2-
1997 01 10	411	0.7+	0.5+	1999 09 08	703	1.2-	0.6+				

1997 AZ₂ = 1999 RC₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	338.77017		(2000.0)	P	Q	Williams		
<i>n</i>	0.27164795	ω	38.97343	+0.98359451	-0.16133841			
<i>a</i>	2.3611945	Ω	330.01530	+0.09639257	+0.84817500			
<i>e</i>	0.2335571	<i>i</i>	9.29198	+0.15248053	+0.50454839			
<i>P</i>	3.63	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	3	

Residuals in seconds of arc

1997 01 04	411	0.2+	0.1+	1999 08 22	699	0.4-	0.1+	1999 09 08	106	0.5+	0.1+
1997 01 04	411	0.0	1.0+	1999 08 22	699	0.3-	0.1+	1999 09 08	106	0.3+	0.2+
1997 01 06	411	0.2+	0.8+	1999 08 22	699	0.4-	0.2+	1999 09 08	106	0.5+	0.1+
1997 01 06	411	0.1+	0.2+	1999 09 04	703	0.3+	0.2-	1999 09 08	106	0.2+	0.0

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1997 01 10	411	0.4−	1.4−	1999 09 04	703	0.0	0.2+	1999 09 08	106	0.4+	0.0
1997 01 10	411	0.3+	0.2−	1999 09 04	703	0.1−	0.9+	1999 09 09	704	0.0	0.2−
1997 01 12	566	0.1+	0.4−	1999 09 04	703	0.4−	1.6+	1999 09 09	704	0.2−	0.4−
1997 01 12	566	0.2+	0.4−	1999 09 05	703	1.2+	0.8+	1999 09 09	704	0.8−	0.6−
1997 01 12	566	0.1+	0.5−	1999 09 05	703	0.3−	0.2−	1999 09 09	704	1.0−	1.2−
1997 01 15	411	0.7+	0.2+	1999 09 05	703	0.4−	0.8+	1999 09 09	704	1.0−	1.3−
1997 01 15	411	0.5+	0.5+	1999 09 05	703	1.2+	0.1−	1999 09 14	704	0.6+	0.0
1997 01 26	411	0.4−	0.2+	1999 09 07	704	0.3−	0.2−	1999 09 14	704	0.6+	0.1+
1997 01 26	411	0.0	0.2+	1999 09 07	704	0.4−	0.4−	1999 09 14	704	0.1+	0.1+
1999 07 16	704	0.1+	0.1+	1999 09 07	704	0.4−	0.2−	1999 09 14	704	0.5+	0.0
1999 07 16	704	0.0	0.3−	1999 09 07	704	0.5−	0.0	1999 09 14	704	0.2+	0.1+
1999 07 16	704	0.0	0.2−	1999 09 07	704	0.3−	0.1−				
1999 07 16	704	0.2+	0.2−	1999 09 08	106	0.4+	0.2+				

1997 AC₃ = 1999 RQ₁₂₅

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	133.17403		(2000.0)	P		Q	
<i>n</i>	0.21129077	ω	226.87858	−0.95966081		+0.25941501	
<i>a</i>	2.7917876	Ω	327.70642	−0.16033681		−0.82170687	
<i>e</i>	0.0822773	<i>i</i>	11.70873	−0.23096154		−0.50744622	
<i>P</i>	4.66	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 01 04	411	0.1+	0.0	1997 02 06	327	1.4−	0.8+	1999 09 09	704	0.3+	0.0
1997 01 04	411	0.6+	0.5−	1997 02 06	327	0.8−	0.9+	1999 09 09	704	0.6−	0.4−
1997 01 06	411	0.4+	0.8−	1999 09 05	699	0.6−	2.0+	1999 09 09	704	0.4+	0.4+
1997 01 06	411	0.7+	0.5−	1999 09 05	699	0.2−	1.2+	1999 09 09	704	0.2−	0.4+
1997 01 10	411	0.2−	0.1+	1999 09 05	699	0.8−	0.0	1999 09 14	704	0.5+	0.1+
1997 01 10	411	0.8−	0.8+	1999 09 07	704	0.4+	0.2+	1999 09 14	704	0.9+	0.2+
1997 01 15	411	0.7+	0.2+	1999 09 07	704	0.4+	0.3−	1999 09 14	704	0.7+	1.1−
1997 01 15	411	0.3+	0.5−	1999 09 07	704	0.3−	0.4−	1999 09 14	704	0.3−	0.7−
1997 01 26	411	0.4+	0.2−	1999 09 07	704	0.4−	0.1−	1999 09 14	704	0.0	1.0−
1997 01 26	411	0.2+	0.9−	1999 09 07	704	0.1−	0.1+				
1997 02 06	327	0.2−	0.7+	1999 09 09	704	0.3−	0.4−				

1997 AA₄ = 1999 RM₆₀

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	298.75517		(2000.0)	P		Q	
<i>n</i>	0.25321112	ω	120.98689	+0.70873629		−0.70447983	
<i>a</i>	2.4744624	Ω	283.83065	+0.63340354		+0.65879876	
<i>e</i>	0.1876609	<i>i</i>	2.20919	+0.31063294		+0.26399309	
<i>P</i>	3.89	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1997 01 06	411	0.5+	0.5+	1997 01 16	411	0.5−	0.5+	1999 09 07	704	0.9+	0.5+
1997 01 06	411	0.6+	0.5+	1997 01 16	411	0.8+	0.4+	1999 09 07	704	0.0	1.1+
1997 01 07	411	0.2+	0.3+	1997 01 27	411	0.5+	0.1+	1999 09 09	704	1.5−	0.2+
1997 01 07	411	0.2+	1.0−	1997 01 27	411	0.1−	0.3−	1999 09 09	704	0.3+	1.4−
1997 01 11	411	1.5−	1.1−	1999 09 07	704	0.0	0.6+	1999 09 09	704	0.5+	0.8−
1997 01 11	411	0.6−	0.2+	1999 09 07	704	0.3−	0.0				

1997 AB₄ = 1999 RX₁₆₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	316.78923		(2000.0)	P		Q	
<i>n</i>	0.27003855	ω	76.90901	+0.78446573		−0.61948417	
<i>a</i>	2.3705668	Ω	321.35817	+0.54934014		+0.71595265	
<i>e</i>	0.2138114	<i>i</i>	2.68058	+0.28781754		+0.32194902	
<i>P</i>	3.65	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 01 06	411	0.8+	0.6−	1997 02 04	566	0.2−	0.1−	1999 09 09	704	0.0	0.1+
1997 01 06	411	0.3−	0.3+	1997 02 04	566	0.1+	0.3−	1999 09 09	704	0.5+	0.0
1997 01 07	411	0.5+	0.0	1997 02 04	566	0.1+	0.0	1999 09 09	704	0.5+	0.6+

1997 01 07	411	0.3+	0.2+	1999 09 07	704	0.0	0.1+	1999 09 14	704	0.2+	0.5−
1997 01 11	411	0.2+	0.9+	1999 09 07	704	0.1−	0.1−	1999 09 14	704	0.3+	0.0
1997 01 11	411	1.0−	0.2−	1999 09 07	704	0.1−	0.2+	1999 09 14	704	0.2−	0.0
1997 01 16	411	1.1−	0.1−	1999 09 07	704	0.2−	0.4−	1999 09 14	704	0.7−	0.1−
1997 01 16	411	0.2+	0.4−	1999 09 07	704	0.1−	0.3−	1999 09 14	704	0.4+	0.3+
1997 01 27	411	0.0	0.2+	1999 09 09	704	0.7−	0.1−				
1997 01 27	411	0.5+	0.0	1999 09 09	704	0.0	0.1+				

1997 AD₄ = 1999 RN₁₉₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	232.93329		(2000.0)	P		Q	
<i>n</i>	0.23857933	ω	150.49802	−0.43712532		−0.89871467	
<i>a</i>	2.5746261	Ω	325.38850	+0.81259928		−0.37790068	
<i>e</i>	0.0838251	<i>i</i>	3.54485	+0.38549171		−0.22249275	
<i>P</i>	4.13	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1997 01 06	411	0.0	0.7−	1997 02 04	566	0.1−	0.4−	1999 09 09	704	0.7−	1.0−
1997 01 06	411	0.7−	0.2−	1999 09 07	704	0.5−	0.3+	1999 09 09	704	1.5+	0.5+
1997 01 07	411	1.0+	0.0	1999 09 07	704	0.4−	0.0	1999 09 09	704	1.2+	0.5+
1997 01 07	411	0.6+	0.1+	1999 09 07	704	0.0	0.7+	1999 09 10	704	0.0	0.4−
1997 01 11	411	0.1−	0.4+	1999 09 07	704	0.6−	0.2+	1999 09 10	704	0.1+	0.2−
1997 01 11	411	0.4+	0.1+	1999 09 07	704	0.5−	0.6+	1999 09 10	704	0.6+	1.2+
1997 01 16	411	0.6−	0.1−	1999 09 09	704	0.6−	0.6+	1999 09 14	704	0.3+	0.8−
1997 01 16	411	0.6−	0.7+	1999 09 09	704	0.2−	0.2−	1999 09 14	704	0.4−	0.4−
1997 01 27	411	0.4−	0.5+	1999 09 09	704	0.1+	0.7−	1999 09 14	704	0.5−	0.4+
1997 01 27	411	0.1−	0.2−	1999 09 09	704	0.5+	0.4+	1999 09 14	704	0.1+	0.8−
1997 02 04	566	0.2+	0.1+	1999 09 09	704	0.1+	0.1+	1999 09 14	704	0.1−	0.7−
1997 02 04	566	0.6+	0.2−	1999 09 09	704	(1.3−	2.5−)				

1997 AH₄ = 1981 UX₂ = 1999 RA₁₆₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	295.86548		(2000.0)	P		Q	
<i>n</i>	0.26967220	ω	107.79365	+0.41543254		−0.90943669	
<i>a</i>	2.3727133	Ω	317.64463	+0.82384364		+0.38478096	
<i>e</i>	0.1883144	<i>i</i>	1.56996	+0.38561310		+0.15769755	
<i>P</i>	3.65	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1981 10 30	381	0.0	1.2−	1997 01 11	411	0.9−	1.1+	1999 09 09	704	1.4+	0.2+
1981 10 30	381	0.7+	1.5−	1997 01 16	411	0.4−	0.4−	1999 09 09	704	0.1−	0.6+
1992 11 25	691	0.1+	0.3+	1997 01 16	411	0.2+	0.2−	1999 09 09	704	0.4−	0.4−
1992 11 25	691	0.1−	0.4+	1997 01 28	411	0.0	0.3+	1999 09 09	704	(0.3−	2.4−)
1992 11 25	691	0.3−	0.2+	1997 01 28	411	0.4+	0.2+	1999 09 14	704	0.3−	0.5+
1997 01 06	411	1.4+	0.5−	1999 09 07	704	0.5−	0.6+	1999 09 14	704	0.6+	0.3−
1997 01 06	411	0.6+	0.7+	1999 09 07	704	0.7−	0.2−	1999 09 14	704	0.0	0.6+
1997 01 07	411	0.8+	0.1+	1999 09 07	704	0.7−	0.1+	1999 09 14	704	0.2+	0.2+
1997 01 07	411	0.5+	0.4+	1999 09 07	704	0.7−	0.4+	1999 09 14	704	1.0+	0.3+
1997 01 11	411	1.9−	0.4+	1999 09 07	704	1.1−	0.0				

1997 AV₄ = 1999 RC₁₅₈

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	114.65051		(2000.0)	P		Q	
<i>n</i>	0.21141720	ω	83.62798	−0.79754815		+0.59551351	
<i>a</i>	2.7906745	Ω	132.87095	−0.59230635		−0.74273631	
<i>e</i>	0.0571953	<i>i</i>	7.55321	−0.11441211		−0.30611506	
<i>P</i>	4.66	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1997 01 06	411	0.1−	0.4+	1997 02 07	098	0.4−	1.0−	1998 06 18	704	(0.4+	4.9+)
1997 01 06	411	0.5−	0.7+	1998 05 23	704	(3.3+	1.0−)	1998 06 18	704	(2.6−	2.0+)
1997 01 07	411	0.3+	0.4+	1998 05 23	704	0.1−	0.4+	1998 07 15	699	1.0−	1.2+
1997 01 07	411	0.1−	0.7+	1998 05 23	704	0.2−	0.8−	1998 07 15	699	0.5−	0.6+
1997 01 11	411	0.3−	0.3−	1998 05 23	704	0.6+	1.2−	1998 07 15	699	0.8−	0.8+

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1997 01 11	411	0.8−	0.8+	1998 05 23	699	0.7+	0.3−	1999 09 07	699	(0.1+	2.1+)
1997 01 16	411	0.9+	0.2−	1998 05 23	699	0.2−	0.2+	1999 09 07	704	0.1+	0.1+
1997 01 16	411	0.9+	0.0	1998 05 23	704	0.6+	0.6−	1999 09 07	699	0.2−	1.4+
1997 01 25	327	0.4+	1.1+	1998 05 23	699	0.6+	0.7−	1999 09 07	704	0.6+	0.5−
1997 01 25	327	0.3+	0.6+	1998 05 26	704	0.0	0.4+	1999 09 07	704	0.2+	0.0
1997 01 25	327	0.5+	0.5+	1998 05 26	704	0.5−	0.2−	1999 09 07	704	0.2+	0.2+
1997 01 27	411	0.2−	0.4−	1998 05 26	704	0.2+	0.2+	1999 09 07	699	0.4−	1.4+
1997 01 27	411	0.1+	0.1+	1998 05 26	704	(1.1+	2.3−)	1999 09 07	704	0.3+	0.4+
1997 01 27	327	0.4+	0.4+	1998 05 26	704	(2.1−	0.3+)	1999 09 09	704	(2.2+	3.1−)
1997 01 27	327	0.5−	0.4+	1998 06 03	704	0.2+	0.2+	1999 09 09	704	0.6−	0.7−
1997 01 27	327	0.6+	0.4+	1998 06 03	704	0.7−	0.6−	1999 09 09	704	0.5−	0.4−
1997 01 30	098	0.1−	0.9−	1998 06 03	704	1.0+	0.1−	1999 09 09	704	1.5−	0.7−
1997 01 30	098	0.2−	0.2+	1998 06 03	704	0.3−	0.5+	1999 09 13	704	0.0	0.1+
1997 01 31	098	0.1−	0.7+	1998 06 03	704	0.6−	1.1+	1999 09 13	704	0.7+	1.6+
1997 01 31	098	1.4+	1.4−	1998 06 18	704	(0.3+	4.9+)	1999 09 13	704	0.3−	0.3+
1997 02 07	098	0.9−	0.6+	1998 06 18	704	1.3+	1.7+	1999 09 13	704	0.4+	0.2+
1997 02 07	098	1.1−	0.4+	1998 06 18	704	(0.3+	5.2+)				

1997 AE₅ = 1999 RY₁₉₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	339.66858		(2000.0)	P	Q
n	0.25536452	ω	54.23254	+0.98047870	−0.09121579
a	2.4605320	Ω	310.32323	−0.01360612	+0.85228570
e	0.1468655	i	13.20704	+0.19615398	+0.51506191
P	3.86	H	14.0	G 0.15	U 4

Residuals in seconds of arc

1997 01 03	369	0.7+	0.0	1997 01 30	369	0.6+	0.3+	1999 09 08	704	0.0	0.4+
1997 01 03	369	0.6+	0.6−	1997 01 30	369	0.7−	0.8−	1999 09 08	704	0.0	0.4+
1997 01 06	369	0.3−	0.2+	1997 01 30	369	1.2−	2.0−	1999 09 08	704	0.0	0.1−
1997 01 06	369	0.1−	0.2−	1997 02 09	369	0.5+	1.0+	1999 09 16	704	0.2+	0.1−
1997 01 09	369	0.5−	1.7+	1997 02 09	369	0.4+	0.3+	1999 09 16	704	0.0	0.1+
1997 01 09	369	0.1+	0.3+	1997 02 13	369	0.3+	0.6+	1999 09 16	704	0.4−	0.5−
1997 01 18	369	0.1+	0.7−	1997 02 13	369	0.6−	0.6+	1999 09 16	704	0.3−	0.3−
1997 01 18	369	0.1−	0.2+	1997 02 13	369	0.4+	0.4−				
1997 01 18	369	0.1+	0.4−	1999 09 08	704	0.4+	0.1+				

1997 AZ₅ = 1999 RZ₁₄₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	271.26646		(2000.0)	P	Q
n	0.28484055	ω	157.76759	+0.28846263	−0.95236469
a	2.2877128	Ω	275.35484	+0.86284576	+0.30335580
e	0.0944093	i	5.70360	+0.41507409	+0.03125311
P	3.46	H	14.9	G 0.15	U 4

Residuals in seconds of arc

1996 12 27	327	0.4+	0.2−	1997 01 14	327	0.1+	0.0	1999 09 09	704	0.4+	0.2+
1996 12 27	327	0.5+	0.0	1997 01 14	327	0.4+	0.1+	1999 09 09	704	0.6+	0.2+
1996 12 27	327	0.2−	0.7−	1997 01 15	327	0.6+	0.2−	1999 09 09	704	0.1+	0.3−
1997 01 02	327	0.5−	0.1+	1997 01 15	327	0.2+	0.5−	1999 09 09	704	0.3−	0.4−
1997 01 02	327	0.4+	0.1+	1997 01 15	327	0.1−	0.2−	1999 09 14	704	0.8+	0.3+
1997 01 02	327	0.6−	0.1−	1999 09 05	703	0.0	0.1+	1999 09 14	704	0.7−	0.1−
1997 01 05	327	0.5−	0.9+	1999 09 05	703	0.4−	0.3+	1999 09 14	704	0.5+	0.2−
1997 01 05	327	0.3−	0.3+	1999 09 05	703	0.8−	0.4+	1999 09 14	704	0.7+	0.5−
1997 01 05	327	0.1+	0.0	1999 09 05	703	0.5−	0.2+	1999 09 14	704	0.7−	0.3−
1997 01 14	327	0.5−	0.5+	1999 09 09	704	0.3+	0.1+				

1997 AA₇ = 1991 PT₂₈ = 1999 RH₄₆

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Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	277.17104		(2000.0)	P	Q
n	0.24428281	ω	282.56406	+0.51674303	−0.85548299
a	2.5343939	Ω	136.26868	+0.80313270	+0.47080248
e	0.2304824	i	2.78173	+0.29657125	+0.21562440
P	4.03	H	15.0	G 0.15	U 3

Residuals in seconds of arc

1991 08 05	809	0.8+	0.7−	1997 01 28	411	0.1+	1.0+	1999 08 13	691	0.1+	0.8+
1991 08 05	809	0.1+	0.0	1997 02 03	566	0.3−	0.5−	1999 08 13	691	0.4+	0.8+
1991 08 05	809	0.5−	0.9−	1997 02 03	566	0.4−	0.7−	1999 08 13	691	0.2−	0.5+
1997 01 09	411	0.4−	0.2+	1997 02 03	566	0.4−	0.6−	1999 09 07	704	0.1+	0.1+
1997 01 09	411	0.1+	0.3+	1997 02 14	411	0.2+	0.4−	1999 09 07	704	1.5−	0.3−
1997 01 10	411	0.0	0.0	1997 02 14	411	0.4+	0.2−	1999 09 07	704	0.1+	0.3+
1997 01 10	411	0.4−	0.0	1997 03 10	675	1.9−	0.0	1999 09 07	704	0.7−	1.0−
1997 01 13	411	0.5+	0.2+	1997 03 10	675	1.8+	0.1+	1999 09 11	704	0.7+	0.6−
1997 01 13	411	0.2+	0.4+	1999 07 14	704	1.0+	0.6−	1999 09 11	704	0.4−	0.7+
1997 01 16	411	0.3+	0.5+	1999 07 14	704	0.0	1.0+	1999 09 11	704	0.8+	0.0
1997 01 16	411	1.0+	0.3+	1999 07 14	704	0.1+	0.0	1999 09 11	704	0.2−	0.8+
1997 01 28	411	0.6−	0.5+	1999 07 14	704	0.3−	0.3+	1999 09 11	704	0.8−	0.1+

1997 AC₉ = 1999 RY₄₅

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	307.09594		(2000.0)	P	Q
n	0.24085109	ω	84.73307	+0.85239551	−0.49422571
a	2.5584109	Ω	304.77710	+0.35819237	+0.78981415
e	0.1723099	i	11.99981	+0.38094635	+0.36322798
P	4.09	H	15.5	G 0.15	U 4

Residuals in seconds of arc

1997 01 02	691	0.3+	0.1−	1997 02 06	566	0.0	0.3−	1999 09 07	704	0.5−	0.5+
1997 01 02	691	0.3+	0.1−	1997 02 06	566	0.1−	0.2−	1999 09 07	704	0.1+	0.0
1997 01 02	691	0.3+	0.1−	1997 02 06	566	0.1−	0.2−	1999 09 08	703	0.7+	0.9−
1997 01 10	691	0.2−	0.1−	1999 07 13	704	0.6+	0.5−	1999 09 08	703	0.0	0.3+
1997 01 10	691	0.1−	0.0	1999 07 13	704	1.0−	1.0+	1999 09 08	703	0.6+	0.6+
1997 01 10	691	0.1−	0.0	1999 07 13	704	1.5+	0.8−	1999 09 08	703	1.3+	1.2+
1997 01 17	691	0.7−	0.2+	1999 07 13	704	0.2+	0.1+	1999 09 09	704	0.7−	0.5−
1997 01 17	691	0.6−	0.1−	1999 08 12	699	0.8−	0.2−	1999 09 09	704	0.5+	0.3−
1997 01 17	691	0.2−	0.1−	1999 08 12	699	0.2−	0.1−	1999 09 09	704	1.3−	0.2+
1997 01 31	691	0.0	0.4+	1999 08 12	699	0.1+	0.1+	1999 09 09	704	0.0	0.5−
1997 01 31	691	0.4+	0.1−	1999 09 07	704	0.1−	0.2−	1999 09 09	704	0.6−	0.4−
1997 01 31	691	0.5+	0.2+	1999 09 07	704	0.2+	0.3−				

1997 AG₁₃ = 1999 RY₄₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	247.06390		(2000.0)	P	Q		
n	0.27349356	ω	66.37976	−0.71077191	−0.69537175		
a	2.3505598	Ω	69.37026	+0.59697432	−0.67610181		
e	0.1210075	i	6.51082	+0.37205504	−0.24360721		
P	3.60	H	14.3	G	0.15	U	5

Residuals in seconds of arc

1997 01 11	411	0.1−	0.3−	1997 01 27	411	0.1+	0.5+	1999 09 15	120	0.6+	0.1−
1997 01 11	411	0.5−	0.5−	1997 01 27	411	0.3+	0.4+	1999 09 15	691	0.4+	0.4−
1997 01 12	411	0.2+	0.1−	1997 02 12	411	0.6+	0.5−	1999 09 16	120	0.1−	0.3−
1997 01 12	411	0.7−	0.5−	1997 02 12	411	1.2−	0.2+	1999 09 16	120	1.5−	0.7+
1997 01 14	411	0.5+	0.5+	1999 09 15	120	0.0	0.3−	1999 09 16	120	0.4+	0.3+
1997 01 14	411	0.9+	0.3+	1999 09 15	120	0.1+	0.1+				

1997 AT₁₃ = 1999 RX₅₇

Id. G. V. Williams, E. Bowell

1999 SEPT. 28

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Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	323.11462		(2000.0)	P	Q
<i>n</i>	0.26811799	ω	345.05291	+0.92922981	-0.36829188
<i>a</i>	2.3818738	Ω	36.60203	+0.34394635	+0.83257280
<i>e</i>	0.2157168	<i>i</i>	2.87284	+0.13502914	+0.41374343
<i>P</i>	3.68	<i>H</i>	15.6	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1996 12 14	691	0.6-	0.2+	1997 01 14	411	0.6+	0.3-	1999 09 07	699	0.4-	0.6+
1996 12 14	691	0.6-	0.2+	1997 01 15	566	0.2+	0.3-	1999 09 07	699	0.1-	0.9+
1996 12 14	691	0.2-	0.4+	1997 01 15	566	0.1-	0.1-	1999 09 07	704	0.2-	0.0
1997 01 11	566	0.9+	0.1-	1997 01 15	566	0.5-	0.1-	1999 09 07	699	0.1-	0.3+
1997 01 11	566	1.5+	0.0	1997 01 15	411	0.5+	0.8-	1999 09 07	704	0.5+	0.1+
1997 01 11	566	0.8-	0.2-	1997 01 15	411	0.3-	0.0	1999 09 07	704	0.3-	0.0
1997 01 12	566	0.3-	0.0	1998 04 22	704	0.6-	0.1-	1999 09 07	704	0.1-	0.3-
1997 01 12	566	0.0	0.0	1998 04 22	704	1.4+	0.4-	1999 09 07	704	0.2+	0.3-
1997 01 12	566	0.2-	0.2+	1998 04 22	704	0.3-	0.5-	1999 09 13	704	1.3+	0.0
1997 01 14	566	0.3-	0.0	1998 04 22	704	1.0+	0.7-	1999 09 13	704	0.5-	0.7-
1997 01 14	566	0.2+	0.3-	1998 05 20	691	0.8-	0.2+	1999 09 13	704	0.3+	0.7-
1997 01 14	566	0.1-	0.1-	1998 05 20	691	0.5-	0.2+	1999 09 13	704	0.0	0.6-
1997 01 14	411	0.4-	0.4+	1998 05 20	691	0.7-	0.4+	1999 09 13	704	0.1-	0.6-

1997 AW₁₃ = 1999 RK₁₀₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	108.89233		(2000.0)	P	Q
<i>n</i>	0.21796976	ω	259.94784	-0.57214128	+0.81496145
<i>a</i>	2.7344620	Ω	334.46410	-0.64354370	-0.51574920
<i>e</i>	0.1185428	<i>i</i>	12.34363	-0.50843472	-0.26427373
<i>P</i>	4.52	<i>H</i>	13.6	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1997 01 11	587	0.4+	0.7-	1997 01 28	587	0.0	0.2+	1999 09 08	704	1.1+	0.5-
1997 01 11	587	0.9-	0.8+	1997 01 28	587	0.4-	0.4-	1999 09 09	704	0.1-	0.2+
1997 01 11	587	0.5-	0.1+	1997 02 06	587	0.3-	0.1+	1999 09 09	704	0.5-	0.0
1997 01 11	587	0.8-	0.2-	1997 02 06	587	0.4-	0.2-	1999 09 09	704	0.4-	0.6-
1997 01 12	587	0.3+	0.3-	1997 02 10	587	0.8+	0.1+	1999 09 09	704	0.1+	0.3-
1997 01 12	587	1.0+	0.7+	1997 02 28	587	0.5+	1.1+	1999 09 09	704	1.9-	0.2+
1997 01 13	587	1.1+	0.1-	1997 02 28	587	0.4-	0.7+	1999 09 09	704	0.0	1.0-
1997 01 13	587	0.6+	0.6-	1997 03 31	587	0.7-	0.6-	1999 09 09	704	0.1-	0.3+
1997 01 16	587	0.7+	0.7+	1997 03 31	587	0.6-	0.4-	1999 09 09	704	0.4+	0.5+
1997 01 16	587	0.4-	0.2-	1999 09 08	704	1.0+	0.2-	1999 09 09	704	0.3+	0.4+
1997 01 28	587	0.2-	0.9-	1999 09 08	704	0.0	0.8+	1999 09 09	704	0.1+	0.1+

1997 AR₁₆ = 1999 RE₂₁

Id. G. W. Williams, G. J. Garradd (1998 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	155.62597		(2000.0)	P	Q
<i>n</i>	0.19080134	ω	192.27718	-0.97959583	+0.20093865
<i>a</i>	2.9882374	Ω	359.27823	-0.14733569	-0.73139012
<i>e</i>	0.1550096	<i>i</i>	18.31029	-0.13669015	-0.65168408
<i>P</i>	5.17	<i>H</i>	12.7	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1997 01 10	355	0.1+	0.3-	1997 03 08	402	0.1-	0.3+	1997 06 24	402	0.7-	0.3+
1997 01 10	355	0.6-	0.9+	1997 03 08	402	0.1-	0.4+	1997 06 24	402	0.2+	0.4+
1997 01 10	355	0.3-	0.2+	1997 03 08	402	0.1-	0.4+	1997 07 04	402	0.3-	0.5-
1997 01 10	355	0.1+	0.5-	1997 03 11	355	0.5-	1.2+	1997 07 04	402	0.7-	0.0
1997 01 14	355	0.2-	0.5-	1997 03 11	402	0.4-	0.7+	1997 07 04	402	0.9-	0.0
1997 01 14	355	1.0-	1.7-	1997 03 11	402	0.4-	0.8+	1998 07 04	422	0.5-	0.3-
1997 01 14	355	1.4-	0.7-	1997 03 11	355	0.7-	0.8+	1998 07 04	422	0.2-	0.1-
1997 01 14	355	0.9-	0.1-	1997 03 11	402	0.4-	0.7+	1998 07 04	422	0.1-	0.3-
1997 01 14	355	0.4-	0.6+	1997 03 11	355	0.3-	0.6+	1999 08 11	355	1.1+	0.0
1997 01 14	355	1.0-	1.4+	1997 03 17	402	0.4-	1.5+	1999 08 11	355	0.9-	0.9-
1997 01 15	402	0.0	0.4-	1997 03 17	402	0.4-	1.5+	1999 08 11	355	(1.1-	2.3-)
1997 01 15	402	0.5-	0.3-	1997 03 17	402	0.5-	1.6+	1999 08 22	699	1.8-	1.2+

1997 01 15	402	0.3-	0.3-	1997 03 30	355	0.9+	0.6-	1999 08 22	699	1.0-	1.7+
1997 01 16	355	0.5-	0.2+	1997 03 30	355	1.3+	0.3-	1999 08 22	699	0.1-	0.6+
1997 01 16	355	0.4-	0.3-	1997 04 01	355	0.2-	0.1-	1999 09 07	704	0.8+	0.4-
1997 01 16	355	0.9-	0.4+	1997 04 01	355	0.7+	0.5+	1999 09 07	704	0.4+	0.2-
1997 01 17	900	1.1-	0.1-	1997 04 12	355	1.6+	1.3-	1999 09 07	704	0.2-	0.5-
1997 01 17	900	0.1-	0.3-	1997 04 12	355	1.0+	0.7-	1999 09 07	704	0.7-	0.0
1997 01 17	355	0.8-	0.5-	1997 04 12	355	(2.0+	1.0-)	1999 09 07	704	0.9+	1.2+
1997 01 17	355	0.2-	0.3+	1997 04 16	402	0.2-	0.8-	1999 09 08	704	0.3-	0.3+
1997 01 18	355	0.0	0.1+	1997 04 16	402	0.3-	0.8-	1999 09 08	704	0.6+	0.3-
1997 01 18	355	0.4-	0.7-	1997 04 16	402	0.3-	0.8-	1999 09 08	704	0.1+	0.5-
1997 01 20	355	0.0	0.2+	1997 04 26	900	0.1+	0.5-	1999 09 08	704	0.0	0.3+
1997 01 20	355	0.1+	0.5+	1997 04 26	355	0.9+	1.9-	1999 09 08	704	0.1-	0.0
1997 01 25	355	0.9-	0.5+	1997 04 26	355	1.6+	1.7-	1999 09 09	704	0.4+	0.3+
1997 01 25	355	0.4-	1.4+	1997 04 26	900	0.1+	0.8-	1999 09 09	704	0.3+	0.0
1997 01 25	355	0.1-	0.2-	1997 04 26	402	0.4+	0.7-	1999 09 09	704	0.6+	0.4-
1997 01 29	900	0.9+	0.1-	1997 04 26	402	0.4+	0.5-	1999 09 09	704	0.3+	0.1+
1997 01 29	900	0.5+	0.2-	1997 04 26	402	0.2+	1.1-	1999 09 09	704	0.1+	0.1+
1997 02 01	355	0.1+	0.7-	1997 04 29	355	1.0+	1.0-	1999 09 12	355	0.1-	0.3-
1997 02 01	355	0.1-	0.8-	1997 04 29	355	1.3+	1.8-	1999 09 12	355	0.6+	1.5-
1997 02 01	355	0.1-	0.6-	1997 05 04	402	0.2+	0.3-	1999 09 12	355	0.6+	1.9-
1997 02 11	355	0.2+	0.4+	1997 05 04	402	0.3+	0.1-	1999 09 12	355	0.4+	1.5-
1997 02 11	355	0.3+	0.1-	1997 05 04	402	0.4+	0.4-	1999 09 14	704	1.3+	1.2-
1997 02 13	900	0.9-	1.0+	1997 05 09	355	1.0+	0.1+	1999 09 14	704	0.3+	0.7-
1997 02 13	900	0.9-	0.8+	1997 05 09	355	0.6+	1.0+	1999 09 14	704	0.7-	0.4+
1997 03 04	355	0.0	0.1-	1997 05 25	355	0.3-	0.8-	1999 09 14	704	0.1-	0.1-
1997 03 04	355	0.1+	0.5-	1997 05 25	355	0.5+	0.1+	1999 09 14	704	1.1+	0.4-
1997 03 04	355	0.4+	0.1-	1997 05 28	402	1.0-	1.4-	1999 09 17	355	0.9+	0.7-
1997 03 07	355	0.5-	0.6+	1997 05 28	402	0.2-	1.6-	1999 09 19	355	0.4+	0.0
1997 03 07	355	0.0	0.7+	1997 05 28	402	0.4-	1.5-	1999 09 19	355	0.3+	0.1+
1997 03 07	355	0.4+	0.2+	1997 06 24	402	0.9-	1.5+	1999 09 19	355	0.2+	0.0

1997 AY₁₇ = 1999 RO₈₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	295.85941		(2000.0)	P	Q
<i>n</i>	0.27927414	ω	54.22884	+0.24465650	-0.96939234
<i>a</i>	2.3180114	Ω	21.63707	+0.87065910	+0.21031875
<i>e</i>	0.2269082	<i>i</i>	3.19256	+0.42672699	+0.12666694
<i>P</i>	3.53	<i>H</i>	15.6	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1997 01 15	411	0.5+	0.1+	1997 03 05	704	0.7+	0.3-	1999 09 07	704	0.3+	0.6+
1997 01 15	411	1.5+	1.8-	1997 03 05	704	1.0+	0.0	1999 09 07	704	0.0	0.3+
1997 01 16	411	0.2+	0.2+	1997 03 06	704	0.4-	0.5+	1999 09 07	704	0.3+	0.9+
1997 01 16	411	0.4-	0.6+	1997 03 06	704	0.7+	0.5+	1999 09 14	704	0.7+	0.6-
1997 01 28	411	0.4-	0.2-	1999 08 22	703	0.0	0.2+	1999 09 14	704	0.1+	0.3-
1997 01 28	411	1.0-	0.2+	1999 08 22	703	0.3+	0.7+	1999 09 14	704	0.2+	0.9-
1997 02 14	411	0.3-	0.6-	1999 08 22	703	1.7-	0.4+	1999 09 14	704	0.2+	0.1+
1997 02 14	411	1.3-	0.1+	1999 08 22	703	0.1+	0.2+	1999 09 14	704	0.3-	0.7-
1997 03 04	704	0.8-	1.5+	1999 09 07	704	0.1-	0.1-				
1997 03 04	704	0.5+	0.3+	1999 09 07	704	0.6-	0.5+				

1997 AB₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	291.41962		(2000.0)	P	Q
<i>n</i>	0.26629170	ω	93.91271	+0.09228067	-0.99556114
<i>a</i>	2.3927517	Ω	350.73126	+0.86191075	+0.08916862
<i>e</i>	0.0757963	<i>i</i>	6.59605	+0.49859215	+0.03011611
<i>P</i>	3.70	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1997 01 15	411	1.0-	0.7-	1997 02 1

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1997 01 28	411	0.9+	0.4+	1997 03 06	704	0.8+	0.2-	1999 09 13	106	0.2+	0.1-
1997 02 13	411	0.7-	0.4+	1997 03 06	704	0.1-	0.4+	1999 09 13	106	0.3-	0.8-

1997 AT₂₀ = 1999 RF₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	350.82800		(2000.0)		P		Q
n	0.23607704	ω	58.36945		+0.99272997		+0.09959952
a	2.5927872	Ω	295.83771		-0.11899538		+0.89654087
e	0.0962074	i	4.30622		+0.01809188		+0.43161835
P	4.17	H	14.6	G	0.15	U	3

Residuals in seconds of arc

1997 01 11	691	0.3+	0.2+	1998 05 01	704	0.3+	1.0+	1999 09 06	596	1.1-	0.6+
1997 01 11	691	0.3+	0.6+	1998 05 01	704	0.8+	1.4+	1999 09 07	704	0.0	0.1+
1997 01 11	691	0.4+	0.4+	1999 07 23	704	0.9+	0.6-	1999 09 07	704	0.1-	0.3+
1997 01 17	691	0.5-	0.5+	1999 07 23	704	0.0	0.2+	1999 09 07	704	0.0	0.5-
1997 01 17	691	0.2-	0.5+	1999 07 23	704	0.5+	0.7+	1999 09 07	704	0.4+	0.4-
1997 01 17	691	0.2-	0.1+	1999 07 23	704	1.0+	0.6-	1999 09 07	704	0.5-	0.4-
1997 01 31	691	0.3+	0.0	1999 07 23	704	1.0+	0.1-	1999 09 09	704	0.3-	0.8+
1997 01 31	691	0.3+	0.0	1999 09 05	596	1.0-	0.8+	1999 09 09	704	0.1-	0.6+
1997 01 31	691	0.4+	0.6+	1999 09 05	596	0.6-	0.0	1999 09 09	704	0.3+	0.2+
1998 05 01	704	1.0-	0.4-	1999 09 05	596	0.7-	0.3-	1999 09 09	704	0.1+	0.7+
1998 05 01	704	0.6+	0.1+	1999 09 06	596	0.3-	0.6+	1999 09 09	704	0.3+	0.6+
1998 05 01	704	0.1+	0.5+	1999 09 06	596	0.4-	0.1-				

1997 BZ = 1999 RK₂₀₆

Id. G. V. Williams, L. Robinson (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	95.22806		(2000.0)		P		Q
n	0.22662797	ω	307.71019		-0.37799504		+0.91216157
a	2.6643649	Ω	299.36800		-0.78192213		-0.40613313
e	0.1603746	i	10.47017		-0.49569903		-0.05492864
P	4.35	H	13.6	G	0.15	U	4

Residuals in seconds of arc

1996 12 14	691	1.1-	0.4+	1997 01 26	327	0.7+	0.3+	1999 09 08	704	0.0	0.4-
1996 12 14	691	0.0	0.3+	1997 02 07	327	0.1-	0.0	1999 09 17	739	2.2-	0.2+
1996 12 14	691	0.0	0.1-	1997 02 07	327	0.1-	0.2+	1999 09 17	739	0.3-	0.1+
1997 01 19	327	0.4+	0.5-	1997 02 07	327	0.4-	0.1-	1999 09 18	704	0.4+	0.2+
1997 01 19	327	0.1-	0.2-	1999 09 08	704	0.5+	0.2-	1999 09 18	704	0.0	0.3+
1997 01 19	327	1.2+	0.5-	1999 09 08	704	0.2+	0.5-	1999 09 18	704	0.7+	0.2-
1997 01 26	327	0.7-	0.1+	1999 09 08	704	0.3+	0.6-	1999 09 18	704	0.3-	0.6+
1997 01 26	327	0.0	0.0	1999 09 08	704	0.3+	0.3-	1999 09 18	704	0.5+	0.7+

1997 BN₂ = 1999 RC₆₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	35.30273		(2000.0)		P		Q
n	0.18358258	ω	293.18534		+0.17262022		+0.98422355
a	3.0660677	Ω	346.58015		-0.83148980		+0.12448325
e	0.0707507	i	9.62657		-0.52804069		+0.12572957
P	5.37	H	14.2	G	0.15	U	4

Residuals in seconds of arc

1997 01 30	411	0.2-	0.4+	1997 02 11	411	0.1+	0.4-	1999 09 07	704	0.5-	1.9-
1997 01 30	411	0.2-	0.5+	1997 02 26	411	1.1+	0.2-	1999 09 07	704	0.3-	0.5-
1997 01 31	411	0.3-	0.1-	1997 02 26	411	0.6-	1.0-	1999 09 07	704	0.2-	0.4+
1997 01 31	411	0.0	0.3-	1999 08 13	703	0.1+	0.8-	1999 09 11	704	1.3-	0.3-
1997 02 06	411	0.8-	0.6-	1999 08 13	703	0.6+	0.6-	1999 09 11	704	0.5+	0.6+
1997 02 06	411	0.7+	0.9+	1999 08 13	703	0.3+	1.2+	1999 09 11	704	1.1+	0.4+
1997 02 11	411	0.1-	0.4+	1999 08 13	703	0.0	0.9+				

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1997 BT₂ = 1999 RH₆₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	247.13165		(2000.0)		P		Q
n	0.23780523	ω	132.79021		-0.22146239		-0.96910426
a	2.5802103	Ω	329.49853		+0.82057761		-0.12503149
e	0.1461354	i	12.35340		+0.52688405		-0.21261245
P	4.14	H	14.8	G	0.15	U	4

Residuals in seconds of arc

1997 01 30	411	0.5+	0.9+	1997 02 14	411	0.2+	0.1+	1999 09 07	704	0.4-	0.3-
1997 01 30	411	0.9-	0.7+	1997 02 14	411	0.2-	0.4-	1999 09 07	704	0.5+	0.8+
1997 01 31	411	0.3+	0.3+	1997 02 26	411	1.2-	0.0	1999 09 07	704	0.8-	1.1+
1997 01 31	411	0.7-	0.3+	1997 02 26	411	1.2-	0.5+	1999 09 09	704	0.1+	0.9-
1997 02 03	566	0.3+	0.7-	1997 03 05	704	0.4+	0.2+	1999 09 09	704	0.5+	0.4-
1997 02 03	566	0.5+	0.9-	1997 03 05	704	0.7+	0.1-	1999 09 09	704	0.6+	0.4-
1997 02 03	566	0.9+	0.6-	1997 03 06	704	0.7+	0.4-	1999 09 09	704	0.0	0.9+
1997 02 06	411	0.0	0.2-	1997 03 06	704	0.3+	0.4+				
1997 02 06	411	0.4-	0.0	1999 09 07	704	0.5-	0.6-				

1997 BV₂ = 1999 RA₄₈

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

$\dot{M}$	281.08411		(2000.0)		P		Q
n	0.20318480	ω	333.10468		+0.75282839		-0.65614726
a	2.8655538	Ω	68.00150		+0.61357247		+0.67087544
e	0.0518529	i	3.22464		+0.23828186		+0.34553859
P	4.85	H	14.3	G	0.15	U	2

Residuals in seconds of arc

1996 01 12	327	0.6+	0.2-	1997 02 26	411	0.1-	0.8+	1999 08 13	703	0.6-	0.3-
1996 01 12	327	0.3+	1.3-	1998 04 22	704	0.5+	1.3-	1999 08 13	699	0.2-	0.4-
1996 01 12	327	0.2-	0.6-	1998 04 22	704	0.3-	0.9+	1999 08 13	699	0.2+	0.1-
1997 01 30	411	0.3+	0.3+	1998 04 22	704	1.3-	1.5-	1999 08 13	699	0.6-	1.3+
1997 01 30	411	0.0	0.2+	1998 04 22	704	(3.1-	0.4+)	1999 09 07	704	1.2+	0.6+
1997 01 31	411	1.0-	0.1-	1998 05 24	704	0.0	1.0+	1999 09 07	704	0.6+	1.3+
1997 01 31	411	0.1-	0.2-	1998 05 24	704	0.1+	1.4-	1999 09 07	704	0.6+	1.4+
1997 02 06	411	0.4+	0.9+	1998 05 24	704	(2.3+	0.5+)	1999 09 11	704	0.9+	0.9+
1997 02 06	411	0.5+	0.5+	1998 05 24	704	0.2+	0.5+	1999 09 11	704	0.6+	0.4+
1997 02 14	411	0.5+	0.5+	1999 08 13	703	1.2-	1.2-	1999 09 11	704	0.3+	0.5-
1997 02 14	411	0.4+	1.0+	1999 08 13	703	0.4+	0.8+	1999 09 11	704	0.6-	0.8+
1997 02 26	411	0.6+	0.1+	1999 08 13	703	2.0-	1.3-				

1997 BV₅ = 1999 RS₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	259.44792		(2000.0)		P		Q
n	0.24024215	ω	326.95339		-0.09026417		-0.99591728
a	2.5627323	Ω	128.22539		+0.91403367		-0.08327172
e	0.1314144	i	0.07849		+0.39546786		-0.03485112
P	4.10	H	15.0	G	0.15	U	5

Residuals in seconds of arc

1997 01 31	684	0.7-	0.3+	1997 03 02	684	0.2-	0.3-	1999 09 08	691	0.0	0.2-
1997 01 31	684	0.4-	0.5-	1997 03 03	684	0.1-	0.3-	1999 09 11	684	0.3-	0.2-
1997 02 01	684	0.2+	0.1+	1997 03 03	684	0.1-	0.5-	1999 09 11	684	0.2-	0.3-
1997 02 01	684	0.5-	0.3+	1997 03 03	684	0.0	0.4-	1999 09 12	684	0.5-	0.5-
1997 02 01	684	0.1+	0.1+	1999 09 03	691	0.3+	0.6-	1999 09 12	684	0.1-	0.5-
1997 02 01	691	1.4+	0.1+	1999 09 03	691	0.3+	0.3-	1999 09 14	704	0.5+	0.6-
1997 02 01	691	0.2-	0.3-	1999 09 03	691	0.3+	0.3-	1999 09 14	704	0.0	0.5-
1997 02 01	691	0.5-	0.0	1999 09 07	704	0.7+	0.1-	1999 09 14	704	1.0+	0.4+
1997 02 02	684	0.3+	0.0	1999 09 07	704	0.1-	0.2+	1999 09 14	704	0.1-	0.1+
1997 02 02	684	0.4+	0.1+	1999 09 07	704	0.2-	0.1-	1999 09 14	704	0.1-	0.2+
1997 02 02	684	0.1+	0.2+	1999 09 07	704	0.3+	0.3-	1999 09 14	703	0.7+	1.4+
1997 02 12	684	0.2+	0.2+	1999 09 07	704	0.0	0.4+	1999 09 14	703	1.1-	0.6+
1997 02 12	684	0.2+	0.3+	1999 09 08	691	0.3-	0.2-	1999 09 14	703	0.4+	0.1-
1997 03 02	684	0.3-	0.2-	1999 09 08	691	0.1-	0.1-	1999 09 14	703	0.9-	1.1+

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1997 CH₁ = 1999 RS₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	127.27463		(2000.0)	P	Q
<i>n</i>	0.21906645	ω	278.03489	-0.70801932	+0.70298402
<i>a</i>	2.7253281	Ω	306.66382	-0.61040837	-0.65709093
<i>e</i>	0.0461553	<i>i</i>	4.80891	-0.35512007	-0.27211207
<i>P</i>	4.50	<i>H</i>	13.6	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1997 02 01	411	0.4+	0.5+	1997 03 01	411	0.7+	0.5+	1999 09 08	699	0.3-	1.3+
1997 02 01	411	0.3-	0.3-	1997 03 01	411	1.1-	0.9-	1999 09 08	704	0.3-	0.2-
1997 02 03	411	0.2+	0.7-	1999 09 07	704	0.0	1.2-	1999 09 08	704	0.5-	0.1-
1997 02 03	411	0.8-	0.0	1999 09 07	704	0.1+	0.1+	1999 09 08	699	0.3-	1.5+
1997 02 11	411	0.5+	0.1-	1999 09 07	704	0.1-	0.1-	1999 09 18	703	0.2+	0.0
1997 02 11	411	0.1-	0.2+	1999 09 07	704	0.3+	1.3-	1999 09 18	703	0.2+	0.1-
1997 02 12	905	0.1+	0.1+	1999 09 07	704	1.0-	1.7-	1999 09 18	703	0.3+	0.3+
1997 02 12	905	0.4-	0.1-	1999 09 08	699	1.1+	1.0+	1999 09 18	703	0.1-	0.1+
1997 02 13	905	0.0	0.0	1999 09 08	704	0.2+	0.5+				
1997 02 13	905	0.6+	0.9+	1999 09 08	704	0.2+	0.2-				

1997 CL₁ = 1999 RE₉₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	269.16630		(2000.0)	P	Q
<i>n</i>	0.25673039	ω	22.58378	-0.22523454	-0.97239513
<i>a</i>	2.4517971	Ω	80.47549	+0.88419788	-0.23028647
<i>e</i>	0.1601038	<i>i</i>	3.54430	+0.40922306	-0.03762780
<i>P</i>	3.84	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1995 08 29	809	0.1+	0.9-	1997 02 11	411	0.5-	0.4-	1999 09 07	704	0.4-	0.3+
1995 08 30	809	0.4+	0.2-	1997 03 01	411	0.1-	1.0+	1999 09 14	704	0.3+	0.6+
1997 02 01	411	0.1-	0.5+	1997 03 01	411	1.2+	0.1-	1999 09 14	704	1.1+	0.7-
1997 02 01	411	0.0	0.2+	1999 09 07	704	0.9+	0.4+	1999 09 14	704	0.6-	0.6+
1997 02 03	411	0.2-	1.2-	1999 09 07	704	0.0	0.7+	1999 09 14	704	0.2-	0.7-
1997 02 03	411	0.3-	0.6-	1999 09 07	704	0.4-	0.1-				
1997 02 11	411	0.1-	0.3+	1999 09 07	704	1.0-	0.2-				

1997 CN₁ = 1999 RP₇₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	252.50260		(2000.0)	P	Q
<i>n</i>	0.23746136	ω	53.81240	-0.18093969	-0.98177013
<i>a</i>	2.5827007	Ω	46.72171	+0.87472566	-0.18770147
<i>e</i>	0.1734231	<i>i</i>	4.58587	+0.44957297	-0.02992595
<i>P</i>	4.15	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1995 09 23	809	0.3+	0.7-	1997 02 11	411	0.5+	0.0	1999 09 07	704	0.0	1.0+
1997 02 01	411	0.7+	0.6-	1997 03 05	411	0.9-	0.6+	1999 09 13	704	0.8-	1.4+
1997 02 01	411	0.7-	0.2+	1997 03 05	411	1.2-	0.3-	1999 09 13	704	0.1+	0.5-
1997 02 03	411	0.6+	0.1-	1999 09 07	704	0.7-	0.0	1999 09 13	704	0.9+	0.6+
1997 02 03	411	1.4+	0.1-	1999 09 07	704	0.0	0.9-				
1997 02 11	411	0.1-	0.7+	1999 09 07	704	0.1-	0.3-				

1997 CX₂

Id. E. Bowell (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	314.64390		(2000.0)	P	Q
<i>n</i>	0.21918247	ω	39.61769	+0.83141185	-0.55555832
<i>a</i>	2.7243663	Ω	354.10318	+0.48050645	+0.72828813
<i>e</i>	0.0422339	<i>i</i>	5.84042	+0.27904820	+0.40118743
<i>P</i>	4.50	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1997 02 03	411	0.8+	0.0	1999 09 06	691	0.4-	0.2-	1999 09 09	704	0.0	0.1-
1997 02 03	411	1.1-	0.1+	1999 09 06	691	0.5-	0.3-	1999 09 09	704	0.8+	0.4+
1997 02 04	411	0.4+	0.5-	1999 09 06	691	0.5-	0.4-	1999 09 11	699	0.7+	0.1-
1997 02 04	411	0.2+	0.3-	1999 09 07	704	0.1+	0.2+	1999 09 11	699	0.3+	0.1-
1997 02 11	411	0.4+	0.2-	1999 09 07	704	0.2+	0.2-	1999 09 11	699	0.8+	0.2+
1997 02 11	411	0.6-	0.4-	1999 09 07	704	0.0	0.0	1999 09 14	704	0.2+	0.3+
1997 03 01	411	0.6-	0.2+	1999 09 07	704	0.6-	0.1-	1999 09 14	704	0.1-	0.2+
1997 03 01	411	0.7+	1.3+	1999 09 07	704	0.2+	0.8-	1999 09 14	704	0.5-	1.0+
1999 08 12	699	0.5-	0.4+	1999 09 09	704	0.7-	0.4-	1999 09 14	704	0.2-	0.5+
1999 08 12	699	0.2-	0.0	1999 09 09	704	0.6-	0.1-				
1999 08 12	699	1.5+	0.3+	1999 09 09	704	0.1-	0.2-				

1997 CT₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	290.95307		(2000.0)	P	Q
<i>n</i>	0.28749521	ω	130.74065	-0.10629198	-0.99192634
<i>a</i>	2.2736083	Ω	325.17743	+0.87188491	-0.05953418
<i>e</i>	0.0556970	<i>i</i>	6.95710	+0.47803631	-0.11197237
<i>P</i>	3.43	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1997 02 07	046	0.0	0.0	1997 02 15	046	0.1+	0.2+	1997 04 07	566	0.1+	0.3+
1997 02 07	046	0.2-	0.0	1997 02 15	046	0.1-	0.0	1997 04 07	566	0.3-	0.1+
1997 02 07	046	0.1-	0.0	1997 02 27	046	0.3+	0.3-	1997 04 07	046	0.5-	0.2-
1997 02 07	046	0.1-	0.1+	1997 02 27	046	0.2+	0.1+	1997 04 07	046	0.4+	0.2+
1997 02 07	046	0.2-	0.0	1997 02 27	046	0.3+	0.0	1997 04 07	046	0.4+	0.3+
1997 02 07	046	0.1-	0.2+	1997 03 05	046	0.3+	0.1-	1999 08 26	046	0.2+	0.4+
1997 02 09	046	0.3-	0.0	1997 03 05	046	0.9+	0.4-	1999 08 26	046	0.1+	0.4+
1997 02 09	046	0.2-	0.2-	1997 03 08	046	0.1+	0.6-	1999 08 26	046	0.0	0.5+
1997 02 09	046	0.2-	0.0	1997 03 08	046	0.5+	0.2-	1999 09 05	046	0.2-	0.2-
1997 02 10	046	0.3-	0.0	1997 04 02	046	0.6-	0.4+	1999 09 05	046	0.0	0.2-
1997 02 10	046	0.1-	0.0	1997 04 02	046	0.3+	0.3+	1999 09 05	046	0.2-	0.4-
1997 02 10	046	0.4-	0.0	1997 04 02	046	0.1+	0.2+				
1997 02 15	046	0.0	0.0	1997 04 07	566	0.2+	0.3+				

1997 CB₁₀ = 1999 RS₁₈₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	317.49047		(2000.0)	P	Q
<i>n</i>	0.26991116	ω	71.97551	+0.80829920	-0.58873499
<i>a</i>	2.3713126	Ω	324.09097	+0.53584441	+0.74023357
<i>e</i>	0.1873826	<i>i</i>	0.64441	+0.24397370	+0.32472353
<i>P</i>	3.65	<i>H</i>	16.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1992 11 24	691	0.1-	0.1+	1997 02 14	691	0.0	0.2-	1999 09 08	691	0.6+	0.1-
1992 11 24	691	0.2-	0.1+	1997 02 14	691	0.4+	0.4+	1999 09 08	691	0.5-	0.1-
1992 11 24	691	0.2+	0.2+	1997 02 14	691	0.9+	0.7+	1999 09 09	704	0.6+	0.3-
1997 02 02	691	0.3-	0.8-	1999 09 07	704	0.0	0.0	1999 09 09	704	0.9+	0.5+
1997 02 02	691	0.2-	0.2-	1999 09 07	704	0.3-	0.8-	1999 09 09	704	0.1+	1.9+
1997 02 02	691	0.2-	0.3-	1999 09 07	704	0.8-	0.6-	1999 09 14	704	0.0	0.8-
1997 02 07	691	0.0	0.3-	1999 09 07	704	0.7-	0.0	1999 09 14	704	0.2+	0.7-
1997 02 07	691	0.3-	0.2-	1999 09 07	704	0.0	0.0	1999 09 14	704	0.9+	0.4+
1997 02 07	691	0.5-	0.4+	1999 09 08	691	0.2-	0.1+	1999 09 14	704	0.5-	0.1+

1997 CX₁₆ = 1999 RU₅₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	187.69452		(2000.0)	P	Q
<i>n</i>	0.19035756	ω	183.56170	-0.78889799	-0.60423779
<i>a</i>	2.9928800	Ω	318.57625	+0.56791431	-0.64725364
<i>e</i>	0.0393875	<i>i</i>	9.74312	+0.23476221	-0.46471434
<i>P</i>	5.18	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 4

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Residuals in seconds of arc

1997 02 06	369	0.1+	0.4-	1997 03 01	369	0.2-	0.9+	1999 09 07	704	0.5+	0.2+
1997 02 06	369	0.1-	0.7+	1997 03 01	369	1.0-	0.7+	1999 09 07	704	0.2-	0.7-
1997 02 06	369	0.4+	1.1-	1999 08 22	703	0.7-	1.8+	1999 09 07	704	0.7+	1.2-
1997 02 09	369	0.1-	0.0	1999 08 22	703	1.1-	0.7-	1999 09 14	704	0.8-	0.9+
1997 02 09	369	0.0	0.7+	1999 08 22	703	0.4-	0.2-	1999 09 14	704	0.6-	1.4+
1997 02 13	369	0.3+	1.1-	1999 08 22	703	1.6+	0.9-	1999 09 14	704	1.7+	0.5-
1997 02 13	369	0.3+	1.6-	1999 09 07	704	0.1-	0.7-				
1997 03 01	369	0.2-	0.5+	1999 09 07	704	0.1-	0.1-				

1997 CX₂₂ = 1999 RW₇₂

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	248.39066		(2000.0)	<i>P</i>		<i>Q</i>
<i>n</i>	0.24371067	ω	38.86602	-0.16563821	-0.98614427	
<i>a</i>	2.5383589	Ω	60.67003	+0.90217284	-0.15526228	
<i>e</i>	0.0719222	<i>i</i>	0.60040	+0.39830660	-0.05842173	
<i>P</i>	4.04	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1995 08 25	809	0.4+	0.4+	1997 01 14	566	0.0	0.1+	1999 09 07	704	0.3-	0.7-
1995 08 26	809	0.6+	0.4+	1997 02 03	691	0.2+	0.2-	1999 09 07	704	1.3-	1.0+
1995 09 17	691	0.8-	0.1-	1997 02 03	691	0.1-	0.1-	1999 09 09	704	0.5-	1.0+
1995 09 17	691	0.3-	0.2-	1997 02 03	691	0.2-	0.1-	1999 09 09	704	0.4-	0.8+
1995 09 17	691	0.7-	0.3-	1997 02 14	691	0.5-	0.3+	1999 09 09	704	0.1-	1.1+
1995 09 19	809	1.5+	0.6-	1997 02 14	691	0.0	0.2+	1999 09 09	704	0.5-	0.1+
1995 09 20	809	0.3+	0.9-	1997 02 14	691	0.2-	0.3+	1999 09 09	704	0.1-	1.2-
1995 09 22	809	1.9-	0.6-	1999 09 03	691	0.2-	0.0	1999 09 11	699	1.0+	0.7-
1995 09 22	809	0.5+	0.8-	1999 09 03	691	0.0	0.0	1999 09 11	699	0.8+	0.8+
1995 09 23	809	1.4+	0.1+	1999 09 03	691	0.0	0.0	1999 09 11	699	0.0	1.5+
1997 01 14	566	0.3+	0.1+	1999 09 07	704	0.8+	0.5-				
1997 01 14	566	0.6+	0.0	1999 09 07	704	0.5-	0.3-				

1997 CC₂₆ = 1999 RE₄₀

Id. T. Urata

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	299.38635		(2000.0)	<i>P</i>		<i>Q</i>
<i>n</i>	0.26696823	ω	30.62560	+0.54502511	-0.83810278	
<i>a</i>	2.3887076	Ω	26.36885	+0.75833550	+0.48105252	
<i>e</i>	0.1776492	<i>i</i>	2.97501	+0.35759601	+0.25723958	
<i>P</i>	3.69	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1997 01 09	691	0.0	0.2-	1999 09 07	704	0.1+	0.5-	1999 09 13	704	0.0	0.3+
1997 01 09	691	0.2-	0.3+	1999 09 07	704	0.4+	0.1-	1999 09 13	385	0.6+	0.3-
1997 01 09	691	0.1-	0.1-	1999 09 07	699	0.0	0.8+	1999 09 13	385	0.5-	1.1-
1997 02 07	566	0.1+	0.2+	1999 09 07	704	0.1-	0.5-	1999 09 14	704	0.8-	0.1-
1997 02 07	566	0.6+	0.1+	1999 09 07	704	0.1+	0.4-	1999 09 14	704	0.1+	0.1+
1997 02 07	566	0.2-	0.1-	1999 09 08	703	0.3+	0.1-	1999 09 14	704	0.1+	0.0
1997 02 13	385	0.3+	0.4+	1999 09 08	703	0.0	0.2+	1999 09 14	704	0.1+	0.1-
1997 02 13	385	0.4-	0.1+	1999 09 08	703	0.2+	0.0	1999 09 14	704	0.8-	0.4+
1997 02 13	385	0.3-	0.5+	1999 09 08	703	0.2+	0.7+	1999 09 14	704	0.1-	0.1+
1997 02 14	385	0.6+	0.2-	1999 09 09	704	0.6-	0.1+	1999 09 14	704	0.2-	0.2-
1997 02 14	385	0.7+	0.7-	1999 09 09	704	0.5-	0.3-	1999 09 14	704	0.3-	0.3-
1997 03 04	385	1.2-	0.3+	1999 09 09	704	0.6+	0.2+	1999 09 14	704	0.3-	0.2-
1997 03 04	385	0.5-	0.0	1999 09 09	704	0.7+	0.9+	1999 09 14	704	0.8-	0.0
1997 03 08	385	1.8+	1.1-	1999 09 09	704	1.5+	0.9+	1999 09 14	704	0.3-	0.3+
1997 03 08	385	0.9-	0.2-	1999 09 12	385	0.1-	0.2+	1999 09 14	704	0.2+	0.1+
1997 03 08	385	0.3-	0.4+	1999 09 12	385	0.7-	0.6-	1999 09 14	704	0.1-	0.3-
1999 09 07	699	0.1-	0.1+	1999 09 13	704	0.5+	0.1+	1999 09 14	704	0.0	0.1-
1999 09 07	704	0.8+	0.2-	1999 09 13	704	0.4+	0.2-	1999 09 14	704	0.1+	0.3+
1999 09 07	699	0.8-	0.2+	1999 09 13	704	0.1+	0.2-				

1997 EA = 1999 RB₆₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	199.00711		(2000.0)	<i>P</i>		<i>Q</i>
<i>n</i>	0.20467109	ω	353.57931	-0.80003895	-0.59315758	
<i>a</i>	2.8516642	Ω	149.46876	+0.55802282	-0.79080833	
<i>e</i>	0.1526105	<i>i</i>	10.20565	+0.22033659	-0.15095122	
<i>P</i>	4.82	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i> 6

Residuals in seconds of arc

1997 03 01	411	0.5-	1.0+	1997 03 12	411	0.4-	0.6+	1999 09 07	704	0.4-	1.2-
1997 03 01	411	0.7-	0.3+	1997 03 12	411	0.4+	0.0	1999 09 09	704	1.3-	0.8-
1997 03 02	411	0.6+	0.4-	1999 09 07	704	0.2-	0.9+	1999 09 09	704	0.4+	0.0
1997 03 02	411	0.7+	1.2-	1999 09 07	704	0.1+	0.6-	1999 09 09	704	1.4+	1.3+
1997 03 07	411	0.0	0.8-	1999 09 07	704	0.1+	0.0				
1997 03 07	411	0.2-	0.4+	1999 09 07	704	0.0	0.1+				

1997 EJ = 1999 RB₁₆₀

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	161.84130		(2000.0)	<i>P</i>		<i>Q</i>
<i>n</i>	0.18908183	ω	166.34025	-0.99534073	-0.09296499	
<i>a</i>	3.0063268	Ω	8.45098	+0.06367184	-0.83295469	
<i>e</i>	0.0371976	<i>i</i>	10.02380	+0.07240665	-0.54547594	
<i>P</i>	5.21	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1997 03 01	411	0.4+	0.3-	1997 04 10	411	0.2+	0.1-	1999 09 08	703	0.3-	0.3+
1997 03 01	411	0.2+	0.0	1997 04 10	411	0.1-	0.2+	1999 09 08	703	0.7-	0.2+
1997 03 02	411	0.8+	0.7+	1999 09 07	699	0.5-	1.0+	1999 09 09	704	0.7+	0.0
1997 03 02	411	0.1-	0.4+	1999 09 07	704	0.0	0.1-	1999 09 09	704	0.1+	0.4-
1997 03 07	411	0.6-	0.2-	1999 09 07	699	0.6-	0.7+	1999 09 09	704	0.7+	0.2-
1997 03 07	411	0.4-	0.9-	1999 09 07	704	0.2+	0.3+	1999 09 09	704	0.3+	0.6-
1997 03 08	411	0.5-	0.2-	1999 09 07	704	0.4+	0.1-	1999 09 09	704	0.2-	1.3-
1997 03 08	411	0.1-	0.1+	1999 09 07	704	0.7+	0.5+	1999 09 13	704	0.1+	0.4-
1997 03 09	411	0.2-	0.3+	1999 09 07	699	0.6-	1.5+	1999 09 13	704	0.2+	0.5-
1997 03 09	411	0.2-	0.3+	1999 09 07	704	0.4+	0.0	1999 09 13	704	0.2+	0.4-
1997 03 12	411	0.2+	0.3-	1999 09 08	703	0.7-	0.0	1999 09 13	704	0.0	1.0-
1997 03 12	411	0.2+	0.1-	1999 09 08	703	0.2-	0.1+	1999 09 13	704	0.0	0.1-

1997 EN₂ = 1999 RN₁₅₂

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	166.51141		(2000.0)	<i>P</i>		<i>Q</i>
<i>n</i>	0.17775554	ω	3.42616	-0.97908733	-0.19804036	
<i>a</i>	3.1327131	Ω	164.90647	+0.18214452	-0.95527432	
<i>e</i>	0.1129906	<i>i</i>	10.30060	+0.09061666	-0.21961553	
<i>P</i>	5.54	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1993 07 15	691	0.0	0.1+	1997 03 12	411	0.4-	0.1-	1999 09 07	704	0.0	0.1-
1993 07 15	691	0.5-	0.2+	1997 04 10	411	0.4-	0.3+	1999 09 09	704	1.0+	0.2+
1993 07 15	691	0.5+	0.1+	1997 04 10	411	0.0	0.5+	1999 09 09	704	1.0+	0.5-
1997 03 04	411	0.8+	0.1-	1999 09 05	699	0.3+	0.4-	1999 09 09	704	0.1+	0.3-
1997 03 04	411	0.2-	0.3-	1999 09 05	699	0.0	1.1+	1999 09 09	704	0.0	0.9-
1997 03 05	411	0.3-	0.4+	1999 09 05	699	0.9-	0.7+	1999 09 09	704	(0.4-	2.5-)
1997 03 05	411	0.6+	0.7-	1999 09 07	704	0.0	0.3-	1999 09 14	704	1.2-	0.5-
1997 03 09	411	0.5-	0.6-	1999 09 07	704	1.1+	0.2+	1999 09 14	704	0.2-	0.9-
1997 03 09	411	0.2+	0.3-	1999 09 07	704	0.1-	0.4+	1999 09 14	704	0.6-	0.0
1997 03 12	411	0.0	0.1+	1999 09 07	704	0.2-	0.3+	1999 09 14	704	0.1+	0.4-

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1997 EX₇ = 1999 SD

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.24174847	<i>ω</i>	50.66274	+0.72606043	−0.68757656		
<i>a</i>	2.5520757	<i>Ω</i>	352.76099	+0.60790233	+0.64770108		
<i>e</i>	0.1414265	<i>i</i>	3.93373	+0.32138919	+0.32820996		
<i>P</i>	4.08	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	5
Residuals in seconds of arc							
1997 03 07	552	0.0	0.5−	1997 03 10	552	0.2−	0.6−
1997 03 07	540	0.0	0.2−	1997 03 10	552	0.7+	0.3−
1997 03 07	540	0.0	0.2−	1997 03 11	552	0.3+	0.6−
1997 03 07	552	1.0+	0.2+	1997 03 11	540	0.5−	0.5−
1997 03 07	540	0.2−	0.2+	1997 03 11	540	0.1+	0.2−
1997 03 08	540	0.0	0.0	1997 03 11	552	0.3−	1.0−
1997 03 08	552	0.5−	1.1+	1997 03 11	552	0.2−	0.6−
1997 03 08	552	0.5−	0.1−	1997 03 15	552	0.4−	0.4+
1997 03 08	552	0.4−	0.3+	1997 03 15	552	0.8−	1.2+
1997 03 08	540	0.5+	0.2+	1997 03 15	552	0.2+	0.9+
1997 03 09	540	0.7+	0.6−	1997 04 07	552	0.5+	1.1−
1997 03 09	540	0.5−	1.0+	1997 04 07	552	0.4−	1.2+
1997 03 09	540	0.3+	0.1−	1997 04 07	552	0.4+	0.2−

1997 EG₁₆ = 1999 RP₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.19478626	<i>ω</i>	301.14950	−0.63142039	−0.77543160		
<i>a</i>	2.9473418	<i>Ω</i>	188.00870	+0.72031918	−0.58473518		
<i>e</i>	0.0650728	<i>i</i>	1.54549	+0.28713857	−0.23830778		
<i>P</i>	5.06	<i>H</i>	16.6	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1997 03 05	691	0.3+	0.1+	1997 03 13	691	0.2−	0.1−
1997 03 05	691	0.4−	0.1+	1997 03 13	691	0.1−	0.0
1997 03 05	691	0.1+	0.4+	1997 04 07	691	0.3+	0.1+
1997 03 10	691	0.3+	0.1−	1997 04 07	691	0.0	0.1+
1997 03 10	691	0.1−	0.1−	1997 04 07	691	0.4−	0.0
1997 03 10	691	0.1+	0.1−	1997 04 13	691	0.2+	0.1+
1997 03 13	691	0.1+	0.1−	1997 04 13	691	0.0	0.2−

1997 EU₁₇ = 1999 RT₄₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.16822286	<i>ω</i>	21.86248	+0.99295054	+0.06044588		
<i>a</i>	3.2499701	<i>Ω</i>	334.03072	−0.10863772	+0.80812820		
<i>e</i>	0.0343980	<i>i</i>	13.46438	+0.04740330	+0.58589684		
<i>P</i>	5.86	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1997 03 03	400	0.6+	0.6−	1997 03 28	400	0.6+	0.0
1997 03 03	400	1.8−	0.7+	1997 03 28	400	0.8−	0.2−
1997 03 04	400	0.2−	0.6+	1999 07 14	704	0.0	0.1+
1997 03 04	400	0.1−	0.8+	1999 07 14	704	0.3−	0.1−
1997 03 12	400	0.2−	0.7+	1999 07 14	704	0.1−	0.6+
1997 03 12	400	0.9+	0.3+	1999 07 14	704	0.5+	0.0
1997 03 16	400	0.4−	0.7−	1999 07 14	704	0.1+	0.6−
1997 03 16	400	1.5+	1.5−	1999 09 07	704	0.1−	0.1−

1997 ER₂₆ = 1994 TE₁₄

Id. K. Korlević (1999 observations), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18438583	<i>ω</i>	194.41138	+0.99945522	−0.03221844		
<i>a</i>	3.0571566	<i>Ω</i>	167.42838	+0.03259011	+0.92920855		
<i>e</i>	0.2073733	<i>i</i>	1.88439	+0.00520953	+0.36814867		
<i>P</i>	5.35	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	2
Residuals in seconds of arc							
1994 10 12	691	0.2+	0.1−	1997 03 13	691	0.4+	0.7−
1994 10 12	691	0.2+	0.3−	1997 04 07	691	0.3−	0.3−
1994 10 12	691	0.1−	0.6−	1997 04 07	691	0.5−	0.4−
1996 01 19	691	0.3+	0.2+	1997 04 13	691	0.1+	0.1−
1996 01 19	691	0.1−	0.0	1997 04 13	691	0.4−	0.2−
1996 01 19	691	0.2−	0.2+	1997 04 13	691	0.3−	0.4−
1997 03 04	691	0.0	0.0	1999 08 08	699	1.5−	0.8+
1997 03 04	691	0.0	0.0	1999 08 08	699	0.2−	1.2+
1997 03 04	691	0.2−	0.2−	1999 08 08	699	0.5−	0.3+
1997 03 13	691	0.4−	0.5−	1999 09 08	120	0.2−	0.8−
1997 03 13	691	0.3+	0.9−	1999 09 08	120	0.9+	0.6−

1997 EL₂₈ = 1999 RG₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21349616	<i>ω</i>	23.45837	+0.88604813	−0.46343711		
<i>a</i>	2.7725284	<i>Ω</i>	4.20964	+0.39515110	+0.74141103		
<i>e</i>	0.1913302	<i>i</i>	9.43351	+0.24243415	+0.48532023		
<i>P</i>	4.62	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1997 03 07	691	0.4−	0.3−	1999 09 05	699	(1.2−	2.2+)
1997 03 07	691	0.3−	0.2−	1999 09 05	699	0.6−	0.5+
1997 03 07	691	0.3−	0.4−	1999 09 07	704	0.2+	0.2−
1997 03 13	691	0.0	0.7−	1999 09 07	704	0.1−	0.2+
1997 03 13	691	0.2+	0.5−	1999 09 07	704	0.6+	0.4+
1997 03 13	691	0.0	0.3−	1999 09 07	704	0.1+	0.1+
1997 04 07	691	0.0	0.2+	1999 09 07	704	0.2+	1.0+
1997 04 07	691	0.6−	0.0	1999 09 08	704	0.0	0.2−
1997 04 07	691	0.2+	0.2−	1999 09 08	704	0.0	0.0
1997 04 08	691	0.1+	0.3+	1999 09 08	704	0.2+	0.5+
1997 04 08	691	0.1−	0.4+	1999 09 08	704	0.4+	0.3+
1997 04 08	691	0.3+	0.2+	1999 09 09	704	0.5+	0.3−
1997 04 16	691	0.2+	0.0	1999 09 09	704	0.0	0.7−
1997 04 16	691	0.0	0.1−	1999 09 09	704	0.7+	0.1−
1997 04 16	691	0.2−	0.0	1999 09 09	704	0.2+	0.1+
1999 09 05	699	0.3−	1.8+	1999 09 09	704	0.3+	0.1+

1997 ER₃₁ = 1993 RV₁₈ = 1999 RB₃₈

Id. G. V. Williams, A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17023307	<i>ω</i>	271.58939	+0.44554302	+0.89523272		
<i>a</i>	3.2243345	<i>Ω</i>	24.87248	−0.81457007	+0.40864366		
<i>e</i>	0.1525953	<i>i</i>	0.96134	−0.37143912	+0.17767592		
<i>P</i>	5.79	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1993 09 15	809	(5.4+	5.5+)	1997 03 15	691	0.5+	0.0
1993 09 15	809	(1.6+	4.3+)	1997 03 15	691	0.3+	0.0
1993 09 15	809	(1.9+	3.5+)	1997 04 07	691	0.0	0.3+
1993 09 22	809	0.3+	0.3+	1997 04 07	691	0.1−	0.2+
1993 09 22	809	0.7−	1.0+	1997 04 07	691	0.1−	0.1+
1993 09 22	809	0.0	0.5−	1997 04 08	691	0.5−	1.1+
1997 03 10	691	0.3−	0.5+	1997 04 08	691	0.1+	0.1−
1997 03 10	691	0.3−	0.5+	1997 04 08	691	0.1−	0.3−
				1999 09 14	120	0.9−	0.3+

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1997 03 10 691 0.2- 0.4+ 1997 04 16 691 0.3+ 0.9-
 1997 03 15 691 0.2+ 0.1+ 1997 04 16 691 0.1+ 0.5-

1997 EN₃₂ = 1999 RB₉₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	290.08186		(2000.0)	P		Q	
<i>n</i>	0.21949771	ω	68.68413	+0.25691085	-0.96640267		
<i>a</i>	2.7217572	Ω	6.44447	+0.85849417	+0.22444646		
<i>e</i>	0.0916073	<i>i</i>	4.04511	+0.44382945	+0.12525838		
<i>P</i>	4.49	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 01 30	691	0.4-	0.1-	1997 04 09	691	0.5-	1.0+	1999 09 07	704	0.3+	0.0
1992 01 30	691	0.0	0.2+	1997 04 09	691	0.1+	0.5+	1999 09 07	691	0.5-	0.3-
1992 01 30	691	0.4+	0.0	1997 04 09	691	0.2-	0.8+	1999 09 07	704	0.1+	0.1-
1997 03 11	691	0.0	0.0	1997 04 15	691	0.2-	0.1+	1999 09 07	704	1.0+	1.4-
1997 03 11	691	0.5+	0.1+	1997 04 15	691	0.1-	0.3-	1999 09 09	704	0.2+	0.5+
1997 03 11	691	0.3+	0.2-	1997 04 15	691	0.5-	0.5-	1999 09 09	704	0.1+	0.5-
1997 03 15	691	0.4+	0.1-	1999 09 07	691	0.3-	0.2-	1999 09 09	704	0.3-	0.3+
1997 03 15	691	0.3+	0.4-	1999 09 07	704	0.5+	1.6+	1999 09 09	704	0.3+	0.0
1997 03 15	691	0.4+	0.3-	1999 09 07	691	0.5-	0.2-	1999 09 09	704	1.2-	1.2+

1997 EH₄₆ = 1978 PF₂ = 1999 RF₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	352.33941		(2000.0)	P		Q	
<i>n</i>	0.23525333	ω	25.44006	+0.98418943	+0.12993336		
<i>a</i>	2.5988359	Ω	326.40221	-0.17521845	+0.81353820		
<i>e</i>	0.3205298	<i>i</i>	12.56357	+0.02587795	+0.56680942		
<i>P</i>	4.19	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1978 08 08	095(90.2+ 58.0+)		1997 04 01	621	0.1+	0.0	1999 09 08	621	0.2-	0.4+	
1997 02 03	691	0.5+	0.1+	1997 04 01	621	0.3-	0.1+	1999 09 08	621	0.0	0.3+
1997 02 03	691	0.2-	0.5+	1997 04 01	621	0.2+	0.1-	1999 09 08	621	0.0	0.3+
1997 02 03	691	0.2-	0.0	1997 04 01	621	0.8-	0.8-	1999 09 09	704	0.1+	0.4-
1997 03 07	621	0.3-	0.1-	1999 07 16	704	0.5-	0.0	1999 09 09	704	0.2+	0.4-
1997 03 07	621	0.1-	0.2+	1999 07 16	704	0.2-	0.1-	1999 09 09	704	0.5+	0.2-
1997 03 07	621	0.1-	0.2+	1999 07 16	704	0.1+	0.0	1999 09 09	704	0.3+	0.4-
1997 03 07	621	0.1-	0.4-	1999 07 16	704	0.0	0.3+	1999 09 09	704	0.6+	0.4-
1997 03 08	621	0.0	0.0	1999 09 04	703	0.9-	0.4+	1999 09 10	704	0.5+	0.3-
1997 03 08	621	0.2+	0.3+	1999 09 04	703	0.3-	0.3+	1999 09 10	704	0.2+	0.5-
1997 03 08	621	0.1+	0.2+	1999 09 04	703	0.1+	1.1+	1999 09 10	704	0.2+	0.4-
1997 03 09	621	0.1-	0.0	1999 09 04	703	0.1-	0.8+	1999 09 10	621	0.3-	0.6+
1997 03 09	621	0.5+	0.3-	1999 09 08	704	0.2-	0.8-	1999 09 10	621	0.1-	0.5+
1997 03 09	621	0.9+	0.1-	1999 09 08	704	0.1-	0.8-	1999 09 10	621	0.3-	0.4+
1997 03 12	621	0.7+	0.6+	1999 09 08	704	0.1-	0.5-	1999 09 10	621	0.2-	0.4+
1997 03 12	621	0.2+	0.4-	1999 09 08	704	0.1-	0.6-	1999 09 16	704	0.5+	0.2+
1997 03 12	621	0.1-	0.9+	1999 09 08	704	0.1-	0.6-	1999 09 16	704	0.1+	0.1-
1997 03 31	621	0.3-	0.1+	1999 09 08	621	0.0	0.2+	1999 09 16	704	0.0	0.3+
1997 03 31	621	0.3+	0.3-	1999 09 08	621	0.1-	0.3+	1999 09 16	704	0.0	0.2-
1997 03 31	621	0.4-	0.1+	1999 09 08	621	0.2-	0.3+				

1997 EK₅₄ = 1991 FP₂ = 1999 RL₂₄

Id. G. V. Williams, S. Nakano, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	69.36986		(2000.0)	P		Q	
<i>n</i>	0.17109491	ω	240.86851	+0.12491062	+0.99202449		
<i>a</i>	3.2134977	Ω	36.31921	-0.90011053	+0.12045909		
<i>e</i>	0.0758355	<i>i</i>	1.63262	-0.41737078	+0.03710824		
<i>P</i>	5.76	<i>H</i>	12.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1991 03 20	809	0.6-	0.7+	1997 03 09	809	1.2+	0.9-	1999 09 07	704	0.4-	0.5-
1991 03 20	809	0.4-	0.6+	1997 03 10	809	1.0-	0.8+	1999 09 08	704	0.0	0.3+
1991 03 20	809	0.1-	0.4+	1997 03 10	809	1.4-	0.8+	1999 09 08	704	0.1+	0.6+

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1991 03 22	809	0.3+	0.6-	1997 03 10	809	1.4-	0.8+	1999 09 08	704	0.1-	0.0
1991 03 22	809	0.4+	0.5-	1997 03 11	809	1.2-	0.8+	1999 09 08	704	0.1+	0.4+
1991 03 22	809	0.5+	0.5-	1997 03 11	809	1.6-	0.3+	1999 09 08	704	0.0	0.2+
1997 03 08	809	1.6+	0.8-	1997 03 11	809	1.9-	0.3+	1999 09 08	704	0.2-	0.1-
1997 03 08	809	1.0+	0.9-	1999 09 07	704	0.1-	0.2-	1999 09 08	704	0.5-	0.5+
1997 03 08	809	1.1+	0.2-	1999 09 07	704	0.2+	0.4-	1999 09 08	704	0.2+	0.0
1997 03 09	809	1.9+	0.5-	1999 09 07	704	0.3+	0.1-				
1997 03 09	809	1.8+	0.3-	1999 09 07	704	0.0	0.3-				

1997 EL₅₅ = 1987 DX₆ = 1997 HO₁₄ = 1999 RX₂

Id. A. Doppler (d, MPC 34061), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	309.17742		(2000.0)	P		Q	
<i>n</i>	0.20122347	ω	86.92385	+0.64461458	-0.76440877		
<i>a</i>	2.8841441	Ω	322.92997	+0.69306835	+0.59109356		
<i>e</i>	0.0700245	<i>i</i>	1.16915	+0.32268918	+0.25746385		
<i>P</i>	4.90	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1987 02 26	809	0.7-	0.3-	1997 04 28	691	0.6-	0.2-	1999 09 07	704	0.3+	0.1-
1987 02 26	809	0.1+	0.1-	1997 04 28	691	0.5-	0.2-	1999 09 07	704	0.1+	0.5-
1987 02 26	809	0.8+	0.2-	1997 05 09	691	0.5-	0.8-	1999 09 07	704	0.3-	0.1-
1994 09 11	691	0.5-	0.3+	1997 05 09	691	0.3-	0.9-	1999 09 08	678	0.6-	0.1+
1994 09 11	691	0.3-	0.6+	1997 05 09	691	0.8-	0.7-	1999 09 08	678	0.8-	0.0
1994 09 11	691	0.4-	0.2+	1998 06 24	704	0.4+	0.5-	1999 09 08	678	0.3-	0.0
1997 03 08	809	(3.5- 1.2+)		1998 06 24	704	(0.7+ 4.6-)		1999 09 09	704	0.1-	0.2+
1997 03 08	809	(3.6- 0.9+)		1998 06 24	704	1.4-	0.0	1999 09 09	704	0.1+	0.0
1997 03 08	809	(3.4- 1.5+)		1998 06 24	704	(5.4- 7.7-)		1999 09 09	704	0.3-	0.1+
1997 03 09	809	(3.4- 1.1+)		1998 06 26	704	0.6+	0.5+	1999 09 09	704	0.2-	0.1+
1997 03 09	809	(3.1- 1.5+)		1998 06 26	704	0.3-	0.4+	1999 09 09	704	0.3+	0.0
1997 03 09	809	(3.0- 1.1+)		1998 06 26	704	(4.1- 0.3+)		1999 09 09	120	0.1-	0.4-
1997 03 10	809	1.4+	1.5+	1998 06 26	704	1.0+	0.0	1999 09 09	120	0.3+	0.3-
1997 03 10	809	0.6+	1.1+	1998 06 26	704	(4.4- 1.4+)		1999 09 09	120	0.1+	0.5-
1997 03 10	809	0.5+	0.1-	1999 09 07	678	2.0+	0.4-	1999 09 10	120	0.5+	0.1+
1997 03 11	809	(1.2+ 2.8+)		1999 09 07	678	0.0	0.3-	1999 09 10	120	0.9+	0.2-
1997 03 11	809	(1.3+ 3.3+)		1999 09 07	678	0.4-	0.1+	1999 09 11	120	0.4-	0.1+
1997 03 11	809	(0.6+ 3.6+)		1999 09 07	704	0.2+	0.1+	1999 09 11	120	0.1-	0.1+
1997 04 28	691	0.7-	0.2-	1999 09 07	704	0.1+	0.1-				

1997 GX₃ = 1992 GV₇ = 1992 HJ₆ = 1999 QR₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	28.10393		(2000.0)	P		Q	
<i>n</i>	0.18991471	ω	311.87895	+0.91526111	+0.39593402		
<i>a</i>	2.9975308	Ω	25.07061	-0.29763099	+0.78900016		
<i>e</i>	0.0412477	<i>i</i>	10.11064	-0.27150118	+0.46980315		
<i>P</i>	5.19	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1992 04 06	809	0.0	1.0-	1997 04 04	400	1.3+	0.4+	1999 08 25	557	0.0	0.2+
1992 04 06	809	0.5-	1.3-	1997 04 04	400	0.3-	1.4+	1999 08 25	557	0.2-	0.2-
1992 04 06	809	1.0-	1.3-	1997 04 10	400	1.0-	0.8+	1999 09 03	557	0.2-	0.0
1992 04 25	809	0.9+	0.7+	1997 04 10	400	0.4-	0.2-	1999 09 03	557	0.0	0.6-
1992 04 25	809	0.4+	1.9+	1997 04 11	704	(0.1-	2.1+)	1999 09 03	557	0.2-	0.3-
1992 04 25	809	0.0	0.3+	1997 04 11	704	0.2+	1.2+	1999 09 03	557	0.3-	0.5-
1994 11 06	691	0.1-	0.1-	1999 08 20	557	0.0	0.0	1999 09 04	557	0.5+	0.1-
1994 11 06	691	0.1-	0.2+	1999 08 21	557	0.1+	0.0	1999 09 05	699	0.5+	0.2-
1994 11 06	691	0.0	0.3+	1999 08 22	557	0.0	0.1+	1999 09 05	699	0.2-	0.5+
1997 03 12	809	1.9+	1.5-	1999 08 22	557	0.1-	0.1+	1999 09 05	699	0.1-	0.5+
1997 03 12	809	0.9+	1.5-	1999 08 22	557	0.1+	0.3+	1999 09 10	557	0.4-	0.2-
1997 03 12	809	0.8+	0.1-	1999 08 22	557	0.2+	0.1+	1999 09 10	557	0.4+	0.2+
1997 04 03	400	1.8-	0.3+	1999 08 24	557	0.2+	0.1+				
1997 04 03	400	0.7-	0.1+	1999 08 24	557	0.3-	0.1+				

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M.P.C. 35943

1997 GN₁₉ = 1999 RF₁₉₉

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	322.08442		(2000.0)		P		Q
<i>n</i>	0.17113443	ω	179.76264	+0.95028138			-0.28712108
<i>a</i>	3.2130030	Ω	198.36225	+0.28506288			+0.95789278
<i>e</i>	0.1234945	<i>i</i>	22.49463	+0.12531740			-0.00170656
<i>P</i>	5.76	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 04 05	704	1.2-	0.0	1999 07 22	704	0.9-	0.0	1999 09 10	704	0.9-	0.3-
1997 04 05	704	1.7+	0.3+	1999 07 22	704	0.0	0.7+	1999 09 10	704	0.7+	0.4+
1997 04 07	704	1.5+	0.2+	1999 07 22	704	0.3-	0.8+	1999 09 10	704	0.9+	0.7+
1997 04 07	704	1.2+	0.9-	1999 08 11	704	1.0+	1.0-	1999 09 16	704	0.3+	0.5-
1997 05 05	691	0.3-	0.2-	1999 08 11	704	0.1+	0.8-	1999 09 16	704	0.3+	0.9+
1997 05 05	691	0.0	0.2-	1999 08 11	704	0.3-	0.5-	1999 09 16	704	0.0	0.8-
1997 05 05	691	0.0	0.3+	1999 08 11	704	0.1-	0.1-	1999 09 16	704	0.9+	0.5-
1997 05 08	691	1.1-	0.2+	1999 09 08	699	0.5-	1.4+	1999 09 16	704	0.8+	1.4+
1997 05 08	691	0.9-	0.1+	1999 09 08	699	1.4-	0.8-				
1997 05 08	691	0.8-	0.2+	1999 09 08	699	0.5-	1.0-				

1997 GO₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	20.37733		(2000.0)		P		Q
<i>n</i>	0.58159552	ω	139.25598	+0.84482627			+0.53291208
<i>a</i>	1.4214187	Ω	188.92592	-0.53487556			+0.83899140
<i>e</i>	0.0709889	<i>i</i>	17.89625	-0.01329315			+0.10999153
<i>P</i>	1.69	<i>H</i>	18.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1997 04 12	691	0.0	0.2-	1997 04 26	557	0.3+	0.4+	1997 05 17	658	0.6-	0.4-
1997 04 12	691	0.2-	0.6-	1997 04 26	557	0.7+	0.2-	1997 05 17	381	0.6+	0.1-
1997 04 12	691	0.3-	0.5-	1997 04 27	658	0.4-	1.0+	1997 05 17	381	0.5+	0.5-
1997 04 13	691	0.7-	0.2+	1997 04 27	658	0.0	0.8+	1997 05 18	381	0.1+	0.4-
1997 04 13	691	0.2-	0.1-	1997 04 27	658	0.3+	0.4+	1997 05 18	381	0.1+	0.4-
1997 04 13	691	0.4-	0.0	1997 05 02	118	0.1-	0.3+	1997 06 10	658	0.1+	0.0
1997 04 14	691	0.1-	0.2-	1997 05 02	118	0.6+	0.5+	1997 06 10	658	0.6+	0.3+
1997 04 14	691	0.0	0.1-	1997 05 03	118	0.1+	0.2+	1997 06 10	658	0.4+	1.1+
1997 04 14	691	0.2-	0.2+	1997 05 03	118	0.2+	0.2-	1997 06 11	696	0.2-	0.1-
1997 04 15	046	0.0	0.5+	1997 05 03	118	0.2-	0.2+	1997 06 11	696	0.1+	0.1-
1997 04 15	046	0.5-	1.2+	1997 05 04	360	0.0	0.0	1997 06 11	696	0.0	0.0
1997 04 15	046	1.0+	0.2-	1997 05 04	360	0.3-	0.6+	1997 06 13	658	0.2-	1.1+
1997 04 16	422	0.0	0.5+	1997 05 04	360	0.2-	0.4-	1997 06 13	658	0.3-	1.0-
1997 04 16	422	0.4+	0.5-	1997 05 04	118	0.3-	0.1-	1997 06 13	658	0.1+	0.1-
1997 04 16	422	0.2+	0.1+	1997 05 04	118	0.1+	0.2-	1997 07 12	696	0.1-	0.4+
1997 04 19	658	0.2-	0.6-	1997 05 04	118	0.0	0.0	1997 07 12	696	0.3+	0.4+
1997 04 19	658	0.6+	0.7-	1997 05 14	118	0.9+	0.7-	1997 07 12	696	0.2+	0.3+
1997 04 19	658	0.3-	0.4+	1997 05 14	118	0.7+	1.0-	1999 09 18	413	0.2+	0.1-
1997 04 21	658	1.2+	0.2+	1997 05 14	118	0.2+	0.6-	1999 09 18	413	0.2+	0.0
1997 04 21	658	0.2+	0.7+	1997 05 15	696	1.0-	0.4-	1999 09 20	413	0.2-	0.1+
1997 04 21	658	0.6-	0.9+	1997 05 15	696	0.7-	0.6-	1999 09 20	413	0.3+	0.1-
1997 04 24	658	0.1-	0.2-	1997 05 15	696	0.7-	0.5-	1999 09 20	413	0.5-	0.6+
1997 04 24	658	0.2-	0.0	1997 05 17	658	0.4+	0.5-				
1997 04 24	658	0.9-	0.3+	1997 05 17	658	0.2-	0.1+				

1997 GK₃₃ = 1999 RA₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	297.87710		(2000.0)		P		Q
<i>n</i>	0.18656788	ω	213.95475	+0.59426834			-0.80290175
<i>a</i>	3.0332728	Ω	199.71467	+0.76531069			+0.58242966
<i>e</i>	0.0911314	<i>i</i>	7.98132	+0.24727453			+0.12698212
<i>P</i>	5.28	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 03 11	809	0.4-	0.3-	1999 08 22	699	0.4-	1.0+	1999 09 09	704	0.2+	0.3-
1997 03 11	809	0.9-	0.3+	1999 08 22	699	0.8+	0.1+	1999 09 09	704	0.4+	0.5-
1997 03 11	809	1.2-	0.3-	1999 08 22	699	1.3+	0.7+	1999 09 09	704	0.1+	0.4-
1997 03 12	809	0.2+	0.8+	1999 09 07	704	0.2-	0.2-	1999 09 09	704	0.8+	0.4-
1997 03 12	809	0.3-	0.2+	1999 09 07	704	0.0	0.1-	1999 09 09	704	0.1+	0.4-
1997 03 12	809	0.1+	0.3+	1999 09 07	704	0.1+	0.3-	1999 09 09	704	0.0	0.5-
1997 03 13	809	(1.0+	2.6-)	1999 09 07	704	0.0	0.1-	1999 09 09	704	0.1-	0.2-
1997 03 13	809	0.4+	1.8-	1999 09 07	704	0.1+	0.2-	1999 09 09	704	0.9+	0.3+
1997 03 13	809	(0.3+	2.2-)	1999 09 08	704	0.2+	0.4-	1999 09 09	704	1.1+	1.3+
1997 03 13	809	0.8+	0.2+	1999 09 08	704	1.0-	0.2+	1999 09 10	704	0.1+	0.1+
1997 03 13	809	0.6+	0.1+	1999 09 08	704	0.1+	0.4-	1999 09 10	704	0.0	0.1+
1997 03 13	809	1.2-	1.0+	1999 09 08	704	1.5-	0.3+	1999 09 10	704	0.4+	0.4-
1997 04 03	704	1.1+	0.7-	1999 09 08	704	0.3+	0.1+	1999 09 14	703	0.7-	0.1+
1997 04 03	704	1.0+	0.8-	1999 09 08	704	0.9-	0.2+	1999 09 14	703	0.4-	0.1-
1997 04 11	704	0.2+	0.8+	1999 09 08	704	0.1-	0.4-	1999 09 14	703	0.5-	0.2-
1997 04 11	704	0.7-	0.0	1999 09 08	704	0.8-	1.0+	1999 09 14	703	0.5-	0.2-

1997 HX₆ = 1999 RT₉₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	202.44518		(2000.0)		P		Q
<i>n</i>	0.19015547	ω	62.52750	-0.94028515			-0.33794258
<i>a</i>	2.9950001	Ω	97.69741	+0.29599875			-0.87086982
<i>e</i>	0.1573039	<i>i</i>	2.35535	+0.16807315			-0.35690415
<i>P</i>	5.18	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 04 02	704	0.4+	0.8+	1997 05 01	704	0.2-	0.3-	1999 09 07	704	0.3-	0.0
1997 04 02	704	0.2-	1.1+	1997 05 01	704	0.4-	0.1-	1999 09 07	704	0.5-	0.4-
1997 04 30	704	0.1+	0.3-	1997 05 01	704	0.3-	0.5-	1999 09 14	704	0.7+	0.4+
1997 04 30	704	0.1+	0.3-	1997 05 26	910	0.1-	0.3+	1999 09 14	704	0.2+	0.6-
1997 04 30	704	0.3+	0.3-	1997 05 26	910	0.1-	0.3+	1999 09 14	704	0.2-	0.2-
1997 04 30	704	0.4+	0.4-	1997 05 26	910	0.0	0.3+	1999 09 14	704	0.5-	0.9-
1997 04 30	704	0.3+	0.2-	1999 09 07	704	0.1-	0.4+	1999 09 14	704	0.6+	0.4+
1997 05 01	704	0.3-	0.1-	1999 09 07	704	0.1+	0.0				
1997 05 01	704	0.0	0.0	1999 09 07	704	0.2-	1.0+				

1997 JB₁₆ = 1977 UG₅ = 1999 NE₆₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	2.07567		(2000.0)		P		Q
<i>n</i>	0.08097291	ω	85.81862	+0.57053367			+0.81138035
<i>a</i>	5.2914686	Ω	219.85929	-0.81000054			+0.53036958
<i>e</i>	0.0684244	<i>i</i>	11.43794	-0.13561146			+0.24570316
<i>P</i>	12.17	<i>H</i>	10.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 10 18	675	0.0	1.0-	1997 06 08	809	0.4-	0.9-	1999 07 13	704	0.0	0.1-
1977 10 19	675	0.2+	0.7-	1997 06 08	809	0.8-	0.1-	1999 07 13	704	0.0	0.4-
1997 05 03	809	(2.4+	0.4-)	1997 06 08	809	1.5-	0.7-	1999 07 13	704	0.4-	0.4-
1997 05 03	809	0.5+	0.2+	1998 06 19	704	0.9-	0.3+	1999 07 22	704	0.2+	0.2-
1997 05 03	809	1.1+	0.5-	1998 06 19	704	(1.5-	2.3+)	1999 07 22	704	0.2+	0.2+
1997 05 04	809	0.8+	1.1-	1998 06 19	704	(2.4+	0.9-)	1999 07 22	704	0.0	0.4+
1997 05 04	809	0.8+	0.9-	1998 06 19	704	(6.3-	0.3-)	1999 07 22	704	0.4+	0.1+
1997 05 04	809	0.1-	1.7-	1998 06 25	704	0.5+	1.6+	1999 07 22	704	0.2-	0.2+
1997 05 04	809	(0.2-	4.8+)	1998 06 25	704	0.2+	0.8+	1999 09 08	704	0.3+	1.0+
1997 05 04	809	(0.0	4.5+)	1998 06 25	704	0.1-	0.1+	1999 09 08	704	0.1-	0.4-
1997 05 04	809	(1.1-	4.7+)	1998 06 25	704	0.1-	0.4-	1999 09 08	704	0.2+	0.4-
1997 06 07	809	0.4+	1.4+	1998 06 25	704	(0.7-	3.1+)	1999 09 08	704	0.4-	0.3-
1997 06 07	809	0.5-	1.0+	1999 07 13	704	0.6+	0.0	1999 09 08	704	0.6-	0.6-
1997 06 07	809	0.5-	0.0	1999 07 13	704	0.0	0.1+				

1997 LH₉ = 1998 SA₁₁₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	155.73147		(2000.0)	P		Q	
<i>n</i>	0.24323015	ω	101.05402	+0.25050407	+0.96810748		
<i>a</i>	2.5417009	Ω	183.46084	−0.91183166	+0.23456659		
<i>e</i>	0.0987696	<i>i</i>	3.75423	−0.32528562	+0.08801377		
<i>P</i>	4.05	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1994 10 08	691	0.5+	1.0−	1997 05 04	809	0.3−	0.1−	1997 06 08	809	0.7+	0.8−
1994 10 08	691	0.1+	0.7−	1997 06 07	809	0.7+	0.1+	1997 06 08	809	0.1−	0.2−
1994 10 08	691	0.2+	1.1−	1997 06 07	809	0.5+	0.2+	1998 09 25	327	0.1+	0.7+
1997 05 04	809	0.7−	0.0	1997 06 07	809	0.0	0.0	1998 09 25	327	0.6−	0.8+
1997 05 04	809	0.3−	0.3+	1997 06 08	809	0.6−	0.2−	1998 09 25	327	0.2−	0.9+

1997 SW = 1999 GJ₃₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	194.58187		(2000.0)	P		Q	
<i>n</i>	0.28723105	ω	4.79488	+0.76655589	−0.63873033		
<i>a</i>	2.2750020	Ω	35.18817	+0.58528596	+0.65231408		
<i>e</i>	0.1095501	<i>i</i>	6.62163	+0.26425824	+0.40805625		
<i>P</i>	3.43	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 08 31	910	0.9−	0.7+	1997 09 17	327	0.0	0.4−	1999 04 07	704	0.9+	0.1−
1997 08 31	910	0.9−	0.9+	1997 09 17	327	0.5+	0.0	1999 04 12	704	0.8+	0.5−
1997 08 31	910	1.1−	0.7+	1997 10 06	327	0.1−	0.2−	1999 04 12	704	0.4−	1.0−
1997 09 16	327	0.6+	0.2−	1997 10 06	327	0.3−	0.2+	1999 04 12	704	1.0−	0.3+
1997 09 16	327	0.5+	0.0	1997 10 06	327	0.1−	0.4−	1999 04 12	704	0.8−	0.7+
1997 09 16	327	0.6+	0.1+	1999 04 07	704	0.3+	0.2+	1999 04 12	704	(0.6−	2.8+)
1997 09 17	327	0.5+	0.3+	1999 04 07	704	0.5+	0.8+				
1997 09 17	327	0.0	0.0	1999 04 07	704	0.2+	0.8+				

1997 UC₂ = 1986 ER₃ = 1991 KT₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	314.30403		(2000.0)	P		Q	
<i>n</i>	0.22196704	ω	142.91792	−0.59131363	+0.80394771		
<i>a</i>	2.7015337	Ω	90.74563	−0.75426568	−0.52353837		
<i>e</i>	0.0986253	<i>i</i>	3.63381	−0.28536199	−0.28209156		
<i>P</i>	4.44	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1986 03 12	809	0.0	0.0	1997 10 23	691	0.5−	0.8−	1997 10 25	691	0.3+	0.2+
1991 05 17	809	0.7+	0.4+	1997 10 24	691	1.1+	0.1−	1997 10 25	691	0.7−	0.6+
1991 05 17	809	1.1−	0.2−	1997 10 24	691	1.1+	0.0	1997 10 25	691	1.0−	0.4+
1991 05 17	809	0.4+	0.2−	1997 10 24	691	1.2+	0.0	1997 10 25	691	1.2−	0.5+
1997 10 23	691	0.3−	0.7−	1997 10 25	691	0.4+	0.4+				
1997 10 23	691	0.3−	0.8−	1997 10 25	691	0.0	0.3+				

1997 UP₄ = 1987 SV₃₀ = 1996 GA₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	196.09842		(2000.0)	P		Q	
<i>n</i>	0.29696384	ω	226.09941	+0.94717532	−0.31986872		
<i>a</i>	2.2250187	Ω	152.53088	+0.30682848	+0.88261794		
<i>e</i>	0.1664480	<i>i</i>	2.89547	+0.09335525	+0.34448450		
<i>P</i>	3.32	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1987 09 24	095	1.9+	0.0	1996 04 17	608	0.7−	0.2−	1997 10 19	327	0.2−	0.1−
1987 09 27	095	2.0−	0.1+	1996 04 17	608	0.5−	0.3−	1997 10 19	327	0.3+	0.3+
1996 04 14	608	1.0+	0.4+	1997 10 18	327	0.1+	0.1+	1997 10 19	327	0.3−	0.1−
1996 04 14	608	0.8+	0.3+	1997 10 18	327	0.5+	0.3−				
1996 04 17	608	0.7−	0.3−	1997 10 18	327	0.1−	0.2−				

1997 UD₅ = 1999 FE₃₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	92.39807		(2000.0)	P		Q	
<i>n</i>	0.22519187	ω	267.02232	+0.02282812	−0.99971581		
<i>a</i>	2.6756804	Ω	181.71531	+0.98397103	+0.02368285		
<i>e</i>	0.1444377	<i>i</i>	13.26434	+0.17686123	−0.00272311		
<i>P</i>	4.38	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 10 02	910	0.1+	0.1+	1997 10 23	327	0.3−	0.3−	1999 03 20	704	1.6+	1.4+
1997 10 02	910	0.1+	0.3+	1997 10 23	327	0.1−	0.6−	1999 03 20	704	1.8+	0.3−
1997 10 02	910	0.2+	0.3+	1999 02 14	699	(2.8−	2.1+)	1999 03 23	704	1.6−	0.6+
1997 10 21	327	0.0	0.1+	1999 02 14	699	0.0	0.2+	1999 03 23	704	1.8−	0.3−
1997 10 21	327	0.0	0.1+	1999 02 14	699	0.8−	0.1−	1999 03 23	704	0.8+	0.3+
1997 10 21	327	0.2+	0.1−	1999 03 20	704	0.2+	1.4−	1999 03 23	704	0.2−	0.3−
1997 10 23	327	0.3−	0.2+	1999 03 20	704	(0.2−	2.6−)				

1997 UF₁₁ = 1999 CZ₁₂₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	206.53447		(2000.0)	P		Q	
<i>n</i>	0.27239957	ω	306.85430	+0.87549473	+0.44638200		
<i>a</i>	2.3568491	Ω	28.08080	−0.21138003	+0.69817710		
<i>e</i>	0.2261556	<i>i</i>	23.15212	−0.43454282	+0.55972480		
<i>P</i>	3.62	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 10 29	566	0.2−	0.0	1997 11 14	327	1.0+	0.7−	1999 02 11	704	0.1−	0.6+
1997 10 29	566	0.2−	0.1−	1997 11 14	327	0.8+	0.3−	1999 02 11	704	1.2+	0.9+
1997 10 29	566	0.3−	0.0	1997 12 26	566	0.1+	0.3+	1999 02 18	704	0.2−	1.0−
1997 11 01	670	1.2−	0.4+	1997 12 26	566	0.1+	0.0	1999 02 18	704	0.6−	0.3+
1997 11 01	670	0.8−	0.3+	1997 12 26	566	0.4+	0.1−	1999 02 18	704	0.5+	1.0−
1997 11 01	670	0.3−	0.7+	1999 02 11	704	0.5+	0.5−	1999 02 18	704	0.3+	0.1+
1997 11 14	327	0.5+	0.1−	1999 02 11	704	0.9+	0.2+	1999 02 18	704	0.5−	1.3−
1997 11 14	327	0.8+	0.1−	1999 02 11	704	1.6−	2.0+				

1997 UB₂₁ = 1999 CA₇₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	80.07041		(2000.0)	P		Q	
<i>n</i>	0.17741663	ω	293.20144	+0.00293029	−0.99496342		
<i>a</i>	3.1367013	Ω	155.97132	+0.98366822	−0.01516420		
<i>e</i>	0.1442984	<i>i</i>	14.24474	+0.17996737	+0.09908503		
<i>P</i>	5.56	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 10 30	327	0.0	0.2+	1997 11 19	327	0.5+	0.7−	1999 02 12	704	0.6−	1.0−
1997 10 30	327	0.2+	0.2+	1997 11 19	327	0.9−	0.1−	1999 02 16	704	0.6−	0.5−
1997 10 30	327	0.4−	0.2−	1997 11 19	327	0.1+	0.2−	1999 02 16	704	0.9+	0.1+
1997 11 03	327	0.5+	0.2+	1999 02 12	704	0.7+	0.2+	1999 02 16	704	0.8+	0.5−
1997 11 03	327	0.3−	0.2+	1999 02 12	704	0.7−	1.0+	1999 02 16	704	0.7+	0.6+
1997 11 03	327	0.3+	0.4+	1999 02 12	704	1.1−	0.2+				

1997 WC₃₂ = 1999 FY₄₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	128.73784		(2000.0)	P		Q	
<i>n</i>	0.21410519	ω	163.43621	+0.40709046	−0.90959949		
<i>a</i>	2.7672682	Ω	262.47918	+0.82822450	+0.40596541		
<i>e</i>	0.0622553	<i>i</i>	4.80841	+0.38512536	+0.08843555		
<i>P</i>	4.60	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1997 11 29	704	0.8−	1.3+	1997 12 04	704	0.8−	0.4−	1999 03 20	704	0.6−	0.3−
1997 11 29	704	0.0	0.6+	1997 12 04	704	1.1−	0.3−	1999 03 20	704	0.7−	0.5−
1997 11 29	704	0.3−	0.6−	1997 12 23	327	0.2+	0.3+	1999 03 23	704	0.3−	0.9+
1997 11 29	704	0.1+	0.5+	1997 12 23	327	0.4−	0.1−	1999 03 23	704	0.6+	0.6+
1997 11 29	704	0.4+	0.7+	1997 12 23	327	0.1−	0.2+	1999 03 23	704	1.3+	0.2+
1997 12 04	704	2.0+	1.2−	1999 03 20	704	0.3−	0.9−				
1997 12 04	704	0.8+	1.0−	1999 03 20	704	(2.9−	2.2−)				

1997 XH

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	87.12978		(2000.0)	P	Q
<i>n</i>	0.29642211	ω	272.88209	−0.60814899	+0.79126423
<i>a</i>	2.2277288	Ω	319.43645	−0.68386277	−0.56295729
<i>e</i>	0.1424224	<i>i</i>	5.62012	−0.40309617	−0.23870486
<i>P</i>	3.33	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1997 12 03	910	0.3−	0.5−	1998 02 28	372	0.2−	1.0+	1999 09 07	704	0.2+	0.4+
1997 12 03	910	0.5−	0.8−	1998 02 28	372	0.0	0.6+	1999 09 07	704	0.3−	0.1+
1997 12 03	910	1.0−	0.5−	1998 03 02	372	0.6−	1.5+	1999 09 07	704	0.5−	0.7−
1997 12 04	910	0.8−	0.1−	1998 03 02	372	0.3−	1.1+	1999 09 07	704	0.0	0.3+
1997 12 04	910	0.6−	0.4−	1998 03 03	372	0.7+	0.3+	1999 09 07	704	0.3−	0.4−
1997 12 04	910	0.8−	0.3−	1999 09 02	145	0.5+	0.1−	1999 09 09	704	0.3−	0.2+
1998 01 25	566	(0.5+	2.5−)	1999 09 02	145	0.2+	0.3−	1999 09 09	704	0.2−	0.1+
1998 01 25	566	(0.0	2.3−)	1999 09 02	145	0.6+	0.1−	1999 09 09	704	0.1−	0.1−
1998 01 25	566	(0.3+	2.9−)	1999 09 03	145	0.0	0.2−	1999 09 09	704	0.8−	0.0
1998 01 28	411	0.4+	0.7+	1999 09 03	145	0.1+	0.3+	1999 09 09	704	0.4−	0.2−
1998 01 28	411	0.9+	0.0	1999 09 03	145	0.4−	0.4+	1999 09 14	704	0.1+	0.2+
1998 01 29	411	0.1+	1.0−	1999 09 03	145	0.5−	0.2+	1999 09 14	704	0.3−	0.4+
1998 01 29	411	1.3+	0.1−	1999 09 05	699	0.3+	1.4+	1999 09 14	704	0.2+	0.1+
1998 02 21	372	0.3+	0.1+	1999 09 05	699	0.3−	0.8+	1999 09 14	704	0.1−	0.1−
1998 02 21	372	1.3+	1.0+	1999 09 05	699	0.1+	0.8+	1999 09 14	704	0.4+	0.1−

1997 XS = 1989 YX

Id. S. Nakano, A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	129.58242		(2000.0)	P	Q
<i>n</i>	0.24251354	ω	174.57573	−0.45407081	−0.88944037
<i>a</i>	2.5467055	Ω	302.41965	+0.81510618	−0.39108265
<i>e</i>	0.1227964	<i>i</i>	3.53923	+0.35975215	−0.23653792
<i>P</i>	4.06	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1989 12 30	413	1.1−	0.3+	1997 12 04	411	1.1−	0.1+	1998 01 05	411	0.0	0.5−
1989 12 30	413	(5.8+	1.5−)	1997 12 10	411	0.5+	0.4+	1999 06 15	704	1.0+	0.5+
1989 12 31	413	1.5+	1.0+	1997 12 10	411	0.4−	0.4+	1999 06 15	704	1.0−	0.7−
1997 12 03	411	0.0	0.3+	1997 12 27	411	0.3+	0.7−	1999 06 15	704	0.1−	0.2−
1997 12 03	411	1.2+	0.4+	1997 12 27	411	0.4+	1.0−	1999 06 15	704	0.0	0.1−
1997 12 04	411	0.3−	0.6−	1998 01 05	411	0.8−	0.5−				

1997 YP₁₃ = 1984 FL₂ = 1999 RH₁₁₆

Id. G. V. Williams, S. Nakano, D. J. Asher, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	96.99329		(2000.0)	P	Q
<i>n</i>	0.27577066	ω	297.78665	−0.92438930	+0.36458485
<i>a</i>	2.3376026	Ω	263.77761	−0.29806940	−0.87389150
<i>e</i>	0.1959707	<i>i</i>	6.47881	−0.23803164	−0.32154554
<i>P</i>	3.57	<i>H</i>	14.2	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1984 03 30	095	0.1−	0.3−	1999 07 13	704	0.3−	0.0	1999 09 06	699	1.0−	0.6+
1984 04 04	095	(2.3+	6.7+)	1999 07 13	704	0.1−	0.4−	1999 09 08	703	1.3+	0.4−
1997 12 31	411	0.6+	0.5−	1999 07 13	704	0.1−	0.3−	1999 09 08	703	0.5+	0.5+
1997 12 31	411	0.5−	1.3+	1999 07 13	704	0.1+	0.2−	1999 09 08	703	1.2−	0.9+

1998 01 01	411	0.2−	1.2−	1999 07 13	704	0.2−	0.3−	1999 09 08	703	0.3−	0.8+
1998 01 01	411	0.2−	1.0−	1999 07 23	704	0.4+	0.4−	1999 09 09	704	0.3+	0.5−
1998 01 06	411	0.2+	0.3+	1999 07 23	704	0.2−	0.1−	1999 09 09	704	0.9−	0.2+
1998 01 06	411	0.6+	0.4−	1999 07 23	704	0.0	0.3+	1999 09 09	704	0.3−	1.0−
1998 01 16	411	0.1+	0.2−	1999 07 23	704	0.3+	0.1+	1999 09 09	704	0.4+	0.6−
1998 01 16	411	0.3+	0.0	1999 08 09	950	0.1+	0.2−	1999 09 09	704	0.4+	0.7−
1998 01 28	566	0.1+	0.2−	1999 08 10	950	1.4−	0.5−	1999 09 14	704	0.0	0.0
1998 01 28	566	0.0	0.1−	1999 08 10	950	(3.3+	0.5+)	1999 09 14	704	0.3+	0.2+
1998 01 28	566	0.2−	0.0	1999 08 10	950	0.6+	0.1+	1999 09 14	704	0.6+	0.3+
1998 01 30	411	0.5−	0.6+	1999 09 06	699	0.1+	0.3−	1999 09 14	704	0.6+	0.4+
1998 01 30	411	0.6−	0.5+	1999 09 06	699	0.5+	0.2+	1999 09 14	704	0.2+	0.3+

1997 YV₁₈ = 1999 JS₁₃₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Doppler

<i>M</i>	172.08214		(2000.0)	P	Q
<i>n</i>	0.20917120	ω	302.66178	+0.70750307	−0.69216981
<i>a</i>	2.8106157	Ω	101.58920	+0.68732213	+0.62698951
<i>e</i>	0.1990866	<i>i</i>	8.37131	+0.16440102	+0.35747042
<i>P</i>	4.71	<i>H</i>	14.0	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1997 12 26	566	0.2+	0.8−	1998 01 07	691	0.6−	0.1+	1999 05 12	704	1.0+	1.2−
1997 12 26	566	0.7−	0.2+	1998 01 07	691	0.4−	0.1+	1999 05 16	703	1.4+	0.2−
1997 12 26	566	0.3+	0.3−	1998 01 08	699	0.4+	0.0	1999 05 16	703	0.6+	0.7+
1997 12 31	691	0.4+	0.4+	1998 01 08	699	0.1+	0.8−	1999 05 16	703	0.2+	0.8+
1997 12 31	691	0.0	0.9+	1998 01 08	699	0.3+	0.5−	1999 05 16	703	1.1−	0.7+
1997 12 31	691	0.4+	0.4+	1999 05 12	704	0.9−	0.2−				
1998 01 07	691	0.5−	0.2+	1999 05 12	704	1.2−	0.5−				

1998 AV₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	198.93411		(2000.0)	P	Q
<i>n</i>	0.30771407	ω	209.63279	−0.94973745	−0.31297803
<i>a</i>	2.1728903	Ω	312.12688	+0.28893671	−0.86828358
<i>e</i>	0.0650669	<i>i</i>	0.50968	+0.12047553	−0.38487450
<i>P</i>	3.20	<i>H</i>	15.2	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 01 06	688	0.3+	0.0	1998 04 25	699	0.3−	0.1+	1998 05 22	566	0.4+	0.5−
1998 01 06	688	0.5−	0.2+	1998 05 01	704	0.0	0.0	1998 05 22	566	0.1+	0.8−
1998 01 06	688	0.2−	0.7+	1998 05 01	704	0.1+	0.3+	1998 05 24	704	0.4−	0.1+
1998 01 06	688	0.0	0.2+	1998 05 01	704	0.3−	0.7−	1998 05 24	704	(0.2+	2.2−)
1998 01 08	688	0.7+	0.4−	1998 05 01	704	0.4+	0.6−	1998 05 24	704	0.2−	0.3+
1998 01 08	688	0.2+	0.1−	1998 05 01	704	0.5−	0.3−	1998 05 24	704	0.6+	1.0+
1998 01 08	688	0.2−	0.4+	1998 05 06	566	0.0	0.6+	1998 05 24	704	0.1−	0.5+
1998 01 08	688	0.0	0.1+	1998 05 06	566	0.4+	0.1+	1999 09 05	699	0.0	0.2−
1998 04 22	704	0.1+	0.1−	1998 05 06	566	0.2−	0.0	1999 09 05	699	0.8−	0.7+
1998 04 22	704	0.0	0.6+	1998 05 22	704	0.1+	0.5−	1999 09 05	699	1.1−	0.6+
1998 04 22	704	0.6+	0.7+	1998 05 22	704	0.2−	0.1−	1999 09 14	120	0.0	0.0
1998 04 22	704	0.3−	0.4+	1998 05 22	704	0.8+	0.6+	1999 09 14	120	0.1−	0.6+
1998 04 22	704	0.3−	0.1−	1998 05 22	704	0.7−	1.3−	1999 09 15	120	1.6+	0.7−
1998 04 25	699	0.4+	0.0	1998 05 22	704	0.6−	0.8+				
1998 04 25	699	0.1−	0.2+	1998 05 22	566	0.1+	1.1−				

1998 BS₄ = 1999 LX₁₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	331.62797		(2000.0)	P	Q
<i>n</i>	0.28728235	ω	27.42173	+0.66195407	+0.74298074
<i>a</i>	2.2747312	Ω	284.20593	−0.70504271	+0.57237761
<i>e</i>	0.1324641	<i>i</i>	5.86006	−0.25442405	+0.34693443
<i>P</i>	3.43	<i>H</i>	15.5	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1997 12 27	327	0.4−	0.4+	1998 01 23	910	0.2+	0.2+	1999 06 09	704	0.1+	0.2+
1997 12 27	327	0.9+	0.4+	1998 01 23	910	0.0	0.2+	1999 06 15	704	0.7+	0.5−
1997 12 27	327	0.2−	0.4−	1998 01 23	910	0.1−	0.2+	1999 06 15	704	0.1−	1.7+
1998 01 17	910	0.5−	0.2−	1999 06 09	704	1.6−	0.6−	1999 06 15	704	0.1−	0.1−
1998 01 17	910	0.2−	0.2−	1999 06 09	704	0.9+	0.1+	1999 06 15	704	0.1+	0.1−
1998 01 18	910	0.4+	0.5−	1999 06 09	704	0.2−	0.1+	1999 06 15	704	0.1+	0.7−

1998 BP₈ = 1979 SD₅ = 1999 RD₅₂

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	12.09450	(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.29384762	ω	301.29311	+0.55109764	+0.83443391	
<i>a</i>	2.2407217	Ω	2.15817	−0.73181346	+0.48526189	
<i>e</i>	0.1639990	<i>i</i>	5.15253	−0.40092450	+0.26122968	
<i>P</i>	3.35	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1979 09 23	095	0.1−	0.1+	1998 02 24	566	0.4+	0.3−	1999 08 13	703	0.4−	0.1−
1995 04 06	691	0.1+	0.2+	1998 02 24	566	0.1−	0.4−	1999 08 13	703	0.2+	0.1−
1995 04 06	691	0.2+	0.4+	1998 02 24	566	0.3−	0.6−	1999 08 13	703	0.6+	0.4−
1995 04 06	691	0.2+	0.4+	1998 02 26	699	(2.4+ 0.6+)		1999 09 03	699	0.6+	0.5−
1998 01 25	411	0.7+	0.1−	1998 02 26	699	0.8−	0.4+	1999 09 03	699	0.1−	0.1−
1998 01 25	411	0.1+	0.3−	1998 02 26	699	0.4−	0.8+	1999 09 03	699	0.4+	0.3−
1998 01 26	411	0.9−	0.2+	1998 03 03	704	1.1+	1.4+	1999 09 07	704	0.1−	0.6+
1998 01 26	411	0.4−	0.5+	1998 03 03	704	0.1+	1.4−	1999 09 07	704	0.3−	0.7+
1998 01 28	566	0.3+	0.5+	1998 03 03	704	0.4−	0.9−	1999 09 07	704	0.3−	0.3+
1998 01 28	566	0.1+	0.5+	1998 03 03	704	0.2−	0.1−	1999 09 07	704	0.4−	0.3−
1998 01 28	566	0.6+	0.9+	1998 03 03	704	0.7−	0.4−	1999 09 07	704	0.3−	0.3+
1998 01 31	411	1.3−	0.9+	1998 03 04	704	0.8+	0.4+	1999 09 11	704	0.0	0.2+
1998 01 31	411	0.1+	0.3+	1998 03 04	704	0.1−	0.1−	1999 09 11	704	0.1−	0.5+
1998 02 21	411	0.0	0.4+	1998 03 04	704	1.0+	0.6−	1999 09 11	704	0.3−	1.1+
1998 02 21	411	0.4+	0.3+	1998 03 04	704	0.0	0.2+	1999 09 11	704	0.4−	0.6+
1998 02 23	411	0.3+	0.2+	1998 03 04	704	0.7+	0.3−	1999 09 11	704	0.8+	0.2+
1998 02 23	411	0.0	0.1−	1999 08 13	703	0.9−	0.2−				

1998 CK₃ = 1990 BW₅ = 1999 RC₅₄

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	67.08033	(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.25551865	ω	239.23668	−0.49042651	+0.87148197	
<i>a</i>	2.4595424	Ω	1.39587	−0.78483306	−0.44116381	
<i>e</i>	0.1401636	<i>i</i>	2.36036	−0.37883889	−0.21422806	
<i>P</i>	3.86	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1990 01 25	372	(6.9− 2.6−)	1998 03 04	809	1.3+	2.3+	1999 08 07	699	0.6−	0.1+
1990 01 25	372	0.2− 0.9−	1998 03 04	809	1.6+	2.4+	1999 09 06	699	0.3+	0.0
1998 02 06	809	1.7− 0.1+	1998 03 04	809	1.5+	1.9+	1999 09 06	699	0.7+	0.6+
1998 02 06	809	1.4− 0.8−	1998 03 04	704	1.0− 0.7−		1999 09 06	699	0.5+	0.5+
1998 02 06	809	1.9− 0.2+	1998 03 04	704	1.2− 0.8−		1999 09 07	704	0.6+	0.1+
1998 02 07	809	(2.6+ 3.6+)	1998 03 04	704	1.8− 0.0		1999 09 07	704	0.1− 0.7−	
1998 02 07	809	(1.9+ 4.1+)	1998 03 04	704	1.5− 0.4−		1999 09 07	704	0.2− 1.0−	
1998 02 07	809	(2.7+ 3.8+)	1998 03 04	704	1.5− 0.4−		1999 09 07	704	0.1− 0.1+	
1998 03 01	691	1.0+ 0.3−	1998 03 05	691	0.3+ 0.4−		1999 09 07	704	0.5− 0.7−	
1998 03 01	691	1.1+ 0.2−	1998 03 05	691	0.3+ 0.3−		1999 09 13	699	0.8− 0.6+	
1998 03 01	691	1.0+ 0.5−	1998 03 05	691	0.9− 1.7+		1999 09 13	704	0.1+ 0.9−	
1998 03 03	704	1.0+ 0.0	1998 03 24	566	0.1− 1.0−		1999 09 13	699	0.0 0.7+	
1998 03 03	809	(3.3+ 4.9+)	1998 03 24	566	0.2+ 1.0−		1999 09 13	704	0.1− 0.2−	
1998 03 03	704	1.1+ 0.3−	1998 03 24	566	0.5− 0.6−		1999 09 13	704	0.3+ 0.4−	
1998 03 03	809	(3.2+ 3.8+)	1999 07 16	704	0.4+ 0.8−		1999 09 13	699	0.5+ 0.4+	
1998 03 03	809	(2.8+ 3.8+)	1999 07 16	704	1.0+ 0.6−		1999 09 13	704	0.3+ 0.2−	
1998 03 03	704	0.6+ 0.6−	1999 07 16	704	0.1+ 1.0−		1999 09 13	704	0.1− 0.1+	
1998 03 03	704	0.8+ 0.4−	1999 08 07	699	1.1− 0.9+					
1998 03 03	704	1.0+ 0.7−	1999 08 07	699	0.3− 0.3+					

1998 CB₄ = 1999 RF₁₈₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	97.68553	(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.30669680	ω	185.54346	−0.61095493	+0.79127274	
<i>a</i>	2.1776925	Ω	46.80094	−0.72501835	−0.54659683	
<i>e</i>	0.1303222	<i>i</i>	1.95983	−0.31793469	−0.27407910	
<i>P</i>	3.21	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1998 01 22	691	0.1+	0.0	1998 02 27	552	0.4+	0.2−	1998 03 26	552	0.1−	0.5−
1998 01 22	691	0.1+	0.2−	1998 02 27	552	0.1−	0.8−	1998 03 26	552	0.2−	0.1+
1998 01 22	691	0.0	0.0	1998 03 03	704	1.0+	0.0	1999 08 31	552	(2.3+ 0.5+)	
1998 02 15	552	0.4−	0.3−	1998 03 03	704	0.4−	0.7+	1999 09 09	704	0.3−	0.2−
1998 02 15	552	0.2+	0.4−	1998 03 03	704	0.8+	0.4−	1999 09 09	704	0.4+	0.4−
1998 02 15	552	0.3−	0.8−	1998 03 03	704	0.9+	0.2+	1999 09 09	704	0.6+	0.5−
1998 02 18	552	0.4−	0.3−	1998 03 03	704	0.8−	0.6−	1999 09 09	704	1.0+	1.5+
1998 02 18	552	0.4−	0.1−	1998 03 04	704	0.2−	0.2−	1999 09 09	704	1.7+	0.5+
1998 02 20	552	1.3−	1.1+	1998 03 04	704	0.1−	0.3−	1999 09 14	704	0.7−	1.2−
1998 02 20	552	(0.2− 2.2+)		1998 03 04	704	0.4+	0.3+	1999 09 14	704	1.5−	0.3−
1998 02 24	552	0.7+	0.7+	1998 03 04	704	0.8+	0.6+	1999 09 14	704	1.2−	0.4+
1998 02 24	552	0.1+	0.4+	1998 03 04	704	0.3+	0.7+	1999 09 14	704	0.3−	0.6+
1998 02 27	552	0.2+	0.2−	1998 03 18	552	0.4−	0.4−				
1998 02 27	552	0.8−	0.2−	1998 03 18	552	0.1−	1.4+				

1998 DB = 1999 RZ₁₇₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	83.29616	(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.29914563	ω	138.76643	−0.50290530	+0.86359949	
<i>a</i>	2.2141869	Ω	101.01262	−0.80227530	−0.45097703	
<i>e</i>	0.1666215	<i>i</i>	2.09057	−0.32162182	−0.22542323	
<i>P</i>	3.29	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1998 01 29	566	0.6+	0.4−	1998 03 01	411	1.9+	0.4+	1999 09 09	704	0.2−	0.3+
1998 01 29	566	0.4+	0.2+	1998 03 01	411	0.9+	0.1−	1999 09 09	704	0.4−	0.2−
1998 01 29	566	0.2+	0.5−	1998 03 04	411	1.1−	0.5+	1999 09 09	704	0.4−	0.2+
1998 02 17	411	0.1−	0.3+	1998 03 04	411	1.8−	0.0	1999 09 09	704	1.4−	0.2+
1998 02 17	411	0.6−	0.1+	1999 09 07	704	0.2+	0.6+	1999 09 14	704	1.8+	0.9+
1998 02 18	411	1.0−	0.3−	1999 09 07	704	0.8−	1.0−	1999 09 14	704	0.5+	0.2+
1998 02 18	411	0.8−	0.5+	1999 09 07	704	(1.2− 2.8−)		1999 09 14	704	0.4+	0.0
1998 03 01	411	1.4+	0.6−	1999 09 09	704	1.0−	0.6−	1999 09 14	704	1.2+	0.4−

1998 DA₅ = 1999 OM₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	126.78405	(2000.0)	Doppler		<i>P</i>	<i>Q</i>
<i>n</i>	0.27793435	ω	45.42837	−0.99652505	−0.06022428	
<i>a</i>	2.3254548	Ω	131.03041	+0.03630552	−0.93579223	
<i>e</i>	0.1257076	<i>i</i>	4.37458	+0.07496495	−0.34737004	
<i>P</i>	3.55	<i>H</i>	16.1	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1998 02 22	566	0.5−	0.3−	1998 03 03	704	0.1−	0.1+	1999 07 23	122	0.8−	0.2−
1998 02 22	566	0.9+	0.4−	1998 03 03	704	(5.0−	6.6−)	1999 07 23	122	0.4−	0.1+
1998 02 22	566	1.3−	0.5−	1998 03 04	704	0.0	0.2+	1999 07 24	122	0.5+	0.1−
1998 02 22	566	0.2−	0.9−	1998 03 04	704	0.5+	1.4+	1999 07 24	122	0.0	0.2−
1998 02 22	566	0.7−	0.2−	1998 03 04	704	0.1+	0.2+	1999 07 24	122	0.3+	0.8−
1998 02 22	566	0.2+	1.2−	1998 03 04	704	0.5−	0.4+	1999 07 24	122	0.1+	0.4−
1998 02 23	566	0.1−	0.7−	1998 03 04	704	0.8+	1.1+	1999 07 25	122	0.4+	0.7−
1998 02 23	566	0.1−	0.6−	1999 07 13	704	0.0	0.8+	1999 07 25	122	0.4+	0.4−
1998 02 23	566	0.3+	0.5−	1999 07 13	704	0.6−	0.5+	1999 07 25	122	0.7+	0.5−
1998 03 03	704	0.2+	0.5+	1999 07 13	704	0.7−	0.3+	1999 07 25	122	0.3+	0.5−
1998 03 03	704	0.5+	0.2+	1999 07 13	704	0.2−	1.2+				
1998 03 03	704	0.4−	0.3+	1999 07 13	704	0.3+	0.3−				

1998 DP₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	56.02913	(2000.0)	P		Q	
<i>n</i>	0.22731057	ω	283.67976	−0.03062478	+0.98940618	
<i>a</i>	2.6590283	Ω	342.57253	−0.63086059	−0.12925566	
<i>e</i>	0.3193175	<i>i</i>	28.28222	−0.77529158	+0.06609379	
<i>P</i>	4.34	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i> 5
Residuals in seconds of arc						
1998 02 26	596	(2.3+ 1.0+)	1998 03 05	910	(2.7+ 1.2+)	1998 04 25 609 0.7− 1.3+
1998 02 26	596	0.9+ 0.3+	1998 03 05	910	(2.9+ 1.6+)	1998 04 25 609 0.7− 0.1+
1998 02 26	596	0.3+ 0.8+	1998 03 06	910	(2.9+ 1.6+)	1998 04 25 609 1.1+ 0.3−
1998 02 27	596	0.3− 1.0+	1998 03 17	596	(1.0+ 2.4+)	1999 09 17 596 0.0 0.6−
1998 02 27	596	1.2+ 0.0	1998 03 17	596	(0.6+ 2.7+)	1999 09 17 596 0.2− 0.1+
1998 02 27	596	1.3− 0.2−	1998 03 17	596	(0.9+ 2.7+)	1999 09 17 596 0.0 0.4−
1998 03 01	596	0.4− 0.3+	1998 03 20	704	0.3− 1.5−	1999 09 18 704 0.8− 1.2−
1998 03 01	596	1.2+ 1.5−	1998 03 20	704	0.3+ 0.8−	1999 09 18 704 0.2− 1.1−
1998 03 01	596	0.1− 0.1+	1998 03 20	704	0.2+ 1.6+	1999 09 18 704 0.7− 1.0−
1998 03 04	704	1.3− 0.6−	1998 03 20	704	(0.8+ 3.6+)	1999 09 18 704 0.6+ 0.4−
1998 03 04	704	1.4− 0.0	1998 03 22	704	(0.5+ 2.4+)	1999 09 18 704 0.4+ 0.7−
1998 03 04	704	1.6− 0.7+	1998 03 22	704	0.6+ 0.8−	1999 09 18 596 0.5+ 1.9+
1998 03 04	704	(2.1− 0.5+)	1998 03 22	704	0.4+ 0.9+	1999 09 18 596 0.1+ 1.5+
1998 03 04	704	(5.3− 1.0−)	1998 03 22	704	0.5+ 0.9−	1999 09 18 596 0.4+ 1.7+
1998 03 05	596	1.4+ 0.2−	1998 04 04	596	0.5− 0.4−	
1998 03 05	596	0.7+ 0.5+	1998 04 04	596	0.2− 0.2−	

1998 DV₂₃ = 1999 RH₁₇₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	145.11970	(2000.0)	P		Q	
<i>n</i>	0.27055689	ω	166.91505	−0.97478418	+0.21386515	
<i>a</i>	2.3675382	Ω	25.70274	−0.21567673	−0.82968632	
<i>e</i>	0.0765693	<i>i</i>	8.44567	−0.05726566	−0.51563776	
<i>P</i>	3.64	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i> 4
Residuals in seconds of arc						
1998 02 27	910	0.0 0.4+	1998 04 01	704	1.2− 0.7−	1998 05 16 704 1.4+ 1.4+
1998 02 27	910	0.1− 0.3+	1998 04 20	385	0.2− 0.2+	1998 05 16 704 0.7− 2.1+
1998 02 27	910	0.0 0.3+	1998 04 20	385	0.0 0.7−	1998 05 16 704 0.2− 0.2+
1998 03 03	910	0.3+ 0.3−	1998 04 21	704	0.0 0.4+	1998 05 16 704 1.2− 1.7−
1998 03 03	910	0.3+ 0.3−	1998 04 21	704	0.2+ 0.6+	1999 09 09 704 0.5+ 1.4+
1998 03 03	910	0.2+ 0.3−	1998 04 21	704	0.0 3.5−	1999 09 09 704 0.8+ 0.1+
1998 03 27	910	0.2− 0.0	1998 04 21	704	0.0 0.3−	1999 09 09 704 0.2+ 0.3−
1998 03 27	910	0.0 0.3−	1998 04 21	704	0.2− 0.4−	1999 09 13 704 0.2− 0.1−
1998 03 27	910	0.0 0.1+	1998 04 22	704	0.4+ 0.3−	1999 09 13 704 0.4+ 0.6−
1998 04 01	704	0.1− 0.0	1998 04 22	704	1.0+ 0.2+	1999 09 13 704 0.8− 0.6−
1998 04 01	704	0.5− 0.7+	1998 04 22	704	0.2+ 0.4−	1999 09 13 704 0.9− 0.2+
1998 04 01	704	0.3− 0.1+	1998 04 22	704	0.9+ 0.0	
1998 04 01	704	0.2+ 2.5+	1998 04 22	704	0.2− 0.0	

1998 DC₃₀ = 1999 RH₃₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	44.02906	(2000.0)	P		Q	
<i>n</i>	0.30033229	ω	92.49065	+0.14159577	+0.98985153	
<i>a</i>	2.2083507	Ω	185.69186	−0.94959388	+0.13238522	
<i>e</i>	0.2576835	<i>i</i>	6.96355	−0.27968214	+0.05165362	
<i>P</i>	3.28	<i>H</i>	16.3	<i>G</i>	0.15	<i>U</i> 5
Residuals in seconds of arc						
1998 02 23	691	0.1− 0.1+	1998 03 04	691	0.0 0.1+	1999 09 07 704 0.3+ 0.3−
1998 02 23	691	0.1− 0.3+	1998 03 04	691	0.1+ 0.1−	1999 09 07 704 0.5− 0.5−
1998 02 23	691	0.3− 0.1+	1998 03 05	658	1.3− 0.0	1999 09 07 704 0.5+ 0.6+
1998 02 28	691	0.2− 0.0	1998 03 05	658	0.2− 0.0	1999 09 10 120 0.1− 0.5+
1998 02 28	691	0.4− 0.4+	1998 03 05	658	1.2+ 0.1+	1999 09 10 120 0.0 0.5+
1998 02 28	691	0.2− 0.0	1998 03 05	691	0.3+ 0.4−	1999 09 11 120 0.6+ 0.3−
1998 03 03	691	0.3− 0.2+	1998 03 05	691	1.0+ 0.5−	1999 09 11 120 0.3− 0.4−

1998 03 03	691	0.1− 0.0	1998 03 05	691	0.4+ 0.2−	1999 09 12	120	0.0 0.3+
1998 03 03	691	0.2+ 0.3−	1999 09 07	704	0.8− 0.1+	1999 09 12	120	0.8+ 0.1+
1998 03 04	691	0.0 0.0	1999 09 07	704	0.5− 0.7−			

1998 DW₃₁ = 1991 CV₃

Id. E. Bowell (1999 observations), M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	159.86488	(2000.0)	P		Q	
<i>n</i>	0.28417083	ω	195.12542	−0.88188541	−0.46478529	
<i>a</i>	2.2913058	Ω	316.89113	+0.44368155	−0.76143763	
<i>e</i>	0.0596824	<i>i</i>	6.64455	+0.15945159	−0.45187097	
<i>P</i>	3.47	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1991 02 10	372	0.7+ 1.2+	1998 03 04	704	1.1− 0.4+	1998 04 04	699	0.4+ 0.5+
1991 02 10	372	(2.3+ 2.4+)	1998 03 04	704	1.4− 0.3+	1998 04 04	699	0.5+ 0.2+
1998 02 22	358	1.9+ 0.6+	1998 03 04	704	0.8− 0.8−	1998 04 04	699	(2.8+ 0.1−)
1998 02 22	358	0.8+ 1.5−	1998 03 04	704	1.3− 1.2−	1999 07 14	704	0.3+ 0.4+
1998 02 23	358	1.2− 1.4−	1998 03 04	704	0.4− 0.2−	1999 07 14	704	0.5+ 0.3−
1998 02 23	358	0.4+ 0.2−	1998 03 20	704	1.5− 0.3−	1999 07 14	704	0.0 0.1+
1998 02 27	358	(2.5+ 0.3−)	1998 03 20	704	0.4+ 0.4−	1999 07 14	704	0.6+ 0.1−
1998 02 27	358	0.2+ 0.8+	1998 03 20	704	0.3− 0.1+	1999 07 14	704	0.6+ 0.0
1998 02 27	358	1.1− 1.0+	1998 03 20	704	1.1− 0.2−	1999 07 20	699	0.0 1.5−
1998 03 03	704	0.6+ 0.2−	1998 03 22	704	0.1+ 0.1+	1999 07 20	699	1.0− 0.3+
1998 03 03	704	1.0+ 1.0+	1998 03 22	704	0.1+ 0.1+	1999 07 20	699	0.4+ 0.3+
1998 03 03	704	1.0+ 0.3+	1998 03 22	704	0.1+ 0.0	1999 08 07	699	1.3− 1.5+
1998 03 03	704	1.5+ 0.8+	1998 03 22	704	0.2+ 0.2−	1999 08 07	699	0.2− 0.2+
1998 03 03	704	(0.6+ 3.1+)	1998 03 22	704	0.8+ 0.0	1999 08 07	699	0.1− 0.1−

1998 DJ₃₃ = 1974 DG = 1999 RG₄₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	143.68840	(2000.0)	P		Q	
<i>n</i>	0.28734077	ω	54.61416	−0.96047329	−0.26189530	
<i>a</i>	2.2744229	Ω	110.03993	+0.21153449	−0.90698301	
<i>e</i>	0.1094423	<i>i</i>	5.76396	+0.18095362	−0.32983733	
<i>P</i>	3.43	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1974 02 19	029	0.3+ 0.5+	1998 03 04	704	0.9− 0.1+	1999 08 13	699	0.0 0.3−
1974 02 20	029	0.3+ 0.0	1998 03 04	704	0.1− 0.7−	1999 08 13	699	0.2+ 0.9+
1974 02 23	029	0.3− 0.6+	1998 03 04	704	1.2− 0.7−	1999 08 13	699	0.3− 0.3+
1998 02 26	566	1.0+ 0.4+	1998 03 04	704	0.3− 0.4−	1999 09 07	704	0.6− 0.6+
1998 02 26	566	1.3+ 0.4+	1999 07 14	704	0.2+ 0.2+	1999 09 07	704	0.1− 0.7+
1998 02 26	566	1.1+ 0.4+	1999 07 14	704	0.3+ 0.0	1999 09 07	704	0.4+ 0.4−
1998 02 27	098	0.1+ 0.1+	1999 07 14	704	0.7+ 0.4−	1999 09 11	704	0.3− 0.1+
1998 02 27	098	(7.5+ 1.2+)	1999 07 14	704	0.4+ 0.5−	1999 09 11	704	0.7+ 0.6−
1998 02 28	098	1.0− 0.7−	1999 07 20	699	0.3− 0.8+	1999 09 11	704	1.1− 0.5−
1998 02 28	098	0.4+ 0.1+	1999 07 20	699	1.5− 0.3+	1999 09 11	704	0.2− 0.4−
1998 03 04	704	0.7− 0.1+	1999 07 20	699	0.9+ 0.5−	1999 09 11	704	0.4+ 0.3−

1998 DC₃₄ = 1999 RP₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	75.43749	(2000.0)	P		Q	
<i>n</i>	0.26821044	ω	241.28904	−0.39033502	+0.92066185	
<i>a</i>	2.3813264	Ω	5.74116	−0.82819817	−0.34898553	
<i>e</i>	0.1238691	<i>i</i>	2.58321	−0.40215217	−0.17490243	
<i>P</i>	3.67	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1998 02 26	566	0.6+ 0.6−	1998 03 03	704	0.3− 1.7−	1999 09 07	704	0.1− 0.3+
1998 02 26	566	0.1− 0.8−	1998 03 03	704	0.6− 1.7−	1999 09 07	704	0.7− 0.1−
1998 02 26	566	0.4+ 0.7−	1998 03 03	704	0.2+ 0.8−	1999 09 07	704	0.4− 0.2−
1998 02 27	809	0.2+ 0.1−	1998 03 22	704	0.0 0.3+	1999 09 07	704	0.4+ 0.3+
1998 02 27	809	1.6− 0.1−	1998 03 22	704	1.3+ 0.3−	1999 09 07	704	0.2− 0.1−
1998 02 27	809	0.2+ 0.5−	1998 03 22	704	0.5+ 0.2+	1999 09 08	704	0.7− 0.3+

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1998 02 28	809	0.6+	2.5+	1998 03 22	704	1.1-	2.0+	1999 09 08	704	0.4+	0.6+
1998 02 28	809	0.1+	2.4+	1998 03 22	704	2.2-	1.6-	1999 09 08	704	0.2+	0.4-
1998 02 28	809	1.2+	1.8+	1998 03 26	704	0.7+	0.3+	1999 09 08	704	1.2+	0.9-
1998 03 03	704	0.1-	0.3+	1998 03 26	704	0.3+	0.5+				
1998 03 03	704	0.9-	0.5-	1998 03 26	704	0.5+	1.0-				

1998 DB₃₅ = 1999 RW₁₇₄

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	58.96234		(2000.0)	P		Q	
<i>n</i>	0.25800959	ω	239.20061	-0.09222920		+0.99541946	
<i>a</i>	2.4436865	Ω	25.54389	-0.89246234		-0.07142367	
<i>e</i>	0.1655688	<i>i</i>	3.34727	-0.44159342		-0.06355124	
<i>P</i>	3.82	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 27	809	(4.9+	1.1+)	1998 03 20	704	0.8-	0.1+	1999 09 07	704	0.2-	0.3+
1998 02 27	809	(3.6+	0.2+)	1998 03 20	704	0.9-	0.5+	1999 09 07	704	0.2+	0.3+
1998 02 27	809	(3.4+	0.5+)	1998 03 20	704	1.5-	0.6+	1999 09 09	704	0.1-	0.1+
1998 02 27	566	0.9-	0.5-	1998 03 22	704	0.2-	0.1-	1999 09 09	704	0.6-	0.1-
1998 02 27	566	0.6-	0.4-	1998 03 22	704	0.5+	0.2-	1999 09 09	704	0.3-	0.9-
1998 02 27	566	0.1-	0.5-	1998 03 22	704	0.4+	0.1-	1999 09 09	704	1.0-	0.6-
1998 02 28	809	1.1+	1.3+	1998 03 22	704	0.1-	0.8+	1999 09 09	704	1.0-	1.3-
1998 02 28	809	1.1+	1.0+	1998 03 22	704	0.3-	0.5-	1999 09 11	699	0.0	1.3+
1998 02 28	809	1.4+	0.0	1998 03 29	704	1.3+	2.0-	1999 09 11	699	0.8+	0.6+
1998 03 03	704	0.3-	0.5-	1998 03 29	704	0.5-	0.4+	1999 09 11	699	0.2+	1.1+
1998 03 03	704	0.5-	1.3-	1998 03 29	704	0.5+	0.9+	1999 09 14	704	0.7+	0.1+
1998 03 03	704	0.1-	0.1+	1998 03 29	704	0.9+	0.4-	1999 09 14	704	0.7+	0.5+
1998 03 03	704	0.3+	0.1+	1999 09 07	704	0.4-	0.6-	1999 09 14	704	0.3+	0.3+
1998 03 20	704	0.7-	0.3-	1999 09 07	704	0.4-	0.0	1999 09 14	704	0.5+	0.2+
1998 03 20	704	0.2+	1.2+	1999 09 07	704	0.1-	0.2-	1999 09 14	704	0.6+	0.8-

1998 DE₃₆ = 1999 RO₁₆₆

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	111.44641		(2000.0)	P		Q	
<i>n</i>	0.29156885	ω	193.63035	-0.82175665		+0.56881234	
<i>a</i>	2.2523816	Ω	21.14707	-0.51353296		-0.71322482	
<i>e</i>	0.1162616	<i>i</i>	5.43718	-0.24698160		-0.40958868	
<i>P</i>	3.38	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1996 09 13	691	0.2+	0.5+	1998 03 26	704	0.5+	0.3+	1999 09 07	704	1.1+	0.3+
1996 09 13	691	0.5-	0.4+	1998 03 26	704	0.4-	0.4+	1999 09 08	703	0.4-	0.2-
1996 09 13	691	0.1-	0.1+	1998 03 26	704	0.7-	0.3+	1999 09 08	703	0.3-	0.3+
1998 02 22	566	0.0	0.0	1998 04 18	704	(1.1-	2.4+)	1999 09 08	703	1.3-	0.6+
1998 02 22	566	0.3-	0.1+	1998 04 18	704	0.3+	0.3-	1999 09 08	703	0.5-	0.7+
1998 02 22	566	0.0	0.0	1998 04 18	704	1.5+	1.4+	1999 09 09	704	0.3-	0.4+
1998 02 25	809	(2.0+	4.3+)	1998 04 18	704	0.8-	0.1-	1999 09 09	704	0.0	0.4+
1998 02 25	809	(2.1+	4.0+)	1998 04 24	691	0.0	0.3+	1999 09 09	704	0.7+	0.5+
1998 02 25	809	(0.8+	3.8+)	1998 04 24	691	0.1-	0.1+	1999 09 09	704	0.3+	0.5+
1998 02 26	809	(2.3+	4.2+)	1998 04 24	691	0.1-	0.5+	1999 09 09	704	0.4+	0.5-
1998 02 26	809	(2.3+	3.6+)	1999 09 07	699	1.7+	0.3-	1999 09 11	704	0.2+	0.2-
1998 02 26	809	(1.8+	3.1+)	1999 09 07	704	0.2+	0.9-	1999 09 11	704	1.3-	0.4+
1998 03 22	704	0.3+	0.6+	1999 09 07	699	0.6-	0.1+	1999 09 11	704	0.0	1.4-
1998 03 22	704	0.9-	0.1+	1999 09 07	704	0.8-	0.7-	1999 09 11	704	0.0	0.3+
1998 03 22	704	1.3+	1.4-	1999 09 07	704	0.3-	0.8-	1999 09 11	704	0.3+	0.3+
1998 03 22	704	0.1-	0.1+	1999 09 07	699	1.3+	0.7+				
1998 03 22	704	0.3+	0.8-	1999 09 07	704	0.8-	0.0				

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1998 EC₂ = 1999 RK₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	319.67416		(2000.0)	P		Q	
<i>n</i>	0.27416032	ω	349.19669	+0.96558277		-0.25873395	
<i>a</i>	2.3467472	Ω	25.84553	+0.24294928		+0.86070946	
<i>e</i>	0.1160222	<i>i</i>	3.49593	+0.09287390		+0.43844723	
<i>P</i>	3.60	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 02	910	0.0	0.3+	1998 03 29	704	1.2+	0.1-	1999 09 07	704	0.0	1.2+
1998 03 02	910	0.6-	0.2-	1998 03 29	704	0.2+	1.1-	1999 09 08	704	0.5-	0.3-
1998 03 02	910	0.2-	0.2+	1998 04 01	704	0.1+	0.7+	1999 09 08	704	0.4+	0.1-
1998 03 03	910	0.0	0.3+	1998 04 01	704	0.6-	0.9+	1999 09 08	704	0.7+	1.1-
1998 03 03	910	0.2-	0.4+	1998 04 01	704	(2.5+	1.0-)	1999 09 08	704	0.8+	1.0-
1998 03 03	910	0.2+	0.4+	1998 04 01	704	0.4+	0.1-	1999 09 09	704	0.4-	0.2+
1998 03 25	704	1.3+	1.3-	1998 04 22	704	0.5+	0.6+	1999 09 09	704	1.5+	1.0-
1998 03 25	704	0.7-	1.1-	1998 04 22	704	1.4-	0.5+	1999 09 09	704	0.8+	0.8-
1998 03 25	704	1.8+	0.8-	1998 04 22	704	0.9+	0.6+	1999 09 13	704	0.5+	0.2+
1998 03 25	704	1.7-	1.2-	1999 09 07	704	0.5-	0.6+	1999 09 13	704	0.0	0.1+
1998 03 29	704	0.0	0.4+	1999 09 07	704	0.6-	0.9+	1999 09 13	704	0.1+	0.0
1998 03 29	704	1.2-	0.4+	1999 09 07	704	0.4-	0.3+	1999 09 13	704	1.1-	0.8+
1998 03 29	704	(2.2+	0.1+)	1999 09 07	704	0.6-	0.1+	1999 09 13	704	0.5-	0.3-

1998 EW₂ = 1999 RL₁₇₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	35.94436		(2000.0)	P		Q	
<i>n</i>	0.24098061	ω	278.13498	+0.45825432		+0.88697195	
<i>a</i>	2.5574941	Ω	19.45690	-0.73262611		+0.41344216	
<i>e</i>	0.0881417	<i>i</i>	9.90606	-0.50325139		+0.20578225	
<i>P</i>	4.09	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 03 02	910	0.1-	0.1+	1998 03 29	704	0.8-	0.3+	1998 05 16	704	0.9-	0.7+
1998 03 02	910	0.2-	0.3+	1998 03 29	704	0.0	0.7+	1998 05 16	704	0.6+	0.5+
1998 03 02	910	0.1-	0.3+	1998 03 29	704	0.8-	0.2-	1998 05 16	704	1.1-	1.6-
1998 03 03	910	0.3-	0.1+	1998 04 21	704	0.2-	0.7+	1998 05 16	704	(3.5-	0.1-)
1998 03 03	910	0.2-	0.2+	1998 04 21	704	0.1-	0.8+	1999 09 09	704	0.1-	0.6-
1998 03 03	910	0.4-	0.1+	1998 04 21	704	0.5-	0.7+	1999 09 09	704	0.2+	0.1+
1998 03 25	704	0.0	0.2+	1998 04 21	704	(0.1-	2.2+)	1999 09 09	704	0.9+	1.3+
1998 03 25	704	0.3+	1.2-	1998 04 22	704	0.2+	0.4+	1999 09 10	704	0.3-	0.2-
1998 03 25	704	1.7+	0.4-	1998 04 22	704	0.4+	0.5+	1999 09 10	704	0.0	0.1-
1998 03 25	704	(3.8-	1.1-)	1998 04 22	704	1.3+	0.0	1999 09 10	704	0.3-	0.7-
1998 03 26	910	0.4+	0.4-	1998 04 22	704	0.8+	0.3-	1999 09 13	704	0.1-	0.2-
1998 03 26	910	0.0	0.6-	1998 04 22	704	0.6-	0.4-	1999 09 13	704	0.2-	0.3+
1998 03 26	910	0.1+	0.3-	1998 04 25	699	0.8+	0.4-	1999 09 13	704	0.0	0.3-
1998 03 29	704	0.2+	0.7-	1998 04 25	699	0.1-	0.6-	1999 09 13	704	0.1-	0.3+
1998 03 29	704	0.5-	0.2-	1998 04 25	699	0.1-	0.7+				

1998 EX₂ = 1999 RT₁₀₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	56.19185		(2000.0)	P		Q	
<i>n</i>	0.21526994	ω	74.85168	-0.01631617		+0.99865533	
<i>a</i>	2.7572773	Ω	194.48381	-0.97620210		-0.02655441	
<i>e</i>	0.1426823	<i>i</i>	11.34659	-0.21624812		+0.04452403	
<i>P</i>	4.58	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 03 02	910	0.1-	0.1+	1998 04 21	704	1.0+	0.1+	1999 09 05	703	0.7-	0.3+
1998 03 02	910	0.3-	0.1+	1998 04 21	704	0.8+	1.2-	1999 09 05	703	0.8-	0.9+
1998 03 02	910	0.4-	0.1+	1998 04 21	704	0.8+	0.4-	1999 09 05	703	0.2-	0.2+
1998 03 03	910	0.0	0.5-	1998 04 22	704	0.3+	0.2+	1999 09 08	704	0.6+	1.5-
1998 03 03	910	0.1-	0.4-	1998 04 22	704	0.9-	0.0	1999 09 08	704	0.0	0.8-
1998 03 03	910	0.1-	0.6-	1998 04 22	704	0.7-	0.6-	1999 09 08	704	0.5+	0.0
1998 03 29	704	0.3+	1.8+	1998 04 22	704	0.8-	0.2+	1999 09 08	704	0.0	0.3+
1998 03 29	704	0.3-	0.3-	1998 04 22	704	0.0	0.2-	1999 09 09	704	0.6+	1.0+

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1998 03 29	704	0.4+	0.1-	1998 04 28	566	0.3-	0.3-	1999 09 09	704	0.0	0.3-
1998 03 29	704	0.9+	0.9+	1998 04 28	566	0.5-	0.4-	1999 09 09	704	0.2+	0.1+
1998 04 21	704	0.1-	0.3+	1998 04 28	566	0.2-	0.3-	1999 09 09	704	0.3-	0.4-
1998 04 21	704	0.3+	1.5+	1999 09 05	703	0.4+	0.2+	1999 09 09	704	0.4-	0.0

1998 EJ₈ = 1999 RB₁₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	15.15161	(2000.0)		P		Q	
<i>n</i>	0.24410876	ω	128.04642	+0.48806510		+0.87262229	
<i>a</i>	2.5355984	Ω	171.11289	-0.83279438		+0.47175278	
<i>e</i>	0.1520965	<i>i</i>	6.67836	-0.26123930		+0.12641063	
<i>P</i>	4.04	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 02 24	566	0.4-	0.2-	1998 03 22	704	1.1-	0.1-	1999 07 13	704	0.4+	0.0
1998 02 24	566	0.6-	0.3-	1998 03 22	704	0.2-	1.9+	1999 07 13	704	0.4+	0.5-
1998 02 24	566	0.5-	0.2-	1998 03 22	327	0.1+	0.4+	1999 07 13	704	0.2+	0.1+
1998 03 02	327	0.7-	0.1-	1998 03 22	327	0.2+	0.7+	1999 07 13	704	0.4+	0.5-
1998 03 02	327	0.8-	0.0	1998 03 22	327	0.0	0.4+	1999 07 13	704	0.4-	0.7-
1998 03 02	327	0.8+	0.5+	1998 03 22	327	0.6+	0.5+	1999 09 04	703	0.6-	0.6+
1998 03 03	704	0.1+	0.3-	1998 03 22	327	0.2-	1.0-	1999 09 04	703	0.9-	0.0
1998 03 03	704	1.2+	1.2-	1998 03 22	327	(2.2+	1.9-)	1999 09 04	703	0.6+	0.1-
1998 03 03	704	(1.6+	2.5-)	1998 03 29	704	1.2+	0.1+	1999 09 04	703	0.2-	0.2+
1998 03 03	704	1.3+	1.4+	1998 03 29	704	0.1+	0.5+	1999 09 07	704	0.3-	0.2+
1998 03 03	704	0.1+	0.6-	1998 03 29	704	0.3-	0.9+	1999 09 07	704	0.4-	0.8+
1998 03 05	327	0.6-	0.1+	1998 03 29	704	0.2+	0.1-	1999 09 07	704	0.1+	0.1-
1998 03 05	327	0.8-	0.1-	1998 03 29	704	1.2+	1.2+	1999 09 07	704	0.8-	0.1+
1998 03 05	327	0.7-	0.3+	1998 04 17	327	0.2-	0.2+	1999 09 07	704	1.4-	0.1+
1998 03 20	704	1.1-	0.0	1998 04 17	327	0.1-	0.1+	1999 09 09	704	0.1+	0.4+
1998 03 20	704	1.0+	0.6-	1998 04 17	327	0.3-	1.1+	1999 09 09	704	0.4+	0.3+
1998 03 20	704	0.2+	0.9-	1998 04 24	327	0.3-	0.3+	1999 09 09	704	0.1-	0.1+
1998 03 20	704	0.1-	1.2-	1998 04 24	327	0.1-	0.4+	1999 09 09	704	0.1-	0.3+
1998 03 20	704	0.0	0.9-	1998 04 24	327	0.2-	0.3+	1999 09 09	704	0.3+	0.4-
1998 03 20	327	0.4-	0.0	1999 05 21	704	0.7+	1.1-	1999 09 13	704	1.5+	0.5-
1998 03 20	327	0.3+	0.3+	1999 05 21	704	0.2+	1.6-	1999 09 13	704	0.4+	0.6+
1998 03 20	327	0.0	0.1+	1999 05 21	704	0.7-	1.3-	1999 09 13	704	0.3-	1.4+
1998 03 22	704	1.4+	0.3-	1999 05 21	704	0.6-	1.8+	1999 09 13	704	0.5+	0.1-
1998 03 22	704	0.2+	0.4-	1999 05 21	704	(2.7-	1.6-)	1999 09 13	704	0.3+	1.3+

1998 EC₉ = 1999 RA₁₈₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	49.96083	(2000.0)		P		Q	
<i>n</i>	0.24203367	ω	176.02081	-0.13025937		+0.98541147	
<i>a</i>	2.5500705	Ω	86.47043	-0.91266738		-0.07600816	
<i>e</i>	0.2564232	<i>i</i>	6.30020	-0.38738967		-0.15227278	
<i>P</i>	4.07	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1991 10 02	691	0.2-	0.3+	1998 03 05	327	0.3+	0.1+	1998 03 16	411	1.0-	0.0
1991 10 02	691	0.1+	0.1-	1998 03 05	327	0.8-	0.3+	1998 03 16	411	0.3-	0.0
1991 10 02	691	0.0	0.2-	1998 03 05	327	0.4-	0.2-	1998 03 19	327	0.2+	0.7-
1998 02 27	566	0.4-	0.2+	1998 03 08	327	0.6+	0.1+	1998 03 19	327	0.2+	0.2-
1998 02 27	566	0.3+	0.2+	1998 03 08	327	1.3+	0.1-	1998 03 19	327	0.1+	0.2+
1998 02 27	566	0.4+	0.2+	1998 03 08	327	1.5+	0.1-	1999 09 09	704	0.3-	0.4-
1998 03 02	327	0.3+	0.3-	1998 03 08	327	0.1+	0.7+	1999 09 09	704	0.4-	0.0
1998 03 02	327	0.1+	0.5-	1998 03 08	327	0.1-	0.4-	1999 09 09	704	0.2-	0.1+
1998 03 02	327	1.3+	0.9-	1998 03 08	327	0.0	0.3-	1999 09 09	704	0.2+	0.4+
1998 03 04	704	(2.6-	0.1+)	1998 03 14	327	0.7+	0.2+	1999 09 09	704	1.1+	0.3+
1998 03 04	704	1.2-	0.1+	1998 03 14	327	0.3-	0.2+	1999 09 13	704	0.1+	0.3+
1998 03 04	704	2.0-	0.3-	1998 03 14	327	0.3-	0.2+	1999 09 13	704	0.4-	0.4-
1998 03 04	704	(3.6-	2.1-)	1998 03 15	411	0.3-	0.7+	1999 09 13	704	0.1+	0.2-
1998 03 04	704	(2.1-	0.4-)	1998 03 15	411	0.3-	0.5+	1999 09 13	704	0.3-	0.2-

1998 EF₉ = 1999 NL₄₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	94.08911	(2000.0)		P		Q	
<i>n</i>	0.26053249	ω	256.10313	-0.87177035		-0.34772265	
<i>a</i>	2.4278851	Ω	262.63630	+0.45992314		-0.82355906	
<i>e</i>	0.2960220	<i>i</i>	20.36421	-0.16878141		-0.44815113	
<i>P</i>	3.78	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1997 12 28	566	0.8+	0.1-	1998 03 11	327	0.4-	0.1-	1999 06 15	704	1.8+	0.7-
1997 12 28	566	0.7-	0.1-	1998 03 13	327	0.1+	0.2+	1999 06 15	704	0.1+	0.3-
1997 12 28	566	0.5+	0.0	1998 03 13	327	0.2-	0.1+	1999 07 13	704	0.2-	0.1+
1997 12 28	566	0.4-	0.2+	1998 03 13	327	0.2-	0.1-	1999 07 13	704	0.3+	0.3+
1997 12 28	566	0.8+	0.4-	1998 03 13	327	0.1+	1.0-	1999 07 13	704	0.1+	0.3+
1997 12 28	566	0.3-	0.3+	1998 03 21	327	0.5+	0.1-	1999 07 13	704	0.6-	0.5+
1998 03 07	327	0.3+	0.2-	1998 03 21	327	0.7+	0.2-	1999 07 19	704	0.6+	0.2-
1998 03 07	327	0.9-	0.4+	1998 03 21	327	0.3+	0.0	1999 07 19	704	0.3-	0.2-
1998 03 07	327	1.1-	0.4+	1998 03 21	327	0.2+	0.2-	1999 07 19	704	0.4+	0.0
1998 03 07	327	0.3-	0.4-	1999 06 15	704	0.1-	0.4-	1999 07 19	704	1.7-	0.5-
1998 03 11	327	0.1+	0.4-	1999 06 15	704	0.1+	0.0				
1998 03 11	327	0.5-	0.0	1999 06 15	704	0.4-	0.2+				

1998 EB₁₀ = 1999 RR₁₀₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	16.55939	(2000.0)		P		Q	
<i>n</i>	0.28104951	ω	16.64065	+0.62872253		+0.77445582	
<i>a</i>	2.3082393	Ω	292.37159	-0.72182829		+0.54765086	
<i>e</i>	0.2265347	<i>i</i>	4.35288	-0.28926094		+0.31669656	
<i>P</i>	3.51	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 01	327	0.1-	0.4+	1998 03 08	327	0.2+	0.3-	1999 09 08	704	0.3+	0.1-
1998 03 01	327	0.4+	0.8+	1998 03 08	327	0.4+	0.2-	1999 09 08	704	0.1+	0.1-
1998 03 01	327	0.1-	0.3-	1999 07 23	704	0.6+	0.8-	1999 09 08	704	0.1+	0.0
1998 03 03	704	(2.4+	1.4+)	1999 07 23	704	0.1-	0.1-	1999 09 08	704	0.3-	0.0
1998 03 03	704	0.4-	0.2-	1999 07 23	704	0.3-	0.1-	1999 09 09	704	0.0	0.2-
1998 03 03	704	0.5+	0.1-	1999 08 22	699	0.4+	0.2+	1999 09 09	704	0.5-	0.3+
1998 03 03	704	0.3-	0.5+	1999 08 22	699	0.1-	0.5+	1999 09 09	704	0.2-	0.2+
1998 03 03	704	(5.7-	1.0-)	1999 08 22	699	0.5+	0.4+	1999 09 09	704	0.0	0.2+
1998 03 04	704	(4.0-	0.2-)	1999 09 04	703	0.6-	0.3-	1999 09 09	704	0.1+	0.6+
1998 03 04	704	(2.9-	0.1-)	1999 09 04	703	0.2-	0.1-	1999 09 16	704	0.0	0.5-
1998 03 04	704	(3.0-	0.2-)	1999 09 04	703	0.6-	0.2-	1999 09 16	704	0.8+	0.4-
1998 03 04	704	0.9-	1.6-	1999 09 04	703	1.2-	0.0	1999 09 16	704	0.3+	0.3-
1998 03 08	327	0.1-	0.4+	1999 09 08	704	0.8+	1.2+	1999 09 16	704	0.4+	1.0-

1998 EM₁₀ = 1999 RQ₉₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	102.40934	(2000.0)		P		Q	
<i>n</i>	0.28848585	ω	217.62617	-0.63217216		+0.77439770	
<i>a</i>	2.2684004	Ω	13.22919	-0.68067924		-0.53912967	
<i>e</i>	0.1620237	<i>i</i>	6.47777	-0.37018122		-0.33113048	
<i>P</i>	3.42	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1996 10 18	566	0.3+	0.0	1998 03 02	809	1.1-	0.2-	1998 03 29	704	1.2-	0.6-
1996 10 18	566	0.1-	0.3-	1998 03 02	809	0.4-	0.4+	1998 03 29	704	0.8-	1.0-
1996 10 18	566	0.1-	0.0	1998 03 20	704	0.0	0.1-	1998 03 29	704	0.4+	0.4-
1998 02 25	809	(2.7+	1.0+)	1998 03 20	704	0.5+	0.2-	1998 03 29	704	0.5-	0.3+
1998 02 25	809	1.7+	0.8+	1998 03 20	704	0.4+	0.0	1999 09 07	704	0.4-	0.6+
1998 02 25	809	(2.2+	2.5+)	1998 03 20	704	0.1+	0.7-	1999 09 07	704	0.6-	0.0
1998 02 25	566	0.0	0.4-	1998 03 20	704	0.1-	0.2-	1999 09 07	704	1.0+	1.2-
1998 02 25	566	0.2+	0.4-	1998 03 22	704	0.1-	0.2+	1999 09 14	704	0.3-	0.5+
1998 02 25	566	0.4-	0.3-	1998 03 22	704	0.2+	0.4-	1999 09 14	704	0.0	0.4+
1998 02 26	809	1.8+	1.3+	1998 03 22	704	0.2+	0.1+	1999 09 14	704	0.6+	0.3+
1998 02 26	809	(2.3+	1.6+)	1998 03 22	704	0.3-	0.6-	1999 09 14	704	0.6+	0.3-
1998 02 26	809	(3.9+	1.0+)	1998 03 22	704	1.4+	0.6-	1999 09 14	704	0.5+	0.6-

1998 03 01	809	1.6−	0.1+	1998 03 26	704	0.5+	0.2+	1999 09 14	703	0.5−	0.8+
1998 03 01	809	0.8−	0.3−	1998 03 26	704	0.6+	0.4+	1999 09 14	703	0.3+	0.3+
1998 03 01	809	(2.1−	0.1+)	1998 03 26	704	1.5−	1.7+	1999 09 14	703	0.3−	0.5−
1998 03 02	809	0.4+	0.4+	1998 03 29	704	0.1+	0.2−	1999 09 14	703	0.5−	1.0−

1998 EJ₁₁

Id. E. Bowell (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	55.95352		(2000.0)	P		Q	
<i>n</i>	0.29002788	ω	160.15391	+0.02090353		+0.99407078	
<i>a</i>	2.2603528	Ω	110.92489	−0.93201860		+0.05799955	
<i>e</i>	0.0715366	<i>i</i>	6.55985	−0.36180709		−0.09197462	
<i>P</i>	3.40	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1995 05 29	691	0.1+	0.4+	1998 03 24	704	0.7−	1.6−	1999 09 08	703	0.3−	0.3−
1998 02 25	566	0.5+	0.3−	1998 03 25	704	0.2−	0.8+	1999 09 08	703	0.7−	0.3+
1998 02 25	566	0.1+	0.1+	1998 03 25	704	0.6+	0.5+	1999 09 08	703	0.6−	0.6+
1998 02 25	566	0.2+	0.1+	1998 03 25	704	0.6−	0.5+	1999 09 13	704	0.5−	0.4+
1998 03 01	809	(0.3+	5.1+)	1998 03 25	704	1.4+	0.5+	1999 09 13	704	0.1−	0.8−
1998 03 01	809	(0.1+	5.5+)	1998 03 25	704	0.2−	0.1+	1999 09 13	704	0.1+	0.2−
1998 03 01	809	(0.2+	5.7+)	1998 08 12	699	0.3−	0.8−	1999 09 13	704	0.1−	0.4+
1998 03 02	809	(0.6−	2.9+)	1999 08 12	699	0.7+	0.1−	1999 09 14	704	0.2+	1.0+
1998 03 02	809	(0.5−	2.8+)	1999 08 12	699	0.3+	0.2−	1999 09 14	704	1.9+	0.2−
1998 03 02	809	1.0−	1.9+	1999 09 07	699	0.4+	0.2−	1999 09 14	704	(2.6+	0.5−)
1998 03 24	704	0.3+	0.7−	1999 09 07	699	0.5+	0.4−	1999 09 14	704	(2.6+	1.4−)
1998 03 24	704	0.7+	0.8−	1999 09 07	699	0.6−	0.3+				
1998 03 24	704	0.9−	1.3−	1999 09 08	703	0.9−	0.1−				

1998 ET₁₁ = 1999 RA₁₄₃

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	21.50472		(2000.0)	P		Q	
<i>n</i>	0.28430532	ω	288.10873	+0.66571471		+0.74438279	
<i>a</i>	2.2905831	Ω	23.87500	−0.62665177		+0.59562308	
<i>e</i>	0.2083171	<i>i</i>	7.40103	−0.40513145		+0.30187316	
<i>P</i>	3.47	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 26	566	(4.3−	0.2−)	1998 03 25	704	0.0	0.1+	1999 09 07	704	0.1+	0.1+
1998 02 26	566	(4.2−	0.2+)	1998 03 25	704	0.6−	0.1−	1999 09 07	704	0.2−	0.1+
1998 02 26	566	(4.4−	0.1−)	1998 03 25	704	1.1−	0.4+	1999 09 07	704	0.2−	0.1+
1998 03 01	809	0.0	1.2+	1998 03 26	704	0.3+	0.7−	1999 09 07	704	0.0	0.2−
1998 03 01	809	0.3−	0.3+	1998 03 26	704	0.1−	0.0	1999 09 07	704	0.3−	0.2+
1998 03 01	809	0.2+	0.9+	1998 03 26	704	0.0	1.0+	1999 09 09	704	0.3+	0.0
1998 03 02	809	0.9−	0.4+	1998 03 26	566	0.4+	0.1−	1999 09 09	704	0.3+	0.1−
1998 03 02	809	0.8+	1.2−	1998 03 26	566	0.0	0.1−	1999 09 09	704	0.1−	0.3−
1998 03 02	809	0.1+	1.1−	1998 03 26	566	0.9−	0.9−	1999 09 09	704	0.4+	0.5+
1998 03 24	704	0.8+	0.1+	1998 04 02	809	(3.8+	3.4+)	1999 09 09	704	0.2+	0.7+
1998 03 24	704	0.8+	0.2+	1998 04 02	809	(3.0+	3.7+)	1999 09 14	704	0.2−	0.1+
1998 03 24	704	0.0	0.3−	1998 04 02	809	(3.2+	3.1+)	1999 09 14	704	0.5+	1.1−
1998 03 24	704	0.4+	0.4−	1999 09 05	699	0.4+	0.1+	1999 09 14	704	0.9−	0.2−
1998 03 25	704	0.0	0.0	1999 09 05	699	0.3+	0.3−	1999 09 14	704	0.1−	0.1+
1998 03 25	704	0.2−	0.0	1999 09 05	699	(3.2+	1.0−)	1999 09 14	704	0.3−	0.0

1998 EY₁₁ = 1999 RG₉₆

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	46.03629		(2000.0)	P		Q	
<i>n</i>	0.26969159	ω	267.44430	+0.26121677		+0.96417089	
<i>a</i>	2.3725996	Ω	17.90566	−0.81502647		+0.24598252	
<i>e</i>	0.1985908	<i>i</i>	8.65440	−0.51720176		+0.09933327	
<i>P</i>	3.65	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 26	566	1.2−	0.5−	1998 03 25	704	0.2+	1.5+	1999 09 07	704	0.2+	0.4−
1998 02 26	566	0.7−	0.3+	1998 03 25	704	0.1+	0.4+	1999 09 07	704	0.2−	0.4−
1998 02 26	566	1.4−	0.2−	1998 03 25	704	0.1+	0.6+	1999 09 07	704	0.8−	0.7−
1998 03 01	809	1.6+	0.5−	1998 03 25	704	0.8−	0.8+	1999 09 07	704	0.2−	0.3−
1998 03 01	809	1.2+	0.4−	1998 03 26	704	0.0	0.1+	1999 09 07	704	0.4−	0.2−
1998 03 01	809	1.6+	0.0	1998 03 26	704	1.4−	0.3−	1999 09 08	699	0.3−	0.6+
1998 03 02	809	(2.6+	0.8−)	1998 03 26	704	(2.8−	0.5+)	1999 09 08	699	0.4−	0.3+
1998 03 02	809	1.2+	0.5−	1998 04 02	809	(2.7+	4.5+)	1999 09 08	699	0.3−	0.9+
1998 03 02	809	1.6+	1.2−	1998 04 02	809	(2.1+	4.5+)	1999 09 14	704	0.3+	0.7+
1998 03 24	704	0.5−	0.2−	1998 04 02	809	(1.4+	3.9+)	1999 09 14	704	0.2+	0.3+
1998 03 24	704	0.2−	0.9−	1998 04 18	704	0.1−	0.7+	1999 09 14	704	0.1+	0.2+
1998 03 24	704	0.9+	0.4−	1998 04 18	704	0.0	0.8+	1999 09 14	704	0.3+	0.4+
1998 03 24	704	0.3+	0.1−	1998 04 18	704	0.1+	0.7+	1999 09 14	704	0.1+	0.2+
1998 03 25	704	0.4−	0.3+	1998 04 18	704	1.5−	1.3+				

1998 ED₁₂ = 1999 RN₁₇₃

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	56.28207		(2000.0)	P		Q	
<i>n</i>	0.28333527	ω	233.20824	+0.02511206		+0.99685198	
<i>a</i>	2.2958083	Ω	38.44027	−0.87434372		+0.05837203	
<i>e</i>	0.1027552	<i>i</i>	6.94775	−0.48465703		−0.05365486	
<i>P</i>	3.48	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 26	566	0.2+	0.9−	1998 03 25	704	0.4−	1.0+	1999 09 07	699	0.3−	0.2+
1998 02 26	566	0.1+	1.4−	1998 03 25	704	0.1+	1.2+	1999 09 07	699	0.2−	0.1+
1998 02 26	566	0.2−	1.1−	1998 03 25	704	1.9+	0.1+	1999 09 09	704	0.1+	0.0
1998 03 01	809	0.2+	0.2+	1998 03 25	704	0.6−	0.8+	1999 09 09	704	0.2+	0.3+
1998 03 01	809	0.2+	0.7+	1998 03 26	566	0.2+	0.7−	1999 09 09	704	0.8−	0.2+
1998 03 01	809	0.8+	0.7+	1998 03 26	566	0.0	0.8−	1999 09 09	704	0.2+	0.2+
1998 03 02	809	0.8−	0.9+	1998 03 26	566	0.1+	0.3−	1999 09 09	704	0.5+	0.4−
1998 03 02	809	0.5−	0.6+	1998 04 02	809	(0.8+	3.9+)	1999 09 10	704	0.2+	0.1+
1998 03 02	809	0.0	1.0+	1998 04 02	809	(0.5+	3.7+)	1999 09 10	704	0.4−	0.0
1998 03 24	704	0.2+	0.7−	1998 04 02	809	(0.7+	3.0+)	1999 09 10	704	0.1+	0.3−
1998 03 24	704	0.2−	0.8−	1998 04 03	809	(0.4+	3.4+)	1999 09 13	704	0.4+	0.1−
1998 03 24	704	0.2+	0.6−	1998 04 03	809	(0.3−	3.0+)	1999 09 13	704	0.4+	1.0−
1998 03 24	704	1.5−	0.1+	1998 04 03	809	(0.1+	2.4+)	1999 09 13	704	0.3+	0.0
1998 03 25	704	0.1−	0.3−	1999 09 07	699	0.8−	0.5+	1999 09 13	704	0.1+	0.1+

1998 EV₁₂ = 1999 RC₁₇₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	82.98425		(2000.0)	P		Q	
<i>n</i>	0.26120897	ω	126.39972	−0.49557839		+0.86710778	
<i>a</i>	2.4236914	Ω	113.81900	−0.81344788		−0.44306825	
<i>e</i>	0.1551812	<i>i</i>	3.14943	−0.30447430		−0.22762824	
<i>P</i>	3.77	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 23	566	0.4+	0.5−	1998 03 22	704	0.2−	0.3+	1999 09 07	704	0.4−	0.3−
1998 02 23	566	0.5+	0.7−	1998 03 22	704	0.7−	0.4+	1999 09 07	704	0.2−	0.2−
1998 02 23	566	0.5+	0.4−	1998 03 22	704	1.1−	0.5+	1999 09 07	704	0.5−	0.0
1998 03 01	809	0.7−	0.1+	1998 03 26	704	0.2+	0.4+	1999 09 07	704	0.5−	0.4−
1998 03 01	809	0.6−	0.7−	1998 03 26	704	0.2−	1.2+	1999 09 07	704	0.4−	0.6−
1998 03 01	809	0.3−	0.7−	1998 03 26	704	0.7+	0.5+	1999 09 09	704	0.2+	0.1−
1998 03 02	809	(0.5+	2.4+)	1998 03 29	704	0.3+	0.0	1999 09 09	704	0.5−	0.1+
1998 03 02	809	0.0	1.8+	1998 03 29	704	0.7+	0.7+	1999 09 09	704	0.5−	0.6−
1998 03 02	809	(0.6+	2.2+)	1998 03 29	704	0.5−	0.8−	1999 09 09	704	0.2+	0.9+
1998 03 20	704	0.0	0.4−	1998 03 29	704	0.4+	0.6+	1999 09 09	704	0.7+	0.9+
1998 03 20	704	0.4+	0.8+	1998 03 29	704	0.4+	1.3−	1999 09 14	704	0.2+	0.1+
1998 03 20	704	0.1+	0.8−	1998 04 19	704	0.5+	0.3+	1999 09 14	704	0.2+	0.3−
1998 03 20	704	0.2−	0.6−	1998 04 19	704	0.5+	0.2−	1999 09 14	704	0.1+	0.0
1998 03 20	704	0.0	0.2−	1998 04 19	704	1.1−	1.0−	1999 09 14	704	0.6+	0.2+
1998 03 22	704	0.5+	0.5+	1998 04 19	704	1.0−	0.2−	1999 09 14	704	0.1−	0.2+
1998 03 22	704	0.2−	0.2+	1998 04 19	704	0.7+	0.2−				

1999 SEPT. 28

M.P.C. 35951

1998 ED₁₄ = 1978 GA₄ = 1987 RH = 1999 RP₁₆₇

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Williams

<i>M</i>	47.34753		(2000.0)		P		Q
<i>n</i>	0.24354193	ω	211.91974		+0.05356598		+0.99657022
<i>a</i>	2.5395312	Ω	61.21978		-0.90036407		+0.07551775
<i>e</i>	0.1798069	<i>i</i>	4.12684		-0.43182777		-0.03383574
<i>P</i>	4.05	<i>H</i>	14.4		<i>G</i> 0.15		<i>U</i> 1

Residuals in seconds of arc

1978 04 11	095	0.2-	0.0	1998 03 02	809	(2.8+	3.4+)	1998 04 19	704	0.3-	0.0
1987 09 01	809	0.7-	0.7+	1998 03 02	809	(3.0+	2.5+)	1998 04 19	704	0.7-	0.1+
1987 09 01	809	0.4-	0.4+	1998 03 02	809	(2.8+	3.0+)	1999 08 12	699	0.1+	0.3+
1987 09 01	809	0.2+	0.6+	1998 03 24	704	0.2-	0.4+	1999 08 12	699	0.0	0.4+
1987 09 01	809	0.7+	2.1+	1998 03 24	704	0.9+	0.1-	1999 08 12	699	0.1-	0.3+
1991 09 30	691	0.1-	0.1-	1998 03 24	704	0.4+	0.3+	1999 09 08	704	0.4+	0.1+
1991 09 30	691	0.1-	0.1-	1998 03 24	704	0.3-	0.1+	1999 09 08	704	0.6+	0.4+
1991 09 30	691	0.3-	0.0	1998 03 24	566	0.1-	0.5+	1999 09 08	704	0.3+	0.2+
1995 08 28	809	1.6-	1.4+	1998 03 24	566	0.2-	0.1+	1999 09 09	704	0.0	0.9+
1995 08 29	809	(1.3-	2.3+)	1998 03 24	566	0.2-	0.4+	1999 09 09	704	0.4-	0.1-
1995 08 31	809	0.7+	0.7-	1998 03 25	704	0.2-	0.0	1999 09 09	704	0.1-	0.5-
1995 09 01	809	0.3-	1.2-	1998 03 25	704	0.2-	0.8+	1999 09 09	704	0.2-	1.0-
1998 02 24	566	1.0+	0.2+	1998 03 25	704	0.9-	0.4+	1999 09 09	704	(2.1-	2.2-)
1998 02 24	566	1.4+	0.3+	1998 03 25	704	0.4-	0.1+	1999 09 13	704	0.0	0.1+
1998 02 24	566	1.1+	0.4+	1998 03 25	704	0.1+	0.6+	1999 09 13	704	0.6-	0.5+
1998 03 01	809	(2.5+	0.6+)	1998 04 19	704	0.6-	0.1-	1999 09 13	704	0.3-	0.5+
1998 03 01	809	(2.2+	1.4+)	1998 04 19	704	0.7+	0.0	1999 09 13	704	0.2-	0.4+
1998 03 01	809	1.9+	0.7+	1998 04 19	704	0.4-	0.2+				

1998 FK₁

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Williams

<i>M</i>	164.73297		(2000.0)		P		Q
<i>n</i>	0.29592666	ω	183.09046		-0.97969979		-0.19923216
<i>a</i>	2.2302146	Ω	345.36021		+0.18576388		-0.86050486
<i>e</i>	0.0811121	<i>i</i>	5.04957		+0.07536647		-0.46886878
<i>P</i>	3.33	<i>H</i>	16.0		<i>G</i> 0.15		<i>U</i> 4

Residuals in seconds of arc

1998 03 20	704	1.5+	0.0	1998 03 29	704	0.1+	0.3+	1998 04 20	704	0.4-	1.0+
1998 03 20	704	0.1-	0.2-	1998 03 29	704	0.6+	0.8+	1998 04 20	704	1.0-	0.0
1998 03 20	704	1.0-	0.8-	1998 03 29	704	0.6+	0.9+	1998 04 20	704	1.0-	0.8+
1998 03 20	704	0.8-	0.2+	1998 03 29	704	0.3+	0.4+	1998 04 20	704	(1.9-	2.1-)
1998 03 20	704	0.6-	0.0	1998 03 29	704	0.7-	0.7+	1998 04 27	426	0.1+	0.0
1998 03 20	426	1.0-	0.1-	1998 03 30	426	0.1-	0.3-	1998 04 27	426	0.4-	0.4-
1998 03 20	426	0.2-	0.1-	1998 03 30	426	0.2-	1.2-	1998 04 27	426	0.4-	0.2-
1998 03 20	426	0.3-	0.2-	1998 03 30	426	0.1+	0.2-	1998 05 16	426	0.0	0.5-
1998 03 21	426	0.0	0.2-	1998 04 01	704	0.8+	0.2+	1998 05 16	426	0.9+	0.1+
1998 03 21	426	0.0	0.1+	1998 04 01	704	0.8+	0.0	1998 05 16	426	0.0	0.0
1998 03 21	426	0.2+	0.5-	1998 04 01	704	0.1-	0.1-	1998 05 20	426	0.4+	0.5+
1998 03 22	704	1.1+	0.4-	1998 04 01	704	0.9+	0.5-	1998 05 20	426	0.5-	0.2-
1998 03 22	704	0.6-	0.1+	1998 04 01	704	0.2+	0.9-	1998 05 20	426	0.1+	0.4-
1998 03 22	704	0.1-	0.0	1998 04 05	426	0.8+	0.0	1999 09 04	426	0.0	0.3+
1998 03 22	704	0.2+	1.2-	1998 04 05	426	0.7+	0.4-	1999 09 04	426	0.0	0.1+
1998 03 22	704	0.2-	0.0	1998 04 05	426	0.1+	0.0	1999 09 04	426	0.9-	0.0
1998 03 22	704	(0.1+	4.1-)	1998 04 17	426	0.1-	0.5+	1999 09 07	704	0.4+	1.0-
1998 03 22	704	0.1-	0.7+	1998 04 17	426	0.6+	0.4-	1999 09 07	704	0.4-	0.4-
1998 03 22	704	(2.7-	1.0+)	1998 04 18	704	0.5+	0.5+	1999 09 07	704	0.5+	0.2+
1998 03 28	704	0.4+	0.3-	1998 04 18	704	0.5-	1.0+	1999 09 07	704	0.4-	0.8+
1998 03 28	704	0.0	0.1+	1998 04 18	704	0.5-	0.3-	1999 09 07	704	0.4+	0.0
1998 03 28	704	1.0-	0.3+	1998 04 18	704	0.2-	0.2+	1999 09 09	426	0.5-	0.5+
1998 03 28	704	0.2-	0.6+	1998 04 19	704	0.6-	1.5-	1999 09 09	426	0.1-	0.4-
1998 03 28	704	0.3-	0.2+	1998 04 19	704	0.4-	0.2-	1999 09 14	704	0.3+	0.3+
1998 03 28	426	0.1-	0.3-	1998 04 19	704	0.9+	0.9+	1999 09 14	704	0.6-	0.1-
1998 03 28	426	0.2-	0.0	1998 04 19	704	(0.9-	2.2-)	1999 09 14	704	1.5+	0.8-
1998 03 28	426	0.2+	0.1-	1998 04 20	704	0.2+	0.5+				

1998 FB₅ = 1999 RV₂₀₈

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Williams

<i>M</i>	250.17691		(2000.0)		P		Q
<i>n</i>	0.36005123	ω	275.84662		-0.35239258		-0.92990714
<i>a</i>	1.9568604	Ω	196.06122		+0.93582590		-0.35098888
<i>e</i>	0.0942738	<i>i</i>	22.37555		-0.00702519		-0.10990682
<i>P</i>	2.74	<i>H</i>	15.8		<i>G</i> 0.15		<i>U</i> 4

Residuals in seconds of arc

1998 02 25	566	0.8-	0.1-	1998 03 28	704	0.6+	0.0	1998 04 20	704	0.1-	0.2+
1998 02 25	566	0.0	0.9-	1998 03 28	704	0.1+	0.9-	1998 04 20	704	(1.5-	2.5+)
1998 02 25	566	0.8+	0.5-	1998 03 28	704	0.2+	0.1-	1999 09 08	704	1.0-	0.2+
1998 03 20	704	1.2-	0.3+	1998 03 28	704	0.1+	0.2-	1999 09 08	704	0.3+	0.2-
1998 03 20	704	0.3-	0.7+	1998 03 29	704	0.3-	0.1+	1999 09 08	704	0.6+	0.7+
1998 03 20	704	0.5+	0.8+	1998 03 29	704	0.5-	0.8-	1999 09 08	704	0.0	0.3-
1998 03 20	704	(0.2-	3.6+)	1998 03 29	704	0.2-	1.4+	1999 09 08	704	0.7+	0.4-
1998 03 20	704	0.5+	1.2+	1998 03 29	704	(2.2+	2.8-)	1999 09 18	704	0.7+	0.7-
1998 03 25	704	(0.6+	2.6+)	1998 03 29	704	0.4+	0.1-	1999 09 18	704	0.8+	0.5-
1998 03 25	704	0.4-	0.4-	1998 04 01	704	0.7+	0.3+	1999 09 18	704	0.4-	0.3+
1998 03 25	704	0.6-	0.8+	1998 04 01	704	0.4+	0.2+	1999 09 18	704	0.6+	0.1+
1998 03 25	704	0.0	0.8+	1998 04 01	704	0.2-	0.6+	1999 09 18	704	0.6+	0.2-
1998 03 25	704	0.2+	1.0+	1998 04 01	704	0.2+	0.1-	1999 09 18	703	0.3-	0.1+
1998 03 26	566	0.1+	1.0-	1998 04 01	704	0.2+	0.2+	1999 09 18	703	0.8-	0.6+
1998 03 26	566	0.0	1.1-	1998 04 20	704	0.0	0.6-	1999 09 18	703	1.4-	0.1-
1998 03 26	566	0.3-	1.0-	1998 04 20	704	0.0	1.0-	1999 09 18	703	0.0	0.5+
1998 03 28	704	0.7-	0.3-	1998 04 20	704	0.3+	0.3+				

1998 FQ₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	67.90387		(2000.0)		P		Q
<i>n</i>	0.25771572	ω	234.97255		+0.09734000		+0.98681726
<i>a</i>	2.4455438	Ω	41.21765		-0.83723185		+0.15143101
<i>e</i>	0.2067988	<i>i</i>	11.31594		-0.53811500		-0.05709945
<i>P</i>	3.82	<i>H</i>	14.9		<i>G</i> 0.15		<i>U</i> 4

Residuals in seconds of arc

1998 03 23	118	0.5+	0.1-	1998 03 25	118	0.4-	0.2-	1998 05 15	118	0.2-	0.9-
1998 03 23	118	0.5+	0.0	1998 03 25	118	0.3-	0.3-	1998 05 15	118	0.2-	1.1-
1998 03 23	118	0.3+	0.0	1998 03 25	118	0.3-	0.3-	1998 05 15	118	0.3-	1.2-
1998 03 23	118	0.2-	0.1+	1998 04 14	118	0.3-	0.6-	1998 05 16	704	(1.3-	5.2-)
1998 03 23	118	0.2-	0.4-	1998 04 14	118	0.5-	0.1-	1998 05 16	704	1.2+	1.0-
1998 03 23	118	0.2-	0.4-	1998 04 14	118	0.2-	0.7-	1998 05 16	704	0.1+	0.0
1998 03 24	704	0.4-	0.4+	1998 04 15	118	0.6-	0.6-	1998 05 16	704	1.4+	1.2+
1998 03 24	704	0.9-	0.1+	1998 04 15	118	0.5-	0.5-	1998 05 16	704	0.7-	0.2-
1998 03 24	704	0.1+	0.3-	1998 04 20	118	0.4-	0.2+	1998 05 26	118	0.5-	0.5-
1998 03 24	704	0.7-	0.4+	1998 04 20	118	0.5-	0.3+	1998 05 26	118	0.3-	0.1-
1998 03 24	704	0.8-	0.2+	1998 04 22	704	0.2-	0.3-	1999 09 11	118	0.1+	0.3+
1998 03 25	118	0.3+	0.4-	1998 04 22	704	0.6+	0.3+	1999 09 11	118	0.0	0.2+
1998 03 25	118	0.0	0.4-	1998 04 22	704	0.3+	1.3+	1999 09 11	118	0.1-	0.3+
1998 03 25	118	0.4+	0.4-	1998 04 22	704	0.8+	0.8+	1999 09 12	118	0.7+	0.2-
1998 03 25	704	0.1+	0.4+	1998 04 22	704	0.8+	0.0	1999 09 12	118	0.0	0.4-
1998 03 25	704	0.2-	0.5+	1998 04 26	118	1.6+	1.6+	1999 09 13	118	0.2-	0.5-
1998 03 25	704	0.1-	0.3-	1998 04 26	118	1.8+	1.2+	1999 09 13	118	0.1+	0.5-

Residuals in seconds of arc

1996 10 23	327	1.0−	0.9−	1998 03 24	910	1.1+	0.7−	1998 04 01	704	0.2+	0.2−
1996 10 23	327	0.5+	0.4+	1998 03 24	910	1.2+	0.7−	1998 04 19	704	0.5+	0.2+
1996 10 23	327	0.8−	0.6−	1998 03 25	910	1.0+	0.9−	1998 04 19	704	0.3+	0.1+
1996 11 02	327	0.1−	0.4+	1998 03 25	910	0.9+	1.1−	1998 04 19	704	0.5−	0.2+
1996 11 02	327	0.5+	0.1+	1998 03 25	910	0.9+	1.0−	1998 04 19	704	0.1+	0.2−
1996 11 02	327	0.9+	0.5+	1998 03 26	910	0.9+	1.1−	1998 04 19	704	0.3−	0.5−
1998 03 04	704	(2.7−	0.8−)	1998 03 28	704	0.5−	0.7−	1998 04 24	699	0.3+	0.4−
1998 03 04	704	(3.0−	0.3+)	1998 03 28	704	0.1−	0.2−	1998 04 24	699	0.2−	0.2−
1998 03 04	704	(2.8−	0.4+)	1998 03 28	704	0.6−	0.3−	1998 04 24	699	0.7−	0.1+
1998 03 04	704	(2.5−	0.1+)	1998 03 28	704	0.1−	0.8+	1998 05 02	699	0.3+	0.4+
1998 03 04	704	(3.6−	0.5−)	1998 03 28	704	0.2−	0.6+	1998 05 02	699	0.1+	0.3+
1998 03 20	704	0.3−	0.0	1998 03 29	704	0.6−	0.0	1998 05 02	699	0.1−	0.0
1998 03 20	704	0.1−	0.5−	1998 03 29	704	0.9−	1.1+	1999 09 07	704	0.6+	0.7−
1998 03 20	704	0.3+	0.3+	1998 03 29	704	0.6−	0.4+	1999 09 07	704	0.4+	0.0
1998 03 20	704	0.5−	0.0	1998 03 29	704	0.5−	0.4+	1999 09 07	704	0.7+	0.4−
1998 03 20	704	0.5−	0.9+	1998 03 29	704	0.0	0.6+	1999 09 07	704	0.2+	1.0−
1998 03 22	704	0.9+	0.3−	1998 04 01	704	0.0	0.6−	1999 09 09	704	0.2−	0.8+
1998 03 22	704	(3.9−	0.1+)	1998 04 01	704	0.4−	0.1+	1999 09 09	704	1.1+	0.8+
1998 03 22	704	0.2−	1.0+	1998 04 01	704	0.5−	0.2+	1999 09 09	704	1.6−	0.5+
1998 03 22	704	0.7−	0.7+	1998 04 01	704	0.3−	0.6+	1999 09 09	704	0.9−	0.4−

1998 FV_{10} = 1999 RW_{19}

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M	16.93408		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.28027562	ω	42.46822	+0.76437768	+0.64429325
a	2.3124863	Ω	277.40199	−0.59806678	+0.69414152
e	0.1022852	i	1.43060	−0.24092092	+0.32101988
P	3.52	H	14.9	G 0.15	U 4

Residuals in seconds of arc

1998 03 20	704	1.0−	0.3+	1998 04 01	704	0.4+	0.2−	1999 09 09	734	0.0	0.2+
1998 03 20	704	1.0−	0.1−	1998 04 01	704	0.4+	2.0−	1999 09 09	734	0.1+	1.0−
1998 03 20	704	0.5−	0.8+	1998 04 01	704	(1.2−	2.1−)	1999 09 09	734	0.3−	0.5+
1998 03 20	704	0.0	1.0−	1998 04 19	704	0.7+	0.1−	1999 09 09	704	0.3−	0.1−
1998 03 20	704	(2.7−	1.2+)	1998 04 19	704	0.6−	0.3−	1999 09 09	704	0.6−	0.7−
1998 03 22	704	0.2+	0.8+	1998 04 19	704	1.6−	0.4+	1999 09 09	704	0.1+	0.6−
1998 03 22	704	0.4+	1.4−	1998 04 19	704	(0.8−	2.1−)	1999 09 09	704	0.6−	0.3+
1998 03 22	704	0.6−	0.8−	1998 04 19	704	0.4−	1.8−	1999 09 09	704	0.1+	0.3−
1998 03 22	704	1.0−	1.6+	1998 04 20	704	0.6+	0.0	1999 09 10	734	0.4+	0.2−
1998 03 24	910	0.6+	0.3−	1998 04 20	704	0.2+	0.3+	1999 09 10	734	0.8+	0.2−
1998 03 25	910	0.8+	0.2+	1998 04 20	704	0.0	0.9+	1999 09 10	734	0.3+	0.2−
1998 03 25	910	0.8+	0.2−	1998 04 20	704	0.1−	0.9+	1999 09 11	699	0.4+	1.2+
1998 03 25	910	0.9+	0.3−	1998 04 20	704	0.7−	0.4+	1999 09 11	699	0.1+	1.2+
1998 03 25	910	1.1+	0.5−	1999 08 22	699	0.0	0.7+	1999 09 11	699	0.1+	1.7+
1998 03 26	910	1.2+	0.5−	1999 08 22	699	0.5−	0.5+	1999 09 14	704	0.1−	0.5−
1998 03 28	704	0.3+	0.8+	1999 08 22	699	0.0	0.1+	1999 09 14	704	0.0	0.8−
1998 03 28	704	1.2−	1.9+	1999 09 07	704	0.3−	0.1+	1999 09 14	704	0.4+	1.1−
1998 03 28	704	0.1+	0.4−	1999 09 07	704	0.5+	0.6−	1999 09 14	704	0.3+	1.3−
1998 03 28	704	0.1−	0.1+	1999 09 07	704	0.1−	0.3−	1999 09 14	704	0.4+	1.2−
1998 03 28	704	0.4+	0.5−	1999 09 07	704	0.1+	0.3+	1999 09 16	734	0.2+	0.2+
1998 03 29	704	0.9+	0.1−	1999 09 07	704	0.8−	0.5−	1999 09 16	734	0.3+	0.3+
1998 03 29	704	0.4+	0.5−	1999 09 08	704	0.4−	0.3+	1999 09 16	734	0.5+	0.1+
1998 03 29	704	0.7−	1.0+	1999 09 08	704	0.2+	0.0	1999 09 16	734	0.2+	0.3+
1998 03 29	704	0.5−	0.0	1999 09 08	704	0.2+	0.5+	1999 09 16	734	0.4+	0.4+
1998 03 29	704	(1.9−	2.3+)	1999 09 08	704	1.0−	0.0	1999 09 16	734	0.2+	0.2+
1998 04 01	704	0.2+	0.3−	1999 09 09	734	0.1−	0.1−				
1998 04 01	704	0.8−	0.1+	1999 09 09	734	0.8−	0.3+				

1998 FB_{11} = 1999 RX_{73}

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	104.26509		(2000.0)		P		Q	
n	0.21810712	ω	63.24041		−0.70498070		+0.70834240	
a	2.7333138	Ω	161.78634		−0.68428113		−0.66621483	
e	0.1210089	i	6.50338		−0.18644449		−0.23325702	
P	4.52	H	14.4		G	0.15	U	4

Residuals in seconds of arc

1998 03 25	910	0.2−	1.2+	1998 05 22	704	0.0	0.5−	1999 09 07	704	0.3−	0.1−
1998 03 25	910	0.2−	0.8+	1998 05 22	704	0.2−	0.5−	1999 09 07	704	0.1+	0.3+
1998 03 25	910	0.1−	1.1+	1998 05 22	704	0.6−	1.9−	1999 09 07	704	0.5+	0.0
1998 03 26	910	0.0	0.5+	1998 05 25	704	1.4−	1.7+	1999 09 07	704	0.1+	0.8+
1998 03 26	910	0.0	0.4+	1998 05 25	704	1.0−	0.5−	1999 09 09	704	1.1+	1.8+
1998 03 26	910	0.2−	0.4+	1998 05 25	704	0.5−	0.2+	1999 09 09	704	1.2−	0.2+
1998 04 23	704	1.1+	0.6−	1998 05 25	704	0.1+	1.3−	1999 09 09	704	0.8−	1.2−
1998 04 23	704	0.7+	0.6+	1998 06 16	704	1.7+	1.3−	1999 09 09	704	1.0−	0.6−
1998 04 23	704	0.2−	0.4+	1998 06 16	704	1.0+	0.5+	1999 09 09	704	(0.9−	2.2−)
1998 04 23	704	0.4+	0.2+	1998 06 16	704	0.4−	1.9−	1999 09 11	699	1.3+	0.1+
1998 04 24	704	0.5+	0.4+	1998 06 16	704	(7.0−	1.6−)	1999 09 11	699	0.2−	1.8+
1998 04 24	704	0.0	0.5+	1998 06 28	699	0.1+	0.1+	1999 09 11	699	0.5+	1.7+
1998 04 24	704	0.1+	0.4+	1998 06 28	699	0.7−	0.3+	1999 09 14	704	0.9−	0.4−
1998 05 05	699	0.4−	0.4+	1998 06 28	699	0.5−	0.3−	1999 09 14	704	0.1−	0.7−
1998 05 05	699	0.6+	0.7+	1999 09 03	691	0.3+	0.4−	1999 09 14	704	0.2−	0.4−
1998 05 05	699	1.1+	0.1−	1999 09 03	691	0.3+	0.4−	1999 09 14	704	0.1−	0.2−
1998 05 22	704	0.1−	0.1+	1999 09 03	691	0.4+	0.5−	1999 09 14	704	0.4−	0.3−
1998 05 22	704	0.6−	0.6−	1999 09 07	704	0.1−	0.3+				

1998 FW_{14} = 1999 RZ_{193}

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	40.87839		(2000.0)		P		Q				
n	0.27230857	ω	89.32883		+0.41221624		+0.90990904				
a	2.3573741	Ω	205.17430		−0.87320973		+0.38006982				
e	0.1070866	i	6.24821		−0.25996641		+0.16616999				
P	3.62	H	15.0		G	0.15	U	3			
Residuals in seconds of arc											
1992 10 23	010	0.2−	0.0	1998 03 28	704	0.0	0.4+	1998 04 20	704	0.4+	0.3+
1992 10 23	010	0.0	0.6+	1998 03 28	704	0.5−	0.2+	1998 04 20	704	1.2−	1.9+
1998 03 20	704	0.3+	0.2+	1998 03 28	704	0.1−	0.9−	1998 04 20	704	(3.1−	0.7+)
1998 03 20	704	0.5−	0.8−	1998 03 28	704	(2.7−	1.6−)	1999 07 23	704	0.3−	0.2−
1998 03 20	704	1.0+	0.2+	1998 03 28	704	0.8−	0.8−	1999 07 23	704	0.0	0.0
1998 03 20	704	0.8+	0.4−	1998 03 29	704	1.1−	0.2+	1999 07 23	704	0.3+	0.4+
1998 03 20	704	0.4−	0.1−	1998 03 29	704	0.5−	0.1+	1999 07 23	704	0.1−	0.1−
1998 03 22	704	0.4−	0.3+	1998 03 29	704	0.1−	0.9−	1999 07 23	704	0.1−	0.9−
1998 03 22	704	0.8+	0.1+	1998 03 29	704	0.5−	0.0	1999 09 07	704	0.1+	0.2−
1998 03 22	704	0.5−	0.5+	1998 03 29	704	0.7−	0.4−	1999 09 07	704	0.4+	0.1+
1998 03 22	704	0.0	0.4+	1998 04 01	704	0.2−	0.2−	1999 09 07	704	0.1+	0.2+
1998 03 22	704	0.3+	0.0	1998 04 01	704	0.2+	0.5+	1999 09 07	704	0.3+	1.2−
1998 03 23	691	0.6−	0.7+	1998 04 01	704	1.0−	0.9+	1999 09 07	704	0.4+	0.5−
1998 03 23	691	0.7−	0.6+	1998 04 01	704	0.5+	1.8−	1999 09 08	699	0.4−	0.7+
1998 03 23	691	0.7−	0.4+	1998 04 01	704	1.2−	0.1+	1999 09 08	699	0.2+	1.2+
1998 03 26	910	1.1+	0.3−	1998 04 19	704	1.1+	0.9−	1999 09 08	699	0.7−	1.0+
1998 03 27	910	1.3+	0.7−	1998 04 19	704	(3.2−	1.2−)	1999 09 16	704	0.1−	0.2−
1998 03 27	910	1.5+	0.7−	1998 04 19	704	0.4+	1.9+	1999 09 16	704	0.0	0.3−
1998 03 28	910	1.2+	0.7−	1998 04 19	704	0.4−	1.3+	1999 09 16	704	0.1−	0.1−
1998 03 28	910	1.2+	0.6−	1998 04 20	704	0.3−	0.9−				
1998 03 28	910	1.2+	0.7−	1998 04 20	704	0.7−	1.4+				

1999 SEPT. 28

M.P.C. 35953

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	41.85576	(2000.0)	P	Q
<i>n</i>	0.20702326	ω 5.20506	+0.04163938	+0.99377494
<i>a</i>	2.8300230	Ω 267.20927	−0.92037922	−0.00209409
<i>e</i>	0.1626329	<i>i</i> 5.93815	−0.38880362	+0.11138665
<i>P</i>	4.76	<i>H</i> 14.9	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1994 07 08	010	0.7−	0.4+	1998 04 18	704	0.7−	0.4−	1999 09 04	426	0.1−	0.6−
1994 07 08	010	0.2+	0.4−	1998 04 19	704	0.6−	0.7+	1999 09 04	426	0.2+	0.6−
1994 07 08	010	0.7+	0.8−	1998 04 19	704	0.5−	0.9+	1999 09 04	426	0.4−	0.2−
1998 03 24	426	(2.1−	0.0)	1998 04 19	704	1.3−	0.3−	1999 09 05	699	1.1+	1.4+
1998 03 24	426	0.4−	0.5+	1998 04 19	704	1.0−	0.3+	1999 09 05	699	0.2−	1.5+
1998 03 24	426	0.0	0.7+	1998 04 20	704	1.3+	0.3−	1999 09 05	699	0.7−	1.4+
1998 03 25	426	0.2−	0.5+	1998 04 20	704	0.4+	0.6−	1999 09 06	426	0.6−	0.5−
1998 03 25	426	0.1−	0.0	1998 04 20	704	0.0	0.9+	1999 09 06	426	0.5−	1.0−
1998 03 25	426	1.1−	0.4+	1998 04 20	704	0.0	0.3−	1999 09 06	426	0.5−	0.5−
1998 03 27	426	0.6−	0.2+	1998 04 20	704	0.9−	0.9−	1999 09 09	704	0.3+	0.3−
1998 03 27	426	0.1+	0.4+	1998 04 22	426	0.4−	0.1+	1999 09 09	704	0.3−	0.3+
1998 03 27	426	0.6−	0.2+	1998 04 22	426	0.6+	0.1−	1999 09 09	704	1.3+	1.2+
1998 04 01	704	0.1+	0.9+	1998 04 22	426	0.1+	0.1−	1999 09 09	704	0.3−	0.5+
1998 04 01	704	0.3−	1.0+	1998 04 27	426	0.8+	0.3−	1999 09 09	704	1.3+	1.5+
1998 04 01	704	1.3+	1.7+	1998 04 27	426	0.7+	1.0+	1999 09 14	704	0.3+	0.2−
1998 04 01	704	(4.7−	1.3+)	1998 04 27	426	1.3+	0.5−	1999 09 14	704	0.6−	0.0
1998 04 05	426	0.4−	0.6−	1998 05 16	426	0.2+	0.2−	1999 09 14	704	0.1−	0.2−
1998 04 05	426	0.1+	0.4+	1998 05 16	426	0.3+	0.2−	1999 09 14	704	0.4−	0.7−
1998 04 18	704	0.2+	0.2+	1998 05 16	426	0.5+	0.5−	1999 09 14	704	0.8−	1.3−
1998 04 18	704	1.3+	1.7−	1998 05 20	426	1.0+	1.4−				
1998 04 18	704	1.4−	0.6−	1998 05 20	426	1.3+	0.8−				

1998 FK₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	134.02937	(2000.0)	P	Q
<i>n</i>	0.26631371	ω 14.15648	−0.99546113	+0.09393868
<i>a</i>	2.3926198	Ω 171.19126	−0.09409687	−0.94753398
<i>e</i>	0.1589022	<i>i</i> 5.71639	−0.01424466	−0.30554032
<i>P</i>	3.70	<i>H</i> 15.6	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 20	704	0.7+	1.0−	1998 03 28	704	0.1+	0.0	1998 04 20	704	0.4+	0.6+
1998 03 20	704	0.3+	0.6−	1998 03 28	704	0.2−	0.1+	1998 04 20	704	0.8+	0.8+
1998 03 20	704	0.0	0.4+	1998 03 28	704	0.8−	0.5+	1998 04 20	704	0.8−	0.2+
1998 03 20	704	0.1−	0.2−	1998 03 28	704	0.1+	0.5+	1998 04 20	595	0.5+	0.2−
1998 03 20	704	0.1+	0.2−	1998 03 28	595	0.5−	0.4−	1998 04 20	595	0.4+	0.3+
1998 03 22	704	0.1−	0.2−	1998 03 28	595	0.4−	0.4−	1998 04 23	595	0.7+	0.4+
1998 03 22	704	0.8−	0.0	1998 03 29	704	0.1−	0.6−	1998 04 23	595	0.1−	0.6+
1998 03 22	704	0.4+	0.5−	1998 03 29	704	0.1−	0.7−	1998 05 25	595	0.1+	0.2−
1998 03 22	704	0.5−	0.9−	1998 03 29	704	0.4−	0.3−	1998 05 25	595	0.1−	0.4+
1998 03 22	704	0.5−	0.1−	1998 03 29	704	0.9+	1.1−	1998 05 27	595	0.2−	1.6+
1998 03 25	691	0.4+	0.2+	1998 03 29	704	0.2−	0.4−	1998 05 27	595	0.5−	0.4+
1998 03 25	691	0.7+	0.5+	1998 04 04	699	0.5−	0.1−	1999 09 01	595	0.3−	1.2−
1998 03 25	691	0.1+	0.9−	1998 04 04	699	0.6−	0.1−	1999 09 01	595	0.1+	0.8−
1998 03 28	595	0.6−	0.5−	1998 04 04	699	0.2−	0.8+	1999 09 07	595	1.0+	0.3−
1998 03 28	595	0.1−	0.3−	1998 04 20	704	0.1−	0.0	1999 09 07	595	0.0	0.7−
1998 03 28	704	0.1+	0.0	1998 04 20	704	1.2+	0.9+				

1998 FU₂₀ = 1999 RA₄₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	77.53632	(2000.0)	P	Q
<i>n</i>	0.28536248	ω 103.54745	−0.37992218	+0.92353076
<i>a</i>	2.2849225	Ω 143.98253	−0.87943885	−0.34304451
<i>e</i>	0.1032405	<i>i</i> 5.11647	−0.28678640	−0.17149750
<i>P</i>	3.45	<i>H</i> 15.0	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 02 22	566	0.5−	1.0−	1999 08 07	691	0.2−	0.5−	1999 09 09	704	0.8+	0.9+
1998 02 22	566	0.1−	0.6−	1999 08 07	691	0.1−	0.7−	1999 09 10	704	0.3−	0.5+
1998 02 22	566	0.3−	0.7−	1999 08 07	691	0.1+	0.2−	1999 09 10	704	0.1+	0.5+
1998 02 26	809	(4.1+	0.1+)	1999 09 07	699	0.0	0.8+	1999 09 10	704	0.6−	0.4−
1998 02 26	809	(2.8+	0.5+)	1999 09 07	704	0.5−	0.4−	1999 09 10	704	0.7−	1.3+
1998 02 26	809	1.3+	0.5+	1999 09 07	699	0.1+	0.3+	1999 09 10	704	0.4−	0.2+
1998 03 20	704	0.3+	0.4−	1999 09 07	704	0.1+	0.1−	1999 09 10	704	0.4−	0.7+
1998 03 20	704	0.3−	0.2+	1999 09 07	704	0.2−	0.5−	1999 09 10	704	0.6−	0.0
1998 03 20	704	0.1−	0.3−	1999 09 07	699	0.2+	0.1+	1999 09 10	704	0.4−	0.9+
1998 03 20	704	0.3+	0.4+	1999 09 07	704	0.1−	0.4−	1999 09 11	164	0.2−	0.4+
1998 03 20	704	0.6−	0.8+	1999 09 07	704	0.1+	0.9−	1999 09 11	164	0.2+	1.3+
1998 03 22	704	0.3−	0.8−	1999 09 08	703	0.4−	0.2−	1999 09 11	164	0.2−	0.3−
1998 03 22	704	0.1−	0.0	1999 09 08	703	0.1+	0.5−	1999 09 13	704	0.4−	0.1−
1998 03 22	704	0.6−	0.1+	1999 09 08	703	0.4+	0.6−	1999 09 13	704	0.5+	0.5−
1998 03 22	704	0.4−	0.7+	1999 09 08	703	0.5+	0.4−	1999 09 13	704	0.8−	0.2−
1998 03 22	704	0.1−	0.6+	1999 09 09	704	0.2+	0.8−	1999 09 13	704	0.3+	0.1−
1998 03 26	704	0.7+	0.1−	1999 09 09	704	0.5+	0.0	1999 09 16	132	1.7+	0.1+
1998 03 26	704	0.5+	0.4−	1999 09 09	704	0.7+	0.3+	1999 09 16	132	0.3−	0.7−
1998 03 26	704	0.1−	0.1+	1999 09 09	704	0.1+	0.3−	1999 09 16	132	0.4+	0.3−

1998 FW₂₀ = 1999 RD₉₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	79.19080	(2000.0)	P	Q
<i>n</i>	0.28209579	ω 155.69641	−0.31897053	+0.94675593
<i>a</i>	2.3025283	Ω 95.67901	−0.87659086	−0.27716640
<i>e</i>	0.1640213	<i>i</i> 2.51785	−0.36034187	−0.16380473
<i>P</i>	3.49	<i>H</i> 14.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 02 25	809	1.1−	0.5−	1998 03 22	704	0.2+	0.0	1999 08 22	703	0.8+	1.1−
1998 02 25	809	0.7−	1.0−	1998 03 22	704	0.2−	0.2+	1999 09 07	704	0.7+	0.0
1998 02 25	809	0.1−	1.3−	1998 03 22	704	0.4−	0.0	1999 09 07	704	0.3+	0.1+
1998 02 26	809	0.4+	0.5+	1998 03 22	704	0.7−	0.7+	1999 09 07	704	0.1+	0.6+
1998 02 26	809	1.2+	0.5+	1998 03 22	704	0.7−	0.0	1999 09 07	704	0.3+	0.2+
1998 02 26	809	0.1−	0.3+	1998 03 26	704	(0.8+	2.3−)	1999 09 07	704	0.1+	0.6−
1998 03 20	704	0.0	0.3+	1998 03 26	704	(4.4−	0.3−)	1999 09 14	704	0.3−	0.0
1998 03 20	704	0.2−	0.4+	1998 03 26	704	0.9+	0.4−	1999 09 14	704	0.5−	0.7+
1998 03 20	704	0.5+	0.1+	1998 08 22	703	0.6−	0.5−	1999 09 14	704	0.7−	0.3+
1998 03 20	704	0.9+	0.2+	1998 08 22	703	1.0−	0.2−	1999 09 14	704	0.2−	0.4+
1998 03 20	704	(2.6−	1.0−)	1998 08 22	703	0.6+	0.3−	1999 09 14	704	0.3+	0.4+

1998 FU₂₂ = 1999 RA₂₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	43.73632	(2000.0)	P	Q
<i>n</i>	0.29940735	ω 124.29977	+0.34876374	+0.93713581
<i>a</i>	2.2128964	Ω 166.09719	−0.87526247	+0.33020404
<i>e</i>	0.1301266	<i>i</i> 2.82594	−0.33508128	+0.11287944
<i>P</i>	3.29	<i>H</i> 14.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 03	704	0.6+	1.0+	1998 03 22	704	0.3−	0.5+	1999 09 10	120	0.3+	0.2+
1998 03 03	704	0.6+	0.1−	1998 03 22	704	0.1+	0.5−	1999 09 10	120	0.1−	0.4+
1998 03 03	704	0.8−	0.3−	1998 03 22	704	(2.5−	1.4−)	1999 09 10	120	0.2+	0.1−
1998 03 03	704	1.5+	1.6+	1998 08 22	699	0.2−	0.7+	1999 09 13	678	0.2+	0.5−
1998 03 03	704	1.2+	1.6+	1998 08 22	699	0.6−	1.2+	1999 09 13	678	0.3−	0.5−
1998 03 04	704	1.1−	0.3−	1998 08 22	699	0.2−	0.7+	1999 09 13	678	0.7−	0.5−
1998 03 04	704	1.6−	0.8−	1999 09 07	704	0.0	0.1−	1999 09 14	678	1.1+	1.0+
1998 03 04	704	0.7−	0.6−	1999 09 07	704	0.1+	0.0	1999 09 14	678	0.4−	0.6+
1998 03 04	704	1.0−	1.2−	1999 09 07	704	0.1−	0.1−	1999 09 14	678	0.9−	0.5+
1998 03 04	704	1.4−	1.4−	1999 09 07	704	0.2+	0.4−	1999 09 14	703	0.2+	0.2+
1998 03 20	704	0.1+	0.0	1999 09 07	704	0.2+	0.5−	1999 09 14	703	0.4−	0.1−
1998 03 20	704	1.8+	0.0	1999 09 08	704	0.3−	0.1+	1999 09 14	703	0.3+	0.3+
1998 03 20	704	0.3+	1.1+	1999 09 08	704	0.2+	0.2−	1999 09 14	703	0.2−	0.2+
1998 03 20	704	0.5+	0.7+	1999 09 08	704	0.1−	0.4−	1999 09 14	703	0.3+	0.0
1998 03 20	704	1.0+	1.3+	1999 09 08	704	0.1+	0.4+	1999 09 14	703	0.3+	0.3+

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1998 03 22 704 0.2- 0.6+ 1999 09 09 120 0.1+ 0.1- 1999 09 14 703 0.3- 0.3-
 1998 03 22 704 1.2+ 0.5- 1999 09 09 120 0.1- 0.1- 1999 09 14 703 0.4+ 0.5-

1998 FJ₂₅ = 1999 NT₄₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	333.59173		(2000.0)	P	Q
<i>n</i>	0.29116794	ω	15.81458	+0.97001680	+0.23450015
<i>a</i>	2.2544486	Ω	330.38820	-0.23463793	+0.83511754
<i>e</i>	0.0734007	<i>i</i>	7.42473	-0.06334393	+0.49758253
<i>P</i>	3.39	<i>H</i>	15.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1996 12 08	691	0.2-	0.5+	1998 03 22	704	0.9-	0.1+	1999 07 14	704	0.1-	0.1-
1996 12 08	691	0.3-	0.2+	1998 03 22	704	(0.0	3.0-)	1999 07 14	704	0.5+	0.3-
1996 12 08	691	0.1-	0.4+	1998 03 22	704	0.9+	0.3-	1999 07 14	704	1.0+	0.1+
1998 03 03	704	0.1-	1.7+	1998 03 26	704	1.6+	0.7-	1999 07 16	704	0.7-	0.1+
1998 03 03	704	0.4+	0.0	1998 03 26	704	0.4+	0.2+	1999 07 16	704	0.6+	0.3+
1998 03 03	704	1.4-	1.6-	1998 03 26	704	1.2-	1.2+	1999 07 16	704	1.0-	0.5+
1998 03 03	704	1.3-	0.9+	1998 03 29	704	(2.6+	0.4-)	1999 08 13	699	0.9-	0.7-
1998 03 20	704	1.5+	1.8-	1998 03 29	704	0.4+	0.6+	1999 08 13	699	0.2+	0.8-
1998 03 20	704	0.7+	0.3+	1998 03 29	704	1.5+	0.1-	1999 08 13	699	0.5+	0.1-
1998 03 20	704	0.3+	0.5-	1998 03 29	704	0.1+	0.5+	1999 09 07	704	0.9-	0.5+
1998 03 20	704	0.8+	0.1+	1998 03 29	704	1.1-	0.1-	1999 09 07	704	0.3-	0.3-
1998 03 20	704	1.4-	0.7+	1999 07 14	704	0.2+	0.5+	1999 09 07	704	0.5+	0.6+
1998 03 22	704	0.4-	0.2+	1999 07 14	704	0.1-	1.0+				

1998 FD₂₆ = 1989 BM = 1996 TA₄₉ = 1998 FV₁₄₄ = 1998 HX₁₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	173.80488		(2000.0)	P	Q
<i>n</i>	0.22803843	ω	100.29953	-0.01577622	-0.99971434
<i>a</i>	2.6533672	Ω	350.54891	+0.86925055	-0.00483922
<i>e</i>	0.1972333	<i>i</i>	6.27728	+0.49412001	-0.02340569
<i>P</i>	4.32	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1989 01 29	400	(16.2+	23.9-)	1998 03 20	704	0.4+	0.4-	1998 03 29	704	0.4-	0.1+
1989 01 29	400	(7.5+	23.5-)	1998 03 20	704	0.4-	0.1+	1998 03 29	704	0.1+	0.1+
1989 01 30	400	2.0+	0.2+	1998 03 20	704	0.0	0.0	1998 03 29	704	0.4-	0.2+
1989 01 30	400	2.0-	0.2+	1998 03 22	704	0.2+	0.3-	1998 03 29	704	0.3+	1.2+
1996 10 04	809	1.4+	0.4+	1998 03 22	704	0.2-	0.0	1998 04 18	704	0.9+	0.7+
1996 10 04	809	0.1-	0.6-	1998 03 22	704	0.4-	0.4-	1998 04 18	704	1.3-	0.5-
1996 10 04	809	0.8-	0.2-	1998 03 22	704	0.7+	1.4-	1998 04 18	704	1.9+	0.6+
1996 10 05	809	0.6+	0.2-	1998 03 22	704	1.1+	0.9-	1998 04 18	704	(3.9-	0.7-)
1996 10 05	809	0.0	0.0	1998 03 26	704	0.1+	0.2-	1998 04 19	704	1.8+	0.7+
1996 10 05	809	0.9-	0.4+	1998 03 26	704	0.3-	0.2+	1998 04 19	704	0.5-	1.4+
1998 03 20	704	0.5-	0.1+	1998 03 26	704	0.6-	0.3+	1998 04 19	704	0.8-	1.3-
1998 03 20	704	0.3-	0.1-	1998 03 29	704	1.3-	0.4-				

1998 FQ₂₇ = 1999 RP₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	64.90116		(2000.0)	P	Q
<i>n</i>	0.23954459	ω	305.58561	-0.21358937	+0.97548162
<i>a</i>	2.5677051	Ω	311.99115	-0.87163260	-0.21481488
<i>e</i>	0.2429257	<i>i</i>	4.09367	-0.44117591	-0.04785585
<i>P</i>	4.11	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 03 20	704	0.7-	0.3+	1998 03 29	704	0.1+	0.4-	1999 09 07	704	0.5+	0.3+
1998 03 20	704	0.4-	0.3+	1998 03 29	704	0.0	0.1+	1999 09 07	704	0.4+	0.3+
1998 03 20	704	0.9+	0.3-	1998 03 29	704	0.6+	0.4+	1999 09 08	704	0.1-	0.0
1998 03 20	704	0.9+	0.1-	1998 04 01	704	0.2+	0.4-	1999 09 08	704	0.5-	0.3-
1998 03 20	704	0.1+	0.6-	1998 04 01	704	0.6-	1.1-	1999 09 08	704	0.2+	0.1-
1998 03 22	704	0.4-	0.3+	1998 04 01	704	0.1-	0.2-	1999 09 08	704	0.1+	0.5-

1998 03 22 704 0.1- 0.4- 1998 04 01 704 0.1+ 0.4+ 1999 09 09 704 0.3+ 0.2-
 1998 03 22 704 0.1- 0.7+ 1998 04 01 704 0.2- 0.9+ 1999 09 09 704 0.2+ 0.5-
 1998 03 22 704 0.3- 0.2+ 1999 09 07 704 0.8- 0.4+ 1999 09 09 704 0.4+ 0.0
 1998 03 22 704 0.1- 0.5- 1999 09 07 704 0.4- 0.0 1999 09 09 704 0.2+ 0.5+
 1998 03 29 704 0.1+ 0.5+ 1999 09 07 704 0.4- 0.1+

1998 FB₂₉ = 1999 NS₁₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	321.85165		(2000.0)	P	Q
<i>n</i>	0.20258817	ω	134.51335	+0.73841453	+0.67434450
<i>a</i>	2.8711772	Ω	183.08513	-0.62810142	+0.68676761
<i>e</i>	0.0563177	<i>i</i>	1.98284	-0.24542326	+0.27131115
<i>P</i>	4.87	<i>H</i>	13.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1995 09 19	809	0.7+	0.1+	1998 03 22	704	0.2-	1.2+	1999 06 15	704	0.5-	0.4-
1995 09 20	809	0.0	0.1+	1998 03 29	704	0.3-	0.5+	1999 06 15	704	0.1+	1.1+
1995 09 29	691	0.5-	0.5+	1998 03 29	704	0.7+	0.1-	1999 07 14	704	0.1+	0.7+
1995 09 29	691	0.4-	0.4+	1998 03 29	704	0.5-	0.4+	1999 07 14	704	0.6+	0.1-
1995 09 29	691	0.4-	0.5+	1998 03 29	704	0.2-	0.6-	1999 07 14	704	0.7-	0.5-
1998 03 20	704	(1.3-	2.2+)	1998 03 29	704	0.9+	0.4+	1999 07 14	704	0.4+	0.4-
1998 03 20	704	0.9+	0.1-	1998 04 01	704	0.2-	0.7+	1999 07 14	704	0.6+	0.4+
1998 03 20	704	0.1+	0.2-	1998 04 01	704	0.4+	0.1-	1999 07 16	704	0.1-	0.2+
1998 03 20	704	0.1+	1.3-	1998 04 01	704	0.6+	0.4-	1999 07 16	704	0.6-	0.1+
1998 03 20	704	0.5+	0.1+	1998 04 01	704	0.1-	0.1-	1999 07 16	704	0.2+	0.4-
1998 03 22	704	0.3-	0.2+	1998 04 01	704	0.0	0.7+	1999 07 16	704	0.3-	0.1-
1998 03 22	704	1.1-	1.0-	1999 06 15	704	0.1+	0.5+	1999 07 16	704	0.5-	0.3-
1998 03 22	704	0.7+	0.8+	1999 06 15	704	0.1+	0.7+				
1998 03 22	704	1.5-	0.8+	1999 06 15	704	0.3+	1.4-				

1998 FM₂₉ = 1999 RZ₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	49.53662		(2000.0)	P	Q
<i>n</i>	0.24103256	ω	91.08239	-0.01619445	+0.99982560
<i>a</i>	2.5571267	Ω	177.92025	-0.98865389	-0.01462276
<i>e</i>	0.2009835	<i>i</i>	14.85043	-0.14933594	-0.01161665
<i>P</i>	4.09	<i>H</i>	14.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 03	704	(1.1+	3.5-)	1998 04 01	704	0.2+	0.8+	1999 09 09	704	0.7-	0.4-
1998 03 03	704	0.1-	0.3+	1998 04 01	704	1.1+	0.1+	1999 09 09	704	0.0	0.8-
1998 03 03	704	(3.2-	1.7-)	1998 04 01	704	0.5-	0.4-	1999 09 09	704	0.3-	0.6-
1998 03 03	704	0.2-	1.7-	1999 08 22	699	(0.3-	2.8+)	1999 09 11	699	0.4+	0.6+
1998 03 03	704	0.1+	0.6+	1999 08 22	699	1.5-	0.7+	1999 09 11	699	0.4+	0.2-
1998 03 20	704	0.0	1.0-	1999 08 22	699	0.3+	1.6+	1999 09 11	699	0.6+	0.1+
1998 03 20	704	0.0	0.1+	1999 09 07	704	0.3+	0.0	1999 09 14	704	0.1+	0.4-
1998 03 20	704	0.8-	0.1-	1999 09 07	704	0.1+	0.5-	1999 09 14	704	0.2+	0.7-
1998 03 20	704	0.9-	0.6-	1999 09 07	704	0.5+	0.2-	1999 09 14	704	0.1-	0.3-
1998 03 20	704	1.4-	0.7+	1999 09 07	704	0.1-	0.7-	1999 09 14	704	0.1-	0.5-
1998 03 22	704	0.2+	0.7-	1999 09 07	704	0.1+	0.4+	1999 09 14	704	0.1+	0.7-
1998 03 22	704	0.5-	0.2-	1999 09 08	704	0.1-	0.5+	1999 09 14	703	0.2-	0.1+
1998 03 22	704	0.4+	0.2-	1999 09 08	704	0.1-	0.2+	1999 09 14	703	0.0	0.3+
1998 03 22	704	1.1+	1.2-	1999 09 08	704	0.3-	0.2-	1999 09 14	703	0.0	0.2+
1998 03 22	704	0.4+	0.1-	1999 09 08	704	0.0	0.6-	1999 09 14	703	0.0	0.2+
1998 04 01	704	0.9+	0.1-	1999 09 09	704	0.0	0.8-				

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M.P.C. 35955

1998 FL₃₀ = 1999 RP₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	71.61734	(2000.0)	P		Q	
<i>n</i>	0.26296344	ω	35.21831	−0.30594783	+0.95176548	
<i>a</i>	2.4128989	Ω	216.98203	−0.88209691	−0.29255375	
<i>e</i>	0.1390978	<i>i</i>	2.21054	−0.35819124	−0.09249200	
<i>P</i>	3.75	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1998 02 22	566	0.2−	0.5−	1998 04 01	704	0.3−	0.2+	1999 09 09	704	0.2+	0.3−
1998 02 22	566	0.1+	0.3−	1998 04 18	704	0.1−	0.0	1999 09 09	704	0.2−	0.6−
1998 02 22	566	0.0	0.0	1998 04 18	704	0.8+	0.4−	1999 09 09	704	0.7−	0.5−
1998 03 20	704	0.2+	0.5+	1998 04 18	704	0.9+	0.8−	1999 09 09	704	0.5−	1.7−
1998 03 20	704	0.1+	0.4+	1998 04 18	704	0.8−	0.6+	1999 09 10	704	0.1−	0.0
1998 03 20	704	0.9+	0.4+	1999 09 07	704	0.9−	0.0	1999 09 10	704	0.0	0.4−
1998 03 20	704	0.8+	0.3+	1999 09 07	704	0.2+	0.4−	1999 09 10	704	0.2+	0.1+
1998 03 20	704	0.7+	0.8+	1999 09 07	704	0.6+	0.2+	1999 09 10	704	0.0	0.3−
1998 03 22	704	0.2−	0.1+	1999 09 07	704	0.3+	0.7−	1999 09 10	704	0.1−	0.6−
1998 03 22	704	0.5−	0.4+	1999 09 07	704	0.2−	0.2+	1999 09 10	704	0.2−	0.3−
1998 03 22	704	0.3−	0.1+	1999 09 08	704	0.1−	0.7−	1999 09 11	699	0.8+	1.0+
1998 03 22	704	0.2+	0.2−	1999 09 08	704	0.6−	0.0	1999 09 11	699	0.1+	0.2+
1998 03 22	704	0.3−	0.3+	1999 09 08	704	0.4−	0.0	1999 09 11	699	0.6−	1.5+
1998 03 26	704	0.1+	0.2+	1999 09 08	704	0.3−	0.3+	1999 09 11	106	0.1+	0.1+
1998 03 26	704	0.1−	0.6−	1999 09 09	704	0.1+	0.4−	1999 09 11	106	1.3+	0.7+
1998 03 26	704	1.8−	1.9−	1999 09 09	704	0.1+	0.4−	1999 09 11	106	0.6+	0.4+
1998 04 01	704	(1.6−	2.9−)	1999 09 09	704	0.1−	0.2−	1999 09 14	703	0.2−	0.3+
1998 04 01	704	0.5−	0.6+	1999 09 09	704	0.4+	0.2+	1999 09 14	703	0.4−	1.1+
1998 04 01	704	0.4−	0.2−	1999 09 09	704	0.2−	0.2+	1999 09 14	703	0.1−	0.1+
1998 04 01	704	1.0+	0.3+	1999 09 09	704	0.7+	0.8+	1999 09 14	703	0.0	0.5+

1998 FR₃₀ = 1999 RX₁₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	27.31791	(2000.0)	P		Q	
<i>n</i>	0.26379854	ω	91.13170	+0.50628384	+0.86221106	
<i>a</i>	2.4078039	Ω	209.30316	−0.80393050	+0.46501255	
<i>e</i>	0.1872067	<i>i</i>	1.91951	−0.31204554	+0.20088656	
<i>P</i>	3.74	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 20	704	0.4−	0.2+	1998 03 29	704	0.5−	1.1−	1999 09 07	704	0.4+	0.6−
1998 03 20	704	1.4+	0.1−	1998 04 01	704	0.8+	0.1+	1999 09 07	704	0.7−	0.6−
1998 03 20	704	0.5+	1.0−	1998 04 01	704	0.6+	0.3−	1999 09 08	704	0.1−	0.2+
1998 03 20	704	1.4+	0.3−	1998 04 01	704	0.6+	0.4−	1999 09 08	704	0.2+	0.2+
1998 03 20	704	0.6+	0.4−	1998 04 01	704	0.3−	1.2+	1999 09 08	704	0.1+	0.4+
1998 03 22	704	1.0−	0.4−	1998 04 19	704	0.2+	0.4−	1999 09 08	704	0.1+	0.4−
1998 03 22	704	0.2−	0.1−	1998 04 19	704	0.1−	0.0	1999 09 09	704	0.1−	0.3−
1998 03 22	704	0.2−	0.0	1998 04 19	704	0.6+	0.3+	1999 09 09	704	0.0	0.1−
1998 03 22	704	0.1+	0.7+	1998 04 19	704	0.0	0.6+	1999 09 09	704	0.0	0.2−
1998 03 22	704	1.2−	0.3+	1998 04 19	704	1.2−	0.7+	1999 09 09	704	0.2+	0.3−
1998 03 22	327	0.4−	0.7+	1999 08 22	699	0.4−	0.2+	1999 09 09	704	0.5+	0.6−
1998 03 22	327	0.2−	0.7+	1999 08 22	699	0.6−	0.3+	1999 09 14	704	0.1+	0.2−
1998 03 22	327	1.3−	0.0	1999 08 22	699	0.1−	0.1−	1999 09 14	704	0.2−	0.2+
1998 03 29	704	0.6−	1.4−	1999 09 07	704	0.5+	0.1+	1999 09 14	704	0.2−	0.0
1998 03 29	704	(1.6+	3.1−)	1999 09 07	704	0.1+	0.2+	1999 09 14	704	0.0	0.3+
1998 03 29	704	0.1+	0.9−	1999 09 07	704	0.4+	0.3−	1999 09 14	704	0.2+	0.4+

1998 FW₃₀ = 1998 HB₁₃ = 1989 VS₃ = 1992 RN₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	57.78868	(2000.0)	P		Q	
<i>n</i>	0.28799537	ω	115.35812	+0.16642012	+0.98557401	
<i>a</i>	2.2709751	Ω	164.13030	−0.94033497	+0.16802528	
<i>e</i>	0.1446820	<i>i</i>	6.46577	−0.29677347	+0.02028247	
<i>P</i>	3.42	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1989 11 03	809	0.5+	0.6−	1998 03 20	704	0.1+	0.7−	1998 04 18	704	1.1−	0.9−
1989 11 03	809	0.1+	0.2−	1998 03 20	704	0.6+	1.2−	1998 04 18	704	0.2+	0.2−
1989 11 03	809	0.4−	0.5−	1998 03 22	704	0.5−	0.0	1998 04 18	704	(4.1−	1.2+)
1992 09 02	809	0.6+	0.7−	1998 03 22	704	0.0	0.6−	1998 04 19	704	0.4+	0.5+
1992 09 02	809	0.9+	0.8−	1998 03 22	704	0.7−	0.0	1998 04 19	704	0.5+	0.5+
1992 09 02	809	0.2−	1.0−	1998 03 22	704	0.3−	0.3+	1998 04 19	704	0.9+	0.4+
1992 09 03	809	0.3−	0.8−	1998 03 22	704	0.5−	0.5−	1998 04 19	704	0.1+	0.6−
1998 03 20	704	0.2−	0.5−	1998 04 18	704	0.7+	0.6−	1998 04 19	704	1.3−	0.3+
1998 03 20	704	0.1−	0.3−	1998 04 18	704	0.1+	0.2−				

1998 FY₃₁ = 1976 UJ₆ = 1999 RJ₁₄₁

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	136.98609	(2000.0)	P		Q	
<i>n</i>	0.29543866	ω	356.42479	−0.98089845	+0.19382469	
<i>a</i>	2.2326698	Ω	194.78218	−0.17683290	−0.92372554	
<i>e</i>	0.0638470	<i>i</i>	3.69399	−0.08104541	−0.33039842	
<i>P</i>	3.34	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1976 10 22	381	1.4−	0.6+	1998 03 22	704	0.4+	1.0+	1998 04 19	704	(2.5−	0.5+)
1976 10 22	381	0.9+	1.1+	1998 03 22	704	0.5+	1.4+	1998 04 19	704	0.3−	0.8+
1998 03 03	704	0.5+	0.4−	1998 03 24	566	0.7+	0.6+	1999 09 05	699	1.7−	1.3+
1998 03 03	704	0.8+	0.3+	1998 03 24	566	0.3+	0.2+	1999 09 05	699	0.9−	0.3+
1998 03 03	704	0.9+	1.2−	1998 03 24	566	0.8+	0.1+	1999 09 05	699	0.4−	0.6+
1998 03 03	704	(2.1−	0.7+)	1998 03 29	704	0.2+	0.8+	1999 09 07	704	0.4+	0.2+
1998 03 04	704	0.9−	0.4+	1998 03 29	704	0.0	0.0	1999 09 07	704	0.0	0.2−
1998 03 04	704	1.4−	0.4−	1998 03 29	704	0.3+	0.2−	1999 09 07	704	0.5−	0.2−
1998 03 04	704	1.3−	0.5−	1998 03 29	704	0.9−	0.6−	1999 09 07	704	0.2−	0.3+
1998 03 04	704	1.8−	1.0−	1998 03 29	704	1.0−	0.0	1999 09 07	704	0.9+	0.0
1998 03 04	704	(3.2−	1.0−)	1998 04 01	704	0.0	0.3+	1999 09 09	704	0.5+	0.5−
1998 03 20	704	0.2+	1.0+	1998 04 01	704	0.4−	0.3−	1999 09 09	704	0.2+	1.0−
1998 03 20	704	0.2−	0.1+	1998 04 01	704	0.6−	0.7−	1999 09 09	704	0.4−	0.4−
1998 03 20	704	0.4+	0.4−	1998 04 01	704	0.0	0.7+	1999 09 14	704	1.4+	1.1+
1998 03 20	704	1.7+	0.1−	1998 04 01	704	(4.5−	1.3−)	1999 09 14	704	(3.2+	0.8+)
1998 03 20	704	1.4+	0.2−	1998 04 19	704	0.0	0.9−	1999 09 14	704	(2.3+	0.3−)
1998 03 22	704	0.1−	1.3+	1998 04 19	704	0.6+	0.2+				
1998 03 22	704	0.3+	0.4+	1998 04 19	704	0.1−	0.3−				

1998 FK₃₂ = 1999 RS₁₂₅

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	150.64892	(2000.0)	P		Q	
<i>n</i>	0.30044913	ω	312.33221	−0.99956188	−0.00405185	
<i>a</i>	2.2077781	Ω	227.45815	+0.01469539	−0.92780479	
<i>e</i>	0.0412803	<i>i</i>	2.28063	−0.02569235	−0.37304403	
<i>P</i>	3.28	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1995 05 27	691	0.2+	0.4+	1998 03 29	704	0.2+	0.1−	1999 08 22	699	0.6−	0.3+
1995 05 27	691	0.0	0.1+	1998 04 01	704	0.2+	0.4−	1999 08 22	699	0.2−	0.1−
1995 05 27	691	0.0	0.1+	1998 04 01	704	0.1−	0.8+	1999 08 22	699	0.8−	0.1+
1996 10 06	691	0.1+	0.2−	1998 04 01	704	0.7−	0.3+	1999 09 05	699	0.6−	0.3+
1996 10 06	691	0.2+	0.0	1998 04 01	704	0.2−	0.4+	1999 09 05	699	0.7−	0.9+
1996 10 06	691	0.1−	0.2−	1998 04 01	704	0.2−	0.1−	1999 09 05	699	0.5−	0.8+
1998 03 20	704	0.4−	0.3−	1998 04 18	704	0.6+	0.5+	1999 09 07	704	0.2−	0.0
1998 03 20	704	0.0	1.0−	1998 04 18	704	0.3+	1.1+	1999 09 07	704	0.1+	0.4−
1998 03 20	704	0.2+	1.5−	1998 04 18	704	0.6+	0.5+	1999 09 07	704	0.0	0.0
1998 03 20	704	0.1−	1.2−	1998 04 18	704	0.7−	0.0	1999 09 07	704	0.4+	0.2+
1998 03 20	704	0.6+	1.1−	1998 04 18	704	1.0−	1.3−	1999 09 07	704	0.3−	0.0
1998 03 22	704	0.7−	0.7−	1998 04 19	704	0.7+	0.2−	1999 09 09	704	0.6+	0.3−
1998 03 22	704	0.3+	0.3−	1998 04 19	704	0.2−	1.3+	1999 09 09	704	0.8+	0.2−
1998 03 22	704	0.5+	0.6−	1998 04 19	704	0.1+	0.6+	1999 09 09	704	0.1+	0.1+
1998 03 22	704	0.9+	0.1+	1998 04 19	704	0.7−	0.2+	1999 09 09	704	0.4+	0.4−
1998 03 22	704	0.1−	0.0	1998 04 19	704	0.7−	0.4+	1999 09 14	704	0.8+	0.2−

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1998 03 25	566	0.3−	0.1−	1999 08 08	699	0.9−	0.5+	1999 09 14	704	1.0+	0.5−
1998 03 25	566	0.5−	0.2−	1999 08 08	699	1.0−	0.5−	1999 09 14	704	0.6+	0.5−
1998 03 25	566	0.2−	0.1−	1999 08 08	699	0.3−	0.4+	1999 09 14	704	0.7+	0.2+
1998 03 29	704	0.3+	0.2+	1999 08 17	292	0.1−	0.9−	1999 09 14	704	1.2+	0.1−
1998 03 29	704	0.6−	0.5+	1999 08 17	292	0.1−	1.1−				
1998 03 29	704	0.1+	0.5−	1999 08 17	292	0.7+	1.7−				

1998 FO₃₂ = 1999 RH₂₅

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				<i>P</i>				<i>Q</i>			
37.27494				(2000.0)							
<i>n</i>	0.23315245	ω	299.81270	+0.31712972				+0.94761396			
<i>a</i>	2.6144242	Ω	348.48384	−0.79073667				+0.24198279			
<i>e</i>	0.2648128	<i>i</i>	11.02063	−0.52360697				+0.20849968			
<i>P</i>	4.23	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	4				

Residuals in seconds of arc

1998 03 20	704	0.2+	0.0	1998 04 18	704	0.2−	0.2−	1999 09 08	699	0.1+	1.0+
1998 03 20	704	0.0	0.7−	1998 04 18	704	0.1+	0.0	1999 09 08	704	0.3+	0.2−
1998 03 20	704	0.4+	1.0−	1998 04 18	704	0.5+	0.2−	1999 09 08	704	0.3+	0.3−
1998 03 20	704	0.6+	0.4−	1998 04 18	704	0.2+	0.9−	1999 09 08	699	1.3−	1.2+
1998 03 20	704	1.1−	0.4+	1998 04 19	704	0.6−	0.8+	1999 09 08	704	0.2−	0.4−
1998 03 22	704	(2.4+	1.2+)	1998 04 19	704	1.0+	0.1−	1999 09 08	704	0.2−	0.4−
1998 03 22	704	0.2−	0.9+	1998 04 19	704	1.4−	0.8−	1999 09 08	699	0.2+	0.3−
1998 03 22	704	(0.8+	2.9+)	1998 04 19	704	0.4+	0.1+	1999 09 09	704	0.5+	0.2+
1998 03 22	704	0.3+	0.4+	1998 04 19	704	0.2−	0.9+	1999 09 09	704	0.2+	0.3−
1998 03 22	704	1.3−	0.2+	1999 09 07	704	0.2+	0.0	1999 09 09	704	0.1+	0.1−
1998 04 01	704	0.5+	0.5+	1999 09 07	704	0.2+	0.0	1999 09 09	704	0.1+	0.5+
1998 04 01	704	0.4+	0.0	1999 09 07	704	0.1−	0.1+	1999 09 09	704	0.1−	0.2−
1998 04 01	704	0.4+	0.1−	1999 09 07	704	0.1−	0.3−				
1998 04 01	704	0.1−	0.1−	1999 09 07	704	0.1+	0.5−				

1998 FF₃₄ = 1999 RD₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				<i>P</i>				<i>Q</i>			
54.10853				(2000.0)							
<i>n</i>	0.26762592	ω	340.89019	+0.21245491				+0.97688515			
<i>a</i>	2.3847925	Ω	301.36979	−0.89289440				+0.18425109			
<i>e</i>	0.1980662	<i>i</i>	1.58580	−0.39699181				+0.10838329			
<i>P</i>	3.68	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	5				

Residuals in seconds of arc

1998 03 20	704	0.0	0.2−	1998 04 18	704	0.6+	0.9+	1999 09 07	704	0.6−	0.4−
1998 03 20	704	0.1+	0.0	1998 04 18	704	0.8−	0.0	1999 09 08	704	0.7−	0.6+
1998 03 20	704	1.2+	0.9−	1998 04 18	704	0.2+	1.1−	1999 09 08	704	0.8+	0.4−
1998 03 20	704	0.5−	0.3−	1998 04 18	704	0.1+	1.4−	1999 09 08	704	0.6+	0.3−
1998 03 20	704	0.3−	0.6−	1998 04 18	704	(0.4−	2.2−)	1999 09 08	704	0.3+	0.3−
1998 03 22	704	0.0	0.4+	1998 04 19	704	1.1−	0.9+	1999 09 08	704	0.3−	0.0
1998 03 22	704	0.8−	0.2+	1998 04 19	704	0.9−	0.7+	1999 09 09	704	0.4+	0.1+
1998 03 22	704	0.2−	0.5−	1998 04 19	704	0.5−	0.1−	1999 09 09	704	0.3−	0.3−
1998 03 22	704	0.5−	0.0	1998 04 19	704	0.8−	0.1−	1999 09 09	704	0.6+	0.3+
1998 03 22	704	0.5−	0.6+	1998 04 19	704	0.2+	0.1−	1999 09 09	704	0.3+	0.1+
1998 04 01	704	1.0+	0.8−	1999 09 05	699	0.2−	0.4+	1999 09 18	703	0.4−	0.2+
1998 04 01	704	0.2−	1.1+	1999 09 05	699	0.6−	0.2−	1999 09 18	703	0.5−	0.4+
1998 04 01	704	0.4+	0.3+	1999 09 05	699	0.0	0.4−	1999 09 18	703	0.4−	0.3+
1998 04 01	704	1.7+	0.7+	1999 09 07	704	1.2+	0.6−	1999 09 18	703	0.0	0.4+
1998 04 01	704	0.7+	0.6−	1999 09 07	704	0.2+	1.0−				

1998 FT₃₄ = 1999 RN₅₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				<i>P</i>				<i>Q</i>			
84.61686				(2000.0)							
<i>n</i>	0.25143031	ω	31.69817	−0.64533111				+0.76320325			
<i>a</i>	2.4861327	Ω	198.17896	−0.72094399				−0.62263009			
<i>e</i>	0.0966291	<i>i</i>	6.01427	−0.25256192				−0.17277897			
<i>P</i>	3.92	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	3				

Residuals in seconds of arc

1995 08 22	691	0.0	0.2+	1998 03 22	704	0.4+	1.1−	1998 04 18	704	0.4+	0.6+
1995 08 22	691	0.1+	0.4+	1998 03 29	704	0.3−	0.6+	1998 04 18	704	0.1−	1.2+
1995 08 22	691	0.2−	0.2+	1998 03 29	704	0.7+	0.1−	1998 04 18	704	1.7−	1.4−
1998 03 20	704	0.6+	0.1−	1998 03 29	704	1.1−	1.2−	1998 04 18	704	0.8+	0.2+
1998 03 20	704	0.2+	0.3−	1998 03 29	704	0.9+	0.2−	1999 09 07	704	0.6+	0.9+
1998 03 20	704	0.3+	0.2+	1998 03 29	704	0.9−	1.3−	1999 09 07	704	0.4+	0.2−
1998 03 20	704	0.1+	0.5+	1998 04 01	704	1.2+	0.2−	1999 09 07	704	0.4+	0.6+
1998 03 20	704	0.3+	0.6−	1998 04 01	704	0.7−	1.1+	1999 09 09	704	0.3+	0.2+
1998 03 22	704	0.2−	0.7+	1998 04 01	704	0.8−	0.3−	1999 09 09	704	1.6−	1.0−
1998 03 22	704	(1.2+	2.9−)	1998 04 01	704	0.2+	0.7+	1999 09 09	704	0.2+	1.8−
1998 03 22	704	0.6−	0.3−	1998 04 01	704	0.0	0.8+				

1998 FJ₄₂ = 1999 RW₁₅₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				<i>P</i>				<i>Q</i>			
126.53239				(2000.0)							
<i>n</i>	0.27285400	ω	302.57682	−0.95408127				+0.29722091			
<i>a</i>	2.3542315	Ω	254.73720	−0.26025481				−0.88408501			
<i>e</i>	0.1786385	<i>i</i>	2.21372	−0.14831170				−0.36062921			
<i>P</i>	3.61	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	4				

Residuals in seconds of arc

1998 02 26	566	1.2+	0.4−	1998 03 22	704	0.2+	0.7+	1998 04 19	704	0.2+	0.6+
1998 02 26	566	0.8+	0.4−	1998 03 28	704	0.1+	0.1+	1998 04 19	704	0.5+	0.4+
1998 02 26	566	0.6+	0.5−	1998 03 28	704	0.6−	0.1+	1998 04 19	704	0.5−	0.9+
1998 03 03	704	1.0+	0.1−	1998 03 28	704	0.2−	0.8−	1998 05 14	704	1.3+	1.4+
1998 03 03	704	1.2+	0.1−	1998 03 28	704	0.3−	0.2−	1998 05 14	704	0.6+	0.4−
1998 03 03	704	1.9+	0.2+	1998 03 28	704	(2.2−	2.4−)	1998 05 14	704	1.0−	0.4+
1998 03 03	704	0.5+	0.0	1998 03 29	704	0.2−	0.8−	1998 05 14	704	0.4−	0.4+
1998 03 03	704	0.1−	0.4+	1998 03 29	704	0.3+	1.2−	1999 09 07	704	0.7−	0.5+
1998 03 04	704	1.5−	0.5+	1998 03 29	704	(2.2−	0.8+)	1999 09 07	704	0.3+	0.2+
1998 03 04	704	1.1−	0.4+	1998 03 29	704	0.4−	0.8−	1999 09 07	704	0.1+	0.0
1998 03 04	704	1.9−	0.8+	1998 03 29	704	0.4−	1.2−	1999 09 07	704	0.2−	0.1−
1998 03 04	704	1.4−	0.6+	1998 04 01	704	0.3+	0.2−	1999 09 07	704	0.4+	1.0−
1998 03 04	704	1.4−	0.3−	1998 04 01	704	0.3+	0.4−	1999 09 09	704	0.8+	0.4+
1998 03 20	704	0.8−	1.6+	1998 04 01	704	0.4−	0.3−	1999 09 09	704	1.0−	1.2+
1998 03 20	704	0.0	1.0+	1998 04 01	704	0.0	0.6−	1999 09 09	704	0.3+	0.1−
1998 03 20	704	1.0+	0.2−	1998 04 01	704	0.5−	0.3−	1999 09 09	704	0.3−	0.2−
1998 03 20	704	0.4+	0.2+	1998 04 18	704	0.7+	0.2−	1999 09 09	704	0.0	0.3−
1998 03 20	704	1.3+	0.1−	1998 04 18	704	0.8+	0.3−	1999 09 14	704	0.2+	1.7−
1998 03 22	704	(2.0+	3.6−)	1998 04 18	704	1.2−	1.0−	1999 09 14	704	0.3−	0.7+
1998 03 22	704	0.3−	0.6+	1998 04 18	704	1.9−	1.1−	1999 09 14	704	0.3+	0.4+
1998 03 22	704	0.6−	0.0	1998 04 19	704	1.8+	0.2+				
1998 03 22	704	0.1+	0.8+	1998 04 19	704	(0.2−	3.4+)				

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1998 03 28	704	0.5−	1.6−	1998 04 19	704	0.6+	0.1−	1999 09 11	704	0.7+	0.2−
1998 03 28	704	0.3+	1.4−	1998 04 19	704	0.4−	1.2+				
1998 03 28	704	0.5−	0.7−	1999 07 14	704	0.3−	0.3+				

1998 FK₄₄ = 1999 RF₁₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	20.05646		(2000.0)	P		Q	
<i>n</i>	0.19905508	ω	285.82824	+0.38886728		+0.92124807	
<i>a</i>	2.9050518	Ω	7.07628	−0.81419755		+0.34830782	
<i>e</i>	0.2751977	<i>i</i>	4.27253	−0.43112015		+0.17315790	
<i>P</i>	4.95	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 20	704	0.3+	0.4−	1998 03 29	704	0.4+	0.6+	1999 09 07	704	0.2−	0.1−
1998 03 20	704	0.1−	0.6−	1998 03 29	704	1.2+	0.2+	1999 09 07	704	0.2−	0.1−
1998 03 20	704	0.8+	0.6−	1998 03 29	704	1.1−	0.1−	1999 09 07	704	0.7−	0.4−
1998 03 20	704	0.9+	1.4−	1998 03 29	704	1.0−	0.4−	1999 09 09	704	0.1+	0.3−
1998 03 20	704	0.9−	0.5−	1998 03 29	704	0.5−	0.6+	1999 09 09	704	0.2+	0.5−
1998 03 22	704	0.3+	0.5−	1998 04 19	704	0.3+	1.2−	1999 09 09	704	0.3+	0.3−
1998 03 22	704	(0.4+	2.5−)	1998 04 19	704	0.0	0.3−	1999 09 09	704	0.0	0.3−
1998 03 22	704	0.6+	1.5+	1998 04 19	704	0.0	1.1+	1999 09 09	704	0.2−	0.2−
1998 03 22	704	0.5−	1.1+	1998 04 19	704	1.8+	1.7+	1999 09 13	704	0.7+	0.2−
1998 03 22	704	(3.7−	1.0−)	1998 04 19	704	1.4−	0.1−	1999 09 13	704	0.6+	0.7+
1998 03 28	704	0.4−	0.3+	1999 08 08	699	(1.5−	2.9+)	1999 09 13	704	0.6+	0.3+
1998 03 28	704	1.5−	0.1+	1999 08 08	699	0.4+	0.8+	1999 09 13	704	0.4+	0.1+
1998 03 28	704	0.2−	0.5−	1999 08 08	699	0.7−	0.9+	1999 09 13	704	0.4+	0.7+
1998 03 28	704	0.3+	1.4−	1999 09 07	704	1.6−	1.3−				
1998 03 28	704	(2.6−	1.5+)	1999 09 07	704	0.1+	0.6−				

1998 FK₄₆ = 1999 RQ₈₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	128.39313		(2000.0)	P		Q	
<i>n</i>	0.29775274	ω	195.83796	−0.86964402		+0.49357064	
<i>a</i>	2.2210868	Ω	13.75190	−0.44807977		−0.78033602	
<i>e</i>	0.1205333	<i>i</i>	2.49756	−0.20722886		−0.38401005	
<i>P</i>	3.31	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 27	566	0.1+	0.4−	1998 03 22	704	0.2−	0.3−	1998 04 19	704	1.1+	0.1+
1998 02 27	566	0.0	0.6−	1998 03 28	704	0.2−	0.0	1998 04 19	704	0.1−	0.4−
1998 02 27	566	0.0	0.6−	1998 03 28	704	0.2−	0.2−	1998 04 19	704	0.9+	0.1+
1998 03 20	704	0.2−	0.4−	1998 03 28	704	0.2−	0.7−	1998 04 19	704	0.1+	0.1−
1998 03 20	704	0.3+	0.4−	1998 03 28	704	0.0	0.6−	1999 09 07	704	0.1+	1.7+
1998 03 20	704	0.4−	0.6+	1998 03 28	704	1.1−	1.4−	1999 09 07	704	0.5−	0.4−
1998 03 20	704	0.0	0.3+	1998 03 29	704	0.5−	1.0+	1999 09 07	704	1.4−	1.5−
1998 03 20	704	0.4−	0.3+	1998 03 29	704	0.3−	0.3+	1999 09 14	704	0.1−	0.8−
1998 03 22	704	0.2−	0.2+	1998 03 29	704	0.0	0.2+	1999 09 14	704	0.3+	0.5−
1998 03 22	704	0.3+	0.0	1998 03 29	704	0.1−	0.6+	1999 09 14	704	0.0	0.1+
1998 03 22	704	0.4−	0.6−	1998 03 29	704	0.4−	0.5+	1999 09 14	704	0.7+	1.0−
1998 03 22	704	0.0	0.5−	1998 04 19	704	0.9+	0.2−	1999 09 14	704	2.7+	1.4−

1998 FK₄₇ = 1999 RU₁₈₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	26.16133		(2000.0)	P		Q	
<i>n</i>	0.27714238	ω	315.42718	+0.61617442		+0.78743409	
<i>a</i>	2.3298829	Ω	352.55542	−0.68203831		+0.52290198	
<i>e</i>	0.1261861	<i>i</i>	7.37540	−0.39389445		+0.32637565	
<i>P</i>	3.56	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 01 31	910	0.1−	0.0	1998 03 29	704	0.2+	0.1+	1999 08 22	703	0.9+	0.7+
1998 01 31	910	0.4−	0.5−	1998 04 01	704	0.3+	1.5−	1999 08 22	703	0.2+	0.6+
1998 01 31	910	0.4−	0.2+	1998 04 01	704	0.0	0.8−	1999 08 22	699	0.4+	1.1+
1998 03 20	704	0.7+	0.4−	1998 04 01	704	0.4−	1.3−	1999 08 22	699	0.6−	0.5+
1998 03 20	704	0.9+	0.5+	1998 04 01	704	(0.0	2.3−)	1999 08 22	699	0.1−	0.8+

1998 03 20	704	0.8+	0.5+	1998 04 01	704	(0.3+	2.0−)	1999 09 07	704	0.2−	0.1+
1998 03 20	704	0.4+	0.2+	1998 04 18	704	(0.6+	2.1−)	1999 09 07	704	0.3−	0.5−
1998 03 20	704	1.5+	0.6−	1998 04 18	704	1.9−	0.1+	1999 09 07	704	0.5−	0.3−
1998 03 22	704	0.4−	0.1+	1998 04 18	704	0.2+	0.1+	1999 09 07	704	0.4−	0.5−
1998 03 22	704	0.4+	0.3+	1998 04 18	704	0.8−	0.2−	1999 09 07	704	0.5−	0.8−
1998 03 22	704	0.1+	0.5+	1998 04 18	704	(0.6+	2.2−)	1999 09 09	704	0.2−	0.3−
1998 03 22	704	0.2+	0.2+	1998 04 19	704	0.0	0.1−	1999 09 09	704	0.4−	0.4+
1998 03 22	704	0.7−	0.8+	1998 04 19	704	(0.7+	2.4+)	1999 09 09	704	0.6−	0.7+
1998 03 28	704	0.2+	0.7+	1998 04 19	704	0.3−	0.3+	1999 09 09	704	0.4−	0.4+
1998 03 28	704	0.0	0.6+	1998 04 19	704	0.4+	0.8+	1999 09 09	704	0.2−	0.6+
1998 03 28	704	0.6+	0.7+	1998 04 19	704	0.7−	0.4+	1999 09 14	704	0.3−	0.2−
1998 03 28	704	0.4+	0.2−	1999 07 16	704	0.8−	0.5−	1999 09 14	704	0.4−	0.1+
1998 03 28	704	0.5+	0.1−	1999 07 16	704	0.4+	0.7−	1999 09 14	704	0.2−	0.3+
1998 03 29	704	0.2−	0.2+	1999 07 16	704	1.0+	1.8−	1999 09 14	704	0.2−	0.1+
1998 03 29	704	0.1−	0.5+	1999 07 16	704	1.4+	0.2−	1999 09 14	704	0.6+	0.1+
1998 03 29	704	0.6−	0.2+	1999 08 22	703	0.0	0.2+				
1998 03 29	704	0.6+	0.5+	1999 08 22	703	0.5+	1.2+				

1998 FS₄₉ = 1999 RY₆₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	108.71093		(2000.0)	P		Q	
<i>n</i>	0.26073314	ω	210.62585	−0.84778871		+0.53033292	
<i>a</i>	2.4266393	Ω	1.40365	−0.47666314		−0.76104726	
<i>e</i>	0.1232703	<i>i</i>	2.66536	−0.23247915		−0.37356934	
<i>P</i>	3.78	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 01 08	910	1.0−	1.1−	1998 03 28	704	0.6−	1.1−	1998 04 24	699	0.1−	1.2+
1998 01 08	910	1.0−	1.1−	1998 03 28	704	0.8−	1.3−	1998 04 24	699	0.3+	0.5+
1998 01 08	910	0.7−	0.9−	1998 03 29	704	0.3+	0.2−	1998 04 24	699	0.4−	0.4−
1998 03 20	704	0.2+	0.1−	1998 03 29	704	0.2−	0.1+	1998 04 29	566	0.7−	0.3−
1998 03 20	704	0.6−	0.0	1998 03 29	704	0.2−	0.1−	1998 04 29	566	0.6−	0.4−
1998 03 20	704	0.6+	0.3+	1998 03 29	704	0.3−	0.7−	1998 04 29	566	0.6−	0.3−
1998 03 20	704	0.2−	0.5+	1998 04 01	704	0.1+	0.1+	1999 09 07	704	0.6+	0.1−
1998 03 20	704	0.2+	0.2+	1998 04 01	704	0.1+	0.8+	1999 09 07	704	0.4+	0.3−
1998 03 22	704	0.0	0.3+	1998 04 01	704	0.0	0.6+	1999 09 07	704	0.5+	0.6−
1998 03 22	704	1.1+	0.8−	1998 04 01	704	0.4+	0.4+	1999 09 07	704	0.2+	1.6−
1998 03 22	704	1.1+	0.3−	1998 04 01	704	0.3+	3.9+	1999 09 07	704	0.1−	0.9−
1998 03 22	704	0.2+	1.2−	1998 04 19	704	0.7+	0.2+	1999 09 13	704	1.3+	0.4+
1998 03 22	704	0.1+	1.3−	1998 04 19	704	0.8+	0.1−	1999 09 13	704	0.1−	0.6+
1998 03 28	704	0.1−	0.2+	1998 04 19	704	0.5+	0.4−	1999 09 13	704	1.5−	0.6−
1998 03 28	704	0.1−	0.7−	1998 04 19	704	0.5−	0.2+				
1998 03 28	704	0.2−	0.6−	1998 04 19	704	0.3−	0.1+				

1998 FN₅₃ = 1999 RU₅₄

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	287.85954		(2000.0)	P		Q	
<i>n</i>	0.31334764	ω	183.93296	+0.67745995		−0.73464873	
<i>a</i>	2.1467679	Ω	223.42678	+0.67630694		+0.64167963	
<i>e</i>	0.0858942	<i>i</i>	3.05165	+0.28923510		+0.22031455	
<i>P</i>	3.15	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 24	566	0.3−	0.2−	1998 03 29	704	0.6−	1.1+	1999 09 06	699	0.9+	0.3−
1998 02 24	566	0.1+	0.6−	1998 03 29	704	0.0	1.0+	1999 09 07	723	0.4−	0.0
1998 02 24	566	0.2−	0.1−	1998 04 01	704	0.5−	0.5+	1999 09 07	723	0.1+	0.0
1998 03 20	704	0.4+	0.4−	1998 04 01	704	0.4+	0.6+	1999 09 07	704	0.4−	0.7−
1998 03 20	704	0.4+	0.3+	1998 04 01	704	(2.3+	0.3−)	1999 09 07	704	0.3−	0.3−
1998 03 20	704	1.0+	0.9+	1998 04 01	704	(5.0−	1.4−)	1999 09 07	704	0.0	0.2−
1998 03 20	704	0.2−	0.4+	1998 04 18	704	0.1+	0.3−	1999 09 07	704	0.1−	0.3−
1998 03 20	704	0.1−	1.3+	1998 04 18	704	0.2+	0.4−	1999 09 07	704	0.2−	0.2−
1998 03 22	704	0.4+	0.5−	1998 04 18	704	0.2+	0.1−	1999 09 09	704	1.0+	0.0
1998 03 22	704	0.4+	0.3−	1998 04 18	704	0.3−	1.1−	1999 09 09	704	0.1−	0.1−
1998 03 22	704	0.4+	0.9−	1998 04 18	704	0.6−	1.2−	1999 09 09	704	0.1−	1.2−
1998 03 22	704	0.3+	0.2−	1998 04 19	704	0.4+	0.8−	1999 09 09	704	(2.7−	1.3+)

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1998 03 22	704	0.8−	0.4+	1998 04 19	704	0.3+	0.8−	1999 09 09	704	0.8−	0.8−
1998 03 28	704	0.5+	0.0	1998 04 19	704	0.3−	1.1−	1999 09 14	723	0.4+	0.0
1998 03 28	704	0.1+	0.2−	1998 04 19	704	0.7−	1.1−	1999 09 14	704	0.1+	0.3−
1998 03 28	704	0.2−	0.5+	1998 04 19	704	0.1+	1.5−	1999 09 14	723	0.1−	0.1+
1998 03 28	704	0.9+	1.0+	1999 08 07	699	0.3+	1.3+	1999 09 14	704	0.5−	0.2+
1998 03 28	704	0.4−	1.1+	1999 08 07	699	0.2−	1.8+	1999 09 14	704	0.1−	0.2−
1998 03 29	704	0.2−	0.0	1999 08 07	699	0.1−	1.0+	1999 09 14	704	0.2−	0.0
1998 03 29	704	0.7−	0.9+	1999 09 06	699	1.2+	0.1−	1999 09 14	723	0.7−	0.2−
1998 03 29	704	0.5−	0.7+	1999 09 06	699	0.3+	0.4+	1999 09 14	704	0.4−	0.3+

1998 FW₅₃ = 1987 KZ₄ = 1999 RC₁₇₆

Id. G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26183536	<i>ω</i>	336.25453	−0.32349726	+0.94537045		
<i>a</i>	2.4198244	<i>Ω</i>	274.85103	−0.86154108	−0.31188905		
<i>e</i>	0.1229686	<i>i</i>	2.31806	−0.39127547	−0.09486800		
<i>P</i>	3.76	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1987 05 30	413	0.0	0.9+	1998 03 28	704	0.8+	0.2−	1998 04 19	704	0.1−	0.9−
1987 05 30	413	0.2+	0.1+	1998 03 28	910	(3.2+ 0.1+)		1998 04 19	704	0.1−	1.2+
1998 03 20	704	0.2+	1.0+	1998 03 28	910	1.9+	0.0	1998 04 19	704	0.1−	0.7−
1998 03 20	704	0.4+	0.0	1998 03 29	910	1.4+	0.3−	1998 04 19	704	0.1−	0.7−
1998 03 20	704	0.4+	1.1−	1998 03 29	704	0.7−	0.5−	1998 04 19	704	1.4−	0.0
1998 03 20	704	0.4+	0.3+	1998 03 29	704	1.4+	0.6+	1999 09 07	704	0.1−	0.3−
1998 03 20	704	0.8−	0.0	1998 03 29	704	1.7−	0.2+	1999 09 07	704	0.7+	0.1−
1998 03 22	704	0.3+	1.7−	1998 03 29	704	1.6+	0.5+	1999 09 07	704	0.0	0.7+
1998 03 22	704	0.7−	0.7−	1998 03 29	704	1.1+	0.2+	1999 09 07	704	1.7+	0.8−
1998 03 22	704	1.1−	0.6−	1998 04 01	704	0.5+	0.4+	1999 09 09	704	0.0	0.3−
1998 03 22	704	1.7+	1.8+	1998 04 01	704	1.9−	0.3+	1999 09 09	704	0.3−	0.1+
1998 03 22	704	0.1+	0.5+	1998 04 01	704	1.4−	0.1−	1999 09 09	704	1.5−	0.3−
1998 03 23	691	0.0	0.5+	1998 04 01	704	1.7−	0.1−	1999 09 09	704	0.4−	0.8+
1998 03 23	691	0.1−	0.5+	1998 04 01	704	1.4−	0.2−	1999 09 14	704	1.8−	0.5+
1998 03 23	691	0.2−	0.4+	1998 04 18	704	0.5+	0.5+	1999 09 14	704	0.6−	0.3+
1998 03 28	704	1.5+	0.6−	1998 04 18	704	0.4−	0.2+	1999 09 14	704	0.9+	0.4−
1998 03 28	704	0.6+	0.7−	1998 04 18	704	1.4−	1.1−	1999 09 14	704	0.8+	0.7−
1998 03 28	704	0.8+	0.6+	1998 04 18	704	(2.4− 0.3−)		1999 09 14	704	1.2+	0.5−
1998 03 28	704	(2.3− 1.9−)		1998 04 18	704	1.2−	1.2−				

1998 FA₅₄ = 1999 RB₉₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27224095	<i>ω</i>	324.09516	−0.75435979	+0.65555189		
<i>a</i>	2.3577644	<i>Ω</i>	256.90402	−0.59371662	−0.70376119		
<i>e</i>	0.1564838	<i>i</i>	2.03228	−0.28007479	−0.27380998		
<i>P</i>	3.62	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1996 12 05	691	0.4−	1.0−	1998 03 28	704	0.2+	0.2+	1998 04 19	704	0.1−	0.2+
1996 12 05	691	0.5−	0.4+	1998 03 28	704	0.3−	0.7−	1998 04 19	704	0.0	0.1+
1996 12 05	691	0.9+	0.3+	1998 03 28	704	0.4−	0.4−	1998 04 19	704	0.8+	0.2−
1998 03 20	704	0.1+	0.5−	1998 03 29	704	0.4+	0.2−	1998 04 19	704	0.1+	0.3+
1998 03 20	704	0.7−	0.2−	1998 03 29	704	1.1+	0.1+	1998 04 19	704	1.3−	0.9−
1998 03 20	704	0.2−	0.6−	1998 03 29	704	0.5−	0.1+	1998 04 20	704	0.1+	0.8−
1998 03 20	704	0.0	0.4−	1998 03 29	704	0.1−	0.3+	1998 04 20	704	0.2+	0.3+
1998 03 20	704	0.0	0.1−	1998 03 29	704	0.2+	0.2+	1998 04 20	704	0.6+	0.0
1998 03 22	704	1.2+	0.4−	1998 04 01	704	0.2−	0.2+	1998 04 20	704	0.8+	0.2+
1998 03 22	704	0.3−	1.0+	1998 04 01	704	0.2−	0.1−	1998 04 20	704	0.1−	1.2+
1998 03 22	704	0.8+	0.5+	1998 04 01	704	0.0	0.2+	1999 09 07	704	0.6+	1.3+
1998 03 22	704	0.8−	0.6−	1998 04 01	704	0.5−	0.4+	1999 09 07	704	1.0−	0.4+
1998 03 22	704	0.5−	0.5+	1998 04 01	704	0.4−	0.6+	1999 09 07	704	0.4−	1.2−
1998 03 23	691	0.4+	0.7+	1998 04 18	704	0.2−	0.4−	1999 09 09	704	0.2−	0.3−
1998 03 23	691	0.4+	0.6+	1998 04 18	704	0.3+	0.5−	1999 09 09	704	0.6+	1.0−
1998 03 23	691	0.4+	0.4+	1998 04 18	704	0.2−	0.2−	1999 09 09	704	0.1−	0.3+

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1998 03 28	704	0.4−	0.3+	1998 04 18	704	0.4−	0.9−	1999 09 09	704	0.4+	0.7+
1998 03 28	704	0.8+	0.0	1998 04 18	704	0.8−	0.2−				

1998 FG₅₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.24049361	<i>ω</i>	143.17838	+0.55687388	+0.82936806		
<i>a</i>	2.5609456	<i>Ω</i>	160.53446	−0.79071717	+0.54599971		
<i>e</i>	0.1994765	<i>i</i>	7.78986	−0.25427906	+0.11846067		
<i>P</i>	4.10	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 01 31	910	0.1−	1.0+	1998 03 29	704	0.2−	0.5−	1999 09 05	699	0.3+	0.1+
1998 01 31	910	0.0	1.5+	1998 03 29	704	0.9+	0.7+	1999 09 07	704	0.1−	0.2+
1998 01 31	910	0.1−	1.1+	1998 03 29	704	0.5−	0.3−	1999 09 07	704	0.1−	0.1−
1998 03 20	704	0.5+	0.1+	1998 04 19	704	0.3−	0.4−	1999 09 07	704	0.4−	0.4−
1998 03 20	704	0.9+	1.2−	1998 04 19	704	0.4−	0.8+	1999 09 07	704	0.3−	0.3−
1998 03 20	704	0.1−	0.4−	1998 04 19	704	0.6−	1.1+	1999 09 07	704	0.1−	0.7−
1998 03 20	704	1.5+	0.9−	1998 04 19	704	1.7−	0.8+	1999 09 09	704	0.1+	0.6−
1998 03 22	704	0.0	0.0	1998 04 20	704	0.4+	0.1−	1999 09 09	704	0.3+	0.2−
1998 03 22	704	0.5+	0.2+	1998 04 20	704	1.0+	1.4+	1999 09 09	704	0.6−	0.1−
1998 03 22	704	0.6+	0.9−	1998 04 20	704	1.2+	0.5−	1999 09 09	704	0.4−	0.6−
1998 03 22	704	0.3+	1.2−	1998 04 20	704	0.2+	1.5+	1999 09 09	704	0.1−	0.6−
1998 03 22	691	0.2−	0.0	1998 04 20	704	0.3−	0.1−	1999 09 11	699	0.1−	0.1+
1998 03 22	704	(3.8− 0.6+)		1999 07 16	704	0.7−	0.3+	1999 09 11	699	0.2−	0.2+
1998 03 22	691	0.3−	0.1−	1999 07 16	704	0.4+	0.5−	1999 09 11	699	0.4+	0.2+
1998 03 22	691	0.3−	0.1−	1999 07 16	704	0.5−	0.5+	1999 09 12	106	0.2+	0.3+
1998 03 28	704	0.6+	0.4+	1999 07 16	704	0.3+	0.6−	1999 09 12	106	0.6+	0.1+
1998 03 28	704	0.5−	0.9+	1999 07 16	704	0.8+	0.1−	1999 09 13	106	0.3+	0.2+
1998 03 28	704	0.6+	0.4−	1999 08 12	699	0.0	0.4+	1999 09 14	704	0.0	0.1+
1998 03 28	704	0.1−	1.3−	1999 08 12	699	0.6−	0.3+	1999 09 14	704	0.0	0.3+
1998 03 28	704	1.6−	1.3−	1999 08 12	699	0.4−	0.3+	1999 09 14	704	0.0	0.4+
1998 03 29	704	0.7−	0.1−	1999 09 05	699	0.2+	0.8+	1999 09 14	704	0.1+	0.0
1998 03 29	704	1.1−	0.8−	1999 09 05	699	0.2+	0.2+	1999 09 14	704	0.1+	0.2−

1998 FH₅₆ = 1999 RB₅₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.24483097	<i>ω</i>	152.95122	+0.58093412	+0.81257116		
<i>a</i>	2.5306096	<i>Ω</i>	152.48715	−0.76410664	+0.56448683		
<i>e</i>	0.0952998	<i>i</i>	5.88535	−0.28045782	+0.14519893		
<i>P</i>	4.03	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 20	704	0.6+	0.6−	1998 04 19	704	0.8+	1.2−	1999 07 16	704	0.3+	0.2−
1998 03 20	704	(0.7+	3.0−)	1998 04 19	704	0.8+	0.3+	1999 07 16	704	0.1+	0.7+
1998 03 20	704	1.6+	1.0−	1998 04 19	704	0.1+	0.1−	1999 07 16	704	0.4−	0.1−
1998 03 20	704	(0.4−	2.4−)	1998 04 19	704	0.2+	0.0	1999 09 07	704	0.0	0.4+
1998 03 20	704	(5.3−	1.3−)	1998 04 20	704	1.1−	0.7+	1999 09 07	704	0.6−	0.9−
1998 03 21	691	1.2−	0.2−	1998 04 20	704	0.1+	1.0+	1999 09 07	704	0.5+	0.1+
1998 03 21	691	1.4−	0.2−	1998 04 20	704	0.0	0.0	1999 09 07	704	0.0	0.0
1998 03 21	691	1.3−	0.2−	1998 04 20	704	1.2+	1.1−	1999 09 07	704	0.3−	0.1−
1998 03 22	704	0.5−	0.3−	1998 04 20	704	1.2+	0.2+	1999 09 09	704	0.3+	0.1−
1998 03 22	704	0.8+	0.3−	1998 04 30	704	0.1−	0.2−	1999 09 09	704	0.2+	0.4−
1998 03 22	704	0.9−	0.4−	1998 04 30	704	0.9−	0.7+	1999 09 09	704	0.5+	0.1+
1998 03 22	704	0.4−	0.6−	1998 04 30	704	1.3+	1.6+	1999 09 09	704	0.2+	0.2−
1998 03 22	704	(3.0−	0.4−)	1998 04 30	704	1.3−	1.3+	1999 09 09	704	0.7−	0.3−

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Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	227.69763	(2000.0)	P	Q
<i>n</i>	0.28965547	ω	279.62387	-0.14504201
<i>a</i>	2.2622897	Ω	178.70929	+0.94271651
<i>e</i>	0.0557603	<i>i</i>	5.78439	+0.30041370
<i>P</i>	3.40	<i>H</i>	15.4	<i>G</i> 0.15 <i>U</i> 2

Residuals in seconds of arc

1996 10 11	566	0.3+	0.7-	1998 03 25	699	0.1+	0.0	1999 07 23	704	0.2+	0.4-
1996 10 11	566	0.1+	0.4-	1998 03 26	566	0.3+	0.5-	1999 07 23	704	0.2-	0.6-
1996 10 11	566	0.1+	0.4-	1998 03 26	566	0.4-	0.6-	1999 07 23	704	0.0	0.3-
1998 02 26	566	0.7-	0.6+	1998 03 26	566	0.6+	0.3-	1999 08 12	699	0.4-	0.1+
1998 02 26	566	0.3-	0.6+	1998 04 19	704	0.1+	0.3-	1999 08 12	699	0.1-	0.4+
1998 02 26	566	0.3-	0.2+	1998 04 19	704	0.0	0.3-	1999 08 12	699	0.4+	0.3+
1998 03 20	704	0.3-	0.2+	1998 04 19	704	1.1-	0.5+	1999 09 04	703	0.4+	0.5+
1998 03 20	704	0.1-	1.6+	1998 04 19	704	1.0-	0.4-	1999 09 04	703	0.1-	0.2+
1998 03 20	704	0.3-	0.1+	1998 04 20	704	0.3+	0.7-	1999 09 04	703	0.2+	0.8+
1998 03 20	704	0.0	0.3+	1998 04 20	704	1.1+	1.1-	1999 09 04	703	(0.2- 2.2+)	
1998 03 20	704	0.9-	0.2-	1998 04 20	704	1.0+	0.2-	1999 09 07	704	0.2-	0.9-
1998 03 22	704	0.2-	0.5+	1998 04 20	704	0.4-	0.9-	1999 09 07	704	0.1+	0.2+
1998 03 22	704	0.5+	0.9+	1998 04 20	704	0.3+	1.2-	1999 09 07	704	0.1+	0.4+
1998 03 22	704	0.0	0.3+	1999 07 13	704	0.5+	0.3-	1999 09 07	704	0.1-	0.4-
1998 03 22	704	0.1+	1.0+	1999 07 13	704	0.5-	0.4-	1999 09 09	704	0.2+	1.1+
1998 03 22	704	0.9-	0.1+	1999 07 13	704	0.3+	0.2-	1999 09 09	704	0.2-	0.6+
1998 03 25	699	1.3+	0.9-	1999 07 13	704	0.1-	0.4+	1999 09 09	704	0.9-	0.2-
1998 03 25	699	0.9+	0.2+	1999 07 13	704	0.3+	0.2-				

1998 FT₅₇ = 1999 RM₁₉₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	21.87587	(2000.0)	P	Q
<i>n</i>	0.26793076	ω	105.18375	+0.68942473
<i>a</i>	2.3829833	Ω	208.68315	-0.70299722
<i>e</i>	0.1298668	<i>i</i>	7.10889	-0.17460941
<i>P</i>	3.68	<i>H</i>	14.7	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1998 03 20	704	0.8-	1.2-	1998 03 29	704	0.3-	1.0-	1998 04 20	704	0.8-	1.3-
1998 03 20	704	0.8+	0.3-	1998 03 29	704	0.6+	1.0+	1998 04 20	704	1.9+	1.6-
1998 03 20	704	0.3-	0.0	1998 03 29	704	1.1+	0.4+	1998 04 20	704	1.2+	2.0-
1998 03 20	704	0.4-	0.8+	1998 03 29	704	0.1+	0.3-	1998 04 20	704	0.2-	1.8+
1998 03 20	704	3.2-	0.7-	1998 04 01	704	1.6+	0.2-	1998 04 20	704	0.6-	1.5+
1998 03 22	704	1.5+	0.0	1998 04 01	704	1.8+	0.5+	1999 09 08	704	0.6+	0.7-
1998 03 22	704	0.1+	0.6+	1998 04 01	704	0.9-	0.6+	1999 09 08	704	0.2-	0.1+
1998 03 22	704	1.1+	1.7-	1998 04 01	704	0.5+	0.1-	1999 09 08	704	0.1+	0.6-
1998 03 22	704	1.9-	0.2+	1998 04 01	704	0.1-	2.7+	1999 09 16	704	0.6-	0.2-
1998 03 28	704	0.9+	0.3+	1998 04 19	704	0.6+	0.2+	1999 09 16	704	0.3+	0.3+
1998 03 28	704	0.5-	0.4-	1998 04 19	704	1.0-	0.6-	1999 09 16	704	0.0	0.9+
1998 03 28	704	0.1+	1.2-	1998 04 19	704	0.4-	0.5+	1999 09 16	704	0.1-	0.4+
1998 03 28	704	0.4-	0.5+	1998 04 19	704	0.3-	0.2+				
1998 03 29	704	0.8+	0.3+	1998 04 19	704	2.7-	0.3+				

1998 FG₅₈ = 1999 RB₈₇

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	23.31977	(2000.0)	P	Q
<i>n</i>	0.27218929	ω	312.59768	+0.68868253
<i>a</i>	2.3580628	Ω	0.93556	-0.62364227
<i>e</i>	0.1208434	<i>i</i>	7.12127	-0.36984684
<i>P</i>	3.62	<i>H</i>	14.8	<i>G</i> 0.15 <i>U</i> 3

Residuals in seconds of arc

1997 12 06	910	1.0-	1.2-	1998 03 29	704	0.2-	0.8+	1999 08 12	699	0.0	0.9-
1997 12 06	910	0.8-	1.1-	1998 03 29	704	0.4-	1.0+	1999 08 12	699	0.3-	0.3+
1997 12 06	910	0.8-	1.6-	1998 04 01	704	0.1+	0.1-	1999 08 12	699	0.7+	0.7-
1998 03 20	704	0.8-	0.2-	1998 04 01	704	0.9+	0.5+	1999 08 22	703	0.2-	1.0+

1998 03 20	704	0.5-	0.1-	1998 04 01	704	0.3+	0.2+	1999 08 22	703	0.7-	1.0+
1998 03 20	704	1.9+	0.2-	1998 04 01	704	0.2+	0.5-	1999 08 22	703	0.2-	1.0+
1998 03 20	704	0.8+	1.3-	1998 04 01	704	1.1-	1.4-	1999 08 22	703	0.5-	0.7+
1998 03 20	704	0.3-	0.1-	1998 04 19	704	0.4-	1.0-	1999 08 22	699	1.2-	0.6+
1998 03 22	704	0.1-	0.3-	1998 04 19	704	0.7-	0.3+	1999 08 22	699	0.6-	0.6+
1998 03 22	704	0.1+	0.5-	1998 04 19	704	0.4-	0.2+	1999 08 22	699	0.8-	0.4+
1998 03 22	704	0.3+	0.8+	1998 04 19	704	0.8-	0.2+	1999 09 07	704	0.8+	1.0-
1998 03 22	704	0.8+	0.3+	1998 04 19	704	(2.5- 0.6-)		1999 09 07	704	0.8+	0.7-
1998 03 22	704	0.9+	1.7-	1998 04 20	704	0.0	0.5-	1999 09 07	704	0.9+	1.1-
1998 03 28	704	1.3-	1.1-	1998 04 20	704	0.1-	0.8+	1999 09 07	704	1.0+	0.9-
1998 03 28	704	1.0+	0.5-	1998 04 20	704	0.0	1.0+	1999 09 07	704	0.2+	1.0-
1998 03 28	704	0.6-	0.5-	1998 04 20	704	0.8+	0.6-	1999 09 14	704	0.5+	0.3-
1998 03 28	704	0.9-	0.2+	1998 04 20	704	0.3-	0.9+	1999 09 14	704	0.2+	0.5-
1998 03 28	704	0.1-	0.9-	1999 07 16	704	0.7+	0.1+	1999 09 14	704	0.4+	0.5-
1998 03 29	704	0.5-	0.5+	1999 07 16	704	0.0	0.3+	1999 09 14	704	0.1+	0.8-
1998 03 29	704	0.3+	1.0+	1999 07 16	704	0.6+	0.9-	1999 09 14	704	0.3+	0.8-

1998 FQ₅₈ = 1999 RJ₂₈

Id. M. Tichý

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	77.57413	(2000.0)	P	Q
<i>n</i>	0.24522516	ω	80.06814	-0.34480743
<i>a</i>	2.5278969	Ω	169.75363	-0.87581914
<i>e</i>	0.1712993	<i>i</i>	2.24218	-0.33771092
<i>P</i>	4.02	<i>H</i>	15.2	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1998 03 20	704	0.1-	0.1-	1998 03 29	704	0.3+	0.4+	1999 09 08	046	0.0	0.4+
1998 03 20	704	0.3+	0.7+	1998 03 29	704	0.2+	0.4+	1999 09 08	046	0.1-	0.8+
1998 03 20	704	0.1+	0.7+	1998 03 29	704	0.9+	0.8+	1999 09 08	046	0.3+	0.6+
1998 03 20	704	0.4+	0.3+	1998 03 29	704	0.1-	1.0+	1999 09 08	046	1.0+	1.1+
1998 03 20	704	0.1+	0.0	1998 04 19	704	0.1-	1.6-	1999 09 08	046	0.1+	0.7+
1998 03 22	704	0.5-	0.6+	1998 04 19	704	0.4-	0.8-	1999 09 08	046	0.3+	1.5+
1998 03 22	704	0.4-	0.4-	1998 04 19	704	0.7-	1.6+	1999 09 08	046	0.1+	0.9+
1998 03 22	704	0.2-	1.2+	1998 04 19	704	0.1-	0.4-	1999 09 10	046	0.1+	0.5-
1998 03 22	704	0.8+	0.7-	1998 04 20	704	0.6-	0.7-	1999 09 10	046	0.0	0.4+
1998 03 22	704	1.5-	0.4+	1998 04 20	704	0.9+	0.7-	1999 09 10	046	0.4-	0.6+
1998 03 28	704	0.0	0.3-	1998 04 20	704	0.1+	0.7+	1999 09 14	704	1.2-	0.6-
1998 03 28	704	0.1+	0.5-	1998 04 20	704	0.3+	1.0-	1999 09 14	704	0.9-	1.0-
1998 03 28	704	0.4+	0.2-	1998 04 20	704	(5.5- 0.3-)		1999 09 14	704	0.9-	1.3-
1998 03 28	704	0.0	0.1-	1999 09 07	704	0.8+	0.4-	1999 09 14	704	0.2+	0.6-
1998 03 28	704	(0.7+ 2.1-)		1999 09 07	704	1.2+	0.2-	1999 09 14	704	0.8-	0.6-
1998 03 29	704	0.2+	0.0	1999 09 07	704	0.3-	0.2-				

1998 FX₅₈ = 1999 RY₄₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	227.17254	(2000.0)	P	Q
<i>n</i>	0.28652510	ω	282.12130	-0.12452227
<i>a</i>	2.2787373	Ω	174.99852	+0.94954698
<i>e</i>	0.0604429	<i>i</i>	6.67321	+0.28784500
<i>P</i>	3.44	<i>H</i>	15.2	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1998 01 08	688	0.8+	0.5+	1998 04 03	691	0.3+	0.2-	1999 07 13	704	0.6-	0.0
1998 01 08	688	0.5-	0.5+	1998 04 03	691	0.2+	0.3-	1999 09 04	703	1.0+	0.5+
1998 03 20	704	1.1-	0.8+	1998 04 03	691	0.2+	0.1-	1999 09 04	703	0.3-	0.0
1998 03 20	704	0.3+	0.7+	1998 04 19	704	0.0	0.2+	1999 09 04	703	0.5-	0.7+
1998 03 20	704	0.2-	0.4+	1998 04 19	704	0.1+	0.4+	1999 09 04	703	1.4-	0.5+
1998 03 20	704	0.3-	0.0	1998 04 19	704	0.1+	0.5-	1999 09 07	704	0.0	0.1+
1998 03 20	704	0.5-	0.6-	1998 04 19	704	0.2-	0.0	1999 09 07	704	0.3+	0.3+
1998 03 22	704	0.2+	0.5-	1998 04 20	704	0.2+	1.2+	1999 09 07	704	0.3+	0.8-
1998 03 22	704	0.9+	0.7-	1998 04 20	704	0.0	0.6+	1999 09 07	704	0.4-	0.2-
1998 03 22	704	0.2-	0.6-	1998 04 20	704	0.2+	0.9+	1999 09 07	704	0.4-	0.4-
1998 03 22	704	0.2+	0.6+	1998 04 20	704	(0.4+	2.2+)	1999 09 09	704	0.6+	0.2+
1998 03 22	704	0.7-	0.7+	1999 07 13	704	1.0+	0.1+	1999 09 09	704	0.2+	0.1-
1998 03 26	566	0.2+	1.2-	1999 07 13	704	0.3+	0.2+	1999 09 09	704	0.5+	0.5-

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1998 03 26 566 1.2+ 1.0- 1999 07 13 704 0.3- 0.2- 1999 09 09 704 0.3- 0.7-
 1998 03 26 566 1.4- 1.4- 1999 07 13 704 0.0 0.1+

1998 FF₆₀ = 1999 RA₇₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	122.81003	(2000.0)	P	Q	
<i>n</i>	0.26606846	ω	35.58471	-0.92241613	+0.38604217
<i>a</i>	2.3940899	Ω	167.11016	-0.36472137	-0.86144718
<i>e</i>	0.1507804	<i>i</i>	2.81376	-0.12699133	-0.32996999
<i>P</i>	3.70	<i>H</i>	15.7	<i>G</i>	0.15 <i>U</i> 4

Residuals in seconds of arc

1998 03 20	704	0.5-	0.3-	1998 03 25	699	0.3-	1.0-	1998 04 20	704	0.4+	0.6-
1998 03 20	704	0.3+	0.7+	1998 03 25	699	1.4+	0.6-	1998 04 20	704	0.6-	0.4+
1998 03 20	704	0.4-	0.6+	1998 03 25	699	0.8-	0.6+	1998 04 22	704	0.7+	1.1-
1998 03 20	704	0.3-	0.4+	1998 03 31	358	0.2-	1.0+	1998 04 22	704	0.4-	0.3+
1998 03 20	704	0.1+	0.8+	1998 03 31	358	1.1-	0.9+	1998 04 22	704	0.8+	1.3+
1998 03 22	704	0.0	0.1+	1998 03 31	358	0.8+	0.3+	1998 04 22	704	0.9-	0.5-
1998 03 22	704	0.2+	0.5-	1998 04 17	691	0.1+	0.1-	1998 04 22	704	0.1-	0.6+
1998 03 22	704	0.4+	0.2-	1998 04 17	691	0.1-	0.2+	1999 09 07	704	0.7-	0.2-
1998 03 22	704	0.7-	0.6-	1998 04 17	691	0.4-	0.1-	1999 09 07	704	0.4-	0.5+
1998 03 22	704	0.2-	0.1+	1998 04 19	704	0.4+	0.3-	1999 09 07	704	0.9-	0.3-
1998 03 22	358	0.5+	0.9-	1998 04 19	704	1.3+	0.1+	1999 09 07	704	0.1-	0.4-
1998 03 22	358	1.9+	0.5+	1998 04 19	704	0.1-	0.1+	1999 09 09	704	0.7+	0.2+
1998 03 24	358	1.6-	0.4-	1998 04 19	704	0.4-	0.5+	1999 09 09	704	1.0+	0.0
1998 03 24	358	(2.3+	0.5+)	1998 04 20	704	0.1+	0.2-	1999 09 09	704	0.4+	0.1+
1998 03 24	358	0.4+	1.4-	1998 04 20	704	0.8-	0.7-				

1998 FD₆₁ = 1999 RO₂₁₃

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	118.29956	(2000.0)	P	Q	
<i>n</i>	0.30805843	ω	48.00790	-0.58798063	+0.80882627
<i>a</i>	2.1712708	Ω	185.99816	-0.76498397	-0.55960904
<i>e</i>	0.1217032	<i>i</i>	4.87436	-0.26282751	-0.18065931
<i>P</i>	3.20	<i>H</i>	15.1	<i>G</i>	0.15 <i>U</i> 3

Residuals in seconds of arc

1996 10 18	566	0.0	0.9-	1998 03 28	704	(4.4-	3.4-)	1998 04 20	704	1.1+	0.9-
1996 10 18	566	0.2+	1.0-	1998 03 28	704	(3.5-	0.3-)	1998 04 20	704	0.2+	1.2-
1996 10 18	566	0.4+	1.0-	1998 03 28	704	0.3+	0.2+	1998 04 22	704	0.4+	0.0
1998 03 08	699	0.2+	0.8+	1998 03 28	704	0.4+	0.3-	1998 04 22	704	0.5+	0.1-
1998 03 08	699	1.0-	0.5+	1998 03 28	704	0.2-	0.8-	1998 04 22	704	0.9-	0.2-
1998 03 08	699	0.0	0.7+	1998 03 28	358	0.3-	0.6-	1998 04 22	704	0.3+	0.5-
1998 03 20	704	0.0	0.4+	1998 03 28	358	(2.6-	0.8+)	1998 04 22	704	0.5+	0.6+
1998 03 20	704	0.3-	1.1+	1998 03 28	358	(0.5+	2.5-)	1998 05 02	699	0.2+	0.7-
1998 03 20	704	0.3-	0.3+	1998 03 29	704	0.8-	1.0+	1998 05 02	699	0.1-	0.8-
1998 03 20	704	0.2+	0.1+	1998 03 29	704	1.1+	0.5-	1998 05 02	699	0.1+	1.2-
1998 03 20	704	0.5-	0.0	1998 03 29	704	(3.3-	2.8+)	1999 09 05	699	0.2+	0.3+
1998 03 22	704	0.2+	0.7+	1998 03 29	704	0.6-	1.8+	1999 09 05	699	0.1-	0.9+
1998 03 22	704	1.1-	0.8+	1998 03 29	704	(2.3-	1.9+)	1999 09 05	699	0.8-	0.8+
1998 03 22	704	0.1-	0.5-	1998 04 19	704	(3.3+	0.3-)	1999 09 07	327	0.4-	0.3-
1998 03 22	704	0.2-	0.2+	1998 04 19	704	(2.3-	1.0-)	1999 09 07	327	0.1+	0.4-
1998 03 22	704	0.5-	0.2-	1998 04 19	704	0.4-	0.1+	1999 09 07	327	1.0+	0.3-
1998 03 22	358	0.0	0.7+	1998 04 19	704	0.0	0.1+	1999 09 12	327	0.2+	0.2+
1998 03 22	358	0.2+	1.2-	1998 04 20	704	0.2-	0.6-	1999 09 12	327	0.2-	0.4-
1998 03 24	358	(2.4-	1.2+)	1998 04 20	704	1.2+	0.6-	1999 09 12	327	0.1-	0.5-
1998 03 24	358	0.1+	0.6-	1998 04 20	704	0.1-	1.0-				

1998 FH₆₁ = 1999 RZ₅₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	88.59097	(2000.0)	P	Q	
<i>n</i>	0.24545283	ω	34.74466	-0.62820355	+0.77772971
<i>a</i>	2.5263335	Ω	196.37466	-0.73057134	-0.59948147
<i>e</i>	0.1020626	<i>i</i>	4.53464	-0.26762999	-0.18909907
<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 07 26	691	0.1+	0.1+	1998 03 28	704	0.1-	0.1-	1998 04 20	704	0.5+	0.3-
1995 07 26	691	0.3-	0.2+	1998 03 28	704	0.7-	1.3-	1998 04 20	704	1.0+	0.4-
1995 07 26	691	0.2-	0.4+	1998 03 29	704	0.2-	0.1+	1998 04 20	704	0.1-	0.0
1998 03 20	704	0.8+	0.8-	1998 03 29	704	0.4-	0.2+	1998 04 20	704	0.2+	0.7+
1998 03 20	704	0.3+	0.1+	1998 03 29	704	0.0	0.1-	1998 04 20	704	1.2+	0.6-
1998 03 20	704	0.2+	0.8+	1998 03 29	704	0.3-	0.4-	1998 05 02	699	0.5+	0.4-
1998 03 20	704	0.3+	0.5+	1998 03 29	704	0.1-	0.4-	1998 05 02	699	0.3-	0.9-
1998 03 20	704	0.5-	0.8+	1998 04 01	704	0.3-	0.6+	1998 05 02	699	0.3+	0.7-
1998 03 22	704	0.2-	0.1-	1998 04 01	704	0.9+	0.4+	1999 09 07	704	0.4+	1.5+
1998 03 22	704	0.1+	1.0+	1998 04 01	704	0.3-	0.2+	1999 09 07	704	0.3-	0.5-
1998 03 22	704	0.2+	0.4+	1998 04 01	704	0.1-	1.0+	1999 09 07	704	0.5-	0.1+
1998 03 22	704	0.5-	0.1+	1998 04 01	704	(1.1-	2.3-)	1999 09 07	704	0.4-	0.8+
1998 03 22	704	1.1-	0.1+	1998 04 19	704	1.3+	0.4+	1999 09 09	704	0.6+	0.3-
1998 03 28	704	0.1+	0.1+	1998 04 19	704	1.7-	0.5+	1999 09 09	704	0.4+	0.8-
1998 03 28	704	0.1-	0.3-	1998 04 19	704	0.3+	0.5-	1999 09 09	704	0.8-	0.2-
1998 03 28	704	0.2-	0.2+	1998 04 19	704	0.7-	1.0-	1999 09 09	704	0.7+	0.7-

1998 FR₆₁ = 1999 RG₅₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	69.00523	(2000.0)	P	Q	
<i>n</i>	0.23434712	ω	306.84690	-0.35855200	+0.93325585
<i>a</i>	2.6055313	Ω	302.12806	-0.84808717	-0.33539956
<i>e</i>	0.1136142	<i>i</i>	1.47312	-0.39011359	-0.12861046
<i>P</i>	4.21	<i>H</i>	14.8	<i>G</i>	0.15 <i>U</i> 4

Residuals in seconds of arc

1998 03 20	704	0.9+	0.5+	1998 03 29	704	0.1+	0.1+	1998 04 20	704	0.4+	0.6-
1998 03 20	704	0.1-	0.4-	1998 03 29	704	0.2-	0.4-	1998 04 20	704	0.8-	1.5-
1998 03 20	704	1.2+	0.1-	1998 03 29	704	0.3+	0.0	1998 04 20	704	0.4+	1.8-
1998 03 20	704	0.2+	0.5+	1998 03 29	704	0.3-	0.3-	1999 08 22	699	0.5-	0.0
1998 03 20	704	0.8-	0.9+	1998 04 01	704	0.2+	0.2+	1999 08 22	699	0.7-	0.3+
1998 03 22	704	0.3+	0.0	1998 04 01	704	0.7-	0.2-	1999 08 22	699	0.2+	0.5+
1998 03 22	704	0.6+	0.6-	1998 04 01	704	0.5-	1.3+	1999 09 07	704	0.6+	0.1-
1998 03 22	704	0.6-	1.1-	1998 04 01	704	1.2-	0.5+	1999 09 07	704	0.1+	1.5-
1998 03 22	704	0.3+	1.3+	1998 04 01	704	0.5-	0.6+	1999 09 07	704	0.3+	0.1+
1998 03 22	704	(0.8-	2.6-)	1998 04 19	704	0.3+	0.3-	1999 09 07	704	0.5-	0.3-
1998 03 28	704	0.8+	0.4-	1998 04 19	704	0.1+	0.8+	1999 09 07	704	0.3+	0.3-
1998 03 28	704	0.2-	1.2+	1998 04 19	704	0.3+	0.4+	1999 09 09	704	0.4+	0.7-
1998 03 28	704	0.1+	1.4-	1998 04 19	704	0.6-	1.9+	1999 09 09	704	0.5-	0.7+
1998 03 28	704	0.4+	0.3-	1998 04 19	704	0.4-	2.0+	1999 09 09	704	0.6+	0.7+
1998 03 28	704	0.2+	0.3-	1998 04 20	704	0.8+	1.7-	1999 09 09	704	0.4-	0.6+
1998 03 29	704	0.4-	1.2-	1998 04 20	704	0.0	0.4+				

1998 FD₆₂

Id. C. W. Juels (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	64.31090	(2000.0)	P	Q	
<i>n</i>	0.27391393	ω	284.67374	+0.06631902	+0.99758624
<i>a</i>	2.3481543	Ω	349.06665	-0.86863251	+0.04757297
<i>e</i>	0.0945704	<i>i</i>	6.22878	-0.49099832	+0.05058166
<i>P</i>	3.60	<i>H</i>	14.8	<i>G</i>	0.15 <i>U</i> 4

Residuals in seconds of arc

1998 03 20	704	0.2+	0.4+	1998 04 01	704	0.0	0.1+	1998 05 02	699	0.5-	0.1-
1998 03 20	704	0.7-	0.3+	1998 04 01	704	0.3-	0.4+	1998 05 02	699	0.3+	0.3+
1998 03 20	704	0.1+	1.3+	1998 04 04	699	0.1+	0.4+	1999 09 07	704	0.5+	1.4-

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1998 03 20	704	0.1+	0.7+	1998 04 04	699	1.0+	0.0	1999 09 07	704	0.3+	0.1-
1998 03 20	704	(3.3+	2.0+)	1998 04 04	699	0.1+	0.9-	1999 09 07	704	0.9+	0.9-
1998 03 22	704	0.4+	0.5+	1998 04 18	704	0.4-	0.0	1999 09 07	704	0.1-	0.0
1998 03 22	704	0.0	0.2-	1998 04 18	704	0.0	0.1+	1999 09 07	704	0.7-	0.7-
1998 03 22	704	0.3+	0.6-	1998 04 18	704	0.1-	0.8-	1999 09 09	704	0.2+	0.5-
1998 03 22	704	0.0	0.5-	1998 04 18	704	1.7-	1.2-	1999 09 09	704	0.5-	0.1-
1998 03 22	704	0.5+	1.1+	1998 04 19	704	0.1+	0.5+	1999 09 09	704	0.7-	0.1-
1998 03 28	704	0.3-	0.1-	1998 04 19	704	(0.2-	2.1+)	1999 09 09	704	0.2-	0.1+
1998 03 28	704	0.6-	0.2-	1998 04 19	704	0.2-	0.2+	1999 09 09	704	0.5+	0.0
1998 03 28	704	0.4-	1.0-	1998 04 19	704	0.3-	0.1-	1999 09 11	678	1.3-	0.6+
1998 03 28	704	0.4-	0.4+	1998 04 19	704	0.4-	0.1+	1999 09 11	678	0.2+	0.1+
1998 03 28	704	0.2+	0.9-	1998 04 20	704	0.3-	0.1+	1999 09 11	678	0.9-	0.6+
1998 03 29	704	0.5+	0.2-	1998 04 20	704	0.5+	0.9+	1999 09 13	678	1.9+	1.3+
1998 03 29	704	0.7+	0.4-	1998 04 20	704	0.6-	0.5+	1999 09 13	678	0.8+	0.7-
1998 03 29	704	0.5-	0.4+	1998 04 20	704	0.6+	0.0	1999 09 13	678	0.3-	1.1+
1998 03 29	704	0.6-	0.5+	1998 04 20	704	1.0+	0.7-	1999 09 16	704	0.3+	0.3+
1998 03 29	704	0.8-	0.4+	1998 04 28	691	0.1+	0.5+	1999 09 16	704	0.8-	0.4+
1998 04 01	704	0.6+	0.6-	1998 04 28	691	0.3+	0.3+	1999 09 16	704	0.7-	0.5+
1998 04 01	704	0.2+	0.1-	1998 04 28	691	0.0	0.2+				
1998 04 01	704	0.4+	0.2-	1998 05 02	699	1.2+	0.9-				

1998 FL₆₂ = 1999 RU₅₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	349.24723		(2000.0)		$\mathbf{P}$		$\mathbf{Q}$
n	0.27196314	ω	122.20732		+0.94599466		+0.31997646
a	2.3593698	Ω	219.20037		-0.31819676		+0.88577206
e	0.0522277	i	4.72381		-0.06200748		+0.33618882
P	3.62	H	14.7	G	0.15	U	4

Residuals in seconds of arc

1998 03 20	704	0.3-	0.9-	1998 03 29	704	0.2+	0.2-	1998 04 22	704	0.6-	0.5-
1998 03 20	704	0.2+	1.2+	1998 04 01	704	1.0+	0.5-	1999 08 22	699	0.2+	1.2+
1998 03 20	704	0.5+	0.4+	1998 04 01	704	0.6-	1.0+	1999 08 22	699	(0.4-	2.5+)
1998 03 20	704	0.5-	0.9+	1998 04 01	704	0.1+	0.5+	1999 08 22	699	1.2+	1.6+
1998 03 20	704	0.4-	1.3-	1998 04 01	704	0.8+	0.5+	1999 09 07	704	0.4-	0.8-
1998 03 22	704	1.0-	0.4+	1998 04 01	704	1.6-	1.2-	1999 09 07	704	0.2-	0.1-
1998 03 22	704	1.2-	0.6+	1998 04 19	704	0.1-	0.3+	1999 09 07	704	0.5+	0.1-
1998 03 22	704	1.4-	0.9+	1998 04 19	704	0.2+	0.7-	1999 09 07	704	0.1-	0.2-
1998 03 22	704	0.9+	0.9+	1998 04 19	704	1.0-	0.2-	1999 09 07	704	0.1-	0.5-
1998 03 22	704	(4.2-	1.0-)	1998 04 19	704	0.2-	0.6-	1999 09 14	704	0.1+	0.9-
1998 03 28	704	1.3+	0.1-	1998 04 20	704	0.0	0.3-	1999 09 14	704	0.2-	0.2-
1998 03 28	704	0.9-	0.3-	1998 04 20	704	0.3+	0.5+	1999 09 14	703	1.0-	0.2+
1998 03 28	704	0.9+	0.5-	1998 04 20	704	0.6+	0.5+	1999 09 14	704	0.5+	1.0+
1998 03 28	704	0.5+	0.2-	1998 04 20	704	0.6+	0.2+	1999 09 14	703	0.6-	0.4-
1998 03 28	704	0.2+	1.4-	1998 04 20	704	(6.7-	0.3-)	1999 09 14	704	0.1+	0.2-
1998 03 29	704	0.2+	0.1+	1998 04 22	704	0.1+	0.1+	1999 09 14	703	0.1-	0.3+
1998 03 29	704	0.2+	0.2+	1998 04 22	704	1.2-	0.5-	1999 09 14	704	0.1+	0.3-
1998 03 29	704	1.0+	0.7+	1998 04 22	704	0.3+	0.7-	1999 09 14	703	0.1-	0.6-
1998 03 29	704	0.1-	0.1+	1998 04 22	704	0.8+	0.4+				

1998 FS₆₂ = 1999 RS₉₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	85.94138		(2000.0)		P		Q
n	0.26124821	ω	46.25846		-0.39903289		+0.91620043
a	2.4234487	Ω	200.31178		-0.86875607		-0.39057806
e	0.1128332	i	6.07486		-0.29331834		-0.08958541
P	3.77	H	15.4	G	0.15	U	4

Residuals in seconds of arc

1998 03 20	704	0.3+	0.2+	1998 04 01	704	(2.5-	0.2+)	1998 04 22	704	0.0	0.7+
1998 03 20	704	1.1-	0.4+	1998 04 01	704	1.1+	0.9+	1998 04 22	704	1.5+	0.4+
1998 03 20	704	1.2+	0.1-	1998 04 19	704	0.4-	0.0	1998 04 22	704	0.0	1.1+
1998 03 20	704	0.7+	0.1+	1998 04 19	704	0.4+	0.0	1999 09 07	704	0.3+	1.5-
1998 03 20	704	(0.8+	2.8-)	1998 04 19	704	0.8-	0.9-	1999 09 07	704	0.2-	0.2-
1998 03 22	704	(3.1-	0.5+)	1998 04 19	704	0.6-	1.3-	1999 09 07	704	0.8-	0.2-
1998 03 22	704	1.3-	0.1+	1998 04 20	704	0.4+	0.3+	1999 09 07	704	0.2+	1.8+

1998 03 22	704	0.7-	0.6+	1998 04 20	704	1.0+	0.6+	1999 09 09	704	0.4+	0.5+
1998 03 22	704	0.7+	1.1-	1998 04 20	704	0.3-	0.1-	1999 09 09	704	0.2-	0.1+
1998 03 22	704	(6.4-	1.1+)	1998 04 20	704	0.4-	1.1-	1999 09 09	704	0.6+	0.5-
1998 04 01	704	0.4-	0.0	1998 04 20	704	(3.3-	0.6+)	1999 09 09	704	0.1+	0.5+
1998 04 01	704	0.0	0.3-	1998 04 22	704	0.3-	0.9-	1999 09 09	704	0.5-	0.6-
1998 04 01	704	0.4-	0.8-	1998 04 22	704	0.7-	1.1+				

1998 FF₆₃ = 1999 RW₈₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	66.16830		(2000.0)		P		Q
n	0.24268818	ω	80.22266		-0.13444311		+0.99088756
a	2.5454836	Ω	182.10350		-0.97389727		-0.13365227
e	0.1641165	i	12.87539		-0.18289113		-0.01670077
P	4.06	H	15.5	G	0.15	U	4

Residuals in seconds of arc

1998 03 20	704	0.6+	0.5+	1998 04 22	704	0.3-	0.7-	1999 09 09	704	0.2+	0.0
1998 03 20	704	1.1-	1.1-	1998 04 22	704	1.0-	1.7+	1999 09 09	704	0.1+	0.1-
1998 03 20	704	0.4-	0.7-	1998 04 22	704	0.2+	1.1+	1999 09 09	704	0.4+	0.5+
1998 03 20	704	1.1-	0.9+	1998 04 22	704	1.8-	0.8+	1999 09 09	704	0.4-	0.6-
1998 03 22	704	1.0+	0.4+	1999 09 07	704	0.2+	0.6+	1999 09 09	704	0.1+	1.2-
1998 03 22	704	0.8+	0.4+	1999 09 07	704	0.4+	1.2+	1999 09 09	704	0.9+	0.1-
1998 03 22	704	0.6-	0.1+	1999 09 07	704	0.7+	0.2+	1999 09 09	704	0.1-	0.4+
1998 03 22	704	0.6+	0.5-	1999 09 07	704	0.6-	0.5+	1999 09 09	704	0.5-	0.2-
1998 03 22	704	(3.5-	2.4-)	1999 09 07	704	1.0+	0.8+	1999 09 09	704	0.4+	0.2-
1998 04 20	704	0.8-	1.8-	1999 09 09	704	0.7-	1.3-	1999 09 09	704	0.3-	0.5+
1998 04 20	704	1.6+	0.3-	1999 09 09	704	0.4+	0.3-	1999 09 09	704	0.8-	0.1+
1998 04 20	704	0.0	0.5+	1999 09 09	704	0.3+	0.2-	1999 09 09	704	0.5-	0.3+
1998 04 20	704	1.1+	1.6-	1999 09 09	704	0.1-	0.4-	1999 09 09	704	1.4-	0.6+
1998 04 20	704	1.3+	0.2+	1999 09 09	704	0.2+	1.3-				

1998 FS₆₃ = 1986 RT₁₆ = 1999 RF₁₈₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	343.10745		(2000.0)		P		Q
n	0.30194533	ω	330.42018		+0.99785366		+0.00364809
a	2.2004787	Ω	29.58745		+0.02959170		+0.86556386
e	0.1480806	i	7.60935		-0.05841578		+0.50078529
P	3.26	H	14.9	G	0.15	U	2

Residuals in seconds of arc

1986 09 14	095	1.4+	2.3-	1998 04 03	691	0.0	0.2-	1998 04 22	704	1.1-	0.6+
1996 12 13	691	0.0	0.1-	1998 04 03	691	0.4+	0.3-	1998 04 22	704	0.2-	0.1+
1996 12 13	691	0.0	0.3-	1998 04 18	691	0.9-	0.6-	1998 04 22	704	0.0	0.7-
1996 12 13	691	0.4+	0.5-	1998 04 18	691	0.9-	0.2-	1998 04 22	704	(0.8-	2.1+)
1998 03 20	704	0.2-	0.6-	1998 04 18	691	0.9-	0.2-	1999 09 09	704	0.2+	0.1+
1998 03 20	704	0.3-	0.3+	1998 04 19	704	0.2-	0.4-	1999 09 09	704	0.0	0.1+
1998 03 20	704	0.5+	0.0	1998 04 19	704	1.4+	0.4+	1999 09 09	704	0.0	0.5+
1998 03 20	704	0.9+	0.7+	1998 04 19	704	0.1+	0.7-	1999 09 09	704	0.3+	0.2+
1998 03 20	704	(2.2-	1.9+)	1998 04 19	704	0.1+	0.5-	1999 09 09	704	0.5+	0.7+
1998 03 22	704	0.1-	0.4+	1998 04 20	704	0.5+	0.2+	1999 09 13	704	0.2+	0.4-
1998 03 22	704	(2.4+	0.6+)	1998 04 20	704	0.0	0.8-	1999 09 13	704	0.4-	0.4-
1998 03 22	704	0.5-	0.4-	1998 04 20	704	0.5+	0.3+	1999 09 13	704	0.3-	0.1+
1998 03 22	704	0.3-	0.6+	1998 04 20	704	0.2+	1.7-	1999 09 13	704	0.4-	0.9-
1998 03 22	704	1.1-	0.3+	1998 04 20	704	(6.1-	0.7+)				
1998 04 03	691	0.0	0.1-	1998 04 22	704	0.3+	0.1+				

Residuals in seconds of arc

1994 01 18	691	0.1+	0.3+	1998 03 29	704	0.2-	0.5-	1998 04 22	704	0.3+	0.5+
1994 01 18	691	0.1-	0.1-	1998 03 29	704	0.9+	0.6-	1998 04 22	704	0.9+	0.3+
1994 01 18	691	0.1+	0.1+	1998 03 29	704	0.2+	0.1+	1998 04 22	704	1.8-	1.0-
1998 03 20	704	0.4+	0.1-	1998 03 29	704	0.4+	0.1+	1999 09 07	704	0.1-	0.8-
1998 03 20	704	0.2-	0.8-	1998 03 29	704	0.9-	0.9-	1999 09 07	704	0.6+	0.6+
1998 03 20	704	0.1-	1.1+	1998 04 19	704	0.3+	0.4+	1999 09 07	704	0.3+	0.3-
1998 03 20	704	1.1-	0.7+	1998 04 19	704	0.5-	0.5+	1999 09 07	704	0.4+	0.0
1998 03 20	704	(1.1- 2.7-)		1998 04 19	704	0.8-	0.5+	1999 09 07	704	0.1-	1.0-
1998 03 22	704	0.0	0.3-	1998 04 19	704	0.1+	0.6+	1999 09 09	704	0.3-	0.0
1998 03 22	704	0.4+	0.1-	1998 04 20	704	0.4+	1.0+	1999 09 09	704	1.4-	0.2+
1998 03 22	704	0.3-	0.2-	1998 04 20	704	0.8+	0.4+	1999 09 09	704	0.6+	0.2+
1998 03 22	704	0.9+	1.3-	1998 04 20	704	0.6+	1.3+	1999 09 14	704	0.1-	1.0-
1998 03 22	704	0.6-	0.8-	1998 04 20	704	0.4+	0.8+	1999 09 14	704	0.9+	0.4+
1998 03 25	699	0.6-	0.2+	1998 04 20	704	0.9-	0.7-	1999 09 14	704	0.5-	0.8+
1998 03 25	699	0.2-	0.4-	1998 04 22	704	0.3+	0.4-	1999 09 14	704	0.6-	0.2-
1998 03 25	699	0.5-	0.4+	1998 04 22	704	1.5+	1.1-	1999 09 14	704	0.6+	0.4+

1998 FR₆₅ = 1999 RT₁₆₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
194.58247							
<i>n</i>	0.30455314	<i>ω</i>	213.96562	-0.82700989	-0.56059133		
<i>a</i>	2.1878993	<i>Ω</i>	291.88222	+0.52540468	-0.74391675		
<i>e</i>	0.0587218	<i>i</i>	2.61468	+0.20001143	-0.36376536		
<i>P</i>	3.24	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 03	704	1.2+	1.0+	1998 04 01	704	1.0-	1.2+	1998 04 30	566	0.3+	0.0
1998 03 03	704	0.1+	0.2-	1998 04 01	704	0.6-	1.4+	1999 08 22	699	0.5-	1.6+
1998 03 03	704	1.6-	0.8-	1998 04 04	699	0.4+	0.9-	1999 08 22	699	0.4+	0.1+
1998 03 03	704	1.0+	0.2-	1998 04 04	699	0.7+	0.4-	1999 08 22	699	0.5-	0.4-
1998 03 03	704	0.7-	1.1-	1998 04 04	699	0.3+	1.1+	1999 09 07	704	0.1-	0.5-
1998 03 20	704	0.6-	0.3-	1998 04 18	704	0.9+	0.1-	1999 09 07	704	0.5-	0.2-
1998 03 20	704	0.0	0.2+	1998 04 18	704	0.4+	0.3+	1999 09 07	704	0.4+	0.2-
1998 03 20	704	1.2+	0.1-	1998 04 18	704	0.0	0.7+	1999 09 07	704	0.0	0.1+
1998 03 20	704	1.5+	0.7-	1998 04 18	704	0.3+	0.2+	1999 09 07	704	0.1-	0.1-
1998 03 20	704	0.8+	0.5-	1998 04 19	704	0.3+	0.0	1999 09 09	704	0.9+	0.3-
1998 03 22	704	0.1-	0.3-	1998 04 19	704	0.1-	0.0	1999 09 09	704	0.2-	0.1-
1998 03 22	704	0.3-	0.2+	1998 04 19	704	1.7-	1.8-	1999 09 09	704	0.3+	0.3+
1998 03 22	704	0.7+	0.1+	1998 04 19	704	0.4+	0.1-	1999 09 09	704	0.8-	1.0-
1998 03 22	704	0.3-	0.3-	1998 04 20	704	0.5+	0.2+	1999 09 09	704	0.9-	1.8-
1998 03 22	704	0.6+	0.2-	1998 04 20	704	0.5+	1.2-	1999 09 14	704	0.5+	0.3+
1998 03 24	699	0.7-	0.4+	1998 04 20	704	0.1-	0.4-	1999 09 14	704	0.2+	0.6-
1998 03 24	699	0.2-	0.2-	1998 04 20	704	0.2-	0.2-	1999 09 14	704	0.1-	0.2-
1998 03 24	699	0.0	0.4-	1998 04 20	704	0.2+	0.7+	1999 09 14	704	0.1-	0.0
1998 03 25	704	0.6-	0.4-	1998 04 22	704	0.1-	0.1+	1999 09 14	704	0.3+	0.3-
1998 03 25	704	0.1-	0.3+	1998 04 22	704	0.0	0.3-	1999 09 14	703	(3.0+ 1.6+)	
1998 03 25	704	0.7-	0.1-	1998 04 22	704	0.4-	0.4-	1999 09 14	703	0.3+	1.4+
1998 03 25	704	0.3-	0.4+	1998 04 22	704	0.2+	0.3+	1999 09 14	703	0.5+	0.6+
1998 04 01	704	0.4-	0.3+	1998 04 22	704	0.2-	1.1+	1999 09 14	703	0.2+	1.1+
1998 04 01	704	0.8-	0.7+	1998 04 30	566	0.3+	0.1-				
1998 04 01	704	0.7-	0.3+	1998 04 30	566	0.3-	0.3-				

1998 FS₆₅ = 1999 RQ₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
127.55405							
<i>n</i>	0.28485340	<i>ω</i>	317.37535	-0.85393804	+0.51886817		
<i>a</i>	2.2876440	<i>Ω</i>	253.92122	-0.46565594	-0.79587320		
<i>e</i>	0.1090883	<i>i</i>	2.36005	-0.23228079	-0.31202832		
<i>P</i>	3.46	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 20	704	0.0	0.4-	1998 04 01	704	0.2+	0.4+	1999 09 07	704	0.4-	0.4-
1998 03 20	704	0.9+	0.0	1998 04 04	699	0.6-	0.8+	1999 09 07	704	0.6+	0.1-
1998 03 20	704	1.7+	0.1-	1998 04 04	699	0.8+	0.9-	1999 09 07	704	0.1-	0.7-
1998 03 20	704	0.4-	1.0-	1998 04 04	699	0.1+	0.1-	1999 09 07	704	0.8+	0.4+

1998 03 20	704	0.3+	0.2-	1998 04 20	704	1.0-	0.3+	1999 09 08	704	0.1-	1.1-
1998 03 22	704	0.2-	0.2-	1998 04 20	704	0.3-	0.7+	1999 09 08	704	0.1-	0.2+
1998 03 22	704	0.8-	0.0	1998 04 20	704	0.4+	0.5+	1999 09 08	704	0.9-	0.9-
1998 03 22	704	0.0	0.1-	1998 04 20	704	0.2+	1.1-	1999 09 08	704	0.2+	0.3-
1998 03 22	704	0.4-	0.5-	1998 04 20	704	(2.1- 0.4+)		1999 09 09	704	0.0	0.4+
1998 03 22	704	0.2+	0.4-	1998 04 22	704	0.0	1.5-	1999 09 09	704	0.4+	0.1-
1998 03 22	699	0.9+	0.6+	1998 04 22	704	0.7+	0.2+	1999 09 09	704	0.8-	0.0
1998 03 22	699	1.1-	0.3-	1998 04 22	704	1.0+	0.2+	1999 09 09	704	1.1+	0.6-
1998 03 22	699	(2.2- 1.4+)		1998 04 22	704	0.6+	0.6-	1999 09 09	704	0.4+	0.5-
1998 03 25	704	0.3-	0.1+	1998 04 22	704	0.9+	0.6+	1999 09 09	704	0.3+	0.8+
1998 03 25	704	0.5+	0.1+	1998 04 24	699	0.4-	0.2-	1999 09 09	704	1.3-	0.1-
1998 03 25	704	0.4+	1.2+	1998 04 24	699	0.9-	0.2+	1999 09 09	704	0.6+	0.2-
1998 03 25	704	0.8-	0.1+	1998 04 24	699	0.3-	0.0	1999 09 09	704	0.4-	0.8+
1998 03 27	428	0.1-	1.1+	1998 05 01	699	0.5-	0.3-	1999 09 09	704	0.7+	0.1-
1998 03 27	428	0.0	0.4-	1998 05 01	699	0.2+	0.3+	1999 09 09	704	0.1-	0.0
1998 03 28	428	0.4-	0.3+	1998 05 01	699	0.2-	0.3+	1999 09 09	704	0.0	0.7+
1998 03 28	428	0.2-	0.3-	1999 09 07	704	0.4-	0.3+	1999 09 09	704	1.3+	0.0
1998 03 29	428	1.3-	0.0	1999 09 07	704	0.0	0.8-	1999 09 09	704	0.0	0.5+
1998 04 01	704	0.2-	0.1+	1999 09 07	704	0.2-	0.5+	1999 09 09	704	1.4-	1.1-
1998 04 01	704	0.5-	0.2+	1999 09 07	704	0.8+	0.6+	1999 09 09	704	0.3+	0.8+
1998 04 01	704	0.1+	0.8+	1999 09 07	704	0.4-	0.4+	1999 09 09	704	0.5-	0.1-
1998 04 01	704	0.6+	0.7-	1999 09 07	704	0.5-	0.0	1999 09 09	704	0.3+	0.6+

1998 FD₆₆ = 1984 QO₁ = 1999 RQ₁₈

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<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
61.52398							
<i>n</i>	0.26226762	<i>ω</i>	73.28069	+0.03932065	+0.99859482		
<i>a</i>	2.4171648	<i>Ω</i>	199.07915	-0.95319149	+0.02681747		
<i>e</i>	0.0819699	<i>i</i>	6.23991	-0.29979972	+0.04570791		
<i>P</i>	3.76	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1984 08 21	675	0.1-	0.2+	1998 04 01	704	0.1-	0.1-	1999 08 22	699	(0.8+	3.1+)
1998 03 20	704	0.3-	0.0	1998 04 01	704	0.2+	0.5+	1999 08 22	699	0.9-	0.9+
1998 03 20	704	0.7+	0.1-	1998 04 01	704	0.0	0.4-	1999 08 22	699	0.3-	0.7+
1998 03 20	704	(4.2+	0.2-)	1998 04 18	704	0.6+	0.3-	1999 09 07	704	0.4-	0.0
1998 03 20	704	0.7-	0.1-	1998 04 18	704	0.4-	0.4-	1999 09 07	704	0.2-	0.1-
1998 03 20	704	0.1+	0.4+	1998 04 18	704	0.1+	1.2+	1999 09 07	704	0.2-	0.0
1998 03 22	704	0.0	0.3+	1998 04 18	704	0.2+	0.5+	1999 09 07	704	0.4-	0.1-
1998 03 22	704	0.7-	0.2+	1998 04 18	704	0.5+	0.4+	1999 09 07	704	0.0	0.1+
1998 03 22	704	0.7-	0.3-	1998 04 19	704	0.1-	0.4-	1999 09 08	704	(0.1-	2.3+)
1998 03 22	704	0.5-	0.0	1998 04 19	704	0.7+	1.0-	1999 09 08	704	0.2-	0.2-
1998 03 22	704	0.3-	0.4+	1998 04 19	704	1.6+	0.3-	1999 09 08	704	0.3+	0.1+
1998 03 22	699	0.8-	0.5+	1998 04 19	704	0.8+	1.1-	1999 09 08	704	0.6+	1.6-
1998 03 22	699	0.9-	0.7+	1998 04 24	699	0.1-	0.2-	1999 09 09	704	0.1+	0.1+
1998 03 22	699	1.7-	1.8+	1998 04 24	699	0.2+	0.7-	1999 09 09	704	0.0	0.1+
1998 03 24	699	0.2+	0.1-	1998 04 24	699	0.0	0.2+	1999 09 09	704	0.0	0.1-
1998 03 24	699	0.3+	0.3-	1998 04 28	699	0.0	0.1-	1999 09 09	704	0.1+	0.4+
1998 03 24	699	0.3-	0.2+	1998 04 28	699	0.4+	0.0	1999 09 09	704	0.3-	0.4+
1998 03 25	704	0.3+	0.3+	1998 04 28	699	0.4+	0.1+	1999 09 14	704	0.1-	0.2-
1998 03 25	704	0.2-	0.3-	1998 04 30	699	0.2-	0.2-	1999 09 14	704	0.4+	0.1-
1998 03 25	704	0.1+	0.7-	1998 04 30	699	0.3-	0.2-	1999 09 14	704	0.5+	0.3-
1998 03 25	704	0.0	0.0	1998 04 30	699	0.3+	0.3-	1999 09 14	704	0.4+	0.3+
1998 03 25	704	0.3-	0.4-	1998 05 01	699	0.6+	0.1-	1999 09 14	704	0.6+	0.1-
1998 04 01	704	0.2-	0.6+	1998 05 01	699	0.3+	0.5-				
1998 04 01	704	0.2+	0.6+	1998 05 01	699	0.1+	0.3-				

Residuals in seconds of arc

1995 11 18	691	0.1+	0.2-	1998 03 28	704	1.2+	0.2+	1999 09 07	699	0.1-	0.6-
1995 11 18	691	0.2+	0.1-	1998 03 28	704	0.7+	0.8+	1999 09 07	699	0.4-	0.2-
1995 11 18	691	0.1-	0.0	1998 03 28	704	(2.0+	2.2-)	1999 09 07	699	0.1-	0.4+
1998 03 20	704	1.9-	0.9-	1998 04 19	704	0.3+	1.1+	1999 09 08	703	0.7-	0.4-
1998 03 20	704	0.4+	0.8+	1998 04 19	704	0.4+	0.6-	1999 09 08	703	0.2+	0.2-
1998 03 20	704	(1.7+	2.3+)	1998 04 19	704	0.5+	1.4+	1999 09 08	703	1.0+	0.1-
1998 03 20	704	1.5-	0.0	1998 04 19	704	1.3+	0.8-	1999 09 08	703	0.1+	0.1-
1998 03 22	704	0.4-	0.4+	1998 04 20	704	1.2+	0.3+	1999 09 09	704	0.7+	0.1+
1998 03 22	704	1.6+	0.1-	1998 04 20	704	0.7-	1.5-	1999 09 09	704	0.3-	0.5+
1998 03 22	704	1.1-	0.4+	1998 04 20	704	1.1-	1.1-	1999 09 09	704	1.0+	1.0-
1998 03 22	704	0.5+	1.1+	1998 04 20	704	0.6-	0.8-	1999 09 09	704	0.9-	0.4-
1998 03 25	704	0.9-	0.3-	1998 04 22	704	0.4-	1.5+	1999 09 09	704	0.4-	0.9-
1998 03 25	704	1.1+	1.2-	1998 04 22	704	0.2+	0.1+	1999 09 13	704	0.0	0.0
1998 03 25	704	0.0	1.8-	1998 04 22	704	0.3+	0.8-	1999 09 13	704	1.1+	1.1+
1998 03 25	704	0.1-	0.3+	1998 04 22	704	0.4+	0.1+	1999 09 13	704	0.6+	0.2-
1998 03 25	704	0.4-	0.4-	1999 08 12	699	1.0-	0.4+	1999 09 13	704	0.5+	0.3-
1998 03 28	704	1.6-	0.2+	1999 08 12	699	0.5-	1.0+	1999 09 13	704	0.6-	0.1+
1998 03 28	704	0.0	0.6+	1999 08 12	699	0.2+	0.0				

1998 FJ₆₇ = 1999 RR₁₇₈

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Williams				Q			
<i>M</i>	278.15214	(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.31314500	ω	335.33473	+0.41815854	-0.90645960		
<i>a</i>	2.1476940	Ω	89.90111	+0.84289597	+0.36300871		
<i>e</i>	0.0385815	<i>i</i>	3.37922	+0.33862931	+0.21576763		
<i>P</i>	3.15	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1995 04 25	691	0.7+	0.0	1998 03 29	704	0.1+	0.5-	1999 07 16	704	0.6+	1.0-
1995 04 25	691	1.2-	0.7-	1998 03 29	704	0.4-	1.0-	1999 09 07	699	0.6+	0.6+
1995 04 25	691	0.2+	0.1-	1998 03 29	704	0.1-	0.7-	1999 09 07	699	0.3+	0.5+
1998 03 20	704	1.0-	0.8-	1998 04 19	704	0.7+	0.5+	1999 09 07	704	0.4-	0.1+
1998 03 20	704	0.2+	0.1+	1998 04 19	704	0.5-	0.7+	1999 09 07	704	0.5-	0.5+
1998 03 20	704	0.2-	0.2+	1998 04 19	704	0.5-	0.2+	1999 09 07	704	0.4-	0.5-
1998 03 20	704	0.7-	0.6+	1998 04 19	704	0.8+	0.0	1999 09 07	699	0.4+	0.4+
1998 03 20	704	1.1-	1.1+	1998 04 20	704	0.2-	0.1+	1999 09 07	704	0.0	0.2+
1998 03 22	704	0.3-	0.2-	1998 04 20	704	0.7+	0.5+	1999 09 07	704	0.2-	0.1+
1998 03 22	704	0.9+	1.3-	1998 04 20	704	0.3+	0.5+	1999 09 09	704	0.6-	0.2-
1998 03 22	704	0.2-	0.5-	1998 04 20	704	0.5+	0.2+	1999 09 09	704	0.1-	0.0
1998 03 22	704	0.8+	1.8+	1998 04 20	704	0.3-	0.5-	1999 09 09	704	0.1+	0.0
1998 03 22	704	0.1-	0.2-	1998 04 22	704	0.4-	0.3+	1999 09 09	704	0.4+	0.2+
1998 03 25	704	0.1+	0.1-	1998 04 22	704	0.9+	0.7+	1999 09 09	704	0.5+	0.7+
1998 03 25	704	0.2+	0.1+	1998 04 22	704	0.1-	0.8+	1999 09 13	704	0.1-	0.1+
1998 03 25	704	0.2-	0.5-	1998 04 22	704	0.6-	0.2-	1999 09 13	704	0.1-	0.1+
1998 03 25	704	0.3+	0.2+	1998 04 22	704	0.1+	1.0+	1999 09 13	704	0.1+	0.3-
1998 03 25	704	0.1-	0.1-	1999 07 16	704	0.3+	1.1-	1999 09 13	704	0.4-	0.6+
1998 03 29	704	1.7+	0.4-	1999 07 16	704	0.3+	0.7-	1999 09 13	704	0.2-	0.6+
1998 03 29	704	0.4-	0.6-	1999 07 16	704	1.0-	0.6-				

1998 FW₆₇ = 1999 RT₁₅₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Q			
<i>M</i>	100.00934	(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.26538659	ω	64.13599	-0.65730467	+0.75342251		
<i>a</i>	2.3981890	Ω	164.72969	-0.71300446	-0.61420219		
<i>e</i>	0.0675172	<i>i</i>	3.80269	-0.24408035	-0.23475561		
<i>P</i>	3.71	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 20	704	0.3+	0.6-	1998 04 19	704	0.1-	0.8-	1998 05 03	691	0.1-	0.6+
1998 03 20	704	0.8-	1.5-	1998 04 19	704	1.3+	0.8+	1999 08 21	691	0.3+	0.9+
1998 03 20	704	0.2-	0.5+	1998 04 20	704	1.2+	0.2+	1999 08 21	691	0.1+	1.2+
1998 03 20	704	1.0-	0.4+	1998 04 20	704	0.1+	0.5-	1999 08 21	691	0.4+	0.1+
1998 03 20	704	1.8-	0.7-	1998 04 20	704	1.0-	0.2+	1999 09 07	704	0.2+	0.6-
1998 03 22	704	0.5+	0.1+	1998 04 20	704	0.9-	0.7-	1999 09 07	704	0.2-	1.0-

1998 03 22	704	0.0	0.1-	1998 04 20	704	(5.5-	0.9-)	1999 09 07	704	0.8-	0.5-
1998 03 22	704	0.2+	0.2-	1998 04 22	704	1.2+	0.7+	1999 09 07	704	0.1-	0.9+
1998 03 22	704	0.8-	0.5-	1998 04 22	704	1.1+	0.9-	1999 09 07	704	0.1-	0.8-
1998 03 22	704	1.0-	0.2+	1998 04 22	704	0.4-	0.3+	1999 09 09	704	0.3+	0.0
1998 03 24	566	0.6+	0.5-	1998 04 22	704	0.6-	0.5+	1999 09 09	704	0.8+	0.2+
1998 03 24	566	0.4+	0.1+	1998 04 22	704	0.7+	0.5-	1999 09 09	704	0.2-	0.3+
1998 03 24	566	0.2+	0.5+	1998 04 24	691	0.6+	0.3+	1999 09 09	704	0.3-	0.8-
1998 03 25	704	0.4+	0.8+	1998 04 24	691	0.4+	0.0	1999 09 09	704	0.4+	0.1-
1998 03 25	704	0.5+	0.8-	1998 04 24	691	0.3+	0.2-	1999 09 14	704	0.1-	1.0-
1998 03 25	704	0.3+	0.5-	1998 05 01	691	1.3-	0.1-	1999 09 14	704	0.1+	0.4+
1998 03 25	704	0.2+	1.3+	1998 05 01	691	1.4-	0.2-	1999 09 14	704	0.2+	0.2-
1998 03 25	704	0.3-	0.5-	1998 05 01	691	1.1-	0.0	1999 09 14	704	0.4-	0.5+
1998 04 19	704	0.8+	0.7+	1998 05 03	691	0.1+	0.6-	1999 09 14	704	0.3-	0.3-
1998 04 19	704	1.0+	1.4+	1998 05 03	691	0.1-	0.2-				

1998 FM₆₈ = 1999 RY₈₁

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Williams				Q			
<i>M</i>	85.35780	(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.25865747	ω	41.09917	-0.38958672	+0.91996506		
<i>a</i>	2.4396042	Ω	206.06004	-0.86873725	-0.38273351		
<i>e</i>	0.1038742	<i>i</i>	5.67393	-0.30580677	-0.08473101		
<i>P</i>	3.81	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1992 11 21	691	0.1-	0.2-	1998 04 01	704	0.1-	0.2-	1998 05 01	699	0.3+	0.8-
1992 11 21	691	0.0	0.1-	1998 04 01	704	0.1+	0.9+	1998 05 01	566	0.3-	0.4-
1992 11 21	691	0.2+	0.1-	1998 04 01	704	0.2-	0.6+	1998 05 01	566	0.2+	0.1-
1998 03 20	704	0.1-	0.8+	1998 04 01	704	0.5-	0.5-	1998 05 01	566	0.1+	0.3-
1998 03 20	704	0.3-	1.1-	1998 04 01	704	0.2+	0.6-	1998 05 02	566	0.4-	0.8-
1998 03 20	704	0.9+	0.4-	1998 04 04	699	0.2-	1.0-	1998 05 02	566	0.1+	0.1-
1998 03 20	704	0.4-	0.5-	1998 04 04	699	1.1+	0.5+	1998 05 02	566	0.0	1.0-
1998 03 22	704	0.2+	0.4-	1998 04 04	699	0.8+	0.4-	1999 09 07	704	0.2-	0.0
1998 03 22	704	0.1-	0.4+	1998 04 18	704	0.1-	0.1+	1999 09 07	704	0.1+	0.0
1998 03 22	704	0.5-	0.2+	1998 04 18	704	0.3-	0.0	1999 09 07	704	0.0	0.4-
1998 03 22	704	1.5-	0.9-	1998 04 18	704	0.4+	0.1+	1999 09 07	704	0.8+	1.9-
1998 03 22	704	0.5+	1.2+	1998 04 18	704	0.0	0.5-	1999 09 07	704	0.5+	0.3+
1998 03 22	699	0.2+	0.5-	1998 04 18	704	0.5+	0.2+	1999 09 09	704	0.0	0.2-
1998 03 22	699	0.2-	0.3+	1998 04 20	704	0.0	0.3-	1999 09 09	704	0.7+	0.0
1998 03 22	699	0.2-	0.1-	1998 04 20	704	0.6-	1.9+	1999 09 09	704	0.1+	0.3-
1998 03 24	699	0.0	0.8-	1998 04 20	704	0.9-	1.2+	1999 09 09	704	0.0	0.3+
1998 03 24	699	0.6+	0.1+	1998 04 20	704	0.1-	0.4+	1999 09 09	704	0.1+	0.0
1998 03 24	699	0.1-	0.3-	1998 04 20	704	1.6-	0.8+	1999 09 12	699	0.6+	0.1+
1998 03 25	704	0.8-	0.1+	1998 04 24	699	0.0	0.4-	1999 09 12	699	0.0	1.3+
1998 03 25	704	0.3-	0.8+	1998 04 24	699	0.3+	0.1+	1999 09 12	699	0.4+	0.3-
1998 03 25	704	0.7+	0.5-	1998 04 24	699	0.5+	0.1-	1999 09 16	704	0.4-	0.6+
1998 03 25	704	0.2+	1.1+	1998 05 01	699	0.5+	0.2-	1999 09 16	704	1.2-	0.7+
1998 03 25	704	0.8+	0.8+	1998 05 01	699	0.1+	0.3+	1999 09 16	704	1.4-	0.3-

1998 FU₆₈ = 1999 RH₁₃₁

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1998 03 22	704	0.6−	0.4+	1998 04 03	704	0.1+	0.3−	1998 05 16	704	0.8−	0.8−
1998 03 22	704	0.3−	0.3+	1998 04 03	704	0.6−	0.6−	1998 05 16	704	0.4−	1.3+
1998 03 24	699	0.8−	0.6+	1998 04 03	704	0.0	1.8−	1998 05 16	704	0.2+	0.4−
1998 03 24	699	0.3−	0.6+	1998 04 03	704	0.4+	0.2−	1999 09 07	703	0.1−	0.4+
1998 03 24	699	0.5−	0.3+	1998 04 03	704	0.0	0.1−	1999 09 07	703	0.7+	0.2−
1998 03 25	704	1.0+	0.3+	1998 04 03	704	1.0−	0.9−	1999 09 07	703	0.7−	0.2−
1998 03 25	704	0.4+	0.4+	1998 04 03	704	1.6−	0.5−	1999 09 07	703	1.3+	0.4+
1998 03 25	704	0.1−	0.4−	1998 04 03	704	0.7−	0.1−	1999 09 08	704	0.0	0.0
1998 03 25	704	0.2+	0.1−	1998 04 04	699	0.5+	1.2−	1999 09 08	704	0.1+	0.8−
1998 03 25	704	0.6+	0.2+	1998 04 04	699	1.8+	1.1−	1999 09 08	704	0.3−	0.4+
1998 04 01	704	0.7+	1.2−	1998 04 04	699	0.2−	0.8−	1999 09 08	704	0.4+	0.8−
1998 04 01	704	0.4−	0.2+	1998 04 18	704	0.2+	0.2+	1999 09 09	704	0.4+	0.6+
1998 04 01	704	0.1+	0.4+	1998 04 18	704	0.0	0.8+	1999 09 09	704	0.3−	0.1−
1998 04 01	704	0.7−	0.2+	1998 04 18	704	0.0	0.5+	1999 09 09	704	0.3−	0.4−
1998 04 01	704	0.5−	0.1−	1998 04 18	704	0.2−	0.2+	1999 09 09	704	0.3+	0.2+
1998 04 03	704	0.7−	0.8−	1998 04 18	704	0.0	0.2−	1999 09 09	704	0.1−	0.4+
1998 04 03	704	0.1+	0.9−	1998 04 20	704	0.0	1.2+	1999 09 14	704	0.8−	0.5+
1998 04 03	704	0.8+	0.8−	1998 04 20	704	0.1−	0.8+	1999 09 14	704	0.1−	0.2−
1998 04 03	704	0.6+	0.5−	1998 04 20	704	0.4−	1.2+	1999 09 14	704	0.6−	0.1−
1998 04 03	704	(5.2−	3.1+)	1998 04 20	704	0.2+	0.7+	1999 09 14	704	0.2+	0.2−
1998 04 03	704	1.0+	0.2−	1998 04 20	704	0.5−	1.0+	1999 09 14	704	0.2−	0.2+
1998 04 03	704	0.7−	0.3−	1998 04 22	704	0.7+	0.4+				
1998 04 03	704	0.3−	0.4−	1998 04 22	704	0.1+	0.7+				

1998 FV₇₀ = 1980 FY₈ = 1999 RC₆₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	146.98102	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.27544615	<i>ω</i> 14.12970	−0.99803774	+0.06201658	
<i>a</i>	2.3394382	<i>Ω</i> 169.41456	−0.06104054	−0.93289699	
<i>e</i>	0.0960082	<i>i</i> 2.69495	−0.01395394	−0.35476351	
<i>P</i>	3.58	<i>H</i> 15.0	<i>G</i> 0.15	<i>U</i> 2	

Residuals in seconds of arc

1980 03 23	809	0.3+	0.6+	1998 03 25	704	1.3−	0.3+	1998 05 01	699	0.9+	0.2−
1993 12 16	691	0.0	0.2−	1998 03 29	704	0.3−	0.3−	1999 08 21	691	0.3−	0.8+
1993 12 16	691	0.1−	0.2+	1998 03 29	704	0.2+	1.4−	1999 08 21	691	0.3−	0.5+
1993 12 16	691	0.1+	0.3+	1998 03 29	704	0.8−	0.2+	1999 08 21	691	0.1−	0.1−
1998 03 20	704	0.2+	0.7−	1998 03 29	704	0.2+	0.3−	1999 09 07	704	0.3−	0.3−
1998 03 20	704	0.5+	0.8−	1998 03 29	704	0.6+	1.1−	1999 09 07	704	0.2+	0.2−
1998 03 20	704	0.5+	1.1−	1998 04 20	704	0.5−	0.8+	1999 09 07	704	0.9+	0.6−
1998 03 20	704	1.1+	0.6−	1998 04 20	704	0.6−	0.1−	1999 09 07	704	0.2−	0.1−
1998 03 20	704	1.6+	1.1−	1998 04 20	704	0.3−	0.1+	1999 09 07	704	0.2+	0.2−
1998 03 22	704	0.2+	0.0	1998 04 20	704	0.7+	1.2+	1999 09 09	704	0.5+	0.0
1998 03 22	704	0.1+	0.3+	1998 04 20	704	0.9−	0.4+	1999 09 09	704	0.5+	0.5−
1998 03 22	704	0.5+	0.1+	1998 04 22	704	0.4−	0.4+	1999 09 09	704	0.3−	0.3+
1998 03 22	704	0.4+	1.4−	1998 04 22	704	1.0−	0.1+	1999 09 09	704	0.3−	0.0
1998 03 22	704	0.5+	0.4−	1998 04 22	704	0.8−	0.7+	1999 09 09	704	0.3−	0.1−
1998 03 22	699	0.6−	0.2−	1998 04 22	704	0.3−	0.2+	1999 09 09	704	0.3−	0.2+
1998 03 22	699	1.3−	0.4−	1998 04 22	704	1.8−	0.7+	1999 09 09	704	0.3−	0.1+
1998 03 22	699	0.1−	0.1+	1998 04 28	699	0.6+	0.2−	1999 09 09	704	1.2+	0.1−
1998 03 25	699	0.4−	0.3+	1998 04 28	699	0.3+	1.2+	1999 09 09	704	0.5+	0.4+
1998 03 25	699	0.5+	0.3+	1998 04 28	699	0.1+	0.3−	1999 09 09	704	0.8−	0.4+
1998 03 25	699	(2.1+	0.5+)	1998 04 30	699	0.5+	0.3+	1999 09 14	704	0.4−	0.3−
1998 03 25	704	0.4+	0.1+	1998 04 30	699	0.2+	0.3−	1999 09 14	704	0.2+	0.0
1998 03 25	704	0.5−	0.9+	1998 04 30	699	0.3+	0.3+	1999 09 14	704	0.3−	0.2−
1998 03 25	704	0.3+	0.0	1998 05 01	699	0.3+	0.6+	1999 09 14	704	0.6+	0.3−
1998 03 25	704	0.6+	0.3+	1998 05 01	699	0.8−	0.4−	1999 09 14	704	0.3−	0.6−

1998 FA₇₃ = 1999 RE₁₉₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	245.34461	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.27702940	<i>ω</i> 67.69574	+0.01107421	−0.99884278	
<i>a</i>	2.3305163	<i>Ω</i> 21.82652	+0.86485559	−0.01392525	
<i>e</i>	0.0599268	<i>i</i> 7.23166	+0.50189857	+0.04603466	
<i>P</i>	3.56	<i>H</i> 15.2	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1996 12 13	691	0.4−	0.6+	1998 04 01	704	(2.4+	0.9−)	1998 04 25	699	0.3−	0.9+
1996 12 13	691	0.3−	0.6+	1998 04 01	704	0.9−	1.4−	1999 09 08	703	0.9+	0.3−
1996 12 13	691	0.1−	0.4+	1998 04 21	704	0.1−	1.1−	1999 09 08	703	0.1−	0.2−
1998 03 03	910	1.4−	0.6+	1998 04 21	704	0.9+	0.6−	1999 09 08	703	0.4−	0.1+
1998 03 03	910	1.1−	0.5+	1998 04 21	704	0.5+	0.2+	1999 09 08	703	0.3−	0.6−
1998 03 03	910	1.0−	0.6+	1998 04 21	704	0.3+	0.7+	1999 09 11	704	1.1+	0.3+
1998 03 27	910	0.9+	0.2−	1998 04 21	704	0.2+	0.8+	1999 09 11	704	0.8+	0.0
1998 03 27	910	0.9+	0.2−	1998 04 22	704	0.9+	0.2+	1999 09 11	704	0.8−	0.4−
1998 03 27	910	1.3+	0.5+	1998 04 22	704	0.8−	0.3+	1999 09 11	704	0.2−	1.4+
1998 03 30	910	1.0+	0.5−	1998 04 22	704	(0.9−	2.8+)	1999 09 11	704	0.3+	0.1−
1998 03 31	910	0.4+	0.1−	1998 04 22	704	0.3−	0.7+	1999 09 14	704	1.6−	0.7+
1998 03 31	910	1.0+	0.7−	1998 04 22	704	1.6−	0.2−	1999 09 14	704	0.5−	0.0
1998 04 01	704	1.2+	0.6+	1998 04 25	699	0.3−	0.0	1999 09 14	704	0.4+	0.2+
1998 04 01	704	0.1−	0.6−	1998 04 25	699	1.1−	1.3+				

1998 FC₇₄

Id. E. Bowell (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	321.79784	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.30661337	<i>ω</i> 278.89422	+0.92045489	−0.38586072	
<i>a</i>	2.1780875	<i>Ω</i> 103.82215	+0.37904918	+0.84243851	
<i>e</i>	0.1439594	<i>i</i> 3.67519	+0.09531275	+0.37604371	
<i>P</i>	3.21	<i>H</i> 14.3	<i>G</i> 0.15	<i>U</i> 2	

Residuals in seconds of arc

1994 01 17	010	0.6−	0.1−	1998 04 20	704	1.4−	1.2−	1998 05 16	704	(6.6−	1.9−)
1994 01 17	010	0.7+	0.9−	1998 04 20	704	0.1+	0.3−	1999 07 16	704	0.1−	0.0
1994 01 17	010	0.0	0.9−	1998 04 20	704	0.1+	0.5+	1999 07 16	704	0.3−	0.2+
1995 05 01	691	0.4+	1.1+	1998 04 20	704	0.2+	1.1−	1999 07 16	704	0.4+	0.5−
1995 05 01	691	0.5+	0.8+	1998 04 22	704	0.4+	0.0	1999 07 16	704	0.0	0.2−
1995 05 01	691	0.5+	1.0+	1998 04 22	704	0.6+	0.3−	1999 08 12	699	0.0	0.0
1998 03 22	704	0.2−	0.7−	1998 04 22	704	0.1−	1.0−	1999 08 12	699	0.0	0.0
1998 03 22	704	0.3−	0.3−	1998 04 22	704	0.7−	0.4+	1999 08 12	699	0.3+	0.2+
1998 03 22	704	0.2+	0.3−	1998 04 22	704	1.0+	0.1−	1999 09 07	699	0.5−	0.1+
1998 03 22	704	(0.3−	4.2+)	1998 04 28	699	0.5+	0.1+	1999 09 07	699	0.5−	0.4+
1998 03 22	704	0.8+	1.1−	1998 04 28	699	0.3+	0.8+	1999 09 07	699	0.5−	0.3+
1998 03 22	699	0.3−	0.8+	1998 04 28	699	0.6+	0.0	1999 09 07	106	0.4−	0.4−
1998 03 22	699	(2.2−	0.0)	1998 04 28	691	0.1+	0.2+	1999 09 07	106	0.3−	0.3−
1998 03 22	699	1.1−	0.1−	1998 04 28	691	0.4+	0.1+	1999 09 07	106	0.3−	0.5−
1998 03 24	699	1.1−	0.1−	1998 04 28	691	0.4+	0.2+	1999 09 08	703	0.8−	0.3−
1998 03 24	699	1.9−	0.4−	1998 04 30	699	0.7+	0.0	1999 09 08	703	0.2−	0.6−
1998 03 24	699	0.4−	0.6−	1998 04 30	699	1.0+	0.3+	1999 09 08	703	0.3−	0.1−
1998 03 25	704	0.2−	0.0	1998 04 30	699	0.0	0.3+	1999 09 08	703	0.7−	0.1−
1998 03 25	704	0.2−	0.3−	1998 05 01	699	1.0+	0.2−	1999 09 09	704	0.4+	0.6−
1998 03 25	704	1.1−	0.0	1998 05 01	699	0.6+	0.4+	1999 09 09	704	0.6+	0.1−
1998 03 25	704	0.8−	0.2−	1998 05 01	699	1.8+	0.5+	1999 09 09	704	0.9+	0.6−
1998 03 25	704	1.0−	0.4+	1998 05 03	691	0.4−	0.1−	1999 09 09	704	1.1+	0.3−
1998 03 29	704	0.2−	0.1−	1998 05 03	691	0.4−	0.1−	1999 09 09	704	1.0+	0.7+
1998 03 29	704	0.4−	0.1−	1998 05 03	691	0.4−	0.0	1999 09 13	704	0.7+	0.4−
1998 03 29	704	0.9−	1.3−	1998 05 16	704	(2.2+	0.7−)	1999 09 13	704	0.2+	0.7−
1998 03 29	704	0.3−	0.3−	1998 05 16	704	(0.3−	2.4−)	1999 09 13	704	0.2+	0.5−
1998 03 29	704	0.4−	0.4−	1998 05 16	704	1.3+	0.2−	1999 09 13	704	0.3+	0.7−
1998 04 20	704	0.0	1.1−	1998 05 16	704	1.4−	1.3−	1999 09 13	704	0.7+	0.6−

1999 SEPT. 28

M.P.C. 35965

Residuals in seconds of arc

1996 12 02	327	0.5−	0.4+	1998 03 23	621	0.3−	0.1−	1999 09 05	621	0.5−	0.1+
1996 12 02	327	0.3−	0.1−	1998 03 23	621	1.7−	0.2−	1999 09 07	704	0.5+	0.2−
1996 12 02	327	0.8+	0.3−	1998 03 24	621	0.0	0.5−	1999 09 07	704	0.5−	0.2−
1998 02 23	691	0.0	0.5−	1998 03 24	621	0.4+	0.3−	1999 09 07	704	0.4+	0.4−
1998 02 23	691	0.3+	0.6−	1998 03 24	621	0.5−	0.3−	1999 09 07	704	0.1−	0.8−
1998 02 23	691	0.3+	0.7−	1998 03 24	621	0.2−	0.1+	1999 09 07	704	0.2+	0.3−
1998 03 03	809	0.4+	0.6+	1998 03 24	621	0.4−	0.0	1999 09 08	120	1.1+	1.0−
1998 03 03	704	(2.3−	2.2−)	1998 03 25	621	0.5−	0.2−	1999 09 08	120	0.6+	1.1−
1998 03 03	809	0.1−	1.2+	1998 03 25	621	0.1+	0.0	1999 09 08	120	0.4+	0.4−
1998 03 03	809	0.2+	0.9+	1998 03 25	621	0.4−	0.4−	1999 09 09	120	0.3+	1.1+
1998 03 03	704	0.3−	0.1+	1998 03 25	621	0.0	0.7−	1999 09 09	120	1.2+	0.4−
1998 03 03	704	1.9−	1.8−	1998 03 31	621	0.6−	0.1−	1999 09 09	621	0.5−	0.1+
1998 03 03	704	0.2−	1.5+	1998 03 31	621	0.4−	0.4−	1999 09 09	621	0.1−	0.3+
1998 03 04	809	1.6+	1.5+	1998 03 31	621	0.5−	0.1−	1999 09 09	621	0.2+	0.3+
1998 03 04	809	1.3+	0.8+	1999 08 12	699	0.9−	0.3−	1999 09 09	704	0.7+	0.3+
1998 03 04	809	1.2+	0.6+	1999 08 12	699	0.4−	0.2+	1999 09 09	704	0.3−	0.1−
1998 03 20	704	1.8+	0.8−	1999 08 12	699	1.3−	0.0	1999 09 09	704	0.5+	0.5+
1998 03 20	704	1.7+	1.1+	1999 08 22	703	1.2+	0.2+	1999 09 09	704	0.2+	0.3+
1998 03 20	704	(1.5+	2.5+)	1999 08 22	703	1.2−	0.6−	1999 09 09	704	0.6−	0.9+
1998 03 20	704	0.2−	1.0+	1999 08 22	703	0.1−	0.9−	1999 09 12	113	0.2−	0.1+
1998 03 20	691	0.2−	0.1−	1999 08 22	703	1.2−	0.7−	1999 09 12	113	0.7−	0.4−
1998 03 20	691	0.2−	0.3−	1999 08 22	703	0.7−	1.1+	1999 09 12	113	0.2+	0.4+
1998 03 20	691	0.2−	0.0	1999 08 22	703	0.7+	0.6+	1999 09 12	113	0.1+	0.5+
1998 03 21	621	0.2−	0.3−	1999 08 22	703	0.5−	0.5+	1999 09 14	704	0.4−	0.2−
1998 03 21	621	0.3+	0.4−	1999 08 22	703	1.4+	0.2+	1999 09 14	704	0.3−	0.5−
1998 03 21	621	0.3−	0.3−	1999 08 22	699	(2.0−	1.3+)	1999 09 14	704	0.0	0.3+
1998 03 21	621	0.3−	0.3−	1999 08 22	699	1.1+	0.4−	1999 09 14	704	0.3+	0.2−
1998 03 21	621	0.3−	0.3−	1999 08 22	699	0.2+	0.9+	1999 09 14	704	0.3−	0.5−
1998 03 21	621	0.4+	0.2−	1999 09 05	621	0.4−	0.2+				
1998 03 23	621	0.5−	0.3−	1999 09 05	621	0.2−	0.0				

1998 FV₇₄ = 1999 NW₄₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	270.89326	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.18315856	<i>ω</i>	179.37874	+0.94637081 −0.31844098
<i>a</i>	3.0707979	<i>Ω</i>	199.46205	+0.29571153 +0.92178610
<i>e</i>	0.0975146	<i>i</i>	9.42621	+0.13014216 +0.22114637
<i>P</i>	5.38	<i>H</i>	13.2	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1996 11 13	599	0.1+	0.6+	1998 03 25	704	0.0	1.6−	1998 04 22	704	0.6−	0.4−
1996 11 13	599	0.0	0.2−	1998 03 25	704	0.0	0.7−	1998 04 22	704	(0.3+	2.4−)
1998 03 20	704	0.8+	1.0+	1998 03 25	704	1.8−	0.5+	1999 06 14	704	0.9−	0.1−
1998 03 20	704	1.0+	0.8−	1998 03 29	704	0.0	0.7−	1999 06 14	704	0.3−	0.6−
1998 03 20	704	0.1+	0.8−	1998 03 29	704	0.1−	0.2+	1999 06 14	704	0.0	0.3+
1998 03 20	704	0.1−	0.3−	1998 03 29	704	1.2−	1.4−	1999 06 14	704	0.2+	0.1+
1998 03 22	704	1.3+	0.7−	1998 03 29	704	0.3−	0.3−	1999 07 13	704	(2.9−	1.9−)
1998 03 22	704	0.8−	0.4−	1998 03 29	704	0.7+	0.5−	1999 07 13	704	1.4+	0.1−
1998 03 22	704	0.1−	1.1+	1998 04 01	704	0.4+	0.5+	1999 07 13	704	(0.5+	2.3−)
1998 03 24	704	0.4+	0.2+	1998 04 01	704	0.3+	1.8+	1999 07 13	704	1.0+	0.6−
1998 03 24	704	0.3+	0.6+	1998 04 01	704	0.1+	1.6+	1999 07 19	704	0.4−	0.1+
1998 03 24	704	0.2+	1.1+	1998 04 01	704	0.1−	0.4+	1999 07 19	704	0.1−	0.4+
1998 03 24	704	1.0−	0.3+	1998 04 01	704	(2.6−	2.0+)	1999 07 19	704	0.6+	0.1+
1998 03 24	704	0.8−	1.0+	1998 04 22	704	0.0	1.1−	1999 07 19	704	0.7−	0.2+
1998 03 25	704	0.7+	0.0	1998 04 22	704	0.2+	0.1+	1999 07 19	704	0.9−	0.4+
1998 03 25	704	0.3+	1.0−	1998 04 22	704	(0.2+	2.3−)				

1998 FG₇₅ = 1999 SF

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	28.44014	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.27139236	<i>ω</i>	129.15836	+0.75554871 +0.65483820
<i>a</i>	2.3626767	<i>Ω</i>	189.98037	−0.62882819 +0.71716600
<i>e</i>	0.1339542	<i>i</i>	6.04468	−0.18363347 +0.23845304
<i>P</i>	3.63	<i>H</i>	14.6	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1998 03 22	704	0.5−	0.3−	1998 03 29	704	0.1−	0.3−	1998 05 16	704	0.9−	1.6−
1998 03 22	704	0.5+	0.4+	1998 03 29	704	0.0	0.1+	1998 05 16	704	1.2+	1.5−
1998 03 22	704	1.2+	1.3+	1998 04 20	704	0.1+	0.3+	1998 05 16	704	0.1−	0.1−
1998 03 22	704	0.4−	1.0−	1998 04 20	704	0.8−	0.7−	1999 07 23	704	0.1−	0.4−
1998 03 22	704	(4.0−	0.1−)	1998 04 20	704	0.1+	1.7+	1999 07 23	704	0.1−	0.4−
1998 03 24	704	1.0+	1.0−	1998 04 20	704	0.6−	1.5+	1999 07 23	704	0.4+	1.0+
1998 03 24	704	0.8+	1.5+	1998 04 20	704	1.9−	0.2+	1999 07 23	704	0.8+	0.1−
1998 03 24	704	0.6+	1.4+	1998 04 21	704	0.4−	0.4+	1999 09 05	699	0.3−	0.4−
1998 03 24	704	0.9+	0.3+	1998 04 21	704	0.5−	0.1+	1999 09 05	699	0.3−	0.7+
1998 03 24	704	0.0	0.1−	1998 04 21	704	0.2+	0.7+	1999 09 05	699	0.4−	0.2−
1998 03 25	704	0.0	1.8+	1998 04 21	704	1.3−	1.0+	1999 09 16	120	0.1−	0.6+
1998 03 25	704	0.7+	0.2−	1998 04 21	704	0.4−	1.0+	1999 09 16	120	0.1+	0.3−
1998 03 25	704	1.4−	0.7−	1998 04 22	704	1.0+	0.3−	1999 09 16	120	0.0	0.3+
1998 03 25	704	0.7−	0.8+	1998 04 22	704	1.1+	0.2+	1999 09 17	120	0.1−	0.6+
1998 03 25	704	0.9+	0.6+	1998 04 22	704	1.1+	0.9−	1999 09 18	120	0.2−	1.3+
1998 03 29	704	0.2−	0.8−	1998 04 22	704	1.3−	0.3−	1999 09 18	120	0.8+	0.8+
1998 03 29	704	0.6+	0.7−	1998 04 22	704	0.1−	1.3−	1999 09 21	120	0.6−	0.2−
1998 03 29	704	0.0	0.3+	1998 05 16	704	0.7+	0.8−	1999 09 21	120	0.5−	0.2−

1998 FM₇₆ = 1999 RU₁₆₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	143.93811	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.28069241	<i>ω</i>	100.41855	−0.98897935 +0.12465786
<i>a</i>	2.3101966	<i>Ω</i>	86.77587	−0.14636376 −0.90447386
<i>e</i>	0.1238416	<i>i</i>	4.58875	+0.02230451 −0.40790619
<i>P</i>	3.51	<i>H</i>	15.1	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1998 03 22	699	0.5−	0.8+	1998 04 20	704	0.1+	0.5+	1998 05 16	704	(2.0−	2.1+)
1998 03 22	699	0.3−	0.1−	1998 04 20	704	0.9+	1.3−	1998 05 16	704	(0.4−	2.2−)
1998 03 22	699	0.4−	0.6+	1998 04 20	704	0.7−	0.6+	1999 09 08	703	0.7+	1.1−
1998 03 24	704	0.5+	0.1+	1998 04 20	704	1.0+	0.4−	1999 09 08	703	0.6−	0.7+
1998 03 24	704	0.3+	0.4+	1998 04 20	704	0.6−	0.0	1999 09 08	703	0.3+	0.5+
1998 03 24	704	1.4+	0.8−	1998 04 22	704	0.1−	0.3−	1999 09 08	703	0.3+	0.7−
1998 03 24	704	0.1+	0.2−	1998 04 22	704	0.1−	0.1+	1999 09 09	704	1.2−	0.1+
1998 03 24	704	0.5−	0.1+	1998 04 22	704	0.2−	0.5+	1999 09 09	704	0.4−	0.8+
1998 03 25	704	0.4+	0.1+	1998 04 22	704	0.3−	0.2−	1999 09 09	704	0.6−	0.5+
1998 03 25	704	0.1+	0.6+	1998 04 22	704	0.1−	0.2−	1999 09 09	704	0.4+	0.9−
1998 03 25	704	0.2+	0.1−	1998 05 16	704	0.3−	0.9+	1999 09 13	704	1.2+	0.2−
1998 03 25	704	0.6−	0.0	1998 05 16	704	0.8−	1.3+	1999 09 13	704	0.1+	0.5+
1998 03 25	704	0.4−	0.7−	1998 05 16	704	0.7+	1.8−	1999 09 13	704	0.3−	0.2+

1998 FP₇₆ = 1999 RB₁₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	179.34138	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.28477368	<i>ω</i>	20.10230	−0.87078060 −0.48767106
<i>a</i>	2.2880710	<i>Ω</i>	130.55078	+0.43908890 −0.82860861
<i>e</i>	0.0601654	<i>i</i>	4.72537	+0.22122858 −0.27492673
<i>P</i>	3.46	<i>H</i>	15.1	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1998 03 24	704	0.3−	0.2−	1998 04 20	704	0.9

1998 03 25	704	0.2−	0.1−	1998 04 22	704	0.9+	0.0	1999 09 09	704	0.4−	0.4+
1998 03 25	704	0.0	0.8−	1999 08 08	699	0.2+	0.5−	1999 09 13	704	0.8−	0.4+
1998 03 25	704	0.3+	0.1+	1999 08 08	699	0.1−	1.3+	1999 09 13	704	1.2−	0.4−
1998 03 25	704	0.6−	0.7+	1999 08 08	699	0.5+	0.7+	1999 09 13	704	0.0	0.2−
1998 04 20	704	0.4+	0.0	1999 09 07	704	0.1+	0.9−	1999 09 13	704	1.0−	1.0+
1998 04 20	704	0.4−	0.4−	1999 09 07	704	0.5+	0.9−				
1998 04 20	704	0.2+	0.5−	1999 09 07	704	0.5+	0.1+				

1998 FG₇₇

Id. E. Bowell (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	23.92384	(2000.0)		P	Q		
<i>n</i>	0.27062866	ω	245.53508	+0.78161684	+0.61282352		
<i>a</i>	2.3671196	Ω	76.46110	−0.52019675	+0.74329046		
<i>e</i>	0.1803961	<i>i</i>	6.86959	−0.34419538	+0.26826596		
<i>P</i>	3.64	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 24	704	0.1+	0.1+	1998 04 20	704	0.8+	0.6−	1998 05 16	704	0.2+	1.3−
1998 03 24	704	0.3−	0.3+	1998 04 20	704	0.8+	0.5+	1999 09 08	699	0.1+	0.7+
1998 03 24	704	0.3+	0.6−	1998 04 20	704	0.8+	1.5+	1999 09 08	699	0.1−	0.5+
1998 03 24	704	0.8−	0.0	1998 04 20	704	0.1−	0.1+	1999 09 08	699	0.1+	0.1−
1998 03 24	704	0.5−	0.4−	1998 04 20	704	1.1−	0.3+	1999 09 14	704	0.3−	0.2+
1998 03 25	704	0.2−	0.8−	1998 04 24	704	0.1−	0.2+	1999 09 14	704	0.5−	0.2−
1998 03 25	704	0.8+	0.5+	1998 04 24	704	0.3+	0.5+	1999 09 14	704	0.6−	0.2−
1998 03 25	704	0.5+	0.4−	1998 04 24	704	0.7+	0.2+	1999 09 14	704	0.4−	0.6−
1998 03 25	704	0.4+	0.1+	1998 04 24	704	0.5+	0.1−	1999 09 14	704	0.9−	0.8−
1998 03 25	704	0.5−	0.0	1998 04 24	704	0.4−	0.8−	1999 09 21	699	0.4+	0.6+
1998 03 25	566	0.5−	0.4+	1998 05 16	704	0.3+	0.7+	1999 09 21	699	0.5+	0.3+
1998 03 25	566	0.2−	0.4+	1998 05 16	704	0.3−	0.9+	1999 09 21	699	1.5+	0.3−
1998 03 25	566	0.2−	0.0	1998 05 16	704	1.5−	1.7−				

1998 FS₇₇

Id. E. Bowell (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	63.67900	(2000.0)		P	Q		
<i>n</i>	0.24030708	ω	102.34759	−0.05223852	+0.99793531		
<i>a</i>	2.5622706	Ω	164.51075	−0.96197595	−0.04024062		
<i>e</i>	0.1444136	<i>i</i>	8.04315	−0.26809217	−0.05005799		
<i>P</i>	4.10	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 24	704	0.6−	0.1+	1998 04 24	704	0.7+	0.6+	1999 08 22	703	0.3+	0.5+
1998 03 24	704	1.5−	0.3+	1998 04 24	704	0.1+	0.5+	1999 08 22	703	0.2−	0.4+
1998 03 24	704	1.2−	1.1−	1998 04 24	704	0.3+	1.5+	1999 08 22	703	0.8−	1.0+
1998 03 24	704	1.0−	0.5−	1998 04 24	704	0.0	0.8+	1999 08 22	703	0.3+	0.4+
1998 03 25	699	0.6+	0.5−	1998 04 24	704	0.4−	1.2+	1999 08 22	699	1.6−	0.7+
1998 03 25	699	0.2+	1.0−	1998 05 16	704	0.7−	0.8−	1999 08 22	699	0.2−	0.0
1998 03 25	699	0.2+	0.5−	1998 05 16	704	1.2−	0.0	1999 08 22	699	0.0	0.4+
1998 03 25	704	0.5−	0.3−	1998 05 16	704	0.0	0.9+	1999 09 05	699	0.2−	1.0+
1998 03 25	704	1.0−	0.0	1998 05 16	704	(2.2−	0.4+)	1999 09 05	699	0.1+	1.2+
1998 03 25	704	0.2+	0.9−	1998 05 16	704	(7.5−	1.3+)	1999 09 05	699	0.4−	0.7+
1998 03 25	704	0.1+	0.5−	1999 07 16	704	0.7+	0.1+	1999 09 07	704	0.0	0.7−
1998 03 25	704	0.4−	0.3−	1999 07 16	704	0.2−	0.3−	1999 09 07	704	0.3+	1.2−
1998 04 20	704	0.5+	0.3−	1999 07 16	704	1.3+	0.5+	1999 09 07	704	0.4+	1.3−
1998 04 20	704	1.1+	0.4−	1999 07 16	704	0.6−	0.3+	1999 09 07	704	0.2+	1.3−
1998 04 20	704	0.5+	0.3−	1999 07 16	704	0.4+	0.2+	1999 09 07	704	0.6+	0.7−
1998 04 20	704	0.3+	0.4−	1999 08 12	699	0.3−	1.1+	1999 09 14	704	0.1+	1.7−
1998 04 20	704	0.3+	0.1−	1999 08 12	699	0.5+	0.3+	1999 09 14	704	0.1−	1.4−
1998 04 21	704	0.2+	0.1−	1999 08 12	699	0.5+	1.5+	1999 09 14	704	0.0	1.3−
1998 04 21	704	0.4+	0.1−	1999 08 22	703	1.9+	0.7+	1999 09 14	704	0.0	1.3−
1998 04 21	704	0.8−	0.2−	1999 08 22	703	1.1−	0.3−	1999 09 14	704	0.0	1.6−
1998 04 21	704	1.0+	0.5−	1999 08 22	703	0.1+	0.2+				
1998 04 21	704	0.1−	0.3−	1999 08 22	703	0.5−	0.5−				

1998 FV₇₇ = 1999 RJ₁₅₆

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	9.88182	(2000.0)		P	Q		
<i>n</i>	0.23064690	ω	144.82215	+0.77621367	+0.63024787		
<i>a</i>	2.6333240	Ω	175.98690	−0.61926168	+0.76712791		
<i>e</i>	0.1798276	<i>i</i>	13.83265	−0.11835251	+0.11959264		
<i>P</i>	4.27	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 24	704	0.0	0.1+	1998 04 21	704	1.0−	0.7+	1999 09 07	704	0.4−	0.3−
1998 03 24	704	1.5−	1.7−	1998 04 21	704	0.4−	0.1−	1999 09 07	704	0.1+	0.0
1998 03 24	704	0.2−	1.3−	1998 04 24	704	1.7+	0.9−	1999 09 08	699	0.2+	0.3+
1998 03 24	704	(2.3−	1.1+)	1998 04 24	704	1.7+	0.9−	1999 09 08	699	0.5+	0.0
1998 03 25	704	0.1+	0.5−	1998 04 24	704	1.4−	0.3−	1999 09 08	699	0.4+	0.2+
1998 03 25	704	0.2+	0.0	1998 04 24	704	1.9+	0.1−	1999 09 09	704	0.1−	0.3+
1998 03 25	704	0.1−	0.4−	1998 04 24	704	1.8+	0.9−	1999 09 09	704	0.1−	0.8−
1998 03 25	704	0.3−	2.0+	1998 05 16	704	1.8+	1.8+	1999 09 09	704	1.3+	0.2+
1998 03 25	704	(3.4−	0.0)	1998 05 16	704	0.5−	0.6+	1999 09 09	704	0.2+	0.0
1998 04 20	704	0.7−	0.3+	1998 05 16	704	0.5−	1.0−	1999 09 09	704	0.1+	0.5−
1998 04 20	704	0.4+	0.4−	1998 05 16	704	(6.0−	2.1+)	1999 09 14	704	0.0	0.4−
1998 04 20	704	0.9−	0.1−	1999 08 22	699	0.0	0.5+	1999 09 14	704	0.0	0.3−
1998 04 20	704	(2.2−	1.0−)	1999 08 22	699	0.6−	0.5+	1999 09 14	704	0.3−	0.1+
1998 04 20	704	1.3−	0.2−	1999 08 22	699	0.2+	1.2+	1999 09 14	704	0.7−	0.2+
1998 04 21	704	1.3+	0.4−	1999 09 07	704	0.0	0.6−	1999 09 14	704	0.4−	0.3−
1998 04 21	704	1.0−	1.9+	1999 09 07	704	0.3−	0.8−				
1998 04 21	704	0.9−	1.1+	1999 09 07	704	0.0	0.0				

1998 FA₇₈ = 1999 RK₁₈₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	63.52342	(2000.0)		P	Q		
<i>n</i>	0.23890661	ω	127.98789	−0.07442569	+0.99406932		
<i>a</i>	2.5722743	Ω	137.53230	−0.94780519	−0.04579290		
<i>e</i>	0.1367389	<i>i</i>	6.74422	−0.31004215	−0.09863672		
<i>P</i>	4.13	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 24	704	0.4+	1.6−	1998 04 20	704	(2.9−	1.3−)	1998 04 24	704	0.7−	0.4−
1998 03 24	704	(2.6+	0.3+)	1998 04 20	704	0.3+	0.9+	1999 09 09	704	0.2+	0.5−
1998 03 24	704	1.2+	1.1+	1998 04 20	704	0.6−	1.2+	1999 09 09	704	1.2−	0.6+
1998 03 24	704	0.2−	0.5+	1998 04 21	704	1.5−	0.8+	1999 09 09	704	0.5+	0.5−
1998 03 24	704	1.3−	0.8+	1998 04 21	704	0.1−	0.4+	1999 09 09	704	0.1+	0.4−
1998 03 25	704	(0.3−	2.5−)	1998 04 21	704	1.0−	0.4−	1999 09 09	704	0.2−	1.0−
1998 03 25	704	0.0	0.1+	1998 04 21	704	0.7+	0.4−	1999 09 14	704	0.3−	0.3−
1998 03 25	704	0.4−	1.6−	1998 04 21	704	0.3+	0.2+	1999 09 14	704	0.8+	0.0
1998 03 25	704	0.4+	0.1−	1998 04 24	704	0.4+	0.6−	1999 09 14	704	0.1−	0.1−
1998 03 25	704	0.3−	1.0−	1998 04 24	704	1.5+	1.0−	1999 09 14	704	0.0	1.0+
1998 04 20	704	0.3+	0.1−	1998 04 24	704	0.8−	0.7+	1999 09 14	704	0.3+	0.7+
1998 04 20	704	0.3−	0.3+	1998 04 24	704	1.7+	0.1−				

1998 FB₇₉ = 1999 RF₁₇₂

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

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1998 03 25	704	1.6+	0.9+	1998 04 24	704	0.4−	0.2−	1999 09 09	704	0.1−	0.3+
1998 03 25	704	0.7−	1.3−	1998 04 24	704	0.6−	0.1+	1999 09 09	704	0.2−	0.5+
1998 03 25	704	0.1+	0.7+	1998 04 24	704	0.2−	0.6−	1999 09 09	704	0.9−	0.1−
1998 03 25	704	0.5+	0.8+	1998 04 24	704	0.3−	0.5+	1999 09 09	704	0.5−	0.2+
1998 03 25	704	1.3−	0.3+	1998 04 24	704	0.7−	0.2+	1999 09 13	704	0.1+	0.1+
1998 03 25	704	0.2+	0.1+	1999 08 12	699	1.2+	0.0	1999 09 13	704	0.1−	0.7+
1998 03 25	704	1.5+	1.7+	1999 08 12	699	0.0	0.3−	1999 09 13	704	0.2+	0.1−
1998 03 25	704	1.2−	0.4+	1999 08 12	699	0.6+	1.3+	1999 09 13	704	0.0	0.4−
1998 03 25	704	(3.4−	1.8+)	1999 09 07	704	0.5−	0.2−				

1998 FJ₇₉ = 1999 RN₁₇₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	30.78551		(2000.0)	P	Q
n	0.26246528	ω	150.97548	+0.58528988	+0.80900394
a	2.4159511	Ω	154.72920	−0.76630666	+0.57379793
e	0.0536011	i	7.30751	−0.26497144	+0.12754825
P	3.76	H	14.7	G 0.15	U 4

Residuals in seconds of arc

1994 03 10	691	0.2−	0.2+	1998 04 21	704	0.7+	0.2−	1999 09 07	704	0.1−	0.1+
1994 03 10	691	0.3+	0.2+	1998 04 21	704	0.5−	0.3−	1999 09 07	704	0.7−	0.0
1998 03 24	704	0.3+	1.1+	1998 04 21	704	0.3−	0.7−	1999 09 07	704	0.4−	0.3−
1998 03 24	704	0.6+	0.0	1998 04 21	704	0.4+	0.6−	1999 09 09	704	0.2+	0.2+
1998 03 24	704	(1.6+	3.9+)	1998 04 21	704	0.1−	0.3−	1999 09 09	704	0.5+	0.3+
1998 03 24	704	0.7−	0.3−	1998 04 23	704	0.6+	0.7−	1999 09 09	704	0.7+	0.9+
1998 03 24	704	0.2+	0.3−	1998 04 23	704	0.4+	0.6+	1999 09 09	704	0.7−	0.7+
1998 03 25	704	0.5−	1.0+	1998 04 23	704	0.8+	0.2−	1999 09 09	704	0.1+	0.0
1998 03 25	704	1.5−	1.4+	1998 04 23	704	0.5+	0.1+	1999 09 11	699	0.1−	0.4−
1998 03 25	704	0.7+	0.3+	1998 04 23	704	0.2−	0.4+	1999 09 11	699	0.6+	0.7+
1998 03 25	704	0.4+	0.2+	1998 04 24	704	0.7−	0.7−	1999 09 11	699	0.1−	0.4+
1998 03 25	704	1.2−	0.2−	1998 04 24	704	1.5−	1.3+	1999 09 14	704	0.1+	0.8−
1998 04 20	704	1.2−	1.6−	1998 04 24	704	1.0+	0.8+	1999 09 14	704	0.2+	0.0
1998 04 20	704	0.3+	0.8−	1998 04 24	704	0.2+	0.6+	1999 09 14	704	0.3+	0.3−
1998 04 20	704	0.1+	0.3−	1998 04 24	704	(1.1−	2.1+)	1999 09 14	704	0.2−	0.6−
1998 04 20	704	1.0+	0.4−	1999 09 07	704	0.1−	0.2+	1999 09 14	704	0.2−	0.5−
1998 04 20	704	0.3+	0.3+	1999 09 07	704	0.5−	0.3+				

1998 FK₇₉ = 1999 RZ₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	52.70204		(2000.0)	P	Q
n	0.23101340	ω	100.16970	+0.10251726	+0.99460157
a	2.6305381	Ω	175.61768	−0.97498407	+0.10367008
e	0.1197454	i	12.13298	−0.19722140	+0.00449824
P	4.27	H	14.9	G 0.15	U 4

Residuals in seconds of arc

1998 03 24	704	0.2−	0.6+	1998 04 23	704	0.6+	0.7−	1999 09 09	704	0.6−	1.0−
1998 03 24	704	0.8+	0.0	1998 04 23	704	0.2−	1.0−	1999 09 09	704	0.2−	0.4+
1998 03 24	704	1.2+	0.3−	1998 04 24	704	1.8+	0.3−	1999 09 09	704	0.6−	0.6−
1998 03 24	704	1.7−	0.9−	1998 04 24	704	0.8−	0.1+	1999 09 09	704	0.1−	0.2+
1998 03 25	704	0.6−	0.1+	1998 04 24	704	0.1+	0.6+	1999 09 09	704	0.2+	0.5+
1998 03 25	704	0.6+	1.1+	1998 04 24	704	0.9−	0.5+	1999 09 09	704	0.3+	0.1+
1998 03 25	704	1.7+	0.8−	1998 04 24	704	0.8−	0.0	1999 09 09	704	0.6−	0.3+
1998 03 25	704	1.6−	1.2+	1999 09 07	704	0.1+	0.9+	1999 09 09	704	0.3−	0.2+
1998 03 25	704	0.8−	1.0−	1999 09 07	704	0.2−	0.7+	1999 09 09	704	1.4+	0.3−
1998 04 21	704	0.3−	0.4−	1999 09 07	704	0.1−	0.9−	1999 09 14	704	0.9−	0.6+
1998 04 21	704	0.4+	0.3−	1999 09 07	704	0.0	0.4+	1999 09 14	704	0.3−	0.6−
1998 04 21	704	0.5−	0.8+	1999 09 07	704	0.8−	0.0	1999 09 14	704	0.4−	0.4−
1998 04 21	704	0.4+	0.2+	1999 09 08	704	1.3+	0.1+	1999 09 14	704	0.5+	0.5−
1998 04 23	704	0.5−	0.4+	1999 09 08	704	1.6+	0.1+	1999 09 18	691	0.1+	0.0
1998 04 23	704	0.1+	0.2+	1999 09 08	704	0.4−	0.4−	1999 09 18	691	0.1+	0.2−
1998 04 23	704	1.0+	0.0	1999 09 09	704	0.4−	0.6+	1999 09 18	691	0.2+	0.1−

1998 FL₇₉ = 1999 RD₉₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	85.38354		(2000.0)	P	Q
n	0.26878748	ω	106.50118	−0.23414191	+0.97049294
a	2.3779170	Ω	149.77072	−0.92993253	−0.20627939
e	0.0930268	i	6.57272	−0.28355434	−0.12486902
P	3.67	H	15.3	G 0.15	U 5

Residuals in seconds of arc

1998 03 24	704	1.4+	0.3+	1998 04 20	704	0.8−	0.1+	1998 04 24	704	1.0−	1.2+
1998 03 24	704	0.8−	0.2+	1998 04 21	704	1.3+	0.4+	1998 04 24	704	1.1+	0.7+
1998 03 24	704	0.6+	1.2+	1998 04 21	704	0.6−	0.8−	1998 04 24	704	0.6−	1.5+
1998 03 24	704	0.0	1.3−	1998 04 21	704	0.1−	0.3+	1999 09 07	704	1.0+	0.4+
1998 03 24	704	0.8−	0.3−	1998 04 21	704	0.3+	1.9−	1999 09 07	704	0.5+	0.2+
1998 03 25	704	0.1+	0.6+	1998 04 21	704	0.4+	0.6−	1999 09 07	704	0.5−	0.1−
1998 03 25	704	1.8+	0.0	1998 04 23	704	0.1−	1.1+	1999 09 14	704	0.5−	0.3+
1998 03 25	704	1.9−	0.0	1998 04 23	704	0.4−	0.7−	1999 09 14	704	0.1+	0.3−
1998 03 25	704	0.8−	1.2−	1998 04 23	704	0.7+	0.8+	1999 09 14	704	0.1+	0.6−
1998 04 20	704	0.2−	0.4+	1998 04 23	704	0.0	1.7−	1999 09 14	704	0.5−	0.1−
1998 04 20	704	1.7−	0.4−	1998 04 23	704	0.1+	0.3+				
1998 04 20	704	1.2+	0.4+	1998 04 24	704	0.6+	0.9−				

1998 FG₈₀ = 1999 RO₈₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	117.90033		(2000.0)	P	Q
n	0.28219659	ω	131.11391	−0.82248628	+0.56515376
a	2.3019800	Ω	83.39386	−0.53929507	−0.73900944
e	0.1323584	i	3.70372	−0.18076822	−0.36669642
P	3.49	H	15.8	G 0.15	U 4

Residuals in seconds of arc

1998 03 24	704	0.1+	0.4+	1998 03 25	704	0.5−	1.3+	1998 04 20	704	0.2−	1.0+
1998 03 24	704	0.4−	0.7+	1998 04 04	699	0.5+	1.3+	1998 04 20	704	0.1−	0.7+
1998 03 24	704	1.7+	0.2+	1998 04 04	699	1.3−	0.4+	1999 09 07	704	1.6+	0.5+
1998 03 24	704	1.5+	0.7−	1998 04 04	699	0.6+	0.0	1999 09 07	704	0.8+	0.3+
1998 03 24	566	1.2−	0.8−	1998 04 19	704	0.8+	0.7−	1999 09 07	704	0.9−	0.2+
1998 03 24	566	1.0−	0.9−	1998 04 19	704	0.4+	0.1+	1999 09 14	704	0.2−	0.7−
1998 03 24	566	0.8−	0.8−	1998 04 19	704	0.5+	1.1−	1999 09 14	704	0.7−	0.5−
1998 03 25	704	0.9+	0.0	1998 04 19	704	1.8+	0.7−	1999 09 14	704	0.2+	0.2−
1998 03 25	704	(2.6+	2.2+)	1998 04 20	704	0.1−	0.2−	1999 09 14	704	0.5−	0.3−
1998 03 25	704	1.3−	1.0−	1998 04 20	704	0.1+	0.3−				
1998 03 25	704	0.5−	0.0	1998 04 20	704	1.3−	0.5+				

1998 FV₈₃ = 1999 RA₁₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	141.20967		(2000.0)	P	Q		
n	0.29987897	ω	57.08449	−0.99695767	+0.05660543		
a	2.2105756	Ω	126.10502	−0.07219473	−0.92974965		
e	0.0835513	i	3.80275	+0.02938251	−0.36381507		
P	3.29	H	15.1	G	0.15	U	4

Residuals in seconds of arc

1998 02 25	809	1.3−	0.4−	1998 03 24	704	0.5+	0.1+	1999 09 07	704	0.3+	0.5+
1998 02 25	809	0.6−	1.2−	1998 03 24	704	0.9−	0.6−	1999 09 07	704	0.2+	0.8−
1998 02 25	809	0.2+	1.2−	1998 03 24	704	0.9−	0.3−	1999 09 07	704	0.4+	1.3+
1998 02 26	809	1.0+	1.0+	1998 03 25	704	0.1+	0.2−	1999 09 07	704	0.7−	0.3−
1998 02 26	809	0.3+	0.3+	1998 03 25	704	0.1−	0.3−	1999 09 09	704	0.3+	1.0−
1998 02 26	809	0.4−	0.6+	1998 03 25	704	0.3+	0.3+	1999 09 09	704	0.1−	1.5−
1998 03 20	704	0.1+	0.3+	1998 03 25	704	0.3+	0.4+	1999 09 09	704	0.3+	0.3+
1998 03 20	704	0.4+	0.4−	1998 03 25	704	0.2−	0.0	1999 09 09	704	0.9+	0.3+
1998 03 20	704	0.1+	0.0	1998 03 26	704	1.1+	1.0−	1999 09 09	704	0.0	0.2−
1998 03 20	704	0.2−	0.7+	1998 03 26	704	1.2+	0.4−	1999 09 13	704	0.3−	0.2+
1998 03 20	704	0.5−	0.9+	1998 03 26	704	0.6−	1.0+	1999 09 13	704	0.2−	0.2+
1998 03 24	704	0.1−	0.2−	1999 09 07	704	0.2−	0.6+	1999 09 13	704	0.7−	0.1−

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1998 FU₉₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	86.93701		(2000.0)	P		Q	
<i>n</i>	0.23782008	ω	197.03284	−0.74459211		+0.66482986	
<i>a</i>	2.5801030	Ω	24.95032	−0.59471290		−0.61997692	
<i>e</i>	0.1831094	<i>i</i>	8.15880	−0.30314874		−0.41668918	
<i>P</i>	4.14	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 24	704	0.5−	0.2−	1998 04 03	809	0.7+	1.8−	1998 05 14	704	1.3−	0.4−
1998 03 24	704	0.3+	0.1−	1998 04 03	809	(0.1−	2.5−)	1998 05 14	704	1.1−	0.3−
1998 03 24	704	0.0	0.5−	1998 04 03	809	(0.3−	2.2−)	1998 05 14	704	1.7−	0.2−
1998 03 24	704	0.2−	0.2+	1998 04 19	704	0.7+	0.3+	1998 06 17	704	0.3+	1.2−
1998 03 25	704	0.1+	0.2+	1998 04 19	704	0.0	0.2−	1998 06 17	704	0.7+	0.3+
1998 03 25	704	0.2−	0.3+	1998 04 19	704	0.3+	0.2+	1998 06 17	704	0.2−	0.6+
1998 03 25	704	0.1+	0.0	1998 04 19	704	0.1+	0.3+	1998 06 17	704	(4.4−	0.0)
1998 03 25	704	0.8−	1.3+	1998 04 19	704	1.0−	0.8−	1999 08 13	699	0.9+	0.7+
1998 03 25	704	0.4+	0.8+	1998 04 29	566	0.2+	0.1+	1999 08 13	699	0.3−	0.2−
1998 03 26	704	0.4−	0.0	1998 04 29	566	0.4+	0.0	1999 08 13	699	0.2−	0.2+
1998 03 26	704	0.5+	0.2−	1998 04 29	566	0.6+	0.2+	1999 09 07	699	1.0−	0.5−
1998 03 26	704	0.6+	0.9−	1998 04 30	566	0.4+	0.7+	1999 09 07	699	0.1+	0.2+
1998 04 02	809	(0.4+	3.4−)	1998 04 30	566	0.4+	0.9+	1999 09 07	699	0.3+	0.1−
1998 04 02	809	(0.2+	3.5−)	1998 04 30	566	0.0	1.1+				
1998 04 02	809	(0.5+	3.4−)	1998 05 14	704	0.5+	0.6−				

1998 FZ₉₉ = 1999 RE₃₆

Id. B. G. Marsden

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	72.30853		(2000.0)	P		Q	
<i>n</i>	0.26973696	ω	291.37177	−0.28111043		+0.95598827	
<i>a</i>	2.3723335	Ω	321.98118	−0.82218724		−0.28507931	
<i>e</i>	0.0658772	<i>i</i>	7.84261	−0.49495966		−0.06939900	
<i>P</i>	3.65	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 31	704	1.8+	0.9+	1998 04 19	704	0.1+	0.3−	1999 09 09	704	0.0	0.1+
1998 03 31	704	(2.1−	2.2+)	1998 04 19	704	0.2−	0.1−	1999 09 09	704	0.9+	0.3−
1998 03 31	704	0.9+	1.0+	1998 04 19	704	0.4−	0.3−	1999 09 12	046	0.3−	0.1+
1998 03 31	704	1.6−	0.9−	1998 04 19	704	0.4−	0.5−	1999 09 12	046	0.3−	0.0
1998 03 31	704	0.3+	0.6+	1999 08 08	699	0.0	0.4+	1999 09 12	046	0.4−	0.1−
1998 04 01	704	0.2+	0.5+	1999 08 08	699	0.4+	0.0	1999 09 12	046	0.4−	0.0
1998 04 01	704	0.1+	0.8+	1999 08 08	699	0.1−	0.1−	1999 09 12	046	0.3−	0.0
1998 04 01	704	0.7+	0.3+	1999 08 22	699	0.1+	0.6+	1999 09 13	046	0.4−	0.1+
1998 04 01	704	0.6+	0.4+	1999 08 22	699	0.4−	0.1+	1999 09 13	046	0.3−	0.0
1998 04 01	704	0.8+	0.1+	1999 08 22	699	0.5−	0.2+	1999 09 13	046	0.4−	0.1+
1998 04 18	704	0.5−	0.4−	1999 09 05	699	0.2−	0.1−	1999 09 13	046	0.5−	0.2+
1998 04 18	704	0.8−	0.0	1999 09 05	699	0.3−	0.4+	1999 09 14	704	0.4+	0.1−
1998 04 18	704	1.2−	0.2−	1999 09 05	699	0.0	0.1−	1999 09 14	704	0.8+	0.1−
1998 04 18	704	0.1−	0.4−	1999 09 09	704	0.2+	0.6−	1999 09 14	704	0.5+	0.4−
1998 04 18	704	0.7−	0.4−	1999 09 09	704	0.1+	0.2+	1999 09 14	704	0.5+	0.2+
1998 04 19	704	0.4+	0.6−	1999 09 09	704	0.3−	0.3−	1999 09 14	704	0.7+	0.3+

1998 FW₁₀₀ = 1999 QK₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	143.92275		(2000.0)	P		Q	
<i>n</i>	0.27200898	ω	249.83808	−0.99160323		−0.08013992	
<i>a</i>	2.3591047	Ω	285.45914	+0.11581772		−0.89948740	
<i>e</i>	0.0670864	<i>i</i>	6.04455	−0.05752639		−0.42953465	
<i>P</i>	3.62	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1992 09 07	033	0.5−	0.2+	1998 04 18	704	(2.2−	1.2+)	1999 08 31	557	0.1+	0.3+
1992 09 07	033	0.0	0.1−	1998 04 18	704	0.3−	1.2−	1999 08 31	557	0.1+	0.2+
1994 01 17	010	1.2−	0.7−	1998 04 18	704	1.7−	1.6−	1999 09 01	557	0.2+	0.4−
1994 01 17	010	0.8−	0.1−	1998 04 19	704	0.2−	0.5−	1999 09 01	557	0.2+	0.4−

1994 01 17	010	1.2−	1.3−	1998 04 19	704	0.2−	0.1−	1999 09 01	557	0.3+	0.1−
1994 01 30	010	0.6+	0.6−	1998 04 19	704	0.3−	0.3−	1999 09 01	557	0.7+	0.4−
1994 01 30	010	1.7+	1.3−	1998 04 19	704	0.5+	0.9−	1999 09 07	704	0.1−	0.3−
1998 02 23	566	0.2+	0.3+	1998 04 19	704	1.2−	0.1+	1999 09 07	704	0.2−	0.6−
1998 02 23	566	0.1+	0.0	1998 04 29	566	0.9−	0.5−	1999 09 07	704	0.4−	0.4−
1998 02 23	566	0.3−	0.1+	1998 04 29	566	0.3−	0.9−	1999 09 07	704	0.3+	0.3+
1998 03 31	704	1.4+	1.1+	1998 04 29	566	1.0−	0.7−	1999 09 07	704	1.1+	0.6−
1998 03 31	704	(0.3−	4.6+)	1999 06 20	703	1.1−	0.4−	1999 09 09	704	0.1−	0.9−
1998 03 31	704	0.5−	0.8+	1999 06 20	703	1.2−	0.9+	1999 09 09	704	0.0	0.9−
1998 03 31	704	0.6−	1.7+	1999 06 20	703	0.2−	0.9+	1999 09 09	704	0.2+	0.4+
1998 03 31	704	1.0−	1.4+	1999 06 20	703	0.1+	0.9+	1999 09 09	704	0.3−	0.5−
1998 04 01	704	0.1−	0.6+	1999 07 13	704	0.6+	0.3−	1999 09 09	704	0.1+	0.4−
1998 04 01	704	1.0+	0.4+	1999 07 13	704	0.4+	0.3−	1999 09 14	704	(1.0−	3.6−)
1998 04 01	704	0.6+	0.4−	1999 07 13	704	0.3+	0.3+	1999 09 14	704	0.1+	1.7−
1998 04 01	704	0.8+	0.5−	1999 07 13	704	0.4+	0.2−	1999 09 14	704	0.4+	0.9−
1998 04 01	704	0.8+	0.9−	1999 07 13	704	0.4−	0.2+				
1998 04 18	704	1.2+	1.0−	1999 08 31	557	0.7+	0.2+				

1998 FT₁₀₁ = 1999 RY₁₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	148.68118		(2000.0)	P		Q	
<i>n</i>	0.28200641	ω	241.23011	−0.99369292		−0.09578783	
<i>a</i>	2.3030148	Ω	293.22194	+0.11146028		−0.90068783	
<i>e</i>	0.0732597	<i>i</i>	3.63736	−0.01228769		−0.42377603	
<i>P</i>	3.49	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 08	699	1.1+	0.5−	1998 04 18	704	0.1−	0.1−	1999 09 07	704	0.0	0.4−
1998 03 08	699	0.6+	0.5+	1998 04 18	704	0.7−	0.5−	1999 09 07	704	0.4+	0.0
1998 03 08	699	0.4−	0.7+	1998 04 18	704	1.2−	0.8−	1999 09 07	704	1.0+	1.2−
1998 03 31	704	0.1−	0.2−	1998 04 18	704	1.0−	0.2−	1999 09 07	704	0.3+	0.8+
1998 03 31	704	(2.5−	3.3−)	1998 04 19	704	0.2+	0.3−	1999 09 07	704	0.2+	0.8−
1998 03 31	699	1.5+	0.1−	1998 04 19	704	0.2+	0.4−	1999 09 09	704	0.4+	0.1+
1998 03 31	699	1.1+	0.5+	1998 04 19	704	0.3+	0.1+	1999 09 09	704	0.0	0.1−
1998 03 31	704	0.0	0.5+	1998 04 19	704	0.3−	0.9−	1999 09 09	704	0.1+	0.1+
1998 03 31	699	0.5+	0.8+	1998 04 19	704	0.6−	0.2−	1999 09 09	704	0.5+	0.1−
1998 03 31	704	0.4−	0.0	1999 08 07	699	0.1+	2.0+	1999 09 09	704	0.8+	0.2+
1998 04 01	704	0.5+	0.3−	1999 08 07	699	0.8−	1.4+	1999 09 13	704	0.3−	0.1−
1998 04 01	704	0.1−	0.6+	1999 08 07	699	0.0	0.6+	1999 09 13	704	0.4−	0.5−
1998 04 01	704	0.5−	0.0	1999 08 22	699	0.7−	0.4−	1999 09 13	704	0.2−	0.4−
1998 04 01	704	0.3−	0.4+	1999 08 22	699	0.2−	0.2−	1999 09 13	704	0.7−	1.1−
1998 04 01	704	0.6−	0.3+	1999 08 22	699	0.9−	0.4+	1999 09 13	704	0.1+	0.2−

1998 FA₁₀₂ = 1999 RO₈₄

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	91.77695		(2000.0)	P		Q	
<i>n</i>	0.26692269	ω	278.09944	−0.49929292		+0.86429071	
<i>a</i>	2.3889793	Ω	321.75059	−0.75116423		−0.46682406	
<i>e</i>	0.1445809	<i>i</i>	5.64486	−0.43180885		−0.18728820	
<i>P</i>	3.69	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 01 18	691	0.3+	0.0	1998 04 01	704	0.4−	0.4+	1999 08 12	699	0.6+	0.1+
1994 01 18	691	0.0	0.1+	1998 04 01	704	0.0	0.8+	1999 08 12	699	0.3+	0.3+
1994 01 18	691	0.2−	0.0	1998 04 01	704	0.3+	0.6+	1999 08 12	699	0.8−	0.8+
1998 03 24	566	0.8−	0.1−	1998 04 01	704	0.7+	0.5+	1999 09 07	704	0.9+	0.1+
1998 03 24	566	0.5+	1.1−	1998 04 01	704	0.3+	0.3+	1999 09 07	704	0.4+	0.1−
1998 03 24	566	0.7−	0.2−	1998 04 18	704	0.3+	0.2−	1999 09 07	704	0.1+	0.3−
1998 03 24	566	0.6+	1.4−	1998 04 18	704	0.8−	0.0	1999 09 07	704	0.4−	0.8−
1998 03 24	566	0.7−	0.4−	1998 04 18	704	0.4+	1.0−	1999 09 07	704	0.6+	0.7−
1998 03 24	566	0.1+	1.0−	1998 04 18	704	(0.3−	2.7−)	1999 09 09	704	0.3−	0.6+
1998 03 31	704	0.3+	0.3+	1998 04 19	704	1.4−	0.4+	1999 09 09	704	0.3−	0.1−
1998 03 31	704	0.5+	0.7+	1998 04 19	704	0.4+	0.6+	1999 09 09	704	0.4−	0.1+
1998 03 31	704	1.2+	0.5+	1998 04 19	704	0.4+	0.3−	1999 09 09	704	0.8−	0.4+

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M.P.C. 35969

1998 03 31 704 0.0 0.9+ 1998 04 19 704 0.4- 0.4-
 1998 03 31 704 0.6- 0.8+ 1998 04 19 704 0.2- 0.7-

1998 FT₁₀₂ = 1999 RU₉₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	89.39462		(2000.0)		P		Q
<i>n</i>	0.23315084	ω	6.63504	-0.79334099		+0.59441465	
<i>a</i>	2.6144363	Ω	211.05096	-0.56960237		-0.80098750	
<i>e</i>	0.0756621	<i>i</i>	14.76546	-0.21485627		-0.07134596	
<i>P</i>	4.23	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i> 3	

Residuals in seconds of arc

1998 02 25	566	0.8-	0.6-	1998 04 18	704	0.5+	0.3+	1998 05 14	704	0.8-	1.0-
1998 02 25	566	0.6-	0.0	1998 04 18	704	0.4+	0.5+	1998 05 14	704	1.4-	0.2+
1998 02 25	566	0.5-	0.3-	1998 04 18	704	0.4+	1.1+	1999 07 22	704	0.1+	0.0
1998 03 31	704	0.1+	0.3-	1998 04 18	704	(0.2-	2.1+)	1999 07 22	704	0.2-	0.0
1998 03 31	704	0.2+	0.2+	1998 04 19	704	0.5+	0.3+	1999 07 22	704	0.4+	0.8+
1998 03 31	704	0.5-	0.0	1998 04 19	704	0.5+	0.8+	1999 07 22	704	0.4+	0.0
1998 03 31	704	0.8+	0.2-	1998 04 19	704	0.1+	0.6+	1999 07 22	704	0.4+	1.0-
1998 03 31	704	(2.2-	1.5-)	1998 04 19	704	0.2+	0.8+	1999 09 08	704	0.6-	0.2-
1998 04 01	704	0.1-	0.9-	1998 04 19	704	0.7+	1.0+	1999 09 08	704	0.4-	0.9-
1998 04 01	704	0.5+	0.6+	1998 05 02	566	0.3-	0.6-	1999 09 08	704	0.4-	1.0+
1998 04 01	704	0.2-	0.0	1998 05 02	566	0.2-	1.2-	1999 09 09	704	0.1+	0.7+
1998 04 01	704	0.1-	0.4-	1998 05 02	566	0.4-	1.1-	1999 09 09	704	0.5+	0.2+
1998 04 01	704	0.5-	0.3-	1998 05 14	704	0.1-	0.2-	1999 09 09	704	0.1-	0.1+
1998 04 18	704	1.1+	0.2+	1998 05 14	704	0.1+	0.0	1999 09 09	704	0.2-	0.6-

1998 FU₁₀₂ = 1999 RQ₁₉₆

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	105.74071		(2000.0)		P		Q
<i>n</i>	0.28239278	ω	324.98883	-0.66322580		+0.74156508	
<i>a</i>	2.3009137	Ω	263.23796	-0.66134362		-0.64390720	
<i>e</i>	0.0770959	<i>i</i>	5.84088	-0.35036575		-0.18832086	
<i>P</i>	3.49	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i> 3	

Residuals in seconds of arc

1995 07 16	327	0.4-	0.2+	1998 05 01	566	0.1-	0.4+	1999 09 04	703	0.7-	0.0
1995 07 16	327	0.5-	0.4+	1998 05 01	566	0.4-	1.0+	1999 09 04	703	0.3+	0.9-
1995 07 16	327	0.5+	0.1+	1998 05 01	566	0.6-	0.5+	1999 09 08	704	0.8+	0.5-
1995 07 16	327	0.2+	0.8+	1998 05 02	566	1.0-	0.4-	1999 09 08	704	0.8+	0.5-
1998 03 31	704	0.3+	0.5+	1998 05 02	566	1.1-	0.7-	1999 09 08	704	0.7+	0.5-
1998 03 31	704	1.1-	0.9-	1998 05 02	566	0.7-	0.0	1999 09 12	699	0.5+	0.1+
1998 03 31	704	0.6-	0.9-	1999 07 23	704	0.7-	0.8-	1999 09 12	699	0.4-	0.8+
1998 03 31	704	0.1+	0.9-	1999 07 23	704	0.1-	1.7-	1999 09 12	699	0.6+	0.2-
1998 04 01	704	0.3-	0.4+	1999 07 23	704	0.7-	0.5-	1999 09 16	704	0.2+	0.2-
1998 04 01	704	0.7+	0.4+	1999 07 23	704	0.9-	0.8+	1999 09 16	704	0.4+	0.5+
1998 04 01	704	1.0+	0.9-	1999 07 23	704	0.1+	0.2-	1999 09 16	704	0.5+	0.8-
1998 04 01	704	0.9+	0.5-	1999 09 04	703	0.1+	0.6+				
1998 04 01	704	1.1+	0.9-	1999 09 04	703	0.4-	0.1+				

1998 FW₁₀₂ = 1999 RU₁₆₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	132.06111		(2000.0)		P		Q
<i>n</i>	0.28888845	ω	306.65582	-0.92931346		+0.35915633	
<i>a</i>	2.2662923	Ω	254.53330	-0.30395318		-0.87604364	
<i>e</i>	0.0907141	<i>i</i>	5.11496	-0.20973546		-0.32179851	
<i>P</i>	3.41	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i> 3	

Residuals in seconds of arc

1993 08 17	691	(5.7-	2.3-)	1998 04 01	704	0.3+	0.0	1999 09 05	703	0.0	0.0
1993 08 17	691	0.4+	0.0	1998 04 01	704	0.0	0.6+	1999 09 05	703	0.4-	0.5+
1993 08 17	691	0.4-	0.2+	1998 04 01	704	0.5-	0.7-	1999 09 05	703	1.0-	0.2+
1998 03 03	704	0.4+	0.4+	1998 04 01	704	0.1-	0.5-	1999 09 08	704	0.2+	0.3-
1998 03 03	704	0.6+	0.9+	1998 04 01	704	0.1-	0.2-	1999 09 08	704	0.4+	0.2-

1998 03 03	704	0.2-	0.9+	1998 04 18	704	0.2+	0.5-	1999 09 08	704	0.1+	0.3+
1998 03 03	704	0.2+	1.5+	1998 04 18	704	0.9+	0.2+	1999 09 08	704	0.0	0.1+
1998 03 03	704	0.9+	1.8+	1998 04 18	704	0.2+	0.8-	1999 09 08	704	0.2+	0.5+
1998 03 04	704	1.7-	1.3+	1998 04 18	704	0.1-	0.4-	1999 09 09	704	0.8-	0.6-
1998 03 04	704	1.5-	0.6+	1998 04 18	704	0.1+	0.2+	1999 09 09	704	0.1-	0.3-
1998 03 04	704	0.1-	1.3+	1998 04 19	704	0.4+	0.1+	1999 09 09	704	0.4+	0.2+
1998 03 04	704	(4.5-	1.1+)	1998 04 19	704	0.2-	1.0-	1999 09 09	704	0.9+	0.1+
1998 03 04	704	(1.5-	2.5+)	1998 04 19	704	0.2+	0.7-	1999 09 09	704	0.4+	1.3+
1998 03 25	566	0.1-	1.0-	1998 04 19	704	0.2+	0.1+	1999 09 10	704	0.1+	0.1+
1998 03 25	566	0.1-	1.1-	1998 04 19	704	0.0	0.1-	1999 09 10	704	0.2+	0.2-
1998 03 25	566	0.1+	1.2-	1998 06 18	704	0.6+	0.9+	1999 09 10	704	0.4-	0.4+
1998 03 31	704	0.0	0.1-	1998 06 18	704	0.1-	1.2+	1999 09 10	704	0.1-	0.5+
1998 03 31	704	0.1+	0.7-	1998 06 18	704	0.8-	1.6+	1999 09 10	704	0.2-	1.3-
1998 03 31	704	0.2+	0.5-	1998 06 18	704	0.5+	0.4-	1999 09 10	704	0.0	0.5-
1998 03 31	704	0.3-	0.9-	1999 09 05	703	0.3-	0.3+				

1998 FE₁₀₃ = 1999 NX₄₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Doppler

<i>M</i>	76.34116		(2000.0)		P		Q
<i>n</i>	0.18346131	ω	343.29927	-0.92287839		+0.37243544	
<i>a</i>	3.0674187	Ω	219.02034	-0.33314954		-0.89968988	
<i>e</i>	0.0499927	<i>i</i>	8.94696	-0.19314984		-0.22770585	
<i>P</i>	5.37	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i> 4	

Residuals in seconds of arc

1998 03 31	704	0.4+	0.4-	1998 04 18	704	0.3+	0.7+	1999 07 13	704	0.1+	1.7-
1998 03 31	704	0.7-	0.5-	1998 04 18	704	0.0	0.5-	1999 07 13	704	0.4+	0.2-
1998 03 31	704	0.1-	0.4+	1998 04 18	704	1.8-	0.3-	1999 07 13	704	0.7+	0.6+
1998 03 31	704	0.7-	1.4-	1998 04 19	704	(1.0-	3.2-)	1999 07 19	704	0.3-	0.4+
1998 04 01	704	0.0	0.8+	1998 04 19	704	0.4-	0.3-	1999 07 19	704	0.8+	0.4-
1998 04 01	704	0.2+	0.1-	1998 04 19	704	0.2+	0.5+	1999 07 19	704	0.4-	0.8+
1998 04 01	704	0.4+	1.2+	1998 04 19	704	0.1+	0.2-	1999 07 19	704	1.2-	0.3+
1998 04 01	704	0.3+	0.3+	1998 04 19	704	0.7+	0.0	1999 07 19	704	0.3+	0.0
1998 04 18	704	1.3+	0.1-	1999 07 13	704	0.4-	0.0				

1998 FM₁₀₃ = 1999 RA₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	65.13903		(2000.0)		P		Q
<i>n</i>	0.27041885	ω	331.32810	-0.04491162		+0.99755978	
<i>a</i>	2.3683438	Ω	296.05398	-0.90482604		-0.06329891	
<i>e</i>	0.1072565	<i>i</i>	3.41120	-0.42340617		+0.02945748	
<i>P</i>	3.64	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i> 5	

Residuals in seconds of arc

1998 03 22	704	0.9+	1.6-	1998 04 01	704	1.3-	0.3+	1999 09 07	704	0.0	0.3-
1998 03 22	704	1.3+	0.7-	1998 04 01	704	0.3-	0.0	1999 09 07	704	0.4+	0.4+
1998 03 22	704	1.0+	0.1-	1998 04 18	704	0.7+	1.5-	1999 09 07	704	0.4-	0.6+
1998 03 22	704	0.8-	1.0+	1998 04 18	704	0.3+	0.3-	1999 09 07	704	0.9+	1.7+
1998 03 22	704	0.6+	1.4+	1998 04 18	704	1.0-	0.7-	1999 09 08	704	0.2+	0.8-
1998 03 31	704	0.2+	0.6-	1998 04 18	704	(2.5-	2.1-)	1999 09 08	704	0.1+	0.1+
1998 03 31	704	0.2+	1.0+	1998 04 19	704	0.2+	1.7+	1999 09 08	704	0.0	0.3+
1998 03 31	704	0.6-	0.9-	1998 04 19	704	1.3+	0.5+	1999 09 08	704	0.5-	0.6-
1998 03 31	704	0.2+	1.3+	1998 04 19	704	0.3-	0.6-	1999 09 09	704	0.3-	0.7-
1998 03 31	704	0.9-	0.1+	1998 04 19	704	1.2+	1.8-	1999 09 09	704	0.1-	0.2-
1998 04 01	704	1.0-	1.3+	1998 04 19	704	(5.9-	0.6-)	1999 09 09	704	0.9-	0.2+
1998 04 01	704	1.4-	0.6+	1999 09 07	704	0.8+	0.5+	1999 09 09	704	0.6-	0.5-

1998 FQ₁₀₃ = 1999 RW₁₃₈

Id. G. V. Williams, E. Bowell

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Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	64.74811	(2000.0)	P	Q
<i>n</i>	0.23727063	ω	328.44036	-0.30009883 +0.95158145
<i>a</i>	2.5840846	Ω	284.02418	-0.86028480 -0.30014209
<i>e</i>	0.1210170	<i>i</i>	3.93529	-0.41212954 -0.06638884
<i>P</i>	4.15	<i>H</i>	14.6	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1998 03 03	704	0.5+	1.0+	1998 04 03	704	0.6+	0.2+	1998 04 19	704	1.1-	0.4-
1998 03 03	704	0.7+	0.6+	1998 04 03	704	0.4+	0.3+	1998 04 19	704	0.0	0.4+
1998 03 03	704	0.6+	1.4-	1998 04 03	704	0.0	1.8-	1998 04 19	704	0.0	0.1-
1998 03 03	704	0.1-	0.4-	1998 04 03	704	1.4-	0.5+	1998 04 19	704	0.5-	0.1-
1998 03 03	704	(6.4-	0.0)	1998 04 03	704	0.0	0.0	1998 04 19	704	1.0+	1.9+
1998 03 04	704	0.8-	0.4-	1998 04 03	704	0.2-	0.2+	1999 08 22	699	1.4+	1.3-
1998 03 04	704	0.0	0.2-	1998 04 03	704	0.6-	0.5-	1999 08 22	699	0.6+	0.3-
1998 03 04	704	1.5-	1.4+	1998 04 03	704	0.4-	0.5-	1999 08 22	699	0.5-	0.9+
1998 03 04	704	0.8-	0.3+	1998 04 03	704	1.3+	0.4+	1999 09 05	699	0.4-	0.7+
1998 03 04	704	(6.5-	0.5+)	1998 04 03	704	0.2-	0.1+	1999 09 05	699	0.5-	0.9+
1998 03 25	566	0.1+	0.4+	1998 04 03	704	0.1-	1.5-	1999 09 05	699	(0.1+	2.2+)
1998 03 25	566	0.2+	0.6+	1998 04 03	704	0.3+	0.5-	1999 09 07	704	0.5-	0.0
1998 03 25	566	0.5+	0.3+	1998 04 03	704	0.6-	0.7-	1999 09 07	704	0.1-	0.3-
1998 03 31	704	0.3-	0.5-	1998 04 03	704	0.8-	0.3-	1999 09 07	704	0.1+	0.2-
1998 03 31	704	(4.3+	1.1+)	1998 04 03	704	0.2+	1.2+	1999 09 07	704	0.2+	0.4+
1998 03 31	704	0.4-	0.4+	1998 04 03	704	1.1+	0.9-	1999 09 07	704	0.1+	0.2+
1998 03 31	704	1.8+	0.1+	1998 04 03	704	0.7-	1.1-	1999 09 09	704	0.9+	1.2-
1998 04 01	704	0.4+	0.8-	1998 04 03	704	0.7+	0.2+	1999 09 09	704	0.3-	0.4+
1998 04 01	704	0.5+	0.0	1998 04 03	704	0.4-	0.6-	1999 09 09	704	0.7-	0.1+
1998 04 01	704	(2.2+	0.5-)	1998 04 03	704	0.8+	0.2+	1999 09 09	704	0.1+	0.2-
1998 04 01	704	(2.3+	0.6-)	1998 04 03	704	(3.5-	0.5+)	1999 09 14	704	0.0	0.2+
1998 04 01	704	(2.6+	1.4-)	1998 04 18	704	0.1-	0.8-	1999 09 14	704	0.5-	0.0
1998 04 02	704	0.8+	0.1+	1998 04 18	704	0.8-	0.7+	1999 09 14	704	0.0	0.2-
1998 04 02	704	0.4-	0.7+	1998 04 18	704	0.4+	0.1-	1999 09 14	704	0.2+	0.2+
1998 04 02	704	0.7-	1.0+	1998 04 18	704	0.2+	0.8+	1999 09 14	704	0.1-	0.1-

1998 FZ₁₀₃ = 1999 RP₁₆₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	61.20265	(2000.0)	P	Q
<i>n</i>	0.20690709	ω	299.62455	-0.27275321 +0.95945798
<i>a</i>	2.8310821	Ω	314.36405	-0.84477246 -0.27417460
<i>e</i>	0.2504076	<i>i</i>	5.70249	-0.46039676 -0.06533515
<i>P</i>	4.76	<i>H</i>	14.8	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1998 03 31	704	0.6-	0.2-	1998 04 18	704	1.4-	1.6+	1999 09 07	704	0.3-	0.1-
1998 03 31	704	0.8+	1.1-	1998 04 19	704	0.2+	0.6-	1999 09 07	704	0.2+	0.4-
1998 03 31	704	1.3+	0.3+	1998 04 19	704	0.7+	0.5-	1999 09 09	704	0.1+	1.1-
1998 03 31	704	0.0	0.4-	1998 04 19	704	0.6-	0.6+	1999 09 09	704	0.1-	0.5-
1998 04 01	704	0.2-	0.3-	1998 04 19	704	0.2+	0.9+	1999 09 09	704	0.3+	0.0
1998 04 01	704	0.3-	0.3+	1998 04 19	704	1.0+	0.3+	1999 09 09	704	0.1+	0.1-
1998 04 01	704	0.6-	0.5+	1999 09 04	703	1.0-	0.3-	1999 09 09	704	0.3+	0.7+
1998 04 01	704	0.6+	0.2-	1999 09 04	703	0.4-	0.5+	1999 09 14	704	0.0	0.2+
1998 04 01	704	0.3-	1.0-	1999 09 04	703	0.8+	0.1-	1999 09 14	704	0.4+	0.8+
1998 04 18	704	0.3-	0.4+	1999 09 04	703	1.6-	1.3+	1999 09 14	704	0.7+	0.3+
1998 04 18	704	0.3-	0.4+	1999 09 07	704	0.3-	0.4-	1999 09 14	704	0.1-	0.2-
1998 04 18	704	0.1+	0.5-	1999 09 07	704	0.4+	0.4-	1999 09 14	704	0.8+	0.3+
1998 04 18	704	0.5-	0.8-	1999 09 07	704	0.1-	0.9-				

1998 FG₁₀₄ = 1999 RQ₂₀₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	86.25679	(2000.0)	P	Q
<i>n</i>	0.28182201	ω	289.35840	-0.23391863 +0.96825663
<i>a</i>	2.3040193	Ω	326.71764	-0.82088910 -0.24524233
<i>e</i>	0.1325622	<i>i</i>	9.23811	-0.52098288 -0.04832503
<i>P</i>	3.50	<i>H</i>	15.5	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1998 03 26	566	0.6+	0.8-	1998 04 01	704	0.5-	0.2+	1999 09 08	704	0.0	0.2+
1998 03 26	566	0.1+	1.1-	1998 04 01	704	1.4-	1.0+	1999 09 08	704	0.1+	0.6+
1998 03 26	566	0.8+	1.0-	1998 05 01	566	0.3-	0.1+	1999 09 08	704	0.2+	0.6+
1998 03 31	704	0.0	0.7-	1998 05 01	566	0.4-	0.0	1999 09 08	704	0.5-	0.3+
1998 03 31	704	0.2+	0.6+	1998 05 01	566	0.1+	0.1-	1999 09 18	704	0.4-	0.2-
1998 03 31	704	1.7+	1.2+	1998 05 02	566	0.2+	0.3-	1999 09 18	704	0.3+	0.7-
1998 03 31	704	0.3+	0.7+	1998 05 02	566	0.3-	0.2-	1999 09 18	704	0.1+	0.2-
1998 04 01	704	0.1-	0.2-	1998 05 02	566	0.7-	0.7+	1999 09 18	704	0.2+	0.7-
1998 04 01	704	0.5-	0.2-	1999 09 08	704	0.0	0.1+	1999 09 18	704	0.2+	0.3-

1998 FC₁₀₆ = 1999 RU₆₁

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	48.19439	(2000.0)	P	Q
<i>n</i>	0.24001378	ω	12.31926	+0.03761586 +0.99611875
<i>a</i>	2.5643577	Ω	259.87589	-0.92355663 +0.00424400
<i>e</i>	0.1023759	<i>i</i>	4.63660	-0.38161263 +0.08791714
<i>P</i>	4.11	<i>H</i>	14.8	<i>G</i> 0.15 <i>U</i> 3

Residuals in seconds of arc

1991 10 08	691	0.2-	0.3+	1998 04 18	704	1.4-	0.7+	1999 09 07	704	0.2+	0.2-
1991 10 08	691	0.1-	0.0	1998 04 18	704	1.3+	0.8+	1999 09 07	704	0.2+	0.4+
1991 10 08	691	0.1+	0.3+	1998 04 19	704	0.7-	0.0	1999 09 07	704	0.1+	0.1-
1998 03 31	704	0.6+	0.0	1998 04 19	704	0.7-	0.4-	1999 09 09	704	0.4+	0.6-
1998 03 31	704	0.2-	0.6-	1998 04 19	704	0.1-	0.1-	1999 09 09	704	0.4-	0.9-
1998 03 31	704	0.5+	0.5+	1998 04 19	704	0.2+	0.0	1999 09 09	704	0.4-	1.0-
1998 03 31	704	0.2-	0.5-	1998 04 19	704	1.0+	0.3+	1999 09 09	704	0.1+	1.3-
1998 04 01	704	0.5+	0.8-	1999 08 22	699	(0.6-	2.9+)	1999 09 09	704	0.0	1.0-
1998 04 01	704	0.1+	0.0	1999 08 22	699	1.5+	0.7+	1999 09 14	703	0.6-	0.4-
1998 04 01	704	0.3+	0.5+	1999 08 22	699	0.9+	0.9+	1999 09 14	703	0.1+	0.1-
1998 04 01	704	0.2-	0.0	1999 09 05	699	0.1-	1.7+	1999 09 14	703	0.7-	0.2-
1998 04 01	704	0.1+	0.7-	1999 09 05	699	0.3+	1.4+	1999 09 14	703	0.2-	0.2+
1998 04 18	704	0.3-	0.0	1999 09 05	699	0.3-	1.1+				
1998 04 18	704	0.9-	0.6+	1999 09 07	704	1.1-	1.1-				

1998 FG₁₀₇ = 1988 RP₇ = 1999 RS₁₃₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	355.39219	(2000.0)	P	Q
<i>n</i>	0.26716369	ω	69.87943	+0.91159049 +0.39762665
<i>a</i>	2.3875424	Ω	266.57307	-0.40531725 +0.82687726
<i>e</i>	0.1372504	<i>i</i>	6.00240	-0.06870732 +0.39770222
<i>P</i>	3.69	<i>H</i>	14.7	<i>G</i> 0.15 <i>U</i> 3

Residuals in seconds of arc

1988 09 08	054	0.1+	0.3-	1998 04 19	704	(0.9+	3.4-)	1999 09 09	704	0.3-	0.5-
1998 03 31	704	0.5+	1.0+	1998 04 20	704	0.3-	0.3+	1999 09 09	704	0.2-	0.0
1998 03 31	704	0.1-	1.4-	1998 04 20	704	0.9-	1.1+	1999 09 09	704	0.3-	0.1-
1998 03 31	704	0.6-	0.2-	1998 04 20	704	(0.6+	2.4-)	1999 09 09	704	0.1-	0.3-
1998 03 31	704	0.6-	0.0	1998 04 20	704	1.5+	1.8-	1999 09 09	704	0.1+	0.1+
1998 04 01	704	0.4+	0.8-	1999 07 12	704	0.1-	0.4-	1999 09 10	704	0.5+	0.5+
1998 04 01	704	0.9+	1.5+	1999 07 12	704	0.1-	0.0	1999 09 10	704	0.2+	0.4+
1998 04 01	704	0.5+	1.4-	1999 07 12	704	1.3+	0.2-	1999 09 10	704	0.1-	0.3-
1998 04 01	704	0.8+	0.7+	1999 07 12	704	0.1+	0.1+	1999 09 10	704	0.6-	0.3+
1998 04 01	704	1.0-	0.7+	1999 07 12	704	0.3+	0.5-	1999 09 14	704	0.4+	0.3-
1998 04 19	704	0.7-	0.0	1999 09 04	703	0.4+	0.0	1999 09 14	704	0.4-	0.3-
1998 04 19	704	0.0	0.1+	1999 09 04	703	0.1-	0.3+	1999 09 14	704	0.6-	0.2-
1998 04 19	704	0.7-	0.3+	1999 09 04	703	0.3-	0.5+	1999 09 14	704	0.0	0.4+
1998 04 19	704	0.8+	0.6+	1999 09 04	703	0.0	1.3+	1999 09 14	704	0.3-	0.2-

1998 FX₁₀₈ = 1999 RW₁₀₆

Id. G. V. Williams, E. Bowell

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Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	69.47920		(2000.0)		P		Q				
<i>n</i>	0.28046955	ω	30.49602		+0.00211236		+0.99682254				
<i>a</i>	2.3114202	Ω	239.73196		−0.93508599		−0.02625189				
<i>e</i>	0.0835489	<i>i</i>	5.28987		−0.35441463		+0.07520407				
<i>P</i>	3.51	<i>H</i>	15.1		<i>G</i>	0.15	<i>U</i>	4			
Residuals in seconds of arc											
1998 03 31	704	0.0	0.1−	1998 04 19	704	0.6+	0.5+	1999 09 08	704	0.4−	0.9−
1998 03 31	704	0.3−	0.7−	1998 04 19	704	1.1+	0.3+	1999 09 08	699	0.5+	1.2+
1998 03 31	704	0.0	0.1−	1998 04 19	704	0.4+	1.1+	1999 09 08	704	0.4−	0.8−
1998 03 31	704	0.6−	0.8−	1998 04 19	704	0.5−	1.3+	1999 09 09	704	0.2+	0.9−
1998 04 01	704	0.3+	0.1−	1998 04 19	704	0.2−	0.0	1999 09 09	704	0.0	0.6−
1998 04 01	704	0.1+	0.6+	1998 04 28	566	(2.3−	1.3−)	1999 09 09	704	0.5+	0.6−
1998 04 01	704	0.1−	0.0	1998 04 28	566	0.8−	1.8−	1999 09 09	704	0.2+	0.3−
1998 04 01	704	0.1−	0.1−	1998 04 28	566	0.6−	1.2−	1999 09 09	704	0.2+	0.2−
1998 04 01	704	0.5−	0.2−	1999 09 08	699	0.3−	1.4+	1999 09 18	703	0.1−	0.1+
1998 04 18	704	0.9+	0.6+	1999 09 08	704	0.6+	0.8−	1999 09 18	703	0.0	0.0
1998 04 18	704	1.2+	0.2+	1999 09 08	699	0.3+	1.8+	1999 09 18	703	0.3−	0.2+
1998 04 18	704	0.2−	0.9−	1999 09 08	704	0.2−	0.1−	1999 09 18	703	0.7−	0.6+
1998 04 18	704	0.7−	1.2+	1999 09 08	704	0.2−	0.1−				

1998 FJ₁₀₉ = 1999 RX₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	67.92757		(2000.0)		P		Q				
<i>n</i>	0.27656815	ω	292.80450		+0.03958303		+0.99832936				
<i>a</i>	2.3331067	Ω	339.33091		−0.86747159		+0.01342732				
<i>e</i>	0.0962152	<i>i</i>	6.84877		−0.49590949		+0.05619791				
<i>P</i>	3.56	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	6				
Residuals in seconds of arc											
1998 03 31	704	1.2−	0.6−	1998 04 19	704	0.1+	1.3−	1999 09 07	704	0.3+	1.3+
1998 03 31	704	1.6+	1.2+	1998 04 19	704	0.3+	0.8−	1999 09 07	704	0.2+	0.1+
1998 03 31	704	0.9−	0.3−	1998 04 19	704	0.4+	0.9−	1999 09 07	704	0.6−	0.5−
1998 03 31	704	0.5+	0.2+	1998 04 19	704	0.1+	0.7+	1999 09 07	704	0.4+	0.4+
1998 04 01	704	1.4+	0.1−	1998 04 19	704	1.3−	1.6−	1999 09 07	704	0.3+	0.2+
1998 04 01	704	0.8+	0.1+	1998 04 20	704	0.5+	0.1+	1999 09 08	704	1.0−	0.5+
1998 04 01	704	0.2+	0.5+	1998 04 20	704	1.1−	0.6+	1999 09 08	704	0.8+	0.7−
1998 04 01	704	0.1+	0.6+	1998 04 20	704	0.9+	0.9+	1999 09 08	704	0.7−	0.6−
1998 04 01	704	1.2−	0.7+	1998 04 20	704	1.0−	0.7+				

1998 FU₁₁₃ = 1999 RL₁₃₂

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Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	130.99843		(2000.0)		P		Q				
<i>n</i>	0.26828988	ω	299.72445		−0.96154192		+0.26172479				
<i>a</i>	2.3808563	Ω	255.55363		−0.21278586		−0.90159978				
<i>e</i>	0.0457495	<i>i</i>	4.93409		−0.17366438		−0.34440960				
<i>P</i>	3.67	<i>H</i>	14.7		<i>G</i>	0.15	<i>U</i>	4			
Residuals in seconds of arc											
1998 03 31	704	0.1−	0.6−	1998 04 19	704	0.8−	0.7+	1999 09 08	704	0.4−	0.2+
1998 03 31	704	1.2−	0.6−	1998 04 19	704	0.1+	0.7+	1999 09 08	704	0.4−	0.2+
1998 03 31	704	0.4+	0.6−	1998 04 20	704	0.1+	0.0	1999 09 08	704	0.3+	0.7−
1998 03 31	704	0.2+	0.4−	1998 04 20	704	0.3−	0.0	1999 09 09	704	0.1−	0.3−
1998 04 01	704	0.3+	0.2+	1998 04 20	704	0.3−	0.5+	1999 09 09	704	0.7−	1.1−
1998 04 01	704	0.1−	0.7+	1998 04 20	704	0.7−	0.2+	1999 09 09	704	0.7−	0.0
1998 04 01	704	0.9+	0.2−	1998 04 20	704	0.4−	0.0	1999 09 09	704	0.6−	0.4−
1998 04 01	704	1.1+	0.2−	1998 04 22	704	0.2+	0.6+	1999 09 09	704	0.3−	0.2−
1998 04 01	704	0.1−	1.0+	1998 04 22	704	0.4+	0.1−	1999 09 14	704	0.3+	0.2−
1998 04 18	704	0.2−	0.2−	1998 04 22	704	0.7+	0.2+	1999 09 14	704	1.5+	0.0
1998 04 18	704	0.5−	0.6+	1998 04 22	704	1.8+	1.0−	1999 09 14	704	0.5+	0.5−
1998 04 18	704	0.4−	0.6−	1998 04 22	704	0.1−	0.8−	1999 09 14	704	0.7+	0.7−
1998 04 18	704	1.1−	0.1+	1999 09 05	699	0.1+	0.8+	1999 09 14	704	0.0	0.7+

1998 04 19	704	0.1+	0.1−	1999 09 05	699	0.7−	1.7+	1999 09 14	704	0.7+	1.2+
1998 04 19	704	0.2−	0.0	1999 09 05	699	0.4−	0.6−	1999 09 14	704	0.1+	0.3−

1998 FZ₁₁₃ = 1988 VU₁₃ = 1999 RZ₁₉₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	4.18365		(2000.0)		P		Q				
<i>n</i>	0.26288917	ω	96.48996		+0.89748466		+0.42890854				
<i>a</i>	2.4133534	Ω	238.15644		−0.43714478		+0.83414905				
<i>e</i>	0.1645370	<i>i</i>	6.94759		−0.05852966		+0.34674605				
<i>P</i>	3.75	<i>H</i>	13.9		<i>G</i>	0.15	<i>U</i>	2			
Residuals in seconds of arc											
1988 11 04	327	0.3−	0.3+	1998 04 01	704	1.2−	0.4−	1999 09 08	699	0.4−	1.0+
1988 11 04	327	0.1+	1.2+	1998 04 19	704	1.3+	0.7−	1999 09 08	704	0.3−	0.2+
1992 09 26	691	0.2−	0.2+	1998 04 19	704	0.5+	0.3−	1999 09 08	704	0.4−	0.3+
1992 09 26	691	0.2−	0.1+	1998 04 19	704	0.4−	1.1+	1999 09 08	704	0.3−	0.1+
1992 09 26	691	0.1−	0.1−	1998 04 19	704	0.1+	0.1+	1999 09 08	699	0.1−	0.2+
1996 09 19	696	0.5+	0.6−	1998 04 20	704	0.7+	0.1−	1999 09 08	704	0.1+	0.2+
1996 09 19	696	0.4−	0.4−	1998 04 20	704	1.0+	0.1−	1999 09 16	704	0.1+	0.5−
1996 09 19	696	0.2+	0.7−	1998 04 20	704	0.9+	0.4−	1999 09 16	704	0.1−	0.2−
1998 03 25	704	0.0	0.7−	1998 04 20	704	0.5−	1.0−	1999 09 16	704	0.3+	0.9−
1998 03 25	704	0.2+	0.5+	1998 04 22	704	0.1+	0.5+	1999 09 16	704	0.0	1.5−
1998 03 25	704	0.6+	0.7+	1998 04 22	704	0.1−	0.0	1999 09 18	704	0.3+	0.2−
1998 03 25	704	0.1+	0.1+	1998 04 22	704	0.6+	0.2−	1999 09 18	704	0.0	0.0
1998 03 25	704	0.4−	0.5−	1998 04 22	704	0.0	0.6+	1999 09 18	704	0.7+	0.1−
1998 03 31	704	0.8−	0.4+	1998 04 22	704	0.2−	1.4+	1999 09 18	704	0.1+	0.0
1998 03 31	704	1.1−	0.3+	1999 07 23	704	0.4+	0.3+	1999 09 18	704	0.3+	0.1−
1998 03 31	704	0.5−	0.4−	1999 07 23	704	0.6+	0.1−	1999 09 18	704	0.1−	0.0
1998 03 31	704	0.3+	0.2−	1999 07 23	704	0.2−	0.4+	1999 09 18	704	0.3+	0.1−
1998 04 01	704	0.3−	0.7−	1999 07 23	704	0.1+	0.1−	1999 09 18	704	0.2−	0.2−
1998 04 01	704	0.2−	0.5+	1999 07 23	704	0.4−	0.3−	1999 09 18	704	0.1+	0.3−
1998 04 01	704	0.4−	0.2−	1999 09 08	699	0.2−	1.0+	1999 09 18	704	0.1+	0.1−
1998 04 01	704	0.0	0.1−	1999 09 08	704	0.3−	0.5+				

1998 FA₁₁₄ = 1999 RT₁₄₆

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	98.64128		(2000.0)		P		Q				
<i>n</i>	0.23942556	ω	318.94357		−0.74732710		+0.65764197				
<i>a</i>	2.5685560	Ω	262.43845		−0.58187446		−0.71670557				
<i>e</i>	0.1357884	<i>i</i>	5.49447		−0.32081821		−0.23203485				
<i>P</i>	4.12	<i>H</i>	13.9		<i>G</i>	0.15	<i>U</i>	3			
Residuals in seconds of arc											
1998 03 31	704	0.6+	0.6+	1998 04 20	704	0.0	0.4−	1998 06 18	704	0.3+	0.7+
1998 03 31	704	0.3+	1.1+	1998 04 20	704	0.4+	1.0−	1998 06 18	704	0.7+	1.2−
1998 03 31	704	0.3+	1.0+	1998 04 20	704	0.4+	0.8−	1998 06 18	704	(5.8−	0.3−)
1998 03 31	704	(2.2+	6.0+)	1998 05 01	566	0.3−	0.4+	1999 09 08	699	0.8−	0.2+
1998 03 31	704	(1.2+	2.5+)	1998 05 01	566	0.4−	0.4+	1999 09 08	699	0.1−	0.5+
1998 04 01	704	0.2−	0.3−	1998 05 01	566	0.5−	0.4+	1999 09 08	699	0.7−	0.3+
1998 04 01	704	0.1+	0.3+	1998 05 02	566	0.2−	0.3+	1999 09 09	704	0.2+	0.2−
1998 04 01	704	0.1+	0.1−	1998 05 02	566	0.2−	0.2+	1999 09 09	704	0.1−	0.0
1998 04 01	704	0.1−	0.3−	1998 05 02	566	0.5−	0.3+	1999 09 09	704	0.3+	0.0
1998 04 01	704	0.3−	0.6−	1998 05 16	704	0.1−	1.5−	1999 09 09	704	0.5−	0.4+
1998 04 19	704	0.2−	0.2+	1998 05 16	704	0.2+	0.1−	1999 09 09	704	0.3+	0.1−
1998 04 19	704	0.1+	0.1+	1998 05 16	704	0.1+	0.8−	1999 09 14	704	0.0	0.0
1998 04 19	704	0.7−	0.9+	1998 05 16	704	(4.8−	1.1−)	1999 09 14	704	0.2+	0.0
1998 04 19	704	0.3−	0.2−	1998 05 16	704	(0.2+	2.2+)	1999 09 14	704	0.6+	0.7−
1998 04 20	704	0.2+	0.7−	1998 06 18	704	0.3−	0.5+	1999 09 14	704	0.3+	0.3+
1998 04 20	704	0.6+	0.4−	1998 06 18	704	0.1−	1.4+	1999 09 14	704	0.0	0.7−

1998 FB₁₁₄ = 1999 RN₁₉₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	54.28154	(2000.0)	P			Q		
<i>n</i>	0.22987754	ω	50.10816	-0.06785776	+0.98604551			
<i>a</i>	2.6391962	Ω	216.86323	-0.97515595	-0.09775475			
<i>e</i>	0.1170003	<i>i</i>	14.67899	-0.21087007	+0.13475258			
<i>P</i>	4.29	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4	
Residuals in seconds of arc								
1998 03 31	704	(2.9+ 0.1+)	1998 04 18	704	0.2+ 1.2-	1999 08 11	704	1.5+ 0.3-
1998 03 31	704	0.2- 0.4+	1998 04 22	704	0.3+ 0.2+	1999 08 11	704	0.3+ 0.2+
1998 03 31	704	0.2- 1.6+	1998 04 22	704	(2.3- 1.0+)	1999 08 11	704	1.1+ 0.0
1998 03 31	704	(2.8+ 3.9+)	1998 04 22	704	0.5- 0.7-	1999 09 08	704	0.5- 0.1+
1998 03 31	704	0.2+ 0.7+	1998 04 22	704	(0.2+ 2.0-)	1999 09 08	704	0.3+ 1.3+
1998 04 01	704	0.6- 0.2-	1998 04 22	704	0.7- 1.0-	1999 09 08	704	0.2- 0.1-
1998 04 01	704	0.1- 1.3+	1998 04 30	699	0.5+ 1.0+	1999 09 08	704	0.3- 0.1-
1998 04 01	704	0.3- 0.4-	1998 04 30	699	0.1- 0.2-	1999 09 16	704	1.0- 0.7-
1998 04 01	704	0.7- 0.6+	1998 04 30	699	0.4+ 0.6+	1999 09 16	704	0.6- 0.8+
1998 04 01	704	0.0 0.9-	1998 05 16	704	0.8- 0.4-	1999 09 16	704	0.5- 0.3-
1998 04 18	704	0.2- 0.5+	1998 05 16	704	1.0+ 1.4-	1999 09 16	704	0.3- 0.4-
1998 04 18	704	0.2+ 0.2-	1998 05 16	704	0.2- 0.6-			
1998 04 18	704	0.6+ 0.7-	1998 05 16	704	1.5+ 1.5+			

1998 FJ₁₁₄ = 1999 RG₂₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	64.98125	(2000.0)	P			Q		
<i>n</i>	0.28004067	ω	22.26786	+0.22020480	+0.97031769			
<i>a</i>	2.3137796	Ω	260.56626	-0.90954237	+0.16721232			
<i>e</i>	0.1032202	<i>i</i>	5.81621	-0.35248054	+0.17471013			
<i>P</i>	3.52	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4	
Residuals in seconds of arc								
1998 03 31	704	0.2+ 0.9-	1998 04 18	704	0.6+ 0.6-	1998 05 16	704	1.5- 0.4-
1998 03 31	704	1.0+ 0.3+	1998 04 18	704	0.6- 1.5-	1999 09 08	704	0.4+ 0.0
1998 03 31	704	0.3+ 0.0	1998 04 18	704	2.9- 2.2+	1999 09 08	704	0.6+ 0.4+
1998 03 31	704	1.2- 1.8-	1998 04 20	704	0.6+ 0.8+	1999 09 08	704	0.6+ 0.2+
1998 04 01	704	1.0- 0.1+	1998 04 20	704	1.8- 1.5+	1999 09 08	704	0.1+ 0.6+
1998 04 01	704	0.8+ 0.7+	1998 04 20	704	0.5+ 1.0+	1999 09 08	704	0.1+ 0.2+
1998 04 01	704	0.2+ 0.1-	1998 04 20	704	1.4+ 0.5+	1999 09 18	704	0.4- 0.1-
1998 04 01	704	0.4- 0.4+	1998 04 20	704	0.4+ 0.0	1999 09 18	704	0.6- 0.1-
1998 04 01	704	0.4+ 0.7-	1998 05 16	704	1.1+ 0.5-	1999 09 18	704	0.3- 0.7-
1998 04 18	704	0.8+ 0.4+	1998 05 16	704	0.5+ 0.6-	1999 09 18	704	0.4- 0.4-
1998 04 18	704	0.7+ 0.0	1998 05 16	704	0.1- 1.0-	1999 09 18	704	0.1- 0.1+

1998 FL₁₁₄ = 1999 RD₁₀₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	103.56101	(2000.0)	P			Q		
<i>n</i>	0.23101570	ω	342.41058	-0.83770172	+0.52486514			
<i>a</i>	2.6305206	Ω	230.21376	-0.47448967	-0.83629011			
<i>e</i>	0.1356251	<i>i</i>	11.32532	-0.27039855	-0.15854158			
<i>P</i>	4.27	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	4	
Residuals in seconds of arc								
1998 03 31	704	0.0 0.2+	1998 04 01	704	(2.7- 2.4+)	1998 04 30	699	0.4+ 0.3-
1998 03 31	704	0.1+ 0.4-	1998 04 20	704	0.5- 0.2+	1999 09 08	704	1.1+ 0.2+
1998 03 31	704	0.6+ 0.5+	1998 04 20	704	1.0+ 0.4-	1999 09 08	704	0.6- 0.9+
1998 03 31	704	0.9- 1.0-	1998 04 20	704	0.6- 0.2-	1999 09 08	704	0.0 0.1-
1998 04 01	704	0.4- 0.5+	1998 04 20	704	0.3+ 0.9+	1999 09 08	704	0.6- 0.8-
1998 04 01	704	0.1+ 0.3+	1998 04 20	704	1.7- 0.7-	1999 09 09	704	0.2+ 0.3+
1998 04 01	704	0.4+ 0.1-	1998 04 30	699	0.4+ 0.5+	1999 09 09	704	0.6- 0.1-
1998 04 01	704	0.5+ 0.2+	1998 04 30	699	0.2+ 0.2-	1999 09 09	704	0.4+ 0.3-

1998 FX₁₁₄ = 1999 RH₁₉₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	80.42884	(2000.0)	P			Q		
<i>n</i>	0.24134030	ω	18.23706	-0.37534169	+0.91513274			
<i>a</i>	2.5549524	Ω	229.99321	-0.87252442	-0.40241412			
<i>e</i>	0.1194311	<i>i</i>	11.07530	-0.31276149	+0.02439137			
<i>P</i>	4.08	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	4	
Residuals in seconds of arc								
1998 03 25	699	0.7+ 0.1-	1998 04 20	704	0.6+ 0.1+	1998 05 28	699	0.6+ 0.3+
1998 03 25	699	0.4+ 0.2-	1998 04 20	704	0.9- 0.7+	1999 09 07	703	0.2+ 0.6+
1998 03 25	699	0.7+ 0.7-	1998 04 20	704	0.0 0.4-	1999 09 07	703	0.0 0.3+
1998 03 31	704	0.0 1.3-	1998 04 20	704	0.3- 0.1-	1999 09 07	703	0.7- 0.4+
1998 03 31	704	0.5- 0.4+	1998 04 30	699	0.5+ 0.7-	1999 09 07	703	1.0- 0.2+
1998 03 31	704	0.8+ 0.0	1998 04 30	699	0.2- 0.6-	1999 09 08	704	1.0+ 0.8-
1998 03 31	704	0.1+ 0.9+	1998 04 30	699	0.4+ 0.8-	1999 09 08	704	0.6+ 0.6-
1998 03 31	704	0.1+ 1.2+	1998 05 16	704	0.2- 0.3+	1999 09 08	704	0.7+ 0.5-
1998 04 01	704	0.0 0.7-	1998 05 16	704	0.6- 0.2+	1999 09 16	704	0.4- 0.1+
1998 04 01	704	0.1- 0.9-	1998 05 16	704	0.5+ 0.1-	1999 09 16	704	0.1+ 0.1-
1998 04 01	704	0.8- 1.2+	1998 05 16	704	1.8- 0.9+	1999 09 16	704	0.1- 0.4+
1998 04 01	704	0.1- 1.8+	1998 05 16	704	(2.8- 0.1-)	1999 09 16	704	0.4- 0.2+
1998 04 01	704	0.9- 0.2+	1998 05 28	699	0.6+ 0.9-			
1998 04 20	704	0.5- 0.3-	1998 05 28	699	1.2+ 0.0			

1998 FE₁₁₅ = 1999 RE₁₀₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	105.56114	(2000.0)	P			Q		
<i>n</i>	0.22599083	ω	345.06313	-0.86149764	+0.48852178			
<i>a</i>	2.6693704	Ω	225.05164	-0.44350268	-0.85672677			
<i>e</i>	0.1359955	<i>i</i>	11.28101	-0.24723913	-0.16542586			
<i>P</i>	4.36	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	3	
Residuals in seconds of arc								
1998 03 25	699	0.2+ 0.2-	1998 04 21	704	0.4+ 0.5-	1999 07 22	704	0.2+ 0.5+
1998 03 25	704	0.1+ 0.3-	1998 04 22	704	0.3- 0.3+	1999 07 22	704	0.3+ 0.1+
1998 03 25	699	0.3+ 0.2+	1998 04 22	704	0.1+ 0.5+	1999 07 22	704	0.2+ 0.1+
1998 03 25	699	0.2- 0.4+	1998 04 22	704	0.7- 0.4+	1999 07 22	704	0.1- 0.1-
1998 03 25	704	(1.2+ 3.7-)	1998 04 22	704	0.3+ 0.2-	1999 09 07	703	0.6- 0.4-
1998 03 25	704	(3.1- 0.3+)	1998 04 22	704	0.5- 0.3-	1999 09 07	703	0.5- 0.1+
1998 03 25	704	0.1- 0.2+	1998 04 30	699	0.4+ 0.2+	1999 09 07	703	0.6- 0.5-
1998 03 25	704	0.5- 1.1+	1998 04 30	699	0.4+ 0.9+	1999 09 07	703	0.0 0.4-
1998 03 31	704	0.4- 0.9+	1998 04 30	699	0.5+ 0.5+	1999 09 08	704	0.2- 0.1+
1998 03 31	704	0.3- 0.3-	1998 05 16	704	0.3+ 0.0	1999 09 08	704	0.3- 0.3+
1998 03 31	704	0.4- 0.2-	1998 05 16	704	0.1+ 0.1+	1999 09 08	704	0.2- 0.1+
1998 03 31	704	0.1- 1.2-	1998 05 16	704	0.6- 0.5-	1999 09 08	704	0.7+ 0.9+
1998 03 31	704	(0.6- 2.8-)	1998 05 16	704	0.9- 1.3-	1999 09 09	704	0.7+ 0.5+
1998 04 01	704	0.4+ 0.2+	1998 05 16	704	1.6- 1.5-	1999 09 09	704	0.3+ 0.2+
1998 04 01	704	1.0+ 0.2+	1998 05 28	699	0.2+ 0.1-	1999 09 09	704	0.4+ 0.2-
1998 04 01	704	0.2+ 0.1+	1998 05 28	699	0.9+ 0.1-	1999 09 09	704	0.2+ 0.1-
1998 04 01	704	0.1+ 0.5-	1998 05 28	699	0.5+ 0.0	1999 09 09	704	0.8+ 1.0-
1998 04 01	704	0.2- 0.3-	1998 06 18	704	(1.8- 2.5+)	1999 09 19	699	0.6- 0.3+
1998 04 21	704	0.3- 0.6+	1998 06 18	704	1.1+ 0.0	1999 09 19	699	0.2- 0.5+
1998 04 21	704	0.3- 1.1+	1998 06 18	704	0.2- 0.1-	1999 09 19	699	1.0- 0.4-
1998 04 21	704	0.1+ 0.1-	1998 06 18	704	(3.4+ 1.2+)			
1998 04 21	704	0.1+ 0.1+	1999 07 22	704	0.4+ 0.1+			

1998 FG₁₁₅ = 1999 RR₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	206.20023	(2000.0)	P			Q		
<i>n</i>	0.26254576	ω	225.85796	-0.46479606	-0.88017240			
<i>a</i>	2.4154573	Ω	252.06590	+0.83849380	-0.40264260			
<i>e</i>	0.0766082	<i>i</i>	5.80538	+0.28441655	-0.25134734			
<i>P</i>	3.75	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4	

Residuals in seconds of arc

1998 03 25	704	0.0	0.4+	1998 04 22	704	0.8-	0.2-	1999 09 04	703	0.4+	0.3+
1998 03 25	704	0.9-	0.2+	1998 04 22	704	0.6-	0.6-	1999 09 06	699	1.7-	0.0
1998 03 25	704	0.3-	1.1-	1998 04 22	704	0.0	0.4-	1999 09 06	699	1.9-	1.7+
1998 03 25	704	1.1+	1.0+	1998 04 22	704	0.7-	0.6-	1999 09 06	699	0.2+	0.3+
1998 03 25	704	(0.0	2.4-)	1998 04 22	704	0.9-	0.6-	1999 09 08	703	0.5+	1.3+
1998 03 31	704	0.8-	0.8-	1998 04 25	699	0.1-	0.4+	1999 09 08	703	0.3+	0.6+
1998 03 31	704	0.8+	0.5+	1998 04 25	699	0.2-	0.2+	1999 09 08	703	0.2-	1.0+
1998 03 31	704	0.2-	0.0	1998 04 25	699	0.5-	0.6-	1999 09 08	703	0.2+	0.6-
1998 03 31	704	0.2-	0.7-	1998 04 30	699	0.3+	0.2+	1999 09 09	704	0.2+	0.4-
1998 03 31	704	0.3+	0.3-	1998 04 30	699	1.1+	1.2+	1999 09 09	704	0.5-	0.9-
1998 04 01	704	0.5+	0.7+	1998 04 30	699	1.1+	1.4+	1999 09 09	704	0.3-	0.7-
1998 04 01	704	0.5+	0.5-	1999 07 13	704	0.8-	0.5-	1999 09 09	704	0.3+	0.5-
1998 04 01	704	0.1+	0.3+	1999 07 13	704	0.7+	0.2+	1999 09 09	704	0.8+	0.1+
1998 04 01	704	(2.2-	0.5-)	1999 07 13	704	0.0	0.4+	1999 09 14	704	0.0	0.4-
1998 04 21	704	0.3+	0.2+	1999 07 13	704	0.5+	0.5-	1999 09 14	704	0.7+	0.1+
1998 04 21	704	0.3+	0.8-	1999 07 13	704	0.3-	0.4-	1999 09 14	704	0.4+	0.7-
1998 04 21	704	(3.7-	0.8-)	1999 09 04	703	0.4-	0.4-	1999 09 14	704	0.9+	0.2-
1998 04 21	704	0.4-	0.1+	1999 09 04	703	0.1+	0.3-	1999 09 14	704	0.6+	0.1+
1998 04 21	704	0.4+	0.5+	1999 09 04	703	0.5-	0.2+				

1998 FK₁₁₅ = 1999 RA₁₉₇

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	337.53709	(2000.0)	
<i>n</i>	0.28344199	ω	123.60780
<i>a</i>	2.2952320	Ω	248.08751
<i>e</i>	0.1484131	<i>i</i>	5.93129
<i>P</i>	3.48	<i>H</i>	14.1
		<i>G</i>	0.15
		<i>U</i>	3

Residuals in seconds of arc

1998 03 31	704	0.5+	0.8+	1998 04 22	704	0.1+	0.3-	1999 09 07	703	0.0	0.2-
1998 03 31	704	0.8+	0.1-	1998 04 22	704	1.0+	0.1+	1999 09 08	699	0.6-	0.3+
1998 03 31	704	1.2+	0.5+	1998 04 22	704	(1.3+	3.0-)	1999 09 08	704	0.4+	0.1+
1998 03 31	704	(1.5-	2.2+)	1998 04 22	704	0.6-	0.4-	1999 09 08	699	0.9-	0.7+
1998 04 01	704	0.7-	0.5+	1998 04 22	704	0.3-	0.2-	1999 09 08	704	0.4+	0.3-
1998 04 01	704	0.2-	0.8+	1999 07 23	704	0.2+	0.2-	1999 09 08	704	0.4+	0.1-
1998 04 01	704	1.0-	0.1+	1999 07 23	704	0.4+	0.5-	1999 09 08	704	0.2+	0.3-
1998 04 01	704	(2.9-	1.3-)	1999 07 23	704	0.4+	0.3-	1999 09 08	699	0.5-	0.4+
1998 04 21	704	0.3+	0.5+	1999 07 23	704	0.7+	0.1-	1999 09 08	704	0.1+	0.3-
1998 04 21	704	0.3-	0.2-	1999 07 23	704	0.3+	0.3-	1999 09 16	704	0.5+	0.3+
1998 04 21	704	0.2+	0.8-	1999 09 07	703	0.7-	0.3+	1999 09 16	704	0.3+	0.3+
1998 04 21	704	0.7-	0.3+	1999 09 07	703	0.6-	0.1-	1999 09 16	704	0.1-	0.3+
1998 04 21	704	0.1+	0.2-	1999 09 07	703	0.8-	0.4+	1999 09 16	704	0.0	0.2+

1998 FS₁₁₅ = 1999 RA₆₉

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	76.89846	(2000.0)	
<i>n</i>	0.23208773	ω	245.52736
<i>a</i>	2.6224140	Ω	358.31314
<i>e</i>	0.1206015	<i>i</i>	13.41020
<i>P</i>	4.25	<i>H</i>	14.8
		<i>G</i>	0.15
		<i>U</i>	4

Residuals in seconds of arc

1998 03 25	704	0.2+	0.1+	1998 04 01	704	0.7-	0.8+	1999 09 07	699	0.9+	0.0
1998 03 25	704	0.7+	0.5-	1998 04 01	704	0.4-	0.2-	1999 09 07	704	0.4+	0.1-
1998 03 25	704	1.1+	0.1+	1998 04 01	704	0.5-	0.3+	1999 09 07	699	0.6-	1.2+
1998 03 25	704	0.3+	0.6-	1998 04 19	704	0.6-	0.7-	1999 09 07	704	0.4-	0.2+
1998 03 25	704	(3.5-	1.1+)	1998 04 19	704	0.2+	0.1+	1999 09 07	704	0.3-	0.0
1998 03 26	566	0.1+	0.4+	1998 04 19	704	0.4+	0.1+	1999 09 07	704	0.1+	0.5-
1998 03 26	566	0.1-	0.3+	1998 04 19	704	0.6-	1.0-	1999 09 07	699	0.3-	0.2-
1998 03 26	566	0.0	0.3+	1998 04 20	704	0.1-	0.5-	1999 09 07	704	0.1+	0.1-
1998 03 31	704	0.2-	0.0	1998 04 20	704	1.5+	0.9+	1999 09 09	704	0.1+	1.0-
1998 03 31	704	0.8-	0.7-	1998 04 20	704	0.6+	0.8+	1999 09 09	704	0.1-	0.3+
1998 03 31	704	0.6+	0.5+	1998 04 20	704	0.2+	0.4+	1999 09 09	704	0.8+	0.3-

1998 03 31	704	0.3-	1.4-	1998 05 01	566	0.3-	0.4-	1999 09 09	704	0.6-	0.6+
1998 04 01	704	0.2-	0.4+	1998 05 01	566	0.2+	0.3+				
1998 04 01	704	0.7-	0.3+	1998 05 01	566	0.3-	0.2-				

1998 FD₁₁₆ = 1999 RU₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	38.23314	(2000.0)	
<i>n</i>	0.26037074	ω	327.92356
<i>a</i>	2.4288905	Ω	331.10491
<i>e</i>	0.1300490	<i>i</i>	5.94666
<i>P</i>	3.79	<i>H</i>	14.0
		<i>G</i>	0.15
		<i>U</i>	4

Residuals in seconds of arc

1998 03 31	704	0.4+	0.7-	1998 04 19	704	0.3-	0.5+	1999 09 07	704	0.1-	0.2-
1998 03 31	704	0.3-	0.0	1998 04 19	704	0.5+	1.1+	1999 09 08	704	0.2+	0.3-
1998 03 31	704	0.1+	0.2+	1998 04 20	704	0.3+	0.4-	1999 09 08	704	0.4+	0.1-
1998 03 31	704	0.2+	0.2-	1998 04 20	704	0.2-	0.0	1999 09 08	704	0.1+	0.1-
1998 03 31	704	(2.7-	0.7+)	1998 04 20	704	0.0	0.5+	1999 09 08	704	0.2-	0.2-
1998 04 01	704	0.4-	0.6-	1998 04 20	704	0.5-	0.7+	1999 09 08	704	0.2-	0.2-
1998 04 01	704	0.1-	0.6-	1998 04 20	704	0.7+	0.1+	1999 09 09	704	0.2+	0.4+
1998 04 01	704	0.3-	0.2-	1998 04 22	704	0.1+	0.1+	1999 09 09	704	0.4-	0.1-
1998 04 01	704	0.2+	0.2+	1998 04 22	704	0.3+	0.1+	1999 09 09	704	0.2+	0.2-
1998 04 01	704	0.3-	0.1+	1998 04 22	704	0.7+	0.1+	1999 09 09	704	0.2+	0.1-
1998 04 18	704	0.1-	0.2-	1998 04 22	704	0.6+	0.4-	1999 09 09	704	0.2-	0.4-
1998 04 18	704	0.7-	0.7+	1998 04 22	704	1.0-	1.1-	1999 09 16	704	0.2+	0.2+
1998 04 18	704	0.1+	0.1-	1999 09 07	704	0.1+	0.1+	1999 09 16	704	0.4+	0.6+
1998 04 18	704	0.8-	0.1+	1999 09 07	704	0.4+	0.3+	1999 09 16	704	0.0	0.5-
1998 04 19	704	0.6+	0.6-	1999 09 07	704	0.7-	0.2+				
1998 04 19	704	0.1+	0.3+	1999 09 07	704	0.4-	0.1+				

1998 FG₁₁₆ = 1999 RM₁₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	254.19059	(2000.0)	
<i>n</i>	0.29526920	ω	213.10706
<i>a</i>	2.2335240	Ω	223.05864
<i>e</i>	0.0765052	<i>i</i>	6.56540
<i>P</i>	3.34	<i>H</i>	15.1
		<i>G</i>	0.15
		<i>U</i>	3

Residuals in seconds of arc

1997 02 01	691	0.3-	0.4+	1998 04 04	699	0.1+	1.1+	1998 04 22	704	0.9-	1.3+
1997 02 01	691	0.0	0.2+	1998 04 18	704	0.7+	0.0	1998 04 22	704	0.8-	1.1+
1997 02 01	691	0.1+	0.4+	1998 04 18	704	0.1+	0.1-	1998 05 02	699	0.4+	0.0
1998 03 24	566	0.5-	0.2-	1998 04 18	704	0.0	0.4-	1998 05 02	699	(0.1+	2.1-)
1998 03 24	566	1.1-	0.3-	1998 04 18	704	0.1+	1.1-	1998 05 02	699	0.0	0.1-
1998 03 24	566	1.5-	0.7-	1998 04 19	704	0.1+	0.3-	1999 07 13	704	0.3-	1.0+
1998 03 31	704	0.1-	0.4-	1998 04 19	704	0.2+	0.0	1999 07 13	704	0.3+	1.1+
1998 03 31	704	0.6+	0.2-	1998 04 19	704	0.6-	0.0	1999 07 13	704	0.5+	0.8-
1998 03 31	704	1.0+	0.9+	1998 04 19	704	0.1-	0.4+	1999 07 13	704	0.1-	0.2-
1998 03 31	704	1.7+	0.3+	1998 04 19	704	0.1-	0.5-	1999 09 09	704	0.4+	1.0-
1998 03 31	704	(1.0+	2.9+)	1998 04 20	704	0.5+	0.9-	1999 09 09	704	0.0	0.5-
1998 04 01	704	0.6-	0.1+	1998 04 20	704	0.3+	0.5+	1999 09 09	704	0.0	0.2-
1998 04 01	704	0.3+	0.0	1998 04 20	704	0.1+	0.3+	1999 09 14	704	0.2-	0.7+
1998 04 01	704	0.8+	0.4+	1998 04 20	704	0.1-	0.7-	1999 09 14	704	0.2+	0.1+
1998 04 01	704	0.5+	0.4+	1998 04 20	704	0.6-	0.8-	1999 09 14	704	0.3+	0.3+
1998 04 01	704	0.9-	0.9+	1998 04 22	704	1.2-	0.1+	1999 09 14	704	0.4-	0.4-
1998 04 04	699	1.4+	1.6-	1998 04 22	704	0.5+	0.2+	1999 09 14	704	0.2+	0.3+
1998 04 04	699	(0.7+	2.5-)	1998 04 22	704	0.3-	0.6+				

1998 FH₁₁₆ = 1999 RL₁₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams		

Residuals in seconds of arc

1994 01 07	691	0.4−	0.1−	1998 04 18	704	0.6−	1.2−	1998 04 22	704	1.9−	1.5+
1994 01 07	691	0.2+	0.1−	1998 04 18	704	1.1+	0.6−	1998 04 22	704	0.4−	0.2+
1994 01 07	691	0.1+	0.1−	1998 04 19	704	0.3+	0.9−	1999 09 07	704	0.5−	0.7+
1998 03 31	704	1.2−	0.4+	1998 04 19	704	0.2−	0.4−	1999 09 07	704	0.2+	0.5−
1998 03 31	704	(0.4+ 2.3−)		1998 04 19	704	0.8+	0.2+	1999 09 07	704	0.1+	0.7−
1998 03 31	704	0.6−	1.5−	1998 04 19	704	0.2+	0.1−	1999 09 07	704	0.5+	1.1+
1998 03 31	704	(4.8− 0.3+)		1998 04 19	704	0.3+	0.4+	1999 09 09	704	0.1+	1.3−
1998 04 01	704	0.1+	0.2−	1998 04 20	704	0.4+	0.3−	1999 09 09	704	0.2−	1.2−
1998 04 01	704	0.5+	0.4+	1998 04 20	704	0.3+	0.4−	1999 09 09	704	0.7−	0.6+
1998 04 01	704	0.1−	1.0+	1998 04 20	704	(0.7+ 2.4−)		1999 09 13	704	0.4−	0.1+
1998 04 01	704	1.7+	0.1−	1998 04 20	704	0.6+	0.2−	1999 09 13	704	0.4−	0.1+
1998 04 01	704	0.3+	0.9+	1998 04 20	704	(0.1− 2.2−)		1999 09 13	704	0.1+	0.3+
1998 04 18	704	(2.2− 0.3+)		1998 04 22	704	0.2−	0.9+	1999 09 13	704	0.8+	0.2−
1998 04 18	704	0.2−	0.7+	1998 04 22	704	1.2−	0.7−	1999 09 13	704	0.6+	0.6+

1998 FL₁₁₆ = 1999 RP₆₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.30487735	ω	177.83447	−0.74790435	−0.66251384		
<i>a</i>	2.1863479	Ω	320.57029	+0.60804647	−0.65872147		
<i>e</i>	0.0854790	<i>i</i>	3.73797	+0.26630541	−0.35659701		
<i>P</i>	3.23	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1996 10 12	566	0.4−	0.3+	1998 04 04	699	0.4+	0.1+	1998 04 22	704	0.2+	0.1−
1996 10 12	566	0.1−	0.0	1998 04 04	699	0.8+	0.2−	1998 04 22	704	1.1+	0.3−
1996 10 12	566	0.2+	0.4+	1998 04 04	699	0.6+	0.8+	1998 04 22	704	0.6+	0.0
1998 03 28	704	0.4−	1.4+	1998 04 18	704	0.5+	0.6−	1998 04 22	704	0.2+	0.4+
1998 03 28	704	0.5−	0.4+	1998 04 18	704	0.7+	0.4+	1998 04 29	566	0.6−	0.3−
1998 03 28	704	0.5−	0.5+	1998 04 18	704	0.2−	0.2+	1998 04 29	566	0.3−	0.3−
1998 03 28	704	0.7−	0.9+	1998 04 18	704	0.0	1.7−	1998 04 29	566	0.9−	0.0
1998 03 28	704	0.2−	1.3+	1998 04 19	704	0.6+	0.1−	1999 09 07	704	0.4−	0.8+
1998 03 31	704	0.0	0.7−	1998 04 19	704	0.5+	0.0	1999 09 07	704	0.7−	0.1+
1998 03 31	704	0.1−	0.0	1998 04 19	704	0.4−	0.0	1999 09 07	704	0.6−	0.3−
1998 03 31	704	0.8+	0.3−	1998 04 19	704	0.9+	0.4−	1999 09 07	704	0.4−	0.5−
1998 03 31	704	0.9−	0.7−	1998 04 19	704	0.2+	1.0−	1999 09 07	704	0.6−	0.5−
1998 03 31	704	0.4+	0.3−	1998 04 20	704	0.4+	0.4−	1999 09 14	704	0.2+	0.2−
1998 04 01	704	0.4−	0.1+	1998 04 20	704	1.1−	0.4−	1999 09 14	704	0.4+	0.2+
1998 04 01	704	0.1−	0.1−	1998 04 20	704	0.6−	0.7+	1999 09 14	704	0.1+	0.8+
1998 04 01	704	0.2+	1.0+	1998 04 20	704	0.0	0.2+	1999 09 14	704	0.7+	0.3−
1998 04 01	704	0.1−	0.6−	1998 04 20	704	0.7−	0.2+	1999 09 14	704	1.1+	0.6+
1998 04 01	704	0.4−	0.4+	1998 04 22	704	0.5+	0.0				

1998 FB₁₁₇ = 1999 RL₁₆₃

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.30880229	ω	162.34213	−0.13802300	−0.98897379		
<i>a</i>	2.1677825	Ω	295.56329	+0.90137151	−0.10297024		
<i>e</i>	0.0517912	<i>i</i>	3.41078	+0.41046200	−0.10643298		
<i>P</i>	3.19	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 22	699	0.7−	0.1+	1998 04 18	704	0.4−	0.9−	1999 08 22	699	0.3−	0.2+
1998 03 22	699	1.7−	1.7+	1998 04 18	704	0.9−	0.4−	1999 08 22	699	0.9+	0.6+
1998 03 22	699	0.2−	0.4−	1998 04 19	704	0.5−	0.1−	1999 09 07	704	0.0	0.2−
1998 03 25	704	1.9+	0.1−	1998 04 19	704	0.2−	0.3−	1999 09 07	704	0.8−	0.1−
1998 03 25	704	0.0	2.0+	1998 04 19	704	1.7−	0.0	1999 09 07	704	0.1−	0.5−
1998 03 25	704	1.2+	0.3−	1998 04 19	704	0.7−	0.3−	1999 09 07	704	0.2+	0.2−
1998 03 25	704	0.1+	0.4+	1998 04 20	704	0.2+	0.2+	1999 09 07	704	0.1−	0.7−
1998 03 25	704	1.6+	1.5+	1998 04 20	704	0.5+	0.9−	1999 09 08	699	0.4−	0.8+
1998 03 31	704	0.1+	0.6−	1998 04 20	704	0.5−	0.3+	1999 09 08	699	0.6−	0.8+
1998 03 31	704	0.8+	1.2−	1998 04 20	704	0.1−	0.7+	1999 09 08	699	0.4−	0.6+
1998 03 31	704	0.2+	0.5+	1998 04 20	704	0.4−	0.5+	1999 09 09	704	0.2+	0.5+
1998 03 31	704	0.7+	1.4−	1998 04 22	704	0.8+	0.0	1999 09 09	704	0.1+	0.2+

1998 03 31	704	1.6−	0.0	1998 04 22	704	0.4+	0.5+	1999 09 09	704	0.3+	0.3+
1998 04 01	704	0.0	0.3−	1998 04 22	704	0.4−	0.3−	1999 09 09	704	0.5+	0.0
1998 04 01	704	0.2+	0.2−	1998 04 22	704	0.2+	0.1−	1999 09 09	704	0.1+	0.0
1998 04 01	704	0.6−	0.1+	1998 04 22	704	0.4−	0.3+	1999 09 14	704	0.2+	0.0
1998 04 01	704	0.0	0.1−	1998 04 30	699	1.0+	0.4−	1999 09 14	704	0.6+	0.3−
1998 04 01	704	0.1−	0.2−	1998 04 30	699	0.4+	0.5+	1999 09 14	704	0.0	0.4−
1998 04 18	704	0.3+	0.2−	1998 04 30	699	0.3+	0.2+	1999 09 14	704	0.4−	0.2−
1998 04 18	704	0.2+	0.3−	1999 08 22	699	0.8−	0.6−	1999 09 14	704	0.6+	0.5−

1998 FC₁₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28390054	ω	92.40233	+0.83105296	+0.55034866		
<i>a</i>	2.2927599	Ω	234.21823	−0.54153858	+0.76768118		
<i>e</i>	0.1339835	<i>i</i>	5.68911	−0.12683429	+0.32830162		
<i>P</i>	3.47	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 25	704	0.5−	0.2−	1998 04 19	704	(2.3−	1.8+)	1999 07 23	704	0.7−	0.2−
1998 03 25	704	0.5−	0.2+	1998 04 19	704	0.6−	1.6+	1999 07 23	704	0.3−	0.2+
1998 03 25	704	1.2−	0.2−	1998 04 19	704	(0.8+	2.9+)	1999 07 23	704	0.0	0.6+
1998 03 25	704	1.0−	0.4+	1998 04 20	704	0.1−	0.4−	1999 07 23	704	0.7−	0.1+
1998 03 31	704	(1.0−	3.1−)	1998 04 20	704	0.9+	1.6−	1999 09 05	703	0.5+	0.1+
1998 03 31	704	0.3+	0.3−	1998 04 20	704	(3.0−	2.4+)	1999 09 05	703	0.0	0.6+
1998 03 31	704	0.3+	0.7−	1998 04 20	704	0.5+	1.2+	1999 09 05	703	0.1−	0.1+
1998 03 31	704	(0.4−	2.7−)	1998 04 20	704	1.2−	0.8−	1999 09 05	703	1.3−	0.3+
1998 03 31	704	(5.1−	2.2−)	1998 04 22	704	0.1+	0.4−	1999 09 08	704	0.5+	0.0
1998 04 01	704	0.3+	0.7+	1998 04 22	704	0.3+	0.2−	1999 09 08	704	0.2+	0.5+
1998 04 01	704	0.5+	0.0	1998 04 22	704	1.0−	0.8−	1999 09 08	704	0.0	0.1+
1998 04 01	704	0.4−	0.2+	1998 04 22	704	0.0	1.4−	1999 09 08	704	0.0	0.8−
1998 04 01	704	1.2+	0.4−	1998 04 22	704	0.3+	0.9−	1999 09 08	704	0.8−	1.2−
1998 04 01	704	(0.2+	2.7−)	1998 04 30	699	0.1+	0.1−	1999 09 13	106	0.1−	0.0
1998 04 18	704	0.1+	0.2+	1998 04 30	699	0.9+	0.0	1999 09 13	106	0.2+	0.2+
1998 04 18	704	0.6+	0.2−	1998 04 30	699	1.6+	0.4+	1999 09 13	106	0.3+	0.0
1998 04 18	704	0.4−	0.1+	1998 05 16	704	0.6−	1.1+	1999 09 18	704	0.7+	0.2−
1998 04 18	704	0.6−	0.4+	1998 05 16	704	0.0	0.4−	1999 09 18	704	0.2+	0.2+
1998 04 18	704	0.8−	0.8−	1998 05 16	704	0.5+	0.2+	1999 09 18	704	0.6+	0.3−
1998 04 19	704	1.2−	0.9+	1998 05 16	704	1.2+	0.3−	1999 09 18	704	0.1+	0.4−
1998 04 19	704	0.0	0.8+	1999 07 23	704	0.6+	0.5−	1999 09 18	704	0.1+	1.1−

1998 FT₁₁₇ = 1999 RB₆₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29084023	ω	209.81983	−0.90363806	−0.42631762		
<i>a</i>	2.2561418	Ω	304.88937	+0.40220638	−0.81166568		
<i>e</i>	0.1204397	<i>i</i>	2.87406	+0.14720152	−0.39931456		
<i>P</i>	3.39	<i>H</i>	15.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 03 31	704	0.1+	0.5+	1998 04 21	704	0.5+	0.1−	1998 04 29	566	0.1+	0.3+
1998 03 31	704	0.3−	0.3+	1998 04 21	704	1.6−	0.5+	1998 04 29	566	0.3−	0.2+
1998 03 31	704	0.3+	0.3+	1998 04 21	704	0.3+	0.2+	1998 05 01	860	2.0−	1.9−
1998 03 31	704	1.2+	0.3−	1998 04 21	704	0.8+	0.4−	1998 05 01	860	0.6+	0.2−
1998 03 31	704	0.8−	0.1−	1998 04 21	860	0.0	1.0+	1999 09 07	704	0.1+	0.6+
1998 04 01	704	1.9−	0.9−	1998 04 21	860	0.1+	1.6+	1999 09 07	704	0.3−	0.2−
1998 04 01	704	0.3−	0.9+	1998 04 22	860	0.9+	1.0+	1999 09 07	704	1.1+	0.9−
1998 04 01	704	0.3−	1.6−	1998 04 22	704	0.7−	0.0	1999 09 07	704	0.3−	0.7−
1998 04 01	704	0.5+	0.2+	1998 04 22	704	0.7+	0.2−	1999 09 09	704	0.2−	0.7+
1998 04 01	704	0.8+	0.9−	1998 04 22	704	0.1+	1.5+	1999 09 09	704	0.3−	0.2+
1998 04 20	860	0.0	0.8−	1998 04 22	704	0.7+	0.0	1999 09 09	704	0.1+	0.2−
1998 04 20	860	0.2−	0.7−	1998 04 22	704	0.6+	0.4−	1999 09 09	704	0.4−	0.1−
1998 04 20	860	0.0	0.7−	1998 04 29	566	0.0	0.4+	1999 09 09	704	0.3+	0.5+

1999 SEPT. 28

M.P.C. 35975

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	71.87066	(2000.0)	P	Q
<i>n</i>	0.21536489	ω	253.96365	-0.46398000 +0.88550794
<i>a</i>	2.7564669	Ω	348.30005	-0.75964767 -0.41193310
<i>e</i>	0.1023946	<i>i</i>	6.92760	-0.45569504 -0.21491117
<i>P</i>	4.58	<i>H</i>	14.2	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1998 03 25	704	0.0	0.3-	1998 04 01	704	0.2-	0.5+	1999 09 06	699	0.1-	0.4+
1998 03 25	699	0.0	0.0	1998 04 01	704	0.6+	0.6-	1999 09 06	699	0.6-	0.6+
1998 03 25	699	0.7+	0.4+	1998 04 01	704	(2.2-	0.6-)	1999 09 06	699	0.6+	0.6+
1998 03 25	704	0.5-	0.2+	1998 04 20	704	0.1-	0.6+	1999 09 07	704	(1.9-	2.5-)
1998 03 25	699	0.3+	0.7-	1998 04 20	704	0.1-	0.2+	1999 09 07	704	0.6+	1.6-
1998 03 25	704	0.4-	0.1-	1998 04 20	704	1.0+	0.6-	1999 09 07	704	0.4+	0.0
1998 03 25	704	0.8+	0.2+	1998 04 20	704	0.8+	0.3+	1999 09 13	704	0.4-	0.1-
1998 03 31	704	0.3-	0.0	1998 04 20	704	0.6-	0.6-	1999 09 13	704	0.2-	0.3+
1998 03 31	704	0.3-	0.4-	1998 04 22	704	0.5+	0.8+	1999 09 13	704	0.5+	0.9-
1998 03 31	704	0.2-	0.1+	1998 04 22	704	0.3-	0.1+	1999 09 13	704	0.0	0.1+
1998 03 31	704	0.2-	0.1-	1998 04 22	704	0.2+	0.8-	1999 09 13	704	0.7-	0.6+
1998 03 31	704	(2.3-	0.8-)	1998 04 22	704	0.3-	0.1+				
1998 04 01	704	0.8-	0.8+	1998 04 22	704	0.5-	0.2-				

1998 FH₁₂₂ = 1999 RT₅₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	100.27601	(2000.0)	P	Q
<i>n</i>	0.25729681	ω	15.43710	-0.71221677 +0.70011664
<i>a</i>	2.4481975	Ω	209.20499	-0.65456310 -0.68854209
<i>e</i>	0.0479662	<i>i</i>	5.97986	-0.25356343 -0.18906737
<i>P</i>	3.83	<i>H</i>	15.0	<i>G</i> 0.15 <i>U</i> 3

Residuals in seconds of arc

1992 11 19	691	0.0	0.1+	1998 03 25	704	0.5+	0.0	1998 04 20	704	1.6-	0.4+
1992 11 19	691	0.1-	0.2+	1998 04 01	704	0.6+	0.0	1998 04 22	704	0.2+	0.3-
1992 11 19	691	0.1+	0.2+	1998 04 01	704	1.1-	0.5-	1998 04 22	704	0.3+	0.1+
1998 03 20	704	0.0	0.5-	1998 04 01	704	(3.4-	1.0-)	1998 04 22	704	0.1+	0.1+
1998 03 20	704	1.3+	0.9+	1998 04 01	704	0.3-	0.3-	1998 04 22	704	1.8+	0.5+
1998 03 20	704	0.9+	1.0-	1998 04 01	704	0.0	0.5+	1998 04 22	704	0.9-	1.1+
1998 03 20	704	0.2+	1.0-	1998 04 18	704	0.6+	1.0-	1998 04 24	699	0.6-	0.9-
1998 03 22	704	0.9-	0.1+	1998 04 18	704	(1.7-	2.4-)	1998 04 24	699	0.1-	0.8-
1998 03 22	704	0.8-	2.0+	1998 04 18	704	0.0	0.1+	1998 04 24	699	0.3-	0.2+
1998 03 22	704	0.0	0.3+	1998 04 18	704	(3.5-	0.9-)	1999 09 07	704	0.1+	0.7-
1998 03 22	704	0.1-	0.1+	1998 04 19	704	0.0	0.6-	1999 09 07	704	0.5-	0.2-
1998 03 24	699	0.9+	0.3-	1998 04 19	704	0.8+	0.8+	1999 09 07	704	0.3-	0.1+
1998 03 24	699	1.8+	0.2+	1998 04 19	704	0.5+	0.3+	1999 09 14	704	0.1+	0.0
1998 03 24	699	1.6-	0.8-	1998 04 19	704	0.0	0.8+	1999 09 14	704	0.3+	0.1-
1998 03 25	704	0.5-	0.3-	1998 04 20	704	0.1-	0.7-	1999 09 14	704	0.2+	0.0
1998 03 25	704	0.2-	0.8-	1998 04 20	704	1.9-	1.3+	1999 09 14	704	0.1-	0.5+
1998 03 25	704	0.2+	0.3-	1998 04 20	704	0.6+	0.9+	1999 09 14	704	0.0	0.6+

1998 FM₁₂₂ = 1999 RC₁₄₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	26.21925	(2000.0)	P	Q
<i>n</i>	0.24377477	ω	102.67505	+0.49400197 +0.86894960
<i>a</i>	2.5379138	Ω	197.02677	-0.83200129 +0.46248526
<i>e</i>	0.0978642	<i>i</i>	5.84311	-0.25245972 +0.17616465
<i>P</i>	4.04	<i>H</i>	14.8	<i>G</i> 0.15 <i>U</i> 3

Residuals in seconds of arc

1994 04 06	691	0.4-	0.3+	1998 04 01	704	0.2+	0.6-	1998 04 30	566	0.0	0.1+
1994 04 06	691	0.2-	0.2-	1998 04 01	704	0.2-	1.2+	1998 04 30	566	0.7-	1.2+
1994 04 06	691	0.5+	0.2-	1998 04 01	704	1.2+	0.6+	1998 04 30	566	0.3-	0.1-
1994 04 06	691	0.2+	0.1+	1998 04 01	704	0.7+	0.6+	1999 08 08	699	1.2-	0.1+
1994 04 06	691	0.2+	0.2+	1998 04 04	699	0.8-	0.6-	1999 08 08	699	1.0-	0.6+
1994 04 06	691	0.1-	0.2+	1998 04 04	699	1.2+	1.4-	1999 08 08	699	0.2-	0.3-
1998 03 20	704	0.4-	0.7+	1998 04 04	699	(0.2+	2.7-)	1999 09 07	704	0.2-	0.7-

1998 03 20	704	0.3+	1.3-	1998 04 19	704	0.2-	0.5-	1999 09 07	704	0.1-	0.4-
1998 03 20	704	0.2-	1.5+	1998 04 19	704	0.4+	0.4+	1999 09 07	704	0.3+	0.3+
1998 03 20	704	0.2+	0.2-	1998 04 19	704	0.4+	1.2+	1999 09 07	704	0.3+	0.1-
1998 03 20	704	1.0-	0.0	1998 04 19	704	0.6+	0.5+	1999 09 07	704	0.0	0.4-
1998 03 22	704	0.8-	0.4-	1998 04 20	704	0.0	0.8+	1999 09 09	704	0.6+	0.1-
1998 03 22	704	0.7-	1.5-	1998 04 20	704	0.1+	0.2-	1999 09 09	704	0.6+	0.1+
1998 03 22	704	(3.0-	0.9+)	1998 04 20	704	0.7+	1.2-	1999 09 09	704	0.8+	0.2-
1998 03 22	704	0.8-	0.7+	1998 04 20	704	0.1+	1.1-	1999 09 09	704	0.3+	0.5-
1998 03 25	704	0.4-	0.3+	1998 04 20	704	(4.9-	1.4-)	1999 09 09	704	0.3+	0.2+
1998 03 25	704	0.2-	0.6-	1998 04 22	704	0.8-	0.2+	1999 09 14	704	0.2+	0.3-
1998 03 25	704	0.3+	0.8-	1998 04 22	704	0.6+	0.0	1999 09 14	704	0.2-	1.0+
1998 03 25	704	0.3-	0.4+	1998 04 22	704	0.3-	0.6-	1999 09 14	704	0.2-	0.1+
1998 03 25	704	1.1-	0.6-	1998 04 22	704	1.0+	0.5+	1999 09 14	704	0.3-	0.1+
1998 04 01	704	0.9+	0.1-	1998 04 22	704	0.0	0.0	1999 09 14	704	0.1-	0.1+

1998 FN₁₂₂ = 1999 RM₈₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	83.74486	(2000.0)	P	Q
<i>n</i>	0.25867775	ω	56.04928	-0.33871740 +0.94063663
<i>a</i>	2.4394767	Ω	194.20078	-0.88986587 -0.32777426
<i>e</i>	0.1288405	<i>i</i>	5.08748	-0.30562927 -0.08812922
<i>P</i>	3.81	<i>H</i>	15.4	<i>G</i> 0.15 <i>U</i> 3

Residuals in seconds of arc

1992 11 21	691	0.3+	0.7-	1998 04 01	704	0.5-	0.5+	1998 04 22	704	1.2+	1.0-
1992 11 21	691	0.1-	0.8-	1998 04 01	704	0.3-	0.5+	1998 04 22	704	0.0	0.2-
1998 03 20	704	0.3-	0.6-	1998 04 01	704	0.6-	0.4+	1998 04 22	704	1.2-	0.7+
1998 03 20	704	0.2-	1.1-	1998 04 01	704	0.4+	0.0	1999 09 07	704	0.1-	1.1-
1998 03 20	704	0.4+	0.3-	1998 04 19	704	0.5+	0.3+	1999 09 07	704	0.4+	0.3-
1998 03 20	704	1.0+	0.8+	1998 04 19	704	0.4-	0.8+	1999 09 07	704	0.3-	0.8-
1998 03 20	704	0.7-	1.4+	1998 04 19	704	0.2-	0.7+	1999 09 07	704	0.3+	0.5-
1998 03 22	704	0.9-	0.1+	1998 04 19	704	0.6+	0.2+	1999 09 07	704	0.4+	0.9+
1998 03 22	704	1.1+	1.3-	1998 04 20	704	0.1+	0.8-	1999 09 09	704	0.6-	0.8-
1998 03 22	704	0.6+	0.3-	1998 04 20	704	0.3+	1.3-	1999 09 09	704	0.9+	0.5+
1998 03 22	704	1.4-	1.4+	1998 04 20	704	0.6+	1.3-	1999 09 09	704	1.1+	0.1+
1998 03 25	704	1.1+	0.3-	1998 04 20	704	0.8+	1.0-	1999 09 15	691	0.5-	0.3+
1998 03 25	704	(0.2-	2.6+)	1998 04 20	704	0.3-	1.5-	1999 09 15	691	0.4-	0.1+
1998 03 25	704	0.4-	1.4+	1998 04 22	704	0.8-	0.0	1999 09 15	691	0.7-	0.1+
1998 03 25	704	1.7-	0.2+	1998 04 22	704	0.3+	0.4-				

1998 FP₁₂₂ = 1999 RH₁₃₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	353.84586	(2000.0)	P	Q
<i>n</i>	0.26261463	ω	178.62468	+0.90673007 +0.42129549
<i>a</i>	2.4150351	Ω	156.43120	-0.38735851 +0.84960076
<i>e</i>	0.0815913	<i>i</i>	2.68441	-0.16671526 +0.31731475
<i>P</i>	3.75	<i>H</i>	14.7	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1994 03 04	691	0.2-	0.1-	1998 03 25	704	(2.8+	1.5+)	1999 08 07	699	0.3-	0.3+
1994 03 04	691	0.0	0.2+	1998 03 25	704	(0.9+	2.8+)	1999 09 07	704	0.1-	0.1+
1994 03 04	691	0.2+	0.0	1998 04 19	704	0.3+	0.1-	1999 09 07	704	0.2+	0.2-
1998 03 20	704	1.1-	0.3+	1998 04 19	704	0.1+	0.7-	1999 09 07	704	0.2+	0.5-
1998 03 20	704	0.6-	0.3+	1998 04 19	704	0.9-	1.5-	1999 09 07	704	0.2-	0.4-
1998 03 20	704	1.3-	0.7+	1998 04 19	704	0.4-	0.4-	1999 09 07	704	0.2+	0.2-
1998 03 20	704	0.7-	0.3+	1998 04 20	704	0.5+	0.4+	1999 09 09	704	0.2-	0.1-
1998 03 20	704	(3.2-	0.7-)	1998 04 20	704	1.7+	1.1-	1999 09 09	704	0.3-	0.3-
1998 03 22	704	0.1-	0.7+	1998 04 20	704	0.8+	1.2-	1999 09 09	704	0.4+	0.4+
1998 03 22	704	0.6-	0.3+	1998 04 20	704	1.3+	0.4-	1999 09 09	704	0.4+	0.0
1998 03 22	704	0.4+	1.1+	1998 04 20	704	(2.3-	0.7-)	1999 09 09	704	0.4-	0.2-
1998 03 22	704	0.8-	1.2+	1998 04 22	704	0.9+	1.4-	1999 09 13	704	0.1+	0.2-
1998 03 24	699	0.5+	0.1+	1998 04 22	704	0.7+	0.0	1999 09 13	704	0.0	0.7+
1998 03 24	699	1.6+	0.3+	1998 04 22	704	0.9-	1.0+	1999 09 13	704	0.4+	0.4-
1998 03 24	699	1.2-	0.4+	1998 04 22	704	0.2+	0.1+	1999 09 13	704	0.1-	0.1+
1998 03 25	704	(1.1+	2.6+)	1998 04 22	704	0.3-	0.6-	1999 09 13	704	0.0	0.2-

M.P.C. 35976

1998 03 25 704 (0.7+ 2.8+) 1999 08 07 699 0.1+ 1.4+
 1998 03 25 704 (0.0 2.2+) 1999 08 07 699 0.5- 0.0

1998 FY₁₂₂ = 1999 RS₁₀₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	72.84854	(2000.0)	P		Q	
<i>n</i>	0.21630600	ω	58.26000	-0.42707474	+0.90366503	
<i>a</i>	2.7484658	Ω	186.69253	-0.89386345	-0.42719579	
<i>e</i>	0.1963247	<i>i</i>	15.71740	-0.13643789	-0.02988768	
<i>P</i>	4.56	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1998 03 20	704	1.3-	1.5-	1998 03 28	704	0.6-	0.3-	1998 05 16	704	1.4-	1.0+
1998 03 20	704	0.7-	0.8-	1998 03 28	704	0.2-	0.1+	1999 09 05	703	0.2-	0.4-
1998 03 20	704	0.2+	0.9+	1998 03 28	704	0.8+	1.4-	1999 09 05	703	0.4+	0.2+
1998 03 20	704	1.3+	0.2+	1998 03 29	704	0.3-	0.3+	1999 09 05	703	0.1+	0.7+
1998 03 22	704	0.2+	0.3-	1998 03 29	704	0.1-	0.2+	1999 09 05	703	1.6-	0.2+
1998 03 22	704	0.6-	0.9+	1998 03 29	704	0.1-	0.3+	1999 09 08	704	0.6+	0.2+
1998 03 22	704	0.8-	0.4+	1998 03 29	704	0.3+	0.2+	1999 09 08	704	0.5+	0.3-
1998 03 22	704	0.8-	0.7-	1998 03 29	704	0.1+	0.5-	1999 09 08	704	0.3+	0.2+
1998 03 22	704	1.7-	1.4+	1998 04 20	704	0.6+	0.3-	1999 09 08	704	0.2+	0.5+
1998 03 24	699	1.4+	0.6+	1998 04 20	704	0.1+	0.9-	1999 09 09	704	0.7+	0.1-
1998 03 24	699	0.6+	0.5+	1998 04 20	704	0.2+	0.7-	1999 09 09	704	0.2+	0.3-
1998 03 24	699	0.0	0.6+	1998 04 20	704	0.9-	0.7+	1999 09 09	704	0.1-	0.5-
1998 03 25	704	0.7-	0.7-	1998 04 20	704	0.5+	1.2-	1999 09 09	704	0.1-	0.7-
1998 03 25	704	0.2+	0.7+	1998 04 22	704	0.1-	0.2+	1999 09 09	704	0.3+	0.5-
1998 03 25	704	0.6+	1.0+	1998 04 22	704	0.6-	0.4+	1999 09 10	704	0.6+	0.1-
1998 03 25	704	0.7+	0.8+	1998 04 22	704	0.3+	0.3-	1999 09 10	704	0.1+	0.2+
1998 03 25	704	0.3+	0.9+	1998 04 22	704	0.1-	0.2+	1999 09 10	704	0.2-	0.8-
1998 03 25	566	0.7+	0.8-	1998 04 22	704	0.8-	0.1-	1999 09 14	704	0.7+	0.0
1998 03 25	566	0.3+	1.0-	1998 05 16	704	0.1-	0.3-	1999 09 14	704	0.1-	0.7+
1998 03 25	566	0.6+	1.3-	1998 05 16	704	0.4+	0.2-	1999 09 14	704	0.7-	0.4+
1998 03 28	704	0.5+	0.3-	1998 05 16	704	0.8-	1.3+	1999 09 14	704	0.6-	0.1-
1998 03 28	704	0.1+	0.2-	1998 05 16	704	1.6+	0.1-	1999 09 14	704	1.1-	0.4+

1998 FX₁₂₅ = 1991 EA₉ = 1999 RO₁₄₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	171.26530	(2000.0)	P		Q	
<i>n</i>	0.28910710	ω	243.88694	-0.94929833	-0.29774266	
<i>a</i>	2.2651495	Ω	278.65454	+0.31236211	-0.85703039	
<i>e</i>	0.0511400	<i>i</i>	5.85827	+0.03553295	-0.42053326	
<i>P</i>	3.41	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1991 03 11	413	0.8+	0.3+	1998 04 18	704	0.1-	0.3+	1999 09 08	704	0.2+	0.1-
1991 03 11	413	0.5-	0.4+	1998 04 18	704	0.3-	0.0	1999 09 08	704	0.1+	0.8-
1998 03 31	704	0.4+	1.7-	1998 04 19	704	0.1-	0.1-	1999 09 08	704	0.3+	0.5-
1998 03 31	704	(0.6+ 2.4-)		1998 04 19	704	0.0	0.9+	1999 09 09	704	0.3+	0.1+
1998 03 31	704	0.3+	0.1+	1998 04 19	704	1.1-	0.7+	1999 09 09	704	0.7+	0.1-
1998 03 31	704	0.4-	1.1-	1998 04 19	704	0.4+	0.5+	1999 09 09	704	0.3-	0.1-
1998 03 31	704	0.1+	0.9-	1998 04 19	704	0.5+	0.9+	1999 09 09	704	1.1+	0.2+
1998 04 01	704	0.3+	1.0-	1999 08 22	699	0.2-	0.5+	1999 09 09	704	0.3+	0.2+
1998 04 01	704	1.2+	0.9-	1999 08 22	699	0.5-	0.5+	1999 09 14	704	0.6-	0.0
1998 04 01	704	0.9-	0.8+	1999 08 22	699	0.5-	0.6+	1999 09 14	704	0.3+	0.0
1998 04 01	704	0.6+	0.0	1999 09 05	703	0.2+	0.3-	1999 09 14	704	0.1+	0.1+
1998 04 01	704	0.1+	0.5+	1999 09 05	703	0.0	0.0	1999 09 14	704	0.2+	0.3+
1998 04 18	704	0.4-	0.1+	1999 09 05	703	0.5-	0.3-	1999 09 14	704	0.2-	0.1+
1998 04 18	704	0.1-	0.3+	1999 09 05	703	1.1-	0.3-				

1998 FC₁₂₇ = 1998 HQ₁Id. G. V. Williams (d, *MPC* 32093)

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Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	56.66030	(2000.0)	P		Q	
<i>n</i>	0.27990530	ω	220.33310	+0.14905804	+0.98288924	
<i>a</i>	2.3145255	Ω	58.49792	-0.87142034	+0.18229318	
<i>e</i>	0.0923014	<i>i</i>	7.29165	-0.46734172	-0.02641843	
<i>P</i>	3.52	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 24	566	0.4+	0.9-	1998 04 20	704	0.4+	0.7+	1999 09 08	113	0.7+	0.8+
1998 03 24	566	0.1+	0.9-	1998 04 20	704	0.2+	0.8+	1999 09 08	113	0.4-	0.5+
1998 03 24	566	0.3+	0.8-	1998 04 20	704	0.4+	0.2+	1999 09 08	113	0.2+	0.8+
1998 03 31	113	0.6-	0.8+	1998 04 20	704	0.8+	0.5-	1999 09 12	113	0.2-	0.7-
1998 04 01	113	0.8-	0.5+	1998 04 20	113	0.1+	0.5-	1999 09 12	113	0.2+	0.3-
1998 04 01	113	0.6+	0.5-	1998 04 20	113	0.5-	1.4+	1999 09 13	704	0.5+	0.4-
1998 04 01	113	1.1-	1.8+	1998 04 20	113	0.7+	1.2-	1999 09 13	704	0.1+	0.1+
1998 04 06	113	1.6-	1.2+	1998 04 21	113	0.9-	0.6-	1999 09 13	704	0.4+	0.2+
1998 04 06	113	(2.8- 0.5+)		1998 04 21	113	0.8-	0.4-	1999 09 13	704	0.6-	0.4+
1998 04 16	113	1.9+	1.5+	1998 04 21	113	1.1-	0.9-	1999 09 14	113	0.1-	0.7-
1998 04 16	113	0.3+	1.2+	1998 04 22	113	0.1-	0.6-	1999 09 14	113	0.9-	0.4-
1998 04 19	704	1.3+	0.5-	1998 04 22	113	0.3+	0.0	1999 09 14	704	0.0	0.4-
1998 04 19	704	0.3-	0.1-	1998 04 22	113	0.3-	0.1+	1999 09 14	704	0.2+	0.2+
1998 04 19	704	0.2+	1.4-	1999 09 05	113	0.6-	0.1+	1999 09 14	704	0.4+	0.0
1998 04 19	704	0.1+	1.4-	1999 09 05	113	0.7-	0.4-	1999 09 14	704	0.4+	0.1-
1998 04 20	704	0.0	0.4+	1999 09 05	113	0.2-	0.1-	1999 09 14	704	0.4+	0.2+

1998 FQ₁₃₃ = 1999 RF₄₀

Id. M. Tichý

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	353.92070	(2000.0)	P		Q	
<i>n</i>	0.28289887	ω	10.09416	+0.92390604	+0.38063228	
<i>a</i>	2.2981687	Ω	327.44688	-0.35589939	+0.81755298	
<i>e</i>	0.1731087	<i>i</i>	4.15054	-0.14047508	+0.43211826	
<i>P</i>	3.48	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 20	704	0.9-	0.4-	1998 04 01	704	0.1-	1.1-	1999 09 14	704	0.9+	0.7-
1998 03 20	704	1.4+	0.9+	1998 04 01	704	1.2+	0.9-	1999 09 14	704	1.3+	0.0
1998 03 20	704	1.1+	1.5+	1998 04 19	704	0.7-	0.6-	1999 09 14	704	0.9+	0.4-
1998 03 20	704	0.6+	0.1+	1998 04 19	704	1.9-	1.3+	1999 09 14	704	0.9+	0.6-
1998 03 20	704	0.2-	1.2-	1998 04 19	704	1.1-	1.1-	1999 09 14	046	0.4-	0.0
1998 03 25	704	1.1+	0.6+	1998 04 19	704	(2.9- 1.0+)		1999 09 14	046	0.3-	0.1+
1998 03 25	704	(2.8+ 1.1+)		1999 08 22	699	1.1-	1.0+	1999 09 14	046	0.3-	0.0
1998 03 25	704	1.0+	0.8-	1999 08 22	699	1.6-	0.5+	1999 09 15	046	0.2-	0.0
1998 03 25	704	0.0	0.6+	1999 08 22	699	1.5-	0.1+	1999 09 15	046	0.5-	0.1+
1998 03 29	704	0.2-	0.9-	1999 09 09	704	0.7+	0.6-	1999 09 15	046	0.3-	0.1+
1998 03 29	704	0.2-	1.9+	1999 09 09	704	0.9+	0.5-	1999 09 15	046	0.3-	0.2+
1998 03 29	704	0.4-	0.9+	1999 09 09	704	0.6+	0.4-	1999 09 18	046	0.5-	0.4-
1998 03 29	704	0.2+	0.6-	1999 09 09	704	1.0+	0.3-	1999 09 18	046	0.7-	0.2+
1998 04 01	704	0.3-	0.3+	1999 09 09	704	0.9+	0.5+	1999 09 18	046	0.6-	0.6+
1998 04 01	704	1.1-	1.1-	1999 09 14	704	1.0+	0.1-	1999 09 18	046	0.7-	0.2+

1998 FO₁₄₁ = 1999 NW₅₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	346.61204	(2000.0)	P		Q	
<i>n</i>	0.23820296	ω	138.39766	+0.88396223	+0.46406714	
<i>a</i>	2.5773375	Ω	194.27538	-0.46626321	+0.86585925	
<i>e</i>	0.1899461	<i>i</i>	13.37264	-0.03477639	+0.18689420	
<i>P</i>	4.14	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 20	704	0.6+	0.5+	1998 04 01	704	1.1-	0.7-	1999 07 22	704	0.5-	0.1-
1998 03 20	704	0.8+	0.9-	1998 04 01	704	0.2+	1.1-	1999 07 22	704	0.2-	0.1+
1998 03 20	704	0.3+	0.1-	1998 04 19	704	0.3+	1.3+	1999 09 08	704	0.1+	0.2-
1998 03 20	704	1.3+	0.3+	1998 04 19	704	0.1+	0.0	1999 09 08	704	0.4+	0.5-

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1998 03 20	704	1.7-	0.7-	1998 04 19	704	1.5+	0.5-	1999 09 08	704	0.3-	0.4-
1998 03 24	910	0.4+	0.8-	1998 04 19	704	0.4-	0.8+	1999 09 08	704	0.1+	0.2-
1998 03 24	910	0.3+	0.9-	1999 07 12	704	0.3+	0.1-	1999 09 09	704	0.0	0.1-
1998 03 25	910	0.4+	0.7-	1999 07 12	704	0.3+	0.6+	1999 09 09	704	0.1-	0.1+
1998 03 29	704	0.5-	0.6+	1999 07 12	704	0.5+	0.4+	1999 09 09	704	0.2+	0.1+
1998 03 29	704	0.6-	0.4+	1999 07 12	704	0.1-	0.3+	1999 09 14	704	0.2-	0.0
1998 03 29	704	0.9-	0.8+	1999 07 12	704	0.0	0.0	1999 09 14	704	0.0	0.2-
1998 03 29	704	1.4-	1.3+	1999 07 22	704	0.2-	0.0	1999 09 14	704	0.1+	0.2-
1998 04 01	704	0.7+	1.2-	1999 07 22	704	0.4-	0.2-	1999 09 14	704	0.1+	0.3+
1998 04 01	704	0.2-	1.0+	1999 07 22	704	0.2-	0.2-	1999 09 14	704	0.5+	0.0

1998 GG₁

Id. F. B. Zoltowski (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21453708	ω	41.37613	-0.21867125		+0.97247822	
<i>a</i>	2.7635530	Ω	216.20630	-0.92726245		-0.23275933	
<i>e</i>	0.1381170	<i>i</i>	7.82581	-0.30391978		+0.01044998	
<i>P</i>	4.59	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 04	426	0.1-	0.4-	1998 04 22	704	(2.2-	2.1-)	1998 05 17	426	1.3-	1.0+
1998 04 04	426	0.2-	0.3+	1998 04 22	426	0.1+	0.3-	1998 05 17	426	0.8-	1.0+
1998 04 05	426	1.4-	0.6-	1998 04 22	426	0.2+	0.1-	1999 09 04	426	0.9-	0.4+
1998 04 05	426	0.5-	0.4+	1998 04 22	426	0.1-	0.2-	1999 09 04	426	0.1+	0.1-
1998 04 05	426	0.8-	0.4-	1998 04 25	426	0.2+	0.1-	1999 09 04	426	0.6+	0.4-
1998 04 16	426	0.0	0.3+	1998 04 25	426	0.2+	0.1-	1999 09 06	426	0.6-	0.1+
1998 04 16	426	0.2-	1.0+	1998 04 30	699	0.1+	0.2-	1999 09 06	426	0.6-	0.0
1998 04 16	426	0.0	0.0	1998 04 30	699	0.2+	0.6-	1999 09 06	426	0.8-	0.4-
1998 04 21	704	0.1+	0.2-	1998 04 30	699	(2.2+	1.7-)	1999 09 08	704	0.0	0.7-
1998 04 21	704	0.7+	0.5-	1998 05 01	704	0.8-	1.0-	1999 09 08	704	0.1-	0.1+
1998 04 21	704	0.6+	0.8-	1998 05 01	704	0.7+	0.4+	1999 09 08	704	0.2-	0.0
1998 04 21	704	0.8-	0.4+	1998 05 01	704	0.6+	0.8-	1999 09 09	704	0.9+	0.4+
1998 04 21	704	0.4+	0.5+	1998 05 01	704	0.9+	0.2-	1999 09 09	704	1.1+	0.1-
1998 04 22	704	0.3+	0.5+	1998 05 01	704	1.3+	1.2+	1999 09 09	704	0.5-	0.3-
1998 04 22	704	0.1-	1.4+	1998 05 15	426	0.7-	0.1-	1999 09 09	704	0.5+	0.1+
1998 04 22	704	1.0+	0.0	1998 05 15	426	1.0-	0.1-	1999 09 09	704	0.6+	0.8+
1998 04 22	704	1.1+	1.4-	1998 05 15	426	0.3-	0.3-				

1998 GH₁

Id. F. B. Zoltowski (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21150795	ω	214.57187	-0.24046659		+0.96581303	
<i>a</i>	2.7898761	Ω	41.75112	-0.85450500		-0.16330266	
<i>e</i>	0.1773622	<i>i</i>	8.36342	-0.46043134		-0.20133909	
<i>P</i>	4.66	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 04	426	0.4+	0.1-	1998 04 20	704	0.6+	0.0	1998 05 20	426	0.2-	0.2-
1998 04 04	426	0.3-	0.4+	1998 04 20	704	0.0	0.4-	1998 05 20	426	0.4-	0.7+
1998 04 04	426	0.2-	0.8+	1998 04 20	704	0.4+	0.7-	1998 05 23	426	0.1+	0.4-
1998 04 05	426	0.4+	0.2+	1998 04 20	704	0.4+	0.3+	1998 05 23	426	0.0	0.3-
1998 04 05	426	0.8+	0.2+	1998 04 20	704	1.1-	0.4-	1998 05 23	426	0.0	0.4-
1998 04 05	426	0.4+	0.4-	1998 04 22	704	0.2+	0.4-	1999 09 04	426	0.3-	0.2-
1998 04 14	426	0.3-	0.1+	1998 04 22	704	0.2-	0.0	1999 09 04	426	0.6-	0.2-
1998 04 14	426	0.3-	0.5+	1998 04 22	704	0.8+	0.1+	1999 09 04	426	0.2-	0.0
1998 04 14	426	0.2+	0.2-	1998 04 22	704	0.3+	0.7-	1999 09 06	426	0.0	0.4-
1998 04 16	426	0.1+	0.2-	1998 04 22	704	0.6-	0.6-	1999 09 06	426	0.1-	0.6-
1998 04 16	426	0.2+	0.1-	1998 04 28	566	0.7-	0.1-	1999 09 06	426	0.3-	0.5-
1998 04 16	426	0.3-	0.6-	1998 04 28	566	0.7-	0.6-	1999 09 11	704	0.5-	0.5+
1998 04 19	704	0.3+	0.2-	1998 04 28	566	0.1-	0.2+	1999 09 11	704	0.4+	0.5+
1998 04 19	704	(2.1+	0.4-)	1998 05 05	426	1.6+	1.2+	1999 09 11	704	0.3+	0.9+
1998 04 19	704	1.7-	1.4+	1998 05 05	426	0.2+	1.2+	1999 09 11	704	0.3+	0.0
1998 04 19	704	0.0	0.2-	1998 05 20	426	0.3-	0.0	1999 09 11	704	0.9+	0.3+

1998 GO₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28265711	ω	73.10602	-0.76195846		+0.64219954	
<i>a</i>	2.2994790	Ω	146.71084	-0.63693619		-0.71972869	
<i>e</i>	0.1416254	<i>i</i>	8.76745	-0.11718190		-0.26376194	
<i>P</i>	3.49	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 04 07	046	0.3-	0.1+	1998 04 23	046	0.3+	0.2-	1998 05 26	704	0.4-	0.1-
1998 04 07	046	0.3-	0.2+	1998 05 01	046	0.1+	0.4-	1998 05 26	704	1.2-	0.5+
1998 04 07	046	0.2-	0.1+	1998 05 01	046	0.2+	0.5-	1998 05 27	699	0.3-	0.5-
1998 04 07	046	0.1-	0.2+	1998 05 01	046	0.2+	0.4-	1998 05 27	699	0.1+	0.3-
1998 04 07	046	0.0	0.1+	1998 05 01	699	0.9+	0.4-	1998 05 27	699	0.1-	0.3-
1998 04 08	046	0.2+	0.3+	1998 05 01	699	0.7+	0.2-	1998 05 27	046	0.3-	0.1+
1998 04 08	046	0.3-	0.3+	1998 05 01	699	0.6+	0.4-	1998 05 27	046	0.2-	0.1+
1998 04 08	046	0.3-	0.1+	1998 05 07	046	0.3+	0.3-	1998 05 27	046	0.3-	0.0
1998 04 08	046	0.0	0.4+	1998 05 07	046	0.4+	0.2-	1998 06 16	046	0.2+	0.2+
1998 04 09	046	0.1+	0.3+	1998 05 07	046	0.3+	0.1-	1998 06 16	046	0.3+	0.1+
1998 04 09	046	0.1+	0.4+	1998 05 16	046	0.2-	0.2-	1998 06 16	046	0.3+	0.2+
1998 04 09	046	0.1+	0.1+	1998 05 16	046	0.1+	0.4-	1998 06 17	046	0.1-	0.2+
1998 04 17	691	0.1-	0.2+	1998 05 16	046	0.2+	0.2-	1998 06 17	046	0.1+	0.1+
1998 04 17	691	0.1-	0.7+	1998 05 23	704	0.0	1.4+	1998 06 17	046	0.0	0.3+
1998 04 17	691	0.4-	0.6+	1998 05 23	704	0.9-	0.1+	1999 09 12	046	0.2+	0.0
1998 04 21	046	0.1-	0.1-	1998 05 23	704	0.2+	0.0	1999 09 12	046	0.1+	0.2+
1998 04 21	046	0.2-	0.1-	1998 05 23	704	0.3+	0.3-	1999 09 12	046	0.2+	0.2-
1998 04 21	046	0.0	0.1+	1998 05 23	704	0.8-	0.2+	1999 09 14	046	0.3-	0.4+
1998 04 23	046	0.3+	0.2-	1998 05 26	704	0.1-	0.2-	1999 09 14	046	0.1-	0.0
1998 04 23	046	0.3+	0.2-	1998 05 26	704	0.1+	0.6-	1999 09 14	046	0.2-	0.2+

1998 GW₁₀

Id. E. Bowell (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29596026	ω	224.39432	-0.31992992		+0.94565202	
<i>a</i>	2.2300458	Ω	27.10482	-0.82983856		-0.25004767	
<i>e</i>	0.0576072	<i>i</i>	7.33876	-0.45717919		-0.20789041	
<i>P</i>	3.33	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 27	566	0.4+	1.3-	1998 04 02	809	0.3+	0.1+	1999 09 07	699	0.4+	0.5-
1998 02 27	566	0.2+	1.0-	1998 04 02	809	0.2+	0.6-	1999 09 07	699	0.3+	1.2+
1998 02 27	566	0.7+	1.3-	1998 04 02	809	0.3+	1.5-	1999 09 07	699	0.6-	0.2+
1998 03 02	809	0.1+	2.0+	1998 04 03	809	0.6+	0.4+	1999 09 09	704	0.5-	0.0
1998 03 02	809	0.4-	1.8+	1998 04 03	809	0.7-	2.0-	1999 09 09	704	0.5+	0.2-
1998 03 02	809	0.1+	1.3+	1998 04 03	809	0.9-	1.5-	1999 09 09	704	0.1+	0.4+
1998 03 25	704	0.1+	0.1+	1998 04 19	704	0.2+	0.4+	1999 09 09	704	0.4-	0.8-
1998 03 25	704	0.1-	0.5+	1998 04 19	704	0.3+	1.3+	1999 09 09	704	0.5-	0.7-
1998 03 25	704	0.7+	0.6+	1998 04 19	704	1.0+	1.0+	1999 09 10	704	0.1+	

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1999 SEPT. 28

Residuals in seconds of arc

1998 04 21	704	1.4−	0.5+	1998 04 22	704	1.9+	0.1−	1999 09 08	703	0.1+	0.5−
1998 04 21	704	1.6+	0.4−	1998 04 24	910	0.4+	0.3+	1999 09 08	703	0.3−	0.7−
1998 04 21	704	0.1+	0.4−	1998 04 24	910	0.2+	0.3+	1999 09 08	703	0.5+	1.4−
1998 04 21	704	(1.6−	3.4+)	1998 04 24	910	0.3+	0.4+	1999 09 09	704	0.4−	0.2−
1998 04 21	704	0.3−	0.5−	1998 05 01	691	0.2−	0.2+	1999 09 09	704	0.4+	0.1+
1998 04 21	910	0.6+	0.1−	1998 05 01	691	0.0	0.3+	1999 09 09	704	0.0	0.6+
1998 04 21	910	0.1+	0.2+	1998 05 01	691	0.1−	0.0	1999 09 09	704	0.7+	0.8+
1998 04 21	910	0.2−	0.5+	1999 09 07	704	0.1−	1.3−	1999 09 13	704	0.7+	0.0
1998 04 22	704	1.1−	0.7−	1999 09 07	704	0.1−	1.6−	1999 09 13	704	0.8−	1.1+
1998 04 22	704	0.8+	0.5−	1999 09 07	704	0.1+	1.3+	1999 09 13	704	0.3−	0.2+
1998 04 22	704	1.6−	0.2+	1999 09 07	704	0.1−	1.4+	1999 09 13	704	0.4−	0.2+
1998 04 22	704	1.0−	0.2−	1999 09 08	703	0.2+	0.1−				

1998 HV₆

Id. S. Sposetti (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams			
<i>M</i>	113.59488	(2000.0)	P	Q		
<i>n</i>	0.24219809	ω	355.08460	−0.79700140	+0.60057784	
<i>a</i>	2.5489163	Ω	222.04578	−0.55083088	−0.76623747	
<i>e</i>	0.1549584	<i>i</i>	5.48300	−0.24773798	−0.22844344	
<i>P</i>	4.07	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1998 04 21	704	0.2+	0.1−	1998 04 30	133	0.8+	0.0	1998 05 22	699	0.2−	0.1−
1998 04 21	704	0.3−	0.2−	1998 04 30	133	1.5+	0.8−	1998 05 22	704	0.4+	0.1−
1998 04 21	704	0.7−	0.4+	1998 04 30	133	0.5+	0.3+	1998 05 22	699	0.3−	0.3+
1998 04 21	704	0.0	0.2+	1998 05 01	704	0.5+	0.7+	1998 05 22	704	0.5+	0.4+
1998 04 21	704	0.1+	0.3−	1998 05 01	704	0.4−	1.3+	1998 05 23	133	0.6−	0.3−
1998 04 21	133	0.6−	0.9+	1998 05 01	699	1.0+	0.3+	1998 05 23	133	0.6−	0.6−
1998 04 21	133	(2.6−	1.1+)	1998 05 01	699	0.7+	0.2−	1999 09 04	703	0.0	0.9+
1998 04 21	133	0.4+	1.3−	1998 05 01	704	0.5−	1.6+	1999 09 04	703	0.4−	0.2+
1998 04 22	704	0.3−	0.2−	1998 05 01	699	0.8+	0.3+	1999 09 04	703	0.4+	1.0−
1998 04 22	704	0.2−	0.2−	1998 05 01	704	0.0	1.5+	1999 09 04	703	0.7−	0.2−
1998 04 22	704	1.2−	0.0	1998 05 01	704	0.4+	1.6+	1999 09 07	143	1.1+	0.7+
1998 04 22	704	1.2−	0.4−	1998 05 18	699	0.1+	0.6−	1999 09 07	143	0.2+	1.0+
1998 04 22	704	1.0−	0.9−	1998 05 18	699	0.4−	0.1−	1999 09 07	143	0.7+	0.3+
1998 04 23	133	1.2+	1.9−	1998 05 18	699	0.4−	0.1+	1999 09 09	143	1.2−	0.3−
1998 04 23	133	(3.2+	0.8−)	1998 05 20	133	0.6+	0.0	1999 09 09	143	1.5+	0.3−
1998 04 23	133	(3.3+	1.0−)	1998 05 20	133	0.3−	0.7−	1999 09 09	143	1.3−	0.0
1998 04 24	133	0.5+	0.7−	1998 05 20	133	0.3−	0.9−	1999 09 18	704	0.5−	0.5+
1998 04 24	133	0.7+	0.9−	1998 05 22	704	0.7−	0.7+	1999 09 18	704	0.4+	0.2+
1998 04 25	699	0.2−	0.3+	1998 05 22	704	0.3+	0.7−	1999 09 18	704	0.0	0.5−
1998 04 25	699	0.5−	0.2+	1998 05 22	704	0.5+	0.7+	1999 09 18	704	0.2−	0.7−
1998 04 25	699	0.8−	0.1+	1998 05 22	699	0.1−	0.0	1999 09 18	704	0.1+	0.9−

1998 HN₈ = 1999 RA₉₁

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams			
<i>M</i>	73.68341	(2000.0)	P	Q		
<i>n</i>	0.26352479	ω	139.34395	−0.06258573	+0.99688225	
<i>a</i>	2.4094711	Ω	127.01368	−0.93057177	−0.04088643	
<i>e</i>	0.0815262	<i>i</i>	3.44992	−0.36072039	−0.06748396	
<i>P</i>	3.74	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1996 12 17	566	0.8−	0.5+	1998 04 22	704	0.2+	0.1−	1999 09 05	699	0.7+	0.5+
1996 12 17	566	0.2+	0.2+	1998 04 22	704	0.6−	0.0	1999 09 05	699	1.0−	0.3+
1996 12 17	566	0.5+	0.2−	1998 04 22	704	0.3+	0.5−	1999 09 05	699	0.7−	0.9+
1998 03 29	704	0.2+	0.1+	1998 04 25	691	0.1−	1.2+	1999 09 07	704	0.2−	0.0
1998 03 29	704	0.0	0.3−	1998 04 25	691	0.6−	1.0+	1999 09 07	704	0.1+	0.6−
1998 03 29	704	0.8−	0.3−	1998 04 25	691	0.5−	0.4+	1999 09 07	704	0.0	0.1−
1998 03 29	704	0.5+	0.1−	1998 05 02	691	0.1+	0.4+	1999 09 07	704	0.3+	0.2−
1998 03 29	704	1.0−	0.4−	1998 05 02	691	0.0	0.4+	1999 09 07	704	0.7−	0.2−
1998 04 17	691	0.3+	0.0	1998 05 02	691	0.0	0.0	1999 09 14	704	0.6+	0.4+
1998 04 17	691	0.3+	0.2+	1998 05 16	704	1.1−	0.7−	1999 09 14	704	0.6−	0.0

1998 04 17	691	0.2+	0.3+	1998 05 16	704	0.1−	0.8−	1999 09 14	704	0.4−	0.2−
1998 04 21	704	0.4+	0.1+	1998 05 16	704	0.2−	1.3+	1999 09 14	704	0.1−	0.2−
1998 04 21	704	0.7+	0.2+	1998 05 16	704	0.7−	0.1+	1999 09 14	704	0.0	0.3−
1998 04 21	704	0.5+	0.1−	1998 05 16	704	(3.5−	1.1−)	1999 09 14	703	0.1−	0.4+
1998 04 21	704	1.5+	0.6−	1999 08 22	703	0.2+	0.7−	1999 09 14	703	0.7+	0.1−
1998 04 21	704	0.1+	0.7−	1999 08 22	703	0.1−	0.1−	1999 09 14	703	0.1+	0.3+
1998 04 22	704	0.5+	0.1+	1999 08 22	703	0.5+	0.7+	1999 09 14	703	0.2+	0.4−
1998 04 22	704	0.0	0.4−	1999 08 22	703	0.2+	0.3+				

1998 HY₈ = 1999 RC₉₆Id. G. V. Williams; 1998 HY₈ = 1983 YF (*MPC* 32687) is invalid

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams			
<i>M</i>	46.41772	(2000.0)	P	Q		
<i>n</i>	0.24019199	ω	187.81575	+0.38661945	+0.91902831	
<i>a</i>	2.5630891	Ω	104.95446	−0.84177467	+0.38571870	
<i>e</i>	0.1446152	<i>i</i>	4.56485	−0.37675032	+0.08128988	
<i>P</i>	4.10	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1998 04 17	691	0.2+	0.1+	1998 04 22	704	0.1+	0.2+	1999 09 07	704	0.2+	0.1+
1998 04 17	691	0.4+	0.0	1998 04 22	704	0.4+	0.3−	1999 09 07	704	0.4−	0.4−
1998 04 17	691	0.3+	0.2−	1998 04 22	704	0.3+	0.7+	1999 09 07	704	0.1+	0.7−
1998 04 21	704	0.8+	0.6−	1998 04 25	691	0.1−	0.5−	1999 09 07	704	0.0	0.8−
1998 04 21	704	1.0−	0.1+	1998 04 25	691	0.1+	0.1+	1999 09 14	704	0.0	0.0
1998 04 21	704	0.9−	1.4−	1998 04 25	691	0.1−	0.1+	1999 09 14	704	0.1+	0.4+
1998 04 21	704	1.1−	0.4−	1998 04 27	691	0.3+	0.1+	1999 09 14	704	0.1+	1.2+
1998 04 21	704	0.1+	0.5+	1998 04 27	691	0.4−	0.4+	1999 09 14	704	0.1+	0.5+
1998 04 22	704	0.0	0.8+	1998 04 27	691	0.4−	0.5+				
1998 04 22	704	0.8+	0.3−	1999 09 07	704	0.3−	0.4−				

1998 HT₁₃ = 1999 RT₁₄

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams			
<i>M</i>	34.96088	(2000.0)	P	Q		
<i>n</i>	0.24416606	ω	311.31736	+0.38283663	+0.92316923	
<i>a</i>	2.5352017	Ω	341.10599	−0.81249818	+0.31866448	
<i>e</i>	0.1144742	<i>i</i>	6.12739	−0.43963942	+0.21496864	
<i>P</i>	4.04	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 20	704	0.2−	1.7−	1998 04 18	704	0.9−	1.2−	1999 09 08	704	0.0	0.8+
1998 03 20	704	0.1−	0.8+	1998 04 19	704	0.9+	0.9−	1999 09 08	704	0.3−	0.5+
1998 03 20	704	(4.4−	0.8+)	1998 04 19	704	0.3−	1.3−	1999 09 08	704	1.5+	0.1+
1998 03 20	704	1.1−	1.7+	1998 04 19	704	1.7−	0.4+	1999 09 08	704	0.1−	0.8+
1998 03 28	704	0.7+	0.6−	1998 04 19	704	0.2−	0.9+	1999 09 08	120	0.1+	1.2−
1998 03 28	704	0.3−	0.1−	1998 04 19	704	(1.3−	2.5−)	1999 09 08	120	1.3−	0.6+
1998 03 28	704	(3.3−	0.4+)	1998 04 20	704	0.3−	0.8+	1999 09 08	120	0.8+	0.7−
1998 03 28	704	1.2+	0.4+	1998 04 20	704	1.4+	0.8+	1999 09 09	704	0.3−	0.0
1998 03 28	704	(4.6−	1.3−)	1998 04 20	704	0.7−	0.8+	1999 09 09	704	0.4−	0.2−
1998 03 29	704	0.1+	0.6−	1998 04 20	704	0.6−	0.7+	1999 09 09	704	0.2+	0.4−
1998 03 29	704	0.0	0.0	1998 04 22	704	1.1+	0.7−	1999 09 09	704	0.0	0.5+
1998 03 29	704	0.3−	0.8+	1998 04 22	704	0.2+	0.3−	1999 09 09	704	0.2+	0.5+
1998 03 29	704	(0.8−	2.2+)	1998 04 22	704	0.1+	0.2+	1999 09 09	120	1.3+	1.2+
1998 03 29	704	1.3−	1.2−	1998 04 22	704	(3.3−	0.5+)	1999 09 09	120	(3.4+	0.7−)
1998 04 01	704	0.0	0.8+	1998 04 22	704	0.1−	1.0+	1999 09 14	704	0.8−	0.2−
1998 04 01	704	(0.2+	2.1+)	1999 09 07	704	0.0	0.3−	1999 09 14	704	0.1−	1.0−
1998 04 01	704	(2.7+	0.4−)	1999 09 07	704	0.1−	0.1−	1999 09 14	704	0.7−	0.2+
1998 04 01	704	0.1+	0.8−	1999 09 07	704	0.4−	0.3−	1999 09 14	704	0.1+	0.3−
1998 04 01	704	1.1+	0.6−	1999 09 07	704	0.0	0.4−	1999 09 14	704	0.5−	0.2+
1998 04 18	704	1.0+	0.3−	1999 09 07	704	0.1−	0.5−				
1998 04 18	704	0.1−	0.1+	1999 09 08	704	1.1+	0.0				

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1998 HW₁₃ = 1986 RW₇ = 1986 RE₁₅ = 1999 RG₃₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	23.45886		(2000.0)	P		Q	
<i>n</i>	0.22742641	ω	311.16380	+0.48866581	+0.87112652		
<i>a</i>	2.6581253	Ω	347.81132	-0.71597425	+0.36868137		
<i>e</i>	0.2352911	<i>i</i>	13.25743	-0.49858460	+0.32436498		
<i>P</i>	4.33	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	2
Residuals in seconds of arc							
1986 09 07	095	0.8-	0.9-	1998 04 01	704	0.2+	0.1-
1986 09 12	095	2.3+	1.1-	1998 04 18	704	0.5-	1.3-
1998 02 27	566	0.3+	0.1+	1998 04 18	704	(3.0-	3.1-)
1998 02 27	566	0.6+	0.2-	1998 04 18	704	1.1-	0.5+
1998 02 27	566	0.9+	0.0	1998 04 18	704	1.5-	0.0
1998 03 20	704	1.0+	0.3+	1998 04 19	704	1.3-	0.4-
1998 03 20	704	0.6+	0.7+	1998 04 19	704	1.5-	0.6+
1998 03 20	704	0.8+	1.1+	1998 04 19	704	1.0-	0.6-
1998 03 20	704	0.6+	1.0+	1998 04 19	704	1.9-	0.3+
1998 03 20	704	0.5+	0.6+	1998 04 19	704	1.6-	0.3+
1998 03 28	704	0.1+	0.9-	1999 07 16	704	0.0	0.4-
1998 03 28	704	0.1+	0.2-	1999 07 16	704	0.1+	0.3-
1998 03 28	704	1.0+	0.1+	1999 07 16	704	0.5-	0.1-
1998 03 28	704	0.4+	0.8+	1999 07 16	704	0.4-	0.0
1998 03 28	704	0.5+	0.7+	1999 09 07	704	0.2-	0.2+
1998 03 29	704	0.7+	0.4-	1999 09 07	704	0.0	0.3+
1998 03 29	704	0.1+	0.3+	1999 09 07	704	0.0	0.2+
1998 03 29	704	0.7+	0.1+	1999 09 07	704	0.1-	0.2+
1998 03 29	704	0.1+	1.3-	1999 09 07	704	0.1-	0.3+
1998 03 29	704	0.8+	0.7-	1999 09 08	691	0.3-	0.2+
1998 04 01	704	0.2-	1.2+	1999 09 08	691	0.6-	0.5+
1998 04 01	704	0.6+	0.2+	1999 09 08	691	0.4-	0.3+
1998 04 01	704	0.2+	0.4-	1999 09 09	704	0.4+	0.2+
1998 04 01	704	0.8+	0.5-	1999 09 09	704	0.4+	0.1+

1998 HT₁₄ = 1991 LC₆ = 1999 RV₈₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	8.44453		(2000.0)	P		Q	
<i>n</i>	0.26401041	ω	189.40545	+0.86751694	+0.49626913		
<i>a</i>	2.4065156	Ω	140.78277	-0.45283477	+0.81594891		
<i>e</i>	0.1822482	<i>i</i>	3.04946	-0.20580339	+0.29655410		
<i>P</i>	3.73	<i>H</i>	16.0	<i>G</i>	0.15	<i>U</i>	2
Residuals in seconds of arc							
1991 06 06	809	0.8+	1.1+	1998 04 28	691	0.8+	0.3-
1991 06 06	809	0.2-	0.7+	1998 04 28	691	0.6+	0.5-
1991 06 06	809	0.0	0.9+	1998 04 28	691	0.5+	1.0-
1994 04 03	691	0.1-	0.2-	1998 05 03	691	0.3-	0.7-
1994 04 03	691	0.3-	0.7+	1998 05 03	691	0.4-	0.6-
1994 04 03	691	0.0	0.2-	1998 05 03	691	0.5-	1.0-
1998 03 29	704	0.5+	0.0	1999 08 22	703	0.6-	0.2+
1998 03 29	704	0.5-	1.2+	1999 08 22	703	0.6-	0.4+
1998 03 29	704	1.8-	0.3+	1999 08 22	703	0.8-	0.1-
1998 03 29	704	0.5-	0.8-	1999 08 22	703	0.0	0.3-
1998 04 17	691	0.4+	0.9-	1999 08 22	699	0.4-	0.2+
1998 04 17	691	0.2+	0.7-	1999 08 22	699	0.2+	0.8-
1998 04 17	691	0.6+	0.5-	1999 08 22	699	0.3-	0.1-
1998 04 27	691	1.0-	0.7-	1999 09 05	699	(0.3+	2.7+)
1998 04 27	691	0.7-	1.0-	1999 09 05	699	0.5-	1.0+
1998 04 27	691	0.6-	0.9-	1999 09 05	699	0.2-	1.4+

1998 HC₁₈ = 1999 RV₁₁₆

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	12.27770		(2000.0)	P		Q	
<i>n</i>	0.21480386	ω	38.18628	+0.55169342	+0.83195309		
<i>a</i>	2.7612644	Ω	265.37140	-0.77905659	+0.48873778		
<i>e</i>	0.1269547	<i>i</i>	3.39712	-0.29783420	+0.26265842		
<i>P</i>	4.59	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1998 03 22	704	0.4+	0.2-	1998 04 19	704	1.1+	0.2+
1998 03 22	704	0.5-	0.4-	1998 04 19	704	0.9+	1.5+
1998 03 22	704	0.3+	0.6-	1998 04 19	704	0.3+	1.7-
1998 03 22	704	(7.5-	0.6+)	1998 04 20	704	1.1+	0.7+
1998 03 24	699	1.0-	0.1-	1998 04 20	704	0.7+	1.6-
1998 03 24	699	1.3-	0.4-	1998 04 20	704	0.8+	0.4-
1998 03 24	699	0.9+	0.5+	1998 04 20	704	0.9+	1.1-
1998 03 25	704	0.9-	1.3-	1998 04 20	704	0.5-	0.9-
1998 03 25	704	0.2-	0.2-	1998 04 22	704	0.4-	0.7-
1998 03 25	704	0.0	0.7-	1998 04 22	704	0.5-	1.6+
1998 03 25	704	1.0-	1.1+	1998 04 22	704	0.5+	0.2-
1998 03 25	566	1.1-	0.0	1998 04 22	704	(3.4-	1.9+)
1998 03 25	566	0.9-	0.3+	1998 04 22	704	0.4+	0.3+
1998 03 25	566	1.1-	0.0	1998 05 16	704	0.4+	0.2-
1998 04 01	704	0.0	0.2+	1998 05 16	704	0.3+	0.5+
1998 04 01	704	0.5-	1.0+	1998 05 16	704	0.1+	1.9+
1998 04 01	704	1.3-	0.9+	1998 05 16	704	(6.1-	1.2+)
1998 04 01	704	0.7-	0.1+	1999 07 13	704	0.5+	0.4-
1998 04 01	704	0.4+	0.2-	1999 07 13	704	0.2-	1.0-
1998 04 18	704	0.7+	0.4+	1999 07 13	704	0.7+	0.5-
1998 04 18	704	0.8+	0.5+	1999 07 13	704	0.4-	0.3-
1998 04 18	704	1.0+	0.1-	1999 07 13	704	0.4+	0.6-
1998 04 18	704	(0.2-	3.9-)	1999 07 21	699	1.1+	0.1+
1998 04 19	704	0.5+	0.7+	1999 07 21	699	0.9+	0.2+

1998 HH₁₉

Id. E. Bowell (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	326.41729		(2000.0)	P		Q	
<i>n</i>	0.29637072	ω	126.14069	+0.98898806	-0.13924902		
<i>a</i>	2.2279863	Ω	241.91233	+0.11084237	+0.92135161		
<i>e</i>	0.1517735	<i>i</i>	3.25698	+0.09806425	+0.36293377		
<i>P</i>	3.33	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1998 03 20	704	0.3+	1.0+	1998 04 18	704	0.3+	0.5+
1998 03 20	704	0.5+	0.7-	1998 04 18	704	0.4+	0.3-
1998 03 20	704	(3.1+	0.7+)	1998 04 18	704	0.4+	1.2-
1998 03 20	704	(2.1+	1.5+)	1998 04 18	704	0.4+	0.2+
1998 03 28	704	1.6+	0.2+	1998 04 19	704	1.2+	1.9-
1998 03 28	704	1.3-	0.8+	1998 04 19	704	0.2-	0.8-
1998 03 28	704	1.0+	1.4+	1998 04 19	704	1.6+	0.5+
1998 03 29	704	0.8-	0.1+	1998 04 19	704	(7.0-	0.8+)
1998 03 29	704	0.8-	0.8+	1999 06 20	703	0.4+	0.7-
1998 03 29	704	0.3-	0.3+	1999 06 20	703	0.1-	0.9-
1998 03 29	704	(0.6+	2.3-)	1999 06 20	703	0.0	0.9+
1998 03 29	704	0.4-	1.6-	1999 06 20	703	0.2+	0.4-
1998 04 01	704	0.4-	0.4+	1999 08 12	699	0.4+	0.5+
1998 04 01	704	0.7-	1.8+	1999 08 12	699	0.5+	0.0
1998 04 01	704	1.2-	0.2+	1999 08 12	699	0.2-	0.3+
1998 04 01	704	1.1-	1.5-	1999 09 06	699	0.3-	0.7+
1998 04 01	704	0.1+	0.3+	1999 09 06	699	0.8+	0.3+

1998 HP₁₉ = 1998 HL₂₈ = 1999 RS₁₆

Id. G. V. Williams (d, MPC 32093; unpublished)

M.P.C. 35980

1999 SEPT. 28

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	17.85216		(2000.0)	P	Q
<i>n</i>	0.23749118	ω	305.74413	+0.62473231	+0.78077592
<i>a</i>	2.5824845	Ω	2.97547	-0.64038839	+0.51959198
<i>e</i>	0.1638454	<i>i</i>	11.02255	-0.44677987	+0.34700596
<i>P</i>	4.15	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 20	704	0.9+	1.7-	1998 04 18	704	0.2+	0.5-	1999 09 07	704	0.6+	0.3+
1998 03 20	704	0.0	1.2+	1998 04 18	704	0.5+	0.4-	1999 09 07	699	1.1-	0.3+
1998 03 20	704	0.4+	0.4-	1998 04 18	704	1.0+	0.4-	1999 09 07	704	0.4+	0.0
1998 03 20	704	1.4+	1.3+	1998 04 19	704	0.1+	0.6+	1999 09 07	704	0.4-	0.4+
1998 03 28	704	0.5+	0.4-	1998 04 19	704	0.5+	0.1-	1999 09 07	704	0.5+	0.6+
1998 03 28	704	0.0	0.1-	1998 04 19	704	1.8+	1.1+	1999 09 07	699	0.9-	0.7+
1998 03 28	704	1.5-	0.5-	1998 04 19	704	0.9+	0.2-	1999 09 07	704	0.0	0.4+
1998 03 28	704	0.4-	0.5-	1998 04 20	704	0.3-	1.3-	1999 09 08	704	0.1+	0.0
1998 03 28	704	(5.9-	0.7-)	1998 04 20	704	0.4-	1.0+	1999 09 08	704	0.4+	0.1-
1998 03 29	704	0.9-	0.2+	1998 04 20	704	0.5-	1.1-	1999 09 08	704	0.9+	0.2+
1998 03 29	704	0.8-	1.0-	1998 04 20	704	1.8-	0.3+	1999 09 09	704	0.2+	0.3-
1998 03 29	704	0.2-	1.2+	1998 04 23	691	(1.5-	22.8-)	1999 09 09	704	1.2+	0.5+
1998 03 29	704	0.4+	1.2-	1998 04 23	691	(1.0-	22.8-)	1999 09 09	704	0.2-	1.1-
1998 03 29	704	0.1+	1.0+	1998 04 29	691	0.4-	0.2-	1999 09 09	704	0.2+	0.4-
1998 04 01	704	0.0	0.6-	1998 04 29	691	0.3-	0.1+	1999 09 09	704	0.2+	0.7-
1998 04 01	704	0.7-	1.0+	1998 04 29	691	0.2-	0.0	1999 09 13	704	0.1-	0.2-
1998 04 01	704	(2.2-	0.1-)	1998 05 03	691	0.2+	0.4+	1999 09 13	704	0.2-	0.3-
1998 04 01	704	1.2-	0.7+	1998 05 03	691	0.3+	0.5+	1999 09 13	704	0.1-	0.5-
1998 04 01	704	(6.9-	2.0+)	1998 05 03	691	0.0	0.5+	1999 09 13	704	0.4-	0.4+
1998 04 18	704	0.5+	0.6-	1999 09 07	699	1.0-	0.0	1999 09 13	704	0.2-	0.2-

1998 HQ₁₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	25.80890		(2000.0)	P	Q
<i>n</i>	0.28819746	ω	113.92744	+0.80810390	+0.58541595
<i>a</i>	2.2699134	Ω	210.36127	-0.57641217	+0.76310415
<i>e</i>	0.1745892	<i>i</i>	7.41601	-0.12131401	+0.27378864
<i>P</i>	3.42	<i>H</i>	14.7	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1992 08 24	675	0.3-	1.0+	1998 04 01	704	0.9+	0.5+	1998 04 20	704	1.3-	1.6+
1992 08 24	675	(0.4-	3.7+)	1998 04 01	704	1.0-	0.0	1998 04 22	704	0.7+	1.2-
1998 02 27	566	0.5-	0.4-	1998 04 01	704	0.7-	0.5+	1998 04 22	704	0.1-	0.4+
1998 02 27	566	0.5-	0.3-	1998 04 18	704	0.3+	0.4-	1998 04 22	704	0.7-	0.8+
1998 02 27	566	0.7-	0.2-	1998 04 18	704	0.3+	0.2+	1998 04 22	704	(2.2-	0.6-)
1998 03 22	704	0.6+	0.4+	1998 04 18	704	0.0	0.7-	1998 04 22	704	0.0	1.3+
1998 03 22	704	0.2-	0.0	1998 04 18	704	1.1-	1.3-	1999 07 23	704	0.1+	0.8-
1998 03 22	704	0.3+	0.3+	1998 04 18	704	0.9-	0.6-	1999 07 23	704	0.9+	1.3-
1998 03 22	704	0.2+	0.9+	1998 04 19	704	0.2-	0.3-	1999 07 23	704	0.6-	0.3-
1998 03 22	704	0.5+	0.7+	1998 04 19	704	0.4+	0.3+	1999 07 23	704	0.0	0.3-
1998 03 28	704	0.6+	0.7-	1998 04 19	704	0.1-	0.4-	1999 09 12	703	0.5-	0.0
1998 03 28	704	0.0	0.6+	1998 04 19	704	1.0-	1.2+	1999 09 12	703	0.5-	0.5+
1998 03 28	704	0.4-	0.1-	1998 04 19	704	1.8+	0.1-	1999 09 12	703	1.0+	0.3-
1998 03 28	704	1.3+	0.7-	1998 04 20	704	0.9+	0.6+	1999 09 12	703	0.4+	0.3-
1998 03 28	704	0.1+	0.9-	1998 04 20	704	1.6-	0.7+	1999 09 13	106	0.2-	0.3+
1998 04 01	704	0.7+	0.7-	1998 04 20	704	0.8+	0.5-	1999 09 13	106	0.5-	0.4+
1998 04 01	704	0.3+	0.3+	1998 04 20	704	0.0	1.8-	1999 09 13	106	0.1+	0.3+

1998 HR₁₉ = 1999 RH₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	58.53025		(2000.0)	P	Q
<i>n</i>	0.27405794	ω	279.46806	+0.15310858	+0.98820841
<i>a</i>	2.3473317	Ω	359.33435	-0.85365872	+0.13155827
<i>e</i>	0.1093885	<i>i</i>	6.82245	-0.49781981	+0.07833621
<i>P</i>	3.60	<i>H</i>	15.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 22	704	0.6-	0.6+	1998 04 18	704	0.8-	0.9-	1999 09 08	704	0.9-	0.6+
1998 03 22	704	0.4-	0.8+	1998 04 18	704	0.4+	0.1+	1999 09 08	704	0.4-	0.1+
1998 03 22	704	0.1-	0.5+	1998 04 18	704	(1.4-	2.5-)	1999 09 08	704	0.8-	0.0
1998 03 22	704	1.1+	1.0-	1998 04 18	704	0.5+	0.6-	1999 09 08	704	0.5-	0.4-
1998 03 22	704	(4.3-	1.7-)	1998 04 18	704	(2.2-	1.2+)	1999 09 09	704	0.0	0.3+
1998 03 28	704	0.2+	0.3-	1998 04 19	704	0.2+	0.5-	1999 09 09	704	0.1+	0.2-
1998 03 28	704	0.0	0.2+	1998 04 19	704	1.0-	0.6+	1999 09 09	704	0.4+	0.5-
1998 03 28	704	0.2-	0.3-	1998 04 19	704	1.2-	0.3-	1999 09 09	704	0.3+	0.5+
1998 03 28	704	1.5-	0.1-	1998 04 19	704	1.1-	0.0	1999 09 09	704	0.0	0.5+
1998 03 28	704	0.3-	0.1-	1998 04 19	704	(3.6-	1.4-)	1999 09 14	704	0.3-	0.2+
1998 03 29	704	0.9+	0.4+	1998 04 20	704	0.7+	1.5-	1999 09 14	704	0.6-	0.3+
1998 03 29	704	0.4-	0.8+	1998 04 20	704	0.8+	0.6+	1999 09 14	704	0.6-	0.4-
1998 03 29	704	0.5+	0.1+	1998 04 20	704	0.7-	1.8+	1999 09 14	704	0.1-	0.2-
1998 03 29	704	0.1-	0.7-	1998 04 20	704	0.8+	0.5+	1999 09 14	704	0.2-	0.2+
1998 03 29	704	0.7-	0.7-	1998 04 20	704	(3.1-	1.1-)	1999 09 14	703	0.8+	0.6+
1998 04 01	704	0.5+	1.0-	1999 09 07	704	0.5-	0.2+	1999 09 14	703	0.2-	0.1-
1998 04 01	704	1.0+	1.2-	1999 09 07	704	0.0	0.5-	1999 09 14	703	1.5+	0.2-
1998 04 01	704	0.1+	0.4+	1999 09 07	704	0.5+	0.1+	1999 09 14	703	0.8+	0.0
1998 04 01	704	0.5+	0.3+	1999 09 07	704	0.1+	0.2-				
1998 04 01	704	0.8+	1.4+	1999 09 07	704	0.4+	0.5-				

1998 HU₁₉ = 1999 RV₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	118.92593		(2000.0)	P	Q
<i>n</i>	0.28357796	ω	21.35240	-0.84761033	+0.52474350
<i>a</i>	2.2944982	Ω	191.33641	-0.52609908	-0.85041346
<i>e</i>	0.1317027	<i>i</i>	23.61592	-0.06911219	+0.03796323
<i>P</i>	3.48	<i>H</i>	15.4	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 04 01	704	0.1+	0.2+	1998 04 19	704	0.4+	0.2-	1999 09 07	703	0.7+	0.2+
1998 04 01	704	0.2+	0.1+	1998 04 19	704	0.1-	1.4+	1999 09 07	703	0.2-	0.6+
1998 04 01	704	0.8+	0.0	1998 04 19	704	0.0	0.3-	1999 09 08	704	0.0	0.3+
1998 04 01	704	0.1+	0.8-	1998 04 19	704	0.4-	0.1-	1999 09 08	704	0.3+	0.3+
1998 04 01	704	0.7+	0.0	1998 04 19	704	0.2-	0.3-	1999 09 08	704	0.1-	0.0
1998 04 18	704	0.1+	0.2+	1998 04 28	566	0.3-	0.1+	1999 09 09	704	0.8+	0.7-
1998 04 18	704	0.2-	0.7+	1998 04 28	566	0.8+	0.4-	1999 09 09	704	0.7-	0.6-
1998 04 18	704	0.5-	0.1-	1998 04 28	566	0.9+	0.2+	1999 09 09	704	0.6-	0.4+
1998 04 18	704	1.0-	0.8-	1999 09 07	703	1.7-	0.2-	1999 09 09	704	1.9+	0.1-
1998 04 18	704	1.3-	0.2-	1999 09 07	703	0.7-	0.2-	1999 09 09	704	0.4+	0.2-

1998 HR₂₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	127.61062		(2000.0)	P	Q
<i>n</i>	0.25582000	ω	2.16781	-0.77040265	+0.63733616
<i>a</i>	2.4576105	Ω	217.44292	-0.58536281	-0.71753115
<i>e</i>	0.1530827	<i>i</i>	1.58386	-0.25264628	-0.28098340
<i>P</i>	3.85	<i>H</i>	16.0	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 04 25	809	1.8+	1.1+	1998 05 22	704	1.9-	1.6-	1998 06 03	704	0.9-	1.0+
1998 04 25	809	1.5+	1.3+	1998 05 22	704	0.7+	1.1+	1998 06 03	704	(2.3+	2.1-)
1998 04 25	809	0.2+	0.9+	1998 05 22	704	0.7+	0.9-	1998 06 03	684	0.2-	0.4-
1998 04 28	684	0.0	0.6-	1998 05 22	704	0.7-	1.9+	1998 06 03	684	0.1+	0.4-
1998 04 28	684	0.2-	0.5-	1998 05 24	704	0.2+	0.3-	1998 06 26	684	0.0	0.6-
1998 04 29	684	0.7-	0.4+	1998 05 24	704	0.3+	0.9-	1998 06 26	684	0.1-	0.5-
1998 04 29	684	1.0-	0.3-	1998 05 24	684	0.5+	0.1+	1998 06 26	684	0.4+	0.2-
1998 05 01	684	0.5-	0.2-	1998 05 24	704	1.8+	1.1+	1998 06 27	684	0.4-	0.6-
1998 05 01	684	0.3-	0.5-	1998 05 24	704	(0.3-	2.7-)	1998 06 27	684	0.1-	0.8-
1998 05 02	684	0.8-	0.6-	1998 05 24	684	0.2+	0.0	1999 09 11	684	0.8-	0.5-
1998 05 02	684	0.1-	0.6-	1998 05 24	704	(2.4-	0.4+)	1999 09 11	684	0.0	1.4+
1998 05 17	684	0.2-	0.1+	1998 06 02	684	0.5-	0.0	1999 09 12	684	0.4+	0.1+
1998 05 17	684	0.4-	0.0	1998 06 02	684	0.7-	0.0	1999 09 12	684	0.0	0.2-
1998 05 18	684	0.2-	0.1+	1998 06 03	704	0.1+	0.7+				
1998 05 18	684	0.2-	0.1+	1998 06 03	704	1.6+	0.6+				

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1998 HR₂₇ = 1999 RB₄₂

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Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	1.76281		(2000.0)	P		Q	
<i>n</i>	0.28758538	ω	23.87054	+0.95802695		+0.28419316	
<i>a</i>	2.2731330	Ω	319.55901	−0.27148369		+0.85718043	
<i>e</i>	0.1774056	<i>i</i>	3.32873	−0.09209219		+0.42950665	
<i>P</i>	3.43	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 01 18	691	0.2+	0.2+	1998 04 19	704	(2.6+	1.2+)	1999 09 07	704	0.5+	0.1−
1994 01 18	691	0.1−	0.3+	1998 04 19	704	1.5+	1.0−	1999 09 07	704	0.5+	0.2−
1994 01 18	691	0.2+	0.4+	1998 04 19	704	0.4+	1.3+	1999 09 07	704	0.5+	0.4+
1998 03 28	704	(1.8+	2.5+)	1998 04 19	704	1.1−	0.9−	1999 09 07	704	0.6+	0.3−
1998 03 28	704	1.0+	0.8+	1998 04 22	691	0.4−	0.3+	1999 09 07	704	0.3−	0.1+
1998 03 28	704	0.0	0.4+	1998 04 22	691	0.3−	0.4+	1999 09 13	120	0.0	0.3+
1998 03 29	704	1.8+	1.4−	1998 04 22	691	0.4−	0.0	1999 09 13	120	0.4−	0.3−
1998 03 29	704	0.9−	1.4+	1998 04 28	691	0.1−	0.3+	1999 09 13	120	0.2+	0.3−
1998 03 29	704	1.0−	0.1−	1998 04 28	691	0.2−	0.2+	1999 09 14	120	0.7−	0.2+
1998 03 29	704	0.7+	0.0	1998 04 28	691	0.0	0.3+	1999 09 14	120	0.1+	0.2−
1998 04 01	704	1.1−	1.0−	1999 08 13	699	0.5−	0.8+	1999 09 14	120	0.3−	0.3−
1998 04 01	704	0.6+	0.4+	1999 08 13	699	0.2+	0.0	1999 09 15	120	0.5−	0.3+
1998 04 01	704	(3.0+	1.8−)	1999 08 13	699	0.3−	0.7+	1999 09 15	120	0.2−	0.6+

1998 HE₂₉ = 1999 RN₇₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	132.50117		(2000.0)	P		Q	
<i>n</i>	0.27252551	ω	193.09437	−0.94191825		+0.33550150	
<i>a</i>	2.3561229	Ω	6.56818	−0.29498490		−0.80496023	
<i>e</i>	0.0846272	<i>i</i>	7.59828	−0.16054258		−0.48936466	
<i>P</i>	3.62	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 22	704	0.5+	1.9+	1998 04 01	704	0.3+	0.3−	1998 04 22	704	1.0+	0.9+
1998 03 22	704	1.4−	1.0+	1998 04 01	704	0.1−	0.7−	1998 04 22	704	1.1−	0.5+
1998 03 22	704	1.1+	1.2−	1998 04 18	704	0.1−	0.1−	1998 04 22	704	1.3+	0.5+
1998 03 22	704	0.8−	0.8−	1998 04 18	704	0.5+	0.4−	1998 04 22	704	0.1−	1.1+
1998 03 25	704	0.2+	0.0	1998 04 18	704	0.5−	0.2−	1999 09 07	704	0.7+	0.2−
1998 03 25	704	0.1+	0.8+	1998 04 18	704	0.9−	0.9−	1999 09 07	704	0.6+	0.0
1998 03 25	704	1.7−	0.9−	1998 04 18	704	1.0−	1.9−	1999 09 07	704	1.0−	1.3+
1998 03 25	704	0.8+	0.9+	1998 04 20	704	1.7+	1.8−	1999 09 08	703	1.1−	0.5−
1998 03 25	704	0.6−	0.3−	1998 04 20	704	0.1−	1.0+	1999 09 08	703	0.4+	0.2−
1998 03 29	704	0.6−	0.5+	1998 04 20	704	0.9−	0.6−	1999 09 08	703	1.4−	0.4−
1998 03 29	704	1.6+	0.2−	1998 04 20	704	1.2−	0.4−	1999 09 08	703	0.6+	0.1+
1998 03 29	704	0.2+	0.2+	1998 04 20	704	(2.5−	0.6+)	1999 09 14	704	0.1+	0.1+
1998 03 29	704	0.3−	0.1−	1998 04 20	704	0.1+	0.8+	1999 09 14	704	0.5−	0.4−
1998 03 29	704	1.2+	0.9−	1998 04 20	704	0.3+	0.0	1999 09 14	704	0.4+	1.3+
1998 04 01	704	0.1−	0.7−	1998 04 20	704	0.0	1.6+	1999 09 14	704	0.1−	0.1+
1998 04 01	704	0.2−	0.2+	1998 04 20	704	0.3−	0.9+	1999 09 14	704	0.0	0.5−
1998 04 01	704	0.9+	0.2+	1998 04 22	704	0.1+	0.7−	1999 09 14	704	1.3+	0.8−

1998 HS₃₂ = 1999 RE₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	15.01038		(2000.0)	P		Q	
<i>n</i>	0.24035630	ω	122.03372	+0.75831881		+0.65178329	
<i>a</i>	2.5619209	Ω	197.29892	−0.61032726		+0.70369597	
<i>e</i>	0.1745168	<i>i</i>	2.20701	−0.22902669		+0.28282596	
<i>P</i>	4.10	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 22	704	0.0	0.8+	1998 04 18	704	0.2+	0.6−	1999 09 07	704	0.0	0.7+
1998 03 22	704	0.4−	0.7+	1998 04 20	704	0.6−	1.1+	1999 09 08	704	0.3+	0.0
1998 03 22	704	0.7−	0.6−	1998 04 20	704	0.4+	1.0−	1999 09 08	704	0.1+	0.4−
1998 03 22	704	1.1−	1.8−	1998 04 20	704	0.0	0.4+	1999 09 08	704	0.4+	0.5−
1998 03 22	704	(6.0−	1.1−)	1998 04 20	704	0.9+	1.9+	1999 09 08	704	0.0	0.7−

1998 03 25	704	0.1+	0.5−	1998 04 22	704	1.3+	1.2−	1999 09 09	704	0.1−	0.2−
1998 03 25	704	0.2−	1.1−	1998 04 22	704	1.7−	1.4+	1999 09 09	704	0.3−	0.3−
1998 03 25	704	0.8+	0.8−	1998 04 22	704	1.3+	0.4−	1999 09 09	704	0.1+	0.3+
1998 03 25	704	1.1+	1.1+	1998 04 22	704	(0.9−	2.3+)	1999 09 09	704	0.8−	0.5−
1998 03 25	704	(0.2−	2.0+)	1998 04 22	704	0.9−	0.5+	1999 09 09	704	1.3−	1.4−
1998 04 01	704	1.4+	0.5−	1998 05 16	704	0.1−	1.1+	1999 09 11	699	0.0	0.9+
1998 04 01	704	0.6−	0.7+	1998 05 16	704	(1.7+	2.0−)	1999 09 11	699	1.0+	0.6+
1998 04 01	704	0.2−	0.1+	1998 05 16	704	0.6−	0.7−	1999 09 11	699	(3.1+	0.0)
1998 04 01	704	0.8−	0.4+	1998 05 16	704	0.1+	0.6−	1999 09 14	704	0.3+	0.1−
1998 04 01	704	0.1+	0.6+	1999 09 07	704	0.1−	0.3+	1999 09 14	704	0.1+	0.1−
1998 04 18	704	1.0+	0.2−	1999 09 07	704	0.2+	0.5+	1999 09 14	704	0.1+	0.0
1998 04 18	704	0.7−	1.3−	1999 09 07	704	0.1−	0.1+	1999 09 14	704	0.1+	0.2+
1998 04 18	704	0.6−	0.1−	1999 09 07	704	0.2−	0.2+	1999 09 14	704	0.1+	0.0

1998 HU₃₃ = 1999 RT₆₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	73.17828		(2000.0)	P		Q	
<i>n</i>	0.23382471	ω	244.28459	−0.32007434		+0.94734005	
<i>a</i>	2.6094108	Ω	7.06999	−0.83762961		−0.27806262	
<i>e</i>	0.1134459	<i>i</i>	4.64256	−0.44263875		−0.15883327	
<i>P</i>	4.22	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 22	704	0.7+	0.3+	1998 04 20	704	0.5−	0.6+	1999 09 07	699	0.6+	1.2+
1998 03 22	704	0.3+	0.4+	1998 04 20	704	1.2−	0.4−	1999 09 07	704	0.4+	0.4+
1998 03 22	704	(0.1−	2.3+)	1998 04 20	704	0.6−	0.2+	1999 09 07	704	0.2+	0.6−
1998 03 22	704	1.1−	1.9−	1998 04 22	704	0.2+	0.2−	1999 09 07	704	0.3+	0.9−
1998 03 25	704	0.7+	1.3+	1998 04 22	704	0.7+	1.0−	1999 09 07	699	0.9−	0.7−
1998 03 25	704	0.0	0.5−	1998 04 22	704	(0.4+	2.2−)	1999 09 07	704	0.1−	0.8−
1998 03 25	704	0.7+	1.0+	1998 04 22	704	0.0	1.4−	1999 09 08	703	1.1−	0.5−
1998 03 25	704	0.5−	0.2+	1998 04 22	704	0.2+	1.3−	1999 09 08	703	0.8+	0.2+
1998 03 29	704	0.8+	1.4+	1998 05 16	704	1.9+	1.1+	1999 09 08	703	0.1+	0.7+
1998 03 29	704	0.4+	0.7−	1998 05 16	704	0.0	0.8+	1999 09 08	703	0.2+	0.6+
1998 03 29	704	0.3+	0.6+	1998 05 16	704	1.2+	0.4−	1999 09 09	704	0.3−	0.2−
1998 03 29	704	1.0−	0.8+	1998 05 16	704	1.0−	1.5+	1999 09 09	704	0.4+	0.8−
1998 03 29	704	0.4−	1.6−	1998 05 16	704	(5.7−	0.1−)	1999 09 09	704	0.6+	0.2+
1998 04 20	704	0.4−	0.6−	1999 09 07	699	0.5−	1.7+	1999 09 09	704	0.4+	1.0−
1998 04 20	704	1.2−	0.2−	1999 09 07	704	0.1−	0.0	1999 09 09	704	0.0	0.1+

1998 HZ₃₈ = 1999 RK₁₀₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	40.27006		(2000.0)	P		Q	
<i>n</i>	0.23686047	ω	80.24323	+0.30577851		+0.94568423	
<i>a</i>	2.5870669	Ω	208.33509	−0.93901364		+0.28038673	
<i>e</i>	0.0961619	<i>i</i>	13.44628	−0.15733050		+0.16451326	
<i>P</i>	4.16	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 25	704	0.5+	0.2+	1998 04 20	704	0.1+	0.5−	1998 04 22	704	0.7−	0.7−
1998 03 25	704	0.4−	1.2+	1998 04 20	704	1.1−	0.4−	1998 05 16	704	0.1+	0.5+
1998 03 25	704	0.7+	0.3+	1998 04 20	704	0.2−	0.1+	1998 05 16	704	1.7−	1.0+
1998 03 25	704	0.8+	0.4−	1998 04 20	704	0.3+	0.6+	1998 05 16	704	0.2−	1.4+
1998 03 25	704	0.3+	1.2−	1998 04 20	704	0.7−	1.8−	1998 05 16	704	1.0+	1.8+
1998 03 29	704	0.5+	0.9+	1998 04 21	704	1.8−	0.6−	1999 09 08	704	0.6−	0.1+
1998 03 29	704	1.2+	0.8−	1998 04 21	704	1.1+	0.8−	1999 09 08	704	0.3−	0.1+
1998 03 29	704	0.9−	1.9+	1998 04 21	704	0.9+	0.2−	1999 09 08	704	0.9+	0.3−
1998 03 29	704	1.0−	0.7+	1998 04 21	704	0.1+	0.1+	1999 09 10	704	0.4−	0.1+
1998 03 29	704	1.0−	1.5−	1998 04 21	704	0.6+	1.0−	1999 09 10	704	0.1+	0.1+
1998 04 01	704	0.3−	0.2+	1998 04 22	704	0.0	1.1−	1999 09 10	704	0.1−	0.1+
1998 04 01	704	1.3+	0.8+	1998 04 22	704	0.9+	0.6+	1999 09 10	704	0.4+	0.2−
1998 04 01	704	0.2−	0.0	1998 04 22	704	0.2+	1.6−				
1998 04 01	704	1.6−	1.4+	1998 04 22	704	1.1+	0.6−				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	346.83397		(2000.0)	P		Q					
<i>n</i>	0.25750298	ω	331.64104	+0.98293734		+0.18323022					
<i>a</i>	2.4468905	Ω	17.82286	−0.15721750		+0.88247051					
<i>e</i>	0.1054410	<i>i</i>	3.02493	−0.09548220		+0.43321183					
<i>P</i>	3.83	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4				
Residuals in seconds of arc											
1971 03 25	675	0.4+	0.8−	1998 04 20	704	1.5+	1.4−	1999 09 09	704	0.2+	0.5+
1971 03 25	675	1.4+	1.0−	1998 04 20	704	(0.7−	2.3+)	1999 09 09	704	0.2+	1.3−
1971 03 26	675	2.1−	1.2+	1998 04 21	704	(3.0−	1.8+)	1999 09 09	704	0.0	0.0
1971 03 27	675	(5.8−	1.8+)	1998 04 21	704	0.4+	1.6−	1999 09 09	704	0.3+	0.2−
1971 04 02	675	(6.6−	2.9+)	1998 04 21	704	0.5−	0.2+	1999 09 09	704	0.1−	0.2−
1998 03 25	704	0.0	0.6−	1998 04 21	704	1.3−	0.7+	1999 09 09	704	0.5+	0.4−
1998 03 25	704	0.6+	0.0	1998 04 22	704	0.4−	0.8+	1999 09 09	704	0.2+	0.3−
1998 03 25	704	0.1+	0.5+	1998 04 22	704	1.4−	0.6+	1999 09 09	704	0.2+	0.3−
1998 03 25	704	(0.7+	2.4+)	1998 04 22	704	0.2+	0.4+	1999 09 09	704	0.6+	0.7−
1998 03 29	704	1.6−	0.7−	1998 04 22	704	0.5+	0.2+	1999 09 09	704	0.0	0.2−
1998 03 29	704	0.2+	0.0	1998 04 22	704	(2.8−	0.6+)	1999 09 09	704	0.6−	0.2+
1998 03 29	704	1.2+	0.8+	1999 08 12	699	0.8−	0.4+	1999 09 09	704	0.7−	0.9−
1998 03 29	704	(2.2+	1.5+)	1999 08 12	699	0.2−	0.5+	1999 09 09	704	0.2+	0.8−
1998 03 29	704	0.2+	0.6−	1999 08 12	699	0.2+	0.6+	1999 09 09	704	0.6−	0.3+
1998 04 01	704	(0.7+	2.7+)	1999 09 07	106	0.8+	0.3+	1999 09 13	704	0.2+	0.5+
1998 04 01	704	0.1+	0.8−	1999 09 07	106	0.4+	0.4+	1999 09 13	704	0.8−	0.1+
1998 04 01	704	(1.1+	3.2+)	1999 09 07	106	0.5+	0.2−	1999 09 13	704	0.5−	0.4+
1998 04 01	704	0.2+	1.2+	1999 09 08	106	1.4+	0.1+	1999 09 13	704	0.7−	0.2+
1998 04 20	704	1.6−	0.8+	1999 09 08	106	0.8−	0.5+	1999 09 13	704	0.0	0.1+
1998 04 20	704	1.5+	0.6−	1999 09 09	704	0.3+	0.1+				

1998 HO₄₉ = 1999 RS₁₄₂

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	145.23615		(2000.0)	P		Q					
<i>n</i>	0.26331342	ω	62.02796	−0.94087260	+0.32835916						
<i>a</i>	2.4107604	Ω	136.99604	−0.33753642	−0.88780194						
<i>e</i>	0.0864050	<i>i</i>	7.01522	−0.02877355	−0.32247167						
<i>P</i>	3.74	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	3				
Residuals in seconds of arc											
1995 07 24	691	0.1+	0.4−	1998 05 23	704	0.8−	0.3−	1999 09 05	699	0.8+	1.3+
1995 07 24	691	0.1+	0.3−	1998 05 23	704	1.2−	1.1−	1999 09 05	699	0.6+	0.2+
1995 07 24	691	0.1+	0.2−	1998 05 23	704	0.1−	0.0	1999 09 05	699	1.7−	1.4+
1998 04 23	704	0.4+	0.4+	1998 05 24	704	0.7−	0.2+	1999 09 07	704	0.2−	0.6−
1998 04 23	704	0.7+	0.2+	1998 05 24	704	0.1+	0.2−	1999 09 07	704	0.1−	0.3+
1998 04 23	704	0.9+	0.2+	1998 05 24	704	1.0+	1.4−	1999 09 07	704	0.2−	0.3−
1998 04 23	704	0.3+	1.1+	1998 05 24	704	2.0−	0.4+	1999 09 07	704	0.6−	0.1−
1998 04 23	704	0.3−	0.8+	1998 05 24	704	1.0−	0.1+	1999 09 07	704	0.3−	0.1−
1998 04 25	566	0.1+	0.1−	1998 05 25	704	0.7−	0.6−	1999 09 09	704	0.0	0.3−
1998 04 25	566	0.0	0.2−	1998 05 25	704	1.0−	1.0+	1999 09 09	704	0.3+	0.6−
1998 04 25	566	0.1+	0.0	1998 05 25	704	0.3+	0.0	1999 09 09	704	0.3−	0.6−
1998 05 03	566	1.9+	0.3−	1998 05 25	704	0.1−	0.9+	1999 09 09	704	0.2+	0.2−
1998 05 03	566	0.9+	0.9−	1998 06 28	699	0.7+	0.1+	1999 09 09	704	0.6+	0.2+
1998 05 03	566	0.4+	0.4−	1998 06 28	699	0.1+	0.1+	1999 09 14	704	0.4+	0.7−
1998 05 05	699	0.0	0.6+	1998 06 28	699	0.2+	0.5+	1999 09 14	704	0.0	0.3−
1998 05 05	699	0.7+	0.0	1999 08 22	703	0.1+	0.7+	1999 09 14	704	0.1+	0.2−
1998 05 05	699	0.0	0.0	1999 08 22	703	0.7−	0.5+	1999 09 14	704	0.3+	1.3−
1998 05 23	704	0.7−	0.1+	1999 08 22	703	0.1+	1.3+	1999 09 14	704	0.4−	0.3−
1998 05 23	704	0.1−	0.7−	1999 08 22	703	0.9+	1.3+				

1998 HJ₅₁ = 1999 RE₄₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	359.16257		(2000.0)	P		Q					
n	0.26767424	ω	251.94195	+0.99071712		+0.07756489					
a	2.3845055	Ω	103.49489	−0.03092020		+0.92829131					
e	0.1443024	i	6.59260	−0.13237649		+0.36367422					
P	3.68	H	14.3	G	0.15	U	3				
Residuals in seconds of arc											
1997 01 11	566	0.0	0.2−	1998 04 24	704	0.1−	1.4−	1998 05 24	704	0.6+	1.0−
1997 01 11	566	0.0	0.0	1998 04 24	704	0.8−	0.7−	1998 05 27	699	0.9+	0.5−
1997 01 11	566	0.0	0.0	1998 04 25	699	0.2−	0.1+	1998 05 27	699	0.2−	0.2+
1998 04 21	704	0.6−	0.4+	1998 04 25	699	0.5+	0.2+	1998 05 27	699	0.3+	1.5+
1998 04 21	704	0.5−	0.2−	1998 04 25	699	0.7+	1.6+	1998 06 02	699	1.8+	0.5−
1998 04 21	704	0.7−	0.0	1998 05 01	699	0.2+	0.1−	1998 06 02	699	0.2−	0.3−
1998 04 21	704	0.7−	0.5+	1998 05 01	699	0.2+	0.0	1998 06 02	699	0.0	0.4−
1998 04 21	704	0.1−	0.4+	1998 05 01	699	0.1+	0.6+	1999 09 14	428	0.3−	0.1−
1998 04 23	704	0.1−	0.8+	1998 05 22	704	0.6−	0.1−	1999 09 14	428	0.4−	0.5−
1998 04 23	704	0.2+	0.6+	1998 05 22	704	0.8−	0.4−	1999 09 15	428	1.0−	0.1−
1998 04 23	704	0.6−	0.6+	1998 05 22	704	(2.2−	1.2+)	1999 09 15	428	0.5−	0.4−
1998 04 23	704	0.0	0.2−	1998 05 22	704	1.0−	0.7−	1999 09 21	699	0.8+	0.6+
1998 04 23	704	(2.8−	0.1+)	1998 05 22	704	0.2−	1.3+	1999 09 21	699	0.4+	0.1−
1998 04 24	704	0.2−	0.3−	1998 05 24	704	0.5+	0.9−	1999 09 21	699	0.9+	0.3+
1998 04 24	704	0.5+	1.1−	1998 05 24	704	(1.4+	2.3−)				
1998 04 24	704	0.5+	1.1−	1998 05 24	704	0.5+	0.4+				

1998 HN₅₁ = 1999 RK₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	243.28378		(2000.0)	P		Q					
<i>n</i>	0.27735887	ω	284.82394	−0.15238280		−0.98828458					
<i>a</i>	2.3286703	Ω	173.92172	+0.93497940		−0.14695603					
<i>e</i>	0.0677079	<i>i</i>	4.63050	+0.32030142		−0.04120091					
<i>P</i>	3.55	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	3				
Residuals in seconds of arc											
1992 09 23	691	0.2−	0.5+	1998 05 01	704	0.0	0.6+	1999 09 07	704	0.3−	0.4−
1992 09 23	691	0.2−	0.6+	1998 05 01	704	0.3+	0.3+	1999 09 07	704	0.2−	0.2+
1992 09 23	691	0.2−	0.7+	1998 05 22	704	0.8+	1.6+	1999 09 07	704	0.1−	0.3−
1998 04 21	704	0.0	0.7−	1998 05 22	704	0.6−	0.6+	1999 09 07	704	0.2+	0.5+
1998 04 21	704	0.6−	1.1−	1998 05 22	704	1.5−	0.5+	1999 09 09	704	0.2+	0.1−
1998 04 21	704	0.0	1.0−	1998 05 22	704	1.3−	0.5−	1999 09 09	704	0.2−	0.3−
1998 04 21	704	0.2−	0.2−	1998 05 22	704	0.2+	1.1+	1999 09 09	704	0.0	0.2−
1998 04 21	704	0.7+	0.4+	1998 05 24	704	0.4−	0.3+	1999 09 09	704	0.5+	0.3−
1998 04 22	704	0.6−	0.7−	1998 05 24	704	0.9−	1.2−	1999 09 09	704	0.2−	0.1+
1998 04 22	704	0.9+	0.6−	1998 05 24	704	0.4+	0.0	1999 09 11	678	0.2+	0.3−
1998 04 22	704	0.4+	0.5−	1998 05 24	704	1.4−	1.0+	1999 09 11	678	0.7−	0.2−
1998 04 22	704	0.5+	0.2−	1998 05 24	704	0.8+	0.3+	1999 09 11	678	(2.7−	1.2+)
1998 04 22	704	0.5−	0.1+	1999 08 08	699	0.5+	1.6+	1999 09 13	678	1.1−	0.1−
1998 04 25	699	0.9+	0.6−	1999 08 08	699	1.6+	0.8+	1999 09 13	678	0.9+	0.7−
1998 04 25	699	1.4+	1.3−	1999 08 08	699	0.5+	1.7+	1999 09 13	678	0.2−	0.4+
1998 04 25	699	0.1+	1.0+	1999 08 17	691	0.0	0.4−	1999 09 13	678	0.6−	0.3−
1998 05 01	704	0.1+	0.0	1999 08 17	691	0.0	0.5−	1999 09 14	704	0.2−	1.0−
1998 05 01	699	0.3+	0.6−	1999 08 17	691	0.1+	0.2−	1999 09 14	704	0.3−	0.8−
1998 05 01	704	0.6−	0.5+	1999 08 22	699	0.4−	0.8+	1999 09 14	704	0.7−	1.0−
1998 05 01	699	0.4+	0.5+	1999 08 22	699	1.3+	0.7−	1999 09 14	704	0.5−	0.2−
1998 05 01	704	0.2−	0.2+	1999 08 22	699	0.0	0.9+	1999 09 14	704	0.8+	0.6−
1998 05 01	699	0.2+	0.3+	1999 09 07	704	0.3−	0.3−				

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M.P.C. 35983

1998 HB₅₂ = 1999 RS₁₉₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	27.27392		(2000.0)	P			Q				
<i>n</i>	0.17284407	ω	70.40708	+0.24220592		+0.94638084					
<i>a</i>	3.1917808	Ω	215.86847	−0.96915541		+0.22565061					
<i>e</i>	0.1680286	<i>i</i>	21.39828	−0.04554220		+0.23118197					
<i>P</i>	5.70	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	3				
Residuals in seconds of arc											
1998 04 21	704	0.0	0.5+	1998 05 01	704	0.5+	0.1−	1999 08 11	704	0.2−	0.2−
1998 04 21	704	0.3−	0.7+	1998 05 01	699	0.1−	0.0	1999 08 11	704	0.4−	0.1+
1998 04 21	704	0.9−	0.3+	1998 05 01	704	0.1+	0.4+	1999 08 11	704	0.8−	0.0
1998 04 21	704	1.2+	1.4−	1998 05 01	699	0.4+	0.8−	1999 09 10	704	1.1+	0.3+
1998 04 21	704	0.8+	0.9+	1998 05 01	699	0.8−	0.0	1999 09 10	704	0.9+	0.4−
1998 04 22	704	0.5−	0.1−	1998 05 01	704	0.2+	0.2−	1999 09 10	704	0.0	0.1−
1998 04 22	704	0.1+	0.1+	1998 05 01	704	1.2+	0.1+	1999 09 10	704	0.5+	0.3−
1998 04 22	704	0.4+	0.6−	1998 05 23	691	0.7−	1.0+	1999 09 16	704	0.4−	0.5−
1998 04 22	704	0.5−	0.1+	1998 05 23	691	0.8−	0.9+	1999 09 16	704	0.3−	0.5−
1998 04 22	704	0.1+	0.3−	1998 05 23	691	0.9−	0.8+	1999 09 16	704	0.3+	0.5+
1998 04 30	699	0.1−	0.1+	1999 06 21	704	0.2+	0.5−	1999 09 16	704	0.2+	0.6+
1998 04 30	699	0.0	0.7−	1999 06 21	704	0.5−	0.1−	1999 09 16	704	0.4−	0.2+
1998 04 30	699	0.6+	1.0−	1999 06 21	704	0.5+	0.0				
1998 05 01	704	0.1−	0.7−	1999 06 21	704	0.9−	0.5+				

1998 HD₅₂ = 1977 RH₁₇ = 1995 SS₁₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	85.75636		(2000.0)	P			Q				
n	0.27343668	ω	120.58516	+0.11300735		+0.99358323					
a	2.3508858	Ω	155.90223	−0.91546804		+0.10594316					
e	0.1949003	i	0.65386	−0.38619634		+0.03960325					
P	3.60	H	16.0	G	0.15	U	1				
Residuals in seconds of arc											
1977 09 09	675	0.3+	1.0−	1995 09 22	691	0.5−	0.1+	1998 04 30	699	1.4+	0.6−
1977 09 10	675	0.6+	1.2−	1995 09 23	809	0.2+	0.9−	1998 04 30	699	0.6+	0.1−
1992 11 24	691	0.4−	0.2+	1995 09 23	809	(7.1+ 2.9−)		1998 05 01	704	0.0	0.4−
1992 11 24	691	0.0	0.2+	1995 09 24	809	0.1+	0.3+	1998 05 01	704	0.5+	0.6+
1992 11 24	691	0.2+	0.4+	1995 09 27	691	0.8−	0.2+	1998 05 01	699	1.2+	0.4−
1995 08 25	809	0.3−	1.0+	1995 09 27	691	0.0	0.3+	1998 05 01	699	0.4+	0.7+
1995 08 26	809	0.3+	0.8+	1995 09 27	691	0.1−	0.1+	1998 05 01	704	0.0	0.5−
1995 09 01	809	0.3+	0.3+	1998 04 21	704	0.8−	0.2+	1998 05 01	699	0.9−	0.7−
1995 09 18	691	0.4−	0.6+	1998 04 21	704	0.1−	0.7−	1998 05 01	704	0.2+	0.8+
1995 09 18	691	0.6−	0.4+	1998 04 21	704	0.9+	0.1−	1998 05 01	704	0.0	1.0+
1995 09 18	809	1.8+	0.1−	1998 04 21	704	0.6−	0.7+	1998 05 16	704	0.5−	1.4+
1995 09 18	691	0.6−	0.4+	1998 04 21	704	1.3−	1.5+	1998 05 16	704	0.7−	1.0+
1995 09 19	809	1.0+	0.1+	1998 04 22	704	0.4+	0.1+	1998 05 16	704	0.9−	2.0−
1995 09 19	809	0.3−	0.3−	1998 04 22	704	0.3+	0.7−	1998 05 16	704	(2.1− 2.9−)	
1995 09 20	809	0.1+	0.2−	1998 04 22	704	0.0	1.1−	1998 05 20	691	0.2−	0.5+
1995 09 22	809	1.0+	1.0−	1998 04 22	704	0.4−	0.2−	1998 05 20	691	0.1−	0.6+
1995 09 22	691	1.4−	0.2+	1998 04 22	704	0.6−	1.4−	1998 05 20	691	0.1−	0.5+
1995 09 22	691	0.8−	0.0	1998 04 30	699	1.3+	0.4−				

1998 HL₅₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	79.29419		(2000.0)			P		Q			
<i>n</i>	0.23858257	ω	199.28302			−0.15231536		+0.96329994			
<i>a</i>	2.5746028	Ω	62.49117			−0.87089264		−0.02508324			
<i>e</i>	0.0190218	<i>i</i>	14.43033			−0.46727511		−0.26725278			
<i>P</i>	4.13	<i>H</i>	13.5			<i>G</i>	0.15	<i>U</i>	2		
Residuals in seconds of arc											
1992 11 28	691	0.1+	0.0	1998 05 22	704	0.4+	0.4−	1998 06 30	699	0.5−	0.6+
1992 11 28	691	0.0	0.2+	1998 05 22	704	0.8+	0.3+	1998 07 11	426	0.5−	0.6−
1992 11 28	691	0.0	0.2+	1998 05 22	699	0.7+	1.0+	1998 07 11	426	0.5−	0.1−

1998 04 22	704	0.3−	0.5+	1998 05 22	699	0.2+	0.5+	1998 07 11	426	0.2−	0.6−
1998 04 22	704	1.2−	0.3+	1998 05 22	699	0.9+	0.1+	1998 07 22	426	0.5−	0.2−
1998 04 22	704	0.3−	0.5+	1998 05 24	704	0.7+	0.1+	1998 07 22	426	0.8−	0.2−
1998 04 22	704	0.4−	1.4+	1998 05 24	704	0.8+	0.0	1998 08 05	426	0.6−	0.2−
1998 04 22	704	0.5−	1.7+	1998 05 24	704	0.3+	1.8−	1998 08 05	426	0.4+	0.6−
1998 04 27	426	0.2−	0.6+	1998 05 24	704	1.5+	0.3−	1998 08 12	426	0.4−	0.4−
1998 04 27	426	0.2+	0.0	1998 05 24	704	1.4+	0.3−	1998 08 12	426	0.7−	0.3−
1998 05 05	426	0.1−	0.2−	1998 06 14	426	0.4−	0.1−	1998 08 12	426	0.8−	0.2+
1998 05 05	426	0.2+	0.3−	1998 06 14	426	0.3−	0.1−	1999 09 04	426	0.3+	0.2+
1998 05 05	426	0.1−	0.3−	1998 06 14	426	0.1−	0.3−	1999 09 04	426	0.0	0.0
1998 05 15	426	0.5−	0.6−	1998 06 16	704	0.9+	0.3−	1999 09 04	426	0.4+	0.2+
1998 05 15	426	0.3−	0.4−	1998 06 16	704	1.1+	0.8+	1999 09 09	426	0.1+	0.1−
1998 05 15	426	0.3−	0.4−	1998 06 16	704	0.3+	0.6+	1999 09 09	426	0.2+	0.5−
1998 05 17	426	0.3+	0.5−	1998 06 16	704	1.3−	0.9+	1999 09 09	426	0.2−	0.2−
1998 05 17	426	0.0	0.4−	1998 06 16	704	0.8−	1.7+	1999 09 11	704	0.4−	0.0
1998 05 17	426	0.1+	0.5−	1998 06 21	426	0.1+	0.6−	1999 09 11	704	0.5−	0.2−
1998 05 22	704	1.0+	0.6−	1998 06 21	426	0.1−	0.1−	1999 09 11	704	0.4−	0.2+
1998 05 22	704	(2.1+ 0.3−)		1998 06 30	699	0.1−	0.4+	1999 09 11	704	0.3−	0.8+
1998 05 22	704	(3.1− 0.3−)		1998 06 30	699	1.2−	0.3+	1999 09 11	704	0.1+	0.9+

1998 HH₅₅

Id. M. Tichý (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	97.60388		(2000.0)	P			Q				
n	0.27081440	ω	31.44733	−0.27470702			+0.96137570				
a	2.3660371	Ω	222.61484	−0.88734661			−0.26032782				
e	0.1927121	i	1.44821	−0.37034044			−0.08936547				
P	3.64	H	15.0	G	0.15	U	4				
Residuals in seconds of arc											
1998 03 25	704	0.0	0.2−	1998 04 04	699	0.1+	0.1+	1998 05 16	704	0.7−	0.6+
1998 03 25	704	0.5+	0.3+	1998 04 04	699	0.7+	0.3−	1998 05 16	704	0.8−	0.7−
1998 03 25	704	0.4−	1.4+	1998 04 04	699	0.4+	0.8+	1999 09 12	046	0.2+	0.2−
1998 03 25	699	0.2+	0.9+	1998 04 21	704	0.3−	0.1+	1999 09 12	557	0.1+	0.1−
1998 03 25	704	0.8+	1.9+	1998 04 21	704	0.1−	0.2+	1999 09 12	046	0.2+	0.0
1998 03 25	699	0.4+	0.5−	1998 04 21	704	0.3+	0.3−	1999 09 12	557	0.6−	0.2−
1998 03 25	699	0.3−	0.5−	1998 04 21	704	0.0	0.6−	1999 09 12	046	0.5+	0.4−
1998 03 25	704	0.6−	0.1−	1998 04 21	704	0.2+	1.2−	1999 09 12	046	0.0	0.0
1998 03 29	704	0.0	0.4−	1998 04 22	704	0.4−	0.1+	1999 09 12	557	0.6−	0.3−
1998 03 29	704	0.3+	0.7−	1998 04 22	704	0.1+	0.1−	1999 09 12	046	0.0	0.3+
1998 03 29	704	0.7−	0.0	1998 04 22	704	0.4−	0.5−	1999 09 12	557	0.3−	0.1−
1998 03 29	704	0.2−	0.0	1998 04 22	704	0.2−	0.1−	1999 09 12	046	0.4+	0.2+
1998 03 29	704	0.1−	0.9−	1998 04 22	704	0.5−	0.8−	1999 09 12	046	0.5+	0.3+
1998 04 01	704	0.1+	0.2−	1998 04 25	699	0.4+	0.2−	1999 09 12	557	0.2−	0.2−
1998 04 01	704	0.2+	0.1+	1998 04 25	699	0.1−	0.1+	1999 09 12	557	0.3+	0.3−
1998 04 01	704	0.1+	0.6−	1998 04 25	699	0.3−	0.1+	1999 09 13	557	0.0	0.1+
1998 04 01	704	0.3−	0.1−	1998 05 16	704	0.8+	0.8+	1999 09 13	557	0.2−	0.0
1998 04 01	704	0.4−	0.2−	1998 05 16	704	1.1+	1.4+				

1998 HR₆₃ = 1999 RB₄₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	347.75925		(2000.0)	P			Q				
n	0.21254102	ω	243.85991		+0.87520521		+0.47773157				
a	2.7808285	Ω	87.51935		-0.41218572		+0.81877097				
e	0.0958800	i	4.36746		-0.25321684		+0.31841270				
P	4.64	H	14.3	G	0.15		U	4			
Residuals in seconds of arc											
1998 03 25	691	0.4-	0.0	1998 04 22	704	0.6-	0.5-	1999 08 13	703	0.8-	0.0
1998 03 25	691	0.4-	0.1-	1998 04 22	704	0.9-	0.4+	1999 08 13	703	0.7-	0.3-
1998 03 25	691	0.5-	0.3+	1998 04 22	704	0.0	0.0	1999 08 13	703	0.1-	1.6-
1998 04 21	704	0.1+	0.0	1998 04 22	704	0.8-	0.1+	1999 09 07	704	0.4+	0.6-
1998 04 21	704	0.9-	0.1+	1998 05 19	910	0.1+	0.1+	1999 09 07	704	0.1+	0.4-
1998 04 21	704	0.4-	0.2-	1998 05 19	910	0.1+	0.3-	1999 09 07	704	0.4+	0.9-
1998 04 21	704	0.2+	0.2-	1998 05 19	910	0.1-	0.0	1999 09 07	704	0.0	0.3+
1998 04 21	704	0.2-	1.0+	1999 07 14	704	0.9+	0.3+	1999 09 11	704	0.2+	0.3+

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1998 04 21	910	1.4+	0.3−	1999 07 14	704	0.5+	1.1+	1999 09 11	704	0.5−	0.2+
1998 04 22	910	1.4+	0.1−	1999 07 14	704	0.2+	0.4+	1999 09 11	704	0.0	0.4+
1998 04 22	910	1.2+	0.3−	1999 07 14	704	0.1−	0.4+	1999 09 11	704	0.1+	0.2+
1998 04 22	704	0.5+	0.2−	1999 08 13	703	0.6−	0.0	1999 09 11	704	0.1+	0.3+

1998 HQ₆₈ = 1999 RJ₁₂₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	331.93625		(2000.0)	P		Q	
<i>n</i>	0.27347389	ω	137.93229	+0.96440263		−0.24831138	
<i>a</i>	2.3506725	Ω	236.66337	+0.20420057		+0.91779015	
<i>e</i>	0.1233037	<i>i</i>	6.24867	+0.16801696		+0.30984301	
<i>P</i>	3.60	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	0.8−	1.0+	1998 05 19	691	(4.4+	5.8−)	1999 09 09	704	0.0	0.1−
1998 04 21	704	0.7+	0.6−	1998 05 19	691	0.1−	0.1−	1999 09 10	704	0.4+	0.1−
1998 04 21	704	0.2−	0.7−	1998 05 19	691	0.2−	0.1+	1999 09 10	704	0.6−	0.2−
1998 04 21	704	0.6−	0.2+	1998 05 20	691	0.1+	0.2+	1999 09 10	704	0.1−	0.0
1998 04 21	704	0.1−	0.3−	1998 05 20	691	0.1−	0.0	1999 09 12	699	0.3−	0.4+
1998 04 22	704	0.4+	0.4−	1998 05 20	691	0.0	0.1+	1999 09 12	699	0.0	0.3−
1998 04 22	704	0.1−	0.3−	1999 09 08	704	0.1+	0.1−	1999 09 12	699	0.6−	0.2+
1998 04 22	704	0.1+	0.4+	1999 09 08	704	0.5+	0.5−	1999 09 16	704	0.3+	0.4−
1998 04 22	704	1.1−	0.0	1999 09 08	704	0.3+	0.2−	1999 09 16	704	0.3+	0.6+
1998 04 22	704	1.2+	1.8−	1999 09 09	704	0.0	0.1−	1999 09 16	704	0.8+	0.5+
1998 04 25	699	0.2+	0.7+	1999 09 09	704	0.1−	0.4+	1999 09 16	704	0.3+	0.2−
1998 04 25	699	0.4−	0.9+	1999 09 09	704	0.9−	0.1−				
1998 04 25	699	1.0+	0.6+	1999 09 09	704	0.3−	0.0				

1998 HR₈₄ = 1999 RY₁₀₃

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	59.89149		(2000.0)	P		Q	
<i>n</i>	0.23270338	ω	69.40965	+0.01831850		+0.99531797	
<i>a</i>	2.6177867	Ω	202.28734	−0.98497565		+0.00166272	
<i>e</i>	0.0687214	<i>i</i>	14.49155	−0.17171893		+0.09664040	
<i>P</i>	4.24	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 03 29	910	0.3−	0.5−	1998 05 01	704	(0.3+	2.6+)	1999 09 05	703	0.8−	0.7−
1998 03 29	910	0.2−	1.2−	1998 05 01	704	(3.5−	0.3+)	1999 09 05	703	0.2+	1.5+
1998 03 29	910	0.5−	1.5−	1998 05 22	704	0.7−	0.8−	1999 09 05	703	1.1+	0.5+
1998 04 21	704	0.0	0.4+	1998 05 22	704	0.8−	0.2−	1999 09 08	704	0.5+	0.2+
1998 04 21	704	0.4+	0.3+	1998 05 22	704	0.7−	0.4+	1999 09 08	704	0.1+	0.0
1998 04 21	704	0.3−	0.3+	1998 05 22	704	0.5+	1.7−	1999 09 08	704	0.5−	0.6−
1998 04 21	704	1.5+	0.0	1998 05 23	704	0.4+	0.7+	1999 09 08	704	0.4+	0.3−
1998 04 21	704	0.5−	1.6+	1998 05 23	704	1.3+	0.0	1999 09 09	704	0.5+	0.1+
1998 04 22	704	0.3+	0.3+	1998 05 23	704	0.4−	1.2−	1999 09 09	704	0.3−	0.7−
1998 04 22	704	0.6+	0.1+	1998 05 23	704	0.9−	0.1−	1999 09 09	704	0.2+	0.4−
1998 04 22	704	0.3−	0.5+	1998 05 23	704	0.9+	0.9+	1999 09 09	704	0.4−	0.2−
1998 04 22	704	0.4+	0.6+	1998 05 25	699	0.1−	1.0−	1999 09 09	704	0.0	0.1−
1998 04 22	704	0.2−	0.6+	1998 05 25	699	0.4+	0.5−	1999 09 12	699	0.7+	0.2−
1998 05 01	704	0.3−	1.1+	1998 05 25	699	0.2+	0.6−	1999 09 12	699	0.8−	0.8+
1998 05 01	704	0.7−	1.0+	1999 09 05	703	0.8−	0.4−	1999 09 12	699	0.0	0.7+

1998 HL₈₆ = 1999 RR₁₈₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	338.55920		(2000.0)	P		Q	
<i>n</i>	0.26416030	ω	342.46921	+0.99057676		−0.12325268	
<i>a</i>	2.4056052	Ω	24.84556	+0.13638991		+0.84804469	
<i>e</i>	0.1009688	<i>i</i>	8.17120	+0.01246914		+0.51539206	
<i>P</i>	3.73	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1994 04 02	691	0.0	0.1−	1998 04 22	704	0.7+	0.3+	1999 09 09	704	0.5−	1.1−
1994 04 02	691	0.2−	0.2−	1998 05 01	704	1.1+	1.4−	1999 09 09	704	0.1+	0.3+

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1994 04 02	691	0.1+	0.2+	1998 05 01	704	0.5+	0.6+	1999 09 09	704	0.2+	0.0
1998 04 21	704	0.9+	1.5−	1998 05 01	704	0.0	0.2−	1999 09 09	704	0.2+	0.1+
1998 04 21	704	0.8−	0.3+	1998 05 01	704	0.5−	0.2+	1999 09 09	704	0.4+	0.7+
1998 04 21	704	1.9−	1.0−	1998 05 01	704	(3.2−	0.1−)	1999 09 13	704	0.2−	0.1+
1998 04 21	704	(1.1−	2.6+)	1998 05 16	691	0.0	0.1+	1999 09 13	704	0.3−	0.1−
1998 04 21	704	0.1−	1.3+	1998 05 16	691	0.3+	0.1+	1999 09 13	704	0.0	0.3−
1998 04 22	704	0.4−	1.3+	1998 05 16	691	0.3+	0.3+	1999 09 13	704	0.2+	0.3+
1998 04 22	704	0.3+	0.4−	1998 05 23	691	0.5−	0.2−				
1998 04 22	704	0.1+	0.4+	1998 05 23	691	0.1−	0.2−				

1998 HH₈₇ = 1999 RT₂₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	17.08379		(2000.0)	P		Q	
<i>n</i>	0.25345967	ω	89.29672	+0.89447410		+0.44018212	
<i>a</i>	2.4728445	Ω	244.58511	−0.43695982		+0.82339026	
<i>e</i>	0.1472889	<i>i</i>	4.98330	−0.09477446		+0.35814547	
<i>P</i>	3.89	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	0.7+	1.1−	1998 04 22	704	1.0−	0.9−	1999 09 08	704	0.3−	0.0
1998 04 21	704	0.6+	0.9+	1998 05 24	691	0.3−	0.3+	1999 09 08	704	0.7−	1.4−
1998 04 21	704	0.0	0.5+	1998 05 24	691	0.6−	0.1−	1999 09 18	704	0.1+	0.3−
1998 04 21	704	0.5−	0.2+	1998 05 27	691	0.2+	0.3+	1999 09 18	704	0.3+	0.1−
1998 04 22	704	0.0	1.8+	1998 05 27	691	0.3+	0.1−	1999 09 18	704	0.1+	0.1+
1998 04 22	704	1.3+	0.3−	1998 05 27	691	0.6+	0.2−	1999 09 18	704	0.4+	0.1−
1998 04 22	704	0.5−	1.2−	1999 09 08	704	0.0	1.2+	1999 09 18	704	0.0	0.1+
1998 04 22	704	0.8−	0.2−	1999 09 08	704	0.1+	0.3+				

1998 HV₈₇ = 1999 RV₁₉₄

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	8.62468		(2000.0)	P		Q	
<i>n</i>	0.18806982	ω	84.51025	+0.70197352		+0.69385268	
<i>a</i>	3.0171019	Ω	231.42679	−0.70726433		+0.65262970	
<i>e</i>	0.1722116	<i>i</i>	11.85626	−0.08372786		+0.30437302	
<i>P</i>	5.24	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 04 21	704	0.3+	0.9−	1998 05 01	704	0.4+	0.4−	1999 09 07	703	0.2−	1.1+
1998 04 21	704	0.4−	0.7−	1998 05 22	704	0.9−	0.3+	1999 09 07	703	0.9−	0.9+
1998 04 21	704	0.3−	0.3+	1998 05 22	704	0.5−	1.3+	1999 09 08	699	0.1+	0.3+
1998 04 21	704	0.9−	0.8+	1998 05 22	704	0.2+	0.6+	1999 09 08	699	0.6−	0.7+
1998 04 21	704	1.0−	1.5+	1998 05 22	704	(4.0−	0.3−)	1999 09 08	704	0.5+	0.4−
1998 04 22	704	0.2−	1.4+	1998 05 23	691	0.6−	0.9+	1999 09 08	699	0.6−	1.0+
1998 04 22	704	(0.5+	2.9−)	1998 05 23	691	0.5−	0.1+	1999 09 08	704	0.2+	1.2−
1998 04 22	704	0.4+	0.4−	1998 05 31	691	0.4+	0.6+	1999 09 08	704	0.2−	0.2−
1998 04 22	704	0.7+	1.1−	1998 05 31	691	0.1+	0.8+	1999 09 08	704	0.0	0.1−
1998 04 22	704	0.0	1.1−	1998 05 31	691	0.7+	0.5+	1999 09 08	704	0.2+	0.3−
1998 04 25	699	0.4−	0.1−	1999 07 22	704	0.0	0.4−	1999 09 16	704	0.2+	0.0
1998 04 25	699	1.2+	0.3−	1999 07 22	704	0.4−	0.7−	1999 09 16	704	1.0+	0.1+
1998 04 25	699	0.0	0.5+	1999 07 22	704	0.4−	0.0	1999 09 16	704	0.7+	0.2−
1998 05 01	704	0.2+	0.0	1999 07 22	704	0.2−	1.1−	1999 09 16	704	0.3+	0.1−
1998 05 01	704	0.1+	1.5−	1999 07 22	704	0.3−	0.1+	1999 09 16	704	0.1+	1.0−
1998 05 01	704	0.1+	1.6−	1999 09 07	703	0.4+	0.7+				
1998 05 01	704	0.9+	1.0−	1999 09 07	703	0.0	0.4+				

1998 HD₈₈ = 1999 RH₂₈

Id. M. Tichý

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

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1999 SEPT. 28

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Residuals in seconds of arc

1998 04 21	704	0.4+	0.5-	1998 05 01	704	0.4+	0.5+	1999 09 08	557	0.4+	0.1+
1998 04 21	704	0.9-	0.8+	1998 05 16	691	0.5-	0.3+	1999 09 08	557	0.2+	0.1-
1998 04 21	704	0.7-	1.2+	1998 05 16	691	0.3-	0.3+	1999 09 08	046	0.9-	0.1+
1998 04 21	704	0.9-	1.1+	1998 05 16	691	0.1-	0.4+	1999 09 08	046	0.8-	0.2-
1998 04 21	704	0.0	1.4+	1998 05 18	691	1.5+	0.6+	1999 09 08	046	0.5-	0.1-
1998 04 22	704	0.6-	0.6-	1998 05 18	691	0.7+	0.4+	1999 09 08	046	0.4-	0.2+
1998 04 22	704	0.5-	0.7-	1998 05 18	691	1.0+	0.3+	1999 09 08	046	0.8-	0.3-
1998 04 22	704	0.2-	1.2-	1998 05 26	691	0.3-	0.2+	1999 09 10	046	0.1+	0.2+
1998 04 22	704	0.8+	1.4-	1998 05 26	691	0.4-	0.1+	1999 09 10	046	0.9+	0.1+
1998 04 22	704	0.3+	1.5-	1998 05 26	691	0.0	0.9-	1999 09 10	046	0.1-	0.3+
1998 05 01	704	0.4-	0.1-	1998 06 01	691	0.8-	0.0	1999 09 10	046	0.3+	0.1+
1998 05 01	704	0.6+	0.2-	1998 06 01	691	0.5-	0.3+	1999 09 10	557	0.9+	0.4-
1998 05 01	704	0.8+	0.4-	1998 06 01	691	0.7-	0.2+	1999 09 10	557	0.6+	0.1-
1998 05 01	704	0.8+	0.8-	1999 09 08	557	0.4+	0.1-				

1998 HX₉₁ = 1999 RE₁₅₂

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
303.97747		(2000.0)			
<i>n</i>	0.26235566	ω	228.35726	+0.79659863	-0.60426160
<i>a</i>	2.4166240	Ω	168.78174	+0.57767330	+0.75250360
<i>e</i>	0.0775353	<i>i</i>	5.09530	+0.17811284	+0.26192794
<i>P</i>	3.76	<i>H</i>	14.4	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1997 05 14	691	0.3-	0.6-	1998 05 22	704	0.8-	1.5-	1999 09 05	699	0.6-	0.7+
1997 05 14	691	0.2+	0.5-	1998 05 22	704	1.0-	0.6-	1999 09 05	699	0.0	1.0+
1997 05 14	691	0.1-	0.2-	1998 05 22	704	0.5+	0.2+	1999 09 07	704	0.5-	0.5-
1998 04 21	704	0.0	0.1-	1998 05 23	704	0.6-	0.4+	1999 09 07	704	0.3-	0.8-
1998 04 21	704	0.2-	0.5+	1998 05 23	704	(2.5-	1.2-)	1999 09 07	704	0.2-	0.5-
1998 04 21	704	0.2+	1.9-	1998 05 23	704	0.4+	0.9+	1999 09 07	704	0.5-	0.4-
1998 04 21	704	1.3-	0.2-	1998 05 23	704	0.3+	0.9+	1999 09 07	704	0.1-	0.1-
1998 04 21	704	0.9+	0.1+	1998 05 23	704	(0.1-	2.5-)	1999 09 09	704	0.2-	0.4-
1998 04 22	704	0.5-	0.4+	1998 05 24	704	0.6+	0.6+	1999 09 09	704	0.4-	1.1-
1998 04 22	704	0.7+	0.0	1998 05 24	704	1.1+	1.3-	1999 09 09	704	0.3+	0.1-
1998 04 22	704	0.0	0.3+	1998 05 24	704	(0.8+	2.1+)	1999 09 09	704	0.9+	0.6+
1998 04 22	704	0.6-	1.1-	1998 05 24	704	1.0-	0.5+	1999 09 14	704	0.1+	0.4-
1998 04 22	704	0.2-	0.1+	1998 05 24	704	0.2+	1.0+	1999 09 14	704	0.4+	0.2+
1998 05 01	704	0.3-	0.9+	1999 08 08	699	0.6+	0.5-	1999 09 14	704	0.0	0.4-
1998 05 01	704	(2.0+	2.6+)	1999 08 08	699	0.0	0.5+	1999 09 14	704	0.1-	0.0
1998 05 01	704	0.7+	0.3+	1999 08 08	699	0.7+	0.3+	1999 09 14	704	0.5+	0.2-
1998 05 01	704	0.6+	0.2-	1999 09 05	699	0.2-	1.0+				

1998 HQ₉₂

Id. E. Bowell (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
72.38693		(2000.0)			
<i>n</i>	0.16979097	ω	170.48329	-0.68603367	+0.72715093
<i>a</i>	3.2299291	Ω	56.19498	-0.66947074	-0.61760293
<i>e</i>	0.1091645	<i>i</i>	1.70233	-0.28489775	-0.29969675
<i>P</i>	5.80	<i>H</i>	13.6	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1994 09 30	691	0.1+	0.3-	1998 05 01	704	0.4-	0.3+	1998 05 22	699	0.4+	0.6+
1994 09 30	691	0.0	0.4-	1998 05 01	699	0.2-	1.3+	1998 05 22	704	0.5-	0.6-
1994 09 30	691	0.3+	0.2-	1998 05 01	704	0.8-	1.0+	1999 07 14	704	0.4+	0.1+
1998 04 21	704	0.2-	0.1+	1998 05 01	699	1.0-	0.0	1999 07 14	704	0.8+	0.2+
1998 04 21	704	0.2+	1.0-	1998 05 01	704	0.0	0.2+	1999 07 14	704	1.0+	0.5+
1998 04 21	704	0.3+	0.5-	1998 05 01	704	0.1+	0.5+	1999 07 14	704	0.0	0.1-
1998 04 21	704	0.3-	0.4-	1998 05 18	699	0.9+	0.5-	1999 07 14	704	0.3+	0.5-
1998 04 21	704	(3.8-	0.5+)	1998 05 18	699	0.1-	0.8+	1999 07 20	699	0.5-	0.1+
1998 04 22	704	0.2+	0.1+	1998 05 18	699	0.7+	0.5+	1999 07 20	699	0.1+	0.9+
1998 04 22	704	0.3+	0.4-	1998 05 22	704	0.1+	0.2-	1999 07 20	699	0.0	0.2+
1998 04 22	704	0.2-	0.7-	1998 05 22	704	0.8+	0.1+	1999 08 07	699	0.0	0.2+
1998 04 22	704	0.2-	0.9-	1998 05 22	704	0.6+	1.4+	1999 08 07	699	2.0-	0.2-

1998 04 22	704	0.3-	1.3-	1998 05 22	699	0.5+	1.5-	1999 08 07	699	0.3-	1.1-
1998 05 01	704	0.4-	0.3+	1998 05 22	699	0.5+	1.1+				
1998 05 01	699	0.7-	0.2-	1998 05 22	704	0.6-	0.8-				

1998 HY₉₃ = 1999 RF₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
27.86351		(2000.0)			
<i>n</i>	0.17329706	ω	275.85990	+0.22607334	+0.97404729
<i>a</i>	3.1862163	Ω	7.23467	-0.85530679	+0.20393108
<i>e</i>	0.1070885	<i>i</i>	5.04666	-0.46619862	+0.09820381
<i>P</i>	5.69	<i>H</i>	13.1	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	0.4-	0.2+	1998 05 22	704	0.4-	0.7+	1999 09 08	704	0.4-	0.7-
1998 04 21	704	0.2-	0.3+	1998 05 22	704	0.6+	0.4-	1999 09 08	704	0.1-	1.1-
1998 04 21	704	0.1+	0.4+	1998 05 22	704	0.6+	0.0	1999 09 08	704	0.5-	0.6-
1998 04 21	704	(2.3-	0.2+)	1998 05 24	704	0.1-	0.5+	1999 09 09	704	0.3-	0.3-
1998 04 21	704	(4.3-	2.3+)	1998 05 24	704	0.1-	0.3-	1999 09 09	704	0.0	0.0
1998 04 22	704	0.5+	0.1+	1998 05 24	704	0.2+	0.1-	1999 09 09	704	0.6+	0.3-
1998 04 22	704	0.3+	0.5+	1998 05 24	704	1.0+	0.1+	1999 09 09	704	0.2+	0.0
1998 04 22	704	0.4-	0.1+	1998 05 24	704	0.1-	0.6-	1999 09 09	704	0.3-	0.2-
1998 04 22	704	0.3+	0.7-	1999 09 07	704	0.2-	0.2+	1999 09 11	704	0.3+	0.4+
1998 04 22	704	0.1-	0.7-	1999 09 07	704	0.2+	0.7-	1999 09 11	704	0.3+	1.1+
1998 05 03	566	0.3-	0.3-	1999 09 07	704	0.8+	1.2+	1999 09 11	704	0.4-	0.6-
1998 05 03	566	0.4+	0.0	1999 09 07	704	1.0+	0.9+	1999 09 11	704	0.1+	0.1+
1998 05 03	566	0.3-	0.2-	1999 09 07	704	0.6-	0.1+	1999 09 11	704	0.2-	0.9+
1998 05 22	704	0.7-	0.2-	1999 09 08	704	0.7-	0.5-				
1998 05 22	704	0.9-	0.4+	1999 09 08	704	0.1+	0.0				

1998 HR₉₄ = 1999 RE₂₀₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
61.09503		(2000.0)			
<i>n</i>	0.22474939	ω	59.50639	+0.09971050	+0.98684145
<i>a</i>	2.6791912	Ω	216.89377	-0.97006250	+0.06794164
<i>e</i>	0.1495446	<i>i</i>	12.24110	-0.22144200	+0.14672385
<i>P</i>	4.39	<i>H</i>	13.5	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	0.4+	0.3-	1998 04 28	566	0.2-	0.1+	1998 05 24	704	0.4-	0.9+
1998 04 21	704	0.6-	0.5+	1998 04 28	566	0.4-	0.0	1998 05 24	704	0.3+	0.5+
1998 04 21	704	0.1-	0.3+	1998 05 01	704	0.3-	0.9-	1998 05 24	704	0.7-	0.5+
1998 04 21	704	0.6-	0.7+	1998 05 01	704	0.2+	0.7-	1999 09 08	704	0.3-	0.1+
1998 04 21	704	0.2-	1.4+	1998 05 01	704	0.5-	0.2+	1999 09 08	704	0.5-	0.3-
1998 04 22	704	0.4+	0.3+	1998 05 01	704	0.5+	0.6-	1999 09 08	704	0.0	0.4-
1998 04 22	704	0.5+	0.1-	1998 05 01	704	0.2+	0.1+	1999 09 08	704	0.3-	0.6-
1998 04 22	704	0.4-	0.9-	1998 05 22	704	0.1+	0.1+	1999 09 08	704	0.4-	0.6-
1998 04 22	704	0.2-	0.4-	1998 05 22	704	0.8+	0.5-	1999 09 18	704	0.2+	0.5+
1998 04 22	704	1.2+	0.8-	1998 05 22	704	0.0	0.3+	1999 09 18	704	0.8+	0.9+
1998 04 25	699	0.2+	0.0	1998 05 22	704	0.6+	0.5-	1999 09 18	704	0.2-	0.3+
1998 04 25	699	0.2+	0.2-	1998 05 22	704	1.1+	1.3+	1999 09 18	704	0.8+	0.0
1998 04 25	699	0.0	0.1+	1998 05 24	704	0.4+	0.6-	1999 09 18	704	0.2-	0.2+
1998 04 28	566	0.1+	0.1+	1998 05 24	704	2.6-	1.0-				

1998 HB₉₅ = 1999 RU₅₂

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

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1992 02 09	691	0.2+	0.4+	1998 05 01	704	0.4-	0.0	1999 09 03	699	0.9+	1.0-
1998 04 21	704	0.1+	0.3+	1998 05 22	704	1.1+	0.0	1999 09 03	699	0.5-	0.5+
1998 04 21	704	0.0	0.1-	1998 05 22	704	0.4+	0.5-	1999 09 07	704	0.2-	0.2+
1998 04 21	704	0.1+	0.1-	1998 05 22	704	0.7-	0.3+	1999 09 07	704	0.2+	0.2-
1998 04 21	704	0.3-	0.4-	1998 05 24	704	0.4-	1.5+	1999 09 07	704	0.8+	0.0
1998 04 21	704	0.4+	0.6+	1998 05 24	704	0.5+	0.5+	1999 09 07	704	0.8-	0.1+
1998 04 22	704	0.1-	0.5+	1998 05 24	704	(1.4+	2.5+)	1999 09 07	704	0.1+	1.0-
1998 04 22	704	0.6+	0.3+	1998 05 24	704	0.3-	0.6+	1999 09 13	699	0.4-	0.0
1998 04 22	704	1.0+	0.8-	1998 05 24	704	1.7-	0.5-	1999 09 13	704	0.1+	0.2+
1998 04 22	704	0.4-	0.0	1998 05 28	699	0.1+	0.3+	1999 09 13	699	0.1+	1.0+
1998 04 22	704	0.8+	0.2-	1998 05 28	699	0.4+	0.3+	1999 09 13	704	0.7+	0.3+
1998 04 28	566	0.0	0.9-	1998 05 28	699	0.8+	0.5-	1999 09 13	704	0.2-	0.1-
1998 04 28	566	0.2+	1.0-	1999 07 16	704	0.4+	0.4+	1999 09 13	704	0.3+	0.3-
1998 04 28	566	0.1+	1.1-	1999 07 16	704	0.2-	0.1+	1999 09 13	699	0.5-	0.3+
1998 04 29	120	1.1-	0.1-	1999 07 16	704	0.5-	0.5-	1999 09 13	704	0.1+	0.8+
1998 04 29	120	1.2-	0.3-	1999 08 07	699	0.7-	0.4+				
1998 05 01	704	0.6+	0.9+	1999 08 07	699	0.4-	0.2+				

1998 HC₉₅ = 1999 RY₇₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	249.57075		(2000.0)		P		Q
<i>n</i>	0.29894141	ω	7.25687	-0.17059574			-0.98343856
<i>a</i>	2.2151952	Ω	92.57937	+0.90092661			-0.18083332
<i>e</i>	0.0816317	<i>i</i>	3.51237	+0.39903426			-0.01216155
<i>P</i>	3.30	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	0.1-	0.8-	1998 05 22	704	0.4+	1.7-	1999 09 07	704	0.3-	0.0
1998 04 21	704	1.3-	0.3+	1998 05 22	704	0.4-	1.4+	1999 09 09	704	0.6-	0.2-
1998 04 21	704	(1.3-	2.5-)	1998 05 22	704	1.1-	0.1+	1999 09 09	704	0.3+	0.7+
1998 04 21	704	0.6-	1.1+	1998 05 22	704	1.8+	0.6-	1999 09 09	704	0.2+	0.5+
1998 04 22	704	0.2+	0.2-	1998 05 24	704	0.4-	0.3-	1999 09 09	704	1.1+	0.6+
1998 04 22	704	1.0+	0.3-	1998 05 24	704	(1.3-	2.7-)	1999 09 09	704	1.7+	0.5+
1998 04 22	704	0.2+	0.4-	1998 05 24	704	0.9+	0.4+	1999 09 10	704	0.2+	0.3+
1998 04 22	704	0.3-	0.6-	1998 05 24	704	0.8-	1.3+	1999 09 10	704	0.1+	0.1-
1998 04 22	704	0.2+	0.7-	1998 05 24	704	0.7-	1.4-	1999 09 10	704	0.8-	0.2-
1998 05 01	704	0.1+	0.5-	1999 09 07	704	0.5+	0.3-	1999 09 13	704	0.1-	0.0
1998 05 01	704	0.7+	1.3+	1999 09 07	704	0.9-	0.3-	1999 09 13	704	0.7-	0.2-
1998 05 01	704	0.6+	1.7+	1999 09 07	704	0.0	0.1-	1999 09 13	704	0.2-	0.3-
1998 05 01	704	0.3-	0.1-	1999 09 07	704	0.5-	0.4-	1999 09 13	704	0.1-	0.5-

1998 HC₉₆ = 1999 RA₁₄₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	278.13285		(2000.0)		P		Q
<i>n</i>	0.28748132	ω	243.75386	+0.38494219			-0.92289733
<i>a</i>	2.2736815	Ω	183.64124	+0.88906516			+0.37339785
<i>e</i>	0.1257496	<i>i</i>	8.09769	+0.24775523			+0.09399237
<i>P</i>	3.43	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1994 01 17	691	0.5-	0.6-	1998 05 01	704	0.2-	0.9-	1999 09 07	704	1.2+	0.3-
1994 01 17	691	0.3-	0.6-	1998 05 01	704	0.5-	0.0	1999 09 07	704	0.5+	0.0
1994 01 17	691	0.4+	0.8-	1998 05 01	704	0.4+	1.1+	1999 09 07	704	0.3+	0.5-
1998 04 21	704	0.0	0.3+	1998 05 22	704	1.1-	0.4+	1999 09 07	704	0.8+	0.1-
1998 04 21	704	0.8-	0.3+	1998 05 22	704	(2.1-	0.3+)	1999 09 07	704	0.6+	0.6-
1998 04 21	704	0.7-	0.1+	1998 05 22	704	1.3+	0.2+	1999 09 09	704	0.8-	0.3+
1998 04 21	704	0.0	0.3-	1998 05 22	704	0.1+	0.1+	1999 09 09	704	0.1-	0.6+
1998 04 21	704	0.5+	0.8-	1998 05 22	704	1.2-	0.0	1999 09 09	704	0.7-	0.3+
1998 04 22	704	0.4+	1.0+	1998 05 24	704	0.5+	0.9-	1999 09 09	704	0.2-	0.8-
1998 04 22	704	0.2-	0.9-	1998 05 24	704	1.4-	0.4-	1999 09 09	704	0.6-	0.1-
1998 04 22	704	0.6-	0.9-	1998 05 24	704	1.3+	0.2-	1999 09 14	704	0.1+	0.0
1998 04 22	704	(0.1+	2.1-)	1998 05 24	704	0.2+	0.2+	1999 09 14	704	0.6+	0.2-
1998 04 25	699	0.0	1.1-	1998 05 24	704	(2.7-	0.6+)	1999 09 14	704	0.4+	0.7-
1998 04 25	699	0.5+	1.0+	1999 08 08	699	0.6-	0.4+	1999 09 14	704	0.4-	0.2-
1998 04 25	699	0.5+	0.3+	1999 08 08	699	0.5-	0.0	1999 09 14	704	0.4+	0.1-
1998 05 01	704	0.4+	0.4+	1999 08 08	699	0.4-	0.2-				

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1998 HB₉₇ = 1999 RW₁₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	20.84873		(2000.0)		P		Q
<i>n</i>	0.21368740	ω	113.28328	+0.51582400			+0.85665638
<i>a</i>	2.7708740	Ω	187.78413	-0.80621187			+0.48221266
<i>e</i>	0.0191085	<i>i</i>	3.42417	-0.28973785			+0.18333247
<i>P</i>	4.61	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1993 04 17	413	0.3-	0.9-	1998 05 01	704	0.4+	0.9+	1998 05 24	704	0.3-	1.0+
1998 04 21	704	0.1-	0.6-	1998 05 01	704	0.3+	0.2-	1999 09 09	704	1.1+	0.5-
1998 04 21	704	1.1+	0.6+	1998 05 01	704	0.4-	0.6+	1999 09 09	704	0.1+	0.6-
1998 04 21	704	1.0+	0.7-	1998 05 22	704	1.2+	0.1-	1999 09 09	704	0.4-	0.7-
1998 04 21	704	0.9-	0.2+	1998 05 22	704	0.6-	0.9-	1999 09 09	704	0.0	0.6+
1998 04 21	704	0.1-	0.7+	1998 05 22	704	0.1+	0.7+	1999 09 13	704	0.1+	0.7-
1998 04 22	704	0.9-	0.2-	1998 05 22	704	0.1-	0.3-	1999 09 13	704	0.3-	1.3-
1998 04 22	704	0.6-	1.9+	1998 05 22	704	(2.8-	2.1-)	1999 09 13	704	0.4-	0.3+
1998 04 22	704	0.1-	0.1+	1998 05 24	704	0.1-	1.0-	1999 09 13	704	0.3+	0.9+
1998 04 22	704	0.3+	0.6-	1998 05 24	704	0.3-	0.4-	1999 09 13	704	0.5-	1.6+
1998 05 01	704	0.5+	1.5-	1998 05 24	704	(3.4+	0.3+)				

1998 HD₉₇ = 1999 RV₁₈₃

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	60.97564		(2000.0)		P		Q
<i>n</i>	0.22503273	ω	217.66970	+0.05450559			+0.99735314
<i>a</i>	2.6769418	Ω	55.50409	-0.90133921			+0.06988281
<i>e</i>	0.1049398	<i>i</i>	3.34743	-0.42967054			-0.02007770
<i>P</i>	4.38	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1997 01 15	566	0.1-	0.1+	1998 05 22	704	0.6-	1.0+	1999 09 07	704	0.1-	0.7-
1997 01 15	566	0.1-	0.0	1998 05 22	704	0.0	0.0	1999 09 07	704	0.4-	0.2-
1997 01 15	566	0.2+	0.2+	1998 05 22	704	0.3-	0.5+	1999 09 07	704	0.4-	0.3+
1998 04 21	704	0.3+	0.3+	1998 05 23	704	0.3-	0.3-	1999 09 07	704	0.0	1.1-
1998 04 21	704	0.6+	0.3-	1998 05 23	704	0.8-	0.8+	1999 09 07	704	0.7-	0.0
1998 04 21	704	0.5+	1.0+	1998 05 23	704	0.7+	1.0-	1999 09 09	704	0.1-	1.0-
1998 04 21	704	0.4-	1.7+	1998 05 23	704	0.9-	0.4-	1999 09 09	704	0.3-	0.4-
1998 04 21	704	0.4+	1.3+	1998 05 23	704	1.1+	0.2-	1999 09 09	704	0.6-	0.2+
1998 04 22	704	0.9+	0.4-	1998 05 24	704	0.3+	1.7-	1999 09 09	704	0.3-	0.4+
1998 04 22	704	0.6+	0.2+	1998 05 24	704	0.0	0.3-	1999 09 09	704	0.3-	0.5+
1998 04 22	704	0.3+	1.0-	1998 05 24	704	(2.8-	2.5+)	1999 09 11	699	0.0	0.1+
1998 04 22	704	0.5-	0.7-	1998 05 24	704	0.6-	0.1-	1999 09 11	699	0.9+	0.5+
1998 04 22	704	0.9-	0.5-	1999 08 22	703	0.4+	0.2+	1999 09 11	699	0.3+	0.3+
1998 05 01	704	0.2-	0.2-	1999 08 22	703	0.1-	0.4+	1999 09 14	704	0.4-	0.3-
1998 05 01	704	0.1+	0.3-	1999 08 22	703	0.5-	0.5+	1999 09 14	704	0.2-	0.5-
1998 05 01	704	0.4+	0.0	1999 08 22	703	0.2+	0.0	1999 09 14	704	0.2+	0.6-
1998 05 01	704	0.9-	0.4+	1999 09 05	699	1.6+	0.2+	1999 09 14	704	0.6+	0.1+
1998 05 22	704	0.3-	0.9+	1999 09 05	699	1.9+	1.8+	1999 09 14	704	0.8-	0.0
1998 05 22	704	0.6+	0.6-	1999 09 05	699	0.3+	0.2+				

1998 HP₉₈ = 1999 RT₃

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	46.05521		(2000.0)		P		Q
n	0.20560589	ω	49.04039	+0.04873944			+0.99674262
a	2.8430141	Ω	223.88257	-0.94198289			+0.02448127
e	0.0144590	i	5.31864	-0.33210346			+0.07684274
P	4.79	H	13.9	G	0.15	U	3

1999 SEPT. 28

M.P.C. 35987

1998 04 21	704	1.1−	1.0−	1998 05 23	704	0.4−	0.8−	1999 09 08	703	1.0+	0.4+
1998 04 22	704	0.7−	0.5−	1998 05 24	704	0.3−	0.4+	1999 09 08	703	0.6−	0.0
1998 04 22	704	0.1−	1.5+	1998 05 24	704	0.1+	0.5−	1999 09 08	703	0.9+	0.0
1998 04 22	704	0.7+	0.7+	1998 05 24	704	0.0	0.0	1999 09 08	703	1.2−	0.2+
1998 05 01	704	0.4+	0.4+	1998 05 24	704	0.9+	1.3−	1999 09 08	703	0.6+	0.4+
1998 05 01	704	0.6+	1.2−	1998 05 24	704	1.7−	1.0+	1999 09 08	703	1.1−	0.1−
1998 05 01	704	1.3−	0.1+	1999 07 13	704	0.2−	1.6+	1999 09 09	704	0.8−	1.0−
1998 05 01	704	0.4−	0.2+	1999 07 13	704	0.1−	1.7+	1999 09 09	704	0.3−	0.6−
1998 05 22	704	1.1−	0.5+	1999 07 13	704	(0.8−	2.5+)	1999 09 09	704	0.7−	0.3+
1998 05 22	704	0.5+	1.0+	1999 07 13	704	1.2+	0.4−	1999 09 09	704	0.1−	0.2−
1998 05 22	704	1.4−	0.2−	1999 07 13	704	0.0	0.5−	1999 09 09	704	0.3−	0.4+
1998 05 22	704	0.2+	1.3−	1998 08 12	699	0.1−	1.3−	1999 09 13	704	1.1+	0.9+
1998 05 22	704	(2.1−	1.0+)	1998 08 12	699	0.4−	0.5−	1999 09 13	704	1.4+	0.5−
1998 05 22	699	0.9+	0.5−	1998 08 12	699	0.1−	0.4+	1999 09 13	704	1.2+	0.2−
1998 05 22	699	1.7+	1.2−	1999 09 04	703	0.2+	0.4−	1999 09 13	704	(0.3+	2.5−)
1998 05 22	699	1.7+	0.9+	1999 09 04	703	0.4+	0.3+				

1998 HE₉₉ = 1999 RU₁₁₈

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	246.56682	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.23061383	ω	240.51662	+0.18706137	−0.98125250
<i>a</i>	2.6335758	Ω	198.87174	+0.94363658	+0.19261424
<i>e</i>	0.0278606	<i>i</i>	8.24505	+0.27305319	+0.00657965
<i>P</i>	4.27	<i>H</i>	14.0	<i>U</i>	3

Residuals in seconds of arc

1991 10 13	691	0.4−	0.3+	1998 05 22	704	0.9+	0.1+	1999 07 13	704	0.3+	0.1−
1991 10 13	691	0.5−	0.2+	1998 05 22	704	1.0+	0.7−	1999 07 13	704	0.1−	0.5+
1991 10 13	691	0.7+	0.2+	1998 05 22	704	0.8+	0.4+	1999 07 13	704	1.0−	0.3−
1998 04 21	704	0.1−	0.3+	1998 05 22	704	1.0+	1.2+	1999 07 23	704	0.2−	0.2−
1998 04 21	704	0.4−	0.4−	1998 05 22	704	0.7−	0.4+	1999 07 23	704	0.1−	0.2−
1998 04 21	704	0.2−	0.2−	1998 05 24	704	0.2+	0.2−	1999 07 23	704	1.3−	0.1−
1998 04 21	704	0.3−	1.0+	1998 05 24	704	0.5−	0.3−	1999 09 06	699	0.8−	0.7+
1998 04 21	704	0.2+	1.1+	1998 05 24	704	0.2+	0.3+	1999 09 06	699	0.4+	1.0+
1998 04 22	704	0.8+	0.3+	1998 05 24	704	0.2−	0.4+	1999 09 06	699	0.0	1.0+
1998 04 22	704	0.1+	0.3+	1998 05 24	704	0.2+	0.9−	1999 09 09	704	0.2−	0.1−
1998 04 22	704	0.5+	1.0−	1998 05 27	699	0.5−	0.0	1999 09 09	704	0.0	0.7−
1998 04 22	704	0.0	1.4−	1998 05 27	699	0.4−	0.1−	1999 09 09	704	0.1+	0.1+
1998 04 22	704	(0.7−	2.2−)	1998 05 27	699	0.5−	0.2−	1999 09 09	704	0.3−	0.1+
1998 05 01	704	0.5+	0.3−	1998 06 02	699	1.2−	0.8+	1999 09 09	704	0.6−	0.1−
1998 05 01	704	0.3−	0.1−	1998 06 02	699	0.2−	0.6+	1999 09 14	704	0.3+	0.4−
1998 05 01	704	0.1+	0.5−	1998 06 02	699	0.2−	0.4−	1999 09 14	704	1.2+	1.2−
1998 05 01	704	(3.5+	0.1+)	1999 07 13	704	0.6+	0.3−	1999 09 14	704	0.9+	0.0
1998 05 01	704	0.8−	0.2+	1999 07 13	704	0.5+	0.6−	1999 09 14	704	0.5+	0.3+

1998 HJ₉₉

Id. E. Bowell (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	29.15672	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.18141704	ω	179.81078	+0.32207610	+0.94523882
<i>a</i>	3.0904188	Ω	108.97746	−0.86866628	+0.31724922
<i>e</i>	0.1240757	<i>i</i>	3.20233	−0.37641184	+0.07665841
<i>P</i>	5.43	<i>H</i>	13.8	<i>U</i>	3

Residuals in seconds of arc

1998 04 21	704	0.1−	0.7−	1998 05 22	704	1.0+	0.8−	1999 08 08	699	0.6−	0.5+
1998 04 21	704	0.9−	0.2−	1998 05 22	704	1.2−	0.3+	1999 08 08	699	0.3+	0.5+
1998 04 21	704	0.7−	0.1+	1998 05 22	704	0.0	1.1−	1999 09 06	699	1.2−	0.6+
1998 04 21	704	0.6−	0.3+	1998 05 23	704	1.3−	1.5−	1999 09 06	699	0.2−	0.4+
1998 04 21	704	0.4+	1.0+	1998 05 23	704	1.3+	0.7+	1999 09 06	699	0.2−	0.4+
1998 04 22	704	0.2+	0.2+	1998 05 23	704	0.6−	0.1+	1999 09 07	704	0.1−	0.6−
1998 04 22	704	1.0+	0.6+	1998 05 23	704	1.1−	0.2+	1999 09 07	704	0.5−	0.2−
1998 04 22	704	0.4+	0.5+	1998 05 23	704	1.2−	0.2−	1999 09 07	704	0.0	0.0
1998 04 22	704	0.2+	1.9+	1998 05 24	704	1.0+	0.3+	1999 09 07	704	0.4−	0.3−
1998 04 22	704	0.4−	0.7+	1998 05 24	704	1.2+	0.5+	1999 09 07	704	0.2+	0.5+

1998 05 01	704	0.2−	0.9+	1998 05 24	704	(2.8+	3.6−)	1999 09 13	704	0.1−	0.2−
1998 05 01	704	0.4−	1.7−	1998 05 24	704	0.4+	1.3−	1999 09 13	704	0.8+	0.5−
1998 05 01	704	0.4+	1.4−	1999 07 21	699	0.2+	0.1−	1999 09 13	704	0.6+	0.2−
1998 05 01	704	0.7−	0.7−	1999 07 21	699	0.1+	1.4+	1999 09 13	704	0.7+	1.2−
1998 05 22	704	1.1+	0.6−	1999 07 21	699	0.1+	0.4+	1999 09 13	704	0.3+	1.5−
1998 05 22	704	0.8+	1.5+	1999 08 08	699	0.1+	0.3+				

1998 HC₁₀₀

Id. E. Bowell (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	111.47184	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.24717450	ω	99.02444	−0.69299850	+0.71830174
<i>a</i>	2.5145886	Ω	126.92072	−0.68802677	−0.63341679
<i>e</i>	0.0898573	<i>i</i>	4.41975	−0.21534215	−0.28779469
<i>P</i>	3.99	<i>H</i>	14.6	<i>U</i>	4

Residuals in seconds of arc

1995 08 25	809	(2.1−	2.3+)	1998 05 22	704	0.4−	0.4+	1999 09 05	699	0.6+	0.7+
1995 08 26	809	1.2−	1.4+	1998 05 22	704	0.0	0.3+	1999 09 05	699	0.5+	0.8+
1995 08 28	809	0.9+	0.5−	1998 05 22	704	0.6−	0.4+	1999 09 05	699	0.6+	0.5+
1995 08 29	809	0.9+	0.1−	1998 05 22	704	0.7+	0.3−	1999 09 07	704	0.2+	0.1−
1995 08 31	809	0.4−	1.3−	1998 05 22	704	0.6+	0.4−	1999 09 07	704	0.2−	0.4+
1995 09 01	809	(1.8−	2.3−)	1998 05 24	704	0.1−	0.1−	1999 09 07	704	0.4−	0.0
1995 09 23	809	(5.0+	2.8−)	1998 05 24	704	0.6+	0.8−	1999 09 07	704	0.5+	0.1−
1995 09 24	809	(3.9−	2.7+)	1998 05 24	704	0.4−	0.4+	1999 09 07	704	0.0	0.2−
1998 04 21	704	0.3+	0.4+	1998 05 24	704	0.2−	1.0−	1999 09 09	704	0.1+	0.2+
1998 04 21	704	0.0	0.2−	1998 05 24	704	0.6+	0.6−	1999 09 09	704	0.5+	0.0
1998 04 21	704	0.2−	0.1−	1998 05 27	699	0.7−	0.1+	1999 09 09	704	0.7−	0.5−
1998 04 21	704	0.5−	1.1+	1998 05 27	699	0.2+	0.1+	1999 09 09	704	0.3+	0.5−
1998 04 21	704	0.1+	1.3+	1998 05 27	699	0.3−	0.3+	1999 09 09	704	0.8−	0.1−
1998 04 22	704	0.3+	0.3+	1998 06 02	699	0.4−	0.0	1999 09 11	699	0.0	1.0+
1998 04 22	704	0.3−	0.1−	1998 06 02	699	0.1−	0.0	1999 09 11	699	0.2+	1.3+
1998 04 22	704	0.2−	0.1+	1998 06 02	699	0.2+	0.0	1999 09 11	699	0.4−	0.7+
1998 04 22	704	0.8−	1.1−	1998 08 12	699	0.1−	0.1−	1999 09 14	704	0.3+	0.5−
1998 04 22	704	0.7−	1.9−	1998 08 12	699	0.4−	0.3−	1999 09 14	704	0.1−	0.6−
1998 05 01	704	0.1−	0.1+	1998 08 12	699	0.8+	0.3−	1999 09 14	704	0.5−	0.3−
1998 05 01	704	1.0+	0.2−	1998 08 22	703	0.1−	0.3−	1999 09 14	704	0.8−	1.4−
1998 05 01	704	0.3+	0.2+	1998 08 22	703	1.1−	0.2+	1999 09 14	704	0.6+	1.0−
1998 05 01	704	0.9+	0.2+	1998 08 22	703	0.1+	0.2+				
1998 05 01	704	0.3+	1.2+	1998 08 22	703	0.0	1.0+				

1998 HL₁₀₀ = 1999 RF₁₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	171.02111	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.22621325	ω	298.25487	−0.79082700	−0.60490823
<i>a</i>	2.6676204	Ω	204.87782	+0.60984426	−0.76592751
<i>e</i>	0.1156556	<i>i</i>	12.79405	+0.05179413	−0.21780975
<i>P</i>	4.36	<i>H</i>	14.0	<i>U</i>	4

Residuals in seconds of arc

1991 10 10	691	0.0	0.3−	1998 05 01	704	0.6+	1.2−	1999 09 08	704	0.2+	0.7−
1991 10 10	691	0.2+	0.5−	1998 05 01	704	1.1−	1.7−	1999 09 09	704	0.7−	1.2+
1991 10 10	691	0.0	0.5−	1998 05 22	704	0.8+	0.8+	1999 09 09	704	0.7−	0.7+
1998 04 21	704	0.8−	0.4+	1998 05 22	704	(0.1+	2.4+)	1999 09 09	704	0.5+	0.3+
1998 04 21	704	0.5+	0.8+	1998 05 22	704	0.1+	0.2+	1999 09 09	704	1.4−	0.8+
1998 04 21	704	0.0	0.2−	1998 05 22	704	(2.1+	1.3+)	1999 09 09	704	0.1−	0.0
1998 04 21	704	(0.7−	2.4+)	1998 05 22	704	0.5+	1.7+	1999 09 09	704	0.3+	0.2+
1998 04 22	704	0.6+	1.4+	1998 05 24	704	0.3−	0.8+	1999 09 09	704	0.1+	0.1−
1998 04 22	704	1.4−	0.4−	1998 05 24	704	1.3+	0.4−	1999 09 09	704	0.1−	0.6−
1998 04 22	704	1.6−	0.2−	1998 05 24	704	1.5−	0.5+	1999 09 09	704	0.6+	0.3+
1998 04 22	704	1.7−	1.2+	1998 05 24	704	0.2+	0.4+	1999 09 09	704	0.6+	0.3+
1998 04 25	699	0.2+	0.6+	1998 05 24	704	1.0+	0.2+	1999 09 14	704	0.4+	0.1+
1998 04 25	699	0.9+	0.4−	1998 05 27	699	0.1−	1.0−	1999 09 14	704	0.8+	0.4−
1998 04 25	699	1.3+	0.1+	1998 05 27	699	0.4−	0.3−	1999 09 14	704	0.4+	0.2−
1998 05 01	704	0.7+	0.7−	1998 05 27	699	0.1+	0.1−	1999 09 14	704	0.1+	0.5−

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1998 05 01 704 0.2+ 1.8- 1999 09 08 704 0.5- 0.8-
 1998 05 01 704 0.3- 1.4- 1999 09 08 704 0.5- 0.2-

1998 HE₁₀₂ = 1999 RO₁₀

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Williams

<i>M</i>	180.17020		(2000.0)	P	Q
<i>n</i>	0.20468398	ω	157.37394	-0.80298596	-0.59596732
<i>a</i>	2.8515445	Ω	346.03946	+0.54291423	-0.72724743
<i>e</i>	0.0190300	<i>i</i>	1.43478	+0.24588143	-0.34049100
<i>P</i>	4.82	<i>H</i>	13.6	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 04 25	809	1.5+	0.1+	1998 05 22	699	0.4+	0.2-	1999 09 07	704	0.8-	0.5-
1998 04 25	809	0.2+	0.5-	1998 05 24	704	0.5+	1.0-	1999 09 08	704	0.1+	1.3-
1998 04 25	809	0.1-	0.3-	1998 05 24	704	1.1+	0.3-	1999 09 08	704	0.1-	0.3-
1998 04 28	809	(2.2+	3.7+)	1998 05 24	704	1.8+	0.7+	1999 09 08	704	0.1+	0.1+
1998 04 28	809	(1.3+	3.1+)	1998 05 24	704	(2.2-	1.5+)	1999 09 08	704	0.8+	0.0
1998 04 28	809	(1.4+	2.5+)	1998 05 24	704	1.5-	0.6+	1999 09 09	704	0.3+	0.9-
1998 05 01	704	(2.9-	0.6-)	1998 06 16	704	0.0	0.0	1999 09 09	704	0.1+	0.3-
1998 05 01	704	0.1+	0.0	1998 06 16	704	(1.9+	2.2+)	1999 09 09	704	0.4-	0.2-
1998 05 01	704	(3.2-	0.4+)	1998 06 16	704	0.9-	0.3+	1999 09 09	704	0.3+	0.0
1998 05 01	704	0.2+	1.0+	1998 06 16	704	(3.0-	2.0+)	1999 09 09	704	0.2+	0.4+
1998 05 05	699	1.1-	0.5-	1999 08 07	699	0.6-	1.0+	1999 09 13	699	0.9-	1.7+
1998 05 05	699	0.3-	0.4-	1999 08 07	699	0.7-	0.1+	1999 09 13	704	0.8+	0.4+
1998 05 05	699	0.7-	0.2+	1999 08 07	699	0.2-	0.8+	1999 09 13	699	0.9-	0.4+
1998 05 22	704	0.2+	0.4+	1999 09 06	699	0.7+	1.3+	1999 09 13	704	0.7+	0.5-
1998 05 22	704	1.0+	1.8+	1999 09 06	699	0.2+	0.7-	1999 09 13	704	0.8+	0.3-
1998 05 22	704	0.9-	1.2-	1999 09 06	699	0.1-	0.6+	1999 09 13	699	0.3+	0.8+
1998 05 22	704	0.0	0.1-	1999 09 07	704	0.4-	0.4-	1999 09 13	704	0.1+	1.3-
1998 05 22	704	0.2+	0.8-	1999 09 07	704	0.6-	0.6-	1999 09 13	704	0.9-	0.2-
1998 05 22	699	0.5-	0.3-	1999 09 07	704	0.0	0.3-				
1998 05 22	699	1.1-	0.4+	1999 09 07	704	1.1+	0.2+				

1998 HO₁₀₂ = 1998 KG₄ = 1994 BU₃

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Doppler

<i>M</i>	127.90661		(2000.0)	P	Q
<i>n</i>	0.29165731	ω	22.62283	-0.51886644	+0.85376721
<i>a</i>	2.2519261	Ω	216.16159	-0.79507129	-0.50049641
<i>e</i>	0.1296934	<i>i</i>	4.19053	-0.31406889	-0.14347436
<i>P</i>	3.38	<i>H</i>	16.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1994 01 16	010	0.8+	0.4+	1998 04 28	809	1.3+	1.5+	1998 05 24	704	0.1-	0.3+
1994 01 16	010	0.4+	1.2+	1998 04 28	809	1.1+	1.6+	1998 05 24	704	0.9+	0.3-
1994 01 17	010	(2.7-	0.2-)	1998 05 22	704	0.4-	0.3-	1998 05 24	704	1.1+	0.3-
1994 01 17	010	0.9-	0.2+	1998 05 22	704	0.9-	0.6-	1998 05 24	704	0.3+	0.4+
1994 01 17	010	0.2-	1.8-	1998 05 22	704	0.6-	0.7-	1998 05 24	704	0.5+	0.7-
1998 04 25	809	0.9-	1.0-	1998 05 22	704	0.7-	0.4-	1998 05 24	699	0.2-	0.1+
1998 04 25	809	0.9-	1.1-	1998 05 22	699	1.2+	0.3-	1998 05 24	699	0.9-	0.8+
1998 04 25	809	1.0-	1.5-	1998 05 22	699	0.4-	0.5+	1998 05 24	699	0.3-	0.8+
1998 04 28	809	0.9+	1.1+	1998 05 22	699	0.0	0.4+				

1998 HX₁₁₂ = 1999 RH₁₆₄

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Williams

<i>M</i>	108.35107		(2000.0)	P	Q
<i>n</i>	0.24119261	ω	48.27230	-0.76959783	+0.63779130
<i>a</i>	2.5559953	Ω	171.20126	-0.62905886	-0.74906284
<i>e</i>	0.1262363	<i>i</i>	11.57140	-0.10956335	-0.17924039
<i>P</i>	4.09	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1995 09 19	809	0.1+	0.5-	1998 04 24	704	0.1+	0.2+	1999 09 09	704	0.3-	0.8+
1995 09 20	809	0.2+	0.6-	1998 04 24	704	0.5-	0.4+	1999 09 09	704	0.9+	0.7-

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1995 09 23	809	(3.5+	2.1-)	1998 05 16	704	0.5-	0.4+	1999 09 09	704	0.5+	0.1+
1998 03 24	704	0.5-	0.2-	1998 05 16	704	0.0	0.6+	1999 09 09	704	1.0+	1.4+
1998 03 24	704	0.1-	0.7+	1998 05 16	704	0.7-	1.1+	1999 09 11	699	0.2-	0.6+
1998 03 24	704	0.5-	0.8-	1998 05 16	704	(2.9-	0.6+)	1999 09 11	699	0.0	1.4+
1998 03 24	704	0.6+	1.2-	1998 05 28	704	(2.3+	0.9+)	1999 09 11	699	0.4+	0.2+
1998 03 24	704	0.3-	0.1+	1998 05 28	704	(2.1+	0.5+)	1999 09 14	704	0.5-	0.2-
1998 04 21	704	0.5+	0.2-	1998 05 28	704	0.4-	1.7+	1999 09 14	704	0.4-	0.3+
1998 04 21	704	0.7+	1.0-	1998 05 28	704	(0.9+	3.5-)	1999 09 14	704	0.8+	1.1-
1998 04 21	704	0.9+	0.1-	1998 05 28	704	(4.1-	0.8+)	1999 09 14	704	0.0	0.2-
1998 04 21	704	0.5+	0.7-	1999 09 05	691	0.3-	0.1+	1999 09 14	704	0.8-	0.6-
1998 04 21	704	0.7+	0.1+	1999 09 05	691	0.1-	0.0	1999 09 14	703	0.2+	0.2+
1998 04 23	704	0.5-	0.3-	1999 09 05	691	0.1-	0.1-	1999 09 14	703	1.2-	0.5+
1998 04 23	704	0.3+	0.1+	1999 09 07	704	0.9+	0.6-	1999 09 14	703	0.1+	0.0
1998 04 23	704	0.4-	0.2+	1999 09 07	704	0.2-	0.3-	1999 09 14	703	0.3-	0.3+
1998 04 23	704	0.1-	0.4-	1999 09 07	704	0.6+	0.4-	1999 09 17	691	0.2-	0.3-
1998 04 23	704	0.5-	0.4-	1999 09 07	704	0.4+	0.7-	1999 09 17	691	0.6-	0.1-
1998 04 24	704	0.4+	0.5-	1999 09 07	704	0.1-	0.5-	1999 09 17	691	0.7-	0.1+
1998 04 24	704	0.0	0.5-	1999 09 09	704	0.1+	0.3-				

1998 HY₁₁₄ = 1999 RJ₅₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	85.99036		(2000.0)	P	Q
<i>n</i>	0.18382977	ω	66.34599	-0.81781679	+0.56225122
<i>a</i>	3.0633185	Ω	147.47235	-0.57507496	-0.79047523
<i>e</i>	0.2345905	<i>i</i>	13.18793	-0.02155209	-0.24294540
<i>P</i>	5.36	<i>H</i>	13.5	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1998 03 24	704	0.9-	0.2+	1998 05 23	704	0.0	0.3+	1999 07 13	704	0.2+	1.2+
1998 03 24	704	1.1-	0.8+	1998 05 23	704	0.1-	1.1+	1999 07 13	704	0.8+	0.4-
1998 03 24	704	1.4-	0.3+	1998 05 23	704	0.0	0.2-	1999 07 13	704	0.3+	0.0
1998 03 24	704	0.6-	0.8+	1998 05 23	704	1.8-	0.5-	1999 08 07	699	0.6-	1.0-
1998 03 24	704	1.4-	1.6+	1998 05 28	704	0.6+	0.2+	1999 08 07	699	0.6-	0.5+
1998 04 23	704	1.4+	0.6-	1998 05 28	704	0.6+	0.5-	1999 08 07	699	0.8-	1.4+
1998 04 23	704	1.7+	0.7+	1998 05 28	704	0.6-	1.0+	1999 09 07	704	0.7+	0.1+
1998 04 23	704	0.0	0.0	1998 05 28	704	0.1+	0.8-	1999 09 07	704	0.2-	0.5-
1998 04 23	704	0.5+	0.6-	1998 05 28	704	1.6-	0.1-	1999 09 07	704	0.6-	0.0
1998 04 23	704	0.4+	1.6-	1998 06 17	704	0.1-	0.7-	1999 09 07	704	0.9-	0.0
1998 04 24	704	1.7+	0.2-	1998 06 17	704	(2.3-	0.2-)	1999 09 07	704	0.1-	0.1-
1998 04 24	704	0.1-	0.3-	1998 06 17	704	0.2-	0.2+	1999 09 09	704	0.6+	0.0
1998 04 24	704	0.3+	0.4-	1998 06 17	704	1.1+	0.7+	1999 09 09	704	0.2-	1.1-
1998 04 24	704	0.8+	0.4-	1998 06 17	704	0.1-	0.4-	1999 09 09	704	0.2-	0.7-
1998 04 24	704	0.1-	0.9-	1999 07 13	704	1.4+	1.0+	1999 09 09	704	0.7-	0.1+
1998 05 23	704	0.2+	0.3+	1999 07 13	704	1.4+	1.1+	1999 09 09	704	0.5-	1.3-

1998 HA₁₁₆ = 1999 RJ₁₁₂

Id. G. V. Williams, E. Howell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	198.66282		(2000.0)	P	Q
<i>n</i>	0.25703715	ω	311.24765	-0.52844722	-0.84834171
<i>a</i>	2.4498460	Ω	170.48875	+0.82588627	-0.52258360
<i>e</i>	0.1325704	<i>i</i>	11.36274	+0.19660981	-0.08498659
<i>P</i>	3.83	<i>H</i>	13.9	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1994 04 03	675	0.4-	0.2-	1998 04 24	704	0.5+	0.2-	1999 07 13	704	0.9-	0.4-
1994 04 03	675	0.3+	0.2-	1998 04 24	704	0.0	0.2-	1999 09 05	699	0.5-	0.5-
1998 03 24	704	0.3+	0.3+	1998 04 24	704	0.0	0.7+	1999 09 05	699	1.1-	0.1-
1998 03 24	704	0.4+	0.6+	1998 05 23	704	0.3+	0.2+	1999 09 05	699	1.1-	1.8+
1998 03 24	704	1.1+	0.4+	1998 05 23	704	0.1-	0.4+	1999 09 08	704	0.5+	1.0-
1998 03 24	704	0.8+	0.4+	1998 05 23	704	0.6+	0.6-	1999 09 08	704	0.2-	0.3+
1998 03 24	704	0.7+	0.4-	1998 05 23	704	0.0	0.2+	1999 09 08	704	0.4+	0.1+
1998 04 21	704	0.5-	0.0	1998 05 23	704	0.9-	1.3-	1999 09 08	704	0.3-	0.3-
1998 04 21	704	0.2-	0.7-	1998 05 24	699	0.7+	0.1-	1999 09 09	704	0.9+	0.4-
1998 04 21	704	1.4-	0.9-	1998 05 24	699	0.7-	0.8+	1999 09 09	704	0.4+	0.4-
1998 04 21	704	0.7-	0.0	1998 05 24	699	0.1+	0.4+	1999 09 09	704	0.5-	0.5+

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1998 04 21	704	0.7−	0.3−	1998 05 28	704	0.5+	0.5+	1999 09 09	704	0.8+	0.6−
1998 04 23	704	0.1−	0.0	1998 05 28	704	1.1+	0.6+	1999 09 09	704	0.8−	0.4+
1998 04 23	704	0.1−	0.3−	1998 05 28	704	(1.1−	2.2+)	1999 09 13	704	0.3+	0.2+
1998 04 23	704	0.2−	0.0	1998 05 28	704	1.0+	0.7+	1999 09 13	704	0.5+	1.0+
1998 04 23	704	0.3+	0.3−	1998 05 28	704	1.2−	1.2+	1999 09 13	704	0.5+	0.4−
1998 04 23	704	0.4−	0.7−	1999 07 13	704	0.2+	0.0	1999 09 13	704	0.7+	0.0
1998 04 24	704	0.4−	0.2−	1999 07 13	704	0.0	0.4−				
1998 04 24	704	0.1−	0.5−	1999 07 13	704	0.2+	0.4−				

1998 HC₁₁₈ = 1999 RD₁₅₁

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	21.22871		(2000.0)	<i>P</i>		<i>Q</i>	
<i>n</i>	0.23552059	<i>ω</i>	170.73644		+0.62735548		+0.76947100
<i>a</i>	2.5968695	<i>Ω</i>	137.99104		−0.72544196		+0.63337966
<i>e</i>	0.0408761	<i>i</i>	10.30737		−0.28312376		+0.08212548
<i>P</i>	4.18	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 04 23	704	0.4+	0.5+	1998 05 23	704	1.2−	0.1+	1999 09 07	704	0.6−	0.0
1998 04 23	704	0.4+	0.6+	1998 05 28	704	0.2+	0.4+	1999 09 07	704	0.1−	0.5−
1998 04 23	704	1.3−	0.8+	1998 05 28	704	0.3−	0.3+	1999 09 07	704	0.4−	0.4−
1998 04 23	704	0.3−	0.2+	1998 05 28	704	0.9+	0.6+	1999 09 09	704	0.4−	0.4−
1998 04 23	704	1.5−	1.0+	1998 05 28	704	1.0+	1.7−	1999 09 09	704	0.1−	0.9−
1998 04 24	704	0.1+	0.2−	1998 05 28	704	0.5−	0.1−	1999 09 09	704	0.3+	0.3−
1998 04 24	704	0.1+	1.1−	1999 08 07	699	0.3+	0.5+	1999 09 09	704	0.1+	0.8+
1998 04 24	704	0.7+	0.2+	1999 08 07	699	0.3+	0.1+	1999 09 09	704	1.3+	1.1+
1998 04 24	704	0.4−	1.2−	1999 08 07	699	0.3+	0.2−	1999 09 13	704	0.1−	0.3+
1998 04 24	704	0.2−	0.7−	1999 08 08	699	0.1+	0.6+	1999 09 13	704	0.3−	0.4−
1998 05 23	704	0.9+	0.2−	1999 08 08	699	0.5+	0.4+	1999 09 13	704	0.4+	0.4+
1998 05 23	704	0.4+	0.2−	1999 08 08	699	0.5−	0.0	1999 09 13	704	0.1−	0.4−
1998 05 23	704	0.1+	0.1+	1999 09 07	704	0.4−	0.4−	1999 09 13	704	0.2−	0.1−
1998 05 23	704	0.4+	0.4+	1999 09 07	704	0.5−	0.1−				

1998 HJ₁₁₈ = 1999 RR₁₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	107.29878		(2000.0)	<i>P</i>		<i>Q</i>	
<i>n</i>	0.22411267	<i>ω</i>	51.74224		−0.83043114		+0.55151814
<i>a</i>	2.6842633	<i>Ω</i>	161.31130		−0.55627698		−0.81304792
<i>e</i>	0.0931667	<i>i</i>	14.23919		−0.03066012		−0.18649617
<i>P</i>	4.40	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 23	704	0.2+	0.4+	1998 05 23	704	0.4−	1.3−	1999 09 07	704	1.1−	1.4−
1998 04 23	704	0.9+	0.5+	1998 05 23	704	0.3+	0.8+	1999 09 07	704	0.0	0.4−
1998 04 23	704	0.4−	0.1−	1998 05 23	704	0.4−	0.9−	1999 09 07	704	0.3+	0.0
1998 04 23	704	1.5−	0.2−	1998 05 28	704	0.8+	1.2+	1999 09 09	704	0.4−	0.4+
1998 04 23	704	0.5−	0.6−	1998 05 28	704	1.1−	0.5+	1999 09 09	704	0.7−	0.8−
1998 04 24	704	0.3+	0.8−	1998 05 28	704	(1.4+	3.0+)	1999 09 09	704	0.6+	0.4−
1998 04 24	704	0.7−	1.0−	1998 05 28	704	(0.6−	3.2+)	1999 09 09	704	0.7+	1.4+
1998 04 24	704	0.7+	0.2−	1998 05 28	704	1.2+	0.5+	1999 09 09	704	0.5+	0.7+
1998 04 24	704	0.2+	0.3+	1999 08 22	703	0.2+	0.4+	1999 09 13	704	0.1−	0.2+
1998 04 24	704	0.4+	1.0+	1999 08 22	703	0.2−	0.8+	1999 09 13	704	0.4+	0.2−
1998 05 23	704	0.5+	0.1−	1999 08 22	703	0.0	0.3+	1999 09 13	704	0.0	0.5−
1998 05 23	704	0.4−	0.0	1999 08 22	703	0.5+	1.1−	1999 09 13	704	0.8−	0.2+

1998 HN₁₁₉ = 1999 RE₃₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	46.29137		(2000.0)	<i>P</i>		<i>Q</i>	
<i>n</i>	0.23017131	<i>ω</i>	112.43384		+0.46610800		+0.88451973
<i>a</i>	2.6369502	<i>Ω</i>	185.46507		−0.86761226		+0.45273802
<i>e</i>	0.1611073	<i>i</i>	11.62302		−0.17318282		+0.11248617
<i>P</i>	4.28	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	4

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Residuals in seconds of arc

1998 03 24	704	1.5+	0.3−	1998 04 24	704	0.5+	1.1−	1998 05 27	699	0.5−	0.4−
1998 03 24	704	1.9−	0.1+	1998 04 24	704	0.3−	0.4−	1998 05 27	699	(2.2−	0.6+)
1998 03 24	704	1.5+	0.4+	1998 04 28	566	0.1+	0.2−	1998 05 27	699	0.5+	0.4−
1998 03 24	704	0.3+	0.7+	1998 04 28	566	0.6+	0.2+	1999 09 05	699	0.4−	0.3+
1998 03 24	704	0.8−	1.4−	1998 04 28	566	0.0	0.4−	1999 09 05	699	0.5−	0.3−
1998 04 21	704	0.1+	0.7+	1998 05 01	699	0.8−	0.9+	1999 09 05	699	0.3−	0.3+
1998 04 21	704	0.2−	0.1+	1998 05 01	699	0.4+	0.8+	1999 09 07	704	0.1−	0.2+
1998 04 21	704	0.0	0.5−	1998 05 01	699	0.3+	0.3+	1999 09 07	704	0.5+	0.8−
1998 04 21	704	0.5−	0.7−	1998 05 23	704	0.3+	0.8+	1999 09 07	704	0.6+	0.6−
1998 04 21	704	0.9+	0.3+	1998 05 23	704	0.2−	0.3+	1999 09 13	120	0.4+	0.0
1998 04 23	704	0.2+	0.3−	1998 05 23	704	0.7−	0.0	1999 09 13	120	0.5+	0.3−
1998 04 23	704	0.1−	0.7+	1998 05 23	704	0.2−	0.8+	1999 09 13	120	0.2+	0.1−
1998 04 23	704	0.1−	0.2+	1998 05 23	704	0.5+	1.1−	1999 09 13	120	0.1−	0.6+
1998 04 23	704	1.1−	1.3+	1998 05 25	704	1.3+	0.2−	1999 09 14	120	0.9−	0.6+
1998 04 23	704	1.4−	0.5+	1998 05 25	704	0.9−	1.3+	1999 09 14	120	0.2+	0.0
1998 04 24	704	0.3−	0.5−	1998 05 25	704	0.4−	0.8−	1999 09 15	120	0.2−	0.1+
1998 04 24	704	0.2+	0.5−	1998 05 25	704	1.0+	1.3−				

1998 HD₁₂₃ = 1999 RP₁₄₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	204.80938		(2000.0)	<i>P</i>		<i>Q</i>	
<i>n</i>	0.30211504	<i>ω</i>	8.77260		−0.85113468		−0.52209323
<i>a</i>	2.1996546	<i>Ω</i>	139.60116		+0.47636808		−0.81192239
<i>e</i>	0.0935647	<i>i</i>	4.83854		+0.22055204		−0.26115263
<i>P</i>	3.26	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 23	704	0.7−	0.4−	1998 05 24	704	0.5+	0.7−	1999 09 08	704	0.4+	0.8−
1998 04 23	704	0.7−	0.7+	1998 05 24	704	0.7−	0.2+	1999 09 09	704	1.0−	0.6+
1998 04 23	704	0.7+	0.9−	1998 05 24	704	0.6+	0.7−	1999 09 09	704	0.4−	0.2−
1998 04 23	704	0.2+	0.9+	1998 05 24	704	0.4+	0.5−	1999 09 09	704	0.0	0.8−
1998 04 23	704	0.1+	1.3−	1998 05 27	699	0.2+	0.4+	1999 09 09	704	0.5−	0.6−
1998 04 24	704	0.3+	0.7−	1998 05 27	699	0.8+	0.1−	1999 09 09	704	0.1+	0.1+
1998 04 24	704	0.8−	1.9+	1998 05 27	699	0.5−	0.4−	1999 09 14	704	1.3+	0.1+
1998 04 24	704	0.4+	0.3−	1998 06 02	699	0.0	0.1+	1999 09 14	704	0.8−	0.2−
1998 04 25	699	1.1−	0.1−	1998 06 02	699	0.1−	0.3+	1999 09 14	704	0.4−	0.0
1998 04 25	699	1.2+	0.4+	1998 06 02	699	1.6−	0.7+	1999 09 14	704	0.1+	0.2−
1998 04 25	699	0.0	0.6+	1999 08 22	703	0.1−	0.3−	1999 09 14	704	0.2+	0.2−
1998 05 22	704	1.7−	0.4+	1999 08 22	703	0.1+	0.0	1999 09 14	703	1.0+	0.3+
1998 05 22	704	(1.1−	2.1+)	1999 08 22	703	0.4+	0.7+	1999 09 14	703	0.5−	0.2+
1998 05 22	704	0.1−	0.8+	1999 08 22	703	0.6+	0.9+	1999 09 14	703	(3.4−	3.2−)
1998 05 22	704	0.2+	0.1−	1999 09 08	704	0.2−	0.7+	1999 09 14	703	0.1−	0.5−
1998 05 22	704	1.8+	0.8−	1999 09 08	704	0.7−	0.4+				
1998 05 24	704	0.4+	0.4−	1999 09 08	704	0.4+	0.1+				

1998 HO₁₂₄ = 1999 RH₁₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	217.85093		(2000.0)	<i>P</i>		<i>Q</i>	
<i>n</i>	0.26337968	<i>ω</i>	321.31717		−0.45733153		−0.88823152
<i>a</i>	2.4103561	<i>Ω</i>	155.80467		+0.84002956		−0.44753497
<i>e</i>	0.1201516	<i>i</i>	6.09329		+0.29188732		−0.10371697
<i>P</i>	3.74	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1993 01 23	691	0.1−	0.6+	1998 05 24	704	0.2+	0.3+	1999 08 22	703	0.1−	0.8+
1993 01 23	691	0.4−	0.5+	1998 05 24	704	1.2−	0.5+	1999 08 22	703	0.1−	0.5+
1993 01 23	691	0.1+	0.4+	1998 05 24	704	0.4+	0.9+	1999 08 22	703	0.0	0.3−
1998 04 23	704	0.3−	0.2−	1998 05 25	699	0.0	0.0	1999 08 22	703	0.1+	0.0
1998 04 23	704	0.4+	0.1+	1998 05 25	699	0.3−	0.3−	1999 09 07	704	0.5+	0.1+
1998 04 23	704	0.1+	0.1−	1998 05 25	699	0.6−	0.3+	1999 09 07	704	0.8+	0.4−
1998 04 23	704	1.6+	0.6+	1998 06 02	699	1.1−	0.4+	1999 09 07	704	0.1+	0.2−
1998 04 23	704	0.3−	0.7−	1998 06 02	699	0.0	0.3+	1999 09 09	704	0.2+	0.5+
1998 04 24	704	0.4+	0.4−	1998 06 02	699	0.3+	0.0	1999 09 09	704	0.6+	0.2−
1998 04 24	704	0.3+	0.3−	1998 06 28	699	0.3−	1.4−	1999 09 09	704	0.1−	0.7+
1998 04 24	704	0.6+	0.1−	1998 06 28	699	0.5−	0.3+	1999 09 09	704	0.7−	1.0+

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1998 05 22	704	0.4−	0.7+	1998 06 28	699	1.1+	0.3+	1999 09 09	704	0.5−	0.5+
1998 05 22	704	0.3−	1.2−	1999 08 07	699	0.7+	0.0	1999 09 13	704	0.5+	0.7−
1998 05 22	704	0.5+	0.0	1999 08 07	699	1.6−	1.1+	1999 09 13	704	0.2+	0.9−
1998 05 22	704	0.5−	0.1+	1999 08 07	699	0.0	0.0	1999 09 13	704	0.4−	0.1−
1998 05 22	704	0.3+	0.1−	1999 08 08	699	0.5+	0.2−	1999 09 13	704	0.7−	1.3−
1998 05 24	704	0.6+	0.9+	1999 08 08	699	0.8−	0.4+	1999 09 13	704	0.3+	1.1−
1998 05 24	704	0.8−	0.2−	1999 08 08	699	0.5+	0.3−				

1998 HX₁₂₄ = 1999 RP₉₇

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	112.88927		(2000.0)	P		Q	
<i>n</i>	0.25737414	ω	70.58232	−0.60596426		+0.79285148	
<i>a</i>	2.4477071	Ω	161.66042	−0.78500024		−0.58280939	
<i>e</i>	0.0591046	<i>i</i>	11.87733	−0.12877087		−0.17810040	
<i>P</i>	3.83	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1995 09 02	010	(0.5−	2.5−)	1998 05 23	704	0.4+	0.4−	1999 08 22	699	0.9+	0.1+
1995 09 02	010	1.3+	1.6−	1998 05 23	704	(3.3+	0.3−)	1999 08 22	703	0.6+	0.5+
1995 09 02	010	(1.0+	3.2−)	1998 05 23	704	(4.8−	1.0+)	1999 08 22	699	0.0	0.3−
1995 09 20	691	0.4−	0.5−	1998 05 28	699	0.1−	0.4+	1999 09 05	699	1.4+	0.2−
1995 09 20	691	0.2−	0.6−	1998 05 28	699	0.0	0.1+	1999 09 05	699	0.2+	1.2+
1995 09 20	691	0.1−	0.2−	1998 05 28	699	0.8+	0.0	1999 09 05	699	0.2−	0.2−
1998 04 23	704	0.0	1.0−	1998 06 02	699	0.1−	1.8+	1999 09 07	704	0.5−	0.5+
1998 04 23	704	0.0	1.0−	1998 06 02	699	0.4−	0.7+	1999 09 07	704	0.9−	0.2−
1998 04 23	704	0.5+	0.9−	1998 06 02	699	0.0	1.0+	1999 09 07	704	0.6−	0.6−
1998 04 23	704	0.3+	0.4−	1998 06 18	699	1.3+	1.5+	1999 09 07	704	0.7−	0.1+
1998 04 23	704	0.9−	1.1−	1998 06 18	699	0.1−	0.7+	1999 09 14	704	0.3−	0.6−
1998 04 24	704	0.4+	0.5−	1998 06 18	699	1.3−	0.6+	1999 09 14	704	0.5−	0.2+
1998 04 24	704	0.7+	0.6−	1999 08 22	699	0.2−	0.5+	1999 09 14	704	0.6−	0.0
1998 04 24	704	0.0	1.0−	1999 08 22	703	1.9+	0.8+	1999 09 14	704	0.7−	0.3−
1998 05 23	704	0.7−	0.4−	1999 08 22	703	0.8−	0.1−	1999 09 14	704	0.0	0.0
1998 05 23	704	0.9−	0.6+	1999 08 22	703	0.9+	0.3+				

1998 HG₁₂₅

Id. K. Korlević (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	57.64117		(2000.0)	P		Q	
<i>n</i>	0.23431091	ω	117.24742	+0.41952518		+0.90767615	
<i>a</i>	2.6057997	Ω	177.47775	−0.89613867		+0.41607543	
<i>e</i>	0.1695894	<i>i</i>	14.57451	−0.14468625		+0.05482013	
<i>P</i>	4.21	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 23	704	0.4+	1.2−	1998 05 23	704	0.5−	0.5+	1998 06 18	699	0.0	0.6+
1998 04 23	704	0.2+	1.0−	1998 05 23	704	0.6−	0.4+	1999 08 22	703	0.8−	1.0−
1998 04 23	704	1.1+	1.3−	1998 05 23	704	0.1+	0.5−	1999 08 22	703	0.3+	0.1−
1998 04 23	704	0.1+	0.5−	1998 05 23	704	0.2−	0.3+	1999 08 22	703	0.7−	0.1+
1998 04 23	704	1.6−	1.8−	1998 05 27	699	0.4+	0.7+	1999 08 22	703	0.1+	0.4+
1998 04 24	704	0.2+	0.8−	1998 05 27	699	0.0	0.7+	1999 09 15	120	0.4−	0.5−
1998 04 24	704	0.0	0.7−	1998 05 27	699	0.5+	0.7+	1999 09 15	120	0.2−	0.6−
1998 04 24	704	0.5−	0.3−	1998 06 02	699	0.2+	0.7+	1999 09 15	120	0.9−	0.3−
1998 05 01	699	0.5+	0.1−	1998 06 02	699	0.5+	0.6+	1999 09 17	120	1.6+	0.4−
1998 05 01	699	0.1+	0.1+	1998 06 02	699	0.2−	0.0	1999 09 17	120	1.2+	0.6−
1998 05 01	699	0.2−	0.3+	1998 06 18	699	0.6−	0.8+				
1998 05 23	704	0.1−	0.5−	1998 06 18	699	0.3−	0.2+				

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1998 HX₁₂₇ = 1999 RH₁₃₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	39.34574		(2000.0)	P		Q	
<i>n</i>	0.21654894	ω	280.23375	+0.18727211		+0.98230775	
<i>a</i>	2.7464098	Ω	0.56178	−0.86598859		+0.16548384	
<i>e</i>	0.1356363	<i>i</i>	4.71790	−0.46367329		+0.08767320	
<i>P</i>	4.55	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1995 10 24	691	0.2−	0.8+	1998 04 01	704	0.7+	1.0+	1999 08 08	699	(0.4+	2.6+)
1995 10 24	691	0.3−	0.0	1998 04 01	704	0.0	0.5+	1999 09 07	704	(0.5−	2.2+)
1995 10 24	691	0.1−	0.1−	1998 04 01	704	1.0−	1.4−	1999 09 07	704	0.5−	1.4−
1995 11 17	691	0.3+	0.4+	1998 04 18	704	0.6−	0.6+	1999 09 07	704	0.7+	1.3−
1995 11 17	691	0.2−	0.1+	1998 04 18	704	0.4−	0.6+	1999 09 09	704	0.4−	0.7+
1995 11 17	691	0.0	0.1+	1998 04 18	704	1.0+	0.7+	1999 09 09	704	1.1−	0.6+
1998 03 25	704	(2.3−	0.7+)	1998 04 18	704	0.1−	1.4−	1999 09 09	704	0.1+	0.4+
1998 03 25	704	0.3−	0.1−	1998 04 22	704	(0.2+	2.7+)	1999 09 13	704	0.2+	0.3+
1998 03 29	704	0.2+	1.5+	1998 04 22	704	0.4+	1.1−	1999 09 13	704	0.5+	0.4−
1998 03 29	704	0.1+	0.7+	1998 04 22	704	0.0	0.4−	1999 09 13	704	0.0	0.2+
1998 03 29	704	(2.3−	0.0)	1998 04 22	704	0.9+	0.3+	1999 09 13	704	0.5−	0.1−
1998 03 29	704	0.6−	0.2+	1998 04 22	704	0.2+	1.0+	1999 09 13	704	0.2−	0.4+
1998 04 01	704	0.5+	1.2−	1999 08 08	699	0.3+	1.1+				
1998 04 01	704	0.1−	0.1−	1999 08 08	699	0.7+	0.0				

1998 HY₁₂₇ = 1999 RZ₁₃₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	349.55029		(2000.0)	P		Q	
<i>n</i>	0.26127365	ω	322.55931	+0.94787784		+0.31754974	
<i>a</i>	2.4232914	Ω	18.97683	−0.26931848		+0.84249542	
<i>e</i>	0.0751818	<i>i</i>	4.63249	−0.17027965		+0.43515931	
<i>P</i>	3.77	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 22	704	1.4−	0.7−	1998 04 18	704	0.1−	0.2−	1999 09 07	704	0.2−	1.0−
1998 03 22	704	1.1+	0.4+	1998 04 18	704	0.1+	0.3−	1999 09 07	704	1.1+	0.0
1998 03 22	704	1.4−	0.8−	1998 04 18	704	0.2+	0.1−	1999 09 09	704	0.7−	0.7−
1998 03 22	704	0.5−	0.3+	1998 04 18	704	0.4+	0.9+	1999 09 09	704	0.2+	0.5+
1998 03 25	704	0.1+	0.3+	1998 04 20	704	0.4+	0.4+	1999 09 09	704	0.9+	0.0
1998 03 25	704	0.6+	0.6−	1998 04 20	704	0.5−	0.3−	1999 09 09	704	0.0	0.2−
1998 03 25	704	1.2−	0.1+	1998 04 20	704	(0.9−	2.2−)	1999 09 09	704	0.1+	1.5−
1998 03 25	704	1.6+	0.8+	1998 04 20	704	(2.4+	0.3+)	1999 09 13	704	0.3+	1.0+
1998 03 25	704	0.4−	1.4+	1998 04 20	704	1.2−	0.7+	1999 09 13	704	0.1−	0.1−
1998 03 29	704	0.4+	1.3−	1999 08 08	699	0.9−	1.1+	1999 09 13	704	0.2+	0.5−
1998 03 29	704	0.4−	0.9−	1999 08 08	699	0.1−	1.1+	1999 09 13	704	0.3+	0.0
1998 03 29	704	1.3+	0.5−	1999 08 08	699	0.1−	0.1−	1999 09 13	704	0.0	0.1−
1998 03 29	704	1.1+	0.2−	1999 09 07	704	0.6−	0.1−				
1998 03 29	704	0.5−	0.2−	1999 09 07	704	0.2−	0.2+				

1998 HC₁₂₉ = 1999 RM₁₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	152.37573		(2000.0)	P		Q	
<i>n</i>	0.27777064	ω	195.25197	−0.99546874		−0.08743559	
<i>a</i>	2.3263684	Ω	339.62030	+0.09453926		−0.86782742	
<i>e</i>	0.0458958	<i>i</i>	6.16142	+0.01021368		−0.48911204	
<i>P</i>	3.55	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1994 01 15	033	0.1−	0.4+	1998 04 01	704	0.4−	1.2+	1999 09 07	704	0.2+	0.0
1994 01 15	033	0.2+	0.1−	1998 04 01	704	0.3−	0.5+	1999 09 07	704	0.2−	1.3−
1998 03 28	704	0.8+	0.6+	1998 04 01	704	(0.1−	2.6−)	1999 09 09	704	1.0−	0.4−
1998 03 28	704	0.6−	0.8−	1998 04 19	704	0.2−	0.2+	1999 09 09	704	0.0	0.6−
1998 03 28	704	0.3+	0.1−	1998 04 19	704	0.6−	0.7−	1999 09 09	704	1.2−	0.5+
1998 03 28	704	0.1−	1.0+	1998 04 19	704	0.4+	0.5+	1999 09 09	704	1.2+	0.1+
1998 03 28	704	0.7−	0.3−	1998 04 19	704	0.7−	1.0−	1999 09 09	704	0.0	0

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1998 03 29	704	0.7+	0.5+	1998 04 20	704	0.8-	0.3+	1999 09 13	704	0.5-	0.5+
1998 03 29	704	0.4+	0.5+	1998 04 20	704	0.3+	1.3+	1999 09 13	704	0.5+	0.1+
1998 03 29	704	0.6-	0.3+	1998 04 20	704	0.1-	0.1-	1999 09 13	704	0.2+	0.2-
1998 03 29	704	0.7-	0.5-	1998 04 20	704	0.8+	1.0-	1999 09 13	704	0.4-	0.4+
1998 04 01	704	0.5+	0.2-	1999 09 07	704	0.0	0.6+				
1998 04 01	704	0.5+	0.1-	1999 09 07	704	0.2+	0.0				

1998 HD₁₂₉ = 1991 RW₁₅ = 1999 RX₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	18.20361		(2000.0)	P		Q	
<i>n</i>	0.24420029	ω	313.43993	+0.63747371		+0.77032708	
<i>a</i>	2.5349648	Ω	356.07462	-0.62869637		+0.50885776	
<i>e</i>	0.1690439	<i>i</i>	12.61287	-0.44538539		+0.38426548	
<i>P</i>	4.04	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1991 09 11	675	(3.0+	1.8-)	1998 03 28	704	1.5+	0.6+	1999 09 07	704	0.6-	0.6+
1991 09 11	675	1.1-	1.9-	1998 03 28	704	0.6-	0.0	1999 09 07	704	0.6-	0.1-
1991 09 15	675	(0.5-	2.2-)	1998 03 29	704	1.0+	0.4-	1999 09 07	699	0.2-	0.3+
1991 09 15	675	1.7+	1.7-	1998 03 29	704	0.1+	0.2-	1999 09 07	704	0.7-	0.2+
1995 08 27	809	0.6+	0.2+	1998 03 29	704	0.3+	0.0	1999 09 07	704	0.6-	0.2+
1995 08 28	809	0.4+	0.1+	1998 03 29	704	0.5-	1.3-	1999 09 08	703	0.1-	1.0+
1995 08 28	809	0.5+	0.3-	1998 03 29	704	0.3-	0.3+	1999 09 08	703	0.2-	0.1+
1995 08 29	809	0.8+	0.0	1998 04 19	704	0.2+	0.7+	1999 09 08	703	0.1+	0.1-
1995 08 30	809	0.1+	0.8-	1998 04 19	704	0.0	1.1-	1999 09 08	703	0.0	0.5-
1995 08 31	809	1.1+	0.2-	1998 04 19	704	1.0-	0.9+	1999 09 09	704	0.0	0.0
1995 08 31	809	0.1+	1.6-	1998 04 19	704	0.8-	1.4-	1999 09 09	704	0.8-	0.6-
1995 09 01	809	0.9-	1.4-	1998 04 19	704	0.1-	1.0+	1999 09 09	704	1.0-	1.0-
1995 09 17	809	(2.4-	0.2+)	1998 04 20	704	0.3-	1.8-	1999 09 09	704	(3.9-	2.7-)
1995 09 18	809	0.3-	0.4-	1998 04 20	704	1.1-	0.7+	1999 09 10	704	0.1+	0.1+
1995 09 19	809	0.5+	0.3-	1998 04 20	704	0.6-	0.1-	1999 09 10	704	0.2-	0.0
1995 09 20	809	0.7+	0.6+	1998 04 20	704	0.3+	1.2+	1999 09 10	704	0.5-	0.1-
1995 09 22	809	0.5+	0.5+	1998 04 20	704	(2.6-	0.7-)	1999 09 10	704	0.4-	0.6-
1995 09 22	809	1.6+	0.1-	1999 08 12	699	0.0	0.5+	1999 09 10	704	0.2-	0.1+
1995 09 23	809	0.6+	0.3+	1999 08 12	699	0.4+	0.5+	1999 09 13	704	(0.5-	2.4+)
1995 09 24	809	0.3+	0.2+	1999 08 12	699	0.2+	0.1+	1999 09 13	704	0.1-	1.3+
1998 03 28	704	0.3-	0.9-	1999 09 07	699	0.4-	1.1+	1999 09 13	704	0.3-	0.9+
1998 03 28	704	0.3+	0.5-	1999 09 07	704	0.5-	0.0	1999 09 13	704	0.2+	0.3+
1998 03 28	704	0.2+	0.2+	1999 09 07	699	0.6+	0.8+				

1998 HR₁₃₃ = 1992 EO₃₆ = 1999 NC₁₅

Id. M. E. Sansaturio, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	1.04543		(2000.0)	P		Q	
<i>n</i>	0.18142157	ω	195.32436	+0.44057726		+0.89181900	
<i>a</i>	3.0903673	Ω	100.90726	-0.81224974		+0.44473969	
<i>e</i>	0.1369135	<i>i</i>	6.00444	-0.38228528		+0.08285823	
<i>P</i>	5.43	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1992 03 04	809	0.4+	0.4-	1998 04 20	704	0.2-	1.3+	1999 07 14	704	0.2-	0.1-
1992 04 04	809	0.7-	0.0	1998 04 20	704	(0.5-	2.2-)	1999 07 14	704	0.3-	0.1+
1993 05 25	691	0.3-	0.2+	1998 04 20	704	0.1-	1.3-	1999 07 14	704	0.1-	0.3+
1993 05 25	691	0.2-	0.1+	1998 04 20	704	0.4+	0.3-	1999 07 14	704	0.1+	0.2+
1993 05 25	691	0.7+	0.0	1998 04 24	704	0.2+	0.1+	1999 07 16	704	0.2-	0.1-
1998 03 25	704	0.1-	0.0	1998 04 24	704	0.2+	0.6+	1999 07 16	704	0.4+	0.2+
1998 03 25	704	0.3-	0.3+	1998 04 24	704	0.6-	1.2+	1999 07 16	704	0.2+	0.6+
1998 03 25	704	0.4-	1.3-	1998 04 24	704	0.1+	0.0	1999 07 16	704	0.3-	0.9+
1998 03 25	704	1.2+	1.3-	1998 04 24	704	1.0-	1.0+	1999 08 12	704	0.6+	0.4-
1998 03 25	704	(5.4-	0.3+)	1999 06 15	704	0.3-	0.4+	1999 08 12	704	0.1-	0.3-
1998 04 19	704	0.3-	0.2+	1999 06 15	704	0.4-	0.2-	1999 08 12	704	0.1+	0.2-
1998 04 19	704	0.2+	0.2-	1999 06 15	704	0.3-	0.2+	1999 08 12	704	0.2+	0.8-
1998 04 19	704	0.7+	1.2-	1999 06 15	704	0.7-	0.2-	1999 08 12	704	0.5+	1.9-
1998 04 19	704	0.3+	0.1+	1999 06 15	704	0.0	0.1+				
1998 04 20	704	0.3-	0.3+	1999 07 14	704	0.5+	0.2+				

1998 HV₁₄₃ = 1999 RR₁₇₉

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	332.30601		(2000.0)	P		Q	
<i>n</i>	0.26324895	ω	344.04689	+0.97053031		-0.23212720	
<i>a</i>	2.4111540	Ω	29.61658	+0.23293063		+0.83483145	
<i>e</i>	0.1209387	<i>i</i>	7.52440	+0.06175953		+0.49917272	
<i>P</i>	3.74	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	0.3-	1.6-	1998 05 01	704	(1.8-	2.5+)	1999 09 07	699	0.0	0.3-
1998 04 21	704	1.8-	0.0	1998 05 01	704	1.9+	2.0+	1999 09 07	699	0.3+	0.0
1998 04 21	704	1.2-	0.7+	1998 05 18	691	0.5-	0.2+	1999 09 07	699	0.3+	0.1+
1998 04 21	704	0.7-	0.3-	1998 05 18	691	0.9-	0.1+	1999 09 09	704	0.1-	0.1+
1998 04 21	704	0.2+	0.6+	1998 05 18	691	0.6-	0.1+	1999 09 09	704	0.5+	0.5+
1998 04 22	704	0.2+	0.5+	1998 05 26	691	0.0	0.4-	1999 09 09	704	0.4+	0.1-
1998 04 22	704	0.3+	1.9-	1998 05 26	691	0.1+	0.0	1999 09 09	704	0.3+	0.2+
1998 04 22	704	1.0+	0.2+	1998 05 26	691	0.7+	0.6-	1999 09 09	704	0.5+	0.5+
1998 04 22	704	(1.6+	2.2-)	1998 05 27	691	0.2+	0.2+	1999 09 13	704	0.3-	0.3-
1998 04 25	699	0.2+	0.2+	1998 05 27	691	0.0	0.1+	1999 09 13	704	0.5-	0.0
1998 04 25	699	0.4+	0.4+	1998 05 27	691	0.2+	0.3-	1999 09 13	704	0.9-	0.2-
1998 04 25	699	0.5-	0.4+	1998 05 31	691	0.0	0.3-	1999 09 13	704	0.4-	0.3-
1998 05 01	704	0.3+	0.7-	1998 05 31	691	0.3-	0.4+				
1998 05 01	704	1.3+	0.1-	1998 05 31	691	0.1-	0.2+				

1998 HB₁₄₈ = 1999 RQ₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	39.34702		(2000.0)	P		Q	
<i>n</i>	0.17088556	ω	138.13593	+0.29417481		+0.95567221	
<i>a</i>	3.2161217	Ω	148.96624	-0.88310701		+0.27672232	
<i>e</i>	0.1595460	<i>i</i>	1.36941	-0.36549034		+0.10057523	
<i>P</i>	5.77	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 25	809	(2.7+	1.4+)	1999 09 07	704	0.1-	0.1+	1999 09 09	704	0.6-	0.1+
1998 04 25	809	(1.8+	2.0+)	1999 09 07	704	0.3+	0.1-	1999 09 09	704	0.2+	0.6+
1998 04 25	809	1.2+	1.7+	1999 09 08	704	0.9+	0.4+	1999 09 09	704	0.1-	0.3+
1998 04 28	809	0.8-	0.1+	1999 09 08	704	0.4-	0.9-	1999 09 09	704	0.9-	0.0
1998 04 28	809	0.1+	0.2-	1999 09 08	704	1.0+	0.1-	1999 09 09	704	0.4-	0.0
1998 04 28	809	0.1+	1.6+	1999 09 08	704	0.0	0.5+	1999 09 10	735	0.8+	0.3+
1998 05 22	704	0.3-	0.0	1999 09 08	704	0.3+	0.2-	1999 09 10	735	0.5-	0.2+
1998 05 22	704	0.2-	0.2-	1999 09 08	704	0.3-	0.1+	1999 09 11	735	0.7+	1.0-
1998 05 22	704	0.4+	1.2-	1999 09 09	704	0.5+	0.4+	1999 09 11	735	0.8+	0.6-
1998 05 22	704	(1.2+	2.4-)	1999 09 09	704	0.1-	0.1-	1999 09 11	735	0.2-	0.3+
1998 05 24	704	(0.5-	2.1-)	1999 09 09	704	0.0	0.2+	1999 09 12	735	1.5+	0.9+
1998 05 24	704	0.5-	0.8-	1999 09 09	704	0.2+	0.5-	1999 09 12	735	0.2-	1.0+
1998 05 24	704	0.2-	0.7+	1999 09 09	704	0.3-	0.0	1999 09 14	704	0.4-	0.0
1998 05 24	704	0.2+	0.3-	1999 09 09	704	0.4-	0.7+	1999 09 14	704	0.2-	0.6-
1998 05 24	704	0.0	1.1-	1999 09 09	704	0.4-	0.1+	1999 09 14	704	0.6-	0.1+
1999 09 07	704	0.5-	0.9-	1999 09 09	704	0.4-	0.0	1999 09 14	704	0.2-	0.0
1999 09 07	704	0.0	0.7-	1999 09 09	704	0.6-	0.5+	1999 09 14	704	0.1-	0.4-
1999 09 07	704	0.1-	0.1-	1999 09 09	704	0.4+	0.2-				

1998 HN₁₄₈ = 1999 RG₃₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M.P.C. 35992

1998 04 28	809	(3.5+ 2.4+)	1999 09 03	691	0.1+ 0.3+	1999 09 11	120	0.6+ 0.1-
1998 04 28	809	(3.7+ 3.9+)	1999 09 03	691	0.1+ 0.2+	1999 09 11	120	0.9- 0.6+
1998 04 28	809	(3.3+ 4.5+)	1999 09 03	691	0.2+ 0.5+	1999 09 14	704	0.7+ 0.1+
1998 05 22	704	1.3- 1.8-	1999 09 07	704	0.6+ 0.3-	1999 09 14	704	0.0 1.4-
1998 05 22	704	(2.4- 0.5+)	1999 09 07	704	0.1- 0.5-	1999 09 14	704	0.5+ 0.2-
1998 05 22	704	1.1- 0.4+	1999 09 07	704	0.2- 0.5-	1999 09 14	704	0.1- 0.2-
1998 05 22	704	0.1+ 1.0+	1999 09 09	704	0.5- 0.4+	1999 09 14	704	0.2- 0.3-
1998 05 23	699	1.3+ 1.2+	1999 09 09	704	0.3- 0.4+	1999 09 14	703	0.5+ 0.0
1998 05 23	699	0.7+ 0.8+	1999 09 09	704	0.3+ 0.7+	1999 09 14	703	0.3- 0.6+
1998 05 23	699	(1.6+ 4.3+)	1999 09 09	704	1.1+ 0.2-	1999 09 14	703	0.0 0.8+
1998 05 24	704	0.8+ 0.4-	1999 09 09	704	0.1+ 0.6+	1999 09 14	703	0.4+ 0.7+
1998 05 24	704	0.2+ 0.4-	1999 09 10	120	1.3- 0.1-			

1998 HL₁₄₉ = 1999 RZ₈₉

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	131.04669	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.24185738	ω 177.70402	-0.87204667	+0.48655430	
<i>a</i>	2.5513095	Ω 31.58606	-0.45063098	-0.75604110	
<i>e</i>	0.1218127	<i>i</i> 5.79772	-0.19096156	-0.43779763	
<i>P</i>	4.08	<i>H</i> 14.2	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1991 10 05	691	0.2- 0.3+	1998 05 24	704	0.5+ 0.3-	1999 08 12	699	0.6- 0.2-
1991 10 05	691	0.4- 0.3+	1998 05 24	704	1.2+ 0.0	1999 08 12	699	0.7- 1.4+
1991 10 05	691	0.1+ 0.2+	1998 05 24	704	(3.8- 3.8+)	1999 08 12	699	0.4+ 0.3+
1998 04 25	809	(2.8+ 3.8+)	1998 05 24	704	1.2+ 0.0	1999 08 22	703	0.9+ 0.1+
1998 04 25	809	(2.5+ 2.8+)	1998 05 24	704	0.1- 1.0+	1999 08 22	703	0.6- 0.1+
1998 04 25	809	(3.0+ 3.0+)	1998 06 16	704	0.1- 0.0	1999 08 22	703	(0.9+ 2.1+)
1998 04 28	809	(4.2+ 5.3+)	1998 06 16	704	0.7+ 0.9-	1999 08 22	703	(0.6+ 2.3+)
1998 04 28	809	(3.2+ 3.5+)	1998 06 16	704	0.6- 0.1+	1999 09 07	704	0.1- 0.1+
1998 04 28	809	(3.2+ 3.3+)	1998 06 16	704	0.1- 0.8-	1999 09 07	704	0.1+ 0.2+
1998 05 03	566	0.6- 0.2-	1998 06 16	704	1.2- 0.9+	1999 09 07	704	0.1- 0.2-
1998 05 03	566	0.3- 0.2-	1998 06 18	704	0.1+ 1.7-	1999 09 07	704	0.3- 0.3-
1998 05 03	566	0.4- 0.1+	1998 06 18	704	(2.3+ 1.0-)	1999 09 07	704	0.5- 0.1-
1998 05 22	704	0.1+ 0.2-	1998 06 18	704	0.0 0.7+	1999 09 14	704	0.4+ 0.8-
1998 05 22	704	0.3- 0.8+	1998 06 18	704	(4.9- 1.8+)	1999 09 14	704	0.1+ 0.1-
1998 05 22	704	(0.5+ 3.8-)	1998 07 13	699	0.2- 0.6-	1999 09 14	704	0.5+ 0.2-
1998 05 22	704	0.4+ 0.5+	1998 07 13	699	0.5- 0.1-	1999 09 14	704	0.4+ 0.2-
1998 05 22	704	0.2- 0.7+	1998 07 13	699	0.1+ 0.0	1999 09 14	704	0.2+ 0.3-

1998 JH₁ = 1999 RH₂₀₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	70.40974	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.25691081	ω 18.75239	+0.12462395	+0.98273209	
<i>a</i>	2.4506491	Ω 258.58470	-0.92724157	+0.06629421	
<i>e</i>	0.0487276	<i>i</i> 8.02076	-0.35311746	+0.17275047	
<i>P</i>	3.84	<i>H</i> 14.5	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1998 05 01	566	0.0 0.5-	1998 05 22	704	0.2- 0.4-	1999 09 08	704	0.1- 0.3+
1998 05 01	566	0.7- 0.4+	1998 05 22	704	0.4+ 0.1+	1999 09 08	704	0.1- 0.3+
1998 05 01	566	0.2+ 0.7-	1998 05 24	704	0.4+ 0.0	1999 09 08	704	0.1+ 0.5+
1998 05 02	566	0.1- 0.3+	1998 05 24	704	0.7- 0.7-	1999 09 18	704	0.1- 0.5-
1998 05 02	566	0.1+ 0.6+	1998 05 24	704	0.2- 0.3+	1999 09 18	704	0.2- 0.7-
1998 05 02	566	0.5+ 0.2+	1998 05 24	704	0.5+ 0.5+	1999 09 18	704	0.2+ 0.4+
1998 05 22	704	0.4+ 0.4-	1998 05 24	704	1.0- 0.4+	1999 09 18	704	0.2+ 0.1+
1998 05 22	704	0.4+ 0.1-	1999 09 08	704	0.2+ 0.1-	1999 09 18	704	0.2- 0.4-

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1998 JQ₁ = 1999 RZ₂₀₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	139.03421	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.28006845	ω 355.74670	-0.83886508	+0.53470589	
<i>a</i>	2.3136266	Ω 217.16512	-0.49431063	-0.82672206	
<i>e</i>	0.0958632	<i>i</i> 9.71626	-0.22795257	-0.17498642	
<i>P</i>	3.52	<i>H</i> 15.2	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1998 03 22	327	0.3+ 0.2-	1998 05 02	566	0.2+ 0.4+	1999 09 08	704	0.7+ 0.4+
1998 03 22	327	0.5+ 0.3-	1998 05 02	566	0.2+ 0.4+	1999 09 08	704	0.6+ 0.4-
1998 03 22	327	0.6+ 0.4-	1998 05 02	566	0.6- 0.4+	1999 09 08	704	0.2+ 0.2-
1998 04 22	704	0.2- 0.8+	1998 05 18	699	0.3+ 0.0	1999 09 08	704	0.1- 0.3-
1998 04 22	704	0.3+ 0.3-	1998 05 18	699	0.4- 0.4+	1999 09 08	704	0.1+ 1.1-
1998 04 22	704	0.3- 0.3-	1998 05 18	699	1.0+ 0.1+	1999 09 18	704	0.4+ 0.6+
1998 04 22	704	0.2- 0.3-	1998 05 22	699	0.6+ 0.3-	1999 09 18	704	0.2- 0.2+
1998 04 22	704	1.6- 1.4-	1998 05 22	699	0.1- 0.7-	1999 09 18	704	0.4- 0.1+
1998 04 25	699	0.1+ 0.2+	1998 05 22	699	0.9+ 0.3+	1999 09 18	704	0.4+ 0.3+
1998 04 25	699	0.1+ 0.6+	1998 05 24	704	0.3+ 0.2-	1999 09 18	703	0.4- 0.1+
1998 04 25	699	0.5- 0.6+	1998 05 24	704	0.7+ 0.0	1999 09 18	703	0.8- 0.4+
1998 05 01	566	0.2- 0.5+	1998 05 24	704	0.2- 0.3-	1999 09 18	703	0.0 0.7+
1998 05 01	566	0.1- 0.4+	1998 05 24	704	0.4- 0.0	1999 09 18	703	0.5- 0.8-
1998 05 01	566	0.2- 0.5+	1998 05 24	704	0.5- 1.1-			

1998 JY₁ = 1984 CQ₁ = 1999 RP₇₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	328.99607	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.22994683	ω 74.88493	+0.94519001	-0.31427662	
<i>a</i>	2.6386660	Ω 303.35810	+0.24374511	+0.85962512	
<i>e</i>	0.1253002	<i>i</i> 6.08764	+0.21726519	+0.40283354	
<i>P</i>	4.29	<i>H</i> 13.6	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1984 02 02	801	0.7+ 1.6+	1998 05 24	704	0.8+ 1.0+	1999 09 07	704	0.1- 0.1-
1998 05 01	566	0.0 0.6-	1999 07 23	704	0.3- 0.9+	1999 09 09	704	0.3- 0.4-
1998 05 01	566	0.0 0.5-	1999 07 23	704	0.6+ 0.7-	1999 09 09	704	0.3- 0.1-
1998 05 01	566	0.1+ 0.6-	1999 07 23	704	0.1- 0.8+	1999 09 09	704	0.2- 0.1-
1998 05 02	566	0.5+ 0.8-	1999 08 22	699	(2.1- 0.3+)	1999 09 09	704	0.6+ 0.0
1998 05 02	566	0.6+ 0.0	1999 08 22	699	(3.2- 0.7+)	1999 09 09	704	0.8+ 0.7+
1998 05 02	566	0.5- 0.2-	1999 08 22	699	0.0 0.1+	1999 09 10	704	0.1- 0.0
1998 05 22	704	0.0 1.0+	1999 09 05	703	0.4+ 0.3+	1999 09 10	704	0.3+ 0.2-
1998 05 22	704	0.8- 1.1+	1999 09 05	703	0.2- 0.2-	1999 09 10	704	0.0 0.4-
1998 05 22	704	0.8- 0.9+	1999 09 05	703	0.6- 0.7+	1999 09 14	704	0.7+ 0.2-
1998 05 22	704	(2.6- 1.7+)	1999 09 05	703	1.5+ 0.4+	1999 09 14	704	1.3- 0.8+
1998 05 24	704	0.4- 0.5+	1999 09 07	704	0.1- 0.2-	1999 09 14	704	0.7- 0.1+
1998 05 24	704	0.6+ 0.7-	1999 09 07	704	0.2- 0.2-	1999 09 14	704	0.2- 0.2-
1998 05 24	704	0.2+ 0.3-	1999 09 07	704	0.2+ 0.2-	1999 09 14	704	0.3- 0.1-
1998 05 24	704	(2.6+ 1.8-)	1999 09 07	704	0.6- 0.1+			

1998 JF₃ = 1999 RM₂₇

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	321.05493	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.25514244	ω 216.47070	+0.87892740	-0.47655402	
<i>a</i>	2.4619596	Ω 171.91818	+0.46387418	+0.84455875	
<i>e</i>	0.0587286	<i>i</i> 8.00080	+0.11093863	+0.24416551	
<i>P</i>	3.86	<i>H</i> 14.4	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1998 04 23	704	0.3+ 1.3-	1998 05 23	704	0.4+ 0.9+	1999 09 09	120	(2.6+ 1.3-)
1998 04 23	704	0.1- 0.2+	1999 07 16	704	0.2+ 0.1+	1999 09 09	120	0.2- 0.7-
1998 04 23	704	0.6- 0.7-	1999 07 16	704	0.1- 0.1-	1999 09 09	704	0.1- 0.3-
1998 04 23	704	1.7- 0.3-	1999 07 16	704	0.3+ 0.4+	1999 09 09	704	0.4+ 0.3-
1998 04 24	704	1.6+ 0.9+	1999 07 16	704	0.2- 0.3+	1999 09 09	704	0.1+ 0.4-
1998 04 24	704	1.6- 0.2+	1999 08 12	699	0.2- 0.7+	1999 09 09	704	0.1- 0.0

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1998 04 24	704	0.9−	1.9−	1999 08 12	699	0.1−	1.0+	1999 09 09	704	0.2+	0.2+
1998 05 01	699	1.4+	0.6−	1999 08 12	699	0.3−	0.5+	1999 09 11	699	0.1+	1.7+
1998 05 01	699	0.1−	1.2+	1999 09 07	704	0.4+	0.2−	1999 09 11	699	0.2+	1.2+
1998 05 01	699	0.3−	0.3+	1999 09 07	704	0.3+	0.4−	1999 09 11	699	0.3−	1.0+
1998 05 05	699	0.2+	0.7−	1999 09 07	704	0.3+	0.0	1999 09 14	704	0.1−	0.4−
1998 05 05	699	0.5+	0.9−	1999 09 07	704	0.1−	0.4−	1999 09 14	704	0.4−	1.1−
1998 05 05	699	0.4+	0.0	1999 09 07	704	0.3−	1.0−	1999 09 14	704	0.9−	0.2−
1998 05 23	704	0.2−	0.6+	1999 09 07	120	0.5+	0.2−	1999 09 14	704	0.1−	0.6−
1998 05 23	704	0.4−	0.7+	1999 09 08	120	0.6+	0.0	1999 09 14	704	0.4−	0.2−
1998 05 23	704	0.9+	0.2−	1999 09 08	120	0.4−	0.1+				
1998 05 23	704	0.1−	0.9+	1999 09 08	120	0.8+	0.8−				

1998 JK₃ = 1999 RY₅₇

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>				(2000.0)			
<i>n</i>				<i>P</i>			
<i>a</i>				<i>Q</i>			
<i>e</i>				<i>ω</i>			
<i>P</i>				<i>H</i>			
				<i>G</i>			
				<i>U</i>			
				<i>3</i>			

Residuals in seconds of arc

1992 03 30	691	0.5−	0.1−	1998 05 05	699	0.4+	0.5−	1999 08 20	682	0.1−	0.6−
1992 03 30	691	0.1+	0.6−	1998 05 05	699	0.9+	0.0	1999 08 20	682	1.1+	0.8−
1992 03 30	691	0.0	0.8−	1998 05 22	704	1.0+	0.1−	1999 08 20	682	0.8−	0.8−
1994 10 10	675(13.2−	7.2−)		1998 05 22	704	0.4−	0.6−	1999 09 07	699	0.1−	0.1+
1994 10 10	675(13.1−	8.1−)		1998 05 22	704	1.1−	0.7−	1999 09 07	699	0.7−	0.8+
1998 03 26	910	0.2−	0.3+	1998 05 22	704	0.9−	0.5−	1999 09 07	704	0.4+	0.1−
1998 03 26	910	0.1+	0.1+	1998 05 22	704	1.5−	1.7+	1999 09 07	699	0.1+	0.5+
1998 03 26	910	0.0	0.2+	1998 05 24	704	1.3−	0.2−	1999 09 07	704	0.1+	0.5−
1998 04 24	704	0.1−	0.2+	1998 05 24	704	0.9−	0.8−	1999 09 07	704	0.5+	0.0
1998 04 24	704	0.0	0.5−	1998 05 24	704	(0.8−	3.1−)	1999 09 07	704	0.1+	1.7−
1998 04 24	704	0.3−	0.3+	1998 05 24	704	(2.5−	0.2−)	1999 09 07	704	0.0	0.8−
1998 04 30	566	0.8+	0.2+	1998 06 16	704	0.2−	0.2+	1999 09 13	704	0.0	0.2+
1998 04 30	566	0.9+	0.1+	1998 06 16	704	0.5+	0.6+	1999 09 13	704	0.2−	1.0+
1998 04 30	566	0.4+	0.1+	1998 06 16	704	0.2−	0.3+	1999 09 13	704	0.1−	0.5+
1998 05 01	699	0.2+	0.2−	1998 06 16	704	(3.4−	0.5−)	1999 09 13	704	0.2−	1.0+
1998 05 01	699	0.5+	0.4+	1999 08 08	699	0.1+	0.2−	1999 09 13	704	0.2−	0.4+
1998 05 01	699	0.7+	0.4+	1999 08 08	699	0.4+	0.1+				
1998 05 05	699	1.1+	0.5+	1999 08 08	699	0.0	0.3+				

1998 JL₃ = 1999 RG₁₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>				(2000.0)			
<i>n</i>				<i>P</i>			
<i>a</i>				<i>Q</i>			
<i>e</i>				<i>ω</i>			
<i>P</i>				<i>H</i>			
				<i>G</i>			
				<i>U</i>			
				<i>3</i>			

Residuals in seconds of arc

1993 04 15	675	0.5+	0.1+	1998 05 22	699	0.0	0.3−	1999 09 08	704	0.9−	0.0
1993 04 15	675	0.4−	0.3+	1998 05 22	699	1.0−	0.8+	1999 09 08	704	0.2−	0.2+
1998 05 02	910	0.3+	0.2−	1998 05 22	699	0.8+	0.1+	1999 09 08	704	0.2−	0.2+
1998 05 02	910	0.5+	0.1−	1998 05 24	704	0.0	0.7+	1999 09 08	704	0.1+	0.4+
1998 05 02	910	0.5+	0.3−	1998 05 24	704	0.1−	0.8+	1999 09 09	704	0.0	0.0
1998 05 06	910	0.0	0.2−	1998 05 24	704	0.3+	0.7+	1999 09 09	704	0.0	0.1−
1998 05 06	910	0.5+	0.3−	1998 05 24	704	0.6+	0.7−	1999 09 09	704	1.9+	0.4+
1998 05 06	910	0.4+	0.4−	1998 05 24	699	0.4+	0.3−	1999 09 09	704	0.5−	0.1+
1998 05 07	910	0.0	0.2−	1998 05 24	704	0.1+	0.8−	1999 09 09	704	0.9−	0.0
1998 05 07	910	0.1−	0.2−	1998 05 24	699	0.1+	0.2+	1999 09 09	704	0.2−	0.2+
1998 05 07	910	0.1−	0.2−	1998 05 24	699	0.1+	0.5−	1999 09 09	704	0.2−	0.0
1998 05 22	704	0.3−	0.1+	1999 07 13	704	0.1−	0.3−	1999 09 09	704	0.2−	0.1−
1998 05 22	704	1.2−	1.1+	1999 07 13	704	0.5+	0.2−	1999 09 14	704	0.4−	1.1+
1998 05 22	704	0.8−	0.7−	1999 07 13	704	0.7+	0.2+	1999 09 14	704	0.1−	0.4−
1998 05 22	704	0.0	0.5−	1999 07 13	704	0.5+	0.2−	1999 09 14	704	0.1−	1.0−
1998 05 22	704	1.0−	1.2+	1999 07 13	704	0.3+	0.5−	1999 09 14	704	(1.2+	2.3−)

M.P.C. 35993

1998 JE₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>				(2000.0)			
<i>n</i>				<i>P</i>			
<i>a</i>				<i>Q</i>			
<i>e</i>				<i>ω</i>			
<i>P</i>				<i>H</i>			
				<i>G</i>			
				<i>U</i>			
				<i>4</i>			

Residuals in seconds of arc

1998 04 22	704	1.2+	0.4−	1998 05 19	611	0.8−	0.2+	1999 09 08	704	0.3+	1.2−
1998 04 22	704	0.1−	1.1+	1998 05 22	704	0.8+	0.2−	1999 09 08	704	1.8+	1.5−
1998 04 22	704	(2.6+	1.3+)	1998 05 22	704	0.9+	0.6+	1999 09 08	704	(0.5+	2.6−)
1998 04 22	704	0.3+	0.5+	1998 05 22	704	0.6+	1.2−	1999 09 11	611	0.2+	0.7−
1998 05 01	704	0.5−	0.0	1998 05 22	704	0.4+	0.4−	1999 09 11	611	0.1+	0.0
1998 05 01	704	0.3+	0.1−	1998 05 23	611	1.0+	0.3+	1999 09 11	611	0.2−	0.2−
1998 05 01	704	0.3+	0.7−	1998 05 23	611	1.1−	0.4+	1999 09 12	611	0.8+	0.2−
1998 05 01	704	1.4−	0.2−	1998 05 24	704	0.2+	0.1+	1999 09 12	611	1.8−	0.8+
1998 05 01	704	0.4+	0.1−	1998 05 24	704	0.8+	0.7−	1999 09 12	611	0.2−	0.4+
1998 05 15	611	0.2+	1.5+	1998 05 24	704	1.1−	0.7−	1999 09 13	611	1.2−	1.8+
1998 05 15	611	1.6+	0.9−	1998 05 24	704	1.0+	0.7+	1999 09 13	611	1.1+	0.7+
1998 05 15	611	1.3−	1.2+	1998 05 24	704	0.4−	0.9−	1999 09 13	611	(1.4−	2.4−)
1998 05 16	611	0.0	0.3+	1998 06 01	611	0.7−	0.9−	1999 09 18	704	0.9+	0.3−
1998 05 16	611	0.5−	0.6+	1998 06 01	611	0.4+	0.1−	1999 09 18	704	0.3−	0.2+
1998 05 17	611	0.4−	0.5−	1998 06 14	611	0.6+	0.2+	1999 09 18	704	1.3−	0.6+
1998 05 17	611	0.7−	0.6−	1998 06 14	611	0.3−	1.3+				
1998 05 19	611	1.1−	0.1−	1999 09 08	704	0.2−	0.3−				

1998 JH₄ = 1999 RB₈₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>				(2000.0)			
<i>n</i>				<i>P</i>			
<i>a</i>				<i>Q</i>			
<i>e</i>				<i>ω</i>			
<i>P</i>				<i>H</i>			
				<i>G</i>			
				<i>U</i>			
				<i>4</i>			

Residuals in seconds of arc

1998 05 15	426	0.0	0.8−	1998 05 24	704	1.5−	0.4−	1998 06 02	426	0.2+	0.3−
1998 05 15	426	0.4−	0.7−	1998 05 24	704	0.3−	0.7+	1998 06 17	426	0.3+	0.1+
1998 05 15	426	0.2−	0.6−	1998 05 24	699	0.7+	0.0	1998 06 17	426	0.6−	0.9−
1998 05 16	426	0.3+	0.1+	1998 05 24	699	1.0+	0.3+	1998 06 17	426	0.6−	0.4−
1998 05 16	426	0.4	0.7+	1998 05 24	704	0.3+	0.7−	1998 06 22	426	0.8+	0.3−
1998 05 16	426	0.0	0.1−	1998 05 24	699	0.2−	1.2+	1998 06 22	426	0.7−	0.1+
1998 05 22	704	1.3+	1.1+	1998 05 24	704	2.1−	0.6−	1999 09 07	704	1.1−	0.1−
1998 05 22	704	0.0	0.7−	1998 05 26	426	0.9+	0.0	1999 09 07	704	0.0	0.3−
1998 05 22	704	0.2−	2.6−	1998 05 26	426	0.0	0.4−	1999 09 07	704	0.6−	0.8+
1998 05 22	704	0.6+	0.8−	1998 05 31	426	0.0	1.1+	1999 09 13	704	0.9+	0.1−
1998 05 23	699	0.3+	1.9+	1998 05 31	426	0.3−	0.0	1999 09 13	704	0.2−	0.4+
1998 05 23	699	0.0	1.6+	1998 05 31	426	0.1+	0.6+	1999 09 13	704	1.0+	0.1−
1998 05 23	699	0.7+	1.4+	1998 06 02	426	0.1+	0.3−	1999 09 13	704	0.1−	0.5−

M.P.C. 35994

1992 09 02	809	1.3+	0.3-	1998 05 25	699	1.1+	0.6-	1999 09 09	704	(2.6+	1.2+)
1992 09 22	809	0.3-	0.3-	1998 05 25	699	1.0+	0.3+	1999 09 09	426	0.2+	0.0
1992 09 22	809	0.4-	0.1+	1998 05 25	699	0.3-	0.3+	1999 09 09	426	0.0	0.0
1992 09 22	809	1.1-	0.8-	1998 05 27	426	0.1+	0.4-	1999 09 09	426	0.1-	0.1+
1992 09 23	809	0.3-	1.2-	1998 05 27	426	1.2-	0.5+	1999 09 11	699	0.0	0.6+
1992 09 23	809	0.5-	0.6-	1998 05 27	426	0.1-	0.1+	1999 09 11	699	0.1-	0.8+
1992 09 23	809	1.0-	1.6-	1998 05 31	426	0.8+	0.1-	1999 09 11	699	0.1-	0.8+
1998 05 19	426	0.1-	0.1+	1998 05 31	426	0.6-	0.1+	1999 09 12	106	0.9-	0.7+
1998 05 19	426	0.2-	0.1-	1998 05 22	699	0.0	0.9+	1999 09 12	106	0.1-	0.1-
1998 05 19	426	0.0	0.0	1998 05 22	699	0.2-	0.7+	1999 09 12	106	0.6-	0.3+
1998 05 21	426	0.1-	0.2+	1998 05 22	699	0.5-	1.0+	1999 09 14	704	0.3-	0.4-
1998 05 21	426	0.4-	0.2-	1998 09 04	426	0.3-	0.2+	1999 09 14	704	0.4-	0.4-
1998 05 21	426	0.6+	0.0	1998 09 04	426	0.2-	0.1+	1999 09 14	704	0.0	0.4-
1998 05 22	704	0.4+	0.7-	1998 09 04	426	0.3-	0.1+	1999 09 14	704	0.1+	0.2-
1998 05 22	704	0.8-	1.3+	1998 09 07	704	0.1-	0.1+	1999 09 14	704	0.4-	0.2-
1998 05 22	704	1.0-	0.4-	1998 09 07	704	0.0	0.2-	1999 09 18	691	0.1+	0.4-
1998 05 22	704	1.5+	0.6-	1998 09 07	704	0.1-	0.0	1999 09 18	691	0.1+	0.5-
1998 05 22	704	(3.8-	0.1+)	1998 09 07	704	0.2-	0.0	1999 09 18	691	0.2+	0.3-

1998 KZ = 1996 XT₂₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	45.97194	(2000.0)	P	Q	
<i>n</i>	0.36292853	ω	306.46919	+0.94889204	+0.11387577
<i>a</i>	1.9465040	Ω	49.03571	+0.09104169	+0.79422003
<i>e</i>	0.0667122	<i>i</i>	22.94166	-0.30218423	+0.59686419
<i>P</i>	2.72	<i>H</i>	15.4	<i>G</i>	0.15 <i>U</i> 4

Residuals in seconds of arc

1996 12 06	327	0.0	0.4-	1998 04 22	704	0.6+	0.9-	1998 05 23	704	0.3+	0.6+
1996 12 06	327	0.6+	0.3-	1998 04 22	704	1.2+	1.3-	1998 05 23	704	1.2-	0.7+
1996 12 06	327	0.3+	1.0-	1998 05 01	704	0.1-	0.2+	1998 05 23	704	0.0	0.0
1996 12 10	327	0.0	0.3+	1998 05 01	704	1.4+	0.6-	1998 05 23	704	0.3+	0.6+
1996 12 10	327	0.1-	0.3+	1998 05 01	704	0.4+	0.1+	1998 05 23	704	1.1+	0.1+
1996 12 10	327	0.1+	0.4+	1998 05 01	704	0.2+	1.2-	1998 05 24	704	0.2-	0.4-
1996 12 24	327	0.3+	0.5+	1998 05 22	704	0.2-	0.2+	1998 05 24	704	0.0	0.2+
1996 12 24	327	0.0	0.2-	1998 05 22	704	1.2-	0.4-	1998 05 24	704	0.4-	0.7+
1996 12 24	327	0.3-	0.6-	1998 05 22	704	0.4-	0.4-	1998 05 24	704	0.2-	1.7+
1998 04 22	704	0.5-	0.7-	1998 05 22	704	0.5-	0.5+	1998 05 24	704	1.2-	0.6-
1998 04 22	704	0.8+	1.4+	1998 05 22	704	0.9-	1.2-				

1998 KL₁

Id. E. Bowell (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	93.24449	(2000.0)	P	Q	
<i>n</i>	0.22479779	ω	207.47322	-0.49445560	+0.86888053
<i>a</i>	2.6788066	Ω	32.90861	-0.78926985	-0.43741116
<i>e</i>	0.0412687	<i>i</i>	2.49702	-0.36409718	-0.23177163
<i>P</i>	4.38	<i>H</i>	14.2	<i>G</i>	0.15 <i>U</i> 1

Residuals in seconds of arc

1995 10 23	691	0.1-	0.1+	1998 05 22	704	0.1-	0.8+	1999 09 07	704	0.1+	0.1+
1995 10 23	691	0.2-	0.3+	1998 05 22	704	1.6+	1.5-	1999 09 07	704	0.0	0.3+
1995 10 23	691	0.1+	0.1-	1998 05 22	699	1.2+	1.8+	1999 09 08	703	0.2+	0.2+
1996 12 11	691	0.4+	0.2-	1998 05 22	699	0.1-	0.8+	1999 09 08	703	0.7+	0.0
1996 12 11	691	0.1-	0.4-	1998 05 22	699	(0.5+	2.1+)	1999 09 08	703	0.3+	0.1+
1996 12 11	691	0.3-	0.1-	1998 05 23	704	0.3-	0.8-	1999 09 08	703	1.4+	0.1+
1998 04 22	704	1.0+	0.2-	1998 05 23	704	0.9-	0.1+	1999 09 09	704	0.1+	0.7-
1998 04 22	704	0.4+	0.0	1998 05 23	704	2.0-	1.6-	1999 09 09	704	0.0	1.3-
1998 04 22	704	0.5-	0.1+	1998 05 23	704	0.4-	1.0+	1999 09 09	704	0.0	0.1-
1998 04 22	704	0.4-	0.4-	1998 05 23	704	1.2-	1.1+	1999 09 09	704	0.1-	1.0-
1998 04 22	704	1.0-	0.8-	1998 05 24	704	0.6+	0.2-	1999 09 10	704	0.1-	0.9-
1998 05 01	704	0.0	0.1-	1998 05 24	704	0.6-	0.2+	1999 09 10	704	0.1+	0.7-
1998 05 01	704	0.7+	1.5-	1998 05 24	704	0.7+	0.8+	1999 09 10	704	0.0	0.4-
1998 05 01	704	0.4+	0.2-	1998 05 24	704	0.7-	0.1+	1999 09 10	704	0.2+	0.8+
1998 05 01	704	1.4+	0.8+	1998 05 24	704	0.3-	0.6+	1999 09 10	704	0.8-	0.0

1999 SEPT. 28

1998 05 18	699	0.1+	0.4+	1998 08 12	699	0.5+	1.0+	1999 09 10	704	0.5-	1.2+
1998 05 18	699	0.1-	0.0	1998 08 12	699	0.4-	1.3+	1999 09 13	704	0.2-	0.2-
1998 05 18	699	0.8+	0.3-	1998 08 12	699	0.6+	1.5+	1999 09 13	704	0.0	0.9-
1998 05 22	704	0.5+	0.7-	1998 09 07	704	0.7-	0.1-	1999 09 13	704	0.1-	0.7-
1998 05 22	704	0.8-	0.5+	1998 09 07	704	0.1-	0.1+	1999 09 13	704	0.8-	0.4-
1998 05 22	704	0.3-	1.4-	1998 09 07	704	0.1-	0.2-				

1998 KP₆ = 1999 RJ₁₉₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	61.81757	(2000.0)	P	Q	
<i>n</i>	0.21831812	ω	66.32488	+0.14174763	+0.98760815
<i>a</i>	2.7315523	Ω	212.05172	-0.94817592	+0.11590870
<i>e</i>	0.0815894	<i>i</i>	7.29255	-0.28437658	+0.10580788
<i>P</i>	4.51	<i>H</i>	14.1	<i>G</i>	0.15 <i>U</i> 4

Residuals in seconds of arc

1998 04 24	327	0.5-	0.1-	1998 05 22	699	0.2+	0.0	1998 06 18	704	0.6+	0.2+
1998 04 24	327	0.4-	0.6+	1998 05 23	699	0.7+	0.5-	1998 06 18	704	0.5+	1.3-
1998 04 24	327	0.0	0.3-	1998 05 23	699	0.9+	0.0	1998 06 18	704	0.7+	0.6-
1998 05 05	699	0.4+	0.9-	1998 05 23	699	0.2-	0.0	1998 06 18	704	3.9-	0.7+
1998 05 05	699	0.5-	0.5-	1998 05 24	704	0.5+	0.0	1999 09 07	704	0.4+	0.4-
1998 05 05	699	0.6-	0.4-	1998 05 24	704	0.0	1.8+	1999 09 07	704	0.1+	0.1-
1998 05 22	704	0.7+	0.3+	1998 05 24	704	0.6-	0.3+	1999 09 07	704	0.2-	0.3+
1998 05 22	704	0.2+	0.4+	1998 05 24	704	1.5-	1.9-	1999 09 07	704	0.1-	0.0
1998 05 22	704	0.1+	0.1-	1998 05 24	704	0.3+	0.6+	1999 09 07	704	0.6+	0.1-
1998 05 22	704	0.0	0.4-	1998 06 03	704	0.6-	0.8+	1999 09 16	704	0.4+	0.3-
1998 05 22	699	0.5+	0.2-	1998 06 03	704	1.3-	1.9+	1999 09 16	704	0.9-	0.0
1998 05 22	704	0.6-	0.3+	1998 06 03	704	2.3+	0.7-	1999 09 16	704	0.1-	0.5+
1998 05 22	699	1.0+	0.3+	1998 06 03	704	0.8+	0.3-				

1998 KK₈ = 1999 RE₁₄₇

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	35.86612	(2000.0)	P	Q	
<i>n</i>	0.18973173	ω	91.07150	+0.38633811	+0.91990744
<i>a</i>	2.9994576	Ω	202.03251	-0.90137088	+0.36109633
<i>e</i>	0.0750392	<i>i</i>	10.31639	-0.19563590	+0.15290434
<i>P</i>	5.19	<i>H</i>	13.4	<i>G</i>	0.15 <i>U</i> 4

Residuals in seconds of arc

1998 05 05	699	0.3-	0.5-	1998 05 24	704	0.2+	0.8-	1999 09 09	704	0.5+	0.8-
1998 05 05	699	0.1-	0.2-	1998 05 24	699	0.1+	0.0	1999 09 09	704	0.9+	0.3+
1998 05 05	699	0.5-	1.1+	1998 05 24	704	0.5+	1.1-	1999 09 09	704	1.1+	0.4-
1998 05 22	704	0.4-	0.0	1998 05 24	699	0.5+	0.1+	1999 09 10	704	0.8+	0.1-
1998 05 22	704	0.3+	0.3+	1998 05 24	699	0.1+	0.1-	1999 09 10	704	0.5+	0.1+
1998 05 22	704	0.2+	0.4+	1998 06 03	704	0.2+	0.7+	1999 09 10	704	0.3+	0.1-
1998 05 22	704	0.1-	0.1+	1998 06 03	704	0.8+	0.3+	1999 09 10	704	0.5-	0.1-
1998 05 22	704	0.2-	1.0+	1998 06 03	704	0.3-	0.6-	1999 09 10	704	0.3+	0.5-
1998 05 23	699	0.1-	0.6+	1998 06 03	704	1.6-	0.7+	1999 09 10	704	0.7-	1.1-
1998 05 23	699	0.3-	0.1+	1999 09 08	699	0.2-	0.9+	1999 09 14	704	0.3-	0.3+
1998 05 23	699	0.6+	0.2-	1999 09 08	699	0.2-	0.8+	1999 09 14	704	0.6-	0.2+
1998 05 24	704	0.4+	0.8-	1999 09 08	699	0.5-	1.0+	1999 09 14	704	0.1-	0.1+
1998 05 24	704	0.3-	0.4-	1999 09 09	704	0.3+	1.0-	1999 09 14	704	1.1-	0.2+
1998 05 24	704	0.1+	0.7-	1999 09 09	704	0.2+	0.0	1999 09 14	704	0.7-	0.2+

1998 KP₈ = 1999 RO₁₇₃

Id. G. V. Williams, E. Bowell

Residuals in seconds of arc

1998 05 23	704	0.0	0.8−	1998 05 26	704	0.5−	1.5−	1999 08 12	699	0.3−	0.3−
1998 05 23	704	1.8+	0.0	1998 05 26	704	(2.2−	1.1+)	1999 08 12	699	0.1−	0.1−
1998 05 23	704	0.7+	0.3−	1998 05 26	704	1.6−	1.5+	1999 08 12	699	0.0	0.2+
1998 05 23	704	1.0−	0.4−	1998 06 03	704	1.2−	0.1−	1999 09 09	704	0.9−	0.1−
1998 05 23	699	0.2+	0.9−	1998 06 03	704	0.8−	0.3−	1999 09 09	704	0.8−	0.3+
1998 05 23	704	0.3−	1.6+	1998 06 03	704	(0.5−	2.2+)	1999 09 09	704	0.1−	0.2+
1998 05 23	699	0.2+	0.3+	1998 06 03	704	0.5−	0.3−	1999 09 09	704	0.8+	0.9+
1998 05 23	699	0.9+	0.3−	1999 07 16	704	0.9−	1.2−	1999 09 09	704	1.5+	1.6+
1998 05 24	699	0.5+	0.8+	1999 07 16	704	0.5−	0.1−	1999 09 13	704	0.1+	0.2−
1998 05 24	699	0.1−	0.6+	1999 07 16	704	0.1+	0.1−	1999 09 13	704	0.0	0.6−
1998 05 24	699	0.3+	0.0	1999 07 16	704	0.8+	0.5+	1999 09 13	704	0.1−	0.6−
1998 05 26	704	1.3+	0.3+	1999 07 16	704	0.3+	0.3−	1999 09 13	704	0.0	0.5−

1998 KC₉ = 1999 RJ₃₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17832274	<i>ω</i>	105.73747	+0.32813914	+0.94447314		
<i>a</i>	3.1260666	<i>Ω</i>	183.55999	−0.93745965	+0.32335806		
<i>e</i>	0.2178020	<i>i</i>	16.06296	−0.11616418	+0.05839559		
<i>P</i>	5.53	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 03 08	691	0.1−	0.3−	1998 05 26	704	0.9−	1.0−	1999 09 07	704	0.1+	0.1−
1997 03 08	691	0.2+	0.3−	1998 05 27	699	0.3+	0.3+	1999 09 07	704	0.3−	1.9−
1997 03 08	691	0.2−	0.1−	1998 05 27	699	0.5+	0.1+	1999 09 10	120	0.0	0.3−
1998 05 23	704	0.1+	0.4−	1998 05 27	699	0.3+	1.0+	1999 09 10	120	0.3+	0.1+
1998 05 23	704	0.1−	0.0	1998 05 28	699	0.2−	0.5−	1999 09 11	120	0.3−	0.0
1998 05 23	704	0.0	0.8+	1998 05 28	699	0.0	0.6+	1999 09 11	120	(2.6+	0.9−)
1998 05 23	704	0.2−	0.6+	1998 05 28	699	0.2+	1.2−	1999 09 12	120	1.3−	0.1+
1998 05 23	704	0.5−	0.7−	1999 09 05	699	0.1+	0.0	1999 09 12	120	0.2+	0.4−
1998 05 26	704	0.8−	1.9−	1999 09 05	699	0.2−	0.6+	1999 09 13	120	0.2+	0.0
1998 05 26	704	0.9+	1.5+	1999 09 05	699	0.1−	0.8+	1999 09 13	120	1.4+	0.1−
1998 05 26	704	0.3−	0.7+	1999 09 07	704	0.3−	0.2+	1999 09 14	120	0.6+	0.3+
1998 05 26	704	0.7+	0.3−	1999 09 07	704	0.5+	0.2−	1999 09 14	120	0.8−	0.0

1998 KM₉

Id. P. G. Comba (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26936172	<i>ω</i>	338.77479	−0.43960476	−0.89374857		
<i>a</i>	2.3745362	<i>Ω</i>	137.16815	+0.84182073	−0.44461514		
<i>e</i>	0.0763689	<i>i</i>	7.54141	+0.31318607	−0.05942116		
<i>P</i>	3.66	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 28	684	0.1+	0.1+	1998 06 03	684	0.7−	0.1+	1998 07 18	684	0.5+	0.2+
1998 05 28	684	0.1−	0.4−	1998 06 26	684	0.7−	0.1−	1998 07 18	684	1.0+	0.7+
1998 05 29	684	0.6−	0.7−	1998 06 26	684	0.5+	0.3−	1999 09 13	684	0.3+	0.1+
1998 05 29	684	0.8+	0.8−	1998 06 27	684	0.4−	1.0−	1999 09 13	684	0.1−	0.0
1998 05 29	684	0.7+	1.0+	1998 06 27	684	0.6−	0.5−	1999 09 14	684	0.2−	0.0
1998 06 02	684	0.0	0.2+	1998 06 27	684	0.2−	0.5−	1999 09 14	684	0.0	0.1−
1998 06 02	684	0.1−	0.6+	1998 07 17	684	0.3+	0.9+	1999 09 14	684	0.1+	0.1−
1998 06 03	684	0.2+	0.4+	1998 07 17	684	0.6−	0.1+				

1998 KW₉ = 1999 RP₁₂₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17559717	<i>ω</i>	36.37881	+0.78854627	+0.59558812		
<i>a</i>	3.1583315	<i>Ω</i>	286.35650	−0.59516789	+0.67637485		
<i>e</i>	0.2105720	<i>i</i>	9.18714	−0.15482234	+0.43334958		
<i>P</i>	5.61	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 05 22	566	0.3−	0.4−	1999 07 23	704	0.2+	0.3−	1999 09 08	704	0.0	0.3+
1998 05 22	566	0.2−	0.2−	1999 07 23	704	0.5−	0.0	1999 09 09	704	0.7−	0.0
1998 05 22	566	0.2+	0.2+	1999 07 23	704	0.7+	0.6−	1999 09 09	704	0.0	0.4−
1998 05 24	327	0.1−	0.2+	1999 07 23	704	0.0	0.2+	1999 09 09	704	0.1−	0.1+
1998 05 24	327	0.1+	0.0	1999 07 23	704	0.6+	0.2+	1999 09 09	704	0.1+	0.1−
1998 05 24	327	0.2+	0.1+	1999 09 07	703	1.1−	0.3−	1999 09 09	704	0.2−	0.3+
1998 05 24	327	0.0	0.1+	1999 09 07	703	0.5−	0.4−	1999 09 10	704	0.3+	0.3−
1998 05 25	327	0.0	0.0	1999 09 07	703	0.1−	0.5−	1999 09 10	704	0.1+	0.3+
1998 05 25	327	0.0	0.2−	1999 09 07	703	0.1−	0.0	1999 09 10	704	0.0	0.0
1998 05 25	327	0.1−	0.1+	1999 09 08	704	0.2−	0.3+	1999 09 16	704	0.9+	0.2+
1998 06 04	327	0.3+	0.1−	1999 09 08	704	0.0	0.5+	1999 09 16	704	0.5+	0.1+
1998 06 04	327	0.0	0.2+	1999 09 08	704	0.1−	0.4+	1999 09 16	704	0.4+	0.1−
1998 06 04	327	0.1+	0.0	1999 09 08	704	0.2−	0.0	1999 09 16	704	0.1+	0.1−

1998 KF₁₀ = 1999 RZ₁₄₉

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22026905	<i>ω</i>	172.45624	+0.97492359	+0.22238101		
<i>a</i>	2.7153995	<i>Ω</i>	174.67262	−0.20861323	+0.92641401		
<i>e</i>	0.0555095	<i>i</i>	5.19495	−0.07748876	+0.30381534		
<i>P</i>	4.47	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1995 11 19	691	0.2−	0.4−	1998 05 23	704	1.6−	0.4+	1998 05 28	824	0.1+	0.4+
1995 11 19	691	0.1+	0.2−	1998 05 23	704	0.9+	0.4−	1998 08 08	699	1.2−	0.3+
1995 11 19	691	0.3+	0.3−	1998 05 23	704	1.7+	0.3+	1998 08 08	699	0.2+	0.8−
1997 02 13	327	0.1−	0.3+	1998 05 24	824	0.8+	0.1−	1998 08 08	699	0.3+	0.3−
1997 02 13	327	0.1−	0.3+	1998 05 24	824	0.6+	0.0	1998 08 22	699	1.1−	0.2+
1997 02 13	327	0.1−	0.1−	1998 05 24	824	0.6+	0.4+	1998 08 22	699	0.5+	0.7+
1997 02 13	327	0.4+	0.1+	1998 05 24	704	0.2−	0.1−	1998 08 22	699	0.2+	0.2−
1998 04 22	704	1.4−	0.4−	1998 05 24	704	0.9−	0.3+	1998 08 22	699	(0.1+	2.2+)
1998 04 22	704	(2.5−	1.4+)	1998 05 24	704	0.7+	0.4+	1998 08 22	699	0.5−	0.3−
1998 04 22	704	0.4−	0.3+	1998 05 24	704	0.1+	0.1−	1998 08 22	699	0.6−	0.9+
1998 04 22	704	0.3−	0.8−	1998 05 24	704	0.7−	0.8−	1999 09 05	699	0.6−	0.9+
1998 04 22	704	1.6−	0.4+	1998 05 24	704	0.8+	0.5+	1999 09 05	699	0.2+	1.0+
1998 04 29	691	0.2−	0.4−	1998 05 24	704	0.3+	0.6+	1999 09 05	699	0.3+	0.7+
1998 04 29	691	0.2−	0.1+	1998 05 24	704	0.4−	0.9−	1999 09 07	704	0.3+	0.3−
1998 04 29	691	0.7−	0.4+	1998 05 24	704	0.8−	0.8−	1999 09 07	704	0.5−	0.4−
1998 05 01	704	0.1+	0.0	1998 05 24	704	0.5+	0.2−	1999 09 07	704	0.5−	0.5−
1998 05 01	704	0.6+	0.5−	1998 05 24	704	0.3−	0.7+	1999 09 07	704	0.5−	0.3+
1998 05 01	704	0.5+	0.6−	1998 05 24	704	0.8+	0.2−	1999 09 07	704	0.3−	0.1+
1998 05 01	704	1.3+	0.5−	1998 05 24	704	0.4+	0.0	1999 09 09	704	0.0	0.2−
1998 05 01	704	0.4+	1.7−	1998 05 24	704	0.6−	0.5+	1999 09 09	704	0.5+	0.2−
1998 05 22	704	0.2+	1.0+	1998 05 24	704	0.5+	1.1+	1999 09 09	704	0.5+	0.1−
1998 05 22	704	0.6−	1.4+	1998 05 27	824	0.3−	0.1+	1999 09 09	704	1.3+	0.6+
1998 05 22	704	0.7−	1.9−	1998 05 27	824	0.7−	0.4+	1999 09 09	704	0.3+	0.8+
1998 05 22	704	(2.1−	2.2+)	1998 05 27	824	0.2−	0.2+	1999 09 14	704	0.0	0.1−
1998 05 22	704	0.1+	0.6−	1998 05 28	824	0.2+	0.4−	1999 09 14	704	0.6+	1.3−
1998 05 23	704	(1.7+	2.2+)	1998 05 28	824	0.3+	0.8+	1999 09 14	704	0.4+	1.5−

1998 KE₁₁ = 1999 RV₇₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	51.25163		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.17781554	ω	124.16569	+0.15087871	+0.98241189
a	3.1320083	Ω	153.84385	−0.96910921	+0.16895533
e	0.0992415	i	14.45155	−0.19509731	−0.07950460
P	5.54	H	14.4	G 0.15	U 4

M.P.C. 35996

1998 05 28	691	0.4+	0.1+	1998 06 19	704	(5.6−	1.3+)	1999 09 13	704	0.9+	0.4−
1998 06 01	691	0.0	0.1+	1999 09 07	704	0.1+	0.4−	1999 09 13	704	0.1−	0.3−
1998 06 01	691	0.5−	0.1+	1999 09 07	704	0.0	0.2+	1999 09 13	704	1.0+	0.1−
1998 06 01	691	0.1+	0.1+	1999 09 07	704	0.1−	0.3−	1999 09 13	704	0.4+	0.4−
1998 06 02	699	1.3+	0.1+	1999 09 07	704	0.1−	0.1+	1999 09 13	704	0.5+	0.5+

1998 KS₁₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	279.91670		(2000.0)	P	Q
n	0.22859291	ω	216.98022	+0.62697357	−0.77805613
a	2.6490747	Ω	194.33032	+0.74725315	+0.61484029
e	0.0700572	i	9.10119	+0.22026547	+0.12884127
P	4.31	H	13.3	G 0.15	U 4

Residuals in seconds of arc

1998 04 22	704	0.3+	0.4−	1998 05 24	704	0.6−	1.1+	1999 07 23	704	0.3−	0.1−
1998 04 22	704	0.6−	0.3+	1998 05 24	704	0.2+	0.0	1999 09 06	699	0.1−	0.2+
1998 04 22	704	1.1−	0.5−	1998 05 24	704	0.6−	0.3+	1999 09 06	699	0.0	0.2+
1998 04 22	704	0.4−	0.8−	1998 06 02	699	0.7+	0.3−	1999 09 06	699	0.1−	0.3−
1998 04 22	704	0.3−	1.0−	1998 06 02	699	0.6+	0.6+	1999 09 09	704	0.3−	0.3−
1998 05 01	704	0.0	0.1+	1998 06 02	699	0.7+	1.0+	1999 09 09	704	0.1−	0.1+
1998 05 01	704	0.2+	0.2+	1999 05 21	704	(2.8−	0.4+)	1999 09 09	704	0.1+	0.0
1998 05 01	704	0.3+	0.4−	1999 05 21	704	0.8−	0.9+	1999 09 09	704	0.3−	0.1−
1998 05 01	704	1.0−	0.4−	1999 05 21	704	(2.2+	0.4−)	1999 09 09	704	0.0	0.6+
1998 05 01	704	0.1−	0.6−	1999 05 21	704	(0.7+	2.1−)	1999 09 12	106	0.2−	0.5+
1998 05 22	704	0.4−	0.0	1999 07 13	704	0.8+	0.2+	1999 09 12	106	0.1+	0.2+
1998 05 22	704	0.8+	0.2+	1999 07 13	704	0.1+	0.4+	1999 09 12	106	0.2−	0.2+
1998 05 22	704	0.1−	0.7+	1999 07 13	704	0.1+	0.1+	1999 09 14	704	0.4+	0.1+
1998 05 22	704	0.6+	0.8+	1999 07 13	704	0.1−	0.5+	1999 09 14	704	0.5+	1.5−
1998 05 22	704	0.2−	0.7−	1999 07 13	704	0.2−	0.6+	1999 09 14	704	0.0	0.4−
1998 05 24	704	0.5+	0.5−	1999 07 23	704	0.6+	0.5−	1999 09 14	704	0.5−	0.7−
1998 05 24	704	0.4+	0.4−	1999 07 23	704	0.3+	0.1+	1999 09 14	704	0.0	0.9−

1998 KR₂₉ = 1949 US

Id. E. Bowell (1999 observations), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	292.86948		(2000.0)	P	Q
n	0.21486643	ω	270.61096	+0.72827416	−0.68017410
a	2.7607283	Ω	132.25023	+0.66504561	+0.67208115
e	0.0782387	i	6.48062	+0.16532116	+0.29269459
P	4.59	H	12.7	G 0.15	U 3

Residuals in seconds of arc

1949 10 28	760	0.9−	0.0	1998 05 24	704	(2.0−	2.9+)	1999 07 21	699	0.0	0.4+
1949 10 28	760	0.9+	0.0	1998 05 24	704	1.5−	0.0	1999 07 21	699	0.5−	0.0
1998 05 05	699	0.7+	0.9−	1998 06 16	704	0.7−	0.9−	1999 09 07	699	0.0	0.8+
1998 05 05	699	0.6+	0.5−	1998 06 16	704	0.1+	0.4−	1999 09 07	699	0.2+	0.5+
1998 05 05	699	0.1+	0.2+	1998 06 16	704	0.6−	0.1+	1999 09 07	704	0.1+	0.0
1998 05 22	704	0.1+	0.1−	1998 06 16	704	0.4−	0.7−	1999 09 07	699	0.3−	0.9+
1998 05 22	704	0.3+	0.8+	1998 06 16	704	1.1−	0.7+	1999 09 07	704	0.0	0.3−
1998 05 22	704	0.2−	0.4+	1998 06 18	704	0.8+	0.8−	1999 09 07	704	0.1−	0.2+
1998 05 22	704	0.2+	0.4−	1998 06 18	704	1.2−	0.2−	1999 09 07	704	0.1−	0.2+
1998 05 22	704	0.2+	0.9+	1998 06 18	704	0.3−	0.2+	1999 09 07	704	0.0	0.2−
1998 05 23	699	0.8+	0.5+	1998 06 18	704	(1.4−	2.4+)	1999 09 13	704	0.3+	0.4−
1998 05 23	699	0.8+	0.2+	1999 07 16	704	0.2+	0.4+	1999 09 13	704	0.4+	0.5−
1998 05 23	699	0.5+	0.3+	1999 07 16	704	0.3+	0.6−	1999 09 13	704	0.1−	0.1−
1998 05 24	704	0.3+	0.1+	1999 07 16	704	0.6−	1.3−	1999 09 13	704	0.1+	0.2−
1998 05 24	704	0.4+	0.3+	1999 07 21	699	0.0	0.2+	1999 09 13	704	0.1−	0.3−

1998 KH₃₀ = 1987 DU₃ = 1999 RL₂₀₇

Id. G. V. Williams, M. E. Sansaturio

1999 SEPT. 28

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	175.65111		(2000.0)	P	Q
n	0.28101836	ω	258.82737	−0.99211941	+0.02837199
a	2.3084099	Ω	282.71332	+0.02571031	−0.90720016
e	0.0826604	i	7.18703	−0.12262976	−0.41974146
P	3.51	H	14.8	G 0.15	U 3

Residuals in seconds of arc

1987 02 23	010	0.2−	0.1−	1998 06 16	704	0.1−	1.0−	1998 07 15	428	0.7−	0.4−
1987 02 24	010	1.9−	0.1−	1998 06 16	704	0.1+	0.6−	1998 07 15	428	0.9+	0.4−
1987 02 24	010	2.0+	0.1−	1998 06 20	428	0.3−	0.0	1998 07 27	428	1.0−	0.2+
1998 05 22	704	0.9−	0.1+	1998 06 20	428	0.2+	0.2−	1998 07 27	428	0.4−	0.1+
1998 05 22	704	0.6−	1.0+	1998 06 23	428	0.3−	0.4−	1998 07 27	428	0.4+	0.3−
1998 05 22	704	0.7+	0.3+	1998 06 24	428	0.3+	0.6−	1999 09 08	704	0.3−	0.1+
1998 05 22	704	0.1−	0.4+	1998 06 25	428	1.1+	0.4+	1999 09 08	704	0.2+	0.6+
1998 05 22	704	0.1+	0.1−	1998 06 25	428	0.8+	0.3−	1999 09 08	704	0.3+	0.4+
1998 05 24	704	0.2−	0.9−	1998 06 25	428	1.2+	0.1+	1999 09 08	704	0.5+	0.2−
1998 05 24	704	0.4−	0.3−	1998 06 30	428	0.8+	0.5−	1999 09 08	704	0.6−	0.8−
1998 05 24	704	0.0	0.3+	1998 07 02	428	0.2+	1.3+	1999 09 18	704	0.1+	0.5+
1998 05 24	704	1.1−	1.5+	1998 07 02	428	0.7+	0.2−	1999 09 18	704	0.2−	0.0
1998 05 24	704	0.4−	0.4+	1998 07 13	699	0.6+	1.2−	1999 09 18	704	0.1−	0.0
1998 06 16	704	0.1+	0.6+	1998 07 13	699	0.3−	0.2−	1999 09 18	704	0.2−	0.4−
1998 06 16	704	0.2−	0.0	1998 07 13	699	1.1−	0.0	1999 09 18	704	0.2+	0.0

1998 KZ₃₀ = 1994 GS₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	93.62440		(2000.0)	P	Q
n	0.26031817	ω	59.82805	−0.01152985	+0.99980114
a	2.4292175	Ω	209.52463	−0.92840147	−0.01674744
e	0.1546650	i	1.89211	−0.37139975	+0.01082606
P	3.79	H	15.6	G 0.15	U 4

Residuals in seconds of arc

1994 04 06	691	0.1+	0.4−	1995 09 22	691	0.0	0.4+	1998 05 22	704	0.4−	0.0
1994 04 06	691	0.7+	0.3−	1995 09 22	691	0.0	0.1+	1998 05 22	704	0.5+	0.1+
1994 04 06	691	0.4+	0.0	1995 09 22	691	0.3−	0.3+	1998 05 24	704	0.6−	0.8+
1994 04 16	691	0.1−	0.3+	1998 05 03	566	0.2−	0.2−	1998 05 24	704	0.2−	0.8+
1994 04 16	691	0.1−	0.3+	1998 05 03	566	0.3−	0.4−	1998 05 24	704	1.0+	0.6+
1994 04 16	691	0.1−	0.2+	1998 05 03	566	0.3−	0.2−	1998 05 24	704	0.4+	0.7−
1994 04 16	691	0.2−	0.4+	1998 05 22	704	0.0	0.6+	1998 05 24	704	0.7−	0.6+
1994 04 16	691	0.1−	0.4+	1998 05 22	704	0.4+	1.0−				
1994 04 16	691	0.3−	0.2+	1998 05 22	704	0.3+	1.4−				

1998 KC₃₂ = 1999 RB₆₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	257.63988		(2000.0)	P	Q		
n	0.25995079	ω	9.61040	+0.03383638	−0.99760478		
a	2.4315057	Ω	78.46834	+0.91281921	+0.00626748		
e	0.1566100	i	3.53015	+0.40695969	+0.06888707		
P	3.79	H	14.6	G	0.15	U	1

Residuals in seconds of arc

1992 11 27	691	0.1−	0.2−	1998 05 24	704	0.1−	0.8+	1999 08 13	699	0.1−	0.4+
1992 11 27	691	0.2+	0.3−	1998 05 25	699	1.6−	0.1+	1999 08 13	699	0.5−	0.1−
1992 11 27	691	0.1+	0.3−	1998 05 25	699	0.3+	1.1+	1999 09 07	704	0.2−	0.1+
1996 11 07	327	0.1+	0.3−	1998 05 25	699	0.2+	1.6−	1999 09 07	704	0.9−	0.2−
1996 11 07	327	0.1−	0.6−	1998 06 28	691	0.6+	0.3−	1999 09 07	704	0.1+	0.6−
1996 11 07	327	0.1−	0.5+	1998 06 28	691	0.4+	0.4+	1999 09 07	704	0.0	0.4−
1998 05 22	704	0.2+	0.8−	1998 06 28	691	0.6+	0.5−	1999 09 07	704	1.4+	0.2+
1998 05 22	704	0.1−	0.9+	1998 07 02	691	0.1−	0.1−	1999 09 13	704	0.0	0.4−
1998 05 22	704	0.7−	1.0−	1998 07 02	691	0.3+	0.2−	1999 09 13	704	0.9−	0.0
1998 05 22	704	1.5−	1.3−	1998 07 02	691	0.6+	0.1+	1999 09 13	704	0.3−	0.3+
1998 05 24	704	1.0+	1.0+	1999 08 08	699	0.9+	0.9−	1999 09 13	704	0.6−	0.4+
1998 05 24	704	0.1−	1.1−	1999 08 08	699	0.2−	0.2+	1999 09 13	704	0.1−	0.0

1999 SEPT. 28

1998 05 24 704 0.2− 1.2+ 1999 08 08 699 0.4+ 0.4−
 1998 05 24 704 (0.7− 2.4+) 1999 08 13 699 1.1+ 1.4+

1998 KV₃₃ = 1999 RD₈₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18061685	ω	159.42660	−0.18485839	+0.98266261		
<i>a</i>	3.0995398	Ω	99.91843	−0.90367209	−0.16428516		
<i>e</i>	0.1823479	<i>i</i>	0.82582	−0.38626951	−0.08593355		
<i>P</i>	5.46	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 22 704 0.2− 1.0− 1998 06 19 691 0.1+ 0.1+ 1999 09 07 704 0.5+ 0.3+
 1998 05 22 704 1.0− 1.4− 1998 06 19 691 0.1− 0.2+ 1999 09 07 704 1.5+ 0.0
 1998 05 22 704 0.2− 0.6− 1998 06 25 691 0.1+ 0.2+ 1999 09 09 704 0.1+ 0.5+
 1998 05 22 704 0.6+ 0.3+ 1998 06 25 691 0.0 0.1− 1999 09 09 704 0.4+ 0.9−
 1998 05 24 704 0.3+ 1.4+ 1998 06 25 691 0.1+ 0.1− 1999 09 09 704 0.4− 0.3−
 1998 05 24 704 0.7+ 0.2+ 1999 09 06 691 0.4− 0.4+ 1999 09 09 704 0.7− 0.7−
 1998 05 24 704 0.0 0.2+ 1999 09 06 691 0.3− 0.4+ 1999 09 09 704 0.4− 0.0
 1998 05 24 704 0.4− 0.4+ 1999 09 06 691 0.4− 0.2+
 1998 06 19 691 0.0 0.1+ 1999 09 07 704 0.1+ 0.0

1998 KB₃₄ = 1999 RG₆₅

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17841834	ω	86.14647	−0.21461773	+0.97664143		
<i>a</i>	3.1249499	Ω	171.43863	−0.92181952	−0.19898613		
<i>e</i>	0.1189608	<i>i</i>	4.05374	−0.32278167	−0.08109280		
<i>P</i>	5.52	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1994 10 09 691 0.0 0.3+ 1998 05 24 704 0.6− 0.4− 1999 09 07 704 0.1+ 0.1−
 1994 10 09 691 0.1− 0.2− 1998 06 03 704 1.0+ 1.6− 1999 09 07 704 0.3− 0.5−
 1994 10 09 691 0.0 0.2+ 1998 06 03 704 0.5− 0.2− 1999 09 09 704 0.0 1.5−
 1998 05 05 699 0.2− 1.3+ 1998 06 03 704 0.1− 1.4− 1999 09 09 704 0.3+ 0.8−
 1998 05 05 699 0.4+ 1.1+ 1998 06 03 704 (4.2− 1.1−) 1999 09 09 704 0.2− 0.4−
 1998 05 05 699 0.8− 0.3+ 1999 08 08 699 0.5+ 0.8− 1999 09 09 704 0.8− 0.8−
 1998 05 22 704 0.8+ 0.2+ 1999 08 08 699 0.3+ 1.2+ 1999 09 09 704 0.1+ 0.1+
 1998 05 22 704 0.5+ 0.3+ 1999 08 08 699 0.4− 1.3+ 1999 09 14 704 0.3− 0.9+
 1998 05 22 704 1.0− 0.4+ 1999 09 05 699 0.7− 1.2+ 1999 09 14 704 1.0+ 0.2−
 1998 05 22 704 0.8+ 0.9+ 1999 09 05 699 0.5+ 0.2+ 1999 09 14 704 0.7− 0.3+
 1998 05 24 704 0.1− 0.2− 1999 09 05 699 0.5+ 0.6+ 1999 09 14 704 0.5− 0.1+
 1998 05 24 704 0.4+ 0.3+ 1999 09 07 704 0.8+ 0.3− 1999 09 14 704 0.1+ 0.2+
 1998 05 24 704 0.4− 0.2− 1999 09 07 704 0.2+ 0.4−
 1998 05 24 704 0.1− 0.8− 1999 09 07 704 0.5− 0.1−

1998 KY₃₄ = 1999 RM₈₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21015013	ω	142.67874	+0.67420954	+0.73841662		
<i>a</i>	2.8018805	Ω	169.69006	−0.69449425	+0.64011492		
<i>e</i>	0.0928533	<i>i</i>	4.32763	−0.25123542	+0.21211738		
<i>P</i>	4.69	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 22 704 0.4+ 1.0− 1998 06 21 691 0.2+ 0.3+ 1999 09 14 704 1.4+ 0.5−
 1998 05 22 704 1.4+ 0.1− 1998 06 29 691 0.2− 0.0 1999 09 14 704 0.9+ 0.9−
 1998 05 22 704 0.5− 0.9+ 1998 06 29 691 0.1+ 0.2− 1999 09 14 703 0.4− 0.4+
 1998 05 22 704 0.5− 0.9− 1998 06 29 691 0.1− 0.2− 1999 09 14 703 1.0− 0.1−
 1998 05 24 704 0.2+ 0.3− 1999 09 07 704 0.2− 0.5− 1999 09 14 703 0.1− 1.1+
 1998 05 24 704 0.2− 1.2+ 1999 09 07 704 1.2− 0.9+ 1999 09 14 703 0.4− 0.2+
 1998 05 24 704 0.4− 0.6+ 1999 09 07 704 0.4+ 0.5+ 1999 09 14 703 1.1− 0.0
 1998 05 24 704 0.7− 0.1+ 1999 09 07 704 0.7+ 1.1+ 1999 09 14 703 0.4− 0.5−

M.P.C. 35997

1998 06 21 691 0.0 0.2− 1999 09 14 704 0.5− 0.1− 1999 09 14 703 0.1− 0.0
 1998 06 21 691 0.3+ 0.3− 1999 09 14 704 0.8+ 1.2− 1999 09 14 703 1.2+ 0.3−

1998 KA₃₆ = 1999 RC₁₁₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23621072	ω	254.83064	−0.74189824	−0.64806763		
<i>a</i>	2.5918089	Ω	244.44661	+0.66476335	−0.67738931		
<i>e</i>	0.1633436	<i>i</i>	10.99277	+0.08761665	−0.34806907		
<i>P</i>	4.17	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 22 704 0.2+ 0.2+ 1998 06 03 704 0.3+ 0.2+ 1999 09 09 704 0.3− 0.3+
 1998 05 22 704 0.0 0.8+ 1998 06 03 704 3.6− 0.3− 1999 09 09 704 0.3+ 0.1+
 1998 05 22 704 0.2+ 0.3+ 1998 06 03 704 (4.5− 0.7+) 1999 09 09 704 0.0 0.3+
 1998 05 22 704 0.3+ 1.0− 1998 06 27 699 0.2− 0.1+ 1999 09 09 704 0.4− 0.2−
 1998 05 22 704 1.0+ 0.8− 1998 06 27 699 0.3− 0.5− 1999 09 09 704 0.3− 0.5−
 1998 05 24 704 0.3+ 1.0+ 1998 06 27 699 0.7− 0.1+ 1999 09 14 704 0.1+ 0.3−
 1998 05 24 704 0.3− 1.1+ 1998 06 29 699 0.1+ 0.8− 1999 09 14 704 0.2+ 0.2+
 1998 05 24 704 1.8+ 1.5− 1998 06 29 699 0.0 0.5+ 1999 09 14 704 0.0 0.7+
 1998 05 24 704 0.0 0.4− 1998 06 29 699 0.1+ 1.1+ 1999 09 14 704 0.3− 0.6−
 1998 05 24 704 0.5− 0.2+ 1998 07 02 691 0.8+ 0.6− 1999 09 14 704 0.6+ 0.2+
 1998 06 03 704 0.5− 1.2+ 1998 07 02 691 0.5+ 1.0−
 1998 06 03 704 0.2− 0.6+ 1998 07 02 691 1.0+ 0.7−

1998 KP₃₇ = 1999 RP₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23996625	ω	341.76319	−0.81415254	−0.58007274		
<i>a</i>	2.5646963	Ω	162.70555	+0.54299785	−0.77640570		
<i>e</i>	0.0602927	<i>i</i>	4.99980	+0.20569148	−0.24639360		
<i>P</i>	4.11	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 05 20 910 0.3+ 0.7+ 1999 09 07 704 0.3+ 0.4− 1999 09 09 704 0.4− 0.4+
 1998 05 20 910 0.0 0.5+ 1999 09 07 704 0.1+ 0.1− 1999 09 09 704 0.1+ 0.1−
 1998 05 20 910 0.4+ 0.5+ 1999 09 08 704 0.1+ 0.5− 1999 09 09 704 0.6− 0.7−
 1998 05 22 704 0.1+ 0.4− 1999 09 08 704 0.5− 0.1− 1999 09 09 704 0.0 0.3+
 1998 05 22 704 1.0− 0.8+ 1999 09 08 704 0.0 0.9+ 1999 09 09 704 0.1− 0.1−
 1998 05 22 704 1.3+ 0.3− 1999 09 09 704 0.6− 0.2+ 1999 09 10 735 0.4− 0.0
 1998 05 22 704 0.9− 0.3− 1999 09 09 704 0.0 0.1+ 1999 09 10 735 0.7− 0.3−
 1998 05 24 704 0.7− 0.8− 1999 09 09 704 0.0 0.1+ 1999 09 10 704 1.0+ 0.5−
 1998 05 24 704 0.7− 0.1+ 1999 09 09 704 0.5− 0.3− 1999 09 10 704 0.5+ 0.3−
 1998 05 24 704 0.7+ 0.1− 1999 09 09 704 0.4− 0.3+ 1999 09 10 704 0.0 0.2−
 1998 05 24 704 1.6+ 1.3+ 1999 09 09 704 0.0 0.1+ 1999 09 11 735 0.0 0.1−
 1998 05 24 704 1.1− 2.0− 1999 09 09 704 0.2− 0.0 1999 09 11 735 1.0+ 0.1−
 1999 09 07 704 0.5+ 0.0 1999 09 09 704 0.3+ 0.5+ 1999 09 11 735 0.9+ 0.0
 1999 09 07 704 0.0 0.1+ 1999 09 09 704 0.3− 0.1+ 1999 09 12 735 0.1− 0.1+
 1999 09 07 704 0.5+ 0.3+ 1999 09 09 704 0.3− 0.0 1999 09 12 735 0.1− 0.4+

1998 KQ₃₈ = 1999 RG₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27098922	ω	153.82043	−0.99972716	−0.01346395		
<i>a</i>	2.3650194	Ω	25.42994	+0.00384136	−0.90080099		
<i>e</i>	0.1402900	<i>i</i>	2.54767	+0.02304018	−0.43402338		
<i>P</i>	3.64	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 05 22 704 0.1+ 0.2+ 1998 06 03 704 (1.3+ 3.2−) 1999 09 07 704 0.2+ 0.2+
 1998 05 22 704 0.4− 0.5+ 1998 06 18 704 0.4+ 0.5+ 1999 09 08 704 1.0+ 1.6−
 1998 05 22 704 0.2− 1.3+ 1998 06 18 704 1.5+ 0.3− 1999 09 08 704 0.6− 0.8−
 1998 05 22 704 0.7− 0.4− 1998 06 18 704 0.9− 0.9− 1999 09 08 704 0.7− 0.4−
 1998 05 24 704 0.6− 1.0+ 1998 06 18 704 (0.0 2.9−) 1999 09 08 704 0.2− 0.7+
 1998 05 24 704 1.5+ 0.2+ 1998 06 18 704 (6.1− 0.3−) 1999 09 14 703 1.0+ 0.3+

M.P.C. 35998

1998 05 24	704	0.7+	0.1+	1998 06 27	699	0.3+	1.1+	1999 09 14	703	0.2+	0.5+
1998 05 24	704	0.9+	1.2-	1998 06 27	699	0.2+	0.6+	1999 09 14	703	0.1-	1.5+
1998 05 24	704	0.2-	1.1-	1998 06 27	699	0.2-	0.9+	1999 09 14	703	0.7-	0.0
1998 06 03	704	1.0-	0.9-	1999 09 07	704	0.6+	0.7+	1999 09 14	703	1.7-	0.5-
1998 06 03	704	0.5+	0.6+	1999 09 07	704	0.9-	0.3+	1999 09 14	703	0.1-	0.4+
1998 06 03	704	1.7-	0.6-	1999 09 07	704	0.4+	0.2+	1999 09 14	703	0.8+	0.2-
1998 06 03	704	0.0	1.6-	1999 09 07	704	0.1-	0.2-	1999 09 14	703	1.1+	1.4-

1998 KE₄₀ = 1982 VG₂

Id. E. Bowell (1999 observations), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	295.64492		(2000.0)	P	Q		
<i>n</i>	0.28896393	ω	307.54705	+0.27203485	-0.96029979		
<i>a</i>	2.2658977	Ω	126.55508	+0.90537506	+0.23365264		
<i>e</i>	0.1268336	<i>i</i>	4.41359	+0.32602613	+0.15241641		
<i>P</i>	3.41	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1982 11 14	381	0.6+	0.3-	1998 05 24	704	0.4-	0.2-	1999 09 14	704	0.1+	0.5-
1982 11 14	381	0.8-	0.7+	1998 06 03	704	0.7+	1.6+	1999 09 14	704	0.1+	0.6-
1998 05 22	704	0.5-	0.5+	1998 06 03	704	1.2-	0.6+	1999 09 14	704	0.3+	0.4-
1998 05 22	704	1.1-	0.3-	1998 06 03	704	1.0+	0.3-	1999 09 14	704	0.1-	0.8-
1998 05 22	704	0.7-	0.5-	1998 06 03	704	1.9+	0.9+	1999 09 21	699	0.1-	0.7+
1998 05 22	704	0.5+	1.1-	1999 09 08	699	0.0	0.1+	1999 09 21	699	0.2+	0.2+
1998 05 24	704	0.4-	0.7-	1999 09 08	699	0.1-	0.1+	1999 09 21	699	0.1+	0.9+
1998 05 24	704	0.1-	0.8+	1999 09 08	699	0.4-	0.0				
1998 05 24	704	0.2+	1.0-	1999 09 14	704	0.3+	0.4-				

1998 KF₄₀ = 1999 RX₁₉₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	201.60777		(2000.0)	P	Q		
<i>n</i>	0.23405480	ω	268.36210	-0.68261801	-0.71400212		
<i>a</i>	2.6077003	Ω	226.03656	+0.72645712	-0.63988512		
<i>e</i>	0.1150287	<i>i</i>	12.49038	+0.07932661	-0.28416192		
<i>P</i>	4.21	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 22	704	0.7+	0.1+	1998 06 03	704	0.2-	0.1+	1999 07 22	704	0.6-	0.8+
1998 05 22	704	0.1+	1.1+	1998 06 03	704	0.3-	0.3-	1999 09 08	704	0.9-	0.2+
1998 05 22	704	0.2+	0.1+	1998 06 03	704	0.5-	0.0	1999 09 08	704	0.2-	0.2-
1998 05 22	704	0.4+	0.1-	1998 06 03	704	1.9-	1.8-	1999 09 08	704	0.6-	0.3-
1998 05 22	704	0.3+	0.1-	1998 06 26	699	0.5+	0.1-	1999 09 08	704	0.4-	0.6-
1998 05 24	704	0.5+	0.2-	1998 06 26	699	0.6+	0.3-	1999 09 08	704	0.2-	0.5-
1998 05 24	704	0.1+	0.9+	1998 06 26	699	0.7+	0.2-	1999 09 16	704	0.7+	0.1-
1998 05 24	704	1.1+	0.1-	1999 07 22	704	0.6+	0.4+	1999 09 16	704	0.6+	0.7-
1998 05 24	704	1.6-	0.3+	1999 07 22	704	0.1+	0.4+	1999 09 16	704	0.0	0.2+
1998 05 24	704	0.5-	0.0	1999 07 22	704	0.3+	0.5+	1999 09 16	704	0.6+	0.1-
1998 06 03	704	0.2-	0.1+	1999 07 22	704	0.3+	0.2+	1999 09 16	704	0.0	0.0

1998 KD₄₄ = 1999 RX₂₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	125.40029		(2000.0)	P	Q		
<i>n</i>	0.25812708	ω	344.39756	-0.57935301	+0.80968795		
<i>a</i>	2.4429449	Ω	250.10910	-0.73676911	-0.56932866		
<i>e</i>	0.0661539	<i>i</i>	5.71080	-0.34859915	-0.14237380		
<i>P</i>	3.82	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 05 22	704	0.6+	0.8+	1998 05 24	704	0.9-	0.1+	1999 09 08	704	0.6-	0.9+
1998 05 22	704	2.6+	0.8+	1998 05 24	704	1.0-	1.1-	1999 09 08	704	0.6+	0.4-
1998 05 22	704	0.3-	0.2-	1998 06 03	704	0.2+	0.0	1999 09 18	704	1.4-	0.0
1998 05 22	704	1.2-	0.2-	1998 06 03	704	1.5-	1.2+	1999 09 18	704	0.3+	0.5-
1998 05 24	704	0.5+	0.7-	1998 06 03	704	0.3+	0.2-	1999 09 18	704	0.9-	0.1-
1998 05 24	704	0.2-	0.3-	1998 06 03	704	1.1+	1.5-	1999 09 18	704	1.1+	0.0
1998 05 24	704	0.3-	1.3+	1999 09 08	704	0.8+	0.1-	1999 09 18	704	0.0	0.3+

1999 SEPT. 28

1998 KN₄₅ = 1999 RY₁₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	76.23677		(2000.0)	P	Q		
<i>n</i>	0.17075679	ω	170.60264	-0.37223051	+0.92744332		
<i>a</i>	3.2177383	Ω	77.53744	-0.85392634	-0.32702773		
<i>e</i>	0.0964104	<i>i</i>	2.11072	-0.36366777	-0.18138837		
<i>P</i>	5.77	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 05 22	704	0.7+	0.4+	1998 06 01	809	0.6-	0.9-	1999 09 09	704	0.3+	0.7+
1998 05 22	704	0.9-	0.4-	1998 06 02	809	1.1+	0.7+	1999 09 09	704	0.1-	0.3+
1998 05 22	704	1.7-	0.9+	1998 06 02	809	0.3+	0.9+	1999 09 09	704	1.0-	1.0-
1998 05 22	704	0.2+	2.1-	1998 06 02	809	0.0	0.6+	1999 09 13	704	0.2+	0.4-
1998 05 24	704	0.3-	1.0+	1998 06 24	704	1.4+	0.6-	1999 09 13	704	0.1+	0.5-
1998 05 24	704	1.0+	0.1+	1998 06 24	704	1.5-	0.4-	1999 09 13	704	0.2-	0.4-
1998 05 24	704	1.2-	1.5+	1998 06 24	704	0.6+	0.4-	1999 09 13	704	0.3+	0.5-
1998 05 24	704	2.0+	0.1+	1998 06 24	704	1.1-	1.0+	1999 09 13	704	0.4+	1.5+
1998 06 01	809	0.3+	1.4-	1999 09 09	704	0.6+	0.6+				
1998 06 01	809	0.4-	1.1-	1999 09 09	704	0.7-	0.2-				

1998 KH₄₇ = 1999 RV₁₀₀

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	151.77438		(2000.0)	P	Q		
<i>n</i>	0.18460930	ω	300.18073	-0.98159807	-0.07096018		
<i>a</i>	3.0546889	Ω	236.30174	+0.11945697	-0.95248857		
<i>e</i>	0.0434682	<i>i</i>	12.30350	-0.14898076	-0.29619281		
<i>P</i>	5.34	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 22	704	0.1+	0.5+	1998 06 24	704	0.0	0.1+	1999 09 08	699	0.4-	0.1+
1998 05 22	704	1.3-	0.7-	1998 06 24	704	0.1-	0.8-	1999 09 08	699	0.4-	0.5-
1998 05 22	704	1.1-	0.2-	1998 06 24	704	(1.2+	4.2-)	1999 09 08	704	0.1-	0.9-
1998 05 22	704	0.6-	0.0	1998 06 26	704	0.4+	1.4-	1999 09 08	699	0.4-	0.5-
1998 05 22	704	0.7+	0.2-	1998 06 26	704	0.8-	1.4-	1999 09 08	704	0.0	0.0
1998 05 24	704	0.5+	0.1-	1998 06 26	704	0.5+	0.4+	1999 09 08	704	0.6+	1.4-
1998 05 24	704	0.4+	0.4+	1998 06 26	704	0.2+	1.6+	1999 09 08	704	0.0	0.8-
1998 05 24	704	0.7-	1.3+	1999 07 22	704	0.0	0.6+	1999 09 08	704	0.3-	0.1+
1998 05 24	704	(1.6+	2.3-)	1999 07 22	704	0.7+	0.5+	1999 09 10	704	0.3+	0.1+
1998 05 24	704	1.0+	0.9+	1999 07 22	704	0.1-	0.7+	1999 09 10	704	0.1-	1.5+
1998 06 03	704	0.9+	0.6-	1999 07 22	704	0.1-	0.6+	1999 09 10	704	0.1-	0.7+
1998 06 03	704	0.2-	1.3+	1999 07 22	704	0.5-	0.7+	1999 09 16	704	0.5+	0.0
1998 06 03	704	0.4+	1.5-	1999 09 07	703	0.1+	0.4-	1999 09 16	704	0.6+	0.7-
1998 06 03	704	0.3+	1.6-	1999 09 07	703	0.4-	0.0	1999 09 16	704	0.2+	0.0
1998 06 24	704	0.4-	0.4+	1999 09 07	703	0.4+	0.4-	1999 09 16	704	0.3-	0.0
1998 06 24	704	0.1-	0.8+	1999 09 07	703	0.4+	0.2+	1999 09 16	704	0.4-	0.0

1998 KH₅₀ = 1999 RT₅₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	356.68296		(2000.0)	P	Q		
<i>n</i>	0.17960535	ω	191.88231	+0.83140677	+0.53689116		
<i>a</i>	3.1111661	Ω	134.67181	-0.49189629	+0.83101153		
<i>e</i>	0.0300458	<i>i</i>	11.61808	-0.25845856	+0.14549126		
<i>P</i>	5.49	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 05 23	704	0.2+	0.9+	1998 06 04	699	1.2-	1.2+	1999 08 07	699	0.8+	0.8+
1998 05 23	704	0.2+	0.3+	1998 06 15	699	0.8+	0.5-	1999 09 07	704	0.2-	0.4-
1998 05 23	704	0.8-	0.0	1998 06 15	699	0.7-	0.6-	1999 09 07	704	1.0-	0.0
1998 05 23	704	0.7-	0.2-	1998 06 15	699	0.4-	0.9-	1999 09 07	704	0.1-	0.2-
1998 05 23	704	0.2-	0.4-	1998 06 28	699	0.8+	0.8-	1999 09 07	704	0.2-	0.4-
1998 05 26	704	1.1-	0.4-	1998 06 28	699	0.6-	1.1+	1999 09 07	704	0.3-	1.5-
1998 05 26	704	0.2+	1.3-	1998 06 28	699	0.6+	0.7-	1999 09 13	704	0.2+	0.1+
1998 05 26	704	1.7+	1.9+	1999 07 16	704	0.5-	0.1+	1999 09 13	704	0.3-	0.3+
1998 05 26	704	1.0+	0.3+	1999 07 16	704	0.7-	0.1-	1999 09 13	704	0.1+	0.4+

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1998 05 26	704	0.2+	0.4+	1999 07 16	704	0.4+	0.3-	1999 09 13	704	0.5+	0.9+
1998 06 04	699	0.4-	0.0	1999 08 07	699	0.2+	0.3+	1999 09 13	704	0.9+	0.2-
1998 06 04	699	0.5+	0.6-	1999 08 07	699	0.1+	0.3+				

1998 KT₅₀ = 1999 RC₄₆

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	245.19864		(2000.0)	P		Q	
<i>n</i>	0.17571938	ω	270.48412	+0.29059212		-0.95431850	
<i>a</i>	3.1568670	Ω	162.14380	+0.94307115		+0.27336800	
<i>e</i>	0.0621692	<i>i</i>	13.10341	+0.16178081		+0.12060738	
<i>P</i>	5.61	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 23	704	0.4-	0.3-	1998 06 03	704	(0.9-	2.6-)	1999 08 13	699	1.3-	0.1-
1998 05 23	704	0.1-	0.1+	1998 06 03	704	(0.1+	2.3-)	1999 08 13	699	1.9-	0.0
1998 05 23	704	0.0	0.6-	1998 06 19	704	0.1+	0.3+	1999 08 13	699	0.7-	0.0
1998 05 23	704	0.0	0.7+	1998 06 19	704	(0.2+	2.9-)	1999 09 07	704	0.5-	0.1+
1998 05 23	704	1.3-	0.3-	1998 06 19	704	0.5+	1.1-	1999 09 07	704	0.1+	0.3+
1998 05 26	704	0.2-	0.6+	1998 06 19	704	0.7+	0.3-	1999 09 07	704	0.9+	0.1+
1998 05 26	704	(1.3+	2.7+)	1998 06 19	704	1.3-	0.9+	1999 09 07	704	0.2+	0.4+
1998 05 26	704	1.3+	0.4+	1999 07 13	704	0.4+	0.2-	1999 09 09	704	0.3+	0.1+
1998 05 26	704	0.1+	0.2-	1999 07 13	704	0.6+	0.0	1999 09 09	704	0.7+	0.2-
1998 05 26	704	1.4-	0.3+	1999 07 13	704	0.2+	0.4-	1999 09 09	704	0.1+	0.3-
1998 06 03	704	1.0+	0.2+	1999 07 13	704	0.6+	0.6+	1999 09 09	704	0.3+	0.0
1998 06 03	704	1.0+	0.7-	1999 07 13	704	0.4+	0.0	1999 09 09	704	0.3-	0.2-

1998 KW₅₀ = 1999 RW₉₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	120.56481		(2000.0)	P		Q	
<i>n</i>	0.24071210	ω	75.93395	-0.71126681		+0.69798910	
<i>a</i>	2.5593957	Ω	148.20376	-0.69032407		-0.67132689	
<i>e</i>	0.1119664	<i>i</i>	9.07768	-0.13248470		-0.24926175	
<i>P</i>	4.09	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 23	704	1.1-	0.4+	1998 05 26	704	0.2+	0.7+	1999 09 07	704	0.1+	0.4+
1998 05 23	704	1.2-	0.7+	1998 05 26	704	0.5+	0.3-	1999 09 07	704	0.2-	0.4-
1998 05 23	704	0.1+	0.5+	1998 05 26	704	0.2+	0.8+	1999 09 14	704	0.7+	0.4-
1998 05 23	704	0.0	0.4-	1998 06 26	699	0.2-	0.3-	1999 09 14	704	0.1-	0.8-
1998 05 23	704	0.3-	0.8-	1998 06 26	699	0.4-	0.0	1999 09 14	704	0.5+	0.0
1998 05 24	699	0.2+	0.6-	1998 06 26	699	0.6+	0.1+	1999 09 14	704	0.4-	0.1+
1998 05 24	699	0.4+	0.5-	1999 09 07	704	0.3-	0.3-	1999 09 14	704	0.6-	0.6-
1998 05 24	699	0.2+	0.3-	1999 09 07	704	0.2+	0.8+				
1998 05 26	704	0.7+	0.0	1999 09 07	704	0.1+	1.2+				

1998 KE₅₁ = 1999 RF₂₀₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	124.44493		(2000.0)	P		Q	
<i>n</i>	0.22207524	ω	5.90444	-0.85278785		+0.51307891	
<i>a</i>	2.7006561	Ω	205.70437	-0.48788893		-0.84926008	
<i>e</i>	0.1060020	<i>i</i>	12.98853	-0.18632571		-0.12452851	
<i>P</i>	4.44	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 23	704	0.2+	0.2-	1998 05 26	704	0.3-	0.4+	1998 06 26	699	0.6+	0.2-
1998 05 23	704	0.4-	0.1+	1998 06 03	704	1.1+	1.3+	1998 06 26	699	0.0	1.3-
1998 05 23	704	0.3-	0.1+	1998 06 03	704	0.6+	0.2-	1999 09 08	704	0.1-	0.2-
1998 05 23	704	0.1-	0.7-	1998 06 03	704	2.4+	2.3+	1999 09 08	704	0.7+	0.3+
1998 05 23	704	0.0	2.3-	1998 06 03	704	1.1+	1.2+	1999 09 08	704	0.2+	0.8+
1998 05 25	699	0.1-	0.1-	1998 06 19	704	0.9+	0.4-	1999 09 08	704	0.1-	0.3+
1998 05 25	699	0.3-	0.4-	1998 06 19	704	0.1+	0.2-	1999 09 18	704	0.6-	0.8-
1998 05 25	699	0.6-	0.8+	1998 06 19	704	0.0	0.3-	1999 09 18	704	0.5+	0.1+
1998 05 26	704	0.3-	0.7-	1998 06 19	704	1.8-	0.3+	1999 09 18	704	0.0	0.0

1998 05 26	704	0.8-	0.7+	1998 06 19	704	1.4-	0.7-	1999 09 18	704	0.4-	0.1+
1998 05 26	704	0.6-	0.2+	1998 06 26	699	0.3+	0.2+	1999 09 18	704	0.1-	0.4-

1998 KF₅₁ = 1999 RC₁₀₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	192.50403		(2000.0)	P		Q	
<i>n</i>	0.24471889	ω	291.94789	-0.81333349		-0.56360464	
<i>a</i>	2.5313822	Ω	214.23358	+0.58175335		-0.79090553	
<i>e</i>	0.1178308	<i>i</i>	14.86845	-0.00718818		-0.23836579	
<i>P</i>	4.03	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 23	704	0.0	0.5+	1998 06 03	704	0.6-	0.1+	1999 09 08	704	0.1-	0.0
1998 05 23	704	0.8+	0.6+	1998 06 03	704	0.4+	0.8+	1999 09 08	704	0.7+	0.2-
1998 05 23	704	1.2-	0.4-	1998 06 03	704	1.3+	0.2-	1999 09 08	704	1.0+	0.4+
1998 05 23	704	0.5+	0.7-	1998 06 19	704	1.6+	0.3+	1999 09 08	704	0.5+	0.5-
1998 05 23	704	0.3+	0.8-	1998 06 19	704	1.2-	0.6-	1999 09 10	704	0.0	0.2-
1998 05 26	704	0.7-	0.4+	1998 06 19	704	(0.7+	2.8+)	1999 09 10	704	0.7+	0.5-
1998 05 26	704	1.6-	0.5-	1998 06 19	704	1.3-	0.1+	1999 09 10	704	0.5+	0.1-
1998 05 26	704	0.9+	0.2-	1999 07 22	704	0.2+	0.8-	1999 09 16	704	0.8-	0.0
1998 05 26	704	1.0-	0.1-	1999 07 22	704	0.7-	0.0	1999 09 16	704	0.3-	0.1-
1998 05 26	704	0.6-	0.0	1999 07 22	704	0.3-	0.8+	1999 09 16	704	0.6-	0.5+
1998 06 03	704	1.7+	0.4+	1999 07 22	704	0.6+	0.6+	1999 09 16	704	1.2-	0.1+
1998 06 03	704	0.6+	0.2+	1999 07 22	704	0.3-	0.1+				

1998 KT₅₁ = 1999 RK₇₅

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	123.76681		(2000.0)	P		Q	
<i>n</i>	0.22216749	ω	41.43815	-0.84661513		+0.53124334	
<i>a</i>	2.6999085	Ω	170.49293	-0.52490216		-0.82356356	
<i>e</i>	0.0889077	<i>i</i>	11.16748	-0.08786665		-0.19880536	
<i>P</i>	4.44	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 23	704	0.5+	0.9+	1998 06 26	699	0.3-	0.5-	1999 09 11	704	0.5-	0.6-
1998 05 23	704	0.0	1.0+	1998 06 26	699	0.5-	1.0+	1999 09 11	704	0.2-	0.2-
1998 05 23	704	0.2+	0.1+	1998 06 26	699	0.1-	1.0+	1999 09 11	704	0.8-	0.0
1998 05 23	704	0.8-	0.3-	1999 09 07	704	0.5-	0.1-	1999 09 11	704	0.3+	0.3+
1998 05 23	704	0.6-	1.2+	1999 09 07	704	0.2-	1.1-	1999 09 11	699	0.1-	1.5+
1998 05 26	704	0.4-	0.3-	1999 09 07	704	0.2+	0.7-	1999 09 11	704	0.4+	0.2+
1998 05 26	704	0.6+	0.7-	1999 09 07	704	0.1-	0.3-	1999 09 11	704	0.1+	0.2+
1998 05 26	704	0.3+	0.7+	1999 09 07	704	0.2+	0.8-	1999 09 11	704	1.5+	0.5+
1998 05 26	704	0.6+	1.0-	1999 09 09	704	0.1-	0.1-	1999 09 11	704	1.7+	0.3+
1998 05 26	704	0.5-	0.0	1999 09 09	704	0.7+	0.1-	1999 09 11	699	0.6-	1.0+
1998 06 04	699	0.0	0.5+	1999 09 09	704	0.2-	0.9-	1999 09 14	704	0.2-	0.7-
1998 06 04	699	0.6+	0.2-	1999 09 09	704	0.4+	0.1-	1999 09 14	704	0.4+	0.2+
1998 06 04	699	0.5+	0.2+	1999 09 09	704	0.4-	0.6-	1999 09 14	704	0.3-	0.2+
1998 06 15	699	1.1+	1.8-	1999 09 11	704	0.3+	0.7+	1999 09 14	704	0.3-	0.5+
1998 06 15	699	0.5-	0.7-	1999 09 11	704	0.2-	0.1-	1999 09 14	704	0.4+	0.3-
1998 06 15	699	0.8-	1.2-	1999 09 11	699	1.8-	1.3+				

1998 KF₅₃

Id. E. Bowell (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	115.49443		(2000.0)	P		Q	
<i>n</i>	0.22706336	ω	83.34318	-0.71037063		+0.69292046	
<i>a</i>	2.6609580	Ω	140.40751	-0.69768073		-0.67012696	
<i>e</i>	0.1431140	<i>i</i>	11.16694	-0.09281791		-0.26606594	
<i>P</i>	4.34	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 06	566	0.5-	0.0	1998 05 26	704	0.6+	0.7+	1998 06 26	699	0.6+	0.6+
1998 05 06	566	0.3-	0.3-	1998 06 03	704	0.1-	0.1+	1998 06 26	699	0.7+	0.5+
1998 05 06	566	0.2+	0.2-	1998 06 03	704	0.5+	0.1-	1999 09 05	699	0.1+	0.2-

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1998 05 23	704	0.5+	0.3-	1998 06 03	704	1.0-	0.1-	1999 09 05	699	0.4+	0.1-
1998 05 23	704	0.6+	0.2-	1998 06 03	704	0.2-	0.3-	1999 09 05	699	0.2+	0.5+
1998 05 23	704	1.0+	0.5+	1998 06 03	704	0.3-	0.4-	1999 09 08	703	0.2+	0.4+
1998 05 23	704	0.2-	0.3+	1998 06 19	704	0.1+	0.7-	1999 09 08	703	0.2+	0.0
1998 05 23	704	0.2-	1.2-	1998 06 19	704	0.4-	0.5+	1999 09 08	703	0.6-	0.6-
1998 05 26	704	0.2+	0.5-	1998 06 19	704	0.9+	0.2+	1999 09 08	703	0.2+	0.9-
1998 05 26	704	0.3-	0.5+	1998 06 19	704	1.6-	0.7-	1999 09 11	699	1.1-	0.5+
1998 05 26	704	0.1-	0.7+	1998 06 19	704	1.2-	0.4-	1999 09 11	699	(0.3+	2.8+)
1998 05 26	704	0.3-	0.6+	1998 06 26	699	0.5+	0.0	1999 09 11	699	0.4+	0.4+

1998 KK₅₅ = 1999 RU₁₇₆

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	284.84417	(2000.0)	
<i>n</i>	0.21727908	<i>ω</i>	242.15970
<i>a</i>	2.7402537	<i>Ω</i>	182.61658
<i>e</i>	0.0321182	<i>i</i>	9.58686
<i>P</i>	4.54	<i>H</i>	13.8
Residuals in seconds of arc			
<i>G</i>	0.15	<i>U</i>	4

1997 04 07	691	0.0	0.7-	1998 06 19	704	0.2+	0.3+	1999 09 09	704	0.0	0.1-
1997 04 07	691	0.2-	0.2-	1998 06 25	704	0.9-	0.1-	1999 09 09	704	0.2+	0.1+
1997 04 07	691	0.1-	0.3-	1998 06 25	704	0.5-	1.6-	1999 09 09	704	0.0	0.0
1998 05 23	704	0.7-	1.3+	1998 06 25	704	0.5+	0.4-	1999 09 09	704	0.2-	0.0
1998 05 23	704	1.0-	0.6+	1998 06 25	704	1.4+	1.4-	1999 09 09	704	0.1+	1.5+
1998 05 23	704	0.7+	0.4+	1999 08 22	699	1.4-	0.3+	1999 09 11	699	0.2+	0.6+
1998 05 26	704	0.8+	0.8+	1999 08 22	699	1.0-	0.2-	1999 09 11	699	0.2+	1.0-
1998 05 26	704	0.4+	1.1+	1999 08 22	699	0.1-	1.6+	1999 09 11	699	0.6+	0.9+
1998 05 26	704	0.2-	0.7-	1999 09 07	704	0.5+	0.1-	1999 09 14	704	0.0	0.4-
1998 05 26	704	0.5-	0.4-	1999 09 07	704	0.5+	0.1+	1999 09 14	704	0.4+	0.6-
1998 06 19	704	0.1-	0.5+	1999 09 07	704	0.2-	0.1+	1999 09 14	704	0.1-	1.6-
1998 06 19	704	0.0	0.2-	1999 09 07	704	0.7+	0.4-	1999 09 14	704	0.9+	1.0-
1998 06 19	704	0.4-	0.5-	1999 09 07	704	0.2-	0.3-	1999 09 14	704	0.9-	0.2-

1998 KN₅₅ = 1999 RR₁₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	244.72882	(2000.0)	
<i>n</i>	0.21116565	<i>ω</i>	278.87619
<i>a</i>	2.7928903	<i>Ω</i>	177.34454
<i>e</i>	0.1362337	<i>i</i>	9.04762
<i>P</i>	4.67	<i>H</i>	13.9
Residuals in seconds of arc			
<i>G</i>	0.15	<i>U</i>	4

1998 05 23	704	1.3-	0.7-	1998 07 16	910	0.4-	0.5-	1999 09 09	704	0.2-	0.0
1998 05 23	704	0.9-	0.6+	1998 07 16	910	0.1-	0.3-	1999 09 09	704	0.3-	0.2+
1998 05 23	704	1.6+	2.0+	1998 07 22	910	0.2-	0.3-	1999 09 09	704	0.5-	0.0
1998 05 23	704	0.7-	1.0+	1998 07 22	910	0.0	0.3-	1999 09 09	704	0.4+	0.4+
1998 05 23	704	0.6-	0.4+	1998 07 22	910	0.2-	0.1-	1999 09 09	704	0.2-	0.3+
1998 05 26	704	0.2-	1.0-	1998 07 23	910	0.4-	0.1-	1999 09 14	704	0.4+	0.1+
1998 05 26	704	0.3+	0.8+	1998 07 23	910	0.0	0.1-	1999 09 14	704	0.5-	0.1+
1998 05 26	704	(1.9+	2.5+)	1998 07 23	910	0.5-	0.3-	1999 09 14	704	0.5+	0.7+
1998 05 26	704	1.3+	0.1+	1999 09 07	704	0.2+	1.0-	1999 09 14	704	0.1+	0.0
1998 06 19	704	0.1+	0.5-	1999 09 07	704	0.2+	0.0	1999 09 14	704	0.2+	0.4+
1998 06 19	704	1.4+	0.7-	1999 09 07	704	0.5-	0.1-				
1998 07 16	910	0.6+	0.5-	1999 09 07	704	0.3+	0.6-				

1998 KC₅₆ = 1999 RA₉₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	288.21989	(2000.0)	
<i>n</i>	0.27386911	<i>ω</i>	273.85987
<i>a</i>	2.3484105	<i>Ω</i>	172.62318
<i>e</i>	0.1324175	<i>i</i>	12.29742
<i>P</i>	3.60	<i>H</i>	13.7
Residuals in seconds of arc			
<i>G</i>	0.15	<i>U</i>	6

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Residuals in seconds of arc

1998 05 23	704	1.9-	0.7+	1998 06 03	704	1.0+	3.1-	1999 09 07	704	0.3+	0.5+
1998 05 23	704	0.3-	0.5+	1998 06 03	704	0.7-	0.7+	1999 09 07	704	0.6+	0.1-
1998 05 23	704	0.4-	0.9-	1998 06 03	704	1.4+	1.3+	1999 09 07	704	0.1-	0.5-
1998 05 26	704	1.3+	0.2-	1998 06 19	704	0.7-	0.0	1999 09 09	704	0.2-	0.1-
1998 05 26	704	0.1+	1.1+	1998 06 19	704	0.4+	0.6+	1999 09 09	704	0.3-	0.2+
1998 05 26	704	0.2+	0.5+	1998 06 19	704	0.6-	0.3+	1999 09 09	704	0.0	0.2-
1998 05 26	704	0.4+	0.1-	1998 06 19	704	0.5-	0.2+	1999 09 09	704	0.3-	0.0
1998 06 03	704	0.2-	1.7-	1998 06 19	704	0.5+	0.0	1999 09 09	704	0.0	0.1+

1998 KL₅₆ = 1978 EC₂ = 1978 GS = 1983 VO₄ = 1988 JR₁ = 1999 RG₁₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	123.74344	(2000.0)	
<i>n</i>	0.29367100	<i>ω</i>	260.31665
<i>a</i>	2.2416201	<i>Ω</i>	290.93122
<i>e</i>	0.1076284	<i>i</i>	1.43653
<i>P</i>	3.36	<i>H</i>	14.7
Residuals in seconds of arc			
<i>G</i>	0.15	<i>U</i>	2

1978 03 05	095	2.0+	1.2+	1998 05 23	950	0.0	0.9+	1999 09 07	704	0.1-	0.2-
1978 04 07	095	0.9-	0.6+	1998 05 24	950	0.4+	0.7+	1999 09 07	704	0.2+	0.7+
1983 11 08	381	0.0	0.9+	1999 06 20	703	0.7-	0.2-	1999 09 07	704	0.4-	0.1-
1988 05 11	413	0.9-	0.8+	1999 06 20	703	0.1-	0.4+	1999 09 07	704	0.3-	0.1-
1988 05 11	413	(3.3-	1.1+)	1999 06 20	703	0.6-	0.3+	1999 09 07	704	0.2-	0.3+
1996 09 10	566	0.1+	0.4+	1999 06 20	703	0.7+	0.6-	1999 09 09	704	0.6+	0.0
1996 09 10	566	0.0	0.5+	1999 07 16	704	0.8+	0.4-	1999 09 09	704	0.0	0.6-
1996 09 10	566	0.5+	0.7+	1999 07 16	704	0.9+	0.0	1999 09 09	704	0.2-	0.0
1996 10 12	566	0.2-	0.2+	1999 07 16	704	0.6+	0.2-	1999 09 09	704	0.1-	0.2-
1996 10 12	566	0.6-	0.1+	1999 07 21	699	0.2+	1.1+	1999 09 09	704	0.2-	0.1-
1996 10 12	566	0.7-	0.0	1999 07 21	699	0.4+	0.4-	1999 09 13	704	0.1+	0.0
1998 01 24	566	0.0	0.2+	1999 07 21	699	0.1+	0.7+	1999 09 13	704	0.2-	0.4-
1998 01 24	566	0.1-	0.2+	1999 08 07	699	0.6-	1.5+	1999 09 13	704	0.1-	0.3-
1998 01 24	566	0.1-	0.2+	1999 08 07	699	0.0	1.1+	1999 09 13	704	0.0	0.3-
1998 05 22	950	1.4+	0.7-	1999 08 07	699	1.5-	0.7+	1999 09 13	704	0.1-	0.8-

1998 KH₅₈

Id. J. Broughton (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	46.83069	(2000.0)	
<i>n</i>	0.17770519	<i>ω</i>	242.48753
<i>a</i>	3.1333048	<i>Ω</i>	36.45241
<i>e</i>	0.1950117	<i>i</i>	17.10910
<i>P</i>	5.55	<i>H</i>	14.9
Residuals in seconds of arc			
<i>G</i>	0.15	<i>U</i>	4

1998 04 22	704	0.4-	0.7-	1998 05 05	699	1.5+	1.4-	1998 05 25	428	0.1+	0.0
1998 04 22	704	0.8-	1.0+	1998 05 05	699	1.5+	0.6+	1998 05 25	428	0.1-	0.0
1998 04 22	704	0.7-	0.9-	1998 05 21	428	0.3+	1.2-	1998 05 25	428	0.7-	0.2-
1998 04 22	704	0.1+	0.9-	1998 05 22	428	0.9+	0.1-	1998 05 28	428	0.4-	0.1-
1998 04 22	704	0.8+	1.4+	1998 05 22	428	0.2-	0.3+	1998 05 29	428	0.0	0.1-
1998 05 01	704	0.7-	0.9+	1998 05 24	704	0.7+	0.8+	1999 09 12	428	0.7-	0.5+
1998 05 01	704	0.4-	0.1-	1998 05 24	704	0.3-	0.9-	1999 09 12	428	0.9+	0.3+
1998 05 01	704	0.4+	0.4-	1998 05 24	704	0.6-	1.1+	1999 09 13	428	0.5-	0.5-
1998 05 01	704	0.3-	0.3-	1998 05 24	704	0.6-	0.5+	1999 09 13	428	0.3+	0.3-
1998 05 05	699	0.1-	0.7+	1998 05 24	704	(3.0-	0.5-)				

1998 KK₅₈ = 1999 RF₄₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	75.56901	(2000.0)	
<i>n</i>	0.20304931	<i>ω</i>	259.88893
<i>a</i>	2.8668284	<i>Ω</i>	357.55137
<i>e</i>	0.0937288	<i>i</i>	1.68401
<i>P</i>	4.85	<i>H</i>	15.1
Residuals in seconds of arc			
<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 02 06	910	0.1+	0.3+	1999 09 09	704	0.9-	0.9+	1999 09 11	704	0.1-	0.0
1997 02 06	910	0.2+	0.4+	1999 09 09	704	0.2-	0.7+	1999 09 11	704	1.2+	0.1-
1997 02 07	910	0.1+	0.4+	1999 09 09	704	(0.8-	2.5+)	1999 09 11	704	0.1-	1.1-
1998 05 22	428	0.4-	0.6-	1999 09 10	704	0.4+	0.1-	1999 09 11	704	0.7+	0.2-
1998 05 22	428	1.1-	0.2-	1999 09 10	704	0.4+	1.1+	1999 09 14	704	0.6-	0.4+
1998 05 25	428	0.5+	0.3+	1999 09 10	704	0.2-	0.0	1999 09 14	704	0.8-	0.9-
1998 05 25	428	0.4+	0.2-	1999 09 11	704	0.5+	0.7+	1999 09 14	704	0.8+	0.1+
1998 06 02	428	0.1+	0.1+	1999 09 11	704	0.1-	0.5+	1999 09 14	704	0.7+	0.2+
1998 06 02	428	0.2+	0.0	1999 09 11	704	0.9-	0.1+	1999 09 14	704	0.6-	0.3-
1998 06 02	428	0.5+	1.0+	1999 09 11	704	0.7-	0.1-				
1999 09 09	704	0.0	0.6-	1999 09 11	704	0.1-	0.4-				

1998 KZ₅₉ = 1999 RX₉₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	122.89231		(2000.0)	P	Q
n	0.24434944	ω	57.50250	-0.74578546	+0.66214005
a	2.5339331	Ω	163.56505	-0.66432087	-0.73095098
e	0.1015875	i	15.01778	-0.04981789	-0.16517024
P	4.03	H	14.6	G 0.15	U 4

Residuals in seconds of arc

1998 05 23	704	0.1-	0.5-	1998 06 03	704	1.0+	0.0	1999 08 22	703	0.5-	0.2+
1998 05 23	704	0.4+	0.1-	1998 06 03	704	(0.9+	2.9+)	1999 08 22	703	0.6+	0.5-
1998 05 23	704	0.6-	0.9+	1998 06 18	704	(0.2+	2.1+)	1999 08 22	703	0.0	0.1-
1998 05 23	704	1.4-	1.0-	1998 06 18	699	0.3+	1.2+	1999 09 07	704	0.2-	0.0
1998 05 23	704	0.8-	0.1+	1998 06 18	704	0.5+	1.6-	1999 09 07	704	0.4-	0.2-
1998 05 26	704	0.3+	1.0+	1998 06 18	704	0.5-	1.5-	1999 09 07	704	0.2+	0.0
1998 05 26	704	0.5+	1.1+	1998 06 18	699	0.5+	0.7+	1999 09 07	704	0.3-	0.0
1998 05 26	704	1.0+	1.2-	1998 06 18	704	(1.2+	2.3-)	1999 09 14	704	0.4-	1.2+
1998 05 26	704	1.2-	0.3+	1998 06 18	704	(3.5-	0.3+)	1999 09 14	704	0.1-	0.7-
1998 06 03	704	0.5-	0.9-	1998 06 18	699	0.8-	0.3+	1999 09 14	704	0.8+	0.9-
1998 06 03	704	1.5+	1.1+	1999 08 22	703	0.0	1.5+	1999 09 14	704	0.3+	0.5-

1998 LL₂ = 1992 EN₃

Id. E. Bowell (1999 observations), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	163.01513		(2000.0)	P	Q
n	0.19056890	ω	35.44259	-0.99130390	-0.05351685
a	2.9906668	Ω	140.94837	+0.02133037	-0.96683443
e	0.0448151	i	11.00047	+0.12985221	-0.24973412
P	5.17	H	13.1	G 0.15	U 3

Residuals in seconds of arc

1992 03 11	372	0.2+	0.5-	1998 06 25	704	0.4+	0.4+	1999 09 13	704	0.2-	0.3-
1992 03 11	372	0.2+	1.8+	1998 06 25	704	1.3+	0.2+	1999 09 13	704	0.5-	0.1-
1998 06 01	809	0.9-	0.4-	1999 08 12	699	0.6+	0.6+	1999 09 13	704	0.4-	0.4+
1998 06 01	809	0.7-	0.0	1999 08 12	699	0.6+	0.6+	1999 09 13	704	0.1+	0.5+
1998 06 01	809	0.5-	0.6-	1999 08 12	699	(2.2+	0.7+)	1999 09 14	704	0.1-	0.1-
1998 06 02	809	1.6-	0.1-	1999 09 07	704	0.2-	0.3-	1999 09 14	704	0.1-	0.2+
1998 06 02	809	0.0	1.1-	1999 09 07	704	0.7-	0.0	1999 09 14	704	0.3+	0.0
1998 06 02	809	0.4-	0.6-	1999 09 07	704	0.6-	0.5+	1999 09 14	704	0.3+	0.1+
1998 06 03	704	0.8+	0.6-	1999 09 07	704	0.3-	0.1+	1999 09 14	704	0.1+	0.2-
1998 06 03	704	(1.4-	2.7-)	1999 09 07	704	0.0	0.6+	1999 09 14	704	0.1+	0.1+
1998 06 03	704	(2.5+	1.9+)	1999 09 08	703	0.0	0.7-	1999 09 14	704	0.3+	0.1+
1998 06 03	704	1.3-	0.2+	1999 09 08	703	0.1-	0.2+	1999 09 14	704	0.1-	0.2-
1998 06 19	704	0.5+	0.3+	1999 09 08	703	0.1-	0.2-	1999 09 14	704	0.4+	0.2-
1998 06 19	704	0.3+	1.6+	1999 09 08	703	0.7+	0.8-	1999 09 14	704	0.1-	0.1-
1998 06 19	704	(0.0	3.6+)	1999 09 09	704	0.3-	0.7+	1999 09 14	704	0.4+	0.1+
1998 06 19	704	0.4-	0.7-	1999 09 09	704	0.5+	0.3-	1999 09 14	704	0.3+	0.4+
1998 06 25	704	0.7+	0.3+	1999 09 09	704	0.1+	0.3+	1999 09 14	704	0.3-	0.2+
1998 06 25	704	1.1+	0.3+	1999 09 09	704	0.5-	0.4-	1999 09 14	704	0.0	0.2-
1998 06 25	704	0.7+	0.3+	1999 09 09	704	0.7-	0.2-	1999 09 14	704	0.4+	0.0

1998 MG₁ = 1999 RD₁₈₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	51.51960		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.21036247	ω	113.45303	+0.29826184	+0.95445275
a	2.7999947	Ω	173.88472	-0.90008375	+0.28395017
e	0.0762368	i	4.16398	-0.31763048	+0.09160927
P	4.69	H	14.8	G 0.15	U 3

Residuals in seconds of arc

1995 11 30	691	0.2+	0.2+	1998 06 16	691	0.1+	0.4+	1999 09 07	704	0.0	0.3-
1995 11 30	691	0.2+	0.0	1998 06 16	691	0.4-	0.9-	1999 09 09	704	0.0	1.7+
1995 11 30	691	0.2+	0.3-	1998 06 21	691	0.1+	0.0	1999 09 09	704	0.7+	0.2-
1995 12 14	691	0.0	0.3-	1998 06 21	691	0.1+	0.1-	1999 09 09	704	0.1+	0.8+
1995 12 14	691	0.7-	0.3+	1998 06 21	691	0.3+	0.1+	1999 09 09	704	0.4+	0.3+
1995 12 14	691	0.1+	0.2+	1998 06 29	691	0.2-	0.7-	1999 09 14	704	0.4-	0.2-
1998 05 22	704	0.7+	1.4+	1998 06 29	691	0.3-	0.1-	1999 09 14	704	0.4-	1.1-
1998 05 22	704	0.6+	1.3+	1998 06 29	691	0.2-	0.1-	1999 09 14	704	0.4+	0.2+
1998 05 22	704	0.0	0.3-	1999 09 07	704	0.2-	0.9+	1999 09 14	704	0.2-	0.2-
1998 05 22	704	0.5+	0.9-	1999 09 07	704	0.2+	0.5-	1999 09 14	704	0.1-	0.2+
1998 05 22	704	1.6-	0.1+	1999 09 07	704	0.5-	0.6-				
1998 06 16	691	0.3+	0.3-	1999 09 07	704	0.0	0.8-				

1998 MZ₈ = 1999 RH₇₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	76.85803		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.18413789	ω	84.20690	-0.20138234	+0.97938733
a	3.0599003	Ω	174.10529	-0.94821610	-0.19091075
e	0.0801994	i	8.77775	-0.24562448	-0.06598147
P	5.35	H	14.1	G 0.15	U 3

Residuals in seconds of arc

1994 10 02	691	0.2+	0.2-	1998 07 17	910	0.4+	0.1+	1999 09 11	704	0.6-	0.4+
1994 10 02	691	0.2-	0.2-	1998 07 17	910	0.6+	0.0	1999 09 11	704	0.6-	0.4-
1994 10 02	691	0.2+	0.2-	1998 07 22	910	0.1+	0.3+	1999 09 11	704	0.6+	0.0
1998 05 26	704	1.0-	0.6+	1998 07 22	910	0.2+	0.3+	1999 09 11	704	0.6+	0.9-
1998 05 26	704	(0.2-	2.2+)	1998 07 22	910	0.4+	0.3+	1999 09 11	704	0.1+	0.3+
1998 05 26	704	1.7-	1.5+	1998 07 23	910	0.1+	0.6+	1999 09 11	704	0.3+	0.0
1998 05 26	704	1.1-	0.7+	1998 07 23	910	0.1-	0.6+	1999 09 11	704	0.3-	1.0+
1998 06 03	704	0.5-	0.1+	1998 07 23	910	0.2-	0.7+	1999 09 11	704	0.1-	0.2-
1998 06 03	704	0.2-	0.9+	1999 09 07	704	0.1+	0.3+	1999 09 14	704	0.2+	0.5-
1998 06 03	704	0.5+	1.6-	1999 09 07	704	0.2+	0.7+	1999 09 14	704	0.5-	0.8-
1998 06 03	704	0.3-	1.9-	1999 09 07	704	0.1+	1.3+	1999 09 14	704	0.5+	0.0
1998 06 19	704	0.0	1.1+	1999 09 07	704	0.2-	0.3+	1999 09 14	704	0.3-	0.0
1998 06 19	704	0.0	0.7-	1999 09 07	704	0.9+	0.5+	1999 09 14	704	0.2-	0.0
1998 06 19	704	0.1+	0.3+	1999 09 09	704	0.2-	0.4+	1999 09 14	691	0.1-	0.2-
1998 06 25	704	1.4+	1.3-	1999 09 09	704	0.4-	1.5-	1999 09 14	691	0.1+	0.2-
1998 06 25	704	0.2-	1.0-	1999 09 09	704	0.0	0.6+	1999 09 14	691	0.1+	0.0
1998 06 25	704	1.2+	1.7-	1999 09 09	704	1.2-	0.1+	1999 09 18	691	0.0	0.2-
1998 06 25	704	(2.7+	1.6-)	1999 09 11	704	0.5+	0.3+	1999 09 18	691	0.0	0.3-
1998 07 17	910	0.5+	0.2+	1999 09 11	704	0.1+	0.0	1999 09 18	691	0.2+	0.7-

1998 MS₂₉ = 1999 RB₁₀₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	99.05853		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.17499684	ω	133.69968	-0.28969930	+0.95214024
a	3.1655505	Ω	119.22384	-0.90713041	-0.24065594
e	0.1199171	i	6.41346	-0.30526831	-0.18845074
P	5.63	H	13.1	G 0.15	U 4

Residuals in seconds of arc

1998 06 24	704	0.6+	2.0-	1998 06 27	809	0.2-	1.1+	1999 09 08	704	0.2-	0.0
1998 06 24	704	0.5+	2.6-	1998 06 27	809	0.2+	0.9+	1999 09 08	704	0.0	0.1-
1998 06 24	704	0.8+	1.1-	1998 06 27	809	0.1+	0.8+	1999 09 08	704	0.1+	0.2-
1998 06 24	704	0.2+	2.0-	1998 07 21	704	1.6+	0.2-	1999 09 09	704	0.8+	0.8+
1998 06 26	809	1.2+	3.0+	1998 07 21	704	0.2-	2.7+	1999 09 09	704	0.2+	0.2-

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1998 06 26	809	1.1+	3.3+	1998 07 21	704	1.7+	0.5-	1999 09 09	704	1.2-	0.1-
1998 06 26	809	0.9+	3.0+	1998 07 21	704	0.4+	0.8+	1999 09 09	704	0.1+	0.2-
1998 06 26	704	0.8-	2.5-	1998 07 26	704	0.2+	0.9-	1999 09 09	704	0.1-	0.5-
1998 06 26	704	0.3+	0.1-	1998 07 26	704	0.6+	1.4-	1999 09 09	704	0.6-	0.2-
1998 06 26	704	2.2-	0.4-	1998 07 26	704	1.1-	0.5-	1999 09 09	704	0.2+	0.2+
1998 06 26	704	0.3-	0.6-	1998 07 26	704	2.5-	0.4-	1999 09 09	704	0.3+	0.2+
1998 06 26	704	3.1-	0.7-	1999 09 08	704	0.5+	0.3-	1999 09 09	704	0.0	0.6+

1998 MY₂₉ = 1985 VM₅ = 1999 RN₁₁₀

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<i>M</i>				Williams				<i>Q</i>			
137.16703				(2000.0)				<i>P</i>			
<i>n</i>	0.20393287	<i>ω</i>	311.70693	-0.69224417	+0.68176451						
<i>a</i>	2.8585419	<i>Ω</i>	272.77490	-0.57156623	-0.71813797						
<i>e</i>	0.1030649	<i>i</i>	13.70428	-0.44057922	-0.13955288						
<i>P</i>	4.83	<i>H</i>	12.3	<i>G</i>	0.15	<i>U</i>	3				

Residuals in seconds of arc

1985 11 11	095(20.2-	4.5-)	1998 07 21	704	(2.5-	0.7+)	1999 09 08	704	0.3+	0.1-	
1996 01 21	566	0.2+	0.5+	1998 07 21	704	1.9-	0.4+	1999 09 08	704	0.7+	0.2-
1996 01 21	566	0.1-	0.5+	1998 07 26	704	0.2-	1.0+	1999 09 08	704	0.5+	0.7+
1996 01 21	566	0.2+	0.8+	1998 07 26	704	0.6+	0.6+	1999 09 08	704	0.3+	0.6+
1998 06 24	704	0.5+	0.1+	1998 07 26	704	(2.6-	1.1-)	1999 09 09	704	0.1+	0.6-
1998 06 24	704	0.2-	0.1+	1998 07 26	704	0.7-	0.9-	1999 09 09	704	0.2-	0.3-
1998 06 24	704	0.1+	0.4+	1998 08 15	704	1.1+	0.3+	1999 09 09	704	0.1+	1.3-
1998 06 24	704	0.7+	0.7-	1998 08 15	704	0.3-	0.6-	1999 09 09	704	0.4+	0.5-
1998 06 24	704	0.8+	0.2-	1998 08 15	704	1.7-	0.4+	1999 09 09	704	0.0	0.6+
1998 06 26	704	1.0+	0.6+	1998 08 15	704	(4.1-	2.6+)	1999 09 09	704	0.0	0.4-
1998 06 26	704	0.2+	0.5-	1999 07 22	704	0.4-	0.5-	1999 09 09	704	0.6-	0.0
1998 06 26	704	0.7+	0.3+	1999 07 22	704	0.1+	0.8-	1999 09 09	704	0.2-	0.3+
1998 06 26	704	1.2+	0.0	1999 07 22	704	0.1-	0.2-	1999 09 13	703	0.5-	0.8+
1998 06 26	704	0.5-	0.2+	1999 07 22	704	0.5-	0.2-	1999 09 13	703	0.3-	0.4+
1998 07 21	704	1.1-	0.3+	1999 07 22	704	0.1-	0.6-	1999 09 13	703	0.1-	0.5+
1998 07 21	704	1.1-	0.0	1999 09 08	704	0.6+	0.6-	1999 09 13	703	0.0	0.8+

1998 OZ₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				Williams				<i>Q</i>			
352.83591				(2000.0)				<i>P</i>			
<i>n</i>	0.17747895	<i>ω</i>	209.61912	+0.55847913	-0.82571518						
<i>a</i>	3.1359670	<i>Ω</i>	206.67115	+0.79158677	+0.55909143						
<i>e</i>	0.1372555	<i>i</i>	10.18137	+0.24797469	+0.07490812						
<i>P</i>	5.55	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	3				

Residuals in seconds of arc

1993 10 12	809	0.2+	0.3-	1998 08 17	557	0.7-	0.1-	1998 09 18	557	0.0	0.4+
1993 10 12	809	0.2+	0.3-	1998 08 24	704	1.1-	1.2-	1998 09 27	557	0.6-	0.0
1993 10 12	809	0.1-	0.7-	1998 08 24	704	0.4-	0.0	1998 09 27	557	0.9-	0.3-
1998 07 27	557	0.1-	0.5+	1998 08 24	704	1.5+	1.1+	1998 10 23	557	0.2+	0.2+
1998 07 31	557	0.2-	0.0	1998 08 24	704	0.7+	1.3+	1998 10 23	557	0.2+	0.7-
1998 07 31	557	0.1-	0.2+	1998 08 24	704	0.3+	1.2-	1999 09 05	557	0.1+	0.8+
1998 07 31	557	0.1-	0.1+	1998 08 27	704	1.3+	0.3+	1999 09 05	557	0.1+	0.2+
1998 07 31	557	0.1-	0.7-	1998 08 27	704	(1.5+	2.2+)	1999 09 06	557	0.0	0.4+
1998 08 07	557	0.2+	0.6-	1998 08 27	704	0.6-	0.4-	1999 09 06	557	0.2-	0.2+
1998 08 07	557	1.0+	0.3-	1998 08 27	704	0.2-	1.4+				
1998 08 17	557	0.3-	0.8+	1998 09 18	557	0.5-	0.4-				

1998 QW₂ = 1998 RT₂₀Id. G. V. Williams (d, *MPC* 33385)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				Marsden				<i>Q</i>			
158.53998				(2000.0)				<i>P</i>			
<i>n</i>	0.21609102	<i>ω</i>	261.65136	-0.55026723	+0.70032941						
<i>a</i>	2.7502884	<i>Ω</i>	320.60641	-0.12289434	-0.60654591						
<i>e</i>	0.1810914	<i>i</i>	45.76231	-0.82589524	-0.37635193						
<i>P</i>	4.56	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4				

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Residuals in seconds of arc

1998 08 17	704	0.3+	0.0	1998 08 28	699	0.7-	0.6-	1999 09 13	046	0.6-	0.7-
1998 08 17	704	0.4+	0.2-	1998 08 28	699	0.4-	0.9-	1999 09 13	046	0.1+	0.1-
1998 08 17	704	0.2+	0.3-	1998 08 28	699	0.0	0.1+	1999 09 13	046	0.1+	0.1-
1998 08 17	704	0.8+	0.2-	1998 09 15	699	0.2+	0.1-	1999 09 13	046	0.0	0.1+
1998 08 17	704	0.3+	0.2+	1998 09 15	699	0.6+	0.9-	1999 09 14	046	0.3+	0.1+
1998 08 23	704	0.2+	1.2+	1998 09 15	699	1.1+	0.0	1999 09 14	046	0.5+	0.3+
1998 08 23	704	0.3-	0.8+	1998 09 22	699	(0.7-	2.5+)	1999 09 14	046	0.5+	0.4+
1998 08 23	704	0.6-	0.7+	1998 09 22	699	0.6-	0.1-	1999 09 14	046	0.3+	0.5+
1998 08 23	704	1.6-	0.6+	1998 09 22	699	0.1-	1.0+				
1998 08 23	704	0.3+	1.3-	1999 09 13	046	1.1-	0.5-				

1998 QS₁₃ = 1998 UN₄ = 1979 MV

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				Williams				<i>Q</i>			
94.45935				(2000.0)				<i>P</i>			
<i>n</i>	0.26211191	<i>ω</i>	344.90671	+0.78067071	+0.62492306						
<i>a</i>	2.4181220	<i>Ω</i>	336.41459	-0.57208704	+0.71143986						
<i>e</i>	0.2271866	<i>i</i>	0.70751	-0.25153460	+0.32144128						
<i>P</i>	3.76	<i>H</i>	16.1	<i>G</i>	0.15	<i>U</i>	3				

Residuals in seconds of arc

1979 06 22	805	1.3-	0.7+	1998 08 23	704	0.3+	0.3-	1998 10 21	910	0.6+	0.2-
1979 06 22	805	1.1+	0.1-	1998 08 23	704	1.3-	0.4+	1998 10 21	910	0.5+	0.3-
1979 06 25	805	0.2+	0.3-	1998 08 23	704	1.5+	0.3+	1998 10 21	910	0.6+	0.1-
1998 08 17	704	0.4+	0.1+	1998 08 23	704	0.1-	0.4+	1998 11 11	910	0.2-	0.6+
1998 08 17	704	0.8-	0.2-	1998 08 23	704	0.1+	0.4-	1998 11 11	910	0.2-	0.2+
1998 08 17	704	0.3-	0.0	1998 10 20	910	0.4-	0.1-	1998 11 11	910	0.1-	0.5+
1998 08 17	704	0.3-	0.0	1998 10 20	910	0.4-	0.1+				
1998 08 17	704	0.7+	0.4-	1998 10 20	910	0.5-	0.3-				

1998 QP₁₇ = 1998 UT₄

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				Williams				<i>Q</i>			
142.42774				(2000.0)				<i>P</i>			
<i>n</i>	0.26895077	<i>ω</i>	239.61402	-0.26323725	+0.96473103						
<i>a</i>	2.3769544	<i>Ω</i>	15.12377	-0.88454112	-0.24117362						
<i>e</i>	0.2447105	<i>i</i>	0.09708	-0.38508851	-0.10549564						
<i>P</i>	3.66	<i>H</i>	16.1	<i>G</i>	0.15	<i>U</i>	5				

Residuals in seconds of arc

1995 12 19	691	0.1+	0.1+	1998 08 23	704	0.1-	0.4+	1998 10 17	691	0.1-	0.4+
1995 12 19	691	0.0	0.2-	1998 08 23	699	0.3+	0.0	1998 10 17	691	0.4-	0.1-
1995 12 19	691	0.1+	0.3-	1998 08 23	704	0.0	0.8+	1998 10 20	910	0.1-	0.3+
1998 08 17	704	0.2+	1.1+	1998 08 23	704	1.5-	0.0	1998 10 20	910	0.2+	0.1+
1998 08 17	704	(3.2-	0.7-)	1998 08 23	699	0.7+	0.5-	1998 10 20	910	0.1+	0.2+
1998 08 17	704	0.4+	0.1-	1998 08 23	704	0.1+	0.8-	1998 10 21	910	0.3-	0.2-
1998 08 17	704	0.3-	0.4-	1998 08 23	699	0.6+	0.1-	1998 10 21	910	0.0	0.2+
1998 08 17	704	0.3-	1.0-	1998 10 17	691	0.2+	0.1+	1998 10 21	910	0.2+	0.1-

1998 QB₃₅ = 1988 BF₃

Id. G. V. Williams, A. Gnädig, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	312.75106		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.24423975	ω	163.16079	-0.51398244	-0.84397633
a	2.5346917	Ω	317.42840	$+0.75858072$	-0.36372776
e	0.1193682	i	13.10433	$+0.40047141$	-0.39421577
P	4.04	H	14.5	G 0.15	U 5

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1998 08 03	699	0.1−	0.6+	1998 08 26	699	0.1−	1.3+	1998 09 18	699	0.4+	0.1−
1998 08 17	704	2.4+	2.0−	1998 08 26	699	0.6−	0.2−	1998 09 18	704	1.6−	0.4+
1998 08 17	704	2.4+	2.5−	1998 09 14	704	0.7−	0.1+	1998 09 18	704	0.8+	1.7−
1998 08 17	704	1.0−	1.8−	1998 09 14	704	0.3−	1.3+	1998 09 18	704	1.0−	0.1+
1998 08 23	704	1.4−	0.6+	1998 09 14	704	0.4+	0.3−				

1998 QS₉₃ = 1994 RB₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	60.22083	(2000.0)	
<i>n</i>	0.23963615	ω	216.18827
<i>a</i>	2.5670510	Ω	141.34360
<i>e</i>	0.2086666	<i>i</i>	15.67610
<i>P</i>	4.11	<i>H</i>	15.4
		<i>G</i>	0.15
		<i>U</i>	4

Residuals in seconds of arc

1994 09 04	675	0.9+	1.5+	1998 08 17	704	0.1−	0.6−	1998 08 23	704	0.3+	0.1−
1994 09 04	675	0.2−	0.2−	1998 08 17	704	0.6+	0.3−	1998 08 23	704	0.9+	0.3+
1994 09 06	675	1.5−	0.2−	1998 08 17	704	0.3+	0.2−	1998 08 23	704	1.3−	1.0−
1994 09 06	675	0.7+	0.6−	1998 08 17	704	0.2+	0.4−	1998 09 14	699	0.3−	0.2+
1998 07 16	699	1.0−	0.5+	1998 08 17	704	1.8+	0.4−	1998 09 14	699	0.1−	0.4+
1998 07 16	699	0.6−	0.2+	1998 08 22	566	0.4−	0.8−	1998 09 14	699	0.1−	1.4+
1998 07 16	699	1.1−	0.3+	1998 08 22	566	1.5−	1.0−	1998 09 24	699	0.4−	0.6+
1998 08 01	910	0.7+	1.0+	1998 08 22	566	0.9−	1.2−	1998 09 24	699	0.6−	0.1+
1998 08 02	910	0.7+	0.8+	1998 08 23	704	0.6+	0.6−	1998 09 24	699	0.5−	0.5−
1998 08 02	910	1.0+	0.9+	1998 08 23	704	1.0+	0.3+				

1998 RB₆₂ = 1999 SS₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	61.54829	(2000.0)	
<i>n</i>	0.19165456	ω	9.91550
<i>a</i>	2.9793620	Ω	353.52622
<i>e</i>	0.1047571	<i>i</i>	9.60478
<i>P</i>	5.14	<i>H</i>	13.8
		<i>G</i>	0.15
		<i>U</i>	3

Residuals in seconds of arc

1996 03 23	566	0.2−	0.6−	1998 09 16	699	0.5+	0.6+	1998 09 27	704	0.2+	0.9−
1996 03 23	566	0.3−	0.4−	1998 09 16	699	0.9+	0.1−	1998 09 27	704	0.0	0.2−
1996 03 23	566	0.3−	0.3−	1998 09 16	699	0.6+	0.0	1998 09 27	704	1.0−	0.5−
1998 08 02	699	0.5−	0.9−	1998 09 16	699	0.9+	1.0+	1998 10 14	699	0.5−	0.5+
1998 08 02	699	0.7−	0.5+	1998 09 18	704	0.1+	0.1−	1998 10 14	699	0.4+	0.0
1998 08 02	699	0.9+	0.2+	1998 09 18	704	0.4−	0.2+	1998 10 14	699	0.6−	0.1−
1998 08 28	704	0.2+	0.9−	1998 09 18	704	0.0	0.3−	1999 09 20	557	0.1−	0.3+
1998 08 28	704	0.0	1.5−	1998 09 18	704	0.3+	0.0	1999 09 20	557	0.1−	0.3+
1998 08 28	704	1.5+	1.1−	1998 09 18	704	0.2+	0.9+	1999 09 20	557	0.8+	0.8+
1998 08 28	704	0.2−	1.9+	1998 09 26	704	0.4−	0.3−	1999 09 22	557	0.2+	0.3−
1998 08 28	704	0.5−	0.5+	1998 09 26	704	0.8−	0.4−	1999 09 22	557	0.0	0.1−
1998 09 14	704	0.6+	0.4−	1998 09 26	704	1.0−	0.6−	1999 09 22	557	0.1+	0.3−
1998 09 14	704	0.5+	0.1+	1998 09 26	704	1.4−	0.6+	1999 09 24	557	0.2+	1.1+
1998 09 14	704	0.6+	0.5+	1998 09 26	704	1.9−	0.8+	1999 09 24	557	0.9−	1.0−
1998 09 16	699	1.4+	0.2−	1998 09 27	704	0.4−	0.0	1999 09 24	557	0.1−	1.2−
1998 09 16	699	0.8+	0.6−	1998 09 27	704	0.6+	0.4−	1999 09 24	557	0.4−	0.3−

1998 SQ₆ = 1993 PF₈

Id. A. Gnädig, G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	92.80706	(2000.0)	
<i>n</i>	0.19803589	ω	134.00449
<i>a</i>	2.9150104	Ω	177.43774
<i>e</i>	0.0655460	<i>i</i>	1.97778
<i>P</i>	4.98	<i>H</i>	14.6
		<i>G</i>	0.15
		<i>U</i>	5

Residuals in seconds of arc

1993 08 15	010	(2.6+	1.9+)	1998 08 26	699	1.5+	0.1+	1998 09 20	691	0.4−	0.4+
1993 08 15	010	0.7−	0.0	1998 08 26	699	0.5+	0.8−	1998 09 20	691	0.7−	0.4+

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1993 08 15	010	0.7−	0.5−	1998 08 26	699	0.7−	1.1−	1998 09 20	691	0.5−	0.3+
1993 08 16	010	1.5+	0.1+	1998 09 14	704	0.3−	0.9−	1998 09 21	691	0.6+	0.3+
1993 08 17	010	(0.3+	2.3−)	1998 09 14	704	0.3−	0.8+	1998 09 21	691	0.7+	0.1+
1993 08 17	010	(0.7−	2.9−)	1998 09 14	704	1.0+	1.5−	1998 09 21	691	0.2+	0.5+
1998 08 17	704	1.5−	0.1+	1998 09 14	704	0.2−	1.2−	1998 09 26	691	0.2−	0.0
1998 08 17	704	0.1−	1.5+	1998 09 18	704	(1.1+	2.2−)	1998 09 26	691	0.1−	0.2+
1998 08 17	704	1.0+	0.5+	1998 09 18	704	0.2−	0.6−	1998 09 26	691	0.4−	0.2+
1998 08 17	704	0.2+	0.1−	1998 09 18	704	(2.8−	0.1−)				
1998 08 17	704	0.6−	0.6+	1998 09 18	704	0.4+	0.8+				

1998 SG₃₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden			
<i>M</i>	234.98753	(2000.0)	
<i>n</i>	0.04034880	ω	337.66851
<i>a</i>	8.4187759	Ω	173.19003
<i>e</i>	0.3063631	<i>i</i>	15.61630
<i>P</i>	24.43	<i>H</i>	11.2
		<i>G</i>	0.15
		<i>U</i>	4

Residuals in seconds of arc

1998 09 13	691	0.9−	0.4+	1998 09 29	684	(2.8+	0.5+)	1998 12 17	950	0.2+	0.0
1998 09 13	691	0.3−	0.5+	1998 09 29	684	(2.4+	0.4−)	1998 12 17	950	0.2+	0.1−
1998 09 19	691	0.6+	0.1−	1998 09 30	691	0.1+	0.4−	1998 12 18	950	0.1−	0.2−
1998 09 19	691	0.2+	0.0	1998 09 30	691	0.1−	0.0	1998 12 18	950	0.1+	0.0
1998 09 19	691	0.2+	0.1−	1998 09 30	691	0.5+	0.4−	1998 12 18	950	0.1−	0.0
1998 09 20	691	0.4−	0.6+	1998 10 15	950	0.2+	0.3−	1999 09 08	691	0.2+	0.1+
1998 09 20	691	0.2+	0.2+	1998 10 15	950	0.2+	0.2−	1999 09 08	691	0.0	0.0
1998 09 23	691	0.4−	0.3+	1998 10 16	950	0.3+	0.3−	1999 09 08	691	0.2−	0.3+
1998 09 23	691	0.1−	0.6+	1998 10 16	950	0.3+	0.3−	1999 09 14	691	0.6+	0.4+
1998 09 23	691	0.1−	0.4+	1998 10 17	950	0.3+	0.4−	1999 09 14	691	0.1+	0.0
1998 09 26	691	0.2−	0.1+	1998 10 17	950	0.3+	0.3−	1999 09 14	691	0.8−	0.4−
1998 09 26	691	0.5−	0.4+	1998 10 18	950	0.3+	0.2−				
1998 09 26	691	0.1−	0.5−	1998 12 17	950	0.7−	0.2−				

1998 SQ₅₃ = 3057 P-L

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	53.83880	(2000.0)	
<i>n</i>	0.18187116	ω	22.31762
<i>a</i>	3.0852722	Ω	342.77634
<i>e</i>	0.1935881	<i>i</i>	13.01485
<i>P</i>	5.42	<i>H</i>	14.6
		<i>G</i>	0.15
		<i>U</i>	4

Residuals in seconds of arc

1960 09 25	675	0.9+	0.1−	1998 09 14	704	0.2+	0.9+	1998 09 25	699	0.4−	0.0
1960 09 27	675	0.9−	0.4−	1998 09 14	704	0.3+	0.3+	1998 09 25	699	0.9−	0.4+
1960 09 28	675	0.0	0.5+	1998 09 16	699	0.4−	0.1−	1998 09 26	704	0.2−	0.5−
1960 09 29	675	0.1+	0.2−	1998 09 16	699	0.0	0.3−	1998 09 26	704	1.3+	1.1+
1998 08 23	704	2.0+	1.3−	1998 09 16	699	0.6+	0.2−	1998 09 26	704	0.0	0.1−
1998 08 23	704	0.2+	0.8+	1998 09 18	704	0.1+	0.3+	1998 09 26	704	0.3+	0.9+
1998 08 23	704	1.6−	1.5+	1998 09 18	704	0.8+	0.0	1998 09 26	704	0.3−	0.1+
1998 08 23	704	1.1+	0.6+	1998 09 18	704	0.5−	0.2−	1998 09 27	704	0.0	1.5−
1998 08 23	704	1.8−	1.4−	1998 09 18	704	0.4−	0.5−	1998 09 27	704	1.0−	0.3+
1998 09 14	704	0.7+	0.4−	1998 09 18	704	0.1+	0.8−	1998 09 27	704	0.1−	0.1+
1998 09 14	704	0.5+	0.5+	1998 09 25	699	0.3+	0.3−	1998 09 27	704	1.0−	0.1−

1998 SK₁₅₇ = 1997 ML₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Doppler			
<i>M</i>	151.35199	(2000.0)	
<i>n</i>	0.18142342	ω	132.88591
<i>a</i>	3.0903463	Ω	131.27746
<i>e</i>	0.1576498	<i>i</i>	2.57043
<i>P</i>	5.43	<i>H</i>	14.6
		<i>G</i>	0.15
		<i>U</i>	6

Residuals in seconds of arc

1997 06 28	704	0.6+	0.1-	1997 07 02	704	0.3+	0.2+	1998 09 27	704	1.8+	0.1-
1997 06 28	704	0.3-	0.0	1998 09 26	704	1.3-	1.6+	1998 09 27	704	0.5+	0.4+
1997 06 28	704	0.0	0.3+	1998 09 26	704	0.0	1.0+	1998 09 27	704	(2.3+	1.0+)
1997 07 02	704	0.3-	0.5-	1998 09 26	704	0.1-	0.7-	1998 10 01	327	0.4-	0.2+
1997 07 02	704	0.3-	0.0	1998 09 26	704	1.0-	1.4-	1998 10 01	327	0.2-	0.1-
1997 07 02	704	0.0	0.1-	1998 09 26	704	0.4-	0.8-	1998 10 01	327	0.1-	0.7+
1997 07 02	704	0.1+	0.3+	1998 09 27	704	1.1+	0.7-				

1998 UL

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	162.38492		(2000.0)	P	Q
n	0.19293701	ω	329.61273	-0.27283094	+0.94914982
a	2.9661448	Ω	284.16817	-0.84686544	-0.31441705
e	0.0681993	i	9.32419	-0.45648900	+0.01601681
P	5.11	H	13.6	G 0.15	U 4

Residuals in seconds of arc

1998 08 27	704	0.2-	0.3-	1998 10 16	557	0.1+	0.6-	1998 11 21	557	0.4+	0.7+
1998 08 27	704	0.0	0.7+	1998 10 17	557	0.2+	0.5-	1998 11 21	557	1.0-	0.5-
1998 08 27	704	0.0	1.2+	1998 10 17	557	0.1+	0.4-	1998 12 11	557	1.8+	1.5-
1998 08 27	704	1.9-	1.6+	1998 10 17	557	0.4+	0.4-	1998 12 17	557	0.1-	0.2-
1998 09 18	699	0.4-	0.7-	1998 10 17	557	0.0	0.5-	1998 12 17	557	0.3-	1.0-
1998 09 18	699	0.1+	0.4+	1998 10 23	557	0.2+	0.8+	1999 09 06	557	0.2+	0.6+
1998 09 18	699	0.0	1.2+	1998 10 23	557	0.0	0.2+	1999 09 06	557	0.2-	0.3+
1998 10 16	557	0.3+	0.5-	1998 10 23	557	1.0+	1.2+	1999 09 08	557	0.2+	0.5+
1998 10 16	557	0.3+	0.6-	1998 11 12	557	0.0	0.4-	1999 09 08	557	0.0	0.4+
1998 10 16	557	0.2-	0.6-	1998 11 12	557	0.3+	0.7-				

1998 UP₂₁ = 1977 RQ₁₆

Id. G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	8.76469		(2000.0)	P	Q
n	0.18957297	ω	256.98276	+0.24585173	-0.96930158
a	3.0011321	Ω	178.76971	+0.93905013	+0.23731323
e	0.0998783	i	9.03880	+0.24029521	+0.06431860
P	5.20	H	13.7	G 0.15	U 5

Residuals in seconds of arc

1977 09 09	675	1.4-	0.5-	1998 10 19	699	1.7+	0.3-	1998 10 29	704	0.1-	1.1+
1977 09 10	675	1.4+	0.4+	1998 10 19	699	1.2+	0.3-	1998 10 29	704	2.0+	0.7-
1998 09 15	699	0.9+	0.3-	1998 10 19	699	1.0+	0.9-	1998 10 29	704	0.8-	2.1+
1998 09 15	699	1.9+	2.4+	1998 10 28	704	0.6+	0.1+	1998 10 29	704	2.5-	0.3+
1998 09 15	699	0.3-	0.9-	1998 10 28	704	1.0-	0.1-	1998 10 29	704	1.0-	0.3+
1998 10 10	699	0.2-	0.7-	1998 10 28	704	1.2-	1.2+	1998 11 11	699	0.2+	0.3-
1998 10 10	699	0.2-	0.7-	1998 10 28	704	1.2-	0.9-	1998 11 11	699	0.1+	0.7-
1998 10 10	699	1.0-	0.3+	1998 10 28	704	2.1-	0.8-	1998 11 11	699	2.3+	0.0

1998 VP₄₄ = 1999 AN₈ = 1988 SZ₁

Id. A. Doppler (d), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	307.71850		(2000.0)	P	Q
n	0.21584262	ω	75.49711	-0.98506604	-0.01447921
a	2.7523981	Ω	103.45438	-0.04790517	-0.93406294
e	0.0777160	i	10.16063	+0.16537830	-0.35681476
P	4.57	H	14.4	G 0.15	U 2

Residuals in seconds of arc

1950 04 22	675	0.2-	0.1+	1998 11 11	699	0.7-	0.1+	1999 01 07	699	0.3+	0.1-
1950 04 22	675	0.3+	0.1-	1998 11 11	699	(2.7-	0.8+)	1999 01 07	699	0.1+	0.0
1988 09 16	807	0.7-	1.4-	1998 11 11	699	0.6-	1.3+	1999 01 10	699	0.1-	1.2-
1988 09 18	807	1.2+	1.2-	1998 11 16	699	0.7-	1.1+	1999 01 10	699	0.1+	1.0-
1997 09 02	566	0.0	0.7+	1998 11 16	699	0.8+	1.6+	1999 01 10	699	0.4+	0.9-
1997 09 02	566	0.0	0.5+	1998 11 16	699	0.9+	1.1+				
1997 09 02	566	0.3-	0.3+	1999 01 07	699	0.4-	2.0-				

1998 WL₁₂ = 1991 TC₅

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	112.87584		(2000.0)	P	Q
n	0.28482512	ω	86.16642	+0.98504644	+0.16349029
a	2.2877954	Ω	264.41827	-0.17163309	+0.90367865
e	0.3015482	i	3.13069	-0.01501968	+0.39577244
P	3.46	H	15.8	G 0.15	U 4

Residuals in seconds of arc

1991 10 05	033	0.2+	0.1-	1998 11 18	704	0.5+	0.9-	1998 11 21	704	0.3+	0.7+
1991 10 06	033	0.9+	0.5+	1998 11 18	704	0.2+	1.2-	1998 11 24	704	0.2+	0.3-
1991 10 06	033	0.6-	0.6+	1998 11 18	704	0.5+	0.1+	1998 11 24	704	0.6+	1.5-
1991 10 09	033	1.0-	0.0	1998 11 18	399	0.4+	1.6+	1998 11 24	704	0.1+	1.3-
1991 10 09	033	0.3+	0.7+	1998 11 18	399	(0.7+	2.1+)	1998 11 24	704	0.8-	1.6-
1991 10 10	033	0.3-	0.0	1998 11 19	399	1.9-	0.7+	1998 11 24	704	(0.8-	2.3-)
1996 01 13	691	0.1-	0.5+	1998 11 19	399	0.3+	0.8+	1999 01 10	691	0.7-	0.4-
1996 01 13	691	0.6+	0.6+	1998 11 21	704	0.2+	0.5-	1999 01 10	691	0.5-	0.1+
1996 01 13	691	0.3+	0.6+	1998 11 21	704	0.3+	0.3-	1999 01 10	691	0.9-	0.4-
1998 11 18	704	0.1+	0.1+	1998 11 21	704	0.0	0.1+				
1998 11 18	704	0.0	0.4-	1998 11 21	704	0.6+	1.9+				

1998 WK₃₂ = 1999 BV₁₈ = 1977 UW₁ = 1981 WX₄ = 1985 RN₆

Id. A. Doppler (d), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	153.05853		(2000.0)	P	Q
n	0.23987357	ω	325.11254	+0.95904181	+0.28038352
a	2.5653568	Ω	18.72863	-0.22285272	+0.83465022
e	0.1955655	i	7.20983	-0.17485842	+0.47407182
P	4.11	H	13.6	G 0.15	U 3

Residuals in seconds of arc

1977 10 20	033	0.6-	1.5+	1998 11 21	699	(0.3-	2.3+)	1999 01 16	704	0.2-	0.1+
1981 11 24	095	0.1-	0.9-	1998 11 24	699	0.3+	0.4+	1999 01 16	704	0.5-	0.7+
1985 09 15	095	0.2+	1.7-	1998 11 24	699	0.1+	0.4-	1999 01 16	704	0.1+	0.9+
1985 09 20	095	(0.3+	3.7-)	1998 11 24	699	0.9-	1.4+	1999 01 19	704	0.2-	0.5+
1985 09 22	095	1.8+	0.4-	1998 12 17	704	0.6-	0.5+	1999 01 19	704	0.3+	0.2+
1997 09 02	566	0.5+	1.3+	1998 12 17	704	0.9-	0.3-	1999 01 19	704	0.9+	1.4-
1997 09 02	566	0.8-	0.9+	1998 12 17	704	0.1-	0.0	1999 01 19	704	0.3+	0.8-
1997 09 02	566	0.8-	1.0+	1998 12 17	704	0.7+	0.3-	1999 01 19	704	1.4+	0.0
1998 11 21	699	0.1-	1.0+	1998 12 17	704	0.2+	1.2-				
1998 11 21	699	0.2+	1.1+	1999 01 16	704	0.4-	0.4+				

1998 XB

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	115.63454		(2000.0)	P	Q
n	1.13954985	ω	202.58078	+0.13644802	+0.96406051
a	0.9077798	Ω	75.86558	-0.86921283	+0.22690323
e	0.3511815	i	13.59662	-0.47523782	-0.13821090
P	0.86	H	15.5	G 0.15	U 4

Residuals in seconds of arc

1998 11 25	704	0.0	0.6-	1998 12 16	557	0.6-	0.4+	1998 12 28	402	0.8+	0.0
1998 11 25	704	1.1-	0.9+	1998 12 16	557	0.7-	0.3+	1998 12 28	402	0.4+	0.1+
1998 11 25	704	1.0+	0.8-	1998 12 16	557	0.6-	0.4+	1999 01 02	046	0.5-	1.7+
1998 11 25	704	0.7-	0.4-	1998 12 16	557	0.5-	0.3+	1999 01 02	046	0.7-	0.9+
1998 12 01	327	0.3+	0.0	1998 12 16	360	0.1-	0.5-	1999 01 02	046	0.0	0.5+
1998 12 01	327	0.2+	0.0	1998 12 16	360	0.1+	0.4-	1999 01 02	046	1.1-	0.1+
1998 12 01	327	0.3+	0.2+	1998 12 16	360	0.0	0.4-	1999 01 06	557	0.5-	1.4-
1998 12 02	327	0.4+	0.4+	1998 12 17	557	0.4+	0.8-	1999 01 06	557	0.4-	1.4-
1998 12 02	327	0.3+	0.1+	1998 12 17	557	0.3-	0.9-	1999 01 06	557	0.5-	1.5-
1998 12 02	327	0.2+	0.1+	1998 12 17	557	0.0	0.5-	1999 01 06	557	0.7-	1.4-
1998 12 02	327	0.0	0.1+	1998 12 17	046	0.6+	0.2-	1999 01 09	327	1.2+	0.9+
1998 12 02	327	0.1-	0.2+	1998 12 17	046	0.6+	0.1-	1999 01 09	327	0.3-	0.5+
1998 12 02	327	0.0	0.3+	1998 12 17	046	0.7+	0.1-	1999 01 09	327	0.1-	0.0

1998 12 03	758	0.2+	0.1+	1998 12 17	327	0.4+	0.3+	1999 01 17	402	0.2-	0.1+
1998 12 03	758	0.7+	0.8+	1998 12 17	327	0.4+	0.2+	1999 01 17	402	0.0	0.1+
1998 12 03	758	0.5+	0.8+	1998 12 17	327	0.2+	0.2+	1999 01 17	402	0.0	0.1+
1998 12 03	758	0.5+	0.9+	1998 12 17	327	0.3+	0.2+	1999 01 18	327	0.0	0.0
1998 12 03	758	0.7-	0.1-	1998 12 17	327	0.3+	0.4+	1999 01 18	327	0.1-	0.0
1998 12 04	046	0.2+	0.4+	1998 12 17	327	0.1-	0.3+	1999 01 18	327	0.0	0.1-
1998 12 04	046	0.2-	0.8+	1998 12 17	327	0.1+	0.0	1999 01 19	046	0.3-	0.6+
1998 12 04	046	0.7-	0.9+	1998 12 17	327	0.1+	0.2-	1999 01 19	046	0.3-	0.5+
1998 12 04	046	0.3-	0.5+	1998 12 17	327	0.2+	0.2+	1999 01 19	046	0.4-	0.4+
1998 12 04	097	0.3-	0.1+	1998 12 17	327	0.3+	0.2-	1999 01 19	104	0.2-	0.0
1998 12 04	097	0.1-	0.4+	1998 12 17	327	0.5-	0.3+	1999 01 19	104	0.1+	0.1-
1998 12 04	758	0.1+	0.5+	1998 12 17	327	0.3+	0.4+	1999 01 19	104	0.1-	0.4-
1998 12 04	758	0.0	0.5+	1998 12 18	327	0.5+	0.1-	1999 01 21	327	0.5+	0.5-
1998 12 04	758	0.9-	0.6+	1998 12 18	327	0.4+	0.0	1999 01 21	327	0.4+	0.5-
1998 12 04	758	0.9-	0.9+	1998 12 18	327	0.6+	0.0	1999 01 21	327	0.4+	0.4-
1998 12 04	758	0.2-	0.5+	1998 12 18	402	0.3+	0.4-	1999 01 21	327	0.6+	0.5-
1998 12 04	713	0.6-	0.0	1998 12 18	402	0.6+	0.3-	1999 01 21	587	0.4+	0.7-
1998 12 04	713	0.3-	0.3-	1998 12 18	402	0.4+	0.2-	1999 01 21	587	0.3+	0.8-
1998 12 04	713	1.0-	0.2-	1998 12 21	327	0.1-	0.0	1999 01 25	711	0.0	0.7-
1998 12 04	713	0.1-	0.9-	1998 12 21	327	0.5+	0.1+	1999 01 25	711	0.1+	0.7-
1998 12 04	327	0.2+	0.1+	1998 12 21	327	(2.8+	0.9+)	1999 02 05	355	1.6+	0.2-
1998 12 04	327	0.3+	0.1-	1998 12 24	121	0.1-	0.3-	1999 02 05	355	0.9+	0.6-
1998 12 04	327	0.4+	0.4-	1998 12 24	121	0.0	0.5-	1999 02 05	355	1.0+	0.0
1998 12 04	327	0.6+	0.4-	1998 12 24	121	0.0	0.6-	1999 02 09	118	0.5+	0.5-
1998 12 04	327	0.4+	0.0	1998 12 24	360	0.3-	0.4-	1999 02 09	118	0.4+	0.5-
1998 12 04	327	0.1+	0.1-	1998 12 24	360	0.1-	0.5-	1999 02 15	292	0.1+	1.8+
1998 12 05	097	0.5-	0.2-	1998 12 24	360	0.4-	0.4-	1999 02 15	292	0.7-	0.6+
1998 12 05	097	0.5-	0.1-	1998 12 24	327	0.1+	0.4-	1999 02 15	292	0.6-	0.6+
1998 12 05	900	1.6-	0.9-	1998 12 24	327	0.1+	0.4-	1999 02 16	118	0.1-	0.0
1998 12 05	900	0.5-	1.0-	1998 12 24	327	0.1-	0.3-	1999 02 16	118	0.1-	0.1+
1998 12 06	104	1.2+	0.3+	1998 12 25	327	0.3-	0.1-	1999 02 16	118	0.2-	0.1+
1998 12 06	104	0.3-	0.8-	1998 12 25	327	0.4+	0.0	1999 02 28	151	0.8+	0.4+
1998 12 06	104	0.2-	0.4-	1998 12 25	327	0.1+	0.1+	1999 02 28	151	0.2-	1.5+
1998 12 06	327	0.7+	0.1+	1998 12 25	327	0.3-	0.1-	1999 02 28	151	(4.3-	4.0+)
1998 12 06	327	0.0	0.2+	1998 12 26	151	0.9-	0.6-	1999 09 11	046	1.2-	0.7+
1998 12 06	327	0.7+	0.3+	1998 12 26	151	1.1-	0.0	1999 09 11	046	0.4-	0.8+
1998 12 08	327	0.4-	0.1-	1998 12 26	151	0.2+	0.9+	1999 09 11	046	0.2-	0.7+
1998 12 08	327	0.8-	0.6+	1998 12 26	151	0.3+	0.2-	1999 09 11	046	0.2+	0.3+
1998 12 09	327	0.8+	0.6-	1998 12 26	327	0.1+	0.3-	1999 09 11	046	0.5+	0.1-
1998 12 09	327	0.3+	0.3-	1998 12 26	327	0.1+	0.0	1999 09 11	046	0.8+	0.5+
1998 12 09	327	0.9+	0.5+	1998 12 26	327	0.1+	0.0	1999 09 12	046	0.3+	0.1+
1998 12 11	355	0.7-	0.1-	1998 12 26	327	0.1+	0.0	1999 09 12	046	0.5+	0.8+
1998 12 11	355	0.5+	0.0	1998 12 26	327	0.0	0.1-	1999 09 12	046	0.2-	0.7+
1998 12 11	355	1.3-	0.1+	1998 12 27	402	0.0	0.1-	1999 09 12	046	0.4-	0.1-
1998 12 14	327	0.9-	1.6+	1998 12 27	402	0.0	0.2-	1999 09 12	046	0.0	0.2+
1998 12 14	327	0.0	0.5+	1998 12 27	402	0.1-	0.3-	1999 09 12	046	0.2-	0.2+
1998 12 14	327	0.4-	0.6+	1998 12 28	402	0.4+	0.1+				

1998 XC₅₀ = 1999 BH₂₁ = 1991 JJ₇

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	318.77332	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.21638430	ω	137.26287	-0.93458475
<i>a</i>	2.7478027	Ω	62.25366	-0.35415798
<i>e</i>	0.0707150	<i>i</i>	9.33880	-0.03351814
<i>P</i>	4.55	<i>H</i>	14.1	<i>G</i> 0.15
				<i>U</i> 5

Residuals in seconds of arc

1991 05 08	675	0.5-	0.7+	1998 12 14	704	0.9-	0.4-	1999 01 16	704	2.7-	1.7+
1991 05 08	675	1.0+	0.2-	1998 12 17	704	1.0+	1.2+	1999 01 16	704	3.8-	0.2+
1991 05 10	675	1.1+	0.1+	1998 12 17	704	0.1-	0.1+	1999 01 19	704	1.1+	1.5-
1991 05 10	675	1.6-	0.5-	1998 12 17	704	0.1-	0.7+	1999 01 19	704	2.2+	1.2-
1998 12 14	704	1.1+	0.2-	1998 12 17	704	1.3+	0.1-	1999 01 19	704	1.1+	0.4+
1998 12 14	704	0.2-	0.3-	1998 12 17	704	1.0-	0.6+	1999 01 19	704	0.2+	1.6-
1998 12 14	704	1.2+	0.4-	1999 01 16	704	0.9-	1.5+	1999 01 19	704	2.2+	0.6-
1998 12 14	704	1.0-	1.0-	1999 01 16	704	0.6-	1.0+				

1998 XS₇₃ = 1999 BW₁₆ = 1996 SM₈

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	11.52422	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.12309875	ω	174.29157	-0.53931414
<i>a</i>	4.0022137	Ω	308.29769	+0.76722810
<i>e</i>	0.1536174	<i>i</i>	7.68569	+0.34713298
<i>P</i>	8.01	<i>H</i>	12.4	<i>G</i> 0.15
				<i>U</i> 3

Residuals in seconds of arc

1996 09 16	809	0.1-	0.4-	1998 12 17	704	0.2+	0.2+	1999 01 19	704	0.1-	0.5-
1996 09 17	809	0.1+	0.1+	1998 12 17	704	0.0	0.3+	1999 01 19	704	1.0+	0.1+
1996 09 17	809	0.0	0.2+	1998 12 17	704	0.2+	0.7+	1999 01 19	704	0.4-	0.3+
1996 09 17	809	0.3+	0.4-	1998 12 17	704	0.5+	0.9+	1999 01 19	704	0.1+	0.9+
1998 12 14	704	0.2-	0.0	1999 01 16	704	0.7+	0.1+	1999 01 19	704	0.1+	0.3+
1998 12 14	704	0.2-	1.1+	1999 01 16	704	0.4+	0.5-	1999 04 06	704	1.4-	1.1-
1998 12 14	704	0.1-	0.3+	1999 01 16	704	0.2-	1.0-	1999 04 06	704	0.2+	1.8-
1998 12 14	704	0.0	1.0-	1999 01 16	704	0.0	0.6-	1999 04 06	704	1.3-	1.5+
1998 12 14	704	1.1-	0.4-	1999 01 16	704	(1.4-	2.4-)	1999 04 06	704	1.2+	0.6-

1999 ET

Id. A. Doppler (1997 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	221.08985	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.27980010	ω	356.64490	+0.91124202
<i>a</i>	2.3151056	Ω	339.02696	-0.37641525
<i>e</i>	0.1679919	<i>i</i>	3.58191	-0.16718115
<i>P</i>	3.52	<i>H</i>	16.0	<i>G</i> 0.15
				<i>U</i> 4

Residuals in seconds of arc

1997 10 08	691	0.3-	1.1-	1997 11 02	327	0.3+	0.1-	1999 03 09	691	0.4-	0.3+
1997 10 08	691	0.6-	0.3+	1997 11 02	327	0.1+	0.4+	1999 03 09	691	0.2-	0.0
1997 10 08	691	0.5-	0.0	1997 11 19	327	0.5-	0.1+	1999 03 09	691	0.5-	0.3-
1997 10 11	327	0.5+	0.2-	1997 11 19	327	0.2-	0.4+	1999 03 20	691	0.4-	0.0
1997 10 11	327	0.5+	0.3-	1997 11 19	327	0.0	0.6+	1999 03 20	691	0.4-	0.3-
1997 10 11	327	0.5+	0.1-	1999 03 06	691	0.6+	0.4+	1999 03 20	691	0.5-	0.6-
1997 10 11	327	0.4+	0.2-	1999 03 06	691	0.8+	0.1+				
1997 11 02	327	0.1-	0.2+	1999 03 06	691	0.8+	0.1-				

1999 GL₁₈ = 1997 WA₄₁

Id. S. Nakano, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	314.54287	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.29748328	ω	238.95505	+0.34421871
<i>a</i>	2.2224279	Ω	51.30542	-0.83240060
<i>e</i>	0.1253092	<i>i</i>	4.50927	-0.43430718
<i>P</i>	3.31	<i>H</i>	14.9	<i>G</i> 0.15
				<i>U</i> 5

Residuals in seconds of arc

1997 11 29	704	1.8-	0.3+	1999 03 23	703	0.1-	0.3-	1999 04 15	704	1.2-	0.4-
1997 11 29	704	1.1-	0.9+	1999 04 10	699	1.1+	1.0+	1999 04 16	704	0.3-	0.2-
1997 11 29	704	0.1-	1.0+	1999 04 10	699	1.4+	1.0+	1999 04 16	704	0.4-	0.6-
1997 11 29	704	2.7-	1.7-	1999 04 10	699	0.6+	1.4+	1999 04 16	704	0.4-	0.4-
1997 11 29	704	2.1-	1.3-	1999 04 12	704	0.1+	0.3-	1999 04 16	704	0.6-	1.0-
1997 12 04	704	2.6+	0.2+	1999 04 12	704	0.4+	0.4+	1999 04 16	704	0.2+	0.8-
1997 12 04	704	2.7+	0.2+	1999 04 12	704	0.3+	0.2+	1999 05 07	704	0.4+	0.8-
1997 12 04	704	2.6+	0.9-	1999 04 12	704	1.3+	0.1+	1999 05 07	704	1.9-	0.7+
1997 12 04	704	0.1-	1.4+	1999 04 12	704	0.1-	0.4+	1999 05 07	704	0.5-	1.2-
1999 03 23	703	1.4-	0.2-	1999 04 15	704	0.2-	0.2+	1999 05 07	704	0.9-	1.5+
1999 03 23	703	0.7-	0.1-	1999 04 15	704	1.7+	0.8+				
1999 03 23	703	0.0	0.2-	1999 04 15	704	0.8+	1.5-				

1999 GM₁₉ = 1975 XP₁ = 1978 GT₃ = 1980 TS = 1990 RQ₁₈
= 1993 BU₆

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	216.22704		(2000.0)	P		Q	
<i>n</i>	0.18704821	ω	340.69394	+0.97095924		-0.21852741	
<i>a</i>	3.0280776	Ω	32.42330	+0.23636269		+0.81319940	
<i>e</i>	0.1047556	<i>i</i>	10.46482	+0.03702486		+0.53940014	
<i>P</i>	5.27	<i>H</i>	12.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1975 12 01	095	(4.9+ 8.1+)	1999 04 07	704	0.1+ 0.1-	1999 04 15	704	0.2+ 0.3+
1978 04 11	095	0.7- 0.1-	1999 04 07	704	1.2+ 0.8+	1999 04 15	704	1.2- 1.1-
1980 10 05	046	0.0 0.8+	1999 04 07	704	0.1- 0.1+	1999 04 15	704	0.0 0.5+
1980 10 05	046	1.1+ 0.2+	1999 04 07	704	0.7- 0.3-	1999 04 15	704	0.6+ 0.3-
1980 10 08	095	(1.3+ 5.1+)	1999 04 09	699	0.1+ 0.0	1999 04 16	704	0.3+ 0.7-
1990 09 15	675	0.3- 1.3-	1999 04 09	699	0.2+ 1.6+	1999 04 16	704	0.0 0.1+
1990 09 15	675	0.5- 0.9-	1999 04 09	699	0.7+ 0.6-	1999 04 16	704	0.4+ 0.0
1993 01 30	372	1.0- 0.6-	1999 04 12	704	0.8+ 0.8-	1999 04 16	704	0.0 0.8+
1993 01 30	372	0.1+ 0.7+	1999 04 12	704	0.1- 0.2-	1999 04 16	704	1.4- 0.1+
1993 02 02	372	0.5+ 1.8-	1999 04 12	704	0.2+ 0.1-	1999 05 08	703	0.0 0.3-
1993 02 02	372	0.5+ 0.6+	1999 04 12	704	0.2+ 0.3-	1999 05 08	703	0.3+ 0.3-
1993 02 04	372	1.1- 0.1+	1999 04 12	704	0.8+ 0.9+	1999 05 08	703	0.4- 0.2-
1993 02 04	372	1.8- 0.5+	1999 04 15	704	0.5+ 0.6-	1999 05 08	703	0.1+ 0.0

1999 GX₃₁ = 1986 WY₈

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	297.48560		(2000.0)	P		Q	
<i>n</i>	0.27951456	ω	246.60232	+0.72879121		+0.67945453	
<i>a</i>	2.3166820	Ω	70.47776	-0.59076160		+0.68659848	
<i>e</i>	0.1546608	<i>i</i>	5.16701	-0.34621396		+0.25869688	
<i>P</i>	3.53	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1986 11 30	381	1.5+ 0.0	1999 04 12	704	0.1+ 0.4-	1999 05 12	704	1.5+ 0.0
1986 11 30	381	3.0+ 1.3+	1999 04 12	704	1.4- 0.0	1999 05 12	704	1.0+ 1.1-
1986 12 01	381	3.0- 0.5-	1999 04 16	704	0.6+ 0.2-	1999 05 15	704	1.0- 0.6+
1986 12 01	381	1.5- 1.0-	1999 04 16	704	0.6+ 1.0+	1999 05 15	704	1.4+ 0.4+
1999 04 07	704	0.5- 0.6+	1999 04 16	704	0.6- 1.3-	1999 05 15	704	0.5- 1.8-
1999 04 07	704	0.1+ 0.2-	1999 04 16	704	2.3+ 0.5+	1999 05 15	704	2.1- 0.4-
1999 04 07	704	3.0- 0.6+	1999 05 08	703	1.2+ 1.2-	1999 05 16	703	0.1- 0.5+
1999 04 07	704	0.1- 0.3+	1999 05 08	703	0.0 1.0+	1999 05 16	703	0.7+ 0.7+
1999 04 12	704	0.8+ 0.0	1999 05 08	703	0.1+ 1.2-	1999 05 16	703	0.5- 0.6+
1999 04 12	704	0.1- 0.1-	1999 05 08	703	2.0- 0.4+	1999 05 16	703	0.5- 1.0+
1999 04 12	704	1.5+ 0.3-	1999 05 12	704	0.3+ 0.2-			

1999 HC₈

Id. A. Doppler (1997 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	126.47050		(2000.0)	P		Q	
<i>n</i>	0.23960008	ω	32.78461	+0.14676315		-0.98894140	
<i>a</i>	2.5673086	Ω	48.78550	+0.90132698		+0.12480981	
<i>e</i>	0.1009855	<i>i</i>	1.62576	+0.40751719		+0.08010880	
<i>P</i>	4.11	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 10 22	327	0.5+ 0.5+	1997 11 29	704	0.6+ 1.4-	1999 04 12	704	0.0 0.2-
1997 10 22	327	0.8+ 0.4-	1997 11 29	704	1.2+ 0.8-	1999 04 12	704	0.0 0.1+
1997 10 22	327	0.1- 0.2-	1997 11 29	704	1.1- 0.6+	1999 04 12	704	1.1+ 0.5+
1997 11 02	327	0.3- 0.3-	1997 11 29	704	0.9+ 0.3-	1999 04 20	691	0.2+ 0.2+
1997 11 02	327	0.4- 0.3-	1997 11 29	704	(3.2- 0.1+)	1999 04 20	691	0.8+ 0.2-
1997 11 02	327	0.6- 0.2-	1999 04 06	704	1.3+ 0.5-	1999 04 20	691	0.1+ 0.4+
1997 11 06	704	0.3+ 1.4+	1999 04 06	704	1.1+ 0.1+	1999 04 24	691	0.4- 0.3+

1997 11 06	704	0.5- 0.8+	1999 04 06	704	1.4- 0.9-	1999 04 24	691	0.5- 0.5+
1997 11 06	704	(0.7- 2.4+)	1999 04 06	704	0.9- 1.1+	1999 04 24	691	0.7- 0.1+
1997 11 06	704	1.1- 0.8+	1999 04 06	704	0.6- 0.6-			
1997 11 06	704	0.3- 0.2+	1999 04 12	704	0.1+ 0.5-			

1999 JU₃₄ = 1972 AT

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	142.06173		(2000.0)	P		Q	
<i>n</i>	0.22682094	ω	57.95818	-0.03605993		-0.99642874	
<i>a</i>	2.6628535	Ω	34.36051	+0.86521613		-0.06936152	
<i>e</i>	0.1639438	<i>i</i>	7.77472	+0.50010071		+0.04815342	
<i>P</i>	4.35	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1972 01 14	029	0.4- 0.5+	1999 05 10	704	0.6- 0.2-	1999 05 13	704	1.0- 0.5+
1972 01 15	029	1.0+ 0.7-	1999 05 10	704	(2.4- 1.6+)	1999 05 18	704	0.1+ 0.1-
1972 01 16	029	0.4+ 0.0	1999 05 10	704	0.3+ 0.7+	1999 05 18	704	0.7- 0.3-
1972 01 17	029	1.0- 0.2+	1999 05 10	704	0.3- 0.4-	1999 05 18	704	(0.9- 2.5+)
1999 05 08	699	0.6+ 1.1-	1999 05 13	704	0.6+ 0.6+	1999 05 18	704	0.6- 0.9+
1999 05 08	699	0.4+ 1.0-	1999 05 13	704	0.7- 0.6-	1999 05 18	704	1.5+ 0.9-
1999 05 08	699	0.4+ 1.2+	1999 05 13	704	0.1- 0.8+			

1999 JO₄₂ = 1999 KT₉ = 1996 TU₃₈

Id. G. V. Williams (d, MPC 35481), A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	305.97486		(2000.0)	P		Q	
<i>n</i>	0.27655801	ω	285.11911	+0.90382261		+0.42424823	
<i>a</i>	2.3331638	Ω	49.81152	-0.35915253		+0.82305419	
<i>e</i>	0.2221782	<i>i</i>	4.19185	-0.23262448		+0.37761785	
<i>P</i>	3.56	<i>H</i>	15.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 10 07	809	0.3- 1.0+	1999 05 10	704	0.9+ 0.2-	1999 05 18	704	0.1- 0.3-
1996 10 07	809	0.1- 1.1+	1999 05 10	704	1.1+ 0.0	1999 05 18	704	0.3+ 1.1+
1996 10 07	809	0.2- 0.9+	1999 05 10	704	0.0 1.4-	1999 05 19	704	0.5+ 1.1-
1996 10 08	809	0.4+ 0.9+	1999 05 13	704	0.2- 0.9+	1999 05 19	704	0.2- 0.1-
1996 10 08	809	1.3- 0.2-	1999 05 13	704	0.7- 0.3+	1999 05 19	704	1.2- 0.1-
1996 10 08	809	0.3- 0.7+	1999 05 13	704	0.9- 0.6+	1999 05 19	703	1.2- 0.4+
1996 10 10	809	1.2+ 1.2-	1999 05 13	704	0.2- 0.2+	1999 05 19	703	0.1+ 0.4+
1996 10 10	809	0.7+ 1.8-	1999 05 13	704	(0.6+ 2.1+)	1999 05 19	704	0.3+ 0.5-
1996 10 10	809	0.1+ 1.6-	1999 05 18	704	0.5- 0.2-	1999 05 19	703	0.6+ 0.0
1999 05 10	704	0.7+ 0.0	1999 05 18	704	0.4- 0.8-	1999 05 19	704	1.2+ 0.8+
1999 05 10	704	0.2+ 1.2-	1999 05 18	704	0.0 0.2-	1999 05 19	703	0.4- 1.1+

1999 JR₅₁ = 1995 DF₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	63.88344		(2000.0)	P		Q	
<i>n</i>	0.27145518	ω	331.07033	-0.99969519		-0.01999202	
<i>a</i>	2.3623122	Ω	207.79542	+0.02394954		-0.92777430	
<i>e</i>	0.1786746	<i>i</i>	1.78016	-0.00599519		-0.37260592	
<i>P</i>	3.63	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1995 02 24	098	1.0- 0.8-	1999 05 10	704	1.4- 0.8-	1999 05 18	704	0.4+ 0.1-
1995 02 24	098	0.9- 0.1+	1999 05 13	704	0.1- 1.4+	1999 05 18	704	0.1+ 0.6+
1995 02 25	098	1.3+ 0.5-	1999 05 13	704	0.6- 1.0-	1999 05 18	704	0.8+ 0.7+
1995 02 26	098	1.3+ 0.2+	1999 05 13	704	1.2- 0.9-	1999 05 22	691	0.7- 0.1-
1995 02 27	098	0.7- 1.0+	1999 05 13	704	0.7+ 0.1+	1999 05 22	691	0.1- 0.3+
1995 02 27	098	(3.0- 3.4+)	1999 05 13	704	0.0 0.3-	1999 05 22	691	0.5- 0.5-
1999 05 10	704	0.2+ 1.1+	1999 05 18	704	0.4+ 1.4-			
1999 05 10	704	1.3+ 1.7+	1999 05 18	704	0.6+ 0.6-			

1999 JH₆₃ = 1999 LH₁₈ = 1981 UV₁₆ = 1986 WE₄ = 1991 XL₄

Id. S. Nakano

1999 SEPT. 28

M.P.C. 36007

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	317.82978		(2000.0)	P	Q
<i>n</i>	0.20360315	ω	256.95009	+0.67025394	+0.74101501
<i>a</i>	2.8616272	Ω	55.21252	-0.66024738	+0.62044408
<i>e</i>	0.0492015	<i>i</i>	2.84051	-0.33887026	+0.25679932
<i>P</i>	4.84	<i>H</i>	13.3	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1981 10 24	095	2.1-	2.1+	1999 05 10	704	0.6-	0.3+	1999 05 19	704	0.6+	1.3-
1986 11 25	010	0.3-	1.1-	1999 05 10	704	1.6+	0.1+	1999 05 19	704	0.3+	1.2-
1986 11 25	010	2.3+	1.2-	1999 05 10	704	0.2-	0.7+	1999 05 19	704	1.5+	0.4+
1986 11 25	010	1.4+	2.2-	1999 05 10	704	0.8+	0.7+	1999 06 09	704	(1.0-	2.6-)
1986 11 25	010	1.6+	1.9-	1999 05 13	704	1.8-	0.6+	1999 06 09	704	1.2-	0.1+
1991 12 01	675	1.3-	0.0	1999 05 13	704	1.1-	0.7+	1999 06 09	704	0.4-	0.1-
1991 12 01	675	0.3-	0.9+	1999 05 13	704	0.7-	0.6+	1999 06 09	704	0.7-	0.2-
1991 12 14	691	0.3-	0.2+	1999 05 13	704	0.7-	0.7+	1999 06 09	704	0.9-	0.0
1991 12 14	691	0.2-	0.6+	1999 05 18	704	1.2+	0.3+	1999 06 15	704	0.2-	0.1-
1991 12 14	691	0.1+	0.3+	1999 05 18	704	0.1+	0.0	1999 06 15	704	0.4-	1.0-
1998 03 20	704	0.2+	0.6-	1999 05 18	704	1.0+	0.0	1999 06 15	704	0.3-	0.9-
1998 03 20	704	0.5-	0.1+	1999 05 18	704	0.3+	0.5-	1999 06 15	704	0.1+	0.7-
1998 03 20	704	(2.6+	1.9-)	1999 05 18	704	0.5+	0.1-	1999 06 15	704	0.4-	1.3-
1998 03 20	704	(0.3-	3.3+)	1999 05 19	704	1.0+	0.0				
1998 03 20	704	0.0	0.5-	1999 05 19	704	0.2-	0.1-				

1999 JT₇₁ = 1977 EU₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	144.54008		(2000.0)	P	Q
<i>n</i>	0.18421259	ω	259.57076	+0.01257136	-0.99952414
<i>a</i>	3.0590731	Ω	189.84064	+0.96975183	+0.01905484
<i>e</i>	0.0667173	<i>i</i>	9.48644	+0.24376904	-0.02425690
<i>P</i>	5.35	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1977 03 12	381	0.6-	0.4+	1999 05 12	704	1.8+	0.6+	1999 05 14	703	0.3-	0.2-
1977 03 12	381	0.7-	0.1+	1999 05 12	704	0.9-	1.0-	1999 05 17	704	(2.3-	0.7-)
1977 03 14	381	0.7-	0.3+	1999 05 12	699	1.0+	0.6+	1999 05 17	704	0.8-	1.0+
1977 03 14	381	0.1+	0.4-	1999 05 12	704	1.1-	1.4-	1999 05 17	704	0.2+	0.0
1977 03 15	381	0.9+	0.2-	1999 05 12	699	0.2+	0.3+	1999 05 17	704	1.9-	0.2-
1977 03 15	381	1.0+	0.2+	1999 05 12	699	1.0+	0.9+	1999 05 18	704	0.3+	1.1+
1998 01 28	566	0.1+	0.0	1999 05 13	704	(0.1-	2.6+)	1999 05 18	704	0.1-	0.3+
1998 01 28	566	0.1-	0.2-	1999 05 13	704	0.6+	1.6-	1999 05 18	704	0.9-	1.0-
1998 01 28	566	0.0	0.0	1999 05 13	704	(0.6+	2.6+)	1999 05 18	704	0.5+	1.8-
1999 04 12	704	0.9+	0.3-	1999 05 13	704	(2.3-	0.9+)	1999 05 18	704	1.9-	1.2-
1999 04 12	704	1.3+	0.6+	1999 05 13	704	1.8-	1.9+	1999 05 19	704	(2.6+	0.1-)
1999 04 12	704	0.6-	0.8-	1999 05 14	703	0.2+	1.2+	1999 05 19	704	1.8+	1.0+
1999 04 12	704	1.4+	1.2-	1999 05 14	703	0.4+	1.0+	1999 05 19	704	0.6+	0.0
1999 05 12	704	(2.2+	0.6-)	1999 05 14	703	1.3-	0.2+	1999 05 19	704	0.4-	0.3-

1999 JD₇₂ = 1992 GW₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	294.47870		(2000.0)	P	Q
<i>n</i>	0.28051636	ω	230.76108	+0.94414593	+0.31506774
<i>a</i>	2.3111631	Ω	110.68317	-0.26151488	+0.89465751
<i>e</i>	0.2356376	<i>i</i>	5.92320	-0.20049545	+0.31673375
<i>P</i>	3.51	<i>H</i>	15.6	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1992 04 08	691	0.6+	0.2-	1999 05 12	704	0.8+	1.1+	1999 05 18	704	1.4-	0.4-
1992 04 08	691	0.8+	0.9-	1999 05 12	704	1.1+	1.3-	1999 05 18	704	(0.6+	2.1+)
1992 04 08	691	1.5+	0.2-	1999 05 12	699	0.5+	0.6+	1999 05 19	704	0.0	1.8+
1992 04 09	691	0.8-	0.6+	1999 05 12	704	1.1-	1.6-	1999 05 19	704	0.5-	0.1-
1992 04 09	691	1.3-	0.6+	1999 05 12	699	(0.2+	2.2+)	1999 05 19	704	0.5+	0.9-
1992 04 09	691	0.8-	0.2+	1999 05 12	699	1.2+	0.8-	1999 05 19	704	(2.5-	1.8-)

1997 11 28	910	0.0	0.0	1999 05 13	704	0.7-	1.2-	1999 05 20	699	0.2+	0.8+
1997 11 28	910	0.1-	0.0	1999 05 13	704	0.2-	0.4+	1999 05 20	699	0.6+	1.0-
1997 11 28	910	0.1+	0.0	1999 05 13	704	0.1+	1.7+	1999 05 20	699	1.0+	0.5+
1999 05 12	704	0.9-	0.7-	1999 05 18	704	1.2-	1.2+				

1999 JM₈₁ = 1978 PT = 1987 XC₁ = 1991 VE₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	336.33856		(2000.0)	P	Q
<i>n</i>	0.23594308	ω	70.02053	+0.97181737	+0.11397753
<i>a</i>	2.5937686	Ω	282.99912	-0.19506981	+0.88029880
<i>e</i>	0.1911408	<i>i</i>	12.22649	+0.13235850	+0.46052486
<i>P</i>	4.18	<i>H</i>	13.5	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1978 08 08	095	(12.9-	9.5-)	1999 06 24	699	0.4+	0.7+	1999 08 22	703	0.4+	0.3+
1987 12 12	054	0.2+	0.1+	1999 06 24	699	0.1-	0.5+	1999 09 08	704	1.1+	0.2+
1987 12 12	054	0.2+	0.3-	1999 06 24	699	0.1+	0.7+	1999 09 08	704	0.1+	0.7-
1991 11 07	675	0.0	0.4-	1999 07 13	704	0.2-	0.1+	1999 09 08	704	0.2-	0.4-
1991 11 07	675	0.2-	0.2+	1999 07 13	704	0.0	0.4+	1999 09 08	704	1.4-	0.6-
1991 11 09	675	0.2-	0.2-	1999 07 13	704	0.2-	0.5+	1999 09 09	704	0.7+	0.4-
1999 05 14	704	(2.6+	0.8-)	1999 07 13	704	0.0	0.6+	1999 09 09	704	0.5-	0.6-
1999 05 14	704	0.2+	0.7+	1999 07 13	704	0.1-	0.5+	1999 09 09	704	0.0	0.5-
1999 05 14	704	1.1+	1.9-	1999 07 23	704	0.3+	0.6+	1999 09 09	704	0.4-	0.5-
1999 05 14	704	0.3+	1.2-	1999 07 23	704	0.5+	0.1-	1999 09 09	704	0.9-	0.4-
1999 05 21	704	1.0-	0.2-	1999 07 23	704	0.5+	0.2+	1999 09 14	704	1.0+	0.0
1999 05 21	704	0.6-	0.7+	1999 07 23	704	0.2+	0.2+	1999 09 14	704	0.0	1.3-
1999 05 21	704	0.7-	0.8-	1999 08 22	703	0.3+	1.3+	1999 09 14	704	1.9-	0.1+
1999 05 21	704	0.7+	1.4-	1999 08 22	703	0.5-	0.9+				
1999 05 21	704	0.6+	1.2-	1999 08 22	703	0.5+	1.1+				

1999 KR₄ = 1988 TC₄ = 1991 HY₄ = 1995 KD₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	0.04816		(2000.0)	P	Q
<i>n</i>	0.26588313	ω	114.86948	+0.80783667	+0.58467727
<i>a</i>	2.3952023	Ω	209.51847	-0.58049203	+0.76733064
<i>e</i>	0.2598091	<i>i</i>	8.69854	-0.10212208	+0.26335562
<i>P</i>	3.71	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1988 10 09	046	0.5+	2.1-	1999 05 20	704	0.6-	0.4+	1999 09 09	704	0.4+	0.3-
1988 10 09	046	0.8+	3.3-	1999 05 20	704	(5.7-	1.0-)	1999 09 14	704	0.1+	0.3+
1991 04 19	809	0.6-	1.9-	1999 05 21	704	1.4-	0.9-	1999 09 14	704	0.3-	0.4+
1991 04 19	809	0.5-	1.5-	1999 05 21	704	0.7-	0.2+	1999 09 14	704	0.1-	0.1+
1991 04 19	809	1.2-	1.9-	1999 05 21	704	1.0-	0.6+	1999 09 14	704	0.4+	0.2+
1995 05 28	675	0.0	1.3+	1999 05 21	704	1.1-	0.9+	1999 09 14	704	0.0	0.0
1995 05 28	675	0.4-	0.1-	1999 05 21	704	0.6-	0.5-	1999 09 19	699	0.3-	0.5+
1995 05 30	675	2.1+	0.4-	1999 09 09	704	0.3+	0.2-	1999 09 19	699	0.0	0.3+
1995 05 30	675	0.4+	1.7-	1999 09 09	704	0.4+	0.2-	1999 09 19	699	0.1+	0.3+
1999 05 20	704	0.5-	1.2+	1999 09 09	704	0.4+	0.2-				
1999 05 20	704	0.5+	0.3-	1999 09 09	704	0.3+	0.3-				

1999 KK₁₅ = 1991 SP₂ = 1998 FO₁₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	3.76428		(2000.0)	P	Q
<i>n</i>	0.23592299	ω	145.16540	+0.68756005	+0.72439219
<i>a</i>	2.5939158	Ω	167.99568	-0.70891379	+0.68461176
<i>e</i>	0.1688747	<i>i</i>	13.95876	-0.15716999	+0.08101047
<i>P</i>	4.18	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1991 09 13	675	1.1-	0.9-	1998 03 22	704	1.2-	0.7+	1999 07 22	704	0.2+	0.6-
1991 09 13	675	1.0+	1.3-	1998 03 24	704	0.6-	0.4-	1999 07 22	704	0.1+	0.2-
1991 09 15	675	0.1-	0.7-	1998 03 24	704	0.7+	0.0	1999 07 22	704	0.1+	0.1-
1991 09 15	675	0.2-	0.4-	1998 03 24	704	0.1-	0.1+	1999 07 22	704	0.4+	0.3-
1991 09 16	675	0.0	1.7-	1998 03 24	704	0.6-	0.5-	1999 07 22	704	0.4+	0.6+

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1991 09 16	675	0.7−	1.4−	1998 03 24	704	0.6+	0.9+	1999 09 04	703	0.1−	0.2+
1995 08 24	809	0.2+	0.9+	1998 03 24	704	0.6+	0.1−	1999 09 04	703	0.2−	0.6+
1995 08 25	809	0.0	0.5+	1998 03 24	704	0.1+	0.8+	1999 09 04	703	0.4−	0.0
1995 08 26	809	(2.9+	0.8−)	1998 03 24	704	0.4−	0.0	1999 09 04	703	0.2+	0.0
1995 09 01	809	0.2+	0.4+	1998 03 24	704	0.1+	0.4+	1999 09 08	703	0.1−	1.0+
1995 09 18	809	(2.2−	2.5+)	1998 03 24	704	1.6−	0.7−	1999 09 08	703	0.1+	0.4+
1995 09 18	809	0.7+	0.9−	1999 05 20	704	1.0−	1.1−	1999 09 08	703	0.2−	0.5+
1995 09 20	809	0.3−	0.4+	1999 05 20	704	0.8−	0.3−	1999 09 08	703	0.7−	0.6+
1995 09 22	809	0.2+	1.1+	1999 05 20	704	0.7−	0.3−	1999 09 09	704	0.0	0.2+
1995 09 22	809	0.9+	0.0	1999 05 20	704	(2.6−	0.0)	1999 09 09	704	0.2+	1.2+
1995 09 23	809	0.4+	0.3+	1999 05 21	704	0.9+	1.2−	1999 09 09	704	0.1+	0.3+
1995 09 24	809	0.4+	0.6+	1999 05 21	704	1.4−	0.4−	1999 09 09	704	0.2+	0.2+
1995 09 29	809	0.3+	0.6+	1999 05 21	704	0.7−	0.5−	1999 09 09	704	0.5−	0.8+
1998 02 01	327	0.0	0.6−	1999 05 21	704	1.1+	0.6−	1999 09 09	704	0.5−	0.6+
1998 02 01	327	0.1+	1.0−	1999 05 21	704	1.1−	0.5−	1999 09 13	704	0.2+	0.4+
1998 02 01	327	0.1−	0.7−	1999 07 12	704	1.0+	0.0	1999 09 13	704	0.1−	0.2−
1998 03 22	704	0.2−	0.3−	1999 07 12	704	0.3−	0.4+	1999 09 13	704	0.4−	0.4+
1998 03 22	704	0.7+	0.3−	1999 07 12	704	1.3+	1.7−	1999 09 13	704	0.3−	0.2−
1998 03 22	704	1.5+	1.1+	1999 07 12	704	(1.4+	2.9−)				
1998 03 22	704	0.7+	0.6+	1999 07 12	704	0.4−	1.6−				

1999 KA₁₆ = 1982 XC₁ = 1988 JK₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	40.58626		(2000.0)		P		Q
<i>n</i>	0.27743060	ω	29.25258	−0.24174374			+0.95622066
<i>a</i>	2.3282689	Ω	227.29822	−0.92818911			−0.27743017
<i>e</i>	0.1921538	<i>i</i>	12.96921	−0.28288680			+0.09313725
<i>P</i>	3.55	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1982 12 13	381	0.4−	0.5+	1999 05 21	704	1.0+	0.7−	1999 09 08	704	0.1−	0.1−
1982 12 13	381	0.8+	1.4+	1999 05 21	704	0.1−	0.2−	1999 09 08	704	0.2−	0.3−
1982 12 14	381	1.0−	0.7−	1999 07 12	704	0.1+	0.1+	1999 09 09	704	0.1+	0.7+
1982 12 14	381	0.2+	0.3−	1999 07 12	704	0.0	0.0	1999 09 09	704	0.2−	1.8+
1988 05 14	688	0.6−	2.1+	1999 07 12	704	0.1−	0.2+	1999 09 09	704	1.3−	0.7−
1988 05 14	688	0.9+	1.3−	1999 07 12	704	0.0	0.2−	1999 09 09	704	1.1+	0.7−
1996 11 07	691	0.0	0.2−	1999 07 12	704	1.2+	1.3−	1999 09 09	704	0.1+	0.2−
1996 11 07	691	0.2+	0.4−	1999 07 27	704	0.5+	0.7+	1999 09 09	704	0.0	0.2+
1996 11 07	691	0.1+	0.3−	1999 07 27	704	0.1−	0.6+	1999 09 14	704	0.2+	0.5+
1999 05 21	704	1.6−	0.9+	1999 07 27	704	0.0	0.3+	1999 09 14	704	0.3−	0.1−
1999 05 21	704	0.1+	0.8−	1999 07 27	704	0.4−	0.6+	1999 09 14	704	0.3−	0.1+
1999 05 21	704	0.8−	0.2−	1999 07 27	704	0.3−	0.4+	1999 09 14	704	0.1+	0.1−
1999 05 21	704	0.1+	1.1−	1999 09 08	704	0.2+	0.1+	1999 09 14	704	0.1+	0.6−
1999 05 21	704	0.0	0.6−	1999 09 08	704	0.2+	0.1+				

1999 KJ₁₇ = 1975 NB = 1998 BK₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	51.07406		(2000.0)		P		Q
<i>n</i>	0.28712853	ω	47.76266	−0.34003230			+0.93988915
<i>a</i>	2.2755435	Ω	202.41692	−0.88525211			−0.33117848
<i>e</i>	0.1094878	<i>i</i>	4.72421	−0.31734325			−0.08324177
<i>P</i>	3.43	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1975 07 15	805	0.3−	1.6+	1998 01 28	691	(0.1+	2.6+)	1999 07 23	704	0.2+	0.2−
1993 12 14	691	0.1−	0.2−	1998 01 28	566	0.5−	0.5+	1999 07 23	704	0.4−	1.0+
1993 12 14	691	0.6−	0.4−	1998 01 28	566	0.2−	0.1+	1999 07 23	704	0.3−	0.3−
1993 12 14	691	0.3−	0.7−	1998 01 28	566	0.6−	0.5+	1999 09 07	704	0.3+	0.6+
1996 10 19	910	0.1+	0.4+	1999 05 20	699	0.1+	0.4+	1999 09 07	704	0.1+	0.1−
1996 10 19	910	0.1−	0.6+	1999 05 20	699	1.6−	0.5+	1999 09 07	704	0.9+	0.6−
1996 10 19	910	0.2−	0.6+	1999 05 20	699	1.5−	0.8−	1999 09 07	704	0.9+	0.3−
1998 01 24	566	0.4+	0.1−	1999 05 21	704	(0.5+	2.3−)	1999 09 07	704	0.4+	0.9+
1998 01 24	566	0.5+	0.2−	1999 05 21	704	0.3−	0.0	1999 09 09	704	(2.2+	0.4−)
1998 01 24	566	0.7+	0.1−	1999 05 21	704	(2.6+	1.3−)	1999 09 09	704	(2.5+	0.5−)
1998 01 28	691	0.4+	0.3+	1999 05 21	704	0.1−	1.0−	1999 09 09	704	0.5+	0.2+
1998 01 28	691	0.3+	0.5+	1999 05 21	704	(4.2−	1.0+)	1999 09 09	704	0.3+	1.9−

1999 SEPT. 28

1999 MM₁ = 1991 GK₁₁

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	15.80717		(2000.0)		P		Q
<i>n</i>	0.26616533	ω	215.64986	+0.44497588			+0.89469610
<i>a</i>	2.3935090	Ω	80.80057	−0.81223116			+0.42150726
<i>e</i>	0.1851861	<i>i</i>	2.26003	−0.37719625			+0.14781922
<i>P</i>	3.70	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1991 04 11	033	1.2+	0.2+	1999 06 20	699	0.4−	0.2+	1999 09 07	704	0.6−	0.5+
1991 04 11	033	0.2+	0.2+	1999 06 20	699	0.6−	0.6+	1999 09 11	704	0.8+	0.3+
1991 04 12	033	0.1+	0.9+	1999 06 25	699	0.5+	1.3−	1999 09 11	704	0.0	1.0+
1991 04 19	809	1.1−	1.7−	1999 06 25	699	0.6+	0.9−	1999 09 11	704	0.3+	0.4+
1991 04 19	809	(2.9−	1.1−)	1999 06 25	699	0.2−	0.5+	1999 09 11	704	0.5+	0.1+
1991 04 19	809	(1.4−	2.9−)	1999 09 07	704	0.1−	0.1+	1999 09 11	704	0.7+	1.7−
1991 04 19	675	0.8−	0.2−	1999 09 07	704	0.3−	0.1−	1999 09 13	699	0.2+	0.2−
1991 04 19	675	0.3+	0.4+	1999 09 07	704	0.3−	0.2−	1999 09 13	699	0.8−	0.4−
1999 06 20	699	0.1+	1.4+	1999 09 07	704	0.4−	0.1−	1999 09 13	699	0.1+	0.1−

1999 NP₂ = 1998 FK₂₅

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	3.69443		(2000.0)		P		Q
<i>n</i>	0.29133497	ω	124.57337	+0.81817514			+0.57408546
<i>a</i>	2.2535869	Ω	200.44882	−0.55287704			+0.77031484
<i>e</i>	0.1809400	<i>i</i>	5.23291	−0.15784939			+0.27756248
<i>P</i>	3.38	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 25	566	0.0	0.3−	1998 03 29	704	1.7−	1.3−	1999 09 07	704	0.5−	0.1+
1998 02 25	566	0.1+	0.5−	1998 03 29	704	1.0+	1.3+	1999 09 07	704	0.6−	0.3+
1998 02 25	566	0.1−	0.5−	1998 03 29	704	0.0	0.4+	1999 09 07	704	0.5−	0.6+
1998 02 28	809	(4.1+	0.7−)	1999 07 12	704	0.0	0.1−	1999 09 07	704	0.5−	0.4+
1998 03 02	809	(2.3−	1.7−)	1999 07 12	704	0.3+	0.1−	1999 09 07	704	0.4−	0.6+
1998 03 20	704	0.0	0.0	1999 07 12	704	0.3+	0.3−	1999 09 09	704	0.2+	0.2−
1998 03 20	704	1.3+	1.2+	1999 07 12	704	0.3+	0.3−	1999 09 09	704	0.5−	0.2−
1998 03 20	704	1.3−	0.6+	1999 07 12	704	0.2+	0.2−	1999 09 09	704	0.3+	0.4−
1998 03 20	704	0.1+	1.0−	1999 07 13	704	0.0	0.5−	1999 09 09	704	0.3−	0.9−
1998 03 20	704	0.7−	0.3−	1999 07 13	704	0.7−	0.5+	1999 09 09	704	0.0	0.5−
1998 03 22	704	0.4−	0.0	1999 07 13	704	0.6−	0.3+	1999 09 14	704	0.8+	0.1+
1998 03 22	704	1.0+	0.1−	1999 07 13	704	0.7+	0.2−	1999 09 14	704	0.8+	0.3−
1998 03 22	704	0.1+	0.4+	1999 07 13	704	0.2−	0.5+	1999 09 14	704	0.8+	0.3−
1998 03 22	704	0.3+	0.7−	1999 08 22	699	1.0−	0.2+	1999 09 14	704	0.8+	0.1+
1998 03 22	704	(2.9−	0.7−)	1999 08 22	699	0.1−	0.5−	1999 09 14	704	0.7+	0.1−
1998 03 29	704	(2.3+	0.0)	1999 08 22	699	0.1+	0.5+				

1999 NZ₃ = 1991 PA₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	60.55190		(2000.0)		P		Q
<i>n</i>	0.24243488	ω	83.37352	−0.62346070			+0.77323161
<i>a</i>	2.5472563	Ω	147.14129	−0.77479326			−0.59115495
<i>e</i>	0.2039114	<i>i</i>	12.32337	−0.10484348			−0.22945305
<i>P</i>	4.07	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1991 08 06	675	0.7+	0.8+	1999 07 13	704	0.1-	0.2-	1999 07 14	704	0.0	0.3-
1991 08 06	675	0.5-	1.2-	1999 07 13	704	0.3-	0.6-	1999 07 14	704	0.5-	0.1-
1991 08 10	675	0.4-	0.3-	1999 07 14	704	0.1-	0.4+	1999 08 08	699	0.3-	0.6-
1991 08 10	675	0.4+	1.2-	1999 07 14	704	0.2-	0.1+	1999 08 08	699	0.2+	0.1+
1994 02 19	104	0.3+	0.2-	1999 07 14	704	0.1+	0.9+	1999 08 08	699	0.7-	0.6+
1994 02 19	104	0.4+	0.2+	1999 07 14	704	0.2+	0.0	1999 09 07	704	0.7+	1.2+
1994 02 19	104	0.0	0.3-	1999 07 14	704	0.4-	0.4-	1999 09 07	704	0.5-	0.2-
1994 02 19	104	0.1-	0.6-	1999 07 14	704	1.9+	0.3+	1999 09 07	704	0.2+	0.0
1994 02 19	104	0.6-	0.3-	1999 07 14	704	0.0	0.1-	1999 09 07	704	0.2-	0.8-

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1994 02 19	104	0.1−	0.2−	1999 07 14	704	0.6+	0.4−	1999 09 13	704	0.0	1.0+
1999 07 13	704	0.8−	0.3+	1999 07 14	704	0.4+	0.8−	1999 09 13	704	0.7+	0.1−
1999 07 13	704	0.3−	0.0	1999 07 14	704	(0.3−	3.4−)	1999 09 13	704	0.4+	0.3−
1999 07 13	704	0.5−	0.1+	1999 07 14	704	0.8−	0.2+				

1999 NH₄ = 1996 WM₃ = 1998 FW₇₄

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Williams

<i>M</i>	287.94026		(2000.0)		P		Q
<i>n</i>	0.29683135	ω	210.16396		+0.67478264		−0.73785340
<i>a</i>	2.2256808	Ω	197.41447		+0.68705732		+0.63572764
<i>e</i>	0.1449755	<i>i</i>	2.97181		+0.26948214		+0.22676580
<i>P</i>	3.32	<i>H</i>	15.2		<i>G</i> 0.15		<i>U</i> 3

Residuals in seconds of arc

1996 09 18	327	0.4−	0.4−	1998 03 25	704	0.5+	1.5−	1999 08 12	699	0.2+	0.7+
1996 09 18	327	0.2+	0.4−	1998 03 25	704	0.3−	0.1−	1999 08 12	699	0.2−	0.1+
1996 09 18	327	0.3−	0.6−	1998 03 25	704	(3.0−	1.1−)	1999 08 12	699	0.3−	0.2+
1996 10 11	566	0.4+	0.2+	1998 04 01	704	0.6−	1.2−	1999 09 07	704	0.4+	0.7−
1996 10 11	566	0.2+	0.3+	1998 04 01	704	(1.5+	2.2−)	1999 09 07	704	0.1−	1.6−
1996 10 11	566	0.6+	0.2+	1998 04 01	704	1.2−	1.1+	1999 09 07	704	0.7+	0.8−
1996 11 29	327	1.0−	0.4+	1998 04 01	704	0.6+	0.3−	1999 09 07	704	0.7+	0.5−
1996 11 29	327	0.7+	0.3+	1998 04 01	704	0.1−	0.6+	1999 09 07	704	0.5+	1.0−
1996 11 29	327	0.1−	0.5+	1999 07 13	704	0.2+	0.4−	1999 09 09	704	0.4−	1.6−
1996 12 02	327	0.1+	0.2+	1999 07 13	704	0.7−	0.9+	1999 09 09	704	0.2+	0.4−
1996 12 02	327	0.2−	0.1+	1999 07 13	704	0.7−	0.7+	1999 09 09	704	(2.4+	0.5+)
1996 12 02	327	0.4−	0.3−	1999 07 13	704	0.3−	0.7−	1999 09 13	704	0.0	0.7+
1998 03 24	704	(2.3+	1.3+)	1999 07 14	704	0.2−	1.3+	1999 09 13	704	1.0+	0.6+
1998 03 24	704	0.3−	0.9+	1999 07 14	704	1.2−	0.6+	1999 09 13	699	0.3+	0.2−
1998 03 24	704	1.4+	0.4+	1999 07 14	704	0.8−	0.2+	1999 09 13	704	0.3−	0.7+
1998 03 24	704	0.0	0.1−	1999 07 14	704	0.5−	0.5+	1999 09 13	704	0.1−	1.5−
1998 03 24	704	1.8−	0.3−	1999 07 21	699	0.3+	0.5+	1999 09 13	704	0.4+	0.2−
1998 03 25	704	0.1−	0.9+	1999 07 21	699	0.1−	0.9+	1999 09 13	699	0.2+	0.3+
1998 03 25	704	1.6+	1.7−	1999 07 21	699	1.3+	0.9+	1999 09 13	699	0.9−	0.8−

1999 NT₄ = 1976 JU₉ = 1998 KM₁₇

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Williams

<i>M</i>	270.14844		(2000.0)		P		Q
<i>n</i>	0.26906725	ω	97.07872		+0.24985253		−0.96818059
<i>a</i>	2.3762684	Ω	338.43651		+0.87250040		+0.23144746
<i>e</i>	0.0794147	<i>i</i>	2.20552		+0.41990091		+0.09517570
<i>P</i>	3.66	<i>H</i>	14.3		<i>G</i> 0.15		<i>U</i> 3

Residuals in seconds of arc

1976 05 02	809	0.1−	0.3−	1999 09 08	120	0.2+	0.5−	1999 09 11	704	0.3+	0.1−
1998 04 22	704	0.8−	0.4−	1999 09 08	120	0.2+	0.0	1999 09 11	704	0.0	0.1−
1998 04 22	704	1.0+	0.3+	1999 09 08	120	0.3−	0.2−	1999 09 11	704	0.1−	0.1+
1998 04 22	704	1.3−	1.5−	1999 09 09	704	0.0	0.0	1999 09 11	704	0.0	0.1−
1998 04 22	704	0.0	0.5−	1999 09 09	704	0.4+	0.3−	1999 09 11	704	0.3−	0.1+
1998 04 22	704	0.7−	1.4−	1999 09 09	704	0.1−	0.2+	1999 09 11	704	0.2−	0.2−
1998 05 01	704	0.5+	0.1−	1999 09 09	704	0.0	0.3+	1999 09 11	704	0.5+	0.2+
1998 05 01	704	0.2+	0.1−	1999 09 09	704	0.1+	0.1+	1999 09 11	704	0.1−	0.3+
1998 05 01	704	0.4+	0.2−	1999 09 09	120	0.2−	0.0	1999 09 11	704	0.2+	0.2−
1998 05 01	704	0.2+	0.1+	1999 09 09	120	0.4+	1.8−	1999 09 11	704	0.2−	0.2+
1998 05 01	704	0.6+	0.3+	1999 09 09	120	0.5−	0.0	1999 09 11	704	0.1+	0.3+
1998 05 22	704	1.5+	0.4−	1999 09 10	704	0.2−	0.1+	1999 09 11	704	0.1−	0.0
1998 05 22	704	0.3+	0.2−	1999 09 10	704	0.0	0.3−	1999 09 11	704	0.1+	0.1−
1998 05 22	704	0.3+	1.4−	1999 09 10	704	0.1+	0.1+	1999 09 11	704	0.3−	0.1−
1998 05 22	704	1.1−	0.4+	1999 09 10	704	0.1+	0.4−	1999 09 11	704	0.3−	0.0
1998 05 22	704	0.5−	1.3+	1999 09 10	704	0.0	0.3+	1999 09 11	704	0.4−	0.3−
1998 05 24	704	0.5+	0.1−	1999 09 10	704	0.1+	0.9+	1999 09 11	704	0.0	0.2−
1998 05 24	704	0.8−	1.4+	1999 09 10	704	0.1+	0.0	1999 09 11	704	0.1−	0.1−
1998 05 24	704	0.2+	1.1+	1999 09 10	704	0.1−	0.3−	1999 09 11	704	0.0	0.1−
1998 05 24	704	0.5−	1.2+	1999 09 10	704	0.2+	0.2−	1999 09 11	704	0.2+	0.2+
1998 05 24	704	0.2+	0.0	1999 09 10	704	0.1+	0.1−	1999 09 11	704	0.1+	0.3+
1999 07 12	120	(2.7−	2.3+)	1999 09 10	704	0.2+	0.4−	1999 09 11	704	0.0	0.1+

1999 07 12	120	0.2+	0.3+	1999 09 10	704	0.2+	0.2+	1999 09 11	704	0.2+	0.4+
1999 07 12	120	(2.4+	0.3+)	1999 09 10	704	0.8+	0.2−	1999 09 11	704	0.0	0.1+
1999 07 12	120	0.7+	0.2−	1999 09 10	704	0.3−	0.7+	1999 09 11	704	0.2−	0.2−
1999 07 12	120	0.8−	0.6+	1999 09 10	704	0.5−	0.1−	1999 09 11	704	0.3−	0.2+
1999 07 16	120	0.3−	1.0−	1999 09 10	704	0.2+	0.0	1999 09 11	704	0.1−	0.0
1999 07 16	120	1.5+	1.0−	1999 09 10	704	0.8+	0.0	1999 09 11	704	0.1−	0.0
1999 07 16	120	0.8+	1.0+	1999 09 10	704	0.9+	0.6+	1999 09 11	704	0.5−	0.4+
1999 07 16	120	0.4−	0.3+	1999 09 10	704	0.1+	0.1−	1999 09 11	704	0.3−	0.2−
1999 07 18	120	0.2−	0.2+	1999 09 10	704	0.5+	0.1+	1999 09 11	704	0.0	0.1+
1999 07 18	120	0.7−	0.8+	1999 09 10	704	0.1−	1.0+	1999 09 11	704	0.2+	0.0
1999 07 18	120	0.7+	0.3−	1999 09 10	704	1.2−	0.2+	1999 09 11	704	0.2+	0.1−
1999 07 19	120	1.1−	0.1+	1999 09 10	704	0.4+	0.1−	1999 09 11	704	0.3−	0.3−
1999 07 19	120	0.9−	0.6−	1999 09 10	704	0.4+	0.3+	1999 09 11	704	0.3−	0.2+
1999 07 19	120	0.6−	0.5−	1999 09 10	704	0.6+	1.0−	1999 09 11	704	0.2−	0.0
1999 08 12	699	0.4+	1.3+	1999 09 10	704	0.4+	0.7−	1999 09 11	704	0.4−	0.1−
1999 08 12	699	0.0	1.0+	1999 09 10	704	0.5−	0.7+	1999 09 11	704	0.1−	0.0
1999 08 12	699	0.5+	0.0	1999 09 11	704	0.4+	0.3+	1999 09 11	704	0.3+	0.3+
1999 08 17	691	0.3−	0.2+	1999 09 11	704	0.2+	0.3−	1999 09 11	704	0.3−	0.0
1999 08 17	691	0.3−	0.3+	1999 09 11	704	0.0	0.5−	1999 09 11	704	0.2−	0.1+
1999 08 17	691	0.3−	0.3+	1999 09 11	704	0.3−	0.3−	1999 09 11	704	0.3−	0.0
1999 09 07	704	0.0	0.2−	1999 09 11	704	0.1−	0.3−	1999 09 11	704	0.1+	0.0
1999 09 07	704	0.2+	0.2+	1999 09 11	704	0.2−	0.2−	1999 09 11	704	0.0	0.0
1999 09 07	704	0.1+	0.3−	1999 09 11	704	0.3+	0.3−	1999 09 11	704	0.2−	0.3−
1999 09 07	704	0.1+	0.0	1999 09 11	704	0.3−	0.1−	1999 09 11	704	0.3−	0.3+
1999 09 07	704	0.0	0.2−	1999 09 11	704	0.0	0.2−	1999 09 14	704	0.2−	0.3−
1999 09 08	704	0.1−	0.1−	1999 09 11	704	0.1+	0.4−	1999 09 14	704	0.1+	0.3+
1999 09 08	704	0.2+	0.2+	1999 09 11	704	0.1+	0.2−	1999 09 14	704	0.3+	0.2+
1999 09 08	704	0.0	0.2+	1999 09 11	704	0.1+	0.2−	1999 09 14	704	0.2−	0.1−
1999 09 08	704	0.3+	0.9−	1999 09 11	704	0.3−	0.1−	1999 09 14	704	0.2−	0.3+
1999 09 08	704	0.6+	0.3+	1999 09 11	704	0.1+	0.5−				

1999 NG₆ = 1998 FH₈₁

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Williams

<i>M</i>	346.81704		(2000.0)		P		Q
<i>n</i>	0.28747908	ω	200.15954		+0.85754044		+0.50426013
<i>a</i>	2.2736933	Ω	129.14009		−0.45216450		+0.83317091
<i>e</i>	0.1600895	<i>i</i>	7.53570		−0.24529914		+0.22704174
<i>P</i>	3.43	<i>H</i>	15.1		<i>G</i> 0.15		<i>U</i> 3

Residuals in seconds of arc

1998 03 24	704	(2.7+	1.5+)	1999 06 12	703	0.2+	1.3−	1999 09 07	704	0.4−	0.3+
1998 03 24	704	1.2+	0.8−	1999 06 22	699	0.7+	0.3+	1999 09 07	704	0.4+	0.5+
1998 03 24	704	1.3−	1.0+	1999 06 22	699	0.8+	0.8+	1999 09 07	704	1.2−	0.1+
1998 03 24	704	(3.6+	1.6+)	1999 06 22	699	0.6−	1.2+	1999 09 07	704	0.3+	1.3−
1998 03 24	704	(5.2−	0.4+)	1999 07 13	704	0.4−	0.1−	1999 09 11	704	0.2+	1.3+
1998 03 25	704	0.7+	0.4−	1999 07 13	704	0.3−	0.3+	1999 09 11	704	0.8+	0.9+
1998 03 25	704	(0.9+	2.3+)	1999 07 13	704	0.1+	0.1−	1999 09 11	699	1.0−	0.4−
1998 03 25	704	0.1−	0.6+	1999 07 13	704	0.2−	0.1+	1999 09 11	704	0.1−	0.7+
1998 03 25	704	0.1−	0.0	1999 07 13	704	0.3−	0.2+	1999 09 11	704	0.2+	1.4−
1998 03 25	704	0.5−	0.6−	1999 07 16	704	0.4−	0.6+	1999 09 11	699	1.6+	0.7−
1999 06 12	703	(2.2−	1.7+)	1999 07 16	704	0.1−	0.4−	1999 09 11	699	0.8−	0.1−
1999 06 12	703	0.3−	0.5+	1999 07 16	704	0.2+	0.4−				
1999 06 12	703	0.2+	0.6−	1999 07 16	704	0.5+	0.9−				

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1998 04 21	704	0.5+	0.4-	1998 04 22	704	0.8+	1.6+	1999 08 07	699	1.1+	0.7+
1998 04 21	704	0.3-	0.2+	1999 07 13	704	0.0	0.3+	1999 08 07	699	0.7-	0.7-
1998 04 21	704	0.2+	0.5+	1999 07 13	704	0.1+	0.1-	1999 08 07	699	0.2+	0.1-
1998 04 21	704	0.4-	1.3-	1999 07 13	704	0.0	0.5-	1999 08 08	699	0.6+	2.1+
1998 04 21	704	0.0	0.3-	1999 07 13	704	0.2+	0.3-	1999 08 08	699	0.7-	0.0
1998 04 22	704	1.1+	0.5-	1999 07 13	704	0.4-	0.4-	1999 08 08	699	0.1+	0.5-

1999 NQ₇ = 1996 VB₃₈

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<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27181594	ω	120.44254	+0.63949098	-0.76236437		
<i>a</i>	2.3602216	Ω	289.46613	+0.66432380	+0.61294376		
<i>e</i>	0.1161163	<i>i</i>	6.04296	+0.38694337	+0.20760665		
<i>P</i>	3.63	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 11 01	327	0.0	0.1+	1996 12 02	327	0.6+	0.2-	1999 09 07	704	0.9-	0.1+
1996 11 01	327	1.1-	0.1+	1996 12 02	327	0.1+	1.5-	1999 09 07	704	0.2+	0.2-
1996 11 01	327	0.2-	0.0	1996 12 02	327	1.2+	0.1-	1999 09 07	704	0.9+	0.4+
1996 11 01	327	0.4-	0.8+	1999 07 13	704	0.4-	0.3-	1999 09 07	704	0.2+	0.5+
1996 11 09	327	0.2-	0.4+	1999 07 13	704	0.8-	0.0	1999 09 09	704	0.2+	0.2+
1996 11 09	327	0.1-	0.3+	1999 07 13	704	1.0+	0.5-	1999 09 09	704	0.7+	0.3-
1996 11 09	327	0.2+	0.3+	1999 07 13	704	1.0-	0.3+	1999 09 09	704	1.2+	0.2+
1996 11 30	327	0.2-	0.2+	1999 07 16	704	0.3-	0.1-	1999 09 09	704	0.0	0.9-
1996 11 30	327	0.4-	0.1-	1999 07 16	704	0.5-	0.5+				
1996 12 02	327	0.5+	0.2-	1999 07 16	704	0.2-	0.2-				

1999 NK₈ = 1982 TR₁ = 1995 UM₄₈ = 1998 KV₂₀

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22240616	ω	159.56824	+0.16398422	-0.98485702		
<i>a</i>	2.6979766	Ω	280.96081	+0.89691765	+0.17260096		
<i>e</i>	0.0904578	<i>i</i>	3.28549	+0.41066762	+0.01629582		
<i>P</i>	4.43	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1982 10 14	095	0.2-	0.5+	1998 05 22	704	0.2+	0.4-	1999 08 08	699	0.2-	1.4+
1995 10 17	327	0.3+	0.2-	1998 05 22	704	(2.8-	0.9+)	1999 08 08	699	0.0	1.3+
1995 10 17	327	1.0-	1.0-	1998 05 22	704	0.1+	0.8-	1999 09 07	704	0.9-	1.1+
1995 10 17	327	0.5+	0.6-	1998 05 24	704	1.0-	0.2+	1999 09 07	704	0.6+	0.4+
1995 10 18	327	1.1+	0.0	1998 05 24	704	0.6+	0.0	1999 09 07	704	0.6+	0.1-
1995 10 18	327	0.2+	0.6-	1998 05 24	704	(0.1-	2.1+)	1999 09 07	704	0.2-	1.3-
1995 10 18	327	0.4+	0.3-	1998 05 24	704	0.7-	1.4+	1999 09 09	704	1.2+	0.2+
1998 05 01	704	0.6-	1.3-	1998 05 24	704	0.5-	0.9+	1999 09 09	704	0.1+	0.6+
1998 05 01	704	(1.0+	2.2-)	1999 07 13	704	0.1+	0.3-	1999 09 09	704	0.2-	0.2+
1998 05 01	704	0.5+	1.5-	1999 07 13	704	0.5-	0.3-	1999 09 09	704	0.6+	0.1-
1998 05 01	704	0.5+	1.9-	1999 07 13	704	0.2+	0.1-	1999 09 09	704	0.1-	0.4-
1998 05 01	704	0.1+	1.6-	1999 07 13	704	0.8-	0.4-	1999 09 13	704	0.7+	0.6+
1998 05 05	699	0.4-	1.5+	1999 07 13	704	0.1-	1.1-	1999 09 13	704	0.2-	0.6-
1998 05 05	699	0.1+	0.7+	1999 07 16	704	0.9-	0.2-	1999 09 13	704	0.5+	0.4-
1998 05 05	699	0.3-	0.5+	1999 07 16	704	0.7-	0.4-	1999 09 13	704	1.0+	0.6+
1998 05 22	704	0.6+	0.7+	1999 07 16	704	0.7-	0.4-	1999 09 13	704	0.0	0.8+
1998 05 22	704	0.5+	0.1+	1999 08 08	699	0.7-	0.3+				

1999 NR₈ = 1998 HN₁₃₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.25585107	ω	222.51223	+0.99512343	+0.01550967		
<i>a</i>	2.4574115	Ω	136.30752	+0.01452651	+0.95374837		
<i>e</i>	0.1727214	<i>i</i>	8.10651	-0.09756201	+0.30020575		
<i>P</i>	3.85	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	3

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Residuals in seconds of arc

1998 03 24	704	(2.3+	1.1-)	1998 05 16	704	0.1-	1.2+	1999 09 03	699	0.7-	0.2-
1998 03 24	704	0.4-	0.8-	1998 05 16	704	0.2+	1.2-	1999 09 03	699	1.1-	0.6-
1998 03 24	704	0.1+	0.4-	1998 05 16	704	0.5+	0.6-	1999 09 03	699	1.0-	0.3-
1998 03 24	704	1.3+	0.1-	1999 07 13	704	0.1+	0.1+	1999 09 07	704	0.3+	0.2+
1998 03 24	704	0.2-	0.3+	1999 07 13	704	0.0	0.1-	1999 09 07	704	0.0	0.4+
1998 04 20	704	(2.3+	1.4-)	1999 07 13	704	0.4+	0.3-	1999 09 07	704	0.3+	0.0
1998 04 20	704	0.3+	0.5+	1999 07 13	704	0.3-	0.2-	1999 09 07	704	0.2+	0.9+
1998 04 20	704	(4.4+	1.7-)	1999 07 13	704	0.5-	0.3-	1999 09 07	704	0.7+	0.5+
1998 04 20	704	0.0	0.5+	1999 07 16	704	0.4-	0.3-	1999 09 11	704	0.3+	0.2+
1998 04 24	704	(2.9+	1.4+)	1999 07 16	704	0.2+	0.0	1999 09 11	704	0.1+	0.3+
1998 04 24	704	0.9+	1.1+	1999 07 16	704	0.2+	0.2-	1999 09 11	704	0.1+	0.2-
1998 04 24	704	1.0-	0.1+	1999 08 07	699	0.4+	0.7+	1999 09 11	704	0.3+	0.4-
1998 04 24	704	0.9-	0.2+	1999 08 07	699	0.2-	0.5+	1999 09 11	704	0.5+	0.8-
1998 05 16	704	0.5-	0.8-	1999 08 07	699	0.0	0.1+				

1999 NC₉ = 1976 YM₇ = 1977 AP = 1992 OG₈ = 1998 FM₁₃

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28695482	ω	39.48246	-0.93561165	-0.34093447		
<i>a</i>	2.2764618	Ω	120.35410	+0.29106732	-0.89182713		
<i>e</i>	0.0934388	<i>i</i>	6.09495	+0.19977650	-0.29733492		
<i>P</i>	3.43	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1976 12 20	095	0.3-	0.0	1998 03 24	704	0.2+	0.4+	1999 07 16	704	0.1+	0.5-
1977 01 13	095	0.8+	1.0-	1998 03 25	704	0.7+	0.2-	1999 07 16	704	0.2+	1.0-
1992 07 22	809	0.1+	0.1-	1998 03 25	704	0.2-	0.1-	1999 07 20	699	(0.4-	2.6+)
1992 07 22	809	0.5+	0.2-	1998 03 25	704	0.0	0.5+	1999 07 20	699	0.5+	0.8+
1992 07 22	809	0.4+	0.1-	1998 03 25	704	0.1+	0.3+	1999 07 20	691	0.8-	0.3+
1992 07 23	809	0.9-	0.9-	1998 03 25	704	0.7-	1.2+	1999 07 20	699	(2.3-	1.2+)
1992 07 23	809	0.5-	1.0-	1998 03 26	566	0.2+	0.2+	1999 07 20	691	0.7-	0.4+
1992 07 23	809	0.5-	0.7-	1998 03 26	566	0.2+	0.3+	1999 07 20	691	1.3-	0.3-
1997 12 07	910	0.9-	0.9+	1998 03 26	566	0.0	0.3+	1999 09 07	704	0.5+	0.9+
1997 12 07	910	0.7-	0.8+	1998 03 27	566	0.1-	0.5-	1999 09 07	704	0.0	0.7+
1997 12 07	910	0.6-	0.8+	1998 03 27	566	0.0	0.7-	1999 09 07	704	0.4+	1.2+
1998 02 26	566	0.3+	0.0	1998 03 27	566	0.3-	0.3-	1999 09 07	704	0.5+	0.8+
1998 02 26	566	0.3+	0.1+	1999 07 13	704	0.0	0.1-	1999 09 07	704	0.6+	1.7+
1998 02 26	566	0.5+	0.1+	1999 07 13	704	0.6+	0.1-	1999 09 11	704	0.4-	0.5-
1998 03 24	704	0.1-	0.0	1999 07 13	704	0.5-	0.3-	1999 09 11	704	0.4+	0.4+
1998 03 24	704	0.5+	0.7+	1999 07 13	704	0.1+	0.2-	1999 09 11	704	0.2-	1.2+
1998 03 24	704	0.5+	0.1-	1999 07 13	704	0.0	0.1-	1999 09 11	704	0.7+	1.4+
1998 03 24	704	0.2+	0.2-	1999 07 16	704	0.3-	0.7-				

1999 ND₉ = 1985 QR₆ = 1992 PS₅

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27751062	ω	299.17593	+0.53453735	-0.84169352		
<i>a</i>	2.3278213	Ω	118.31522	+0.80239227	+0.47707386		
<i>e</i>	0.0076208	<i>i</i>	4.97212	+0.26539869	+0.25288841		
<i>P</i>	3.55	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1985 08 24	095	0.7-	0.1+	1998 04 19	704	0.8+	0.2-	1999 07 20	699	0.1+	0.4+
1992 08 03	675	1.2+	1.1-	1998 04 19	704	0.0	0.6-	1999 09 07	704	1.2+	0.6+
1992 08 03	675	0.9+	1.7-	1998 04 19	704	1.6-	1.3+	1999 09 07	704	0.6+	0.8+
1992 08 06	675	0.3+	0.4-	1999 07 13	704	0.4-	0.3-	1999 09 07	704	0.1+	0.8-
1998 02 25	566	0.5+	0.5-	1999 07 13	704	0.3-	0.1-	1999 09 07	704	0.0	0.4+
1998 02 25	566	0.4+	0.6-	1999 07 13	704	0.0	0.4-	1999 09 07	704	0.0	0.0
1998 02 25	566	0.5+	0.8-	1999 07 13	704	0.4-	0.1-	1999 09 11	704	0.2+	1.3+
1998 03 24	704	0.4+	0.0	1999 07 13	704	0.7-	0.0	1999 09 11	704	0.4+	0.8+
1998 03 24	704	0.9-	0.2+	1999 07 16	704	0.6-	0.7-	1999 09 11	704	0.1+	0.8+
1998 03 24	704	0.4-	0.4-	1999 07 16	704	0.4-	1.2-	1999 09 11	704	0.0	0.6+
1998 03 24	704	0.2-	0.3+	1999 07 16	704	0.5-	0.9-	1999 09 11	704	0.6-	0.1-

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1998 04 19 704 0.6+ 0.6+ 1999 07 20 699 0.1- 0.9+
 1998 04 19 704 0.8+ 0.7+ 1999 07 20 699 0.3+ 0.9+

1999 NG₉ = 1982 VQ₁₁ = 1998 HW₁₂₇

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	264.44415		(2000.0)	P	Q
<i>n</i>	0.28324798	ω	108.60786	+0.41482111	-0.90643422
<i>a</i>	2.2962800	Ω	316.60921	+0.78519398	+0.40068213
<i>e</i>	0.1116879	<i>i</i>	6.63500	+0.45977588	+0.13353214
<i>P</i>	3.48	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1982 11 09	095	0.4-	0.3+	1998 04 18	704	0.5+	0.4-	1999 09 05	699	0.6-	0.0
1993 11 21	691	0.2-	0.1-	1998 04 18	704	0.2-	0.7-	1999 09 05	699	0.1-	0.2+
1993 11 21	691	0.2-	0.1-	1998 04 18	704	1.1-	0.5-	1999 09 05	699	0.1+	0.4+
1993 11 21	691	0.8-	0.0	1998 04 18	704	0.0	0.3+	1999 09 06	691	0.9+	0.1-
1994 01 11	691	0.6+	0.1+	1998 04 20	704	0.2+	0.8+	1999 09 06	691	0.5+	0.3+
1994 01 11	691	0.1+	0.5+	1998 04 20	704	0.0	1.2-	1999 09 06	691	(3.1+	5.2-)
1994 01 11	691	0.1+	0.0	1998 04 20	704	1.2+	1.1+	1999 09 07	704	0.9+	0.4-
1994 02 11	675	1.0+	1.5-	1998 04 20	704	1.5+	0.2-	1999 09 07	704	0.6+	0.2+
1994 02 11	675	0.1+	0.2-	1999 07 13	704	0.0	0.2+	1999 09 07	704	0.4+	0.0
1997 01 02	327	0.5-	0.5-	1999 07 13	704	0.3-	0.2-	1999 09 07	704	0.1-	0.3-
1997 01 02	327	0.3-	0.6-	1999 07 13	704	0.4+	0.4-	1999 09 07	704	0.5+	0.7-
1997 01 02	327	0.2-	0.5-	1999 07 13	704	0.3-	0.0	1999 09 13	704	0.4+	0.2+
1998 04 01	704	0.8-	0.8+	1999 07 13	704	0.2+	0.2+	1999 09 13	704	0.3-	0.1+
1998 04 01	704	0.8-	0.6+	1999 07 16	704	0.1-	0.5-	1999 09 13	704	0.4-	0.1-
1998 04 01	704	0.2-	0.3+	1999 07 16	704	0.2-	0.3-	1999 09 13	704	0.5+	0.1-
1998 04 01	704	1.9-	0.8-	1999 07 16	704	0.6-	0.5-	1999 09 13	704	0.6-	0.8+

1999 NP₉ = 1998 KY₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	302.74303		(2000.0)	P	Q
<i>n</i>	0.27728382	ω	127.38138	+0.76056136	-0.64720320
<i>a</i>	2.3290905	Ω	273.01085	+0.57812373	+0.71132387
<i>e</i>	0.2218570	<i>i</i>	2.96848	+0.29549852	+0.27412839
<i>P</i>	3.55	<i>H</i>	15.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 05 16	691	0.2-	0.1+	1999 07 13	704	0.0	0.2+	1999 09 09	704	0.8-	0.5+
1998 05 16	691	0.5+	0.0	1999 07 13	704	0.1-	1.3-	1999 09 09	704	0.5+	1.1-
1998 05 16	691	0.1-	0.4+	1999 07 13	704	0.8-	0.4+	1999 09 13	704	0.2+	0.1+
1998 05 24	691	0.1+	0.1-	1999 07 16	704	0.1+	0.2+	1999 09 13	704	0.1+	0.5-
1998 05 24	691	0.3-	0.4-	1999 07 16	704	0.3+	0.7-	1999 09 13	704	0.5-	0.3+
1999 07 13	704	0.0	0.4+	1999 07 16	704	0.1-	0.2+	1999 09 13	704	0.1-	0.0
1999 07 13	704	0.6+	0.7+	1999 09 09	704	0.6+	1.8+	1999 09 13	704	0.0	1.2-

1999 NS₉ = 1998 JL

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	69.98695		(2000.0)	P	Q
<i>n</i>	0.21108454	ω	92.94118	-0.51933095	+0.84922944
<i>a</i>	2.7936056	Ω	145.23157	-0.83539002	-0.48097339
<i>e</i>	0.1008877	<i>i</i>	9.63230	-0.18005244	-0.21788521
<i>P</i>	4.67	<i>H</i>	13.3	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1993 02 26	691	0.0	0.4+	1998 05 02	566	0.0	0.2-	1999 09 06	691	0.0	0.1+
1993 02 26	691	0.1+	0.3+	1998 05 02	566	0.0	0.0	1999 09 06	691	0.4-	0.3+
1993 02 26	691	0.1+	0.3+	1998 05 16	704	1.6+	0.1+	1999 09 06	691	0.1-	0.4+
1998 03 24	704	0.3+	0.5-	1998 05 16	704	(1.5-	3.3+)	1999 09 07	704	0.3+	0.1-
1998 03 24	704	0.4-	0.6+	1998 05 16	704	(0.9-	3.2-)	1999 09 07	704	0.2+	0.3-
1998 03 24	704	0.4+	0.3-	1998 05 16	704	0.6-	1.7+	1999 09 07	704	0.3+	0.4-
1998 03 24	704	0.0	0.0	1998 05 16	704	1.1-	0.1+	1999 09 07	704	1.4+	1.4-
1998 03 24	704	0.0	0.1-	1999 05 21	704	0.8+	0.0	1999 09 07	704	(0.8+	2.4-)
1998 03 26	566	0.5-	0.2-	1999 05 21	704	1.6-	0.4-	1999 09 13	704	0.4+	0.1+

1998 03 26	566	0.7-	0.3-	1999 05 21	704	0.2+	0.7+	1999 09 13	704	0.3+	0.1+
1998 03 26	566	0.9-	0.8-	1999 05 21	704	1.0-	1.2-	1999 09 13	699	0.6-	1.4+
1998 04 24	704	1.0+	0.0	1999 05 21	704	0.5+	1.6+	1999 09 13	704	0.6+	0.0
1998 04 24	704	0.4+	0.4-	1999 07 13	704	0.3-	0.3-	1999 09 13	704	0.7+	0.5+
1998 04 24	704	0.2-	0.1-	1999 07 13	704	0.2-	0.2-	1999 09 13	704	0.7+	0.1+
1998 04 24	704	0.4-	0.2+	1999 07 13	704	0.3-	0.0	1999 09 13	699	0.6-	0.9+
1998 04 24	704	0.4+	0.9+	1999 07 13	704	0.8-	0.2-	1999 09 13	699	0.3-	1.1+
1998 05 01	566	0.2+	0.1-	1999 07 13	704	0.6-	0.0	1999 09 18	691	0.1-	0.2+
1998 05 01	566	0.2-	0.2-	1999 07 16	704	0.2+	0.4-	1999 09 18	691	0.1+	0.3+
1998 05 01	566	0.3+	0.2-	1999 07 16	704	0.2+	0.6-	1999 09 18	691	0.0	0.2+
1998 05 02	566	0.2+	0.0	1999 07 16	704	0.6-	1.8-				

1999 NW₉ = 1998 KU₃₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	299.61061		(2000.0)	P	Q
<i>n</i>	0.19563617	ω	231.06185	+0.84917845	-0.52793287
<i>a</i>	2.9387995	Ω	160.79226	+0.49635588	+0.78911934
<i>e</i>	0.1067396	<i>i</i>	2.35558	+0.18035189	+0.31397063
<i>P</i>	5.04	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1997 04 02	704	0.4+	0.4+	1999 07 13	704	0.9+	0.6-	1999 09 06	699	0.7-	1.7+
1997 04 02	704	0.5+	1.2+	1999 07 13	704	1.4+	0.0	1999 09 06	699	1.0-	0.1-
1997 04 02	704	0.2-	0.1+	1999 07 13	704	0.3-	0.6-	1999 09 07	704	0.1-	0.2+
1997 04 02	704	0.5+	1.5+	1999 07 13	704	0.3-	0.3+	1999 09 07	704	0.3+	0.4-
1998 05 22	704	0.6-	0.1+	1999 07 13	704	0.3+	0.6-	1999 09 07	704	0.4+	0.1+
1998 05 22	704	0.4+	1.5+	1999 07 16	704	0.1-	0.2-	1999 09 07	704	0.7+	0.8+
1998 05 22	704	1.5+	0.2+	1999 07 16	704	0.3-	0.3-	1999 09 07	704	0.1-	0.1-
1998 05 22	704	1.9-	0.2-	1999 07 16	704	0.1-	0.5-	1999 09 09	704	1.2+	1.0-
1998 05 24	704	0.8+	0.2+	1999 09 04	703	0.2+	0.1-	1999 09 09	704	0.6+	0.1-
1998 05 24	704	(2.9-	2.2+)	1999 09 04	703	0.8-	0.3+	1999 09 09	704	0.1-	0.2+
1998 05 24	704	0.1+	0.9-	1999 09 04	703	0.8-	0.4+	1999 09 09	704	0.5+	1.2+
1998 05 24	704	0.5-	1.7-	1999 09 04	703	1.6-	0.4+				
1998 05 24	704	(0.0	2.7-)	1999 09 06	699	0.7-	1.8+				

1999 NA₁₀ = 1998 KF₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	247.40045		(2000.0)	P	Q
<i>n</i>	0.20480566	ω	137.09872	+0.20312490	-0.97904190
<i>a</i>	2.8504149	Ω	301.17646	+0.89362601	+0.19151398
<i>e</i>	0.0582823	<i>i</i>	0.98707	+0.40021597	+0.06927737
<i>P</i>	4.81	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1995 11 21	691	0.1-	0.3+	1999 07 13	704	0.1+	0.5-	1999 09 07	704	0.3+	0.6+
1995 11 21	691	0.1-	0.0	1999 07 13	704	0.3-	0.8-	1999 09 09	704	0.2+	0.1+
1995 11 21	691	0.2+	0.2-	1999 07 16	704	0.5-	0.5+	1999 09 09	704	0.0	1.5-
1998 05 23	699	0.7+	0.9+	1999 07 16	704	0.3-	0.7-	1999 09 09	704	0.7+	1.0-
1998 05 23	699	0.2-	0.1+	1999 07 16	704	0.0	0.1-	1999 09 09	704	0.4-	0.5-
1998 05 23	699	1.0-	1.0-	1999 08 07	699	0.1-	1.0+	1999 09 09	704	0.1-	0.0
1998 05 24	704	0.4+	0.5-	1999 08 07	699	0.4-	1.1+	1999 09 13	704	0.0	0.2+
1998 05 24	704	0.7-	0.0	1999 08 07	699	0.7+	0.6-	1999 09 13	704	0.5+	0.2-
1998 05 24	704	1.0+	0.6+	1999 09 05	691	0.2-	0.5+	1999 09 13	699	(0.2-	2.5+)
1998 05 24	704	0.2-	0.4-	1999 09 05	691	0.2-	0.3+	1999 09 13	704	0.3+	0.0
1998 05 24	704	(2.8-	1.4-)	1999 09 05	691	0.0	0.4+	1999 09 13	704	0.5+	0.2-
1998 05 25	699	0.2-	0.1-	1999 09 06	699	0.9-	0.8-	1999 09 13	691	0.1-	0.1+
1998 05 25	699	0.5-	0.3+	1999 09 06	699	0.9-	0.3+	1999 09 13	704	0.4-	0.2+
1998 05 25	699	0.6+	0.4+	1999 09 06	699	0.3+	1.0+	1999 09 13	699	0.5-	1.0+
1999 07 13	704	0.5+	0.0	1999 09 07	704	0.7+	1.3-	1999 09 13	691	0.3-	0.3+
1999 07 13	704	0.3+	0.4-	1999 09 07	704	0.5+	0.0	1999 09 13	691	0.2-	0.1-
1999 07 13	704	0.1-	0.1-	1999 09 07	704	0.3+	1.2+	1999 09 13	699	(0.5-	2.4+)

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1999 NH₁₀ = 1998 EW₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	11.61741		(2000.0)	P		Q	
<i>n</i>	0.29393724	ω	350.04244	+0.53357257	+0.84301382		
<i>a</i>	2.2402663	Ω	312.16807	-0.76951445	+0.45052598		
<i>e</i>	0.1734421	<i>i</i>	5.26633	-0.35092424	+0.29386057		
<i>P</i>	3.35	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 03	704	0.6+	0.8+	1999 07 13	704	0.2+	0.4+	1999 09 07	704	0.2-	0.3+
1998 03 03	704	(3.4+	3.2+)	1999 07 16	704	0.3-	0.1-	1999 09 09	704	0.0	0.2+
1998 03 03	704	0.1+	0.2-	1999 07 16	704	0.9-	0.2+	1999 09 09	704	0.6-	0.7-
1998 03 03	704	(3.5-	1.1-)	1999 07 16	704	0.3-	0.4-	1999 09 09	704	0.1-	0.5-
1998 03 04	704	0.2+	1.2-	1999 08 07	699	0.5-	0.5+	1999 09 09	704	0.0	0.5-
1998 03 04	704	0.7-	0.9+	1999 08 07	699	0.4-	0.4+	1999 09 09	704	0.1+	0.5+
1998 03 04	704	(2.6+	0.9-)	1999 08 07	699	0.3-	0.7+	1999 09 13	704	1.4+	1.3-
1998 03 04	704	(4.5-	1.5-)	1999 09 04	703	1.2+	1.8+	1999 09 13	704	0.6+	0.0
1999 06 25	699	0.5-	0.1-	1999 09 04	703	0.7-	0.2+	1999 09 13	699	0.8-	1.1+
1999 06 25	699	0.1-	0.2-	1999 09 04	703	0.4-	0.6+	1999 09 13	704	(0.3-	2.3-)
1999 06 25	699	0.2-	0.9+	1999 09 04	703	0.3+	0.6+	1999 09 13	704	(0.7-	2.1-)
1999 07 13	704	1.2+	1.8-	1999 09 07	704	0.2-	0.9-	1999 09 13	699	0.0	0.6-
1999 07 13	704	0.5+	0.3-	1999 09 07	704	0.0	0.1-	1999 09 13	699	1.2-	0.5-
1999 07 13	704	0.6+	0.0	1999 09 07	704	0.6+	0.6-				
1999 07 13	704	0.8+	0.0	1999 09 07	704	0.2+	0.1+				

1999 NO₁₀ = 1998 HC₉₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	310.94827		(2000.0)	P		Q	
<i>n</i>	0.23009413	ω	47.32731	+0.93842535	-0.34518839		
<i>a</i>	2.6375398	Ω	332.85678	+0.30714313	+0.85245167		
<i>e</i>	0.1173859	<i>i</i>	1.78897	+0.15818018	+0.39264630		
<i>P</i>	4.28	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	0.4+	1.8+	1998 05 22	704	0.5+	0.3+	1999 09 07	704	0.1+	0.1-
1998 04 21	704	1.7-	0.2-	1999 07 13	704	1.2+	0.2+	1999 09 07	704	0.3-	0.5-
1998 04 21	704	0.1+	0.1-	1999 07 13	704	0.2+	0.7+	1999 09 07	704	0.0	0.2-
1998 04 21	704	1.1-	0.1+	1999 07 13	704	0.1+	1.4-	1999 09 07	704	0.3+	1.3-
1998 04 21	704	1.3+	0.1+	1999 07 13	704	0.1-	0.9+	1999 09 07	704	0.7-	0.2-
1998 04 22	704	0.2-	0.4+	1999 07 13	704	0.3-	0.2-	1999 09 13	691	0.0	0.2+
1998 04 22	704	0.3+	0.8-	1999 07 16	704	0.3-	0.3-	1999 09 13	691	0.2-	0.1-
1998 04 22	704	1.9+	0.5-	1999 07 16	704	0.0	0.5-	1999 09 13	704	0.6+	0.4-
1998 04 22	704	0.4+	0.5-	1999 07 16	704	0.7-	0.3-	1999 09 13	691	0.2-	0.1-
1998 04 22	704	0.7+	0.2-	1999 08 07	699	0.4+	0.0	1999 09 13	704	0.8+	0.3+
1998 05 01	704	0.8-	0.4-	1999 08 07	699	0.5-	0.7+	1999 09 13	704	0.6+	0.2-
1998 05 01	704	0.6+	0.3+	1999 08 07	699	0.4+	0.8+	1999 09 13	699	1.1-	0.4+
1998 05 01	704	1.2-	0.0	1999 09 06	691	0.2-	0.3+	1999 09 13	704	0.1+	0.9+
1998 05 01	704	1.0-	0.2-	1999 09 06	691	0.1-	0.2+	1999 09 13	699	1.2-	0.8+
1998 05 01	704	0.8-	0.7+	1999 09 06	699	1.1+	0.5-	1999 09 13	699	0.8+	1.1-
1998 05 22	704	1.2+	0.4-	1999 09 06	691	0.0	0.4+	1999 09 19	691	0.2+	0.2+
1998 05 22	704	0.5-	0.3-	1999 09 06	699	0.4-	0.4+	1999 09 19	691	0.0	0.1+
1998 05 22	704	(2.3+	0.0)	1999 09 06	699	0.6-	0.5-	1999 09 19	691	0.1+	0.4+

1999 NN₁₁ = 1984 BB₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	60.77733		(2000.0)	P		Q	
<i>n</i>	0.28172320	ω	114.85329	-0.44969945	+0.89065891		
<i>a</i>	2.3045580	Ω	128.25521	-0.84721045	-0.40157425		
<i>e</i>	0.1618770	<i>i</i>	4.89897	-0.28285130	-0.21322482		
<i>P</i>	3.50	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1984 01 25	675	0.4-	0.2+	1999 07 13	704	0.1+	0.5-	1999 09 03	699	0.6+	0.6+
1984 01 26	675	0.4+	0.5-	1999 07 13	704	0.3+	0.6-	1999 09 07	704	0.8+	1.4-
1997 12 24	910	0.3+	0.1+	1999 07 13	704	0.8-	0.8-	1999 09 07	704	0.7-	0.1-

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1997 12 24	910	0.2-	0.4+	1999 07 16	704	0.2+	0.6-	1999 09 07	704	0.3+	0.7-
1997 12 24	910	0.1+	0.5+	1999 07 16	704	0.2-	0.3-	1999 09 07	704	0.8-	0.6-
1999 06 20	703	0.7+	0.9+	1999 07 16	704	0.3+	0.4-	1999 09 07	704	0.6-	0.0
1999 06 20	703	0.2+	0.8+	1999 08 07	699	0.1+	0.1-	1999 09 13	704	0.9+	0.0
1999 06 20	703	0.6-	0.7+	1999 08 07	699	0.4+	0.5+	1999 09 13	704	0.3+	0.1+
1999 06 20	703	0.1-	1.3+	1999 08 07	699	0.5-	0.2-	1999 09 13	704	0.6+	0.7+
1999 07 13	704	0.1-	0.2-	1999 09 03	699	0.9+	1.4+	1999 09 13	704	0.3+	0.5+
1999 07 13	704	0.1+	0.3-	1999 09 03	699	1.8-	0.7+	1999 09 13	704	0.8-	0.5-

1999 NS₁₁ = 1978 SM = 1992 OK₆

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	330.12970		(2000.0)	P		Q	
<i>n</i>	0.28255618	ω	232.59924	+0.93874847	-0.33798161		
<i>a</i>	2.3000265	Ω	147.00077	+0.34210259	+0.89057009		
<i>e</i>	0.3080183	<i>i</i>	7.09069	+0.04143822	+0.30439013		
<i>P</i>	3.49	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1978 09 27	809	1.2-	0.9-	1999 06 20	703	0.7-	0.1+	1999 08 22	703	0.4-	0.3+
1978 09 28	809	0.2+	0.8-	1999 07 13	704	0.2-	0.0	1999 09 07	704	0.3-	0.1+
1978 09 29	809	1.5-	1.1-	1999 07 13	704	0.3+	0.2-	1999 09 07	704	0.3-	0.1-
1992 07 30	809	1.4+	0.1+	1999 07 13	704	0.6+	0.1+	1999 09 07	704	0.2-	0.0
1992 07 30	809	1.4+	0.5-	1999 07 13	704	0.5+	0.6+	1999 09 07	704	0.1-	0.0
1992 07 30	809	0.3+	0.6-	1999 07 13	704	1.0+	0.4-	1999 09 07	704	0.5-	0.3+
1992 07 31	809	1.4+	1.3+	1999 07 16	704	0.3-	0.3+	1999 09 09	704	0.1+	0.2-
1992 07 31	809	0.9+	0.5+	1999 07 16	704	0.6+	0.3+	1999 09 09	704	0.0	0.3-
1992 07 31	809	0.2+	0.3+	1999 07 16	704	1.3+	0.5-	1999 09 09	704	0.0	0.2-
1998 04 23	704	1.1-	1.0-	1999 07 16	704	0.5-	0.4-	1999 09 09	704	0.2-	0.5-
1998 04 23	704	(0.6+	3.0-)	1999 08 07	699	0.9-	0.2+	1999 09 09	704	0.1-	0.4-
1998 04 23	704	(2.5-	2.3-)	1999 08 07	699	0.6-	0.5+	1999 09 13	704	0.0	0.2-
1998 04 23	704	0.2+	0.1+	1999 08 07	699	0.4-	0.2-	1999 09 13	704	0.2+	0.1+
1999 06 20	703	0.9-	0.3+	1999 08 22	703	0.4-	0.1-	1999 09 13	704	0.1-	0.1+
1999 06 20	703	0.4-	0.7+	1999 08 22	703	0.4-	0.1-	1999 09 13	704	0.0	0.6+
1999 06 20	703	0.6-	0.1+	1999 08 22	703	0.1+	0.2+	1999 09 13	704	0.1+	0.0

1999 NU₁₁ = 1990 TE₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	292.71659		(2000.0)	P		Q	
<i>n</i>	0.21527007	ω	110.35406	+0.55287819	-0.82843450		
<i>a</i>	2.7572763	Ω	305.76102	+0.71742095	+0.52793124		
<i>e</i>	0.2085178	<i>i</i>	6.33697	+0.42383120	+0.18704247		
<i>P</i>	4.58	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1990 10 09	413	0.1+	0.1-	1999 07 16	704	0.3+	0.0	1999 09 09	704	0.0	0.3-
1990 10 11	413	0.1-	0.1+	1999 07 16	704	0.9-	0.5-	1999 09 09	704	0.5+	1.0-
1997 03 17	599	0.2+	0.2-	1999 08 07	699	0.0	1.8+	1999 09 09	704	0.9-	0.4-
1997 03 17	599	0.0	0.6+	1999 08 07	699	0.5+	0.3+	1999 09 13	704	0.1+	0.1+
1999 07 13	704	1.0+	0.1-	1999 08 07	699	(0.6-	2.7+)	1999 09 13	704	0.6-	0.9+
1999 07 13	704	1.2+	0.3+	1999 09 07	704	0.8-	1.7-	1999 09 13	704	0.2+	0.9+
1999 07 13	704	(2.4+	0.3-)	1999 09 07	704	0.9-	0.8-	1999 09 13	704	0.1+	0.5+
1999 07 13	704	0.5+	0.5+	1999 09 07	704	0.9-	0.4+	1999 09 13	704	0.6-	0.3-
1999 07 16	704	1.6+	0.4-	1999 09 07	704	0.2-	0.4+				

1999 NV₁₁ = 1992 PK₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	341.64406		(2000.0)	P		Q	
n	0.28351611	ω	52.50325	+0.99452155	+0.08098859		
a	2.2948319	Ω	302.76034	-0.10177855	+0.89438518		
e	0.2640679	i	4.50748	+0.02383320	+0.43990454		
P	3.48	H	15.2	G	0.15	U	4

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Residuals in seconds of arc

1992 07 27	010	0.7+	1.1-	1999 07 21	699	0.4-	0.7+	1999 09 09	704	0.2+	0.9-
1992 07 27	010	0.2+	1.1-	1999 07 21	699	1.0-	0.9+	1999 09 09	704	0.3+	0.5-
1992 07 27	010	1.0-	1.8-	1999 07 21	699	0.3-	0.8+	1999 09 09	704	0.1+	0.2-
1992 08 01	809	0.9-	0.7+	1999 09 03	138	1.4-	1.1+	1999 09 09	704	0.0	0.5-
1992 08 01	809	0.6-	0.5+	1999 09 03	138	0.9-	1.0+	1999 09 11	106	0.2+	0.2-
1992 08 01	809	0.1+	0.6+	1999 09 03	138	1.0+	0.7+	1999 09 11	106	0.3+	0.0
1992 08 03	809	0.5+	0.0	1999 09 03	138	0.5-	1.1+	1999 09 11	106	0.2-	0.6+
1992 08 03	809	0.9+	0.1-	1999 09 03	138	0.5-	0.7+	1999 09 14	723	0.4-	0.0
1992 08 03	809	1.0+	0.0	1999 09 06	699	0.9+	0.3+	1999 09 14	704	0.5+	0.0
1999 07 13	704	0.6-	0.3-	1999 09 06	699	0.7+	0.2+	1999 09 14	704	0.1-	0.2-
1999 07 13	704	0.4-	0.6-	1999 09 06	699	1.1+	0.3+	1999 09 14	723	1.0-	0.1+
1999 07 13	704	0.1-	0.5+	1999 09 07	704	0.5+	0.4-	1999 09 14	704	0.3-	0.2-
1999 07 13	704	0.3+	0.0	1999 09 07	704	0.5+	0.8-	1999 09 14	704	0.4-	0.1-
1999 07 13	704	0.2-	0.7+	1999 09 07	704	0.4+	0.4-	1999 09 14	704	1.4-	0.3-
1999 07 16	704	0.0	0.7-	1999 09 07	704	0.3+	0.3-	1999 09 14	723	0.4-	0.3-
1999 07 16	704	0.5+	0.4-	1999 09 07	704	0.8+	0.4-				
1999 07 16	704	0.3+	0.8+	1999 09 09	704	0.1-	0.6-				

1999 NE₁₂ = 1998 HQ₁₀₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	58.50089		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.17676142	ω	105.79941	-0.46552946	+0.85839647
<i>a</i>	3.1444478	Ω	134.36423	-0.88253075	-0.43194829
<i>e</i>	0.1555805	<i>i</i>	17.54345	-0.06649656	-0.27672400
<i>P</i>	5.58	<i>H</i>	14.2	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1992 02 25	691	0.3-	0.3-	1998 04 30	704	0.1+	0.7-	1999 07 16	704	0.1-	0.2-
1992 02 25	691	0.2+	0.4-	1998 04 30	704	0.0	0.1-	1999 07 16	704	0.4+	0.3+
1992 02 25	691	0.0	0.3-	1998 04 30	704	0.1-	1.6+	1999 08 08	691	0.1+	0.0
1998 04 02	704	1.0+	1.0+	1998 04 30	704	0.4+	0.1-	1999 08 08	691	0.1+	0.2+
1998 04 02	704	0.1+	0.6+	1998 05 28	704	(2.1+	2.5+)	1999 08 08	691	0.1+	0.1-
1998 04 02	704	1.5+	1.0+	1998 05 28	704	1.3+	0.5+	1999 09 07	704	1.2+	0.5-
1998 04 26	566	1.3-	0.1-	1998 05 28	704	0.5+	0.7+	1999 09 07	704	0.4+	1.1+
1998 04 26	566	1.1-	0.2-	1998 05 28	704	0.3-	0.3-	1999 09 07	704	0.4-	0.6-
1998 04 26	566	1.6-	0.2-	1998 05 28	704	(2.3+	2.2+)	1999 09 07	704	0.7-	0.5-
1998 04 28	704	(1.2+	2.0-)	1999 07 13	704	1.4+	0.4-	1999 09 11	704	0.2+	0.4+
1998 04 28	704	0.9+	1.3-	1999 07 13	704	1.2-	0.5-	1999 09 11	704	0.6+	0.1+
1998 04 28	704	0.2-	0.3-	1999 07 13	704	1.2-	0.7-	1999 09 11	704	0.1+	0.8-
1998 04 28	704	0.5+	0.8-	1999 07 13	704	0.4-	0.2+	1999 09 11	704	1.1-	0.7+
1998 04 28	704	1.4-	0.7-	1999 07 16	704	0.2+	0.6+				

1999 NH₁₆ = 1989 GT₂ = 1998 HA₃₂

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	298.35649		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.21627443	ω	101.60929	+0.98893000	-0.13131929
<i>a</i>	2.7487333	Ω	265.96440	+0.09409213	+0.91499069
<i>e</i>	0.0780097	<i>i</i>	3.97128	+0.11473503	+0.38150659
<i>P</i>	4.56	<i>H</i>	14.1	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1989 04 03	809	0.2+	0.6+	1998 04 19	704	(0.2-	2.5+)	1999 07 14	704	0.4+	0.1+
1989 04 03	809	0.3-	1.0+	1998 04 19	704	(0.1-	4.3+)	1999 07 14	704	0.7+	0.5+
1989 04 03	809	0.1+	0.5+	1998 04 20	704	0.4-	1.4+	1999 07 14	704	0.0	0.0
1989 04 05	809	1.2+	1.3-	1998 04 20	704	1.0+	0.8-	1999 07 14	704	0.2-	0.2+
1989 04 05	809	0.3+	0.8-	1998 04 20	704	1.0-	1.4+	1999 07 14	704	0.4+	0.2+
1989 04 05	809	1.6-	0.4-	1998 04 20	704	1.6+	0.8-	1999 07 16	704	1.5-	0.5-
1998 03 25	704	0.5-	0.5+	1998 04 20	704	(3.1-	1.5+)	1999 07 16	704	0.1-	0.2+
1998 03 25	704	0.8-	0.3+	1998 04 22	704	1.1+	0.8+	1999 07 16	704	0.7+	0.4-
1998 03 25	704	0.6-	0.5+	1998 04 22	704	1.4+	0.2+	1999 07 16	704	1.3+	0.7-
1998 03 25	704	0.5-	0.9-	1998 04 22	704	0.5+	1.4-	1999 07 16	704	0.3-	0.3-
1998 04 18	704	0.4+	0.0	1998 04 22	704	0.2-	1.1+	1999 08 12	704	0.0	0.7-
1998 04 18	704	(1.7+	2.4-)	1998 04 22	704	1.4-	0.6-	1999 08 12	704	0.1+	0.7+
1998 04 18	704	0.2-	0.4-	1999 06 15	704	0.1+	0.6+	1999 08 12	704	0.1-	0.5-

1998 04 18	704	0.4-	0.5-	1999 06 15	704	0.0	0.3+	1999 08 12	704	0.3-	0.5+
1998 04 18	704	(4.0-	0.8-)	1999 06 15	704	0.0	0.1+	1999 08 12	704	0.1-	0.1-
1998 04 19	704	0.4-	0.9-	1999 06 15	704	1.0-	0.9+				
1998 04 19	704	0.4+	0.1+	1999 06 15	704	0.1-	1.1-				

1999 NJ₂₀ = 1998 HK₁₃₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	333.98316		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.23523688	ω	230.31740	+0.92376125	+0.36995073
<i>a</i>	2.5989571	Ω	107.76668	-0.31178841	+0.87661486
<i>e</i>	0.1696705	<i>i</i>	5.96732	-0.22238062	+0.30770578
<i>P</i>	4.19	<i>H</i>	14.4	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1996 12 18	327	0.2-	0.5-	1998 04 20	704	1.7+	0.1-	1999 07 16	704	0.1+	0.3-
1996 12 18	327	0.0	0.2+	1998 04 20	704	0.3-	0.6+	1999 07 16	704	0.0	0.2+
1996 12 18	327	0.0	0.2-	1998 04 20	704	0.2-	1.9+	1999 07 16	704	0.0	0.6-
1998 03 24	566	1.0-	1.3-	1999 06 15	704	0.7-	0.2+	1999 07 16	704	0.5+	0.2+
1998 03 24	566	0.1-	1.3-	1999 06 15	704	0.5-	0.8+	1999 07 16	704	0.1-	0.1-
1998 03 24	566	0.7-	1.6-	1999 06 15	704	0.7+	0.0	1999 08 12	704	1.0+	0.3+
1998 04 19	704	0.6+	0.0	1999 06 15	704	0.5-	0.5-	1999 08 12	704	1.0+	0.7-
1998 04 19	704	0.1+	0.2+	1999 06 15	704	1.9-	0.2-	1999 08 12	704	0.8+	0.5+
1998 04 19	704	1.0-	0.4-	1999 07 14	704	0.3-	0.1-	1999 08 12	704	0.5+	0.1+
1998 04 19	704	0.7+	0.2+	1999 07 14	704	1.2-	0.9-	1999 08 12	704	0.9+	0.6-
1998 04 20	704	0.9+	1.0+	1999 07 14	704	0.3-	0.3+				
1998 04 20	704	0.6-	0.5+	1999 07 14	704	0.0	0.3+				

1999 NH₂₉ = 1996 VE₃₃

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	27.76307		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.26026206	ω	84.24283	-0.03723008	+0.99930625
<i>a</i>	2.4295666	Ω	183.62397	-0.92280812	-0.03475223
<i>e</i>	0.1665403	<i>i</i>	0.87864	-0.38345676	-0.01339033
<i>P</i>	3.79	<i>H</i>	16.5	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1994 01 08	691	1.5-	0.7+	1996 11 18	691	0.4-	0.2-	1999 07 14	704	0.1+	0.5+
1994 01 08	691	1.9+	1.0+	1996 11 18	691	0.0	0.0	1999 07 14	704	0.5+	1.4+
1996 11 05	691	0.3-	0.1+	1996 11 18	691	0.2+	0.0	1999 07 16	704	0.9-	0.7+
1996 11 05	691	0.4-	0.0	1998 02 24	691	0.0	0.4+	1999 07 16	704	0.6+	0.3-
1996 11 05	691	0.0	0.0	1998 02 24	691	0.4+	0.8+	1999 07 16	704	0.3+	0.3-
1996 11 06	381	0.7+	0.5+	1998 02 24	691	0.1+	0.6+	1999 07 19	691	0.5-	0.2-
1996 11 06	381	0.1-	0.1+	1999 07 14	704	0.5-	0.4+	1999 07 19	691	0.5-	0.1+
1996 11 11	691	0.0	0.0	1999 07 14	704	0.2+	0.0	1999 07 19	691	0.6-	0.1-
1996 11 11	691	0.0	0.2+	1999 07 14	704	0.6+	0.7+				

1999 NL₃₁ = 1992 OP₉ = 1996 VT₃₁

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	30.10226		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.28071258	ω	308.82988	-0.10950272	+0.99107620
<i>a</i>	2.3100859	Ω	314.70043	-0.87562097	-0.13237000
<i>e</i>	0.2108100	<i>i</i>	6.13854	-0.47042223	+0.01568888
<i>P</i>	3.51	<i>H</i>	14.4	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1992 07 27	809	0.3-	0.8+	1998 01 23	704	0.7+	1.0+	1999 08 12	699	0.0	0.5-
1992 07 27	809	0.0	0.8+	1998 01 23	704	0.6+	0.1+	1999 09 03	699	0.2-	0.7-
1992 07 27	809	0.5+	0.7+	1998 01 23	704	0.3+	0.3+	1999 09 03	699	0.0	0.4-
1992 07 28	809	1.2-	0.9+	1998 01 23	704	0.7-	1.2+	1999 09 03	699	0.1-	0.0
1992 07 28	809	0.7-	1.1+	1999 07 14	704	0.4-	0.3+	1999 09 07	704	0.0	1.2-
1992 07 28	809	0.5-	1.1+	1999 07 14	704	0.0	0.1-	1999 09 07	704	1.1+	1.0-

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1996 11 04	691	0.2+	0.3+	1999 07 14	704	1.1-	0.4+	1999 09 07	704	0.7+	0.3+
1996 11 04	691	0.2+	0.2+	1999 07 14	704	0.2-	0.2+	1999 09 07	704	1.3+	0.4+
1996 11 04	691	0.4+	0.0	1999 07 14	704	0.3-	0.1+	1999 09 07	704	0.8+	1.2+
1996 11 17	691	0.6-	0.2+	1999 07 16	704	0.2-	0.3+	1999 09 13	704	0.3-	0.4-
1996 11 17	691	0.4-	0.2+	1999 07 16	704	0.0	0.2-	1999 09 13	704	0.0	0.6-
1996 11 17	691	0.5-	0.3+	1999 07 16	704	0.2-	0.3+	1999 09 13	704	0.7+	1.8-
1996 12 14	327	0.6-	0.4+	1999 07 16	704	0.3-	0.1-	1999 09 13	704	1.0+	0.6-
1996 12 14	327	0.4+	0.3-	1999 08 12	699	0.4-	0.8-	1999 09 13	704	0.6+	0.3+
1996 12 14	327	0.1-	0.3+	1999 08 12	699	0.1-	0.5-				

1999 NS₃₁ = 1998 DZ₇

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28531942	ω	172.69294	+0.39256993	+0.91314237		
<i>a</i>	2.2851524	Ω	120.36597	-0.85013712	+0.40583274		
<i>e</i>	0.1606473	<i>i</i>	7.31234	-0.35093550	+0.03835109		
<i>P</i>	3.45	<i>H</i>	16.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 17	327	0.4+	0.3+	1999 06 09	703	0.0	0.3+	1999 07 16	704	0.3+	0.8-
1998 02 17	327	0.4+	0.2-	1999 06 09	703	0.7+	0.1+	1999 07 16	704	1.1+	0.7-
1998 02 17	327	0.0	0.3+	1999 06 09	703	0.3+	1.6+	1999 07 20	699	1.2-	0.4-
1998 02 23	327	0.1-	0.2-	1999 06 09	703	0.5-	0.7+	1999 07 20	699	0.4+	0.4-
1998 02 23	327	0.5-	0.2-	1999 07 14	704	0.1+	0.0	1999 07 20	699	0.5-	0.1-
1998 02 23	327	0.1-	0.0	1999 07 14	704	0.4-	0.6-	1999 08 13	699	0.8+	0.3+
1999 06 09	703	0.1+	0.3-	1999 07 14	704	0.1-	0.2+	1999 08 13	699	0.3-	0.8+
1999 06 09	703	0.1-	0.2-	1999 07 14	704	0.6-	0.7+	1999 08 13	699	0.9-	0.1-
1999 06 09	703	0.8-	0.0	1999 07 16	704	0.2-	0.8+				
1999 06 09	703	0.1-	1.3-	1999 07 16	704	1.9+	0.2-				

1999 NC₃₄ = 1998 KG₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17536898	ω	349.84772	-0.40421240	-0.91085916		
<i>a</i>	3.1610706	Ω	123.94771	+0.84607670	-0.40696963		
<i>e</i>	0.1053791	<i>i</i>	5.76690	+0.34751483	-0.06863893		
<i>P</i>	5.62	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 05 22	704	0.6-	0.3+	1998 05 24	704	(1.0+	3.4+)	1999 07 14	704	0.0	0.2-
1998 05 22	704	0.0	0.8-	1998 05 24	704	0.6+	1.6+	1999 07 14	704	0.2+	0.1-
1998 05 22	704	0.6-	1.3-	1999 07 04	691	0.0	0.1-	1999 07 14	704	0.3+	0.1+
1998 05 22	704	0.7-	1.0+	1999 07 04	691	0.3+	0.4-	1999 07 16	704	0.9-	1.0+
1998 05 24	704	0.8+	1.7-	1999 07 04	691	0.0	0.0	1999 07 16	704	0.5-	0.4+
1998 05 24	704	0.5+	0.9+	1999 07 14	704	0.5+	0.2+	1999 07 16	704	0.2+	1.0-

1999 NH₃₆ = 1981 QQ₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27208040	ω	27.91411	+0.94643246	+0.30908724		
<i>a</i>	2.3586919	Ω	313.75825	-0.31508979	+0.82075739		
<i>e</i>	0.1920313	<i>i</i>	7.43309	-0.07059766	+0.48043979		
<i>P</i>	3.62	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1981 08 30	675	0.1+	0.2-	1999 07 16	704	0.4+	0.3-	1999 07 20	699	0.3-	0.4-
1981 08 31	675	0.3+	0.4-	1999 07 16	704	0.1-	2.2-	1999 08 07	699	0.0	0.4+
1999 07 14	704	0.5+	0.2+	1999 07 18	428	0.1+	0.2+	1999 08 07	699	0.2+	0.1-
1999 07 14	704	0.2+	0.3+	1999 07 18	428	0.3+	0.6+	1999 08 07	699	0.1+	0.5-
1999 07 14	704	0.1+	0.7+	1999 07 19	428	0.1+	0.2+	1999 08 21	691	0.5-	0.6+
1999 07 14	704	0.7+	0.2+	1999 07 19	428	0.5-	0.6+	1999 08 21	691	0.4-	0.6+
1999 07 14	704	0.4+	0.2-	1999 07 20	699	0.5-	0.3-	1999 08 21	691	0.5-	0.5+
1999 07 16	704	0.1+	0.5+	1999 07 20	699	0.4-	0.7-				

1999 NS₃₆ = 1991 EZ₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17518667	ω	119.07006	+0.08310638	-0.98442468		
<i>a</i>	3.1632633	Ω	325.08813	+0.79405375	+0.15934941		
<i>e</i>	0.1066388	<i>i</i>	15.70571	+0.60213949	-0.07426855		
<i>P</i>	5.63	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1991 03 07	809	0.5-	0.0	1999 07 14	704	0.4+	0.1+	1999 09 11	699	0.8-	1.1+
1991 03 07	809	0.1+	0.0	1999 07 14	704	0.1-	0.2-	1999 09 11	704	0.6+	0.1+
1991 03 07	809	0.7+	0.0	1999 07 16	704	0.3-	0.3+	1999 09 11	704	0.5+	0.0
1991 03 09	809	0.1-	0.1-	1999 07 16	704	0.1-	1.1-	1999 09 11	704	0.4+	0.0
1991 03 09	809	0.2-	0.1-	1999 07 16	704	(0.0	4.3-)	1999 09 11	699	0.0	0.8+
1991 03 09	809	0.1+	0.2+	1999 09 03	699	0.0	0.1-	1999 09 11	704	0.8-	0.1-
1999 07 14	704	0.0	0.2+	1999 09 03	699	0.7-	1.1-	1999 09 11	704	0.1+	1.5-
1999 07 14	704	0.1-	0.5+	1999 09 03	699	0.6+	0.5+				
1999 07 14	704	0.0	0.3+	1999 09 11	699	0.0	0.2+				

1999 NA₃₈ = 1997 NA₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.08152884	ω	254.00492	+0.95786745	-0.15633436		
<i>a</i>	5.2673869	Ω	114.47064	+0.22341323	+0.93274133		
<i>e</i>	0.0831166	<i>i</i>	15.34989	-0.18048956	+0.32488949		
<i>P</i>	12.09	<i>H</i>	11.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1991 12 07	691	0.2-	1.1+	1999 07 14	704	0.3-	0.4+	1999 09 07	704	0.3-	0.2-
1991 12 07	691	0.3-	1.2+	1999 07 14	704	0.3+	1.4+	1999 09 07	704	1.0-	0.9-
1991 12 07	691	0.1+	0.7+	1999 07 14	704	0.6+	0.0	1999 09 07	704	0.4-	1.2-
1997 07 07	910	0.0	0.1+	1999 07 14	704	0.3+	0.6+	1999 09 07	704	0.7-	0.0
1997 07 07	910	0.0	0.1+	1999 07 14	704	0.1+	0.3+	1999 09 11	704	1.1+	0.4-
1997 07 07	910	0.2+	0.1+	1999 07 16	704	0.6+	0.4+	1999 09 11	704	0.2+	0.5-
1997 07 08	910	0.4+	0.9+	1999 07 16	704	0.8+	0.4+	1999 09 11	704	0.2-	0.1+
1997 07 08	910	0.0	0.1+	1999 07 16	704	1.2-	0.4+	1999 09 11	704	0.3-	0.5+
1997 07 08	910	0.1+	0.0	1999 09 07	704	0.0	0.7+	1999 09 11	704	0.1+	0.3-

1999 NQ₃₈ = 1991 PK₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.24521954	ω	29.33574	+0.99326062	-0.10064050		
<i>a</i>	2.5279356	Ω	336.23345	+0.05703386	+0.85620105		
<i>e</i>	0.2749902	<i>i</i>	8.20094	+0.10089832	+0.50674574		
<i>P</i>	4.02	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1991 08 06	675	0.1-	1.2+	1999 07 14	704	0.0	0.2+	1999 09 07	704	0.6-	0.1+
1991 08 06	675	0.9-	2.6-	1999 07 14	704	0.3+	0.3+	1999 09 07	704	0.2-	0.5+
1991 08 10	675	0.5+	0.7+	1999 07 16	704	2.0-	0.9-	1999 09 11	704	0.3+	0.2-
1991 08 10	675	0.5+	0.7+	1999 07 16	704	0.5+	0.2-	1999 09 11	704	0.7+	0.2+
1999 07 14	704	0.6+	0.4-	1999 07 16	704	1.4+	1.0+	1999 09 11	704	0.2+	0.6-
1999 07 14	704	0.2-	0.2+	1999 09 07	704	0.8-	0.2+	1999 09 11	704	0.2+	0.2-
1999 07 14	704	0.3-	0.3-	1999 09 07	704	0.6-	0.6+	1999 09 11	704	0.6+	0.8-

1999 NR₃₈ = 1983 EN₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20245665	ω	175.12674	-0.97242415	-0.23225405		
<i>a</i>	2.8724205	Ω	351.35527	+0.20892650	-0.82713782		
<i>e</i>	0.1061962	<i>i</i>	8.10724	+0.10363872	-0.51176272		
<i>P</i>	4.87	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	5

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Residuals in seconds of arc

1983 03 15	095	1.9+	0.8-	1999 07 16	704	0.2+	0.2+	1999 09 07	704	0.2-	0.9-
1983 03 18	095	0.0	1.1+	1999 07 16	704	0.1+	0.1+	1999 09 07	704	0.4+	0.1-
1983 03 20	095	1.8-	0.1-	1999 07 16	704	0.4+	0.5-	1999 09 07	704	0.4-	1.2-
1999 07 14	704	0.5+	0.9+	1999 08 12	699	0.3-	0.3+	1999 09 11	704	0.2-	0.1+
1999 07 14	704	0.0	0.1+	1999 08 12	699	1.0-	0.6+	1999 09 11	704	0.5-	0.3+
1999 07 14	704	0.2+	0.4-	1999 08 12	699	0.0	0.6+	1999 09 11	704	0.6+	0.1+
1999 07 14	704	0.6+	0.4-	1999 09 07	704	0.5+	0.2-	1999 09 11	704	0.1+	0.1-
1999 07 14	704	0.2+	0.3-	1999 09 07	704	0.8-	0.1+	1999 09 11	704	0.5-	1.2+

1999 NC₃₉ = 1998 HU₁₀₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17709684	ω	185.83464	+0.58371512	+0.79802504		
<i>a</i>	3.1404762	Ω	119.97127	-0.73779142	+0.59831584		
<i>e</i>	0.1591948	<i>i</i>	9.95623	-0.33902873	+0.07193191		
<i>P</i>	5.57	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 03 24	704	0.4-	0.9-	1998 04 24	704	1.1-	0.1-	1999 07 16	704	0.1+	0.3+
1998 03 24	704	1.3+	0.6-	1998 04 24	704	1.4+	0.9-	1999 08 13	703	0.6-	0.0
1998 03 24	704	1.4-	0.3-	1998 04 24	566	0.6-	0.3+	1999 08 13	703	0.4-	0.3+
1998 03 24	704	0.0	1.4+	1998 04 24	566	0.3-	0.2+	1999 08 13	703	0.7-	0.6-
1998 03 24	704	(2.6-	0.1-)	1998 04 24	566	0.3-	0.3+	1999 08 13	703	1.0-	0.4+
1998 04 23	704	0.7+	1.3+	1999 07 14	704	0.2+	0.3-	1999 09 07	704	0.8+	0.2-
1998 04 23	704	0.6-	0.7+	1999 07 14	704	0.1+	0.0	1999 09 07	704	0.6-	0.0
1998 04 23	704	0.0	0.7+	1999 07 14	704	0.3+	0.6-	1999 09 07	704	0.3+	0.2+
1998 04 23	704	0.0	0.6+	1999 07 14	704	0.0	0.1-	1999 09 07	704	1.1+	0.5-
1998 04 23	704	0.7-	0.2-	1999 07 14	704	0.1+	0.3+	1999 09 07	704	0.2-	0.5+
1998 04 24	704	0.3+	1.3-	1999 07 16	704	0.2+	0.2-				
1998 04 24	704	1.7+	1.2-	1999 07 16	704	0.5+	0.7+				

1999 NL₃₉ = 1998 FU₉

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28044352	ω	284.56168	-0.21437117	+0.97621366		
<i>a</i>	2.3115632	Ω	332.99383	-0.86640710	-0.20537958		
<i>e</i>	0.1429567	<i>i</i>	4.09579	-0.45098086	-0.06947021		
<i>P</i>	3.51	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1996 10 13	566	0.9+	0.5-	1999 07 14	704	0.5+	0.4-	1999 09 07	704	0.8+	1.0-
1996 10 13	566	0.1+	0.8-	1999 07 14	704	0.4+	0.2-	1999 09 07	704	0.3-	0.4+
1996 10 13	566	0.3-	0.5-	1999 07 14	704	0.6+	0.7-	1999 09 11	699	0.4-	0.4-
1998 03 24	910	0.2-	0.3-	1999 07 16	704	0.4+	0.3-	1999 09 11	704	0.8+	0.1-
1998 03 24	910	0.3-	0.5-	1999 07 16	704	0.6+	0.2-	1999 09 11	699	0.3-	0.4+
1998 03 24	910	0.2+	0.4-	1999 07 16	704	0.4+	0.5-	1999 09 11	704	0.2+	0.3+
1998 03 25	910	0.1-	0.5-	1999 07 20	699	0.4+	0.1-	1999 09 11	704	0.1-	0.1+
1998 03 25	910	0.1-	0.3-	1999 07 20	699	0.5-	1.0-	1999 09 11	699	1.7-	0.4+
1998 03 25	910	0.1-	0.4-	1999 07 20	699	0.0	0.3-	1999 09 11	704	1.2-	0.4+
1999 07 14	704	0.6+	0.1+	1999 09 07	704	0.1+	0.7+	1999 09 11	704	0.9-	0.5+
1999 07 14	704	0.1-	0.1-	1999 09 07	704	0.1-	1.2+				

1999 NN₃₉ = 1998 HL₆₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26689177	ω	89.29652	+0.36666752	-0.92985003		
<i>a</i>	2.3891638	Ω	339.11242	+0.81586042	+0.33715723		
<i>e</i>	0.1398008	<i>i</i>	4.91692	+0.44713165	+0.14732253		
<i>P</i>	3.69	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	1.5-	1.4+	1999 07 14	704	0.6+	0.2+	1999 08 13	703	0.2+	0.7+
1998 04 21	704	0.2-	0.5+	1999 07 14	704	0.6+	0.1+	1999 08 13	703	0.3-	1.1+

1998 04 21	704	1.6-	1.0+	1999 07 14	704	0.2-	0.3-	1999 09 07	704	0.1-	0.3+
1998 04 21	704	1.4+	0.9-	1999 07 14	704	0.1+	0.7-	1999 09 07	704	0.6-	0.4-
1998 04 21	704	0.4+	0.0	1999 07 14	704	0.2-	0.6-	1999 09 07	704	0.3+	0.3+
1998 04 22	704	0.7+	1.2-	1999 07 16	704	0.5-	0.1+	1999 09 11	704	0.3+	0.0
1998 04 22	704	1.0-	1.2-	1999 07 16	704	0.2-	0.9+	1999 09 11	704	0.0	0.3-
1998 04 22	704	1.5+	0.8+	1999 07 16	704	0.6+	0.1-	1999 09 11	704	0.4-	0.6-
1998 04 22	704	0.2+	0.5-	1999 08 13	703	0.0	0.6-	1999 09 11	704	0.5+	0.1-
1998 04 22	704	0.1+	0.2+	1999 08 13	703	1.1-	0.3-	1999 09 11	704	0.6+	0.5+

1999 NX₃₉ = 1977 DH₁₀ = 1998 HT₄₅

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28678334	ω	51.19841	+0.67243918	-0.74012686		
<i>a</i>	2.2773692	Ω	356.52712	+0.64373423	+0.58892025		
<i>e</i>	0.1800822	<i>i</i>	5.82385	+0.36528317	+0.32463083		
<i>P</i>	3.44	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 02 19	381	0.6-	0.3-	1998 04 20	704	1.8-	0.3-	1999 07 14	704	0.1+	0.4+
1977 02 19	381	1.0+	1.0+	1998 04 21	704	0.2+	1.3+	1999 07 14	704	0.7+	0.2+
1996 11 04	691	0.2-	0.2+	1998 04 21	704	1.0-	0.8+	1999 07 16	704	0.4+	0.0
1996 11 04	691	0.0	0.2+	1998 04 21	704	1.1-	0.4+	1999 07 16	704	0.3+	0.7+
1996 11 04	691	0.1-	0.4+	1998 04 21	704	0.6-	0.0	1999 07 16	704	0.2+	0.0
1998 03 25	704	0.0	1.1-	1998 04 21	704	0.2-	0.5-	1999 09 07	704	1.2-	0.4-
1998 03 25	704	0.4-	0.0	1998 04 22	704	0.2-	1.0-	1999 09 07	704	0.4-	0.7-
1998 03 25	704	1.1+	0.7-	1998 04 22	704	0.4-	0.7+	1999 09 07	704	0.5-	0.4-
1998 03 25	704	0.5+	0.4+	1998 04 22	704	0.8-	0.5+	1999 09 07	704	0.7-	0.2+
1998 03 25	704	0.2+	1.6-	1998 04 22	704	(0.5-	2.1+)	1999 09 07	704	0.4-	0.4-
1998 03 29	704	0.6+	0.4+	1998 04 22	704	0.9-	1.7+	1999 09 11	704	0.7-	0.0
1998 03 29	704	0.5+	0.4-	1998 04 25	699	1.1+	0.7-	1999 09 11	704	0.1-	0.1+
1998 03 29	704	0.2+	0.7+	1998 04 25	699	0.0	0.0	1999 09 11	704	0.3-	0.0
1998 03 29	704	0.4-	0.1-	1998 04 25	699	1.3+	0.6-	1999 09 11	704	0.5-	0.6-
1998 04 20	704	0.4+	0.9+	1999 07 14	704	1.5+	0.2+	1999 09 11	704	0.0	1.2+
1998 04 20	704	1.0+	0.4+	1999 07 14	704	0.4+	0.2+				
1998 04 20	704	1.0+	0.6-	1999 07 14	704	0.7+	0.3+				

1999 NG₄₁ = 1998 HV₈₁ = 1999 SA

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26526330	ω	315.45659	+0.86955370	-0.49062687		
<i>a</i>	2.3989320	Ω	74.00236	+0.46784230	+0.78196741		
<i>e</i>	0.2170959	<i>i</i>	3.35336	+0.15811374	+0.38446359		
<i>P</i>	3.72	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	0.1+	0.9-	1999 07 14	704	0.4+	0.4-	1999 09 07	704	(1.5-	2.2-)
1998 04 21	704	0.8+	0.0	1999 07 14	704	0.1+	0.1-	1999 09 11	704	0.1-	0.0
1998 04 21	704	(3.3+	2.1-)	1999 07 14	704	0.2+	0.3+	1999 09 11	704	0.0	0.1-
1998 04 21	704	0.9-	0.9-	1999 07 14	704	0.5+	0.5+	1999 09 11	704	0.0	0.4-
1998 04 21	704	(3.2-	0.4-)	1999 07 16	704	0.6+	0.2-	1999 09 11	704	0.4-	0.0
1998 04 22	704	0.4-	0.1-	1999 07 16	704	0.3+	0.2-	1999 09 16	684	0.1-	0.5+
1998 04 22	704	(2.6+	0.5+)	1999 07 16	704	1.0-	0.4+	1999 09 16	684	0.0	0.3+
1998 04 22	704	0.5-	0.0	1999 08 13	703	0.4-	0.6-	1999 09 16	684	0.2-	0.3+
1998 04 22	704	0.1-	1.3-	1999 08 13	703	0.3-	0.6-	1999 09 18	684	0.3+	0.4+
1998 04 22	704	1.6+	1.8-	1999 08 13	703	0.5-	0.2-	1999 09 18	684	0.3+	0.5+
1998 05 01	704	1.0-	1.0+	1999 08 13	703	0.4-	0.4+	1999 09 18	684	0.3+	0.5+
1998 05 01	704	0.8+	1.1+	1999 09 07	704	0.4+	0.6+	1999 09 21	684	0.5+	0.1-
1998 05 01	704	0.4-	1.6+	1999 09 07	704	0.2-	0.2-	1999 09 21	684	0.4+	0.9-
1998 05 01	704	0.0	1.5+	1999 09 07	704	0.1-	0.9-	1999 09 21	684	0.9+	0.0
1999 07 14	704	0.2+	0.4+	1999 09 07	704	1.0-	0.3+	1999 09 21	684	0.2-	0.3-

1999 NH₄₁ = 1995 DE₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	32.62430		(2000.0)	P		Q	
<i>n</i>	0.29441726	ω	259.94841	+0.04402248	+0.99895480		
<i>a</i>	2.2378306	Ω	12.59432	-0.89307760	+0.04486928		
<i>e</i>	0.1803106	<i>i</i>	3.23417	-0.44774370	+0.00872089		
<i>P</i>	3.35	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1995 02 06	691	0.1-	0.3+	1996 10 10	691	0.1+	0.1+
1995 02 06	691	1.2-	0.3+	1996 10 10	691	0.0	0.3-
1995 02 06	691	0.4-	0.1+	1996 10 10	691	0.0	0.1-
1995 02 24	691	0.2+	0.2+	1999 07 14	704	0.3+	0.3-
1995 02 24	691	0.2-	0.2+	1999 07 14	704	0.2+	0.0
1995 02 24	691	0.3+	0.1+	1999 07 14	704	0.5-	0.2+
1995 03 01	691	0.1+	0.1+	1999 07 14	704	0.3-	0.4+
1995 03 01	691	0.3+	0.1-	1999 07 14	704	0.8-	0.2+
1995 03 01	691	0.3+	0.1+	1999 07 16	704	0.3+	0.4-
1995 03 31	691	0.3+	0.2-	1999 07 16	704	0.1+	0.2-
1995 03 31	691	0.0	1.6-	1999 07 16	704	0.7-	0.0
1995 03 31	691	0.2-	0.2-	1999 09 07	704	0.6+	0.2-

1999 NQ₄₁ = 1992 GQ₄ = 1993 TR₂₁ = 1996 TT₅₂ = 1998 FO₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	302.36806		(2000.0)	P		Q	
<i>n</i>	0.31013689	ω	358.61349	+0.94144296	-0.33608516		
<i>a</i>	2.1615590	Ω	21.08701	+0.31006876	+0.83145495		
<i>e</i>	0.0128230	<i>i</i>	4.31239	+0.13244815	+0.44241319		
<i>P</i>	3.18	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1992 04 04	809	0.4-	0.3+	1998 02 25	566	0.1-	0.3+
1992 04 04	809	1.4-	0.2-	1998 02 25	566	0.3-	0.4+
1992 04 04	809	(3.8-	0.4+)	1998 03 20	704	0.3-	1.0-
1992 04 06	809	1.2+	1.0-	1998 03 20	704	1.1-	1.1-
1992 04 06	809	0.7-	0.9-	1998 03 20	704	0.2-	1.1+
1992 04 06	809	0.0	1.1-	1998 03 20	704	0.3+	0.1+
1993 10 10	675	0.4+	1.8-	1998 03 20	704	0.9-	0.7-
1993 10 10	675	(0.5+	2.7-)	1998 03 22	704	0.1+	0.3-
1993 10 13	675	1.4+	1.4-	1998 03 22	704	0.5+	0.5+
1993 10 13	675	1.1+	1.0-	1998 03 22	704	0.6+	0.2-
1996 09 11	566	0.0	0.4+	1998 03 22	704	1.3+	0.8-
1996 09 11	566	0.2+	0.4+	1998 04 27	691	0.2-	0.2-
1996 09 11	566	0.3-	0.1+	1998 04 27	691	0.2-	0.2-
1996 10 05	809	(1.7-	2.1+)	1998 04 27	691	0.2-	0.0
1996 10 05	809	0.9-	0.4+	1999 07 14	704	0.3+	0.4+
1996 10 05	809	0.6-	0.3+	1999 07 14	704	0.9+	0.3+
1996 10 06	809	0.2+	1.8-	1999 07 14	704	0.0	0.6+
1996 10 06	809	(0.5-	2.3-)	1999 07 14	704	0.5+	0.0
1996 10 06	809	(0.6-	2.4-)	1999 07 14	704	0.3-	0.6-
1998 02 25	566	0.1-	0.3+	1999 07 16	704	0.2+	0.5-

1999 NG₄₂ = 1983 QW

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Doppler

<i>M</i>	20.38396		(2000.0)	P		Q	
<i>n</i>	0.30606915	ω	324.76050	+0.19474826	+0.98065726		
<i>a</i>	2.1806686	Ω	316.46011	-0.89325630	+0.16906289		
<i>e</i>	0.2044704	<i>i</i>	1.63106	-0.40517440	+0.09863606		
<i>P</i>	3.22	<i>H</i>	16.9	<i>G</i>	0.15	<i>U</i>	6
Residuals in seconds of arc							
1983 08 30	675	1.6-	1.0+	1999 07 14	704	0.1+	0.6+
1983 08 31	675	1.3+	0.8+	1999 07 14	704	0.1-	0.2-
1983 09 01	675	0.8+	0.9-	1999 07 14	704	0.6+	0.2+
				1999 07 20	699	0.3-	0.0
				1999 07 20	699	0.2+	0.2+

1983 09 02	675	0.6-	0.8-	1999 07 16	704	0.7-	0.3-	1999 07 20	699	0.5+	0.0
1999 07 14	704	0.2-	0.9+	1999 07 16	704	0.2+	0.8-				

1999 NJ₄₂ = 1984 BB₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	293.48408		(2000.0)	P		Q	
<i>n</i>	0.29187983	ω	282.10868	+0.83840837	-0.54131353		
<i>a</i>	2.2507814	Ω	110.69542	+0.52279000	+0.76564973		
<i>e</i>	0.1389265	<i>i</i>	3.90133	+0.15414935	+0.34750561		
<i>P</i>	3.38	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	5
Residuals in seconds of arc							
1984 01 25	675	0.3+	0.3-	1999 07 14	704	0.4+	1.0+
1984 01 26	675	0.3-	0.2+	1999 07 14	704	0.6+	0.9+
1996 10 11	691	0.1+	0.1-	1999 07 14	704	0.3-	0.3+
1996 10 11	691	0.0	0.2-	1999 07 14	704	0.4+	0.2-
1996 10 11	691	0.1-	0.4+	1999 07 16	704	0.2+	0.4+
				1999 07 20	699	0.1+	0.1-
				1999 07 20	699	1.3-	2.0-

1999 NV₄₂ = 1994 RN₁₇ = 1998 FV₁₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	59.96115		(2000.0)	P		Q	
<i>n</i>	0.19110181	ω	268.64300	-0.33994790	+0.93871547		
<i>a</i>	2.9851043	Ω	341.17398	-0.77725572	-0.31456250		
<i>e</i>	0.1192600	<i>i</i>	10.17345	-0.52944212	-0.14093863		
<i>P</i>	5.16	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1994 09 03	809	1.6+	0.5+	1998 04 01	704	0.4+	1.9+
1994 09 03	809	0.5+	0.1-	1998 04 01	704	0.5+	0.1+
1994 09 03	809	0.4+	0.3+	1998 04 01	704	1.0+	0.7+
1994 09 04	809	0.2+	0.8-	1998 04 01	704	0.1+	0.6-
1994 09 04	809	0.4-	1.0-	1998 04 01	704	1.0-	1.7-
1994 09 04	809	1.1-	0.9-	1999 07 14	704	0.7-	0.7+
1998 03 31	704	0.8+	1.0-	1999 07 14	704	0.4+	1.0-
1998 03 31	704	0.2+	1.2-	1999 07 14	704	0.1-	0.5-
1998 03 31	704	1.0-	1.1+	1999 07 14	704	0.3+	0.8-
1998 03 31	704	0.2+	0.7+	1999 07 16	704	0.6+	0.2+
1998 03 31	704	1.3-	0.5-	1999 07 16	704	0.6+	0.8+
				1999 09 13	704	0.0	0.5+

1999 NX₄₈ = 1995 QJ₉ = 1996 TJ₃₆ = 1998 FZ₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	89.92810		(2000.0)	P		Q	
<i>n</i>	0.24096735	ω	42.93119	-0.86354100	+0.50142622		
<i>a</i>	2.5575880	Ω	166.85356	-0.50244098	-0.84646827		
<i>e</i>	0.1130323	<i>i</i>	13.62053	-0.04301166	-0.17906203		
<i>P</i>	4.09	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1994 03 12	691	0.1+	0.1+	1998 03 20	704	0.3-	0.4-
1994 03 12	691	0.2+	0.2+	1998 03 20	704	0.3-	0.4-
1994 03 12	691	0.7+	0.5+	1998 03 20	704	0.4+	0.1+
1994 04 03	691	0.1+	0.4-	1998 03 20	704	0.5+	0.2-
1994 04 03	691	0.3+	0.4-	1998 03 22	704	0.6-	0.4+
1994 04 03	691	0.3+	0.4-	1998 03 22	704	0.3-	0.3-
1995 08 28	691	0.4-	0.2-	1998 03 22	704	0.5-	0.2+
1995 08 28	691	0.8-	0.4-	1998 03 22	704	0.1+	0.2-
1995 08 28	691	0.2-	0.0	1998 03 22	704	0.4-	0.1-
1995 09 02	691	0.6-	0.2-	1998 03 24	566	0.1-	0.9-
1995 09 02	691	0.3-	0.4-	1998 03 24	566	0.5-	0.7-
1995 09 02	691	0.3-	0.4-	1998 03 24	566	0.5-	1.0-
1996 10 11	691	0.2+	0.1-	1998 03 26	704	0.4-	0.0
1996 10 11	691	0.0	0.1-	1998 03 26	704	0.8-	0.9+
1996 10 15	691	0.2+	0.2+	1998 03 26	704	0.8-	0.3-
1996 10 15	691	0.2+	0.1+	1998 04 18	704	0.3+	0.2-
				1999 09 09	704	1.1+	0.3-

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1996 10 15	691	0.3+	0.1−	1998 04 18	704	0.3+	1.1+	1999 09 13	704	0.7+	0.1+
1998 02 24	566	0.4+	0.1−	1998 04 18	704	0.2+	1.8+	1999 09 13	704	0.5+	0.8+
1998 02 24	566	0.2+	0.0	1998 04 18	704	1.4+	0.2+	1999 09 13	704	0.3−	0.1−
1998 02 24	566	0.2+	0.2−	1998 04 18	704	(0.3+	2.9+)	1999 09 13	704	0.2+	0.2+
1998 03 20	704	0.3−	0.2+	1999 07 13	704	0.4−	0.2−				

1999 NY₄₈ = 1993 FK₇₂ = 1995 VV₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	310.99080		(2000.0)	P	Q
<i>n</i>	0.21439388	ω	179.01140	+0.96112735	−0.27237127
<i>a</i>	2.7647835	Ω	197.00389	+0.25224785	+0.93285340
<i>e</i>	0.1612537	<i>i</i>	8.90257	+0.11227303	+0.23579319
<i>P</i>	4.60	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1993 03 21	809	0.0	0.7+	1998 05 24	704	0.3+	0.1+	1999 09 09	704	0.7+	0.0
1993 03 22	809	0.4+	0.7+	1998 05 24	704	(2.5−	1.1+)	1999 09 09	704	0.5−	0.4+
1995 11 15	691	0.0	0.3+	1999 07 13	704	0.3−	1.2−	1999 09 09	704	0.1−	0.1+
1995 11 15	691	0.2+	0.1+	1999 07 13	704	0.0	1.3−	1999 09 09	704	0.6−	0.0
1995 11 15	691	0.2+	0.0	1999 07 13	704	0.4+	0.1+	1999 09 09	704	0.4+	1.1−
1995 11 25	691	0.5−	0.4−	1999 07 13	704	0.4+	0.3−	1999 09 09	704	0.1−	0.3−
1995 11 25	691	0.1+	0.4−	1999 07 13	704	0.9+	0.0	1999 09 09	704	0.8−	0.7−
1995 11 25	691	0.0	0.2−	1999 07 19	704	0.2+	0.2+	1999 09 09	704	0.3−	0.1+
1998 05 01	704	0.3−	1.3−	1999 07 19	704	0.8+	0.2−	1999 09 13	704	0.5+	0.8+
1998 05 01	704	0.3+	0.8−	1999 07 19	704	0.5−	0.3+	1999 09 13	704	0.3−	0.3+
1998 05 01	704	0.7+	0.4+	1999 09 08	704	0.4−	0.0	1999 09 13	704	0.7+	0.5+
1998 05 01	704	0.3+	1.2−	1999 09 08	704	0.5−	0.5+	1999 09 13	704	0.3−	1.2+
1998 05 24	704	0.3−	0.6+	1999 09 08	704	0.5−	0.2+	1999 09 13	704	0.4−	0.1+
1998 05 24	704	(0.9−	2.7−)	1999 09 08	704	0.8+	1.0+				
1998 05 24	704	1.4−	1.5+	1999 09 09	704	0.4−	0.3+				

1999 NA₅₀ = 4110 T-2

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	306.19435		(2000.0)	P	Q
<i>n</i>	0.26282850	ω	223.93041	+0.86856333	−0.49399682
<i>a</i>	2.4137247	Ω	165.52384	+0.48705789	+0.83616851
<i>e</i>	0.2105080	<i>i</i>	9.10526	+0.09150053	+0.23830519
<i>P</i>	3.75	<i>H</i>	14.5	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1973 09 19	675	0.4+	0.0	1998 04 23	704	0.3+	0.4−	1999 09 07	704	0.5+	0.8+
1973 09 19	675	(0.7−	3.8−)	1998 04 23	704	0.7+	1.2−	1999 09 07	704	0.9+	1.1+
1973 09 20	675	(1.9−	3.2+)	1998 04 23	704	2.0−	0.2+	1999 09 09	704	0.4+	1.0+
1973 09 24	675	1.5−	0.4+	1999 07 13	704	0.3−	0.8−	1999 09 09	704	0.0	0.5+
1973 09 24	675	0.3−	0.6−	1999 07 13	704	0.3+	0.4−	1999 09 09	704	0.7−	1.6+
1973 09 25	675	0.1−	0.4−	1999 07 13	704	0.2−	0.8−	1999 09 09	704	0.1+	0.8+
1973 09 25	675	0.7+	0.2−	1999 07 13	704	0.4−	0.5−	1999 09 09	704	0.1−	0.3+
1973 09 29	675	0.9+	1.3−	1999 07 13	704	0.0	1.1−	1999 09 13	704	0.2+	0.1−
1973 09 29	675	0.9+	1.6−	1999 07 19	704	1.2−	0.5−	1999 09 13	704	0.1+	0.8+
1998 04 21	704	0.7−	0.3+	1999 07 19	704	0.4−	0.9−	1999 09 13	704	0.4+	0.3+
1998 04 21	704	(2.5+	0.3−)	1999 07 19	704	0.1+	0.5−	1999 09 13	704	0.3+	0.6+
1998 04 21	704	(1.3−	2.4+)	1999 09 07	704	0.3−	0.0	1999 09 13	704	0.3+	0.0
1998 04 21	704	(5.1−	0.8−)	1999 09 07	704	0.2+	0.4+				
1998 04 23	704	1.3+	0.7−	1999 09 07	704	0.0	0.1−				

1999 NF₅₀ = 1982 UY₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	312.09592		(2000.0)	P	Q
<i>n</i>	0.28501371	ω	237.94741	+0.85367922	−0.51531640
<i>a</i>	2.2867861	Ω	152.84908	+0.51592287	+0.81702508
<i>e</i>	0.2704626	<i>i</i>	9.50687	+0.07110123	+0.25868712
<i>P</i>	3.46	<i>H</i>	15.5	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1982 10 18	807	1.9+	0.3−	1999 07 13	704	0.1+	0.0	1999 09 07	704	0.4+	0.5−
1982 10 19	695	(3.5−	3.2−)	1999 07 13	704	0.6−	0.4+	1999 09 07	704	0.0	0.1+
1982 10 22	695	0.4−	0.3−	1999 07 13	704	0.0	0.7+	1999 09 13	704	0.3+	0.2−
1982 10 24	695	1.3−	0.3+	1999 07 13	704	0.2−	0.4−	1999 09 13	704	0.6+	0.2−
1982 10 25	807	(3.1+	4.5+)	1999 07 19	704	0.1+	0.7−	1999 09 13	704	0.0	0.6+
1994 03 05	691	0.4+	0.1+	1999 07 19	704	0.1−	0.1−	1999 09 13	704	0.2−	0.1−
1994 03 05	691	0.0	0.0	1999 07 19	704	0.8−	0.5−	1999 09 13	704	0.3−	1.3+
1994 03 05	691	0.2−	0.2+	1999 09 07	704	0.4+	0.6+				
1999 07 13	704	0.3−	0.6−	1999 09 07	704	0.6+	0.0				

1999 NK₅₀ = 1998 HO₇₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	178.85919		(2000.0)	P	Q
<i>n</i>	0.24528966	ω	241.61992	−0.70421191	−0.70648179
<i>a</i>	2.5274538	Ω	253.33067	+0.67444136	−0.63462472
<i>e</i>	0.1498153	<i>i</i>	4.21986	+0.22184328	−0.31326497
<i>P</i>	4.02	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 04 21	704	0.5+	0.3−	1998 05 31	691	1.4−	0.0	1999 09 07	704	0.6+	0.4+
1998 04 21	704	0.8+	0.2−	1998 05 31	691	0.6−	0.3−	1999 09 07	704	0.0	0.2−
1998 04 21	704	0.2+	0.4−	1998 05 31	691	0.2−	0.4+	1999 09 09	704	0.9+	0.5+
1998 04 21	704	0.6+	0.0	1999 07 13	704	0.3−	0.2+	1999 09 09	704	0.4+	0.6+
1998 04 21	704	0.5−	0.1+	1999 07 13	704	0.5−	0.3+	1999 09 09	704	0.1−	1.2−
1998 04 22	704	0.1−	0.5−	1999 07 13	704	0.2+	0.6+	1999 09 09	704	0.8+	1.0−
1998 04 22	704	0.4−	0.2+	1999 07 13	704	0.5−	0.6+	1999 09 09	704	0.0	0.2−
1998 04 22	704	0.4+	0.9−	1999 07 13	704	0.2+	0.7+	1999 09 13	704	0.5−	0.3−
1998 04 22	704	0.1−	0.4−	1999 07 19	704	0.9−	0.4+	1999 09 13	704	0.4+	0.3+
1998 04 22	704	0.2+	0.1−	1999 07 19	704	0.4−	0.6−	1999 09 13	704	0.8+	0.3−
1998 05 16	691	0.1−	0.7+	1999 07 19	704	0.0	0.5+	1999 09 13	704	0.6−	0.8−
1998 05 16	691	0.2+	0.6+	1999 09 07	704	0.1−	0.5−	1999 09 13	704	0.1−	0.3−
1998 05 16	691	0.1+	0.7+	1999 09 07	704	0.1+	0.4−				

1999 NR₅₂ = 1998 KF₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	222.67144		(2000.0)	P	Q
<i>n</i>	0.23255448	ω	224.33844	−0.08567092	−0.97955132
<i>a</i>	2.6189040	Ω	231.44029	+0.96655801	−0.03738448
<i>e</i>	0.1363248	<i>i</i>	13.46221	+0.24171491	−0.19769071
<i>P</i>	4.24	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 04 25	699	0.3+	0.0	1998 05 24	704	0.8+	0.8+	1999 09 13	557	0.1−	0.3+
1998 04 25	699	1.1+	0.6+	1998 05 24	704	0.3−	0.2+	1999 09 13	557	0.1−	0.2−
1998 04 25	699	0.3+	0.7+	1998 05 24	704	1.6−	1.8−	1999 09 13	557	0.4+	0.2−
1998 05 02	566	0.6−	0.5−	1999 07 12	704	0.8−	0.6+	1999 09 14	557	0.2−	0.0
1998 05 02	566	0.2+	1.3−	1999 07 12	704	0.3−	0.7−	1999 09 14	557	0.2+	0.2−
1998 05 02	566	0.2+	0.1−	1999 07 12	704	0.7+	0.6−	1999 09 14	557	0.2+	0.8+
1998 05 22	704	0.5−	0.6+	1999 07 12	704	0.3+	0.1+	1999 09 14	557	0.3+	0.5+
1998 05 22	704	0.9−	0.8+	1999 07 22	704	0.4−	0.5−	1999 09 15	557	0.3−	0.1+
1998 05 22	704	1.6+	0.5+	1999 07 22	704	0.4+	0.7−	1999 09 15	557	0.4+	0.3+
1998 05 22	704	0.4−	0.4+	1999 07 22	704	0.2+	0.0	1999 09 15	557	0.0	0.1+
1998 05 22	704	1.0−	0.2+	1999 07 22	704	0.6−	0.0	1999 09 15	557	0.4−	0.3+
1998 05 24	704	1.3+	0.1−	1999 09 13	557	0.1+	0.1+				
1998 05 24	704	0.4−	0.4−	1999 09 13	557	0.0	0.1+				

1999 NY₅₂ = 1998 FM₁₀₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	14.31470		(2000.0)	P	Q
<i>n</i>	0.20338826	ω	79.16227	+0.37919886	+0.91491459
<i>a</i>	2.8636424	Ω	214.17805	−0.91565540	+0.34947514
<i>e</i>	0.1427195	<i>i</i>	14.25684	−0.13335448	+0.20198619
<i>P</i>	4.85	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 31	704	1.5+	1.3-	1998 04 19	704	0.1+	0.7+	1999 09 08	704	0.7+	1.1-
1998 03 31	704	1.4-	0.4-	1998 04 19	704	(3.7-	0.3-)	1999 09 08	704	0.8-	0.6+
1998 03 31	704	1.3-	1.9+	1999 07 12	704	0.2+	0.3+	1999 09 09	704	0.2+	1.1+
1998 03 31	704	(0.6-	3.6+)	1999 07 12	704	0.6+	0.3-	1999 09 09	704	0.5+	0.1+
1998 04 01	704	1.3+	1.4-	1999 07 12	704	0.3+	0.3-	1999 09 09	704	0.3+	0.4+
1998 04 01	704	1.2-	1.4+	1999 07 12	704	0.4+	0.2-	1999 09 09	704	0.4-	1.0-
1998 04 01	704	(1.1+	3.3+)	1999 07 22	704	0.8-	0.7+	1999 09 09	704	0.1-	0.8+
1998 04 01	704	0.1-	0.2+	1999 07 22	704	0.2+	0.2+	1999 09 14	704	0.4+	0.2+
1998 04 01	704	(2.7-	0.5+)	1999 07 22	704	0.4-	0.4+	1999 09 14	704	0.5-	1.1-
1998 04 19	704	1.0-	1.7-	1999 07 22	704	0.3-	0.4-	1999 09 14	704	0.0	0.4-
1998 04 19	704	1.3+	0.5-	1999 07 22	704	0.2-	0.4+				
1998 04 19	704	0.7+	1.0+	1999 09 08	704	0.2-	0.7-				

1999 NZ₅₂ = 1998 KO₃₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	289.95890		(2000.0)	P	Q
<i>n</i>	0.17650920	ω	160.17658	+0.78610664	-0.57117864
<i>a</i>	3.1474426	Ω	236.91900	+0.52223680	+0.81819332
<i>e</i>	0.1292644	<i>i</i>	16.37349	+0.33061319	+0.06568600
<i>P</i>	5.58	<i>H</i>	12.4	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 05 22	704	0.1+	0.3+	1998 06 18	704	(1.8-	2.2-)	1999 09 08	704	0.1+	0.0
1998 05 22	704	0.6-	0.0	1998 06 18	704	(5.6-	4.7-)	1999 09 08	704	0.2-	0.2+
1998 05 22	704	0.2-	0.2+	1998 06 29	699	0.7+	0.4-	1999 09 08	704	0.6-	0.5-
1998 05 22	704	0.9+	0.9-	1998 06 29	699	0.7+	0.7-	1999 09 09	704	0.3+	0.1+
1998 05 24	704	0.6+	0.2-	1998 06 29	699	0.1-	0.8-	1999 09 09	704	0.4-	0.3+
1998 05 24	704	0.1+	0.0	1999 07 12	704	0.3+	0.1-	1999 09 09	704	0.1+	0.1-
1998 05 24	704	0.2-	0.4-	1999 07 12	704	0.6+	0.1+	1999 09 09	704	0.0	0.3-
1998 05 24	704	0.1+	0.5-	1999 07 12	704	0.6+	0.4+	1999 09 09	704	0.1+	0.3-
1998 05 24	704	0.5+	0.1-	1999 07 12	704	0.4+	0.1-	1999 09 14	704	0.1+	0.0
1998 06 03	704	0.2-	0.2+	1999 07 22	704	0.5-	0.4+	1999 09 14	704	0.0	0.2-
1998 06 03	704	1.2-	0.7+	1999 07 22	704	0.7-	0.2+	1999 09 14	704	0.2+	0.0
1998 06 03	704	0.3-	1.2+	1999 07 22	704	0.3-	0.2+	1999 09 14	704	0.7+	0.3+
1998 06 03	704	1.1-	1.6+	1999 07 22	704	0.5-	0.3+	1999 09 14	704	0.1-	0.6-
1998 06 18	704	0.5+	0.5-	1999 07 22	704	0.1-	0.1+				
1998 06 18	704	(2.8-	1.3-)	1999 09 08	704	0.0	0.3-				

1999 NB₅₃ = 1998 KL₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	218.92745		(2000.0)	P	Q
<i>n</i>	0.22911276	ω	236.69346	-0.18187012	-0.97128906
<i>a</i>	2.6450661	Ω	224.61180	+0.95910227	-0.14081666
<i>e</i>	0.1316569	<i>i</i>	12.61363	+0.21690113	-0.19175042
<i>P</i>	4.30	<i>H</i>	13.4	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1998 04 22	704	0.2+	0.3+	1998 05 22	699	0.0	0.3+	1999 09 08	704	0.3+	0.2-
1998 04 22	704	0.3+	0.2+	1998 05 22	699	(0.6+	2.7+)	1999 09 08	704	0.3+	0.2-
1998 04 22	704	0.7-	0.1+	1998 05 24	704	0.0	0.2-	1999 09 08	704	0.1+	0.6-
1998 04 22	704	0.3-	0.3+	1998 05 24	704	0.7-	0.2+	1999 09 08	704	0.2-	0.3-
1998 04 22	704	0.1+	0.5+	1998 05 24	704	0.7-	1.3+	1999 09 08	704	0.2+	0.0
1998 05 01	704	0.2+	0.1+	1998 05 24	704	(0.8-	2.8+)	1999 09 09	704	0.6+	0.1-
1998 05 01	704	0.3+	0.4-	1998 05 24	704	0.1-	0.1-	1999 09 09	704	0.2-	0.9-
1998 05 01	704	0.9+	0.4-	1999 07 12	704	0.2+	1.2+	1999 09 09	704	0.3+	0.3-
1998 05 01	704	(0.3+	2.1-)	1999 07 12	704	0.3-	0.2-	1999 09 09	704	0.0	0.0
1998 05 01	704	0.4-	1.5-	1999 07 12	704	0.2-	0.4-	1999 09 09	704	0.3-	0.4-
1998 05 22	704	1.2-	0.7-	1999 07 12	704	0.7-	0.6-	1999 09 14	704	0.2-	0.0
1998 05 22	704	0.4-	0.5+	1999 07 22	704	0.0	0.6+	1999 09 14	704	0.2-	0.3+
1998 05 22	704	0.8+	0.2-	1999 07 22	704	0.3+	1.2+	1999 09 14	704	0.1+	0.2+
1998 05 22	704	0.7+	0.5+	1999 07 22	704	0.6-	0.8+	1999 09 14	704	0.6+	0.1-
1998 05 22	704	0.4+	1.3-	1999 07 22	704	0.1+	0.3-	1999 09 14	704	0.5-	0.2+
1998 05 22	699	0.4+	0.2+	1999 07 22	704	0.4+	0.2+				

1999 ND₅₃ = 1991 RK₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	329.17351		(2000.0)	P	Q
<i>n</i>	0.23851716	ω	178.66701	+0.99948199	-0.02983566
<i>a</i>	2.5750735	Ω	183.12030	+0.02709469	+0.98239977
<i>e</i>	0.2325923	<i>i</i>	12.80652	+0.01736724	+0.18439231
<i>P</i>	4.13	<i>H</i>	14.9	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1991 09 11	675	0.1+	0.4-	1999 07 22	704	0.0	0.0	1999 09 09	704	0.1-	0.2-
1991 09 11	675	0.1+	0.2-	1999 07 22	704	0.2+	0.2+	1999 09 09	704	0.1-	0.5-
1991 09 14	675	0.2-	0.3+	1999 07 22	704	0.1+	0.5+	1999 09 14	704	0.3+	0.1-
1991 09 14	675	0.0	0.3+	1999 07 22	704	0.1+	0.5-	1999 09 14	704	0.3+	1.0-
1999 07 12	704	0.4-	0.0	1999 07 22	704	0.0	0.5-	1999 09 14	704	0.5-	0.1-
1999 07 12	704	0.5-	0.5-	1999 09 09	704	0.2+	0.2+	1999 09 14	704	0.2+	0.5+
1999 07 12	704	0.2-	0.4-	1999 09 09	704	0.5-	0.8+	1999 09 14	704	0.4-	0.3-
1999 07 12	704	0.7+	1.2+	1999 09 09	704	0.5+	0.9+				

1999 NJ₅₃ = 1990 WT₃ = 1998 KY₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	311.50429		(2000.0)	P	Q
<i>n</i>	0.19570731	ω	146.22389	+0.96608171	-0.20998325
<i>a</i>	2.9380872	Ω	226.66342	+0.16648507	+0.95140263
<i>e</i>	0.1152893	<i>i</i>	11.92663	+0.19740529	+0.22525559
<i>P</i>	5.04	<i>H</i>	13.0	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1990 11 21	809	0.6-	0.8-	1998 05 22	704	1.6+	0.8+	1999 09 08	704	0.2-	0.7-
1990 11 21	809	0.9+	0.6-	1998 05 22	704	0.6+	0.5+	1999 09 08	704	0.2-	0.4-
1990 11 21	809	0.1+	1.0-	1998 05 22	704	0.6+	0.8+	1999 09 08	704	0.4-	0.3-
1990 11 22	809	(1.2-	2.2-)	1998 05 22	704	(1.5-	2.4+)	1999 09 08	704	0.3-	0.6-
1990 11 22	809	0.7-	1.6-	1998 05 22	699	0.5+	0.1+	1999 09 09	704	0.3-	0.3+
1990 11 22	809	(0.4-	2.4-)	1998 05 22	699	0.4-	0.4-	1999 09 09	704	0.1+	0.2-
1993 06 20	691	0.0	0.6+	1998 05 22	699	0.0	0.5+	1999 09 09	704	0.0	0.1-
1993 06 20	691	0.1-	0.4+	1998 05 24	704	0.3-	0.4+	1999 09 09	704	0.1-	0.5-
1998 04 22	704	0.2+	0.1+	1998 05 24	704	0.7-	0.5-	1999 09 09	704	0.4-	0.4-
1998 04 22	704	0.0	0.3-	1998 05 24	704	0.5+	0.4+	1999 09 09	704	0.0	0.2-
1998 04 22	704	1.5-	1.6-	1998 05 24	704	0.8+	1.8+	1999 09 09	704	0.2-	0.6-
1998 04 22	704	0.0	0.9-	1998 05 24	704	0.8-	0.5-	1999 09 09	704	0.2+	0.6-
1998 04 25	699	1.7-	0.6-	1999 07 12	704	0.6+	0.2-	1999 09 09	704	0.2+	0.3+
1998 04 25	699	0.4-	1.4-	1999 07 12	704	0.6-	0.1-	1999 09 09	704	0.0	1.5+
1998 04 25	699	0.7+	0.2-	1999 07 12	704	0.5+	0.1-	1999 09 14	704	0.6+	0.5+
1998 05 01	704	0.5-	0.2-	1999 07 12	704	0.4+	0.1+	1999 09 14	704	0.4+	0.2-
1998 05 01	704	1.0-	0.4-	1999 07 22	704	0.1+	0.5+	1999 09 14	704	0.3+	0.1-
1998 05 01	704	0.1-	1.1-	1999 07 22	704	0.1-	1.0+	1999 09 14	704	1.3+	0.5-
1998 05 01	704	0.4+	0.6-	1999 07 22	704	0.7-	0.0	1999 09 14	704	1.1+	1.2-
1998 05 01	704	0.2+	1.2-	1999 07 22	704	0.9-	0.3+				
1998 05 22	704	1.2+	1.1-	1999 07 22	704	0.2-	0.2+				

1999 NK₅₃ = 1998 KP

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	273.79364		(2000.0)	P	Q
<i>n</i>	0.22610828	ω	233.74611	+0.53315619	-0.84585915
<i>a</i>	2.6684459	Ω	184.13717	+0.83053713	+0.52697959
<i>e</i>	0.1620926	<i>i</i>	13.08480	+0.16109796	+0.08255179
<i>P</i>	4.36	<i>H</i>	14.2	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1997 04 03	327	0.1+	0.2-	1998 05 23	704	1.5-	0.1+	1999 07 22	704	0.5+	0.7-
1997 04 03	327	0.2-	0.4-	1998 05 23	704	1.7+	0.9-	1999 07 22	704	0.3+	0.3+
1997 04 03	327	0.0	0.2+	1998 05 23	704	0.9-	0.8-	1999 07 22	704	0.4-	0.3+
1997 04 03	327	0.2+	0.3+	1998 05 23	704	0.3+	0.3-	1999 09 09	704	0.4+	1.1+
1998 05 19	691	0.5-	0.3+	1999 07 12	704	0.2-	0.6-	1999 09 09	704	1.1-	1.0+
1998 05 19	691	0.5-	0.4+	1999 07 12	704	0.8+	0.5+	1999 09 09	704	0.4-	0.5-
1998 05 19	691	0.6-	0.6+	1999 07 12	704	0.0	0.4-	1999 09 14	704	1.2+	0.4+

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1998 05 22	691	0.4+	0.2+	1999 07 12	704	0.7−	0.5+	1999 09 14	704	0.6+	0.4−
1998 05 22	691	1.5+	0.0	1999 07 22	704	0.3+	0.2+	1999 09 14	704	1.0−	0.6−
1998 05 22	691	0.2+	0.3+	1999 07 22	704	0.3−	0.4−	1999 09 14	704	0.2+	0.6−

1999 NT₅₃ = 1994 ES₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	56.82414		(2000.0)	P	Q
n	0.22595518	ω	33.91754	-0.44072926	+0.89226675
a	2.6696512	Ω	210.27455	-0.86070246	-0.45108208
e	0.1427388	i	11.21717	-0.25485095	-0.01962169
P	4.36	H	13.7	G 0.15	U 2

Residuals in seconds of arc

1994 03 14	303	0.3+	0.6+	1999 05 21	704	0.4−	0.0	1999 09 09	704	0.0	0.3+
1994 03 15	303	0.2−	1.1+	1999 07 12	704	0.0	0.3+	1999 09 09	704	0.1−	0.4+
1998 03 31	699	0.5−	0.5−	1999 07 12	704	0.2−	0.0	1999 09 09	704	0.5+	0.3−
1998 03 31	699	0.2+	0.0	1999 07 12	704	0.4+	0.5+	1999 09 09	704	0.4+	0.4−
1998 03 31	699	0.2+	1.5−	1999 07 12	704	0.3+	0.4+	1999 09 09	704	0.3−	0.0
1998 04 18	704	0.3−	0.4−	1999 07 12	704	0.4+	0.2+	1999 09 09	704	0.0	0.3−
1998 04 18	704	0.3−	0.4+	1999 07 22	704	0.0	0.1+	1999 09 09	704	0.1+	0.1−
1998 04 18	704	0.2+	0.0	1999 07 22	704	0.3−	0.4+	1999 09 09	704	0.1−	0.1−
1998 04 18	704	0.6−	0.1+	1999 07 22	704	0.5−	0.1+	1999 09 09	704	0.1−	0.1−
1998 04 28	566	0.1−	0.4−	1999 07 22	704	0.1+	0.3+	1999 09 14	704	0.3−	0.3+
1998 04 28	566	0.1+	0.8−	1999 07 22	704	0.1−	0.1+	1999 09 14	704	0.7+	0.4−
1998 04 28	566	0.0	0.7−	1999 09 08	704	0.3−	0.6−	1999 09 14	704	1.3+	1.1−
1999 05 21	704	0.0	1.2−	1999 09 08	704	0.3−	0.1+	1999 09 14	704	0.1+	1.0−
1999 05 21	704	(0.6−	3.3+)	1999 09 08	704	0.6−	0.8−	1999 09 14	704	0.3−	0.4−
1999 05 21	704	0.0	1.1+	1999 09 09	704	0.1+	0.1−				

1999 NV₅₃ = 1982 UT₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)		P	Q
<i>n</i>	0.22699967	<i>ω</i>	191.37369		+0.99709383	−0.06953939
<i>a</i>	2.6614557	<i>Ω</i>	172.40471		+0.07388627	+0.98223320
<i>e</i>	0.2763648	<i>i</i>	13.61587		−0.01856660	+0.17430492
<i>P</i>	4.34	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1982 10 18	807	1.9+	2.4+	1999 07 22	704	0.4−	0.4+	1999 09 08	704	0.1+	0.0
1982 10 19	695	1.7−	1.2−	1999 07 22	704	0.0	0.2−	1999 09 08	704	0.1+	0.4+
1982 10 20	695	0.0	0.2−	1999 07 22	704	0.2−	0.7−	1999 09 09	704	0.9−	0.6+
1982 10 22	695	1.2−	2.3−	1999 07 22	704	0.5−	0.4−	1999 09 09	704	0.8+	0.5+
1982 10 25	807	0.8+	0.9+	1999 07 22	704	0.7−	0.9−	1999 09 09	704	0.7+	1.0+
1982 10 26	695	2.3+	0.1+	1999 08 22	703	0.0	0.2−	1999 09 09	704	0.3−	0.8+
1982 10 27	807	2.1−	0.4−	1999 08 22	703	0.5−	0.5−	1999 09 14	704	0.4−	0.4−
1999 07 12	704	0.0	0.0	1999 08 22	703	0.3+	0.4−	1999 09 14	704	0.1−	0.6+
1999 07 12	704	0.0	1.3+	1999 08 22	703	0.2−	0.3+	1999 09 14	704	1.0+	0.3+
1999 07 12	704	0.6+	0.9−	1999 09 08	704	0.3−	0.2−	1999 09 14	704	0.4+	1.0−
1999 07 12	704	0.2−	0.5−	1999 09 08	704	0.1−	0.2−	1999 09 14	704	0.8+	0.2+

1999 NE₅₄ = 1998 HP₄₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22698550	<i>ω</i>	144.49033	+0.91758768		+0.39563197	
<i>a</i>	2.6615664	<i>Ω</i>	192.38420	−0.39357002		+0.89033356	
<i>e</i>	0.0797134	<i>i</i>	10.43266	−0.05599539		+0.22534752	
<i>P</i>	4.34	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 06 07	691	0.2+	0.6+	1998 04 21	704	0.6+	0.0	1999 07 22	704	0.2+	0.3+
1994 06 07	691	0.1+	0.5+	1998 04 22	704	0.3−	0.3−	1999 07 22	704	0.3+	0.2−
1994 06 07	691	0.1−	0.2+	1998 04 22	704	0.2+	0.0	1999 07 22	704	0.1+	0.4−
1998 03 25	704	0.1+	0.2+	1998 04 22	704	0.6−	0.4+	1999 08 22	703	(2.2+	0.9−)
1998 03 25	704	1.8−	0.5−	1998 04 22	704	1.7+	0.4+	1999 08 22	703	1.0−	0.1−
1998 03 25	704	0.1+	0.0	1998 04 22	704	1.7+	0.9+	1999 08 22	703	1.0−	0.3−

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1998 03 25	704	(2.2+	1.8+)	1998 05 16	704	0.8−	1.5+	1999 08 22	703	0.3−	0.3−
1998 03 25	704	0.2−	0.4+	1998 05 16	704	0.3+	0.7+	1999 09 09	704	0.8+	0.3−
1998 04 20	704	1.4+	0.7−	1998 05 16	704	1.0−	0.2−	1999 09 09	704	0.1−	0.5+
1998 04 20	704	1.1−	1.2−	1998 05 16	704	0.8−	1.1−	1999 09 09	704	0.0	0.1+
1998 04 20	704	0.1−	1.7−	1999 07 12	704	0.3+	0.1−	1999 09 09	704	0.2+	0.7−
1998 04 20	704	1.0+	1.1−	1999 07 12	704	0.1−	0.2+	1999 09 09	704	0.6+	0.3−
1998 04 20	704	1.0−	0.5+	1999 07 12	704	0.2−	0.2−	1999 09 14	704	0.0	0.8+
1998 04 21	704	0.1+	0.9−	1999 07 12	704	0.3−	0.8+	1999 09 14	704	0.2−	1.1−
1998 04 21	704	0.0	1.0+	1999 07 12	704	0.4+	0.2−	1999 09 14	704	0.1+	0.3−
1998 04 21	704	1.3+	0.0	1999 07 22	704	0.3−	0.2+	1999 09 14	704	0.6+	0.3+
1998 04 21	704	1.5−	0.2+	1999 07 22	704	0.1+	0.2+	1999 09 14	704	0.1+	0.1+

1999 NF₅₄ = 1978 WV

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	302.81796		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.17928591	ω	134.35396	+0.86435081	−0.45224634
a	3.1148606	Ω	253.68689	+0.37103421	+0.86871208
e	0.1066201	i	13.24760	+0.33945736	+0.20202120
P	5.50	H	13.4	G 0.15	U 4

Residuals in seconds of arc

1978 11 29	675	0.1−	0.3−	1999 07 22	704	0.0	0.2+	1999 09 09	704	0.4+	0.7+
1978 11 30	675	0.1+	0.3+	1999 07 22	704	0.0	0.0	1999 09 09	704	0.5+	0.6−
1999 07 12	704	0.1−	0.4−	1999 07 22	704	0.4+	0.3+	1999 09 09	704	0.4+	0.7−
1999 07 12	704	0.3−	0.3−	1999 07 22	704	0.1+	0.1+	1999 09 14	704	0.3+	0.6−
1999 07 12	704	0.2+	0.1−	1999 09 08	704	0.1−	0.9+	1999 09 14	704	0.6−	0.4+
1999 07 12	704	0.1−	0.3−	1999 09 08	704	0.2−	0.5−	1999 09 14	704	0.2+	0.7−
1999 07 12	704	0.0	0.4+	1999 09 08	704	0.4+	0.5+	1999 09 14	704	0.6−	0.6+
1999 07 22	704	0.5−	0.3+	1999 09 09	704	0.5+	0.2−	1999 09 14	704	0.9−	0.0

1999 NJ₅₄ = 1996 CN = 1998 HV₁₅₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M		(2000.0)		$\mathbf{P}$	$\mathbf{Q}$
n	0.22691748	ω	195.91303	+0.74850933	−0.65547897
a	2.6620983	Ω	205.90186	+0.63071860	+0.75047670
e	0.1759192	i	13.28811	+0.20476285	+0.08445140
P	4.34	H	14.0	G 0.15	U 3

Residuals in seconds of arc

1993 04 17	413	0.7+	0.4−	1998 05 01	704	0.5+	0.4+	1999 07 22	704	0.3+	0.7+
1996 02 01	327	0.6−	0.6−	1998 05 01	704	1.3+	0.4+	1999 07 22	704	0.5+	0.3+
1996 02 01	327	(2.4−	0.2−)	1998 05 01	704	1.0−	0.9−	1999 09 08	704	0.6−	0.2−
1996 02 01	327	0.5−	0.6−	1998 05 22	704	0.9−	0.4−	1999 09 08	704	0.5−	0.2−
1996 02 05	327	0.4+	0.5−	1998 05 22	704	0.2−	0.2−	1999 09 08	704	0.7−	0.2+
1996 02 05	327	0.1−	0.2+	1998 05 22	704	0.7+	0.2+	1999 09 09	704	0.2−	1.6+
1996 02 05	327	0.3+	0.8−	1998 05 22	704	1.7−	1.7−	1999 09 09	704	0.2+	0.2+
1998 04 21	691	0.7−	0.5+	1999 07 12	704	0.7+	0.6−	1999 09 09	704	0.4−	0.9−
1998 04 21	691	0.5−	0.6+	1999 07 12	704	1.2+	0.9−	1999 09 09	704	0.7−	0.5+
1998 04 21	691	0.2−	0.7+	1999 07 12	704	0.2+	0.5−	1999 09 09	704	0.2+	0.7−
1998 04 22	704	0.4+	0.1−	1999 07 12	704	0.8+	0.5−	1999 09 14	704	0.2−	0.1−
1998 04 22	704	0.3−	0.6+	1999 07 12	704	0.2−	0.0	1999 09 14	704	0.3−	0.3−
1998 04 22	704	0.3+	0.6−	1999 07 22	704	0.3+	0.2+	1999 09 14	704	0.1−	0.3−
1998 04 22	704	0.5−	0.7+	1999 07 22	704	0.3+	0.6+	1999 09 14	704	0.0	0.1−
1998 05 01	704	1.3+	1.1−	1999 07 22	704	0.2+	1.0+	1999 09 14	704	0.3−	0.2+

Residuals in seconds of arc

1998 05 01	704	0.1+	0.5+	1998 05 24	704	0.8−	0.7+	1999 07 22	704	0.4−	0.0
1998 05 01	704	0.1−	0.0	1998 05 24	704	0.3−	1.0+	1999 07 22	704	0.2−	0.2+
1998 05 01	704	0.5+	1.0−	1998 05 24	704	0.7−	0.3+	1999 07 22	704	1.0−	0.2−
1998 05 01	704	0.5+	0.9−	1998 06 30	699	1.2+	0.5−	1999 09 09	704	0.7+	0.3+
1998 05 01	704	0.2−	1.9−	1998 06 30	699	0.2−	0.6−	1999 09 09	704	0.6+	0.0
1998 05 22	704	0.1−	0.3+	1998 06 30	699	0.9+	0.7−	1999 09 09	704	0.6+	0.2−
1998 05 22	704	0.2+	1.6+	1999 05 20	704	1.1+	0.4−	1999 09 09	704	0.6+	0.4−
1998 05 22	704	0.6+	1.2+	1999 05 20	704	0.1+	1.8−	1999 09 09	704	0.1+	0.3−
1998 05 22	704	0.1−	0.4+	1999 05 20	704	(1.7+	3.1−)	1999 09 10	704	0.1−	0.2−
1998 05 22	704	0.3−	0.3−	1999 05 20	704	0.7+	0.0	1999 09 10	704	0.4+	0.7+
1998 05 23	704	0.3−	0.7+	1999 07 12	704	0.1+	1.2−	1999 09 10	704	0.3−	0.6−
1998 05 23	704	0.0	1.3+	1999 07 12	704	0.3−	0.2−	1999 09 16	704	0.1−	1.2+
1998 05 23	704	0.8−	1.3−	1999 07 12	704	0.2+	0.1+	1999 09 16	704	0.5−	0.8+
1998 05 23	704	0.3+	0.3+	1999 07 12	704	0.7+	0.6+	1999 09 16	704	0.0	0.0
1998 05 23	704	0.5+	0.5−	1999 07 12	704	0.8−	0.3+	1999 09 16	704	0.3−	0.4+
1998 05 24	704	0.5−	0.1+	1999 07 22	704	0.3−	0.2−	1999 09 16	704	0.8−	0.9+
1998 05 24	704	0.1+	0.1+	1999 07 22	704	0.6−	0.1−				

1999 NF₅₅ = 1989 AS₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	309.58617		(2000.0)	P	Q
n	0.24530668	ω	128.31336	+0.86542775	-0.44062935
a	2.5273368	Ω	259.00049	+0.34928563	+0.87185225
e	0.1327595	i	14.06131	+0.35921353	+0.21382102
P	4.02	H	14.0	G 0.15	U 3

Residuals in seconds of arc

1989 01 11	413	1.5−	0.0	1999 07 12	704	0.4+	0.2−	1999 09 10	704	0.4−	0.1+
1989 01 11	413	0.4+	0.7+	1999 07 12	704	0.0	0.3+	1999 09 10	704	0.2−	0.2+
1989 01 12	413	(4.6−	0.5−)	1999 07 12	704	0.1+	0.1−	1999 09 10	704	0.4−	0.3+
1989 01 12	413	1.7+	0.8+	1999 07 22	704	0.4+	0.6+	1999 09 16	704	0.3+	0.1−
1998 04 29	566	0.3+	0.2−	1999 07 22	704	0.3+	0.2+	1999 09 16	704	0.2+	0.4−
1998 04 29	566	0.3−	0.0	1999 07 22	704	0.0	0.4+	1999 09 16	704	0.4−	0.7−
1998 04 29	566	0.2+	0.5+	1999 07 22	704	0.3+	0.4+	1999 09 16	704	0.1−	0.0
1999 07 12	704	0.2+	0.8+	1999 07 22	704	0.0	0.2+	1999 09 16	704	0.9−	0.9−
1999 07 12	704	0.3+	0.2+	1999 09 10	704	0.4−	0.1+				

1999 NV₅₅ = 1964 WZ = 1995 UT₄₇ = 1998 KY₃₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	148.66434		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.19072651	ω	290.19070	−0.98089676	−0.08004062
a	2.9890190	Ω	245.56413	+0.13380031	−0.93919341
e	0.0248029	i	11.22974	−0.14120562	−0.33392998
P	5.17	H	12.7	G 0.15	U 1

Residuals in seconds of arc

1964 11 27	330	0.0	1.1−	1998 06 29	699	0.4−	0.8+	1999 09 07	699	0.2−	0.1+
1995 10 24	033	0.3−	0.3+	1998 06 29	699	0.3+	0.8+	1999 09 08	704	0.1+	0.8+
1995 10 25	033	1.1−	0.2+	1998 07 01	691	0.5−	0.6+	1999 09 08	704	0.2+	0.1+
1995 10 25	033	1.2+	0.3−	1998 07 01	691	0.6−	0.7+	1999 09 08	704	0.0	0.3−
1995 10 26	033	0.4+	0.6+	1998 07 01	691	0.5−	0.4+	1999 09 09	704	0.2+	0.0
1998 05 22	704	0.7+	0.6−	1998 07 13	699	0.3−	1.0+	1999 09 09	704	0.3+	0.1+
1998 05 22	704	0.1+	0.8−	1998 07 13	699	0.2+	0.5+	1999 09 09	704	0.1+	0.2−
1998 05 22	704	0.6+	0.4−	1998 07 13	699	1.7−	0.6−	1999 09 09	704	0.1+	0.2−
1998 05 22	704	0.8+	1.2−	1999 07 12	704	0.7+	0.6−	1999 09 09	704	0.1−	0.5−
1998 05 22	704	(1.4+	2.3−)	1999 07 12	704	1.3−	0.9−	1999 09 10	704	0.3−	0.1−
1998 05 24	704	1.0+	0.9−	1999 07 12	704	0.1+	1.0−	1999 09 10	704	0.3+	0.4+
1998 05 24	704	0.3+	0.5−	1999 07 12	704	0.6+	0.1+	1999 09 10	704	0.1+	0.5−
1998 05 24	704	0.4+	0.5−	1999 07 12	704	1.2−	0.2−	1999 09 14	704	0.1−	0.1−
1998 05 24	704	0.3+	1.0−	1999 07 22	704	0.6+	0.2−	1999 09 14	704	0.1−	0.2−
1998 05 24	704	0.0	0.8−	1999 07 22	704	0.5+	0.3+	1999 09 14	704	0.2+	0.3−
1998 06 18	704	1.5−	0.1−	1999 07 22	704	0.1−	0.5+	1999 09 14	704	0.0	0.2−
1998 06 18	704	0.0	0.9+	1999 07 22	704	0.2+	0.1−	1999 09 14	704	0.8−	0.6−
1998 06 18	704	0.7+	1.9+	1999 07 22	704	1.1+	0.1−	1999 09 19	699	0.2−	0.9+

1998 06 18	704	(3.2−	1.5−)	1999 09 07	699	0.6−	0.3+	1999 09 19	699	0.8−	0.6+
1998 06 29	699	0.2−	0.6+	1999 09 07	699	0.2−	0.1−	1999 09 19	699	0.6+	1.3+

1999 NZ₅₅ = 1998 FN₁₁₄ = 1998 HT₁₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	118.44333		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.22636537	ω	309.25779	-0.93918823	$+0.28122581$
a	2.6664251	Ω	247.87842	-0.21093241	-0.92529629
e	0.1237767	i	12.28252	-0.27098522	-0.25443823
P	4.35	H	13.5	G 0.15	U 3

Residuals in seconds of arc

1998 03 31	704	(7.2+	6.6−)	1998 06 18	704	0.4+	1.9+	1999 09 09	704	0.1−	0.3+
1998 03 31	704	1.6−	0.9+	1998 06 18	704	0.0	1.4−	1999 09 09	704	0.1−	0.0
1998 03 31	704	0.4−	0.6−	1998 06 18	704	0.1−	0.6+	1999 09 09	704	0.0	0.4+
1998 03 31	704	0.1+	1.1−	1998 06 18	704	0.9−	1.2+	1999 09 09	704	0.2+	0.1+
1998 04 01	704	0.9+	0.0	1999 07 12	704	0.7−	0.1+	1999 09 09	704	0.3+	0.4−
1998 04 01	704	0.7+	0.3−	1999 07 12	704	0.2+	0.2−	1999 09 10	704	0.4−	0.1+
1998 04 01	704	1.3+	0.7−	1999 07 12	704	0.1+	0.0	1999 09 10	704	0.6−	0.4+
1998 04 01	704	0.4+	0.4−	1999 07 12	704	0.8−	0.0	1999 09 10	704	0.7+	0.4+
1998 04 01	704	0.2+	0.4+	1999 07 22	704	0.4−	0.6−	1999 09 16	704	1.1+	0.8+
1998 04 29	566	0.4−	0.1−	1999 07 22	704	0.1+	0.5−	1999 09 16	704	0.3+	0.2+
1998 04 29	566	0.4−	0.1−	1999 07 22	704	0.4−	1.0−	1999 09 16	704	0.6+	0.6+
1998 04 29	566	0.2−	0.0	1999 07 22	704	0.4−	0.8−	1999 09 16	704	0.5+	0.7+
1998 06 18	704	0.1−	0.4+	1999 07 22	704	0.2−	1.1−				

1999 ND₅₆ = 1998 FB₁₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	22.33948		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.18546793	ω	69.53434	+0.38519180	+0.90360468
a	3.0452538	Ω	224.61109	−0.91447295	+0.34646577
e	0.1990053	i	15.47798	−0.12396171	+0.25191279
P	5.31	H	13.7	G 0.15	U 3

Residuals in seconds of arc

1998 03 31	704	0.3+	0.5−	1998 04 20	704	1.4−	0.2+	1999 07 22	704	0.1+	0.2−
1998 03 31	704	0.9+	0.7−	1998 04 30	699	0.6+	0.0	1999 07 22	704	0.0	0.1−
1998 03 31	704	1.0+	0.3+	1998 04 30	699	0.1+	0.1−	1999 07 22	704	0.7+	0.5+
1998 03 31	704	(0.4−	2.5−)	1998 04 30	699	1.2+	0.4−	1999 07 22	704	0.2+	0.5−
1998 03 31	704	0.4−	0.2−	1998 05 16	704	0.1−	0.9−	1999 07 22	704	0.3−	1.0+
1998 04 01	704	0.0	0.0	1998 05 16	704	0.3+	0.9−	1999 09 10	704	0.8+	0.0
1998 04 01	704	0.5+	0.5+	1998 05 16	704	(2.4−	3.4−)	1999 09 10	704	0.0	0.1+
1998 04 01	704	1.1+	0.6−	1998 05 16	704	(4.8−	0.2+)	1999 09 10	704	0.4−	1.1−
1998 04 01	704	0.7−	1.1+	1999 07 12	704	0.1+	0.0	1999 09 16	704	0.3−	0.4−
1998 04 01	704	(2.5−	0.5−)	1999 07 12	704	0.1−	0.1−	1999 09 16	704	0.1−	0.1+
1998 04 20	704	0.6−	0.1+	1999 07 12	704	0.1−	0.5+	1999 09 16	704	0.1−	0.2−
1998 04 20	704	1.7−	0.7+	1999 07 12	704	0.5−	0.4+	1999 09 16	704	0.2−	0.4−
1998 04 20	704	1.1−	0.7+	1999 07 12	704	0.0	0.6+	1999 09 16	704	0.2+	0.4−

1999 NU₅₆ = 1978 WA₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	25.03265		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.22665025	ω	56.49702	+0.49406800	+0.84868004
a	2.6641904	Ω	244.21712	−0.85092794	+0.42747144
e	0.1380593	i	12.10209	−0.17837728	+0.31146487
P	4.35	H	13.9	G 0.15	U 3

Residuals in seconds of arc

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1999 07 12	704	0.5−	0.3−	1999 09 08	704	0.3−	0.0	1999 09 16	704	0.2−	0.3−
1999 07 12	704	(2.2−	1.7+)	1999 09 08	704	0.5−	0.2+	1999 09 16	704	0.5−	0.3−
1999 07 12	704	0.9−	0.7+	1999 09 08	704	0.5+	0.0				

1999 NY₅₆ = 1998 KX₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	348.66511		(2000.0)	P		Q	
<i>n</i>	0.22078731	ω	119.97554	+0.97151253		+0.19265053	
<i>a</i>	2.7111485	Ω	229.28640	−0.22502013		+0.93260595	
<i>e</i>	0.1544778	<i>i</i>	10.49139	+0.07435962		+0.30517522	
<i>P</i>	4.46	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	0.3−	0.3−	1998 05 24	704	1.2+	1.4−	1999 07 22	704	0.2−	0.6+
1998 04 21	704	0.9+	0.9+	1999 07 12	704	0.4−	0.3−	1999 09 10	704	0.6−	0.2−
1998 04 21	704	(2.6−	2.0+)	1999 07 12	704	0.7+	0.5−	1999 09 10	704	0.5−	0.7−
1998 05 22	704	0.0	0.4+	1999 07 12	704	0.1−	0.6−	1999 09 10	704	0.3−	1.3−
1998 05 22	704	0.2−	0.0	1999 07 12	704	0.1+	0.5+	1999 09 16	704	0.2−	0.9+
1998 05 22	704	(0.3−	2.5+)	1999 07 22	704	0.2−	0.2+	1999 09 16	704	0.8+	0.6−
1998 05 22	704	0.6−	0.3+	1999 07 22	704	0.1−	0.0	1999 09 16	704	0.1−	0.8+
1998 05 24	704	0.4−	0.5+	1999 07 22	704	1.3+	0.2−	1999 09 16	704	0.8+	0.3−
1998 05 24	704	0.7−	0.5−	1999 07 22	704	0.8−	0.8+	1999 09 16	704	0.1−	1.0+

1999 NA₅₇ = 1998 FV₁₀₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	49.93429		(2000.0)	P		Q	
<i>n</i>	0.23737735	ω	35.96399	+0.03369538		+0.98121330	
<i>a</i>	2.5833100	Ω	236.70355	−0.96183875		−0.01980267	
<i>e</i>	0.1331584	<i>i</i>	13.13633	−0.27153423		+0.19190703	
<i>P</i>	4.15	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 03 31	704	0.3−	0.3−	1999 07 12	704	0.6−	0.6+	1999 09 08	704	1.1−	1.5+
1998 03 31	704	(0.8−	4.0−)	1999 07 12	704	0.5+	0.3−	1999 09 08	704	0.3+	0.2−
1998 03 31	704	0.2−	0.2−	1999 07 12	704	0.2−	0.1−	1999 09 10	704	0.1+	0.0
1998 03 31	704	0.8+	0.3−	1999 07 12	704	0.3+	0.2−	1999 09 10	704	0.4−	0.4−
1998 03 31	704	0.3+	0.4−	1999 07 22	704	0.0	0.0	1999 09 10	704	1.0+	0.2+
1998 04 01	704	1.0−	0.0	1999 07 22	704	0.7+	0.1+	1999 09 16	704	1.1+	1.4+
1998 04 01	704	0.6+	1.0+	1999 07 22	704	0.7−	0.3+	1999 09 16	704	1.0−	0.1+
1998 04 01	704	0.2+	1.1+	1999 07 22	704	0.3+	0.0	1999 09 16	704	0.4−	1.0−
1998 04 01	704	0.2−	0.0	1999 07 22	704	0.5+	0.6+	1999 09 16	704	0.8−	0.2−
1998 04 01	704	0.6−	0.4−	1999 08 11	704	(2.2+	0.6−)	1999 09 18	704	0.2−	0.3+
1998 04 28	566	0.2+	0.2−	1999 08 11	704	1.0+	0.9−	1999 09 18	704	0.1+	0.3−
1998 04 28	566	0.1−	0.1+	1999 08 11	704	0.1−	1.4−	1999 09 18	704	0.3+	0.3+
1998 04 28	566	0.4+	0.2−	1999 09 08	704	0.1+	0.2+				
1999 07 12	704	0.7−	0.2+	1999 09 08	704	0.1−	0.5−				

1999 NC₅₇ = 1984 WJ₄ = 1998 KB₄₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	324.34124		(2000.0)	P		Q	
<i>n</i>	0.18674815	ω	116.83760	+0.92682363		−0.33039167	
<i>a</i>	3.0313205	Ω	262.89884	+0.24765547		+0.89504236	
<i>e</i>	0.1056975	<i>i</i>	10.35898	+0.28224940		+0.29956723	
<i>P</i>	5.28	<i>H</i>	12.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1984 11 19	675	0.9+	1.0+	1998 06 26	704	0.9−	1.3+	1999 09 05	703	0.5−	1.0+
1984 11 21	675	0.7−	0.9+	1998 06 26	704	0.2+	1.0+	1999 09 08	704	0.2+	0.1+
1998 05 22	704	1.8+	1.4−	1998 06 26	704	0.6−	1.3−	1999 09 08	704	0.5+	0.4+
1998 05 22	704	(2.1−	0.3−)	1999 07 12	704	0.2+	0.7−	1999 09 08	704	0.3+	0.1−
1998 05 22	704	0.2−	1.5−	1999 07 12	704	0.1+	0.0	1999 09 08	704	0.3−	0.5−
1998 05 22	704	0.6−	1.2+	1999 07 12	704	0.6−	0.9−	1999 09 10	704	0.3+	0.5+
1998 05 24	704	0.8+	0.8−	1999 07 12	704	0.7+	0.4−	1999 09 10	704	0.0	0.1+
1998 05 24	704	(1.2+	2.4+)	1999 07 12	704	0.4+	1.4+	1999 09 10	704	0.4−	0.5−
1998 05 24	704	0.1−	1.1+	1999 07 22	704	0.0	0.2−	1999 09 12	699	0.1−	0.5+

1998 05 24	704	0.7+	0.4−	1999 07 22	704	0.0	0.2−	1999 09 12	699	1.0+	0.2+
1998 06 24	704	(0.5+	2.1−)	1999 07 22	704	0.2−	0.4−	1999 09 12	699	0.5−	0.4+
1998 06 24	704	(0.2+	2.1+)	1999 07 22	704	1.3+	0.1+	1999 09 16	704	0.3−	0.1−
1998 06 24	704	0.1−	0.8+	1999 07 22	704	0.4+	0.8+	1999 09 16	704	0.3−	0.6−
1998 06 24	704	1.2−	1.5+	1999 09 05	703	1.4+	0.1−	1999 09 16	704	0.4−	0.3−
1998 06 24	704	0.7−	0.7+	1999 09 05	703	0.0	0.2−	1999 09 16	704	0.7−	0.4−
1998 06 26	704	0.7+	0.2+	1999 09 05	703	0.7−	0.6+	1999 09 16	704	1.2−	1.0−

1999 ND₅₇ = 1976 JX₃ = 1998 KY₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	338.30907		(2000.0)	P		Q	
<i>n</i>	0.22479731	ω	116.00508	+0.98571711		−0.00369635	
<i>a</i>	2.6788104	Ω	244.60436	−0.05067599		+0.94691284	
<i>e</i>	0.0329839	<i>i</i>	10.74155	+0.16060423		+0.32146916	
<i>P</i>	4.38	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1976 05 03	809	0.0	0.3+	1998 05 22	566	(2.3+	0.4−)	1999 07 22	704	0.3−	1.2+
1998 05 01	704	0.1+	0.1+	1998 05 24	704	0.2−	0.0	1999 09 08	704	0.2−	0.1+
1998 05 01	704	0.9−	0.3+	1998 05 24	704	0.8+	0.5+	1999 09 08	704	0.8−	0.4−
1998 05 01	704	0.9−	0.2+	1998 05 24	704	1.4−	1.6+	1999 09 08	704	0.5+	0.2+
1998 05 01	704	0.7−	1.3−	1998 05 24	704	1.4+	1.3−	1999 09 08	704	0.3+	0.4+
1998 05 05	699	1.0+	0.2+	1999 07 12	704	0.9+	0.9−	1999 09 10	704	0.0	0.1+
1998 05 05	699	1.1+	1.1+	1999 07 12	704	0.3−	0.0	1999 09 10	704	0.1−	0.7−
1998 05 05	699	1.0+	1.9+	1999 07 12	704	0.2−	0.9−	1999 09 10	704	0.3−	0.2+
1998 05 22	704	0.7+	0.1+	1999 07 12	704	0.3+	0.8−	1999 09 10	704	1.4−	0.9−
1998 05 22	704	1.2−	0.5−	1999 07 12	704	0.0	0.1+	1999 09 16	704	0.3+	0.1+
1998 05 22	704	0.4−	1.0−	1999 07 22	704	0.6+	0.5−	1999 09 16	704	0.3−	0.4+
1998 05 22	704	0.5+	0.7−	1999 07 22	704	0.2−	1.4+	1999 09 16	704	0.2+	0.3+
1998 05 22	566	0.7−	0.6−	1999 07 22	704	1.2+	0.3+				
1998 05 22	566	0.4−	0.8−	1999 07 22	704	0.2+	0.5+				

1999 NN₅₉ = 1981 UG₁₇ = 1990 SW₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	345.41496		(2000.0)	P		Q	
<i>n</i>	0.21514986	ω	135.50679	+0.96235227		+0.26281276	
<i>a</i>	2.7583032	Ω	209.46413	−0.27161809		+0.92040710	
<i>e</i>	0.2851921	<i>i</i>	8.10356	−0.01008551		+0.28944813	
<i>P</i>	4.58	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1981 10 24	095	(6.2+	6.5+)	1999 07 13	704	0.5−	0.5+	1999 09 06	699	0.2−	0.2+
1990 09 16	675	0.1+	0.7−	1999 07 22	704	0.0	0.4−	1999 09 09	704	0.2+	0.1+
1990 09 16	675	0.1+	1.1−	1999 07 22	704	0.2+	0.6−	1999 09 09	704	0.3+	0.2−
1990 09 17	675	0.0	0.4+	1999 07 22	704	0.1−	0.5−	1999 09 09	704	0.1−	0.1−
1990 09 17	675	0.5−	1.3+	1999 07 22	704	1.0−	0.3+	1999 09 09	704	0.4+	0.0
1990 09 19	675	0.6+	0.1+	1999 07 22	704	0.3−	0.5−	1999 09 09	704	0.0	0.3+
1990 09 19	675	1.2+	1.8−	1999 08 22	703	0.8+	0.1+	1999 09 14	704	0.6+	0.2−
1990 09 20	675	0.0	0.5+	1999 08 22	703	0.0	0.1+	1999 09 14	704	0.2−	0.1−
1990 09 20	675	1.2−	0.4+	1999 08 22	703	0.6−	0.4+	1999 09 14	704	0.0	0.7−
1999 07 13	704	1.2+	0.4−	1999 08 22	703	0.1+	0.2+	1999 09 14	704	0.1−	0.5+
1999 07 13	704	0.2+	0.2+	1999 09 06	699	0.6−	1.4+	1999 09 14	704	0.2+	0.3+
1999 07 13	704	0.3+	0.6−	1999 09 06	699	0.8−	0.3+				

1999 NJ₆₂ = 1995 WL₁₀ = 1998 HG₁₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	344.71611		(2000.0)	P	Q
n	0.21785599	ω	102.04477	+0.88992198	+0.44150559
a	2.7354138	Ω	231.86685	−0.45419854	+0.83483033
e	0.2068591	i	8.37059	−0.04174402	+0.32883300
P	4.52	H	13.9	G 0.15	U 3

M.P.C. 36022

1995 11 16	691	0.2+	0.0	1998 04 20	704	0.4+	1.0-	1999 07 22	704	0.2-	0.1-
1995 11 21	691	0.2-	0.2-	1998 04 20	704	0.3-	0.9-	1999 09 08	704	0.6+	0.1-
1995 11 21	691	0.0	0.4-	1998 04 20	704	0.3+	0.5-	1999 09 08	704	0.4+	0.5+
1995 11 21	691	0.0	0.5-	1998 04 20	704	1.0-	0.2-	1999 09 08	704	0.4+	0.6-
1998 04 01	704	0.0	0.6+	1999 07 13	704	0.3-	0.1+	1999 09 08	704	0.4+	0.4-
1998 04 01	704	(0.4+	2.2+)	1999 07 13	704	0.2-	0.3-	1999 09 09	704	0.4+	0.4+
1998 04 01	704	0.2-	0.8-	1999 07 13	704	0.4-	0.1+	1999 09 09	704	0.1-	0.4+
1998 04 01	704	1.2+	0.4+	1999 07 13	704	0.1-	0.2+	1999 09 09	704	0.2+	0.1-
1998 04 01	704	1.1-	1.4+	1999 07 13	704	0.1-	0.5+	1999 09 09	704	0.6-	0.3+
1998 04 19	704	0.3-	0.4-	1999 07 22	704	0.2+	0.0	1999 09 09	704	0.3-	0.7-
1998 04 19	704	0.3+	0.9+	1999 07 22	704	0.2+	0.2+				

1999 NM₆₂ = 1998 BV₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	99.93886		(2000.0)	P	Q		
n	0.29771158	ω	296.66502	-0.94595051	+0.31763925		
a	2.2212915	Ω	261.91393	-0.26907494	-0.88134120		
e	0.0819653	i	3.79009	-0.18104227	-0.34977563		
P	3.31	H	15.0	G	0.15	U	4

Residuals in seconds of arc

1998 01 18	910	0.1-	0.5+	1999 07 13	704	0.2+	0.1-	1999 08 07	699	0.3+	0.2-
1998 01 18	910	0.0	0.3+	1999 07 13	704	0.2-	0.5-	1999 08 07	699	1.8-	0.1-
1998 01 18	910	0.0	0.3+	1999 07 13	704	0.1+	0.1+	1999 08 07	699	0.0	0.0
1998 01 23	910	0.0	0.3-	1999 07 22	704	0.7-	0.1+	1999 08 08	699	1.0+	0.4+
1998 01 24	910	0.3+	0.2-	1999 07 22	704	0.4+	0.2+	1999 08 08	699	0.1+	0.4-
1998 01 24	910	0.2-	0.3-	1999 07 22	704	0.0	0.1-	1999 08 08	699	0.0	0.3+
1999 07 13	704	0.8-	0.9+	1999 07 22	704	0.4-	0.2+				
1999 07 13	704	0.3+	0.2+	1999 07 22	704	1.5+	0.9-				

1999 NY₆₂ = 1996 XM₂₆ = 1998 KT₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	240.65738		(2000.0)	P	Q
n	0.25811364	ω	192.71266	-0.01284094	-0.97708988
a	2.4430297	Ω	258.31717	+0.93534965	+0.06337032
e	0.1925814	i	12.52898	+0.35349137	-0.20317373
P	3.82	H	13.7	G 0.15	U 3

Residuals in seconds of arc

1996 12 05	482	0.1+	0.8+	1998 05 24	704	1.7-	0.9+	1999 07 22	704	0.2+	0.1+
1996 12 05	482	0.5-	0.2+	1998 05 24	704	(0.5+	2.2-)	1999 07 22	704	0.0	0.5+
1996 12 05	482	0.5+	0.1+	1998 05 24	704	0.5+	1.5+	1999 07 22	704	0.1+	0.4+
1996 12 05	482	0.7-	0.7+	1998 05 24	704	0.1+	0.7+	1999 09 08	704	0.4-	0.4+
1996 12 05	482	0.5+	0.1-	1998 05 24	327	0.3+	0.6-	1999 09 08	704	0.6-	0.5+
1996 12 05	482	0.3+	0.0	1998 05 24	327	0.4+	0.2-	1999 09 08	704	0.1+	0.7+
1996 12 05	482	0.1-	0.2+	1998 05 24	327	0.0	0.2-	1999 09 08	704	0.2-	0.4+
1996 12 05	482	0.1-	0.0	1998 05 24	327	0.2-	0.4-	1999 09 09	704	1.5+	0.8-
1996 12 05	482	0.3+	0.2+	1998 05 25	327	0.6+	0.4+	1999 09 09	704	0.2+	0.3+
1996 12 05	482	0.3-	0.4+	1998 05 25	327	0.8+	0.4-	1999 09 09	704	0.4+	1.2-
1996 12 06	098	0.6-	0.6+	1998 05 25	327	0.6+	0.1+	1999 09 09	704	0.8-	0.0
1996 12 06	098	0.5-	0.1+	1998 05 25	327	0.4+	0.4-	1999 09 09	704	0.7+	0.4+
1996 12 08	098	0.2-	0.2-	1999 07 13	704	0.1+	0.5+	1999 09 14	704	0.2-	0.3-
1996 12 08	098	1.4+	0.7-	1999 07 13	704	0.4-	0.8+	1999 09 14	704	1.5-	1.0-
1998 05 22	704	0.8-	0.8+	1999 07 13	704	0.4-	0.8+	1999 09 14	704	0.6+	1.2-
1998 05 22	704	0.1-	1.3-	1999 07 13	704	0.1-	0.0	1999 09 14	704	0.3+	0.1-
1998 05 22	704	(0.5+	2.0+)	1999 07 13	704	0.4-	0.6+	1999 09 14	704	0.4-	0.2-
1998 05 22	704	1.4-	1.6+	1999 07 22	704	0.2-	0.4-				
1998 05 24	704	0.6+	0.7-	1999 07 22	704	0.1-	0.1-				

1999 SEPT. 28

1999 NW₆₃ = 1998 EQ₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	349.63352		(2000.0)	P	Q
n	0.29695597	ω	340.74330	+0.85433031	+0.51934789
a	2.2250580	Ω	347.90797	-0.46348741	+0.74396089
e	0.2165399	i	5.46130	-0.23515769	+0.42047588
P	3.32	H	15.2	G 0.15	U 4

Residuals in seconds of arc

1998 03 03	809	0.7-	0.8+	1999 07 14	704	1.3-	0.2+	1999 09 07	704	0.1+	0.5+
1998 03 03	809	1.2-	1.0-	1999 07 14	704	0.1-	0.0	1999 09 07	704	0.1-	1.1+
1998 03 03	809	0.5-	0.2-	1999 07 22	704	0.1-	0.0	1999 09 11	704	0.5+	0.6-
1998 03 04	809	1.2+	0.9+	1999 07 22	704	0.4-	0.4+	1999 09 11	704	0.4+	0.1-
1998 03 04	809	0.8+	0.1+	1999 07 22	704	0.3-	0.1-	1999 09 11	704	0.1-	0.4-
1998 03 04	809	0.8+	0.2+	1999 07 22	704	0.3-	0.1-	1999 09 11	704	0.6+	0.1-
1999 07 14	704	0.4+	0.1-	1999 07 22	704	0.1-	0.3+	1999 09 11	704	0.5-	0.1-
1999 07 14	704	0.9+	0.8+	1999 09 07	704	0.1-	0.1+				
1999 07 14	704	1.5+	1.7-	1999 09 07	704	1.1-	0.4+				

1999 NG₆₄ = 1993 FC₄₄ = 1998 KG₅₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	126.30136		(2000.0)	P	Q
n	0.21603298	ω	19.57168	-0.88257673	+0.46913141
a	2.7507809	Ω	188.60756	-0.45436996	-0.86810240
e	0.0907855	i	12.03619	-0.12085637	-0.16221575
P	4.56	H	14.8	G 0.15	U 3

Residuals in seconds of arc

1993 03 19	809	(0.2-	3.7+)	1998 05 26	704	1.1-	1.0+	1999 07 11	097	0.0	0.4+
1993 03 20	809	0.8+	1.7+	1998 05 26	704	0.6-	0.4+	1999 09 07	704	0.0	0.9-
1993 03 24	809	1.1+	1.2+	1998 05 26	704	0.6-	0.3-	1999 09 07	704	0.1+	0.4+
1993 03 28	691	0.6-	1.3-	1998 05 26	704	0.5-	1.1-	1999 09 07	704	0.9-	0.4-
1993 03 28	691	(1.7-	2.5-)	1999 07 08	097	0.3+	0.4+	1999 09 07	704	0.6-	0.0
1993 03 28	691	0.9-	0.0	1999 07 08	097	0.8+	0.3-	1999 09 09	704	0.4-	0.1-
1998 05 23	704	1.5+	0.9+	1999 07 09	097	0.3+	0.2+	1999 09 09	704	1.1+	1.1+
1998 05 23	704	0.2+	0.5-	1999 07 10	097	0.6+	0.4+	1999 09 09	704	0.7-	0.4-
1998 05 23	704	0.4-	0.8+	1999 07 11	097	0.3+	0.2+	1999 09 09	704	1.1-	0.1+
1998 05 23	704	1.0+	0.8-	1999 07 11	097	0.3+	0.2+	1999 09 09	704	0.2+	0.1+
1998 05 23	704	0.4+	1.1-	1999 07 11	097	0.0	0.4+				

1999 NJ₆₄ = 1998 HL₇₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

M	351.97054		(2000.0)	P	Q
n	0.18772440	ω	235.61378	+0.76917278	+0.63827591
a	3.0208018	Ω	84.70221	-0.57552144	+0.71314980
e	0.1141981	i	1.79896	-0.27775583	+0.28986414
P	5.25	H	14.6	G 0.15	U 5

Residuals in seconds of arc

1998 04 21	704	1.0+	1.1-	1999 07 14	704	0.3+	0.2+	1999 07 25	250	0.2-	0.0
1998 04 21	704	0.2-	1.4-	1999 07 14	704	0.8+	0.6+	1999 07 25	250	0.3-	0.0
1998 04 21	704	(0.2+	2.4+)	1999 07 25	250	0.0	0.0	1999 07 25	250	0.1-	0.0
1998 04 21	704	1.3+	1.5-	1999 07 25	250	0.1-	0.0	1999 09 04	426	0.6-	0.2-
1998 04 22	704	1.0-	0.8+	1999 07 25	250	0.1+	0.0	1999 09 04	426	0.4-	1.0+
1998 04 22	704	0.2-	1.0+	1999 07 25	250	0.1-	0.2-	1999 09 04	426	0.7+	0.5-
1998 04 22	704	0.6-	1.0+	1999 07 25	250	0.0	0.1-	1999 09 04	426	0.4-	0.4-
1998 04 22	704	0.3-	1.3+	1999 07 25	250	0.1-	0.2-	1999 09 04	426	0.2+	0.3-
1999 07 14	704	0.2-	0.2-	1999 07 25	250	0.0	0.1-	1999 09 04	426	0.8+	0.5+
1999 07 14	704	0.1-	0.2-	1999 07 25	250	0.3-	0.1+				

1999 SEPT. 28

M.P.C. 36023

1999 OL = 1998 HD₆₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	344.87581		(2000.0)	P		Q	
<i>n</i>	0.21796065	ω	354.06582	+0.94160833	+0.33544615		
<i>a</i>	2.7345382	Ω	346.22613	-0.30367250	+0.80863436		
<i>e</i>	0.1505269	<i>i</i>	7.03213	-0.14545364	+0.48330772		
<i>P</i>	4.52	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1997 02 02	691	0.1-	0.0	1999 07 14	704	0.0	0.1-	1999 09 03	699	0.6-	0.0
1997 02 02	691	0.1+	0.2+	1999 07 14	704	0.1+	0.5-	1999 09 03	699	0.2-	0.1+
1997 02 02	691	0.1+	0.1-	1999 07 16	704	0.1+	0.2-	1999 09 07	691	0.1+	0.4+
1998 03 25	704	0.1-	0.9-	1999 07 16	704	0.3+	0.1-	1999 09 07	704	0.4+	0.6+
1998 03 25	704	1.5+	0.4+	1999 07 16	704	0.6-	0.1+	1999 09 07	691	0.4+	0.2+
1998 03 25	704	0.5+	0.6-	1999 07 17	122	0.1-	0.4-	1999 09 07	704	0.6+	0.5+
1998 03 25	704	0.8-	1.4-	1999 07 17	122	0.0	0.3-	1999 09 07	704	0.3+	0.6-
1998 04 21	704	0.5-	1.0+	1999 07 17	122	0.2+	0.3-	1999 09 07	704	0.3+	0.2+
1998 04 21	704	(2.2+	1.3+)	1999 07 17	122	0.2+	0.3-	1999 09 07	704	0.3+	1.0+
1998 04 21	704	0.0	0.0	1999 07 18	122	0.3+	0.1-	1999 09 13	699	0.6-	0.2-
1998 04 21	704	0.6+	0.8+	1999 07 18	122	0.2-	0.1+	1999 09 13	704	1.1+	0.1+
1998 04 21	704	(0.1-	2.3+)	1999 07 18	122	0.5-	0.1-	1999 09 13	704	0.4+	0.6-
1998 04 22	704	0.2+	1.0-	1999 07 22	122	1.1-	0.3-	1999 09 13	699	(2.5-	0.7+)
1998 04 22	704	0.0	0.1+	1999 07 22	122	0.8-	0.2-	1999 09 13	704	0.3+	0.9-
1998 04 22	704	0.0	0.1+	1999 07 22	122	1.0-	0.5-	1999 09 13	704	0.7+	0.6-
1998 04 22	704	0.3-	0.5+	1999 07 22	122	1.0-	0.6-	1999 09 13	699	1.0-	0.0
1998 04 22	704	0.9-	0.8+	1999 07 23	122	0.1+	0.1-	1999 09 13	704	0.4+	0.4-
1999 07 14	704	0.4+	0.4+	1999 07 23	122	0.1+	0.0	1999 09 14	691	0.5+	0.7+
1999 07 14	704	0.1+	0.2+	1999 07 23	122	0.3+	0.3+	1999 09 14	691	0.2+	0.8+
1999 07 14	704	0.0	1.1+	1999 09 03	699	0.5-	0.5+	1999 09 14	691	(10.7+	0.6+)

1999 OS = 1984 UZ₁ = 1997 BP₈

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	325.20999		(2000.0)	P		Q	
<i>n</i>	0.25892975	ω	206.71931	+0.89369710	-0.44867080		
<i>a</i>	2.4378936	Ω	179.93908	+0.41853500	+0.83363579		
<i>e</i>	0.1962293	<i>i</i>	2.31524	+0.16165996	+0.32209608		
<i>P</i>	3.81	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1984 10 29	688	0.5+	0.6-	1999 07 16	704	0.3-	0.3+	1999 09 09	704	(0.8-	2.3-)
1984 10 29	688	0.4+	2.1-	1999 07 16	704	0.3-	0.1-	1999 09 09	704	(1.4-	2.2-)
1984 10 31	688	(2.8-	1.3-)	1999 07 16	704	0.5+	0.7-	1999 09 11	704	0.2-	0.1+
1984 10 31	688	0.3+	1.2-	1999 07 16	704	0.4+	0.0	1999 09 11	704	0.1-	0.1-
1994 03 15	691	0.7-	0.1-	1999 07 18	120	0.6+	1.0+	1999 09 11	704	0.2-	0.1-
1994 03 15	691	0.5-	0.0	1999 07 18	120	0.7+	0.0	1999 09 11	704	0.0	0.2-
1994 03 15	691	0.3-	0.0	1999 07 19	120	1.9+	0.5-	1999 09 11	704	0.1-	0.0
1997 01 31	691	0.2+	0.2+	1999 07 19	120	0.8+	0.1-	1999 09 11	704	0.3-	0.1+
1997 01 31	691	0.2+	0.0	1999 07 19	120	0.2-	0.2+	1999 09 11	704	0.0	0.2+
1997 01 31	691	0.2+	0.2+	1999 08 03	595	1.1-	0.0	1999 09 11	704	0.2+	0.1-
1997 02 11	691	0.1-	0.4-	1999 08 03	595	0.1-	0.5-	1999 09 11	704	0.1-	0.1+
1997 02 11	691	0.2-	0.2-	1999 08 07	595	0.2+	0.2-	1999 09 11	704	0.7+	0.2+
1998 05 01	704	0.3-	0.6-	1999 09 07	704	0.2+	0.3+	1999 09 11	704	0.4+	0.2-
1998 05 01	704	0.8+	1.2-	1999 09 07	704	0.1+	0.4+	1999 09 11	704	0.3+	0.2-
1998 05 01	704	0.7-	0.7-	1999 09 07	704	0.1-	0.3+	1999 09 11	704	0.2+	1.1-
1998 05 01	704	0.2-	0.3+	1999 09 07	704	0.2+	0.8+	1999 09 11	704	0.1-	0.8-
1998 05 01	704	0.2-	1.0+	1999 09 07	704	0.1+	0.5+	1999 09 11	704	0.6-	0.5-
1998 05 02	566	0.6-	0.8-	1999 09 08	704	0.1-	0.1-	1999 09 14	703	0.2-	0.4+
1998 05 02	566	0.8+	0.8-	1999 09 08	704	0.3-	0.0	1999 09 14	703	0.3-	0.5+
1998 05 02	566	0.7-	0.9-	1999 09 08	704	(0.6-	3.0+)	1999 09 14	703	0.5-	0.6+
1998 05 22	704	0.0	0.2+	1999 09 08	704	0.4-	0.7-	1999 09 14	703	0.4-	0.4+
1998 05 22	704	1.2+	0.6-	1999 09 08	704	0.0	0.2+	1999 09 17	691	0.4-	0.0
1998 05 22	704	1.0+	0.4+	1999 09 09	704	0.4+	0.2-	1999 09 17	691	0.6-	0.3+
1998 05 22	704	(2.3+	0.3+)	1999 09 09	704	0.7+	0.2-	1999 09 17	691	0.5-	0.6+
1998 05 22	704	1.3-	0.4-	1999 09 09	704	0.2-	0.6-				

1999 OV₁ = 1985 SU

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	326.97981		(2000.0)	P		Q	
<i>n</i>	0.28157490	ω	73.50928	+0.88355579	-0.46311540		
<i>a</i>	2.3053671	Ω	314.01699	+0.38419466	+0.80183265		
<i>e</i>	0.1515250	<i>i</i>	5.55921	+0.26781268	+0.37760897		
<i>P</i>	3.50	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1985 09 18	046	1.0+	0.5-	1999 07 16	704	0.5-	0.7-	1999 09 08	704	0.1-	1.3+
1985 09 18	046	1.8+	1.2-	1999 07 16	704	0.5-	0.9-	1999 09 08	704	0.3-	0.8+
1985 09 19	046	0.1-	1.4-	1999 07 23	704	0.3+	0.2+	1999 09 08	704	0.0	0.7+
1985 09 19	046	0.0	2.1-	1999 07 23	704	0.2-	0.1-	1999 09 08	704	0.0	0.9+
1998 04 28	566	0.4-	0.6-	1999 07 23	704	0.3-	0.3+	1999 09 08	704	0.2-	1.0+
1998 04 28	566	0.3-	0.7-	1999 07 23	704	0.1-	0.1-	1999 09 16	704	0.1+	0.7-
1998 04 28	566	0.0	0.7-	1999 07 23	704	0.1-	0.1+	1999 09 16	704	0.3+	1.0-
1999 07 16	704	0.7-	0.4+	1999 08 12	699	0.2-	0.8+	1999 09 16	704	0.8+	0.8-
1999 07 16	704	0.2+	0.2+	1999 08 12	699	0.9-	1.3+	1999 09 16	704	0.1-	0.1-
1999 07 16	704	0.2-	0.3-	1999 08 12	699	0.4-	1.1+				

1999 OJ₂ = 1987 XM = 1998 MP₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	213.46419		(2000.0)	P		Q	
<i>n</i>	0.23647384	ω	255.94784	-0.88586991	-0.41312465		
<i>a</i>	2.5898860	Ω	259.29991	+0.46318578	-0.81340658		
<i>e</i>	0.1054398	<i>i</i>	12.40578	-0.02633315	-0.40950917		
<i>P</i>	4.17	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1987 12 15	033	0.2-	0.4+	1999 07 22	704	0.5-	0.2-	1999 09 08	704	0.2+	0.1-
1987 12 15	033	0.2+	0.7+	1999 07 22	704	0.5+	0.8-	1999 09 08	704	0.2-	0.1+
1998 06 24	704	0.1+	0.5-	1999 07 22	704	0.9+	0.1-	1999 09 13	703	0.2-	0.3+
1998 06 24	704	1.3+	0.6+	1999 07 22	704	0.1+	0.8-	1999 09 13	703	0.3-	0.3+
1998 06 24	704	0.6-	0.7+	1999 07 23	704	0.5-	0.2-	1999 09 13	703	0.4+	0.4-
1998 06 24	704	0.4+	0.4-	1999 07 23	704	0.0	0.0	1999 09 13	703	0.8-	0.7-
1998 06 24	704	1.1-	1.1+	1999 07 23	704	0.0	0.1+	1999 09 18	704	0.1+	0.6+
1998 06 26	704	(2.3+	0.2+)	1999 07 23	704	0.2-	0.5-	1999 09 18	704	0.2+	0.4+
1998 06 26	704	1.2+	1.5+	1999 07 23	704	0.1+	0.1-	1999 09 18	704	0.2+	0.2+
1998 06 26	704	0.9-	1.5-	1999 09 08	704	0.4+	0.1+	1999 09 18	704	0.3-	0.3+
1998 06 26	704	0.7-	0.2-	1999 09 08	704	0.1+	0.1-	1999 09 18	704	0.1+	0.3+
1999 07 22	704	0.2+	0.4+	1999 09 08	704	0.0	0.4-				

1999 PC₁ = 1998 MC₂₇

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	79.44627		(2000.0)	P		Q	
<i>n</i>	0.22864850	ω	7.55885	+0.51460168	+0.83080770		
<i>a</i>	2.6486453	Ω	293.63081	-0.79828841	+0.37399678		
<i>e</i>	0.1778084	<i>i</i>	13.37969	-0.31292286	+0.41217106		
<i>P</i>	4.31	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 06 24	704	0.7+	0.3+	1998 06 26	704	0.7+	1.9-	1999 08 18	557	0.5-	0.6+
1998 06 24	704	1.6+	0.1+	1998 08 08	557	0.9+	0.7-	1999 08 18	557	0.4-	0.5+
1998 06 24	704	1.1-	0.5+	1998 08 08	557	0.3+	0.9-	1999 08 18	557	0.8-	0.1+
1998 06 24	704	0.7-	0.1+	1999 08 09	557	0.3+	0.6-	1999 09 03	557	0.1+	0.4+
1998 06 24	704	0.2+	0.0	1999 08 09	557	0.3+	0.7-	1999 09 03	557	0.0	0.2+
1998 06 26	704	0.6-	1.3+	1999 08 14	557	0.1+	0.1-	1999 09 03	557	0.1+	0.1-
1998 06 26	704	0.1+	0.3+	1999 08 14	557	0.0	0.1+	1999 09 05	557	0.1-	0.5+
1998 06 26	704	0.1-	0.3-	1999 08 14	557	0.1-	0.1+	1999 09 05	557	0.1+	0.1+
1998 06 26	704	0.9-	0.1-	1999 08 18	557	0.3-	0.5+				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	273.49158	(2000.0)	P		Q	
<i>n</i>	0.17144523	ω	295.25106	+0.27527372	-0.96112293	
<i>a</i>	3.2091187	Ω	138.75151	+0.89340949	+0.24744863	
<i>e</i>	0.1493373	<i>i</i>	1.87847	+0.35502656	+0.12252304	
<i>P</i>	5.75	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>

Residuals in seconds of arc

1994 10 31	691	0.1-	0.0	1999 08 11	684	0.4-	0.4+	1999 09 03	684	0.5+	0.6-
1994 10 31	691	0.1+	0.1+	1999 08 11	684	0.3-	0.2+	1999 09 04	684	0.0	0.6-
1994 10 31	691	0.1-	0.2+	1999 08 12	721	(2.7-	0.9-)	1999 09 04	684	0.2+	0.4-
1996 01 18	120	0.2+	0.5-	1999 08 12	721	(3.3-	1.0-)	1999 09 05	684	0.1-	0.1+
1996 01 18	120	(2.7-	1.4-)	1999 08 12	684	0.0	0.3+	1999 09 05	684	0.0	0.0
1996 01 18	120	0.2-	0.3-	1999 08 12	684	0.1+	0.2+	1999 09 07	704	0.8+	0.5-
1996 02 16	010	(3.9+	1.3+)	1999 08 13	721	0.2+	0.7-	1999 09 07	704	0.3+	0.2-
1996 02 16	010	(3.9+	1.0+)	1999 08 13	721	1.4+	1.1-	1999 09 07	704	0.3+	0.7+
1996 02 16	010	(4.4+	1.8+)	1999 08 17	721	1.0-	0.5-	1999 09 07	704	0.0	0.4+
1996 02 17	010	(0.6-	2.4-)	1999 08 17	721	0.8-	0.3-	1999 09 07	704	0.1+	1.3+
1996 02 17	010	0.8-	1.4-	1999 08 19	721	0.4-	1.7-	1999 09 09	704	0.2+	0.3-
1996 02 17	010	0.4+	1.1-	1999 08 19	721	0.1-	1.3-	1999 09 09	704	1.1+	0.8+
1996 03 19	566	0.1+	0.8+	1999 08 21	691	0.5+	0.4+	1999 09 09	704	0.6+	0.7-
1996 03 19	566	0.5-	0.7+	1999 08 21	691	0.3+	0.6+	1999 09 09	704	0.2-	1.3-
1996 03 19	566	0.3+	0.6+	1999 08 17	691	0.4+	0.4+	1999 09 13	704	1.0-	0.4+
1999 08 08	684	0.1-	0.4-	1999 08 22	703	0.1-	1.0+	1999 09 13	704	1.2-	0.5-
1999 08 08	684	0.1-	0.5-	1999 08 22	703	0.1-	0.3-	1999 09 13	704	0.8-	0.7+
1999 08 09	684	0.5+	0.0	1999 08 22	703	0.9+	1.4+	1999 09 13	704	0.7-	0.7+
1999 08 09	684	0.5+	0.0	1999 08 22	703	0.5-	0.2-	1999 09 13	704	0.3-	0.8+
1999 08 11	684	0.3-	0.5+	1999 09 03	684	0.3+	0.6-				

1999 PR₁ = 1998 HK₆₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	333.09471	(2000.0)	P		Q	
<i>n</i>	0.25889070	ω	353.70047	+0.99654460	-0.08273836	
<i>a</i>	2.4381387	Ω	11.05345	+0.07776983	+0.89863391	
<i>e</i>	0.0747055	<i>i</i>	2.18059	+0.02916685	+0.43082648	
<i>P</i>	3.81	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>

Residuals in seconds of arc

1998 04 21	704	0.8-	0.2+	1999 09 07	704	0.0	0.1-	1999 09 09	704	0.7+	0.4-
1998 04 21	704	0.6-	1.0-	1999 09 07	704	0.0	0.0	1999 09 09	704	0.1-	0.7-
1998 04 21	704	0.0	0.4-	1999 09 07	704	0.2-	0.2-	1999 09 09	704	0.1-	0.5+
1998 04 21	704	0.5+	0.1-	1999 09 07	704	0.3-	0.0	1999 09 09	704	0.4-	0.2+
1998 04 21	704	0.5+	0.2-	1999 09 07	704	0.3-	0.5+	1999 09 09	704	0.5+	1.1-
1998 04 22	704	0.1-	0.1-	1999 09 08	704	0.1-	0.5-	1999 09 09	704	0.0	0.3+
1998 04 22	704	0.6-	0.6+	1999 09 08	704	1.0-	0.9-	1999 09 09	704	0.3+	0.9+
1998 04 22	704	0.5+	0.3+	1999 09 08	704	0.3+	0.3+	1999 09 09	704	0.2-	0.2-
1998 04 22	704	0.1-	0.3+	1999 09 08	704	0.6-	0.3+	1999 09 09	704	0.4+	0.3-
1998 04 22	704	0.8+	0.9+	1999 09 08	704	0.4-	0.3-	1999 09 09	704	0.4-	0.4+
1999 08 09	428	0.2-	0.2-	1999 09 08	704	0.1-	0.3-	1999 09 09	704	0.6-	0.3+
1999 08 09	428	0.1+	0.0	1999 09 08	704	0.3-	0.1-	1999 09 09	704	0.3-	0.1-
1999 08 10	428	0.2+	0.4-	1999 09 08	704	0.2-	0.0	1999 09 09	704	0.1+	0.6-
1999 08 10	428	0.0	0.4-	1999 09 08	704	0.4+	0.1-	1999 09 09	704	0.2-	0.1+
1999 08 11	428	0.3+	0.4-	1999 09 08	704	0.9-	0.1-	1999 09 09	704	0.6-	0.4-
1999 08 11	428	0.5+	0.6-	1999 09 08	164	0.1-	1.9+	1999 09 09	704	0.2+	0.3+
1999 08 12	699	0.0	0.9+	1999 09 08	164	0.6-	0.0	1999 09 09	704	0.9+	0.1+
1999 08 12	699	0.8+	0.4+	1999 09 08	164	0.2+	1.5+	1999 09 09	704	0.1-	0.5-
1999 08 12	699	0.1+	0.1+	1999 09 09	704	0.3-	1.7+	1999 09 09	704	0.7+	0.7+
1999 08 18	428	(2.5-	0.5-)	1999 09 09	704	0.7+	0.8-	1999 09 09	704	0.9+	0.0
1999 08 18	428	1.2-	0.2-	1999 09 09	704	1.0+	0.5-				
1999 09 03	428	0.0	0.2-	1999 09 09	704	0.4+	0.4-				

1999 PZ₁ = 1989 VL₄ = 1989 XG₁ = 1998 HG₁₁₁

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	215.03864	(2000.0)	P		Q	
<i>n</i>	0.28338610	ω	332.20866	-0.56361576	-0.82388637	
<i>a</i>	2.2955338	Ω	151.97503	+0.77944483	-0.55431783	
<i>e</i>	0.0533888	<i>i</i>	7.28370	+0.27350145	-0.11808047	
<i>P</i>	3.48	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>

Residuals in seconds of arc

1989 11 06	809	1.1+	1.2+	1998 04 24	704	0.4+	0.5+	1999 08 13	428	0.8-	0.2-
1989 11 06	809	0.9-	1.1+	1998 04 24	704	0.5-	0.0	1999 08 19	428	0.1-	0.8-
1989 11 06	809	0.5-	1.8+	1998 04 24	704	0.3-	0.7+	1999 08 19	428	1.4-	1.0-
1989 12 02	809	0.1+	0.6+	1998 04 24	704	0.6-	0.8+	1999 09 04	428	0.1+	0.3-
1989 12 02	809	0.3+	0.4+	1998 04 24	704	0.0	0.3+	1999 09 04	428	0.7+	0.0
1989 12 02	809	1.0-	0.4-	1998 04 28	566	0.2+	0.0	1999 09 07	704	0.3+	0.8-
1989 12 03	809	0.1+	1.0-	1998 04 28	566	0.1+	0.1-	1999 09 07	704	1.0+	0.0
1989 12 03	809	0.4+	1.1-	1998 04 28	566	0.3-	0.0	1999 09 07	704	0.7+	0.4-
1989 12 03	809	0.0	1.7-	1998 05 16	704	0.5+	0.9-	1999 09 07	704	0.2+	0.1-
1998 03 24	704	0.3+	0.1+	1998 05 16	704	1.6-	1.3+	1999 09 07	704	0.4+	0.6-
1998 03 24	704	1.3+	1.3+	1998 05 16	704	0.2+	0.7-	1999 09 07	428	0.3+	0.6-
1998 03 24	704	0.2+	0.3+	1998 05 16	704	(1.8+	2.7-)	1999 09 07	428	1.3+	1.0+
1998 03 24	704	0.8-	0.6-	1998 05 28	704	1.2+	1.1-	1999 09 09	704	0.4-	0.3-
1998 03 24	704	0.0	0.0	1998 05 28	704	1.9+	1.3-	1999 09 09	704	0.8-	0.3-
1998 04 21	704	0.1-	0.3+	1998 05 28	704	(2.4+	0.0)	1999 09 09	704	(2.3+	0.1+)
1998 04 21	704	0.2-	0.0	1998 05 28	704	1.0-	1.1+	1999 09 09	704	0.4+	0.1-
1998 04 21	704	0.5-	0.7-	1999 08 07	691	0.4-	0.5+	1999 09 09	704	0.1-	0.5-
1998 04 21	704	0.9+	0.4-	1999 08 07	691	0.3-	0.3+	1999 09 13	704	0.2+	0.6-
1998 04 21	704	0.5+	0.0	1999 08 07	691	0.3-	0.5+	1999 09 13	704	0.1+	0.1+
1998 04 23	704	0.4-	0.0	1999 08 10	428	0.6-	0.8+	1999 09 13	704	0.3+	0.4+
1998 04 23	704	0.3-	0.5-	1999 08 10	428	0.6-	0.8+	1999 09 13	704	0.5-	0.1-
1998 04 23	704	0.0	0.7+	1999 08 11	428	0.5+	1.4+	1999 09 13	704	0.1-	0.4-
1998 04 23	704	0.5-	0.5-	1999 08 11	428	0.3+	0.8+				
1998 04 23	704	0.0	0.1-	1999 08 13	428	0.6-	0.4+				

1999 PA₂ = 1996 TQ₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	52.17157	(2000.0)	P		Q	
<i>n</i>	0.31119994	ω	260.77391	-0.08720803	+0.99618481	
<i>a</i>	2.1566337	Ω	4.22716	-0.89578200	-0.07698881	
<i>e</i>	0.1540016	<i>i</i>	2.52976	-0.43585476	-0.04109194	
<i>P</i>	3.17	<i>H</i>	16.2	<i>G</i>	0.15	<i>U</i>

Residuals in seconds of arc

1992 03 26	691	0.4-	0.3-	1998 01 28	566	0.3+	0.3+	1999 09 07	704	0.4+	0.5-
1992 03 26	691	0.2-	0.7-	1999 08 10	428	0.1-	0.1-	1999 09 07	704	0.2+	0.4+
1992 03 26	691	0.2-	0.7-	1999 08 10	428	0.3-	0.0	1999 09 09	704	0.3+	0.0
1996 10 08	566	0.7-	0.4-	1999 08 11	428	0.1+	0.5+	1999 09 09	704	0.1-	0.2-
1996 10 08	566	1.4+	0.2+	1999 08 11	428	0.2-	0.3+	1999 09 09	704	0.2-	0.5-
1996 10 08	566	0.7+	0.7-	1999 08 13	428	0.8-	0.4+	1999 09 09	704	0.1+	0.0
1996 10 08	566	0.2+	0.2+	1999 08 13	428	0.3+	0.4+	1999 09 09	704	0.4-	0.8+
1996 10 08	566	0.7-	0.3-	1999 08 19	428	0.1-	0.7-	1999 09 13	704	0.1-	0.5-
1996 10 08	566	0.2+	0.2-	1999 08 19	428	0.6-	0.1+	1999 09 13	704	0.0	0.1+
1996 10 09	566	0.1-	0.0	1999 09 05	428	0.2-	0.2+	1999 09 13	704	0.4+	0.5-
1996 10 09	566	0.3+	0.2+	1999 09 05	428	0.0	0.2+	1999 09 13	704	0.0	1.3-
1996 10 09	566	0.2+	0.1+	1999 09 07	704	0.3+	0.2+	1999 09 13	704	0.5+	1.1-
1998 01 28	566	0.1-	0.2-	1999 09 07	704	0.4+	0.4+				
1998 01 28	566	0.2-	0.3-	1999 09 07	704	0.7+	0.2-				

1999 PB₂ = 1998 KR₁₆

Epoch

Residuals in seconds of arc

1998 04 22	704	0.7−	0.5−	1998 05 24	704	0.4−	0.5+	1999 09 07	428	1.3+	0.0
1998 04 22	704	0.7+	0.6−	1998 05 24	704	0.2−	0.1+	1999 09 09	704	0.0	0.1−
1998 04 22	704	0.5−	0.4−	1998 05 24	704	0.3−	1.0+	1999 09 09	704	0.4−	0.2−
1998 04 22	704	(5.4−	1.2−)	1998 05 24	704	0.0	0.0	1999 09 09	704	0.1−	1.3−
1998 05 01	704	0.8+	1.1+	1999 08 10	428	0.2+	1.9+	1999 09 09	704	0.4+	0.3−
1998 05 01	704	0.7−	0.0	1999 08 10	428	1.1−	0.6−	1999 09 09	704	0.1−	0.1+
1998 05 01	704	0.2+	0.0	1999 08 11	428	0.3−	0.8+	1999 09 13	704	0.2−	0.0
1998 05 01	704	0.8−	1.8−	1999 08 11	428	0.1+	0.5+	1999 09 13	704	0.6−	0.3+
1998 05 22	704	0.7−	0.0	1999 08 13	428	0.2−	0.0	1999 09 13	704	0.2−	0.5−
1998 05 22	704	0.7+	1.1+	1999 08 13	428	0.3−	0.1+	1999 09 13	704	0.7+	0.8−
1998 05 22	704	1.0+	0.6−	1999 09 05	428	0.7+	0.2+	1999 09 13	704	0.5−	1.4−
1998 05 22	704	1.6+	0.5+	1999 09 05	428	0.3+	0.5+				
1998 05 24	704	0.6−	1.0−	1999 09 07	428	0.3+	0.4+				

1999 PC₂ = 1993 UA₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	56.14799		(2000.0)	P	Q
<i>n</i>	0.31240406	ω	130.75744	−0.05313982	+0.99731007
<i>a</i>	2.1510885	Ω	136.11643	−0.93673084	−0.03226730
<i>e</i>	0.1023499	<i>i</i>	4.17655	−0.34599349	−0.06581367
<i>P</i>	3.15	<i>H</i>	16.3	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1993 10 20	809	0.7−	1.8−	1999 08 13	428	0.7+	1.4+	1999 09 09	704	0.0	0.1−
1993 10 20	809	1.0−	2.2−	1999 08 20	428	2.5−	0.6−	1999 09 09	704	0.8+	0.1−
1993 10 20	809	0.6−	2.0−	1999 08 20	428	0.5−	0.3−	1999 09 09	704	0.5+	0.4−
1993 10 21	809	2.8−	0.3+	1999 09 04	428	0.5+	0.1−	1999 09 09	704	0.2−	0.2−
1993 10 21	809	2.6−	0.5−	1999 09 04	428	1.2+	0.0	1999 09 09	704	0.3+	0.2−
1993 10 21	809	1.8−	0.2+	1999 09 07	699	0.3+	1.1+	1999 09 13	704	0.2−	0.4−
1993 10 21	809	2.4+	1.6+	1999 09 07	704	0.1−	0.6−	1999 09 13	704	0.2+	0.1+
1993 10 21	809	4.0+	2.5+	1999 09 07	699	1.0+	0.8+	1999 09 13	704	0.0	0.2+
1993 10 21	809	2.9+	2.1+	1999 09 07	704	0.1−	0.3−	1999 09 13	704	0.3−	1.0−
1999 08 10	428	0.6−	0.5−	1999 09 07	704	0.4−	0.1+	1999 09 13	704	0.3+	0.3+
1999 08 10	428	0.0	0.1−	1999 09 07	704	0.6+	0.2−	1999 09 18	428	1.6−	0.3+
1999 08 11	428	0.7+	1.0+	1999 09 07	699	0.2+	0.1+	1999 09 18	428	0.8−	0.6+
1999 08 11	428	0.3+	0.2−	1999 09 07	704	0.4−	0.5−				

1999 PV₂ = 1998 EU₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	80.59354		(2000.0)	P	Q
<i>n</i>	0.23258486	ω	245.45694	−0.67750295	+0.73250167
<i>a</i>	2.6186759	Ω	341.39469	−0.57647989	−0.58503488
<i>e</i>	0.2730068	<i>i</i>	12.04269	−0.45679393	−0.34810271
<i>P</i>	4.24	<i>H</i>	15.6	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 02 24	566	1.2−	0.3−	1998 03 04	809	1.1+	1.1+	1999 09 07	704	1.0−	0.4+
1998 02 24	566	1.1−	0.3−	1999 08 07	691	0.5+	0.6+	1999 09 07	704	0.7−	0.9−
1998 02 24	566	1.2−	0.4−	1999 08 07	691	0.5+	0.4+	1999 09 07	704	0.9−	0.4−
1998 03 03	809	0.9+	0.8−	1999 08 07	691	0.9+	0.8+	1999 09 09	704	1.0−	1.5−
1998 03 03	809	0.4+	0.1+	1999 08 12	691	0.2+	0.5+	1999 09 09	704	0.9−	0.5−
1998 03 03	809	0.4+	0.0	1999 08 12	691	0.1+	1.1+	1999 09 09	704	0.3+	0.2+
1998 03 04	809	1.0+	1.2+	1999 08 12	691	0.6+	0.4+				
1998 03 04	809	1.0+	1.4+	1999 09 07	704	0.1−	1.5+				

1999 PR₃ = 1995 UH₂₆ = 1998 HV₄₃

Id. B. G. Marsden

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	27.07505		(2000.0)	P	Q
<i>n</i>	0.23858387	ω	260.10525	+0.60059821	+0.79710589
<i>a</i>	2.5745935	Ω	46.99651	−0.69601807	+0.55968818
<i>e</i>	0.1430969	<i>i</i>	4.90122	−0.39349796	+0.22665247
<i>P</i>	4.13	<i>H</i>	14.4	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1995 10 20	691	0.3−	0.2+	1998 04 21	704	1.3+	1.0−	1999 08 14	684	0.2+	0.8−
1995 10 20	691	1.0−	0.5+	1998 04 21	704	0.2−	0.1+	1999 08 14	684	0.3+	0.6−
1995 10 20	691	0.0	0.1+	1998 04 21	704	0.7+	0.6−	1999 08 15	684	0.6−	0.8−
1995 10 25	691	0.2+	0.1+	1998 04 21	704	0.5−	1.5−	1999 08 15	684	0.4−	0.7−
1995 10 25	691	0.2+	0.0	1998 04 22	704	0.5−	1.1+	1999 09 05	699	0.6+	0.8+
1995 10 25	691	0.4+	0.1+	1998 04 22	704	0.4+	0.9+	1999 09 05	699	0.1−	1.6+
1998 04 20	704	1.1−	0.7+	1998 04 22	704	0.8+	0.8−	1999 09 05	699	0.4+	0.9+
1998 04 20	704	(0.7+	2.4+)	1998 04 22	704	0.7+	0.2+	1999 09 11	684	0.4−	0.2+
1998 04 20	704	(1.8+	2.4+)	1998 04 22	704	1.6−	0.0	1999 09 11	684	0.1−	0.4+
1998 04 20	704	0.4−	0.8+	1998 08 13	684	0.4+	0.6−	1999 09 12	684	0.5−	0.1+
1998 04 21	704	1.3+	1.8+	1999 08 13	684	0.4+	0.5−	1999 09 12	684	0.4−	0.0

1999 PA₄ = 1997 GH₄₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	33.31922		(2000.0)	P	Q
<i>n</i>	0.18046490	ω	297.55810	+0.56261433	+0.82662345
<i>a</i>	3.1012794	Ω	6.72050	−0.71545449	+0.49447495
<i>e</i>	0.0754219	<i>i</i>	6.18148	−0.41423423	+0.26867861
<i>P</i>	5.46	<i>H</i>	13.9	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1997 04 09	704	1.1+	0.2−	1999 08 18	428	0.9+	0.0	1999 09 11	699	0.8+	1.9+
1997 04 09	704	0.6−	0.4−	1999 09 03	428	0.4−	0.4+	1999 09 11	699	0.5+	1.2+
1997 04 10	704	0.8−	0.5+	1999 09 03	428	0.9−	0.9−	1999 09 11	699	0.7+	1.0+
1997 04 10	704	0.4+	0.2+	1999 09 04	428	0.5+	0.4−	1999 09 14	704	0.1−	0.4−
1999 08 13	428	1.3−	0.6−	1999 09 09	704	0.1−	0.4−	1999 09 14	704	0.4−	0.1+
1999 08 13	428	0.1+	0.1−	1999 09 09	704	0.1+	0.5−	1999 09 14	704	0.1+	0.2−
1999 08 14	428	(2.6+	0.3+)	1999 09 09	704	0.3−	0.4−	1999 09 14	704	0.1−	0.3−
1999 08 14	428	0.9+	0.9+	1999 09 09	704	1.0−	0.9−	1999 09 14	704	0.3+	0.2+
1999 08 18	428	0.1+	0.3+	1999 09 09	704	0.5−	0.6−				

1999 PB₄ = 1993 OU₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	350.42115		(2000.0)	P	Q
<i>n</i>	0.17582385	ω	247.98462	+0.99590677	+0.07492809
<i>a</i>	3.1556163	Ω	107.68938	−0.05000356	+0.92263276
<i>e</i>	0.2164213	<i>i</i>	3.04158	−0.07529505	+0.37833130
<i>P</i>	5.61	<i>H</i>	14.8	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1993 07 13	809	1.0+	0.9+	1999 08 19	428	0.5−	0.8+	1999 09 09	704	0.1+	0.8−
1993 07 13	809	0.8+	0.7+	1999 09 03	428	1.0+	0.2−	1999 09 09	704	1.2−	0.7−
1993 07 13	809	0.6+	0.7+	1999 09 03	428	0.4+	0.7−	1999 09 14	704	0.7+	0.4+
1993 07 20	809	1.1−	0.4−	1999 09 07	704	0.4+	0.7+	1999 09 14	704	0.2−	0.4+
1993 07 20	809	1.0−	0.5−	1999 09 07	704	0.1−	0.5−	1999 09 14	704	0.1+	0.2+
1993 07 20	809	0.1−	0.2+	1999 09 07	704	0.4−	0.7−	1999 09 14	704	0.5−	0.6+
1993 07 24	809	0.1−	1.7−	1999 09 07	704	0.1+	0.8−	1999 09 14	704	0.3−	0.1+
1999 08 13	428	0.4−	0.5+	1999 09 07	704	0.3−	0.6−	1999 09 19	428	0.4+	0.6+
1999 08 13	428	0.0	0.4−	1999 09 09	704	0.5−	0.2+	1999 09 19	428	0.1−	0.1+
1999 08 14	428	0.1+	0.4+	1999 09 09	704	0.2+	0.2−				
1999 08 14	428	0.5+	0.7+	1999 09 09	704	0.6+	0.1+				

1999 PF₄ = 1992 EE₃₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	315.58689		(2000.0)	P	Q
<i>n</i>	0.20022640	ω	43.40687	+0.90381959	−0.42785122
<i>a</i>	2.8937110	Ω	341.92043	+0.38588081	+0.82230696
<i>e</i>	0.0814798	<i>i</i>	1.35026	+0.18494903	+0.37517275
<i>P</i>	4.92	<i>H</i>	15.2	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1992 03 01	809	0.3+	0.5+	1999 09 04	859	0.5+	0.6+	1999 09 09	704	0.3−	0.3+
1992 03 03	809	0.0	0.0	1999 09 04	859	0.7−	0.5+	1999 09 09	704	0.7+	0.0

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1999 08 12	859	0.0	0.0	1999 09 05	859	0.2+	0.4−	1999 09 09	704	1.3−	0.3−
1999 08 12	859	1.0+	0.5+	1999 09 05	859	0.1+	0.4+	1999 09 09	704	0.5+	0.5−
1999 08 12	859	0.1−	0.3−	1999 09 05	859	0.1+	0.2−	1999 09 13	704	0.0	0.5+
1999 08 15	859	0.1+	0.2−	1999 09 07	704	0.6−	0.3+	1999 09 13	704	0.5+	0.6+
1999 08 15	859	0.2−	0.0	1999 09 07	704	0.5−	0.6−	1999 09 13	704	0.7+	0.1−
1999 08 15	859	0.3−	0.5−	1999 09 07	704	0.1−	0.2−				
1999 09 04	859	0.3+	0.7+	1999 09 07	704	0.5−	0.6−				

1999 PT₄ = 1981 UQ₅ = 1998 HA₉₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26696172	ω	216.08918	−0.50017099	−0.86472460		
<i>a</i>	2.3887464	Ω	263.96293	+0.80483200	−0.44480244		
<i>e</i>	0.0109953	<i>i</i>	2.62881	+0.31949090	−0.23324269		
<i>P</i>	3.69	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1981 10 30	381	0.5−	1.0−	1998 05 03	566	0.3−	1.0−	1999 09 04	703	0.3+	1.1+
1981 10 30	381	1.2+	0.8−	1998 05 03	566	0.6−	0.9−	1999 09 07	704	0.4+	0.2+
1981 10 30	381	0.1−	0.5−	1998 05 22	704	0.1+	0.4+	1999 09 07	704	0.0	0.2+
1981 10 30	381	0.2+	1.6−	1998 05 22	704	0.0	0.4−	1999 09 07	704	0.3+	0.2−
1998 04 21	704	0.1+	0.7+	1998 05 22	704	0.8+	0.1+	1999 09 07	704	0.2−	0.6+
1998 04 21	704	0.3+	0.1−	1998 05 22	704	0.9+	0.5−	1999 09 07	704	0.1+	0.2−
1998 04 21	704	0.3+	1.0−	1998 05 22	704	(0.8−	2.5+)	1999 09 09	704	0.5+	0.7+
1998 04 21	704	0.4−	0.6+	1999 08 08	358	1.8−	0.1+	1999 09 09	704	0.5+	0.3+
1998 04 21	704	0.1−	0.3+	1999 08 08	358	0.4+	1.1−	1999 09 09	704	0.4+	0.2+
1998 04 22	704	0.4−	0.1+	1999 08 09	358	0.5−	1.7+	1999 09 09	704	0.3−	0.2−
1998 04 22	704	0.6−	0.9+	1999 08 09	358	1.6−	1.6−	1999 09 09	704	0.7+	0.1+
1998 04 22	704	0.6−	1.3+	1999 08 10	358	0.3−	0.7−	1999 09 11	699	0.0	0.3+
1998 04 22	704	1.0−	0.3+	1999 08 10	358	(0.2+	2.3−)	1999 09 11	699	0.0	0.9+
1998 04 22	704	0.8−	0.7−	1999 08 15	358	(2.6−	1.0+)	1999 09 11	699	0.2+	0.8+
1998 04 25	699	0.8+	0.2+	1999 08 15	358	1.5−	0.8−	1999 09 11	358	0.1+	0.7−
1998 04 25	699	0.0	0.0	1999 08 22	358	0.7+	0.3−	1999 09 11	358	0.3−	1.9−
1998 04 25	699	0.4+	0.1+	1999 08 22	358	0.5−	0.6−	1999 09 14	704	0.3−	0.5+
1998 05 01	704	0.3+	0.4−	1999 09 03	358	0.7+	0.9−	1999 09 14	704	0.2+	0.2+
1998 05 01	704	0.2−	0.7−	1999 09 03	358	0.9+	0.8−	1999 09 14	704	0.4+	0.4+
1998 05 01	704	0.1+	1.0−	1999 09 03	358	0.7−	1.1−	1999 09 14	704	0.2+	0.3+
1998 05 01	704	0.3+	0.0	1999 09 04	703	0.0	0.4+	1999 09 14	704	0.4+	0.3+
1998 05 01	704	0.1+	1.4−	1999 09 04	703	0.3+	0.4+				
1998 05 03	566	0.6−	0.8−	1999 09 04	703	0.1−	0.5+				

1999 PU₄ = 1998 JO₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28430098	ω	290.57964	+0.55294726	−0.83008286		
<i>a</i>	2.2906064	Ω	125.64383	+0.79372505	+0.49840080		
<i>e</i>	0.1447579	<i>i</i>	5.09662	+0.25347559	+0.25011814		
<i>P</i>	3.47	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 01	704	0.2−	0.0	1999 08 15	428	0.5−	0.1+	1999 09 09	704	0.0	0.9+
1998 05 01	704	1.1−	0.0	1999 08 16	428	0.1+	0.3+	1999 09 09	704	0.8+	1.3+
1998 05 01	704	1.5+	0.0	1999 08 16	428	0.3+	0.4−	1999 09 13	704	0.5+	0.3+
1998 05 01	704	1.7+	0.8+	1999 08 20	428	0.7−	0.2−	1999 09 13	704	0.3+	0.2+
1998 05 24	704	0.3−	0.8+	1999 09 03	428	0.9−	1.8−	1999 09 13	704	0.5+	0.0
1998 05 24	704	2.0−	1.6−	1999 09 03	428	0.1+	0.9−	1999 09 13	704	0.4+	0.2−
1998 05 24	704	0.4+	0.5+	1999 09 09	704	0.4+	0.2−	1999 09 15	428	1.4−	0.7+
1998 05 24	704	(1.6−	2.3+)	1999 09 09	704	0.3−	0.4+	1999 09 15	428	0.4+	0.2+
1999 08 15	428	0.3−	1.0−	1999 09 09	704	0.1−	0.3+				

1999 QZ₁ = 1994 PJ₃₄

Id. A. Doppler

1999 SEPT. 28

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21761447	ω	237.23402	+0.34897531	−0.93696155		
<i>a</i>	2.7374374	Ω	192.37967	+0.88527193	+0.33585835		
<i>e</i>	0.0432761	<i>i</i>	4.78091	+0.30742453	+0.09644800		
<i>P</i>	4.53	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1994 08 10	809	0.2−	1.1+	1999 08 24	557	0.3−	0.0	1999 09 11	557	0.7−	0.3−
1994 08 10	809	0.5−	0.8+	1999 08 24	557	0.1−	0.5−	1999 09 11	557	0.5−	0.2−
1994 08 10	809	0.6−	0.1+	1999 08 24	557	0.2−	0.2+	1999 09 12	557	0.1+	0.2−
1994 08 11	809	0.6+	0.2−	1999 08 25	557	0.2+	0.2−	1999 09 12	557	1.0+	0.6+
1994 08 11	809	0.6+	0.6−	1999 08 25	557	0.8+	0.4−	1999 09 12	557	0.9+	0.6+
1994 08 11	809	0.1+	1.3−	1999 09 03	557	0.0	0.4−	1999 09 13	557	0.3+	0.5−
1999 08 20	557	0.3+	0.5+	1999 09 03	557	0.8−	0.0	1999 09 13	557	0.0	0.1+
1999 08 20	557	0.1+	0.3−	1999 09 03	557	0.3−	0.4+	1999 09 15	557	0.7−	0.1−
1999 08 21	557	0.4−	0.5+	1999 09 11	557	0.3+	0.1+				

1999 QA₂ = 1997 EH₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18635887	ω	271.43216	+0.77625755	−0.60213144		
<i>a</i>	3.0355403	Ω	125.62954	+0.63000200	+0.73021217		
<i>e</i>	0.1874388	<i>i</i>	13.28037	+0.02284062	+0.32284348		
<i>P</i>	5.29	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1994 10 04	691	0.0	0.3+	1997 03 14	691	0.1−	0.1+	1999 08 25	557	0.0	0.0
1994 10 04	691	0.1−	0.0	1999 08 22	557	0.6+	0.5+	1999 08 25	557	0.1−	0.2+
1994 10 04	691	0.0	0.0	1999 08 22	557	0.3−	0.6+	1999 08 31	557	0.1−	0.3−
1997 03 10	691	0.0	0.0	1999 08 23	557	0.1−	0.2+	1999 08 31	557	0.1+	0.3−
1997 03 10	691	0.2+	0.1−	1999 08 23	557	0.0	0.2+	1999 09 04	557	0.1−	0.4−
1997 03 10	691	0.2+	0.2−	1999 08 24	557	0.1−	0.0	1999 09 04	557	0.1+	0.3−
1997 03 14	691	0.1+	0.3+	1999 08 24	557	0.1−	0.5+	1999 09 04	557	0.0	0.8−
1997 03 14	691	0.3−	0.2+	1999 08 25	557	0.1−	0.2−				

1999 QG₂ = 1995 KQ₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26702450	ω	156.97261	−0.07399685	+0.98769969		
<i>a</i>	2.3883720	Ω	108.55767	−0.93608812	−0.02116154		
<i>e</i>	0.3285758	<i>i</i>	8.35468	−0.34389460	−0.15492420		
<i>P</i>	3.69	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1995 05 24	693	0.4−	0.1−	1999 08 26	557	0.7−	0.0	1999 09 04	557	0.0	0.7−
1995 05 24	693	0.0	0.0	1999 08 26	557	0.1−	0.3−	1999 09 19	557	0.3−	0.4−
1995 05 25	693	0.4+	0.0	1999 08 26	557	0.4+	0.1+	1999 09 19	557	0.3+	0.0
1999 08 25	557	0.5+	0.6+	1999 08 31	557	0.3−	0.0	1999 09 20	557	0.5+	0.3−
1999 08 25	557	0.7+	0.5+	1999 08 31	557	0.2+	0.1+	1999 09 20	557	0.0	0.0
1999 08 25	557	0.3+	0.4+	1999 08 31	557	0.1−	0.0	1999 09 20	557	0.4−	0.1+
1999 08 25	557	0.4+	0.4+	1999 09 04	557	0.6−	0.2−				
1999 08 26	557	0.4−	0.3−	1999 09 04	557	0.4−	0.1−				

1999 QT₂ = 1991 PW₄ = 1995 OU₃

Id. T. Urata

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.25179739	ω	195.07423	+0.93148563	+0.35817111		
<i>a</i>	2.4837158	Ω	143.73437	−0.32164485	+0.89260825		
<i>e</i>	0.1298325	<i>i</i>	6.17455	−0.16993854	+0.27379547		
<i>P</i>	3.91	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	3

1999 SEPT. 28

M.P.C. 36027

Residuals in seconds of arc

1991 08 03	809	1.2−	1.2+	1999 09 05	888	0.7+	0.8−	1999 09 13	704	0.3−	0.6+
1991 08 03	809	0.7−	0.8+	1999 09 05	385	0.3+	0.1+	1999 09 13	704	0.7−	0.0
1991 08 03	809	0.1+	1.3+	1999 09 05	888	0.4+	0.5−	1999 09 13	704	0.6−	0.1−
1991 08 04	809	0.6−	0.6+	1999 09 05	385	0.5+	0.4+	1999 09 13	704	0.2+	0.0
1991 08 05	809	1.0+	0.8+	1999 09 07	699	1.2+	0.1+	1999 09 13	704	0.7−	0.1+
1991 08 05	809	0.1+	0.4+	1999 09 07	704	0.2+	0.0	1999 09 13	704	1.2−	0.0
1991 08 05	809	0.4+	1.2+	1999 09 07	699	0.0	0.0	1999 09 13	704	0.3+	0.1−
1995 07 22	691	0.5+	0.9−	1999 09 07	704	0.1+	0.7−	1999 09 13	704	0.0	0.3−
1995 07 22	691	0.4+	1.0−	1999 09 07	704	0.0	0.9−	1999 09 13	704	0.9−	0.7−
1995 07 22	691	0.0	0.8−	1999 09 07	699	0.4+	0.0	1999 09 13	704	0.8−	0.6−
1995 07 27	691	0.1+	1.1−	1999 09 07	704	0.2+	0.1+	1999 09 13	704	0.5−	0.3−
1995 07 27	691	0.2+	1.3−	1999 09 07	704	0.1+	1.2−	1999 09 13	704	0.5−	0.1−
1995 07 27	691	0.3−	1.1−	1999 09 08	703	0.7−	0.2−	1999 09 13	704	0.1+	0.2−
1998 04 23	704	1.0−	0.7+	1999 09 08	703	0.3+	0.0	1999 09 13	704	0.4−	0.1−
1998 04 23	704	1.1+	0.2−	1999 09 08	703	0.0	0.0	1999 09 14	704	0.1−	0.6−
1998 04 23	704	1.4−	1.5−	1999 09 08	703	0.1−	0.1−	1999 09 14	704	0.0	0.4+
1998 04 23	704	0.6+	1.1−	1999 09 09	704	0.3+	0.2−	1999 09 14	704	0.3−	0.1+
1999 08 12	699	0.5+	1.7+	1999 09 09	704	0.6+	0.3+	1999 09 14	704	0.2+	0.1+
1999 08 12	699	0.6+	0.5+	1999 09 09	704	0.4+	0.6+	1999 09 14	704	0.1−	0.2−
1999 08 12	699	0.8+	1.1+	1999 09 09	704	0.1+	1.0+	1999 09 14	704	0.2−	0.1−
1999 08 31	385	0.6+	0.2+	1999 09 09	704	0.3+	0.1+	1999 09 14	704	0.2−	0.3+
1999 08 31	385	0.2−	0.1−	1999 09 10	704	0.2−	0.2+	1999 09 14	704	0.3−	0.2+
1999 08 31	385	0.5+	0.1−	1999 09 10	704	0.1+	0.3+	1999 09 14	704	0.2+	0.1−
1999 09 04	888	0.3+	0.5−	1999 09 10	704	0.6+	0.2+	1999 09 14	704	0.3+	0.1+
1999 09 04	888	0.2−	0.5−	1999 09 11	704	0.1−	0.1−	1999 09 14	704	0.3−	0.1+
1999 09 04	888	0.4+	0.2−	1999 09 11	704	0.6−	0.4+	1999 09 14	704	0.2−	0.1+
1999 09 05	385	0.2−	0.3−	1999 09 11	704	0.6−	0.7+	1999 09 14	704	0.1−	0.1−
1999 09 05	888	0.5+	0.8−	1999 09 11	704	0.2−	0.3−	1999 09 14	704	0.3+	0.2−
1999 09 05	385	0.1+	0.0	1999 09 11	704	0.2−	0.2+	1999 09 14	704	0.1+	0.0

1999 RB = 1998 ML₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	293.72596		(2000.0)	P	Q
n	0.20420078	ω	263.64700	+0.44313391	−0.89337226
a	2.8560411	Ω	159.54066	+0.88334364	+0.42102980
e	0.1857604	i	12.27020	+0.15276239	+0.15690734
P	4.83	H	13.8	G 0.15	U 4

Residuals in seconds of arc

1998 06 19	704	1.2−	1.3+	1999 09 02	467	0.3−	0.2+	1999 09 09	704	0.7−	0.9−
1998 06 19	704	0.9−	0.3+	1999 09 02	467	0.3−	0.2−	1999 09 09	467	0.3+	0.2−
1998 06 19	704	0.7−	0.8+	1999 09 03	467	0.2+	0.5+	1999 09 09	704	0.1−	0.0
1998 06 19	704	0.5−	0.8−	1999 09 03	467	0.1−	0.2+	1999 09 09	467	0.6−	0.4−
1998 06 21	910	0.4+	0.2−	1999 09 03	467	0.1−	0.8+	1999 09 09	704	0.1+	0.7−
1998 06 21	910	0.4+	0.2−	1999 09 03	467	0.3+	0.4+	1999 09 09	467	0.6−	0.4−
1998 06 21	910	0.5+	0.0	1999 09 04	467	0.0	0.4+	1999 09 13	704	0.2−	0.2−
1998 06 21	910	0.7+	0.5−	1999 09 04	467	0.0	0.0	1999 09 13	704	0.1−	0.1−
1998 06 21	910	0.5+	0.3−	1999 09 04	467	0.2+	0.7+	1999 09 13	704	0.0	0.5−
1998 06 22	910	0.7+	0.4−	1999 09 07	704	0.2+	0.0	1999 09 13	704	0.1−	0.7−
1999 08 08	699	1.0+	0.1+	1999 09 07	704	0.2+	0.0	1999 09 13	704	0.1−	0.7−
1999 08 08	699	0.6+	0.2−	1999 09 07	704	0.0	0.3−	1999 09 27	467	0.4+	0.8+
1999 08 08	699	0.2+	0.9+	1999 09 07	704	0.0	0.6+	1999 09 27	467	0.2+	0.5+
1999 08 12	691	0.4−	0.2+	1999 09 07	704	0.4+	0.2+	1999 09 27	467	0.3+	0.7+
1999 08 12	691	0.5−	0.1−	1999 09 09	704	0.2+	0.5−				
1999 08 12	691	0.4−	0.1−	1999 09 09	704	0.1+	0.4−				

1999 RC = 1998 FB₁₁₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	7.12868		(2000.0)	P	Q		
n	0.24284591	ω	356.11799	+0.94558847	+0.31994657		
a	2.5443813	Ω	344.81386	−0.29210807	+0.75475269		
e	0.1693593	i	13.04606	−0.14330152	+0.57269762		
P	4.06	H	13.8	G	0.15	U	5

Residuals in seconds of arc

1998 03 31	704	1.4+	0.1−	1999 09 01	589	1.1+	0.8+	1999 09 07	704	0.2+	0.1−
1998 03 31	704	0.7−	1.9−	1999 09 02	589	0.4+	0.2+	1999 09 07	704	0.2−	0.0
1998 03 31	704	0.8−	0.8+	1999 09 02	589	0.5+	0.0	1999 09 07	704	0.5−	0.2−
1998 03 31	704	(4.9−	0.9−)	1999 09 02	589	0.0	0.5+	1999 09 07	704	0.5−	0.0
1998 04 01	704	1.6+	1.1+	1999 09 03	589	0.6−	0.1−	1999 09 07	589	0.1−	0.1+
1998 04 01	704	1.4−	0.0	1999 09 03	589	0.2−	0.2−	1999 09 07	589	0.3−	0.2+
1998 04 01	704	0.1+	0.5−	1999 09 03	589	0.1−	0.5−	1999 09 07	589	0.2−	0.1−
1998 04 01	704	1.1+	0.2−	1999 09 06	589	0.2−	0.5−	1999 09 18	703	0.1+	0.3+
1998 04 01	704	1.2−	0.8+	1999 09 06	589	0.1+	0.6−	1999 09 18	703	0.1−	0.0
1999 09 01	589	0.5+	0.6+	1999 09 06	589	0.3−	0.2−	1999 09 18	703	0.2+	0.2+
1999 09 01	589	0.4+	0.3−	1999 09 07	704	0.2−	0.2−	1999 09 18	703	0.1+	0.2+

1999 RF = 1997 GG₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	332.11962		(2000.0)	P	Q
n	0.23301185	ω	207.28570	+0.92718350	−0.37382118
a	2.6154758	Ω	174.49471	+0.37293626	+0.91499968
e	0.1935525	i	14.64665	+0.03534538	+0.15176728
P	4.23	H	14.4	G 0.15	U 4

Residuals in seconds of arc

1997 04 07	691	0.4+	0.3+	1999 09 04	734	1.8+	0.9+	1999 09 09	704	0.4−	0.5−
1997 04 07	691	0.3+	0.3−	1999 09 06	734	0.5+	0.2+	1999 09 09	704	0.6−	0.2−
1997 04 07	691	0.1+	0.0	1999 09 06	734	1.8+	0.7−	1999 09 09	704	0.2−	0.5−
1997 04 09	691	0.7−	0.3+	1999 09 06	734	0.6+	0.3−	1999 09 09	704	0.3−	1.4−
1997 04 09	691	0.6−	0.0	1999 09 06	734	0.7+	0.6−	1999 09 09	704	1.0−	1.3−
1997 04 09	691	0.4+	0.0	1999 09 07	704	0.3−	0.7−	1999 09 11	699	0.4−	0.7+
1999 09 03	734	0.0	0.5+	1999 09 07	704	0.4−	0.6−	1999 09 11	699	0.1−	0.9+
1999 09 03	734	0.3+	0.2+	1999 09 07	704	0.5−	0.0	1999 09 11	699	0.0	0.9+
1999 09 03	734	0.0	0.4+	1999 09 07	704	0.5−	0.7−	1999 09 14	704	0.4−	0.0
1999 09 03	734	0.6−	0.6+	1999 09 07	704	0.9−	0.4−	1999 09 14	704	0.1+	0.2+
1999 09 03	734	0.4−	0.2+	1999 09 08	704	0.3−	0.3−	1999 09 14	704	0.3−	0.1+
1999 09 03	734	0.3−	0.2−	1999 09 08	704	0.1−	0.4−	1999 09 14	704	0.0	0.0
1999 09 03	734	0.2+	0.1+	1999 09 08	704	0.0	0.9−	1999 09 14	704	0.5−	0.2+
1999 09 03	734	0.5−	0.1−	1999 09 08	704	0.2+	0.6−	1999 09 16	734	0.6+	0.3+
1999 09 03	734	0.6−	0.1+	1999 09 09	734	0.0	0.3+	1999 09 16	734	0.6+	0.3+
1999 09 04	734	1.0+	0.4+	1999 09 09	734	0.0	0.1−	1999 09 16	734	0.4+	0.4+
1999 09 04	734	0.3−	0.5+	1999 09 09	734	0.8−	0.3−	1999 09 16	734	0.6+	0.3−
1999 09 04	734	0.1+	0.5+	1999 09 09	734	0.3−	0.5+	1999 09 16	734	0.7+	0.4+
1999 09 04	734	1.3+	0.9+	1999 09 09	734	0.7−	0.5+				

1999 RM = 1998 KQ₆₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	28.95485		(2000.0)	P	Q
n	0.18412145	ω	148.79553	+0.76727698	+0.64084275
a	3.0600824	Ω	171.22194	−0.61663348	+0.74775444
e	0.1313414	i	9.28759	−0.17620780	+0.17373505
P	5.35	H	13.7	G 0.15	U 4

Residuals in seconds of arc

1998 05 23	704	0.3−	0.2−	1999 09 03	611	0.0	0.3+	1999 09 13	611	0.9+	1.4+
1998 05 23	704	0.5+	0.2+	1999 09 04	611	0.2−	0.8−	1999 09 13	611	0.5+	1.3−
1998 05 23	704	1.0−	1.2+	1999 09 04	611	0.3+	0.2+	1999 09 13	611	0.0	0.1−
1998 05 23	704	0.6−	1.6+	1999 09 04	611	0.5+	0.1+	1999 09 14	113	0.0	0.2−
1998 05 26	704	0.3+	0.8+	1999 09 04	611	1.3+	0.3+	1999 09 14	113	0.1−	0.2−
1998 05 26	704	0.2−	1.7+	1999 09 04	611	0.8−	2.0+	1999 09 14	704	0.4−	1.1−
1998 05 26	704	0.0	0.1+	1999 09 07	611	0.1+	0.3+	1999 09 14	704	0.1−	0.4−
1998 05 26	704	0.7+	0.9−	1999 09 07	611	(2.8−	4.2+)	1999 09 14	704	0.4−	0.5+
1998 05 26	704	0.3+	1.2−	1999 09 07	611	1.0−	0.6+	1999 09 14	704	0.3−	0.3−
1998 06 19	704	0.7+	0.1+	1999 09 07	611	(6.9−	0.7−)	1999 09 14	704	0.6−	0.0
1998 06 19	704	0.6−	0.2−	1999 09 08	611	0.7−	0.3−	1999 09 14	113	0.1+	0.7+
1998 06 19	704	0.3+	0.7−	1999 09 08	611	0.3−	0.2−	1999 09 14	113	0.3+	0.5+
1998 06 19	704	0.2−	1.0−	1999 09 08	611	1.2+	0.6−				
1998 06 19	704	0.0	1.4−	1999 09 08	611	0.4−	1.1−				

1999 RT = 1990 RX₁₀ = 1998 MG₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	250.99888		(2000.0)	P			Q				
<i>n</i>	0.22358375	ω	337.19696		-0.07922632		-0.98232749				
<i>a</i>	2.6884950	Ω	116.98450		+0.94142800		-0.12966430				
<i>e</i>	0.0876551	<i>i</i>	10.96988		+0.32777509		+0.13498102				
<i>P</i>	4.41 <th><i>H</i></th> <td>12.9</td> <th><i>G</i></th> <td>0.15</td> <th></th> <th><i>U</i></th> <td>3</td> <th></th>	<i>H</i>	12.9	<i>G</i>	0.15		<i>U</i>	3			
Residuals in seconds of arc											
1990 09 14	675	0.2+	1.9-	1999 07 16	704	0.1+	0.2+	1999 09 07	699	0.4+	0.6+
1990 09 14	675	0.3+	1.4-	1999 07 16	704	0.1+	0.5+	1999 09 07	699	0.1-	0.3+
1998 06 19	704	0.6+	0.4-	1999 09 04	678	0.1+	0.0	1999 09 07	699	0.2+	0.4+
1998 06 19	704	0.5-	0.0	1999 09 04	678	0.3-	0.1+	1999 09 11	678	0.3+	0.7+
1998 06 19	704	0.1+	1.3+	1999 09 04	678	0.3+	0.8+	1999 09 11	678	0.1-	0.1-
1998 06 19	704	0.9+	1.2+	1999 09 05	678	0.1+	0.2-	1999 09 11	678	0.5-	1.2-
1998 06 19	704	0.7+	0.3+	1999 09 05	678	0.8-	0.6+	1999 09 11	704	0.4+	0.3-
1998 06 25	704	0.9-	1.0-	1999 09 05	678	0.8-	0.1+	1999 09 11	704	0.2+	0.3-
1998 06 25	704	0.2+	0.2-	1999 09 05	678	0.6-	0.4+	1999 09 11	704	0.0	0.2-
1998 06 25	704	0.3-	0.0	1999 09 07	678	0.5+	0.5+	1999 09 11	704	0.0	1.2-
1998 06 25	704	0.7-	1.0-	1999 09 07	678	0.3-	0.3+	1999 09 11	704	0.1+	0.4+
1999 07 16	704	0.0	0.6+	1999 09 07	678	0.6-	0.5+	1999 09 18	678	0.3-	0.3-
1999 07 16	704	0.7+	1.0+	1999 09 07	678	0.9-	0.1+	1999 09 18	678	0.9+	0.8-

1999 RV = 1993 FU₇₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	308.07899		(2000.0)	P		Q					
<i>n</i>	0.23427679	ω	194.77765	+0.72240405		-0.69022314					
<i>a</i>	2.6060528	Ω	209.00666	+0.64278448		+0.69246313					
<i>e</i>	0.2964757	<i>i</i>	4.91261	+0.25487352		+0.20996861					
<i>P</i>	4.21 <th><i>H</i></th> <td>14.7<th><i>G</i></th><td>0.15<th><i>U</i></th><td>4</td></td></td>	<i>H</i>	14.7 <th><i>G</i></th> <td>0.15<th><i>U</i></th><td>4</td></td>	<i>G</i>	0.15 <th><i>U</i></th> <td>4</td>	<i>U</i>	4				
Residuals in seconds of arc											
1993 03 21	809	0.0	0.0	1999 09 04	703	0.5-	0.6-	1999 09 08	703	0.0	0.1-
1993 03 22	809	0.2+	0.6+	1999 09 04	703	0.8-	0.9-	1999 09 08	703	0.2-	0.3+
1999 07 13	704	0.3+	0.2-	1999 09 05	699	0.2+	1.6+	1999 09 08	703	0.4-	0.3-
1999 07 13	704	0.1+	0.2+	1999 09 05	699	0.8-	1.1+	1999 09 08	703	0.3+	0.4-
1999 07 13	704	0.2+	0.3+	1999 09 05	699	0.1-	0.3+	1999 09 09	704	0.3+	0.1+
1999 07 13	704	0.2+	0.9+	1999 09 05	703	0.3-	1.1-	1999 09 09	704	0.6+	0.2+
1999 07 13	704	0.0	0.2+	1999 09 05	703	0.4-	0.2+	1999 09 09	704	0.5+	0.9+
1999 07 23	704	0.2+	0.4-	1999 09 05	703	0.5-	0.3-	1999 09 09	704	0.1-	1.3+
1999 07 23	704	0.1+	0.8-	1999 09 05	703	0.2-	0.9+	1999 09 09	704	0.1+	0.0
1999 07 23	704	0.3-	0.8-	1999 09 07	704	0.4-	0.8-	1999 09 13	704	0.1-	0.1-
1999 07 23	704	0.1+	0.3-	1999 09 07	704	0.3-	0.5+	1999 09 13	704	0.6+	0.3-
1999 07 23	704	0.2+	0.7-	1999 09 07	704	0.0	0.2-	1999 09 13	704	0.4+	0.2+
1999 09 04	703	0.6-	0.5-	1999 09 07	704	0.1-	0.5+	1999 09 13	704	0.7+	0.1-
1999 09 04	703	0.6-	0.6-	1999 09 07	704	0.8+	0.2+	1999 09 13	704	0.6+	0.1-

1999 RE₁ = 1990 MZ₁ = 1993 BV₁₄

Id. T. Urata

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	116.03446		(2000.0)	P		Q					
n	0.23433877	ω	285.84548	-0.60731801		+0.76876248					
a	2.6055932	Ω	305.01048	-0.60253072		-0.61012760					
e	0.0783385	i	14.16421	-0.51780456		-0.19169913					
P	4.21	H	13.4	G	0.15	U	3				
Residuals in seconds of arc											
1990 06 28	808	1.0-	0.7+	1999 09 05	681	0.1-	0.3-	1999 09 08	704	0.2+	0.5-
1990 06 28	808	1.0+	0.8-	1999 09 05	888	0.7+	0.0	1999 09 08	704	0.5+	0.6-
1993 01 23	809	0.5+	0.8-	1999 09 05	888	0.8+	0.4-	1999 09 08	704	0.1+	0.2-
1993 01 28	809	1.4+	1.1+	1999 09 05	888	0.3-	0.2-	1999 09 08	704	0.1-	0.2-
1993 01 28	809	1.9-	0.3-	1999 09 07	681	0.7-	0.6+	1999 09 08	704	0.5+	0.1-
1999 09 04	888	0.4-	0.3-	1999 09 07	681	0.7-	0.5+	1999 09 12	888	1.4-	0.1-
1999 09 04	888	0.1+	0.0	1999 09 07	681	0.3-	0.2+	1999 09 12	888	0.3-	0.2+
1999 09 04	888	0.2-	0.5+	1999 09 07	681	0.3-	0.3+	1999 09 18	704	0.1+	0.3-

1999 09 05	681	0.1-	0.2+	1999 09 08	704	0.4+	0.0	1999 09 18	704	0.5+	0.3-
1999 09 05	681	0.1-	0.3+	1999 09 08	704	0.1-	0.1-	1999 09 18	704	0.1+	0.1-
1999 09 05	681	0.1-	0.4+	1999 09 08	704	0.1-	0.2-	1999 09 18	704	0.4+	0.2-
1999 09 05	681	0.1-	0.1+	1999 09 08	704	0.0	0.1-	1999 09 18	704	0.5+	0.3+
1999 09 05	681	0.2+	0.8+	1999 09 08	704	0.0	0.1-				

1999 RM₁ = 9536 P-L

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	315.69084		(2000.0)	P		Q					
<i>n</i>	0.30265772	ω	229.25338	+0.92437535		-0.38094884					
<i>a</i>	2.1970244	Ω	153.12082	+0.36209094		+0.85948070					
<i>e</i>	0.0583854	<i>i</i>	2.56129	+0.12008485		+0.34083853					
<i>P</i>	3.26	<i>H</i>	16.1	<i>G</i>	0.15	<i>U</i>	5				
Residuals in seconds of arc											
1960 09 24	675	0.2+	0.4+	1999 09 07	704	0.2-	0.2+	1999 09 09	704	1.3+	1.9-
1960 10 22	675	1.8-	0.6-	1999 09 07	704	0.5-	0.0	1999 09 13	704	0.7-	0.1+
1960 10 24	675	0.3+	0.1-	1999 09 07	704	0.5+	0.9+	1999 09 13	704	0.4+	0.9-
1960 10 26	675	1.3+	0.3+	1999 09 07	704	0.0	0.6+	1999 09 13	704	0.3-	0.2-
1999 09 04	467	0.1-	0.4+	1999 09 08	704	0.4-	0.1-	1999 09 13	704	0.2+	0.2+
1999 09 04	467	0.4-	0.5+	1999 09 08	704	1.2+	0.8-	1999 09 13	704	0.7-	0.2+
1999 09 04	467	0.2-	0.3+	1999 09 08	704	0.2-	1.3-	1999 09 27	467	0.8+	0.5+
1999 09 06	467	0.4+	0.8+	1999 09 09	704	0.4-	1.2-	1999 09 27	467	0.5+	0.3+
1999 09 06	467	0.1-	1.1+	1999 09 09	704	0.3-	0.3-	1999 09 27	467	1.5-	0.9+
1999 09 06	467	0.4+	0.9+	1999 09 09	704	1.0+	1.2-				
1999 09 07	704	0.9-	0.3+	1999 09 09	704	0.1+	0.2-				

1999 RT₁ = 1995 UN₄₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	346.65765		(2000.0)	P		Q					
<i>n</i>	0.23567347	ω	11.68188	+0.99735811		−0.06177949					
<i>a</i>	2.5957464	Ω	351.57508	+0.02476066		+0.78364811					
<i>e</i>	0.1799252	<i>i</i>	15.11775	+0.06829138		+0.61812534					
<i>P</i>	4.18 <th><i>H</i></th> <td>13.7<th><i>G</i></th><td>0.15<th><i>U</i></th><td>2</td></td></td>	<i>H</i>	13.7 <th><i>G</i></th> <td>0.15<th><i>U</i></th><td>2</td></td>	<i>G</i>	0.15 <th><i>U</i></th> <td>2</td>	<i>U</i>	2				
Residuals in seconds of arc											
1995 10 23	033	0.1+	0.3+	1999 08 22	703	0.2−	0.3+	1999 09 06	120	0.2−	0.2−
1995 10 23	033	0.5−	0.6−	1999 08 22	703	0.6−	1.1+	1999 09 07	704	0.2+	0.3−
1995 10 24	033	0.3+	0.5+	1999 08 22	703	0.1−	0.6+	1999 09 07	704	0.3+	0.0
1997 02 02	691	0.1−	0.1−	1999 08 22	703	0.4−	0.6+	1999 09 07	704	0.4+	0.2−
1997 02 02	691	0.1−	0.2−	1999 08 22	703	0.4+	0.5+	1999 09 07	704	0.2+	0.0
1997 02 02	691	0.1−	0.2−	1999 09 04	691	0.5−	0.0	1999 09 07	704	0.2+	0.0
1999 07 16	704	0.5−	0.1+	1999 09 04	691	0.1−	0.2−	1999 09 07	120	0.0	0.2−
1999 07 16	704	0.1−	0.4−	1999 09 04	691	0.4−	0.2−	1999 09 07	120	0.0	0.4−
1999 07 16	704	0.4+	0.7−	1999 09 05	120	0.7+	0.3−	1999 09 07	120	0.3+	0.2−
1999 07 16	704	0.5+	0.7−	1999 09 06	120	0.1+	0.2−	1999 09 08	120	0.0	0.6−
1999 07 16	704	1.1+	0.5−	1999 09 06	120	0.2+	0.3−	1999 09 16	120	0.1+	0.3−
1999 08 22	703	0.3+	0.9+	1999 09 06	120	0.7−	0.4+	1999 09 16	120	0.1−	0.3−
1999 08 22	703	0.5−	0.2+	1999 09 06	120	0.2−	0.2−				
1999 08 22	703	0.6−	1.0+	1999 09 06	120	0.3+	0.0				

1999 RW₁ = 1993 FK₇₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	342.44510		(2000.0)	P		Q					
n	0.22319159	ω	4.90447	+0.98022933		-0.19782692					
a	2.6916432	Ω	6.50928	+0.18035698		+0.88528267					
e	0.2240155	i	1.95581	+0.08137456		+0.42087897					
P	4.42	H	14.6	G	0.15	U	5				
Residuals in seconds of arc											
1993 03 21	809	0.1+	0.3+	1999 08 22	699	1.4-	0.9+	1999 09 07	120	0.2+	0.1-
1993 03 22	809	0.4+	0.8+	1999 08 22	699	0.7-	0.2+	1999 09 11	120	0.2+	0.1-
1999 07 16	704	0.0	0.1+	1999 08 22	699	0.8-	0.0	1999 09 11	120	0.2+	0.1-
1999 07 16	704	0.1-	0.8-	1999 09 05	120	1.6+	1.3-	1999 09 12	120	0.2-	0.1-
1999 07 16	704	0.6+	1.1-	1999 09 06	120	1.5+	0.2+	1999 09 12	120	0.1-	0.6+

1999 07 16	704	0.8+	1.1-	1999 09 06	120	0.1+	0.6-	1999 09 12	120	0.2+	0.1-
1999 07 16	704	0.7+	0.4-	1999 09 06	120	0.4-	0.8+	1999 09 14	704	0.1-	0.4-
1999 08 22	703	0.3+	0.3+	1999 09 06	120	0.7+	0.2+	1999 09 14	704	0.1-	0.2-
1999 08 22	703	0.6-	0.9+	1999 09 06	120	0.0	0.4-	1999 09 14	704	0.2-	0.2-
1999 08 22	703	0.0	0.1+	1999 09 07	704	0.2+	0.2-	1999 09 14	704	0.3-	0.3-
1999 08 22	703	0.9-	0.0	1999 09 07	704	0.1+	0.2+	1999 09 14	704	0.4-	0.2-
1999 08 22	703	0.3-	0.2+	1999 09 07	704	0.0	0.6+	1999 09 14	703	0.4-	0.1-
1999 08 22	703	0.4-	0.7+	1999 09 07	704	0.2+	0.2+	1999 09 14	703	0.4-	0.4+
1999 08 22	703	0.4-	0.6+	1999 09 07	704	0.3-	0.1+	1999 09 14	703	0.5-	0.5-
1999 08 22	703	0.0	0.5+	1999 09 07	120	0.8+	0.3-	1999 09 14	703	0.4+	0.4+

1999 RZ₁ = 1995 YD₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	336.34720	(2000.0)	<i>P</i>	Williams	<i>Q</i>
<i>n</i>	0.26198805	ω	19.19224	+0.91005680	-0.41448090
<i>a</i>	2.4188841	Ω	5.29510	+0.37815045	+0.82881314
<i>e</i>	0.1984012	<i>i</i>	0.92014	+0.16970225	+0.37586481
<i>P</i>	3.76	<i>H</i>	15.5	<i>G</i>	0.15

Residuals in seconds of arc

1995 12 19	608	0.3-	0.4-	1999 08 13	699	0.2+	0.3+	1999 09 07	704	0.6-	0.7-
1995 12 19	608	0.1+	0.4-	1999 09 06	120	0.7+	0.4-	1999 09 07	691	0.5-	0.5+
1995 12 20	608	0.2+	0.5+	1999 09 06	120	0.3+	0.0	1999 09 07	691	0.6-	0.3+
1995 12 20	608	0.6+	0.2+	1999 09 06	120	0.1-	0.7-	1999 09 07	691	0.6-	0.2+
1995 12 20	608	0.5+	0.2+	1999 09 06	120	0.5+	0.2-	1999 09 08	120	0.2+	0.1+
1995 12 21	608	0.6-	0.9+	1999 09 06	120	0.5+	0.1-	1999 09 08	120	0.3+	0.2-
1995 12 21	608	0.1+	0.5+	1999 09 06	120	0.7+	0.1-	1999 09 10	120	0.7-	0.1-
1995 12 21	608	0.4-	0.3+	1999 09 07	704	1.2+	0.1+	1999 09 10	120	0.0	0.2-
1995 12 21	608	1.3-	0.5+	1999 09 07	704	1.0-	1.6+	1999 09 12	120	0.5-	0.0
1999 08 13	699	0.4-	0.1-	1999 09 07	704	0.5+	0.6-	1999 09 12	120	0.2+	0.4+
1999 08 13	699	0.3-	1.0+	1999 09 07	704	0.3+	1.8-				

1999 RA₂ = 1998 FY₁₃₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	5.16516	(2000.0)	<i>P</i>	Williams	<i>Q</i>
<i>n</i>	0.30687963	ω	167.96993	+0.92963760	+0.36834780
<i>a</i>	2.1768275	Ω	170.39934	-0.34270199	+0.87397363
<i>e</i>	0.1779767	<i>i</i>	3.32956	-0.13538565	+0.31700156
<i>P</i>	3.21	<i>H</i>	15.9	<i>G</i>	0.15

Residuals in seconds of arc

1998 03 20	704	0.2-	1.5-	1999 09 05	699	0.5-	0.2+	1999 09 09	704	0.1+	0.1+
1998 03 20	704	0.5+	0.1+	1999 09 05	699	0.4-	0.7+	1999 09 09	704	0.7-	0.0
1998 03 20	704	1.6+	0.8-	1999 09 06	120	0.3+	1.0-	1999 09 10	120	(1.4-	2.5+)
1998 03 20	704	(2.5+	0.6+)	1999 09 06	120	0.3+	1.2-	1999 09 10	120	0.3-	0.4-
1998 03 20	704	1.2-	0.5+	1999 09 06	120	0.8+	0.5-	1999 09 10	120	0.6+	0.2-
1998 03 28	704	1.3-	0.3+	1999 09 06	120	0.9+	0.2-	1999 09 10	120	1.3+	0.0
1998 03 28	704	0.7-	0.2+	1999 09 06	120	0.5+	0.4+	1999 09 11	120	0.4+	0.2+
1998 03 28	704	0.0	0.0	1999 09 06	120	0.5-	1.1+	1999 09 11	120	0.1-	0.1+
1998 03 28	704	(4.0-	0.0)	1999 09 07	704	0.2+	0.3+	1999 09 12	120	0.8-	0.0
1998 03 29	704	1.5+	0.2-	1999 09 07	704	0.1+	0.1+	1999 09 12	120	0.1+	0.1+
1998 03 29	704	(1.2+	2.2-)	1999 09 07	704	0.3+	0.7-	1999 09 12	120	0.1+	0.2+
1998 03 29	704	1.1-	0.3+	1999 09 07	704	1.0-	0.9-	1999 09 13	120	0.4-	0.1+
1998 03 29	704	0.3+	0.3-	1999 09 07	704	0.1-	1.9-	1999 09 13	120	0.6+	0.3-
1999 08 13	699	0.3+	0.5+	1999 09 08	120	0.1+	0.2+	1999 09 16	691	0.2-	0.7+
1999 08 13	699	0.2-	0.4+	1999 09 09	704	0.1+	0.2-	1999 09 16	691	0.0	0.6+
1999 08 13	699	0.1-	0.0	1999 09 09	704	0.2+	0.0	1999 09 16	691	0.2-	0.5+
1999 09 05	699	1.3-	0.2+	1999 09 09	704	0.1+	0.1-				

1999 RG₃ = 1979 QP₃ = 1992 GN₅ = 1998 MZ₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	356.55797	(2000.0)	<i>P</i>	Williams	<i>Q</i>
<i>n</i>	0.19985744	ω	175.39433	+0.99362034	+0.11277136
<i>a</i>	2.8972714	Ω	178.12948	-0.10452974	+0.92462016
<i>e</i>	0.0775142	<i>i</i>	1.95478	-0.04233384	+0.36381338
<i>P</i>	4.93	<i>H</i>	14.0	<i>G</i>	0.15

Residuals in seconds of arc

1979 08 22	809	(0.9-	2.8-)	1998 06 26	704	1.0+	0.8-	1999 09 07	120	0.3+	0.1+
1979 08 22	809	0.6+	1.6-	1998 06 26	704	0.1-	1.5+	1999 09 11	120	0.1-	0.5-
1979 08 22	809	0.4-	2.0-	1999 07 16	704	1.4-	0.5+	1999 09 11	120	1.3+	0.4-
1979 08 23	809	1.4+	0.8+	1999 07 16	704	0.3-	0.7+	1999 09 14	704	0.2-	0.2-
1979 08 23	809	0.7+	0.2-	1999 07 16	704	0.9+	0.9-	1999 09 14	704	0.1-	0.2-
1979 08 26	809	1.0+	0.4+	1999 08 22	703	0.2-	1.1+	1999 09 14	704	0.5+	0.4+
1979 08 26	809	0.2-	0.2+	1999 08 22	703	0.1+	0.2+	1999 09 14	704	0.4-	0.1-
1979 08 26	809	0.4-	0.4+	1999 08 22	703	0.2+	0.6+	1999 09 14	704	0.0	0.0
1979 08 30	809	0.8-	0.1+	1999 08 22	703	0.9+	0.2+	1999 09 14	703	0.2+	0.2+
1979 08 30	809	1.0-	0.5-	1999 09 06	120	0.3+	0.5-	1999 09 14	703	0.0	0.6+
1992 04 03	033	0.0	0.9+	1999 09 06	120	0.5-	0.0	1999 09 14	703	0.3-	0.2-
1992 04 03	033	0.2+	0.1-	1999 09 07	120	0.0	1.3+	1999 09 14	703	0.2-	0.2+
1998 06 24	704	0.5-	0.4+	1999 09 07	704	0.4+	0.0	1999 09 14	703	0.9-	0.1-
1998 06 24	704	(2.6+	0.3-)	1999 09 07	704	0.1+	0.4+	1999 09 14	703	0.1-	0.4-
1998 06 24	704	1.2+	0.2-	1999 09 07	704	0.5+	0.4-	1999 09 14	703	1.1-	0.4-
1998 06 26	704	1.0-	1.1+	1999 09 07	704	0.4-	0.8+	1999 09 14	703	0.4+	0.0
1998 06 26	704	(1.5+	2.3+)	1999 09 07	704	1.1-	0.5+				
1998 06 26	704	0.4-	0.9-	1999 09 07	120	0.1+	0.2-				

1999 RO₃ = 1998 DP₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	29.80755	(2000.0)	<i>P</i>	Williams	<i>Q</i>
<i>n</i>	0.30519524	ω	55.27154	+0.09562794	+0.99424715
<i>a</i>	2.1848295	Ω	220.30118	-0.93592998	+0.07330249
<i>e</i>	0.1835751	<i>i</i>	4.27794	-0.33895481	+0.07809834
<i>P</i>	3.23	<i>H</i>	16.0	<i>G</i>	0.15

Residuals in seconds of arc

1998 02 24	691	0.2-	0.3-	1999 08 12	699	0.1-	0.4+	1999 09 08	703	0.2-	0.2-
1998 02 24	691	0.4-	0.4-	1999 08 17	691	0.3-	0.2+	1999 09 08	703	0.3-	0.2+
1998 02 24	691	0.1-	0.4-	1999 08 17	691	0.9-	0.4+	1999 09 08	703	0.0	0.1+
1998 02 28	691	0.2+	0.1+	1999 08 17	691	0.6-	0.3+	1999 09 08	703	0.3+	0.1-
1998 02 28	691	0.2+	0.0	1999 09 04	703	0.5-	0.1+	1999 09 09	704	0.4-	0.2+
1998 02 28	691	0.2+	0.2+	1999 09 04	703	0.5-	0.5+	1999 09 09	704	1.2+	0.0
1999 07 13	704	1.2+	0.4-	1999 09 04	703	0.1-	0.1+	1999 09 09	704	1.2+	1.6-
1999 07 13	704	0.8+	0.2+	1999 09 04	703	0.7-	0.3+	1999 09 09	704	0.5+	0.2+
1999 07 13	704	0.2+	1.0-	1999 09 05	699	0.5-	0.5+	1999 09 09	704	0.0	0.9-
1999 07 13	704	0.4+	0.2+	1999 09 05	699	0.0	0.6+	1999 09 13	704	0.9+	1.0+
1999 07 13	704	0.6-	0.1-	1999 09 05	699	0.0	0.9+	1999 09 13	704	0.4+	0.3-
1999 07 23	704	0.3-	0.4+	1999 09 07	704	0.4-	0.0	1999 09 13	704	1.7+	1.5-
1999 07 23	704	0.4+	0.4-	1999 09 07	704	0.2+	0.2-	1999 09 13	704	0.5-	0.1-
1999 07 23	704	0.3+	0.5-	1999 09 07	704	0.5-	0.2+	1999 09 13	704	0.2+	0.2-
1999 08 12	699	1.2-	0.2+	1999 09 07	704	0.2+	0.1-				
1999 08 12	699	0.4-	0.3+	1999 09 07	704	0.4-	0.7-				

1999 RZ₃ = 1996 TA₆₆ = 1998 FQ₁₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	355.46432	(2000.0)	<i>P</i>	Williams	<i>Q</i>
<i>n</i>	0.29225585	ω	120.88115	+0.83614679	+0.54809048
<i>a</i>	2.2488504	Ω	205.90107	-0.51844922	+0.77702832
<i>e</i>	0.1586913	<i>i</i>	2.80012	-0.17907806	+0.30955421
<i>P</i>	3.37	<i>H</i>	15.6	<i>G</i>	0.15

Residuals in seconds of arc

1996 10 07	691	0.3+	0.1-	1998 03 22	704	(2.5+	2.6-)	1999 09 08	703	0.0	0.1+
1996 10 07	691	0.4+	0.2-	1999 09 04	703	0.1-	0.1-	1999 09 08	703	0.1-	0.4+

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1996 10 07	691	0.4+	0.2-	1999 09 04	703	0.4-	0.2+	1999 09 08	703	0.4-	1.0+
1996 10 12	566	0.3+	0.3+	1999 09 04	703	0.1-	0.6+	1999 09 09	704	0.6+	0.6+
1996 10 12	566	0.9-	0.0	1999 09 04	703	(2.2-	2.3+)	1999 09 09	704	0.0	0.1-
1996 10 12	566	0.4-	0.1+	1999 09 06	699	0.8+	0.1-	1999 09 09	704	0.5-	0.8-
1998 03 20	704	0.4-	1.1+	1999 09 06	699	0.0	0.0	1999 09 09	704	0.2-	0.1+
1998 03 20	704	1.6+	1.8-	1999 09 06	699	0.2-	0.5+	1999 09 09	704	0.3-	0.1-
1998 03 20	704	0.4-	0.4-	1999 09 07	704	0.2-	0.1+	1999 09 13	704	0.8+	0.8+
1998 03 20	704	0.3-	1.2+	1999 09 07	704	0.6+	0.8-	1999 09 13	704	0.2+	0.4+
1998 03 20	704	(5.3-	0.9+)	1999 09 07	704	0.1-	1.0-	1999 09 13	704	0.4-	0.3+
1998 03 22	704	0.7+	1.0+	1999 09 07	704	0.1-	0.5-	1999 09 13	704	0.6+	0.3-
1998 03 22	704	0.6-	0.4-	1999 09 07	704	0.7-	0.0	1999 09 13	704	0.2+	1.6-
1998 03 22	704	0.9-	1.2-	1999 09 08	703	0.3+	0.1+				

1999 RS₄ = 1978 VF₁₀ = 1978 WH₁₃ = 1998 KX₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	23.22724		(2000.0)		P		Q
n	0.17944283	ω	235.83406		+0.59243998		+0.80560582
a	3.1130443	Ω	70.49673		-0.73781792		+0.54445116
e	0.1810848	i	0.22854		-0.32348043		+0.23360693
P	5.49	H	13.4	G	0.15	U	4

Residuals in seconds of arc

1978 11 05	675	1.6-	0.1-	1999 08 12	699	0.4+	0.3+	1999 09 09	704	0.9+	0.7+
1978 11 06	675	0.5+	0.2+	1999 08 12	699	0.1+	0.9+	1999 09 09	120	0.1+	0.6-
1978 11 07	675	2.0-	0.2+	1999 09 03	691	0.3+	0.2-	1999 09 09	120	0.2+	0.2-
1978 11 08	675	3.5+	0.1-	1999 09 03	691	0.0	0.2-	1999 09 10	120	1.5-	0.6-
1978 11 29	675	2.3-	0.1-	1999 09 03	691	0.0	0.1-	1999 09 10	120	0.4-	0.2+
1978 11 30	675	2.0+	0.0	1999 09 07	704	0.3+	0.0	1999 09 10	120	0.5-	0.0
1998 05 22	704	1.7+	1.1-	1999 09 07	704	0.2+	0.3+	1999 09 14	704	0.1+	0.3-
1998 05 22	704	0.1-	0.3+	1999 09 07	704	0.3+	0.2-	1999 09 14	704	0.5-	0.3-
1998 05 22	704	1.4-	0.6-	1999 09 07	704	0.1+	0.1-	1999 09 14	704	0.0	0.1-
1998 05 22	704	0.5+	0.7-	1999 09 07	704	0.1+	0.2-	1999 09 14	704	0.3-	0.0
1998 05 22	704	0.2+	0.3+	1999 09 08	691	0.2-	0.0	1999 09 14	704	0.4+	0.0
1998 05 24	704	0.1-	0.2+	1999 09 08	691	0.2-	0.1+	1999 09 14	703	0.3+	0.1+
1998 05 24	704	0.3-	0.1-	1999 09 08	691	0.1-	0.1-	1999 09 14	703	0.0	0.8+
1998 05 24	704	0.4-	0.4+	1999 09 09	704	0.1-	0.1-	1999 09 14	703	0.2-	0.5-
1998 05 24	704	0.0	1.0+	1999 09 09	704	0.9+	0.1+	1999 09 14	703	0.5-	0.5-
1998 05 24	704	0.2-	0.3+	1999 09 09	704	0.2+	0.5+				
1999 08 12	699	1.1-	0.3+	1999 09 09	704	0.7+	0.2+				

1999 RL₆ = 1995 UK₃₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	310.68806		(2000.0)		P	Q	
n	0.24027854	ω	56.54166	+0.65919734		-0.75191151	
a	2.5624735	Ω	352.19903	+0.66495898		+0.58869935	
e	0.2001399	i	3.96200	+0.35112451		+0.29675269	
P	4.10	H	15.5	G	0.15	U	5

Residuals in seconds of arc

1995 10 22	691	0.5+	0.3+	1999 09 07	704	0.3+	0.6+	1999 09 10	120	0.4-	0.4-
1995 10 22	691	0.7+	0.1+	1999 09 07	704	0.7-	0.1+	1999 09 11	699	0.5-	0.2+
1995 10 22	691	0.4+	0.2-	1999 09 07	704	0.1+	0.2-	1999 09 11	699	1.4+	0.1+
1995 10 27	691	0.8-	0.1+	1999 09 08	691	0.5-	0.0	1999 09 11	699	0.4-	1.0+
1995 10 27	691	0.5-	0.0	1999 09 08	691	0.5-	0.2-	1999 09 14	704	0.4-	0.1+
1995 10 27	691	0.1-	0.6-	1999 09 08	691	0.4-	0.0	1999 09 14	704	0.2-	0.4+
1999 08 12	699	0.6+	0.7-	1999 09 09	704	0.5+	0.5+	1999 09 14	704	0.6+	1.1-
1999 08 12	699	1.2-	1.0+	1999 09 09	704	0.5+	0.6+	1999 09 14	704	0.1-	0.8-
1999 08 12	699	0.5+	0.6-	1999 09 09	704	0.5-	0.1+	1999 09 14	704	0.3+	0.7-
1999 09 03	691	0.1-	0.6-	1999 09 09	704	0.5-	0.1+	1999 09 17	691	0.5-	0.4+
1999 09 03	691	0.2-	0.8-	1999 09 09	120	1.9+	1.3+	1999 09 17	691	0.2-	0.3+
1999 09 03	691	0.0	0.5-	1999 09 09	120	0.0	0.2-	1999 09 17	691	0.3-	0.5+
1999 09 07	704	1.1+	0.6-	1999 09 10	120	0.6-	0.6+				
1999 09 07	704	0.6+	0.2+	1999 09 10	120	0.3-	0.5-				

1999 RK₉ = 1998 HX₅₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	324.06174		(2000.0)		P		Q
n	0.30346790	ω	32.70837		+0.90543524		-0.42443959
a	2.1931123	Ω	352.39916		+0.37874409		+0.81434761
e	0.1635018	i	2.67342		+0.19167666		+0.39583963
P	3.25	H	15.2	G	0.15	U	4

Residuals in seconds of arc

1998 03 25	704	1.1-	0.9-	1999 08 12	699	0.1+	0.2-	1999 09 09	120	0.5+	0.3-
1998 03 25	704	1.0+	0.2-	1999 09 04	691	0.5+	0.0	1999 09 09	120	0.1-	0.1+
1998 03 25	704	1.1-	0.0	1999 09 04	691	0.2+	0.2+	1999 09 10	120	0.3+	0.1+
1998 03 25	704	(6.5-	1.2+)	1999 09 04	691	0.2+	0.1+	1999 09 10	120	0.2-	0.7-
1998 04 21	704	0.6+	0.1-	1999 09 07	704	0.2+	0.2+	1999 09 11	699	0.0	0.2+
1998 04 21	704	(1.2-	2.8+)	1999 09 07	704	0.5+	0.2+	1999 09 11	699	0.2+	0.1+
1998 04 21	704	(3.1-	1.1+)	1999 09 07	704	0.0	0.0	1999 09 11	699	0.2+	0.5+
1998 04 21	704	0.6+	0.3-	1999 09 07	704	0.4+	0.2+	1999 09 11	120	0.2-	0.1-
1998 04 22	704	0.2+	0.3-	1999 09 07	704	0.1+	0.1-	1999 09 11	120	0.8+	0.1+
1998 04 22	704	0.6-	0.8+	1999 09 08	691	0.3+	0.0	1999 09 14	704	0.4+	0.3-
1998 04 22	704	0.3+	0.3-	1999 09 08	691	0.3+	0.0	1999 09 14	704	0.1-	0.5-
1998 04 22	704	0.7-	0.4-	1999 09 08	691	0.2+	0.1-	1999 09 14	704	0.2+	0.0
1999 07 16	704	0.5-	0.5-	1999 09 09	704	0.3+	0.2+	1999 09 14	704	0.1+	0.1+
1999 07 16	704	0.2-	0.8+	1999 09 09	704	0.0	0.1-	1999 09 14	704	0.1+	0.7-
1999 07 16	704	0.6-	1.5+	1999 09 09	704	0.6-	0.1+	1999 09 17	691	0.6-	0.2-
1999 08 12	699	0.3-	0.1+	1999 09 09	704	0.9-	0.2-	1999 09 17	691	0.5-	0.3-
1999 08 12	699	0.1-	0.2+	1999 09 09	704	0.9-	0.7-	1999 09 17	691	0.5-	0.3-

1999 RD₁₀ = 1991 PU₂₁ = 1998 HM₈₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	315.84597		(2000.0)		P		Q
n	0.24443955	ω	194.36763	+0.94071214		-0.33900559	
a	2.5333103	Ω	185.49072	+0.32200139		+0.90327674	
e	0.2024272	i	6.99714	+0.10665725		+0.26299495	
P	4.03	H	14.1	G	0.15	U	4

Residuals in seconds of arc

1991 08 10	675	0.9+	0.5-	1999 07 13	704	0.2-	0.5+	1999 09 08	704	0.6-	0.9+
1991 08 10	675	0.7-	0.5-	1999 07 13	704	0.5+	0.0	1999 09 08	704	0.5-	0.5+
1998 04 21	704	0.2+	1.1+	1999 07 13	704	0.2-	0.3-	1999 09 08	704	0.2+	0.1+
1998 04 21	704	0.1+	0.2-	1999 07 23	704	0.7-	0.4-	1999 09 08	704	0.1+	0.6+
1998 04 21	704	0.5+	0.0	1999 07 23	704	0.1-	0.3-	1999 09 08	704	0.3-	0.1-
1998 04 21	704	0.3+	0.0	1999 07 23	704	0.3-	0.3-	1999 09 09	704	1.0+	0.8-
1998 04 21	704	(1.7-	2.2+)	1999 09 05	699	1.2-	0.3-	1999 09 09	704	0.1-	0.6-
1998 04 22	704	0.2+	0.6+	1999 09 05	699	0.3-	0.3-	1999 09 09	704	0.4+	0.0
1998 04 22	704	1.0-	1.1-	1999 09 05	699	0.6-	0.4+	1999 09 09	704	0.2-	0.6-
1998 04 22	704	0.7-	0.7+	1999 09 07	704	0.1+	0.6+	1999 09 13	704	0.4+	0.9+
1998 04 22	704	0.3-	1.5-	1999 09 07	704	0.1+	0.1+	1999 09 13	704	0.4+	0.0
1998 04 22	704	0.9+	0.3+	1999 09 07	704	0.1+	1.0+	1999 09 13	704	0.5+	0.1+
1999 07 13	704	0.1+	0.2+	1999 09 07	704	0.2-	1.0+	1999 09 13	704	1.0+	1.4-
1999 07 13	704	0.0	0.1-	1999 09 07	704	0.0	0.9+	1999 09 13	704	0.4+	1.2-

1999 RD₁₁ = 1997 AV₂₁ = 1998 FE₇₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	326.44372		(2000.0)		P		Q
n	0.28787123	ω	332.09239	+0.99185330		-0.12476042	
a	2.2716280	Ω	35.10391	+0.12361323		+0.89386464	
e	0.1254549	i	2.56414	+0.03077023		+0.43062843	
P	3.42	H	15.0	G	0.15	U	4

Residuals in seconds of arc

1997 0

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1997 01 15	327	0.2+	0.2+	1999 09 06	699	0.5+	0.1+	1999 09 09	704	0.0	0.0
1998 03 20	704	0.3-	0.3-	1999 09 06	699	0.1-	0.3+	1999 09 09	704	0.1-	0.2+
1998 03 20	704	0.6+	0.7-	1999 09 06	699	0.1+	0.3+	1999 09 09	704	0.0	0.1-
1998 03 20	704	0.0	0.5-	1999 09 07	704	0.7+	0.3+	1999 09 13	704	0.8+	0.0
1998 03 20	704	1.0-	0.6+	1999 09 07	704	0.6-	1.0-	1999 09 13	704	0.1+	0.3+
1998 03 22	704	0.3-	0.9-	1999 09 07	704	1.1-	1.0-	1999 09 13	704	0.2+	0.7-
1998 03 22	704	1.3+	0.6+	1999 09 07	704	0.4+	0.5-	1999 09 13	704	0.1+	0.2+
1998 03 22	704	0.1-	1.7+	1999 09 07	704	0.1+	0.2-	1999 09 13	704	0.1-	0.2+

1999 RG₁₁ = 1998 KD₅₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i> 257.31359				(2000.0)			
<i>n</i> 0.21117196				<i>ω</i> 297.97486			
<i>a</i> 2.7928346				<i>Ω</i> 138.03663			
<i>e</i> 0.0584915				<i>i</i> 15.45020			
<i>P</i> 4.67				<i>H</i> 12.7			
				<i>G</i> 0.15			
				<i>U</i> 3			

Residuals in seconds of arc

1998 05 23	704	0.3+	0.3-	1999 08 08	699	0.5-	0.4+	1999 09 07	704	0.2+	0.5+
1998 05 23	704	0.8+	0.3+	1999 08 08	699	0.5-	0.6+	1999 09 07	704	0.2+	0.5+
1998 05 23	704	0.4-	0.3-	1999 08 08	699	0.2-	0.5+	1999 09 08	704	0.8+	0.1+
1998 05 23	704	0.7+	0.6+	1999 08 13	699	0.2-	0.3-	1999 09 08	704	1.3+	0.9-
1998 05 23	704	0.1-	0.1+	1999 08 13	699	0.1-	0.1-	1999 09 08	704	1.5+	1.3-
1998 05 26	704	0.3-	0.1+	1999 08 13	699	0.4-	0.2+	1999 09 08	704	(2.4+ 1.3-)	
1998 05 26	704	0.2+	0.2+	1999 09 07	699	0.0	0.6+	1999 09 08	703	0.3+	0.9-
1998 05 26	704	0.7-	0.3-	1999 09 07	699	0.0	0.4-	1999 09 08	703	0.6-	0.0
1998 05 26	704	0.5-	0.5-	1999 09 07	699	0.3-	0.0	1999 09 08	703	0.2-	0.5-
1999 07 16	704	0.0	0.6-	1999 09 07	699	0.8-	0.2-	1999 09 08	703	0.5-	0.1+
1999 07 16	704	0.8+	0.7-	1999 09 07	704	0.1+	0.1-	1999 09 13	704	0.1-	0.4+
1999 07 16	704	0.9+	1.2-	1999 09 07	699	0.0	0.6+	1999 09 13	704	0.3-	0.4+
1999 07 21	699	0.1+	0.9+	1999 09 07	699	0.9-	0.8+	1999 09 13	704	0.1-	0.1+
1999 07 21	699	0.7-	0.5+	1999 09 07	704	0.7+	0.1-	1999 09 13	704	0.0	0.2-
1999 07 21	699	0.1-	0.6+	1999 09 07	704	0.2+	0.2-	1999 09 13	704	0.4-	0.2-

1999 RM₁₁ = A904 RD = 1975 RX₁ = 1978 VH₆ = 1985 JP₁
= 1987 SK₁₅ = 1988 RU₈ = 1996 HJ₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i> 21.91436				(2000.0)			
<i>n</i> 0.08202855				<i>ω</i> 301.99424			
<i>a</i> 5.2459729				<i>Ω</i> 351.48658			
<i>e</i> 0.2081964				<i>i</i> 2.04021			
<i>P</i> 12.02				<i>H</i> 10.1			
				<i>G</i> 0.15			
				<i>U</i> 1			

Residuals in seconds of arc

1904 09 13	754	1.1+	2.7-	1999 07 21	699	0.0	0.6+	1999 09 08	704	0.1+	0.5-
1975 09 06	095	0.3-	0.8+	1999 07 21	699	0.6-	0.5+	1999 09 08	704	0.1+	0.2-
1978 11 05	675	0.4-	0.8-	1999 07 21	699	0.5-	0.7+	1999 09 08	704	0.3-	0.3+
1978 11 06	675	0.2+	0.0	1999 08 07	699	0.2-	0.4+	1999 09 08	704	0.4-	0.3-
1978 11 08	675	0.4-	0.3-	1999 08 07	699	0.3-	0.8+	1999 09 09	704	0.9+	0.1+
1985 05 14	675	(0.3-	3.1-)	1999 08 07	699	0.6-	0.6+	1999 09 09	704	0.0	0.3-
1987 09 24	095	(3.0+	1.5+)	1999 08 08	699	0.3-	0.6+	1999 09 09	704	0.3-	0.3-
1988 09 12	675	1.2+	0.8-	1999 08 08	699	0.2-	0.4+	1999 09 09	704	0.3-	0.7+
1988 09 12	675	0.6+	0.3-	1999 08 08	699	0.2-	0.2+	1999 09 09	704	0.9-	0.0
1996 04 22	566	0.1-	0.4-	1999 09 03	691	0.0	1.0+	1999 09 09	704	0.3+	0.4-
1996 04 22	566	0.7-	0.2-	1999 09 03	691	0.1-	0.9+	1999 09 09	704	0.1+	0.2-
1996 04 22	566	0.0	0.7-	1999 09 03	691	0.0	0.8+	1999 09 09	704	0.1-	0.5-
1996 04 22	566	0.2-	0.2+	1999 09 03	699	1.0+	0.5+	1999 09 09	704	0.4-	0.2+
1996 04 22	566	0.4+	0.6-	1999 09 03	699	0.2+	0.7+	1999 09 09	704	0.8-	0.6-
1996 04 22	566	0.3-	0.2-	1999 09 03	699	0.4-	0.3+	1999 09 13	704	1.5+	0.1+
1996 04 23	566	0.1+	0.2-	1999 09 07	704	0.0	0.3-	1999 09 13	704	0.2+	0.0
1996 04 23	566	0.1-	0.3-	1999 09 07	704	0.2-	0.3-	1999 09 13	704	0.5+	0.1-
1996 04 23	566	0.1+	0.4-	1999 09 07	704	0.1-	0.1-	1999 09 13	704	0.0	1.2-
1999 07 16	704	1.8+	0.1+	1999 09 07	704	0.2+	0.1+	1999 09 13	704	1.2-	1.9-
1999 07 16	704	0.9+	1.2-	1999 09 07	704	0.4-	0.4-				
1999 07 16	704	0.4-	1.2-	1999 09 08	704	0.5+	0.1-				

M.P.C. 36031

1999 RN₁₁ = 1998 DS₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i> 248.01840				(2000.0)			
<i>n</i> 0.38723528				<i>ω</i> 296.40981			
<i>a</i> 1.8641725				<i>Ω</i> 154.76117			
<i>e</i> 0.1336261				<i>i</i> 25.84314			
<i>P</i> 2.55				<i>H</i> 15.7			
				<i>G</i> 0.15			
				<i>U</i> 4			

Residuals in seconds of arc

1998 02 23	566	0.8-	1.0-	1999 08 22	703	0.7-	0.3-	1999 09 08	704	0.2+	0.6-
1998 02 23	566	0.9-	1.1-	1999 08 22	703	0.6-	0.5-	1999 09 09	704	0.4-	0.7+
1998 02 23	566	0.8-	1.1-	1999 08 22	703	0.1+	0.0	1999 09 09	704	0.4-	0.3+
1998 02 24	566	0.3+	0.7+	1999 08 22	703	0.3+	0.3-	1999 09 09	704	0.1-	0.2+
1998 02 24	566	0.4+	0.4+	1999 09 04	699	0.6-	1.2+	1999 09 09	704	0.2+	0.1+
1998 02 24	566	0.3+	0.3+	1999 09 04	699	0.2+	0.4+	1999 09 09	704	0.1-	0.4+
1998 02 24	566	0.2+	0.2+	1999 09 04	699	0.4+	0.6+	1999 09 09	704	0.5+	0.3+
1998 02 24	566	0.3+	0.1+	1999 09 07	704	0.5+	0.2-	1999 09 09	704	0.7+	0.1+
1998 02 24	566	0.4+	0.4+	1999 09 07	704	0.1-	0.2-	1999 09 09	704	0.3+	0.3-
1998 02 27	566	0.3+	0.4+	1999 09 07	704	0.1-	0.1-	1999 09 09	704	0.0	0.1-
1998 02 27	566	0.3+	0.2+	1999 09 07	704	0.1+	0.4-	1999 09 09	704	0.5+	0.4+
1998 02 27	566	0.1+	0.6+	1999 09 07	704	0.2-	0.7-	1999 09 13	704	0.5+	0.1-
1999 08 22	703	0.0	0.9+	1999 09 08	704	0.0	0.5+	1999 09 13	704	0.0	0.3-
1999 08 22	703	1.1-	0.1-	1999 09 08	704	0.0	0.4-	1999 09 13	704	0.2+	0.2+
1999 08 22	703	0.4-	0.1-	1999 09 08	704	0.3+	0.9-	1999 09 13	704	0.0	0.6+
1999 08 22	703	0.6-	0.1-	1999 09 08	704	0.2+	0.4-	1999 09 13	704	0.3+	0.8-

1999 RP₁₁ = 1998 FL₁₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i> 20.08579				(2000.0)			
<i>n</i> 0.26021195				<i>ω</i> 92.14175			
<i>a</i> 2.4298785				<i>Ω</i> 204.31530			
<i>e</i> 0.1719461				<i>i</i> 0.70619			
<i>P</i> 3.79				<i>H</i> 15.1			
				<i>G</i> 0.15			
				<i>U</i> 3			

Residuals in seconds of arc

1998 03 22	704	0.6-	0.6+	1999 08 08	699	0.5-	0.1-	1999 09 09	704	0.3+	0.1-
1998 03 22	704	0.3-	1.7-	1999 08 08	699	0.6-	0.1+	1999 09 09	704	0.2+	0.2-
1998 03 22	704	1.4+	1.3+	1999 08 08	699	0.2+	0.2-	1999 09 09	704	0.7+	0.2-
1998 03 22	704	0.5-	0.4-	1999 08 22	703	0.1+	0.0	1999 09 09	704	0.8+	0.3-
1998 03 26	704	(4.7- 0.0)		1999 08 22	703	0.4-	0.2+	1999 09 09	704	0.8+	0.8-
1998 03 26	704	(4.7- 0.5+)		1999 08 22	703	0.6-	0.2+	1999 09 13	704	0.3-	0.0
1998 03 26	704	(3.7- 2.3-)		1999 08 22	703	0.2+	0.3-	1999 09 13	704	0.1-	0.4-
1999 06 20	703	0.5+	0.2+	1999 09 07	704	0.3+	0.0	1999 09 13	704	0.6-	0.4+
1999 06 20	703	0.4-	0.0	1999 09 07	704	0.3+	0.0	1999 09 13	704	0.0	0.6-
1999 06 20	703	0.2-	0.0	1999 09 07	704	0.4+	0.6+	1999 09 13	704	0.7-	0.2+
1999 06 20	703	0.4+	0.8-	1999 09 07	704	0.0	1.3+	1999 09 15	118	1.1-	0.5+
1999 07 21	699	1.0-	0.0	1999 09 07	704	0.2-	0.2+	1999 09 15	118	0.9-	0.5+
1999 07 21	699	0.1-	0.4-	1999 09 08	704	0.3+	0.0	1999 09 15	118	1.4-	0.2+
1999 07 21	699	0.2+	0.9+	1999 09 08	704	0.5+	0.5-	1999 09 16	118	0.9+	0.5+
1999 08 07	699	0.5+	0.1+	1999 09 08	704	0.4+	0.4-	1999 09 16	118	0.4-	0.2-
1999 08 07	699	0.4-	0.7+	1999 09 08	704	0.3+	0.2-	1999 09 16	118	0.2-	0.3+
1999 08 07	699	0.8+	0.2-	1999 09 08	704	0.9+	1.4-				

1989 03 02	413	0.9+	0.7−	1999 09 05	699	0.9−	0.2+	1999 09 09	704	0.0	0.5+
1989 03 04	413	1.0−	0.7+	1999 09 05	699	0.3−	0.5+	1999 09 09	704	0.2+	0.3+
1998 05 23	704	0.6−	0.1−	1999 09 05	699	0.0	0.6−	1999 09 09	704	0.1−	0.1−
1998 05 23	704	0.2+	0.7+	1999 09 07	704	0.5−	0.0	1999 09 09	704	1.1+	0.4+
1998 05 23	704	0.3−	0.7+	1999 09 07	704	0.4−	0.2+	1999 09 14	704	1.1+	0.1−
1998 05 23	704	0.4−	0.3+	1999 09 07	704	0.8−	0.1−	1999 09 14	704	0.9+	0.6+
1998 05 23	704	0.8−	0.0	1999 09 07	704	0.6−	0.1−	1999 09 14	704	0.7+	0.4+
1998 05 26	704	0.2+	0.6+	1999 09 07	704	0.3−	0.5−	1999 09 14	704	0.8+	0.1−
1998 05 26	704	0.2−	1.0+	1999 09 08	704	0.8−	0.4+	1999 09 14	704	1.2+	0.7−

1999 RH₁₄ = 1998 KG₅₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	354.85559		(2000.0)	P	Q
n	0.19170502	ω	185.27297	+0.95017766	+0.30217657
a	2.9788392	Ω	156.69131	−0.27845506	+0.93314706
e	0.1035379	i	11.14701	−0.14008992	+0.19474567
P	5.14	H	14.1	G 0.15	U 4

Residuals in seconds of arc

1998 05 23	704	0.3+	0.8−	1999 08 07	691	0.4−	0.2−	1999 09 08	704	0.4+	0.8−
1998 05 23	704	0.4+	0.5+	1999 08 22	699	0.5+	0.3+	1999 09 09	704	0.1−	0.6+
1998 05 23	704	1.0−	0.1+	1999 08 22	699	0.9+	0.4+	1999 09 09	704	0.2−	0.4+
1998 05 23	704	0.2−	1.3−	1999 08 22	699	0.4+	0.6−	1999 09 09	704	(1.5−	2.8+)
1998 05 23	704	0.1−	0.8−	1999 09 07	704	0.5+	0.3−	1999 09 09	704	0.4+	0.4+
1998 05 26	704	0.8+	0.6−	1999 09 07	704	0.4−	0.3−	1999 09 09	704	0.4−	0.7+
1998 05 26	704	0.4+	1.7+	1999 09 07	704	0.1−	0.0	1999 09 13	704	0.4−	0.4+
1998 05 26	704	0.2−	0.5−	1999 09 07	704	0.2−	0.9−	1999 09 13	704	0.4−	0.4+
1998 05 26	704	0.3−	1.6+	1999 09 07	704	0.2+	0.1−	1999 09 13	704	0.0	0.1+
1999 08 07	691	0.4−	0.0	1999 09 08	704	0.2+	0.4−	1999 09 13	704	0.1+	0.1−
1999 08 07	691	0.3−	0.1+	1999 09 08	704	0.0	0.2−	1999 09 13	704	0.3−	0.1+

1999 RK₁₄ = 1991 TY₅ = 1995 SW₂ = 1997 ET₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	311.51288		(2000.0)	P	Q
n	0.24142585	ω	235.81544	+0.73700955	−0.67508561
a	2.5543488	Ω	166.54401	+0.65720031	+0.70445944
e	0.1926165	i	8.10500	+0.15781215	+0.21908060
P	4.08	H	14.6	G 0.15	U 3

Residuals in seconds of arc

1991 10 03	046	(3.0+	4.8+)	1999 08 08	699	0.2−	0.3+	1999 09 08	704	0.0	0.3−
1991 10 03	046	(2.2+	2.1+)	1999 08 08	699	0.3+	0.5−	1999 09 09	704	0.1+	0.3−
1991 10 04	046	0.1+	0.2−	1999 08 08	699	0.2+	0.1−	1999 09 09	704	0.0	0.2+
1991 10 04	046	(0.1−	3.3−)	1999 08 17	691	0.3−	0.3−	1999 09 09	704	0.2+	0.2+
1995 09 20	399	(3.5−	0.0)	1999 08 17	691	0.3−	0.3−	1999 09 09	704	0.1+	0.1+
1995 09 20	399	(2.9−	0.2+)	1999 08 17	691	0.2−	0.2−	1999 09 09	704	0.3+	0.1−
1995 09 21	399	0.2+	1.5+	1999 08 22	699	0.3−	0.5+	1999 09 09	704	0.1−	0.0
1995 09 21	399	0.1−	0.6+	1999 08 22	699	0.0	0.2+	1999 09 09	704	0.4+	0.1−
1995 09 26	098	1.4−	1.7−	1999 08 22	699	0.4−	0.1−	1999 09 09	704	0.0	1.0−
1995 09 26	098	1.1+	0.2−	1999 09 07	704	0.3+	0.1−	1999 09 09	704	0.2−	0.2−
1997 03 03	691	0.3+	0.1−	1999 09 07	704	0.4+	0.1−	1999 09 09	704	0.2+	0.9−
1997 03 03	691	0.4+	0.1+	1999 09 07	704	0.4+	0.4+	1999 09 14	704	0.4−	0.4+
1997 03 03	691	0.2+	0.1+	1999 09 07	704	0.5+	0.0	1999 09 14	704	0.4−	0.4+
1997 03 11	691	0.2−	0.1+	1999 09 07	704	0.8+	0.2+	1999 09 14	704	0.5−	0.4+
1997 03 11	691	0.4−	0.1+	1999 09 08	704	0.2+	0.3+	1999 09 14	704	0.2−	0.6+
1997 03 11	691	0.3−	0.2−	1999 09 08	704	0.2−	0.1+	1999 09 14	704	0.5−	0.3+

1999 RQ₁₅ = 1998 FW₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	282.06229		(2000.0)	P	Q
n	0.37803391	ω	79.79023	+0.39426519	−0.91556667
a	1.8943005	Ω	346.15666	+0.65844022	+0.34164415
e	0.1280820	i	19.36207	+0.64110173	+0.21217196
P	2.61	H	16.9	G 0.15	U 5

Residuals in seconds of arc

1998 03 20	704	0.9+	0.8+	1999 09 09	704	0.4+	1.2+	1999 09 11	704	0.3−	0.5−
1998 03 20	704	0.7+	0.1−	1999 09 09	704	0.4−	0.2+	1999 09 11	704	0.1−	0.4−
1998 03 20	704	0.8+	0.9−	1999 09 09	704	0.8−	0.3−	1999 09 11	704	0.1+	0.1−
1998 03 20	704	0.7+	1.7−	1999 09 10	704	0.4−	1.0+	1999 09 11	704	0.7+	0.1−
1998 03 20	704	0.2+	1.6+	1999 09 10	704	0.1−	0.7−	1999 09 11	704	0.1+	0.1−
1998 03 22	704	1.0−	1.6+	1999 09 10	704	0.3+	0.1+	1999 09 11	704	0.1+	0.1−
1998 03 22	704	1.1−	0.3−	1999 09 10	704	0.1−	0.4+	1999 09 11	704	0.2+	0.1+
1998 03 22	704	0.1−	1.7+	1999 09 10	704	0.1+	0.1−	1999 09 11	704	0.1−	0.4−
1998 03 22	704	1.1−	2.5−	1999 09 10	704	0.3+	0.4+	1999 09 11	704	0.1+	0.2−
1999 09 07	704	0.1−	0.2−	1999 09 10	704	0.3−	0.4+	1999 09 11	704	0.1+	0.7−
1999 09 07	704	0.3−	1.3+	1999 09 10	704	0.6−	0.1+	1999 09 11	704	0.3−	0.2−
1999 09 07	704	1.0−	0.2+	1999 09 10	704	0.5+	2.0−	1999 09 11	704	0.4+	0.3−
1999 09 07	704	0.5−	0.1+	1999 09 10	704	0.4+	0.8+	1999 09 11	704	0.2+	0.8−
1999 09 07	704	0.5+	0.3+	1999 09 10	704	0.8+	0.2−	1999 09 11	704	0.3+	0.4−
1999 09 08	704	0.3+	1.8+	1999 09 10	704	0.1−	0.2−	1999 09 11	704	0.0	0.4+
1999 09 08	704	0.1−	0.1+	1999 09 10	704	0.7−	0.3−	1999 09 11	704	0.0	0.0
1999 09 08	704	0.4−	0.6+	1999 09 10	704	0.3−	0.2−	1999 09 11	704	0.8+	0.3−
1999 09 08	704	0.3+	0.2−	1999 09 10	704	0.1−	0.2+	1999 09 11	704	0.2+	0.2+
1999 09 08	704	0.5−	0.4+	1999 09 10	704	0.4−	0.4+	1999 09 11	704	0.2+	0.5−
1999 09 08	704	0.1+	0.9−	1999 09 10	704	0.4+	0.3+	1999 09 11	704	0.3+	0.5−
1999 09 08	704	0.6+	0.1+	1999 09 10	704	0.3+	0.1+	1999 09 11	704	0.1+	0.4−
1999 09 08	704	0.5−	0.9−	1999 09 10	704	0.1−	0.8−	1999 09 11	704	0.1+	0.2−
1999 09 08	704	0.5−	0.1+	1999 09 10	704	0.7+	0.2+	1999 09 11	704	0.2+	0.7−
1999 09 08	704	0.1+	0.2−	1999 09 10	704	0.1+	0.3−	1999 09 11	704	0.2+	0.2−
1999 09 08	704	1.0−	0.6+	1999 09 10	704	0.1+	0.3−	1999 09 11	704	0.1+	0.1+
1999 09 08	704	0.3−	0.4+	1999 09 10	704	0.3−	0.6+	1999 09 11	704	0.7−	0.4−
1999 09 09	704	0.5−	0.7−	1999 09 10	704	0.1−	0.0	1999 09 11	704	0.4−	0.7−
1999 09 09	704	0.4+	0.2+	1999 09 10	704	0.2+	0.0	1999 09 11	704	0.3−	0.1+
1999 09 09	704	0.8+	0.4−	1999 09 10	704	1.1−	0.5+	1999 09 11	704	0.6+	0.1−
1999 09 09	704	0.2+	0.3−	1999 09 10	704	1.2−	0.2+	1999 09 11	704	0.1+	0.1−
1999 09 09	704	0.0	0.0	1999 09 10	704	0.6−	1.0−	1999 09 11	704	0.2−	0.2+
1999 09 09	704	0.8−	0.3+	1999 09 10	704	0.9−	1.1+	1999 09 11	704	0.2+	0.2−
1999 09 09	704	0.3+	0.9−	1999 09 10	704	0.3+	0.8+	1999 09 11	704	0.4+	0.1−
1999 09 09	704	0.5−	0.2+	1999 09 10	704	0.3−	0.7+	1999 09 11	704	0.4+	0.1−
1999 09 09	704	1.0+	0.1+	1999 09 10	704	0.5+	0.1+	1999 09 11	704	0.7+	0.1−
1999 09 09	704	0.1+	0.2−	1999 09 10	704	0.6−	0.8−	1999 09 11	704	0.5+	0.5−
1999 09 09	704	0.2+	0.5+	1999 09 10	704	0.5+	1.3+	1999 09 11	704	0.3+	0.2+
1999 09 09	704	0.1−	0.6+	1999 09 10	704	0.7+	0.6+	1999 09 11	704	0.2+	0.2−
1999 09 09	704	0.7+	0.5−	1999 09 10	704	1.1+	0.6−	1999 09 11	704	0.0	0.3+
1999 09 09	704	0.5+	0.1+	1999 09 11	704	0.3−	0.3−	1999 09 11	704	0.8+	0.1+
1999 09 09	704	0.2+	0.2−	1999 09 11	704	0.2−	0.5−	1999 09 11	704	0.3+	0.1+
1999 09 09	704	0.3+	0.3+	1999 09 11	704	0.1−	0.4−	1999 09 11	704	0.1−	0.0
1999 09 09	704	0.3−	0.6+	1999 09 11	704	0.2+	0.4−	1999 09 11	704	0.3−	0.0
1999 09 09	704	0.1+	0.3−	1999 09 11	704	0.3−	0.1−	1999 09 11	704	0.0	0.1+
1999 09 09	704	1.1−	0.7−	1999 09 11	704	0.1+	0.1−	1999 09 14	704	0.2+	1.4+
1999 09 09	704	1.6+	0.1−	1999 09 11	704	0.2+	0.2+	1999 09 14	704	0.7−	0.5+
1999 09 09	704	1.2−	1.2−	1999 09 11	704	0.5+	0.1−	1999 09 14	704	0.3+	0.5−
1999 09 09	704	0.3−	0.2−	1999 09 11	704	0.0	0.0	1999 09 14	704	0.2+	0.4+
1999 09 09	704	0.8−	0.2−	1999 09 11	704	0.5−	0.6+	1999 09 19	848	1.4−	0.5−
1999 09 09	704	0.1−	0.3+	1999 09 11	704	0.5−	0.4−	1999 09 19	848	0.6−	0.8+
1999 09 09	704	0.5−	0.1+	1999 09 11	704	0.2+	0.1+	1999 09 19	848	0.1+	0.2−
1999 09 09	704	0.1+	0.1−	1999 09 11	704	0.1+	0.4+	1999 09 20	848	0.8−	0.7+
1999 09 09	704	0.0	0.3+	1999 09 11	704	0.2−	0.1−	1999 09 20	848	1.3+	0.2+
1999 09 09	704	0.1+	0.3+	1999 09 11	704	0.8+	0.1+				
1999 09 09	704	0.6−	0.3+	1999 09 11	704	0.4+	0.5+				

1999 SEPT. 28

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Residuals in seconds of arc

1997 03 05	691	0.2+	0.1-	1998 06 29	699	0.3+	0.3-	1999 09 09	704	0.4-	1.0-
1997 03 05	691	0.1-	0.1-	1998 06 29	699	0.1-	1.5-	1999 09 09	704	0.3-	0.2-
1997 03 05	691	0.2-	0.1-	1998 06 29	699	0.2-	0.5-	1999 09 14	704	0.5-	0.2+
1998 05 22	704	0.6+	0.5+	1999 09 07	704	0.9+	0.5-	1999 09 14	704	0.1-	0.2+
1998 05 22	704	(1.0-	2.0+)	1999 09 07	704	0.4+	0.2-	1999 09 14	704	0.3+	0.0
1998 05 22	704	0.6+	1.8+	1999 09 07	704	0.0	0.3-	1999 09 14	704	0.2-	0.2+
1998 05 22	704	0.2-	0.4+	1999 09 07	704	0.2-	0.5-	1999 09 14	704	0.1+	0.3+
1998 05 22	704	1.2-	1.7+	1999 09 07	704	0.2-	0.9-	1999 09 14	703	0.2+	0.3+
1998 05 24	704	0.6+	0.3-	1999 09 08	704	0.0	0.5+	1999 09 14	703	0.0	0.5+
1998 05 24	704	0.1-	0.1-	1999 09 08	704	0.9+	0.0	1999 09 14	703	0.0	0.3+
1998 05 24	704	(3.2+	1.0-)	1999 09 08	704	0.0	0.1+	1999 09 14	703	0.2+	0.5+
1998 05 24	704	(0.1-	3.8-)	1999 09 08	704	0.2+	0.1+	1999 09 18	691	0.9-	0.7+
1998 06 27	699	1.1-	0.8-	1999 09 09	704	0.0	0.3+	1999 09 18	691	0.2-	0.2+
1998 06 27	699	1.1-	0.5-	1999 09 09	704	0.1-	0.7-	1999 09 18	691	0.3-	0.1+
1998 06 27	699	1.4+	0.4-	1999 09 09	704	0.1+	0.1-				

1999 RX₁₆ = 1998 HL₄₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	346.67075		(2000.0)	P	Q		
n	0.25841636	ω	162.40897	+0.99771532	+0.06445441		
a	2.4411214	Ω	193.94212	-0.06753932	+0.94447773		
e	0.2208382	i	4.81941	-0.00160703	+0.32219162		
P	3.81	H	15.5	G	0.15	U	6

Residuals in seconds of arc

1998 04 20	704	2.6+	1.1+	1998 04 22	704	2.0-	2.7-	1999 09 08	704	0.1+	0.1+
1998 04 20	704	(5.5+	0.7+)	1998 04 22	704	1.5-	1.1-	1999 09 09	704	0.1-	0.1+
1998 04 20	704	4.0+	1.9+	1998 04 22	704	2.2-	1.0-	1999 09 09	704	0.0	0.7-
1998 04 20	704	(4.5+	3.2+)	1999 09 07	704	0.2+	0.4+	1999 09 09	704	0.8-	0.8-
1998 04 20	704	0.5+	2.2+	1999 09 07	704	1.3+	1.0-	1999 09 11	699	0.3-	0.7-
1998 04 21	704	1.9+	0.2+	1999 09 07	704	0.2-	1.6-	1999 09 11	699	1.5-	0.3-
1998 04 21	704	1.1+	1.4+	1999 09 07	704	0.7+	0.8+	1999 09 11	699	0.6+	0.9+
1998 04 21	704	0.6+	0.9+	1999 09 07	704	0.5+	0.4-	1999 09 14	704	0.2+	0.0
1998 04 21	704	1.0-	0.1+	1999 09 08	704	0.5-	0.3+	1999 09 14	704	0.3+	0.3+
1998 04 22	704	0.8-	1.6-	1999 09 08	704	1.0-	0.4-	1999 09 14	704	0.3-	2.2+
1998 04 22	704	2.9-	0.9-	1999 09 08	704	0.3-	0.2-	1999 09 14	704	0.9+	1.2+

1999 RK₁₇ = 1998 HG₇₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	293.50329		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.28177757	ω	166.86790	+0.62968804	-0.77570098
a	2.3042615	Ω	244.08839	+0.70843692	+0.59567891
e	0.0483283	i	2.68920	+0.31876339	+0.20845775
P	3.50	H	15.7	G 0.15	U 6

Residuals in seconds of arc

1998 04 21	704	0.4+	0.7+	1999 09 07	704	0.6-	0.4+	1999 09 11	699	0.7+	1.6+
1998 04 21	704	0.3+	0.5-	1999 09 07	704	0.1-	0.5+	1999 09 11	699	0.2+	2.1+
1998 04 21	704	1.2+	1.1+	1999 09 07	704	0.1+	0.2+	1999 09 11	699	0.4+	0.6+
1998 04 22	704	0.2+	0.6-	1999 09 07	704	0.1-	0.7+	1999 09 14	704	0.2+	0.2-
1998 04 22	704	0.7-	0.8-	1999 09 08	704	0.5-	0.8-	1999 09 14	704	0.4+	0.1+
1998 04 22	704	0.8-	0.4-	1999 09 08	704	0.2+	0.8+	1999 09 14	704	0.5+	0.6-
1998 04 22	704	0.5-	1.6+	1999 09 08	704	0.3-	0.1+	1999 09 14	704	0.2-	1.0-
1998 04 22	704	0.2-	1.1-	1999 09 08	704	0.4-	0.2-	1999 09 14	703	0.1-	0.6-
1999 09 04	703	0.5+	0.1-	1999 09 09	704	0.4-	1.1+	1999 09 14	703	0.4-	0.2-
1999 09 04	703	0.2+	0.3-	1999 09 09	704	1.3+	1.2-	1999 09 14	703	0.4-	0.1+
1999 09 04	703	0.7+	0.1+	1999 09 09	704	0.3+	1.0-	1999 09 14	703	0.0	0.3-
1999 09 04	703	1.1-	0.1+	1999 09 09	704	0.3-	0.9-				
1999 09 07	704	0.4-	0.4+	1999 09 09	704	0.2-	1.4-				

1999 RT₁₇ = 1998 HC₈₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	168.39025		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.27850128	ω	346.66084	-0.98619933	-0.16546448
a	2.3222978	Ω	183.82867	+0.15864633	-0.93461490
e	0.0891811	i	4.88860	+0.04735205	-0.31482772
P	3.54	H	15.0	G 0.15	U 5

Residuals in seconds of arc

1998 04 21	704	0.2+	0.1-	1999 09 08	704	0.2-	0.0	1999 09 14	704	0.0	0.2-
1998 04 21	704	0.2+	0.3-	1999 09 08	704	0.1+	0.3-	1999 09 14	704	0.1-	0.6-
1998 04 21	704	0.2-	0.1-	1999 09 08	704	0.2+	0.1+	1999 09 14	704	0.1-	0.6-
1998 04 21	704	0.3+	0.5-	1999 09 09	704	0.1+	0.2+	1999 09 14	704	0.4+	0.1-
1998 04 21	704	0.1+	0.2+	1999 09 09	704	0.1-	0.0	1999 09 14	703	0.2+	0.9+
1998 04 22	704	0.3+	0.3-	1999 09 09	704	0.2+	0.1-	1999 09 14	703	0.5+	0.1+
1998 04 22	704	0.7-	0.5+	1999 09 09	704	0.3+	0.4-	1999 09 14	703	0.3-	0.1+
1998 04 22	704	0.4-	0.2+	1999 09 09	704	0.3-	0.6+	1999 09 14	691	0.2-	0.3+
1998 04 22	704	0.4+	0.1-	1999 09 09	704	1.1+	1.6-	1999 09 14	703	0.7-	0.1+
1998 04 22	704	0.2-	0.5+	1999 09 09	704	0.7+	0.5-	1999 09 14	691	0.2-	0.1+
1999 09 07	704	0.0	0.5+	1999 09 09	704	0.5+	0.6-	1999 09 14	691	0.0	0.3+
1999 09 07	704	0.2-	0.3+	1999 09 09	704	1.7-	1.2-	1999 09 18	691	0.0	0.0
1999 09 07	704	0.9-	0.2+	1999 09 09	704	1.1-	2.4-	1999 09 18	691	0.1-	0.0
1999 09 07	704	0.0	0.8+	1999 09 11	699	1.6+	1.4+	1999 09 18	691	0.1+	0.2-
1999 09 07	704	0.4+	0.5+	1999 09 11	699	0.3-	1.9+				
1999 09 08	704	0.3+	0.4+	1999 09 11	699	0.1-	0.2+				

1999 RW₁₇ = 1996 TV₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	30.95488		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.30970629	ω	347.36254	+0.48110943	+0.87620101
a	2.1635621	Ω	311.38767	-0.80099235	+0.42619473
e	0.1056271	i	2.16797	-0.35629339	+0.22501076
P	3.18	H	16.6	G 0.15	U 6

Residuals in seconds of arc

1996 10 10	566	(2.7+	0.9+)	1999 09 08	704	0.4+	0.6-	1999 09 10	704	0.3-	0.5-
1996 10 10	566	0.4+	0.1-	1999 09 08	704	0.1-	0.3-	1999 09 10	704	0.1-	0.3-
1996 10 10	566	0.5+	0.2-	1999 09 08	704	1.3+	1.3-	1999 09 10	704	0.2-	0.4-
1996 10 11	566	0.2-	0.6+	1999 09 09	704	0.8-	0.1-	1999 09 11	699	0.1+	1.8+
1996 10 11	566	0.0	0.3+	1999 09 09	704	0.6+	0.4+	1999 09 11	699	0.7+	1.1+
1996 10 11	566	0.6-	0.3+	1999 09 09	704	0.1-	0.8-	1999 09 11	699	0.5+	0.4+
1996 10 11	557	0.3+	0.5-	1999 09 09	704	0.3+	0.0	1999 09 14	704	0.1+	0.4-
1996 10 11	557	0.7-	0.1+	1999 09 09	704	0.6-	0.6-	1999 09 14	704	0.4-	0.7-
1996 10 11	557	0.4+	0.8-	1999 09 09	704	0.5-	0.5+	1999 09 14	704	0.0	0.7-
1996 10 11	557	0.2-	0.2+	1999 09 09	704	0.2-	0.4-	1999 09 14	704	0.0	0.6-
1999 09 07	704	0.5-	0.1+	1999 09 09	704	0.5+	0.6+	1999 09 14	704	0.2+	0.4-
1999 09 07	704	0.4-	0.1-	1999 09 09	704	0.9+	0.3+	1999 09 14	703	0.0	0.9+
1999 09 07	704	0.4-	0.2-	1999 09 09	704	1.1+	0.5+	1999 09 14	703	0.4-	0.1-
1999 09 07	704	0.2+	0.0	1999 09 10	704	0.6+	0.6-	1999 09 14	703	0.2-	0.2+
1999 09 07	704	0.7-	0.0	1999 09 10	704	0.7-	0.9+	1999 09 14	703	0.2-	0.5+
1999 09 08	704	0.6-	0.6+	1999 09 10	704	0.0	0.3+				

1999 RF₁₈ = 1997 CS₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	339.75800		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$		
n	0.22091448	ω	41.45631	+0.99670204	-0.08028144		
a	2.7101080	Ω	323.14341	+0.06828833	+0.90854064		
e	0.0987716	i	1.13005	+0.04383777	+0.41001072		
P	4.46	H	15.7	G	0.15	U	6

Residuals in seconds of arc

1997 02 06	691	0.1-	0.0	1999 09 08	704	0.3-	0.3-	1999 09 13	691	0.2+	0.0
1997 02 06	691	0.2-	0.2-	1999 09 08	704	0.0	0.0	1999 09 14	704	0.3-	0.1-
1997 02 06	691	0.4-	0.0	1999 09 08	704	0.2+	1.1-	1999 09 14	704	0.5-	0.8-
1997 02 10	691	0.4+	0.1-	1999 09 09	704	0.3-	0.2-	1999 09 14	704	0.3+	0.8+

1997 02 10	691	0.2+	0.2−	1999 09 09	704	1.2−	1.5+	1999 09 14	704	0.1+	0.7−
1997 02 10	691	0.1+	0.4+	1999 09 09	704	0.7−	0.3+	1999 09 14	704	0.0	0.5+
1999 09 07	704	0.3+	0.4−	1999 09 11	699	0.3+	0.7+	1999 09 17	691	0.0	0.2−
1999 09 07	704	1.3+	1.3−	1999 09 11	699	0.6+	0.3+	1999 09 17	691	0.2+	0.1−
1999 09 07	704	0.3+	0.4+	1999 09 11	699	0.4−	0.0	1999 09 17	691	0.3−	0.4+
1999 09 07	704	0.1+	0.2−	1999 09 13	691	0.0	0.1−				
1999 09 07	704	0.1+	0.3+	1999 09 13	691	0.1+	0.1+				

1999 RW₁₈ = 1998 HM₆₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	283.61280		(2000.0)	P	Q		
<i>n</i>	0.30133229	ω	69.42668	+0.40905903	−0.91249299		
<i>a</i>	2.2034622	Ω	356.41475	+0.80304248	+0.36269896		
<i>e</i>	0.0828143	<i>i</i>	4.78889	+0.43335146	+0.18922476		
<i>P</i>	3.27	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	0.3−	1.0+	1999 09 07	704	0.1−	0.0	1999 09 09	704	0.1−	0.1+
1998 04 21	704	0.7−	0.6−	1999 09 07	704	0.5+	0.0	1999 09 09	704	0.0	0.2−
1998 04 21	704	0.1+	0.8−	1999 09 07	704	0.1−	0.3−	1999 09 11	699	0.2+	0.2+
1998 04 21	704	0.3−	0.1+	1999 09 08	704	0.0	0.1+	1999 09 11	699	0.2+	0.2+
1998 04 21	704	0.2+	1.3+	1999 09 08	704	0.7−	0.5−	1999 09 11	699	0.1−	0.1−
1998 04 22	704	0.3+	0.3−	1999 09 08	704	0.3−	0.0	1999 09 14	704	0.4+	0.2−
1998 04 22	704	0.1+	0.5−	1999 09 08	704	0.0	0.1+	1999 09 14	704	0.3−	0.5+
1998 04 22	704	0.0	0.3−	1999 09 09	704	0.4+	0.0	1999 09 14	704	0.2+	0.1−
1998 04 22	704	0.7−	0.4−	1999 09 09	704	0.6+	0.0	1999 09 14	704	0.3−	0.2+
1998 04 22	704	0.0	0.4−	1999 09 09	704	0.7+	0.2+	1999 09 14	704	0.3+	0.0
1998 05 16	691	0.6+	0.0	1999 09 09	704	0.4+	0.3+	1999 09 17	691	0.5−	0.3−
1998 05 16	691	0.3+	0.3+	1999 09 09	704	0.0	0.1−	1999 09 17	691	0.8−	0.0
1998 05 16	691	0.4+	0.6+	1999 09 09	704	0.1−	0.3−	1999 09 17	691	0.7−	0.1−
1999 09 07	704	0.2+	0.2+	1999 09 09	704	0.0	0.2−				
1999 09 07	704	0.1−	0.0	1999 09 09	704	0.1+	0.1−				

1999 RO₁₉ = 1998 HR₁₄₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	18.37846		(2000.0)	P	Q		
<i>n</i>	0.21759734	ω	311.80922	+0.70109094	+0.71306889		
<i>a</i>	2.7375811	Ω	2.70808	−0.64060815	+0.63111237		
<i>e</i>	0.1747174	<i>i</i>	2.50164	−0.31319752	+0.30533577		
<i>P</i>	4.53	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	0.6+	0.6−	1999 09 07	704	0.3−	0.2+	1999 09 10	704	0.3+	0.3−
1998 04 21	704	0.6+	0.5−	1999 09 07	704	0.0	0.6−	1999 09 10	704	0.1+	0.1+
1998 04 21	704	0.2−	0.1−	1999 09 07	704	0.1−	0.1+	1999 09 10	704	0.1−	0.2−
1998 04 21	704	0.1−	0.3+	1999 09 08	704	0.2−	0.3+	1999 09 10	704	0.0	0.5+
1998 04 21	704	1.0−	0.9+	1999 09 08	704	0.0	0.2+	1999 09 10	704	0.0	0.2−
1998 04 22	704	0.5−	0.3−	1999 09 08	704	0.1−	0.1−	1999 09 10	704	0.2+	0.6−
1998 04 22	704	(1.0−	2.3+)	1999 09 08	704	0.1+	0.5+	1999 09 10	704	0.2−	0.1+
1998 04 22	704	0.7+	0.3−	1999 09 09	704	0.6+	0.4+	1999 09 11	699	0.2−	0.7+
1998 04 22	704	1.0+	0.7−	1999 09 09	704	0.1−	0.5+	1999 09 11	699	0.1−	0.7+
1998 04 25	699	0.4−	0.2−	1999 09 09	704	0.4−	0.1−	1999 09 11	699	0.2−	0.5+
1998 04 25	699	0.1−	0.6+	1999 09 09	704	0.0	0.3+	1999 09 14	704	0.1+	0.4−
1998 04 25	699	0.5−	1.2+	1999 09 09	704	0.3+	0.1+	1999 09 14	704	0.4+	0.1+
1999 07 16	704	0.1+	0.4−	1999 09 09	704	1.0−	0.0	1999 09 14	704	0.1−	0.0
1999 07 16	704	0.3−	0.1+	1999 09 09	704	0.3+	0.4−	1999 09 14	704	0.2+	0.1+
1999 07 16	704	0.1−	0.2+	1999 09 09	704	0.4−	0.0	1999 09 14	704	0.1+	0.1+
1999 07 16	704	0.8+	0.7−	1999 09 09	704	0.3−	0.4−	1999 09 17	691	0.0	0.1−
1999 09 07	704	0.1−	0.5+	1999 09 09	704	0.8−	0.8−	1999 09 17	691	0.1+	0.5−
1999 09 07	704	0.6+	0.6−	1999 09 10	704	0.7+	0.1−	1999 09 17	691	0.2+	0.1−

1999 RU₁₉ = 1998 CD₅ = 1998 EZ₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	98.08016		(2000.0)	P	Q		
<i>n</i>	0.30415439	ω	134.84920	−0.63011881	+0.77649750		
<i>a</i>	2.1898111	Ω	96.09186	−0.71281566	−0.57773289		
<i>e</i>	0.1186938	<i>i</i>	0.07976	−0.30796773	−0.25154789		
<i>P</i>	3.24	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1996 10 16	691	0.3+	0.2−	1998 03 03	809	0.3+	1.6+	1999 09 09	704	0.4−	0.3+
1996 10 16	691	0.2+	0.5−	1998 03 04	809	1.0+	1.8+	1999 09 09	704	0.4−	0.7+
1996 10 16	691	0.1+	0.4−	1998 03 04	809	0.9+	1.3+	1999 09 09	704	0.5−	0.5+
1997 12 08	910	0.0	0.2−	1998 03 04	809	0.5+	1.0+	1999 09 09	704	0.2+	0.6+
1997 12 08	910	0.0	0.0	1998 08 22	699	0.2−	0.9+	1999 09 09	704	0.2+	0.2−
1997 12 08	910	0.2−	0.2−	1998 08 22	699	0.7+	1.8+	1999 09 09	704	0.7−	0.1+
1998 01 26	566	0.7−	0.4+	1998 08 22	699	0.6+	1.5+	1999 09 09	704	0.0	0.1−
1998 01 26	566	0.9−	0.6+	1999 09 06	691	0.8−	0.1−	1999 09 09	704	0.0	0.5+
1998 01 26	566	0.5−	1.0+	1999 09 06	691	0.7−	0.6−	1999 09 09	704	0.0	0.2+
1998 02 06	809	(2.3+	0.2−)	1999 09 06	691	0.8−	0.3−	1999 09 11	699	0.1−	1.0+
1998 02 06	809	1.2+	0.6−	1999 09 07	704	0.1+	0.1+	1999 09 11	699	0.2+	0.3+
1998 02 06	809	1.9+	0.4−	1999 09 07	704	0.1−	0.3−	1999 09 11	699	0.2−	0.8+
1998 02 07	809	1.4+	1.8−	1999 09 07	704	0.6−	0.3−	1999 09 14	704	0.6+	0.6+
1998 02 07	809	0.6+	1.6−	1999 09 07	704	0.1−	0.5−	1999 09 14	704	0.7+	0.3+
1998 02 07	809	0.5+	1.9−	1999 09 07	704	0.3+	0.8−	1999 09 14	704	0.2−	0.3−
1998 02 27	566	1.6−	0.5+	1999 09 08	704	0.2−	0.2+	1999 09 14	704	0.2+	0.2+
1998 02 27	566	1.6−	0.5+	1999 09 08	704	1.0−	1.0−	1999 09 14	704	0.1−	0.2+
1998 02 27	566	1.6−	0.4+	1999 09 08	704	0.3−	0.0	1999 09 18	691	0.3+	0.0
1998 03 03	809	0.6+	1.4+	1999 09 08	704	0.7−	0.0	1999 09 18	691	0.4+	0.0
1998 03 03	809	0.2+	1.3+	1999 09 09	704	0.4+	0.3+	1999 09 18	691	0.4+	0.1−

1999 RL₂₁ = 1998 HT₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	357.76451		(2000.0)	P	Q		
<i>n</i>	0.27176178	ω	209.96178	+0.95497423	+0.29418935		
<i>a</i>	2.3605351	Ω	132.87691	−0.26072605	+0.89396174		
<i>e</i>	0.2266784	<i>i</i>	3.00604	−0.14158444	+0.33806070		
<i>P</i>	3.63	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 20	691	0.3+	0.3−	1999 08 22	703	0.3−	1.5+	1999 09 08	704	0.1+	0.6−
1998 04 20	691	0.3+	0.0	1999 08 22	703	1.6−	0.1+	1999 09 08	704	0.2+	1.0−
1998 04 20	691	0.2+	0.0	1999 09 05	699	0.9−	0.6+	1999 09 08	704	0.4+	0.6−
1998 04 29	691	0.5−	0.2+	1999 09 05	699	0.0	0.5+	1999 09 14	704	0.3+	0.4−
1998 04 29	691	0.4−	0.2−	1999 09 05	699	0.2−	0.5+	1999 09 14	704	0.8+	0.2−
1998 04 29	691	0.1−	0.0	1999 09 07	704	0.0	0.3−	1999 09 14	704	0.4+	0.2+
1999 07 16	704	0.3−	0.2+	1999 09 07	704	0.0	0.2−	1999 09 14	704	0.3+	0.0
1999 07 16	704	0.6+	0.6−	1999 09 07	704	0.2+	0.7−	1999 09 14	704	0.0	0.2−
1999 07 16	704	0.4−	0.6−	1999 09 07	704	0.1−	0.8−	1999 09 14	703	0.4+	0.5+
1999 07 16	704	1.2+	0.4−	1999 09 07	704	0.6+	0.3−	1999 09 14	703	0.5−	0.5+
1999 08 22	703	0.6−	1.3+	1999 09 08	704	0.6+	0.8−	1999 09 14	703	0.4−	0.5+
1999 08 22	703	0.5−	0.9+	1999 09 08	704	0.2+	0.8−	1999 09 14	703	0.1−	0.8+

1999 RF₂₃ = 1998 HJ₂₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	11.01171		(2000.0)	P	Q		
<i>n</i>	0.25594133	ω	171.46125	+0.84054707	+0.54121017		
<i>a</i>	2.4568337	Ω	155.72575	−0.50040865	+0.79257888		
<i>e</i>	0.1967758	<i>i</i>	3.33564	−0.20753747	+0.28090972		
<i>P</i>	3.85	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 04 20	704	0.3+	0.2+	1999 08 22	699	0.2−	1.0+	1999 09 08	704	0.2−	0.3−
1998 04 20	704	0.8−	0.4−	1999 08 22	703	0.4+	0.8+	1999 09 08	704	0.7+	0.2−
1998 04 20	704	0.1+	0.7+	1999 08 22	699	0.7−	0.6+	1999 09 08	704	0.5+	0.1−
1998 04 20	704	1.2−	1.4−	1999 09 03	620	0.0	1.0+	1999 09 08	704	0.1−	0.9−

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1998 04 22	704	0.6+	0.2-	1999 09 04	620	0.3-	0.1-	1999 09 10	620	0.2+	0.3-
1998 04 22	704	0.8+	1.5-	1999 09 04	620	0.4-	0.7-	1999 09 11	620	0.1-	0.2-
1998 04 22	704	1.0+	1.7+	1999 09 07	704	0.3+	0.2-	1999 09 11	620	0.4-	0.0
1998 04 22	704	1.1-	0.3+	1999 09 07	704	0.4+	0.6-	1999 09 14	703	0.0	0.2+
1999 08 22	703	0.2+	0.2-	1999 09 07	704	0.0	0.5-	1999 09 14	703	0.2-	0.0
1999 08 22	699	0.1+	0.3-	1999 09 07	704	0.4+	0.3-	1999 09 14	703	0.4-	0.6+
1999 08 22	703	0.1+	0.0	1999 09 07	704	0.3-	0.2+	1999 09 14	703	0.4-	0.1-
1999 08 22	703	0.1+	0.2+	1999 09 08	704	0.6+	0.2-				

1999 RB₂₄ = 1998 HZ₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	356.25101		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.26953166	ω	322.90803	+0.97717600	+0.20706173
a	2.3735380	Ω	25.26538	-0.15825878	+0.85861910
e	0.1651133	i	6.38437	-0.14170822	+0.46893355
P	3.66	H	14.2	G 0.15	U 4

Residuals in seconds of arc

1998 04 20	704	0.2+	0.2-	1999 07 16	704	0.3-	0.5-	1999 09 08	704	0.3-	0.2+
1998 04 20	704	1.2-	0.2-	1999 07 16	704	0.4+	1.0-	1999 09 08	704	0.2-	0.7-
1998 04 20	704	1.6-	0.2+	1999 07 16	704	0.3-	0.2-	1999 09 08	704	0.3-	0.3-
1998 04 20	704	1.2+	0.6+	1999 07 16	704	0.0	0.4+	1999 09 08	704	0.4-	0.2-
1998 04 20	704	1.3-	0.9-	1999 07 16	704	0.0	0.3-	1999 09 09	704	0.3-	0.1-
1998 04 21	704	0.8+	0.3-	1999 08 22	703	1.0+	1.0+	1999 09 09	704	0.2-	0.1-
1998 04 21	704	0.9+	1.1+	1999 08 22	703	0.5+	0.4+	1999 09 09	704	0.1-	0.2+
1998 04 21	704	1.2-	0.5+	1999 08 22	703	0.0	1.5+	1999 09 09	704	0.3-	0.1+
1998 04 21	704	0.5-	0.9-	1999 08 22	703	0.4+	1.1+	1999 09 09	704	0.4+	0.0
1998 04 21	704	1.0+	0.3-	1999 09 05	699	0.0	0.5+	1999 09 14	704	0.7+	0.8-
1998 04 22	704	0.5-	0.5-	1999 09 05	699	0.1-	0.4+	1999 09 14	704	0.1+	0.6-
1998 04 22	704	0.7+	0.5-	1999 09 05	699	0.1+	0.5+	1999 09 14	704	0.6+	0.5-
1998 04 22	704	1.0-	0.4+	1999 09 07	704	0.0	0.1-	1999 09 14	704	0.6+	0.7-
1998 04 22	704	0.2-	0.3+	1999 09 07	704	0.1+	0.1-	1999 09 14	704	0.1+	0.6-
1998 04 22	704	0.2-	0.7+	1999 09 07	704	0.3-	0.5-	1999 09 14	703	0.4+	0.4+
1998 04 25	699	0.2-	0.4+	1999 09 07	704	0.1-	0.4-	1999 09 14	703	0.2-	0.3+
1998 04 25	699	2.0+	1.1+	1999 09 07	704	0.3-	0.0	1999 09 14	703	0.4-	0.5+
1998 04 25	699	1.0+	1.5-	1999 09 08	704	0.4-	0.2-	1999 09 14	703	0.8-	0.3+

1999 RH₂₆ = 1998 HV₁₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	40.26805		(2000.0)	P	Q
n	0.23720967	ω	133.11576	+0.50978775	+0.85828927
a	2.5845273	Ω	167.15012	-0.84595437	+0.51254220
e	0.1356512	i	15.32748	-0.15645336	+0.02529854
P	4.16	H	14.3	G 0.15	U 4

Residuals in seconds of arc

1998 03 24	704	0.1+	1.5+	1998 05 23	704	(1.5-	2.3-)	1999 09 07	704	0.1-	0.0
1998 03 24	704	1.3+	1.7-	1998 05 23	704	0.9-	0.1-	1999 09 08	704	0.3-	0.2+
1998 03 24	704	1.7-	0.8-	1998 05 23	704	0.0	1.5-	1999 09 08	704	0.2+	1.2+
1998 03 24	704	(2.7-	0.0)	1998 05 23	704	0.5-	0.3+	1999 09 08	704	0.1-	0.5+
1998 03 24	704	0.9-	0.8+	1998 05 23	704	0.7-	0.6-	1999 09 08	704	0.1-	0.7+
1998 04 23	704	1.5+	1.3+	1998 05 28	704	1.2+	0.3-	1999 09 09	704	0.4+	0.1+
1998 04 23	704	0.4+	0.3-	1998 05 28	704	0.6+	0.6-	1999 09 09	704	0.6+	0.2-
1998 04 23	704	0.1+	0.3-	1998 05 28	704	(0.4-	3.9-)	1999 09 09	704	0.6+	0.3+
1998 04 23	704	0.2-	1.3+	1998 05 28	704	(3.0-	0.5+)	1999 09 09	704	0.5-	0.1-
1998 04 23	704	0.8-	0.0	1998 05 28	704	(6.9-	0.8-)	1999 09 14	704	0.6-	0.9-
1998 04 24	704	0.5+	0.6-	1999 09 07	704	0.2+	0.1-	1999 09 14	704	0.2+	0.5-
1998 04 24	704	0.3-	0.9+	1999 09 07	704	0.1+	0.5+	1999 09 14	704	0.0	0.1+
1998 04 24	704	0.4+	0.8+	1999 09 07	704	0.5-	0.4-	1999 09 14	704	0.1-	0.7-
1998 04 24	704	(0.5-	2.8+)	1999 09 07	704	0.0	0.2-				

1999 RK₂₇ = 1991 RW₂₆ = 1998 KJ₅₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	334.64961		(2000.0)	P	Q
n	0.24261154	ω	213.21521	+0.96076696	-0.27450485
a	2.5460196	Ω	162.58568	+0.27447847	+0.92046505
e	0.1530213	i	7.61762	+0.03985494	+0.27819268
P	4.06	H	14.4	G 0.15	U 3

Residuals in seconds of arc

1991 09 13	675	0.1+	1.0-	1999 07 16	704	1.2+	0.1-	1999 09 09	113	0.4+	0.4+
1991 09 13	675	1.3+	1.2-	1999 07 16	704	0.7+	0.2-	1999 09 10	113	0.2+	0.2-
1991 09 15	675	0.1-	1.1-	1999 09 04	691	0.8-	0.0	1999 09 10	113	0.0	0.2-
1991 09 15	675	0.2+	0.8-	1999 09 04	691	1.0-	0.1+	1999 09 10	113	0.1+	0.2+
1994 06 07	691	0.8-	0.1-	1999 09 04	691	0.7-	0.0	1999 09 11	699	0.1+	0.5+
1994 06 07	691	0.0	0.3-	1999 09 05	113	0.5+	0.1-	1999 09 11	699	0.3+	1.5+
1994 06 07	691	0.9-	0.1-	1999 09 05	113	0.0	0.8-	1999 09 11	699	0.1+	0.9+
1998 04 23	704	1.6-	0.3+	1999 09 05	113	0.1-	1.0-	1999 09 11	113	0.0	0.1-
1998 04 23	704	1.9+	1.3-	1999 09 07	704	0.1+	0.1-	1999 09 11	113	0.7+	0.2+
1998 04 23	704	0.9+	0.8+	1999 09 07	704	0.1-	0.4+	1999 09 12	113	0.0	0.2-
1998 04 23	704	1.1+	0.1-	1999 09 07	704	0.2+	0.6-	1999 09 12	113	0.7-	0.6-
1998 05 23	704	0.2-	1.3-	1999 09 07	704	0.4-	0.2-	1999 09 12	113	0.1+	0.2+
1998 05 23	704	0.9-	0.8+	1999 09 07	704	0.3-	0.5-	1999 09 12	113	0.3+	0.1+
1998 05 23	704	0.5+	0.4+	1999 09 08	113	0.1-	0.1+	1999 09 13	113	0.2+	0.4+
1998 05 23	704	0.1-	1.0+	1999 09 08	113	0.1-	0.2+	1999 09 14	113	0.2+	0.2+
1998 05 27	704	1.2+	0.5-	1999 09 09	704	0.4-	0.4-	1999 09 14	704	0.1+	0.1+
1998 05 27	704	1.1-	0.3+	1999 09 09	704	0.2+	0.2-	1999 09 14	704	0.4-	0.7+
1998 05 27	704	0.5-	1.1-	1999 09 09	704	0.0	0.6-	1999 09 14	704	0.1-	0.5+
1998 05 27	704	0.3+	0.3+	1999 09 09	704	0.1+	0.2-	1999 09 14	704	0.1+	0.1+
1999 07 16	704	0.2+	0.1-	1999 09 09	704	0.3+	0.3-	1999 09 14	704	0.1-	0.2+
1999 07 16	704	0.5+	0.3+	1999 09 09	113	0.3-	0.3+	1999 09 14	113	0.9-	1.0+
1999 07 16	704	0.8+	0.3-	1999 09 09	113	0.3-	0.6+	1999 09 14	113	1.0-	1.0+

1999 RQ₂₇ = 1997 EW₅₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	40.94284		(2000.0)	P	Q
n	0.16798812	ω	301.11612	+0.50015000	+0.86593281
a	3.2529970	Ω	358.87873	-0.72793630	+0.41842740
e	0.0924937	i	9.46197	-0.46899757	+0.27400527
P	5.87	H	13.5	G 0.15	U 4

Residuals in seconds of arc

1997 03 05	809	0.5+	0.3+	1999 09 07	704	0.6+	0.1-	1999 09 11	699	0.2-	2.2+
1997 03 05	809	0.6+	0.1+	1999 09 07	704	0.4+	0.7-	1999 09 11	699	1.5-	1.4+
1997 03 05	809	0.5+	0.2+	1999 09 07	704	0.2+	0.0	1999 09 11	120	0.7-	0.1-
1997 03 06	809	0.2-	0.2+	1999 09 07	704	0.3+	0.7-	1999 09 11	120	0.8+	0.3-
1997 03 06	809	0.8-	0.1-	1999 09 07	120	0.1+	0.3-	1999 09 11	120	0.3-	0.3-
1997 03 06	809	0.6-	0.7-	1999 09 08	120	0.8-	0.7-	1999 09 13	120	0.5+	0.3-
1999 08 22	703	0.6-	0.2-	1999 09 08	120	1.2+	1.3-	1999 09 13	120	0.2-	0.1+
1999 08 22	703	0.1-	0.8+	1999 09 09	120	0.8+	0.7-	1999 09 13	120	0.6-	0.0
1999 08 22	703	0.3-	0.6-	1999 09 09	120	0.7+	0.9-	1999 09 14	704	0.4+	0.1-
1999 08 22	703	0.6-	0.0	1999 09 09	704	0.6-	0.2-	1999 09 14	704	0.1+	0.4+
1999 08 22	699	0.6+	0.3+	1999 09 09	704	0.5-	0.1-	1999 09 14	704	0.1+	0.1+
1999 08 22	699	0.2+	0.9+	1999 09 09	704	0.2+	0.1+	1999 09 14	704	0.1+	0.3-
1999 08 22	699	0.2+	0.3-	1999 09 09	704	0.1-	0.0	1999 09 14	704	0.0	0.2+
1999 09 07	704	0.2+	0.6-	1999 09 11	699	0.7-	2.2+				

1999 RY₂₇ = 1987 VN = 1998 FU₁₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	102.20972		(2000.0)	P	Q
n	0.23010763	ω	227.69626	-0.75180752	+0.65890297
a	2.6374366	Ω	353.37790	-0.52244865	-0.61851281
e	0.1231543	i	12.59482	-0.40228456	-0.42812238
P	4.28	H	12.9	G 0.15	U 3

Residuals in seconds of arc

1987 11 14	010	0.8−	1.2+	1999 09 07	704	0.4−	0.2−	1999 09 09	106	0.0	0.5+
1987 11 14	010	0.2+	0.5−	1999 09 07	704	0.2−	0.3−	1999 09 09	106	0.3+	0.3+
1987 11 14	010	0.6+	0.7−	1999 09 07	704	0.0	0.1−	1999 09 10	106	0.8+	0.2+
1998 03 31	704	0.5+	0.7−	1999 09 07	699	0.3−	0.6+	1999 09 10	106	0.1+	0.3−
1998 03 31	704	0.5−	0.8−	1999 09 07	704	0.4−	0.7−	1999 09 10	106	0.3−	0.6+
1998 03 31	704	0.6+	0.2−	1999 09 07	106	0.3+	0.5+	1999 09 11	106	0.1−	0.2+
1998 03 31	704	0.2−	0.3+	1999 09 07	106	0.4+	0.4+	1999 09 11	106	0.4−	0.3−
1998 03 31	704	0.7+	0.5+	1999 09 07	106	0.0	0.3+	1999 09 11	106	0.1+	0.5+
1998 04 01	704	0.1+	0.7−	1999 09 08	106	0.0	0.3+	1999 09 13	704	0.1+	0.4−
1998 04 01	704	0.4−	0.1−	1999 09 08	106	0.2−	0.6−	1999 09 13	704	0.2−	0.5−
1998 04 01	704	0.1−	0.5+	1999 09 08	106	0.1+	0.3+	1999 09 13	704	0.3−	0.4−
1998 04 01	704	0.2−	0.6+	1999 09 08	106	0.1+	0.6+	1999 09 13	704	0.2−	0.8−
1998 04 01	704	0.5−	0.6+	1999 09 08	106	0.4−	0.3+	1999 09 13	704	0.6−	1.2−
1999 08 12	699	0.2+	0.3+	1999 09 08	106	1.5+	0.3+	1999 09 14	106	0.3−	0.3+
1999 08 12	699	0.2+	0.1+	1999 09 09	704	0.3+	0.5−	1999 09 14	106	0.1−	0.4+
1999 08 12	699	0.4+	0.1+	1999 09 09	704	0.2+	0.5−	1999 09 14	106	0.2−	0.4−
1999 09 07	699	0.3−	0.4+	1999 09 09	704	0.2−	0.7−	1999 09 16	106	0.2+	0.3+
1999 09 07	699	0.2−	0.1−	1999 09 09	704	0.5+	0.0	1999 09 16	106	0.5+	0.1−
1999 09 07	699	0.3−	0.6+	1999 09 09	704	0.2−	0.5−	1999 09 16	106	0.6−	0.4+

1999 RB₂₈ = 1999 NT₅₉ = 1998 FW₁₄₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Marsden			
				P	Q		
<i>M</i>	6.70487		(2000.0)				
<i>n</i>	0.22755518	ω	141.31550	+0.59912366	+0.79764942		
<i>a</i>	2.6571224	Ω	165.06786	−0.78509427	+0.60226099		
<i>e</i>	0.0394073	<i>i</i>	15.60765	−0.15709175	+0.03220407		
<i>P</i>	4.33	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 03 24	704	0.0	0.1−	1999 09 08	046	0.1−	0.3+	1999 09 10	046	0.1−	0.0
1998 03 24	704	0.2+	0.3+	1999 09 08	046	0.5−	0.0	1999 09 11	046	0.0	0.3−
1998 03 24	704	0.3+	0.0	1999 09 08	046	0.5−	0.1−	1999 09 11	046	0.5−	0.1−
1998 03 24	704	0.0	0.4+	1999 09 08	046	0.3−	0.5+	1999 09 11	046	0.3+	0.0
1998 03 24	704	0.5−	0.6−	1999 09 09	704	0.1+	0.0	1999 09 12	046	0.2−	0.4−
1998 04 24	704	1.2+	0.1−	1999 09 09	704	0.2+	0.2+	1999 09 12	046	0.0	0.1−
1998 04 24	704	0.3+	0.1+	1999 09 09	704	0.1−	0.4−	1999 09 12	046	0.1+	0.0
1998 04 24	704	0.4−	0.4+	1999 09 09	704	0.0	0.3+	1999 09 13	704	(2.0+	0.3−)
1998 04 24	704	0.2−	0.5−	1999 09 09	704	0.1+	0.2+	1999 09 13	704	0.3+	0.5+
1998 04 24	704	0.2+	0.2+	1999 09 09	704	0.6+	0.3−	1999 09 13	704	0.0	0.1−
1998 05 16	704	1.3+	0.5+	1999 09 09	704	0.7−	0.4+	1999 09 13	704	0.5+	0.3−
1998 05 16	704	1.1−	1.6+	1999 09 09	704	0.1+	0.7+	1999 09 13	704	0.7+	0.6−
1998 05 16	704	0.6−	1.3−	1999 09 09	704	0.5−	0.3+	1999 09 13	046	0.1−	0.2+
1998 05 16	704	0.1−	1.7−	1999 09 09	704	0.3−	0.2+	1999 09 13	046	0.3−	0.0
1998 05 16	704	0.7−	0.8+	1999 09 09	704	0.3+	0.1−	1999 09 13	046	0.1−	0.1+
1999 07 13	704	0.0	0.7−	1999 09 09	704	0.3+	0.3+	1999 09 14	046	0.4−	0.1+
1999 07 13	704	0.4−	0.0	1999 09 09	704	0.0	0.3+	1999 09 14	046	0.1−	0.2+
1999 07 13	704	0.2−	0.0	1999 09 09	704	0.3+	0.1+	1999 09 14	046	0.1−	0.1+
1999 07 13	704	0.2−	0.0	1999 09 09	704	0.3+	0.0	1999 09 15	046	0.1+	0.2+
1999 07 13	704	0.5−	0.1−	1999 09 09	046	0.1−	0.1−	1999 09 15	046	0.1+	0.0
1999 07 22	704	1.1+	0.6+	1999 09 09	046	0.1−	0.1−	1999 09 15	046	0.2−	0.2+
1999 07 22	704	0.2−	0.3+	1999 09 09	046	0.2+	0.2−	1999 09 18	046	0.3+	0.2−
1999 07 22	704	0.2+	0.5−	1999 09 09	046	0.2−	0.6−	1999 09 18	046	0.1+	0.4−
1999 07 22	704	0.0	0.0	1999 09 10	046	0.3+	0.0	1999 09 18	046	0.3−	0.1−
1999 07 22	704	0.3+	0.2−	1999 09 10	046	0.3+	0.0	1999 09 18	046	0.2−	0.5−

1999 RO₂₉ = 1980 RC₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
				P	Q		
<i>M</i>	337.68283		(2000.0)				
<i>n</i>	0.25814539	ω	169.71119	+0.99489481	−0.07351221		
<i>a</i>	2.4428294	Ω	195.03516	+0.06270565	+0.98711282		
<i>e</i>	0.2682368	<i>i</i>	15.45755	+0.07907161	+0.14214158		
<i>P</i>	3.82	<i>H</i>	16.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1980 09 13	675	0.2+	0.0	1999 09 07	703	0.5−	0.8+	1999 09 09	704	0.3+	0.0
1980 09 14	675	0.2−	0.0	1999 09 07	703	0.4+	0.6−	1999 09 09	704	0.2+	0.2−
1999 08 11	704	0.1−	0.1+	1999 09 08	699	1.2−	0.9+	1999 09 09	704	0.0	0.2−
1999 08 11	704	0.0	0.2−	1999 09 08	699	0.8−	0.2+	1999 09 09	704	0.2−	0.3−
1999 08 11	704	0.6+	0.2+	1999 09 08	704	0.0	0.7−	1999 09 16	704	0.2+	0.5+
1999 08 11	704	0.5−	0.1+	1999 09 08	699	0.2+	0.1+	1999 09 16	704	0.2+	0.5−
1999 08 11	704	0.4+	0.2−	1999 09 08	704	0.2+	0.0	1999 09 16	704	0.0	0.5+
1999 09 07	703	0.2−	0.5+	1999 09 08	704	0.0	0.7−	1999 09 16	704	0.3+	0.5−
1999 09 07	703	0.2+	0.1+	1999 09 09	704	0.2+	0.1+				

1999 RR₃₁ = 1998 FD₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
				P	Q		
<i>M</i>	15.59999		(2000.0)				
<i>n</i>	0.29294100	ω	306.12889	+0.85708895	+0.51387382		
<i>a</i>	2.2453425	Ω	23.01611	−0.43757579	+0.76356092		
<i>e</i>	0.2033090	<i>i</i>	5.35646	−0.27189327	+0.39103505		
<i>P</i>	3.36	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 03 20	704	0.1−	0.2−	1998 03 22	704	0.1−	1.1−	1999 09 08	557	0.0	0.3−
1998 03 20	704	0.2−	1.5+	1998 03 22	704	0.6−	0.1+	1999 09 08	557	0.1−	0.1−
1998 03 20	704	0.3+	0.3+	1998 03 22	704	(5.2−	0.2−)	1999 09 10	557	0.1−	0.0
1998 03 20	704	0.4+	0.4−	1999 09 05	699	0.0	0.5−	1999 09 10	557	0.2+	0.2−
1998 03 20	704	(5.5−	1.9−)	1999 09 05	699	0.5+	0.4+	1999 09 12	557	0.0	0.1+
1998 03 22	704	0.2+	0.2−	1999 09 05	699	0.4−	0.5+	1999 09 12	557	0.0	0.0

1999 RX₃₁ = 1998 FM₉₁

Id. B. G. Marsden

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
				P	Q		
<i>M</i>	333.91813		(2000.0)				
<i>n</i>	0.35699608	ω	359.91644	+0.95950858	−0.26406209		
<i>a</i>	1.9680090	Ω	16.43882	+0.25863640	+0.68801864		
<i>e</i>	0.0745656	<i>i</i>	20.27276	+0.11158183	+0.67594495		
<i>P</i>	2.76	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 03 24	704	0.1−	0.4+	1999 09 09	595	0.1+	1.0−	1999 09 10	595	0.7−	0.4−
1998 03 24	704	0.7−	0.9−	1999 09 10	046	0.3+	0.0	1999 09 11	595	0.3−	0.6−
1998 03 24	704	0.1−	0.2−	1999 09 10	046	0.3+	0.2−	1999 09 11	595	0.8−	0.5−
1998 03 24	704	0.4−	0.8+	1999 09 10	046	0.2+	0.0	1999 09 11	426	0.6−	0.5−
1998 03 25	704	0.4−	0.3+	1999 09 10	046	0.2+	0.4−	1999 09 11	426	0.4−	0.5−
1998 03 25	704	0.4+	0.3+	1999 09 10	595	0.9+	0.1+	1999 09 11	426	0.1+	0.1+
1998 03 25	704	0.8−	0.1−	1999 09 10	426	0.0	0.4+	1999 09 12	046	0.1+	0.1+
1998 03 25	704	1.3+	1.7−	1999 09 10	426	0.0	0.1+	1999 09 12	046	0.3−	0.1+
1998 03 25	704	0.8+	1.0+	1999 09 10	426	0.3−	0.1+	1999 09 12	046	0.0	0.1+
1999 09 08	703	0.2−	0.2+	1999 09 10	046	0.1+	0.2−	1999 09 12	428	0.6−	0.6−
1999 09 08	703	0.2−	0.1+	1999 09 10	046	0.1−	0.3+	1999 09 12	428	0.2−	0.9−
1999 09 08	703	0.2−	0.0	1999 09 10	046	0.7+	0.5+	1999 09 12	046	0.4+	0.3+
1999 09 08	703	0.1−	1.0+	1999 09 10	046	0.5+	0.1+	1999 09 12	046	0.1+	0.1−
1999 09 08	703	0.3+	0.0	1999 09 10	046	0.7+	0.5+	1999 09 12	046	0.1+	0.4+
1999 09 08	703	1.3−	0.0	1999 09 10	046	0.1−	0.3+	1999 09 14	046	0.4+	0.2+
1999 09 08	703	0.7+	0.2−	1999 09 10	046	0.0	0.5+	1999 09 14	046	0.3+	0.2+
1999 09 08	703	0.1−	1.7+	1999 09 10	046	0.0	0.2−	1999 09 14	046	0.2+	0.1+
1999 09 09	428	0.4+	0.9−	1999 09 10	046	0.5+	0.2+	1999 09 15	046	0.0	0.6+
1999 09 09	428	0.8−	0.7−	1999 09 10	595	0.1+	0.1+	1999 09 15	046	0.0	0.4+
1999 09 09	595	0.1−	0.3−	1999 09 10	595	0.5−	0.9−	1999 09 15	046	0.0	0.6+

1999 SEPT. 28

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1999 RN₃₂ = 1994 WP₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	333.39284	(2000.0)	P		Q	
<i>n</i>	0.17462208	ω	207.28575	+0.90601886	-0.42318872	
<i>a</i>	3.1700780	Ω	177.72106	+0.41175220	+0.87782545	
<i>e</i>	0.0964671	<i>i</i>	9.28156	+0.09792828	+0.22435191	
<i>P</i>	5.64	<i>H</i>	13.2	<i>G</i> 0.15	<i>U</i> 5	

Residuals in seconds of arc

1994 11 28	399	1.8+	0.9+	1999 09 09	120	0.2-	0.0	1999 09 14	704	0.5-	0.4+
1994 11 28	399	0.5+	0.7+	1999 09 10	120	0.2+	0.5-	1999 09 14	703	0.4+	0.3+
1994 11 29	399	1.4-	0.4-	1999 09 10	120	0.5+	0.1+	1999 09 14	703	0.2-	0.1+
1994 11 29	399	2.8-	0.1-	1999 09 10	120	1.0+	1.0+	1999 09 14	703	0.6+	0.1+
1994 12 09	399	1.1+	1.2-	1999 09 11	120	0.2-	0.3-	1999 09 14	703	0.5+	0.6-
1994 12 09	399	0.8+	0.1+	1999 09 11	120	0.4-	0.2+	1999 09 16	691	0.2+	0.7-
1999 09 07	691	0.7-	0.3-	1999 09 14	704	0.1+	0.1+	1999 09 16	691	0.3+	0.5-
1999 09 07	691	0.6-	0.0	1999 09 14	704	0.0	0.6+	1999 09 16	691	0.1+	0.1-
1999 09 07	691	0.6-	0.0	1999 09 14	704	0.3-	0.0				
1999 09 09	120	0.1-	0.3-	1999 09 14	704	0.2-	0.4+				

1999 RO₃₂ = 1988 RH₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	297.38059	(2000.0)	P		Q	
<i>n</i>	0.17849953	ω	88.80815	+0.04284837	-0.99906869	
<i>a</i>	3.1240022	Ω	358.70300	+0.80404324	+0.03749963	
<i>e</i>	0.2914318	<i>i</i>	12.96220	+0.59302486	+0.02134336	
<i>P</i>	5.52	<i>H</i>	13.4	<i>G</i> 0.15	<i>U</i> 5	

Residuals in seconds of arc

1988 09 08	033	0.3+	0.4+	1999 09 07	704	0.1+	0.4-	1999 09 14	704	0.1+	0.0
1988 09 09	033	0.1+	0.1-	1999 09 07	704	0.3-	0.2-	1999 09 14	704	0.2-	0.0
1988 09 09	033	0.3+	0.7+	1999 09 07	704	0.4+	0.3+	1999 09 14	704	0.3-	0.0
1988 09 10	033	0.6-	0.2-	1999 09 07	704	0.2-	0.1-	1999 09 14	704	0.1+	0.1+
1988 09 10	033	0.6-	0.7-	1999 09 09	704	0.1+	0.2-	1999 09 14	704	0.2+	0.1-
1988 09 11	033	0.1+	1.3+	1999 09 09	704	0.2+	0.2+	1999 09 14	703	0.4+	0.4+
1988 09 11	675	0.4-	0.3-	1999 09 09	704	0.0	0.3+	1999 09 14	703	0.5-	0.4+
1988 09 11	675	0.3+	0.4-	1999 09 09	704	0.0	0.2-	1999 09 14	703	0.1-	0.1+
1988 09 12	675	(4.5-	5.0-)	1999 09 09	704	0.5+	0.9+	1999 09 14	703	0.2-	0.4+
1988 09 12	675	(5.3-	2.5-)	1999 09 09	120	0.5-	0.0	1999 09 14	703	0.8-	0.3-
1999 08 22	703	0.2-	0.2-	1999 09 09	120	0.1+	0.0	1999 09 14	703	0.5+	0.1-
1999 08 22	703	0.2+	0.4+	1999 09 10	120	1.9+	0.4-	1999 09 14	703	1.0-	1.2-
1999 08 22	703	0.0	0.6-	1999 09 10	120	0.5-	0.5-	1999 09 14	703	0.8+	0.1-
1999 08 22	703	0.5-	0.5+	1999 09 11	120	0.3+	0.2+				
1999 09 07	704	0.1-	0.3-	1999 09 11	120	0.1-	0.2-				

1999 RD₃₄ = 1997 GW₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	343.70697	(2000.0)	P		Q	
<i>n</i>	0.18419717	ω	5.49446	+0.98575941	-0.16811147	
<i>a</i>	3.0592437	Ω	4.19028	+0.15206267	+0.88067915	
<i>e</i>	0.1263610	<i>i</i>	3.22626	+0.07180058	+0.44288009	
<i>P</i>	5.35	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1997 04 03	704	0.3-	0.4+	1999 08 22	703	0.2-	0.5+	1999 09 12	120	0.3+	0.4+
1997 04 03	704	0.1-	0.1-	1999 08 22	703	0.3+	0.6-	1999 09 12	120	0.9+	0.2-
1997 04 05	704	(2.8-	0.1+)	1999 08 22	703	0.2+	0.7-	1999 09 14	704	0.4+	0.5-
1997 04 05	704	0.2-	1.1-	1999 08 22	703	1.1+	0.0	1999 09 14	704	0.4-	0.2+
1997 04 07	704	0.6+	0.0	1999 09 07	704	0.1-	0.7-	1999 09 14	704	0.1-	0.5-
1997 04 07	704	0.4-	0.2+	1999 09 07	704	0.2-	0.2-	1999 09 14	704	0.2+	0.3-
1999 08 12	699	0.9-	1.2+	1999 09 07	704	0.6-	0.3+	1999 09 14	704	0.4-	0.4-
1999 08 12	699	0.4-	0.2-	1999 09 07	704	0.2-	0.2+	1999 09 14	703	0.1+	0.2+
1999 08 12	699	0.3-	0.1-	1999 09 07	704	0.5-	0.2-	1999 09 14	703	0.2-	0.0
1999 08 22	703	0.1-	0.4+	1999 09 07	120	0.6+	0.6-	1999 09 14	703	0.6-	0.5+
1999 08 22	703	0.4-	0.6+	1999 09 07	120	1.5+	0.1-	1999 09 14	703	0.1+	0.7+

1999 08 22	703	0.7-	0.8+	1999 09 11	120	0.5+	0.7-
1999 08 22	703	0.3+	0.1+	1999 09 11	120	0.2-	0.7-

1999 RE₃₄ = 1992 RQ₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	168.80857	(2000.0)	P		Q	
<i>n</i>	0.29020143	ω	193.77715	-0.99589561	+0.08999464	
<i>a</i>	2.2594515	Ω	351.36884	-0.07576214	-0.88715195	
<i>e</i>	0.0932904	<i>i</i>	3.68249	-0.04951806	-0.45261727	
<i>P</i>	3.40	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 2	

Residuals in seconds of arc

1992 09 02	809	1.3-	1.3+	1998 04 22	704	0.2-	0.7-	1999 09 07	704	0.1-	1.5-
1992 09 02	809	1.1-	0.8+	1998 04 22	704	1.1-	0.1-	1999 09 07	704	0.4-	0.1-
1992 09 02	809	1.0-	0.1-	1998 04 22	704	0.9-	0.2+	1999 09 08	120	0.0	1.0+
1992 09 03	809	0.8-	1.2+	1998 05 01	704	0.8-	0.1-	1999 09 08	120	0.4-	0.0
1992 09 23	809	1.8+	0.5-	1998 05 01	704	0.9+	0.6-	1999 09 11	120	1.6+	1.0-
1992 09 23	809	1.2+	0.5-	1998 05 01	704	0.7+	0.1-	1999 09 11	120	(3.4-	1.0+)
1992 09 23	809	0.8+	1.2-	1998 05 01	704	0.3+	1.7-	1999 09 12	120	0.8+	0.1+
1993 11 10	691	0.1-	0.4-	1998 05 01	704	(5.8-	1.7+)	1999 09 12	120	0.1-	0.5+
1993 11 10	691	0.1-	0.3-	1999 09 07	704	0.3-	0.4-	1999 09 13	120	1.1-	0.3+
1993 11 10	691	0.0	0.5-	1999 09 07	704	0.8+	0.9-	1999 09 13	120	0.1+	0.5-
1998 04 22	704	0.4+	0.9+	1999 09 07	704	0.4+	0.3-				

1999 RF₃₄ = 1996 FV₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	310.49114	(2000.0)	P		Q	
<i>n</i>	0.17742259	ω	272.84776	+0.48989980	-0.87176454	
<i>a</i>	3.1366310	Ω	147.81671	+0.80350814	+0.44931260	
<i>e</i>	0.1900682	<i>i</i>	0.53543	+0.33819056	+0.19530689	
<i>P</i>	5.56	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 5	

Residuals in seconds of arc

1996 03 18	691	0.2-	0.3+	1999 09 06	691	0.1-	0.0	1999 09 11	120	0.1+	0.0
1996 03 18	691	0.2-	0.2+	1999 09 06	691	0.0	0.0	1999 09 12	120	3.7-	1.8+
1996 03 18	691	0.2-	0.0	1999 09 07	704	0.2+	0.4+	1999 09 12	120	0.7-	0.2-
1996 03 26	691	0.4+	0.0	1999 09 07	704	0.0	0.5+	1999 09 14	704	1.1+	0.9+
1996 03 26	691	0.2+	0.0	1999 09 07	704	0.1+	0.1+	1999 09 14	704	0.2+	0.3-
1996 03 26	691	0.2+	0.0	1999 09 07	704	0.2+	0.4+	1999 09 14	704	0.6+	0.6-
1999 08 22	703	0.1+	0.1-	1999 09 07	704	0.7+	1.1+	1999 09 14	704	0.0	0.5-
1999 08 22	703	0.2-	0.2+	1999 09 09	120	0.2-	1.1-	1999 09 14	704	0.3+	0.1-
1999 08 22	703	0.0	0.2-	1999 09 09	120	0.4+	0.4-	1999 09 16	691	0.2-	0.4-
1999 08 22	703	0.1-	0.1+	1999 09 10	120	0.3-	0.6-	1999 09 16	691	0.2-	0.3-
1999 09 06	691	0.2-	0.3+	1999 09 11	120	1.9+	0.2-	1999 09 16	691	0.3-	0.3-

1999 RP₃₄ = 1992 ET₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	121.14781	(2000.0)	P		Q	
<i>n</i>	0.20168875	ω	84.95706	-0.58918711	+0.80771265	
<i>a</i>	2.8797068	Ω	148.91219	-0.75678965	-0.54236588	
<i>e</i>	0.0237556	<i>i</i>	2.37752	-0.28306886	-0.23116991	
<i>P</i>	4.89	<i>H</i>	13.2	<i>G</i> 0.15	<i>U</i> 6	

Residuals in seconds of arc

1992 03 01	809	0.6+	0.1-	1999 09 07	704	0.2-	0.7+	1999 09 12	120	0.6+	1.4-
1992 03 03	809	1.0-	0.2+	1999 09 07	704	0.3-	0.3+	1999 09 12	120	1.1-	0.5-
1992 03 07	809	0.4+	0.0	1999 09 07	704	0.5-	0.0	1999 09 12	120	0.8-	0.1+
1999 09 03	691	0.2+	0.0	1999 09 11	120	0.6+	0.2+	1999 09 13	120	0.2+	0.1+
1999 09 03	691	0.2+	0.0	1999 09 11	120	0.0	0.9+	1999 09 13	120	0.4+	0.1+
1999 09 03	691	0.2+	0.0	1999 09 11	120	0.6+	0.9+	1999 09 14	120	0.0	0.5+
1999 09 07	704	0.1-	0.1-	1999 09 11	120	0.1+	0.2-	1999 09 14	120	0.2-	0.7-
1999 09 07	704	0.2-	0.0	1999 09 11	120	0.3+	0.7-				

1999 RW₃₄ = 1998 HM₆₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.24286743	ω	154.88610	+0.95040799	+0.31065577		
<i>a</i>	2.5442309	Ω	187.06361	−0.30174611	+0.90958382		
<i>e</i>	0.2581741	<i>i</i>	6.89041	−0.07532557	+0.27595338		
<i>P</i>	4.06	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	1.1+	0.5+	1998 05 19	910	0.8+	1.1−	1999 09 11	557	0.1+	0.3+
1998 04 21	704	0.9−	1.5+	1999 07 23	704	0.0	0.4+	1999 09 12	557	0.1+	0.2+
1998 04 21	704	(1.7+ 2.2−)		1999 07 23	704	0.1+	1.0−	1999 09 12	557	0.1+	0.2+
1998 04 21	704	0.3−	1.4−	1999 07 23	704	0.1+	1.0−	1999 09 12	557	0.0	0.0
1998 04 22	704	0.1−	0.1+	1999 07 23	704	0.2+	0.6−	1999 09 13	557	0.1−	0.1+
1998 04 22	704	1.3−	1.5+	1999 07 23	704	0.1+	0.6−	1999 09 13	557	0.3−	0.1−
1998 04 22	704	0.3−	1.1+	1999 09 05	699	0.8−	0.8+	1999 09 13	557	0.2−	0.0
1998 04 22	704	0.3+	0.2−	1999 09 05	699	0.4−	0.9+	1999 09 15	557	0.0	0.1+
1998 04 22	704	0.5−	1.1+	1999 09 05	699	0.1+	0.6+	1999 09 15	557	0.2+	0.2+
1998 05 19	910	0.8+	0.0	1999 09 11	557	0.3+	0.3+	1999 09 15	557	0.1−	0.0
1998 05 19	910	1.3+	0.9−	1999 09 11	557	0.3+	0.3+	1999 09 15	557	0.1−	0.2+

1999 RC₃₅ = 1958 VC₁ = 1978 TP₁ = 1979 YO₂ = 1994 UG₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.19118682	ω	14.79849	+0.74670487	−0.65957664		
<i>a</i>	2.9842194	Ω	27.07569	+0.58947169	+0.59631632		
<i>e</i>	0.0754663	<i>i</i>	10.88692	+0.30814763	+0.45756475		
<i>P</i>	5.16	<i>H</i>	12.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1958 11 13	760	0.6−	0.3−	1994 10 26	399	0.3−	0.7−	1999 09 13	757	0.1+	0.3−
1958 11 13	760	0.1−	1.7+	1994 10 26	399	0.5+	1.1−	1999 09 13	757	0.5+	0.1+
1978 10 03	095	0.0	0.3−	1999 09 11	757	0.1−	0.6+	1999 09 17	757	0.0	0.1−
1979 12 24	095	0.2+	0.6−	1999 09 11	757	0.2−	0.0	1999 09 17	757	0.4+	0.3+
1994 10 25	399	0.2−	0.2+	1999 09 12	757	0.6−	0.2+	1999 09 23	757	0.8+	0.1−
1994 10 25	399	0.2−	0.6+	1999 09 12	757	0.0	0.5+	1999 09 23	757	0.2−	1.0−

1999 RH₃₅ = 1998 FS₄₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28574163	ω	138.59898	+0.67123761	+0.74121685		
<i>a</i>	2.2829008	Ω	173.55510	−0.69364927	+0.63103675		
<i>e</i>	0.1919356	<i>i</i>	3.13411	−0.26132502	+0.22888908		
<i>P</i>	3.45	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1998 03 20	704	0.0	1.3+	1999 08 13	699	0.1−	0.2+	1999 09 12	164	0.7+	0.3+
1998 03 20	704	1.4+	0.8+	1999 08 13	699	0.6+	1.2−	1999 09 12	164	0.4−	0.1+
1998 03 20	704	0.2+	0.7+	1999 09 05	699	0.7−	0.7+	1999 09 12	164	1.7−	0.2−
1998 03 20	704	1.3−	1.5−	1999 09 05	699	0.6−	0.1+	1999 09 16	120	0.7+	0.9−
1998 03 22	704	0.5−	0.8−	1999 09 05	699	0.6−	0.6+	1999 09 16	120	0.9+	0.0
1998 03 22	704	0.4+	0.8+	1999 09 10	164	1.1−	0.2−	1999 09 16	120	0.3+	0.1+
1998 03 22	704	0.0	1.4−	1999 09 10	164	0.8+	0.8−	1999 09 17	120	0.2−	0.5−
1998 03 22	704	0.4−	0.4+	1999 09 10	164	0.9+	0.3+	1999 09 18	120	0.5+	0.1−
1998 03 22	704	0.2+	0.1−	1999 09 10	164	1.0+	0.1−				
1999 08 13	699	0.1+	0.4+	1999 09 12	164	1.0−	1.1+				

1999 RL₃₅ = 1979 QG₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20016460	ω	119.52377	+0.98357445	−0.17975976		
<i>a</i>	2.8943066	Ω	250.83607	+0.15903404	+0.90589829		
<i>e</i>	0.0733867	<i>i</i>	0.99255	+0.08537841	+0.38345106		
<i>P</i>	4.92	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1979 08 22	809	0.1+	0.1+	1999 09 07	704	0.4+	0.6+	1999 09 14	704	0.7+	1.3−
1979 08 22	809	1.4−	0.0	1999 09 07	704	0.4+	0.4+	1999 09 14	704	0.4+	0.3+
1979 08 22	809	0.3−	0.4+	1999 09 07	704	0.0	1.6+	1999 09 14	703	0.4+	0.1−
1979 08 23	809	0.2+	0.6+	1999 09 11	470	0.4−	0.9−	1999 09 14	703	0.1+	0.2−
1979 08 23	809	1.3+	1.0−	1999 09 11	470	0.7−	0.9−	1999 09 14	703	0.0	0.4+
1994 09 11	691	0.2−	0.2−	1999 09 11	470	0.1−	0.3+	1999 09 14	703	0.4+	0.3−
1994 09 11	691	0.2+	0.2−	1999 09 12	470	1.8−	0.2−	1999 09 17	739	0.7+	0.0
1994 09 11	691	0.2+	0.2−	1999 09 12	470	0.9−	0.8+	1999 09 17	739	0.1+	0.0
1999 09 07	691	0.3−	0.4−	1999 09 14	470	0.1+	0.3+	1999 09 17	739	0.6−	0.3−
1999 09 07	691	0.3−	0.4−	1999 09 14	470	0.6−	1.0+	1999 09 18	747	0.2−	0.0
1999 09 07	691	0.0	0.4−	1999 09 14	704	0.1+	0.2−	1999 09 18	747	0.2+	0.3+
1999 09 07	704	0.3−	0.1+	1999 09 14	704	0.2+	0.1−	1999 09 18	747	0.3+	0.0
1999 09 07	704	0.6+	0.2+	1999 09 14	704	0.4+	0.4−	1999 09 18	747	0.4+	0.4+

1999 RN₃₅ = 1998 HX₆₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28229466	ω	186.91457	+0.98646178	−0.16391561		
<i>a</i>	2.3014468	Ω	182.53591	+0.15533765	+0.94371656		
<i>e</i>	0.1317088	<i>i</i>	6.46708	+0.05256782	+0.28728161		
<i>P</i>	3.49	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 29	704	1.3+	0.0	1999 09 07	704	0.3−	0.3−	1999 09 09	704	0.0	0.2+
1998 03 29	704	0.6+	1.1+	1999 09 07	704	0.7−	0.6−	1999 09 11	120	0.6−	0.5+
1998 03 29	704	0.7−	1.4−	1999 09 09	704	0.1+	0.2+	1999 09 11	120	0.5−	0.6−
1998 03 29	704	1.5−	0.3−	1999 09 09	704	0.1−	0.1+	1999 09 12	120	0.6−	0.2+
1998 04 21	704	0.5+	0.2−	1999 09 09	704	0.8+	0.5−	1999 09 12	120	0.5+	0.2+
1998 04 21	704	1.9+	0.4+	1999 09 09	704	0.5+	0.3+	1999 09 14	704	0.0	0.1−
1998 04 21	704	1.1−	0.2−	1999 09 09	704	0.6+	0.3−	1999 09 14	704	0.2+	0.5−
1998 04 21	704	1.4−	0.3+	1999 09 09	704	0.3−	0.1+	1999 09 14	704	0.2+	0.2−
1998 04 22	704	0.2+	1.3−	1999 09 09	704	0.3+	0.7−	1999 09 14	704	0.4+	0.4−
1998 04 22	704	0.2+	0.5+	1999 09 09	704	0.0	0.7+	1999 09 14	704	0.0	0.2+
1998 04 22	704	0.3+	0.0	1999 09 09	704	0.5+	0.3+	1999 09 14	703	0.2+	0.5−
1998 04 22	704	0.3−	1.1+	1999 09 09	704	0.2−	0.2−	1999 09 14	703	0.3+	0.2+
1999 09 07	704	0.1−	0.4+	1999 09 09	704	0.2+	0.2+	1999 09 14	703	0.3−	0.2+
1999 09 07	704	0.2−	0.1+	1999 09 09	704	0.3+	0.3+	1999 09 14	703	0.1−	0.2+
1999 09 07	704	0.4−	0.1+	1999 09 09	704	0.7−	0.0				

1999 RO₃₅ = 1996 BT₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23836197	ω	275.68133	+0.98011101	+0.19751261		
<i>a</i>	2.5761911	Ω	72.92825	−0.17316469	+0.89861248		
<i>e</i>	0.2972442	<i>i</i>	1.15483	−0.09693506	+0.39177082		
<i>P</i>	4.13	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1996 01 22	327	0.5−	0.9+	1999 08 13	699	0.2+	0.9+	1999 09 12	120	0.1−	0.5−
1996 01 22	327	0.2−	1.6+	1999 08 22	699	0.3−	0.1−	1999 09 12	120	0.4−	0.3−
1996 01 22	327	0.7+	0.9+	1999 08 22	699	0.4−	0.0	1999 09 13	120	0.2−	0.1−
1996 01 23	327	0.2+	0.2+	1999 08 22	699	0.0	0.3+	1999 09 13	120	0.3+	0.0
1996 01 23	327	0.7−	0.4−	1999 09 07	704	0.8+	0.2−	1999 09 14	704	0.5+	0.1+
1996 01 23	327	0.2−	0.6−	1999 09 07	704	0.8+	1.0−	1999 09 14	704	0.2+	0.3−
1999 07 16	704	0.8−	0.4+	1999 09 07	704	0.4+	0.0	1999 09 14	704	0.0	0.5−
1999 07 16	704	1.0−	0.2−	1999 09 07	704	0.1+	0.8−	1999 09 14	704	0.1−	0.2−

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1999 07 16	704	0.2−	1.2+	1999 09 07	704	0.2−	1.0−	1999 09 14	704	0.3−	0.2−
1999 07 16	704	0.6+	1.0+	1999 09 11	120	0.4+	0.1−	1999 09 14	120	0.0	0.1+
1999 08 13	699	0.1−	1.1+	1999 09 11	120	0.4+	0.3+	1999 09 14	120	0.0	0.3−
1999 08 13	699	0.3−	1.0+	1999 09 12	120	0.7−	0.3+				

1999 RG₃₆ = 1992 BS₁ = 1997 GQ₄₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	306.30299		(2000.0)	P	Q	Williams	
<i>n</i>	0.23297829	ω	246.06165	−0.01104466	−0.99464467		
<i>a</i>	2.6157270	Ω	205.22967	+0.98252348	+0.00830175		
<i>e</i>	0.1297519	<i>i</i>	13.95058	+0.18581075	−0.10301975		
<i>P</i>	4.23	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1992 01 30	675	0.8+	0.8−	1997 04 12	809	0.1+	0.5+	1999 09 18	703	0.6−	0.7+
1992 01 30	675	1.6−	0.3+	1999 09 12	120	1.6+	0.4−	1999 09 18	703	0.1+	0.7+
1992 01 31	675	0.5+	0.3−	1999 09 12	120	0.5+	0.1+	1999 09 22	120	0.6−	1.7−
1992 01 31	675	0.3+	0.7+	1999 09 13	120	0.8+	0.5+	1999 09 22	120	0.1−	0.1−
1997 04 11	809	0.2+	0.7+	1999 09 13	120	0.9+	0.1+	1999 09 22	120	1.4−	0.1+
1997 04 11	809	0.1−	1.0+	1999 09 14	120	0.8+	0.2+	1999 09 23	120	0.4−	0.3+
1997 04 11	809	0.3+	0.5−	1999 09 14	120	0.0	0.4+	1999 09 23	120	0.5−	0.5+
1997 04 12	809	0.0	0.1+	1999 09 18	703	0.7−	0.7+				
1997 04 12	809	0.3−	0.4+	1999 09 18	703	0.2−	0.6+				

1999 RD₃₇ = 1972 RD₃ = 1980 TE₁₅ = 1998 HM₅₇

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	2.81030		(2000.0)	P	Q	Williams	
<i>n</i>	0.25663839	ω	317.84540	+0.96446589	+0.26269709		
<i>a</i>	2.4523830	Ω	26.96311	−0.22274989	+0.86589989		
<i>e</i>	0.1890045	<i>i</i>	3.56702	−0.14208463	+0.42568488		
<i>P</i>	3.84	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1972 09 04	095	(2.5−	6.0−)	1998 04 04	699	1.5+	1.3+	1998 05 16	704	0.9−	1.5+
1972 09 08	095	1.2−	0.7−	1998 04 21	704	0.1+	0.7+	1998 05 16	704	(3.8−	1.3−)
1980 10 15	095	1.6+	1.2+	1998 04 21	704	0.2−	0.1+	1999 08 13	699	0.5+	0.0
1980 10 17	095	1.1+	0.3+	1998 04 21	704	1.5−	0.1−	1999 08 13	699	0.3+	0.2+
1997 02 07	566	1.3−	0.1+	1998 04 21	704	0.4−	0.8−	1999 08 13	699	0.3+	0.1−
1997 02 07	566	1.0−	0.2+	1998 04 21	704	0.0	0.5−	1999 09 08	699	0.5+	0.3+
1997 02 07	566	0.7−	0.2+	1998 04 22	704	0.4+	0.2+	1999 09 08	699	0.3+	0.3+
1998 03 03	910	0.2−	0.1+	1998 04 22	704	1.1+	0.2+	1999 09 08	699	1.0+	0.3+
1998 03 03	910	0.4−	0.2+	1998 04 22	704	0.4−	0.4+	1999 09 09	392	(2.2−	0.9−)
1998 03 03	910	0.2−	0.2+	1998 04 22	704	0.4+	0.2+	1999 09 09	392	(3.4−	0.8−)
1998 03 29	704	0.4+	0.3−	1998 04 22	704	0.1−	0.6+	1999 09 12	392	0.4−	1.1−
1998 03 29	704	0.8+	0.7−	1998 04 25	699	(3.8+	0.4+)	1999 09 12	392	0.8−	0.5−
1998 03 29	704	0.4+	0.9−	1998 04 25	699	0.3+	0.4+	1999 09 16	392	0.4−	0.7+
1998 03 29	704	1.4+	1.0−	1998 04 25	699	0.4+	0.2+	1999 09 17	392	1.6−	0.4+
1998 03 29	704	0.4−	0.6−	1998 05 16	704	0.0	0.9−	1999 09 17	392	(3.4−	0.3−)
1998 04 04	699	0.6−	0.2+	1998 05 16	704	1.7−	0.7−				
1998 04 04	699	0.8+	0.4+	1998 05 16	704	1.0+	0.0				

1999 RL₃₈ = 1998 HA₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	29.34240		(2000.0)	P	Q	Williams	
<i>n</i>	0.26373400	ω	162.02179	+0.66932288	+0.74221015		
<i>a</i>	2.4081967	Ω	149.96612	−0.68964700	+0.63748615		
<i>e</i>	0.1900882	<i>i</i>	3.85266	−0.27639446	+0.20672566		
<i>P</i>	3.74	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 04 20	704	0.8−	0.8−	1998 04 22	704	(2.6−	1.4−)	1999 09 09	704	0.5+	0.0
1998 04 20	704	0.3+	0.4+	1999 09 05	699	0.8−	0.0	1999 09 13	120	0.3−	0.4+
1998 04 20	704	1.6−	0.2+	1999 09 05	699	0.2−	0.2+	1999 09 13	120	0.1−	0.0
1998 04 20	704	1.0+	0.7−	1999 09 05	699	0.3+	0.6−	1999 09 13	120	0.8+	0.0

1998 04 20	704	0.6−	0.5−	1999 09 09	704	0.2+	0.3−	1999 09 13	120	0.5−	0.1+
1998 04 22	704	0.8+	0.2+	1999 09 09	704	0.2+	0.1+	1999 09 14	120	0.5+	0.2−
1998 04 22	704	0.2−	0.9+	1999 09 09	704	0.0	0.0	1999 09 14	120	0.2−	0.1−
1998 04 22	704	1.2+	0.3+	1999 09 09	704	0.1−	0.3+	1999 09 15	120	0.4−	0.1+

1999 RR₃₈ = 1992 SN₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	10.52285		(2000.0)	P	Q	Williams	
<i>n</i>	0.28104024	ω	150.71583	+0.79710452	+0.60384072		
<i>a</i>	2.3082900	Ω	172.13852	−0.55525576	+0.73353977		
<i>e</i>	0.2247713	<i>i</i>	0.36799	−0.23730871	+0.31192274		
<i>P</i>	3.51	<i>H</i>	17.0	<i>G</i>	0.15	<i>U</i>	7

Residuals in seconds of arc

1992 09 22	033	0.7−	1.3+	1999 09 07	704	0.2−	1.2+	1999 09 14	704	0.5+	0.9−
1992 09 24	033	0.2+	0.5+	1999 09 07	704	0.0	0.7+	1999 09 14	704	0.5+	0.4−
1992 09 24	033	0.5−	0.3+	1999 09 07	704	0.1−	0.4−	1999 09 14	704	0.0	0.2−
1992 09 26	033	0.6+	0.2−	1999 09 11	113	1.0+	0.0	1999 09 14	704	0.1+	0.1+
1992 09 27	033	0.4+	1.0−	1999 09 11	113	0.1−	0.1+	1999 09 14	703	0.6+	1.0−
1992 09 28	033	0.2−	0.2−	1999 09 12	113	1.0−	0.3+	1999 09 14	703	0.0	0.6+
1999 09 04	691	0.4−	0.1+	1999 09 12	113	1.3−	0.2−	1999 09 14	703	0.1+	0.3+
1999 09 04	691	0.1+	0.0	1999 09 13	113	0.4+	0.2+	1999 09 14	703	0.3+	2.0+
1999 09 04	691	0.7+	0.9−	1999 09 13	113	0.5−	0.3−	1999 09 14	113	0.4−	0.9−
1999 09 07	704	0.1−	0.2−	1999 09 13	113	0.2+	0.2+	1999 09 14	113	0.9−	0.4−
1999 09 07	704	0.3−	0.4+	1999 09 14	704	1.4+	1.3−				

1999 RY₃₈ = 1990 TJ₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	313.05349		(2000.0)	P	Q	Williams	
<i>n</i>	0.21378618	ω	278.71570	+0.74873738	−0.64708558		
<i>a</i>	2.7700204	Ω	121.74609	+0.65499952	+0.68891804		
<i>e</i>	0.1703721	<i>i</i>	9.73406	+0.10182320	+0.32660707		
<i>P</i>	4.61	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1990 10 11	033	0.4+	0.3−	1999 08 12	699	0.2−	0.5+	1999 09 13	704	0.1−	0.6−
1990 10 12	033	0.5−	1.1−	1999 09 07	699	0.1−	0.1+	1999 09 13	704	0.3−	0.2−
1990 10 12	033	0.7+	0.8+	1999 09 07	699	0.2−	0.1−	1999 09 13	428	0.3+	0.0
1990 10 13	033	0.1−	0.5+	1999 09 07	699	0.1+	0.2−	1999 09 13	428	0.3+	0.2−
1990 10 14	033	0.4−	0.3+	1999 09 08	703	0.3+	0.1+	1999 09 14	428	0.4−	0.7+
1999 07 16	704	0.3+	0.4−	1999 09 08	703	0.2−	0.1−	1999 09 14	428	0.4−	0.2+
1999 07 16	704	0.2+	0.1+	1999 09 08	703	0.9+	0.8−	1999 09 14	428	0.6+	0.1+
1999 07 16	704	0.3−	0.8+	1999 09 08	703	0.1+	0.9−	1999 09 16	428	0.6−	0.3+
1999 07 16	704	0.3−	0.3−	1999 09 13	704	0.2−	0.1−	1999 09 19	428	0.3+	0.5−
1999 08 12	699	0.8+	0.3+	1999 09 13	704	0.1−	0.9+	1999 09 19	428	0.6−	0.2+
1999 08 12	699	0.2+	0.1+	1999 09 13	704	0.6−	0.2+				

1999 RS₃₉ = 1995 UY₄₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	328.85130		(2000.0)	P	Q	Williams	
<i>n</i>	0.22949548	ω	162.00106	+0.96290302	−0.25937095		
<i>a</i>	2.6421246	Ω	213.31796	+0.22791725	+0.92943688		
<i>e</i>	0.2182403	<i>i</i>	7.79103	+0.14446972	+0.26243817		
<i>P</i>	4.29	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1995 10 27	399	(1.4+	2.8+)	1999 09 08	704	0.5+	0.1−	1999 09 14	704	0.4+	0.3−
1995 10 27	399	0.4+	0.2+	1999 09 08	704	0.5−	0.2−	1999 09 14	704	1.2+	0.9−
1995 10 28	399	1.1+	0.6+	1999 09 08	699	0.1+	0.3+	1999 09 14	703	0.0	0.2−
1995 10 28	399	1.5−	0.7−	1999 09 08	704	0.5+	0.2−	1999 09 14	704	0.2−	0.8−
1999 09 07	703	1.2+	0.9+	1999 09 08	704	(0.3−	2.5+)	1999 09 14	703	0.3−	0.7+
1999 09 07	703	0.6−	0.1−	1999 09 08	699	1.0+	1.1+	1999 09 14	704	0.4−	0.9−
1999 09 07	703	1.2−	0.3+	1999 09 08	699	0.3−	0.6+	1999 09 14	703	0.3−	0.

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1999 09 08	704	0.5−	0.6−	1999 09 09	704	0.4−	0.5+	1999 09 19	699	0.8+	0.5+
1999 09 08	704	0.1+	0.8−	1999 09 09	704	0.3−	0.2+	1999 09 19	699	1.1−	0.6+
1999 09 08	704	0.7−	0.6−	1999 09 09	704	0.0	0.7−	1999 09 19	699	0.6+	0.0

1999 RW₄₁ = 1998 KH₃₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	354.68160		(2000.0)	P	Q
<i>n</i>	0.20602234	ω	325.25975	+0.96815711	+0.25001059
<i>a</i>	2.8391816	Ω	20.27380	−0.22041745	+0.87572926
<i>e</i>	0.0679756	<i>i</i>	2.13418	−0.11869268	+0.41302901
<i>P</i>	4.78	<i>H</i>	13.6	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 05 22	704	0.8+	0.7+	1999 09 11	699	0.3+	0.9+	1999 09 14	704	0.4+	0.2−
1998 05 22	704	0.3−	0.9−	1999 09 11	699	0.1+	0.6+	1999 09 14	704	0.4+	0.0
1998 05 22	704	0.8+	0.5−	1999 09 13	704	0.1−	0.0	1999 09 14	704	0.8+	0.6−
1998 05 22	704	0.2−	0.2−	1999 09 13	704	0.4−	0.6+	1999 09 14	704	0.2+	0.0
1998 05 22	704	0.8−	0.8+	1999 09 13	704	0.7−	0.7+	1999 09 14	704	0.8+	0.6−
1998 05 24	704	0.4−	0.5+	1999 09 13	704	0.5−	0.9+	1999 09 14	704	0.2+	0.1+
1998 05 24	704	0.4+	0.0	1999 09 13	704	0.2−	0.2+	1999 09 14	704	0.2−	0.1+
1998 05 24	704	0.7−	0.1+	1999 09 13	704	0.5+	0.2−	1999 09 14	704	0.2+	0.2+
1998 05 24	704	0.2+	0.4−	1999 09 13	704	0.3−	0.1+	1999 09 14	704	0.2+	0.1+
1999 09 07	704	0.0	0.2−	1999 09 13	704	0.2+	0.8+	1999 09 14	704	0.2+	0.2+
1999 09 07	704	0.4+	0.2−	1999 09 13	704	0.7−	0.2−	1999 09 14	704	0.1+	0.1−
1999 09 07	704	0.2+	0.4−	1999 09 13	704	0.2−	0.3−	1999 09 14	704	0.0	0.0
1999 09 07	704	0.1+	0.2+	1999 09 13	120	0.1−	1.1−	1999 09 14	704	0.3+	0.2+
1999 09 07	704	0.1−	0.1−	1999 09 13	120	0.9−	0.1+	1999 09 14	704	0.1−	0.2−
1999 09 09	704	0.3−	0.1−	1999 09 13	120	2.9−	0.7−	1999 09 14	704	0.3−	0.0
1999 09 09	704	0.2−	0.4−	1999 09 13	120	0.1−	0.4−	1999 09 14	704	0.4−	0.1+
1999 09 09	704	0.1−	0.0	1999 09 14	704	0.5+	0.6−	1999 09 14	120	0.0	0.3−
1999 09 09	704	0.7+	0.0	1999 09 14	704	0.2+	0.5+	1999 09 14	120	0.7+	0.2−
1999 09 09	704	0.3+	0.1+	1999 09 14	704	0.3+	0.7−	1999 09 15	120	0.7+	0.0
1999 09 11	699	0.2−	0.5+	1999 09 14	704	0.4−	0.7+	1999 09 15	120	0.5+	0.1+

1999 RZ₄₁ = 1982 SO₆ = 1997 EE₅₉ = 1997 GF₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	40.09628		(2000.0)	P	Q
<i>n</i>	0.17300267	ω	107.82529	+0.66508964	+0.74431140
<i>a</i>	3.1898299	Ω	204.19239	−0.72878722	+0.62928839
<i>e</i>	0.0672444	<i>i</i>	8.48513	−0.16286485	+0.22359932
<i>P</i>	5.70	<i>H</i>	12.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1982 09 16	095	0.5−	2.2+	1997 04 05	704	0.3−	0.5−	1999 09 13	120	0.3+	0.0
1997 03 11	809	2.2+	1.4+	1997 04 06	704	0.8−	0.8+	1999 09 13	120	0.5−	0.6+
1997 03 11	809	1.9+	0.9+	1997 04 06	704	0.6−	0.3+	1999 09 13	120	0.3−	0.1+
1997 03 11	809	2.3+	1.3+	1997 04 07	704	0.8−	0.3+	1999 09 14	120	0.8−	0.3+
1997 03 13	809	0.7−	1.9−	1997 04 07	704	0.0	0.7+	1999 09 14	120	0.0	0.3+
1997 03 13	809	1.1−	1.9−	1999 09 07	704	0.1−	0.2−	1999 09 14	120	0.1−	0.1+
1997 03 13	809	1.1−	2.1−	1999 09 07	704	0.3+	0.5−	1999 09 15	120	0.2+	0.2+
1997 04 03	704	0.1−	0.8+	1999 09 07	704	0.1−	0.4−	1999 09 15	120	0.6+	0.5+
1997 04 03	704	0.4−	0.5+	1999 09 07	704	0.1+	0.7−	1999 09 22	120	0.7+	0.5−
1997 04 05	704	0.0	0.1+	1999 09 07	704	0.6−	0.6−	1999 09 22	120	0.7+	0.7−

1999 RC₄₂ = 1998 KU₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	347.39655		(2000.0)	P	Q
<i>n</i>	0.26002492	ω	33.39636	+0.99290929	−0.11253144
<i>a</i>	2.4310435	Ω	332.98699	+0.08193355	+0.88134878
<i>e</i>	0.0840079	<i>i</i>	4.83875	+0.08612798	+0.45886926
<i>P</i>	3.79	<i>H</i>	13.9	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 05 22	704	0.4−	0.2−	1998 05 24	704	0.4−	0.0	1999 09 13	120	0.2+	0.0
1998 05 22	704	0.9−	0.3+	1998 05 24	704	0.9+	1.5−	1999 09 13	120	0.2−	0.2−

1998 05 22	704	0.2+	0.1+	1999 09 07	704	0.4+	0.2−	1999 09 14	120	0.2−	0.5+
1998 05 22	704	0.7+	2.0+	1999 09 07	704	0.4+	0.1−	1999 09 14	120	0.6−	0.1+
1998 05 22	704	0.6−	0.2+	1999 09 07	704	0.1−	0.3+	1999 09 15	120	0.2−	0.3−
1998 05 24	704	0.5−	0.0	1999 09 07	704	0.2+	0.1−	1999 09 15	120	0.1+	0.1+
1998 05 24	704	1.4+	0.7−	1999 09 07	704	0.2−	0.5−				
1998 05 24	704	0.4−	0.2−	1999 09 13	120	0.1+	0.4+				

1999 RV₄₂ = 1998 FR₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	74.48267		(2000.0)	P	Q
<i>n</i>	0.29016088	ω	226.57178	−0.25549020	+0.96604386
<i>a</i>	2.2596620	Ω	28.69220	−0.86224029	−0.20965099
<i>e</i>	0.1263642	<i>i</i>	4.60229	−0.43734018	−0.15101563
<i>P</i>	3.40	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 03 20	704	0.3−	0.0	1999 08 22	703	0.6−	0.5−	1999 09 13	106	0.6+	0.5+
1998 03 20	704	0.6−	1.1−	1999 08 22	703	0.1+	0.3−	1999 09 14	704	1.1−	0.1−
1998 03 20	704	0.7+	1.0−	1999 09 05	699	0.9−	1.0+	1999 09 14	704	1.1+	0.2+
1998 03 20	704	0.1+	0.3+	1999 09 05	699	0.2+	0.6+	1999 09 14	704	0.7−	0.1+
1998 03 20	704	1.4−	0.5+	1999 09 05	699	0.8+	0.0	1999 09 14	704	0.5−	0.9−
1998 03 22	704	0.4+	1.1−	1999 09 07	704	0.4+	0.2+	1999 09 14	704	1.0−	0.4−
1998 03 22	704	0.5−	0.5+	1999 09 07	704	0.4+	0.9−	1999 09 14	106	0.9−	0.5+
1998 03 22	704	0.7+	1.9+	1999 09 07	704	0.8+	0.9−	1999 09 14	106	0.6−	0.4+
1998 03 22	704	0.5+	0.6−	1999 09 07	704	1.0+	0.7−	1999 09 14	106	0.9+	0.7+
1998 03 22	704	0.4+	0.8+	1999 09 07	704	0.1−	0.2+	1999 09 16	106	0.5+	0.3−
1999 08 22	703	0.5−	0.1−	1999 09 12	106	0.5+	0.2+	1999 09 16	106	0.3−	0.2+
1999 08 22	703	0.3−	0.6+	1999 09 12	106	0.3−	0.0	1999 09 16	106	0.5+	0.2−

1999 RO₄₃ = 1998 EE₁₅

Id. B. G. Marsden

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	58.63775		(2000.0)	P	Q
<i>n</i>	0.29376730	ω	287.89517	−0.23461558	+0.97136287
<i>a</i>	2.2411301	Ω	328.46018	−0.86249911	−0.22582644
<i>e</i>	0.1057022	<i>i</i>	4.11606	−0.44838691	−0.07386870
<i>P</i>	3.36	<i>H</i>	15.4	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 03 03	704	(0.1+	2.5−)	1999 08 08	699	0.4−	0.3−	1999 09 13	704	0.8−	0.0
1998 03 03	704	0.8−	0.5−	1999 08 08	699	0.4−	0.8−	1999 09 14	118	1.6+	0.9−
1998 03 03	704	0.2+	0.4+	1999 09 07	704	0.2+	0.2−	1999 09 14	118	0.8+	0.2−
1998 03 03	704	1.7+	1.0−	1999 09 07	704	0.4−	0.2+	1999 09 14	118	0.6−	1.1−
1998 03 03	704	0.4−	0.8+	1999 09 07	704	1.1+	0.7−	1999 09 15	118	0.1+	0.5+
1998 03 04	704	(2.6+	1.3−)	1999 09 07	704	0.3−	0.6+	1999 09 15	118	0.2+	0.5+
1998 03 04	704	1.0+	0.7+	1999 09 07	704	0.2+	0.5−	1999 09 15	118	0.7−	0.7+
1998 03 04	704	0.3−	1.5+	1999 09 13	704	1.1−	0.5+	1999 09 16	118	0.3+	0.2+
1998 03 04	704	1.9−	0.4+	1999 09 13	704	0.5+	0.2+	1999 09 16	118	0.6−	0.1+
1998 03 04	704	0.8+	1.9−	1999 09 13	704	0.7−	0.2+	1999 09 16	118	0.2+	0.2−
1999 08 08	699	0.6+	1.5+	1999 09 13	704	0.1+	0.1+				

1999 RP₄₃ = 1978 SP₁ = 1997 EL₅₆ = 1998 MT₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	347.24270		(2000.0)	P	Q
<i>n</i>	0.18812923	ω	188.32067	+0.99318996	−0.11638910
<i>a</i>	3.0164667	Ω	178.33605	+0.11454514	+0.96729784
<i>e</i>	0.1021022	<i>i</i>	10.36371	+0.02128664	+0.22536296
<i>P</i>	5.24	<i>H</i>	13.3	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1978 09 28	095	0.3−	1.1+	1999 07 23	704	1.4+	0.0	1999 09 14	704	0.2+	0.1+
1997 03 10	809	(2.4+	2.6+)	1999 08 22	699	0.1−	0.9+	1999 09 14	704	0.3+	0.2+
1997 03 10	809	(1.5+	2.9+)	1999 08 22	699	0.0	1.0+	1999 09 14	678	0.5+	0.1+
1997 03 10	809	1.6+	1.9+	1999 08 22	699	0.1+	0.3+	1999 09 16	691	0.5−	0.1−
1997 03 11	809	0.6−	1.1+	1999 09 07	691	0.4−	0.4−	1999 09 16	691	0.4−	0.2−

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1997 03 11	809	0.1−	1.0+	1999 09 07	691	0.4−	0.3−	1999 09 16	691	0.5−	0.3−
1997 03 11	809	0.1+	0.9+	1999 09 07	691	0.5−	0.3−	1999 09 18	678	0.5−	0.9+
1998 06 19	704	1.0+	0.2+	1999 09 07	704	0.2+	0.2+	1999 09 18	678	0.2−	1.6+
1998 06 19	704	1.1+	1.7+	1999 09 07	704	0.7+	0.4−	1999 09 18	678	0.1+	1.3+
1998 06 19	704	0.2−	0.0	1999 09 07	704	0.2+	1.0−	1999 09 20	848	0.3+	0.3+
1998 06 19	704	1.2−	0.1+	1999 09 07	704	0.1−	0.9−	1999 09 20	848	0.0	0.3+
1998 06 19	704	0.0	1.4−	1999 09 07	704	0.2−	1.1−	1999 09 20	848	0.3+	0.4+
1998 06 25	704	0.3−	0.3−	1999 09 13	678	0.7−	0.2+	1999 09 22	848	0.7−	0.0
1998 06 25	704	0.2+	0.9−	1999 09 13	678	0.5+	0.0	1999 09 22	848	0.6+	0.5+
1998 06 25	704	0.1+	0.1−	1999 09 13	678	0.5+	0.0	1999 09 22	848	0.2−	0.1+
1998 06 25	704	0.7−	0.4+	1999 09 14	704	0.1+	0.2+	1999 09 23	848	0.4+	0.8−
1999 07 23	704	0.9−	0.9−	1999 09 14	678	1.1−	0.7+	1999 09 23	848	0.1+	0.2+
1999 07 23	704	0.4−	0.0	1999 09 14	704	0.5+	0.1+	1999 09 23	848	0.1+	0.3+
1999 07 23	704	0.1−	0.1−	1999 09 14	704	0.5+	0.4+				
1999 07 23	704	0.3−	0.9−	1999 09 14	678	0.5−	0.3+				

1999 RJ₄₄ = 1998 MO

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	233.23069		(2000.0)		P		Q
n	0.16805042	ω	27.89230		-0.73337461		-0.67737548
a	3.2521930	Ω	109.34732		+0.61180444		-0.69459569
e	0.0797049	i	3.50331		+0.29640683		-0.24227934
P	5.86	H	13.7	G	0.15	U	6

Residuals in seconds of arc

1998 06 17	691	0.1+	0.3−	1999 09 15	159	0.3+	0.5+	1999 09 23	159	0.2−	0.3−
1998 06 17	691	0.2+	0.3+	1999 09 15	159	1.6−	0.4−	1999 09 23	159	0.9+	0.5+
1998 06 17	691	0.1−	0.3−	1999 09 15	159	1.2−	0.1+	1999 09 23	159	0.0	1.3+
1998 06 18	691	0.0	0.2+	1999 09 17	159	1.5−	0.0	1999 09 23	159	2.9−	0.9−
1998 06 18	691	0.3−	0.2+	1999 09 17	159	0.1+	0.6+	1999 09 23	159	0.3+	0.2+
1998 06 18	691	0.1+	0.2−	1999 09 17	159	0.7+	0.3−	1999 09 23	159	0.1−	0.0
1999 09 11	159	2.3+	1.4+	1999 09 17	159	0.1+	0.3+	1999 09 23	159	1.2−	0.0
1999 09 11	159	1.7+	0.9+	1999 09 18	159	1.3+	0.3−	1999 09 23	159	0.3−	0.2+
1999 09 11	159	1.0−	0.1−	1999 09 18	159	1.1+	0.3+	1999 09 23	159	0.6+	0.4+
1999 09 11	159	0.3−	0.3−	1999 09 18	159	0.8+	3.2−	1999 09 23	159	0.7+	0.0
1999 09 11	159	1.5−	0.8−	1999 09 18	159	1.4+	0.2+	1999 09 23	159	0.2−	0.2+
1999 09 15	159	2.6−	0.2−	1999 09 18	159	1.4+	0.4−	1999 09 23	159	0.7+	0.5+
1999 09 15	159	0.5−	0.6+	1999 09 18	159	0.8+	0.9−				

1999 RT₄₄ = 1997 BU₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	323.53551		(2000.0)		P		Q
n	0.23755500	ω	48.62925		+0.93125018		−0.34767839
a	2.5820220	Ω	331.21167		+0.22812786		+0.78967804
e	0.2162251	i	13.08836		+0.28413163		+0.50549810
P	4.15	H	13.7	G	0.15	U	5

Residuals in seconds of arc

1997 01 31	691	0.2−	0.1−	1999 09 03	699	0.7+	0.8+	1999 09 13	704	0.0	0.0
1997 01 31	691	0.1−	0.1+	1999 09 07	704	0.2−	0.1−	1999 09 13	704	0.4−	0.1+
1997 01 31	691	0.1+	0.1−	1999 09 07	704	0.0	0.4−	1999 09 13	704	0.2−	0.1−
1997 02 06	691	0.2+	0.5+	1999 09 07	704	0.0	0.0	1999 09 13	704	0.3−	0.3−
1997 02 06	691	0.6+	0.2+	1999 09 07	704	0.2−	0.1−	1999 09 13	704	0.0	0.1−
1997 02 06	691	0.2+	0.3+	1999 09 07	704	0.1−	0.3+	1999 09 14	106	0.3−	0.4+
1999 08 08	699	0.8−	0.1+	1999 09 09	704	0.1+	0.4−	1999 09 14	106	0.4−	0.0
1999 08 08	699	0.3−	0.2+	1999 09 09	704	0.2−	0.0	1999 09 14	106	0.9+	0.2−
1999 08 08	699	0.1+	0.1+	1999 09 09	704	0.3+	0.2−	1999 09 16	106	0.3+	0.2+
1999 09 03	699	0.3−	0.5−	1999 09 09	704	0.9+	0.2−	1999 09 16	106	0.4+	0.3+
1999 09 03	699	0.6−	0.1−	1999 09 09	704	0.4+	0.6+	1999 09 16	106	0.4−	0.4+

1999 RC₅₂ = 1971 SU = 1992 PH₅ = 1998 FL₃₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	351.05862		(2000.0)		P		Q
n	0.28072169	ω	312.99437		+0.89385675		+0.44783276
a	2.3100359	Ω	20.43009		−0.39126574		+0.80264989
e	0.1835157	i	3.54532		−0.21893204		+0.39395301
P	3.51	H	14.8	G	0.15	U	3

Residuals in seconds of arc

1971 09 16	808	0.2+	0.5−	1998 03 22	704	0.1+	2.5+	1999 09 07	704	0.1−	0.9+
1992 08 03	675	0.5+	0.8−	1998 03 22	704	0.3−	0.7−	1999 09 07	704	0.5−	0.1+
1992 08 03	675	0.0	1.4−	1998 03 22	704	0.5+	0.3+	1999 09 07	704	0.0	1.1+
1992 08 06	675	0.3+	0.7−	1998 03 22	704	0.2−	1.0−	1999 09 11	704	0.1+	0.5+
1992 08 06	675	1.0+	0.2−	1999 09 03	699	0.3+	0.3−	1999 09 11	704	0.0	0.4+
1998 03 20	704	1.5+	0.9+	1999 09 03	699	0.5−	0.0	1999 09 11	704	0.2−	1.0+
1998 03 20	704	0.2−	1.2+	1999 09 03	699	0.5−	0.2−	1999 09 11	704	0.2−	0.9+
1998 03 20	704	0.1+	0.1−	1999 09 07	704	0.1−	0.6+				
1998 03 20	704	0.6−	1.4−	1999 09 07	704	0.6−	0.2+				

1999 RK₅₅ = 1987 OH₁ = 1996 AM₃ = 1998 KZ₃₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	8.61948		(2000.0)		P		Q
n	0.16790109	ω	199.07469		+0.70481837		+0.70799320
a	3.2541211	Ω	115.76918		−0.64426450		+0.66508762
e	0.0882407	i	2.82982		−0.29690793		+0.23749544
P	5.87	H	13.5	G	0.15	U	1

Residuals in seconds of arc

1987 07 28	010	0.3−	1.5+	1998 05 24	704	0.5+	0.6−	1999 08 08	699	0.3+	0.9+
1987 07 28	010	(6.1−	1.3+)	1998 05 24	704	0.9−	0.6+	1999 08 08	699	0.3−	0.6+
1996 01 10	608	1.5+	0.1+	1998 05 24	704	1.1−	0.6+	1999 09 07	704	0.2+	0.8−
1996 01 10	608	0.5−	0.1−	1998 05 24	704	0.3+	0.9−	1999 09 07	704	0.3+	0.3−
1996 01 12	608	0.1−	0.8+	1998 05 24	704	(2.8−	1.6−)	1999 09 07	704	0.4+	0.6−
1996 01 12	608	0.3−	1.0+	1999 07 21	699	0.0	1.2+	1999 09 07	704	0.1+	1.1−
1996 01 13	608	0.4−	0.7+	1999 07 21	699	0.4−	0.2−	1999 09 07	704	0.1+	0.4+
1996 01 13	608	0.2−	0.2−	1999 07 21	699	0.2−	1.9+	1999 09 13	704	0.5+	0.8−
1998 05 22	704	1.2+	1.3+	1999 08 07	699	0.2+	0.7−	1999 09 13	704	0.1+	0.6+
1998 05 22	704	1.4+	1.0+	1999 08 07	699	0.4−	0.5+	1999 09 13	704	0.0	0.1−
1998 05 22	704	1.4−	0.1−	1999 08 07	699	0.5+	0.1−	1999 09 13	704	0.0	0.4−
1998 05 22	704	(2.6−	0.2−)	1999 08 08	699	1.1−	0.6+	1999 09 13	704	0.6−	1.4−

1999 RO₆₃ = 1962 WZ = 1998 KD₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	288.68367		(2000.0)		P		Q
n	0.23572747	ω	212.56423		+0.57878413		-0.81526625
a	2.5953499	Ω	202.08831		+0.75843562		+0.54658304
e	0.0880698	i	2.85122		+0.29964036		+0.19127973
P	4.18	H	13.5	G	0.15	U	4

Residuals in seconds of arc

1962 11 26	760	0.6+	0.6+	1998 05 24	704	0.9−	0.8−	1999 09 09	704	0.6−	0.2−
1962 11 26	760	0.6−	0.4−	1998 05 24	704	1.3−	0.9−	1999 09 09	704	0.3+	0.3−
1998 05 22	704	0.8+	0.5−	1999 08 08	699	0.1−	0.0	1999 09 09	704	0.4+	0.3−
1998 05 22	704	0.0	0.3+	1999 08 08	699	0.0	0.4−	1999 09 09	704	0.2−	0.1−
1998 05 22	704	1.0−	0.3+	1999 08 08	699	0.4+	0.2−	1999 09 09	704	0.2+	0.2−
1998 05 22	704	0.7−	0.6+	1999 08 22	699	0.7−	0.8+	1999 09 09	704	0.2+	0.0
1998 05 22	699	0.4+	0.8+	1999 08 22	699	0.3−	0.4+	1999 09 09	704	1.2−	0.8+
1998 05 22	704	0.4+	1.5+	1999 08 22	699	0.2−	0.2+	1999 09 09	704	0.1+	0.1−
1998 05 22	699	0.4+	0.0	1999 09 05	699	0.9−	0.3+	1999 09 09	704	0.3+	0.3−
1998 05 22	699	0.1−	0.3−	1999 09 05	699	0.5−	0.1−	1999 09 09	704	0.3+	0.1−
1998 05 24	704	0.6+	0.3−	1999 09 05	699	0.5−	0.4+	1999 09 14	704	1.1+	0.3−
1998 05 24	704	0.4−	0.6−	1999 09 07	704	0.3−	0.5+	1999 09 14	704	0.5+	0.1+
1998 05 24	699	0.3+	0.1+	1999 09 07	704	0.4−	0.3−	1999 09 14	704	0.7+	0.4+
1998 05 24	704	1.4+	1.6−	1999 09 07	704	0.2−	0.4−	1999 09 14	704	0.7+	0.4−

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1998 05 24	699	0.5−	0.9+	1999 09 07	704	0.2+	0.1−	1999 09 14	704	0.8+	0.1−
1998 05 24	699	0.8+	0.7+	1999 09 07	704	0.0	0.1−				

1999 RK₇₁ = 1993 FN₇₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams					
<i>M</i>	354.29954	(2000.0)	P			Q		
<i>n</i>	0.21596256	ω	327.01667	+0.96597907		+0.25798730		
<i>a</i>	2.7513789	Ω	18.05892	−0.22285209		+0.86582255		
<i>e</i>	0.0475572	<i>i</i>	3.34411	−0.13123026		+0.42871187		
<i>P</i>	4.56	<i>H</i>	15.3	<i>G</i> 0.15		<i>U</i> 6		

Residuals in seconds of arc

1993 03 21	809	0.1−	0.8−	1999 09 09	704	0.3+	0.3−	1999 09 11	704	0.8+	0.9−
1993 03 22	809	0.3+	0.0	1999 09 11	704	0.2+	0.5+	1999 09 11	704	1.2−	0.6+
1993 03 27	809	0.3−	0.6+	1999 09 11	704	0.5+	0.1+	1999 09 11	704	0.2+	0.2+
1999 09 07	704	0.7−	0.4+	1999 09 11	704	0.7+	0.9+	1999 09 11	704	0.7+	0.1+
1999 09 07	704	0.4−	0.8−	1999 09 11	704	0.7+	0.3−	1999 09 11	704	0.3+	0.1−
1999 09 07	704	0.1−	1.1+	1999 09 11	704	0.2−	0.0	1999 09 11	704	0.8+	0.4−
1999 09 07	704	0.4−	0.1−	1999 09 11	704	0.4−	0.2+	1999 09 14	704	0.5−	0.5+
1999 09 07	704	0.4−	0.9+	1999 09 11	704	0.2−	1.0+	1999 09 14	704	0.2+	1.4−
1999 09 09	704	0.9−	1.1−	1999 09 11	704	1.4+	0.8−	1999 09 14	704	0.3−	0.0
1999 09 09	704	0.4−	0.2−	1999 09 11	704	0.5−	0.1−				

1999 RD₇₂ = 1998 HC₈₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams					
<i>M</i>	350.17193	(2000.0)	P			Q		
<i>n</i>	0.23648332	ω	285.31357	+0.98052874		+0.18746029		
<i>a</i>	2.5898167	Ω	63.91120	−0.14571390		+0.89423630		
<i>e</i>	0.1521121	<i>i</i>	3.73457	−0.13164667		+0.40644812		
<i>P</i>	4.17	<i>H</i>	15.5	<i>G</i> 0.15		<i>U</i> 4		

Residuals in seconds of arc

1991 11 04	691	0.7+	0.5+	1999 09 07	704	0.0	0.3−	1999 09 13	704	0.2+	0.4−
1991 11 04	691	0.3+	0.4+	1999 09 07	704	0.2−	0.7+	1999 09 13	704	0.1+	0.7+
1991 11 04	691	0.5+	0.4+	1999 09 07	704	0.5−	0.5−	1999 09 14	704	0.8+	0.1−
1995 10 24	691	1.2−	0.3−	1999 09 07	699	1.0+	1.3+	1999 09 14	704	0.1−	0.3−
1995 10 24	691	1.2−	0.2+	1999 09 07	704	0.0	0.3−	1999 09 14	704	0.3+	0.1−
1995 10 24	691	1.2−	0.1+	1999 09 07	704	0.6−	0.5−	1999 09 14	704	0.4+	0.3−
1998 04 21	704	1.1+	0.6+	1999 09 07	699	0.7+	0.8+	1999 09 14	704	0.9−	0.5−
1998 04 21	704	0.4+	1.0−	1999 09 08	703	0.7−	0.5−	1999 09 14	704	0.3+	0.7−
1998 04 21	704	0.6−	1.4+	1999 09 08	703	0.3+	0.4−	1999 09 14	704	0.1+	0.1−
1998 04 21	704	(2.6−	1.7+)	1999 09 08	703	0.1+	0.0	1999 09 14	704	0.3+	0.9+
1998 04 22	704	0.0	0.7+	1999 09 08	703	0.4+	0.5−	1999 09 14	704	0.5+	0.1+
1998 04 22	704	(2.0+	2.9−)	1999 09 09	704	0.5−	0.1+	1999 09 14	704	0.4−	0.6−
1998 04 22	704	(0.0	2.2−)	1999 09 09	704	0.4−	0.1+	1999 09 14	704	0.3−	0.6−
1998 05 01	704	0.0	1.5+	1999 09 09	704	0.1−	1.0+	1999 09 14	704	1.9−	0.0
1998 05 01	704	0.9−	0.7−	1999 09 09	704	0.6+	0.5+	1999 09 14	704	0.2−	0.0
1998 05 01	704	0.5+	0.3−	1999 09 09	704	2.0+	1.5+	1999 09 14	704	0.9+	0.0
1998 05 01	704	(2.6−	0.4−)	1999 09 13	704	0.1−	0.0	1999 09 14	704	0.5+	0.1−
1999 09 07	699	0.1−	0.2−	1999 09 13	704	0.5−	0.4−				

1999 RR₇₅ = 1998 HN₇₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams					
<i>M</i>	250.30796	(2000.0)	P			Q		
<i>n</i>	0.29684371	ω	208.86189	−0.12889574		−0.98877781		
<i>a</i>	2.2256190	Ω	248.62946	+0.92469172		−0.09232894		
<i>e</i>	0.0651644	<i>i</i>	4.65199	+0.35823331		−0.11744704		
<i>P</i>	3.32	<i>H</i>	15.1	<i>G</i> 0.15		<i>U</i> 4		

Residuals in seconds of arc

1998 04 21	704	0.3+	0.2+	1998 04 25	699	0.0	0.2−	1999 09 07	704	0.0	0.2+
1998 04 21	704	0.2+	0.1−	1998 05 16	691	0.2−	0.7+	1999 09 07	704	0.6+	0.3−
1998 04 21	704	0.1−	0.5−	1998 05 16	691	0.2−	0.6+	1999 09 07	704	0.2+	0.0
1998 04 21	704	0.3−	0.1−	1998 05 16	691	0.2−	0.8+	1999 09 07	704	0.3+	0.1+
1998 04 21	704	1.3−	0.4+	1998 05 25	699	1.1+	0.9−	1999 09 09	704	0.4+	0.4−

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1998 04 22	704	0.1+	0.2−	1998 05 25	699	0.4−	0.4−	1999 09 09	704	0.8−	0.1+
1998 04 22	704	0.0	0.2+	1998 05 25	699	0.6−	0.4−	1999 09 09	704	0.7+	0.0
1998 04 22	704	0.4+	0.2+	1999 09 04	703	1.1−	0.7+	1999 09 09	704	0.0	0.5−
1998 04 22	704	0.5+	0.3−	1999 09 04	703	0.3+	0.5+	1999 09 09	704	0.8−	0.5−
1998 04 22	704	0.1−	0.2−	1999 09 04	703	0.2−	0.0	1999 09 16	704	(2.9−	2.8+)
1998 04 25	699	0.2+	0.4+	1999 09 04	703	0.6−	0.5+	1999 09 16	704	(2.7−	0.4+)
1998 04 25	699	0.6+	0.4−	1999 09 07	704	0.6+	0.2+	1999 09 16	704	0.4+	0.7−

1999 RO₈₂ = 1998 JN

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams					
<i>M</i>	167.83717	(2000.0)	P			Q		
<i>n</i>	0.28048857	ω	212.06709	−0.99551907		−0.06123867		
<i>a</i>	2.3113157	Ω	324.20525	+0.08867492		−0.86921098		
<i>e</i>	0.0537619	<i>i</i>	7.07634	−0.03284107		−0.49063438		
<i>P</i>	3.51	<i>H</i>	15.1	<i>G</i> 0.15		<i>U</i> 4		

Residuals in seconds of arc

1994 01 12	691	0.8+	0.2+	1998 05 01	566	0.5+	0.3−	1999 09 07	704	0.0	0.2+
1994 01 12	691	0.5−	0.0	1998 05 01	566	0.3+	0.1+	1999 09 09	704	0.4−	0.3−
1994 01 12	691	0.1−	0.4+	1998 05 02	566	0.8+	0.1+	1999 09 09	704	0.0	0.9−
1998 04 01	704	1.6−	0.3−	1998 05 02	566	0.9+	0.3−	1999 09 09	704	0.2−	0.1−
1998 04 01	704	0.1−	0.0	1998 05 02	566	0.2−	0.1−	1999 09 09	704	0.0	0.4+
1998 04 01	704	1.9−	1.7+	1999 09 07	704	0.4+	0.1+	1999 09 09	704	0.4−	0.6+
1998 04 01	704	1.2+	0.2−	1999 09 07	704	0.6+	0.4−	1999 09 16	704	0.3+	0.7+
1998 04 01	704	(4.1−	1.1+)	1999 09 07	704	0.6+	1.0−	1999 09 16	704	0.7−	0.8+
1998 05 01	566	0.3+	0.1−	1999 09 07	704	0.2+	0.1+	1999 09 16	704	0.9−	0.5+

1999 RN₈₄ = 1981 JP₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams					
<i>M</i>	34.58434	(2000.0)	P			Q		
<i>n</i>	0.28129489	ω	30.46371	+0.32118712		+0.94601462		
<i>a</i>	2.3068968	Ω	258.30073	−0.87758952		+0.28004953		
<i>e</i>	0.2264937	<i>i</i>	2.54805	−0.35591496		+0.16318273		
<i>P</i>	3.50	<i>H</i>	14.1	<i>G</i> 0.15		<i>U</i> 1		

Residuals in seconds of arc

1981 05 05	675	0.1+	0.4+	1998 02 06	809	0.5−	0.6−	1999 09 08	699	0.2−	0.5+
1981 05 06	675	0.2+	0.1+	1999 07 23	704	0.1+	0.5−	1999 09 08	699	0.3−	0.5+
1981 05 08	675	0.9−	0.2+	1999 07 23	704	0.1−	0.3−	1999 09 09	704	0.0	0.1+
1981 05 09	675	0.7−	1.1−	1999 07 23	704	0.0	0.0	1999 09 09	704	0.3−	0.1−
1981 05 11	675	2.0+	1.2+	1999 07 23	704	0.1−	0.1−	1999 09 09	704	0.1−	0.2−
1992 08 30	095	0.7−	0.9+	1999 07 23	704	0.1+	0.0	1999 09 09	704	0.1−	0.1+
1992 08 30	095	0.6−	0.3−	1999 09 07	704	0.5+	0.1−	1999 09 09	704	0.1+	0.4+
1995 05 30	691	0.4−	0.3−	1999 09 07	704	0.2+	0.5−	1999 09 16	704	0.6+	0.2+
1995 05 30	691	0.0	0.0	1999 09 07	704	0.0	0.4−	1999 09 16	704	0.0	0.0
1995 05 30	691	0.2−	0.1−	1999 09 07	704	0.1−	0.1−	1999 09 16	704	0.6+	0.3−
1998 02 06	809	0.5+	0.7+	1999 09 07	704	0.2+	0.2−	1999 09 16	704	0.3+	0.0
1998 02 06	809	0.2+	0.7+	1999 09 08	699	0.6−	0.9+				

1999 RK₈₈ = 1992 EA₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	60.26722		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.19872883	ω	8.68276	+0.32594227	+0.94527248
a	2.9082304	Ω	280.34094	-0.86828416	+0.29309332
e	0.0309032	i	0.86698	-0.37395757	+0.14337448
P	4.96	H	14.3	G 0.15	U 6

1999 RM₉₈ = 1997 EY₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	291.30438		(2000.0)	P		Q		Williams	
<i>n</i>	0.23105363	ω	262.34984	+0.23389917		-0.97224125			
<i>a</i>	2.6302328	Ω	174.11255	+0.91408487		+0.21773509			
<i>e</i>	0.1504255	<i>i</i>	3.45148	+0.33127034		+0.08566438			
<i>P</i>	4.27	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	5		

Residuals in seconds of arc

1997 03 10	691	0.1-	0.1+	1999 09 07	691	0.0	0.0	1999 09 14	704	0.1-	0.1-
1997 03 10	691	0.2-	0.0	1999 09 07	691	0.2-	0.0	1999 09 14	704	0.1+	0.0
1997 03 10	691	0.1-	0.1-	1999 09 07	704	1.4+	1.0+	1999 09 14	704	0.4-	0.2-
1997 03 13	691	0.0	0.3-	1999 09 07	704	0.1+	0.6-	1999 09 16	691	0.0	0.5-
1997 03 13	691	0.2+	0.2-	1999 09 07	704	1.2-	0.1+	1999 09 16	691	0.2+	0.2-
1997 03 13	691	0.0	0.3-	1999 09 14	704	0.5+	0.7-	1999 09 16	691	0.2+	0.2+
1999 09 07	691	0.2-	0.2+	1999 09 14	704	0.2-	0.3+				

1999 RR₉₈ = 1998 HO₁₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	347.22165		(2000.0)	P		Q		Williams	
<i>n</i>	0.25971527	ω	197.90570	+0.98665013		-0.15924449			
<i>a</i>	2.4329755	Ω	171.04853	+0.16282953		+0.96828637			
<i>e</i>	0.1912554	<i>i</i>	12.65889	-0.00284137		+0.19251674			
<i>P</i>	3.79	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	5		

Residuals in seconds of arc

1998 04 23	704	0.5-	0.2-	1999 08 13	699	1.5+	0.5+	1999 09 08	699	0.5-	0.5+
1998 04 23	704	0.3+	0.6-	1999 08 13	699	0.7-	0.3-	1999 09 08	699	0.2-	0.1+
1998 04 23	704	0.8+	0.4-	1999 08 13	699	0.8-	0.3-	1999 09 14	704	0.2+	0.2+
1998 04 23	704	(1.2+ 2.5+)		1999 09 07	704	0.0	0.0	1999 09 14	704	0.1+	0.3-
1998 04 24	704	0.7-	0.1+	1999 09 07	704	0.1-	0.3-	1999 09 14	704	0.4+	0.1+
1998 04 24	704	0.5+	0.5+	1999 09 07	704	0.0	1.1-	1999 09 14	704	0.2+	0.3+
1998 04 24	704	0.4-	0.7+	1999 09 08	699	0.2-	0.4+	1999 09 14	704	0.1+	0.3+

1999 RS₁₀₀ = 1998 KT₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	20.85010		(2000.0)	P		Q		Williams	
<i>n</i>	0.19212679	ω	66.53220	+0.52943977		+0.83758672			
<i>a</i>	2.9744781	Ω	236.11939	-0.82547129		+0.47200657			
<i>e</i>	0.0810386	<i>i</i>	9.33697	-0.19568003		+0.27506053			
<i>P</i>	5.13	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	4		

Residuals in seconds of arc

1998 04 22	704	0.2-	0.0	1998 05 22	704	0.9+	0.7+	1999 09 09	704	0.1-	0.2+
1998 04 22	704	0.1-	1.7+	1998 05 24	704	0.3+	0.1+	1999 09 09	704	0.3+	0.5-
1998 04 22	704	0.5+	0.7-	1998 05 24	704	(1.3- 2.6-)		1999 09 10	704	0.4+	0.3+
1998 04 22	704	0.0	0.6+	1998 05 24	704	1.0+	0.6-	1999 09 10	704	0.4+	0.1+
1998 04 22	704	1.1-	1.4-	1998 05 24	704	0.5-	0.8+	1999 09 10	704	0.1-	0.1-
1998 05 01	704	0.9+	0.0	1998 05 24	704	0.8-	0.3-	1999 09 10	704	0.6-	0.2+
1998 05 01	704	0.8+	0.4-	1999 09 08	704	0.1-	1.4-	1999 09 14	704	0.2+	0.7-
1998 05 01	704	0.7-	0.3-	1999 09 08	704	0.1-	0.3+	1999 09 14	704	0.2-	0.4-
1998 05 01	704	0.3+	0.3+	1999 09 08	704	0.1+	1.3+	1999 09 14	704	0.1+	0.2+
1998 05 22	704	0.8-	0.3+	1999 09 09	704	0.4+	0.4+	1999 09 14	704	0.2-	0.4-
1998 05 22	704	0.6+	0.2-	1999 09 09	704	0.6+	0.5+	1999 09 14	704	0.2-	0.2-
1998 05 22	704	0.9-	0.7-	1999 09 09	704	1.1-	0.2+				

1999 RD₁₀₂ = 1998 KD₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	47.47823		(2000.0)	P		Q		Williams	
<i>n</i>	0.18681456	ω	28.21133	+0.09336682		+0.98030283			
<i>a</i>	3.0306020	Ω	247.59581	-0.94521600		+0.03235513			
<i>e</i>	0.1248117	<i>i</i>	10.85047	-0.31280881		+0.19483201			
<i>P</i>	5.28	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	2		

Residuals in seconds of arc

1994 09 05	098	0.2+	0.5-	1998 05 24	704	0.6-	1.2-	1999 09 08	704	0.3+	0.5+
1994 09 05	098	(2.1+ 2.2-)		1998 05 24	704	1.2-	1.4+	1999 09 08	704	0.3-	0.0
1998 04 22	704	0.7+	0.4-	1998 06 30	699	0.3+	0.9-	1999 09 08	704	0.0	0.7-
1998 04 22	704	0.8+	1.8+	1998 06 30	699	0.2+	0.6-	1999 09 08	704	0.1-	0.4+
1998 04 22	704	0.8+	1.3+	1998 06 30	699	0.4+	0.2+	1999 09 08	704	0.3-	0.4-
1998 04 22	704	(1.1+ 3.9+)		1998 07 16	699	1.2+	0.9-	1999 09 10	704	0.6+	0.4+
1998 04 22	704	0.9+	0.5-	1998 07 16	699	0.9+	0.6-	1999 09 10	704	0.2-	0.2+
1998 05 01	704	1.4+	0.3-	1998 07 16	699	0.1+	0.6-	1999 09 10	704	0.6-	0.2+
1998 05 01	704	(2.9+ 0.1-)		1999 07 22	704	1.2+	1.6-	1999 09 16	704	0.0	0.2+
1998 05 01	704	0.8+	0.8-	1999 07 22	704	(1.3+ 2.3-)		1999 09 16	704	0.1-	0.1+
1998 05 01	704	0.2+	0.3-	1999 07 22	704	0.5+	0.4-	1999 09 16	704	0.3+	0.4-
1998 05 22	704	0.3+	0.7-	1999 07 22	704	0.1+	0.2+	1999 09 16	704	0.1+	0.5-
1998 05 22	704	1.3-	0.1+	1999 09 04	703	0.6-	0.4-	1999 09 16	704	0.4+	0.0
1998 05 22	704	1.1-	1.0+	1999 09 04	703	0.6-	0.4-	1999 09 22	704	0.2+	0.4+
1998 05 22	704	0.5-	1.0+	1999 09 04	703	0.6-	0.1-	1999 09 22	704	0.9+	0.7+
1998 05 22	704	0.9-	0.5+	1999 09 04	703	0.6-	0.0	1999 09 22	704	1.4+	0.0
1998 05 24	704	1.0-	0.4-	1999 09 08	704	0.4-	0.4+	1999 09 22	704	0.4+	0.1+
1998 05 24	704	0.3-	0.4-	1999 09 08	704	1.1-	1.8+				
1998 05 24	704	1.2-	1.3+	1999 09 08	704	1.0-	0.1-				

1999 RE₁₀₂ = 1983 TF₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	336.70511		(2000.0)	P		Q		Williams	
<i>n</i>	0.18076561	ω	164.45226	+0.99378194		-0.05811212			
<i>a</i>	3.0978390	Ω	199.63703	+0.04473621		+0.98951232			
<i>e</i>	0.1360905	<i>i</i>	16.41640	+0.10196144		+0.13224354			
<i>P</i>	5.45	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	3		

Residuals in seconds of arc

1983 10 06	046	(6.5- 7.8-)		1998 05 26	704	1.1-	0.6+	1999 09 04	703	1.5-	1.6-
1983 10 06	046	(4.6- 5.2-)		1998 05 26	704	0.6-	0.4-	1999 09 08	704	0.1+	0.1+
1983 10 07	046	1.4-	1.3+	1998 05 27	699	0.0	0.3-	1999 09 08	704	0.0	0.2-
1983 10 07	046	(4.3- 4.3+)		1998 05 27	699	0.2+	0.2+	1999 09 08	704	0.3-	0.2-
1983 10 13	046	1.4+	0.6-	1998 05 27	699	0.4+	0.2-	1999 09 08	704	0.2+	0.2-
1983 10 13	046	0.1+	1.7-	1998 06 19	704	1.2-	0.0	1999 09 10	704	0.7-	0.7+
1983 10 14	046	(3.4+ 0.5+)		1998 06 19	704	0.4-	1.4+	1999 09 10	704	0.1-	0.1+
1983 10 14	046	(0.5- 2.6+)		1998 06 19	704	0.8+	0.6-	1999 09 10	704	0.2+	0.2+
1998 05 23	704	(5.2+ 2.1+)		1998 06 19	704	0.4+	0.3+	1999 09 16	704	0.2+	0.6+
1998 05 23	704	0.2-	0.5-	1998 06 19	704	0.2-	0.4+	1999 09 16	704	0.6+	0.4+
1998 05 23	704	0.4+	0.3-	1998 06 26	699	0.9+	0.5+	1999 09 16	704	0.0	0.6+
1998 05 23	704	0.4-	0.6-	1998 06 26	699	0.8-	0.1+	1999 09 16	704	0.1+	0.1+
1998 05 23	704	(0.1- 2.2-)		1998 06 26	699	0.7+	0.1+	1999 09 16	704	0.1+	0.6+
1998 05 26	704	0.4+	0.1+	1999 09 04	703	0.1+	0.7-	1999 09 18	704	0.2+	0.6+
1998 05 26	704	0.0	0.0	1999 09 04	703	0.7+	0.6-	1999 09 18	704	0.3+	0.6+
1998 05 26	704	0.5+	1.3-	1999 09 04	703	0.3-	0.6-	1999 09 18	704	0.3+	0.0

1999 RL₁₀₃ = 1998 FX₁₀₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	23.85739		(2000.0)	P		Q		Williams	
<i>n</i>	0.26290676	ω	56.94294	+0.57441604		+0.81275921			
<i>a</i>	2.4132457	Ω	248.41586	-0.78158136		+0.50924749			
<i>e</i>	0.1107391	<i>i</i>	6.00672	-0.24326281		+0.28300083			
<i>P</i>	3.75	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4		

Residuals in seconds of arc

1998 03 31	704	0.5+	0.4+	1998 04 19	704	0.4-	0.7-	1999 09 08	704	0.0	0.1+
1998 03 31	704	0.9-	0.5-	1998 04 19	704	0.2+	0.5-	1999 09 09	704	0.2+	0.4+
1998 03 31	704	0.1+	0.3-	1998 04 19	704	0.5+	0.6-	1999 09 09	704	0.2+	0.2+
1998 03 31	704	0.4+	1.0-	1999 09 05	703	0.1-	0.6-	1999 09 09	704	0.2+	0.3+
1998 04 01	704	0.6+	1.3+	1999 09 05	703	0.4-	0.4-	1999 09 09	704	0.2-	0.5+
1998 04 01	704	0.0	0.7+	1999 09 05	703	1.0-	0.7-	1999 09 09	704	0.8+	0.3+
1998 04 01	704	0.0	1.1-	1999 09 05	703	0.8-	0.1-	1999 09 16	704	0.3-	0.6-
1998 04 01	704	0.1+	0.6+	1999 09 08	704	0.5+	0.9+	1999 09 16	704	0.7+	0.1-
1998 04 01	704	0.1-	0.4-	1999 09 08	704	0.4+	0.5+	1999 09 16	704	0.1+	0.9-

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1998 04 19 704 0.6− 0.8+ 1999 09 08 704 0.2− 0.3+
 1998 04 19 704 0.5− 1.4+ 1999 09 08 704 0.0 0.2−

1999 RV₁₀₃ = 1998 FB₁₀₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	41.56580		(2000.0)	P		Q	
<i>n</i>	0.27014469	ω	11.37659	+0.29195179	+0.95124592		
<i>a</i>	2.3699459	Ω	275.65717	−0.88516711	+0.22933705		
<i>e</i>	0.1136490	<i>i</i>	5.73700	−0.36227523	+0.20624191		
<i>P</i>	3.65	<i>H</i>	13.9	<i>G</i> 0.15	<i>U</i> 4		

Residuals in seconds of arc

1998 03 31	704	0.4+	0.4−	1998 04 18	704	1.1+	1.6+	1999 09 09	704	0.0	0.5+
1998 03 31	704	0.5+	0.7−	1998 04 18	704	0.4+	0.2−	1999 09 09	704	0.2−	0.3+
1998 03 31	704	0.1+	0.3+	1998 04 19	704	0.1+	0.1−	1999 09 09	704	0.3+	0.2+
1998 03 31	704	0.5−	0.2+	1998 04 19	704	0.7−	0.3−	1999 09 09	704	0.0	0.3+
1998 04 01	704	0.5+	0.5−	1998 04 19	704	0.3−	0.1+	1999 09 09	704	0.1+	0.0
1998 04 01	704	0.1−	0.3+	1998 04 19	704	0.1−	0.7−	1999 09 16	704	0.4+	0.9−
1998 04 01	704	0.9+	0.6+	1998 04 19	704	1.4−	0.0	1999 09 16	704	0.4+	1.0−
1998 04 01	704	0.2−	0.0	1999 09 08	704	0.4+	0.2+	1999 09 16	704	0.2−	0.5−
1998 04 01	704	0.8−	0.8+	1999 09 08	704	0.3−	0.3+	1999 09 16	704	0.8−	0.1+
1998 04 18	704	0.2−	0.3−	1999 09 08	704	0.1−	0.2+				
1998 04 18	704	0.2+	0.8−	1999 09 08	704	0.2−	0.2+				

1999 RJ₁₀₄ = 1998 HK₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	2.95041		(2000.0)	P		Q	
<i>n</i>	0.27282371	ω	35.38309	+0.91006480	+0.40370891		
<i>a</i>	2.3544058	Ω	300.54472	−0.40092572	+0.80010165		
<i>e</i>	0.1449354	<i>i</i>	6.25367	−0.10507438	+0.44368510		
<i>P</i>	3.61	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 4		

Residuals in seconds of arc

1998 03 24	566	0.5+	0.2−	1998 04 19	704	1.1+	0.9+	1999 09 04	703	0.2−	0.1+
1998 03 24	566	0.7+	0.2−	1998 04 19	704	0.8−	0.9+	1999 09 04	703	0.7−	0.2−
1998 03 24	566	1.3−	0.9−	1998 04 19	704	0.6−	0.1−	1999 09 08	704	0.1+	0.1−
1998 03 31	704	1.8−	0.1−	1998 04 19	704	1.5+	0.3+	1999 09 08	704	0.6+	0.1+
1998 03 31	704	0.4+	1.7−	1998 04 20	704	0.2+	0.3+	1999 09 08	704	0.5+	0.1−
1998 04 01	704	0.0	0.3−	1998 04 20	704	0.7+	1.1+	1999 09 08	699	0.2−	0.3+
1998 04 01	704	0.3−	1.0+	1998 04 20	704	0.7−	0.7−	1999 09 08	699	0.4−	0.1−
1998 04 01	704	0.0	0.4+	1998 04 20	704	0.8−	0.9+	1999 09 08	699	0.5−	0.9+
1998 04 01	704	1.6+	0.6+	1998 04 20	704	0.6−	0.5+	1999 09 11	704	0.1+	0.2−
1998 04 01	704	1.5−	0.0	1999 07 23	704	0.5+	0.1−	1999 09 11	704	0.2+	0.2−
1998 04 18	704	0.9+	0.6+	1999 07 23	704	0.1+	0.3−	1999 09 11	704	0.1+	0.1−
1998 04 18	704	0.7+	0.8+	1999 07 23	704	0.0	0.5−	1999 09 11	704	0.2+	0.1+
1998 04 18	704	0.4+	1.6−	1999 07 23	704	0.3+	0.0	1999 09 11	704	0.3+	0.0
1998 04 18	704	0.5−	2.0−	1999 07 23	704	0.3+	0.0	1999 09 16	704	0.0	0.0
1998 04 18	704	(2.8− 0.4−)		1999 09 04	703	0.1−	0.7+	1999 09 16	704	0.2−	0.3−
1998 04 19	704	0.4+	0.3−	1999 09 04	703	0.2−	0.4+	1999 09 16	704	0.4−	0.5−

1999 RC₁₁₅ = 1990 DY₂ = 1998 HZ₁₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	246.01663		(2000.0)	P		Q	
<i>n</i>	0.26649177	ω	309.59889	−0.08593186	−0.99249417		
<i>a</i>	2.3915540	Ω	145.03636	+0.95430187	−0.10708491		
<i>e</i>	0.1168835	<i>i</i>	8.73345	+0.28622307	+0.05906044		
<i>P</i>	3.70	<i>H</i>	14.6	<i>G</i> 0.15	<i>U</i> 3		

Residuals in seconds of arc

1990 02 24	809	0.6−	0.3−	1998 04 24	704	0.5+	1.3+	1999 09 09	704	0.4−	0.9−
1990 02 24	809	0.0	0.3−	1998 04 24	704	0.1−	0.1+	1999 09 09	704	0.3−	0.2+
1990 02 24	809	0.6+	0.5−	1999 08 07	699	0.1+	0.2−	1999 09 09	704	0.8+	0.5+
1990 02 25	809	1.0+	0.7−	1999 08 07	699	1.3+	1.1+	1999 09 09	704	0.9−	0.7+
1990 02 25	809	1.3+	0.5−	1999 08 07	699	0.7−	1.2−	1999 09 09	704	0.8+	0.9−
1990 02 25	809	1.7+	0.7−	1999 08 08	699	0.4+	0.3−	1999 09 09	704	0.4+	0.3+

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1990 02 26	809	1.8−	0.6+	1999 08 08	699	0.9−	0.5+	1999 09 09	704	0.2+	0.4+
1990 02 26	809	1.3−	0.8+	1999 08 08	699	0.2−	0.7−	1999 09 09	704	0.4+	0.1+
1990 02 26	809	1.0−	1.0+	1999 09 07	704	0.2−	0.2−	1999 09 09	704	0.3+	0.5−
1998 04 23	704	0.1−	1.7−	1999 09 07	704	0.8−	0.3+	1999 09 13	704	0.1+	0.4−
1998 04 23	704	0.4−	0.9+	1999 09 07	704	0.2−	0.1+	1999 09 13	704	0.1−	0.2−
1998 04 23	704	1.7+	1.1−	1999 09 07	704	0.4−	0.9+	1999 09 13	704	1.6−	0.1−
1998 04 23	704	0.8−	1.5+	1999 09 07	704	0.1+	0.2−	1999 09 13	704	0.7+	0.3+
1998 04 24	704	1.0−	1.0−	1999 09 09	704	1.3+	0.4−	1999 09 13	704	0.1−	0.0

1999 RG₁₁₅ = 1978 VD₁₃ = 1997 AV₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	354.34218		(2000.0)	P		Q	
<i>n</i>	0.23247708	ω	188.87284	+0.91293501	+0.40474069		
<i>a</i>	2.6194853	Ω	147.09601	−0.36827492	+0.87225728		
<i>e</i>	0.2923303	<i>i</i>	5.52407	−0.17585007	+0.27450357		
<i>P</i>	4.24	<i>H</i>	15.5	<i>G</i> 0.15	<i>U</i> 2		

Residuals in seconds of arc

1978 11 02	095	1.0−	2.9+	1999 06 20	703	0.6−	0.9+	1999 09 07	704	0.3−	0.5−
1997 01 03	691	0.2+	0.2−	1999 07 13	704	0.1−	0.5+	1999 09 07	704	0.1+	0.7−
1997 01 03	691	0.0	0.2−	1999 07 13	704	1.0+	0.3−	1999 09 07	704	0.5+	0.8−
1997 01 03	691	0.1+	0.3−	1999 07 13	704	1.2+	0.6+	1999 09 07	704	0.4−	1.3−
1997 01 10	691	0.3+	0.5−	1999 07 13	704	1.2+	0.0	1999 09 07	704	0.5−	1.0−
1997 01 10	691	0.6+	0.4−	1999 07 13	704	1.9+	0.5−	1999 09 09	704	0.2−	0.6+
1997 01 10	691	0.7+	0.5−	1999 08 07	699	0.0	0.6+	1999 09 09	704	0.4−	0.3−
1997 01 11	691	0.2−	0.1+	1999 08 07	699	0.0	0.3+	1999 09 09	704	0.0	0.4−
1997 01 11	691	0.6−	0.0	1999 08 07	699	0.1−	0.8+	1999 09 09	704	0.0	0.7−
1997 01 11	691	0.6−	0.2+	1999 08 08	699	0.1+	0.6+	1999 09 09	704	0.1−	0.8−
1997 01 17	691	0.1−	0.2−	1999 08 08	699	0.6+	0.3+	1999 09 13	704	0.0	0.1−
1997 01 17	691	0.4−	0.1−	1999 08 08	699	0.1+	0.4+	1999 09 13	704	0.2+	0.5−
1997 01 17	691	0.3−	0.2−	1999 08 22	703	0.2−	0.1−	1999 09 13	704	0.4+	0.4+
1999 06 20	703	0.8−	1.2+	1999 08 22	703	0.2−	0.1−	1999 09 13	704	0.0	0.5−
1999 06 20	703	1.3−	0.3+	1999 08 22	703	0.3−	0.2+	1999 09 13	704	0.6−	0.6−
1999 06 20	703	0.9−	0.3−	1999 08 22	703	0.0	0.0				

1999 RJ₁₁₅ = 1998 HT₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	16.56006		(2000.0)	P		Q	
<i>n</i>	0.25205081	ω	157.47995	+0.60595071	+0.79318195		
<i>a</i>	2.4820507	Ω	149.71621	−0.74697420	+0.59357508		
<i>e</i>	0.0859245	<i>i</i>	6.91494	−0.27359328	+0.13612869		
<i>P</i>	3.91	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 3		

Residuals in seconds of arc

1998 04 20	704	0.4−	0.2−	1999 08 08	699	1.1+	0.0	1999 09 07	704	0.1+	0.4−
1998 04 20	704	0.3+	0.1+	1999 08 08	699	0.5−	0.3+	1999 09 07	704	0.1+	0.4+
1998 04 20	704	0.3−	0.2−	1999 08 21	691	0.4−	0.0	1999 09 09	704	0.3−	0.1−
1998 04 20	704	0.7−	0.1−	1999 08 21	691	0.2−	0.0	1999 09 09	704	0.3+	0.7−
1998 04 22	704	0.4−	0.1+	1999 08 21	691	0.4−	0.2−	1999 09 09	704	0.2−	0.3−
1998 04 22	704	0.6+	0.2+	1999 08 22	703	0.0	0.5−	1999 09 09	704	0.2−	0.3−
1998 04 22	704	0.1+	0.2−	1999 08 22	703	0.0	0.0	1999 09 09	704	0.0	0.1+
1998 04 22	704	0.7+	0.3+	1999 08 22	703	0.1−	0.2−	1999 09 13	704	0.2−	0.2+
1999 08 07	699	0.2−	0.5+	1999 08 22	703	0.2+	1.1+	1999 09 13	704	0.6+	0.2+
1999 08 07	699	0.1−	0.3−	1999 09 07	704	0.3−	0.1+	1999 09 13	704	0.2+	0.0
1999 08 07	699	0.4+	0.1−	1999 09 07	704	0.1−	0.4+	1999 09 13	704	0.4+	0.0
1999 08 08	699	0.1−	0.3−	1999 09 07	704	0.1+	0.2−	1999 09 13	704	0.2−	0.4+

1999 RE₁₁₈ = 1992 QW₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Residuals in seconds of arc

1992 08 23	675	0.8+	0.9+	1999 07 23	704	0.1+	0.6-	1999 09 08	703	0.9-	0.3-
1992 08 23	675	0.4-	0.2+	1999 07 23	704	1.1+	0.5-	1999 09 09	704	0.5+	0.4-
1992 08 28	675	0.4-	0.1-	1999 07 23	704	0.0	0.7-	1999 09 09	704	0.1-	0.1-
1992 08 28	675	0.0	1.0-	1999 08 12	699	0.3-	0.8+	1999 09 09	704	0.1+	0.4-
1999 05 21	704	0.3+	0.9+	1999 08 12	699	0.2-	0.2+	1999 09 09	704	0.1+	0.1+
1999 05 21	704	1.7-	0.2+	1999 08 12	699	0.0	0.6+	1999 09 09	704	0.1+	0.1-
1999 05 21	704	(0.3-	2.8+)	1999 09 06	699	0.4-	0.7+	1999 09 14	704	0.5+	0.4+
1999 05 21	704	1.2+	0.8+	1999 09 06	699	0.7-	0.7+	1999 09 14	704	0.2+	0.3-
1999 05 21	704	1.1-	0.0	1999 09 06	699	0.3-	0.7+	1999 09 14	704	0.0	0.1+
1999 06 25	699	0.1+	0.4-	1999 09 08	703	0.5-	0.5+	1999 09 14	704	0.3+	0.4-
1999 06 25	699	0.6+	0.6-	1999 09 08	703	0.0	0.6+	1999 09 14	704	0.4+	1.1-
1999 06 25	699	0.6+	0.6-	1999 09 08	703	0.4-	0.4-				

1999 RY₁₁₉ = 1998 FS₁₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	355.49450		(2000.0)	P	Q
<i>n</i>	0.27961421	ω	174.13007	+0.83270526	+0.55071061
<i>a</i>	2.3161316	Ω	152.20977	-0.51291993	+0.80636730
<i>e</i>	0.1328170	<i>i</i>	7.09876	-0.20860271	+0.21561448
<i>P</i>	3.52	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 22	704	0.5+	0.8+	1999 09 07	704	0.5-	0.3-	1999 09 13	704	0.0	0.0
1998 03 22	704	1.0-	0.6+	1999 09 07	704	0.1-	0.5-	1999 09 13	691	0.8-	0.4-
1998 03 22	704	0.3-	1.0-	1999 09 07	704	0.3+	0.7+	1999 09 13	699	0.9-	0.7+
1998 03 26	704	1.4+	0.5-	1999 09 07	704	0.5+	0.0	1999 09 13	704	0.5+	0.2+
1998 03 26	704	1.1-	0.2-	1999 09 07	704	0.9-	0.3-	1999 09 13	704	0.5-	0.1-
1998 03 26	704	0.5+	0.2+	1999 09 09	704	0.1-	0.4-	1999 09 13	691	0.0	0.0
1999 07 23	704	0.3+	0.2-	1999 09 09	704	0.6-	0.0	1999 09 13	704	0.2+	0.8-
1999 07 23	704	0.0	0.3+	1999 09 09	704	0.3+	0.9-	1999 09 13	699	0.2-	0.6+
1999 07 23	704	0.1-	0.4+	1999 09 09	704	0.9+	1.1-	1999 09 19	691	0.4+	0.3+
1999 09 04	703	0.4+	0.6+	1999 09 09	704	0.7-	0.2+	1999 09 19	691	0.2+	0.2+
1999 09 04	703	0.0	0.1+	1999 09 13	699	0.5+	1.1+	1999 09 19	691	0.3+	0.3+
1999 09 04	703	0.1+	0.7-	1999 09 13	691	0.0	0.1+				
1999 09 04	703	0.1+	0.5-	1999 09 13	704	0.5+	0.5+				

1999 RA₁₂₂ = 1998 FW₁₈

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	83.08365		(2000.0)	P	Q
<i>n</i>	0.26944627	ω	270.61202	-0.64673829	+0.75960302
<i>a</i>	2.3740395	Ω	318.82059	-0.65161809	-0.59716147
<i>e</i>	0.0887565	<i>i</i>	5.99756	-0.39638801	-0.25768473
<i>P</i>	3.66	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 20	704	0.2-	0.3+	1998 03 22	704	1.2+	0.5+	1999 09 09	704	0.8-	0.2-
1998 03 20	704	0.3+	0.8-	1999 08 07	699	0.9+	0.5+	1999 09 09	704	0.5+	0.5+
1998 03 20	704	0.1-	0.1-	1999 08 07	699	0.7-	1.4+	1999 09 13	704	0.0	0.7-
1998 03 20	704	0.4-	0.1+	1999 08 07	699	0.6+	0.8-	1999 09 13	704	0.3-	0.1-
1998 03 20	704	0.7-	0.5-	1999 08 08	888	0.1-	0.4-	1999 09 13	704	0.5+	0.3-
1998 03 22	704	0.3-	0.1+	1999 08 08	888	0.5-	0.8-	1999 09 13	704	0.5+	0.5+
1998 03 22	704	(2.3-	0.0)	1999 09 09	704	1.1-	0.2-	1999 09 13	704	0.2+	0.4+
1998 03 22	704	0.2+	0.5+	1999 09 09	704	0.5+	0.2+				

1999 RE₁₂₃ = 1998 FK₁₀₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	82.01915		(2000.0)	P	Q
<i>n</i>	0.27308787	ω	322.53140	-0.33921210	+0.93495148
<i>a</i>	2.3528872	Ω	287.42924	-0.83458223	-0.35007735
<i>e</i>	0.0765100	<i>i</i>	6.25355	-0.43405951	-0.05754631
<i>P</i>	3.61	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 26	566	0.1+	0.1+	1998 05 22	566	0.1+	0.2-	1999 09 09	704	0.0	0.1-
1998 03 26	566	0.1+	0.0	1998 05 22	566	0.0	0.5-	1999 09 09	704	0.2+	0.4-
1998 03 26	566	0.1-	0.4+	1998 05 22	566	0.5+	0.3-	1999 09 09	704	0.6+	0.1-
1998 03 31	704	0.8+	0.1+	1999 09 04	703	0.8-	0.5-	1999 09 09	704	0.2+	0.3-
1998 03 31	704	1.1-	1.8+	1999 09 04	703	0.1-	0.2+	1999 09 09	704	0.1-	0.3-
1998 03 31	704	0.0	0.3-	1999 09 04	703	0.3-	0.4+	1999 09 10	704	0.5+	0.3+
1998 03 31	704	0.3-	0.2-	1999 09 04	703	0.1-	0.6+	1999 09 10	704	0.7+	0.1-
1998 03 31	704	0.3-	0.3-	1999 09 08	704	0.6+	0.5-	1999 09 10	704	0.6+	0.3-
1998 04 01	704	0.1-	0.0	1999 09 08	704	0.1-	0.1-	1999 09 16	704	0.3-	0.3+
1998 04 01	704	0.1+	0.3-	1999 09 08	704	0.1+	0.0	1999 09 16	704	0.2-	0.7+
1998 04 01	704	0.7+	0.1-	1999 09 08	704	0.1+	0.2-	1999 09 16	704	1.1-	0.3+
1998 04 01	704	(1.2+	2.4-)	1999 09 08	704	0.2-	0.1-	1999 09 16	704	0.6-	0.7+

1999 RG₁₂₃ = 1992 UF₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	301.19271		(2000.0)	P	Q
<i>n</i>	0.26960075	ω	163.94065	+0.65310939	-0.75053226
<i>a</i>	2.3731325	Ω	245.16539	+0.68198885	+0.64078518
<i>e</i>	0.0969368	<i>i</i>	6.37356	+0.32914942	+0.16154158
<i>P</i>	3.66	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1992 10 31	033	0.3+	0.1+	1999 09 08	704	0.3+	0.3-	1999 09 10	704	0.2+	0.2-
1992 10 31	033	0.1-	0.0	1999 09 08	704	1.1-	0.4-	1999 09 10	704	0.0	0.3-
1992 11 01	033	0.2-	0.2-	1999 09 08	704	0.2+	0.1+	1999 09 10	704	0.6-	0.3+
1999 09 04	703	0.2+	0.9-	1999 09 09	704	0.2-	0.3+	1999 09 16	704	0.1+	0.4+
1999 09 04	703	0.1-	0.0	1999 09 09	704	0.4+	0.6-	1999 09 16	704	0.0	0.4+
1999 09 04	703	0.0	0.9+	1999 09 09	704	0.2-	0.3-	1999 09 16	704	0.2+	0.6+
1999 09 04	703	0.4+	0.3+	1999 09 09	704	0.2-	0.4-				
1999 09 08	704	0.0	0.0	1999 09 09	704	0.5+	0.0				

1999 RZ₁₂₃ = 1998 MO₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	142.40673		(2000.0)	P	Q
<i>n</i>	0.22164667	ω	289.22594	-0.92219381	+0.32085806
<i>a</i>	2.7041363	Ω	269.95931	-0.22043402	-0.89479951
<i>e</i>	0.1609643	<i>i</i>	12.46778	-0.31775371	-0.31045763
<i>P</i>	4.45	<i>H</i>	13.6	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 06 24	704	1.0-	0.8-	1999 09 06	703	0.7-	0.3-	1999 09 09	704	0.3+	0.1-
1998 06 24	704	0.2-	1.3+	1999 09 06	703	0.3-	0.2-	1999 09 09	704	0.0	0.1+
1998 06 24	704	0.4-	1.1+	1999 09 06	703	1.6-	0.1+	1999 09 10	704	0.0	0.1+
1998 06 24	704	0.1+	0.9+	1999 09 06	703	(3.4-	5.2+)	1999 09 10	704	0.4+	0.2+
1998 06 26	704	0.9+	1.5-	1999 09 08	704	1.0+	0.9-	1999 09 10	704	0.7+	0.3+
1998 06 26	704	(0.4+	2.3-)	1999 09 08	704	0.3-	0.3+	1999 09 10	704	0.8-	0.6+
1998 06 26	704	0.0	1.3-	1999 09 08	704	0.3-	0.6-	1999 09 18	704	0.7+	0.4-
1998 06 26	704	0.5+	0.2+	1999 09 08	704	0.2+	0.3-	1999 09 18	704	1.0-	0.2-
1998 06 26	704	(2.2-	0.7-)	1999 09 08	704	0.1-	0.1-	1999 09 18	704	0.4+	0.7+
1999 08 11	704	0.5+	0.2-	1999 09 09	704	0.6+	0.1-	1999 09 18	704	0.4-	0.2-
1999 08 11	704	0.5+	0.5+	1999 09 09	704	0.3+	0.7+				
1999 08 11	704	0.4-	0.1-	1999 09 09	704	0.3+	0.0				

1999 RB₁₂₄ = 1996 UC₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	51.24976		(2000.0)	P	Q
<i>n</i>	0.29512385	ω	49.81426	+0.00227243	+0.99594452
<i>a</i>	2.2342573	Ω	220.58936	-0.95435689	-0.02470195
<i>e</i>	0.1958140	<i>i</i>	7.94578	-0.29865995	+0.08651205
<i>P</i>	3.34	<i>H</i>	14.5	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1996 10 16	691	0.5-	0.0	1999 09 07	703	0.1+	0.3+	1999 09 09	704	0.1-	1.0-
1996 10 16	691	0.5-	0.2+	1999 09 07	703	0.6-	0.8+	1999 09 09	704	0.2+	0.4-

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1996 10 16	691	1.2−	0.2−	1999 09 07	703	0.4+	0.7+	1999 09 09	704	0.5+	0.4−
1996 10 17	691	0.7+	0.1+	1999 09 08	699	0.0	1.1+	1999 09 09	704	0.1−	0.6−
1996 10 17	691	0.9+	0.2−	1999 09 08	704	0.1+	0.3+	1999 09 10	704	0.1+	0.7−
1996 10 17	691	0.7+	0.1−	1999 09 08	699	0.2−	1.0+	1999 09 10	704	0.2+	0.4−
1999 07 23	704	0.1−	0.2−	1999 09 08	704	0.0	0.2−	1999 09 10	704	0.2+	0.3−
1999 07 23	704	0.1−	0.3−	1999 09 08	704	0.1+	0.1+	1999 09 16	704	0.6+	0.0
1999 07 23	704	0.2+	0.4−	1999 09 08	704	0.2+	0.1+	1999 09 16	704	0.5−	0.0
1999 07 23	704	0.0	0.2−	1999 09 08	699	0.8−	1.3+	1999 09 16	704	0.6−	0.1+
1999 07 23	704	0.4+	0.3+	1999 09 08	704	0.1−	0.4+	1999 09 16	704	0.1+	0.9−
1999 09 07	703	0.3−	0.1−	1999 09 09	704	0.3+	0.5−				

1999 RA₁₂₈ = 1998 HK₄₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	6.16381		(2000.0)	P	Q
<i>n</i>	0.22897926	ω	135.00116	+0.73247322	+0.68079501
<i>a</i>	2.6460941	Ω	182.09390	−0.63253154	+0.67996585
<i>e</i>	0.0787509	<i>i</i>	1.67063	−0.25176741	+0.27233179
<i>P</i>	4.30	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 04 20	704	0.1+	1.0−	1998 04 22	704	0.4−	1.8+	1999 09 07	704	0.5−	0.7−
1998 04 20	704	0.2−	0.3−	1999 08 07	699	1.7+	0.5−	1999 09 07	704	0.4−	0.3−
1998 04 20	704	1.8+	0.2+	1999 08 07	699	0.8+	0.7−	1999 09 07	704	0.2+	0.4−
1998 04 20	704	0.6−	0.3+	1999 08 07	699	0.8+	0.3−	1999 09 09	704	0.6−	0.1−
1998 04 21	704	(2.1+ 2.3+)		1999 08 08	699	1.0−	0.6+	1999 09 09	704	0.3−	0.1+
1998 04 21	704	0.8+	0.6+	1999 08 08	699	0.5+	0.4−	1999 09 09	704	0.7+	0.0
1998 04 21	704	0.4−	1.2−	1999 08 08	699	0.2+	0.1+	1999 09 09	704	0.9+	1.1+
1998 04 21	704	0.1+	1.5+	1999 08 08	691	0.4−	0.1+	1999 09 09	704	0.9+	0.8+
1998 04 21	704	1.2+	0.0	1999 08 08	691	0.5−	0.1−	1999 09 13	704	0.1+	0.1−
1998 04 22	704	0.6−	1.0−	1999 08 08	691	0.5−	0.0	1999 09 13	704	0.2+	0.2−
1998 04 22	704	1.6−	0.4−	1999 08 12	699	2.0−	1.1+	1999 09 13	704	0.7−	0.4−
1998 04 22	704	0.2−	0.5+	1999 08 12	699	0.1−	0.2−				
1998 04 22	704	0.0	1.0−	1999 08 12	699	0.0	0.5+				

1999 RT₁₂₈ = 1981 UQ₂₆ = 1998 HT₁₃₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	354.13114		(2000.0)	P	Q
<i>n</i>	0.21497236	ω	152.27867	+0.91118233	+0.41194072
<i>a</i>	2.7598213	Ω	183.41869	−0.39678239	+0.87269125
<i>e</i>	0.2767752	<i>i</i>	6.91857	−0.11095266	+0.26213512
<i>P</i>	4.58	<i>H</i>	13.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1981 10 25	675	0.0	0.4+	1998 04 21	704	1.2+	0.7+	1999 09 09	704	0.1+	0.1−
1981 10 26	675	0.2−	0.6+	1999 09 05	699	0.7−	1.1+	1999 09 09	704	0.1+	0.3−
1998 04 20	704	0.2+	0.0	1999 09 05	699	0.5−	0.6+	1999 09 09	704	0.2+	0.5−
1998 04 20	704	(3.0− 2.8−)		1999 09 05	699	0.3−	0.7+	1999 09 09	704	0.0	0.4−
1998 04 20	704	(2.5+ 1.4−)		1999 09 07	704	0.1−	0.0	1999 09 14	704	0.5+	0.1+
1998 04 20	704	0.1+	0.2+	1999 09 07	704	0.0	0.1−	1999 09 14	704	0.3+	0.3+
1998 04 20	704	(4.3− 0.9−)		1999 09 07	704	0.3−	0.1+	1999 09 14	704	0.4+	0.1+
1998 04 21	704	0.7+	0.8−	1999 09 07	704	0.2−	0.1−	1999 09 14	704	0.2+	0.2−
1998 04 21	704	0.6−	0.6+	1999 09 07	704	0.2−	0.7−	1999 09 14	704	0.2+	0.0
1998 04 21	704	1.3−	0.7+	1999 09 09	704	0.1+	0.2−				

1999 RC₁₃₀ = 1998 FS₃₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	47.15751		(2000.0)	P	Q
<i>n</i>	0.26008664	ω	118.39640	−0.01065703	+0.99820614
<i>a</i>	2.4306589	Ω	150.81295	−0.95450732	+0.00740327
<i>e</i>	0.1155939	<i>i</i>	6.93887	−0.29799700	−0.05941131
<i>P</i>	3.79	<i>H</i>	15.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 20	704	0.6+	0.3+	1999 08 08	699	1.0−	0.2−	1999 09 07	704	0.3−	0.2−
1998 03 20	704	1.2+	1.1+	1999 08 08	699	0.1−	0.8+	1999 09 07	704	0.0	0.4−

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1998 03 20	704	0.2−	0.1+	1999 08 08	699	1.4+	0.4+	1999 09 09	704	0.1−	0.2−
1998 03 20	704	0.2+	1.0+	1999 08 13	691	0.1+	0.2−	1999 09 09	704	0.1−	0.8−
1998 03 22	704	0.3−	1.6+	1999 08 13	691	0.2+	0.5−	1999 09 09	704	0.2+	0.2−
1998 03 22	704	0.6−	1.5−	1999 08 13	691	0.1−	0.4−	1999 09 09	704	0.7−	0.1+
1998 03 22	704	0.7+	0.7−	1999 08 21	691	0.3−	0.0	1999 09 09	704	0.3+	0.0
1998 03 22	704	1.3−	0.8−	1999 08 21	691	0.1−	0.0	1999 09 13	704	0.2−	0.2−
1998 03 22	704	0.3−	1.0−	1999 08 21	691	0.0	0.2−	1999 09 13	704	0.5+	0.5+
1999 08 07	699	0.1+	0.3+	1999 09 07	704	0.1−	0.2−	1999 09 13	704	0.2+	0.1−
1999 08 07	699	0.0	0.6−	1999 09 07	704	0.7−	0.6+	1999 09 13	704	0.5+	0.2+
1999 08 07	699	0.1+	0.5+	1999 09 07	704	0.4+	0.6+	1999 09 13	704	0.1−	0.4+

1999 RS₁₃₂ = 1992 PW

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	39.49128		(2000.0)	P	Q
<i>n</i>	0.28495354	ω	351.07499	+0.18890937	+0.97713007
<i>a</i>	2.2871080	Ω	289.76820	−0.89443967	+0.13018049
<i>e</i>	0.1106081	<i>i</i>	5.95431	−0.40532818	+0.16813643
<i>P</i>	3.46	<i>H</i>	15.3	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1992 08 08	010	0.5+	1.2−	1999 09 07	704	0.1+	0.4+	1999 09 14	704	0.9+	0.2−
1992 08 08	010	0.1−	1.5+	1999 09 07	704	0.1+	0.7−	1999 09 14	703	0.6−	0.6+
1992 08 08	010	0.7−	1.4+	1999 09 07	704	0.4+	0.5+	1999 09 14	704	0.5+	0.4−
1992 08 09	010	0.5−	0.1+	1999 09 07	704	0.6+	0.5−	1999 09 14	703	0.7−	0.2−
1992 08 09	010	0.3+	1.0−	1999 09 09	704	0.2−	0.4−	1999 09 14	704	0.8+	0.3+
1992 08 09	010	0.5+	1.0−	1999 09 09	704	0.4−	0.1−	1999 09 14	703	0.8−	0.1−
1999 09 05	699	0.6−	0.3+	1999 09 09	704	0.3+	0.2+	1999 09 14	704	0.5+	0.4−
1999 09 05	699	0.5−	0.6+	1999 09 09	704	0.1+	0.3+	1999 09 14	703	0.4−	0.5+
1999 09 05	699	0.0	0.3+	1999 09 09	704	0.0	0.4−				
1999 09 07	704	0.2−	0.4−	1999 09 14	704	0.1+	0.1−				

1999 RB₁₃₈ = 1992 GV₁ = 1998 KR₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	49.43037		(2000.0)	P	Q
<i>n</i>	0.17261624	ω	225.02699	−0.02933242	+0.99944176
<i>a</i>	3.1945886	Ω	43.29971	−0.91040007	−0.02010646
<i>e</i>	0.1482434	<i>i</i>	1.33625	−0.41268792	−0.02668147
<i>P</i>	5.71	<i>H</i>	13.0	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1992 04 05	691	0.0	0.2−	1998 05 24	704	0.4+	0.4+	1999 09 07	704	0.4+	0.5−
1992 04 05	691	0.1+	0.2−	1998 05 24	704	0.7+	0.7+	1999 09 09	704	0.3+	0.2−
1992 04 05	691	0.1−	0.1−	1998 05 24	704	0.9+	0.5−	1999 09 09	704	0.0	0.2+
1992 04 09	691	0.3+	0.6+	1999 08 07	699	0.3−	0.3−	1999 09 09	704	(3.1+ 0.8+)	
1992 04 09	691	0.2+	0.2+	1999 08 07	699	0.4+	0.3+	1999 09 09	704	0.7−	0.2−
1992 04 09	691	0.3−	0.1−	1999 08 07	699	0.1−	0.1−	1999 09 09	704	0.3+	0.4+
1998 05 22	704	0.4−	0.5+	1999 08 08	699	0.0	0.8+	1999 09 13	704	0.1+	0.5+
1998 05 22	704	0.1−	0.9−	1999 08 08	699	0.8−	0.2+	1999 09 13	704	0.3+	0.1−
1998 05 22	704	0.7−	0.0	1999 08 08	699	0.2−	0.0	1999 09 13	704	0.0	0.0
1998 05 22	704	0.3+	1.1−	1999 09 07	704	0.4+	0.0	1999 09 13	704	0.0	0.1−
1998 05 22	704	(0.3− 2.4−)		1999 09 07	704	0.1+	0.3+	1999 09 13	704	0.0	0.2−
1998 05 24	704	0.7−	0.8+	1999 09 07	704	0.1+	0.3−				
1998 05 24	704	0.7−	0.1−	1999 09 07	704	0.3−	0.5−				

1999 RO₁₄₁ = 1998 FE₁₃₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	50.43406		(2000.0)	P	Q
<i>n</i>	0.26388456	ω	314.32784	−0.07462528	+0.99460408
<i>a</i>	2.4072807	Ω	311.25017	−0.88548235	−0.09932935
<i>e</i>	0.1016883	<i>i</i>	5.50058	−0.45864155	+0.02994011
<i>P</i>	3.73	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 20	704	0.5+	0.6−	1999 08 07	699	0.1+	0.4−	1999 09 09	704	1.4−	0.2+
1998 03 20	704	0.4+	0.7+	1999 08 08	699	0.6−	0.5−	1999 09 09	704	0.4+	0.6−

1998 03 20	704	1.7−	0.6+	1999 08 08	699	0.2−	1.2−	1999 09 09	704	0.3−	0.3+
1998 03 20	704	0.7−	0.1−	1999 08 08	699	0.7+	0.4+	1999 09 13	704	0.2+	0.7+
1998 03 26	704	1.0+	1.6−	1999 09 07	704	0.1−	0.4−	1999 09 13	704	0.4+	0.0
1998 03 26	704	1.7+	0.5+	1999 09 07	704	0.2−	0.2−	1999 09 13	704	0.7+	0.7+
1998 03 26	704	1.1−	0.5+	1999 09 07	704	0.2−	0.3−	1999 09 13	704	0.2+	0.6+
1999 08 07	699	1.3+	1.2+	1999 09 07	704	0.2−	0.3−				
1999 08 07	699	0.9−	0.9+	1999 09 07	704	0.1+	1.0−				

1999 RS₁₄₄ = 1989 SS₁₂ = 1998 KM₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.19035070	ω	354.46099	−0.06325738	+0.98614186		
<i>a</i>	2.9929518	Ω	271.84661	−0.90965200	−0.12018862		
<i>e</i>	0.0448246	<i>i</i>	8.82697	−0.41052618	+0.11436314		
<i>P</i>	5.18	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1989 09 28	493	0.4−	1.6−	1998 05 24	704	0.1−	0.4−	1999 09 09	704	0.1−	0.4+
1989 09 28	493	0.8+	1.0+	1999 09 04	703	0.4−	0.8+	1999 09 09	704	0.2+	0.2+
1989 10 03	493	0.1+	0.7−	1999 09 04	703	0.2−	0.4+	1999 09 10	704	0.5−	0.0
1989 10 03	493	0.5−	1.3+	1999 09 04	703	0.3−	1.0−	1999 09 10	704	0.1+	0.2+
1998 05 22	704	0.9+	0.3+	1999 09 04	703	0.8−	0.0	1999 09 10	704	0.3+	0.0
1998 05 22	704	1.1−	0.1+	1999 09 08	704	0.3+	0.0	1999 09 16	704	0.2+	0.4−
1998 05 22	704	0.1+	0.7−	1999 09 08	704	0.4+	0.1−	1999 09 16	704	0.0	0.5+
1998 05 22	704	0.4+	0.6−	1999 09 08	704	0.2−	0.4−	1999 09 16	704	0.2−	0.0
1998 05 24	704	0.3+	0.7+	1999 09 08	704	0.4+	0.4−	1999 09 16	704	0.2+	0.2+
1998 05 24	704	0.2−	0.0	1999 09 09	704	0.5+	0.0	1999 09 16	704	0.0	0.2−
1998 05 24	704	0.9−	0.6+	1999 09 09	704	0.3+	0.3−				
1998 05 24	704	0.5+	0.1−	1999 09 09	704	0.1−	0.1−				

1999 RX₁₄₅ = 1998 FF₁₃₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28227075	ω	41.35398	+0.54191922	+0.83834272		
<i>a</i>	2.3015768	Ω	261.54032	−0.78595653	+0.48058596		
<i>e</i>	0.1161081	<i>i</i>	3.43146	−0.29765062	+0.25732978		
<i>P</i>	3.49	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 20	704	0.1−	0.2+	1999 08 22	699	0.7−	0.6+	1999 09 09	704	0.3+	0.1+
1998 03 20	704	0.7+	1.3+	1999 08 22	699	0.1−	1.6+	1999 09 09	704	0.8+	0.0
1998 03 20	704	0.6−	0.7+	1999 08 22	699	0.3−	0.2−	1999 09 09	704	0.9+	0.2−
1998 03 20	704	1.7−	0.5+	1999 09 05	699	0.7−	0.3−	1999 09 09	704	0.4−	0.3+
1998 03 20	704	1.5−	0.9−	1999 09 05	699	0.2+	0.3−	1999 09 09	704	0.3+	0.9+
1998 03 26	704	0.1+	0.5−	1999 09 05	699	0.2−	0.0	1999 09 14	704	0.6−	0.3−
1998 03 26	704	1.9+	0.8+	1999 09 07	704	0.3−	0.2+	1999 09 14	704	1.2−	0.1+
1998 03 26	704	1.4+	1.7−	1999 09 07	704	0.1+	0.2−	1999 09 14	704	0.0	0.5+
1999 08 08	699	0.2+	0.0	1999 09 07	704	0.9+	0.3−	1999 09 14	704	0.3−	0.2+
1999 08 08	699	0.1+	0.4−	1999 09 07	704	0.4+	0.2−	1999 09 14	704	0.2+	0.3−
1999 08 08	699	0.8+	0.6−	1999 09 07	704	0.5−	0.8−				

1999 RD₁₄₆ = 1998 HE₄₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22977217	ω	112.10764	+0.57407284	+0.81850385		
<i>a</i>	2.6400031	Ω	192.99817	−0.78288555	+0.54075443		
<i>e</i>	0.1049761	<i>i</i>	5.65857	−0.23985536	+0.19400027		
<i>P</i>	4.29	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 20	704	0.3+	1.0−	1998 04 22	704	1.2+	0.8−	1999 09 07	704	0.1+	0.4−
1998 04 20	704	0.1−	0.2−	1998 04 22	704	0.2−	0.5+	1999 09 07	704	0.1+	0.2−
1998 04 20	704	1.0−	0.5+	1998 04 22	704	0.5−	0.6+	1999 09 09	704	0.4+	0.1−
1998 04 20	704	0.6+	1.2+	1999 08 08	699	0.7+	0.3−	1999 09 09	704	0.4+	0.1+
1998 04 20	704	0.2−	0.1−	1999 08 08	699	0.1+	0.1+	1999 09 09	704	0.4+	0.1+

1998 04 21	704	0.2+	0.3−	1999 08 08	699	0.8−	0.7−	1999 09 09	704	0.3+	0.1−
1998 04 21	704	0.7+	0.1+	1999 08 22	699	0.4−	1.3+	1999 09 09	704	0.5+	0.9+
1998 04 21	704	0.3−	0.3+	1999 08 22	699	(2.2−	0.8+)	1999 09 14	704	0.2−	0.2−
1998 04 21	704	0.4−	0.1−	1999 08 22	699	0.1−	0.2+	1999 09 14	704	0.5−	0.2+
1998 04 21	704	0.5−	0.6−	1999 09 07	704	0.5+	0.4−	1999 09 14	704	0.4−	0.2+
1998 04 22	704	0.3−	0.2+	1999 09 07	704	0.0	0.3−	1999 09 14	704	0.7−	0.2+
1998 04 22	704	0.7+	0.2−	1999 09 07	704	0.3−	0.4−	1999 09 14	704	0.1−	0.1−

1999 RG₁₄₈ = 1998 FA₁₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29234078	ω	191.98304	−0.72251400	−0.68839644		
<i>a</i>	2.2484149	Ω	304.32201	+0.64052616	−0.63173960		
<i>e</i>	0.0627104	<i>i</i>	4.43787	+0.26019177	−0.35639223		
<i>P</i>	3.37	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 03 31	704	0.1+	0.1+	1999 09 05	699	0.3−	0.8+	1999 09 09	704	0.3+	0.2−
1998 03 31	704	0.1−	0.0	1999 09 05	699	0.2−	0.1−	1999 09 09	704	0.0	0.3+
1998 03 31	704	0.4+	0.1+	1999 09 05	699	1.1−	0.6−	1999 09 09	704	0.5+	0.0
1998 03 31	704	0.4+	0.2+	1999 09 07	704	0.6−	0.3+	1999 09 14	704	0.0	0.6+
1998 03 31	704	1.2−	0.2+	1999 09 07	704	0.7+	0.4+	1999 09 14	704	0.0	0.1+
1998 04 01	704	1.5−	0.2−	1999 09 07	704	0.4+	0.4−	1999 09 14	704	0.6−	0.2+
1998 04 01	704	0.9+	0.4−	1999 09 07	704	0.5+	0.5−	1999 09 14	704	0.7−	0.7−
1998 04 01	704	0.4+	0.5+	1999 09 07	704	0.2+	0.2+	1999 09 14	704	0.3+	0.0
1998 04 01	704	0.0	0.2+	1999 09 09	704	0.3−	0.3+				
1998 04 01	704	0.8+	0.7−	1999 09 09	704	0.8+	0.6−				

1999 RB₁₅₃ = 1998 FU₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27817713	ω	93.90547	+0.49096230	+0.87016705		
<i>a</i>	2.3241016	Ω	205.63267	−0.83287725	+0.45468619		
<i>e</i>	0.1443473	<i>i</i>	5.57359	−0.25548290	+0.18992045		
<i>P</i>	3.54	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 03 20	704	0.9+	1.6−	1999 09 07	704	0.1−	0.1+	1999 09 09	704	0.3−	0.1−
1998 03 20	704	0.6−	1.1+	1999 09 07	704	0.2+	0.1+	1999 09 09	704	0.5−	0.1−
1998 03 20	704	1.9+	0.2−	1999 09 07	704	0.0	0.3−	1999 09 09	704	0.6−	0.1−
1998 03 20	704	0.2−	0.7+	1999 09 07	704	0.2−	0.3−	1999 09 14	704	0.2+	0.5−
1998 03 20	704	1.9−	1.4+	1999 09 08	699	0.4+	0.2+	1999 09 14	704	0.4+	0.0
1998 03 22	704	0.4−	0.5+	1999 09 08	699	0.2+	0.3+	1999 09 14	704	0.3+	0.7+
1998 03 22	704	0.7−	1.2−	1999 09 08	699	1.1+	0.9+	1999 09 14	704	0.5−	0.8−
1998 03 22	704	0.7−	0.9−	1999 09 09	704	0.3−	0.2−	1999 09 14	704	0.2−	0.2+
1998 03 22	704	1.7+	0.2+	1999 09 09	704	0.1−	0.1−				

1999 RG₁₅₄ = 1998 KZ₄₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21704347	ω	271.44780	−0.56527476	−0.82424189		
<i>a</i>	2.7422364	Ω	213.04305	+0.77886807	−0.52011965		
<i>e</i>	0.0248144	<i>i</i>	3.47091	+0.27171488	−0.22383223		
<i>P</i>	4.54	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 22	704	0.6+	0.3−	1998 06 03	704	0.8+	0.6+	1999 09 07	704	0.2−	0.6−
1998 05 22	704	0.3−	0.6+	1998 06 03	704	1.3+	1.4+	1999 09 09	704	0.0	0.6+
1998 05 22	704	0.7+	0.3+	1999 08 08	699	0.5−	1.0+	1999 09 09	704	0.3+	0.2−
1998 05 22	704	0.5−	1.1−	1999 08 08	699	0.1+	0.3+	1999 09 09	704	0.3+	0.4−
1998 05 24	704	0.9+	0.3−	1999 08 08	699	0.3−	0.3+	1999 09 09	704	0.4−	0.0
1998 05 24	704	0.9−	0.6+	1999 09 05	699	0.2−	0.2−	1999 09 09	704	0.0	0.5−
1998 05 24	704	0.2−	0.3+	1999 09 05	699	0.3−	0.3−	1999 09 14	704	0.3−	0.5−
1998 05 24	704	0.2−	0.7−	1999 09 05	699	0.2−	0.9+	1999 09 14	704	0.5+	0.2−
1998 05 24	704	0.0	1.0−	1999 09 07	704	0.7+	0.2−	1999 09 14	704	0.3+	0.1−

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1998 06 03	704	1.5-	1.0-	1999 09 07	704	0.2+	0.4-	1999 09 14	704	0.3-	1.0+
1998 06 03	704	0.7-	1.3+	1999 09 07	704	0.1-	0.5-	1999 09 14	704	0.4-	0.8+
1998 06 03	704	0.1+	0.9-	1999 09 07	704	0.2+	0.8-				

1999 RM₁₅₄ = 1998 FK₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams							
<i>M</i>	54.20579		(2000.0)	P		Q					
<i>n</i>	0.26010417	ω	333.73812		-0.09846048		+0.99457411				
<i>a</i>	2.4305497	Ω	290.59600		-0.90659325		-0.10356466				
<i>e</i>	0.1532832	<i>i</i>	2.05603		-0.41035864		-0.00983340				
<i>P</i>	3.79	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	4				

Residuals in seconds of arc

1998 03 20	704	(1.1-	2.2-)	1999 08 08	699	0.6+	0.8+	1999 09 09	704	0.6-	0.2+
1998 03 20	704	1.2+	0.6+	1999 08 17	691	0.2+	0.6-	1999 09 09	704	0.4-	0.7+
1998 03 20	704	0.1-	0.9-	1999 08 17	691	0.0	0.7-	1999 09 09	704	0.5+	0.8+
1998 03 20	704	0.2+	0.5+	1999 08 17	691	0.3-	0.4-	1999 09 09	704	0.3-	0.0
1998 03 20	704	0.4-	1.2+	1999 09 05	699	0.5-	0.1-	1999 09 09	704	0.5+	0.1+
1998 03 22	704	0.2+	0.8-	1999 09 05	699	0.1+	0.8+	1999 09 14	704	0.2-	0.5-
1998 03 22	704	0.8-	0.1-	1999 09 05	699	0.6+	0.9-	1999 09 14	704	0.1-	0.3+
1998 03 22	704	0.5+	1.3-	1999 09 07	704	0.0	0.3-	1999 09 14	704	0.0	0.3+
1998 03 22	704	0.5-	1.3+	1999 09 07	704	0.5-	0.6-	1999 09 14	704	0.2-	0.6+
1998 03 22	704	0.2-	0.2-	1999 09 07	704	0.4-	0.0	1999 09 14	704	0.9+	0.3-
1999 08 08	699	1.0-	0.1-	1999 09 07	704	0.2-	0.4-				
1999 08 08	699	0.9+	0.7+	1999 09 07	704	0.0	0.2-				

1999 RR₁₅₉ = 1986 RA₇ = 2414 T-2

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams							
<i>M</i>	334.11655		(2000.0)	P		Q					
<i>n</i>	0.22651368	ω	14.16034		+0.97671602		-0.21443599				
<i>a</i>	2.6652611	Ω	358.18309		+0.17114792		+0.79725280				
<i>e</i>	0.1987556	<i>i</i>	11.93887		+0.12936075		+0.56427403				
<i>P</i>	4.35	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	5				

Residuals in seconds of arc

1973 09 19	675	0.7-	0.4-	1999 09 07	699	0.3+	0.2-	1999 09 09	704	0.3+	0.0
1973 09 19	675	1.4-	0.1+	1999 09 07	704	0.9+	0.7-	1999 09 09	704	0.7+	0.6+
1973 09 20	675	0.4+	1.4-	1999 09 07	704	0.6+	1.1-	1999 09 09	704	0.1+	0.0
1973 09 24	675	1.7+	0.1-	1999 09 07	704	0.7+	0.3-	1999 09 09	704	0.3+	0.4-
1973 09 24	675	1.6+	0.6+	1999 09 07	699	0.4-	0.4+	1999 09 13	704	0.6-	0.0
1973 09 25	675	0.0	0.4+	1999 09 07	704	0.2+	0.7-	1999 09 13	704	0.6-	0.6+
1973 09 25	675	1.0-	0.1+	1999 09 08	703	0.5-	0.2+	1999 09 13	704	0.4-	0.2+
1986 09 06	095	1.5-	1.2+	1999 09 08	703	0.3-	0.1-	1999 09 13	704	0.8-	0.1+
1999 09 07	699	0.1+	0.2+	1999 09 08	703	0.1-	0.2+				
1999 09 07	704	0.3+	0.5-	1999 09 08	703	0.0	0.8+				

1999 RG₁₆₄ = 1998 HJ₉₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams							
<i>M</i>	28.62062		(2000.0)	P		Q					
<i>n</i>	0.23029469	ω	107.74325		+0.58978420		+0.80744476				
<i>a</i>	2.6360083	Ω	198.41852		-0.75637545		+0.54638105				
<i>e</i>	0.0778225	<i>i</i>	2.48428		-0.28293245		+0.22248755				
<i>P</i>	4.28	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	2				

Residuals in seconds of arc

1991 11 07	691	0.2-	0.5-	1998 04 22	704	0.6+	0.1-	1999 09 14	704	1.3+	0.4+
1991 11 07	691	0.5+	0.1-	1998 04 22	704	0.8-	1.2+	1999 09 14	704	0.8-	0.7+
1995 10 01	691	0.1+	0.7-	1998 05 01	704	(0.8-	2.6+)	1999 09 14	704	0.2-	0.4-
1995 10 01	691	0.2+	0.5-	1998 05 01	704	0.2-	1.4+	1999 09 14	704	0.4-	0.5-
1995 10 01	691	0.1+	0.6-	1998 05 01	704	(2.3-	0.3+)	1999 09 14	704	0.5-	0.5+
1995 10 15	691	0.3+	0.4-	1998 05 01	704	0.6-	1.3-	1999 09 14	703	0.4+	0.6+
1995 10 15	691	0.0	0.3-	1998 05 01	704	(4.4-	2.6-)	1999 09 14	703	0.2+	0.2-
1995 10 15	691	0.0	0.5-	1999 09 07	704	0.6+	0.6+	1999 09 14	703	0.6-	0.1-
1996 01 21	691	0.1-	0.1+	1999 09 07	704	0.0	0.2-	1999 09 14	691	0.4-	0.1+
1996 01 21	691	0.1-	0.4+	1999 09 07	704	1.0+	0.1-	1999 09 14	703	0.5+	0.5+

1996 01 21	691	0.1-	0.1-	1999 09 07	704	0.7+	1.6-	1999 09 14	691	0.3-	0.0
1998 04 21	704	0.0	1.1-	1999 09 09	704	0.1-	1.6-	1999 09 14	691	0.0	0.0
1998 04 21	704	(2.7-	0.4-)	1999 09 09	704	0.3-	0.1+	1999 09 18	691	0.1-	0.2+
1998 04 21	704	1.0+	1.6-	1999 09 09	704	0.5-	0.5+	1999 09 18	691	0.1-	0.2+
1998 04 22	704	0.7-	1.7-	1999 09 09	704	0.2+	0.8+	1999 09 18	691	0.1-	0.4+
1998 04 22	704	0.1-	0.9+	1999 09 09	704	0.4-	0.0				

1999 RQ₁₆₅ = 1995 TO₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams							
<i>M</i>	24.17452		(2000.0)	P		Q					
<i>n</i>	0.23080978	ω	104.28317		+0.68416818		+0.72924031				
<i>a</i>	2.6320850	Ω	208.89671		-0.67766038		+0.63002030				
<i>e</i>	0.0650202	<i>i</i>	1.31231		-0.26961141		+0.26698876				
<i>P</i>	4.27	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	1				

Residuals in seconds of arc

1995 10 15	691	0.2-	0.3-	1998 04 21	704	(4.8-	2.0+)	1999 09 09	704	0.8+	1.2-
1995 10 15	691	0.1-	0.4-	1998 05 01	704	0.2+	0.6+	1999 09 14	704	1.1+	1.0-
1995 10 15	691	0.2-	0.3-	1998 05 01	704	0.8+	0.0	1999 09 14	704	1.7+	1.3-
1995 10 21	691	0.5+	0.1-	1998 05 01	704	1.2+	0.7-	1999 09 14	704	0.4-	0.8-
1995 10 21	691	0.3+	0.4-	1998 05 01	704	0.9-	1.3-	1999 09 14	704	0.2-	0.6-
1995 10 21	691	0.4+	0.3-	1999 09 07	704	0.1+	1.1+	1999 09 14	691	0.5-	0.0
1996 12 15	691	0.2-	0.1-	1999 09 07	704	0.3+	1.6+	1999 09 14	691	0.4-	0.1-
1996 12 15	691	0.2+	0.7-	1999 09 07	704	0.6-	0.6+	1999 09 14	691	0.4-	0.1-
1996 12 15	691	0.3-	0.5-	1999 09 07	704	0.7-	0.4+	1999 09 18	691	0.4-	0.3+
1998 04 21	704	0.9-	0.1-	1999 09 09	704	0.1-	0.7+	1999 09 18	691	0.3-	0.1-
1998 04 21	704	(2.7+	1.8+)	1999 09 09	704	0.5+	0.8-	1999 09 18	691	0.2-	0.1-
1998 04 21	704	1.0-	1.1-	1999 09 09	704	0.1+	0.7+				

1999 RT₁₆₅ = 1993 OT₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams							
<i>M</i>	271.60312		(2000.0)	P		Q					
<i>n</i>	0.18398430	ω	105.65145		+0.17411577		-0.98464124				
<i>a</i>	3.0616030	Ω	334.31066		+0.89172680		+0.16319773				
<i>e</i>	0.0816197	<i>i</i>	1.69967		+0.41774036		+0.06203323				
<i>P</i>	5.36	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	5				

Residuals in seconds of arc

1993 07 13	809	0.6+	0.2+	1999 09 07	704	0.7+	0.4-	1999 09 14	704	0.3-	0.5+
1993 07 13	809	0.8+	0.1+	1999 09 07	704	0.3+	0.9-	1999 09 14	704	0.8+	0.8+
1993 07 13	809	0.3-	0.5+	1999 09 07	704	0.8-	0.6-	1999 09 14	704	(2.4+	1.4-)
1993 07 20	809	0.2-	0.0	1999 09 07	704	1.1-	1.1-	1999 09 14	704	0.2-	0.3+
1993 07 20	809	0.2-	0.2-	1999 09 07	704	0.1+	0.3-	1999 09 14	704	0.2-	0.4-
1993 07 20	809	0.2-	0.1-	1999 09 09	704	0.6+	0.3-	1999 09 14	703	0.3+	0.2+
1993 07 24	809	0.4-	0.7-	1999 09 09	704	0.4+	0.3-	1999 09 14	703	0.1-	0.0
1999 08 12	699	0.8-	0.7+	1999 09 09	704	0.6+	0.4+	1999 09 14	703	0.1+	0.4+
1999 08 12	699	0.4-	0.2+	1999 09 09	704	0.1-	0.5-	1999 09 14	703	0.3+	0.0
1999 08 12	699	0.4-	0.8+	1999 09 09	704	0.2-	0.3-	1999 09 17	691	0.6-	0.3-
1999 09 04	691	0.1+	0.0	1999 09 11	699	0.4-	0.2+	1999 09 17	691	0.6-	0.2-
1999 09 04	691	0.3+	0.0	1999 09 11	699	0.5+	1.3+	1999 09 17	691	0.5-	0.2-
1999 09 04	691	0.4+	0.0	1999 09 11	699	1.1+	0.0				

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1998 03 22	704	(0.2− 2.5+)	1999 09 07	704	0.0	0.6−	1999 09 14	704	0.4+	0.0
1998 03 22	704	0.8− 0.1−	1999 09 09	704	0.3−	0.6+	1999 09 14	704	0.3−	0.3+
1998 03 22	704	0.4− 0.8+	1999 09 09	704	0.6−	0.4+	1999 09 14	704	0.0	0.1+
1998 03 22	704	1.0+ 1.0+	1999 09 09	704	0.1−	0.1−	1999 09 14	704	0.3−	0.2+
1998 03 22	704	1.0+ 0.3−	1999 09 09	704	0.3−	1.0+	1999 09 14	704	0.5+	0.2+

**1999 RO₁₉₃ = 1955 SG = 1977 RQ₄ = 1982 YD = 1986 TH₁₁
= 1990 SR₁₈ = 1990 SJ₂₆**

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5										
<i>M</i>	329.25295		(2000.0)		P			Q		Williams
<i>n</i>	0.22385452	<i>ω</i>	39.47783		+0.83909993			−0.54335522		
<i>a</i>	2.6863265	<i>Ω</i>	353.28044		+0.42574189			+0.68572816		
<i>e</i>	0.1748640	<i>i</i>	12.84252		+0.33860767			+0.48429535		
<i>P</i>	4.40	<i>H</i>	12.4		<i>G</i>	0.15		<i>U</i>	2	
Residuals in seconds of arc										
1955 09 16	760	(30.4− 9.6+)	X	1999 09 07	704	0.2+	0.3+	1999 09 19	848	0.0 0.3+
1977 09 09	095	0.6− 3.3+		1999 09 07	704	0.0	0.2+	1999 09 19	848	0.1− 0.3+
1982 12 20	688	0.9− 0.0		1999 09 07	704	0.1−	0.2+	1999 09 20	848	0.2− 0.1+
1982 12 20	688	1.3+ 0.4−		1999 09 07	704	0.6−	0.5+	1999 09 20	848	0.1− 0.2−
1986 10 03	095	1.0− 2.8−		1999 09 08	699	0.1+	0.1+	1999 09 20	848	0.1− 0.0
1990 09 16	675	0.2+ 2.1−		1999 09 08	699	0.3+	0.0	1999 09 22	848	0.1− 0.6+
1990 09 16	675	0.5+ 1.8−		1999 09 08	699	0.3+	0.2+	1999 09 22	848	0.2+ 0.1−
1990 09 21	095	(15.1− 3.2+)		1999 09 14	678	0.2+	1.0−	1999 09 27	678	0.3− 0.3+
1999 08 22	699	0.5− 0.2−		1999 09 14	678	0.2−	0.2+	1999 09 27	678	0.1+ 0.5+
1999 08 22	699	0.0 0.1−		1999 09 18	678	0.8−	0.2−	1999 09 27	678	0.9+ 0.2+
1999 08 22	699	0.3− 0.4−		1999 09 18	678	0.4−	0.1−	1999 09 27	678	0.7+ 0.0
1999 09 07	704	0.2+ 0.0		1999 09 19	848	0.2+	0.0	1999 09 27	678	0.2+ 0.5+

2013 P-L = 1999 RU₁₁₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5										
<i>M</i>	359.44762		(2000.0)		P			Q		Williams
<i>n</i>	0.30210844	<i>ω</i>	346.03557		+0.76879333			+0.63874955		
<i>a</i>	2.1996866	<i>Ω</i>	334.18633		−0.57970135			+0.67568070		
<i>e</i>	0.2252102	<i>i</i>	4.07140		−0.27000586			+0.36804157		
<i>P</i>	3.26	<i>H</i>	15.8		<i>G</i>	0.15		<i>U</i>	3	
Residuals in seconds of arc										
1960 09 24	675	0.2− 0.3−		1999 07 20	699	0.4+	0.2−	1999 09 09	704	0.1+ 0.4−
1960 09 26	675	0.0 0.8−		1999 07 20	699	0.3+	0.1−	1999 09 09	704	0.2− 0.5−
1960 09 28	675	0.1− 0.1−		1999 07 20	699	0.1+	0.1−	1999 09 09	704	0.6− 0.3+
1960 09 29	675	0.4+ 0.4−		1999 09 06	699	0.0	0.5+	1999 09 09	704	0.5− 0.4−
1960 10 17	675	0.2− 1.4+		1999 09 06	699	0.3−	0.0	1999 09 09	704	0.7− 0.5+
1960 10 22	675	0.6− 0.2−		1999 09 06	699	(3.4+ 0.7−)		1999 09 13	704	0.9+ 0.8−
1960 10 25	675	0.5+ 1.0−		1999 09 07	704	0.4−	0.5−	1999 09 13	704	0.1+ 0.0
1960 10 26	675	0.6+ 0.4+		1999 09 07	704	0.2−	0.2−	1999 09 13	704	2.0+ 0.6+
1998 01 08	910	0.3+ 0.6+		1999 09 07	704	0.0	0.3+	1999 09 13	704	0.8− 1.3+
1998 01 08	910	0.6+ 0.7+		1999 09 07	704	0.0	1.1+			
1998 01 08	910	0.3+ 0.9+		1999 09 07	704	0.9−	0.7+			

2033 P-L = 1999 RW₁₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5										
<i>M</i>	245.26149		(2000.0)		P			Q		Williams
<i>n</i>	0.12320861	<i>ω</i>	231.96319		−0.10272611			−0.99378412		
<i>a</i>	3.9998344	<i>Ω</i>	223.99315		+0.93088711			−0.08084561		
<i>e</i>	0.1616886	<i>i</i>	3.54117		+0.35056602			−0.07653180		
<i>P</i>	8.00	<i>H</i>	12.2		<i>G</i>	0.15		<i>U</i>	4	
Residuals in seconds of arc										
1960 09 24	675	0.9− 0.1+		1999 07 13	704	0.5−	0.3−	1999 09 09	704	0.3− 0.1+
1960 09 26	675	0.1+ 1.1+		1999 07 13	704	0.0	0.7+	1999 09 09	704	0.3+ 0.7+
1960 09 28	675	0.6+ 1.4−		1999 07 13	704	0.1−	0.9−	1999 09 09	704	0.7− 0.6−
1960 09 29	675	0.7+ 0.1−		1999 08 12	699	0.4−	0.4−	1999 09 09	704	0.6+ 0.1−
1960 10 17	675	1.1− 0.4−		1999 08 12	699	(0.7− 2.5+)		1999 09 13	704	0.2− 0.3−
1960 10 22	675	0.2− 0.5+		1999 08 12	699	0.0	0.2+	1999 09 13	704	0.4− 0.1−

1960 10 25	675	0.7+ 0.1+	1999 09 07	704	0.4−	0.6+	1999 09 13	704	0.2−	0.0
1960 10 26	675	0.2+ 0.2−	1999 09 07	704	0.1+ 0.2+		1999 09 13	704	0.5+ 1.1+	
1999 07 13	704	1.2+ 1.7−	1999 09 07	704	0.4+ 0.9+					
1999 07 13	704	0.4+ 0.1−	1999 09 07	704	0.2− 0.1−					

2047 P-L = 1999 RQ₅₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5										
<i>M</i>	0.75347		(2000.0)		P			Q		Williams
<i>n</i>	0.30151483	<i>ω</i>	315.58479		+0.76958432			+0.63847300		
<i>a</i>	2.2025728	<i>Ω</i>	4.76676		−0.54896983			+0.66923248		
<i>e</i>	0.0971063	<i>i</i>	6.63524		−0.32614736			+0.38010540		
<i>P</i>	3.27	<i>H</i>	15.7		<i>G</i>	0.15		<i>U</i>	4	
Residuals in seconds of arc										
1960 09 24	675	0.7+ 0.3+		1960 10 26	675	0.4−	0.3+	1999 09 07	704	0.4+ 1.1−
1960 09 26	675	(0.4− 4.6−)		1996 10 10	691	0.1−	0.1−	1999 09 11	704	0.3− 0.3+
1960 09 28	675	0.5+ 0.3−		1996 10 10	691	0.1+ 0.0		1999 09 11	704	0.0 0.5+
1960 09 29	675	0.2+ 1.0−		1996 10 10	691	0.0 0.0		1999 09 11	704	0.1+ 0.9+
1960 10 17	675	0.4+ 0.0		1999 09 07	704	0.0 0.6+		1999 09 11	704	0.4− 0.1−
1960 10 22	675	0.2− 0.6+		1999 09 07	704	0.3− 0.5−		1999 09 11	704	0.0 1.0+
1960 10 25	675	1.2− 0.3−		1999 09 07	704	0.4+ 1.1−				

2071 P-L = 1999 RX₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5										
<i>M</i>	18.09263		(2000.0)		P			Q		Williams
<i>n</i>	0.22680358	<i>ω</i>	106.57475		+0.81409667			+0.58027428		
<i>a</i>	2.6629894	<i>Ω</i>	217.96404		−0.54604045			+0.75139279		
<i>e</i>	0.1003270	<i>i</i>	2.14142		−0.19770290			+0.31415065		
<i>P</i>	4.35	<i>H</i>	15.3		<i>G</i>	0.15		<i>U</i>	6	
Residuals in seconds of arc										
1960 09 24	675	0.0 0.4−		1999 09 08	704	0.5+ 0.3+		1999 09 09	704	0.1− 0.8−
1960 09 26	675	0.2+ 1.1+		1999 09 08	704	0.2+ 0.2+		1999 09 09	704	0.2+ 0.5+
1960 09 28	675	0.2− 0.5+		1999 09 08	704	0.1+ 0.4+		1999 09 09	704	0.3+ 0.3−
1960 09 29	675	0.2+ 0.6−		1999 09 08	704	0.1+ 0.5+		1999 09 09	704	0.0 0.1+
1960 10 17	675	0.6− 0.2+		1999 09 08	704	0.0 0.0		1999 09 09	704	0.3+ 0.1−
1960 10 22	675	0.6+ 0.4+		1999 09 08	704	0.2+ 0.1−		1999 09 09	704	0.7+ 0.1+
1960 10 26	675	0.3− 1.0−		1999 09 08	704	0.2+ 0.1+		1999 09 09	704	1.0− 0.9−
1999 09 07	704	0.1+ 0.4−		1999 09 09	704	0.3− 1.3−		1999 09 09	704	1.0− 0.3+
1999 09 07	704	0.3− 0.2+		1999 09 09	704	0.2+ 0.5+		1999 09 09	704	0.3− 0.2+
1999 09 07	704	0.1+ 0.1−		1999 09 09	704	0.2+ 0.3+		1999 09 09	704	0.4− 0.2−
1999 09 07	704	0.8+ 1.1−		1999 09 09	704	0.7− 0.8+		1999 09 09	704	0.7+ 0.7+
1999 09 07	704	0.1− 0.5−		1999 09 09	704	0.8+ 0.0		1999 09 09	704	0.2− 0.2+
1999 09 07	704	0.2− 0.1−		1999 09 09	704	0.5− 0.3−		1999 09 09	704	0.0 0.3+
1999 09 07	704	0.1− 0.2+		1999 09 09	704	0.0 0.1−		1999 09 16	120	0.4+ 0.3−
1999 09 07	704	0.5− 0.3+		1999 09 09	704	0.6+ 0.1−		1999 09 16	120	0.4+ 0.5−
1999 09 08	704	0.9− 0.1−		1999 09 09	704	0.6− 0.8+				

2554 P-L = 1999 RP₁₀

Id. G. V. Williams, E. Bowell										
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5										
<i>M</i>	300.42496		(2000.0)		P			Q		Williams
<i>n</i>	0.12465972	<i>ω</i>	359.71387		+0.63728340			−0.76914869		
<i>a</i>	3.9687335	<i>Ω</i>	50.69603		+0.70716129			+0.55904867		
<i>e</i>	0.2420650	<i>i</i>	3.53798		+0.30625606			+0.30963669		
<i>P</i>	7.91	<i>H</i>	12.4		<i>G</i>	0.15		<i>U</i>	4	
Residuals in seconds of arc										
1960 09 24	675	0.2+	0.6−	1960 10 26	675	0.7+	1999 09 08	704	0.4+	0.2−
1960 09 26	675	0.0	0.4+	1999 09 07	704	0.4+	1999 09 08	704	0.3−	0.0
1960 09 28	675	0.1−	1.0+	1999 09 07	704	0.4+	1999 09 09	704	0.3+	1.7−
1960 09 29	675	0.0	0.1+	1999 09 07	704	0.6+	1999 09 09	704	0.1−	0.1+
1960 10 17	675	0.6−	1.0−	1999 09 07	704	0.0	1999 09 09	704	1.0−	0.2+
1960 10 22	675	0.4−	0.1−	1999 09 07	704	0.1+	1999 09 09	704	1.3−	1.0+
1960 10 25	675	0.3+	0.1+	1999 09 08	704	0.6+				

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2617 P-L = 1999 RW₇₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	318.89663		(2000.0)		P	Q	
n	0.27740673	ω	240.30317		+0.81275814	-0.58240266	
a	2.3284025	Ω	155.30687		+0.54631848	+0.75281282	
e	0.1999176	i	2.08654		+0.20238657	+0.30672464	
P	3.55	H	16.9	G	0.15	U	4

Residuals in seconds of arc

1960 09 24	675	0.4+	0.2+	1992 09 30	691	0.1-	0.6-	1999 09 07	704	0.6-	1.2+
1960 09 26	675	0.0	0.0	1992 09 30	691	0.0	0.2-	1999 09 07	704	0.6-	1.2+
1960 09 28	675	0.2-	0.4+	1992 09 30	691	0.4+	0.1+	1999 09 14	704	0.5-	0.2-
1960 09 29	675	0.6+	1.4-	1999 09 03	691	0.2-	0.7-	1999 09 14	704	0.2-	0.0
1960 10 17	675	0.9+	0.8+	1999 09 03	691	0.3+	0.4-	1999 09 14	704	0.5+	0.9-
1960 10 22	675	1.5-	0.2+	1999 09 03	691	0.2+	0.3-	1999 09 14	704	0.7+	0.4-
1960 10 25	675	0.2+	0.4+	1999 09 07	704	0.2+	0.5+				
1960 10 26	675	0.6-	0.1-	1999 09 07	704	0.0	0.3+				

2737 P-L = 1999 RY₁₆₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	352.29521		(2000.0)	P	Q
n	0.25237716	ω	300.49611	+0.99604787	+0.07027990
a	2.4799105	Ω	55.52603	-0.04009521	+0.90140102
e	0.1079631	i	3.77723	-0.07925290	+0.42724342
P	3.91	H	16.2	G 0.15	U 5

Residuals in seconds of arc

1960 09 24	675	1.2-	0.9-	1999 08 22	703	0.6+	0.2+	1999 09 14	704	0.1-	0.1-
1960 09 26	675	1.3+	1.5-	1999 08 22	703	0.2-	0.9+	1999 09 14	704	0.3+	0.0
1960 09 28	675	0.6+	0.3-	1999 08 22	703	0.3+	0.1+	1999 09 14	704	0.3-	0.0
1960 09 29	675	0.7+	1.4-	1999 08 22	703	0.3+	0.2+	1999 09 14	704	0.5-	0.8-
1960 10 17	675	0.2+	0.3+	1999 09 09	704	0.1+	0.9-	1999 09 14	703	0.5-	1.3+
1960 10 22	675	0.2-	0.5+	1999 09 09	704	0.3+	0.4+	1999 09 14	703	0.2+	0.6+
1960 10 25	675	0.1+	1.2+	1999 09 09	704	0.9-	0.1-	1999 09 14	703	0.0	0.8+
1960 10 26	675	1.0-	0.8+	1999 09 14	704	0.3+	0.0	1999 09 14	703	0.6-	0.9-

2861 P-L = 1998 SZ₄₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Doppler

M	351.36129		(2000.0)	P	Q
n	0.18217719	ω	298.54702	-0.34950873	-0.93693221
a	3.0818160	Ω	171.90993	+0.86280376	-0.32239461
e	0.1481321	i	0.52743	+0.36525788	-0.13498055
P	5.41	H	15.1	G 0.15	U 6

Residuals in seconds of arc

1960 09 24	675	1.1-	0.2+	1960 09 29	675	0.1+	1.2+	1998 10 12	691	0.3+	0.0
1960 09 24	675	0.3+	0.0	1998 09 25	691	0.2+	0.3-	1998 10 12	691	0.4+	0.2-
1960 09 26	675	0.0	0.2-	1998 09 25	691	0.2+	0.6-	1998 10 12	691	0.3+	0.1-
1960 09 26	675	0.6+	0.2+	1998 09 25	691	0.1+	0.3-	1998 10 13	691	0.6+	0.6+
1960 09 28	675	0.1-	0.8-	1998 09 30	691	0.1-	0.5-	1998 10 13	691	0.2-	0.6+
1960 09 28	675	0.8-	0.6-	1998 09 30	691	0.1-	0.3-	1998 10 13	691	0.3-	1.0+
1960 09 29	675	0.7+	0.1+	1998 09 30	691	0.1-	0.2-				

3065 P-L = 1999 JL₄₃

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	318.53882		(2000.0)	P	Q
n	0.22194748	ω	44.65110	+0.59234921	+0.79986412
a	2.7016924	Ω	261.90946	-0.76380200	+0.51933440
e	0.1280345	i	5.60181	-0.25637653	+0.30084743
P	4.44	H	14.7	G 0.15	U 3

Residuals in seconds of arc

1960 09 24	675	0.9+	0.2+	1997 02 04	691	1.2-	0.5+	1999 05 13	704	0.1-	1.7+
1960 09 25	675	1.4+	0.7+	1997 02 04	691	0.3+	0.4+	1999 05 18	704	1.0+	0.5+
1960 09 26	675	0.9+	0.2+	1997 02 04	691	0.4+	0.4+	1999 05 18	704	1.8-	0.3+
1960 09 27	675	2.1-	0.3-	1999 05 10	704	0.0	0.9+	1999 05 18	704	0.1+	0.1+
1960 09 28	675	0.4-	0.6-	1999 05 10	704	0.5-	1.9-	1999 05 18	704	1.0-	0.0
1960 09 29	675	1.0-	0.2+	1999 05 10	704	0.0	0.5-	1999 05 18	704	1.0-	0.5-
1996 12 31	691	0.2+	0.2+	1999 05 10	704	0.3+	0.4-	1999 05 18	699	0.5+	0.5-
1996 12 31	691	0.0	0.1-	1999 05 13	704	0.3+	0.0	1999 05 18	699	0.0	0.3-
1996 12 31	691	0.1-	0.1+	1999 05 13	704	1.8+	1.8+	1999 05 18	699	0.5+	0.1+

4527 P-L = 1999 GF₁₈

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	12.90082		(2000.0)	P	Q		
n	0.27043545	ω	148.00527	-0.77451776	+0.63036119		
a	2.3682468	Ω	71.16314	-0.59143982	-0.69217914		
e	0.1672663	i	3.18609	-0.22432385	-0.35147235		
P	3.64	H	15.4	G	0.15	U	4

Residuals in seconds of arc

1960 09 24	675	0.6-	1.0-	1993 10 20	809	1.7+	1.3+	1999 04 16	704	1.0+	0.1+
1960 09 24	675	0.5-	1.0+	1999 04 12	704	0.6+	0.4-	1999 04 16	704	0.9-	1.1-
1960 09 26	675	0.1+	0.6+	1999 04 12	704	0.4+	0.1+	1999 04 16	704	(1.6+	2.2-)
1960 09 28	675	0.4+	0.9-	1999 04 12	704	0.4-	0.3-	1999 04 16	704	0.5-	0.4-
1960 09 28	675	0.6+	0.2+	1999 04 12	704	0.3+	0.1+	1999 04 17	703	1.2+	0.5-
1993 10 09	809	0.7-	0.5-	1999 04 12	704	0.3-	0.4+	1999 04 17	703	0.7+	0.1-
1993 10 09	809	0.7-	0.8-	1999 04 15	704	1.2-	0.4-	1999 04 17	703	0.1-	0.4+
1993 10 09	809	0.6-	0.6-	1999 04 15	704	1.1-	0.8+	1999 04 17	703	0.2-	1.0+
1993 10 20	809	0.4-	0.6+	1999 04 15	704	0.4+	0.9-				
1993 10 20	809	0.7+	0.0	1999 04 16	704	0.1+	0.8+				

4893 P-L = 1999 RP₈₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	266.08217		(2000.0)	P	Q		
n	0.20170621	ω	61.89199	+0.04640803	-0.99877614		
a	2.8795406	Ω	25.46529	+0.90197109	+0.03453944		
e	0.0282129	i	2.27975	+0.42929528	+0.03540139		
P	4.89	H	14.5	G	0.15	U	6

Residuals in seconds of arc

1960 09 24	675	0.2-	0.4-	1999 08 22	703	0.6+	1.8+	1999 09 07	704	0.9+	0.7-
1960 09 26	675	0.5-	0.0	1999 08 22	703	1.4-	0.6-	1999 09 07	704	0.3+	1.5-
1960 09 27	675	0.3+	0.4+	1999 08 22	703	1.8-	1.0+	1999 09 14	704	0.4-	0.2+
1960 09 28	675	0.7-	0.5-	1999 08 22	703	0.5+	1.3+	1999 09 14	704	0.2-	0.4-
1960 10 17	675	0.1+	0.6+	1999 09 07	704	0.1+	0.1-	1999 09 14	704	1.2+	1.7-
1960 10 17	675	0.5+	0.9+	1999 09 07	704	0.5+	0.3-				

5021 P-L = 1999 JB₆₅

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	316.17467		(2000.0)	P	Q
n	0.27229304	ω	90.41160	+0.51441444	+0.85305486
a	2.3574638	Ω	211.04881	-0.83875553	+0.47924568
e	0.1708116	i	9.77965	-0.17851317	+0.20644848
P	3.62	H	14.3	G 0.15	U 3

Residuals in seconds of arc

1960 10 17	675	0.5+	0.4+	1999 04 07	704	0.3-	1.0-	1999 05 12	704	0.3-	1.0+
1960 10 22	675	0.7+	2.2-	1999 04 07	704	0.4+	0.3-	1999 05 12	704	0.5-	0.9+
1960 10 22	675	0.7-	0.5+	1999 04 07	704	0.2+	0.1-	1999 05 12	704	0.7-	0.1+
1960 10 24	675	1.2-	0.6-	1999 04 15	704	0.6+	0.1-	1999 05 13	704	0.6-	0.1-
1960 10 25	675	1.1+	0.3-	1999 04 15	704	1.1+	0.3+	1999 05 13	704	0.5+	0.7-
1960 10 26	675	0.3+	0.7-	1999 04 15	704	1.6+	0.0	1999 05 13	704	0.8-	0.2+
1996 11 27	327	0.5-	1.1+	1999 04 15	704	(5.2+	0.8-)	1999 05 13	704	0.9-	1.0-

1996 11 27	327	0.2−	0.9+	1999 04 18	704	0.6+	0.7−	1999 05 13	704	0.5+	0.6−
1996 11 27	327	0.0	0.8+	1999 04 18	704	0.6−	1.0+	1999 05 17	703	0.5+	0.6−
1999 03 25	704	0.1+	0.9−	1999 04 18	704	1.1+	1.4+	1999 05 17	703	0.2+	0.4−
1999 03 25	704	0.0	0.2+	1999 04 18	704	0.4−	1.5−	1999 05 17	703	0.1+	0.1+
1999 03 25	704	(0.0	2.2+)	1999 04 18	704	1.6−	1.6+	1999 05 17	703	0.5+	0.2+
1999 03 25	704	(7.4−	2.9+)	1999 05 12	704	1.2−	0.0				
1999 04 07	704	0.1−	0.3+	1999 05 12	704	0.4−	0.6−				

6020 P-L = 1994 NL₁₁ = 1996 TT₆₈Id. G. V. Williams (*MPC* 26415), M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	157.02723		(2000.0)	P	Q
<i>n</i>	0.08200314	ω	92.64711	+0.20986319	+0.97772284
<i>a</i>	5.2470565	Ω	189.46998	−0.90628484	+0.19301620
<i>e</i>	0.0972931	<i>i</i>	1.37029	−0.36688585	+0.08247899
<i>P</i>	12.02	<i>H</i>	11.6	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1960 09 24	675	0.3−	0.3+	1960 10 22	675	0.2+	0.4+	1994 07 09	809	1.6+	0.2+
1960 09 25	675	0.1+	0.4+	1994 07 08	809	1.2−	0.2−	1994 07 09	809	0.2+	0.1−
1960 09 26	675	0.1−	0.0	1994 07 08	809	0.9−	0.4−	1996 10 08	809	2.3−	1.1−
1960 09 28	675	0.0	0.0	1994 07 08	809	1.2−	0.4+	1996 10 10	809	0.5+	0.1+
1960 10 17	675	0.1−	0.5−	1994 07 09	809	1.6+	0.1+	1996 10 11	809	2.1+	0.3+

6082 P-L = 1976 UB₅ = 1999 RS₁₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	262.56209		(2000.0)	P	Q
<i>n</i>	0.25111033	ω	212.63642	+0.28623617	−0.95734000
<i>a</i>	2.4882442	Ω	220.76960	+0.89159372	+0.28126265
<i>e</i>	0.0918698	<i>i</i>	3.47754	+0.35089813	+0.06626803
<i>P</i>	3.92	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1960 09 24	675	0.6−	0.9−	1998 05 01	704	0.7−	0.9−	1999 09 06	699	0.5−	1.3+
1960 09 25	675	0.8+	0.2+	1998 05 01	704	0.9+	1.3−	1999 09 07	704	0.5−	0.9−
1960 09 26	675	0.0	0.5−	1998 05 01	704	1.4−	0.3+	1999 09 07	704	0.5−	0.6−
1960 09 28	675	0.2−	0.9−	1998 05 22	704	0.4−	0.7−	1999 09 07	704	0.2−	0.7−
1960 10 17	675	0.1+	1.0−	1998 05 22	704	0.4+	0.9+	1999 09 07	704	0.5−	0.1−
1960 10 22	675	1.0+	0.4+	1998 05 22	704	(0.9+	3.7+)	1999 09 07	704	0.1−	0.0
1960 10 22	675	0.8−	0.6−	1998 05 22	704	1.7+	1.1+	1999 09 09	704	0.4+	1.0−
1960 10 24	675	0.5+	0.5+	1998 05 24	704	0.3−	0.6+	1999 09 09	704	0.4+	0.8+
1960 10 26	675	0.3+	0.0	1998 05 24	704	0.4+	0.5−	1999 09 09	704	0.1−	0.1+
1976 10 30	095	0.1+	0.5−	1998 05 24	704	(2.7+	1.0+)	1999 09 09	704	0.8+	0.2−
1998 04 22	704	0.4−	0.5+	1998 05 24	704	0.5−	1.6−	1999 09 09	704	0.8−	0.1−
1998 04 22	704	0.1+	0.4−	1999 08 12	699	0.4+	0.1+	1999 09 13	704	0.1−	0.2−
1998 04 22	704	0.6+	0.6−	1999 08 12	699	0.2+	0.1+	1999 09 13	704	0.3−	0.4−
1998 04 22	704	(6.0−	1.4−)	1999 08 12	699	0.7+	1.4+	1999 09 13	704	0.1−	0.3−
1998 05 01	704	0.4−	0.1−	1999 09 06	699	0.6+	0.9+	1999 09 13	704	0.1−	0.1−
1998 05 01	704	0.5−	0.1+	1999 09 06	699	0.2+	1.9+	1999 09 13	704	0.6−	0.2−

6326 P-L = 1999 RH₈₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	286.74390		(2000.0)	P	Q
<i>n</i>	0.17673155	ω	203.05136	+0.17839690	−0.98381859
<i>a</i>	3.1448021	Ω	236.67600	+0.90583019	+0.17079613
<i>e</i>	0.1231104	<i>i</i>	1.13826	+0.38424760	+0.05412628
<i>P</i>	5.58	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1960 09 24	675	0.3+	0.1+	1960 09 28	675	0.6−	0.0	1999 09 07	704	0.3+	0.4+
1960 09 24	675	0.7−	0.5+	1960 10 17	675	0.2−	0.2+	1999 09 07	704	0.2−	0.7+
1960 09 25	675	0.0	0.5+	1960 10 22	675	0.3+	0.3−	1999 09 09	704	0.5+	0.6+
1960 09 25	675	0.1+	0.4−	1960 10 24	675	0.1−	0.0	1999 09 09	704	0.0	0.1−
1960 09 26	675	0.1+	0.2+	1999 09 07	704	0.1−	0.3−	1999 09 09	704	0.1−	1.3−

1960 09 26	675	0.5+	0.7−	1999 09 07	704	0.2+	0.4+	1999 09 09	704	0.2−	1.1−
1960 09 28	675	0.2+	0.1+	1999 09 07	704	0.3+	0.8+	1999 09 09	704	0.5−	0.3−

6589 P-L = 1999 RG₁₉₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	284.19574		(2000.0)	P	Q
<i>n</i>	0.20113175	ω	61.32737	+0.35048453	−0.93624245
<i>a</i>	2.8850209	Ω	8.27041	+0.78812842	+0.28057777
<i>e</i>	0.2157618	<i>i</i>	9.89206	+0.50597844	+0.21148565
<i>P</i>	4.90	<i>H</i>	13.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1960 09 24	675	0.4−	0.6−	1960 10 24	675	0.4+	0.1−	1999 09 14	704	0.0	0.4+
1960 09 26	675	0.3−	0.7−	1960 10 26	675	0.0	0.5+	1999 09 14	704	0.8+	1.5+
1960 09 27	675	0.3+	1.0+	1999 09 13	704	0.4+	0.2−	1999 09 14	704	0.9−	0.5+
1960 09 28	675	0.6+	0.5+	1999 09 13	704	0.5−	0.5−	1999 09 14	704	0.8−	0.5+
1960 10 17	675	0.5−	0.2+	1999 09 13	704	0.1+	1.2−				
1960 10 22	675	0.2−	0.9−	1999 09 13	704	0.9+	1.0−				

6688 P-L = 1999 RW₁₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	350.51894		(2000.0)	P	Q
<i>n</i>	0.17724181	ω	345.08419	+0.97403074	+0.22639694
<i>a</i>	3.1387635	Ω	1.83836	−0.19728503	+0.85497571
<i>e</i>	0.1857452	<i>i</i>	5.22818	−0.11109788	+0.46664864
<i>P</i>	5.56	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1960 09 24	675	0.2−	0.1+	1999 09 07	704	0.3−	0.1+	1999 09 09	704	0.0	0.1+
1960 09 26	675	0.1−	0.1+	1999 09 07	704	0.0	0.7+	1999 09 13	704	1.2+	0.5−
1960 09 27	675	0.0	0.1+	1999 09 07	704	0.2−	0.1+	1999 09 13	704	0.4−	0.7+
1960 09 28	675	0.7+	1.0−	1999 09 07	704	0.7−	0.2−	1999 09 13	704	0.1−	0.8+
1960 10 17	675	0.3+	0.8+	1999 09 09	704	0.3−	0.2−	1999 09 13	704	0.8−	0.3+
1960 10 22	675	0.1−	0.2−	1999 09 09	704	0.7−	0.6−	1999 09 13	704	0.2+	0.1−
1960 10 26	675	0.6−	0.1−	1999 09 09	704	1.1+	1.3−				
1999 09 07	704	0.3−	0.1−	1999 09 09	704	1.2+	0.1+				

1177 T-1 = 1978 WT₆ = 1999 GD₈

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	322.82640		(2000.0)	P	Q
<i>n</i>	0.21208456	ω	15.32858	−0.07803403	+0.99648866
<i>a</i>	2.7848171	Ω	250.20329	−0.91804264	−0.08369393
<i>e</i>	0.0526192	<i>i</i>	1.84838	−0.38872664	−0.00238068
<i>P</i>	4.65	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1971 03 24	675	2.3+	0.1−	1978 11 30	675	0.6−	0.2+	1999 04 15	704	1.2−	0.1+
1971 03 25	675	0.6−	0.1−	1999 04 09	699	1.0+	0.2−	1999 04 15	704	0.1−	0.8−
1971 03 25	675	0.7−	0.5+	1999 04 09	699	0.1+	0.2−	1999 04 15	704	0.5+	0.2+
1971 03 26	675	0.6−	0.1−	1999 04 09	699	0.4+	0.2−	1999 04 15	704	0.5−	1.7+
1971 03 27	675	1.0−	1.7−	1999 04 11	699	0.2+	0.1−	1999 04 15	704	1.7−	0.9+
1971 04 02	675	0.1−	0.1−	1999 04 11	699	1.7+	0.0				
1978 11 29	675	0.6+	0.3+	1999 04 11	699	0.3+	0.4+				

1276 T-1 = 1999 RR₅₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	50.31972		(2000.0)	P	Q
<i>n</i>	0.28828009	ω	37.81251	−0.19220427	+0.98076041
<i>a</i>	2.2694796	Ω	221.13779	−0.91256280	−0.19142378
<i>e</i>	0.1516369	<i>i</i>	2.97596	−0.36095242	−0.03828790
<i>P</i>	3.42	<i>H</i>	15.7	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1971 03 24	675	1.0+	0.7-	1971 05 13	675	0.7-	0.1+	1999 09 06	699	0.2-	1.8+
1971 03 24	675	0.8+	0.4+	1971 05 14	675	0.6-	0.5+	1999 09 07	704	0.3-	0.5+
1971 03 25	675	0.3-	0.0	1996 11 06	691	0.2+	0.5-	1999 09 07	704	0.3+	0.0
1971 03 25	675	0.3-	0.5+	1996 11 06	691	0.3+	1.1-	1999 09 07	704	0.1+	0.4-
1971 03 25	675	0.1-	1.6-	1996 11 06	691	0.4+	1.2-	1999 09 07	704	0.0	0.0
1971 03 26	675	0.4-	0.9+	1999 08 07	699	0.9-	0.1+	1999 09 07	704	0.5-	0.0
1971 03 27	675	2.0+	0.9-	1999 08 07	699	0.3-	0.7-	1999 09 09	704	0.6-	0.4-
1971 04 02	675	0.9-	0.2-	1999 08 07	699	0.1-	0.3+	1999 09 09	704	0.1+	1.2-
1971 04 16	675	1.5-	2.1-	1999 09 06	699	0.9+	1.1+	1999 09 09	704	0.4+	0.6-
1971 04 16	675	0.7-	0.3-	1999 09 06	699	1.1+	1.2-	1999 09 09	704	0.6+	0.8-

3195 T-1 = 1999 RB₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	280.72237		(2000.0)	P	Q
<i>n</i>	0.29572508	ω	99.93317	+0.19255068	-0.98083272
<i>a</i>	2.2312280	Ω	338.89383	+0.86470347	+0.18397982
<i>e</i>	0.1210869	<i>i</i>	4.75599	+0.46390962	+0.06417634
<i>P</i>	3.33	<i>H</i>	14.7	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1971 03 24	675	1.7+	0.5-	1999 09 07	704	0.7-	0.6-	1999 09 09	704	0.5+	0.4-
1971 03 25	675	2.2+	0.1+	1999 09 07	704	0.4-	0.1-	1999 09 09	704	0.0	0.3+
1971 03 26	675	1.2-	1.7-	1999 09 08	704	0.6-	0.6-	1999 09 09	704	0.4+	0.1+
1971 03 26	675	0.0	0.6-	1999 09 08	704	0.1-	0.3+	1999 09 09	704	0.2+	0.1-
1971 03 27	675	0.7-	0.5+	1999 09 08	704	0.1+	0.1-	1999 09 09	704	0.4+	0.2-
1971 04 02	675	0.0	0.5+	1999 09 08	704	0.4-	0.5-	1999 09 09	704	0.5+	0.3-
1971 04 16	675	2.3-	0.0	1999 09 08	704	0.3-	0.1+	1999 09 09	704	0.3+	0.2+
1971 04 16	675	0.8+	0.4+	1999 09 09	704	0.3+	0.1+	1999 09 09	704	0.5+	0.1-
1971 05 13	675	0.4-	0.9+	1999 09 09	704	0.2+	0.4+	1999 09 09	704	0.4+	0.6-
1971 05 14	675	0.6-	0.3-	1999 09 09	704	0.1+	0.5+	1999 09 09	704	0.4+	0.9-
1999 08 22	699	0.0	0.1-	1999 09 09	704	0.1-	0.0	1999 09 09	704	0.3-	0.2-
1999 08 22	699	0.1-	1.8+	1999 09 09	704	0.1+	0.1-	1999 09 16	704	0.4-	0.1+
1999 08 22	699	0.3-	0.6+	1999 09 09	704	0.3+	0.4+	1999 09 16	704	0.1-	0.3+
1999 09 07	704	0.1+	0.6-	1999 09 09	704	0.3-	0.2-	1999 09 16	704	0.6-	0.5-
1999 09 07	704	0.1-	0.0	1999 09 09	704	0.3+	0.3-				
1999 09 07	704	0.0	0.0	1999 09 09	704	0.1-	0.6+				

1043 T-2 = 1999 RH₈₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	253.45043		(2000.0)	P	Q
<i>n</i>	0.26483552	ω	163.73948	-0.34873106	-0.93678955
<i>a</i>	2.4015146	Ω	306.66157	+0.85588022	-0.30592766
<i>e</i>	0.1727676	<i>i</i>	2.03572	+0.38191059	-0.16980462
<i>P</i>	3.72	<i>H</i>	15.7	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1973 09 19	675	0.1-	0.7+	1973 09 30	675	1.5-	0.8+	1999 09 07	704	0.2+	0.4+
1973 09 19	675	0.6+	0.1-	1973 10 04	675	(4.6+	1.2+)	1999 09 07	704	0.2+	0.9-
1973 09 20	675	0.8-	0.2-	1973 10 05	675	(0.8+	4.0+)	1999 09 07	704	0.3+	0.1+
1973 09 24	675	1.0+	0.3-	1973 10 05	675	(1.4+	3.5+)	1999 09 07	704	0.2-	0.4-
1973 09 24	675	0.9+	1.5-	1997 01 03	691	0.8+	1.7-	1999 09 14	704	0.2+	0.5-
1973 09 29	675	0.2-	0.1-	1997 01 03	691	0.1-	0.1-	1999 09 14	704	0.5-	0.5-
1973 09 29	675	0.5+	0.1-	1997 01 03	691	0.8-	1.7+	1999 09 14	704	0.4+	0.5+
1973 09 30	675	0.5-	0.9+	1999 09 07	704	0.1+	0.3+	1999 09 14	704	0.6-	0.8+

1114 T-2 = 1999 RF₈₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	334.21370		(2000.0)	P	Q
<i>n</i>	0.26520556	ω	77.74631	+0.94311004	-0.33242863
<i>a</i>	2.3992801	Ω	301.66967	+0.30229351	+0.86471843
<i>e</i>	0.1942801	<i>i</i>	0.39629	+0.13842716	+0.37650132
<i>P</i>	3.72	<i>H</i>	17.1	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1973 09 19	675	0.7-	1.4-	1994 04 06	691	0.1-	0.8-	1999 09 11	621	0.2+	0.2+
1973 09 19	675	0.1-	0.2-	1994 04 06	691	0.4-	0.8-	1999 09 12	621	0.0	0.5+
1973 09 20	675	0.1+	0.0	1999 09 05	621	0.0	0.5+	1999 09 12	621	0.3-	0.2+
1973 09 24	675	0.6+	1.4-	1999 09 05	621	0.5+	0.9+	1999 09 12	621	0.7-	0.0
1973 09 24	675	0.4+	0.2+	1999 09 05	621	0.0	0.0	1999 09 16	012	0.5-	0.0
1973 09 25	675	0.8-	2.4-	1999 09 05	621	0.6+	0.6-	1999 09 16	012	0.5-	0.5+
1973 09 25	675	0.4-	0.2+	1999 09 07	704	0.3+	1.2+	1999 09 16	012	0.3-	0.3+
1973 09 29	675	0.3+	0.2-	1999 09 07	704	0.0	0.4-	1999 09 16	012	0.5-	0.5+
1973 09 29	675	0.8+	0.6-	1999 09 07	704	1.3+	0.8-	1999 09 16	012	0.5-	0.4+
1973 09 30	675	0.4-	0.4+	1999 09 07	704	0.2+	0.5+	1999 09 16	012	0.3-	0.3+
1973 09 30	675	0.1+	0.3-	1999 09 07	704	0.7-	1.7-	1999 09 16	012	0.3-	0.2+
1973 10 04	675	1.4+	1.8-	1999 09 09	704	0.6+	0.6-	1999 09 16	012	0.6-	0.0
1973 10 04	675	(3.6+	1.2-)	1999 09 09	704	0.9+	0.9+	1999 09 16	012	0.6-	0.2+
1973 10 05	675	0.0	1.1+	1999 09 09	704	0.4-	0.2-	1999 09 16	012	0.2-	0.4+
1973 10 05	675	1.1+	1.2+	1999 09 11	621	0.1-	0.3+				
1994 04 06	691	0.4-	0.6-	1999 09 11	621	0.1+	0.3+				

1405 T-2 = 1999 RR₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	266.57203		(2000.0)	P	Q
<i>n</i>	0.26444080	ω	96.72263	+0.02550746	-0.99967088
<i>a</i>	2.4039037	Ω	351.81425	+0.90941513	+0.02434227
<i>e</i>	0.1409672	<i>i</i>	1.10247	+0.41510660	+0.00809873
<i>P</i>	3.73	<i>H</i>	15.7	<i>G</i>	0.15
				<i>U</i>	6

Residuals in seconds of arc

1973 09 19	675	0.6+	0.4-	1973 09 30	675	0.2-	0.3-	1999 09 08	691	0.2-	0.1+
1973 09 19	675	1.2+	0.8-	1973 10 04	675	0.3+	1.8-	1999 09 09	704	1.6-	0.1+
1973 09 20	675	0.2+	0.3-	1973 10 04	675	1.9+	1.0+	1999 09 09	704	0.5+	0.2+
1973 09 24	675	0.2+	0.5+	1973 10 05	675	0.8-	0.3+	1999 09 09	704	0.5-	0.5-
1973 09 24	675	1.2-	1.5-	1973 10 05	675	1.4-	0.7+	1999 09 14	704	0.5-	0.8-
1973 09 25	675	0.2+	0.2-	1999 09 03	691	0.1-	0.1-	1999 09 14	704	0.9+	0.7-
1973 09 25	675	0.4-	1.2+	1999 09 03	691	0.3+	0.2+	1999 09 14	704	0.8+	0.2+
1973 09 29	675	(0.2+	3.3+)	1999 09 03	691	0.0	0.0	1999 09 14	704	0.5+	0.4+
1973 09 29	675	0.2+	0.4+	1999 09 08	691	0.3-	0.1+	1999 09 14	704	0.5+	1.1+
1973 09 30	675	0.7-	0.8+	1999 09 08	691	0.4-	0.0				

2027 T-2 = 1999 RO₁₆₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	289.02530		(2000.0)	P	Q
<i>n</i>	0.26441410	ω	109.85490	+0.31813778	-0.94785887
<i>a</i>	2.4040656	Ω	321.57866	+0.85812970	+0.29631966
<i>e</i>	0.1831630	<i>i</i>	1.72986	+0.40299103	+0.11729545
<i>P</i>	3.73	<i>H</i>	16.0	<i>G</i>	0.15
				<i>U</i>	6

Residuals in seconds of arc

1973 09 19	675	0.4+	1.1+	1973 10 04	675	0.7-	0.0	1999 09 09	704	0.0	0.0
1973 09 19	675	1.4+	0.6-	1973 10 04	675	0.2-	0.2-	1999 09 14	704	0.4-	0.5+
1973 09 20	675	0.5+	1.7-	1973 10 04	675	1.2-	1.3+	1999 09 14	704	1.1-	0.2+
1973 09 24	675	0.7-	2.0-	1973 10 04	675	0.9+	1.7-	1999 09 14	704	0.1-	0.8-
1973 09 24	675	0.6+	1.9-	1973 10 05	675	0.3+	1.5-	1999 09 14	704	0.5-	0.6+
1973 09 25	675	0.3+	0.2-	1973 10 05	675	0.7-	0.2+	1999 09 14	704	0.4+	0.2+
1973 09 25	675	2.1-	0.0	1999 09 07	704	1.0+	1.5-	1999 09 14	691	0.2-	0.4+
1973 09 29	675	1.2+	2.4+	1999 09 07	704	0.2-	0.3-	1999 09 14	691	0.1+	0.2+
1973 09 29	675	0.7+	2.1+	1999 09 07	704	0.4-	0.6+	1999 09 14	691	0.1+	0.0
1973 09 30	675	0.8-	1.0+	1999 09 07	704	0.4-	0.3+	1999 09 18	691	0.4+	0.2+
1973 09 30	675	0.2+	1.5-	1999 09 07	704	0.1-	0.3+	1999 09 18	691	0.3+	0.3+
1973 09 30	675	0.9-	2.3+	1999 09 09	704	0.9+	0.5-	1999 09 18	691	0.3+	0.2+
1973 09 30	675	1.2+	0.2+	1999 09 09	704	0.2-	0.2-				

1999 SEPT. 28

M.P.C. 36053

2121 T-2 = 1999 RE₅₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	332.99858		(2000.0)		P		Q
<i>n</i>	0.30167662	ω	172.28722	+0.99987776			-0.00994066
<i>a</i>	2.2017852	Ω	188.31100	+0.00554740			+0.94720229
<i>e</i>	0.2026665	<i>i</i>	4.78942	+0.01461839			+0.32048245
<i>P</i>	3.27	<i>H</i>	16.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1973 09 19	675	0.9+	1.1+	1973 09 30	675	0.0	0.3-	1999 09 07	704	0.5-	0.2-
1973 09 19	675	0.2+	1.8+	1973 10 04	675	1.0+	0.2+	1999 09 07	704	0.2+	0.0
1973 09 20	675	1.0-	1.8-	1973 10 04	675	0.9+	0.8-	1999 09 08	703	0.9-	0.3+
1973 09 24	675	(0.5+	2.7+)	1973 10 05	675	0.3-	1.2+	1999 09 08	703	0.6+	0.5+
1973 09 24	675	0.6-	0.3+	1973 10 05	675	0.7-	0.1+	1999 09 08	703	0.4-	0.3+
1973 09 25	675	0.5+	0.5-	1999 09 07	682	0.8+	1.2+	1999 09 08	703	1.0+	0.8-
1973 09 25	675	0.2+	1.2-	1999 09 07	682	0.4-	0.0	1999 09 13	704	0.6+	0.5+
1973 09 29	675	0.1-	0.2+	1999 09 07	682	0.3-	0.7-	1999 09 13	704	1.0-	0.1+
1973 09 29	675	0.0	0.1+	1999 09 07	704	0.0	0.9-	1999 09 13	704	0.2+	0.2+
1973 09 30	675	1.0-	0.5-	1999 09 07	704	0.1+	0.6-				

2243 T-2 = 1999 RF₇₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	240.41291		(2000.0)		P		Q
<i>n</i>	0.26339722	ω	304.06246	-0.37885665			-0.92540947
<i>a</i>	2.4102490	Ω	168.18977	+0.86323829			-0.35695916
<i>e</i>	0.1506332	<i>i</i>	2.58108	+0.33359752			-0.12726928
<i>P</i>	3.74	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1973 09 19	675	0.1-	0.3-	1998 05 24	704	0.9+	0.3+	1999 09 09	704	0.2-	0.0
1973 09 19	675	0.5+	0.6-	1998 05 24	704	0.0	0.0	1999 09 09	704	0.1+	0.5+
1973 09 20	675	0.4-	0.7-	1998 05 24	704	0.9-	0.4-	1999 09 09	704	0.3+	0.1-
1973 09 24	675	1.7-	2.0+	1999 08 17	691	0.2+	0.3-	1999 09 10	704	0.2-	0.4+
1973 09 24	675	1.5-	2.4+	1999 08 17	691	0.1+	0.4-	1999 09 10	704	0.7-	0.9+
1973 09 25	675	1.4+	0.3-	1999 08 17	691	0.3+	0.5-	1999 09 10	704	0.2+	0.1+
1973 09 25	675	0.9+	1.0-	1999 09 03	691	0.0	0.4+	1999 09 14	704	0.9+	0.0
1973 09 29	675	0.0	0.1+	1999 09 03	691	0.1-	0.2+	1999 09 14	704	0.6-	0.8-
1973 09 29	675	0.5+	0.8-	1999 09 03	691	0.2-	0.1+	1999 09 14	704	0.1-	0.1+
1973 09 30	675	0.7+	1.0-	1999 09 07	704	0.1-	0.4-	1999 09 14	704	0.5+	0.2+
1973 09 30	675	0.6+	0.3-	1999 09 07	704	0.0	0.2+	1999 09 14	704	0.6+	0.8-
1973 10 04	675	0.3+	0.4+	1999 09 07	704	1.2-	0.8+	1999 09 14	704	0.2-	0.1+
1973 10 04	675	(3.3-	2.1+)	1999 09 07	704	0.4+	1.3-	1999 09 14	704	0.6+	0.3+
1973 10 05	675	0.5-	1.6-	1999 09 07	704	1.0-	0.5-	1999 09 14	704	0.6+	0.4+
1973 10 05	675	0.6-	1.1+	1999 09 09	704	0.6-	0.1+	1999 09 14	704	0.1-	0.1+
1998 05 24	704	(2.7-	0.8-)	1999 09 09	704	0.4+	0.3+				

2316 T-2 = 1998 FM₂₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	190.89523		(2000.0)		P		Q
<i>n</i>	0.29965074	ω	312.68455	-0.66685555			-0.74518664
<i>a</i>	2.2116979	Ω	179.13926	+0.69729062			-0.62434379
<i>e</i>	0.0356935	<i>i</i>	2.82325	+0.26284876			-0.23428978
<i>P</i>	3.29	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1973 09 29	675	0.5-	0.4-	1998 03 05	910	0.9+	0.1-	1998 03 22	704	0.5-	0.1-
1973 09 29	675	0.1-	1.2+	1998 03 06	910	0.9+	0.0	1998 03 22	704	0.0	0.6-
1973 09 30	675	0.8+	1.5-	1998 03 06	910	0.9+	0.3-	1998 03 26	704	0.2-	0.3-
1973 09 30	675	0.7+	1.0-	1998 03 20	704	0.5-	0.4+	1998 03 26	704	0.7-	0.5+
1973 10 04	675	0.1-	0.3+	1998 03 20	704	0.0	0.4-	1998 03 26	704	(2.8-	1.3-)
1973 10 04	675	1.0+	1.3+	1998 03 20	704	0.7-	0.7-	1998 03 29	704	0.5+	0.9-
1973 10 05	675	1.7-	0.5-	1998 03 20	704	1.3+	0.5-	1998 03 29	704	0.6-	0.5+
1973 10 05	675	0.3+	0.4-	1998 03 20	704	0.2-	0.7-	1998 03 29	704	1.2+	0.9-
1998 02 26	566	0.6-	0.9+	1998 03 22	704	0.2-	0.4+	1998 03 29	704	0.4+	0.4-

1998 02 26	566	1.0-	0.9+	1998 03 22	704	0.0	0.6+	1998 03 29	704	0.0	0.7-
1998 02 26	566	0.8-	0.8+	1998 03 22	704	0.2-	0.6+				

3116 T-2 = 1999 RL₁₈₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	290.75357		(2000.0)		P		Q
<i>n</i>	0.26512657	ω	314.44683	+0.32323934			-0.94574282
<i>a</i>	2.3997567	Ω	116.66793	+0.87836909			+0.28688508
<i>e</i>	0.1539352	<i>i</i>	2.11423	+0.35211372			+0.15253678
<i>P</i>	3.72	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1973 09 19	675	0.9+	1.5+	1973 09 30	675	0.3-	0.3-	1999 09 09	704	0.6+	0.4-
1973 09 19	675	1.3-	1.4+	1973 09 30	675	0.4+	0.5-	1999 09 09	704	0.4+	0.0
1973 09 20	675	0.3-	0.2+	1973 10 04	675	1.2+	1.5-	1999 09 09	704	0.3+	0.8+
1973 09 24	675	1.9-	0.5+	1973 10 04	675	1.3+	0.3-	1999 09 14	704	0.0	0.3+
1973 09 24	675	0.5-	2.0+	1973 10 05	675	1.2-	0.0	1999 09 14	704	0.2-	1.2+
1973 09 25	675	0.5+	1.9-	1973 10 05	675	0.3+	0.2+	1999 09 14	704	0.2-	0.1-
1973 09 25	675	0.6+	1.7-	1999 08 31	552	(0.0	2.4-)	1999 09 14	704	1.6-	0.7-
1973 09 29	675	1.1+	1.3+	1999 08 31	552	0.3+	1.8-				
1973 09 29	675	1.3-	0.2-	1999 09 09	704	0.7+	0.1-				

3144 T-2 = 1999 RH₉₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	347.73186		(2000.0)		P		Q
<i>n</i>	0.26543939	ω	228.78729	+0.99864331			-0.03651903
<i>a</i>	2.3978709	Ω	133.26979	+0.04757301			+0.92971269
<i>e</i>	0.1743314	<i>i</i>	2.92219	-0.02117426			+0.36647055
<i>P</i>	3.71	<i>H</i>	16.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1973 09 19	675	1.9+	0.3-	1973 09 30	675	1.6-	0.9-	1999 09 07	704	0.1-	0.2-
1973 09 19	675	0.9+	0.6+	1973 09 30	675	0.7-	1.9-	1999 09 07	704	1.3+	0.4+
1973 09 20	675	0.5+	0.1-	1973 10 04	675	(3.8+	0.1+)	1999 09 07	704	0.6+	0.6-
1973 09 24	675	(1.2-	3.3-)	1973 10 04	675	1.5+	1.6+	1999 09 07	704	0.3-	0.4+
1973 09 24	675	0.4-	1.1-	1973 10 05	675	0.6+	1.7-	1999 09 07	704	1.2+	0.3+
1973 09 25	675	1.4-	0.9-	1973 10 05	675	0.1-	1.9+	1999 09 14	704	0.2-	1.3+
1973 09 25	675	0.4-	1.5-	1994 04 03	691	0.4-	0.4-	1999 09 14	704	1.8-	1.3+
1973 09 29	675	0.6+	1.4+	1994 04 03	691	0.1+	0.0	1999 09 14	704	0.4-	0.0
1973 09 29	675	0.0	0.2-	1994 04 03	691	0.0	0.5-	1999 09 14	704	1.3-	0.3-

3240 T-2 = 1999 RA₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	356.00533		(2000.0)		P		Q
<i>n</i>	0.18996317	ω	253.87182	+0.99953910			-0.00257598
<i>a</i>	2.9970210	Ω	106.26819	+0.01415987			+0.92092561
<i>e</i>	0.1041700	<i>i</i>	1.80567	-0.02685294			+0.38972988
<i>P</i>	5.19	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1973 09 19	675	1.7-	1.6-	1973 09 24	675	0.1+	1.6+	1973 10 04	675	0.0	0.4-
1973 09 19	675	2.1+	2.9+	1973 09 24	675	1.1+	0.2-	1973 10 05	675	0.6+	0.7-
1973 09 19	675	1.2+	1.7-	1973 09 25	675	3.9-	0.2-	1973 10 05	675	1.8+	0.4+
1973 09 19	675	1.7-	0.4-	1973 09 25	675	1.2-	0.4+	1999 09 07	704	0.5-	0.2+
1973 09 19	675	1.1+	1.1+	1973 09 25	675	0.7-	1.2-	1999 09 07	704	0.3+	0.1-
1973 09 19	675	1.2+	2.4-	1973 09 25	675	0.3-	0.7+	1999 09 07	704	0.6-	0.7+
1973 09 20	675	3.3-	1.2+	1973 09 25	675	0.6-	0.8+	1999 09 07	704	0.1-	1.0-
1973 09 20	675	2.6+	0.4+	1973 09 25	675	0.3-	0.1+	1999 09 07	704	0.5+	0.8-
1973 09 20	675	0.5-	0.1+	1973 09 29	675	0.2+	1.0+	1999 09 08	704	0.0	0.9-
1973 09 24	675	0.1+	0.3-	1973 09 29	675	0.8+	0.0	1999 09 08	704	1.0+	0.1+
1973 09 24	675	0.1+	0.4+	1973 09 30	675	1.2-	0.9-	1999 09 08	704	0.1+	0.2+
1973 09 24	675	0.9+	0.1-	1973 09 30	675	0.5+	0.2+	1999 09 08	704	0.1-	0.2-
1973 09 24	675	0.5-	0.4-	1973 10 04	675	0.9+	0.4+	1999 09 08	704	0.0	0.5+

4200 T-2 = 1999 RC₁₈₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26491538	ω	225.59351	+0.90562717	+0.42102389		
<i>a</i>	2.4010320	Ω	109.44676	-0.37217459	+0.84647176		
<i>e</i>	0.1996147	<i>i</i>	3.08681	-0.20328674	+0.32592091		
<i>P</i>	3.72	<i>H</i>	16.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1973 09 19	675	0.5-	0.3-	1973 10 05	675	0.3-	0.7+	1999 09 07	704	0.4-	0.2+
1973 09 19	675	0.4+	0.7-	1998 04 04	691	1.0+	0.3-	1999 09 07	704	0.2-	0.2+
1973 09 20	675	2.0-	0.9-	1998 04 04	691	0.7+	0.4-	1999 09 07	704	0.9-	0.9-
1973 09 24	675	0.5-	0.2-	1998 04 04	691	0.4+	0.0	1999 09 07	704	0.5-	0.2-
1973 09 24	675	0.1+	1.5+	1998 04 21	691	0.9-	0.3-	1999 09 07	704	1.1-	1.1-
1973 09 25	675	0.9-	0.7+	1998 04 21	691	1.2-	0.3-	1999 09 09	704	0.3+	0.2+
1973 09 25	675	0.1+	0.3+	1998 04 21	691	0.8-	0.1-	1999 09 09	704	0.2-	0.1+
1973 09 29	675	1.6+	1.4-	1999 08 22	703	0.4+	0.0	1999 09 09	704	0.0	0.3+
1973 09 29	675	0.8+	1.7-	1999 08 22	703	0.9+	0.2-	1999 09 09	704	0.6+	0.7+
1973 09 30	675	0.4+	0.4+	1999 08 22	703	(2.3+ 1.3+)		1999 09 14	704	0.3-	0.0
1973 09 30	675	0.3+	1.6+	1999 08 22	703	1.0+	0.6+	1999 09 14	704	0.4-	0.3-
1973 10 04	675	0.2-	0.5-	1999 09 05	699	0.7+	0.4+	1999 09 14	704	0.1-	0.4-
1973 10 04	675	1.1+	1.5-	1999 09 05	699	0.0	0.1+	1999 09 14	704	0.5-	0.1+
1973 10 05	675	0.3+	0.4+	1999 09 05	699	1.1+	0.7+	1999 09 14	704	0.5-	0.0

5089 T-2 = 1999 JW₂₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29579412	ω	66.77697	+0.42112580	+0.90140972		
<i>a</i>	2.2308808	Ω	228.52294	-0.87349327	+0.37320694		
<i>e</i>	0.1485844	<i>i</i>	7.71397	-0.24425920	+0.21949282		
<i>P</i>	3.33	<i>H</i>	16.0	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1973 09 24	675	1.0+	0.7+	1999 05 10	704	1.2-	0.3-	1999 05 18	691	0.3+	0.6-
1973 09 24	675	0.7+	2.3+	1999 05 10	704	0.3-	0.1+	1999 05 18	691	0.7+	0.8-
1973 09 25	675	0.2-	0.3-	1999 05 10	704	1.1+	1.1+	1999 05 19	704	0.9-	0.9+
1973 09 25	675	0.8-	0.0	1999 05 10	704	0.3-	1.0+	1999 05 19	704	0.1-	0.6-
1973 09 29	675	0.6+	1.0-	1999 05 13	704	0.5+	0.7+	1999 05 19	704	(0.0 2.2-)	
1973 09 29	675	0.8+	0.9-	1999 05 13	704	1.9-	1.0-	1999 05 19	704	1.1+	0.8+
1973 09 30	675	1.2-	0.2+	1999 05 13	704	0.6+	0.7-				
1973 09 30	675	0.8-	1.0-	1999 05 18	691	0.4+	0.7-				

5134 T-2 = 1999 RU₁₅₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22591895	ω	15.17411	+0.89219092	+0.44120149		
<i>a</i>	2.6699366	Ω	318.21055	-0.42801999	+0.75761709		
<i>e</i>	0.1179373	<i>i</i>	8.33718	-0.14420211	+0.48099646		
<i>P</i>	4.36	<i>H</i>	15.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1973 09 20	675	1.3+	1.6-	1973 09 30	675	1.2-	0.0	1999 09 07	704	0.8-	0.3+
1973 09 20	675	(2.9+ 1.8-)		1973 10 04	675	1.6+	0.7+	1999 09 09	704	0.9+	0.1-
1973 09 24	675	1.0+	2.2+	1973 10 04	675	0.5-	0.5-	1999 09 09	704	0.3+	0.2+
1973 09 24	675	(3.0- 4.3+)		1973 10 05	675	0.8+	0.5-	1999 09 09	704	0.4+	0.7-
1973 09 25	675	0.6-	0.2+	1973 10 05	675	1.4+	0.2-	1999 09 09	704	0.2-	0.6-
1973 09 25	675	1.6-	0.4-	1999 09 07	704	0.1-	0.4+	1999 09 14	704	0.5-	0.2-
1973 09 29	675	0.1-	0.1-	1999 09 07	704	1.0-	0.4+	1999 09 14	704	0.3+	0.4-
1973 09 29	675	0.1+	0.3+	1999 09 07	704	0.2-	0.7+	1999 09 14	704	1.2+	0.4+
1973 09 30	675	2.2-	0.0	1999 09 07	704	0.1-	0.4-				

5163 T-2 = 1999 RJ₁₀₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18776173	ω	230.05391	-0.96374342	-0.21694745		
<i>a</i>	3.0204014	Ω	296.90194	+0.26506574	-0.84524264		
<i>e</i>	0.1558489	<i>i</i>	10.03196	-0.03063945	-0.48836327		
<i>P</i>	5.25	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	7

Residuals in seconds of arc

1973 09 20	675	0.8-	0.4-	1973 09 30	675	1.3+	0.9+	1999 09 08	704	0.7-	0.5+
1973 09 20	675	0.9+	0.9+	1973 09 30	675	0.4+	0.8-	1999 09 08	704	0.2-	0.2-
1973 09 24	675	0.3-	1.3-	1973 10 04	675	0.5-	1.4+	1999 09 08	704	0.3+	1.1-
1973 09 24	675	0.1+	0.5-	1973 10 04	675	0.2-	1.4+	1999 09 09	704	0.4+	1.3+
1973 09 25	675	0.7-	0.5-	1973 10 05	675	0.9-	0.2+	1999 09 09	704	0.3-	0.4+
1973 09 25	675	0.6+	1.8-	1973 10 05	675	1.1+	0.5-	1999 09 09	704	0.4+	1.5-
1973 09 29	675	0.3-	0.7+	1999 09 08	704	0.3+	0.1+				
1973 09 29	675	0.7-	0.1+	1999 09 08	704	0.3-	0.6+				

5178 T-2 = 1999 RL₁₂₃

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18832601	ω	196.76705	+0.12731320	-0.98213955		
<i>a</i>	3.0143650	Ω	246.09450	+0.92652113	+0.16761815		
<i>e</i>	0.0663254	<i>i</i>	8.71616	+0.35404795	-0.08547551		
<i>P</i>	5.23	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1973 09 24	675	0.6+	0.6+	1999 09 07	703	1.8-	0.2+	1999 09 08	699	0.3+	0.5+
1973 09 24	675	1.3+	0.3-	1999 09 07	703	0.1+	0.3+	1999 09 08	704	0.6+	0.3-
1973 09 25	675	0.4-	0.5-	1999 09 07	703	0.2-	0.1-	1999 09 09	704	0.2-	0.2-
1973 09 25	675	0.2-	0.0	1999 09 07	703	0.2-	0.2+	1999 09 09	704	0.4+	0.4-
1973 09 29	675	0.2-	0.1-	1999 09 08	699	(0.5- 2.2+)		1999 09 09	704	0.6+	0.1-
1973 09 29	675	0.9-	0.2-	1999 09 08	699	(1.1+ 2.2+)		1999 09 09	704	0.2+	0.2+
1973 09 30	675	0.2+	0.1+	1999 09 08	704	0.4-	0.5+	1999 09 09	704	0.7+	0.5+
1973 09 30	675	0.3-	0.3+	1999 09 08	704	0.4+	0.5-	1999 09 10	704	0.1+	0.3-
1973 10 04	675	0.1-	0.9+	1999 09 08	704	0.2+	0.5+	1999 09 10	704	0.3-	0.0
1973 10 04	675	0.3-	0.5+	1999 09 08	704	0.6-	0.1-	1999 09 10	704	0.2+	1.2-
1973 10 05	675	0.2+	0.7-	1999 09 08	704	0.4+	0.2-				
1973 10 05	675	0.1+	0.5-	1999 09 08	704	0.4-	0.5+				

5366 T-2 = 1999 RZ₁₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18732880	ω	335.67931	-0.58639186	+0.79965581		
<i>a</i>	3.0250532	Ω	258.16937	-0.71988297	-0.58759262		
<i>e</i>	0.0490594	<i>i</i>	7.58599	-0.37136652	-0.12363456		
<i>P</i>	5.26	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	7

Residuals in seconds of arc

1973 09 20	675	0.3+	0.5-	1999 09 09	704	0.6+	0.3-	1999 09 10	704	0.7-	1.0+
1973 09 29	675	0.7+	0.9+	1999 09 09	704	0.5-	0.7-	1999 09 11	704	0.2+	0.9-
1973 09 29	675	0.8-	0.6-	1999 09 09	704	0.4-	0.1-	1999 09 11	704	0.0	0.5-
1973 09 30	675	0.4-	0.8+	1999 09 09	704	0.5-	0.0	1999 09 11	704	0.1-	0.2+
1973 09 30	675	0.6+	0.3+	1999 09 09	704	0.0	0.1+	1999 09 11	704	0.3+	0.3+
1973 10 04	675	0.2-	0.9+	1999 09 09	704	0.0	0.2-	1999 09 11	704	0.3-	0.3-
1973 10 04	675	0.8-	1.4-	1999 09 09	704	0.4+	0.3+	1999 09 13	704	0.3+	0.2+
1973 10 05	675	0.1+	0.3-	1999 09 09	704	0.1+	1.5+	1999 09 13	704	1.9+	1.1-
1973 10 05	675	0.6+	0.1-	1999 09 10	704	1.1-	0.0	1999 09 13	704	1.1+	0.2+
1999 09 09	704	0.1+	0.3+	1999 09 10	704	1.3-	0.0				

1079 T-3 = 1999 RT₂₀₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22295188	ω	57.76857	+0.50780820	+0.84176731		
<i>a</i>	2.6935722	Ω	243.81845	−0.84302964	+0.44180962		
<i>e</i>	0.1646129	<i>i</i>	11.77882	−0.17729031	+0.31021292		
<i>P</i>	4.42	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1977 10 11	675	2.2+	0.3−	1977 10 22	675	0.5−	1.3−	1999 09 18	704	0.8+	0.3+
1977 10 12	675	1.0−	0.2+	1977 10 22	675	1.2−	0.1+	1999 09 18	704	0.3+	0.2−
1977 10 12	675	0.2+	0.2+	1999 09 08	704	0.3−	0.1+	1999 09 18	704	0.5−	0.3+
1977 10 16	675	0.2+	1.1−	1999 09 08	704	0.2−	0.1+	1999 09 18	704	0.4−	0.6+
1977 10 16	675	1.5−	1.2−	1999 09 08	704	0.1−	0.5−	1999 09 18	704	0.1+	0.0
1977 10 17	675	0.7+	1.3+	1999 09 08	704	0.1+	0.4−				
1977 10 17	675	1.0+	2.0+	1999 09 08	704	0.1+	0.1−				

1118 T-3 = 1999 RG₆₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17508141	ω	143.94301	+0.05481865	−0.99103399		
<i>a</i>	3.1645310	Ω	302.61526	+0.87889740	+0.10580292		
<i>e</i>	0.0737440	<i>i</i>	8.31746	+0.47385048	−0.08159276		
<i>P</i>	5.63	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1977 10 07	675	0.2+	1.2−	1977 10 16	675	1.2−	0.5−	1999 09 07	704	0.1+	1.1−
1977 10 11	675	0.2+	0.3+	1977 10 17	675	0.0	1.6+	1999 09 14	704	0.8+	0.4+
1977 10 11	675	2.1+	1.5+	1977 10 17	675	1.2+	0.8+	1999 09 14	704	0.6−	0.6−
1977 10 12	675	0.8−	1.0+	1977 10 22	675	0.4−	2.1−	1999 09 14	704	0.6+	0.9+
1977 10 12	675	0.8−	0.2+	1999 09 07	704	0.7−	0.1−	1999 09 14	704	1.1+	0.1+
1977 10 16	675	0.5−	1.6−	1999 09 07	704	0.9−	0.3−	1999 09 14	704	0.4−	0.8+

4170 T-3 = 1999 RC₈₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26708030	ω	336.03533	+0.08058603	−0.99437581		
<i>a</i>	2.3880394	Ω	109.28393	+0.92585860	+0.04914035		
<i>e</i>	0.1711624	<i>i</i>	4.17520	+0.36917711	+0.09381889		
<i>P</i>	3.69	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1977 10 07	675	0.3+	1.5+	1977 10 22	675	0.2−	0.2+	1999 09 07	704	0.3+	0.4+
1977 10 11	675	1.1+	0.2−	1999 08 22	703	0.2−	0.7+	1999 09 14	704	1.7−	1.3+
1977 10 11	675	0.3+	0.3−	1999 08 22	703	0.4−	0.3−	1999 09 14	704	0.0	0.3−
1977 10 12	675	0.7−	0.5−	1999 08 22	703	0.1−	0.1+	1999 09 14	704	0.1−	0.5−
1977 10 12	675	1.2−	0.9−	1999 08 22	703	0.6+	0.3+	1999 09 14	704	0.0	0.1−
1977 10 16	675	0.8−	1.0+	1999 09 05	699	0.3+	0.7+	1999 09 14	704	0.1+	0.1+
1977 10 16	675	1.4−	1.4+	1999 09 05	699	0.4+	0.0	1999 09 14	704	0.3+	0.6−
1977 10 17	675	0.1−	0.9−	1999 09 05	699	0.3+	0.1+	1999 09 14	704	0.4−	0.8−
1977 10 17	675	0.4+	1.4−	1999 09 07	704	0.3−	0.4−	1999 09 14	704	0.4+	0.5−
1977 10 21	675	0.5+	0.5+	1999 09 07	704	0.1−	0.0	1999 09 14	704	0.5−	0.2−
1977 10 21	675	0.1−	0.3+	1999 09 07	704	0.5+	0.0	1999 09 14	704	0.1+	0.1−
1977 10 22	675	1.8+	0.5−	1999 09 07	704	0.5+	0.0				

5019 T-3 = 1999 RO₁₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17446360	ω	253.41626	+0.64134393	−0.76056434		
<i>a</i>	3.1719975	Ω	155.78009	+0.76370644	+0.62015835		
<i>e</i>	0.1169072	<i>i</i>	14.26604	+0.07369152	+0.19221214		
<i>P</i>	5.65	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1977 10 11	675	1.1+	0.7+	1977 10 21	675	0.0	0.6+	1999 09 07	704	0.2−	0.2+
1977 10 11	675	0.5+	0.5+	1977 10 22	675	0.3−	1.3−	1999 09 07	704	0.4−	0.2−
1977 10 12	675	0.7+	0.5+	1977 10 22	675	2.0+	0.2+	1999 09 09	704	0.3+	0.4+
1977 10 12	675	0.8−	0.0	1999 09 04	703	0.4+	0.3−	1999 09 09	704	0.2+	0.3+
1977 10 16	675	0.8−	0.5−	1999 09 04	703	0.1−	0.3−	1999 09 09	704	1.1−	0.3+
1977 10 16	675	0.2−	0.5+	1999 09 04	703	0.9−	1.3−	1999 09 13	704	1.4+	0.3+
1977 10 17	675	1.5−	1.6−	1999 09 04	703	0.5−	0.2+	1999 09 13	704	0.2−	0.5−
1977 10 17	675	1.0−	1.0−	1999 09 07	704	0.1+	0.7+	1999 09 13	704	0.1+	0.8+
1977 10 21	675	0.4+	1.4+	1999 09 07	704	0.4+	0.3−	1999 09 13	704	0.6+	0.4−

5160 T-3 = 1996 TL₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20337657	ω	132.90374	+0.34790942	+0.93275160		
<i>a</i>	2.8637522	Ω	156.93851	−0.91504628	+0.35978206		
<i>e</i>	0.2302524	<i>i</i>	13.96258	−0.20408173	−0.02305039		
<i>P</i>	4.85	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1977 10 11	675	0.3−	1.2+	1977 10 17	675	1.3+	0.3−	1996 10 09	327	0.3−	0.3+
1977 10 11	675	1.4−	0.1−	1977 10 21	675	2.0−	0.7+	1996 10 09	327	0.5−	0.1+
1977 10 12	675	0.5−	0.3−	1977 10 21	675	0.4−	0.5−	1996 10 18	327	0.3−	0.4+
1977 10 12	675	0.3+	0.6−	1996 10 07	327	0.0	0.4−	1996 10 18	327	0.0	0.0
1977 10 16	675	0.6+	0.7−	1996 10 07	327	0.1−	0.4−	1996 10 18	327	0.1+	0.2−
1977 10 16	675	1.6+	0.1+	1996 10 07	327	0.7+	0.1−	1996 10 18	327	0.4+	0.7+
1977 10 17	675	0.8+	0.4+	1996 10 09	327	0.0	0.2−				

5167 T-3 = 1993 PJ₉ = 1997 GN₂₈Id. G. V. Williams (*MPC* 34000), A. Doppler (*ibid.*), M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17664369	ω	171.28087	+0.62992211	+0.76722926		
<i>a</i>	3.1458449	Ω	137.64181	−0.72293277	+0.63600371		
<i>e</i>	0.0794870	<i>i</i>	10.31587	−0.28384210	+0.08281628		
<i>P</i>	5.58	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 10 11	675	1.7−	0.3+	1993 08 13	675	0.8−	0.9−	1998 06 19	704	0.5−	1.7−
1977 10 11	675	0.7−	0.2−	1997 04 13	104	0.3+	0.2−	1998 06 19	704	0.1+	0.1+
1977 10 12	675	0.1−	1.1−	1997 04 13	104	0.9+	0.4+	1998 06 19	704	0.6+	0.4−
1977 10 12	675	0.2+	1.6−	1997 04 13	104	0.8+	0.9+	1999 09 09	704	0.4−	0.1−
1977 10 16	675	1.7+	2.2−	1997 04 14	104	0.6−	0.2−	1999 09 09	704	0.7−	0.5+
1977 10 16	675	1.7+	2.0−	1997 04 14	104	0.3−	0.2+	1999 09 09	704	0.0	0.3−
1977 10 17	675	0.4+	0.6−	1997 04 14	104	0.3−	0.4+	1999 09 09	704	0.5+	1.3+
1977 10 17	675	0.4+	1.1−	1997 04 14	104	0.4−	0.7+	1999 09 09	704	0.5−	0.6+
1977 10 21	675	0.6−	0.9+	1998 06 03	704	0.4+	1.0−	1999 09 13	704	0.3−	1.4+
1977 10 21	675	0.9−	1.0+	1998 06 03	704	0.2−	0.6+	1999 09 13	704	0.4−	1.9+
1977 10 22	675	0.9+	2.1+	1998 06 03	704	0.9+	1.0−	1999 09 13	704	(0.2−	2.2+)
1977 10 22	675	0.6+	1.4−	1998 06 03	704	0.8−	1.0−	1999 09 13	704	0.0	1.8+
1993 08 13	675	0.6+	0.5+	1998 06 19	704	0.7−	1.3+				

5278 T-3 = 1996 VC₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26200708	ω	258.51198	+0.98886218	+0.01254140		
<i>a</i>	2.4187670	Ω	100.64100	+0.04335789	+0.92895008		
<i>e</i>	0.1519346	<i>i</i>	8.67907	−0.14237865	+0.36999250		
<i>P</i>	3.76	<i>H</i>	15.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1977 10 17	675	0.1+	0.6−	1977 10 22	675	0.0	1.4−	1996 11 18	691	0.2+	0.1−
1977 10 17	675	0.5−	0.1−	1996 11 11	691	0.1−	0.2+	1996 11 18	691	0.1+	0.3−
1977 10 21	675	0.0	0.4+	1996 11 11	691	0.3−	0.2+	1996 11 18	691	0.2+	0.0
1977 10 21	675	0.5+	1.7+	1996 11 11	691	0.1−	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
(193)	9.68	0.15	19990810	315.53913	80.92006	350.27422	12.03619	0.2945338	2.6027034	97	22 1915–1999	1.01 M-v 1	Williams	18999	(193)
(422)	10.83	0.15	19990810	352.68534	335.09977	9.26097	5.00062	0.2144325	2.2282061	117	29 1906–1999	0.93 M-v 1	Williams	16554	(422)
(605)	9.9	0.15	19990810	354.00104	16.78474	343.06420	19.66562	0.1410989	2.9994323	65	22 1906–1999	1.20 M-v 1	Williams	23325	(605)
(840)	9.3	0.15	19990810	57.49377	5.78144	273.53200	9.91099	0.0864519	3.1389368	73	19 1916–1999	0.87 M-v 1	Williams	16395	(840)
(938)	10.8	0.15	19990810	3.83423	228.46317	119.23801	2.66526	0.1906956	3.1568116	122	23 1920–1999	1.00 M-v 1	Williams	19480	(938)
(941)	11.55	0.15	19990810	347.91849	334.44696	52.60231	6.63990	0.1979909	2.7841275	71	18 1920–1998	1.15 M-v 1	Williams	15530	(941)
(963)	12.49	0.15	19990810	4.53641	4.82751	62.61458	7.98943	0.1375661	2.2474952	38	17 1921–1999	1.07 M-v 2	Williams	25408	(963)
(1101)	10.1	0.15	19990810	105.71670	113.03970	202.18536	21.39619	0.0768670	3.2321227	104	13 1963–1999	0.74 M-v 1	Williams	19483	(1101)
(1136)	11.0	0.15	19990810	28.66851	148.33609	209.64057	8.97674	0.2583756	2.5648318	103	16 1929–1998	0.80 M-v 1	Williams	25188	(1136)
(1276)	10.4	0.15	19990810	318.72326	330.83523	114.74868	23.33590	0.1042616	3.1734641	50	17 1933–1999	1.04 M-v 1	Williams	30890	(1276)
(1325)	11.5	0.15	19990810	358.73789	337.06455	14.54682	7.43938	0.2572444	2.5408221	77	19 1934–1999	0.83 M-v 1	Williams	27290	(1325)
(1413)	10.9	0.15	19990810	342.54905	298.59918	179.03404	10.23738	0.0575486	3.0208730	96	17 1937–1999	0.90 M-v 1	Williams	16400	(1413)
(1419)	11.3	0.15	19990810	340.32074	231.99262	213.77164	5.72523	0.1469902	2.2928351	83	23 1917–1998	0.90 M-v 1	Williams	17408	(1419)
(1423)	10.5	0.15	19990810	348.08851	320.36037	58.71176	2.91314	0.0827452	2.8614553	76	18 1936–1999	1.01 M-v 1	Williams	15531	(1423)
(1501)	12.1	0.15	19990810	343.94513	12.77799	17.14378	7.34100	0.2419266	2.5449328	68	14 1930–1999	1.05 M-v 1	Williams	22200	(1501)
(1526)	13.6	0.15	19990810	335.33116	72.38741	337.16974	6.20909	0.1881038	2.3152584	52	12 1939–1999	0.94 M-v 1	Williams	29578	(1526)
(1560)	11.5	0.15	19990810	346.68719	94.19369	289.52606	6.26991	0.2158368	2.6841932	108	22 1942–1999	0.96 M-v 1	Williams	17180	(1560)
(1839)	11.8	0.15	19990810	329.14746	349.53463	51.19731	10.18691	0.1698510	2.7996254	72	11 1962–1999	0.85 M-v 1	Williams	29579	(1839)
(1846)	13.1	0.15	19990810	236.77472	75.37978	19.20151	3.18883	0.1429463	2.3376438	108	12 1957–1999	0.80 M-v 1	Williams	24718	(1846)
(1849)	11.6	0.15	19990810	222.32165	134.57480	50.63718	10.78152	0.0088963	3.0562769	48	11 1942–1998	0.99 M-v 2	Williams	30247	(1849)
(1853)	10.5	0.15	19990810	327.01901	96.53641	299.13879	15.77003	0.0557521	3.0644617	58	13 1950–1999	0.84 M-v 1	Williams	35407	(1853)
(1935)	13.0	0.15	19990810	359.44292	197.86503	200.33837	9.57384	0.2295420	2.6265165	49	10 1969–1999	0.94 M-v 1	Williams	35673	(1935)
(1999)	10.6	0.15	19990810	300.86899	354.02038	148.38588	12.48813	0.1071315	3.1193321	79	14 1951–1999	0.82 M-v 1	Williams	25190	(1999)
(2030)	13.5	0.15	19990810	97.41366	61.21684	169.97027	2.57784	0.0929636	2.2473360	107	14 1949–1999	0.79 M-v 1	Williams	14769	(2030)
(2038)	12.3	0.15	19990810	93.85978	183.33602	73.69774	14.77557	0.0881560	2.4367173	76	10 1973–1999	0.90 M-v 1	Williams	30248	(2038)
(2047)	13.9	0.15	19990810	354.44748	309.86878	36.70843	25.28218	0.0032205	1.8719467	25	6 1971–1999	0.83 M-v 2	Williams	35673	(2047)
(2065)	12.2	0.15	19990810	324.12433	65.63206	328.63801	6.43600	0.2364245	2.6974838	81	11 1955–1999	0.84 M-v 1	Williams	15536	(2065)
(2073)	12.7	0.15	19990810	306.67990	359.51514	85.12982	2.96258	0.1114742	2.7189595	62	14 1972–1998	0.79 M-v 1	Williams	15537	(2073)
(2079)	12.7	0.15	19990810	233.82890	145.22073	353.36519	13.29304	0.0791479	2.6001736	97	13 1953–1999	0.77 M-v 1	Williams	16853	(2079)
(2135)	17.94	0.15	19990810	40.43979	290.71796	191.37057	23.04673	0.5028901	1.5997708	17	4 1977–1990	0.76 M-v 3	Williams	16998	(2135)
(2137)	11.1	0.15	19990810	283.78934	135.45528	320.40998	11.71607	0.0657840	3.1873237	80	17 1936–1999	0.86 M-v 1	Williams	22473	(2137)
(2197)	11.2	0.15	19990810	344.11118	67.63917	56.63496	2.50963	0.1160770	3.1564190	103	16 1955–1999	0.97 M-v 1	Williams	18775	(2197)
(2259)	12.6	0.15	19990810	34.86583	11.77404	280.58287	4.68168	0.1851871	2.2941832	77	14 1929–1999	0.75 M-v 1	Williams	25038	(2259)
(2355)	11.4	0.15	19990810	43.32452	281.22543	54.02406	10.00745	0.1179230	3.0234357	44	8 1973–1999	0.92 M-v 1	Williams	29580	(2355)
(2373)	12.5	0.15	19990810	318.80409	215.60130	146.67077	10.08223	0.1718723	2.7945788	100	11 1929–1999	0.84 M-v 1	Williams	33329	(2373)
(2385)	13.2	0.15	19990810	355.71065	190.28247	153.37627	4.07677	0.1609468	2.2424670	95	10 1915–1999	0.63 M-v 1	Williams	16558	(2385)
(2467)	13.0	0.15	19990810	11.82031	17.80671	309.43692	5.80174	0.1603979	2.2134659	114	14 1933–1999	0.77 M-v 1	Williams	17181	(2467)
(2469)	11.6	0.15	19990810	59.21172	140.85688	152.31995	9.66867	0.1262117	3.1203243	77	10 1949–1999	0.92 M-v 1	Williams	33330	(2469)
(2621)	10.7	0.15	19990810	289.19857	274.44058	95.93427	13.03067	0.1695248	3.0856454	105	12 1971–1999	0.87 M-v 1	Williams	25716	(2621)
(2640)	13.0	0.15	19990810	242.04912	192.33377	4.66227	6.64959	0.0875474	2.3977254	88	14 1941–1999	0.87 M-v 2	Williams	15385	(2640)
(2662)	14.4	0.15	19990810	19.03663	99.82212	339.64097	2.91630	0.1593119	2.4385073	95	8 1960–1998	0.78 M-v 1	Williams	23959	(2662)
(2669)	12.6	0.15	19990810	358.42951	94.99472	292.85218	7.77529	0.2224628	2.7791635	23	6 1976–1996	0.85 M-v 1	Williams	26547	(2669)
(2679)	11.9	0.15	19990810	297.16344	281.57856	208.30952	10.09975	0.1014740	2.6212850	65	12 1939–1998	0.97 M-v 1	Williams	20611	(2679)
(2685)	12.2	0.15	19990810	227.19590	288.31628	215.47216	12.13054	0.1120833	2.5692864	59	13 1973–1999	0.77 M-v 1	Williams	22387	(2685)
(2717)	12.6	0.15	19990810	359.14642	163.33657	165.02640	3.27953	0.2178618	2.2146612	101	21 1909–1999	0.90 M-v 1	Williams	24372	(2717)
(2751)	12.7	0.15	19990810	249.36900	201.64465	246.67752	1.48307	0.1734045	2.4059340	110	11 1962–1999	0.75 M-v 1	Williams	28815	(2751)
(2764)	13.6	0.15	19990810	141.56458	251.52559	284.14825	1.99172	0.0838408	2.2462168	102	11 1976–1999	0.75 M-v 1	Williams	25625	(2764)
(2780)	13.3	0.15	19990810	202.38595	312.08448	275.13687	5.46323	0.1162036	2.1939038	59	8 1950–1998	0.68 M-v 2	Williams	14770	(2780)
(2781)	11.7	0.15	19990810	327.98813	258.41964	146.95781	2.30936	0.1902496	3.1452618	85	16 1951–1999	1.02 M-v 1	Williams	20612	(2781)
(2797)	8.4	0.15	19990810	314.33523	46.57305	69.95423	22.38210	0.0919017	5.1241347	40	10 1940–1999	0.93 M-v 1	Williams	33063	(2797)
(2815)	13.2	0.15	19990810	19.17054	237.42753	119.99339	5.70451	0.1692083	2.2334219	68	12 1955–1998	0.75 M-v 1	Williams	15218	(2815)

(2864)	12.5	0.15	19990810	208.16605	11.07596	135.44727	3.13692	0.1489673	2.7472323	71	11	1954-1999	0.84	M-v	1	Williams	29888	(2864)
(2866)	11.9	0.15	19990810	234.86780	24.17200	317.40866	8.23881	0.2009558	2.9134017	121	13	1951-1999	0.64	M-v	1	Williams	28056	(2866)
(2891)	11.2	0.15	19990810	299.50722	246.30668	115.34331	9.32603	0.1184285	3.3635995	94	12	1933-1999	0.86	M-v	1	Williams	21762	(2891)
(2901)	11.9	0.15	19990810	16.13417	242.46497	69.28703	3.17801	0.0467712	2.8635371	71	11	1959-1999	0.71	M-v	1	Williams	29888	(2901)
(2922)	13.7	0.15	19990810	160.83496	343.73290	188.15713	2.97653	0.1453887	2.3711565	94	11	1954-1999	0.76	M-v	1	Williams	24719	(2922)
(2955)	13.5	0.15	19990810	46.10061	233.96398	32.60895	3.59987	0.1151572	2.1801310	64	11	1954-1999	0.96	M-v	1	Williams	27693	(2955)
(2982)	11.9	0.15	19990810	331.15983	32.79224	43.17324	10.25659	0.0638911	3.0019163	59	9	1978-1998	0.91	M-v	1	Williams	18604	(2982)
(2987)	12.1	0.15	19990810	201.99237	333.22984	167.67657	1.01179	0.0661461	2.8860963	96	13	1951-1999	0.88	M-v	1	Williams	20613	(2987)
(3015)	11.1	0.15	19990810	37.81934	303.07901	38.52468	17.42915	0.1635747	3.4053703	53	8	1965-1997	0.86	M-v	1	Williams	29888	(3015)
(3021)	11.9	0.15	19990810	309.01214	96.26202	353.31754	16.55888	0.2575177	3.1813955	47	6	1967-1999	0.88	M-v	1	Williams	25039	(3021)
(3022)	13.4	0.15	19990810	323.32998	247.01001	180.97126	23.51937	0.1039376	1.9313966	60	7	1980-1998	0.85	M-v	2	Williams	16688	(3022)
(3025)	11.6	0.15	19990810	291.86602	120.10177	293.76056	20.98400	0.0875178	3.1983577	64	8	1927-1999	0.74	M-v	1	Williams	27086	(3025)
(3037)	11.6	0.15	19990810	282.18790	329.75597	108.03300	18.97775	0.1884437	2.6743137	59	10	1944-1999	0.84	M-v	1	Williams	24087	(3037)
(3045)	11.4	0.15	19990810	22.34982	334.26309	36.42705	3.34719	0.1181752	3.1320594	52	12	1951-1998	0.84	M-v	1	Williams	15861	(3045)
(3055)	12.5	0.15	19990810	346.76347	62.92743	3.54984	15.01462	0.1074099	2.5617703	37	7	1976-1993	1.09	M-v	2	Williams	33330	(3055)
(3063)	8.6	0.15	19990810	323.25043	202.75497	287.86846	12.18451	0.0595670	5.1722980	50	12	1931-1998	0.99	M-v	1	Williams	24087	(3063)
(3105)	13.1	0.15	19990810	358.50964	198.55176	140.63865	6.47639	0.1937508	2.2618863	128	14	1931-1999	0.79	M-v	1	Williams	28815	(3105)
(3111)	13.9	0.15	19990810	29.98413	291.46332	95.49580	2.01213	0.1611493	2.2235691	61	12	1952-1998	0.96	M-v	1	Williams	20128	(3111)
(3176)	10.9	0.15	19990810	281.67933	20.93725	53.49865	18.12281	0.0332527	2.8760486	50	13	1902-1999	1.01	M-v	1	Williams	26547	(3176)
(3188)	14.1	0.15	19990810	343.51054	22.62597	336.66613	4.70096	0.1338386	2.2892955	122	12	1954-1999	0.74	M-v	1	Williams	33330	(3188)
(3200)	14.6	0.15	19990810	43.25104	321.85129	265.55312	22.11492	0.8901341	1.2713623	354	13	1983-1999	0.67	M-v	3	Williams	28056	(3200)
(3226)	14.1	0.15	19990810	316.13716	303.44245	99.07363	3.05979	0.0770734	2.8737988	63	8	1951-1999	0.75	M-v	1	Williams	24088	(3226)
(3240)	10.0	0.15	19990810	7.41759	14.24517	296.36333	2.32853	0.1267423	5.2581455	77	13	1976-1999	0.80	M-v	0	Williams	22474	(3240)
(3256)	12.4	0.15	19990810	249.97447	266.93090	174.72415	7.82777	0.0992035	2.7766388	95	7	1976-1999	0.64	M-v	1	Williams	32039	(3256)
(3308)	11.5	0.15	19990810	173.86397	275.40679	172.47638	23.60125	0.1852575	3.1461820	77	10	1953-1999	0.88	M-v	1	Williams	27431	(3308)
(3324)	11.7	0.15	19990810	259.54037	179.43937	317.12490	10.75165	0.0249316	2.7015562	68	10	1959-1999	0.87	M-v	1	Williams	32296	(3324)
(3348)	11.9	0.15	19990810	239.28943	64.44832	185.95276	10.39734	0.1631174	3.1704133	24	6	1951-1998	0.88	M-v	1	Williams	20129	(3348)
(3364)	13.8	0.15	19990810	206.28656	108.15658	146.15591	5.54750	0.1048161	2.1982310	78	8	1938-1999	0.83	M-v	2	Williams	27431	(3364)
(3422)	12.4	0.15	19990810	271.13251	198.49625	112.06204	13.94828	0.1507067	2.6914246	38	9	1978-1999	0.86	M-v	1	Williams	29581	(3422)
(3426)	12.5	0.15	19990810	219.70664	261.12884	5.68357	13.15418	0.0958278	2.6184217	37	8	1932-1998	0.84	M-v	1	Williams	16008	(3426)
(3490)	13.4	0.15	19990810	292.63393	99.33381	344.12652	5.88689	0.1181604	2.4011183	54	11	1951-1999	0.93	M-v	1	Williams	29581	(3490)
(3492)	11.8	0.15	19990810	89.48245	95.46589	139.26771	13.59267	0.1461441	2.6149081	82	9	1951-1999	0.78	M-v	1	Williams	27432	(3492)
(3543)	11.5	0.15	19990810	167.75756	111.88447	162.89006	1.04356	0.1695989	3.1776611	90	14	1952-1998	0.83	M-v	1	Williams	18399	(3543)
(3544)	12.5	0.15	19990810	343.33433	148.56587	147.96012	8.89297	0.2176102	2.4025394	78	11	1943-1999	0.83	M-v	1	Williams	27432	(3544)
(3561)	10.7	0.15	19990810	309.98370	181.70709	118.14855	9.65434	0.1328733	3.9633096	104	12	1954-1999	0.90	M-v	1	Williams	22798	(3561)
(3569)	12.7	0.15	19990810	301.11905	314.99275	162.06924	14.04447	0.1224992	2.5923465	58	10	1938-1998	0.96	M-v	1	Williams	24888	(3569)
(3579)	14.2	0.15	19990810	269.67362	108.77769	14.73668	31.08437	0.3556849	2.7355653	45	5	1977-1999	0.81	M-v	2	Williams	17605	(3579)
(3581)	12.1	0.15	19990810	342.26477	107.39067	217.87548	28.80876	0.4065225	2.7745328	213	10	1962-1999	0.63	M-v	1	Williams	23656	(3581)
(3644)	13.2	0.15	19990810	347.18535	81.09499	355.52370	3.53700	0.0936864	2.2484360	48	10	1931-1998	0.94	M-v	1	Williams	23770	(3644)
(3651)	13.4	0.15	19990810	99.01079	136.76587	71.80098	7.31062	0.1036681	2.3783761	54	9	1943-1999	0.81	M-v	1	Williams	23114	(3651)
(3670)	12.0	0.15	19990810	122.82035	144.55905	107.23713	6.43814	0.0162179	2.7450052	60	10	1981-1999	0.92	M-v	1	Williams	29889	(3670)
(3687)	11.5	0.15	19990810	81.16312	113.63499	225.10505	15.80309	0.2005277	2.7267205	95	8	1908-1999	0.69	M-v	2	Williams	32039	(3687)
(3740)	13.9	0.15	19990810	356.58806	53.57682	354.88588	5.76490	0.2652540	2.4642211	117	8	1950-1997	0.92	M-v	1	Williams	12712	(3740)
(3761)	11.1	0.15	19990810	138.00531	84.64981	207.38380	16.21806	0.2824870	3.1201499	46	9	1936-1998	0.90	M-v	1	Williams	30890	(3761)
(3779)	11.4	0.15	19990810	201.77970	72.14351	59.38782	13.91632	0.1108271	2.6351879	60	12	1940-1999	0.92	M-v	1	Williams	12937	(3779)
(3798)	13.6	0.15	19990810	124.13037	244.17425	314.69545	2.43251	0.0772742	2.1678338	69	8	1950-1999	0.76	M-v	2	Williams	31412	(3798)
(3858)	13.7	0.15	19990810	14.36726	335.07078	348.15785	7.71239	0.2429595	2.1895953	125	7	1985-1999	0.70	M-v	1	Williams	29582	(3858)
(3916)	12.2	0.15	19990810	291.41117	79.44897	28.36038	1.96225	0.1461328	3.2349343	118	7	1981-1998	0.83	M-v	1	Williams	27290	(3916)
(3939)	11.4	0.15	19990810	77.60504	254.70750	32.70246	24.77130	0.0922676	3.1213113	36	10	1953-1999	0.94	M-v	1	Williams	35674	(3939)
(3947)	12.0	0.15	19990810	9.95122	103.59700	254.24835	5.37966	0.1524417	3.0994597	36	9	1955-1998	0.89	M-v	1	Williams	14007	(3947)
(3951)	12.8	0.15	19990810	336.88192	151.57774	270.28474	5.41790	0.1746884	2.3396120	64	8	1938-1999	0.85	M-v	1	Williams	35410	(3951)
(3984)	13.9	0.15	19990810	327.78480	262.95497	100.22515	2.93606	0.1830659	2.4355105	98	8	1969-1999	0.73	M-v	1	Williams	20130	(3984)
(4019)	14.9	0.15	19990810	174.04850	145.40909	262.81560	2.47851	0.1273208	2.3383162	58	7	1954-1999	0.97	M-v	2	Williams	20486	(4019)

(4083)	13.0	0.15	19990810	239.90959	270.11990	143.55945	12.79623	0.1957089	2.5967693	109	6	1983-1999	0.70	M-v	1	Williams	14603	(4083)
(4089)	13.1	0.15	19990810	0.66413	320.49679	317.00858	1.14481	0.1316019	2.1855180	101	13	1951-1999	0.85	M-v	1	Williams	24888	(4089)
(4101)	12.4	0.15	19990810	27.78138	339.78496	339.34250	8.73760	0.1123982	2.6990209	72	11	1953-1999	0.87	M-v	1	Williams	14609	(4101)
(4115)	11.7	0.15	19990810	308.26781	292.01208	206.80002	9.56805	0.0324355	3.0006635	110	10	1977-1998	0.81	M-v	1	Williams	24552	(4115)
(4213)	13.3	0.15	19990810	322.85380	218.19602	253.54365	3.41528	0.0759914	2.3885131	70	12	1969-1998	0.83	M-v	1	Williams	27087	(4213)
(4224)	10.9	0.15	19990810	323.87552	180.84958	201.16298	12.12786	0.1906226	2.9137901	95	9	1961-1999	0.81	M-v	1	Williams	24888	(4224)
(4290)	11.5	0.15	19990810	348.25338	91.51754	244.26394	8.49811	0.0918636	3.0249547	100	8	1973-1999	0.78	M-v	1	Williams	32040	(4290)
(4296)	13.5	0.15	19990810	317.13360	26.70459	13.25885	6.14931	0.1659548	2.2487546	97	9	1935-1999	0.74	M-v	2	Williams	18264	(4296)
(4307)	13.2	0.15	19990810	80.77591	309.23342	24.40219	5.17707	0.0786326	2.4120495	39	8	1976-1998	0.78	M-v	2	Williams	15680	(4307)
(4353)	12.4	0.15	19990810	40.77694	196.56907	79.27288	8.99477	0.1075530	2.3459287	62	10	1931-1999	1.03	M-v	1	Williams	31778	(4353)
(4368)	11.3	0.15	19990810	334.00661	101.18415	225.90433	20.99218	0.0109422	3.1810916	78	7	1977-1999	0.87	M-v	1	Williams	31778	(4368)
(4386)	12.7	0.15	19990810	224.61364	124.11369	25.54568	11.46442	0.2049420	3.1525242	41	9	1954-1999	0.78	M-v	2	Williams	15872	(4386)
(4390)	13.5	0.15	19990810	61.10663	266.89660	348.44141	10.75321	0.2348753	2.4017713	106	7	1976-1999	0.67	M-v	1	Williams	16010	(4390)
(4414)	14.0	0.15	19990810	230.61083	119.79449	350.74488	7.75768	0.1190010	2.3335694	39	6	1960-1999	0.66	M-v	1	Williams	16018	(4414)
(4452)	12.0	0.15	19990810	118.48954	136.73333	322.97275	14.17739	0.1326234	2.6158328	49	6	1988-1999	0.79	M-v	1	Williams	23326	(4452)
(4469)	13.8	0.15	19990810	4.82308	20.74667	325.49921	11.85302	0.1888465	2.5751852	52	7	1974-1999	0.79	M-v	2	Williams	35674	(4469)
(4490)	12.7	0.15	19990810	314.62726	267.88914	134.92596	26.11963	0.0923934	1.9309710	46	9	1985-1999	0.74	M-v	2	Williams	28565	(4490)
(4497)	11.5	0.15	19990810	335.59203	302.21194	93.53309	9.74954	0.2683845	2.4268285	91	9	1931-1999	0.74	M-v	1	Williams	32040	(4497)
(4538)	13.3	0.15	19990810	316.10261	162.91489	219.44155	3.94145	0.1537655	2.4239824	91	8	1969-1999	0.72	M-v	1	Williams	16570	(4538)
(4625)	13.5	0.15	19990810	341.50040	13.19965	53.47825	1.60601	0.2340292	2.6057424	47	10	1950-1998	0.88	M-v	1	Williams	23770	(4625)
(4637)	13.1	0.15	19990810	201.16163	310.44160	271.72341	1.71608	0.1485920	2.4312953	77	8	1984-1998	0.70	M-v	1	Williams	17192	(4637)
(4689)	13.5	0.15	19990810	104.06644	32.00663	105.87422	5.15913	0.0725544	2.2868976	145	9	1964-1999	0.70	M-v	1	Williams	31413	(4689)
(4704)	13.5	0.15	19990810	263.46811	281.08965	220.96355	12.16978	0.1309335	2.6276760	40	6	1973-1998	0.95	M-v	2	Williams	17615	(4704)
(4747)	11.5	0.15	19990810	320.27159	349.32704	62.76154	11.81872	0.1181037	3.0033167	50	6	1978-1999	0.67	M-v	1	Williams	35410	(4747)
(4750)	13.6	0.15	19990810	269.22065	139.96351	295.17452	4.90479	0.0905724	2.1838519	75	9	1951-1999	0.81	M-v	1	Williams	31578	(4750)
(4774)	12.8	0.15	19990810	197.10891	236.36784	286.08882	3.62917	0.0852275	2.2378492	58	10	1951-1999	0.57	M-v	1	Williams	31413	(4774)
(4781)	14.6	0.15	19990810	2.74723	190.00731	158.75399	1.67084	0.1903018	2.1568308	83	8	1961-1999	0.77	M-v	1	Williams	20131	(4781)
(4827)	10.1	0.15	19990810	263.21075	167.13615	242.09796	7.70478	0.0463036	5.1293827	55	6	1954-1999	0.78	M-v	0	Williams	25412	(4827)
(4836)	9.5	0.15	19990810	338.88132	32.94947	82.03477	19.43554	0.1092504	5.1677551	63	7	1986-1999	0.74	M-v	1	Williams	30891	(4836)
(4841)	13.8	0.15	19990810	257.27126	288.35246	145.58561	3.87858	0.1035583	2.3084647	89	8	1985-1999	0.65	M-v	1	Williams	18276	(4841)
(4881)	14.4	0.15	19990810	195.36214	348.51755	141.45059	8.08308	0.0468442	2.3136012	78	7	1975-1999	0.70	M-v	1	Williams	18607	(4881)
(4887)	13.4	0.15	19990810	53.07573	84.76174	289.35563	1.00010	0.0261427	2.9191290	100	9	1954-1998	0.87	M-v	2	Williams	24223	(4887)
(4938)	13.2	0.15	19990810	333.88039	194.71859	222.56630	4.56108	0.0773094	2.3535579	80	6	1986-1998	0.67	M-v	1	Williams	23657	(4938)
(4993)	13.0	0.15	19990810	164.68607	186.02916	36.81633	6.93623	0.0591184	2.3710483	35	6	1983-1997	0.87	M-v	1	Williams	28817	(4993)
(5044)	13.3	0.15	19990810	142.54597	42.97676	344.78153	5.84817	0.1051874	2.2412710	78	7	1977-1999	0.79	M-v	1	Williams	31413	(5044)
(5057)	11.8	0.15	19990810	148.10862	285.50018	157.33221	6.98933	0.1415952	3.1310158	143	9	1959-1999	0.65	M-v	1	Williams	19665	(5057)
(5064)	12.8	0.15	19990810	192.18209	117.82903	157.24517	6.55209	0.1852736	2.2519053	59	4	1990-1998	0.73	M-v	1	Williams	19668	(5064)
(5066)	14.1	0.15	19990810	133.32479	184.53337	82.37945	41.45088	0.1543613	1.9364001	96	8	1977-1998	0.66	M-v	2	Williams	19669	(5066)
(5075)	13.6	0.15	19990810	297.07569	183.76973	262.30280	1.32357	0.1746825	2.4141768	38	6	1969-1999	0.86	M-v	2	Williams	19823	(5075)
(5125)	13.4	0.15	19990810	283.03345	84.58343	23.59444	3.86815	0.1595558	2.4665075	46	7	1976-1998	0.92	M-v	2	Williams	19843	(5125)
(5212)	11.6	0.15	19990810	236.74205	227.87552	230.46259	11.38589	0.0855668	3.0240957	76	6	1979-1999	0.77	M-v	1	Williams	32507	(5212)
(5214)	13.5	0.15	19990810	33.39977	262.13412	7.83097	6.07654	0.1032747	2.1879716	59	12	1953-1999	0.87	M-v	1	Williams	31414	(5214)
(5245)	13.5	0.15	19990810	96.04497	87.13674	146.23126	3.25203	0.1034715	2.1614666	60	11	1954-1999	0.55	M-v	1	Williams	20487	(5245)
(5246)	14.5	0.15	19990810	12.40014	140.09351	181.19783	5.61557	0.2830926	2.2243933	78	9	1979-1999	0.60	M-v	1	Williams	20487	(5246)
(5258)	10.0	0.15	19990810	315.31538	226.94622	248.31975	5.88805	0.0820789	5.2600121	64	6	1989-1998	0.77	M-v	1	Williams	30684	(5258)
(5290)	11.8	0.15	19990810	331.82133	161.21350	189.44963	11.19644	0.0620877	2.7339580	97	8	1957-1999	0.64	M-v	1	Williams	20624	(5290)
(5340)	12.7	0.15	19990810	172.15484	325.26480	272.36214	3.47396	0.1278512	3.0913521	101	6	1960-1998	0.67	M-v	1	Williams	26727	(5340)
(5418)	13.0	0.15	19990810	133.91602	244.59827	174.97578	17.44355	0.3059154	2.9775479	60	6	1976-1999	0.80	M-v	1	Williams	27545	(5418)
(5431)	13.0	0.15	19990810	346.04806	100.67683	287.87151	23.30781	0.2542554	2.3278404	29	6	1981-1999	0.85	M-v	1	Williams	21551	(5431)
(5435)	11.4	0.15	19990810	280.65198	356.27602	109.69146	18.20837	0.1381278	3.1502010	27	7	1951-1999	0.72	M-v	1	Williams	21552	(5435)
(5436)	10.3	0.15	19990810	329.60945	219.28746	253.98326	7.43463	0.0796045	5.1979575	72	8	1986-1998	0.77	M-v	0	Williams	31002	(5436)
(5441)	11.4	0.15	19990810	158.80761	142.37095	131.37004	10.98719	0.0821581	3.0490313	47	9	1954-1998	0.65	M-v	1	Williams	21555	(5441)
(5480)	11.4	0.15	19990810	68.46430	161.99203	121.24279	6.64435	0.0806402	3.1434981	71	9	1953-1999	0.83	M-v	1	Williams	21776	(5480)

(5486)	12.2	0.15	19990810	66.17852	220.93688	63.86829	10.20179	0.0607620	2.6043135	50	9	1955-1999	0.61	M-v	1	Williams	21779	(5486)
(5496)	15.3	0.15	19990810	327.84608	118.21358	101.10007	68.01666	0.6378558	2.4338025	43	5	1973-1996	0.76	M-v	2	Williams	25193	(5496)
(5532)	12.1	0.15	19990810	48.79863	68.80314	123.92007	1.17296	0.1405295	3.1186720	98	10	1932-1999	0.84	M-v	1	Williams	22035	(5532)
(5539)	12.6	0.15	19990810	292.50240	121.63092	296.16644	1.82408	0.1561688	2.4357976	72	9	1965-1999	0.76	M-v	1	Williams	29585	(5539)
(5575)	12.9	0.15	19990810	180.35250	228.83711	141.77971	0.57786	0.1799889	3.0914511	100	11	1950-1999	0.74	M-v	1	Williams	25041	(5575)
(5593)	13.9	0.15	19990810	219.94655	339.64300	167.69577	5.31583	0.0982695	2.2718633	68	13	1953-1998	0.81	M-v	1	Williams	22213	(5593)
(5604)	16.4	0.15	19990810	201.41946	82.28984	312.14765	4.79132	0.4054193	0.9270127	46	6	1976-1999	0.76	M-v	3	Williams	22476	(5604)
(5637)	10.2	0.15	19990810	353.45508	330.15163	2.18314	22.49113	0.1202070	5.1031470	26	8	1953-1999	0.93	M-v	1	Williams	25041	(5637)
(5652)	9.8	0.15	19990810	56.72449	107.98825	281.66973	1.89970	0.0772328	5.1919608	53	9	1955-1999	0.80	M-v	0	Williams	23497	(5652)
(5661)	10.1	0.15	19990810	297.50912	2.89404	317.43709	13.31530	0.2411406	3.9503834	79	8	1977-1999	0.74	M-v	1	Williams	22578	(5661)
(5662)	12.3	0.15	19990810	168.45286	263.26111	308.28896	8.52534	0.0163105	2.9982877	49	6	1955-1998	0.73	M-v	1	Williams	22578	(5662)
(5690)	12.5	0.15	19990810	259.12001	81.34411	1.33000	29.01810	0.3811539	2.7979887	22	6	1974-1993	0.71	M-v	2	Williams	22584	(5690)
(5770)	12.2	0.15	19990810	32.34957	253.40047	62.75890	0.39111	0.1657233	3.2284568	69	9	1964-1999	0.88	M-v	1	Williams	35411	(5770)
(5862)	13.7	0.15	19990810	160.96738	63.62341	90.06785	3.39336	0.1527047	2.3843055	87	5	1983-1999	0.87	M-v	1	Williams	31578	(5862)
(5892)	13.6	0.15	19990810	288.50601	290.92749	153.88028	4.58512	0.3026655	2.3840668	97	7	1981-1999	0.54	M-v	1	Williams	23328	(5892)
(5903)	12.7	0.15	19990810	94.88082	92.59429	46.18669	2.10352	0.0957297	2.7440042	101	5	1988-1999	0.84	M-v	2	Williams	23330	(5903)
(5908)	14.2	0.15	19990810	301.84262	206.29462	206.91740	5.98261	0.1760030	2.2542030	97	7	1988-1999	0.79	M-v	1	Williams	35411	(5908)
(5915)	13.7	0.15	19990810	240.30436	358.84834	102.88238	4.79890	0.0996520	2.2518642	89	8	1976-1999	0.72	M-v	1	Williams	23333	(5915)
(5937)	13.7	0.15	19990810	334.12101	327.11972	35.97691	3.62273	0.1303853	2.2599365	114	10	1950-1999	0.80	M-v	1	Williams	23499	(5937)
(5951)	13.5	0.15	19990810	338.76240	285.99190	88.54575	5.37212	0.2184951	2.1970843	99	14	1952-1999	0.79	M-v	1	Williams	23502	(5951)
(6034)	14.4	0.15	19990810	274.51529	69.41721	29.47683	3.32164	0.1704316	2.3380720	59	5	1987-1999	0.65	M-v	1	Williams	28818	(6034)
(6060)	13.0	0.15	19990810	74.35438	145.11215	156.02148	9.88664	0.0909297	2.6166848	53	6	1980-1998	0.77	M-v	2	Williams	23853	(6060)
(6149)	14.1	0.15	19990810	143.04769	17.53346	335.18173	6.35994	0.1731707	2.3875550	60	6	1977-1998	0.80	M-v	1	Williams	24223	(6149)
(6174)	11.9	0.15	19990810	16.77598	302.24840	21.94882	14.70155	0.2161284	3.0585315	36	8	1930-1999	0.91	M-v	1	Williams	24376	(6174)
(6206)	12.9	0.15	19990810	270.87704	202.28441	238.32443	1.09729	0.0428509	2.8303640	71	8	1978-1999	0.71	M-v	1	Williams	24554	(6206)
(6300)	12.5	0.15	19990810	294.06076	45.48420	70.08504	1.86592	0.1377972	3.2420096	73	7	1978-1998	0.98	M-v	1	Williams	25048	(6300)
(6309)	12.1	0.15	19990810	223.97364	268.67016	334.96100	10.11884	0.0537181	3.0026482	44	8	1972-1999	0.81	M-v	1	Williams	25050	(6309)
(6338)	11.8	0.15	19990810	171.45272	215.22824	75.12609	15.32867	0.0942489	3.1619548	75	6	1987-1999	0.64	M-v	1	Williams	25056	(6338)
(6348)	13.1	0.15	19990810	144.23097	96.14142	313.31221	4.92407	0.1362272	2.4515958	56	6	1978-1999	0.69	M-v	1	Williams	25058	(6348)
(6384)	12.8	0.15	19990810	63.39326	265.52070	76.95312	26.29153	0.0771442	1.9365859	64	7	1989-1998	0.69	M-v	1	Williams	25200	(6384)
(6434)	14.0	0.15	19990810	14.10686	201.46342	139.49499	14.88716	0.2335695	2.3262358	51	7	1981-1999	0.73	M-v	1	Williams	25318	(6434)
(6444)	14.0	0.15	19990810	1.06594	268.67715	98.28860	6.05944	0.3053790	2.2295464	56	6	1979-1998	0.81	M-v	2	Williams	25320	(6444)
(6491)	18.5	0.15	19990810	17.94017	317.33696	306.55515	5.52176	0.5865188	2.5070839	128	3	1991-1999	0.57	M-v	0	Williams	34572	(6491)
(6495)	12.8	0.15	19990810	46.56643	45.97626	247.00941	6.63825	0.1328247	2.3357937	88	8	1974-1999	0.70	M-v	1	Williams	25420	(6495)
(6516)	14.7	0.15	19990810	18.41456	82.07952	280.35057	1.69731	0.2006329	2.3370901	46	6	1988-1998	0.88	M-v	2	Williams	25521	(6516)
(6556)	13.8	0.15	19990810	26.45509	286.00098	103.54834	4.98613	0.1332971	2.1999202	57	6	1989-1998	0.46	M-v	1	Williams	25631	(6556)
(6716)	12.8	0.15	19990810	264.46402	260.67228	162.50857	4.63998	0.0591672	2.7890684	98	9	1976-1999	0.59	M-v	1	Williams	26156	(6716)
(6734)	11.2	0.15	19990810	334.56014	310.76618	58.58848	11.36643	0.1164785	2.9946124	47	9	1950-1999	0.78	M-v	1	Williams	28818	(6734)
(6772)	12.8	0.15	19990810	308.88863	103.09160	296.28624	12.68578	0.1933924	2.6627663	74	7	1986-1999	0.75	M-v	1	Williams	32041	(6772)
(6824)	12.9	0.15	19990810	313.11881	283.73398	118.06539	2.00007	0.1975117	3.1174249	98	4	1988-1999	0.66	M-v	1	Williams	26552	(6824)
(6836)	12.7	0.15	19990810	10.87224	71.84793	255.84979	0.93998	0.0601439	2.8772563	119	7	1982-1999	0.56	M-v	1	Williams	26555	(6836)
(6839)	11.7	0.15	19990810	354.13988	90.00916	251.96026	0.96630	0.0749760	2.8697059	84	11	1974-1999	0.68	M-v	1	Williams	26555	(6839)
(6842)	13.7	0.15	19990810	342.14944	148.44631	233.66885	10.96793	0.0970251	2.6547968	55	9	1960-1999	0.78	M-v	1	Williams	26556	(6842)
(6866)	11.9	0.15	19990810	42.03190	156.36583	111.80789	11.03135	0.0496940	3.0203152	76	10	1940-1999	0.69	M-v	1	Williams	26733	(6866)
(6915)	12.6	0.15	19990810	268.86004	116.31282	97.97051	12.02832	0.1229222	2.6035106	41	6	1979-1999	0.76	M-v	1	Williams	26893	(6915)
(6924)	11.2	0.15	19990810	30.23414	276.38648	26.96571	12.28347	0.0897359	3.3899975	37	6	1981-1999	0.63	M-v	1	Williams	26895	(6924)
(7149)	13.5	0.15	19990810	61.35070	98.48034	178.52627	0.99994	0.1252085	3.1419026	60	9	1954-1999	0.84	M-v	1	Williams	28566	(7149)
(7179)	12.7	0.15	19990810	21.71930	209.38669	201.23067	1.11676	0.1279419	2.9352338	79	6	1978-1998	0.77	M-v	2	Williams	27899	(7179)
(7255)	13.7	0.15	19990810	31.83829	225.00668	31.12353	5.69731	0.1388012	2.2694110	44	8	1958-1999	0.83	M-v	1	Williams	35412	(7255)
(7275)	11.9	0.15	19990810	137.67111	115.73666	326.41628	9.17977	0.0628487	2.9949135	76	7	1955-1999	0.65	M-v	1	Williams	28283	(7275)
(7277)	13.8	0.15	19990810	273.45392	239.76885	97.27041	3.79606	0.2212332	2.6189464	56	8	1979-1999	0.77	M-v	1	Williams	28284	(7277)
(7302)	12.1	0.15	19990810	213.80950	278.53298	123.54131	9.95600	0.1809995	2.8077952	68	7	1982-1999	0.71	M-v	1	Williams	28289	(7302)
(7306)	13.5	0.15	19990810	20.35341	287.19049	352.19814	28.84387	0.3212819	2.6426379	79	5	1982-1999	0.49	M-v	1	Williams	28290	(7306)

(7345)	14.7	0.15	19990810	291.89162	281.49164	68.46412	3.68090	0.3239420	2.4517332	83	6	1988-1999	0.66	M-v	1	Williams	28574	(7345)
(7385)	14.0	0.15	19990810	261.38895	357.23583	78.09309	3.73167	0.1259550	2.3889082	69	6	1981-1999	0.72	M-v	1	Williams	31779	(7385)
(7435)	13.6	0.15	19990810	195.44165	317.37239	212.60233	3.78692	0.1067307	2.2813483	52	8	1987-1999	0.80	M-v	1	Williams	28835	(7435)
(7445)	15.0	0.15	19990810	352.08229	109.33045	226.96423	1.18046	0.2435129	2.1971880	65	7	1960-1999	0.89	M-v	2	Williams	28837	(7445)
(7532)	13.4	0.15	19990810	348.20313	328.19046	32.71788	16.26531	0.1206531	2.6278103	82	7	1981-1999	0.50	M-v	1	Williams	29294	(7532)
(7583)	12.4	0.15	19990810	78.84025	147.10348	140.16925	10.81120	0.0566184	3.0050889	60	6	1988-1999	0.59	M-v	1	Williams	35675	(7583)
(7588)	11.2	0.15	19990810	80.29971	258.59893	320.73989	20.67184	0.1590749	3.1999988	59	10	1954-1999	0.68	M-v	1	Williams	29598	(7588)
(7591)	14.4	0.15	19990810	268.05529	237.74844	207.22793	1.49663	0.1771880	2.4126672	45	7	1982-1999	0.80	M-v	1	Williams	29598	(7591)
(7678)	13.6	0.15	19990810	47.72365	345.07914	344.82447	8.88462	0.0876758	3.1760078	45	5	1988-1999	0.47	M-v	1	Williams	29906	(7678)
(7821)	13.1	0.15	19990810	266.74892	59.45899	58.03293	2.88410	0.0133073	2.8929005	54	6	1989-1998	0.77	M-v	1	Williams	30436	(7821)
(8032)	14.0	0.15	19990810	306.95685	215.94112	36.04946	9.19136	0.1772947	2.3860920	59	6	1970-1999	0.88	M-v	1	Williams	30859	(8032)
(8275)	14.4	0.15	19990810	152.42308	87.54880	87.08030	3.81794	0.0947892	2.1495199	77	7	1949-1999	0.74	M-v	1	Williams	31213	(8275)
(8307)	15.4	0.15	19990810	52.09425	254.82035	11.90304	5.20903	0.1076640	2.1639405	106	5	1992-1999	0.46	M-v	1	Williams	31219	(8307)
(8359)	12.4	0.15	19990810	129.45993	126.42966	63.43329	7.62883	0.0660936	2.3495455	69	6	1989-1999	0.84	M-v	1	Williams	31356	(8359)
(8460)	14.9	0.15	19990810	308.67134	220.49246	165.86454	3.02158	0.1092914	2.2462063	100	7	1971-1999	0.77	M-v	2	Williams	31487	(8460)
(8519)	13.8	0.15	19990810	316.66300	112.32309	191.19071	5.94302	0.0732583	3.2442318	45	5	1977-1999	0.78	M-v	2	Williams	31500	(8519)
(8580)	13.0	0.15	19990810	224.62557	293.16935	108.86253	12.12882	0.1327735	3.1167649	62	6	1979-1999	0.52	M-v	1	Williams	31515	(8580)
(8602)	13.4	0.15	19990810	96.06810	236.60080	354.17098	8.10083	0.1297052	2.4012168	107	8	1955-1999	0.75	M-v	1	Williams	31520	(8602)
(8632)	13.8	0.15	19990810	30.68976	104.80331	178.53257	12.17958	0.1548277	2.6214116	64	5	1981-1999	0.70	M-v	2	Williams	31671	(8632)
(8639)	14.9	0.15	19990810	291.66934	156.44147	260.10237	5.12678	0.1390106	2.2282271	81	5	1986-1999	0.65	M-v	1	Williams	31673	(8639)
(8643)	13.2	0.15	19990810	169.77902	70.18079	0.64831	12.97445	0.1557975	2.5696321	48	6	1951-1999	0.96	M-v	1	Williams	31673	(8643)
(8686)	14.0	0.15	19990810	294.47950	268.29205	136.82859	7.70015	0.0940727	2.2776683	74	5	1989-1999	0.64	M-v	1	Williams	31683	(8686)
(8688)	14.6	0.15	19990810	9.51849	176.23589	151.93555	4.44142	0.1737873	2.2726095	101	5	1992-1999	0.54	M-v	1	Williams	31684	(8688)
(8696)	13.3	0.15	19990810	166.74090	341.55588	67.53736	5.99167	0.1168028	3.2450943	47	5	1993-1999	0.80	M-v	1	Williams	31686	(8696)
(8725)	14.4	0.15	19990810	314.99492	308.15380	85.17701	2.46708	0.1096661	2.1544653	84	5	1992-1999	0.66	M-v	2	Williams	31693	(8725)
(8731)	14.4	0.15	19990810	335.26784	301.96967	63.14642	7.31032	0.1225906	2.3104577	48	5	1991-1999	0.80	M-v	1	Williams	31694	(8731)
(8752)	14.4	0.15	19990810	84.55271	226.46530	8.12600	3.04109	0.1896496	2.3325590	61	7	1950-1999	0.65	M-v	1	Williams	31699	(8752)
(8764)	15.5	0.15	19990810	58.96797	291.90921	333.78119	2.23734	0.1567262	2.4035078	69	5	1973-1999	0.87	M-v	1	Williams	31702	(8764)
(8775)	14.9	0.15	19990810	14.80030	76.30900	243.58146	6.95462	0.1247579	2.4049647	47	5	1973-1999	0.77	M-v	1	Williams	31705	(8775)
(8790)	14.2	0.15	19990810	346.59550	261.35607	91.60571	3.61560	0.0870574	2.6581978	55	6	1978-1999	0.68	M-v	1	Williams	31897	(8790)
(8793)	13.7	0.15	19990810	252.23534	143.68539	288.99279	2.36653	0.1437206	2.5331570	62	6	1979-1999	0.70	M-v	1	Williams	31897	(8793)
(8805)	14.4	0.15	19990810	5.39122	186.14033	184.99770	2.76488	0.1544054	2.3411822	55	6	1981-1999	0.85	M-v	1	Williams	31900	(8805)
(8819)	13.5	0.15	19990810	7.78320	158.92759	179.64724	9.39159	0.1686521	2.7829278	61	5	1985-1999	0.64	M-v	1	Williams	31903	(8819)
(8830)	11.8	0.15	19990810	353.81942	313.08932	37.54589	9.74501	0.2279399	3.1879775	116	5	1988-1999	0.78	M-v	1	Williams	31906	(8830)
(8834)	12.9	0.15	19990810	186.14831	8.06394	105.25746	6.88675	0.1503190	3.1806373	56	5	1986-1999	0.74	M-v	1	Williams	31907	(8834)
(8840)	13.9	0.15	19990810	219.32903	68.03903	67.23615	4.42875	0.0319828	2.2687040	61	5	1989-1999	0.70	M-v	1	Williams	31909	(8840)
(8842)	13.5	0.15	19990810	11.38116	208.02338	143.08809	11.24971	0.2226260	2.5388316	71	5	1990-1999	0.57	M-v	1	Williams	31909	(8842)
(8896)	13.9	0.15	19990810	101.43950	177.81714	75.33757	7.23867	0.0969523	2.3585636	81	5	1992-1999	0.65	M-v	1	Williams	31922	(8896)
(8905)	14.0	0.15	19990810	0.21364	280.21308	71.05375	5.69794	0.2709602	2.6079454	39	5	1978-1999	0.74	M-v	1	Williams	31924	(8905)
(8913)	12.4	0.15	19990810	81.72525	249.01373	310.71072	1.86106	0.1256178	3.9662345	67	5	1993-1999	0.62	M-v	1	Williams	31926	(8913)
(8920)	14.5	0.15	19990810	213.81925	28.08857	97.23356	3.37474	0.1664100	2.3577021	38	5	1978-1999	0.70	M-v	1	Williams	31928	(8920)
(8922)	13.8	0.15	19990810	237.69373	84.16610	30.66556	4.87154	0.1107956	2.2969797	65	6	1973-1999	0.66	M-v	1	Williams	31928	(8922)
(8929)	14.3	0.15	19990810	307.32342	315.13927	93.42354	5.71892	0.1420112	2.3399566	44	5	1991-1999	0.65	M-v	1	Williams	31930	(8929)
(8944)	14.1	0.15	19990810	118.68110	8.17157	190.15251	0.79757	0.1278892	3.1162664	53	6	1993-1999	0.82	M-v	1	Williams	31933	(8944)
(8948)	14.2	0.15	19990810	347.06341	79.49378	291.39272	1.59426	0.1992558	2.4293053	58	5	1971-1999	0.76	M-v	1	Williams	31934	(8948)
(8964)	15.0	0.15	19990810	286.28874	287.43966	150.60707	4.33796	0.1048029	2.1928669	51	5	1960-1999	0.75	M-v	1	Williams	31938	(8964)
(8978)	14.2	0.15	19990810	99.01303	211.49355	356.21862	0.30326	0.1071050	3.2107245	67	8	1977-1999	0.86	M-v	1	Williams	31941	(8978)
(9003)	12.7	0.15	19990810	300.50147	274.52244	125.19704	5.33508	0.0770891	2.7804440	48	6	1981-1999	0.60	M-v	1	Williams	32175	(9003)
(9014)	13.7	0.15	19990810	315.84874	341.00964	73.64044	9.42880	0.1663097	2.3207939	33	6	1978-1999	0.81	M-v	2	Williams	32177	(9014)
(9032)	14.5	0.15	19990810	211.75623	45.02803	107.88947	5.13614	0.1008903	2.2877531	61	8	1973-1999	0.93	M-v	1	Williams	32181	(9032)
(9054)	13.3	0.15	19990810	2.93812	258.02830	103.81969	14.30473	0.1898510	2.6241864	43	5	1990-1999	0.66	M-v	1	Williams	32186	(9054)
(9064)	13.9	0.15	19990810	166.67258	108.10494	120.52815	8.13462	0.1252047	2.4368556	53	4	1991-1998	0.66	M-v	1	Williams	32188	(9064)
(9078)	12.9	0.15	19990810	2.79383	7.01066	334.83723	1.38168	0.0719793	2.8570627	63	5	1975-1999	0.73	M-v	1	Williams	32191	(9078)

(9094)	13.7	0.15	19990810	345.68146	243.92846	101.69893	3.44942	0.0491193	2.8660767	76	5	1983–1999	0.60	M-v	1	Williams	32195	(9094)
(9107)	13.2	0.15	19990810	181.25558	11.30749	126.46342	6.80211	0.2031467	2.8650511	54	6	1981–1999	0.63	M-v	1	Williams	32198	(9107)
(9112)	13.1	0.15	19990810	70.94963	163.52200	100.67236	2.79085	0.1279791	3.1203534	58	6	1976–1999	0.78	M-v	1	Williams	32199	(9112)
(9113)	13.5	0.15	19990810	141.95344	337.68819	210.07350	5.30955	0.0619130	2.8116941	59	5	1976–1999	0.57	M-v	1	Williams	32199	(9113)
(9121)	11.4	0.15	19990810	271.08515	357.32679	327.95745	4.61485	0.0525286	3.8941726	108	6	1976–1999	0.65	M-v	1	Williams	32201	(9121)
(9123)	14.0	0.15	19990810	115.44100	212.41397	333.59658	11.86991	0.2090319	2.5884150	67	7	1973–1999	0.72	M-v	2	Williams	32202	(9123)
(9331)	14.5	0.15	19990810	25.80266	282.29112	14.05467	4.44654	0.0544403	2.7460204	47	5	1990–1999	0.68	M-v	1	Williams	32613	(9331)
(9346)	14.2	0.15	19990810	326.56438	299.62873	107.69408	3.20454	0.1752647	2.4297115	33	5	1988–1999	1.00	M-v	1	Williams	32617	(9346)
(9378)	13.0	0.15	19990810	179.47001	27.50928	153.74822	2.06691	0.1244343	3.1721468	34	6	1981–1999	0.71	M-v	1	Williams	32624	(9378)
(9398)	13.9	0.15	19990810	318.86600	112.51730	209.85700	1.21872	0.1433558	3.3362104	39	5	1992–1999	0.56	M-v	1	Williams	32629	(9398)
(9401)	12.9	0.15	19990810	71.76487	315.08083	34.23578	14.26741	0.2055860	2.6761842	79	5	1994–1999	0.68	M-v	2	Williams	32630	(9401)
(9430)	10.5	0.15	19990810	47.09851	309.10689	326.61563	0.99974	0.0538322	5.2899939	41	5	1978–1999	0.84	M-v	1	Williams	32637	(9430)
(9459)	13.8	0.15	19990810	98.24364	289.58656	319.81856	4.77341	0.1672908	2.3063576	49	6	1978–1999	0.60	M-v	1	Williams	32643	(9459)
(9506)	13.0	0.15	19990810	177.48336	247.87132	301.81865	7.67274	0.0274795	2.9976742	48	5	1973–1999	0.65	M-v	1	Williams	32655	(9506)
(9525)	14.5	0.15	19990810	59.50039	61.49914	329.79856	7.46824	0.0985957	2.4582671	62	4	1977–1998	0.72	M-v	2	Williams	32870	(9525)
(9544)	12.6	0.15	19990810	245.88104	110.38091	57.04504	5.89096	0.0880435	3.1989886	52	5	1984–1998	0.81	M-v	2	Williams	32875	(9544)
(9595)	13.8	0.15	19990810	71.73771	123.31379	294.63618	4.64459	0.1720163	2.2721486	69	5	1953–1999	0.73	M-v	2	Williams	32888	(9595)
(9714)	12.5	0.15	19990810	93.86241	283.24678	25.02107	19.55846	0.0550648	3.1116463	30	6	1954–1999	0.61	M-v	1	Williams	33191	(9714)
(10174)	14.4	0.15	19990810	354.63962	340.39536	213.85892	4.38329	0.2361566	2.7465828	81	4	1995–1999	0.61	M-v	2	Williams	33899	(10174)
(10181)	16.4	0.15	19990810	112.67835	315.77518	123.15801	5.27978	0.0969528	2.2129442	54	4	1993–1999	0.59	M-v	2	Williams	33901	(10181)
(10195)	12.2	0.15	19990810	222.49326	346.43901	15.10753	14.48960	0.1839210	2.8903114	81	5	1989–1999	0.55	M-v	1	Williams	33904	(10195)
(10339)	14.3	0.15	19990810	269.99266	205.73517	232.93482	0.86654	0.1012863	2.5372797	51	6	1991–1999	0.73	M-v	1	Williams	34145	(10339)
(11255)	13.5	0.15	19990810	51.07086	31.37279	94.60998	2.55065	0.1430701	3.1071229	57	5	1977–1999	0.77	M-v	1	Williams	35555	(11255)
1942 TB	12.9	0.15	19990810	358.26405	221.16009	151.09947	9.38659	0.2757720	2.5454372	47	5	1942–1999	0.70	M-v	2	Williams	32297	1942 TB
1955 RE ₁	14.0	0.15	19990810	357.43163	22.33856	319.77416	7.25296	0.2546059	2.3778261	49	3	1955–1999	0.60	M-v	2	Williams	35414	1955 RE ₁
1966 PL	14.2	0.15	19990810	56.33729	168.50089	123.55670	7.31341	0.1230672	2.3602029	52	4	1966–1999	0.74	M-v	1	Williams	32737	1966 PL
1969 TT ₁	14.2	0.15	19990810	352.63773	355.50001	26.53847	2.37126	0.1837027	2.4095901	42	7	1969–1999	0.82	M-v	2	Williams	32041	1969 TT ₁
1973 AW ₃	12.0	0.15	19990810	230.24517	83.34074	65.70874	7.71590	0.0665236	2.7845603	24	10	1973–1999	0.90	M-v	1	Williams	32297	1973 AW ₃
1973 UK ₅	14.5	0.15	19990810	257.51675	44.40764	46.89124	3.01684	0.1573553	2.4187487	38	5	1973–1999	0.68	M-v	2	Williams	35676	1973 UK ₅
1975 SX	14.1	0.15	19990810	356.48633	158.71281	201.29788	1.51746	0.1455897	3.3132764	21	3	1975–1999	1.07	M-v	6	Williams	30892	1975 SX
1975 TU ₃	13.7	0.15	19990810	318.72286	10.60402	44.90871	8.81306	0.0508737	2.2706821	16	4	1975–1999	0.69	M-v	3	Williams	31942	1975 TU ₃
1976 QK ₁	14.3	0.15	19990810	18.78631	123.63689	200.18397	2.44498	0.2017900	2.4432248	54	4	1976–1999	0.75	M-v	2	Williams	35676	1976 QK ₁
1977 DL ₄	14.6	0.15	19990810	124.50962	213.44894	356.39697	4.46436	0.2353690	2.5722343	45	4	1977–1999	0.77	M-v	4	Williams	32297	1977 DL ₄
1977 ER ₅	13.6	0.15	19990810	311.58994	141.25700	266.52152	0.80697	0.0634364	2.9027224	33	4	1977–1999	0.67	M-v	1	Williams	30684	1977 ER ₅
1977 PB	13.5	0.15	19990810	99.28939	110.80590	132.62394	13.50916	0.1343031	2.6483229	46	4	1977–1999	0.66	M-v	2	Williams	32738	1977 PB
1977 QW	13.1	0.15	19990810	36.89984	315.44325	342.82629	7.24634	0.2643248	3.1028729	30	5	1977–1999	0.69	M-v	1	Williams	35599	1977 QW
1977 QF ₁	12.6	0.15	19990810	24.38365	344.99797	355.77581	13.36160	0.1789302	2.6636768	45	5	1977–1999	0.70	M-v	2	Williams	29939	1977 QF ₁
1977 QN ₂	14.8	0.15	19990810	15.68550	6.91051	314.53358	2.43508	0.2540218	2.3714131	33	5	1977–1999	0.69	M-v	2	Williams	35676	1977 QN ₂
1977 RK	14.7	0.15	19990810	175.01886	133.84821	46.75308	21.44773	0.0497716	1.9517927	45	6	1977–1999	0.76	M-v	2	Williams	32041	1977 RK
1977 RG ₁₉	15.8	0.15	19990810	251.60768	137.41054	312.09406	1.95912	0.0823920	2.1528836	40	4	1977–1999	0.77	M-v	1	Williams	35676	1977 RG ₁₉
1978 NF	14.3	0.15	19990810	56.10226	194.11657	111.79326	14.35662	0.1653353	2.5539216	42	3	1978–1999	0.61	M-v	2	Williams	32297	1978 NF
1978 PE	14.8	0.15	19990810	346.35293	214.08602	133.41164	5.23414	0.2306773	2.2988368	64	5	1978–1999	0.71	M-v	2	Williams	35676	1978 PE
1978 QF ₁	14.7	0.15	19990810	317.48849	199.87179	187.18866	4.97462	0.2144069	2.3102171	45	4	1978–1999	0.63	M-v	2	Williams	35676	1978 QF ₁
1978 RD ₂	14.6	0.15	19990810	4.43036	328.94134	34.49100	4.76588	0.2308693	2.5869326	19	3	1978–1999	0.83	M-v	4	Williams	31943	1978 RD ₂
1978 RQ ₉	14.4	0.15	19990810	96.41485	231.94431	350.02459	6.74724	0.0588257	2.3108739	74	5	1978–1999	0.61	M-v	2	Williams	35676	1978 RQ ₉
1978 RA ₁₀	15.2	0.15	19990810	288.24866	75.10656	358.62663	1.55370	0.2127001	2.3016602	47	3	1978–1999	0.61	M-v	5	Williams	35676	1978 RA ₁₀
1978 ST ₇	14.1	0.15	19990810	278.12761	136.62919	322.16827	5.65224	0.1266392	2.3043145	47	5	1978–1999	0.69	M-v	3	Williams	35414	1978 ST ₇
1978 SX ₇	14.6	0.15	19990810	302.86459	82.04187	342.04713	4.56180	0.2898564	2.6186949	52	4	1978–1999	0.60	M-v	1	Williams	29652	1978 SX ₇
1978 TH ₇	12.6	0.15	19990810	324.40565	256.99544	146.69339	9.66787	0.1486457	3.0393169	26	4	1978–1999	0.68	M-v	2	Williams	30090	1978 TH ₇
1978 VT ₄	13.8	0.15	19990810	245.44273	68.41668	35.47296	1.53672	0.1358219	3.1211502	47	7	1978–1999	0.59	M-v	1	Williams	29939	1978 VT ₄
1978 VX ₄	14.9	0.15	19990810	9.02996	269.70177	66.06010	4.27193	0.1470596	2.3310386	44	4	1978–1999	0.71	M-v	3	Williams	32042	1978 VX ₄
1978 VZ ₆	14.1	0.15	19990810	349.62897	98.96711	242.42983	1.80558	0.0599971	3.1244748	30	4	1978–1999	0.63	M-v	1	Williams	23968	1978 VZ ₆
1978 VE ₇	14.8	0.15	19990810	339.05477	172.10521	176.47765	0.75574	0.2202790	2.3384600	46	5	1978–1999	0.67	M-v	2	Williams	35677	1978 VE ₇

1978 VW ₈	13.2	0.15	19990810	292.50429	338.06718	81.62261	2.55965	0.1598749	3.0991324	36	5	1978–1999	0.74	M-v	1	Williams	28882	1978 VW ₈
1978 VP ₉	15.0	0.15	19990810	24.62494	83.77162	237.50207	6.36549	0.1345793	2.3332410	39	3	1978–1999	0.84	M-v	3	Williams	35414	1978 VP ₉
1979 HN ₅	12.4	0.15	19990810	221.37967	203.60914	101.42724	7.57055	0.2422379	3.0779909	33	5	1979–1999	0.73	M-v	1	Williams	35677	1979 HN ₅
1979 MM ₃	14.2	0.15	19990810	343.15302	254.41716	120.05931	17.68977	0.1163860	2.8664760	24	4	1979–1999	0.68	M-v	2	Williams	32298	1979 MM ₃
1979 QR ₂	14.0	0.15	19990810	280.83071	88.63455	333.80839	1.06076	0.0925386	2.9122350	50	5	1954–1999	0.62	M-v	3	Williams	29653	1979 QR ₂
1979 QM ₃	16.1	0.15	19990810	315.08707	240.46015	148.68518	5.26832	0.1236341	2.2263506	37	4	1979–1999	0.50	M-v	1	Williams	35677	1979 QM ₃
1979 QZ ₉	13.6	0.15	19990810	331.84290	30.20407	310.49038	3.24894	0.1784733	2.2530058	47	5	1979–1999	0.59	M-v	3	Williams	35677	1979 QZ ₉
1980 DS ₄	14.3	0.15	19990810	58.34998	65.40658	173.97239	4.69661	0.1999455	2.3785846	44	5	1980–1999	0.67	M-v	2	Williams	35415	1980 DS ₄
1980 FV ₂	13.0	0.15	19990810	52.97410	296.69746	356.38097	12.13082	0.1863704	2.6828983	33	3	1980–1999	0.53	M-v	4	Williams	21965	1980 FV ₂
1980 FZ ₂	13.3	0.15	19990810	79.54723	103.66681	177.80086	16.14179	0.1366203	3.1526767	25	3	1980–1999	0.66	M-v	5	Williams	33922	1980 FZ ₂
1980 FH ₅	13.4	0.15	19990810	315.19178	82.84762	354.74907	13.57818	0.1579179	2.5936040	44	6	1980–1999	0.89	M-v	1	Williams	28882	1980 FH ₅
1980 PJ ₁	15.0	0.15	19990810	331.03985	130.02590	278.89389	4.54746	0.2417312	2.1432121	22	4	1980–1999	0.43	M-v	1	Williams	32042	1980 PJ ₁
1980 PE ₃	13.7	0.15	19990810	264.68018	208.87753	65.20439	15.67620	0.1608759	2.5571173	32	3	1980–1999	0.84	M-v	2	Williams	35677	1980 PE ₃
1981 DT	13.4	0.15	19990810	160.29276	185.63283	329.35298	14.85863	0.0628283	3.0964482	41	3	1981–1999	0.78	M-v	3	Williams	35415	1981 DT
1981 DH ₁	13.3	0.15	19990810	302.53803	107.18660	280.21714	7.22680	0.1947081	3.0568253	53	3	1981–1999	0.66	M-v	2	Williams	35415	1981 DH ₁
1981 DA ₂	13.5	0.15	19990810	236.99206	99.78216	296.10704	6.73875	0.1120412	3.1644281	28	3	1981–1998	0.90	M-v	5	Williams	32042	1981 DA ₂
1981 DG ₂	13.1	0.15	19990810	30.98014	107.76309	220.94887	10.09617	0.1732725	3.0508798	31	5	1981–1999	0.81	M-v	1	Williams	32298	1981 DG ₂
1981 DL ₂	15.5	0.15	19990810	84.89768	293.49460	321.86306	8.32388	0.1173216	2.2643217	30	3	1981–1999	0.99	M-v	3	Williams	32209	1981 DL ₂
1981 DN ₂	14.0	0.15	19990810	330.56985	149.50402	241.66538	9.99111	0.1132949	3.0200228	24	4	1981–1999	0.84	M-v	2	Williams	29093	1981 DN ₂
1981 DU ₂	14.8	0.15	19990810	14.85403	330.48517	213.02965	11.83820	0.2085649	2.6533025	23	2	1981–1999	0.61	M-v	3	Williams	35276	1981 DU ₂
1981 EP ₂	13.0	0.15	19990810	16.75591	125.78069	214.95283	15.27699	0.1175206	3.0302764	39	3	1981–1999	0.91	M-v	2	Williams	35415	1981 EP ₂
1981 EY ₂	13.8	0.15	19990810	345.38597	120.02243	223.22463	9.25295	0.0962248	3.0732569	32	3	1981–1999	0.86	M-v	3	Williams	31944	1981 EY ₂
1981 EH ₅	13.9	0.15	19990810	326.18219	126.02429	239.15406	8.98230	0.0608948	3.0690994	17	3	1981–1999	1.10	M-v	4	Williams	31945	1981 EH ₅
1981 EL ₅	12.9	0.15	19990810	255.01838	196.56422	246.59588	9.73892	0.0978261	3.0415810	38	6	1950–1999	0.78	M-v	1	Williams	25078	1981 EL ₅
1981 ET ₅	14.6	0.15	19990810	341.37064	143.71450	213.26415	10.79751	0.0541022	2.5755000	31	3	1981–1999	0.86	M-v	3	Williams	32298	1981 ET ₅
1981 EW ₅	13.9	0.15	19990810	293.67137	189.36746	223.84762	12.62111	0.1508361	2.5520934	60	3	1981–1999	0.75	M-v	3	Williams	35415	1981 EW ₅
1981 EM ₆	13.9	0.15	19990810	346.69861	131.82744	214.76591	13.08294	0.1278450	2.5906900	43	3	1981–1999	0.82	M-v	3	Williams	35415	1981 EM ₆
1981 EV ₆	13.8	0.15	19990810	319.37125	86.54512	282.08842	7.59156	0.1031746	3.0785509	56	3	1981–1999	0.52	M-v	2	Williams	35677	1981 EV ₆
1981 EN ₇	13.5	0.15	19990810	21.43595	27.81868	329.07106	9.29319	0.0997386	2.9889570	25	3	1981–1999	0.97	M-v	3	Williams	32210	1981 EN ₇
1981 EP ₁₂	14.6	0.15	19990810	290.32879	155.48337	259.40442	5.11118	0.0731134	2.2427797	54	5	1981–1999	0.84	M-v	2	Williams	32298	1981 EP ₁₂
1981 ES ₁₂	13.5	0.15	19990810	234.76596	262.22382	203.28291	13.93257	0.1247988	3.0345112	48	5	1981–1999	0.78	M-v	1	Williams	32298	1981 ES ₁₂
1981 EZ ₁₂	14.9	0.15	19990810	273.16748	133.54313	278.30208	4.52392	0.1215307	2.2545930	46	3	1981–1999	0.69	M-v	3	Williams	35415	1981 EZ ₁₂
1981 EE ₁₃	14.9	0.15	19990810	57.69638	322.57233	325.84376	7.44835	0.1957333	2.5979315	26	4	1981–1999	0.64	M-v	1	Williams	35677	1981 EE ₁₃
1981 EL ₁₃	14.5	0.15	19990810	5.20746	153.77869	201.86964	9.51593	0.1227487	3.0269951	25	5	1981–1999	0.91	M-v	2	Williams	32298	1981 EL ₁₃
1981 EO ₁₃	15.0	0.15	19990810	153.89209	228.95956	323.51668	4.92232	0.0627124	2.2487154	32	3	1981–1999	0.79	M-v	4	Williams	31709	1981 EO ₁₃
1981 EY ₁₃	14.1	0.15	19990810	337.99079	150.08618	209.98887	8.37102	0.0969452	3.0613546	36	4	1981–1999	0.64	M-v	2	Williams	32042	1981 EY ₁₃
1981 EM ₁₄	14.7	0.15	19990810	31.83811	80.65644	220.57749	7.33173	0.0056013	2.5878427	32	3	1981–1999	0.89	M-v	3	Williams	32210	1981 EM ₁₄
1981 EO ₁₄	14.4	0.15	19990810	353.57085	338.51368	339.17911	14.21386	0.1655259	2.6292730	15	3	1981–1999	0.77	M-v	4	Williams	31780	1981 EO ₁₄
1981 EF ₁₆	14.7	0.15	19990810	317.05085	217.05809	197.35543	10.85844	0.1995848	2.5277066	23	4	1955–1999	0.91	M-v	3	Williams	29093	1981 EF ₁₆
1981 EO ₁₆	15.6	0.15	19990810	327.81031	140.80517	217.90477	7.96964	0.1959340	2.2630730	37	3	1981–1999	0.72	M-v	2	Williams	35677	1981 EO ₁₆
1981 EH ₁₇	13.7	0.15	19990810	54.81887	92.85455	189.30781	8.87185	0.1024851	3.0789987	42	4	1981–1999	0.77	M-v	1	Williams	35677	1981 EH ₁₇
1981 EL ₁₇	15.0	0.15	19990810	71.73184	43.54133	192.42852	14.09743	0.0771301	2.6204306	41	4	1981–1999	0.75	M-v	2	Williams	32298	1981 EL ₁₇
1981 EM ₁₇	14.0	0.15	19990810	14.17117	153.36038	200.26641	7.40873	0.2421761	2.5543588	67	5	1981–1999	0.70	M-v	2	Williams	32298	1981 EM ₁₇
1981 EG ₁₈	15.4	0.15	19990810	15.42470	325.29965	345.83268	4.71231	0.0620573	2.2619194	41	4	1981–1999	0.81	M-v	2	Williams	32042	1981 EG ₁₈
1981 EH ₁₉	15.5	0.15	19990810	164.41421	201.92012	2.69671	3.43505	0.0922692	2.2309490	45	6	1979–1999	0.80	M-v	2	Williams	32298	1981 EH ₁₉
1981 EK ₂₀	14.7	0.15	19990810	46.79362	265.92571	358.84915	11.30255	0.1657925	2.6237434	54	3	1981–1999	0.85	M-v	3	Williams	32298	1981 EK ₂₀
1981 EL ₂₀	13.9	0.15	19990810	48.27690	316.03730	343.38224	9.21202	0.1078538	3.0581604	49	4	1981–1999	0.82	M-v	2	Williams	29132	1981 EL ₂₀
1981 EH ₂₂	15.1	0.15	19990810	63.41744	45.03060	207.63884	1.99960	0.0875888	2.6109277	50	5	1981–1999	0.91	M-v	2	Williams	32509	1981 EH ₂₂
1981 EQ ₂₃	13.8	0.15	19990810	56.15495	85.91614	173.25083	6.17959	0.0933425	3.1119855	55	4	1981–1999	0.72	M-v	2	Williams	32043	1981 EQ ₂₃
1981 ET ₂₃	15.3	0.15	19990810	347.43387	356.60979	6.42853	6.23412	0.1980643	2.2393220	38	4	1981–1999	0.77	M-v	3	Williams	32043	1981 ET ₂₃
1981 EV ₂₄	15.8	0.15	19990810	229.76997	101.83178	358.31756	3.18588	0.1288833	2.5712443	20	5	1979–1999	1.13	M-v	2	Williams	21967	1981 EV ₂₄
1981 EW ₂₆	13.9	0.15	19990810	343.85553	170.67928	175.82217	12.72378	0.0550348	3.0742452	32	4	1981–1999	1.00	M-v	2	Williams	34824	1981 EW ₂₆
1981 EH ₂₇	15.0	0.15	19990810	194.30706	165.02544	358.35984	13.88519	0.1017005	2.5573880	31	4	1981–1999	0.85	M-v	3	Williams	32211	1981 EH ₂₇

1981 EK ₂₇	14.7	0.15	19990810	296.65900	73.79386	354.26154	5.39857	0.0842835	2.2267823	43	3	1981-1999	0.97	M-v	4	Williams	35677	1981 EK ₂₇
1981 EO ₃₀	14.7	0.15	19990810	73.64801	74.15804	174.98953	12.29436	0.1689506	2.6128910	77	3	1981-1999	0.79	M-v	3	Williams	32299	1981 EO ₃₀
1981 EQ ₃₀	14.5	0.15	19990810	30.95450	316.98765	1.70993	12.65959	0.2644148	2.5916426	25	3	1981-1999	0.81	M-v	3	Williams	32299	1981 EQ ₃₀
1981 EB ₃₁	13.6	0.15	19990810	187.93315	1.78941	165.85824	6.41208	0.0990339	3.0307758	20	3	1981-1999	0.69	M-v	3	Williams	15704	1981 EB ₃₁
1981 EG ₃₁	15.0	0.15	19990810	18.88526	2.10799	328.28357	3.47843	0.1675145	2.5821555	26	4	1981-1999	0.90	M-v	2	Williams	32299	1981 EG ₃₁
1981 EX ₃₂	14.6	0.15	19990810	51.23451	68.72221	223.56204	6.78419	0.1887549	2.5932138	32	4	1981-1999	0.92	M-v	2	Williams	32739	1981 EX ₃₂
1981 EH ₃₃	14.0	0.15	19990810	37.18403	98.89252	191.78828	9.76429	0.0439642	3.0777187	36	3	1981-1999	0.80	M-v	2	Williams	32212	1981 EH ₃₃
1981 EQ ₃₄	15.2	0.15	19990810	18.59117	123.44532	168.78955	6.05530	0.2034613	2.6277749	42	4	1981-1999	0.65	M-v	2	Williams	35678	1981 EQ ₃₄
1981 EO ₃₅	15.3	0.15	19990810	8.11272	72.45277	266.80140	5.14330	0.1347888	2.2499591	17	3	1979-1999	0.50	M-v	3	Williams	22430	1981 EO ₃₅
1981 ER ₃₅	14.2	0.15	19990810	324.97390	108.38159	290.48625	8.06944	0.1134070	3.0051530	34	7	1979-1999	0.75	M-v	1	Williams	30090	1981 ER ₃₅
1981 EP ₃₈	14.1	0.15	19990810	344.69883	169.89138	193.42559	10.47010	0.0722275	3.0453338	36	6	1951-1999	0.77	M-v	2	Williams	30287	1981 EP ₃₈
1981 EM ₄₁	14.0	0.15	19990810	308.59110	37.68237	340.82918	5.94381	0.1757107	3.0629659	25	3	1981-1999	0.80	M-v	4	Williams	35678	1981 EM ₄₁
1981 EC ₄₃	14.7	0.15	19990810	349.38859	132.62836	188.81377	5.09020	0.1907408	2.2885133	48	3	1981-1999	0.73	M-v	3	Williams	35416	1981 EC ₄₃
1981 EG ₄₄	13.0	0.15	19990810	217.07192	98.20321	12.71241	9.63118	0.0560683	3.0662652	27	4	1978-1999	0.71	M-v	1	Williams	35416	1981 EG ₄₄
1981 EE ₄₆	14.3	0.15	19990810	16.58023	7.54966	313.69189	4.76883	0.1461113	3.0676632	39	3	1978-1999	0.72	M-v	3	Williams	22430	1981 EE ₄₆
1981 EP ₄₇	14.1	0.15	19990810	308.41429	200.00468	185.75235	11.62802	0.1317629	3.0544922	24	3	1981-1999	0.76	M-v	4	Williams	31225	1981 EP ₄₇
1981 QR ₂	15.0	0.15	19990810	23.75986	323.25050	346.48763	3.69886	0.2377207	2.3362615	78	4	1981-1999	0.70	M-v	2	Williams	35678	1981 QR ₂
1981 RF ₂	12.1	0.15	19990810	80.50150	32.85644	255.05384	14.27521	0.1428694	3.2267159	68	5	1981-1999	0.80	M-v	1	Williams	33065	1981 RF ₂
1981 SD ₂	13.8	0.15	19990810	291.63210	345.77419	35.16530	6.39885	0.1304700	2.3843322	68	4	1981-1999	0.68	M-v	1	Williams	32043	1981 SD ₂
1981 TK	13.8	0.15	19990810	325.40985	27.59341	8.40294	24.42603	0.2487489	2.3531837	34	4	1981-1999	0.64	M-v	2	Williams	29609	1981 TK
1981 UL ₂₉	14.6	0.15	19990810	5.14966	130.85446	214.43808	14.08608	0.2266488	2.7336295	36	4	1981-1999	0.70	M-v	3	Williams	35416	1981 UL ₂₉
1981 VF	14.0	0.15	19990810	341.69713	320.75826	32.28434	4.87527	0.2490831	2.3694942	43	5	1981-1999	0.89	M-v	2	Williams	32043	1981 VF
1982 JD ₂	15.3	0.15	19990810	163.76471	94.54691	107.08212	4.08298	0.0682988	2.1745722	42	4	1982-1999	0.60	M-v	2	Williams	32739	1982 JD ₂
1982 SO ₅	14.9	0.15	19990810	339.92600	353.11699	1.75305	1.73211	0.3062809	2.6367850	45	5	1978-1999	0.66	M-v	1	Williams	35416	1982 SO ₅
1982 UW ₁	12.5	0.15	19990810	20.55384	143.55693	197.83832	9.94061	0.1710220	3.1835225	34	6	1982-1999	0.79	M-v	1	Marsden	35678	1982 UW ₁
1982 UA ₆	14.8	0.15	19990810	344.33374	35.53599	341.10815	3.91715	0.2932681	2.6316517	18	4	1982-1999	0.76	M-v	2	Williams	35678	1982 UA ₆
1982 UQ ₁₀	14.0	0.15	19990810	252.99309	60.06871	24.98402	3.34914	0.2788542	2.7023306	34	7	1982-1999	0.73	M-v	1	Williams	31415	1982 UQ ₁₀
1982 VY ₃	13.8	0.15	19990810	76.36018	198.04339	67.41904	6.53239	0.1354066	2.2913780	29	3	1982-1999	0.51	M-v	2	Williams	32299	1982 VY ₃
1982 VD ₅	15.1	0.15	19990810	292.29872	209.48806	227.94448	3.19171	0.1523375	2.2805021	39	7	1977-1999	0.77	M-v	2	Williams	32043	1982 VD ₅
1983 AA	14.0	0.15	19990810	260.51387	202.52406	295.61283	24.18671	0.2416583	2.2975898	22	3	1983-1999	0.97	M-v	3	Williams	21969	1983 AA
1983 RL	14.6	0.15	19990810	335.26575	29.01949	339.93532	19.07139	0.1177811	1.9192634	97	4	1983-1999	0.60	M-v	3	Williams	35678	1983 RL
1983 RL ₃	14.9	0.15	19990810	337.59483	67.28741	295.14316	3.06721	0.1426986	2.1698527	96	4	1976-1999	0.71	M-v	3	Williams	35416	1983 RL ₃
1983 YK	12.7	0.15	19990810	190.69500	355.81780	161.14706	9.92016	0.0332829	3.2369187	26	3	1983-1999	0.50	M-v	4	Williams	28612	1983 YK
1984 DZ	14.6	0.15	19990810	81.85276	259.69271	345.81889	7.78533	0.2084345	2.3176336	70	6	1953-1999	0.76	M-v	2	Williams	34484	1984 DZ
1984 EU ₁	14.6	0.15	19990810	192.70761	169.53010	333.91102	3.58271	0.1387958	2.2837563	57	5	1984-1999	0.57	M-v	1	Williams	32044	1984 EU ₁
1984 SC ₆	14.6	0.15	19990810	37.23903	209.72873	96.45261	3.31651	0.2081105	2.4017996	76	5	1984-1999	0.75	M-v	2	Williams	32044	1984 SC ₆
1985 DA	16.0	0.15	19990810	190.13351	4.85068	156.08655	23.25187	0.0736189	1.8992369	23	3	1985-1999	0.80	M-v	3	Williams	31712	1985 DA
1985 PC	14.1	0.15	19990810	104.33369	86.86196	184.73232	3.22509	0.1102854	2.2429376	48	3	1985-1999	0.67	M-v	3	Williams	32299	1985 PC
1985 RP	14.7	0.15	19990810	337.61859	226.03071	166.92826	8.00986	0.2301202	2.2930608	28	5	1978-1999	0.67	M-v	3	Williams	32299	1985 RP
1985 RW	15.8	0.15	19990810	232.73466	246.66806	241.41037	19.14547	0.0754377	1.9630048	40	5	1980-1999	0.65	M-v	2	Williams	22492	1985 RW
1985 RQ ₃	14.2	0.15	19990810	71.24985	121.40726	161.19892	10.64770	0.2578337	2.7343871	68	5	1984-1999	0.63	M-v	1	Williams	32299	1985 RQ ₃
1985 RA ₄	13.7	0.15	19990810	62.10177	305.86603	350.14872	7.25693	0.1010347	2.7498907	51	4	1985-1999	0.64	M-v	1	Williams	29940	1985 RA ₄
1985 UJ ₃	14.5	0.15	19990810	4.30522	222.22825	107.86188	1.26901	0.2413427	2.3174504	91	5	1978-1999	0.78	M-v	3	Marsden	35679	1985 UJ ₃
1986 CB	13.3	0.15	19990810	318.12513	289.76659	131.91130	22.47524	0.3524315	2.3449531	33	7	1986-1999	0.98	M-v	2	Williams	32299	1986 CB
1986 GD	13.9	0.15	19990810	188.93229	113.50489	45.19651	7.35450	0.1920607	2.4573686	33	6	1986-1999	1.18	M-v	2	Williams	22271	1986 GD
1986 PY	15.0	0.15	19990810	353.52715	195.44642	146.20024	7.97706	0.2470714	2.1886925	88	3	1986-1999	0.66	M-v	2	Williams	35679	1986 PY
1986 QF ₁	14.6	0.15	19990810	296.40024	15.24877	9.47082	5.27054	0.1391048	2.2152811	103	3	1986-1999	0.58	M-v	3	Williams	35416	1986 QF ₁
1986 QX ₁	14.3	0.15	19990810	59.27504	266.07134	18.51849	3.17766	0.0984924	2.1735904	107	4	1986-1999	0.63	M-v	1	Marsden	35679	1986 QX ₁
1986 QR ₂	13.9	0.15	19990810	2.95148	213.34592	145.56483	13.03538	0.2950424	2.6237607	46	4	1986-1999	0.68	M-v	2	Williams	32300	1986 QR ₂
1986 QY ₂	13.3	0.15	19990810	352.93142	190.91778	147.92171	15.42815	0.2258168	2.6577557	95	3	1986-1999	0.58	M-v	2	Williams	35679	1986 QY ₂
1986 TR	13.5	0.15	19990810	357.63985	89.67909	251.54507	9.76462	0.3055649	2.6712550	71	3	1986-1999	0.56	M-v	2	Williams	35679	1986 TR
1986 VW	14.6	0.15	19990810	9.72270	323.45773	13.82198	6.20841	0.2022113	2.2051136	38	4	1986-1999	0.70	M-v	2	Williams	35679	1986 VW
1987 BA ₂	12.4	0.15	19990810	144.07669	265.48197	258.86687	12.11679	0.0921056	2.9596691	64	5	1980-1999	0.74	M-v	2	Williams	35679	1987 BA ₂

1987 DM ₆	14.6	0.15	19990810	255.67357	285.90633	192.32478	3.85174	0.1515566	2.2767145	59	7	1987–1999	0.71	M-v	1	Marsden	29940	1987 DM ₆
1987 QW ₂	12.8	0.15	19990810	50.48300	260.04784	41.56496	1.34874	0.1504201	3.1939946	29	9	1952–1999	0.84	M-v	1	Williams	30469	1987 QW ₂
1987 SE ₃	13.8	0.15	19990810	281.33691	341.05714	93.20753	4.65634	0.1204428	2.5346018	55	6	1975–1999	0.73	M-v	1	Williams	32300	1987 SE ₃
1987 XC	13.6	0.15	19990810	359.54375	285.18088	55.51568	16.52260	0.2655339	2.5576054	46	6	1987–1999	0.83	M-v	2	Williams	32044	1987 XC
1987 YS ₁	13.0	0.15	19990810	301.50282	304.98677	149.40774	13.02731	0.1219306	2.5572692	23	6	1954–1999	0.74	M-v	2	Williams	30288	1987 YS ₁
1988 BY ₂	13.3	0.15	19990810	202.34714	207.38985	329.67425	10.23667	0.0646761	2.6757446	41	7	1951–1999	0.77	M-v	1	Williams	35059	1988 BY ₂
1988 BJ ₅	13.3	0.15	19990810	217.11559	226.36773	281.20376	12.04095	0.0643390	2.7122300	30	2	1988–1999	0.56	M-v	4	Williams	35279	1988 BJ ₅
1988 CY	12.8	0.15	19990810	306.30366	82.56507	144.12795	15.25641	0.1104233	3.1854928	23	2	1988–1999	0.74	M-v	5	Williams	35679	1988 CY
1988 CG ₂	13.8	0.15	19990810	149.64268	61.82449	125.51817	15.21229	0.1483509	2.7305188	44	3	1988–1999	0.80	M-v	3	Williams	32218	1988 CG ₂
1988 CW ₂	14.3	0.15	19990810	277.09668	344.29001	94.70497	1.21779	0.1274887	2.6491479	46	5	1978–1999	0.82	M-v	1	Williams	26924	1988 CW ₂
1988 CL ₄	13.8	0.15	19990810	200.11010	240.18702	237.35208	7.58019	0.1542788	2.7716043	39	3	1988–1999	0.86	M-v	3	Williams	35417	1988 CL ₄
1988 CF ₇	13.5	0.15	19990810	26.52380	135.01050	231.04600	7.99691	0.2022921	2.6178639	33	5	1988–1999	0.80	M-v	2	Marsden	32300	1988 CF ₇
1988 DG ₂	15.3	0.15	19990810	281.09640	319.99179	132.42414	9.69749	0.1343708	2.6223066	23	3	1988–1999	0.61	M-v	4	Williams	26739	1988 DG ₂
1988 EY ₁	13.0	0.15	19990810	240.88526	135.98450	9.51115	12.77690	0.0973366	2.6944777	26	4	1988–1999	0.51	M-v	1	Williams	32741	1988 EY ₁
1988 PR	14.8	0.15	19990810	55.91313	110.86130	170.69268	6.83484	0.0403145	2.3568028	73	3	1988–1999	0.64	M-v	2	Williams	35680	1988 PR
1988 PD ₁	14.1	0.15	19990810	8.26739	178.23820	172.51567	25.51305	0.2182965	2.3362098	52	5	1988–1999	0.71	M-v	1	Williams	32044	1988 PD ₁
1988 RD	12.2	0.15	19990810	330.57396	23.62887	5.82778	24.25929	0.2305953	2.3859553	30	6	1988–1999	0.66	M-v	2	Williams	23536	1988 RD
1988 RV ₁	14.5	0.15	19990810	284.00614	91.00549	11.22181	4.55625	0.0806137	2.3275443	33	6	1983–1999	0.71	M-v	2	Williams	35059	1988 RV ₁
1988 RJ ₃	15.1	0.15	19990810	27.92313	292.70608	357.21683	2.33207	0.1559858	2.3994607	96	3	1988–1999	0.69	M-v	3	Williams	35680	1988 RJ ₃
1988 RM ₃	14.6	0.15	19990810	352.03714	354.39167	356.18463	8.58704	0.1454103	2.3833125	125	4	1988–1999	0.64	M-v	2	Williams	35680	1988 RM ₃
1988 RS ₃	15.0	0.15	19990810	1.78299	200.58981	157.43283	2.51412	0.2439218	2.3604718	37	4	1988–1999	0.71	M-v	2	Williams	31783	1988 RS ₃
1988 RP ₄	13.8	0.15	19990810	285.41722	96.16489	333.91474	5.20556	0.1213707	2.3661736	58	3	1988–1999	0.72	M-v	4	Williams	35680	1988 RP ₄
1988 RZ ₅	14.3	0.15	19990810	2.29584	166.15857	170.80252	3.37016	0.1137785	2.3636680	127	4	1988–1999	0.74	M-v	3	Williams	35417	1988 RZ ₅
1988 RJ ₆	15.4	0.15	19990810	318.09952	70.14886	326.49437	4.20286	0.2385898	2.3809531	56	3	1988–1999	0.64	M-v	3	Williams	35680	1988 RJ ₆
1988 RL ₆	14.3	0.15	19990810	347.04473	180.40360	160.01422	7.33160	0.1485687	2.3925107	76	3	1988–1999	0.54	M-v	3	Williams	35680	1988 RL ₆
1988 RK ₉	13.6	0.15	19990810	47.86241	177.20038	145.59062	14.27921	0.1412955	2.9756412	70	5	1988–1999	0.75	M-v	2	Williams	32300	1988 RK ₉
1988 RW ₁₀	14.8	0.15	19990810	347.26091	35.00842	335.85624	0.46220	0.1528979	3.0755355	31	3	1988–1999	0.69	M-v	5	Williams	22825	1988 RW ₁₀
1988 RD ₁₂	11.8	0.15	19990810	351.06945	343.88703	340.09270	3.96304	0.0693983	5.2574651	21	4	1988–1999	0.47	M-v	1	Williams	35680	1988 RD ₁₂
1988 RH ₁₃	10.6	0.15	19990810	316.16333	329.38573	45.79524	16.00513	0.0679735	5.1319527	31	6	1984–1999	0.77	M-v	1	Williams	35680	1988 RH ₁₃
1988 SN ₁	14.7	0.15	19990810	30.98081	210.62445	114.78856	7.55051	0.1655092	2.3437135	51	5	1988–1999	0.77	M-v	1	Williams	32045	1988 SN ₁
1988 SP ₂	12.3	0.15	19990810	352.29257	159.71450	170.26564	12.68309	0.1573813	5.1935073	33	3	1988–1999	0.48	M-v	3	Williams	35417	1988 SP ₂
1988 SS ₂	15.6	0.15	19990810	99.20291	207.14223	151.88074	2.06986	0.1394045	2.2265849	56	3	1988–1998	0.73	M-v	3	Williams	35680	1988 SS ₂
1988 UP	13.1	0.15	19990810	17.27367	250.63227	88.62531	2.41448	0.1710247	3.1506252	27	5	1982–1999	1.00	M-v	1	Williams	32511	1988 UP
1988 VA	14.1	0.15	19990810	301.27739	182.33172	219.03228	11.83414	0.1966914	2.4309278	50	3	1988–1999	0.75	M-v	4	Williams	35279	1988 VA
1988 VC ₂	13.2	0.15	19990810	343.83994	341.51530	46.56209	6.06300	0.1818637	3.1542616	38	3	1988–1999	0.86	M-v	4	Williams	35680	1988 VC ₂
1988 VH ₂	13.9	0.15	19990810	343.90040	289.88425	75.51107	9.55969	0.2157638	2.4161963	37	3	1988–1999	0.83	M-v	3	Williams	32300	1988 VH ₂
1988 VL ₂	13.1	0.15	19990810	268.75541	222.04925	236.29488	10.45061	0.0962835	2.4236169	46	4	1988–1999	0.79	M-v	2	Williams	35417	1988 VL ₂
1988 VX ₂	12.4	0.15	19990810	51.47660	87.59672	223.15101	14.17702	0.0819032	3.1700413	31	4	1988–1999	0.77	M-v	2	Williams	25528	1988 VX ₂
1988 VY ₂	10.7	0.15	19990810	24.28050	280.40029	64.21347	12.42005	0.1036779	3.1664012	27	5	1988–1999	0.65	M-v	1	Williams	35680	1988 VY ₂
1988 XB ₂	14.4	0.15	19990810	353.97789	14.99696	354.07480	3.13017	0.1964595	2.3895421	27	4	1988–1999	0.81	M-v	2	Williams	32045	1988 XB ₂
1989 BZ	12.9	0.15	19990810	96.71046	232.27267	330.40883	12.20411	0.0997189	2.6450872	59	4	1987–1999	0.72	M-v	3	Williams	35418	1989 BZ
1989 CQ ₂	13.0	0.15	19990810	271.36724	228.04399	189.83373	10.81143	0.0905086	3.5591603	36	3	1989–1999	0.75	M-v	3	Williams	35418	1989 CQ ₂
1989 DK	12.8	0.15	19990810	206.82576	175.13546	298.60296	11.89324	0.1024696	2.6042912	51	3	1989–1999	0.51	M-v	3	Williams	35680	1989 DK
1989 EX	13.3	0.15	19990810	189.41983	61.12846	135.67923	11.78974	0.1284018	2.5634300	33	5	1989–1999	0.67	M-v	1	Williams	32512	1989 EX
1989 GM ₂	14.1	0.15	19990810	155.38174	297.30678	217.00427	6.08253	0.1664203	2.6994834	43	3	1989–1999	0.67	M-v	4	Williams	35680	1989 GM ₂
1989 GJ ₄	13.8	0.15	19990810	217.33775	286.21535	237.23767	3.74667	0.1140924	2.5565625	40	4	1989–1999	0.73	M-v	2	Williams	32301	1989 GJ ₄
1989 NH ₁	14.2	0.15	19990810	29.09918	184.31948	120.47389	5.87882	0.2026439	2.1914259	45	5	1986–1999	0.82	M-v	2	Williams	31582	1989 NH ₁
1989 RV ₂	14.3	0.15	19990810	324.72631	305.50171	44.73875	5.59993	0.1835135	2.2700538	58	4	1989–1999	0.70	M-v	1	Williams	35060	1989 RV ₂
1989 SC	14.5	0.15	19990810	48.74279	298.89340	354.89558	6.78634	0.2305584	2.2068673	33	4	1986–1999	0.68	M-v	2	Williams	32512	1989 SC
1989 SR	12.8	0.15	19990810	326.31663	130.50591	240.15851	8.88498	0.0984887	2.9874369	65	4	1989–1999	0.86	M-v	4	Williams	32301	1989 SR
1989 SO ₁	14.4	0.15	19990810	3.93753	52.97884	81.11476	5.09451	0.1234496	2.6334520	31	3	1989–1999	0.88	M-v	3	Williams	35681	1989 SO ₁
1989 SL ₂	15.5	0.15	19990810	313.73437	266.87334	106.59013	4.09439	0.1641609	2.2755249	33	3	1989–1999	0.87	M-v	4	Williams	35280	1989 SL ₂
1989 SV ₂	13.4	0.15	19990810	128.55522	145.52241	44.20877	10.41767	0.0376524	3.0667928	59	4	1989–1999	0.76	M-v	1	Williams	35418	1989 SV ₂

1989 SF ₄	13.7	0.15	19990810	21.35048	276.99150	34.71643	10.76584	0.0506810	3.0094383	28	3	1989–1999	0.86	M-v	4	Williams	32220	1989 SF ₄
1989 SM ₄	13.8	0.15	19990810	322.75795	249.03266	109.11605	2.51707	0.1316449	3.0448555	32	5	1989–1999	0.79	M-v	2	Williams	35418	1989 SM ₄
1989 SQ ₄	14.8	0.15	19990810	174.77607	39.05341	101.46855	3.32636	0.1329560	2.3213208	36	4	1984–1999	0.77	M-v	2	Williams	35418	1989 SQ ₄
1989 SP ₁₁	13.3	0.15	19990810	340.74674	57.49752	306.13339	0.85596	0.1232768	2.9378638	73	6	1979–1999	0.42	M-v	1	Williams	35681	1989 SP ₁₁
1989 TW	14.6	0.15	19990810	354.17615	84.48928	284.99111	4.63739	0.1620401	2.2255685	34	4	1989–1999	0.84	M-v	2	Williams	32045	1989 TW
1989 TY	14.1	0.15	19990810	90.36054	266.11738	334.23381	9.20436	0.1318107	2.9781297	33	4	1989–1999	0.66	M-v	2	Williams	31005	1989 TY
1989 TS ₂	11.7	0.15	19990810	10.72540	158.23996	149.68598	11.28294	0.0424613	5.2692408	30	4	1988–1999	0.55	M-v	1	Williams	35418	1989 TS ₂
1989 TC ₃	13.5	0.15	19990810	238.26991	301.57031	169.07324	7.80223	0.1957810	3.0431340	48	4	1989–1999	0.76	M-v	2	Williams	29941	1989 TC ₃
1989 TP ₇	15.1	0.15	19990810	200.29875	18.84022	140.27682	5.40443	0.0737845	2.2399349	37	4	1984–1999	0.76	M-v	2	Williams	32301	1989 TP ₇
1989 VA	17.6	0.15	19990810	57.98273	2.78550	225.65173	28.78876	0.5947750	0.7286614	129	6	1989–1999	0.63	M-v	3	Williams	31136	1989 VA
1989 WR	14.2	0.15	19990810	340.53646	327.61340	25.90830	6.84017	0.1815983	2.2700703	47	5	1955–1999	0.73	M-v	2	Williams	32045	1989 WR
1989 WS ₂	14.0	0.15	19990810	309.94766	318.19302	107.19642	7.40142	0.1360662	2.2550438	28	5	1989–1999	0.82	M-v	2	Williams	32045	1989 WS ₂
1989 WB ₃	12.6	0.15	19990810	29.72725	279.91675	67.99310	10.45717	0.0564823	2.9925543	24	4	1989–1999	0.85	M-v	3	Williams	30076	1989 WB ₃
1989 XD ₁	15.0	0.15	19990810	344.47402	221.18248	150.23570	4.88046	0.1616840	2.2485100	44	7	1979–1999	0.85	M-v	2	Williams	31784	1989 XD ₁
1989 YY	14.9	0.15	19990810	150.47927	86.87421	110.70288	3.00547	0.1591126	2.3944350	32	3	1989–1999	0.60	M-v	4	Williams	32220	1989 YY
1989 YC ₅	12.4	0.15	19990810	317.29640	48.10443	312.02394	15.13274	0.2574961	3.1722440	28	4	1977–1999	0.87	M-v	2	Williams	35418	1989 YC ₅
1989 YG ₅	12.1	0.15	19990810	188.67395	88.02754	88.53732	14.97524	0.1522573	3.1692125	46	6	1968–1999	0.66	M-v	1	Williams	33068	1989 YG ₅
1989 YC ₆	14.8	0.15	19990810	348.02904	223.25046	160.34706	5.65438	0.1711125	2.2804431	26	4	1989–1999	0.70	M-v	2	Williams	32301	1989 YC ₆
1990 AE	14.6	0.15	19990810	266.65072	351.11113	82.43999	4.78294	0.2496155	2.3388023	39	3	1990–1999	0.74	M-v	4	Williams	35681	1990 AE
1990 BO	11.4	0.15	19990810	329.48608	89.57366	305.17761	15.69731	0.1055662	3.1853435	75	3	1990–1999	0.62	M-v	3	Williams	35681	1990 BO
1990 BM ₁	13.5	0.15	19990810	248.11724	316.95689	120.46803	25.30612	0.2421206	2.3553459	52	3	1990–1999	0.62	M-v	2	Williams	35418	1990 BM ₁
1990 BC ₂	14.0	0.15	19990810	159.87923	313.70518	203.80615	5.98112	0.0693160	2.4280036	93	4	1990–1999	0.61	M-v	2	Williams	35681	1990 BC ₂
1990 DZ ₁	13.9	0.15	19990810	170.04059	180.83962	316.04388	5.93704	0.0917990	2.4631711	69	5	1986–1999	0.61	M-v	3	Williams	35418	1990 DZ ₁
1990 ER ₂	15.1	0.15	19990810	80.83215	4.39408	234.90288	4.52564	0.0808179	2.4946252	42	3	1990–1999	0.70	M-v	3	Williams	35681	1990 ER ₂
1990 EZ ₂	12.9	0.15	19990810	232.96426	289.67916	188.46590	6.74665	0.0804333	3.3739243	45	4	1990–1999	0.71	M-v	1	Williams	27933	1990 EZ ₂
1990 FG	14.1	0.15	19990810	22.62616	2.36013	357.07550	25.73718	0.0308498	1.9111784	52	4	1990–1999	0.77	M-v	2	Williams	31784	1990 FG
1990 FL	14.2	0.15	19990810	179.29978	46.86972	161.97159	24.17713	0.1878050	2.3885462	43	5	1990–1999	0.72	M-v	2	Williams	32512	1990 FL
1990 HP	15.2	0.15	19990810	157.40226	188.07489	32.22893	21.55687	0.0504841	1.9410854	49	5	1980–1999	0.69	M-v	2	Williams	32046	1990 HP
1990 KD	14.4	0.15	19990810	79.61851	164.17906	101.66917	13.76470	0.2512556	2.5459561	45	3	1990–1999	0.63	M-v	2	Williams	32301	1990 KD
1990 KD ₁	14.0	0.15	19990810	151.41223	346.31025	186.23884	12.40724	0.0946228	2.5460848	58	3	1990–1999	0.62	M-v	3	Williams	35681	1990 KD ₁
1990 OZ	14.1	0.15	19990810	43.57940	94.12425	182.22398	12.81906	0.1584632	2.6804313	60	3	1990–1999	0.59	M-v	2	Williams	32046	1990 OZ
1990 OB ₄	13.6	0.15	19990810	11.91821	84.96013	271.66018	11.47739	0.2474735	2.6478370	24	4	1990–1999	0.58	M-v	1	Williams	35681	1990 OB ₄
1990 OG ₄	14.1	0.15	19990810	346.85262	84.33960	266.85132	11.05338	0.2850596	2.6965409	73	2	1990–1999	0.63	M-v	3	Williams	35419	1990 OG ₄
1990 OS ₄	13.4	0.15	19990810	236.28879	235.05230	269.45411	14.03696	0.0540273	2.5605486	25	4	1989–1999	0.80	M-v	2	Williams	35681	1990 OS ₄
1990 OB ₅	13.2	0.15	19990810	0.39823	66.96759	259.68996	11.75734	0.1884787	2.6872376	84	3	1990–1999	0.49	M-v	2	Williams	35681	1990 OB ₅
1990 QQ ₄	13.3	0.15	19990810	356.38833	319.51626	25.77392	7.64039	0.0659867	2.7092059	35	5	1990–1999	0.81	M-v	2	Williams	35681	1990 QQ ₄
1990 QN ₅	13.1	0.15	19990810	294.02835	40.62003	345.49088	8.63723	0.1750578	2.7892834	28	4	1990–1999	0.74	M-v	2	Williams	35419	1990 QN ₅
1990 QA ₆	14.8	0.15	19990810	193.56059	18.58862	350.61506	4.22260	0.1793420	2.2804060	49	4	1990–1999	0.95	M-v	3	Williams	35682	1990 QA ₆
1990 QE ₆	14.6	0.15	19990810	39.47133	319.45102	352.96261	18.93509	0.2220099	2.6665682	12	3	1977–1999	0.40	M-v	4	Williams	17963	1990 QE ₆
1990 QO ₆	14.2	0.15	19990810	27.69764	179.20815	157.72355	13.68826	0.1724740	2.6559420	42	4	1977–1999	0.70	M-v	2	Williams	32301	1990 QO ₆
1990 QS ₆	15.0	0.15	19990810	205.07504	34.30966	13.37681	3.09869	0.1379825	2.2145754	33	4	1990–1999	0.88	M-v	2	Williams	35682	1990 QS ₆
1990 QD ₇	15.3	0.15	19990810	3.14841	171.86294	154.59243	5.21023	0.1590160	2.7366942	41	3	1990–1999	0.66	M-v	4	Williams	35682	1990 QD ₇
1990 RF ₁	13.2	0.15	19990810	260.16782	56.45921	225.55806	0.85960	0.2055500	3.1636690	23	3	1990–1999	0.61	M-v	4	Williams	35682	1990 RF ₁
1990 RC ₂	13.8	0.15	19990810	341.58918	166.13714	199.16872	4.30948	0.0516424	2.7279995	46	4	1990–1999	0.72	M-v	1	Williams	32659	1990 RC ₂
1990 RT ₂	13.2	0.15	19990810	352.61330	15.42421	356.85348	12.02714	0.1724214	2.7001425	34	5	1981–1999	0.66	M-v	2	Williams	29611	1990 RT ₂
1990 RA ₃	13.9	0.15	19990810	339.55050	149.63110	233.88421	1.13615	0.1009598	2.6984828	32	4	1990–1999	0.55	M-v	1	Williams	29658	1990 RA ₃
1990 RD ₅	13.4	0.15	19990810	297.72725	168.67569	241.90792	4.18604	0.0545030	2.7355564	58	4	1990–1999	0.64	M-v	2	Williams	32742	1990 RD ₅
1990 RJ ₅	14.2	0.15	19990810	359.97161	184.13935	267.41795	2.80560	0.1477489	2.5278199	48	5	1990–1998	0.63	M-v	2	Williams	35682	1990 RJ ₅
1990 RD ₆	14.2	0.15	19990810	52.73350	320.71591	343.52498	12.37603	0.1690595	2.6409260	34	4	1990–1999	0.74	M-v	2	Williams	32302	1990 RD ₆
1990 SF ₁	13.7	0.15	19990810	275.86069	146.04479	265.44387	3.60620	0.1783344	2.8417897	29	4	1976–1999	0.81	M-v	3	Williams	35419	1990 SF ₁
1990 SY ₃	12.6	0.15	19990810	19.90147	85.58435	275.19992	11.10179	0.2008001	2.6675636	15	3	1990–1999	0.56	M-v	4	Williams	26560	1990 SY ₃
1990 SQ ₈	15.3	0.15	19990810	6.58768	305.96179	116.94672	5.43131	0.2913381	2.6000402	21	4	1990–1998	0.54	M-v	1	Williams	35682	1990 SQ ₈
1990 SX ₈	12.8	0.15	19990810	256.45708	282.19974	168.51678	17.26186	0.1058853	2.7696085	35	4	1985–1999	0.66	M-v	2	Williams	32923	1990 SX ₈

1990 SX ₁₃	15.3	0.15	19990810	299.11613	149.66486	120.36569	1.81313	0.1338641	2.2418163	27	4	1990–1999	0.79	M-v	2	Williams	35682	1990 SX ₁₃
1990 SM ₁₄	13.5	0.15	19990810	172.73375	186.30951	142.86784	4.23308	0.2223545	2.3886527	25	3	1990–1999	0.67	M-v	4	Williams	35682	1990 SM ₁₄
1990 SU ₁₅	14.0	0.15	19990810	13.29295	142.56340	179.14584	12.52227	0.2194824	2.7031129	83	3	1990–1999	0.71	M-v	2	Williams	35682	1990 SU ₁₅
1990 TZ ₁	13.6	0.15	19990810	350.87363	95.65274	279.28738	2.27816	0.0884188	2.7219753	38	3	1990–1999	0.48	M-v	3	Williams	35682	1990 TZ ₁
1990 TT ₁₀	14.9	0.15	19990810	4.97217	345.16239	353.34404	4.08423	0.1622295	2.7583944	40	4	1990–1999	0.60	M-v	2	Williams	35061	1990 TT ₁₀
1990 UD ₃	13.8	0.15	19990810	349.53423	142.18408	228.22319	7.85778	0.2918993	2.7479309	33	5	1981–1999	0.76	M-v	2	Williams	35419	1990 UD ₃
1990 UO ₄	14.1	0.15	19990810	24.52111	133.79366	188.79691	12.08776	0.1420565	2.7745013	30	3	1990–1999	0.82	M-v	3	Williams	35419	1990 UO ₄
1990 UG ₅	15.5	0.15	19990810	331.42459	205.62288	184.17846	8.70388	0.1571499	2.7742523	33	4	1990–1999	0.75	M-v	2	Williams	30091	1990 UG ₅
1990 VF ₈	13.3	0.15	19990810	11.57641	328.22302	25.08168	8.33240	0.1813202	2.7376895	17	4	1990–1999	0.57	M-v	1	Williams	32046	1990 VF ₈
1990 VU ₈	13.4	0.15	19990810	27.99427	188.30190	131.18445	9.85458	0.1442498	2.7919687	44	3	1990–1999	0.60	M-v	2	Williams	32302	1990 VU ₈
1990 WZ	14.0	0.15	19990810	296.24640	244.86297	190.63165	8.91536	0.0579523	2.7934015	21	3	1990–1999	0.46	M-v	4	Williams	30781	1990 WZ
1990 WU ₁	14.5	0.15	19990810	335.82857	193.74659	183.36690	8.45026	0.2335643	2.7941608	45	4	1985–1999	0.46	M-v	1	Williams	25649	1990 WU ₁
1991 AH ₂	12.4	0.15	19990810	32.79336	214.91463	121.05623	19.08778	0.1793585	2.7634226	34	4	1991–1999	0.48	M-v	1	Williams	32302	1991 AH ₂
1991 BZ	13.8	0.15	19990810	335.03770	126.81885	289.00292	5.99201	0.2458715	2.8088911	20	3	1980–1999	0.87	M-v	4	Williams	27934	1991 BZ
1991 CM	12.4	0.15	19990810	108.45668	115.25300	128.17674	16.97497	0.1117822	3.1235489	41	3	1991–1999	0.77	M-v	3	Williams	32222	1991 CM
1991 EM	13.3	0.15	19990810	53.39501	28.13033	280.79077	20.14977	0.1331796	3.2044903	20	3	1991–1999	0.90	M-v	3	Williams	35682	1991 EM
1991 EY ₁	14.8	0.15	19990810	105.29821	244.63929	318.50865	5.06109	0.1385061	2.3105874	50	3	1991–1999	0.64	M-v	3	Williams	35420	1991 EY ₁
1991 ED ₂	14.2	0.15	19990810	176.59403	343.07850	162.20848	4.70101	0.0961721	2.2654593	85	3	1991–1999	0.60	M-v	3	Williams	35420	1991 ED ₂
1991 EX ₂	15.0	0.15	19990810	242.22464	103.89051	345.73094	8.04387	0.0056527	2.2640290	68	3	1991–1999	0.60	M-v	1	Williams	32047	1991 EX ₂
1991 FD	13.7	0.15	19990810	134.46220	358.36254	167.81782	24.90981	0.1815343	2.3462755	26	4	1991–1999	0.73	M-v	2	Williams	35420	1991 FD
1991 FF	13.2	0.15	19990810	169.15741	199.57691	338.45647	17.88395	0.0583599	3.2263449	30	5	1987–1999	0.66	M-v	2	Williams	28614	1991 FF
1991 FH	12.6	0.15	19990810	180.45531	331.48673	207.28067	19.44679	0.1410320	3.1720863	21	3	1991–1999	0.72	M-v	3	Williams	30654	1991 FH
1991 FJ ₂	15.1	0.15	19990810	170.47743	356.72648	186.85837	2.97563	0.0931388	2.2430818	54	5	1949–1999	0.54	M-v	1	Williams	32047	1991 FJ ₂
1991 FT ₂	15.1	0.15	19990810	270.38514	79.85250	9.56069	4.06991	0.0688204	2.2211112	45	4	1991–1999	0.78	M-v	2	Williams	32047	1991 FT ₂
1991 FZ ₂	13.6	0.15	19990810	227.75257	353.90258	176.32185	6.31402	0.0246188	3.0479902	39	4	1991–1999	0.70	M-v	1	Williams	32743	1991 FZ ₂
1991 GW	14.8	0.15	19990810	97.03747	171.33479	38.45080	7.95891	0.1887087	2.3567716	46	4	1991–1999	0.60	M-v	1	Williams	35683	1991 GW
1991 GR ₂	14.2	0.15	19990810	43.77173	295.15447	18.57433	2.21299	0.1881122	2.3012991	83	5	1971–1999	0.64	M-v	2	Williams	32047	1991 GR ₂
1991 GU ₃	14.3	0.15	19990810	358.58789	122.22528	196.62959	6.88475	0.0933258	2.3582666	70	5	1981–1999	0.68	M-v	2	Williams	35683	1991 GU ₃
1991 GZ ₅	14.3	0.15	19990810	124.36838	143.90044	277.07983	1.47808	0.1416281	2.6067092	39	4	1991–1999	0.78	M-v	2	Williams	35683	1991 GZ ₅
1991 GC ₇	14.7	0.15	19990810	188.91917	137.71455	28.44523	5.18304	0.1080534	2.2671868	46	6	1953–1999	0.69	M-v	2	Williams	32302	1991 GC ₇
1991 GL ₇	14.8	0.15	19990810	268.56266	169.24106	251.82925	3.94495	0.0445842	2.3204922	62	3	1991–1999	0.72	M-v	3	Williams	35683	1991 GL ₇
1991 GY ₇	15.4	0.15	19990810	41.28745	299.11051	319.63869	1.74561	0.1435748	2.4079453	31	4	1991–1999	0.84	M-v	2	Williams	35284	1991 GY ₇
1991 GJ ₈	15.5	0.15	19990810	177.56316	154.60844	17.97761	7.90488	0.0354777	2.2879513	45	5	1991–1999	0.65	M-v	2	Williams	35683	1991 GJ ₈
1991 GM ₉	13.0	0.15	19990810	182.41775	44.30115	130.26369	2.09379	0.1258001	3.2118452	47	8	1949–1999	0.85	M-v	1	Williams	30091	1991 GM ₉
1991 GJ ₁₀	12.9	0.15	19990810	210.71875	113.31505	41.64622	9.78071	0.0311781	3.1765274	41	4	1989–1999	0.67	M-v	1	Williams	35062	1991 GJ ₁₀
1991 HN	11.2	0.15	19990810	84.61863	286.33598	91.02627	8.24815	0.0121355	5.1055877	24	3	1991–1998	0.89	M-v	3	Williams	35683	1991 HN
1991 JD	14.8	0.15	19990810	68.01744	239.90888	39.26430	2.93165	0.2067888	2.3512246	42	3	1991–1999	0.53	M-v	3	Williams	32302	1991 JD
1991 LR	14.2	0.15	19990810	47.25374	189.29890	116.22045	14.96084	0.2327429	2.3816211	43	3	1991–1999	0.73	M-v	2	Williams	32047	1991 LR
1991 LZ	13.9	0.15	19990810	68.53374	47.67051	202.81371	10.88052	0.2313367	2.4170547	32	5	1973–1999	0.61	M-v	2	Williams	30654	1991 LZ
1991 LV ₂	14.8	0.15	19990810	14.71743	222.80307	101.71270	3.40414	0.1892116	2.4099113	44	4	1991–1999	0.66	M-v	1	Williams	32303	1991 LV ₂
1991 NB ₁	13.9	0.15	19990810	20.90450	71.50370	238.05124	7.65384	0.2440217	2.4725471	45	3	1991–1999	0.70	M-v	3	Williams	35420	1991 NB ₁
1991 NS ₂	13.5	0.15	19990810	15.48358	97.28151	185.59480	7.67092	0.1706050	2.5515176	41	7	1979–1999	0.82	M-v	2	Williams	35683	1991 NS ₂
1991 PY ₁	14.8	0.15	19990810	51.84009	175.45876	119.18242	7.40327	0.1280017	2.4347065	42	3	1991–1999	0.80	M-v	2	Williams	32224	1991 PY ₁
1991 PL ₂	15.3	0.15	19990810	44.13373	312.95561	338.95940	4.08426	0.1933178	2.4520876	49	4	1991–1999	0.81	M-v	3	Williams	32303	1991 PL ₂
1991 PG ₇	11.8	0.15	19990810	296.11895	65.48030	345.44221	9.24797	0.2090214	3.9998480	32	2	1991–1999	0.67	M-v	5	Williams	35285	1991 PG ₇
1991 PT ₁₀	15.5	0.15	19990810	342.65729	68.83823	282.18553	3.09328	0.2638442	2.5404186	48	5	1987–1999	0.64	M-v	3	Williams	28886	1991 PT ₁₀
1991 PV ₁₁	13.6	0.15	19990810	124.97910	93.94066	147.29288	13.10040	0.1565154	2.4198174	33	3	1991–1999	0.57	M-v	3	Williams	32224	1991 PV ₁₁
1991 PZ ₁₂	14.1	0.15	19990810	339.48786	80.50481	322.32131	5.56737	0.1313486	2.4330545	19	5	1984–1999	0.84	M-v	2	Williams	29942	1991 PZ ₁₂
1991 PZ ₁₄	13.4	0.15	19990810	44.70228	70.87206	195.87985	6.55826	0.1575391	2.5253737	60	4	1991–1999	0.62	M-v	2	Williams	35420	1991 PZ ₁₄
1991 RP ₁	13.5	0.15	19990810	12.67432	337.68501	349.28194	15.19584	0.1286565	2.5397403	67	5	1987–1999	0.60	M-v	3	Williams	35683	1991 RP ₁
1991 RV ₂	14.7	0.15	19990810	16.24333	10.18048	276.57451	3.87325	0.2542741	2.5762245	47	3	1991–1999	0.56	M-v	2	Williams	35683	1991 RV ₂
1991 RD ₇	13.2	0.15	19990810	333.78386	354.72863	3.97807	16.36478	0.1825749	2.5631941	44	6	1954–1999	0.59	M-v	2	Williams	31785	1991 RD ₇
1991 RB ₁₉	14.3	0.15	19990810	318.84910	45.65611	334.91339	10.56809	0.1095677	2.5434632	41	5	1987–1999	0.78	M-v	3	Williams	29135	1991 RB ₁₉

1991 RE ₂₀	13.6	0.15	19990810	171.46382	106.86441	344.25572	11.27308	0.0770143	2.7669418	40	2	1991–1998	0.57	M-v	4	Williams	31785	1991 RE ₂₀
1991 RT ₂₆	13.2	0.15	19990810	323.98957	161.67237	194.70368	13.20343	0.1670471	2.6176421	77	4	1991–1999	0.64	M-v	3	Williams	35684	1991 RT ₂₆
1991 RN ₂₇	12.8	0.15	19990810	190.16763	176.41428	339.02377	14.28771	0.0336847	2.5812009	66	5	1985–1999	0.53	M-v	2	Williams	35684	1991 RN ₂₇
1991 RM ₂₉	13.5	0.15	19990810	281.44435	166.55806	266.60680	12.23447	0.2400493	2.6008922	30	2	1991–1999	0.47	M-v	4	Williams	35601	1991 RM ₂₉
1991 SO	14.8	0.15	19990810	304.75310	352.59745	54.38745	7.75081	0.3312103	2.5517234	21	5	1979–1999	0.53	M-v	3	Williams	35421	1991 SO
1991 SD ₁	14.1	0.15	19990810	91.03176	90.37917	132.63498	13.76770	0.1331444	2.5508263	38	3	1991–1999	0.62	M-v	3	Williams	35421	1991 SD ₁
1991 TE ₁	13.1	0.15	19990810	263.74654	21.94554	89.56388	14.70246	0.1167709	2.5609261	24	4	1979–1999	0.57	M-v	2	Williams	30290	1991 TE ₁
1991 TR ₁	14.8	0.15	19990810	356.41876	145.65705	223.76764	19.62883	0.0995610	1.9207945	28	5	1991–1999	0.76	M-v	2	Williams	35421	1991 TR ₁
1991 TV ₁	13.9	0.15	19990810	335.84551	329.77157	52.33021	8.40567	0.3094047	2.5425842	50	6	1987–1999	0.72	M-v	2	Williams	32048	1991 TV ₁
1991 TC ₂	15.1	0.15	19990810	277.45143	55.26765	26.93614	24.97680	0.1199922	1.9211362	24	3	1991–1999	0.67	M-v	2	Williams	32048	1991 TC ₂
1991 TH ₃	15.4	0.15	19990810	317.28169	192.99726	213.14898	7.50508	0.2872690	2.5367027	39	4	1991–1999	0.56	M-v	2	Williams	30091	1991 TH ₃
1991 TF ₁₄	14.1	0.15	19990810	279.53279	47.13422	25.70528	5.51975	0.1175801	2.5494907	57	4	1977–1999	0.53	M-v	1	Williams	35684	1991 TF ₁₄
1991 UE ₂	13.2	0.15	19990810	271.14283	52.77984	47.25607	3.67259	0.0883099	2.5595377	16	4	1987–1999	0.56	M-v	2	Williams	29615	1991 UE ₂
1991 UD ₃	14.4	0.15	19990810	303.59298	226.39196	209.48828	7.13596	0.2390827	2.5551543	51	6	1983–1999	0.73	M-v	2	Williams	30290	1991 UD ₃
1991 US ₃	13.2	0.15	19990810	5.54751	273.55351	65.07951	15.56666	0.1624926	2.5789027	53	3	1991–1999	0.55	M-v	3	Williams	32304	1991 US ₃
1991 VD ₁	13.4	0.15	19990810	339.65719	3.60204	32.44934	16.03689	0.0938653	2.5323753	54	6	1987–1999	0.61	M-v	3	Williams	32514	1991 VD ₁
1991 VJ ₁	15.0	0.15	19990810	325.69833	275.49310	107.87398	2.42943	0.3157743	2.5665374	78	4	1991–1999	0.61	M-v	2	Williams	35421	1991 VJ ₁
1991 VO ₁	14.5	0.15	19990810	82.90036	313.05460	112.85547	5.47361	0.1222517	2.2591205	26	3	1991–1999	0.74	M-v	3	Williams	35684	1991 VO ₁
1991 VE ₂	13.0	0.15	19990810	306.63989	210.21986	228.37900	14.70666	0.0997591	2.5510489	29	4	1991–1999	0.76	M-v	3	Williams	32304	1991 VE ₂
1991 VA ₃	13.0	0.15	19990810	337.52544	115.01097	254.41592	11.44986	0.2168039	2.6006746	63	3	1991–1999	0.56	M-v	3	Williams	35684	1991 VA ₃
1991 VE ₃	14.2	0.15	19990810	328.61275	296.89081	118.51969	4.52550	0.2892128	2.5436244	20	3	1991–1999	0.72	M-v	4	Williams	25959	1991 VE ₃
1991 VT ₃	13.4	0.15	19990810	0.57138	114.65380	238.09772	12.68725	0.1851123	2.5767339	67	5	1983–1999	0.69	M-v	2	Williams	35684	1991 VT ₃
1991 VT ₅	14.7	0.15	19990810	356.49195	205.94691	155.22685	6.79193	0.0708293	2.5843856	26	3	1991–1999	0.97	M-v	3	Marsden	31956	1991 VT ₅
1991 VU ₅	14.4	0.15	19990810	335.95124	165.63347	197.06087	11.13241	0.1921146	2.6084627	74	3	1991–1999	0.62	M-v	3	Williams	35684	1991 VU ₅
1991 VL ₆	14.9	0.15	19990810	326.34702	203.43330	205.84628	13.29356	0.1631738	2.5613307	31	5	1991–1999	0.86	M-v	2	Williams	32304	1991 VL ₆
1991 VM ₁₂	13.2	0.15	19990810	187.92557	272.34033	66.66770	1.60882	0.1955395	3.1681236	30	6	1991–1999	0.62	M-v	1	Williams	35684	1991 VM ₁₂
1991 WD	13.6	0.15	19990810	258.28715	35.40921	89.53713	13.84845	0.2176456	2.6184557	25	4	1991–1999	0.60	M-v	1	Williams	30470	1991 WD
1991 YT	13.7	0.15	19990810	298.24756	140.21807	266.16533	11.68894	0.1785274	2.6990583	40	5	1988–1999	0.65	M-v	2	Williams	35684	1991 YT
1991 YU	13.3	0.15	19990810	225.92542	323.30087	138.41770	6.61614	0.1432680	2.7986301	37	4	1990–1999	0.64	M-v	1	Williams	35684	1991 YU
1992 AE ₁	13.2	0.15	19990810	244.74481	27.02867	97.66681	10.67271	0.1929801	2.7361703	45	6	1954–1999	0.58	M-v	1	Williams	32304	1992 AE ₁
1992 BT ₂	12.7	0.15	19990810	293.56482	305.45776	146.73400	13.87642	0.1374185	2.6494196	52	3	1992–1999	0.68	M-v	3	Williams	35684	1992 BT ₂
1992 DF ₆	14.5	0.15	19990810	50.24387	350.10717	111.83597	3.49368	0.1503652	2.3920801	21	2	1992–1999	0.83	M-v	5	Williams	35684	1992 DF ₆
1992 DK ₆	13.9	0.15	19990810	299.46788	329.80415	55.94595	2.90330	0.1200394	2.9371857	34	4	1992–1999	0.67	M-v	2	Williams	35684	1992 DK ₆
1992 DL ₆	14.6	0.15	19990810	77.43676	110.39246	119.76255	2.51933	0.0946273	3.0845789	24	4	1992–1998	0.67	M-v	2	Williams	35684	1992 DL ₆
1992 DM ₇	13.4	0.15	19990810	200.48073	1.77381	131.40057	2.98074	0.0436644	2.9390341	29	3	1992–1999	0.68	M-v	4	Williams	33230	1992 DM ₇
1992 DU ₇	13.9	0.15	19990810	25.54655	270.77480	42.45100	2.43930	0.0885394	2.9517001	26	3	1992–1999	0.54	M-v	3	Williams	31957	1992 DU ₇
1992 DP ₁₃	14.9	0.15	19990810	226.65695	355.80082	141.13102	9.69215	0.1237517	2.7855745	16	3	1992–1999	0.88	M-v	4	Williams	35685	1992 DP ₁₃
1992 ES ₆	14.2	0.15	19990810	326.95927	302.94339	113.26608	7.04400	0.2147458	2.6954091	14	4	1992–1999	0.65	M-v	3	Williams	35685	1992 ES ₆
1992 ED ₈	13.8	0.15	19990810	154.65223	200.53906	342.15304	1.46958	0.0552944	2.9195039	44	3	1992–1999	0.56	M-v	4	Williams	35685	1992 ED ₈
1992 EM ₈	14.1	0.15	19990810	339.34489	284.75487	110.38957	7.03165	0.1284618	2.7449518	23	5	1990–1999	0.68	M-v	1	Williams	35685	1992 EM ₈
1992 ER ₈	12.7	0.15	19990810	57.98795	238.80336	65.55240	2.98729	0.0529107	2.8433252	12	4	1975–1999	0.50	M-v	2	Williams	27713	1992 ER ₈
1992 EU ₁₀	15.2	0.15	19990810	278.28132	160.30820	142.76813	5.20920	0.0750459	2.2835568	27	3	1992–1999	0.64	M-v	3	Williams	35685	1992 EU ₁₀
1992 EP ₁₁	14.6	0.15	19990810	251.20875	320.48321	142.35001	2.72371	0.0379119	2.8543532	32	3	1992–1999	0.77	M-v	4	Williams	25215	1992 EP ₁₁
1992 ER ₁₃	15.4	0.15	19990810	123.71759	346.02574	194.73417	5.20804	0.1732677	3.0741108	15	3	1992–1998	0.35	M-v	3	Williams	35685	1992 ER ₁₃
1992 GM ₂	15.1	0.15	19990810	60.14927	343.62667	301.53533	0.98409	0.0933887	2.1302788	45	3	1992–1999	0.60	M-v	3	Williams	35685	1992 GM ₂
1992 GZ ₄	13.5	0.15	19990810	305.09059	308.51382	73.64219	2.41999	0.0310469	3.1471942	32	6	1989–1999	0.78	M-v	1	Williams	32048	1992 GZ ₄
1992 GC ₅	13.6	0.15	19990810	143.31673	136.57742	68.71325	2.39480	0.0619313	3.0490110	48	4	1992–1999	0.71	M-v	1	Williams	27713	1992 GC ₅
1992 HA	14.3	0.15	19990810	352.23063	213.00194	41.87652	7.06396	0.0776640	2.3090731	59	5	1992–1999	0.75	M-v	2	Williams	35685	1992 HA
1992 HG	12.3	0.15	19990810	40.58496	93.97868	216.30377	7.97265	0.1153269	3.0984056	42	4	1950–1999	0.71	M-v	1	Williams	35422	1992 HG
1992 HD ₅	12.3	0.15	19990810	6.34300	296.52427	39.97856	17.91580	0.1591281	3.1469233	33	4	1977–1999	0.84	M-v	1	Williams	24393	1992 HD ₅
1992 HD ₇	13.4	0.15	19990810	154.12735	69.18500	138.21881	12.24810	0.2078603	3.0046309	30	4	1983–1999	0.70	M-v	2	Williams	35064	1992 HD ₇
1992 JG	17.2	0.15	19990810	12.62525	239.34445	58.95593	5.56699	0.4248607	2.2655066	49	2	1992–1999	0.48	M-v	2	Williams	35602	1992 JG
1992 JU ₂	14.7	0.15	19990810	7.90652	125.64523	211.71592	5.19172	0.2300378	2.1858180	51	3	1992–1999	0.73	M-v	3	Williams	35685	1992 JU ₂

1992 LF	12.1	0.15	19990810	348.31718	224.49023	152.51648	20.17223	0.1578521	3.1979921	30	6	1970–1999	0.69	M-v	1	Williams	32305	1992 LF
1992 OO	13.1	0.15	19990810	347.79220	195.28705	122.86670	25.76511	0.1791191	2.3412629	56	3	1992–1999	0.50	M-v	2	Williams	35685	1992 OO
1992 OJ ₁	13.5	0.15	19990810	50.47655	305.50497	320.44598	23.56090	0.1801297	2.2812430	80	3	1992–1999	0.60	M-v	2	Williams	35288	1992 OJ ₁
1992 OB ₃	15.2	0.15	19990810	69.06458	323.63304	305.63719	5.82678	0.1051388	2.2450381	32	4	1992–1999	0.59	M-v	1	Williams	32305	1992 OB ₃
1992 OP ₅	14.7	0.15	19990810	31.15251	93.96003	182.16872	3.34931	0.1373147	2.3119324	65	5	1992–1999	0.66	M-v	1	Williams	35422	1992 OP ₅
1992 PY	13.8	0.15	19990810	297.93613	83.63811	311.73545	21.38124	0.2960259	2.3412600	40	5	1985–1999	0.64	M-v	1	Williams	35685	1992 PY
1992 PQ ₁	15.8	0.15	19990810	24.33104	335.44692	307.79113	4.85059	0.1578684	2.3093995	32	2	1992–1999	0.85	M-v	5	Williams	35288	1992 PQ ₁
1992 PZ ₁	15.1	0.15	19990810	40.03830	144.09532	172.06772	4.89205	0.2163539	2.2254264	45	4	1992–1999	0.63	M-v	2	Williams	32305	1992 PZ ₁
1992 PA ₂	15.2	0.15	19990810	0.49664	42.19829	307.23024	5.67737	0.2170560	2.2614867	39	3	1992–1999	0.64	M-v	3	Williams	35422	1992 PA ₂
1992 PO ₂	14.4	0.15	19990810	341.45388	149.19053	209.00197	6.10387	0.1429552	2.2932869	89	3	1992–1999	0.54	M-v	4	Williams	32305	1992 PO ₂
1992 PE ₃	14.3	0.15	19990810	8.63086	112.57073	238.93738	5.51926	0.1960427	2.2504640	29	3	1992–1999	0.73	M-v	4	Williams	31958	1992 PE ₃
1992 QS ₁	13.3	0.15	19990810	295.94251	310.44629	80.50121	8.88958	0.1232851	2.3661414	47	5	1983–1999	0.55	M-v	1	Williams	35422	1992 QS ₁
1992 RC ₁	15.4	0.15	19990810	334.75177	348.14867	357.14718	2.36301	0.2239700	2.3561278	23	2	1992–1999	0.49	M-v	4	Williams	35289	1992 RC ₁
1992 RF ₂	15.1	0.15	19990810	295.19603	213.33209	193.84167	4.30469	0.1340582	2.3183773	32	3	1992–1999	0.74	M-v	5	Williams	32227	1992 RF ₂
1992 RK ₂	15.4	0.15	19990810	264.85750	164.40022	285.51202	1.62598	0.1557722	2.3006092	34	3	1978–1999	0.68	M-v	5	Williams	23340	1992 RK ₂
1992 RW ₂	15.1	0.15	19990810	17.20711	0.12302	328.68195	6.06613	0.1409151	2.2759938	33	3	1992–1999	0.72	M-v	3	Williams	35422	1992 RW ₂
1992 RD ₃	14.7	0.15	19990810	325.58584	77.03727	325.94822	5.01984	0.1604813	2.2675915	34	5	1982–1999	0.49	M-v	1	Williams	35422	1992 RD ₃
1992 RZ ₃	15.3	0.15	19990810	82.68965	47.13876	205.46017	0.65770	0.1190923	2.2782703	64	4	1992–1999	0.73	M-v	1	Williams	32049	1992 RZ ₃
1992 RS ₅	15.6	0.15	19990810	278.43886	42.21911	26.62236	4.42482	0.1140758	2.3237846	34	4	1992–1999	0.64	M-v	1	Williams	34499	1992 RS ₅
1992 SO	14.4	0.15	19990810	18.81054	79.20311	244.52683	5.75463	0.1645841	2.3198065	51	3	1992–1999	0.56	M-v	3	Williams	35686	1992 SO
1992 SJ ₁	14.8	0.15	19990810	336.40554	284.23762	88.00964	5.38873	0.1971038	2.3185056	41	4	1992–1999	0.60	M-v	2	Williams	35422	1992 SJ ₁
1992 SX ₁	15.3	0.15	19990810	296.76611	5.65071	58.77874	1.22567	0.1117885	2.3028621	32	4	1980–1999	0.73	M-v	2	Williams	32305	1992 SX ₁
1992 SN ₂	14.3	0.15	19990810	264.77784	298.18337	126.67620	2.97304	0.1847794	2.3897064	31	3	1992–1999	0.68	M-v	3	Williams	35423	1992 SN ₂
1992 SA ₄	14.6	0.15	19990810	182.73021	354.77080	154.32187	6.64326	0.0732774	2.3251924	54	3	1992–1999	0.48	M-v	3	Williams	33483	1992 SA ₄
1992 SG ₁₃	14.9	0.15	19990810	337.79962	355.57461	18.52352	5.66395	0.2541349	2.3377656	45	3	1992–1999	0.61	M-v	3	Williams	35423	1992 SG ₁₃
1992 SK ₁₃	14.6	0.15	19990810	2.36772	59.59777	308.00817	4.56799	0.1812891	2.2752674	34	5	1954–1999	0.64	M-v	2	Williams	32049	1992 SK ₁₃
1992 ST ₁₇	14.3	0.15	19990810	209.03622	300.42879	178.63407	6.23569	0.0661120	2.3679260	56	4	1992–1999	0.59	M-v	2	Williams	35686	1992 ST ₁₇
1992 SQ ₂₃	14.4	0.15	19990810	21.02565	101.50864	219.98872	7.82361	0.3102959	2.3073162	25	4	1981–1999	0.47	M-v	2	Williams	35686	1992 SQ ₂₃
1992 UX	14.1	0.15	19990810	340.38879	305.40901	66.98783	7.62908	0.1273262	2.3397603	58	4	1992–1999	0.71	M-v	2	Williams	32049	1992 UX
1992 UY	14.5	0.15	19990810	342.04280	206.80856	179.78894	6.51808	0.1823087	2.3107908	42	4	1992–1999	0.77	M-v	2	Williams	32049	1992 UY
1992 US ₁	14.8	0.15	19990810	6.70701	317.53981	46.88516	7.81825	0.1346395	2.2857549	43	4	1964–1999	0.74	M-v	3	Williams	32305	1992 US ₁
1992 UW ₁	14.2	0.15	19990810	1.29878	221.65203	81.53206	4.13308	0.1849802	2.4118345	31	4	1969–1999	0.64	M-v	1	Williams	35602	1992 UW ₁
1992 UD ₂	14.2	0.15	19990810	324.90351	336.91001	45.87688	26.16877	0.2598279	2.3494005	39	4	1992–1999	0.70	M-v	2	Williams	31787	1992 UD ₂
1992 UR ₂	14.3	0.15	19921114	316.93944	49.26392	46.84146	23.22994	0.2439373	2.3207080	7	1	39 days	0.76		D	Doppler		1992 UR ₂
1992 UW ₂	14.6	0.15	19990810	23.64816	284.85071	54.05477	5.93508	0.2153523	2.2812041	56	3	1992–1999	0.77	M-v	3	Williams	32305	1992 UW ₂
1992 UY ₂	14.3	0.15	19990810	329.10576	211.13553	205.42604	4.97521	0.0746136	2.2963670	40	6	1988–1999	0.75	M-v	1	Williams	32305	1992 UY ₂
1992 UT ₃	13.6	0.15	19990810	316.10269	17.96792	58.52037	6.21099	0.1372376	2.3009427	33	7	1955–1999	0.75	M-v	2	Williams	29661	1992 UT ₃
1992 UA ₆	14.2	0.15	19990810	327.84438	102.62007	282.74624	2.76994	0.1103636	2.3672856	46	3	1992–1999	0.71	M-v	3	Williams	35686	1992 UA ₆
1992 WJ	14.4	0.15	19990810	236.96876	86.98709	26.16163	2.56781	0.1540671	2.4228522	40	5	1988–1999	0.74	M-v	1	Williams	32049	1992 WJ
1992 WR	14.7	0.15	19990810	303.42560	33.82692	56.00553	5.65976	0.1365220	2.3109476	17	3	1978–1999	0.78	M-v	5	Williams	35290	1992 WR
1992 WX	13.5	0.15	19990810	7.90258	209.21316	131.20312	5.73873	0.2085841	2.3550708	50	4	1952–1999	0.60	M-v	1	Williams	32049	1992 WX
1992 WD ₁	15.2	0.15	19990810	309.18253	304.01935	100.36230	3.15052	0.1915185	2.3741277	35	4	1981–1999	0.53	M-v	3	Williams	35686	1992 WD ₁
1992 WY ₁	13.8	0.15	19990810	294.23067	95.57880	0.58888	3.28521	0.0868051	2.3113766	23	5	1988–1999	0.64	M-v	1	Williams	29661	1992 WY ₁
1992 WS ₃	14.4	0.15	19990810	278.04028	144.17452	317.14038	2.18512	0.1922035	2.3661912	17	4	1990–1999	0.60	M-v	1	Williams	29943	1992 WS ₃
1992 WC ₉	14.1	0.15	19990810	290.20641	32.13612	56.45104	7.25103	0.0900219	2.3386984	23	3	1992–1999	0.57	M-v	2	Williams	35686	1992 WC ₉
1992 WK ₉	13.6	0.15	19990810	86.47159	322.92963	53.92442	0.86371	0.2249934	3.1448426	31	4	1992–1998	1.10	M-v	1	Williams	35686	1992 WK ₉
1992 YA ₁	14.9	0.15	19990810	309.22952	245.39509	172.15361	2.19228	0.1935803	2.3710635	48	4	1992–1999	0.73	M-v	2	Williams	32305	1992 YA ₁
1992 YM ₂	14.1	0.15	19990810	334.70114	286.24810	86.42185	7.95044	0.0986573	2.4471935	53	4	1992–1999	0.56	M-v	1	Williams	32305	1992 YM ₂
1992 YP ₂	15.1	0.15	19990810	267.32021	358.57254	85.17715	8.86795	0.1214073	2.4597057	28	4	1992–1999	0.43	M-v	1	Williams	28616	1992 YP ₂
1993 BA	12.6	0.15	19990810	51.97498	183.72481	114.25834	14.74573	0.0619372	2.5688869	67	5	1975–1999	0.60	M-v	1	Williams	32305	1993 BA
1993 BT ₂	13.1	0.15	19990810	166.55896	195.53940	329.11196	5.42859	0.2083403	2.6341931	41	5	1955–1999	0.56	M-v	1	Williams	35686	1993 BT ₂
1993 BX ₂	13.2	0.15	19990810	194.59526	175.99010	321.42875	12.47747	0.1788919	2.6100978	39	5	1982–1999	0.56	M-v	2	Williams	35686	1993 BX ₂
1993 BF ₃	14.0	0.15	19990810	218.81358	149.74738	332.86645	4.88617	0.1575459	2.5561545	24	6	1985–1999	0.85	M-v	3	Williams	29136	1993 BF ₃

1993 CJ ₁	13.2	0.15	19990810	219.55520	345.27199	161.81034	13.38445	0.0987017	2.5684619	40	5	1989–1999	0.60	M-v	2	Williams	29661	1993 CJ ₁
1993 CK ₁	13.7	0.15	19990810	177.35701	155.78274	29.27704	8.57576	0.1255192	2.5836643	21	4	1956–1999	0.50	M-v	2	Williams	30897	1993 CK ₁
1993 DM	13.8	0.15	19990810	176.17051	273.04742	277.75613	4.19618	0.0750186	2.5656498	22	3	1993–1999	0.68	M-v	4	Williams	26172	1993 DM
1993 DE ₁	13.2	0.15	19990810	131.04942	266.11493	301.15638	10.40873	0.1410634	2.6719307	34	3	1993–1999	0.63	M-v	3	Williams	35423	1993 DE ₁
1993 DJ ₁	13.3	0.15	19990810	78.42894	127.49990	141.00739	14.38737	0.0452765	2.5824638	41	4	1989–1999	0.74	M-v	2	Williams	35686	1993 DJ ₁
1993 DD ₂	12.5	0.15	19990810	284.25878	65.09725	14.18739	14.84052	0.0681938	2.5837814	41	5	1982–1999	0.66	M-v	1	Williams	34009	1993 DD ₂
1993 EP	13.3	0.15	19990810	205.07532	178.98463	345.24273	12.81267	0.1239581	2.5918337	47	4	1993–1999	0.61	M-v	2	Williams	29944	1993 EP
1993 ES	12.9	0.15	19990810	138.10305	224.84819	2.43406	11.48302	0.1912556	2.6751107	33	7	1977–1999	0.66	M-v	2	Williams	32306	1993 ES
1993 FN	15.0	0.15	19990810	251.76030	117.91448	6.53469	10.72733	0.2147334	2.5341884	43	5	1991–1999	0.52	M-v	2	Williams	29944	1993 FN
1993 FQ ₂	12.9	0.15	19990810	151.92505	141.63447	25.66580	9.91131	0.1728531	2.7612148	26	5	1991–1999	0.65	M-v	3	Williams	32306	1993 FQ ₂
1993 FL ₄	13.6	0.15	19990810	299.56957	294.99519	138.78984	2.16075	0.1338742	2.5472874	30	5	1991–1999	0.55	M-v	2	Williams	35423	1993 FL ₄
1993 FM ₅	15.0	0.15	19990810	305.66036	296.48122	104.16055	2.19358	0.1142597	2.6564426	41	3	1993–1999	0.64	M-v	3	Williams	33233	1993 FM ₅
1993 FM ₆	14.6	0.15	19990810	113.86376	235.73722	93.16606	2.47215	0.0884923	2.4095052	46	3	1991–1998	0.68	M-v	4	Williams	35687	1993 FM ₆
1993 FB ₈	14.2	0.15	19990810	53.41562	210.88280	76.74560	3.81046	0.1841244	2.7776240	33	4	1993–1999	0.61	M-v	1	Williams	32745	1993 FB ₈
1993 FX ₉	13.4	0.15	19990810	233.84058	79.76150	81.28516	3.66193	0.0714284	2.5239549	24	6	1977–1999	0.61	M-v	1	Williams	32515	1993 FX ₉
1993 FV ₁₁	13.9	0.15	19990810	285.49581	334.77025	100.80875	3.65917	0.1707287	2.5818301	28	4	1958–1999	0.49	M-v	1	Williams	29103	1993 FV ₁₁
1993 FY ₁₂	12.9	0.15	19990810	80.36916	66.87819	164.74082	9.45751	0.0747531	2.8468779	80	4	1990–1999	0.63	M-v	2	Williams	35423	1993 FY ₁₂
1993 FT ₁₄	14.1	0.15	19990810	235.27688	344.06949	131.73101	5.54138	0.2460321	2.5949452	30	4	1993–1999	0.41	M-v	2	Williams	31419	1993 FT ₁₄
1993 FF ₁₆	13.9	0.15	19990810	56.16271	234.15253	56.04321	5.70571	0.0900799	2.7371315	24	4	1993–1999	0.60	M-v	2	Williams	32050	1993 FF ₁₆
1993 FF ₁₉	13.7	0.15	19990810	242.56867	304.52747	147.90512	9.41139	0.0940059	2.7071507	38	4	1993–1999	0.68	M-v	1	Williams	33683	1993 FF ₁₉
1993 FO ₂₁	14.6	0.15	19990810	301.41685	30.98953	6.18775	4.93020	0.0571796	2.7287925	40	5	1990–1999	0.53	M-v	1	Williams	29317	1993 FO ₂₁
1993 FQ ₂₁	15.0	0.15	19990810	19.78995	333.53343	355.56691	2.05763	0.0862642	2.7292827	29	3	1993–1999	0.45	M-v	5	Williams	35687	1993 FQ ₂₁
1993 FX ₂₁	15.0	0.15	19990810	109.53375	82.09196	200.46983	3.06721	0.0404656	2.5776457	12	2	1993–1998	0.43	M-v	5	Williams	35687	1993 FX ₂₁
1993 FZ ₂₁	14.8	0.15	19990810	239.60083	143.29763	1.49563	3.06813	0.0992929	2.5636059	24	3	1993–1999	0.50	M-v	4	Williams	29662	1993 FZ ₂₁
1993 FS ₂₂	15.0	0.15	19990810	294.21087	197.55153	242.64380	2.74138	0.1201967	2.5767776	23	3	1993–1999	0.56	M-v	3	Williams	29918	1993 FS ₂₂
1993 FQ ₂₄	13.7	0.15	19990810	327.72774	151.96294	201.87096	7.90197	0.1229769	2.8073658	38	4	1985–1999	0.54	M-v	2	Williams	35687	1993 FQ ₂₄
1993 FZ ₂₆	14.0	0.15	19990810	17.94326	89.65264	223.70649	3.58706	0.0583185	2.7818707	36	4	1993–1999	0.58	M-v	1	Williams	32306	1993 FZ ₂₆
1993 FH ₂₇	13.7	0.15	19990810	329.71402	22.82561	339.67030	5.84136	0.1424471	2.7400478	35	3	1993–1999	0.79	M-v	4	Williams	35687	1993 FH ₂₇
1993 FS ₂₇	13.8	0.15	19990810	325.82459	156.16691	211.61694	6.03640	0.0780387	2.7354201	56	4	1993–1999	0.49	M-v	2	Williams	32050	1993 FS ₂₇
1993 FU ₃₅	12.5	0.15	19990810	148.21920	323.45158	104.75192	2.37680	0.1530060	3.2128831	18	4	1990–1999	0.66	M-v	2	Williams	35687	1993 FU ₃₅
1993 FH ₃₆	13.0	0.15	19990810	352.97429	211.84823	179.00697	8.99716	0.1683876	2.5711137	33	6	1962–1999	0.79	M-v	1	Williams	32306	1993 FH ₃₆
1993 FA ₃₇	13.9	0.15	19990810	278.68130	283.50097	142.82577	3.65338	0.1566747	2.6532559	50	4	1993–1999	0.53	M-v	3	Williams	35687	1993 FA ₃₇
1993 FF ₄₁	14.7	0.15	19990810	84.96756	20.02642	175.00996	10.87516	0.0546861	2.9625919	19	3	1993–1998	0.60	M-v	4	Williams	35687	1993 FF ₄₁
1993 FZ ₄₁	14.2	0.15	19990810	229.96991	129.10022	6.97080	14.00113	0.1095732	2.6012512	55	3	1993–1999	0.61	M-v	4	Williams	29662	1993 FZ ₄₁
1993 FQ ₄₃	15.0	0.15	19990810	301.06263	43.04062	14.54465	3.30899	0.2218694	2.5804550	30	3	1991–1999	0.58	M-v	5	Williams	30659	1993 FQ ₄₃
1993 FA ₄₆	14.5	0.15	19990810	315.61024	182.91314	201.83748	2.55613	0.1178285	2.6995506	36	4	1993–1999	0.57	M-v	1	Williams	32230	1993 FA ₄₆
1993 FX ₅₀	14.4	0.15	19990810	72.89824	69.74044	197.64934	4.99208	0.1258293	2.7630813	52	4	1993–1999	0.54	M-v	2	Williams	32746	1993 FX ₅₀
1993 FZ ₅₇	14.9	0.15	19990810	315.96104	162.66581	216.42977	2.20615	0.1026961	2.7093668	28	4	1993–1999	0.48	M-v	3	Williams	32050	1993 FZ ₅₇
1993 GN	14.7	0.15	19990810	288.29676	155.37403	46.33574	6.88704	0.1464646	2.3140314	43	4	1991–1998	0.77	M-v	2	Williams	35687	1993 GN
1993 GR	13.3	0.15	19990810	120.01286	171.58589	39.85566	4.29235	0.1244884	2.8097244	66	7	1976–1999	0.72	M-v	2	Williams	32050	1993 GR
1993 HA	20.2	0.15	19990810	245.25721	263.47948	183.44611	7.72428	0.1442052	1.2783033	49	3	1993–1999	0.53	M-v	4	Williams	35687	1993 HA
1993 HE	12.9	0.15	19990810	176.53771	110.31176	93.91387	14.77007	0.1465813	2.6278128	19	5	1949–1999	0.76	M-v	2	Williams	34846	1993 HE
1993 HZ ₅	15.1	0.15	19990810	249.66307	67.93402	68.12996	26.22832	0.1015892	1.8524037	33	3	1993–1999	0.72	M-v	2	Williams	32306	1993 HZ ₅
1993 KT ₁	14.0	0.15	19990810	59.37361	211.45823	77.56858	25.09497	0.0499524	1.9514246	32	6	1990–1999	0.63	M-v	2	Williams	31788	1993 KT ₁
1993 KW ₁	15.0	0.15	19990810	98.98323	41.07128	210.87423	20.68588	0.0455997	1.9468333	30	3	1993–1999	0.54	M-v	2	Williams	35424	1993 KW ₁
1993 LR ₁	14.0	0.15	19990810	168.84390	237.31527	297.56626	12.29911	0.1633623	2.7494675	24	3	1993–1999	0.56	M-v	4	Williams	35688	1993 LR ₁
1993 MT	15.2	0.15	19930712	260.04681	253.48673	148.63965	2.56819	0.0669155	2.8782093	10	1	33 days	0.52		D	Doppler		1993 MT
1993 NZ ₁	12.9	0.15	19990810	300.58008	118.72315	292.93488	9.19565	0.1310073	3.0749506	53	3	1993–1999	0.57	M-v	3	Williams	26564	1993 NZ ₁
1993 OC ₂	14.0	0.15	19990810	203.55128	224.79332	334.71256	18.40312	0.0539700	1.9345747	32	3	1993–1999	0.70	M-v	3	Williams	25228	1993 OC ₂
1993 OH ₅	13.8	0.15	19990810	69.66820	113.69205	142.71946	0.87010	0.1108125	3.1184142	76	4	1993–1999	0.60	M-v	1	Williams	32050	1993 OH ₅
1993 ON ₈	15.5	0.15	19990810	339.37361	105.33679	107.34970	3.24215	0.0639562	2.3030228	46	5	1985–1999	0.76	M-v	1	Williams	35688	1993 ON ₈
1993 OX ₁₁	12.9	0.15	19990810	283.70948	113.77708	297.95454	2.88708	0.1499076	3.1520712	59	3	1993–1999	0.69	M-v	3	Williams	35688	1993 OX ₁₁
1993 PV ₅	12.6	0.15	19990810	14.73085	48.24046	317.72371	9.71088	0.1245853	3.0698909	19	4	1988–1999	0.67	M-v	2	Williams	33235	1993 PV ₅

1993 PB ₇	12.9	0.15	19990810	98.17168	74.71370	172.64959	0.49517	0.1330022	3.1591596	43	6	1988–1999	0.67	M-v	1	Williams	32307	1993 PB ₇
1993 PK ₇	13.8	0.15	19990810	23.46895	231.52974	87.90184	0.20958	0.1932799	3.2212316	36	4	1976–1999	0.73	M-v	1	Williams	32050	1993 PK ₇
1993 QQ ₄	13.2	0.15	19990810	128.14963	62.35901	160.25539	1.88554	0.1162054	3.2014982	41	6	1973–1999	0.78	M-v	1	Williams	32516	1993 QQ ₄
1993 RA ₈	12.5	0.15	19990810	3.86340	155.75185	192.05829	8.07794	0.0255612	3.3489224	78	3	1993–1999	0.50	M-v	4	Williams	35688	1993 RA ₈
1993 SD ₂	11.9	0.15	19990810	298.96625	243.79293	227.20790	7.65568	0.1781371	3.0943116	39	4	1993–1999	0.63	M-v	1	Williams	34581	1993 SD ₂
1993 SN ₃	12.7	0.15	19990810	353.74394	225.76874	175.23221	0.93901	0.1629417	3.1976632	38	5	1976–1999	0.68	M-v	1	Williams	35688	1993 SN ₃
1993 SG ₅	13.3	0.15	19990810	250.08824	349.70150	135.20626	1.93836	0.1542063	3.2014203	21	4	1983–1999	0.79	M-v	4	Williams	28888	1993 SG ₅
1993 ST ₅	15.4	0.15	19990810	20.13949	94.54774	193.97933	1.60756	0.1489135	2.1316300	38	6	1971–1999	0.75	M-v	2	Williams	35603	1993 ST ₅
1993 TD ₂₅	14.8	0.15	19990810	210.68853	249.38816	62.76288	3.56434	0.1694010	2.5376980	26	3	1992–1997	0.65	M-v	3	Williams	35689	1993 TD ₂₅
1993 UD ₇	15.4	0.15	19990810	259.21607	311.89098	110.89943	3.87456	0.1068710	2.1904810	33	4	1993–1999	0.57	M-v	1	Williams	35292	1993 UD ₇
1993 VA ₂	12.8	0.15	19990810	97.48268	289.51462	41.35266	11.09824	0.0944006	3.0515749	40	4	1993–1999	0.58	M-v	1	Williams	34010	1993 VA ₂
1993 XH	15.2	0.15	19990810	251.18692	306.54172	136.02759	5.38380	0.1573294	2.2165437	17	3	1993–1999	0.48	M-v	3	Williams	35689	1993 XH
1994 AC	14.5	0.15	19990810	302.84204	160.73787	255.34790	3.15345	0.0931666	2.1782592	64	4	1991–1999	0.54	M-v	2	Williams	35425	1994 AC
1994 AP	13.9	0.15	19990810	196.11521	41.78077	84.64634	7.10952	0.0830944	2.3111922	32	3	1994–1999	0.46	M-v	3	Williams	35293	1994 AP
1994 AG ₁	15.1	0.15	19990810	153.68950	14.85392	159.51097	5.12697	0.1677469	2.3610699	46	3	1994–1999	0.62	M-v	4	Williams	32307	1994 AG ₁
1994 AN ₂	14.6	0.15	19990810	125.18183	270.85328	305.70295	6.59482	0.0635901	2.3005280	44	3	1994–1999	0.58	M-v	3	Williams	31963	1994 AN ₂
1994 AJ ₃	13.1	0.15	19990810	226.59523	316.65699	161.80983	4.41060	0.1346213	3.9506378	34	4	1994–1999	0.76	M-v	1	Williams	27456	1994 AJ ₃
1994 AM ₃	14.1	0.15	19990810	203.44702	166.03433	2.64883	6.76405	0.0853935	2.2209036	58	4	1981–1999	0.66	M-v	2	Williams	29318	1994 AM ₃
1994 AZ ₄	14.2	0.15	19990810	333.44852	102.68399	96.55586	2.94089	0.1292083	2.9220127	31	4	1994–1999	0.79	M-v	2	Williams	35689	1994 AZ ₄
1994 AX ₆	15.3	0.15	19990810	21.70313	139.54240	145.00410	0.60509	0.1204856	2.3741380	63	3	1994–1999	0.52	M-v	3	Williams	35689	1994 AX ₆
1994 AB ₈	16.2	0.15	19990810	150.68855	126.97984	31.45371	1.75697	0.2101134	2.3982524	33	5	1992–1999	0.70	M-v	2	Williams	35689	1994 AB ₈
1994 AG ₁₀	16.2	0.15	19990810	143.71982	195.81168	3.36737	2.50573	0.1453766	2.3302610	31	3	1994–1999	0.56	M-v	4	Williams	35689	1994 AG ₁₀
1994 BW	15.2	0.15	19990810	108.18131	123.52261	104.97286	7.30654	0.0913873	2.3228732	40	4	1991–1999	0.55	M-v	1	Williams	32051	1994 BW
1994 BX	15.2	0.15	19990810	144.59496	122.57902	75.31575	7.54579	0.0966980	2.3346222	53	4	1994–1999	0.50	M-v	2	Williams	32051	1994 BX
1994 BY	14.1	0.15	19990810	224.16901	107.90630	35.96341	5.16553	0.1094167	2.2258734	33	5	1989–1999	0.68	M-v	1	Williams	32307	1994 BY
1994 BH ₁	14.7	0.15	19990810	164.40146	184.41662	342.81634	7.84187	0.0541831	2.3621524	56	3	1994–1999	0.58	M-v	4	Williams	35689	1994 BH ₁
1994 CA ₁	15.1	0.15	19990810	53.49858	67.14025	196.01145	4.48461	0.0669517	2.3984324	85	4	1994–1999	0.65	M-v	1	Williams	32051	1994 CA ₁
1994 CG ₁	14.8	0.15	19990810	85.17226	286.31309	11.20342	5.00644	0.1984195	2.2533885	31	2	1994–1998	0.54	M-v	4	Williams	35690	1994 CG ₁
1994 CN ₈	14.4	0.15	19990810	308.93885	271.97798	124.44041	2.30628	0.1417849	2.2493695	41	4	1979–1999	0.52	M-v	2	Williams	35690	1994 CN ₈
1994 CK ₁₀	15.2	0.15	19990810	268.13539	354.02340	92.56068	3.67375	0.0976182	2.2837857	36	4	1994–1999	0.85	M-v	2	Williams	32051	1994 CK ₁₀
1994 CU ₁₀	14.9	0.15	19990810	266.65346	323.70369	127.75701	6.31060	0.0300888	2.2957520	32	3	1994–1999	0.66	M-v	4	Williams	35690	1994 CU ₁₀
1994 CX ₁₀	13.8	0.15	19990810	285.84794	132.67404	105.64162	2.54461	0.1375956	3.1518818	26	4	1994–1998	0.77	M-v	1	Williams	35690	1994 CX ₁₀
1994 CM ₁₁	14.7	0.15	19990810	119.50786	204.44005	39.61023	1.98795	0.2039761	2.3566967	29	4	1991–1999	0.80	M-v	1	Williams	32051	1994 CM ₁₁
1994 CG ₁₂	14.6	0.15	19990810	62.18208	215.60836	58.84737	3.28183	0.1528528	2.4168616	40	4	1992–1999	0.76	M-v	2	Williams	32747	1994 CG ₁₂
1994 CX ₁₂	14.3	0.15	19990810	152.47316	145.34305	40.04365	4.02108	0.0650047	2.3745285	66	4	1987–1999	0.75	M-v	2	Williams	32307	1994 CX ₁₂
1994 CN ₁₃	14.5	0.15	19990810	355.74108	260.67037	65.07710	3.63699	0.1875843	2.4536368	32	3	1994–1999	0.73	M-v	3	Williams	35690	1994 CN ₁₃
1994 CG ₁₄	13.9	0.15	19990810	319.77977	313.58085	41.87103	6.85818	0.0916873	2.4404287	37	3	1994–1999	0.75	M-v	4	Williams	35425	1994 CG ₁₄
1994 CL ₁₄	14.3	0.15	19990810	348.46432	263.94615	107.24996	5.32171	0.1137168	2.3019712	40	5	1990–1999	0.72	M-v	2	Williams	32051	1994 CL ₁₄
1994 CO ₁₆	14.9	0.15	19990810	244.19222	319.68294	129.49791	6.79621	0.0854220	2.3570175	38	3	1994–1999	0.72	M-v	3	Williams	35690	1994 CO ₁₆
1994 CL ₁₈	15.0	0.15	19990810	295.64545	282.12265	119.33460	7.08809	0.0791730	2.3527237	31	3	1994–1999	0.81	M-v	4	Williams	32307	1994 CL ₁₈
1994 DG	13.3	0.15	19990810	238.07794	183.65400	147.07569	10.06331	0.1542654	2.7618862	55	3	1988–1999	0.67	M-v	4	Williams	34505	1994 DG
1994 DS	14.3	0.15	19990810	285.82687	32.29560	52.34392	4.50664	0.1117489	2.2681131	42	8	1954–1999	0.76	M-v	1	Williams	32051	1994 DS
1994 EP	14.4	0.15	19990810	147.88070	120.86184	64.68624	4.92072	0.0965115	2.4309430	54	4	1992–1999	0.54	M-v	2	Williams	32051	1994 EP
1994 EQ	14.1	0.15	19990810	52.50678	230.28834	22.82815	12.90625	0.1476499	2.5731001	40	4	1990–1999	0.61	M-v	2	Williams	35425	1994 EQ
1994 ES	15.3	0.15	19990810	340.18250	210.32371	146.84472	25.25268	0.2233875	2.2848603	50	2	1994–1999	0.65	M-v	3	Williams	35604	1994 ES
1994 EB ₂	13.6	0.15	19990810	159.67830	47.36217	133.17460	23.11952	0.2295244	2.3930915	34	3	1994–1999	0.70	M-v	3	Williams	32233	1994 EB ₂
1994 EL ₂	14.5	0.15	19990810	105.68220	193.73605	2.27921	12.61304	0.1923840	2.5479983	45	3	1994–1999	0.76	M-v	3	Williams	35425	1994 EL ₂
1994 EC ₅	14.5	0.15	19990810	16.27811	328.91494	345.75976	6.14305	0.0602542	2.4145391	84	3	1994–1999	0.64	M-v	4	Williams	32307	1994 EC ₅
1994 EJ ₇	14.1	0.15	19990810	335.33405	293.02871	90.17602	5.99929	0.1446462	2.2899932	72	4	1994–1999	0.58	M-v	2	Williams	32051	1994 EJ ₇
1994 EV ₇	13.7	0.15	19990810	130.80106	63.70011	342.61534	23.42019	0.0632133	1.8936247	19	3	1994–1999	0.83	M-v	2	Williams	35604	1994 EV ₇
1994 EW ₇	13.5	0.15	19990810	160.69864	29.09327	134.23295	24.91833	0.2334129	2.4417558	31	3	1994–1999	0.65	M-v	3	Williams	32234	1994 EW ₇
1994 FY	13.8	0.15	19990810	185.53159	136.64943	41.50302	12.04929	0.1076516	2.3654650	19	4	1976–1999	0.62	M-v	2	Williams	29619	1994 FY
1994 GG ₁	13.6	0.15	19990810	79.41456	69.80581	142.64720	13.27250	0.1567496	2.6445017	32	4	1985–1999	0.67	M-v	1	Williams	35425	1994 GG ₁

1994 GU ₉	13.6	0.15	19990810	135.40191	124.37492	125.74260	21.95870	0.1215265	2.3012212	22	4	1990–1999	0.49	M-v	2	Williams	33241	1994 GU ₉
1994 GW ₁₀	14.4	0.15	19990810	177.93123	97.41675	62.04350	7.70800	0.1869440	2.4372655	38	5	1990–1999	0.66	M-v	1	Williams	32307	1994 GW ₁₀
1994 GY ₁₀	13.9	0.15	19990810	83.28491	171.23785	50.17286	8.73262	0.1504980	2.6199225	30	3	1994–1999	0.60	M-v	3	Williams	35604	1994 GY ₁₀
1994 HA	13.5	0.15	19990810	57.22773	69.95960	201.36563	14.37643	0.1405857	2.5885224	122	6	1990–1999	0.64	M-v	1	Williams	32051	1994 HA
1994 HB ₁	16.3	0.15	19940418	168.44235	199.09432	195.01792	4.10781	0.1183382	2.3737001	15	1	14 days	0.56		D	Doppler		1994 HB ₁
1994 JQ ₆	16.1	0.15	19990810	353.46935	137.15866	185.24499	2.13681	0.1269824	2.6715176	21	4	1960–1999	0.51	M-v	1	Williams	23679	1994 JQ ₆
1994 JU ₈	13.9	0.15	19990810	60.41370	58.49955	231.28326	15.78316	0.1222880	2.5232452	52	3	1994–1999	0.75	M-v	2	Williams	35426	1994 JU ₈
1994 LC	14.5	0.15	19990810	114.11760	108.44321	128.92812	9.85874	0.1779929	2.5327977	38	3	1994–1999	0.69	M-v	3	Williams	32516	1994 LC
1994 LH	15.0	0.15	19990810	78.37850	104.03474	134.75343	11.44658	0.2030829	2.6659860	38	3	1994–1999	0.54	M-v	2	Williams	32051	1994 LH
1994 NE	19.8	0.15	19990810	255.53102	246.25843	104.95293	27.52698	0.6047848	2.0362152	37	1	26 days	1.16	M-v	3	Williams	23786	1994 NE
1994 PO	13.3	0.15	19990810	180.68917	241.22900	317.63107	12.34892	0.1037399	2.5748008	32	5	1986–1999	0.43	M-v	1	Williams	32516	1994 PO
1994 PX	13.2	0.15	19990810	19.35217	192.61733	155.79494	13.17075	0.1505979	2.7907618	50	6	1989–1999	0.74	M-v	1	Williams	32307	1994 PX
1994 PK ₃	13.9	0.15	19990810	255.25309	122.82517	321.46687	1.37579	0.0739684	2.9102436	36	3	1994–1999	0.85	M-v	4	Williams	32457	1994 PK ₃
1994 PK ₅	13.2	0.15	19990810	283.11309	128.25066	328.21007	9.15563	0.0068058	2.6872181	26	4	1986–1999	0.95	M-v	2	Williams	35690	1994 PK ₅
1994 PU ₅	13.6	0.15	19990810	341.00400	192.34910	150.26635	9.85415	0.0683159	2.9660978	22	2	1994–1999	0.71	M-v	4	Williams	35604	1994 PU ₅
1994 PC ₇	13.2	0.15	19990810	161.23886	43.82160	146.90828	9.78702	0.0863887	2.7840856	27	4	1992–1999	0.76	M-v	2	Williams	34506	1994 PC ₇
1994 PX ₉	15.8	0.15	19990810	83.55722	313.26846	17.29653	1.27703	0.1344537	2.5384467	27	3	1994–1998	0.67	M-v	4	Williams	35690	1994 PX ₉
1994 PX ₁₁	13.9	0.15	19990810	345.94183	49.29857	302.57629	1.07580	0.0694345	2.9081005	34	4	1979–1999	0.59	M-v	4	Williams	35604	1994 PX ₁₁
1994 PT ₁₃	13.6	0.15	19990810	304.09454	218.10672	163.30219	10.31057	0.0822962	3.0076732	33	3	1994–1999	0.65	M-v	4	Williams	35426	1994 PT ₁₃
1994 PA ₁₄	15.0	0.15	19990810	336.08476	173.95813	201.58031	1.51873	0.0812482	2.8615205	59	3	1992–1999	0.58	M-v	4	Williams	27448	1994 PA ₁₄
1994 PO ₁₆	14.1	0.15	19990810	195.98710	216.72278	313.65012	6.12228	0.0590140	2.7670606	30	5	1989–1999	0.80	M-v	2	Williams	35690	1994 PO ₁₆
1994 PY ₁₇	14.4	0.15	19990810	14.13981	110.75399	207.03735	1.58709	0.0755408	2.9295587	41	4	1994–1999	0.81	M-v	1	Williams	32052	1994 PY ₁₇
1994 PO ₁₈	14.4	0.15	19990810	291.87626	257.54896	156.16312	2.33210	0.0580945	2.9075255	56	3	1994–1999	0.72	M-v	4	Williams	35691	1994 PO ₁₈
1994 PQ ₁₈	16.2	0.15	19940816	351.23200	182.76607	164.59560	1.00635	0.1679521	2.5320860	12	1	25 days	0.70		D	Doppler		1994 PQ ₁₈
1994 PF ₂₀	14.4	0.15	19990810	60.97461	269.35636	344.10476	11.00455	0.2229713	2.9054138	55	4	1978–1999	0.66	M-v	2	Williams	32052	1994 PF ₂₀
1994 PJ ₂₀	13.9	0.15	19990810	60.82624	23.57171	267.02571	0.98736	0.0376998	2.8354282	26	4	1994–1999	0.88	M-v	1	Williams	29663	1994 PJ ₂₀
1994 PK ₂₀	13.5	0.15	19990810	215.64227	330.40158	169.60895	2.05315	0.0286058	2.8370828	58	3	1994–1999	0.60	M-v	3	Williams	29945	1994 PK ₂₀
1994 PW ₂₀	13.4	0.15	19990810	179.01748	206.69207	346.02624	3.91698	0.0227929	2.7464997	35	5	1992–1999	0.76	M-v	1	Williams	32308	1994 PW ₂₀
1994 PL ₂₂	14.1	0.15	19990810	284.15276	262.88340	162.64795	2.39699	0.0947042	2.9231259	162	3	1994–1999	0.50	M-v	4	Williams	35691	1994 PL ₂₂
1994 PO ₂₅	14.3	0.15	19990810	50.30589	223.69797	51.29327	2.71975	0.0514925	2.9136792	35	4	1994–1999	0.73	M-v	1	Williams	32308	1994 PO ₂₅
1994 PR ₂₇	13.6	0.15	19990810	228.60125	128.89340	10.41835	4.69840	0.0545249	2.7413822	50	6	1981–1999	0.64	M-v	1	Williams	32308	1994 PR ₂₇
1994 PC ₂₉	14.3	0.15	19990810	66.21666	160.64070	134.82580	8.00624	0.0955465	2.7383457	28	4	1993–1999	0.70	M-v	1	Williams	35691	1994 PC ₂₉
1994 PW ₂₉	14.0	0.15	19990810	310.08247	210.92198	184.09467	10.55951	0.1327044	2.9299661	37	3	1994–1999	0.55	M-v	4	Williams	32747	1994 PW ₂₉
1994 PO ₃₀	14.1	0.15	19990810	355.73072	151.76386	204.85345	4.59340	0.1230705	2.8506179	21	3	1994–1999	0.96	M-v	6	Williams	31966	1994 PO ₃₀
1994 PC ₃₇	14.1	0.15	19990810	300.58276	126.78382	297.63053	2.48883	0.0822098	2.7824135	26	5	1990–1999	0.52	M-v	1	Williams	35691	1994 PC ₃₇
1994 QQ	13.4	0.15	19990810	87.27793	265.97072	342.13706	9.94489	0.0956558	2.8754846	57	3	1994–1999	0.61	M-v	2	Williams	29945	1994 QQ
1994 RN ₂₈	14.7	0.15	19990810	14.34843	295.12450	3.68947	1.55817	0.0892143	2.9818626	32	4	1994–1999	0.91	M-v	1	Williams	35691	1994 RN ₂₈
1994 TB	7.0	0.15	19990810	332.69771	98.18543	317.36014	12.12481	0.3234632	39.9237081	83	5	1994–1999	0.76	M-v	3	Williams	30900	1994 TB
1994 TD	14.0	0.15	19990810	282.33966	257.29538	179.45504	4.16446	0.0490515	3.0373205	44	4	1994–1999	0.69	M-v	1	Williams	29945	1994 TD
1994 TF ₁	13.4	0.15	19990810	342.20498	298.91963	56.29046	8.29454	0.1305676	3.0768858	28	6	1989–1999	0.65	M-v	2	Williams	35691	1994 TF ₁
1994 TF ₂	19.2	0.15	19990810	183.08155	349.61528	175.31151	23.75677	0.2837239	0.9929892	123	6	1994–1999	0.69	M-v	3	Williams	32748	1994 TF ₂
1994 TT ₁₆	15.9	0.15	19990810	140.77200	323.63398	33.13965	2.82443	0.2147003	2.3478545	15	3	1994–1998	0.41	M-v	3	Williams	35691	1994 TT ₁₆
1994 UW ₂	15.9	0.15	19941124	359.18630	197.98580	216.29800	24.01339	0.2496651	2.3867224	10	1	33 days	1.13		D	Doppler		1994 UW ₂
1994 VK	13.8	0.15	19990810	264.01135	74.04176	16.53094	5.26399	0.1421010	3.1957377	44	4	1991–1999	0.74	M-v	1	Williams	28617	1994 VK
1994 VN	13.8	0.15	19990810	269.36233	68.48205	25.55648	4.57676	0.1798961	3.1645727	33	4	1977–1999	0.59	M-v	1	Williams	28617	1994 VN
1994 VM ₁	13.1	0.15	19990810	315.29457	239.77154	180.70849	4.69326	0.1969078	3.0617454	20	3	1994–1999	0.63	M-v	4	Williams	30276	1994 VM ₁
1994 VD ₇	12.3	0.15	19990810	39.84315	72.58830	234.96691	20.76794	0.1059523	3.1657763	31	3	1994–1999	0.71	M-v	2	Williams	35426	1994 VD ₇
1994 WT ₃	15.1	0.15	19990810	59.49000	156.25176	243.97654	6.38577	0.3411762	2.5804958	36	2	1994–1999	0.63	M-v	2	Williams	33690	1994 WT ₃
1994 WP ₁₃	13.4	0.15	19990810	62.18121	248.48705	139.81998	12.71405	0.2109602	2.6002320	32	3	1994–1999	0.83	M-v	2	Williams	35692	1994 WP ₁₃
1994 XM	14.0	0.15	19990810	309.73304	21.68324	41.74451	1.23971	0.1811216	3.1270232	29	3	1994–1999	0.49	M-v	4	Williams	27108	1994 XM
1995 BP	13.6	0.15	19990810	274.94704	310.02236	315.89022	13.20798	0.2592811	2.6274112	26	3	1995–1999	0.65	M-v	3	Williams	35692	1995 BP
1995 BT	13.1	0.15	19990810	357.64563	87.50061	316.70797	21.08312	0.1143592	3.2308539	42	3	1995–1999	0.58	M-v	3	Williams	32749	1995 BT
1995 FS	13.2	0.15	19990810	284.42060	154.60579	357.23264	17.27405	0.1452527	3.1241193	60	3	1993–1998	0.62	M-v	3	Williams	32945	1995 FS

1995 FA ₁	15.2	0.15	19990810	98.15289	29.68892	217.47998	1.63415	0.1280454	2.1612201	54	4	1995–1999	0.59	M-v	2	Williams	32052	1995 FA ₁
1995 FM ₁₁	16.0	0.15	19990810	51.71437	104.55880	184.66518	3.75700	0.1381440	2.1550110	25	4	1992–1999	0.66	M-v	4	Williams	31789	1995 FM ₁₁
1995 GA	15.7	0.15	19990810	62.61917	109.22154	137.04551	8.13441	0.1153999	2.2303870	48	3	1994–1999	0.55	M-v	2	Williams	35693	1995 GA
1995 GN	15.6	0.15	19990810	22.20333	204.58846	79.43496	3.53432	0.1256281	2.1863745	34	3	1992–1999	0.56	M-v	3	Williams	35693	1995 GN
1995 GV	14.2	0.15	19990810	70.64624	52.61327	192.78100	3.21888	0.1105012	2.2743624	57	4	1971–1999	0.58	M-v	1	Williams	35693	1995 GV
1995 JG	14.5	0.15	19990810	311.08355	49.16508	35.37386	21.68686	0.0527453	1.9796971	40	4	1995–1999	0.53	M-v	2	Williams	32052	1995 JG
1995 KF	14.1	0.15	19990810	35.42157	118.96525	127.44625	22.76181	0.2794270	2.4242470	66	4	1991–1999	0.72	M-v	2	Williams	35427	1995 KF
1995 KO ₁	14.9	0.15	19990810	57.32114	151.68267	119.93553	24.54884	0.1924430	2.3022298	32	4	1988–1999	0.57	M-v	2	Williams	29138	1995 KO ₁
1995 MB	12.6	0.15	19990810	29.91874	11.00048	280.07127	26.26838	0.2207107	2.4128173	57	2	1995–1999	0.59	M-v	2	Williams	35693	1995 MB
1995 NE	16.0	0.15	19990810	63.84553	57.76335	182.46589	5.41815	0.2396588	2.3365880	25	3	1995–1999	0.54	M-v	3	Williams	35693	1995 NE
1995 OA	14.0	0.15	19990810	315.68704	150.08633	274.99642	6.15509	0.0864688	2.3275682	65	4	1995–1999	0.62	M-v	1	Williams	35693	1995 OA
1995 OU	14.1	0.15	19990810	5.98352	288.95384	0.86570	5.59635	0.2205458	2.5492857	26	4	1991–1999	0.61	M-v	3	Williams	35693	1995 OU
1995 OS ₁	14.7	0.15	19990810	283.70062	67.37198	338.93420	2.83035	0.0737998	2.4743000	65	4	1994–1999	0.61	M-v	2	Williams	35693	1995 OS ₁
1995 ON ₄	14.4	0.15	19990810	65.87685	104.65382	135.97917	2.77660	0.1113358	2.5648764	61	3	1995–1999	0.57	M-v	2	Williams	35427	1995 ON ₄
1995 PG	15.0	0.15	19990810	246.94069	124.08132	332.53926	14.56192	0.1389827	2.5491180	61	4	1991–1999	0.47	M-v	2	Williams	35693	1995 PG
1995 QG	14.9	0.15	19990810	288.66015	103.36254	323.51342	13.34048	0.1604880	2.6452552	53	3	1995–1999	0.62	M-v	2	Williams	29107	1995 QG
1995 QQ	14.2	0.15	19990810	15.28661	331.15966	314.48029	13.71962	0.1108246	2.6495388	30	4	1994–1999	0.58	M-v	2	Williams	35693	1995 QQ
1995 QY ₃	14.5	0.15	19990810	70.88695	18.06644	243.26816	4.96353	0.1299234	2.4732467	50	3	1995–1999	0.70	M-v	3	Williams	35427	1995 QY ₃
1995 QB ₁₀	14.4	0.15	19990810	166.28129	197.52531	317.48942	13.95859	0.0385929	2.6114978	52	3	1995–1999	0.55	M-v	3	Williams	35427	1995 QB ₁₀
1995 QC ₁₀	15.4	0.15	19990810	40.41015	80.64656	226.80921	5.64924	0.1351680	2.4333818	19	3	1995–1999	0.86	M-v	3	Williams	31968	1995 QC ₁₀
1995 RA	13.2	0.15	19990810	20.93917	58.25074	303.23020	22.98555	0.2325738	2.3450863	40	3	1995–1999	0.27	M-v	2	Williams	29664	1995 RA
1995 RJ	15.1	0.15	19990810	7.77477	215.85992	103.69395	9.24883	0.2328761	2.5836193	27	3	1978–1999	0.53	M-v	3	Williams	26422	1995 RJ
1995 SP	14.9	0.15	19990810	8.18994	37.45597	13.38181	9.24859	0.1900664	2.3231677	55	3	1995–1999	0.49	M-v	2	Williams	29664	1995 SP
1995 SB ₁	14.4	0.15	19990810	352.26914	167.71246	231.79583	24.33304	0.2543247	2.3953086	26	4	1995–1999	0.71	M-v	2	Williams	32240	1995 SB ₁
1995 SJ ₁	15.5	0.15	19990810	322.01473	62.54467	351.86731	4.07363	0.2009156	2.4807205	57	3	1995–1999	0.47	M-v	2	Williams	35693	1995 SJ ₁
1995 SQ ₁	14.0	0.15	19990810	331.19762	121.86699	313.79464	23.71409	0.2224824	2.3679890	21	3	1991–1999	0.67	M-v	3	Williams	26176	1995 SQ ₁
1995 SK ₂	14.9	0.15	19990810	9.23880	355.62835	349.62508	3.12329	0.1952650	2.4324060	24	3	1995–1999	0.83	M-v	4	Williams	31968	1995 SK ₂
1995 SO ₂	15.9	0.15	19990810	6.90419	83.02196	232.97623	4.11427	0.2934085	2.5724239	46	2	1995–1999	0.36	M-v	3	Williams	35605	1995 SO ₂
1995 SK ₃	14.7	0.15	19990810	74.38973	178.00149	94.66300	3.56732	0.1632357	2.4621826	38	4	1991–1999	0.53	M-v	3	Williams	31968	1995 SK ₃
1995 SR ₃	13.8	0.15	19990810	62.82201	17.07523	328.86659	6.24958	0.1781207	2.2566818	26	4	1978–1999	0.56	M-v	2	Williams	29318	1995 SR ₃
1995 SS ₄	13.8	0.15	19990810	279.77926	36.60756	46.47892	4.77735	0.3019947	2.6216060	32	5	1971–1999	0.71	M-v	2	Williams	35605	1995 SS ₄
1995 SO ₅	14.2	0.15	19990810	10.08213	257.05094	54.66189	14.06974	0.1987010	2.5324971	20	4	1987–1999	0.63	M-v	2	Williams	31420	1995 SO ₅
1995 SS ₅	15.0	0.15	19990810	51.27392	92.02135	207.69940	13.39599	0.1658475	2.5623031	60	4	1991–1999	0.61	M-v	2	Williams	32309	1995 SS ₅
1995 SP ₈	14.8	0.15	19990810	80.52867	90.70431	172.87851	6.44298	0.1040625	2.4631990	44	4	1994–1999	0.69	M-v	2	Williams	35605	1995 SP ₈
1995 SU ₁₅	15.5	0.15	19990810	80.53433	39.65378	213.57325	0.73922	0.1011384	2.5119046	33	4	1994–1999	0.58	M-v	3	Williams	35693	1995 SU ₁₅
1995 SW ₂₅	15.9	0.15	19990810	336.50945	11.96665	358.08926	2.69178	0.2186873	2.5851331	35	2	1995–1999	0.59	M-v	4	Williams	35693	1995 SW ₂₅
1995 SH ₂₆	14.9	0.15	19990810	41.53227	311.11388	354.22965	1.74755	0.1283713	2.5309835	42	4	1991–1999	0.72	M-v	3	Williams	32309	1995 SH ₂₆
1995 SL ₃₅	14.7	0.15	19990810	266.07008	65.88056	18.23539	22.30443	0.0518069	2.6239499	20	4	1978–1999	0.84	M-v	2	Williams	29664	1995 SL ₃₅
1995 SS ₅₂	15.8	0.15	19990810	225.18569	120.45290	12.50054	3.54632	0.0257007	2.5689846	21	3	1995–1999	0.26	M-v	4	Williams	31107	1995 SS ₅₂
1995 TG ₂	15.4	0.15	19990810	353.65166	112.60528	218.11540	2.54076	0.1979549	2.7396428	37	3	1994–1999	0.52	M-v	3	Williams	32670	1995 TG ₂
1995 UC	14.7	0.15	19990810	289.01437	36.42431	11.10737	15.00976	0.0425107	2.6874401	24	4	1971–1999	0.79	M-v	2	Williams	26422	1995 UC
1995 UG	15.4	0.15	19990810	327.69940	141.80624	242.32113	3.71485	0.3203911	2.6011376	50	3	1995–1999	0.54	M-v	3	Williams	35605	1995 UG
1995 UY ₁	14.1	0.15	19990810	236.17974	157.61798	322.18653	4.68354	0.0641670	2.6552386	46	4	1993–1999	0.53	M-v	1	Williams	29946	1995 UY ₁
1995 UW ₂	15.0	0.15	19990810	357.76188	130.84618	261.02145	1.48804	0.1961445	2.4412518	47	3	1995–1999	0.43	M-v	2	Marsden	29304	1995 UW ₂
1995 UU ₃	14.4	0.15	19990810	282.84046	48.19731	29.34468	4.04755	0.2009488	2.6876629	49	3	1995–1999	0.71	M-v	3	Williams	30665	1995 UU ₃
1995 UH ₅	14.2	0.15	19990810	37.68090	288.41496	46.06619	5.55319	0.1233861	2.4511877	33	5	1991–1999	0.77	M-v	2	Williams	32309	1995 UH ₅
1995 UF ₆	13.5	0.15	19990810	4.00084	274.55403	48.95458	12.51091	0.1877156	2.6754024	60	4	1995–1999	0.66	M-v	2	Williams	32053	1995 UF ₆
1995 UH ₆	13.7	0.15	19990810	332.32744	337.65936	34.68966	6.65146	0.0436224	2.7234731	40	5	1993–1999	0.51	M-v	1	Williams	32053	1995 UH ₆
1995 UE ₈	14.1	0.15	19990810	130.11380	170.47852	35.89332	8.33378	0.0614632	2.8061191	28	5	1988–1999	0.75	M-v	2	Williams	32053	1995 UE ₈
1995 UR ₈	15.8	0.15	19990810	16.20448	288.15322	32.73185	4.71455	0.2355120	2.5592703	43	4	1991–1999	0.66	M-v	3	Williams	26423	1995 UR ₈
1995 UF ₂₄	15.3	0.15	19990810	21.40173	34.13076	286.60031	2.02809	0.1498621	2.6242443	42	3	1995–1999	0.66	M-v	3	Williams	31970	1995 UF ₂₄
1995 UQ ₄₄	13.8	0.15	19990810	21.52596	303.74282	17.29314	12.98520	0.1690655	2.5781197	36	3	1995–1999	0.76	M-v	3	Williams	32309	1995 UQ ₄₄
1995 UZ ₄₅	14.1	0.15	19990810	173.09959	315.89405	204.33721	9.33876	0.1602119	2.7522212	31	3	1995–1999	0.72	M-v	3	Williams	35694	1995 UZ ₄₅

1995 UC ₄₇	14.8	0.15	19990810	331.30650	355.98550	30.32059	5.64240	0.3056709	2.5894290	33	3	1993–1999	0.58	M-v	3	Williams	35606	1995 UC ₄₇
1995 VG	13.0	0.15	19990810	264.64022	173.42391	282.73872	1.93523	0.0489816	2.7606168	35	6	1981–1999	0.52	M-v	1	Williams	32309	1995 VG
1995 VO	12.6	0.15	19990810	177.86940	97.17855	46.05342	10.86924	0.0582993	3.0007386	29	3	1995–1999	0.69	M-v	3	Williams	35427	1995 VO
1995 VP	12.8	0.15	19990810	154.97232	307.62942	254.56435	6.07066	0.0559988	2.7974049	42	5	1985–1999	0.59	M-v	2	Williams	35694	1995 VP
1995 VT	12.3	0.15	19990810	154.04626	283.16976	231.82650	8.76378	0.0445814	3.0533848	53	3	1995–1999	0.67	M-v	3	Williams	35694	1995 VT
1995 VC ₁	13.4	0.15	19990810	307.44447	12.69347	36.19874	12.86825	0.2288275	2.6695461	23	4	1973–1999	0.53	M-v	1	Williams	30666	1995 VC ₁
1995 VU ₁	12.6	0.15	19990810	214.57410	90.91814	70.98950	13.74344	0.0927111	2.7014780	25	6	1964–1999	0.88	M-v	2	Williams	30292	1995 VU ₁
1995 WB	13.8	0.15	19990810	305.14418	323.06716	108.16351	2.45105	0.1182124	2.6313917	25	5	1978–1999	0.76	M-v	2	Williams	29627	1995 WB
1995 WY	12.8	0.15	19990810	205.60771	40.44990	70.74773	10.39517	0.0570573	3.0499164	60	3	1995–1999	0.65	M-v	3	Williams	35427	1995 WY
1995 WS ₃	15.2	0.15	19990810	347.03369	68.68815	296.73824	2.91449	0.2550655	2.5766600	74	3	1995–1999	0.49	M-v	2	Williams	35606	1995 WS ₃
1995 WV ₃	12.5	0.15	19990810	190.18815	233.89566	286.98781	18.17315	0.2166216	2.9954536	45	3	1995–1999	0.71	M-v	2	Williams	35694	1995 WV ₃
1995 WT ₄	14.8	0.15	19990810	306.07450	119.89319	258.74680	6.54240	0.2347070	2.7563298	45	2	1995–1999	0.63	M-v	3	Marsden	35694	1995 WT ₄
1995 WF ₅	13.9	0.15	19990810	294.58717	287.39235	149.92632	4.37807	0.1539396	2.6469752	25	4	1991–1999	0.66	M-v	2	Williams	30666	1995 WF ₅
1995 WJ ₅	12.9	0.15	19990810	114.34518	16.27287	262.81942	8.53526	0.0815608	2.5827023	60	4	1990–1999	0.70	M-v	2	Williams	32518	1995 WJ ₅
1995 WN ₅	12.6	0.15	19990810	301.12800	2.16562	67.16614	6.12417	0.0324833	2.7440948	37	8	1974–1999	0.67	M-v	1	Williams	32310	1995 WN ₅
1995 WE ₆	15.1	0.15	19990810	353.59966	15.89575	21.98022	2.25288	0.2086098	2.3968457	45	4	1991–1999	0.58	M-v	2	Marsden	29665	1995 WE ₆
1995 WM ₆	13.5	0.15	19990810	256.63339	280.72398	197.04881	3.32597	0.1750815	2.6775629	32	5	1986–1999	0.88	M-v	1	Williams	32466	1995 WM ₆
1995 WL ₈	18.1	0.15	19990810	21.93029	131.07015	248.41430	17.71745	0.4823859	2.3672692	53	1	102 days	1.05	M-v	5	Williams	26761	1995 WL ₈
1995 WH ₁₇	14.0	0.15	19990810	321.03771	304.97132	70.96966	11.03678	0.2786932	2.7225500	27	3	1995–1999	0.77	M-v	3	Williams	35607	1995 WH ₁₇
1995 WP ₁₇	15.3	0.15	19990810	5.17950	317.43217	18.06746	3.97747	0.2979827	2.5719770	37	3	1995–1999	0.48	M-v	3	Williams	35694	1995 WP ₁₇
1995 WN ₃₃	14.1	0.15	19990810	256.26030	270.10738	208.00995	12.58594	0.1214050	2.5996292	26	4	1991–1999	0.60	M-v	3	Marsden	26761	1995 WN ₃₃
1995 XC	12.7	0.15	19990810	150.47851	283.60961	250.46618	11.73430	0.1603617	3.1675358	51	2	1995–1999	0.57	M-v	4	Williams	35296	1995 XC
1995 XJ	14.2	0.15	19990810	294.37797	344.79489	81.69378	10.40436	0.1384941	2.8034791	58	3	1995–1999	0.44	M-v	2	Williams	29946	1995 XJ
1995 XX	13.1	0.15	19990810	54.81902	245.62086	31.31602	9.53852	0.0338672	3.0861688	31	5	1976–1999	0.68	M-v	1	Williams	32054	1995 XX
1995 XU ₁	14.9	0.15	19990810	24.30924	126.69711	186.78914	1.99733	0.1900245	2.4253683	59	3	1995–1999	0.60	M-v	2	Williams	32750	1995 XU ₁
1995 YB	13.9	0.15	19990810	25.41095	239.41445	96.95156	13.05470	0.2367832	2.6510206	38	3	1995–1999	0.56	M-v	2	Williams	32310	1995 YB
1995 YH	12.7	0.15	19990810	338.74712	94.63872	252.58934	8.82762	0.1268589	2.9851570	75	3	1995–1999	0.58	M-v	3	Williams	35694	1995 YH
1995 YK	13.3	0.15	19990810	301.20560	297.69317	101.46763	10.95623	0.1811906	2.9726612	45	4	1995–1999	0.69	M-v	2	Williams	35428	1995 YK
1995 YO	13.2	0.15	19990810	278.63505	297.62601	109.27181	10.36715	0.0845075	3.1705272	42	5	1954–1999	0.74	M-v	1	Williams	35428	1995 YO
1995 YB ₁	13.0	0.15	19990810	152.81799	80.23110	121.05396	5.83810	0.0926335	3.1231659	36	5	1980–1999	0.64	M-v	1	Williams	32518	1995 YB ₁
1995 YC ₁	13.2	0.15	19990810	48.88024	193.33768	109.20292	17.14923	0.0556363	3.0359224	31	5	1991–1999	0.77	M-v	1	Williams	30093	1995 YC ₁
1995 YJ ₁	12.9	0.15	19990810	357.37732	236.01701	128.96360	2.96044	0.0890121	2.8945946	22	5	1977–1999	0.68	M-v	2	Williams	28890	1995 YJ ₁
1995 YB ₃	13.4	0.15	19990810	256.97710	344.14874	96.87025	2.64228	0.1839900	3.0835401	33	4	1989–1999	0.59	M-v	3	Williams	35694	1995 YB ₃
1995 YV ₃	14.1	0.15	19990810	328.94143	276.33984	119.25142	29.80037	0.4414006	2.7892735	102	3	1995–1999	0.51	M-v	2	Marsden	35694	1995 YV ₃
1995 YU ₉	14.0	0.15	19990810	6.05295	65.63840	290.04749	9.24908	0.0680688	3.0106307	42	6	1988–1999	0.56	M-v	1	Williams	30093	1995 YU ₉
1995 YV ₂₂	14.5	0.15	19990810	223.39307	343.69416	150.14864	1.59404	0.1263460	3.1012372	27	3	1995–1999	0.72	M-v	4	Williams	30473	1995 YV ₂₂
1996 AB	13.2	0.15	19990810	261.37443	136.73252	299.08273	2.53940	0.1388391	3.1894374	34	3	1985–1999	0.68	M-v	4	Williams	35428	1996 AB
1996 AL	13.2	0.15	19990810	238.59547	27.74968	113.46171	15.99913	0.1759205	2.9437236	18	4	1991–1999	0.53	M-v	1	Williams	30689	1996 AL
1996 AE ₁	12.6	0.15	19990810	172.37677	255.33502	291.83550	15.07810	0.0479082	3.1071369	46	3	1995–1999	0.59	M-v	2	Williams	35428	1996 AE ₁
1996 AH ₁	14.0	0.15	19990810	286.12121	115.33156	301.39467	12.44326	0.1723386	3.1797855	40	2	1996–1999	0.53	M-v	3	Marsden	35607	1996 AH ₁
1996 AR ₁	12.9	0.15	19990810	319.19510	104.38451	307.04263	9.36504	0.0472217	3.0519581	35	4	1993–1999	0.53	M-v	1	Williams	35428	1996 AR ₁
1996 AG ₂	12.3	0.15	19990810	280.07149	104.54924	311.78774	12.89184	0.0919173	3.1598314	48	3	1985–1999	0.63	M-v	2	Williams	35694	1996 AG ₂
1996 AS ₂	13.3	0.15	19990810	258.98618	49.28767	38.87403	2.00685	0.1880970	3.1460233	27	4	1985–1999	0.47	M-v	1	Williams	30093	1996 AS ₂
1996 AG ₇	14.5	0.15	19990810	353.89546	258.37141	87.41939	4.23936	0.2409502	3.0727688	34	6	1978–1999	0.59	M-v	1	Williams	29139	1996 AG ₇
1996 BB ₁	14.6	0.15	19990810	10.47742	164.39075	236.48284	3.81009	0.1847970	2.5598370	36	3	1996–1999	0.61	M-v	3	Williams	35694	1996 BB ₁
1996 BE ₁	13.9	0.15	19990810	290.76357	5.50945	80.52049	4.96438	0.1327252	2.8511006	18	3	1996–1999	0.46	M-v	4	Williams	30667	1996 BE ₁
1996 BV ₁	14.2	0.15	19990810	275.89205	158.94360	337.99084	9.35278	0.2734577	2.7696789	32	6	1989–1999	0.52	M-v	2	Williams	34861	1996 BV ₁
1996 BG ₂	12.9	0.15	19990810	300.84035	126.73562	329.52812	21.45190	0.0580277	2.6740334	37	4	1992–1999	0.78	M-v	3	Williams	32519	1996 BG ₂
1996 BM ₃	12.7	0.15	19990810	238.96161	311.12908	150.36508	0.94534	0.1552437	3.1913490	53	3	1994–1999	0.57	M-v	3	Williams	35607	1996 BM ₃
1996 BU ₃	12.6	0.15	19990810	230.78027	4.22562	129.64111	21.50908	0.0967607	3.2057537	29	4	1996–1999	0.56	M-v	2	Williams	32243	1996 BU ₃
1996 BZ ₃	18.2	0.15	19990810	305.66978	278.02990	178.51439	3.36935	0.5221017	2.6460456	98	3	1982–1999	0.54	M-v	1	Williams	35607	1996 BZ ₃
1996 BS ₉	16.1	0.15	19990810	107.97645	140.39171	177.23576	2.79770	0.2087593	2.5984720	23	3	1994–1998	0.60	M-v	5	Williams	35694	1996 BS ₉
1996 BK ₁₃	14.8	0.15	19990810	300.36844	312.25353	78.98420	10.67453	0.2486196	2.7746065	24	3	1996–1999	0.55	M-v	4	Williams	35608	1996 BK ₁₃

1996 CK ₂	12.6	0.15	19990810	213.48918	156.16576	13.64304	11.89944	0.0811651	3.0450911	30	7	1988–1999	0.75	M-v	1	Williams	32750	1996 CK ₂
1996 CP ₇	15.2	0.15	19990810	290.55412	106.11645	127.08471	4.39919	0.0923690	2.2828455	19	4	1991–1998	0.65	M-v	2	Williams	35695	1996 CP ₇
1996 DQ ₁	13.5	0.15	19990810	252.25568	116.06396	359.41762	6.26923	0.1787711	3.0805420	38	3	1991–1999	0.55	M-v	3	Williams	35695	1996 DQ ₁
1996 EQ ₂	12.1	0.15	19990810	320.52856	206.46023	196.24418	17.51081	0.2131570	3.1078428	40	4	1996–1999	0.69	M-v	2	Williams	35695	1996 EQ ₂
1996 ED ₉	13.8	0.15	19990810	20.46950	201.36155	156.57405	14.05521	0.0419024	3.1483752	32	4	1996–1999	0.63	M-v	1	Williams	32751	1996 ED ₉
1996 FR ₁	13.5	0.15	19990810	105.38131	100.33935	216.85310	9.42801	0.1145268	3.0131053	83	4	1996–1999	0.58	M-v	1	Williams	33075	1996 FR ₁
1996 KA ₃	12.9	0.15	19990810	101.35314	137.16862	133.60187	10.88020	0.1513010	3.1858212	66	4	1995–1999	0.52	M-v	1	Williams	33076	1996 KA ₃
1996 OO	12.2	0.15	19990810	189.17594	18.02069	232.22190	10.27249	0.0804193	3.9835104	72	4	1996–1999	0.48	M-v	2	Williams	33343	1996 OO
1996 PZ ₆	15.0	0.15	19990810	17.18735	266.35519	86.76557	23.81271	0.1168666	1.9469653	48	4	1977–1999	0.74	M-v	2	Williams	32054	1996 PZ ₆
1996 PA ₇	13.8	0.15	19990810	279.52905	303.50256	85.94913	25.40320	0.3522552	2.3240616	72	3	1996–1999	0.68	M-v	2	Williams	35696	1996 PA ₇
1996 QG ₁	15.2	0.15	19990810	284.44514	170.39428	148.55239	1.02937	0.2108107	2.4675150	26	3	1996–1999	0.62	M-v	3	Williams	35608	1996 QG ₁
1996 RG ₁	14.4	0.15	19990810	328.11663	18.16485	9.13620	5.75521	0.1654451	2.1810213	78	5	1991–1999	0.54	M-v	2	Williams	35428	1996 RG ₁
1996 SA ₁	15.3	0.15	19990810	234.37422	87.10191	11.82010	9.15819	0.1008339	2.2162645	70	3	1996–1999	0.64	M-v	2	Williams	32310	1996 SA ₁
1996 SC ₁	15.9	0.15	19990810	48.09213	69.42885	181.12503	1.98859	0.1547733	2.2517077	38	2	1996–1999	0.53	M-v	5	Williams	35299	1996 SC ₁
1996 SH ₆	14.2	0.15	19990810	127.74612	355.26806	195.17927	7.94700	0.0638703	2.2960489	70	3	1996–1999	0.65	M-v	3	Williams	35429	1996 SH ₆
1996 TS ₅	13.6	0.15	19990810	182.67626	216.38628	297.63001	23.62122	0.1891700	2.2744374	36	3	1991–1999	0.51	M-v	2	Williams	35696	1996 TS ₅
1996 TD ₇	15.3	0.15	19990810	159.14670	154.20888	33.50075	6.36759	0.0999473	2.2601399	70	4	1991–1999	0.55	M-v	2	Williams	32054	1996 TD ₇
1996 TQ ₇	15.8	0.15	19990810	134.24709	84.35961	100.10560	5.55901	0.0654838	2.2920524	41	3	1996–1999	0.76	M-v	3	Williams	32054	1996 TQ ₇
1996 TX ₇	15.5	0.15	19990810	32.29060	128.41257	147.84332	4.15741	0.1401727	2.2452382	54	3	1996–1999	0.65	M-v	3	Williams	35697	1996 TX ₇
1996 TC ₈	15.4	0.15	19990810	65.42800	32.98233	205.12116	2.08438	0.1413850	2.2793800	45	3	1993–1999	0.51	M-v	4	Williams	35697	1996 TC ₈
1996 TM ₉	15.9	0.15	19990810	340.60020	355.65929	0.49529	0.88239	0.0274031	2.1909679	192	3	1996–1999	0.68	M-v	4	Williams	35697	1996 TM ₉
1996 TY ₉	13.1	0.15	19990810	106.93214	344.77154	263.45367	29.71930	0.3157121	1.9973716	44	5	1949–1999	0.62	M-v	2	Williams	35429	1996 TY ₉
1996 TS ₁₀	14.7	0.15	19990810	300.12667	356.91635	38.83535	5.67318	0.1420379	2.2015980	61	3	1996–1999	0.79	M-v	4	Williams	35429	1996 TS ₁₀
1996 TU ₁₁	15.1	0.15	19990810	276.75670	342.38333	70.98177	7.97463	0.0972540	2.2718972	54	3	1996–1999	0.56	M-v	3	Williams	35697	1996 TU ₁₁
1996 TT ₁₄	14.5	0.15	19990810	332.04232	239.01260	121.46444	3.39097	0.1955048	2.1876210	73	3	1996–1999	0.68	M-v	3	Williams	35429	1996 TT ₁₄
1996 TD ₁₅	13.5	0.15	19990810	252.23489	258.86497	200.81885	21.87471	0.2069679	2.3025250	47	3	1996–1999	0.49	M-v	3	Williams	35697	1996 TD ₁₅
1996 TS ₁₈	15.3	0.15	19990810	166.50866	144.13515	17.08086	1.47648	0.0882749	2.3467019	47	5	1987–1999	0.78	M-v	2	Williams	32311	1996 TS ₁₈
1996 TD ₂₁	15.5	0.15	19990810	96.05043	193.36921	31.20880	1.86871	0.0987962	2.3166091	48	4	1992–1999	0.48	M-v	1	Williams	31792	1996 TD ₂₁
1996 TP ₃₅	16.0	0.15	19990810	102.23184	72.74680	153.36370	5.61545	0.0718797	2.2082181	36	3	1996–1999	0.49	M-v	3	Williams	35697	1996 TP ₃₅
1996 TX ₆₂	16.1	0.15	19990810	198.20702	87.87932	21.64230	4.90381	0.0616819	2.2721198	21	2	1996–1998	0.88	M-v	5	Williams	35697	1996 TX ₆₂
1996 TO ₆₆	4.3	0.15	19990810	112.55857	243.05147	355.20122	27.33734	0.1138775	43.5839184	98	4	1996–1999	0.59	M-v	4	Marsden	33076	1996 TO ₆₆
1996 TP ₆₆	6.6	0.15	19990810	359.00858	75.18185	316.73801	5.68835	0.3391163	39.9031187	55	4	1996–1999	0.58	M-v	3	Williams	32519	1996 TP ₆₆
1996 UE	15.0	0.15	19990810	339.23811	303.19142	42.15832	4.15839	0.2792479	2.1940058	39	5	1976–1999	0.62	M-v	1	Williams	35429	1996 UE
1996 UN	15.3	0.15	19990810	200.46701	304.02899	199.39252	4.78859	0.1404575	2.2239008	108	4	1991–1999	0.58	M-v	2	Williams	34517	1996 UN
1996 UZ	14.5	0.15	19990810	237.16160	249.72240	219.31196	3.91427	0.1095816	2.2962169	60	3	1996–1999	0.63	M-v	4	Williams	31974	1996 UZ
1996 UB ₁	14.8	0.15	19990810	315.39047	354.64869	45.44676	6.01417	0.1396465	2.1827046	54	3	1996–1999	0.64	M-v	3	Williams	35429	1996 UB ₁
1996 VW	15.0	0.15	19990810	277.73966	199.86317	220.70742	3.48082	0.1216793	2.2458255	53	3	1996–1999	0.58	M-v	3	Williams	35697	1996 VW
1996 VB ₁	15.1	0.15	19990810	253.87092	210.53769	229.44365	5.85340	0.0736917	2.3049420	50	4	1991–1999	0.77	M-v	1	Williams	32311	1996 VB ₁
1996 VM ₁	13.5	0.15	19990810	198.93680	62.82192	54.47977	7.06118	0.1008864	2.4462499	53	4	1990–1999	0.61	M-v	1	Williams	35429	1996 VM ₁
1996 VJ ₂	15.2	0.15	19990810	23.87103	83.96816	202.38414	4.88967	0.1508275	2.2448156	116	3	1996–1999	0.47	M-v	2	Williams	35697	1996 VJ ₂
1996 VT ₂	15.2	0.15	19990810	220.86964	262.25217	222.38673	1.56921	0.1715111	2.3278220	35	4	1994–1999	0.60	M-v	2	Williams	32055	1996 VT ₂
1996 VR ₅	14.7	0.15	19990810	239.00686	282.89506	176.39774	2.02780	0.1811904	2.4052570	28	2	1996–1999	0.41	M-v	4	Williams	35697	1996 VR ₅
1996 VT ₅	14.2	0.15	19990810	288.26205	325.99038	89.92293	7.57004	0.1003499	2.3015723	61	4	1989–1999	0.74	M-v	1	Williams	32311	1996 VT ₅
1996 VH ₈	14.1	0.15	19990810	295.60727	11.37015	24.26983	7.16041	0.1459872	2.2830767	82	5	1982–1999	0.61	M-v	1	Williams	35430	1996 VH ₈
1996 VU ₈	14.9	0.15	19990810	282.37718	216.31468	207.87976	6.13326	0.1319263	2.2390493	62	4	1995–1999	0.72	M-v	2	Williams	32055	1996 VU ₈
1996 VZ ₈	15.1	0.15	19990810	320.69474	223.65272	144.17456	1.97975	0.1612472	2.2661052	61	4	1994–1999	0.75	M-v	2	Williams	35697	1996 VZ ₈
1996 VC ₉	14.3	0.15	19990810	307.25080	314.23625	76.00402	6.97186	0.1841317	2.2573638	52	3	1996–1999	0.67	M-v	3	Williams	35430	1996 VC ₉
1996 VG ₁₁	15.0	0.15	19990810	164.03255	185.90527	339.28514	6.70603	0.1457519	2.3107990	41	3	1996–1999	0.68	M-v	3	Williams	32311	1996 VG ₁₁
1996 VX ₁₅	14.1	0.15	19990810	127.92845	356.05909	202.86349	1.73628	0.1587279	2.3893078	103	4	1987–1999	0.62	M-v	1	Williams	32055	1996 VX ₁₅
1996 VV ₁₈	16.0	0.15	19990810	68.97997	231.66876	29.71878	2.28275	0.1168504	2.2836763	27	3	1996–1999	0.71	M-v	3	Williams	32311	1996 VV ₁₈
1996 VX ₂₉	14.4	0.15	19990810	214.97034	79.85092	60.76604	6.18779	0.0357790	2.1785948	42	3	1996–1999	0.67	M-v	3	Williams	32311	1996 VX ₂₉
1996 VL ₃₀	15.0	0.15	19990810	320.79322	150.86143	240.05278	5.84783	0.1873027	2.1867083	34	3	1996–1999	0.60	M-v	4	Williams	31977	1996 VL ₃₀
1996 VC ₃₄	16.5	0.15	19990810	1.47230	265.53598	58.75560	6.66508	0.1550879	2.2436853	16	3	1995–1999	0.38	M-v	3	Williams	28604	1996 VC ₃₄

1996 WA	14.9	0.15	19990810	298.09671	37.23410	32.29606	4.01330	0.1356236	2.2061211	36	5	1984–1999	0.77	M-v	2	Williams	32056	1996 WA
1996 WX	16.0	0.15	19990810	259.93213	46.90516	46.39499	6.88620	0.1113049	2.2421252	40	3	1996–1999	0.52	M-v	3	Williams	35697	1996 WX
1996 WA ₁	14.9	0.15	19990810	252.55193	188.74448	286.20805	2.48531	0.0856968	2.2667011	33	3	1996–1999	0.72	M-v	3	Williams	35430	1996 WA ₁
1996 WC ₂	14.6	0.15	19990810	135.62253	119.26891	69.90116	8.02603	0.0327325	2.3832458	74	4	1991–1999	0.66	M-v	1	Williams	32056	1996 WC ₂
1996 WE ₃	14.9	0.15	19990810	102.18351	11.96758	238.85539	5.37675	0.0902974	2.2861663	68	3	1996–1999	0.61	M-v	3	Williams	35430	1996 WE ₃
1996 XC	14.0	0.15	19990810	61.26695	167.53010	96.09504	6.70491	0.1902700	2.4372058	73	4	1991–1999	0.42	M-v	1	Williams	31793	1996 XC
1996 XU	15.2	0.15	19990810	16.12430	62.03553	250.46207	4.22067	0.1068529	2.3239154	50	3	1996–1999	0.64	M-v	3	Williams	31977	1996 XU
1996 XC ₁	14.5	0.15	19990810	55.84244	96.99750	197.98899	2.05884	0.0589733	2.2917519	43	4	1991–1999	0.60	M-v	1	Williams	32056	1996 XC ₁
1996 XJ ₁	14.3	0.15	19990810	358.17828	249.94461	79.10704	3.61714	0.1898142	2.4497216	38	3	1996–1999	0.59	M-v	3	Williams	35697	1996 XJ ₁
1996 XL ₁	14.3	0.15	19990810	294.91657	337.50787	88.01871	7.64847	0.0752948	2.3273153	46	3	1996–1999	0.63	M-v	3	Williams	32311	1996 XL ₁
1996 XB ₂	13.5	0.15	19990810	285.26484	158.29145	264.15814	24.36117	0.2385759	2.3492200	47	3	1985–1999	0.54	M-v	2	Williams	35697	1996 XB ₂
1996 XM ₂	14.4	0.15	19990810	24.37393	248.98780	82.75332	5.00981	0.2404840	2.2124047	59	3	1996–1999	0.50	M-v	3	Williams	32056	1996 XM ₂
1996 XG ₅	15.2	0.15	19990810	262.07830	24.30753	61.52924	3.19210	0.1066473	2.3578343	46	3	1996–1999	0.75	M-v	4	Williams	35697	1996 XG ₅
1996 XB ₆	14.2	0.15	19990810	195.76860	59.43331	84.99740	13.47121	0.0776889	2.5313560	32	3	1996–1999	0.57	M-v	2	Williams	32311	1996 XB ₆
1996 XE ₉	15.4	0.15	19990810	278.70572	162.02379	263.03197	5.47370	0.1783549	2.3568997	49	2	1996–1999	0.35	M-v	3	Marsden	35609	1996 XE ₉
1996 XJ ₁₅	14.5	0.15	19990810	35.32985	210.55498	97.33421	6.49086	0.1745151	2.4305320	48	4	1991–1999	0.60	M-v	1	Williams	32311	1996 XJ ₁₅
1996 XC ₁₈	14.5	0.15	19990810	98.25759	161.25844	56.87059	8.13503	0.0999686	2.4674264	27	3	1996–1999	0.47	M-v	3	Williams	31793	1996 XC ₁₈
1996 XV ₁₈	15.1	0.15	19990810	263.36363	222.73141	216.63210	3.61912	0.0384976	2.5406955	32	3	1996–1999	0.52	M-v	4	Marsden	31979	1996 XV ₁₈
1996 XY ₁₈	14.4	0.15	19990810	246.18315	210.11867	231.37224	2.89423	0.1670336	2.4451695	47	3	1996–1999	0.67	M-v	3	Williams	35697	1996 XY ₁₈
1996 XD ₁₉	13.8	0.15	19990810	195.68673	296.83238	222.59266	4.23137	0.1273694	2.4517906	27	3	1996–1999	0.63	M-v	3	Williams	32246	1996 XD ₁₉
1996 XF ₁₉	14.5	0.15	19990810	325.28519	143.03659	242.45038	4.11472	0.1513034	2.3027196	45	4	1992–1999	0.59	M-v	1	Williams	32311	1996 XF ₁₉
1996 XH ₁₉	13.6	0.15	19990810	126.12107	111.12929	98.22100	15.81381	0.1509574	2.6295351	51	3	1996–1999	0.50	M-v	3	Williams	32311	1996 XH ₁₉
1996 XW ₁₉	14.0	0.15	19990810	259.52007	206.02301	258.47275	6.91608	0.1492715	2.3516101	38	5	1987–1999	0.52	M-v	1	Williams	29320	1996 XW ₁₉
1996 XX ₁₉	14.7	0.15	19990810	8.23287	251.03547	102.29241	4.01919	0.1611562	2.2401014	34	4	1992–1999	0.63	M-v	1	Williams	32311	1996 XX ₁₉
1996 XH ₂₆	15.6	0.15	19990810	275.72917	250.14612	200.41530	0.57124	0.1077932	2.3418964	35	4	1994–1999	0.38	M-v	2	Marsden	32056	1996 XH ₂₆
1996 XU ₂₆	14.7	0.15	19990810	277.58168	75.70900	334.03334	7.23044	0.0880321	2.2301173	59	3	1996–1999	0.57	M-v	3	Williams	35697	1996 XU ₂₆
1996 XY ₂₈	14.6	0.15	19990810	170.28308	91.90091	66.25825	1.77389	0.1139534	2.4538266	63	3	1996–1999	0.59	M-v	3	Williams	32312	1996 XY ₂₈
1996 XP ₂₉	14.4	0.15	19990810	282.57125	255.73391	153.61581	3.61335	0.0132230	2.6565345	47	3	1996–1999	0.58	M-v	4	Williams	32247	1996 XP ₂₉
1996 XZ ₃₀	14.2	0.15	19990810	304.07546	122.21350	269.98237	5.47226	0.1437261	2.4407465	52	3	1996–1999	0.50	M-v	3	Williams	35609	1996 XZ ₃₀
1996 XJ ₃₁	13.4	0.15	19990810	186.92831	20.52457	107.74559	10.29483	0.0643828	2.7544623	50	3	1996–1999	0.57	M-v	3	Williams	35430	1996 XJ ₃₁
1996 XL ₃₃	14.4	0.15	19990810	177.29817	84.63436	73.51999	9.09115	0.1835024	2.5373076	23	3	1996–1999	0.82	M-v	4	Williams	32247	1996 XL ₃₃
1996 YJ	14.2	0.15	19990810	347.73754	89.75338	280.96492	6.26541	0.1364590	2.3250838	36	5	1989–1999	0.47	M-v	1	Williams	32056	1996 YJ
1996 YG ₁	14.8	0.15	19990810	87.89325	189.38175	77.19445	12.85258	0.1195425	2.4860923	91	3	1996–1999	0.58	M-v	2	Marsden	32312	1996 YG ₁
1996 YT ₁	13.2	0.15	19990810	301.48223	83.12389	296.21439	14.16166	0.1310557	2.6351298	33	2	1996–1999	0.44	M-v	4	Williams	35301	1996 YT ₁
1996 YV ₁	14.5	0.15	19990810	255.74132	116.42716	330.65408	1.57247	0.1828613	2.6304454	50	5	1993–1999	0.52	M-v	1	Williams	32056	1996 YV ₁
1996 YL ₂	14.3	0.15	19990810	146.00970	94.71404	97.10252	7.14308	0.0639842	2.4024037	57	3	1996–1999	0.57	M-v	3	Williams	32312	1996 YL ₂
1996 YN ₂	15.3	0.15	19990810	310.70894	152.47453	250.43054	2.50907	0.1745455	2.3030676	34	4	1989–1999	0.58	M-v	1	Williams	35698	1996 YN ₂
1997 AE	13.5	0.15	19990810	7.00788	356.60393	311.79980	7.46062	0.1233026	2.7186359	70	3	1997–1999	0.51	M-v	3	Williams	35698	1997 AE
1997 AG	14.6	0.15	19990810	313.21247	99.23022	315.81707	3.98158	0.0785962	2.3188410	30	3	1989–1999	0.42	M-v	2	Williams	35431	1997 AG
1997 AQ	15.0	0.15	19990810	322.33901	300.27596	118.38189	7.92148	0.1232661	2.2571114	24	3	1996–1999	0.56	M-v	3	Williams	32247	1997 AQ
1997 AT	13.2	0.15	19990810	335.93901	250.07829	110.06737	8.56161	0.2358968	2.4532716	50	3	1997–1999	0.58	M-v	3	Williams	35431	1997 AT
1997 AD ₁	14.6	0.15	19990810	287.97505	294.59584	118.98377	3.97748	0.1664382	2.4766177	53	3	1997–1999	0.68	M-v	4	Williams	32312	1997 AD ₁
1997 AV ₁	14.2	0.15	19990810	319.36114	69.83431	317.08893	6.97651	0.1186594	2.4398030	41	4	1988–1999	0.52	M-v	1	Williams	35431	1997 AV ₁
1997 AA ₂	13.5	0.15	19990810	177.38626	133.13182	28.77764	2.82873	0.1426669	2.6820946	48	4	1984–1999	0.67	M-v	2	Williams	35698	1997 AA ₂
1997 AB ₂	13.9	0.15	19990810	126.26625	114.62756	104.62951	15.45739	0.0149070	2.5664792	47	4	1993–1999	0.54	M-v	1	Williams	32057	1997 AB ₂
1997 AW ₂	13.2	0.15	19990810	153.37645	119.93867	32.76249	4.63921	0.1717301	3.0179650	33	5	1992–1999	0.57	M-v	1	Williams	32312	1997 AW ₂
1997 AZ ₃	13.5	0.15	19990810	193.38199	29.00510	128.35952	15.45279	0.0437742	2.5982398	33	3	1997–1999	0.55	M-v	3	Williams	32248	1997 AZ ₃
1997 AF ₄	13.8	0.15	19990810	188.79474	12.14456	131.16820	8.86283	0.1588282	2.7727267	39	4	1991–1999	0.56	M-v	1	Williams	35698	1997 AF ₄
1997 AM ₄	13.9	0.15	19990810	73.36115	144.17605	133.01142	13.81487	0.1499276	2.6779508	42	3	1997–1999	0.63	M-v	3	Williams	32312	1997 AM ₄
1997 AB ₅	14.6	0.15	19990810	258.74935	61.73272	30.79643	6.51701	0.1658800	2.4176843	32	5	1973–1999	0.76	M-v	1	Williams	32057	1997 AB ₅
1997 AO ₅	13.4	0.15	19990810	322.98393	295.55771	77.31408	5.74881	0.1994429	2.5259982	35	4	1991–1999	0.55	M-v	1	Williams	35431	1997 AO ₅
1997 AQ ₅	13.2	0.15	19990810	163.21691	97.36365	63.04687	6.62821	0.0250234	2.8321274	44	3	1997–1999	0.58	M-v	3	Williams	35431	1997 AQ ₅
1997 AB ₆	14.7	0.15	19990810	237.94177	181.16488	293.08012	3.51056	0.0641672	2.2634651	34	3	1996–1999	0.56	M-v	3	Williams	31983	1997 AB ₆

1997 AW ₆	14.4	0.15	19990810	20.65074	330.37098	355.49380	4.45843	0.0951582	2.5831868	48	3	1997–1999	0.48	M-v	3	Williams	31983	1997 AW ₆
1997 AC ₇	13.6	0.15	19990810	197.41104	2.34938	136.47799	12.56059	0.0776041	2.7062421	42	3	1997–1999	0.61	M-v	3	Williams	32312	1997 AC ₇
1997 AK ₇	14.2	0.15	19990810	75.36815	155.81029	133.05841	14.29765	0.1737038	2.5958721	55	4	1976–1999	0.59	M-v	1	Williams	32312	1997 AK ₇
1997 AD ₈	15.3	0.15	19990810	331.20283	103.48897	258.47080	2.09263	0.1091772	2.6382578	40	3	1996–1999	0.60	M-v	4	Williams	35698	1997 AD ₈
1997 AR ₈	15.3	0.15	19990810	327.57796	61.34993	300.32680	10.60122	0.2066718	2.6030865	37	2	1997–1999	0.50	M-v	4	Williams	35302	1997 AR ₈
1997 AP ₁₀	17.0	0.15	19990810	19.55753	356.02654	293.23821	6.65055	0.6431638	1.4429192	95	3	1997–1999	0.72	M-v	3	Williams	34586	1997 AP ₁₀
1997 AC ₁₃	14.8	0.15	19990810	290.73870	147.66483	293.95680	3.03720	0.1228330	2.2881234	26	2	1997–1999	0.54	M-v	3	Williams	35610	1997 AC ₁₃
1997 AD ₁₃	13.0	0.15	19990810	155.18284	124.35724	93.83591	12.09480	0.2489902	2.5986161	21	4	1977–1999	0.82	M-v	2	Williams	29141	1997 AD ₁₃
1997 AJ ₁₃	14.4	0.15	19990810	295.82857	76.87947	349.00991	8.22091	0.0896862	2.4146937	41	4	1969–1999	0.46	M-v	1	Williams	29634	1997 AJ ₁₃
1997 AQ ₁₅	15.5	0.15	19990810	18.14846	286.98517	67.27406	3.99162	0.2107799	2.2364077	38	2	1996–1998	0.66	M-v	4	Williams	35698	1997 AQ ₁₅
1997 AT ₁₆	14.8	0.15	19990810	296.79377	318.22117	81.02487	3.32449	0.1807026	2.4480807	30	2	1997–1999	0.51	M-v	4	Williams	35303	1997 AT ₁₆
1997 AN ₁₇	13.4	0.15	19990810	319.81600	88.05092	285.74729	22.25194	0.2883116	2.3378406	102	3	1985–1999	0.39	M-v	1	Williams	35698	1997 AN ₁₇
1997 AZ ₁₇	14.1	0.15	19990810	264.01258	77.53250	55.49749	2.98733	0.1072336	2.2931807	49	3	1997–1999	0.55	M-v	4	Williams	32249	1997 AZ ₁₇
1997 AK ₁₈	16.1	0.15	19990810	289.66292	27.18924	24.56309	2.30707	0.1815100	2.4561979	35	3	1993–1999	0.34	M-v	2	Marsden	29125	1997 AK ₁₈
1997 AM ₂₁	13.8	0.15	19990810	221.03497	344.90925	114.30321	10.18405	0.1105548	2.7665753	47	3	1997–1999	0.52	M-v	3	Williams	35698	1997 AM ₂₁
1997 AZ ₂₁	13.6	0.15	19990810	52.66411	242.80579	19.07128	1.04428	0.1293950	3.1143326	83	3	1997–1999	0.63	M-v	3	Williams	35698	1997 AZ ₂₁
1997 AQ ₂₂	13.5	0.15	19990810	130.12945	86.55442	120.93915	8.52906	0.1598937	2.7795417	45	4	1993–1999	0.63	M-v	1	Williams	32312	1997 AQ ₂₂
1997 BX	14.8	0.15	19990810	295.10338	303.75059	115.53558	3.47605	0.1549511	2.3931503	55	3	1992–1999	0.53	M-v	2	Williams	35698	1997 BX
1997 BA ₃	14.9	0.15	19990810	285.55027	104.36708	336.30493	1.62925	0.1837641	2.4032026	52	3	1973–1999	0.79	M-v	3	Williams	35698	1997 BA ₃
1997 BF ₃	15.1	0.15	19990810	329.26838	273.24444	129.72964	5.48586	0.2213727	2.3139386	35	4	1985–1999	0.50	M-v	1	Williams	32313	1997 BF ₃
1997 BO ₃	13.8	0.15	19990810	240.18033	44.15706	83.15003	3.64171	0.0782422	2.5287190	24	4	1989–1999	0.43	M-v	3	Williams	29667	1997 BO ₃
1997 BS ₃	14.1	0.15	19990810	223.90092	15.78584	123.51074	8.08405	0.1310388	2.5750600	20	6	1954–1999	0.72	M-v	1	Williams	34872	1997 BS ₃
1997 BU ₄	14.2	0.15	19990810	128.15963	72.92193	142.48159	13.82781	0.1050779	2.7841873	35	3	1997–1999	0.64	M-v	3	Williams	32250	1997 BU ₄
1997 BY ₄	13.9	0.15	19990810	332.40798	309.23661	69.43106	9.92541	0.1547688	2.3389811	50	4	1985–1999	0.57	M-v	1	Williams	32313	1997 BY ₄
1997 BP ₅	16.0	0.15	19990810	298.56658	291.55773	142.70340	2.70123	0.1845971	2.3719890	29	4	1977–1999	0.42	M-v	1	Williams	29667	1997 BP ₅
1997 BH ₈	13.4	0.15	19990810	327.20557	31.25808	317.19507	10.53877	0.1987308	2.6539999	42	4	1965–1999	0.64	M-v	1	Williams	35698	1997 BH ₈
1997 BR ₈	14.3	0.15	19990810	22.82161	178.01448	123.62044	15.07668	0.1487736	2.5855588	27	4	1993–1999	0.57	M-v	1	Williams	35698	1997 BR ₈
1997 BU ₈	15.0	0.15	19990810	0.06168	192.22457	155.73690	1.70745	0.0267605	2.6341052	34	3	1997–1999	0.79	M-v	4	Williams	32313	1997 BU ₈
1997 BC ₉	14.7	0.15	19990810	96.23102	186.88346	140.72805	4.23873	0.2342305	2.2306457	65	5	1978–1998	0.80	M-v	2	Williams	33555	1997 BC ₉
1997 BD ₉	13.5	0.15	19990810	121.73239	83.47066	113.04084	2.54515	0.1280626	3.2114976	32	4	1986–1999	0.95	M-v	1	Williams	32313	1997 BD ₉
1997 BN ₉	13.9	0.15	19990810	293.84120	215.48072	201.80305	9.67725	0.0820197	2.9730502	47	3	1997–1999	0.54	M-v	3	Williams	32250	1997 BN ₉
1997 CB	14.5	0.15	19990810	55.93156	191.22451	156.58475	11.34224	0.2794686	2.3481186	49	3	1997–1999	0.46	M-v	2	Williams	32313	1997 CB
1997 CR	13.6	0.15	19990810	2.45849	209.40671	137.72083	13.44923	0.1742884	2.7028687	37	4	1990–1999	0.56	M-v	1	Williams	32313	1997 CR
1997 CS	12.7	0.15	19990810	109.08295	235.95886	349.04392	10.06538	0.0898142	3.0033410	40	3	1992–1999	0.39	M-v	3	Williams	35698	1997 CS
1997 CG ₁	14.2	0.15	19990810	303.53154	311.61423	95.83603	6.16818	0.1431781	2.5873057	29	3	1997–1999	0.60	M-v	4	Williams	35698	1997 CG ₁
1997 CP ₁	16.1	0.15	19990810	272.70910	280.40742	150.39293	5.03932	0.1982411	2.4085309	35	3	1997–1999	0.46	M-v	3	Williams	31737	1997 CP ₁
1997 CZ ₅	13.6	0.15	19990810	264.93865	169.00122	288.15374	24.94008	0.3989639	2.2916916	266	2	1997–1999	0.46	M-v	2	Williams	35698	1997 CZ ₅
1997 CK ₁₂	16.3	0.15	19990810	287.05686	94.44745	341.61117	1.89784	0.1791152	2.4569432	32	4	1993–1999	0.49	M-v	1	Williams	29128	1997 CK ₁₂
1997 CV ₁₅	15.5	0.15	19990810	344.44170	27.68865	330.36208	3.64393	0.1091293	2.7326324	40	3	1993–1999	0.56	M-v	4	Williams	29927	1997 CV ₁₅
1997 CA ₁₇	13.4	0.15	19990810	202.23113	159.26844	283.93989	7.84106	0.1485452	3.1979126	51	4	1992–1998	0.57	M-v	1	Williams	32058	1997 CA ₁₇
1997 CP ₁₉	13.6	0.15	19990810	277.64838	293.04190	139.14486	13.24501	0.1594760	2.5577325	46	3	1997–1999	0.62	M-v	4	Williams	32251	1997 CP ₁₉
1997 CR ₁₉	13.2	0.15	19990810	213.47931	120.75817	19.88664	7.14264	0.0665790	2.7254380	40	4	1970–1999	0.52	M-v	2	Williams	35698	1997 CR ₁₉
1997 CT ₁₉	15.2	0.15	19990810	284.35873	202.24426	241.59357	1.45520	0.1742968	2.3863768	48	4	1977–1999	0.77	M-v	1	Williams	30473	1997 CT ₁₉
1997 CE ₂₀	14.5	0.15	19990810	12.21119	256.09467	104.17624	5.38539	0.1416539	2.5644155	40	4	1995–1999	0.67	M-v	1	Williams	32313	1997 CE ₂₀
1997 CB ₂₂	12.7	0.15	19990810	92.86424	281.73293	348.79616	6.73350	0.0884448	2.7910176	47	7	1980–1999	0.77	M-v	1	Williams	32058	1997 CB ₂₂
1997 CF ₂₂	14.0	0.15	19990810	15.60743	173.67562	158.95226	5.70180	0.0304871	2.7911967	89	3	1997–1999	0.58	M-v	3	Williams	35698	1997 CF ₂₂
1997 CK ₂₂	14.2	0.15	19990810	221.68560	335.44505	148.44538	13.68088	0.1141672	2.6941025	73	3	1997–1999	0.50	M-v	3	Williams	35698	1997 CK ₂₂
1997 CL ₂₈	15.0	0.15	19990810	277.59819	256.77758	165.50314	2.39786	0.1525812	2.5837483	24	3	1995–1999	0.62	M-v	3	Williams	29928	1997 CL ₂₈
1997 CS ₂₈	14.8	0.15	19990810	339.09270	292.95160	80.54540	3.67073	0.0722782	2.6107664	34	3	1997–1999	0.63	M-v	4	Williams	32752	1997 CS ₂₈
1997 DR	14.3	0.15	19990810	33.60396	273.59521	31.51669	2.77183	0.0217433	2.7998716	30	4	1995–1999	0.56	M-v	1	Williams	31987	1997 DR
1997 EK	13.0	0.15	19990810	174.68980	159.24069	9.90036	12.73579	0.0801488	2.9094303	44	4	1992–1999	0.50	M-v	3	Williams	29948	1997 EK
1997 EL	12.2	0.15	19990810	330.34344	215.54558	148.49649	10.95878	0.1209783	3.0019227	99	3	1997–1999	0.52	M-v	3	Williams	35698	1997 EL
1997 ED ₅	15.9	0.15	19990810	284.44380	261.28589	181.05021	4.42847	0.1935176	2.5709567	21	3	1995–1999	0.48	M-v	4	Williams	32956	1997 ED ₅

1997 EK ₆	13.8	0.15	19990810	347.96719	277.61315	85.47368	15.56442	0.1694451	2.5948635	58	3	1997–1999	0.57	M-v	3	Williams	32313	1997 EK ₆
1997 EO ₇	12.9	0.15	19990810	28.92577	321.21781	330.21499	9.20804	0.1709792	3.1609266	70	3	1997–1999	0.53	M-v	3	Williams	35699	1997 EO ₇
1997 EK ₈	15.3	0.15	19990810	293.14038	93.01478	354.26593	2.71427	0.2050360	2.4206519	44	4	1993–1999	0.61	M-v	1	Marsden	30473	1997 EK ₈
1997 EL ₁₁	13.3	0.15	19990810	65.67521	270.81834	55.29673	15.43894	0.1496480	2.6116593	33	3	1986–1999	0.38	M-v	3	Williams	35699	1997 EL ₁₁
1997 EU ₁₆	15.3	0.15	19990810	348.67291	345.33024	12.51228	0.76416	0.2381872	3.0640854	33	3	1978–1999	0.52	M-v	5	Williams	29644	1997 EU ₁₆
1997 EM ₂₅	14.3	0.15	19990810	286.85722	273.10236	140.82030	15.02027	0.0876582	2.6213923	36	3	1997–1999	0.63	M-v	4	Williams	31988	1997 EM ₂₅
1997 EQ ₂₅	13.5	0.15	19990810	34.76748	108.45077	176.59493	12.24075	0.1032272	3.3508028	63	4	1993–1999	0.64	M-v	1	Williams	35699	1997 EQ ₂₅
1997 EQ ₃₀	14.0	0.15	19990810	154.17781	111.40052	103.11203	11.51348	0.1440660	2.6903849	49	3	1997–1999	0.68	M-v	3	Williams	32752	1997 EQ ₃₀
1997 EQ ₄₁	13.4	0.15	19990810	145.59050	9.03212	171.26918	10.32908	0.0271847	2.9994828	40	4	1992–1999	0.48	M-v	1	Williams	35699	1997 EQ ₄₁
1997 FC	12.8	0.15	19990810	119.19943	92.77119	129.41256	11.83552	0.0575723	2.9970487	53	4	1996–1999	0.67	M-v	1	Williams	32313	1997 FC
1997 FN	12.6	0.15	19990810	351.43642	309.73009	62.34125	12.56831	0.0595461	2.9875360	29	6	1953–1999	0.49	M-v	1	Williams	32058	1997 FN
1997 FU	12.9	0.15	19990810	305.62133	6.34992	48.23636	13.99536	0.1388757	2.5920656	63	5	1981–1999	0.90	M-v	1	Williams	32313	1997 FU
1997 FH ₁	13.2	0.15	19990810	49.09403	326.65990	350.33763	12.73461	0.1900833	2.6084761	42	6	1982–1999	0.47	M-v	1	Williams	32058	1997 FH ₁
1997 FW ₁	13.1	0.15	19990810	84.99002	230.23531	38.35839	12.02448	0.1220860	2.9165386	30	4	1955–1999	0.71	M-v	1	Williams	33257	1997 FW ₁
1997 FB ₄	14.1	0.15	19990810	80.14376	268.68764	18.18277	10.16568	0.0779062	2.9905039	29	3	1992–1999	0.69	M-v	3	Williams	30462	1997 FB ₄
1997 FQ ₄	13.0	0.15	19990810	95.05141	9.53458	251.52075	3.95367	0.1011838	3.1618094	42	4	1995–1999	0.66	M-v	1	Williams	35432	1997 FQ ₄
1997 GR ₅	14.5	0.15	19990810	228.04129	82.74587	110.73765	5.36082	0.1383132	2.3465989	58	4	1983–1998	0.78	M-v	2	Williams	32752	1997 GR ₅
1997 GQ ₇	12.8	0.15	19990810	344.08762	2.53077	46.35260	15.94346	0.1592894	2.7748068	33	4	1985–1999	0.51	M-v	2	Williams	30094	1997 GQ ₇
1997 GX ₇	13.8	0.15	19990810	283.60909	329.21182	100.87448	2.41114	0.1906405	3.1706747	51	3	1996–1999	0.71	M-v	4	Williams	30766	1997 GX ₇
1997 GJ ₈	13.2	0.15	19990810	263.66503	237.54260	222.82523	10.13072	0.0958758	3.0774483	44	4	1980–1999	0.64	M-v	1	Williams	35699	1997 GJ ₈
1997 GD ₁₅	14.6	0.15	19990810	41.94204	79.75949	267.15793	1.54667	0.0839479	2.7300217	31	4	1992–1998	0.86	M-v	3	Williams	35699	1997 GD ₁₅
1997 GB ₂₃	15.2	0.15	19990810	283.45601	39.79799	67.75642	4.74513	0.2233496	2.5973825	28	3	1995–1999	0.46	M-v	3	Williams	29934	1997 GB ₂₃
1997 GW ₂₉	13.2	0.15	19990810	317.05731	255.86322	142.53049	11.30653	0.1250549	2.9773727	32	4	1996–1999	0.69	M-v	2	Williams	35699	1997 GW ₂₉
1997 GW ₃₀	13.6	0.15	19990810	91.96222	51.31998	200.51727	0.47782	0.1059093	3.2043717	34	4	1981–1999	0.55	M-v	1	Williams	34873	1997 GW ₃₀
1997 GT ₃₂	13.5	0.15	19990810	4.45245	15.39328	351.58072	1.38940	0.0998777	2.8992029	34	5	1954–1999	0.88	M-v	1	Williams	32752	1997 GT ₃₂
1997 GB ₃₅	12.9	0.15	19990810	274.84787	62.42956	7.64043	12.87671	0.0367442	3.1798612	32	3	1975–1999	0.65	M-v	3	Williams	29935	1997 GB ₃₅
1997 GP ₃₅	13.9	0.15	19990810	232.50241	282.63725	203.18171	4.96899	0.1307380	3.0942857	31	5	1993–1999	0.41	M-v	1	Williams	30085	1997 GP ₃₅
1997 HV ₈	14.7	0.15	19990810	188.59942	109.43658	64.70421	1.82713	0.0986792	3.1013260	39	4	1994–1999	0.53	M-v	1	Williams	32314	1997 HV ₈
1997 HO ₁₁	14.3	0.15	19990810	263.68159	67.96364	23.72202	4.74957	0.1203962	3.1890474	27	4	1989–1999	0.46	M-v	1	Williams	34873	1997 HO ₁₁
1997 HE ₁₄	13.1	0.15	19990810	351.92536	56.51401	313.79014	1.23326	0.0902190	2.9137591	28	8	1974–1999	0.63	M-v	1	Williams	32314	1997 HE ₁₄
1997 JD	13.4	0.15	19990810	225.90943	241.92207	227.21289	8.70549	0.0804176	3.0676534	46	3	1997–1999	0.52	M-v	3	Williams	35611	1997 JD
1997 JO	14.2	0.15	19990810	211.11471	235.53576	355.76616	9.38737	0.1723871	2.3048626	66	4	1995–1999	0.70	M-v	2	Williams	33077	1997 JO
1997 LH ₄	14.5	0.15	19990810	260.63680	352.23856	185.51449	14.89596	0.0287296	2.5946266	40	3	1992–1998	0.46	M-v	3	Williams	35700	1997 LH ₄
1997 MR	14.1	0.15	19990810	42.82242	142.72989	209.17912	7.62828	0.0462954	3.0441521	37	4	1993–1998	0.70	M-v	1	Williams	35700	1997 MR
1997 MC ₈	15.0	0.15	19990810	211.23088	39.32689	223.68226	1.30781	0.0367504	2.7029321	34	3	1993–1999	0.41	M-v	3	Williams	35700	1997 MC ₈
1997 NQ	13.7	0.15	19990810	133.34691	136.15024	212.55706	12.23371	0.1932376	2.6898016	40	3	1993–1999	0.68	M-v	2	Williams	35700	1997 NQ
1997 PY	15.0	0.15	19990810	195.19558	62.54001	203.64898	1.50146	0.0589337	2.9248473	26	4	1995–1998	0.60	M-v	1	Williams	35700	1997 PY
1997 TT ₉	11.6	0.15	19990810	6.08694	39.32894	44.50942	10.10958	0.0655459	5.1043982	53	5	1986–1999	0.64	M-v	1	Williams	35702	1997 TT ₉
1997 TW ₁₅	14.2	0.15	19990810	228.56864	44.82653	230.48930	1.72461	0.1870708	2.5890201	34	4	1992–1997	0.55	M-v	1	Williams	35702	1997 TW ₁₅
1997 UF ₉	16.3	0.15	19990810	261.31162	157.82638	37.25556	25.89788	0.6042964	1.4424452	164	3	1997–1999	0.55	M-v	2	Marsden	32753	1997 UF ₉
1997 US ₉	17.4	0.15	19990810	60.44493	357.21290	212.29813	20.01915	0.2816845	1.0520764	237	3	1997–1999	0.57	M-v	3	Williams	35702	1997 US ₉
1997 VP ₂	14.7	0.15	19990810	95.82819	264.21419	205.71134	14.68608	0.1659878	2.5816817	59	2	1997–1999	0.57	M-v	3	Williams	34587	1997 VP ₂
1997 XZ ₄	15.6	0.15	19990810	249.04966	303.52016	119.69850	0.66219	0.0401358	2.1918292	35	3	1996–1999	0.59	M-v	2	Williams	35306	1997 XZ ₄
1997 YY ₁	13.7	0.15	19990810	155.63349	325.56814	91.69099	3.74122	0.1428373	2.8366660	49	4	1987–1999	0.77	M-v	2	Williams	34589	1997 YY ₁
1997 YR ₁₁	14.7	0.15	19990810	290.37841	11.37937	12.47001	6.48565	0.0235083	2.1974940	32	5	1980–1999	0.62	M-v	2	Williams	35704	1997 YR ₁₁
1997 YS ₁₁	14.6	0.15	19990810	44.45156	171.69153	108.79153	6.27864	0.1597536	2.2842856	43	6	1950–1999	0.50	M-v	1	Williams	35704	1997 YS ₁₁
1997 YC ₁₄	14.1	0.15	19990810	18.25188	329.54799	312.27521	6.23084	0.1713119	2.2663141	56	4	1971–1999	0.48	M-v	3	Williams	35704	1997 YC ₁₄
1997 YO ₁₈	14.5	0.15	19990810	47.50762	255.73048	342.61211	6.97351	0.1468419	2.4842298	36	3	1971–1999	0.58	M-v	3	Williams	35704	1997 YO ₁₈
1998 AR ₄	14.9	0.15	19990810	39.62971	309.15127	309.04965	7.23639	0.2166030	2.3010976	38	2	1998–1999	0.51	M-v	4	Williams	35310	1998 AR ₄
1998 AS ₄	13.0	0.15	19990810	101.09378	235.78869	304.14439	11.08801	0.1422420	2.4253848	42	3	1992–1999	0.46	M-v	3	Williams	35704	1998 AS ₄
1998 BO	14.8	0.15	19990810	109.56966	109.89435	85.91345	6.11628	0.0960925	2.2479803	28	2	1998–1999	0.52	M-v	4	Williams	35311	1998 BO
1998 BK ₈	15.0	0.15	19990810	121.97570	97.83560	84.55975	3.56182	0.0978260	2.2803503	49	3	1995–1999	0.66	M-v	3	Williams	35704	1998 BK ₈
1998 BQ ₈	15.7	0.15	19990810	101.19118	73.19650	129.79436	6.18364	0.1360484	2.4020871	37	3	1991–1999	0.63	M-v	3	Williams	31798	1998 BQ ₈

1998 BH ₁₀	13.6	0.15	19990810	324.97657	232.43754	47.64907	7.12396	0.0236312	2.7587795	74	4	1977–1999	0.78	M-v	2	Williams	35434	1998 BH ₁₀
1998 BM ₁₇	15.3	0.15	19990810	23.58506	174.53072	109.30475	2.26381	0.1775889	2.4080606	32	2	1998–1999	0.48	M-v	4	Williams	35704	1998 BM ₁₇
1998 BA ₂₀	14.5	0.15	19990810	233.03081	151.23246	206.32041	0.23198	0.0696695	2.7969245	32	5	1991–1999	0.69	M-v	1	Williams	35704	1998 BA ₂₀
1998 BA ₂₁	15.3	0.15	19990810	242.30781	226.72336	116.18569	3.16657	0.0801414	2.8697884	19	3	1991–1998	0.39	M-v	5	Williams	35704	1998 BA ₂₁
1998 BT ₂₄	14.5	0.15	19990810	53.80778	261.90106	357.95215	5.40714	0.0979279	2.2534368	42	2	1998–1999	0.58	M-v	4	Williams	35312	1998 BT ₂₄
1998 BH ₂₆	14.3	0.15	19990810	57.43533	277.12841	356.41722	15.71322	0.1889677	2.5300342	91	3	1991–1999	0.69	M-v	2	Williams	35704	1998 BH ₂₆
1998 BS ₃₃	14.3	0.15	19990810	122.20753	62.39426	116.77081	6.41900	0.1371870	2.4633582	54	3	1994–1999	0.61	M-v	3	Williams	35435	1998 BS ₃₃
1998 BL ₃₉	14.9	0.15	19990810	15.83033	334.71641	313.17031	7.18906	0.1660600	2.2527129	37	2	1998–1999	0.45	M-v	3	Williams	35314	1998 BL ₃₉
1998 BB ₄₄	14.3	0.15	19990810	115.54301	38.93300	89.25381	10.02754	0.1289789	2.8106095	42	5	1956–1999	0.86	M-v	2	Williams	35435	1998 BB ₄₄
1998 CY	14.8	0.15	19990810	78.16858	338.05489	244.38295	4.20001	0.1431791	2.4362520	53	2	1998–1999	0.37	M-v	3	Marsden	35704	1998 CY
1998 CK ₁	14.9	0.15	19990810	75.99114	142.59065	94.17009	6.32061	0.2320481	2.3529150	59	2	1998–1999	0.40	M-v	4	Williams	35617	1998 CK ₁
1998 CR ₁	14.6	0.15	19990810	34.06794	115.46690	157.66752	5.40026	0.1750212	2.5260135	101	2	1998–1999	0.58	M-v	3	Williams	35314	1998 CR ₁
1998 CC ₃	14.8	0.15	19990810	344.85163	1.22993	335.37660	3.66558	0.0667672	2.1495091	60	4	1993–1999	0.74	M-v	3	Williams	35435	1998 CC ₃
1998 DU	15.0	0.15	19990810	276.20675	110.57152	309.70911	18.07809	0.0923595	1.9522946	46	3	1980–1999	0.73	M-v	1	Williams	35618	1998 DU
1998 DW	15.9	0.15	19990810	178.78330	193.80150	308.23154	17.89543	0.0670461	1.9642242	36	2	1998–1999	0.42	M-v	3	Marsden	35618	1998 DW
1998 DK ₁	15.2	0.15	19990810	189.73865	135.21569	0.26612	2.35896	0.0526317	2.1555356	73	4	1993–1999	0.63	M-v	4	Williams	35705	1998 DK ₁
1998 DT ₁	14.1	0.15	19990810	263.45064	184.74214	141.27965	3.09848	0.0360480	3.3583976	29	4	1994–1999	0.64	M-v	1	Williams	35705	1998 DT ₁
1998 DA ₂	14.6	0.15	19990810	20.69289	247.85639	22.97625	6.08150	0.1812787	2.2755385	36	4	1995–1999	0.60	M-v	2	Williams	35618	1998 DA ₂
1998 DU ₂	14.7	0.15	19990810	180.26538	340.44985	100.50887	10.15469	0.2718062	2.5351911	25	3	1995–1999	0.53	M-v	5	Williams	35705	1998 DU ₂
1998 DR ₅	13.3	0.15	19990810	28.75455	318.77287	310.38467	14.71818	0.1755107	2.6241196	56	3	1995–1999	0.51	M-v	2	Williams	35435	1998 DR ₅
1998 DT ₉	15.3	0.15	19990810	10.09690	346.09588	345.03060	2.03530	0.1185532	2.1311195	62	5	1990–1999	0.58	M-v	2	Williams	32315	1998 DT ₉
1998 DY ₉	14.3	0.15	19990810	156.04892	210.86188	303.62285	3.08533	0.0651577	2.1399723	78	4	1993–1999	0.55	M-v	3	Williams	35705	1998 DY ₉
1998 DH ₁₁	14.9	0.15	19990810	71.14817	161.20088	138.10407	24.73452	0.0315303	1.9229969	30	4	1988–1999	0.66	M-v	2	Williams	31801	1998 DH ₁₁
1998 DG ₁₂	16.0	0.15	19990810	340.97632	192.36589	149.33595	7.56396	0.2081524	2.3842330	20	2	1998–1999	0.50	M-v	4	Williams	35316	1998 DG ₁₂
1998 DM ₁₃	13.8	0.15	19990810	5.62834	73.19678	235.14684	12.97490	0.0893354	2.5888439	45	2	1998–1999	0.63	M-v	3	Williams	35316	1998 DM ₁₃
1998 DD ₁₄	13.3	0.15	19990810	341.71194	136.33798	196.95384	11.52264	0.2138174	3.1646050	49	3	1997–1999	0.65	M-v	3	Williams	35705	1998 DD ₁₄
1998 DK ₁₄	15.3	0.15	19990810	75.70504	236.04716	357.05843	3.80191	0.1685146	2.3801875	40	3	1991–1999	0.59	M-v	2	Williams	35705	1998 DK ₁₄
1998 DE ₁₆	15.9	0.15	19990810	76.52579	110.43879	142.45812	3.82680	0.1183724	2.2715632	43	3	1995–1999	0.79	M-v	3	Williams	35705	1998 DE ₁₆
1998 DG ₂₀	14.0	0.15	19990810	75.45797	157.73948	95.76605	8.53189	0.0968619	2.4814467	70	2	1998–1999	0.52	M-v	3	Williams	35618	1998 DG ₂₀
1998 DJ ₂₀	15.0	0.15	19990810	47.20042	282.16769	357.04091	5.87518	0.1217884	2.2366396	61	2	1998–1999	0.77	M-v	4	Williams	35619	1998 DJ ₂₀
1998 DK ₂₃	13.2	0.15	19990810	53.20876	263.09701	320.36047	9.03104	0.2091773	2.7482245	62	2	1998–1999	0.44	M-v	3	Williams	35705	1998 DK ₂₃
1998 DB ₂₄	14.7	0.15	19990810	100.58248	298.92502	314.16507	17.21605	0.0554307	1.9626048	32	2	1998–1999	0.44	M-v	3	Williams	35619	1998 DB ₂₄
1998 DZ ₃₃	14.5	0.15	19990810	116.43460	14.09865	165.70497	12.18075	0.1461365	2.5759385	52	3	1995–1999	0.65	M-v	3	Williams	35619	1998 DZ ₃₃
1998 DB ₃₄	14.8	0.15	19990810	88.56223	103.50799	150.19331	4.76877	0.2937891	2.3659117	50	3	1995–1999	0.67	M-v	2	Williams	32315	1998 DB ₃₄
1998 DT ₃₄	14.8	0.15	19990810	18.26230	302.35841	16.22703	5.36845	0.1833464	2.2215083	37	3	1989–1999	0.65	M-v	3	Williams	32256	1998 DT ₃₄
1998 DC ₃₅	14.4	0.15	19990810	157.22254	359.79709	156.30731	4.83072	0.0731636	2.3248123	55	2	1998–1999	0.55	M-v	3	Williams	35317	1998 DC ₃₅
1998 DB ₃₆	14.2	0.15	19990810	35.56731	288.45938	7.24225	11.47452	0.2168879	2.3395615	56	3	1991–1999	0.66	M-v	3	Williams	32315	1998 DB ₃₆
1998 EF	14.7	0.15	19990810	110.64732	81.33750	125.62424	10.09905	0.0504645	2.3782510	54	3	1991–1999	0.53	M-v	3	Williams	35705	1998 EF
1998 EP ₁	15.2	0.15	19990810	198.93419	281.83699	190.99775	2.78928	0.0829551	2.2623175	57	5	1991–1999	0.60	M-v	1	Williams	35436	1998 EP ₁
1998 EZ ₁	16.5	0.15	19980308	74.69610	293.42453	182.57514	3.50659	0.0067096	2.4439113	13	1	23 days	0.67		D	Doppler		1998 EZ ₁
1998 EZ ₂	14.0	0.15	19990810	14.29663	241.84360	43.96741	6.35840	0.1636377	2.5181299	38	5	1950–1999	0.77	M-v	3	Williams	35436	1998 EZ ₂
1998 ED ₃	14.4	0.15	19990810	179.13700	29.63624	103.53130	7.04581	0.0843116	2.4793411	63	2	1998–1999	0.42	M-v	3	Williams	35705	1998 ED ₃
1998 EP ₃	13.6	0.15	19990810	16.18043	300.66073	6.83397	9.42107	0.1761836	2.6516387	61	3	1996–1999	0.56	M-v	3	Williams	32061	1998 EP ₃
1998 ER ₃	15.5	0.15	19990810	145.22606	147.83845	25.11546	2.30327	0.1450786	2.4186361	70	4	1977–1999	0.67	M-v	2	Williams	32316	1998 ER ₃
1998 EL ₅	14.8	0.15	19990810	221.25967	337.26208	127.73086	7.15574	0.0680582	2.3748814	45	3	1994–1999	0.83	M-v	3	Williams	32316	1998 EL ₅
1998 ER ₆	15.3	0.15	19990810	140.00015	200.58751	336.94918	4.08671	0.0827214	2.2953243	51	4	1977–1999	0.72	M-v	4	Williams	32316	1998 ER ₆
1998 EK ₈	14.1	0.15	19990810	91.49186	301.00795	276.66412	5.80731	0.0675880	2.3592358	70	2	1998–1999	0.59	M-v	3	Williams	35705	1998 EK ₈
1998 EP ₁₁	14.1	0.15	19990810	89.66651	218.52129	7.55503	13.42121	0.1800326	2.4772972	60	3	1996–1999	0.71	M-v	3	Williams	32316	1998 EP ₁₁
1998 EQ ₁₁	13.9	0.15	19990810	111.63807	114.28474	41.39642	5.15344	0.0341750	3.0037852	24	2	1993–1998	0.89	M-v	4	Williams	35705	1998 EQ ₁₁
1998 EA ₁₂	15.3	0.15	19990810	107.51515	131.05041	83.59613	3.47924	0.1595695	2.3680753	45	5	1978–1999	0.72	M-v	2	Williams	34907	1998 EA ₁₂
1998 EF ₁₂	14.8	0.15	19990810	155.07557	122.08021	36.95079	4.93467	0.1556906	2.2930021	54	3	1977–1999	0.72	M-v	3	Williams	35436	1998 EF ₁₂
1998 EG ₁₂	14.6	0.15	19990810	305.47567	266.10245	102.81128	6.70433	0.1280955	2.2649767	44	2	1998–1999	0.59	M-v	4	Williams	35705	1998 EG ₁₂
1998 FE ₂	14.5	0.15	19990810	63.78152	172.96294	91.39854	3.98918	0.1302168	2.5107485	84	3	1995–1999	0.51	M-v	2	Williams	35705	1998 FE ₂

1998 FH ₂	14.5	0.15	19990810	106.23497	236.65438	347.30506	22.20343	0.2537944	2.3696374	38	5	1987–1999	0.56	M-v	2	Williams	34907	1998 FH ₂
1998 FO ₂	16.4	0.15	19990810	224.36620	136.82528	4.75630	24.21070	0.1168508	1.8900751	52	3	1960–1999	0.66	M-v	3	Williams	31745	1998 FO ₂
1998 FQ ₂	14.7	0.15	19990810	52.46027	279.62581	23.72729	3.88692	0.1921184	2.2789635	84	5	1961–1999	0.66	M-v	1	Williams	32316	1998 FQ ₂
1998 FC ₃	15.7	0.15	19990810	150.42427	117.80914	62.84356	4.84702	0.1953645	2.3575592	41	3	1994–1999	0.64	M-v	3	Williams	35705	1998 FC ₃
1998 FF ₃	14.4	0.15	19990810	115.41174	234.16704	321.05609	7.46167	0.0845448	2.4819069	100	4	1994–1999	0.65	M-v	2	Williams	35705	1998 FF ₃
1998 FZ ₄	15.4	0.15	19990810	130.63450	98.49319	106.85742	5.43823	0.1195101	2.3450103	49	2	1998–1999	0.62	M-v	4	Marsden	35620	1998 FZ ₄
1998 FN ₅	14.7	0.15	19990810	141.89207	258.94001	263.28564	11.62344	0.1124999	2.6380667	48	2	1998–1999	0.55	M-v	3	Williams	35320	1998 FN ₅
1998 FO ₅	14.6	0.15	19990810	104.87558	69.15809	134.08172	4.78699	0.0572003	2.6149718	100	3	1991–1999	0.59	M-v	3	Williams	35705	1998 FO ₅
1998 FT ₈	14.3	0.15	19990810	77.14851	211.81951	21.72843	11.13637	0.1428382	2.6836732	65	5	1973–1999	0.53	M-v	1	Williams	32316	1998 FT ₈
1998 FC ₉	15.1	0.15	19990810	268.06376	267.44166	166.63885	5.43777	0.0857316	2.2038549	62	3	1973–1999	0.70	M-v	3	Williams	32063	1998 FC ₉
1998 FB ₁₀	14.4	0.15	19990810	44.84696	73.51074	208.33298	6.28229	0.1934059	2.5733783	79	4	1991–1999	0.62	M-v	1	Williams	35705	1998 FB ₁₀
1998 FU ₁₀	14.0	0.15	19990810	14.29675	297.56455	357.38077	8.65486	0.1368916	2.7819835	62	3	1990–1999	0.65	M-v	3	Williams	35436	1998 FU ₁₀
1998 FG ₁₁	13.3	0.15	19990810	20.49831	274.17491	34.38776	15.08476	0.1147690	2.5907624	54	4	1987–1999	0.71	M-v	3	Williams	32317	1998 FG ₁₁
1998 FH ₁₁	15.1	0.15	19990810	109.43195	97.65143	130.02592	8.77331	0.1282217	2.3465380	43	5	1987–1999	0.58	M-v	1	Williams	32317	1998 FH ₁₁
1998 FP ₁₁	14.6	0.15	19990810	130.03522	25.70716	168.24168	5.97129	0.1139786	2.4001358	72	4	1983–1999	0.60	M-v	3	Williams	32317	1998 FP ₁₁
1998 FA ₁₂	15.3	0.15	19990810	145.68101	147.33850	29.33000	8.53363	0.0483949	2.3230328	57	5	1974–1999	0.57	M-v	2	Williams	34908	1998 FA ₁₂
1998 FM ₁₂	14.3	0.15	19990810	26.77508	138.77247	159.40190	3.98604	0.2101014	2.5669870	53	3	1995–1999	0.44	M-v	2	Williams	35706	1998 FM ₁₂
1998 FB ₁₄	13.9	0.15	19990810	16.51205	127.79542	167.74538	12.21757	0.2068533	2.7103418	71	3	1990–1999	0.68	M-v	2	Williams	35706	1998 FB ₁₄
1998 FY ₁₄	14.0	0.15	19990810	43.82522	285.43011	0.84849	13.23986	0.2508460	2.6703544	72	4	1990–1999	0.68	M-v	1	Williams	34909	1998 FY ₁₄
1998 FD ₁₅	14.4	0.15	19990810	100.99720	24.36135	215.50108	2.30443	0.1656810	2.3070108	57	5	1977–1999	0.67	M-v	3	Williams	32317	1998 FD ₁₅
1998 FS ₁₅	14.9	0.15	19990810	43.44974	80.74816	196.74193	13.86439	0.1513727	2.5979834	48	4	1990–1999	0.71	M-v	2	Williams	35706	1998 FS ₁₅
1998 FV ₁₅	14.9	0.15	19990810	1.14608	336.51286	5.34241	4.74271	0.1210844	2.2147091	100	3	1996–1999	0.53	M-v	3	Williams	35706	1998 FV ₁₅
1998 FW ₁₅	14.8	0.15	19990810	124.80505	141.31470	59.68738	10.45343	0.1664243	2.3856074	36	2	1998–1999	0.61	M-v	4	Williams	35620	1998 FW ₁₅
1998 FZ ₁₅	13.3	0.15	19990810	290.95988	202.24595	213.64219	21.56276	0.0730497	2.5717968	54	4	1991–1999	0.69	M-v	2	Williams	35706	1998 FZ ₁₅
1998 FF ₁₆	14.9	0.15	19990810	75.06264	106.45875	161.20932	2.47953	0.1855212	2.3956314	71	3	1995–1999	0.66	M-v	3	Williams	32064	1998 FF ₁₆
1998 FJ ₂₂	15.0	0.15	19990810	143.51854	334.49269	202.27822	3.13664	0.1202903	2.2476219	47	4	1971–1999	0.68	M-v	2	Williams	35706	1998 FJ ₂₂
1998 FH ₂₃	14.1	0.15	19990810	323.52233	223.91501	114.18308	3.08306	0.0601166	2.4335594	57	3	1996–1999	0.61	M-v	4	Williams	35706	1998 FH ₂₃
1998 FX ₂₇	15.4	0.15	19990810	168.02034	210.24173	306.69009	1.98974	0.0618918	2.2024868	32	3	1960–1999	0.72	M-v	4	Williams	32318	1998 FX ₂₇
1998 FP ₃₀	14.1	0.15	19990810	42.76320	72.53711	178.97877	15.90029	0.1851976	2.9268469	43	2	1998–1999	0.69	M-v	3	Williams	35322	1998 FP ₃₀
1998 FA ₃₃	15.1	0.15	19990810	72.71932	96.87895	160.93632	2.85317	0.1736211	2.3985504	90	4	1973–1999	0.72	M-v	1	Williams	32318	1998 FA ₃₃
1998 FO ₃₄	14.3	0.15	19990810	186.00716	135.08333	349.54547	12.88148	0.0888497	2.3383831	41	2	1998–1999	0.62	M-v	4	Williams	35322	1998 FO ₃₄
1998 FY ₃₅	15.1	0.15	19990810	68.65948	269.60354	13.34349	5.80425	0.1800509	2.2006409	52	3	1989–1999	0.63	M-v	2	Williams	35706	1998 FY ₃₅
1998 FX ₃₉	14.4	0.15	19990810	34.62772	81.06940	213.78492	4.28952	0.2704113	2.5508832	49	4	1978–1999	0.69	M-v	2	Williams	35437	1998 FX ₃₉
1998 FV ₄₀	15.5	0.15	19990810	93.36074	178.00848	53.50049	1.99844	0.1391392	2.4021061	56	5	1992–1999	0.63	M-v	1	Williams	32754	1998 FV ₄₀
1998 FZ ₄₀	15.0	0.15	19990810	24.54282	40.44524	251.74220	0.13434	0.0926537	2.4846570	41	5	1991–1999	0.75	M-v	1	Williams	35437	1998 FZ ₄₀
1998 FH ₄₂	15.1	0.15	19990810	42.57166	304.68448	342.68891	9.04362	0.1783162	2.4612539	53	5	1971–1999	0.80	M-v	1	Williams	32319	1998 FH ₄₂
1998 FO ₄₂	16.2	0.15	19990810	146.03556	337.06479	213.03613	3.12941	0.1092864	2.1942848	34	3	1996–1999	0.71	M-v	4	Williams	32064	1998 FO ₄₂
1998 FG ₄₃	14.2	0.15	19990810	67.28148	53.16350	183.63502	15.60612	0.1623252	2.7619521	52	3	1980–1999	0.63	M-v	2	Williams	35323	1998 FG ₄₃
1998 FN ₄₃	15.1	0.15	19990810	349.96068	352.04679	356.64582	6.78120	0.1927417	2.2116340	50	3	1986–1999	0.65	M-v	3	Williams	35706	1998 FN ₄₃
1998 FL ₄₄	14.3	0.15	19990810	42.32047	269.97427	3.33276	13.49934	0.1562616	2.6170803	45	3	1995–1999	0.56	M-v	2	Williams	32319	1998 FL ₄₄
1998 FR ₄₇	13.7	0.15	19990810	358.33460	6.24875	337.28019	6.78965	0.2287181	2.2124993	57	4	1943–1999	0.62	M-v	2	Williams	35706	1998 FR ₄₇
1998 FX ₄₇	14.4	0.15	19990810	17.42979	110.50738	203.60043	5.73187	0.1945367	2.4259434	57	3	1991–1999	0.60	M-v	3	Williams	35437	1998 FX ₄₇
1998 FZ ₄₇	14.9	0.15	19990810	135.54593	208.86705	341.47844	5.58167	0.0845293	2.3015024	56	3	1977–1999	0.62	M-v	4	Williams	32064	1998 FZ ₄₇
1998 FO ₄₈	14.4	0.15	19990810	115.36695	243.78765	309.10507	3.29462	0.0879304	2.5346432	75	2	1998–1999	0.68	M-v	4	Williams	35621	1998 FO ₄₈
1998 FJ ₄₉	14.0	0.15	19990810	96.08796	26.54139	185.22914	12.60722	0.0984631	2.5885511	70	3	1991–1999	0.57	M-v	3	Williams	35621	1998 FJ ₄₉
1998 FK ₄₉	14.6	0.15	19990810	113.02315	351.32675	198.21298	2.23230	0.1233670	2.6136535	55	3	1994–1999	0.58	M-v	4	Williams	35437	1998 FK ₄₉
1998 FO ₄₉	14.3	0.15	19990810	298.50228	25.12415	358.08608	7.83521	0.1040702	2.3047386	60	4	1982–1999	0.55	M-v	2	Williams	35437	1998 FO ₄₉
1998 FQ ₄₉	14.3	0.15	19990810	2.13565	355.70558	332.88167	1.66531	0.2112544	2.4388407	77	3	1976–1999	0.67	M-v	3	Williams	35706	1998 FQ ₄₉
1998 FT ₅₁	15.7	0.15	19990810	230.23427	322.34146	134.10784	3.93127	0.0783423	2.2015095	34	4	1995–1999	0.76	M-v	1	Williams	32320	1998 FT ₅₁
1998 FM ₅₄	14.3	0.15	19990810	14.44727	329.71998	351.22685	5.29641	0.1994544	2.4138531	83	4	1969–1999	0.62	M-v	3	Williams	35706	1998 FM ₅₄
1998 FF ₅₇	15.7	0.15	19990810	76.60553	103.04388	171.68962	1.91125	0.1551749	2.2482454	39	3	1971–1999	0.60	M-v	4	Williams	32321	1998 FF ₅₇
1998 FN ₅₈	15.3	0.15	19990810	43.01554	279.18610	12.41519	3.36146	0.1469061	2.4338214	51	3	1994–1999	0.70	M-v	3	Williams	32259	1998 FN ₅₈
1998 FC ₅₉	14.1	0.15	19990810	21.98466	156.39616	169.54523	7.12813	0.1791710	2.2585637	57	5	1989–1999	0.69	M-v	1	Williams	35706	1998 FC ₅₉

1998 FT ₅₉	15.2	0.15	19990810	106.64717	53.02752	168.84755	6.86478	0.0686145	2.3573097	54	4	1992–1999	0.62	M-v	1	Williams	35706	1998 FT ₅₉
1998 FH ₆₀	15.3	0.15	19990810	315.58655	205.16851	174.75720	3.82108	0.1950981	2.1952936	54	4	1983–1999	0.66	M-v	2	Williams	35437	1998 FH ₆₀
1998 FO ₆₁	15.3	0.15	19990810	86.96097	28.44306	219.21321	2.73445	0.1239886	2.3899505	56	3	1977–1999	0.89	M-v	3	Williams	32066	1998 FO ₆₁
1998 FT ₆₁	15.0	0.15	19990810	82.51967	2.88956	254.79761	1.47161	0.1809578	2.4067047	49	4	1991–1999	0.64	M-v	3	Williams	32322	1998 FT ₆₁
1998 FF ₆₂	13.8	0.15	19990810	45.24992	266.35476	357.53825	10.85886	0.0683820	2.7069403	62	3	1980–1999	0.54	M-v	2	Williams	35437	1998 FF ₆₂
1998 FK ₆₃	14.7	0.15	19990810	79.09903	211.13366	46.21987	2.85359	0.1645468	2.4340415	72	5	1991–1999	0.62	M-v	1	Williams	32322	1998 FK ₆₃
1998 FV ₆₃	14.2	0.15	19990810	301.33650	339.52340	47.60470	5.46022	0.1559004	2.2456380	47	5	1971–1999	0.70	M-v	2	Williams	35706	1998 FV ₆₃
1998 FQ ₆₄	14.5	0.15	19990810	38.74360	289.06070	15.72566	6.45497	0.1237322	2.3212293	59	3	1991–1999	0.57	M-v	3	Williams	32322	1998 FQ ₆₄
1998 FX ₆₄	14.1	0.15	19990810	283.02117	21.14213	10.77824	5.38323	0.1106329	2.4603599	58	4	1982–1999	0.65	M-v	4	Williams	35438	1998 FX ₆₄
1998 FA ₆₅	14.4	0.15	19990810	314.76438	167.72503	200.05883	4.69538	0.1228721	2.4514127	46	5	1971–1999	0.81	M-v	2	Williams	35438	1998 FA ₆₅
1998 FE ₆₅	14.6	0.15	19990810	205.60115	125.26206	352.02028	4.37089	0.0902244	2.3097523	65	2	1998–1999	0.51	M-v	4	Williams	35325	1998 FE ₆₅
1998 FG ₆₅	15.2	0.15	19990810	75.37196	56.01240	196.24233	9.30572	0.2151945	2.6287094	69	4	1989–1999	0.63	M-v	1	Williams	32322	1998 FG ₆₅
1998 FP ₆₅	14.1	0.15	19990810	42.97376	64.27624	212.45581	7.65418	0.1608857	2.7352986	57	3	1990–1999	0.64	M-v	3	Williams	32322	1998 FP ₆₅
1998 FC ₆₆	13.9	0.15	19990810	34.20187	121.65345	196.72048	10.32665	0.2222654	2.3583995	83	4	1973–1999	0.55	M-v	3	Williams	32322	1998 FC ₆₆
1998 FF ₆₆	14.6	0.15	19990810	70.40652	243.66878	9.44110	3.78636	0.1125655	2.5681210	80	3	1995–1999	0.60	M-v	3	Williams	35621	1998 FF ₆₆
1998 FJ ₆₆	13.9	0.15	19990810	88.36315	218.10034	12.36727	9.66965	0.0627307	2.5304301	52	5	1951–1999	0.61	M-v	2	Williams	34912	1998 FJ ₆₆
1998 FY ₆₆	14.1	0.15	19990810	293.20865	216.72215	169.45105	7.93892	0.0614654	2.4458075	61	3	1994–1999	0.67	M-v	3	Williams	35706	1998 FY ₆₆
1998 FF ₆₇	15.3	0.15	19990810	88.25494	119.61133	129.81826	3.30866	0.1511359	2.4008956	63	4	1994–1999	0.55	M-v	1	Williams	32322	1998 FF ₆₇
1998 FC ₆₈	15.7	0.15	19990810	252.64038	72.77487	11.93643	7.41461	0.1148640	2.1403521	49	5	1977–1999	0.73	M-v	1	Williams	35706	1998 FC ₆₈
1998 FS ₆₈	14.5	0.15	19990810	65.98019	36.44585	250.13011	3.13356	0.1144104	2.2596177	69	3	1994–1999	0.63	M-v	3	Williams	32323	1998 FS ₆₈
1998 FX ₆₈	11.9	0.15	19990810	333.12534	96.24441	207.62362	12.97299	0.1513912	3.9597111	66	3	1993–1999	0.62	M-v	3	Williams	35621	1998 FX ₆₈
1998 FZ ₆₈	14.3	0.15	19990810	46.69195	81.88448	199.32118	9.45940	0.1286479	2.5869916	97	4	1991–1999	0.61	M-v	2	Williams	32323	1998 FZ ₆₈
1998 FQ ₆₉	14.1	0.15	19990810	331.70483	179.05346	182.41573	11.82122	0.2513596	2.4142614	74	3	1994–1999	0.57	M-v	3	Williams	35706	1998 FQ ₆₉
1998 FX ₆₉	14.4	0.15	19990810	59.88019	145.88804	133.76627	3.95546	0.1619281	2.4611110	74	4	1991–1999	0.62	M-v	2	Williams	32323	1998 FX ₆₉
1998 FN ₇₀	14.8	0.15	19990810	16.41591	292.72627	30.94280	6.52117	0.1515775	2.4140185	58	3	1984–1999	0.66	M-v	4	Williams	35706	1998 FN ₇₀
1998 FT ₇₀	14.8	0.15	19990810	84.59617	210.59853	32.72398	3.53178	0.2368000	2.6370709	60	4	1981–1999	0.58	M-v	2	Williams	32323	1998 FT ₇₀
1998 FZ ₇₀	13.9	0.15	19990810	83.94187	223.60164	15.15550	14.59490	0.1428314	2.6191651	71	4	1981–1999	0.58	M-v	2	Williams	32323	1998 FZ ₇₀
1998 FH ₇₁	13.0	0.15	19990810	10.00599	83.39832	208.55838	9.87521	0.0787678	3.0007518	58	3	1995–1999	0.65	M-v	3	Williams	35706	1998 FH ₇₁
1998 FL ₇₁	14.3	0.15	19990810	186.24036	136.68490	0.54059	5.76324	0.0839384	2.3749772	66	3	1992–1999	0.66	M-v	3	Williams	35706	1998 FL ₇₁
1998 FY ₇₁	15.4	0.15	19990810	279.11225	49.44942	2.16957	5.32441	0.0857009	2.1813728	53	3	1993–1999	0.61	M-v	4	Williams	35438	1998 FY ₇₁
1998 FP ₇₂	15.6	0.15	19990810	157.65490	195.65852	339.69003	2.39699	0.1144349	2.2753033	66	4	1991–1999	0.62	M-v	2	Williams	35706	1998 FP ₇₂
1998 FQ ₇₂	14.3	0.15	19990810	348.38168	317.51956	30.82554	3.26432	0.1958161	2.4413113	66	3	1980–1999	0.73	M-v	4	Williams	35706	1998 FQ ₇₂
1998 FD ₇₃	15.1	0.15	19990810	80.97555	132.41805	94.22233	4.05521	0.2614171	3.0224146	42	2	1998–1999	0.45	M-v	3	Williams	35622	1998 FD ₇₃
1998 FZ ₇₃	14.6	0.15	19990810	88.29689	6.17920	247.52177	1.42432	0.1704099	2.4172374	60	4	1991–1999	0.65	M-v	1	Williams	32323	1998 FZ ₇₃
1998 FC ₇₅	14.0	0.15	19990810	49.36422	72.07800	198.05563	8.74980	0.1239047	2.7571726	60	4	1991–1999	0.55	M-v	2	Williams	32323	1998 FC ₇₅
1998 FF ₇₅	13.7	0.15	19990810	287.19392	15.79463	25.77312	7.31698	0.1059798	2.3562800	60	3	1992–1999	0.60	M-v	3	Williams	35438	1998 FF ₇₅
1998 FH ₇₅	14.8	0.15	19990810	324.13421	220.21609	165.35329	2.09873	0.1282739	2.1719857	75	3	1992–1999	0.61	M-v	3	Williams	35707	1998 FH ₇₅
1998 FL ₇₅	14.8	0.15	19990810	45.02631	276.50822	41.26450	3.19771	0.1800253	2.2372418	49	3	1992–1999	0.80	M-v	3	Williams	35707	1998 FL ₇₅
1998 FS ₇₅	14.2	0.15	19990810	357.83829	277.15624	59.64112	5.96401	0.1516710	2.3874606	52	5	1981–1999	0.62	M-v	2	Williams	35707	1998 FS ₇₅
1998 FL ₇₆	14.7	0.15	19990810	95.21891	179.89217	69.63751	5.93506	0.1352982	2.3064417	43	4	1994–1999	0.45	M-v	2	Williams	32000	1998 FL ₇₆
1998 FR ₇₆	14.6	0.15	19990810	155.77169	28.77038	129.67311	4.93552	0.0810438	2.4742238	48	3	1982–1999	0.60	M-v	4	Williams	35438	1998 FR ₇₆
1998 FP ₇₇	14.9	0.15	19990810	297.85335	274.72848	122.86395	5.26758	0.0890609	2.2603403	42	3	1994–1999	0.69	M-v	4	Williams	32001	1998 FP ₇₇
1998 FW ₇₇	14.6	0.15	19990810	79.76810	190.44963	50.83409	7.91096	0.0974647	2.5926334	32	3	1994–1999	0.65	M-v	3	Williams	32260	1998 FW ₇₇
1998 FH ₇₈	14.6	0.15	19990810	72.23424	66.83937	176.14854	13.50328	0.0331627	2.6426578	44	3	1995–1999	0.74	M-v	3	Williams	35438	1998 FH ₇₈
1998 FJ ₇₈	14.8	0.15	19990810	303.11322	303.06396	92.82602	4.18052	0.1590449	2.2059264	42	4	1986–1999	0.71	M-v	2	Williams	35707	1998 FJ ₇₈
1998 FU ₇₉	15.3	0.15	19990810	268.90036	4.34159	64.25663	4.41947	0.0966440	2.1814110	49	3	1993–1999	0.74	M-v	3	Williams	32324	1998 FU ₇₉
1998 FP ₉₃	15.4	0.15	19990810	82.02353	139.41528	111.10826	9.37303	0.1440699	2.3214303	32	3	1996–1999	0.62	M-v	2	Williams	32324	1998 FP ₉₃
1998 FQ ₉₄	14.2	0.15	19980308	121.55482	256.49844	147.88916	9.58509	0.0826895	2.9783241	18	1	24 days	0.74			Williams		1998 FQ ₉₄
1998 FZ ₉₇	13.1	0.15	19990810	27.28749	64.95704	232.25103	6.04865	0.2219673	2.5588185	55	4	1983–1999	0.56	M-v	2	Williams	35707	1998 FZ ₉₇
1998 FY ₉₉	13.9	0.15	19990810	112.36682	249.76425	325.13169	7.63823	0.0753426	2.3219767	61	3	1980–1999	0.61	M-v	3	Williams	35707	1998 FY ₉₉
1998 FJ ₁₀₃	14.5	0.15	19990810	45.94764	76.07088	215.72506	7.89439	0.2018840	2.4446957	42	3	1995–1999	0.56	M-v	2	Williams	35438	1998 FJ ₁₀₃
1998 FR ₁₀₃	15.2	0.15	19990810	105.59525	294.87713	298.32140	3.76660	0.0676691	2.2469029	51	3	1992–1999	0.61	M-v	3	Williams	31765	1998 FR ₁₀₃
1998 FD ₁₀₄	14.5	0.15	19990810	55.77809	58.23211	207.05380	16.12865	0.2325785	2.7280480	47	3	1971–1999	0.63	M-v	2	Williams	32071	1998 FD ₁₀₄

1998 FO ₁₀₄	13.9	0.15	19990810	157.87071	288.66955	220.34568	11.88687	0.1811564	2.4158075	44	2	1998–1999	0.63	M-v	3	Williams	35327	1998 FO ₁₀₄
1998 FJ ₁₀₅	14.1	0.15	19990810	48.14172	43.35797	225.08789	8.81680	0.1739904	2.7362163	46	3	1990–1999	0.53	M-v	2	Williams	35707	1998 FJ ₁₀₅
1998 FK ₁₀₆	14.9	0.15	19990810	70.11673	45.40278	226.32144	6.91594	0.1265260	2.3330328	51	3	1991–1999	0.69	M-v	2	Williams	35438	1998 FK ₁₀₆
1998 FU ₁₀₈	14.4	0.15	19990810	311.74652	57.11905	318.34421	5.77660	0.1400521	2.3288720	35	2	1998–1999	0.63	M-v	4	Williams	35328	1998 FU ₁₀₈
1998 FB ₁₁₁	13.1	0.15	19990810	48.22835	328.98393	293.89047	7.15744	0.1874891	3.1076879	47	4	1984–1999	0.49	M-v	1	Williams	35438	1998 FB ₁₁₁
1998 FG ₁₁₂	14.3	0.15	19990810	86.49497	269.38670	309.72524	8.35499	0.1329922	2.7801179	29	2	1998–1999	0.64	M-v	3	Williams	35622	1998 FG ₁₁₂
1998 FM ₁₁₃	14.7	0.15	19990810	217.04530	175.51384	284.03720	5.94549	0.0917521	2.3767527	38	3	1996–1999	0.58	M-v	2	Williams	35329	1998 FM ₁₁₃
1998 FR ₁₁₃	15.0	0.15	19990810	75.83585	18.41884	248.57323	6.19178	0.1101441	2.3410616	32	3	1978–1999	0.61	M-v	3	Williams	32324	1998 FR ₁₁₃
1998 FD ₁₁₄	14.3	0.15	19990810	272.82169	140.42183	275.75738	5.94939	0.1062895	2.2918723	76	3	1993–1999	0.56	M-v	3	Williams	35622	1998 FD ₁₁₄
1998 FE ₁₁₄	14.8	0.15	19990810	243.66209	144.24031	297.05049	5.64403	0.1301481	2.2726881	45	2	1998–1999	0.66	M-v	4	Williams	35329	1998 FE ₁₁₄
1998 FH ₁₁₅	13.5	0.15	19990810	335.44915	104.43350	270.46624	5.13871	0.2202324	2.2813917	67	4	1968–1999	0.56	M-v	2	Williams	35707	1998 FH ₁₁₅
1998 FX ₁₁₅	15.7	0.15	19990810	158.50981	247.57433	303.08692	5.35467	0.1071461	2.1630376	30	3	1996–1999	0.74	M-v	3	Williams	32003	1998 FX ₁₁₅
1998 FB ₁₁₆	13.8	0.15	19990810	327.02041	123.93576	242.27063	12.99371	0.1917291	2.5981897	43	2	1998–1999	0.56	M-v	3	Williams	35329	1998 FB ₁₁₆
1998 FN ₁₁₆	14.3	0.15	19990810	334.44277	125.55814	230.63792	5.04410	0.1422452	2.3839872	59	2	1998–1999	0.67	M-v	4	Williams	35329	1998 FN ₁₁₆
1998 FU ₁₁₆	12.7	0.15	19990810	241.32651	166.17673	239.23490	9.28264	0.1102005	3.0484294	36	3	1990–1999	0.72	M-v	3	Williams	35707	1998 FU ₁₁₆
1998 FD ₁₁₇	13.9	0.15	19990810	314.66852	160.27683	216.81865	11.39320	0.2478333	2.3293585	46	3	1992–1999	0.66	M-v	4	Williams	35438	1998 FD ₁₁₇
1998 FG ₁₁₇	13.7	0.15	19990810	0.54722	114.25617	211.53012	12.37687	0.1874802	2.6366447	83	3	1994–1999	0.63	M-v	2	Williams	35329	1998 FG ₁₁₇
1998 FH ₁₁₇	14.7	0.15	19990810	72.87638	308.64130	302.02762	3.98935	0.0833519	2.5795059	50	3	1991–1999	0.78	M-v	3	Williams	32324	1998 FH ₁₁₇
1998 FL ₁₁₇	14.2	0.15	19990810	126.72520	333.02082	217.81156	13.25290	0.0920421	2.5458363	63	3	1995–1999	0.52	M-v	3	Williams	35623	1998 FL ₁₁₇
1998 FC ₁₁₈	14.4	0.15	19990810	332.54617	136.53782	240.32955	6.13041	0.1752087	2.2547308	68	4	1986–1999	0.80	M-v	2	Williams	35438	1998 FC ₁₁₈
1998 FE ₁₁₈	12.8	0.15	19990810	118.37007	326.50826	223.61586	9.15119	0.0555930	2.7642615	81	4	1991–1999	0.52	M-v	2	Williams	35707	1998 FE ₁₁₈
1998 FH ₁₁₈	14.1	0.15	19990810	288.64939	51.00400	345.83766	5.72301	0.1305788	2.4280137	66	3	1988–1999	0.70	M-v	3	Williams	35438	1998 FH ₁₁₈
1998 FN ₁₁₈	14.4	0.15	19990810	341.93747	140.55461	206.15956	22.04539	0.0413312	2.4216786	57	2	1998–1999	0.73	M-v	4	Williams	35623	1998 FN ₁₁₈
1998 FS ₁₁₈	13.8	0.15	19990810	28.98595	313.07609	0.54235	12.36596	0.2845739	2.6725045	46	4	1977–1999	0.83	M-v	2	Williams	32324	1998 FS ₁₁₈
1998 FM ₁₂₁	14.7	0.15	19990810	354.58553	97.66464	243.84216	3.86347	0.2188392	2.3987669	72	3	1969–1999	0.61	M-v	3	Williams	35439	1998 FM ₁₂₁
1998 FO ₁₂₁	15.1	0.15	19990810	87.64086	74.65974	155.29309	2.28189	0.1076585	2.5487006	42	3	1995–1999	0.69	M-v	4	Williams	32325	1998 FO ₁₂₁
1998 FS ₁₂₁	14.8	0.15	19990810	141.59970	234.37218	333.76938	2.59852	0.0018738	2.1287291	75	6	1962–1999	0.58	M-v	2	Williams	32325	1998 FS ₁₂₁
1998 FA ₁₂₃	13.8	0.15	19990810	40.31606	134.10545	120.08254	3.32752	0.1470834	3.1970715	55	3	1996–1999	0.69	M-v	3	Williams	35330	1998 FA ₁₂₃
1998 FP ₁₂₃	13.5	0.15	19990810	210.83233	57.97918	354.16085	3.62293	0.2361795	3.0341654	33	4	1987–1998	0.93	M-v	2	Williams	35707	1998 FP ₁₂₃
1998 FE ₁₂₅	14.2	0.15	19990810	79.01201	74.76259	169.49575	11.60245	0.1467351	2.6291529	73	3	1989–1999	0.77	M-v	3	Williams	32325	1998 FE ₁₂₅
1998 FL ₁₂₅	13.2	0.15	19990810	85.73438	26.48754	202.26028	13.45256	0.0960327	2.5791820	61	4	1991–1999	0.57	M-v	2	Williams	35707	1998 FL ₁₂₅
1998 FP ₁₂₅	14.2	0.15	19990810	44.57295	48.80869	212.03494	12.43754	0.1077021	2.6482752	55	3	1978–1999	0.70	M-v	2	Williams	35439	1998 FP ₁₂₅
1998 FM ₁₂₆	15.2	0.15	19990810	128.89787	1.09081	189.99961	4.38602	0.1583165	2.2324745	58	3	1996–1999	0.64	M-v	3	Williams	35707	1998 FM ₁₂₆
1998 FC ₁₄₄	14.4	0.15	19990810	53.62123	52.62520	238.63086	5.12517	0.1458048	2.4851751	45	3	1991–1999	0.76	M-v	2	Williams	35707	1998 FC ₁₄₄
1998 GZ	15.5	0.15	19990810	126.02366	173.49823	32.07963	6.54788	0.0553358	2.2742407	47	3	1996–1999	0.76	M-v	3	Williams	35707	1998 GZ
1998 GF ₁	15.5	0.15	19990810	245.42146	159.36073	282.29354	3.55803	0.0968051	2.1960480	76	4	1993–1999	0.74	M-v	2	Williams	35707	1998 GF ₁
1998 GJ ₁	14.6	0.15	19990810	325.39034	230.14398	131.79860	4.90831	0.0770986	2.3610240	73	2	1997–1999	0.58	M-v	3	Williams	35623	1998 GJ ₁
1998 GK ₁	13.5	0.15	19990810	29.29285	331.79220	332.01500	8.28354	0.1800244	2.5719702	70	3	1970–1999	0.50	M-v	2	Williams	35707	1998 GK ₁
1998 GV ₈	13.6	0.15	19990810	96.83424	102.64868	115.07050	13.79274	0.1332389	2.6760226	39	3	1989–1999	0.63	M-v	3	Williams	32263	1998 GV ₈
1998 GE ₉	13.5	0.15	19990810	59.56503	118.49317	150.94858	15.18233	0.1157741	2.6291247	55	2	1998–1999	0.58	M-v	3	Williams	35624	1998 GE ₉
1998 GO ₉	13.5	0.15	19990810	346.78041	203.28711	120.19873	15.41844	0.1700031	3.1530184	51	2	1998–1999	0.69	M-v	3	Williams	35331	1998 GO ₉
1998 HT	15.0	0.15	19990810	14.19521	183.05402	140.84927	4.78559	0.2004889	2.6458625	52	4	1984–1999	0.54	M-v	1	Williams	35707	1998 HT
1998 HE ₁	13.2	0.15	19990810	24.39346	267.22197	12.44036	7.68639	0.1216000	3.1931596	56	3	1992–1999	0.70	M-v	3	Williams	35439	1998 HE ₁
1998 HF ₃	14.1	0.15	19990810	22.80818	112.36689	194.08736	12.98311	0.1579766	3.0489377	65	2	1998–1999	0.53	M-v	3	Williams	35624	1998 HF ₃
1998 HY ₆	15.0	0.15	19990810	136.91725	133.03795	52.84185	5.83028	0.1189101	2.3793944	45	2	1998–1999	0.62	M-v	4	Williams	35624	1998 HY ₆
1998 HE ₈	14.1	0.15	19990810	94.21255	36.78061	210.98767	6.80755	0.0734499	2.4417957	59	4	1991–1999	0.71	M-v	2	Williams	35439	1998 HE ₈
1998 HM ₁₁	14.5	0.15	19990810	150.96006	89.09085	107.27557	7.86936	0.1690378	2.2878721	47	4	1932–1999	0.60	M-v	2	Williams	32326	1998 HM ₁₁
1998 HQ ₁₂	14.8	0.15	19990810	193.94406	3.61029	146.49693	13.02782	0.1163519	2.4022458	32	4	1990–1999	0.66	M-v	3	Williams	32754	1998 HQ ₁₂
1998 HH ₁₄	15.7	0.15	19990810	199.45893	36.98762	117.23129	5.11425	0.0762408	2.1958786	42	3	1979–1999	0.67	M-v	3	Williams	32008	1998 HH ₁₄
1998 HQ ₁₈	15.1	0.15	19990810	70.20678	34.42382	223.79014	4.78041	0.0583705	2.4323291	57	3	1995–1999	0.68	M-v	3	Williams	32326	1998 HQ ₁₈
1998 HS ₁₉	14.4	0.15	19990810	242.73864	328.07667	118.85038	6.30474	0.1227641	2.4421257	50	2	1998–1999	0.53	M-v	3	Williams	35624	1998 HS ₁₉
1998 HV ₁₉	15.8	0.15	19990810	267.49674	60.26830	4.90343	4.10792	0.0626837	2.1711606	53	4	1976–1999	0.74	M-v	1	Williams	35707	1998 HV ₁₉
1998 HE ₂₀	13.1	0.15	19990810	323.76277	194.92485	176.81795	2.21514	0.1060677	2.9050752	71	3	1992–1999	0.61	M-v	4	Williams	35707	1998 HE ₂₀

1998 HZ ₂₀	14.3	0.15	19990810	316.35761	302.20258	65.48046	4.59264	0.2217162	2.3943382	52	4	1981–1999	0.74	M-v	2	Williams	35707	1998 HZ ₂₀
1998 HC ₂₁	14.7	0.15	19990810	259.20264	11.77109	55.65073	4.51095	0.1054347	2.2346537	42	3	1974–1999	0.56	M-v	3	Williams	35333	1998 HC ₂₁
1998 HC ₂₂	15.5	0.15	19990810	105.70711	14.10397	209.85474	5.18139	0.1072761	2.4039308	73	4	1995–1999	0.66	M-v	1	Williams	32754	1998 HC ₂₂
1998 HQ ₂₂	15.9	0.15	19990810	340.41898	281.73877	71.86408	3.22170	0.0448490	2.3003907	47	5	1975–1999	0.68	M-v	2	Williams	32327	1998 HQ ₂₂
1998 HG ₂₃	16.0	0.15	19990810	344.23409	289.20906	77.25861	2.60411	0.0458569	2.1301895	53	3	1996–1999	0.77	M-v	4	Williams	32327	1998 HG ₂₃
1998 HO ₂₃	14.1	0.15	19990810	105.30039	35.68372	155.89096	8.41376	0.1998989	2.9391288	46	2	1998–1999	0.54	M-v	4	Williams	35624	1998 HO ₂₃
1998 HS ₂₃	15.0	0.15	19990810	293.65483	320.93843	108.74004	0.69544	0.0722909	2.2793868	34	4	1992–1999	0.74	M-v	2	Marsden	32521	1998 HS ₂₃
1998 HT ₂₃	15.2	0.15	19990810	14.72844	313.00604	3.81488	12.73298	0.1863461	2.5481936	45	3	1991–1999	0.64	M-v	3	Williams	32327	1998 HT ₂₃
1998 HK ₂₄	15.6	0.15	19990810	316.54599	211.34254	180.20600	14.12634	0.1991583	2.5627859	23	3	1997–1999	0.43	M-v	4	Williams	35707	1998 HK ₂₄
1998 HQ ₂₄	14.1	0.15	19990810	113.15159	321.11521	236.85557	3.88756	0.1395291	2.7877512	48	3	1988–1999	0.61	M-v	4	Williams	35439	1998 HQ ₂₄
1998 HH ₂₇	14.2	0.15	19990810	264.26616	296.14380	124.09500	4.58088	0.0862775	2.7762431	35	5	1990–1999	0.71	M-v	1	Williams	35707	1998 HH ₂₇
1998 HB ₃₀	15.3	0.15	19990810	331.04435	302.23711	69.73982	3.48533	0.1611468	2.2109322	57	5	1994–1999	0.71	M-v	2	Williams	32327	1998 HB ₃₀
1998 HZ ₃₁	14.1	0.15	19990810	121.15369	332.33181	239.67923	6.22838	0.0734175	2.3551968	61	4	1978–1999	0.58	M-v	2	Williams	32327	1998 HZ ₃₁
1998 HJ ₃₃	15.4	0.15	19990810	109.74178	250.19137	329.35405	1.79261	0.1379095	2.4546818	46	3	1971–1999	0.69	M-v	4	Williams	32265	1998 HJ ₃₃
1998 HO ₃₃	14.3	0.15	19990810	25.08694	116.58401	211.22856	23.43086	0.1935008	2.3283745	45	2	1998–1999	0.65	M-v	3	Williams	35707	1998 HO ₃₃
1998 HO ₃₅	14.6	0.15	19990810	88.80450	116.00184	137.48870	3.37255	0.1188116	2.3546458	58	5	1989–1999	0.68	M-v	1	Williams	32327	1998 HO ₃₅
1998 HX ₃₆	14.0	0.15	19990810	14.49212	110.07084	204.64798	7.04910	0.2229208	2.7877343	54	4	1976–1999	0.59	M-v	2	Williams	32327	1998 HX ₃₆
1998 HA ₃₉	15.2	0.15	19990810	246.88841	232.27301	213.74615	4.77448	0.1228353	2.2383393	42	4	1976–1999	0.74	M-v	1	Williams	35439	1998 HA ₃₉
1998 HB ₃₉	13.7	0.15	19990810	345.28169	306.79208	11.08141	1.19353	0.1209752	3.1093665	35	3	1997–1999	0.68	M-v	4	Williams	35625	1998 HB ₃₉
1998 HK ₃₉	13.8	0.15	19990810	49.46728	235.22498	30.79852	5.09629	0.0703244	2.7340594	57	2	1998–1999	0.52	M-v	3	Williams	35334	1998 HK ₃₉
1998 HQ ₃₉	13.6	0.15	19990810	13.66640	246.50296	44.05623	2.14492	0.1567612	3.2064421	37	2	1998–1999	0.70	M-v	4	Williams	35625	1998 HQ ₃₉
1998 HG ₄₀	15.9	0.15	19990810	127.03055	177.12618	50.38923	3.96832	0.1092625	2.1824884	29	2	1996–1998	0.53	M-v	5	Williams	35708	1998 HG ₄₀
1998 HS ₄₂	14.2	0.15	19990810	71.77890	106.31835	155.04678	8.34552	0.2702246	2.7808834	56	3	1994–1999	0.61	M-v	3	Williams	32328	1998 HS ₄₂
1998 HT ₄₂	14.5	0.15	19990810	73.85421	101.75206	181.60233	4.01472	0.0420336	2.3092607	43	4	1984–1999	0.60	M-v	3	Williams	32328	1998 HT ₄₂
1998 HU ₄₃	14.0	0.15	19990810	284.96865	17.05204	38.00908	7.22531	0.1380096	2.1944332	46	4	1978–1999	0.61	M-v	3	Williams	32754	1998 HU ₄₃
1998 HY ₄₄	14.5	0.15	19990810	17.80266	39.26920	263.33057	0.47836	0.0737591	2.7044106	57	7	1977–1999	0.74	M-v	1	Williams	34532	1998 HY ₄₄
1998 HK ₄₅	14.4	0.15	19990810	48.87969	293.39850	8.60364	9.88749	0.1868180	2.4457747	40	3	1971–1999	0.78	M-v	3	Williams	32754	1998 HK ₄₅
1998 HO ₄₅	13.8	0.15	19990810	41.97577	323.54867	330.35013	4.34659	0.1266815	2.5511400	105	3	1995–1999	0.44	M-v	2	Williams	35439	1998 HO ₄₅
1998 HW ₄₅	15.1	0.15	19990810	86.71231	226.93150	20.42809	3.57343	0.1779990	2.5638446	53	4	1978–1999	0.69	M-v	2	Williams	32754	1998 HW ₄₅
1998 HF ₅₁	14.6	0.15	19990810	289.21372	6.10217	51.33569	3.83412	0.0410519	2.3571413	48	2	1998–1999	0.70	M-v	4	Williams	35625	1998 HF ₅₁
1998 HH ₅₁	14.7	0.15	19990810	206.85433	70.61952	66.97472	3.95361	0.1179436	2.2784833	83	4	1989–1999	0.59	M-v	1	Williams	35708	1998 HH ₅₁
1998 HL ₅₁	15.2	0.15	19990810	147.72104	130.19023	71.53467	3.92101	0.1505111	2.2653669	51	3	1996–1999	0.67	M-v	3	Williams	32328	1998 HL ₅₁
1998 HK ₅₂	13.9	0.15	19990810	106.32129	132.17510	64.83937	10.71878	0.1709641	3.1392048	66	3	1995–1999	0.54	M-v	3	Williams	35625	1998 HK ₅₂
1998 HJ ₅₄	14.4	0.15	19990810	29.14420	77.29302	216.40303	8.28313	0.1226702	2.7485286	49	3	1996–1999	0.66	M-v	3	Williams	32268	1998 HJ ₅₄
1998 HS ₆₀	14.3	0.15	19990810	254.15418	120.55610	330.95763	2.17094	0.0596778	2.2072966	64	3	1983–1999	0.66	M-v	3	Williams	35708	1998 HS ₆₀
1998 HN ₆₈	13.9	0.15	19990810	26.50558	5.36439	272.56927	3.27451	0.1103994	3.2060470	40	3	1997–1999	0.51	M-v	3	Williams	35439	1998 HN ₆₈
1998 HX ₇₈	14.6	0.15	19990810	45.43007	52.58887	251.57855	4.89371	0.1091264	2.4232747	42	3	1980–1999	0.62	M-v	2	Williams	35439	1998 HX ₇₈
1998 HH ₈₀	14.2	0.15	19990810	2.48915	339.43097	20.66867	5.88763	0.1889310	2.2943232	36	4	1971–1999	0.57	M-v	3	Williams	32754	1998 HH ₈₀
1998 HP ₈₃	14.7	0.15	19990810	195.64359	71.52796	75.17599	6.03178	0.0699455	2.2692324	50	3	1989–1999	0.75	M-v	3	Williams	32016	1998 HP ₈₃
1998 HE ₈₄	13.4	0.15	19990810	341.49363	136.32905	194.96928	13.26543	0.1671436	3.2324708	35	2	1998–1999	0.67	M-v	4	Williams	35334	1998 HE ₈₄
1998 HX ₈₈	13.5	0.15	19990810	23.38852	248.85382	36.22227	1.65645	0.1240055	3.2523706	50	5	1982–1999	0.59	M-v	1	Williams	35708	1998 HX ₈₈
1998 HX ₈₉	15.5	0.15	19990810	288.24742	44.44576	16.27506	3.87953	0.1373167	2.2278442	42	3	1994–1999	0.64	M-v	4	Williams	32016	1998 HX ₈₉
1998 HZ ₉₁	14.9	0.15	19990810	142.65984	59.67553	137.33865	2.84777	0.1497974	2.3636142	49	4	1976–1999	0.66	M-v	2	Williams	32017	1998 HZ ₉₁
1998 HA ₉₃	14.5	0.15	19990810	23.28270	329.76119	9.34310	2.13656	0.2093169	2.4268574	29	3	1995–1999	0.64	M-v	4	Williams	32017	1998 HA ₉₃
1998 HH ₉₃	14.1	0.15	19990810	285.68491	75.45778	355.72237	2.41796	0.0712574	2.1843961	51	5	1965–1999	0.60	M-v	2	Williams	32755	1998 HH ₉₃
1998 HV ₉₃	13.7	0.15	19990810	59.97016	272.06297	336.17538	3.29012	0.0502620	3.0746942	50	4	1992–1999	0.73	M-v	2	Williams	35439	1998 HV ₉₃
1998 HX ₉₃	14.8	0.15	19990810	111.12139	0.58199	232.24931	7.26872	0.0597578	2.4048881	33	3	1994–1999	0.61	M-v	3	Williams	32017	1998 HX ₉₃
1998 HS ₉₆	14.6	0.15	19990810	69.17415	96.07709	184.45427	5.87098	0.1031537	2.4544013	51	5	1976–1999	0.58	M-v	1	Williams	34917	1998 HS ₉₆
1998 HZ ₉₆	13.9	0.15	19990810	51.22421	236.21610	43.83039	14.97963	0.0473963	2.6386385	43	5	1987–1999	0.70	M-v	2	Williams	34917	1998 HZ ₉₆
1998 HH ₉₇	14.0	0.15	19990810	262.05935	210.38469	212.74621	8.21688	0.1473270	2.5704977	47	5	1979–1999	0.71	M-v	2	Williams	35440	1998 HH ₉₇
1998 HQ ₉₇	13.6	0.15	19990810	326.42696	344.91379	9.41527	2.03509	0.0759745	2.9015688	55	4	1993–1999	0.63	M-v	1	Williams	35335	1998 HQ ₉₇
1998 HF ₉₉	15.2	0.15	19990810	56.27215	103.53197	188.03388	5.37787	0.0272252	2.3875897	51	4	1977–1999	0.86	M-v	1	Williams	32329	1998 HF ₉₉
1998 HX ₉₉	14.8	0.15	19990810	190.52675	1.68355	155.00227	4.44729	0.1038003	2.2366514	61	4	1991–1999	0.68	M-v	2	Williams	35708	1998 HX ₉₉

1998 HF ₁₀₀	14.0	0.15	19990810	137.34627	55.98793	123.30956	4.67433	0.1548038	2.6672214	45	3	1980–1999	0.69	M-v	4	Williams	32020	1998 HF ₁₀₀
1998 HH ₁₀₀	13.5	0.15	19990810	9.20600	273.58430	78.70428	5.90727	0.2192077	2.4659832	51	4	1991–1999	0.57	M-v	2	Williams	32755	1998 HH ₁₀₀
1998 HM ₁₀₀	14.0	0.15	19990810	218.51382	341.94428	112.72876	3.19626	0.0262414	2.8804414	51	3	1997–1999	0.66	M-v	3	Williams	35708	1998 HM ₁₀₀
1998 HW ₁₀₁	15.0	0.15	19990810	151.20312	180.70829	31.62883	6.49332	0.0542724	2.2153609	57	4	1976–1999	0.61	M-v	3	Williams	35708	1998 HW ₁₀₁
1998 HM ₁₀₂	15.4	0.15	19980527	25.54153	331.65309	232.61276	12.88809	0.1282206	2.6249666	20	1	29 days	0.66		D	Nakano		1998 HM ₁₀₂
1998 HF ₁₀₃	15.4	0.15	19990810	179.64492	112.23249	44.57839	2.57647	0.1724911	2.3906720	24	4	1977–1999	0.86	M-v	2	Williams	32021	1998 HF ₁₀₃
1998 HT ₁₀₇	15.0	0.15	19990810	76.97881	201.26545	72.02824	6.78427	0.0532599	2.2735359	42	3	1996–1999	0.63	M-v	3	Williams	35708	1998 HT ₁₀₇
1998 HH ₁₁₄	14.4	0.15	19990810	78.74781	140.94866	132.73184	6.77817	0.0959628	2.3395706	48	3	1991–1999	0.67	M-v	3	Williams	32329	1998 HH ₁₁₄
1998 HB ₁₁₅	13.0	0.15	19990810	186.01673	345.66823	140.84404	14.71342	0.0906347	2.6253603	45	4	1989–1999	0.57	M-v	3	Williams	35440	1998 HB ₁₁₅
1998 HO ₁₁₆	14.1	0.15	19990810	188.81402	304.82658	185.44205	13.46150	0.0826927	2.5610308	46	2	1998–1999	0.64	M-v	4	Williams	35335	1998 HO ₁₁₆
1998 HO ₁₁₇	14.4	0.15	19990810	342.33154	282.88542	93.74574	7.21324	0.1789177	2.2785992	27	3	1992–1999	0.71	M-v	4	Williams	32022	1998 HO ₁₁₇
1998 HW ₁₁₈	13.9	0.15	19990810	11.39542	188.26977	131.58175	11.91109	0.2138688	2.9713044	33	3	1992–1999	0.80	M-v	3	Williams	35708	1998 HW ₁₁₈
1998 HW ₁₁₉	14.8	0.15	19990810	185.20313	19.12463	130.84883	7.31340	0.0684932	2.3990295	61	2	1998–1999	0.59	M-v	4	Williams	35626	1998 HW ₁₁₉
1998 HL ₁₂₀	13.4	0.15	19990810	113.09649	82.78356	133.60507	13.84166	0.1407065	2.5617830	60	4	1977–1999	0.63	M-v	1	Williams	32330	1998 HL ₁₂₀
1998 HF ₁₂₁	14.4	0.15	19990810	135.33930	91.66495	122.46296	6.45784	0.0692537	2.3211844	39	3	1987–1999	0.82	M-v	3	Williams	32272	1998 HF ₁₂₁
1998 HG ₁₂₁	14.1	0.15	19990810	16.39910	207.52992	135.05582	6.14516	0.1465269	2.3975731	54	5	1984–1999	0.61	M-v	1	Williams	32330	1998 HG ₁₂₁
1998 HM ₁₂₁	14.4	0.15	19990810	43.44868	167.18244	121.75068	5.77233	0.0847303	2.7326485	51	3	1997–1999	0.64	M-v	3	Williams	32330	1998 HM ₁₂₁
1998 HC ₁₂₂	12.8	0.15	19990810	27.80794	159.71707	128.22199	11.24889	0.0682211	2.9794329	51	4	1992–1999	0.49	M-v	1	Williams	35336	1998 HC ₁₂₂
1998 HF ₁₂₂	13.3	0.15	19990810	76.68433	80.09913	149.59283	13.15072	0.1477993	3.1185802	56	2	1998–1999	0.55	M-v	3	Williams	35708	1998 HF ₁₂₂
1998 HH ₁₂₃	13.5	0.15	19990810	307.95427	207.39747	181.59829	11.82193	0.0848638	2.6009293	44	3	1995–1999	0.64	M-v	4	Williams	32330	1998 HH ₁₂₃
1998 HU ₁₂₃	13.4	0.15	19990810	246.28172	292.93225	142.33603	14.56724	0.1599863	2.5773108	39	3	1997–1999	0.63	M-v	3	Williams	35440	1998 HU ₁₂₃
1998 HK ₁₂₄	14.7	0.15	19990810	352.21285	250.57896	126.99803	6.20676	0.1192123	2.2147048	25	3	1984–1999	0.62	M-v	4	Williams	32330	1998 HK ₁₂₄
1998 HQ ₁₂₄	15.0	0.15	19990810	249.86584	341.57395	117.83041	5.74622	0.0564602	2.3391571	33	4	1990–1999	0.68	M-v	1	Williams	32023	1998 HQ ₁₂₄
1998 HW ₁₂₅	14.7	0.15	19990810	212.50178	16.97268	108.32959	7.86060	0.1621077	2.3365039	33	5	1991–1999	0.63	M-v	1	Williams	32522	1998 HW ₁₂₅
1998 HR ₁₃₆	15.5	0.15	19990810	91.00972	62.00549	174.08302	3.58148	0.1164892	2.4866369	35	4	1979–1999	0.76	M-v	2	Williams	32331	1998 HR ₁₃₆
1998 HV ₁₃₇	14.9	0.15	19990810	9.06220	334.32042	2.29301	6.81850	0.1251827	2.3516211	48	3	1994–1999	0.66	M-v	3	Williams	32331	1998 HV ₁₃₇
1998 HO ₁₄₅	15.2	0.15	19990810	136.44356	46.84799	144.13826	4.05212	0.0956588	2.5560266	35	3	1995–1999	0.74	M-v	4	Williams	32273	1998 HO ₁₄₅
1998 HP ₁₄₇	14.1	0.15	19990810	19.80108	199.16075	112.27660	7.49770	0.0188807	2.7540169	27	3	1994–1999	0.71	M-v	3	Williams	32025	1998 HP ₁₄₇
1998 HD ₁₄₈	13.7	0.15	19990810	277.00954	188.39831	234.65357	12.15209	0.1481859	2.5976319	56	3	1991–1999	0.57	M-v	3	Williams	35440	1998 HD ₁₄₈
1998 HV ₁₄₈	14.2	0.15	19990810	15.57810	289.18841	39.98976	3.07893	0.1816450	2.9892737	31	3	1994–1999	0.71	M-v	4	Williams	32026	1998 HV ₁₄₈
1998 HR ₁₄₉	15.5	0.15	19990810	103.72936	231.18221	9.65248	2.71996	0.0391622	2.5977218	41	4	1995–1999	0.65	M-v	1	Williams	35708	1998 HR ₁₄₉
1998 HT ₁₅₀	15.5	0.15	19990810	139.43846	94.21662	121.15024	4.46627	0.0443034	2.1900577	32	3	1973–1999	0.79	M-v	4	Williams	34020	1998 HT ₁₅₀
1998 JK	14.3	0.15	19990810	122.34060	132.25445	68.39618	3.23179	0.1448516	2.3980214	55	4	1976–1999	0.60	M-v	2	Williams	35708	1998 JK
1998 JR	14.7	0.15	19990810	14.31680	15.14353	297.11385	3.66062	0.1088594	2.8153277	45	4	1993–1999	0.56	M-v	1	Williams	35708	1998 JR
1998 JU	15.7	0.15	19990810	183.73676	146.77050	4.16226	2.05994	0.1330695	2.3101032	34	3	1994–1999	0.64	M-v	4	Marsden	32331	1998 JU
1998 JW	14.2	0.15	19990810	40.94895	66.98735	220.21922	11.69373	0.0839759	2.7188825	61	3	1995–1999	0.66	M-v	2	Williams	35440	1998 JW
1998 JL ₁	15.9	0.15	19990810	144.69368	183.10260	14.32096	2.64264	0.1293069	2.3830265	35	3	1994–1999	0.70	M-v	4	Williams	32755	1998 JL ₁
1998 JN ₁	14.5	0.15	19990810	190.26660	101.25724	40.58151	14.58997	0.1070368	2.4364804	35	3	1994–1999	0.59	M-v	3	Williams	35708	1998 JN ₁
1998 JO ₁	13.3	0.15	19990810	27.14752	228.92464	59.82379	2.10426	0.1326111	3.2383731	65	4	1982–1999	0.58	M-v	2	Williams	35440	1998 JO ₁
1998 JV ₁	13.1	0.15	19990810	60.24313	127.12083	122.43446	7.39207	0.0893219	3.1683473	70	3	1997–1999	0.64	M-v	3	Williams	35440	1998 JV ₁
1998 JE ₂	15.0	0.15	19990810	152.33225	50.59649	140.32529	3.11227	0.1331121	2.4124213	55	4	1991–1999	0.55	M-v	3	Williams	35708	1998 JE ₂
1998 JO ₂	14.8	0.15	19990810	181.96456	87.59133	81.24654	9.62007	0.0638619	2.2884828	51	3	1996–1999	0.54	M-v	3	Williams	32331	1998 JO ₂
1998 JX ₂	13.4	0.15	19990810	16.42978	144.89529	166.31580	10.25216	0.0883189	2.9879123	53	4	1992–1999	0.71	M-v	1	Williams	32331	1998 JX ₂
1998 JH ₃	13.6	0.15	19990810	321.83441	295.01623	92.12822	10.01286	0.1331240	2.5235143	26	3	1987–1999	0.63	M-v	4	Williams	32029	1998 JH ₃
1998 JB ₄	13.8	0.15	19990810	96.39077	26.20322	212.05574	12.23989	0.1312977	2.7009280	51	4	1990–1999	0.62	M-v	2	Williams	32332	1998 JB ₄
1998 JC ₄	12.8	0.15	19990810	243.63755	217.01782	214.07274	8.95005	0.0847966	3.0626365	70	3	1992–1999	0.56	M-v	3	Williams	35708	1998 JC ₄
1998 JF ₄	14.9	0.15	19990810	184.43223	24.39435	111.08490	4.33747	0.1535059	2.6181719	38	2	1998–1999	0.49	M-v	4	Williams	35626	1998 JF ₄
1998 KX	15.0	0.15	19990810	178.50467	51.35568	115.08437	7.53585	0.1143274	2.5459122	30	2	1998–1999	0.53	M-v	4	Marsden	35626	1998 KX
1998 KJ ₁	15.2	0.15	19990810	109.17864	351.14959	236.14278	1.09913	0.1522982	2.6108460	46	3	1995–1999	0.60	M-v	4	Williams	32332	1998 KJ ₁
1998 KU ₂	16.6	0.15	19990810	99.83749	119.14143	206.66938	4.88905	0.5538595	2.2506007	380	1	237 days	0.54	M-v	3	Williams	33558	1998 KU ₂
1998 KW ₃	13.5	0.15	19990810	71.13660	63.68254	180.80879	5.37619	0.1081308	3.1316479	64	3	1994–1999	0.62	M-v	3	Williams	35708	1998 KW ₃
1998 KC ₄	12.6	0.15	19990810	38.17119	219.66789	65.15889	10.43553	0.0520892	3.0649020	42	4	1979–1999	0.53	M-v	1	Williams	32276	1998 KC ₄
1998 KC ₅	13.0	0.15	19990810	319.76767	243.27347	137.74793	2.74616	0.1268242	2.9310864	80	6	1974–1999	0.55	M-v	3	Williams	35708	1998 KC ₅

1998 KO ₆	12.6	0.15	19990810	75.22248	166.25182	78.46775	11.15184	0.0178872	3.0101831	52	4	1976–1999	0.57	M-v	1	Williams	35440	1998 KO ₆
1998 KS ₆	15.6	0.15	19990810	197.16808	49.45444	101.35567	4.29158	0.1190868	2.3272101	28	4	1995–1999	0.79	M-v	1	Williams	35708	1998 KS ₆
1998 KV ₇	13.9	0.15	19990810	43.40437	135.86374	149.84605	2.91853	0.0477042	2.9634584	45	3	1992–1999	0.75	M-v	4	Williams	32333	1998 KV ₇
1998 KW ₇	12.7	0.15	19990810	165.79731	290.72286	220.81299	8.97923	0.0469317	3.0327731	64	3	1995–1999	0.59	M-v	3	Williams	35708	1998 KW ₇
1998 KZ ₈	13.1	0.15	19990810	287.17626	321.95938	96.53596	15.90914	0.0706930	2.5503766	32	3	1975–1999	0.48	M-v	3	Williams	32333	1998 KZ ₈
1998 KA ₁₀	14.3	0.15	19990810	332.32279	247.54770	141.39887	4.73980	0.1666380	2.2847545	53	4	1985–1999	0.76	M-v	2	Williams	32755	1998 KA ₁₀
1998 KN ₁₀	15.7	0.15	19990810	354.18134	154.24393	193.81562	14.32013	0.0557628	2.6651327	25	4	1973–1999	0.64	M-v	2	Williams	32032	1998 KN ₁₀
1998 KE ₃₀	14.1	0.15	19990810	31.59846	59.61464	250.43232	6.19969	0.0691302	2.7552688	42	3	1981–1999	0.54	M-v	2	Williams	35440	1998 KE ₃₀
1998 KL ₃₁	13.3	0.15	19990810	90.56111	169.46294	81.74517	14.48187	0.1265007	2.6747281	54	4	1989–1999	0.77	M-v	2	Williams	32522	1998 KL ₃₁
1998 KQ ₃₁	15.1	0.15	19990810	325.52672	194.94415	202.63090	5.76198	0.1017104	2.3776437	39	4	1994–1999	0.53	M-v	2	Williams	32755	1998 KQ ₃₁
1998 KN ₃₂	14.5	0.15	19990810	220.98674	56.05020	64.05981	3.21712	0.1680631	2.3700024	38	4	1994–1999	0.73	M-v	2	Williams	35708	1998 KN ₃₂
1998 KQ ₃₂	16.7	0.15	19980527	44.99135	339.46295	199.76235	3.10912	0.1809312	2.1569232	10	1	26 days	0.76		D	Nakano		1998 KQ ₃₂
1998 KL ₃₅	14.8	0.15	19990810	290.86993	4.01249	70.34082	5.98474	0.1129169	2.2812903	27	3	1982–1999	0.61	M-v	4	Williams	32279	1998 KL ₃₅
1998 KM ₃₅	14.3	0.15	19990810	73.71714	202.72672	64.13265	16.35396	0.2422870	2.8918972	30	3	1993–1999	0.64	M-v	3	Williams	32279	1998 KM ₃₅
1998 KT ₃₆	14.8	0.15	19990810	153.34438	315.00230	256.64147	3.69482	0.1041833	2.2711697	25	3	1996–1999	0.66	M-v	4	Williams	35708	1998 KT ₃₆
1998 KL ₃₇	14.3	0.15	19990810	279.42656	239.12016	206.46402	5.91856	0.0703578	2.2905756	39	3	1992–1999	0.61	M-v	3	Williams	35440	1998 KL ₃₇
1998 KX ₃₇	14.2	0.15	19990810	83.41728	168.79445	89.28344	9.25966	0.1459845	2.7707417	34	3	1995–1999	0.60	M-v	3	Williams	32280	1998 KX ₃₇
1998 KG ₃₈	13.5	0.15	19990810	351.91791	182.81308	173.71238	2.87949	0.0999702	2.7900935	61	3	1985–1999	0.66	M-v	3	Williams	35708	1998 KG ₃₈
1998 KS ₃₉	13.8	0.15	19990810	253.31649	279.07432	162.84725	2.33627	0.0333698	2.8333930	40	4	1996–1999	0.79	M-v	2	Williams	32334	1998 KS ₃₉
1998 KR ₄₂	14.1	0.15	19990810	151.95542	350.06774	190.18500	12.95958	0.0996149	2.7242612	47	3	1977–1999	0.83	M-v	3	Williams	32334	1998 KR ₄₂
1998 KD ₄₆	12.5	0.15	19990810	72.38973	123.52942	105.84044	8.21074	0.0730363	3.9622327	42	4	1995–1999	0.59	M-v	2	Williams	35337	1998 KD ₄₆
1998 KO ₄₆	14.3	0.15	19990810	95.97718	133.76500	124.00068	5.58443	0.0547130	2.6055273	34	5	1991–1999	0.72	M-v	2	Williams	35709	1998 KO ₄₆
1998 KU ₄₆	14.7	0.15	19990810	250.81434	275.55902	215.53665	5.03185	0.0272797	2.1796374	26	4	1979–1999	0.89	M-v	2	Williams	32485	1998 KU ₄₆
1998 KW ₄₆	12.6	0.15	19990810	20.02136	74.28524	245.14288	11.53274	0.0833930	3.1004565	48	3	1978–1999	0.56	M-v	3	Williams	35709	1998 KW ₄₆
1998 KZ ₄₆	13.0	0.15	19990810	326.81076	136.80229	258.77190	13.97423	0.1173618	2.6034341	39	3	1991–1999	0.74	M-v	3	Williams	35709	1998 KZ ₄₆
1998 KS ₄₇	14.4	0.15	19990810	167.83568	27.98296	148.11605	4.52111	0.0759269	2.6551613	31	5	1980–1999	0.80	M-v	2	Williams	32522	1998 KS ₄₇
1998 KV ₄₇	14.1	0.15	19990810	266.40433	238.75429	218.97952	5.05134	0.1009543	2.3857128	45	3	1977–1999	0.78	M-v	3	Williams	35440	1998 KV ₄₇
1998 KX ₄₇	14.2	0.15	19990810	171.90137	123.48863	71.29881	8.66097	0.0538337	2.3638918	26	3	1981–1999	0.86	M-v	4	Williams	32485	1998 KX ₄₇
1998 KJ ₄₈	14.0	0.15	19990810	30.86393	155.21317	161.12977	5.06583	0.1592585	3.0938480	34	4	1992–1999	0.72	M-v	1	Williams	35709	1998 KJ ₄₈
1998 KF ₄₉	14.3	0.15	19990810	133.54967	80.73732	116.82870	7.19062	0.0797941	2.7108516	56	3	1994–1999	0.78	M-v	4	Williams	32335	1998 KF ₄₉
1998 KB ₅₁	13.9	0.15	19990810	112.19356	60.20316	179.00762	8.51661	0.1067171	2.5180761	51	6	1982–1999	0.51	M-v	3	Williams	32335	1998 KB ₅₁
1998 KD ₅₁	12.8	0.15	19990810	98.42345	111.12880	130.33454	8.78138	0.1474553	2.7143838	49	4	1966–1999	0.50	M-v	2	Williams	32335	1998 KD ₅₁
1998 KQ ₅₁	13.0	0.15	19990810	242.92296	277.78179	163.82868	11.16278	0.0892311	2.9842112	62	4	1994–1999	0.71	M-v	1	Williams	32335	1998 KQ ₅₁
1998 KU ₅₁	13.6	0.15	19990810	31.72004	168.37893	134.06747	11.71387	0.0980907	3.0188968	45	3	1993–1999	0.62	M-v	2	Williams	35709	1998 KU ₅₁
1998 KA ₅₄	13.5	0.15	19990810	174.73798	323.05391	210.83929	13.89750	0.0560364	2.5600172	29	2	1998–1999	0.59	M-v	4	Williams	35627	1998 KA ₅₄
1998 KK ₅₄	13.4	0.15	19990810	198.96941	19.09059	112.45259	14.54838	0.0752867	2.8474856	38	4	1992–1999	0.76	M-v	1	Williams	35709	1998 KK ₅₄
1998 KP ₅₄	13.8	0.15	19990810	28.95406	232.98121	97.67187	13.86959	0.1530663	2.7773192	30	3	1990–1999	0.56	M-v	2	Williams	34920	1998 KP ₅₄
1998 KR ₅₄	14.1	0.15	19990810	341.49316	288.42952	104.47528	14.03918	0.1212060	2.3980108	30	3	1982–1999	0.88	M-v	3	Williams	32336	1998 KR ₅₄
1998 KY ₅₄	13.9	0.15	19990810	140.18612	98.84397	99.25020	19.20349	0.1087361	2.6911299	29	3	1996–1999	0.63	M-v	3	Williams	32283	1998 KY ₅₄
1998 KZ ₅₄	13.3	0.15	19990810	50.35159	112.29476	178.50501	10.59588	0.1148951	3.0394653	50	3	1997–1999	0.54	M-v	3	Williams	32283	1998 KZ ₅₄
1998 KA ₅₅	13.0	0.15	19990810	9.91950	199.08780	135.05008	10.67676	0.0775246	2.9965900	42	3	1992–1999	0.40	M-v	2	Williams	35440	1998 KA ₅₅
1998 KB ₅₅	13.7	0.15	19990810	351.89431	207.27461	165.14034	8.97785	0.1411416	2.6942296	38	4	1985–1999	0.70	M-v	2	Williams	32283	1998 KB ₅₅
1998 KL ₅₅	13.3	0.15	19990810	45.84261	91.26536	201.52110	9.11967	0.0687119	3.0592307	54	5	1992–1999	0.58	M-v	1	Williams	35627	1998 KL ₅₅
1998 KR ₅₅	14.5	0.15	19990810	67.66910	114.11760	160.25515	9.22787	0.0396823	2.9730849	40	4	1988–1999	0.68	M-v	2	Williams	34920	1998 KR ₅₅
1998 KU ₅₅	13.5	0.15	19990810	330.81468	264.07091	138.37905	8.12389	0.1732583	2.5591650	43	4	1983–1999	0.75	M-v	3	Williams	32284	1998 KU ₅₅
1998 KX ₆₀	13.0	0.15	19990810	224.35868	355.01315	104.58187	11.96451	0.0631338	2.9931993	32	2	1998–1999	0.60	M-v	4	Williams	35337	1998 KX ₆₀
1998 LU	14.0	0.15	19990810	123.36764	339.03327	250.28778	3.87092	0.0660970	2.5620290	41	4	1990–1999	0.66	M-v	1	Williams	35440	1998 LU
1998 LB ₃	13.9	0.15	19990810	314.28248	217.48047	197.08731	9.32606	0.1107787	2.6962973	24	4	1977–1999	0.56	M-v	2	Williams	35709	1998 LB ₃
1998 MY ₁	14.5	0.15	19990810	207.74961	261.44331	231.62304	11.34358	0.1157897	2.6452402	42	3	1991–1999	0.47	M-v	2	Marsden	35709	1998 MY ₁
1998 MK ₄	11.8	0.15	19990810	89.98176	99.60864	157.70358	22.91149	0.1326900	3.1189073	29	6	1931–1999	0.75	M-v	1	Williams	32755	1998 MK ₄
1998 ML ₄	13.1	0.15	19990810	4.32063	176.53231	143.29658	24.50932	0.0955796	3.2388408	57	2	1998–1999	0.62	M-v	3	Williams	35338	1998 ML ₄
1998 MN ₄	14.2	0.15	19990810	150.38055	51.38978	138.36874	20.72234	0.1598922	2.8445731	34	4	1992–1999	0.84	M-v	1	Williams	35709	1998 MN ₄
1998 MQ ₁₁	10.5	0.15	19990810	332.13270	201.95864	137.53715	30.82513	0.1124443	5.2764005	52	2	1998–1999	0.70	M-v	3	Williams	35339	1998 MQ ₁₁

1998 MG ₃₈	14.5	0.15	19990810	115.61629	331.92614	246.33848	12.64582	0.2187062	2.6018354	40	3	1989–1999	0.67	M-v	3	Williams	32288	1998 MG ₃₈
1998 MC ₄₅	13.4	0.15	19990810	343.32220	186.59638	208.48096	13.30672	0.1639532	2.6097749	28	4	1986–1999	0.58	M-v	1	Williams	32688	1998 MC ₄₅
1998 OH ₆	12.6	0.15	19990810	212.98471	353.76721	165.96364	6.27875	0.0991557	3.1640279	58	5	1985–1999	0.78	M-v	2	Williams	35709	1998 OH ₆
1998 OH ₁₂	13.7	0.15	19990810	47.74639	239.03948	100.77740	11.69790	0.1148508	3.0068265	36	5	1977–1999	0.56	M-v	1	Williams	34922	1998 OH ₁₂
1998 OM ₁₂	11.7	0.15	19990810	346.23402	324.42394	27.37511	7.48770	0.0379662	5.3296183	51	2	1998–1999	0.55	M-v	3	Williams	35709	1998 OM ₁₂
1998 PH	13.3	0.15	19990810	302.37509	203.04945	278.42848	13.90236	0.1935924	2.6455361	45	3	1995–1999	0.49	M-v	3	Williams	35709	1998 PH
1998 PO ₁	13.1	0.15	19990810	307.92057	146.20571	275.46964	13.61072	0.0635570	2.5809927	37	2	1998–1999	0.50	M-v	3	Williams	35709	1998 PO ₁
1998 QO ₄	13.5	0.15	19990810	32.81146	67.84788	301.55596	13.19790	0.0341512	3.1810104	57	3	1995–1999	0.59	M-v	2	Williams	35628	1998 QO ₄
1998 QN ₇	12.2	0.15	19990810	52.87071	349.55462	324.22322	17.04226	0.1086831	3.4077812	24	3	1996–1999	0.75	M-v	3	Williams	35441	1998 QN ₇
1998 QJ ₈	12.9	0.15	19990810	338.84456	276.80062	140.48721	14.74959	0.1764247	3.1757056	31	7	1950–1999	0.61	M-v	1	Williams	35709	1998 QJ ₈
1998 QH ₅₁	14.7	0.15	19990810	120.47562	8.09564	295.37739	0.38366	0.1897316	2.4005267	43	4	1991–1998	0.71	M-v	1	Williams	35711	1998 QH ₅₁
1998 QH ₅₁	13.2	0.15	19990810	66.71074	165.46732	189.83210	3.63628	0.1108997	2.7934268	39	3	1997–1999	0.74	M-v	3	Marsden	35711	1998 QH ₅₁
1998 QR ₅₂	18.6	0.15	19990810	145.13222	204.18675	316.32519	17.63634	0.2879288	1.0437825	172	2	1998–1999	0.53	M-v	3	Williams	35711	1998 QR ₅₂
1998 QS ₅₂	14.3	0.15	19990810	51.54919	242.10575	261.33106	17.70116	0.8587837	2.1994922	344	3	1983–1999	0.57	M-v	2	Williams	35711	1998 QS ₅₂
1998 QE ₇₃	12.8	0.15	19990810	99.10061	10.00932	294.65376	8.73533	0.0637071	3.0052720	48	4	1962–1999	0.62	M-v	3	Williams	35712	1998 QE ₇₃
1998 QY ₉₁	14.9	0.15	19990810	77.58533	347.88897	50.41910	3.47679	0.2393162	2.3121249	39	4	1991–1999	0.79	M-v	2	Williams	35712	1998 QY ₉₁
1998 QC ₉₈	13.8	0.15	19990810	43.28682	256.80678	152.98169	10.14713	0.1157116	2.4782003	60	5	1990–1998	0.74	M-v	2	Williams	35713	1998 QC ₉₈
1998 RM	13.4	0.15	19990810	283.34233	270.89939	207.24393	16.60454	0.0891976	2.8057829	42	2	1998–1999	0.46	M-v	4	Williams	35713	1998 RM
1998 RF ₁	15.6	0.15	19990810	89.38323	23.25393	330.04792	5.97073	0.2254293	2.3475320	51	1	77 days	0.58	M-v	4	Williams	35713	1998 RF ₁
1998 RO ₁	17.9	0.15	19990810	233.97220	151.04506	351.95083	22.67929	0.7200570	0.9906716	99	2	1998–1999	0.60	M-v	5	Williams	35632	1998 RO ₁
1998 RO ₂₀	15.6	0.15	19990810	139.62902	129.67225	164.86580	3.54213	0.1939323	2.1881337	40	3	1994–1998	0.58	M-v	2	Williams	35714	1998 RO ₂₀
1998 RO ₂₂	15.2	0.15	19990810	323.69978	305.48107	172.20098	3.90552	0.0716620	2.3316428	40	3	1995–1998	0.80	M-v	3	Williams	35714	1998 RO ₂₂
1998 RU ₂₂	13.6	0.15	19990810	23.68779	343.48292	25.58680	2.98712	0.2386186	3.9937329	25	1	85 days	0.96	M-v	5 D	Williams		1998 RU ₂₂
1998 RR ₂₉	15.7	0.15	19990810	51.71733	243.42437	137.86304	4.25876	0.1328109	2.6027047	20	3	1992–1998	0.69	M-v	4	Williams	35714	1998 RR ₂₉
1998 RD ₄₉	16.4	0.15	19990810	116.10868	136.02913	184.58689	2.32534	0.1568431	2.3361323	40	3	1991–1998	0.68	M-v	4	Williams	35714	1998 RD ₄₉
1998 RK ₅₇	14.4	0.15	19990810	138.81190	128.26292	154.32705	2.60866	0.1967025	2.4266067	54	3	1994–1998	0.81	M-v	2	Williams	35715	1998 RK ₅₇
1998 RA ₆₀	13.4	0.15	19990810	284.83014	159.52820	344.10604	9.22041	0.0185759	2.9557995	38	3	1993–1998	0.58	M-v	3	Williams	35715	1998 RA ₆₀
1998 SD ₂	11.9	0.15	19990810	175.53884	332.82378	188.00378	17.91680	0.1004814	3.2155041	74	7	1982–1999	0.65	M-v	1	Williams	35716	1998 SD ₂
1998 SK ₂	13.9	0.15	19990810	66.78594	317.47457	30.74065	1.40835	0.2242522	3.1545474	75	3	1995–1998	0.44	M-v	3	Williams	35633	1998 SK ₂
1998 SD ₁₅	18.9	0.15	19990810	97.77014	35.77890	184.01048	26.79640	0.3449366	0.9325087	126	2	1998–1999	0.71	M-v	4	Williams	35633	1998 SD ₁₅
1998 SH ₂₅	13.0	0.15	19990810	166.35219	207.99575	71.88548	6.33505	0.0210633	2.7412577	66	3	1997–1999	0.63	M-v	3	Marsden	34303	1998 SH ₂₅
1998 SY ₂₅	13.9	0.15	19990810	69.91883	340.91954	33.33734	6.06334	0.0969445	2.6898458	38	3	1976–1998	0.56	M-v	3	Williams	35717	1998 SY ₂₅
1998 SP ₄₂	14.8	0.15	19990810	39.53072	71.57903	351.33807	2.09328	0.1209667	2.3151620	64	4	1989–1998	0.63	M-v	2	Williams	35717	1998 SP ₄₂
1998 SX ₆₀	14.2	0.15	19990810	43.92520	11.16083	14.58739	10.73608	0.1172469	2.9695780	45	3	1993–1998	0.75	M-v	3	Williams	35718	1998 SX ₆₀
1998 SR ₆₂	15.0	0.15	19990810	120.97882	309.64077	41.32786	2.26122	0.2729741	2.3168371	31	3	1996–1998	0.78	M-v	2	Williams	35718	1998 SR ₆₂
1998 ST ₇₂	14.0	0.15	19990810	39.45037	312.63620	95.59057	3.17114	0.0874734	2.9491265	25	3	1995–1998	0.79	M-v	4	Williams	35634	1998 ST ₇₂
1998 SV ₁₀₅	14.5	0.15	19990810	351.18770	12.43733	104.15296	2.24625	0.1351104	2.4146098	28	3	1993–1998	0.66	M-v	4	Williams	35719	1998 SV ₁₀₅
1998 SO ₁₃₄	15.4	0.15	19990810	34.99033	260.79724	183.55599	5.23077	0.1195896	2.2854927	28	3	1991–1998	0.98	M-v	3	Williams	35719	1998 SO ₁₃₄
1998 SJ ₁₄₁	12.7	0.15	19990810	280.23765	156.52823	23.21693	13.51247	0.1077995	2.6782996	54	6	1950–1999	0.66	M-v	1	Williams	34305	1998 SJ ₁₄₁
1998 SW ₁₄₄	12.2	0.15	19981014	46.81376	297.98848	23.72393	3.02104	0.2088795	3.9722065	19	1	51 days	0.97		D	Williams		1998 SW ₁₄₄
1998 TG ₁₆	11.8	0.15	19990810	358.72982	227.35538	204.52829	11.79315	0.0937940	5.2720904	41	6	1951–1998	0.87	M-v	1	Williams	35635	1998 TG ₁₆
1998 TY ₂₀	14.2	0.15	19990810	16.87630	144.81237	295.19625	0.79473	0.0704014	2.8777024	33	3	1993–1998	0.68	M-v	4	Williams	35721	1998 TY ₂₀
1998 TG ₃₀	15.8	0.15	19990810	90.16192	352.33612	31.04384	1.60707	0.2066398	2.3049237	60	3	1991–1999	0.59	M-v	2	Williams	35721	1998 TG ₃₀
1998 UF	15.9	0.15	19990810	169.95386	353.41568	319.99059	22.06531	0.0696170	1.8618915	27	2	1997–1998	0.76	M-v	4	Williams	35721	1998 UF
1998 UP ₁₇	15.7	0.15	19981014	57.84853	309.91557	5.40816	3.73649	0.0513884	2.2310578	12	1	4 days	0.29		D	Nakano		1998 UP ₁₇
1998 UA ₂₃	14.7	0.15	19990810	3.64019	82.06003	56.86764	2.93064	0.1542548	2.3914081	39	3	1992–1999	0.71	M-v	2	Williams	35636	1998 UA ₂₃
1998 UE ₂₄	14.9	0.15	19990810	77.07142	312.96793	79.60195	7.67414	0.0939698	2.3345481	28	4	1991–1998	0.69	M-v	3	Williams	35723	1998 UE ₂₄
1998 UA ₃₁	15.7	0.15	19981014	72.70985	202.10213	90.07085	24.25487	0.2022973	2.4203332	12	1	53 days	0.84			Williams		1998 UA ₃₁
1998 UF ₃₁	11.7	0.15	19981103	322.09039	40.96562	67.25861	7.89688	0.0985180	5.2458444	15	1	34 days	0.64		D	Williams		1998 UF ₃₁
1998 UL ₃₈	16.1	0.15	19981014	332.64168	345.25387	78.14774	3.75939	0.1685554	2.3940128	20	1	31 days	0.72		D	Williams		1998 UL ₃₈
1998 VR	18.5	0.15	19990810	169.19729	170.65756	46.48242	21.80206	0.3182592	0.8759755	212	1	48 days	0.70	M-v	6	Williams	33574	1998 VR
1998 VO ₃₃	17.0	0.15	19990810	229.28234	209.69870	64.47361	14.96218	0.8093737	1.2479623	145	1	68 days	0.56	M-v	6	Williams	35078	1998 VO ₃₃
1998 VN ₄₀	15.2	0.15	19990810	75.06816	294.79581	89.80983	3.18445	0.1214485	2.9502682	27	3	1993–1999	0.42	M-v	2	Williams	35725	1998 VN ₄₀

1998 VR ₄₃	16.8	0.15	19990810	86.68167	327.84236	106.13077	3.17578	0.1761897	2.3398748	18	1	63 days	0.31	M-v	5 D	Williams	1998 VR ₄₃
1998 WM	16.7	0.15	19990810	59.89017	172.42395	45.71449	22.51779	0.3154525	1.2246195	125	1	308 days	0.53	M-v	3	Williams	35725 1998 WM
1998 WR ₁₅	13.2	0.15	19990810	112.96291	195.67608	131.34104	5.54811	0.2036706	3.1801880	28	3	1986–1998	0.76	M-v	4	Williams	35726 1998 WR ₁₅
1998 WY ₁₇	15.4	0.15	19990810	58.28911	40.67283	40.92960	5.27593	0.1442974	2.3151818	24	1	119 days	0.66	M-v	4 D	Williams	1998 WY ₁₇
1998 XL ₄	14.3	0.15	19990810	49.84984	313.53843	77.39268	5.42421	0.2246042	2.6863631	30	1	111 days	0.62	M-v	4 D	Williams	1998 XL ₄
1998 XB ₁₄	14.5	0.15	19990810	110.78608	157.60419	191.92232	3.13509	0.1993593	2.7234458	24	4	1980–1998	0.57	M-v	1	Williams	35728 1998 XB ₁₄
1998 XS ₁₆	16.5	0.15	19990810	5.28655	358.16924	273.06889	26.54909	0.4965344	1.2123580	110	2	1998–1999	0.57	M-v	3	Marsden	35728 1998 XS ₁₆
1998 XD ₂₆	14.1	0.15	19990810	51.26508	98.17120	37.94735	8.55913	0.1077197	2.7866238	38	2	1997–1999	0.65	M-v	3	Williams	35640 1998 XD ₂₆
1998 XW ₄₉	13.8	0.15	19990102	307.15711	156.86161	5.17876	9.05752	0.0855053	2.7981032	18	1	36 days	0.68		D	Doppler	1998 XW ₄₉
1998 XZ ₄₉	14.4	0.15	19990102	58.33666	329.06228	62.02825	12.22198	0.1155567	2.8305417	16	1	36 days	0.84		D	Doppler	1998 XZ ₄₉
1998 XR ₅₁	14.3	0.15	19990102	113.63872	328.55885	15.27548	9.00218	0.0451151	3.0970429	15	1	36 days	0.92		D	Doppler	1998 XR ₅₁
1998 XB ₅₂	14.7	0.15	19990102	211.49140	284.34136	331.77807	12.94001	0.1116206	2.5806066	14	1	36 days	0.92		D	Doppler	1998 XB ₅₂
1998 XK ₆₃	15.1	0.15	19990810	134.15164	50.80071	293.30450	7.29257	0.2051752	2.2241911	28	2	1991–1998	0.75	M-v	4	Williams	35728 1998 XK ₆₃
1998 XS ₇₆	14.3	0.15	19990102	250.34526	321.44574	244.53101	3.24943	0.0412655	2.7207700	19	1	39 days	0.84		D	Doppler	1998 XS ₇₆
1998 XC ₉₆	12.8	0.15	19990810	242.09500	336.12174	315.79142	3.92526	0.1337757	3.1967911	28	4	1990–1999	0.76	M-v	2	Williams	35728 1998 XC ₉₆
1998 YN ₁	17.8	0.15	19990810	51.28926	147.36151	61.90316	6.29724	0.4648068	1.5561634	127	2	1998–1999	0.57	M-v	4	Williams	35729 1998 YN ₁
1998 YE ₃	14.3	0.15	19990810	26.62611	226.03093	283.69304	7.13342	0.1292105	2.3317623	45	2	1993–1999	0.61	M-v	4	Williams	34313 1998 YE ₃
1999 AC ₆	13.6	0.15	19990810	87.71708	271.16343	97.97171	17.20609	0.3177450	2.6209207	32	2	1995–1999	0.70	M-v	4	Williams	35730 1999 AC ₆
1999 AU ₉	14.9	0.15	19990810	166.42251	308.40025	76.28477	5.39295	0.1280911	2.1936810	38	4	1978–1999	0.60	M-v	2	Williams	35730 1999 AU ₉
1999 AO ₂₄	14.1	0.15	19990211	251.48819	306.93198	324.97523	4.82129	0.1184673	2.9906534	16	1	32 days	0.41		D	Nakano	1999 AO ₂₄
1999 AW ₂₄	14.8	0.15	19990211	340.17265	31.45993	145.21231	1.03440	0.1201714	3.1621920	13	1	29 days	0.61		D	Nakano	1999 AW ₂₄
1999 BW ₃	15.5	0.15	19990810	83.41093	330.57790	98.55358	26.19710	0.2822264	2.3247762	47	1	122 days	0.72	M-v	4	Williams	35731 1999 BW ₃
1999 BP ₅	14.9	0.15	19990810	74.71445	309.96519	182.08381	4.71542	0.1394057	2.3380322	39	3	1992–1999	0.62	M-v	3	Williams	35642 1999 BP ₅
1999 BT ₁₁	16.4	0.15	19990211	197.00026	164.29314	149.59477	1.20011	0.0614696	2.2483129	15	1	58 days	0.47		D	Williams	1999 BT ₁₁
1999 BN ₃₃	16.5	0.15	19990810	10.85293	119.42390	116.03225	39.99533	0.2188738	1.8254929	19	1	228 days	0.60	M-v	3	Williams	35443 1999 BN ₃₃
1999 CP ₃	14.6	0.15	19990810	12.46609	189.20795	0.21255	23.94698	0.2051512	2.3026677	33	1	86 days	0.68	M-v	4	Williams	34601 1999 CP ₃
1999 CU ₃	16.8	0.15	19990810	356.40670	305.46303	339.28207	11.39978	0.5240916	1.5765926	69	2	1999–1999	0.52	M-v	4	Williams	35732 1999 CU ₃
1999 CW ₈	18.5	0.15	19990810	31.65614	261.90136	317.37021	33.66682	0.5988944	2.2359154	77	1	201 days	0.63	M-v	3	Williams	35732 1999 CW ₈
1999 CF ₉	17.9	0.15	19990810	39.89295	89.49449	157.65316	5.54555	0.5986333	1.7732365	223	2	1999–1999	0.50	M-v	4	Williams	35732 1999 CF ₉
1999 CD ₂₈	12.7	0.15	19990810	268.45630	213.38797	60.49750	8.10467	0.1562781	3.1241790	30	3	1990–1999	0.77	M-v	4	Williams	35733 1999 CD ₂₈
1999 CV ₅₄	14.9	0.15	19990810	355.68356	155.31846	64.77473	3.45705	0.1391120	2.4075145	35	4	1977–1999	0.82	M-v	3	Williams	35733 1999 CV ₅₄
1999 CW ₆₅	14.6	0.15	19990810	135.47914	151.80762	242.44858	1.01261	0.0751422	2.8768808	44	4	1992–1999	0.65	M-v	2	Williams	35733 1999 CW ₆₅
1999 CQ ₈₅	16.0	0.15	19990810	73.32392	33.79407	71.67251	5.86142	0.1316390	2.2284119	29	3	1991–1999	0.84	M-v	4	Williams	35733 1999 CQ ₈₅
1999 CF ₁₀₄	14.4	0.15	19990810	68.18144	183.43413	280.31634	1.16475	0.1410843	2.9216181	39	3	1994–1999	0.51	M-v	2	Williams	35645 1999 CF ₁₀₄
1999 CR ₁₀₉	13.0	0.15	19990810	52.11437	180.75098	277.82056	7.01611	0.2124595	3.9777864	51	4	1980–1999	0.60	M-v	1	Williams	35734 1999 CR ₁₀₉
1999 CX ₁₀₉	16.7	0.15	19990211	9.49076	245.22849	247.84211	5.62556	0.0710763	2.2024215	15	1	15 days	0.98			Williams	1999 CX ₁₀₉
1999 CC ₁₄₇	15.4	0.15	19990211	276.25528	270.22577	341.94938	8.15913	0.0515629	3.1674905	16	1	41 days	0.32		D	Williams	1999 CC ₁₄₇
1999 CL ₁₅₄			19990122	311.12375	315.27216	255.00853	5.92418	0.2334192	2.3536429	6	1	2 days	0.66		E	Williams	1999 CL ₁₅₄
1999 CM ₁₅₅			19990122	343.03153	266.68294	255.50855	7.04904	0.1343274	3.0072580	6	1	2 days	0.39		E	Williams	1999 CM ₁₅₅
1999 DV ₁	14.2	0.15	19990810	351.41045	89.46623	97.42051	11.17440	0.0427893	2.7405603	30	3	1991–1999	0.78	M-v	4	Williams	35734 1999 DV ₁
1999 DJ ₄	18.2	0.15	19990810	46.43373	197.33777	20.13491	9.17938	0.4839299	1.8507061	115	1	189 days	0.61	M-v	4	Williams	35734 1999 DJ ₄
1999 DB ₇	19.9	0.15	19990810	103.66155	29.73713	157.69796	10.83827	0.1952906	1.2064652	77	1	187 days	0.67	M-v	4	Williams	35734 1999 DB ₇
1999 FV ₈	15.0	0.15	19990810	12.45680	177.85098	25.19553	1.52681	0.1317375	2.3939471	39	3	1993–1999	0.78	M-v	4	Williams	35734 1999 FV ₈
1999 FG ₁₈	12.4	0.15	19990323	296.62402	287.37910	316.39904	8.96217	0.1366928	3.1698825	15	1	5 days	0.68		D	Nakano	1999 FG ₁₈
1999 FP ₁₉	20.2	0.15	19990810	22.85765	273.59441	347.35157	15.08458	0.5187266	1.9431022	51	1	162 days	0.71	M-v	4	Williams	35735 1999 FP ₁₉
1999 FJ ₃₁	13.7	0.15	19990810	318.36010	247.86433	42.10883	12.00044	0.1944426	2.6846630	40	2	1996–1999	0.54	M-v	3	Williams	34952 1999 FJ ₃₁
1999 FW ₃₂	14.0	0.15	19990810	294.55732	329.49542	318.25659	4.74734	0.1057133	2.4648069	54	3	1987–1999	0.72	M-v	3	Williams	34561 1999 FW ₃₂
1999 FQ ₃₃	14.6	0.15	19990810	319.33981	246.56890	34.90159	5.15503	0.1423010	2.5350522	37	4	1991–1999	0.90	M-v	2	Williams	34952 1999 FQ ₃₃
1999 FV ₃₃	13.0	0.15	19990810	258.67821	167.95889	158.82827	11.85411	0.1030507	3.2295687	19	2	1993–1999	0.72	M-v	5	Williams	34953 1999 FV ₃₃
1999 FN ₅₃	18.4	0.15	19990810	34.69737	191.44380	50.70105	20.17131	0.4547707	1.7354720	114	1	171 days	0.54	M-v	4	Williams	35735 1999 FN ₅₃
1999 GK ₄	16.1	0.15	19990810	352.03987	146.61039	168.46813	5.28137	0.4920432	1.9609840	263	3	1955–1999	0.57	M-v	2	Williams	35735 1999 GK ₄
1999 GN ₄	14.7	0.15	19990810	159.04420	344.40129	90.94369	5.39973	0.0891712	2.2519310	35	2	1992–1999	0.86	M-v	5	Williams	34956 1999 GN ₄
1999 GQ ₅	14.3	0.15	19990810	292.99429	259.51918	33.42577	3.26750	0.0494524	2.6810759	23	2	1996–1999	0.75	M-v	5	Williams	34957 1999 GQ ₅

1999 GS ₅	15.4	0.15	19990810	81.16642	99.47169	34.88370	3.16291	0.1219104	2.4073052	26	2	1997–1999	0.68	M-v	4	Williams	34957	1999 GS ₅
1999 GE ₆	13.6	0.15	19990810	358.50024	146.89848	103.78205	8.97451	0.2401259	2.8977262	61	3	1995–1999	0.73	M-v	3	Williams	34957	1999 GE ₆
1999 GR ₇	15.7	0.15	19990810	19.85776	53.80250	159.69044	1.47485	0.1366197	2.3773497	29	1	83 days	1.02	M-v	6 D	Williams		1999 GR ₇
1999 GQ ₈	14.4	0.15	19990810	97.37020	0.49983	122.54862	4.20885	0.1568925	2.5452998	47	4	1960–1999	0.72	M-v	2	Williams	34958	1999 GQ ₈
1999 GR ₈	13.7	0.15	19990810	323.90773	157.53212	114.12467	4.26657	0.0375046	3.1451516	40	3	1995–1999	0.81	M-v	4	Williams	34958	1999 GR ₈
1999 GV ₈	13.1	0.15	19990810	223.79601	295.77598	81.34661	7.09394	0.1444566	2.7414872	50	5	1951–1999	0.78	M-v	2	Williams	34958	1999 GV ₈
1999 GY ₁₀	14.3	0.15	19990810	10.66384	161.29537	49.85062	2.01582	0.1429997	3.1851126	33	2	1996–1999	0.60	M-v	6	Williams	34960	1999 GY ₁₀
1999 GF ₁₆	13.4	0.15	19990810	157.08950	24.61429	31.85452	2.96854	0.0732086	3.1703933	53	3	1992–1999	0.70	M-v	5	Williams	34961	1999 GF ₁₆
1999 GD ₂₀	14.0	0.15	19990810	266.12388	176.22323	163.09416	6.70657	0.0965262	2.3787041	43	3	1989–1999	0.68	M-v	4	Williams	34965	1999 GD ₂₀
1999 GU ₃₀	14.5	0.15	19990810	114.21647	283.59909	177.27927	12.20164	0.1233401	2.6710551	28	2	1990–1999	0.81	M-v	5	Williams	34968	1999 GU ₃₀
1999 GQ ₃₁	15.2	0.15	19990810	99.90570	314.87372	164.65417	2.68840	0.1449535	2.4323390	36	4	1982–1999	0.68	M-v	1	Williams	34968	1999 GQ ₃₁
1999 GM ₃₂	15.1	0.15	19990810	333.87114	86.55670	198.59276	5.67586	0.1717147	2.2498521	43	3	1992–1999	0.62	M-v	3	Williams	34969	1999 GM ₃₂
1999 HX	14.7	0.15	19990810	339.67129	79.15389	227.52142	29.20569	0.3740216	2.7630873	84	1	143 days	0.56	M-v	3	Williams	35735	1999 HX
1999 HF ₁	14.5	0.15	19990810	256.99464	253.34073	155.96855	25.65879	0.4624944	0.8190956	553	1	136 days	0.50	M-v	4	Williams	35735	1999 HF ₁
1999 HY ₁	18.3	0.15	19990810	342.19551	89.85442	216.18217	34.22567	0.1306242	1.3863094	53	1	135 days	0.59	M-v	4	Williams	35735	1999 HY ₁
1999 HW ₂	15.8	0.15	19990810	9.75906	85.20521	180.75095	27.16415	0.4063284	2.6102173	123	1	148 days	0.55	M-v	3	Williams	35735	1999 HW ₂
1999 HX ₂	15.2	0.15	19990810	3.40195	148.90338	141.81788	16.45987	0.5543690	3.1771794	347	1	148 days	0.55	M-v	3	Marsden	35735	1999 HX ₂
1999 HY ₂	14.9	0.15	19990810	168.35302	229.63518	202.29002	11.96610	0.0593680	2.3691340	55	6	1955–1999	0.85	M-v	2	Williams	35449	1999 HY ₂
1999 HR ₁₀	14.9	0.15	19990810	181.46998	20.22561	34.94785	4.95321	0.0543884	2.3371786	45	2	1997–1999	0.79	M-v	4	Williams	34976	1999 HR ₁₀
1999 JB	16.8	0.15	19990810	359.63361	178.82359	165.40846	23.66493	0.5663601	1.4203615	80	1	132 days	0.54	M-v	4	Williams	35450	1999 JB
1999 JK ₂	15.6	0.15	19990810	76.80547	58.88255	92.25124	5.72393	0.0774606	2.3500016	36	3	1995–1999	0.77	M-v	3	Williams	34978	1999 JK ₂
1999 JD ₆	16.7	0.15	19990810	206.85475	309.11750	130.32549	17.04258	0.6329302	0.8825946	200	1	111 days	0.56	M-v	5	Williams	35736	1999 JD ₆
1999 JT ₆	16.2	0.15	19990810	72.84250	38.87272	79.06514	9.56589	0.5784559	2.1351079	141	1	193 days	0.60	M-v	4	Williams	35099	1999 JT ₆
1999 JU ₆	19.3	0.15	19990810	10.40732	68.94798	220.26645	22.45919	0.2004721	1.4691520	73	1	115 days	0.70	M-v	4	Williams	35736	1999 JU ₆
1999 JZ ₇	14.1	0.15	19990810	341.13381	217.98737	61.18446	19.59806	0.2442550	2.5648930	34	2	1995–1999	0.59	M-v	4	Williams	34982	1999 JZ ₇
1999 JD ₈	15.5	0.15	19990810	0.01478	59.72261	218.29287	25.00309	0.4623108	3.1491548	80	2	1994–1999	0.59	M-v	2	Williams	35736	1999 JD ₈
1999 JM ₈	15.2	0.15	19990810	3.72500	165.97271	134.13039	13.69299	0.6436756	2.7236138	349	3	1990–1999	0.58	M-v	0	Williams	35736	1999 JM ₈
1999 JO ₈	17.0	0.15	19990810	6.49891	204.74508	80.74264	24.66881	0.5700792	2.6535147	336	1	124 days	0.57	M-v	4	Marsden	35736	1999 JO ₈
1999 JD ₁₃	16.6	0.15	19990810	38.84935	53.72865	220.24906	5.67919	0.2663103	2.1920322	30	1	122 days	0.36	M-v	5	Williams		1999 JD ₁₃
1999 JN ₁₇	14.4	0.15	19990810	10.78003	79.12082	216.08882	4.27112	0.2080751	2.2360484	39	1	122 days	0.60	M-v	4	Williams	35736	1999 JN ₁₇
1999 JG ₂₉	15.1	0.15	19990810	28.89346	327.53484	221.59653	19.67222	0.4063655	3.5029935	99	1	109 days	0.59	M-v	3	Williams	35736	1999 JG ₂₉
1999 JJ ₃₅	16.4	0.15	19990522	34.54961	120.16139	70.32770	2.16087	0.0862721	2.1859804	12	1	9 days	0.91		D	Nakano		1999 JJ ₃₅
1999 JB ₅₀	13.5	0.15	19990810	106.20593	57.21733	76.93885	10.37296	0.1031498	2.7859662	46	3	1978–1999	0.58	M-v	3	Williams	35736	1999 JB ₅₀
1999 JD ₆₀	15.2	0.15	19990522	17.28923	140.39228	79.86574	2.22201	0.1171439	2.3316600	19	1	9 days	0.75		D	Nakano		1999 JD ₆₀
1999 JJ ₆₁	14.2	0.15	19990522	295.82624	261.12722	75.24171	12.63900	0.2519149	2.4346005	51	1	36 days	0.67			Williams		1999 JJ ₆₁
1999 JS ₆₃	14.5	0.15	19990522	23.26120	110.21737	110.91441	5.92512	0.0541150	2.7325534	39	1	36 days	0.90		D	Williams		1999 JS ₆₃
1999 JR ₆₄	13.9	0.15	19990522	142.47275	16.79955	83.76859	14.95411	0.0418363	2.4186842	30	1	36 days	0.62		D	Nakano		1999 JR ₆₄
1999 JB ₆₇	15.0	0.15	19990810	4.38369	116.84356	121.95274	5.56928	0.1068735	2.5426293	23	2	1989–1999	0.75	M-v	5	Williams	35016	1999 JB ₆₇
1999 JE ₆₇	15.0	0.15	19990810	1.42330	129.42909	117.92953	4.03726	0.1854935	2.5912466	43	3	1994–1999	0.81	M-v	4	Williams	35016	1999 JE ₆₇
1999 JB ₆₈	14.0	0.15	19990810	193.15514	276.61550	126.44391	6.11973	0.0033043	2.7406495	44	3	1991–1999	0.91	M-v	3	Williams	35017	1999 JB ₆₈
1999 JP ₇₀	15.2	0.15	19990810	67.62403	46.41172	129.46878	3.96560	0.0601781	2.3592797	34	4	1993–1999	0.77	M-v	2	Williams	35737	1999 JP ₇₀
1999 JA ₈₀	15.3	0.15	19990522	68.10600	75.93725	93.05978	7.85234	0.0484440	2.3480378	23	1	32 days	0.88		D	Nakano		1999 JA ₈₀
1999 JB ₈₁	13.0	0.15	19990810	340.74682	150.33474	136.03087	14.19542	0.0284438	2.8880653	36	1	87 days	0.71	M-v	4	Williams	35464	1999 JB ₈₁
1999 JH ₈₁	13.3	0.15	19990810	11.41240	47.42706	238.69831	12.93071	0.1386728	2.5977122	36	1	93 days	0.66	M-v	4	Williams	35464	1999 JH ₈₁
1999 JJ ₈₁	14.4	0.15	19990810	38.93845	38.70437	210.07777	5.44254	0.2368185	2.4117135	20	1	122 days	0.60	M-v	4	Williams		1999 JJ ₈₁
1999 JK ₈₁	13.4	0.15	19990810	9.84723	132.25625	160.51282	8.87203	0.2395040	2.8061191	58	2	1998–1999	0.61	M-v	3	Williams	35377	1999 JK ₈₁
1999 JL ₈₁	14.0	0.15	19990810	337.91733	111.84698	247.51471	10.57439	0.3395569	2.5527201	57	3	1979–1999	0.64	M-v	3	Williams	35377	1999 JL ₈₁
1999 JS ₈₁	14.3	0.15	19990810	241.97191	226.81303	138.75545	11.33061	0.2024767	2.4223806	38	2	1998–1999	0.82	M-v	5	Williams	35026	1999 JS ₈₁
1999 JS ₈₆	14.2	0.15	19990810	287.83434	158.64971	169.55743	6.59397	0.1265271	2.3678745	36	4	1978–1999	0.81	M-v	2	Williams	35030	1999 JS ₈₆
1999 JD ₉₁	14.2	0.15	19990810	224.96570	229.48804	164.64177	11.38060	0.2591070	2.3956915	24	3	1989–1999	0.73	M-v	4	Williams	35653	1999 JD ₉₁
1999 JB ₁₂₀	15.8	0.15	19990522	6.02441	44.49896	190.07436	3.27379	0.1706987	2.5424129	38	1	33 days	0.71			Williams		1999 JB ₁₂₀
1999 JL ₁₂₂	15.1	0.15	19990522	92.73507	111.02788	38.62779	3.29543	0.0408512	2.2081855	18	1	33 days	0.62		D	Nakano		1999 JL ₁₂₂
1999 JK ₁₂₃	16.4	0.15	19990522	0.79183	187.16238	57.78017	4.17664	0.1367592	2.1771520	23	1	33 days	0.91		D	Williams		1999 JK ₁₂₃

1999 JT ₁₂₆	14.3	0.15	19990810	284.69414	89.87155	248.46368	1.48173	0.0656671	2.8968575	17	2	1996–1999	0.72	M-v	4	Williams	35655	1999 JT ₁₂₆
1999 KF ₄	12.6	0.15	19990810	6.12390	54.09083	247.74271	23.45261	0.2866137	3.0917028	62	2	1972–1999	0.57	M-v	2	Williams	35737	1999 KF ₄
1999 KG ₄	14.2	0.15	19990810	10.38632	152.37570	146.26660	7.90573	0.2330253	2.3515763	67	3	1981–1999	0.67	M-v	2	Williams	35737	1999 KG ₄
1999 KU ₄	16.8	0.15	19990810	1.02563	222.92391	76.61663	8.44398	0.4037201	2.1942591	159	1	126 days	0.60	M-v	3	Williams	35737	1999 KU ₄
1999 KV ₄	16.8	0.15	19990810	66.89496	85.83537	50.74028	14.33261	0.3707783	1.5408594	35	1	107 days	0.64	M-v	5	Williams	35470	1999 KV ₄
1999 KS ₇	13.0	0.15	19990810	52.42253	20.69978	242.46114	11.30105	0.0502369	2.5528605	58	2	1998–1999	0.65	M-v	3	Williams	35737	1999 KS ₇
1999 KK ₁₄	15.9	0.15	19990611	358.60522	159.72027	95.98987	8.06991	0.0993670	2.4395220	16	1	28 days	0.74			D Nakano		1999 KK ₁₄
1999 KJ ₁₅	13.6	0.15	19990810	355.23031	173.66408	145.41137	18.99934	0.2373458	3.0997447	40	2	1998–1999	0.80	M-v	3	Williams	35385	1999 KJ ₁₅
1999 KM ₁₅	13.3	0.15	19990810	52.72651	5.26337	248.74140	11.03022	0.1173869	2.6056023	53	4	1985–1999	0.56	M-v	1	Williams	35385	1999 KM ₁₅
1999 LJ	13.8	0.15	19990810	29.43644	59.67453	200.74873	6.25373	0.1281966	2.4937948	34	3	1955–1999	0.58	M-v	4	Williams	35656	1999 LJ
1999 LN	13.9	0.15	19990810	352.60448	63.75184	249.09082	14.41711	0.2100866	2.7998693	37	1	86 days	0.47	M-v	4	Williams		1999 LN
1999 LP	14.4	0.15	19990810	16.07079	97.08182	120.05429	23.86054	0.2803760	2.3246792	40	1	168 days	0.65	M-v	3	Williams	35737	1999 LP
1999 LT	16.1	0.15	19990810	343.44030	118.35499	198.21132	24.11768	0.2098752	1.8219179	33	1	109 days	0.50	M-v	4	Williams	35737	1999 LT
1999 LV ₁	14.5	0.15	19990810	336.41796	142.23644	86.26248	25.76421	0.1246134	1.9235801	56	1	203 days	0.71	M-v	4	Williams	35737	1999 LV ₁
1999 LO ₄	15.7	0.15	19990810	16.08959	181.95961	98.31940	6.81429	0.2275271	2.3012728	38	1	94 days	0.54	M-v	4	Williams	35737	1999 LO ₄
1999 LY ₅	14.6	0.15	19990810	52.89552	329.70530	206.43532	29.27112	0.4661743	3.0539443	33	1	85 days	0.55	M-v	5	Williams	35737	1999 LY ₅
1999 LF ₆	18.0	0.15	19990810	340.53162	140.61580	208.64247	18.93127	0.2804204	1.4086906	147	1	109 days	0.53	M-v	4	Williams	35737	1999 LF ₆
1999 LH ₆	13.1	0.15	19990810	43.50854	342.24733	269.79971	5.05020	0.0725050	2.4002736	55	3	1980–1999	0.53	M-v	3	Williams	35656	1999 LH ₆
1999 LL ₇	15.6	0.15	19990810	330.77965	240.12454	105.81656	2.79102	0.2009920	2.1658549	84	1	89 days	0.55	M-v	4	Williams	35738	1999 LL ₇
1999 LM ₇	15.7	0.15	19990810	351.54892	199.25141	129.89530	7.93471	0.3196594	2.3875218	46	3	1988–1999	0.69	M-v	2	Williams	35386	1999 LM ₇
1999 LO ₇	14.6	0.15	19990810	335.59760	208.10225	140.99220	4.82761	0.2314913	2.2900374	55	2	1998–1999	0.76	M-v	4	Williams	35738	1999 LO ₇
1999 LU ₇	18.6	0.15	19990810	349.00873	146.77118	207.35970	10.73865	0.6280795	2.1023192	51	1	53 days	0.64	M-v	6	Marsden	35738	1999 LU ₇
1999 LX ₇	14.6	0.15	19990810	329.67008	44.64723	306.36592	8.51211	0.2629195	2.5771747	49	4	1991–1999	0.54	M-v	2	Williams	35738	1999 LX ₇
1999 LE ₁₀	13.8	0.15	19990810	205.41987	227.42558	196.09824	12.73645	0.1483851	2.7015414	39	2	1998–1999	0.65	M-v	4	Williams	35656	1999 LE ₁₀
1999 LK ₁₄	15.2	0.15	19990611	353.18244	106.08124	172.20649	4.85257	0.2445614	2.5388648	20	1	40 days	0.28			D Nakano		1999 LK ₁₄
1999 LN ₂₈	19.3	0.15	19990810	5.39906	186.50354	115.77854	9.18353	0.4658634	2.1425961	183	1	98 days	0.54	M-v	4	Williams	35738	1999 LN ₂₈
1999 LD ₃₀	20.6	0.15	19990810	6.52612	203.13586	87.94807	8.70032	0.6034937	2.9023071	50	1	95 days	0.60	M-v	4	Williams	35738	1999 LD ₃₀
1999 LD ₃₁	13.7	0.15	19990810	359.18914	102.21182	296.97481	160.19315	0.9024447	24.3675838	219	1	85 days	0.54	M-v	3	Williams	35738	1999 LD ₃₁
1999 LE ₃₁	12.4	0.15	19990810	9.58073	32.64875	292.01912	151.88171	0.4724727	8.1701953	91	1	107 days	0.58	M-v	4	Williams	35738	1999 LE ₃₁
1999 MB	15.3	0.15	19990810	305.71594	294.04964	71.70786	7.37580	0.1551657	2.2862600	23	1	82 days	0.64	M-v	5	Williams		1999 MB
1999 MK	15.6	0.15	19990810	358.06816	67.19217	245.53291	6.62035	0.1681548	2.2321183	25	2	1989–1999	0.60	M-v	4	Williams	35394	1999 MK
1999 ML	17.6	0.15	19990810	2.68557	110.95152	211.78180	2.50802	0.4540277	2.2661109	134	1	92 days	0.51	M-v	5	Williams	35738	1999 ML
1999 MO	14.9	0.15	19990810	28.87579	242.23119	18.58690	2.31712	0.1768708	2.4023005	59	1	116 days	0.47	M-v	4	Williams	35738	1999 MO
1999 MP	16.2	0.15	19990810	327.00028	260.51174	98.26586	10.55167	0.2821480	2.3362449	20	1	77 days	0.63	M-v	5	Williams		1999 MP
1999 MQ	16.0	0.15	19990810	322.81062	73.06376	282.00326	5.12805	0.1959478	2.2162708	38	2	1996–1999	0.48	M-v	4	Williams	35738	1999 MQ
1999 MR	15.8	0.15	19990810	354.81421	227.67403	80.74862	4.60436	0.2010683	2.6363775	29	1	82 days	0.64	M-v	4	Williams	35738	1999 MR
1999 MT	14.9	0.15	19990810	5.41845	57.44865	236.35942	1.64837	0.2279351	2.4189859	54	3	1973–1999	0.62	M-v	3	Williams	35394	1999 MT
1999 ME ₁	16.2	0.15	19990810	17.78087	76.18320	213.97367	6.11879	0.1077407	2.3306516	32	1	79 days	0.33	M-v	4	Williams		1999 ME ₁
1999 MK ₁	14.6	0.15	19990810	353.12776	21.17631	308.31264	14.28459	0.1263993	2.5629115	37	1	86 days	0.46	M-v	4	Williams		1999 MK ₁
1999 ML ₁	14.2	0.15	19990810	3.52272	11.18562	302.11349	12.89804	0.3112581	2.5807087	38	1	86 days	0.57	M-v	4	Williams		1999 ML ₁
1999 MN ₁	15.0	0.15	19990810	348.13083	346.81034	353.07189	2.72464	0.2217346	2.4132406	52	1	85 days	0.58	M-v	5	Williams	35738	1999 MN ₁
1999 MV ₁	16.5	0.15	19990810	348.92696	254.84394	89.86732	1.44222	0.3003357	2.1777289	47	1	86 days	0.50	M-v	4	Williams		1999 MV ₁
1999 MC ₂	16.8	0.15	19990810	5.19043	199.64921	116.94687	7.77767	0.2864440	2.2612892	18	1	83 days	0.66	M-v	5	Williams		1999 MC ₂
1999 NC	15.4	0.15	19990810	40.70671	115.59210	136.92509	6.30077	0.1312444	2.3019683	44	2	1997–1999	0.35	M-v	3	Williams	35738	1999 NC
1999 ND	13.2	0.15	19990810	352.14985	198.41274	107.13487	18.11236	0.0796361	2.8379114	43	3	1990–1999	0.65	M-v	3	Williams	35738	1999 ND
1999 NJ	17.7	0.15	19990810	2.34899	199.25563	104.46442	6.40365	0.2931919	2.3401077	23	1	65 days	0.47	M-v	4	Williams		1999 NJ
1999 NK	15.3	0.15	19990810	331.07307	41.32693	303.31809	9.47852	0.1842958	2.6414761	27	1	92 days	0.43	M-v	4	Williams	35738	1999 NK
1999 NP	17.2	0.15	19990721	23.90922	259.10296	4.28697	2.11270	0.1878673	2.4167906	23	1	59 days	0.36			Williams		1999 NP
1999 NT	13.8	0.15	19990810	344.21712	35.78256	302.82580	8.43829	0.1973660	2.3946354	62	2	1998–1999	0.68	M-v	3	Williams	35739	1999 NT
1999 NU	15.3	0.15	19990810	320.04737	81.68562	281.89907	6.15702	0.1402726	2.3036627	18	1	62 days	0.47	M-v	5	Williams		1999 NU
1999 NV	14.1	0.15	19990810	318.42548	265.17839	127.78320	16.69373	0.3702124	3.1061580	41	1	65 days	0.56	M-v	5	Williams		1999 NV
1999 NZ	15.5	0.15	19990810	305.87297	228.39760	153.32911	10.50599	0.1691484	2.3496369	24	1	66 days	0.67	M-v	5	Williams		1999 NZ
1999 NA ₁	13.2	0.15	19990810	292.64223	266.66518	130.46926	16.27007	0.1506713	2.7651812	41	1	61 days	0.53	M-v	5	Williams		1999 NA ₁

1999 NB ₁	15.6	0.15	19990810	22.07492	149.55615	134.87919	7.03185	0.1368784	2.3322447	33	1	61 days	0.56	M-v	5	Williams	1999 NB ₁
1999 NQ ₁	13.9	0.15	19990810	31.04252	97.04906	151.50217	26.16246	0.3017860	2.6753559	23	1	63 days	0.39	M-v	5	Williams	1999 NQ ₁
1999 NR ₁	15.4	0.15	19990810	49.46434	94.00877	153.94311	23.68060	0.1106598	1.9086394	23	1	63 days	0.38	M-v	5	Williams	1999 NR ₁
1999 NT ₁	13.8	0.15	19990810	334.73205	90.79733	282.39387	21.36310	0.3189670	2.3053840	36	1	113 days	0.41	M-v	3	Williams	35739 1999 NT ₁
1999 NW ₁	14.2	0.15	19990810	359.72993	23.43202	308.51885	24.55847	0.2328209	2.3482703	19	1	71 days	0.30	M-v	4	Williams	1999 NW ₁
1999 NK ₂	14.8	0.15	19990810	312.10762	159.73355	217.66149	13.26653	0.1654455	2.5487123	23	1	64 days	0.49	M-v	5	Williams	1999 NK ₂
1999 NM ₂	14.3	0.15	19990810	358.51186	106.59811	221.94706	10.64370	0.1881676	2.5454821	63	4	1987–1999	0.56	M-v	2	Williams	35396 1999 NM ₂
1999 NN ₂	14.3	0.15	19990810	324.19893	133.09313	261.00846	15.67253	0.2315737	3.1074020	23	1	59 days	0.49			Williams	1999 NN ₂
1999 NO ₂	16.2	0.15	19990810	9.34801	40.14458	276.66325	7.03210	0.1818714	2.2483031	24	1	66 days	0.50	M-v	5	Williams	1999 NO ₂
1999 NU ₃	13.9	0.15	19990810	3.89629	169.52311	131.87327	14.48853	0.1585443	2.6129023	28	2	1998–1999	0.64	M-v	3	Williams	35397 1999 NU ₃
1999 NB ₄	15.6	0.15	19990810	350.82760	68.97024	260.56290	4.99823	0.2095084	2.2667156	29	1	63 days	0.27	M-v	4	Williams	1999 NB ₄
1999 ND ₄	15.5	0.15	19990810	317.51428	322.39842	53.12903	0.23074	0.1981341	2.4164393	28	3	1977–1999	0.62	M-v	4	Williams	35658 1999 ND ₄
1999 NF ₄	16.1	0.15	19990810	17.48909	327.22502	322.30968	3.39641	0.2174040	2.5552708	32	1	56 days	0.44			Williams	1999 NF ₄
1999 NJ ₄	16.0	0.15	19990810	49.70810	137.30193	100.76338	3.81688	0.1971601	2.3471613	23	1	60 days	0.63	M-v	6	Williams	1999 NJ ₄
1999 NK ₄	15.4	0.15	19990721	343.48172	274.53721	53.30282	1.98042	0.2192479	3.2027689	19	1	53 days	0.39			Williams	1999 NK ₄
1999 NM ₄	17.4	0.15	19990721	350.36553	208.94967	105.52421	8.44740	0.1670592	2.2395636	20	1	53 days	0.61			Williams	1999 NM ₄
1999 NN ₄	16.0	0.15	19990721	354.23758	203.76443	106.00920	10.49363	0.1859468	2.7710448	21	1	53 days	0.40			Williams	1999 NN ₄
1999 NR ₄	14.0	0.15	19990721	331.26499	51.51058	286.89320	9.05538	0.1113969	2.9911070	37	1	36 days	0.33			Williams	1999 NR ₄
1999 NS ₄	14.9	0.15	19990810	26.54786	148.56523	148.47411	2.86849	0.1801113	2.4444138	59	2	1998–1999	0.64	M-v	4	Williams	35659 1999 NS ₄
1999 NW ₄	13.0	0.15	19990810	67.80078	111.45861	125.16301	22.71312	0.0296125	3.1899603	47	2	1998–1999	0.62	M-v	3	Williams	35659 1999 NW ₄
1999 NX ₄	15.0	0.15	19990810	339.70673	205.62756	154.38763	16.21482	0.2850326	2.8701735	51	1	60 days	0.54	M-v	5	Williams	1999 NX ₄
1999 NZ ₄	17.6	0.15	19990810	0.72007	19.46115	297.76049	19.61140	0.4961924	2.8547100	100	1	62 days	0.39	M-v	4	Williams	35739 1999 NZ ₄
1999 NE ₅	16.1	0.15	19990721	351.08559	51.10286	266.40956	4.49389	0.1158237	2.1990671	27	1	59 days	0.64			Williams	1999 NE ₅
1999 NF ₅	14.2	0.15	19990810	284.83616	141.56547	270.26784	1.65094	0.2060417	2.3564753	39	1	62 days	0.61	M-v	5	Williams	1999 NF ₅
1999 NG ₅	14.1	0.15	19990810	24.43794	148.37603	126.71649	11.68028	0.2221850	2.7720191	50	2	1998–1999	0.57	M-v	3	Williams	35397 1999 NG ₅
1999 NJ ₅	14.3	0.15	19990810	181.41255	5.78832	125.27189	7.44546	0.0485970	2.3568874	25	1	59 days	0.95			Williams	1999 NJ ₅
1999 NZ ₅	13.8	0.15	19990810	336.25917	199.06747	151.64792	13.54586	0.2794346	2.4136861	38	3	1995–1999	0.51	M-v	2	Williams	35398 1999 NZ ₅
1999 NF ₆	13.4	0.15	19990810	285.82928	200.01358	189.81146	1.80430	0.0641304	2.9430794	44	3	1979–1999	0.69	M-v	5	Williams	35739 1999 NF ₆
1999 NK ₆	13.8	0.15	19990810	292.00032	104.93425	294.11354	10.65600	0.1850188	2.6965792	29	1	88 days	0.43	M-v	4	Williams	1999 NK ₆
1999 NB ₇	13.6	0.15	19990810	221.83467	162.07730	298.10420	12.03213	0.1349095	2.5912694	17	1	58 days	0.50			Williams	1999 NB ₇
1999 NC ₇	14.7	0.15	19990810	114.59501	255.57679	296.01003	12.67446	0.0699657	2.3472025	34	2	1997–1999	0.44	M-v	3	Williams	35398 1999 NC ₇
1999 NF ₇	15.8	0.15	19990810	310.94782	103.63863	279.77726	3.86612	0.2036451	2.6184596	24	1	58 days	0.61			Williams	1999 NF ₇
1999 NJ ₇	13.9	0.15	19990810	264.78812	286.13457	129.82572	5.43172	0.0658330	2.5755164	44	3	1989–1999	0.60	M-v	3	Williams	35659 1999 NJ ₇
1999 NL ₇	15.4	0.15	19990810	72.47475	90.97796	135.35124	3.35241	0.1305396	2.4051329	29	3	1977–1999	0.47	M-v	2	Williams	35660 1999 NL ₇
1999 NN ₇	15.9	0.15	19990721	20.52102	2.31398	275.31554	1.58833	0.1760278	2.4311839	15	1	26 days	0.52			Williams	1999 NN ₇
1999 NR ₇	15.7	0.15	19990810	327.98148	146.53345	212.57861	1.63804	0.1650461	2.1810558	28	1	88 days	0.46	M-v	4	Williams	1999 NR ₇
1999 NU ₇	14.0	0.15	19990810	26.78491	51.32559	226.67120	2.66458	0.1744291	3.0975655	48	3	1997–1999	0.73	M-v	3	Williams	35398 1999 NU ₇
1999 NV ₇	14.7	0.15	19990810	1.96641	179.68447	132.12389	20.59421	0.3231473	3.0940967	21	2	1988–1999	0.42	M-v	3	Williams	35660 1999 NV ₇
1999 NX ₇	15.0	0.15	19990810	4.08986	12.11403	298.00442	13.37178	0.1663386	2.5721836	27	1	88 days	0.47	M-v	4	Williams	1999 NX ₇
1999 NA ₈	16.5	0.15	19990721	31.78230	85.86188	176.54749	1.19245	0.1853833	2.3284661	14	1	31 days	0.44			Williams	1999 NA ₈
1999 NB ₈	14.9	0.15	19990721	323.44855	198.90406	161.86119	2.60666	0.1871709	2.4053494	11	1	26 days	0.39			Williams	1999 NB ₈
1999 NC ₈	15.0	0.15	19990810	357.55486	188.56802	130.07844	14.38968	0.1957858	2.6655722	27	1	60 days	0.36	M-v	4	Williams	1999 NC ₈
1999 ND ₈	14.6	0.15	19990810	307.90611	256.10141	132.38057	9.77299	0.2092066	2.7582074	21	1	60 days	0.55	M-v	5	Williams	1999 ND ₈
1999 NE ₈	15.4	0.15	19990810	354.53828	198.13303	125.67942	6.46718	0.1998538	2.2439535	24	1	82 days	0.38	M-v	4	Williams	1999 NE ₈
1999 NF ₈	15.7	0.15	19990810	356.40293	14.87484	306.49512	3.42888	0.2055219	2.4005946	20	1	78 days	0.53	M-v	4	Williams	1999 NF ₈
1999 NJ ₈	14.2	0.15	19990810	27.15503	156.04272	125.77684	9.89909	0.1205520	2.7982670	26	1	90 days	0.52	M-v	4	Williams	1999 NJ ₈
1999 NL ₈	12.8	0.15	19990810	279.18990	280.65861	135.08926	20.51146	0.1608876	3.1402914	36	2	1998–1999	0.70	M-v	3	Williams	35660 1999 NL ₈
1999 NM ₈	16.5	0.15	19990721	20.64185	130.48821	148.52733	5.84380	0.1769039	2.2325592	17	1	25 days	0.56			Williams	1999 NM ₈
1999 NN ₈	15.1	0.15	19990810	68.07560	322.99032	273.71466	4.08697	0.1064136	2.2946777	36	4	1974–1999	0.56	M-v	1	Williams	35398 1999 NN ₈
1999 NQ ₈	15.8	0.15	19990810	344.56717	48.68562	289.92541	4.46194	0.1554017	2.2807185	35	1	58 days	0.45			Williams	1999 NQ ₈
1999 NS ₈	13.0	0.15	19990810	302.28996	259.90832	135.20810	13.51659	0.1848573	2.5825632	67	3	1997–1999	0.59	M-v	3	Williams	35739 1999 NS ₈
1999 NT ₈	15.5	0.15	19990810	92.46721	40.12961	180.12301	1.20246	0.0305461	2.1921038	34	3	1996–1999	0.72	M-v	3	Williams	35660 1999 NT ₈
1999 NV ₈	14.9	0.15	19990810	28.29616	353.10248	284.99439	1.45763	0.1639295	2.5908449	31	1	62 days	0.53	M-v	5	Williams	1999 NV ₈

1999 NE ₉	11.0	0.15	19990810	259.24389	101.77027	318.90907	30.04368	0.0105276	5.1535940	34	1	62 days	0.69	M-v	5	Williams		1999 NE ₉
1999 NH ₉	14.4	0.15	19990810	314.39823	250.01185	127.78161	6.75764	0.1572821	2.4090753	35	2	1998–1999	0.53	M-v	3	Williams	35660	1999 NH ₉
1999 NJ ₉	14.3	0.15	19990810	24.51908	327.88311	307.48012	6.49411	0.2691588	2.7740121	39	1	92 days	0.47	M-v	4	Williams		1999 NJ ₉
1999 NM ₉	14.9	0.15	19990810	117.23175	353.74325	201.68809	1.20496	0.0528508	2.1902274	33	2	1996–1999	0.54	M-v	5	Williams	35739	1999 NM ₉
1999 NN ₉	15.8	0.15	19990810	32.20310	342.87606	295.59530	5.58654	0.1130090	2.3076992	26	1	62 days	0.56	M-v	5	Williams		1999 NN ₉
1999 NO ₉	13.8	0.15	19990810	283.48586	102.57221	298.02546	7.67853	0.0476984	2.9104310	23	1	62 days	0.51	M-v	6	Williams		1999 NO ₉
1999 NR ₉	14.5	0.15	19990810	271.24715	118.43117	304.07289	11.54971	0.1172894	2.5443728	32	1	62 days	0.51	M-v	5	Williams		1999 NR ₉
1999 NU ₉	14.1	0.15	19990810	52.81999	311.12237	307.62345	14.15144	0.0861440	2.7904096	40	1	62 days	0.49	M-v	5	Williams		1999 NU ₉
1999 NY ₉	14.7	0.15	19990810	248.30242	310.52062	134.64040	10.07902	0.1524672	2.2685714	21	1	60 days	0.53	M-v	5	Williams		1999 NY ₉
1999 NB ₁₀	14.6	0.15	19990810	326.88627	62.36963	309.75994	15.88401	0.2479818	2.6164845	38	2	1984–1999	0.46	M-v	4	Williams	35661	1999 NB ₁₀
1999 ND ₁₀	15.6	0.15	19990810	2.80243	359.47716	315.23688	6.15911	0.1346213	2.3316677	22	1	62 days	0.48	M-v	5	Williams		1999 ND ₁₀
1999 NF ₁₀	14.5	0.15	19990810	348.47466	231.02503	108.08022	1.02849	0.2427470	3.2612307	22	1	67 days	0.50	M-v	5	Williams		1999 NF ₁₀
1999 NG ₁₀	14.6	0.15	19990810	95.27580	255.44050	314.97533	11.45660	0.1177567	2.5549459	42	2	1998–1999	0.65	M-v	3	Williams	35661	1999 NG ₁₀
1999 NJ ₁₀	15.2	0.15	19990810	39.04554	312.25100	318.66703	6.16069	0.0971901	2.2965584	36	1	85 days	0.54	M-v	5	Williams		1999 NJ ₁₀
1999 NM ₁₀	15.1	0.15	19990810	6.01025	181.89761	128.26760	7.70351	0.2309568	3.0168995	20	1	60 days	0.54	M-v	5	Williams		1999 NM ₁₀
1999 NP ₁₀	15.4	0.15	19990810	46.19380	293.85387	318.70362	2.95864	0.2077208	2.3466092	29	1	62 days	0.44	M-v	5	Williams		1999 NP ₁₀
1999 NQ ₁₀	16.2	0.15	19990810	13.40514	342.43866	318.91192	5.46386	0.1412246	2.2344053	25	1	62 days	0.58	M-v	5	Williams		1999 NQ ₁₀
1999 NR ₁₀	12.9	0.15	19990810	341.82275	34.32161	308.64857	8.51607	0.0928827	3.0632392	32	1	62 days	0.49	M-v	5	Williams		1999 NR ₁₀
1999 NV ₁₀	14.2	0.15	19990810	327.42968	57.05530	304.61362	8.05664	0.1007744	3.0959665	16	1	62 days	0.65	M-v	6	Williams		1999 NV ₁₀
1999 NW ₁₀	15.2	0.15	19990810	127.69620	249.46730	299.59477	6.52780	0.0501296	2.2867766	21	1	58 days	0.63			Williams		1999 NW ₁₀
1999 NX ₁₀	16.1	0.15	19990810	333.51173	65.80403	291.39768	6.10475	0.1442566	2.1878835	16	1	63 days	0.55	M-v	5	Williams		1999 NX ₁₀
1999 NA ₁₁	13.9	0.15	19990810	287.03614	91.35685	320.91638	11.79178	0.1680207	2.6374201	39	1	63 days	0.65	M-v	5	Williams		1999 NA ₁₁
1999 NB ₁₁	16.6	0.15	19990810	334.38776	35.59842	319.24237	6.04974	0.1533013	2.2699962	27	1	58 days	0.50			Williams		1999 NB ₁₁
1999 NF ₁₁	15.5	0.15	19990810	15.62785	202.32646	94.05515	3.58457	0.2105743	2.4251529	24	1	60 days	0.56	M-v	5	Williams		1999 NF ₁₁
1999 NG ₁₁	13.4	0.15	19990810	347.76834	276.19946	59.45115	2.93642	0.0601499	2.9172196	40	3	1995–1999	0.77	M-v	4	Williams	35661	1999 NG ₁₁
1999 NK ₁₁	15.3	0.15	19990810	21.26725	171.24114	121.94930	3.45535	0.1425749	2.3290093	27	1	85 days	0.57	M-v	4	Williams		1999 NK ₁₁
1999 NM ₁₁	15.4	0.15	19990810	37.83936	316.63426	313.10056	7.88509	0.1732515	2.6667954	22	1	58 days	0.47			Williams		1999 NM ₁₁
1999 NO ₁₁	15.9	0.15	19990810	0.63508	13.61232	307.85984	6.38552	0.1275218	2.3601807	22	1	62 days	0.51	M-v	5	Williams		1999 NO ₁₁
1999 NP ₁₁	14.1	0.15	19990810	171.11195	199.79231	311.41179	11.83682	0.0984441	2.6997338	15	1	62 days	0.58	M-v	6	Williams		1999 NP ₁₁
1999 NR ₁₁	14.3	0.15	19990810	354.38664	37.69952	295.65123	5.91999	0.2821688	2.3836321	25	1	63 days	0.48	M-v	4	Williams		1999 NR ₁₁
1999 NW ₁₁	14.7	0.15	19990810	65.13781	303.56260	305.37783	5.60831	0.0874880	2.3643535	26	1	62 days	0.50	M-v	5	Williams		1999 NW ₁₁
1999 ND ₁₂	16.0	0.15	19990721	326.99738	52.07348	301.22706	2.72142	0.1762509	2.4738778	13	1	26 days	0.67			Williams		1999 ND ₁₂
1999 NH ₁₂	15.6	0.15	19990810	106.76039	11.38124	184.20464	2.69026	0.1446017	2.2059682	32	4	1992–1999	0.78	M-v	1	Williams	35661	1999 NH ₁₂
1999 NQ ₁₈	14.6	0.15	19990810	355.17129	349.38173	317.66464	5.94214	0.1248740	2.3843391	31	3	1994–1999	0.55	M-v	3	Williams	35662	1999 NQ ₁₈
1999 NS ₂₈	14.6	0.15	19990810	335.12553	18.01077	321.50635	5.71731	0.1349545	2.4246542	38	2	1998–1999	0.75	M-v	4	Williams	35663	1999 NS ₂₈
1999 NA ₃₅	13.6	0.15	19990810	343.68503	202.48652	125.68161	18.21940	0.1030246	3.1490799	20	1	59 days	0.51			Williams		1999 NA ₃₅
1999 NB ₃₅	15.9	0.15	19990721	357.25542	4.55723	302.35642	7.50154	0.2372488	2.7413293	15	1	25 days	0.40			Williams		1999 NB ₃₅
1999 NZ ₃₅	14.9	0.15	19990810	146.26195	224.67515	291.32027	2.76774	0.1172798	2.2488001	39	4	1993–1999	0.53	M-v	3	Williams	35664	1999 NZ ₃₅
1999 NE ₃₆	16.2	0.15	19990721	342.02986	210.44842	119.88582	3.97113	0.1924532	2.2779030	14	1	24 days	0.36			Williams		1999 NE ₃₆
1999 NT ₃₆	15.2	0.15	19990810	342.10626	21.49916	318.66938	12.07546	0.2181052	2.3859258	21	1	61 days	0.34	M-v	5	Williams		1999 NT ₃₆
1999 NH ₃₇	13.5	0.15	19990810	283.36363	87.96816	313.52311	9.00558	0.1231755	3.0036859	32	2	1994–1999	0.59	M-v	4	Williams	35740	1999 NH ₃₇
1999 NN ₃₇	14.1	0.15	19990810	0.05946	10.82538	300.01811	13.33126	0.1046843	2.6230365	23	1	79 days	0.48	M-v	4	Williams		1999 NN ₃₇
1999 NP ₃₇	13.2	0.15	19990810	124.60517	236.68935	303.58116	9.71722	0.0579076	2.9969706	26	3	1992–1999	0.60	M-v	3	Williams	35400	1999 NP ₃₇
1999 NW ₃₇	14.9	0.15	19990810	352.40632	245.21994	76.84846	2.92095	0.1182387	2.4019041	25	1	77 days	0.54	M-v	4	Williams		1999 NW ₃₇
1999 NZ ₃₇	15.2	0.15	19990810	335.32306	41.61225	313.44749	9.89212	0.2535562	2.3353826	30	1	82 days	0.54	M-v	5	Williams		1999 NZ ₃₇
1999 NB ₃₈	11.2	0.15	19990810	357.96351	356.13066	317.99329	25.27317	0.0823799	5.1557574	20	1	59 days	0.42			Williams		1999 NB ₃₈
1999 NG ₃₈	14.9	0.15	19990810	26.02854	284.63341	353.88365	4.80174	0.1383558	2.3170621	21	1	59 days	0.42			Williams		1999 NG ₃₈
1999 NK ₃₈	14.1	0.15	19990810	346.78444	12.36164	314.40322	28.60847	0.1282283	2.6283767	24	1	61 days	0.35	M-v	4	Williams		1999 NK ₃₈
1999 NY ₃₈	14.2	0.15	19990721	253.79654	98.77297	326.94842	10.00236	0.0963473	2.9926632	22	1	30 days	0.56			Williams		1999 NY ₃₈
1999 ND ₃₉	14.3	0.15	19990810	234.61693	330.96613	116.73051	5.82241	0.1174135	2.2710164	54	2	1998–1999	0.51	M-v	3	Williams	35740	1999 ND ₃₉
1999 NM ₃₉	15.6	0.15	19990810	355.87784	300.22827	20.39371	2.66094	0.1943229	2.4426715	23	1	77 days	0.58	M-v	4	Williams		1999 NM ₃₉
1999 NO ₃₉	15.0	0.15	19990810	335.66497	25.05010	326.07932	8.20324	0.2014422	2.5883554	22	1	61 days	0.43	M-v	5	Williams	35401	1999 NO ₃₉
1999 NP ₃₉	15.9	0.15	19990810	314.58746	35.64516	349.92731	4.70795	0.2581644	2.4295447	24	1	59 days	0.50			Williams		1999 NP ₃₉

1999 NZ ₃₉	15.7	0.15	19990810	19.67910	314.40689	334.41604	9.17012	0.1450399	2.7508277	22	1	59 days	0.44		Williams		1999 NZ ₃₉
1999 NE ₄₀	15.6	0.15	19990810	334.45066	256.62368	94.03056	3.97722	0.1650616	2.2630078	36	3	1995–1999	0.52	M-v 3	Williams	35665	1999 NE ₄₀
1999 NJ ₄₀	15.4	0.15	19990810	41.26545	137.96051	119.21942	4.71815	0.1851544	2.6163415	28	3	1995–1999	0.53	M-v 2	Williams	35740	1999 NJ ₄₀
1999 NK ₄₀	14.8	0.15	19990810	45.21737	148.67100	115.13198	6.24645	0.0772681	2.2711204	29	1	90 days	0.48	M-v 4	Williams		1999 NK ₄₀
1999 NM ₄₀	15.8	0.15	19990810	10.97432	345.18576	312.35346	12.36602	0.2557085	2.6166697	23	1	57 days	0.50		Williams		1999 NM ₄₀
1999 NU ₄₀	15.0	0.15	19990810	333.62206	357.21849	357.06282	5.12217	0.1837358	3.1012436	21	1	59 days	0.78		Williams		1999 NU ₄₀
1999 NV ₄₀	13.6	0.15	19990810	312.29715	60.25649	325.12842	16.45220	0.2171636	3.1304784	28	1	61 days	0.44	M-v 5	Williams		1999 NV ₄₀
1999 NW ₄₀	14.8	0.15	19990810	358.08582	334.31244	344.24404	5.97348	0.1622656	2.4179157	25	1	80 days	0.33	M-v 4	Williams		1999 NW ₄₀
1999 NA ₄₁	13.2	0.15	19990810	112.33828	226.77743	332.70796	9.58320	0.0415080	3.1128415	21	1	59 days	0.83		Williams		1999 NA ₄₁
1999 NC ₄₁	15.1	0.15	19990810	29.42803	199.44253	81.94811	1.66598	0.0969556	2.5595201	19	1	59 days	0.49		Williams		1999 NC ₄₁
1999 NJ ₄₁	13.9	0.15	19990810	311.72106	55.76060	330.00199	13.52073	0.1852454	2.6319040	31	1	67 days	0.48	M-v 5	Williams		1999 NJ ₄₁
1999 NU ₄₁	13.6	0.15	19990810	335.57757	21.34914	333.84567	16.16982	0.1758227	3.1902069	18	1	61 days	0.45	M-v 5	Williams		1999 NU ₄₁
1999 NV ₄₁	12.7	0.15	19990810	232.31543	104.63357	356.51396	7.77959	0.1394720	2.5333153	25	1	61 days	0.39	M-v 5	Williams		1999 NV ₄₁
1999 NY ₄₁	13.1	0.15	19990810	324.16868	37.57767	334.33622	17.98877	0.1601915	3.1678076	28	1	61 days	0.46	M-v 5	Williams		1999 NY ₄₁
1999 NB ₄₂	14.1	0.15	19990810	295.82550	287.51282	114.67350	10.82423	0.1032154	2.9649896	15	1	56 days	0.35		Williams		1999 NB ₄₂
1999 ND ₄₂	14.6	0.15	19990721	354.96783	151.53584	159.42436	1.57634	0.1655314	3.2151254	17	1	38 days	0.51		Williams		1999 ND ₄₂
1999 NX ₄₂	15.1	0.15	19990810	316.31507	28.11327	342.26835	7.68288	0.1334274	2.4126490	48	2	1998–1999	0.69	M-v 4	Williams	35665	1999 NX ₄₂
1999 NC ₄₃	15.9	0.15	19990810	292.67416	120.26421	312.05273	7.10877	0.5791770	1.7585859	57	1	57 days	0.60	M-v 6	Williams	35740	1999 NC ₄₃
1999 ND ₄₃	19.1	0.15	19990810	326.39719	51.70735	332.34094	5.56041	0.3144352	1.5235885	265	1	72 days	0.50	M-v 4	Williams	35740	1999 ND ₄₃
1999 NE ₄₈	13.4	0.15	19990810	351.77800	175.59127	137.87191	14.35609	0.1632516	2.6398849	24	2	1998–1999	0.56	M-v 3	Williams	35401	1999 NE ₄₈
1999 NF ₄₉	14.4	0.15	19990810	322.86112	80.73623	295.69947	20.90502	0.2942199	2.4550783	19	1	87 days	0.35	M-v 4	Williams		1999 NF ₄₉
1999 NG ₄₉	14.8	0.15	19990810	18.46121	27.76804	258.00386	3.80217	0.1682574	2.2738457	17	1	79 days	0.47	M-v 5	Williams		1999 NG ₄₉
1999 NK ₄₉	14.9	0.15	19990810	341.46708	138.48863	199.47375	5.66439	0.1610158	2.4114978	18	1	62 days	0.37	M-v 5	Williams		1999 NK ₄₉
1999 NL ₄₉	14.4	0.15	19990810	269.23938	156.35602	263.00010	10.05726	0.1493967	2.6124663	22	1	57 days	0.43		Williams		1999 NL ₄₉
1999 NS ₄₉	13.2	0.15	19990810	272.55508	281.18160	141.01579	14.85914	0.2150698	2.9410463	23	1	62 days	0.36	M-v 5	Williams		1999 NS ₄₉
1999 NT ₄₉	15.0	0.15	19990721	18.55522	21.64608	260.76826	4.30983	0.1090211	2.3214540	14	1	26 days	0.41		Williams		1999 NT ₄₉
1999 NU ₄₉	16.3	0.15	19990810	0.50474	172.13145	140.29395	5.78349	0.2234487	2.2691138	20	1	60 days	0.45	M-v 5	Williams		1999 NU ₄₉
1999 NY ₄₉	15.5	0.15	19990721	23.69317	56.93896	214.82561	2.65142	0.1813521	2.2668639	11	1	26 days	0.21		Williams		1999 NY ₄₉
1999 NB ₅₀	14.3	0.15	19990810	50.49727	324.05611	275.51599	11.88617	0.2303349	2.6456517	23	1	111 days	0.50	M-v 4	Williams		1999 NB ₅₀
1999 ND ₅₀	13.9	0.15	19990810	262.84931	151.73441	267.42970	11.15812	0.0647247	2.5374587	17	1	58 days	0.32		Williams		1999 ND ₅₀
1999 NJ ₅₀	14.8	0.15	19990810	12.88495	1.07148	295.25207	12.63769	0.1556768	2.6505330	28	2	1998–1999	0.48	M-v 3	Williams	35666	1999 NJ ₅₀
1999 NW ₅₀	15.1	0.15	19990810	14.29877	111.24772	168.61165	1.82093	0.1674227	2.4864125	26	3	1995–1999	0.42	M-v 3	Williams	35666	1999 NW ₅₀
1999 NT ₅₂	14.6	0.15	19990810	31.96557	71.95746	198.61611	11.69074	0.1171957	2.5117116	22	1	64 days	0.43	M-v 5	Williams		1999 NT ₅₂
1999 NU ₅₂	13.5	0.15	19990810	310.90543	190.39383	179.40738	14.96389	0.1081028	2.6167329	73	3	1991–1999	0.53	M-v 3	Williams	35666	1999 NU ₅₂
1999 NV ₅₂	15.4	0.15	19990810	328.77424	179.56619	184.71557	13.74286	0.2546494	2.3249702	21	1	64 days	0.40	M-v 5	Williams		1999 NV ₅₂
1999 NG ₅₃	14.1	0.15	19990810	4.48458	57.58253	250.99086	12.46700	0.1824826	2.5926516	29	1	117 days	0.65	M-v 3	Williams		1999 NG ₅₃
1999 NN ₅₃	15.3	0.15	19990810	339.43840	124.50387	228.96691	10.81809	0.2868449	2.5715022	27	1	64 days	0.36	M-v 5	Williams		1999 NN ₅₃
1999 NP ₅₃	14.4	0.15	19990810	36.21685	53.75058	218.61136	14.13283	0.1070834	2.6776478	20	1	64 days	0.51	M-v 5	Williams		1999 NP ₅₃
1999 NR ₅₃	14.8	0.15	19990810	7.18192	63.73334	243.69864	14.25941	0.1277648	2.6287411	18	1	59 days	0.44		Williams		1999 NR ₅₃
1999 NS ₅₃	15.2	0.15	19990810	336.93212	159.46465	192.33811	12.87228	0.2163819	2.6573202	23	1	64 days	0.48	M-v 5	Williams		1999 NS ₅₃
1999 NW ₅₃	14.8	0.15	19990810	306.68150	204.43167	175.95050	14.70781	0.1099654	2.5217618	23	1	64 days	0.48	M-v 5	Williams		1999 NW ₅₃
1999 NZ ₅₃	13.3	0.15	19990810	291.37102	151.56055	260.19284	16.32745	0.2080935	3.1058948	18	1	59 days	0.37		Williams		1999 NZ ₅₃
1999 NA ₅₄	16.3	0.15	19990810	14.02812	126.87096	164.94737	12.61736	0.2864803	2.5542564	31	1	63 days	0.69	M-v 5	Williams		1999 NA ₅₄
1999 NB ₅₄	15.3	0.15	19990810	122.95852	322.80862	225.92298	9.26971	0.0614754	2.3225139	20	1	59 days	0.70		Williams		1999 NB ₅₄
1999 NC ₅₄	15.9	0.15	19990810	12.43385	54.77965	242.69674	8.44196	0.2518548	2.5699864	21	1	64 days	0.52	M-v 4	Williams		1999 NC ₅₄
1999 ND ₅₄	15.2	0.15	19990810	6.97909	43.02665	266.42442	12.23906	0.1624336	2.6452555	17	1	59 days	0.49		Williams		1999 ND ₅₄
1999 NH ₅₄	14.8	0.15	19990810	327.96269	134.75698	234.23376	11.58703	0.2288172	2.6954579	28	1	64 days	0.37	M-v 5	Williams		1999 NH ₅₄
1999 NN ₅₄	14.8	0.15	19990810	356.51735	109.49176	215.65940	10.83144	0.1804483	2.6062375	23	1	64 days	0.33	M-v 4	Williams		1999 NN ₅₄
1999 NP ₅₄	15.5	0.15	19990810	54.29366	44.77919	201.07812	9.55881	0.1786128	2.3125430	18	1	64 days	0.52	M-v 5	Williams		1999 NP ₅₄
1999 NR ₅₄	16.0	0.15	19990810	339.40721	200.80961	148.92216	27.16710	0.2047077	2.5601955	22	1	58 days	0.56		Williams		1999 NR ₅₄
1999 NT ₅₄	14.2	0.15	19990810	294.56932	226.39059	170.62681	15.29407	0.1126742	2.5198074	42	2	1998–1999	0.42	M-v 3	Williams	35666	1999 NT ₅₄
1999 NX ₅₄	12.9	0.15	19990810	334.67517	187.49341	159.00661	25.12118	0.0264810	2.7147510	37	1	116 days	0.50	M-v 4	Williams		1999 NX ₅₄
1999 NE ₅₅	13.4	0.15	19990810	319.21693	106.70457	268.01476	20.54724	0.0913744	3.1580732	22	1	66 days	0.35	M-v 5	Williams		1999 NE ₅₅

1999 NG ₅₅	14.1	0.15	19990810	311.67910	128.27952	256.75724	13.76144	0.1340302	2.6409539	15	1	66 days	0.49	M-v	5	Williams	1999 NG ₅₅
1999 NH ₅₅	14.5	0.15	19990810	54.62282	2.38882	250.60597	11.92588	0.1412182	2.6235826	17	1	60 days	0.43	M-v	5	Williams	1999 NH ₅₅
1999 NJ ₅₅	15.7	0.15	19990810	12.84284	33.68330	268.20404	11.12410	0.2129448	2.3071558	17	1	66 days	0.44	M-v	4	Williams	1999 NJ ₅₅
1999 NK ₅₅	13.0	0.15	19990810	313.93144	93.85412	299.67302	27.70539	0.2164342	3.2056348	24	1	66 days	0.41	M-v	5	Williams	1999 NK ₅₅
1999 NL ₅₅	13.7	0.15	19990810	46.94303	359.39381	264.95602	14.36940	0.1363320	3.0987294	18	1	60 days	0.43	M-v	5	Williams	1999 NL ₅₅
1999 NN ₅₅	14.3	0.15	19990810	36.19453	39.78134	243.99659	13.20213	0.0589232	2.5723007	17	1	66 days	0.50	M-v	5	Williams	1999 NN ₅₅
1999 NQ ₅₅	14.9	0.15	19990810	4.88341	111.43291	206.31754	12.13803	0.2068838	2.6182899	27	1	66 days	0.45	M-v	4	Williams	1999 NQ ₅₅
1999 NS ₅₅	13.1	0.15	19990810	150.69617	353.18764	178.19207	17.68066	0.0461655	3.1833456	21	1	64 days	0.48	M-v	5	Williams	1999 NS ₅₅
1999 NT ₅₅	16.0	0.15	19990810	1.33811	99.76851	221.81202	7.27358	0.2183023	2.2957630	26	1	64 days	0.40	M-v	4	Williams	1999 NT ₅₅
1999 NU ₅₅	13.9	0.15	19990810	299.27703	150.41215	256.46153	10.77435	0.1835318	2.6948189	22	1	64 days	0.37	M-v	5	Williams	1999 NU ₅₅
1999 NW ₅₅	14.6	0.15	19990810	15.41232	40.65342	264.39899	11.76605	0.1335629	2.6317306	24	1	66 days	0.43	M-v	5	Williams	1999 NW ₅₅
1999 NY ₅₅	13.6	0.15	19990810	223.13146	215.43611	255.79497	12.50352	0.1089561	2.6648889	18	1	60 days	0.44	M-v	5	Williams	1999 NY ₅₅
1999 NA ₅₆	14.4	0.15	19990810	311.09453	164.81434	229.53419	12.53951	0.1919735	2.6178769	20	1	66 days	0.49	M-v	5	Williams	1999 NA ₅₆
1999 NC ₅₆	15.5	0.15	19990810	346.47588	124.18855	221.82603	13.66303	0.1769174	2.4823202	19	1	66 days	0.68	M-v	4	Williams	1999 NC ₅₆
1999 NE ₅₆	14.9	0.15	19990810	325.59552	106.59210	270.00848	12.19330	0.1970203	2.6067510	18	1	66 days	0.35	M-v	5	Williams	1999 NE ₅₆
1999 NF ₅₆	13.8	0.15	19990810	332.78090	88.24658	272.12997	13.11838	0.1053481	2.6172322	22	1	66 days	0.38	M-v	4	Williams	1999 NF ₅₆
1999 NK ₅₆	12.3	0.15	19990810	48.00095	2.51409	264.70285	12.06225	0.1336530	2.6398768	51	3	1989–1999	0.54	M-v	2	Williams	35740 1999 NK ₅₆
1999 NM ₅₆	14.9	0.15	19990810	324.69147	118.11336	265.05888	12.36454	0.2174001	2.7153086	20	1	66 days	0.51	M-v	5	Williams	1999 NM ₅₆
1999 NQ ₅₆	16.1	0.15	19990810	20.84074	25.49880	264.19899	8.29473	0.2767407	2.3719104	20	1	66 days	0.62	M-v	5	Williams	1999 NQ ₅₆
1999 NR ₅₆	13.9	0.15	19990810	2.61283	59.38589	268.30400	11.17514	0.1495638	3.1333532	21	1	66 days	0.56	M-v	5	Williams	1999 NR ₅₆
1999 NS ₅₆	13.7	0.15	19990810	337.94339	119.00182	243.00963	13.77353	0.1316234	2.6136909	23	1	66 days	0.30	M-v	4	Williams	1999 NS ₅₆
1999 NT ₅₆	15.0	0.15	19990810	1.94881	88.25069	241.52773	12.04187	0.1895507	2.6187357	25	1	66 days	0.53	M-v	4	Williams	1999 NT ₅₆
1999 NV ₅₆	15.3	0.15	19990810	342.33197	98.51745	262.25047	9.52870	0.2298761	2.7958342	17	1	66 days	0.52	M-v	4	Williams	1999 NV ₅₆
1999 NW ₅₆	14.9	0.15	19990810	318.85021	114.53632	276.24167	11.11060	0.1871648	2.6481706	20	1	66 days	0.52	M-v	5	Williams	1999 NW ₅₆
1999 NX ₅₆	14.4	0.15	19990810	50.28434	346.66643	282.66318	13.39812	0.1372553	2.5468319	18	1	66 days	0.47	M-v	5	Williams	1999 NX ₅₆
1999 NZ ₅₆	14.7	0.15	19990810	355.05411	132.26856	209.41513	14.43672	0.2181283	2.6408046	17	1	66 days	0.43	M-v	4	Williams	1999 NZ ₅₆
1999 NB ₅₇	14.0	0.15	19990810	284.46442	177.43587	261.07265	11.51345	0.2303255	2.6002740	20	1	66 days	0.42	M-v	5	Williams	1999 NB ₅₇
1999 NF ₅₇	14.2	0.15	19990810	59.42490	14.93238	240.68976	11.32769	0.2055120	2.6649543	47	2	1998–1999	0.62	M-v	3	Williams	35666 1999 NF ₅₇
1999 NH ₅₇	14.8	0.15	19990810	341.96574	85.45241	276.17854	11.53780	0.1653618	2.6520748	15	1	66 days	0.50	M-v	5	Williams	1999 NH ₅₇
1999 NP ₅₉	13.8	0.15	19990810	287.06961	143.36279	257.00086	12.09996	0.0947592	2.7628431	31	1	63 days	0.47	M-v	5	Williams	1999 NP ₅₉
1999 NQ ₅₉	14.4	0.15	19990810	1.30238	150.10061	163.15696	14.43664	0.1970870	2.7276990	30	1	62 days	0.36	M-v	4	Williams	1999 NQ ₅₉
1999 NR ₅₉	13.0	0.15	19990810	322.92902	83.12897	278.50591	20.42464	0.1040744	3.1787314	31	1	116 days	0.59	M-v	4	Williams	1999 NR ₅₉
1999 NS ₅₉	14.9	0.15	19990810	19.51113	34.58364	252.59820	11.01705	0.1845283	2.6604491	18	1	58 days	0.58			Williams	1999 NS ₅₉
1999 NW ₆₁	14.0	0.15	19990810	57.30925	68.64252	161.64137	13.92607	0.1682895	2.5960684	17	1	62 days	0.49	M-v	5	Williams	1999 NW ₆₁
1999 NB ₆₃	11.2	0.15	19990810	337.48296	65.51520	279.82228	21.46684	0.1670256	5.1669550	18	1	58 days	0.36			Williams	1999 NB ₆₃
1999 NH ₆₄	15.8	0.15	19990810	335.42873	159.67580	211.42916	6.27373	0.1266763	2.2842406	30	1	64 days	0.48	M-v	5	Williams	1999 NH ₆₄
1999 OB	14.7	0.15	19990810	330.97334	189.82547	164.86923	4.41210	0.1365039	2.2823411	69	3	1994–1999	0.63	M-v	3	Williams	35666 1999 OB
1999 OC	14.2	0.15	19990810	340.95101	195.12697	146.09202	11.43651	0.1226857	2.6397463	61	2	1998–1999	0.61	M-v	3	Williams	35740 1999 OC
1999 OH	13.9	0.15	19990810	17.57912	343.41834	306.00629	10.92707	0.1647579	2.6569702	56	1	79 days	0.45	M-v	4	Williams	1999 OH
1999 OK	14.4	0.15	19990810	255.11459	316.12567	121.67126	17.79335	0.1111688	3.1360215	26	2	1998–1999	0.48	M-v	3	Williams	35667 1999 OK
1999 OM	14.8	0.15	19990810	214.40838	149.80116	311.56614	10.52039	0.1057103	2.2740075	37	2	1998–1999	0.46	M-v	4	Williams	35667 1999 OM
1999 OO	14.0	0.15	19990810	7.92240	18.91552	275.84380	5.87474	0.1180041	2.3859235	38	2	1998–1999	0.44	M-v	3	Williams	35667 1999 OO
1999 OQ	14.4	0.15	19990810	304.72886	169.67978	217.00775	1.28226	0.0826962	2.8640225	45	3	1997–1999	0.64	M-v	4	Williams	35667 1999 OQ
1999 OT	15.6	0.15	19990810	332.74934	209.19095	148.97028	13.32076	0.1496591	3.0994712	28	1	56 days	0.47			Williams	1999 OT
1999 OU	15.3	0.15	19990810	255.20772	267.76821	173.28755	5.06195	0.1390996	2.7653222	31	1	57 days	0.36			Williams	1999 OU
1999 OW	14.9	0.15	19990810	347.44912	172.60095	163.09478	6.49939	0.3149302	2.5791614	64	2	1995–1999	0.52	M-v	3	Marsden	35667 1999 OW
1999 OX	13.7	0.15	19990810	197.35849	201.82033	281.71944	8.28703	0.1035174	2.7626154	35	3	1986–1999	0.73	M-v	4	Williams	35668 1999 OX
1999 OB ₁	15.1	0.15	19990810	34.08054	49.81747	233.01937	6.40785	0.1221590	2.3003291	42	3	1992–1999	0.53	M-v	3	Williams	35668 1999 OB ₁
1999 OD ₁	17.2	0.15	19990810	337.70864	236.66846	110.79822	3.40135	0.2258055	2.4376266	15	1	57 days	0.44			Williams	1999 OD ₁
1999 OE ₁	16.0	0.15	19990810	20.75381	173.79645	111.65413	7.50027	0.1582159	2.6648896	17	1	64 days	0.67	M-v	5	Williams	1999 OE ₁
1999 ON ₁	16.5	0.15	19990810	39.47583	121.68420	144.97215	4.01075	0.1420368	2.2641328	21	1	57 days	0.71			Williams	1999 ON ₁
1999 OO ₁	17.2	0.15	19990810	326.29457	7.46240	349.90952	1.50835	0.1472229	2.3025545	16	1	57 days	0.56			Williams	1999 OO ₁
1999 OX ₁	15.2	0.15	19990810	16.32461	354.70365	320.91154	7.49862	0.2267992	2.3974305	22	1	62 days	0.46	M-v	5	Williams	1999 OX ₁

1999 OB ₂	14.8	0.15	19990810	20.62407	79.83299	236.38517	14.16428	0.2598695	2.8666215	18	1	58 days	0.42	Williams	1999 OB ₂
1999 OD ₂	14.5	0.15	19990810	14.68178	96.29903	235.27718	14.85554	0.2435619	3.0664489	23	1	58 days	0.30	Williams	1999 OD ₂
1999 OE ₂	12.4	0.15	19990810	123.09494	345.68543	247.19421	15.27356	0.0569252	3.1912473	18	1	58 days	0.34	Williams	1999 OE ₂
1999 OG ₂	14.9	0.15	19990810	32.57184	122.91967	185.05269	22.31177	0.1179196	1.9356691	26	1	55 days	0.24	Williams	1999 OG ₂
1999 OK ₃	14.0	0.15	19990810	46.89841	311.27574	315.56530	8.87978	0.1393220	2.6389278	48	2	1998–1999	0.60	M-v 3 Williams	35668 1999 OK ₃
1999 OO ₃	14.4	0.15	19990810	351.05536	128.88924	232.76453	11.93773	0.2211759	2.5280188	23	1	58 days	0.37	Williams	1999 OO ₃
1999 OP ₃	14.3	0.15	19990810	41.65264	271.08963	311.82812	27.57565	0.6112359	2.7093717	99	2	1990–1999	0.53	M-v 3 Williams	35668 1999 OP ₃
1999 OQ ₃	19.9	0.15	19990810	4.98707	164.24622	148.09833	9.14811	0.4238663	1.8967617	40	1	58 days	0.51	M-v 5 Williams	35741 1999 OQ ₃
1999 OR ₃	17.8	0.15	19990810	26.27065	27.19389	200.43049	9.52083	0.5793086	2.0324308	116	1	47 days	0.59	M-v 5 Williams	1999 OR ₃
1999 OS ₃	15.3	0.15	19990810	17.85105	281.97081	6.27342	5.60163	0.1913186	2.2848723	42	1	118 days	0.50	M-v 4 Marsden	35741 1999 OS ₃
1999 OW ₃	14.8	0.15	19990810	67.64263	34.94028	196.88513	35.52855	0.7792373	2.0888331	33	1	58 days	0.43	M-v 5 Williams	35741 1999 OW ₃
1999 PB	15.8	0.15	19990810	6.50906	339.32500	328.13665	3.69172	0.1816477	2.4755849	22	1	49 days	0.54	Williams	1999 PB
1999 PC	14.9	0.15	19990810	357.12136	185.61996	137.76533	13.98846	0.2665114	2.5879162	30	1	60 days	0.40	M-v 4 Williams	1999 PC
1999 PE	16.2	0.15	19990810	328.79232	230.55890	142.76008	6.94306	0.1244343	2.2976091	33	1	42 days	0.67	Williams	1999 PE
1999 PF	16.6	0.15	19990810	343.08925	220.58412	137.32482	6.79238	0.1978676	2.2456465	26	1	42 days	0.59	Williams	1999 PF
1999 PG	13.6	0.15	19990810	343.16841	247.94900	73.31391	10.61052	0.0749232	2.9817851	47	3	1995–1999	0.50	M-v 3 Williams	35669 1999 PG
1999 PJ	16.4	0.15	19990810	4.29901	169.55228	152.08616	3.16229	0.2327943	2.4053740	48	1	39 days	0.39	Williams	1999 PJ
1999 PK	16.2	0.15	19990810	219.10998	326.44659	145.60569	23.98592	0.0652372	1.9188827	34	1	42 days	0.85	Williams	1999 PK
1999 PL	15.5	0.15	19990830	332.62547	135.57722	262.90515	14.79551	0.2938736	2.5881640	65	1	48 days	0.66	Williams	1999 PL
1999 PM	16.3	0.15	19990810	347.24419	202.58719	149.60619	11.48032	0.2703879	2.5253849	56	1	43 days	0.58	Williams	1999 PM
1999 PV	13.4	0.15	19990810	167.25156	352.45386	158.62394	14.13909	0.1115395	2.5706534	78	2	1998–1999	0.52	M-v 3 Williams	35669 1999 PV
1999 PW	15.3	0.15	19990810	94.50876	6.62786	208.70156	5.03818	0.1176365	2.2535553	34	1	33 days	0.28	Marsden	1999 PW
1999 PX	16.0	0.15	19990810	63.05298	98.45839	152.38131	5.21662	0.1458067	2.1342361	38	3	1992–1999	0.45	M-v 3 Williams	35669 1999 PX
1999 PY	14.8	0.15	19990810	26.19337	292.87070	49.03124	6.30149	0.1246634	2.2345303	57	2	1998–1999	0.57	M-v 4 Williams	35669 1999 PY
1999 PZ	14.3	0.15	19990810	348.18063	176.36740	157.28367	7.23799	0.2381026	2.3075601	37	1	115 days	0.52	M-v 4 Williams	35741 1999 PZ
1999 PB ₁	15.8	0.15	19990810	5.41161	209.49629	139.26329	3.92443	0.2312780	2.5660297	17	1	34 days	0.30	Williams	1999 PB ₁
1999 PG ₁	15.8	0.15	19990810	0.10183	184.54124	142.98308	2.66784	0.2584692	3.0401841	52	1	36 days	0.65	Williams	1999 PG ₁
1999 PJ ₁	18.0	0.15	19990810	319.67756	80.46047	319.59315	34.48698	0.3594990	1.6751186	193	1	38 days	0.56	M-v 6 Williams	1999 PJ ₁
1999 PL ₁	16.6	0.15	19990810	339.76278	311.81719	40.64971	14.27003	0.3179036	2.5500952	6	1	28 days	0.21	Williams	1999 PL ₁
1999 PM ₁	14.8	0.15	19990810	336.03051	258.95006	95.85203	28.14236	0.2406656	2.6838083	18	1	61 days	0.43	M-v 5 Williams	1999 PM ₁
1999 PO ₁	14.6	0.15	19990810	315.74473	333.20094	24.24708	22.02137	0.0290816	3.0893517	8	1	46 days	0.37	Williams	1999 PO ₁
1999 PP ₁	14.2	0.15	19990810	305.83968	40.39022	9.52099	9.96882	0.1079949	3.0595681	37	1	36 days	0.40	Williams	1999 PP ₁
1999 PS ₁	15.8	0.15	19990810	43.15679	324.50471	305.27747	6.33989	0.1703490	2.2992757	44	1	35 days	0.56	Williams	1999 PS ₁
1999 PT ₁	14.2	0.15	19990810	44.24802	312.57161	320.93267	16.83688	0.1453766	2.7391456	39	1	60 days	0.53	M-v 5 Williams	1999 PT ₁
1999 PU ₁	14.7	0.15	19990810	299.42497	56.73711	346.46637	9.71302	0.0630915	3.0069457	29	1	37 days	0.70	Williams	1999 PU ₁
1999 PV ₁	16.3	0.15	19990830	358.02740	1.64287	340.56880	11.45990	0.1929013	2.6106473	29	1	40 days	0.59	Williams	1999 PV ₁
1999 PX ₁	14.5	0.15	19990810	0.70317	204.78001	130.48234	9.24176	0.2242205	2.7106472	47	4	1990–1999	0.69	M-v 2 Williams	35670 1999 PX ₁
1999 PD ₂	14.6	0.15	19990810	285.92436	288.68627	148.48051	12.75264	0.2842665	3.0763934	12	1	28 days	0.18	Marsden	1999 PD ₂
1999 PE ₂	17.2	0.15	19990810	326.06807	231.65989	142.90587	4.55268	0.1838979	2.2032976	25	1	35 days	0.54	Williams	1999 PE ₂
1999 PM ₂	15.4	0.15	19990810	335.74657	35.51269	329.67667	1.06532	0.0893335	2.8429498	23	1	38 days	0.73	Williams	1999 PM ₂
1999 PE ₃	16.1	0.15	19990810	268.23538	211.85538	223.53670	1.14168	0.1150995	2.3455827	12	1	29 days	0.54	Williams	1999 PE ₃
1999 PH ₃	16.1	0.15	19990810	346.41782	65.30800	286.77566	6.04947	0.2885724	2.7594106	32	1	34 days	0.59	Williams	1999 PH ₃
1999 PJ ₃	16.4	0.15	19990810	58.10013	252.46860	6.66995	2.83455	0.1477231	2.3503390	9	1	28 days	0.57	Williams	1999 PJ ₃
1999 PK ₃	16.9	0.15	19990810	51.62367	163.27480	95.77189	5.10197	0.1814902	2.3525225	23	1	25 days	0.92	Williams	1999 PK ₃
1999 PL ₃	16.0	0.15	19990810	305.52982	299.85766	130.89330	13.28690	0.3900294	2.7543017	23	1	25 days	0.98	Williams	1999 PL ₃
1999 PM ₃	16.7	0.15	19990810	348.58687	29.61260	314.80104	3.50528	0.1696916	2.2738564	30	1	33 days	0.42	Williams	1999 PM ₃
1999 PN ₃	14.4	0.15	19990810	9.66032	36.62429	264.61067	9.10196	0.2043765	2.3503218	40	1	135 days	0.64	M-v 3 Williams	35742 1999 PN ₃
1999 PO ₃	15.5	0.15	19990830	335.85244	24.23752	342.06480	8.94845	0.2215791	2.7099705	47	1	36 days	0.72	Williams	1999 PO ₃
1999 PP ₃	14.4	0.15	19990810	273.36395	228.24620	204.13523	5.03479	0.1975928	2.5506902	44	1	62 days	0.39	M-v 5 Williams	1999 PP ₃
1999 PQ ₃	15.0	0.15	19990810	299.26173	234.85961	144.47643	11.40423	0.0799785	3.0576794	28	1	29 days	0.76	Williams	1999 PQ ₃
1999 PS ₃	22.4	0.15	19990810	353.08155	78.15464	257.88558	3.42138	0.4610668	1.9342170	42	1	34 days	2.50	Williams	1999 PS ₃
1999 PT ₃	17.0	0.15	19990810	8.01661	339.66572	311.07238	9.02677	0.3618720	2.1624955	43	1	32 days	0.63	M-v 6 Williams	1999 PT ₃
1999 PY ₃	12.0	0.15	19990810	31.62315	129.21980	148.55460	26.26157	0.0944914	5.1854679	31	1	58 days	0.52	Williams	1999 PY ₃

1999 PZ ₃	16.2	0.15	19990810	224.80165	130.03401	339.99022	20.79269	0.0946040	1.8757919	36	1	25 days	0.87	Williams	1999 PZ ₃
1999 PD ₄	15.0	0.15	19990830	326.12084	263.34744	124.80495	5.82064	0.1001384	2.7684314	22	1	33 days	0.75	Williams	1999 PD ₄
1999 PE ₄	15.9	0.15	19990830	347.60992	231.37041	137.60528	8.12899	0.2724165	3.0113947	17	1	33 days	0.58	Williams	1999 PE ₄
1999 PG ₄	18.1	0.15	19990810	347.56171	22.77799	330.55739	12.98916	0.3055582	2.5904702	15	1	26 days	0.96	Williams	1999 PG ₄
1999 PH ₄	15.5	0.15	19990830	346.51495	238.37960	129.64243	5.56684	0.2000868	3.1150738	28	1	36 days	0.71	Williams	1999 PH ₄
1999 PJ ₄	12.3	0.15	19990810	359.96841	343.96085	342.78338	30.70074	0.0894568	5.1262271	30	1	26 days	0.46	Williams	1999 PJ ₄
1999 PK ₄	14.0	0.15	19990810	12.48307	187.75130	126.13203	10.92454	0.1568962	3.0813066	31	1	30 days	0.99	Williams	1999 PK ₄
1999 PL ₄	14.7	0.15	19990810	38.85234	339.92346	297.33893	8.95042	0.0656905	2.6065428	48	2	1998–1999	0.62	M-v 3 Williams	35670 1999 PL ₄
1999 PO ₄	15.5	0.15	19990830	347.28947	20.46553	349.35334	19.24069	0.3057003	2.5655149	57	1	35 days	0.31	Williams	1999 PO ₄
1999 PP ₄	13.6	0.15	19990830	16.60342	296.75671	33.05716	6.57694	0.0779972	3.1900518	27	1	35 days	0.48	Williams	1999 PP ₄
1999 PR ₄	15.6	0.15	19990830	305.12047	225.30648	191.88969	3.39302	0.1517125	2.2328356	58	1	30 days	0.62	Williams	1999 PR ₄
1999 PS ₄	15.8	0.15	19990830	303.11885	161.78975	259.09485	1.43662	0.1561112	2.2832148	46	1	32 days	0.55	Williams	1999 PS ₄
1999 PV ₄	14.3	0.15	19990830	318.58559	239.72790	177.88650	21.67466	0.0789713	2.6159883	30	1	38 days	0.40	Williams	1999 PV ₄
1999 PW ₄	14.6	0.15	19990810	29.77049	121.84185	162.94513	15.29280	0.1034912	2.5974848	47	1	62 days	0.42	M-v 4 Williams	1999 PW ₄
1999 PZ ₄	16.2	0.15	19990810	2.14333	93.87258	224.26678	1.73690	0.2934806	2.6408600	30	2	1994–1999	0.42	M-v 4 Williams	35670 1999 PZ ₄
1999 PB ₅	13.6	0.15	19990810	350.28334	354.83502	24.56798	11.48089	0.0806293	3.2376580	22	1	29 days	0.36	Williams	1999 PB ₅
1999 PR ₅	17.4	0.15	19990810	349.22882	189.71755	160.42620	5.88334	0.2498929	2.5463675	22	1	29 days	0.68	Williams	1999 PR ₅
1999 PS ₅	15.7	0.15	19990810	328.61015	235.15750	159.02100	6.81785	0.3449874	2.5994877	35	1	59 days	0.55	Williams	1999 PS ₅
1999 PG ₆	15.7	0.15	19990810	341.59094	265.54103	84.15025	2.91599	0.2082377	2.3185332	9	1	20 days	0.75	Williams	1999 PG ₆
1999 QA	14.7	0.15	19990810	36.09395	130.18239	168.78252	7.18248	0.1065290	2.3978718	60	1	33 days	0.66	Williams	1999 QA
1999 QC	15.4	0.15	19990810	26.12093	142.20195	141.67059	10.00234	0.2386625	2.3456126	28	1	62 days	0.48	M-v 4 Williams	1999 QC
1999 QE	14.9	0.15	19990830	104.11901	81.50822	126.23785	4.44188	0.1739302	2.3314684	44	1	27 days	0.85	Williams	1999 QE
1999 QF	16.9	0.15	19990810	350.13071	335.90962	3.65944	1.74028	0.1590854	2.1988919	23	1	22 days	0.96	Williams	1999 QF
1999 QG	13.5	0.15	19990810	248.18156	29.76790	65.86184	14.08013	0.1440978	2.6936239	41	2	1982–1999	0.57	M-v 4 Williams	35670 1999 QG
1999 QH	14.9	0.15	19990830	21.62306	283.43884	23.08422	5.80261	0.1491903	2.2359853	21	1	30 days	0.43	Nakano	1999 QH
1999 QJ	17.4	0.15	19990810	346.49504	14.98447	344.29817	32.06463	0.4407515	2.4288848	129	1	34 days	0.55	M-v 5 Williams	1999 QJ
1999 QL	16.8	0.15	19990830	314.38561	84.49932	301.22534	5.41219	0.1375622	2.3781650	17	1	24 days	0.38	Williams	1999 QL
1999 QO	13.8	0.15	19990810	265.49209	186.47420	237.68834	7.68506	0.0777804	2.9823003	36	2	1998–1999	0.57	M-v 4 Williams	35670 1999 QO
1999 QP	16.6	0.15	19990830	28.25843	352.19264	314.70172	0.61504	0.1925200	2.3833298	25	1	27 days	0.66	Williams	1999 QP
1999 QQ	16.1	0.15	19990810	24.48408	302.54345	348.43033	0.23896	0.2163766	2.3494034	47	1	37 days	0.46	Williams	1999 QQ
1999 QR	16.1	0.15	19990830	345.03121	201.07175	155.91653	7.75525	0.1385521	2.3902342	34	1	24 days	0.51	Marsden	1999 QR
1999 QS ₁	15.6	0.15	19990810	326.33136	219.16001	169.01208	8.39762	0.1501544	2.5396140	13	1	13 days	1.61	Williams	1999 QS ₁
1999 QT ₁	14.9	0.15	19990810	280.76227	130.90061	316.16863	11.81643	0.1436964	2.6317622	31	1	57 days	0.68	Williams	1999 QT ₁
1999 QU ₁	16.2	0.15	19990810	339.28134	80.45754	297.01740	5.40212	0.2692259	2.3776408	36	1	57 days	0.62	Williams	1999 QU ₁
1999 QV ₁	15.9	0.15	19990810	343.86226	207.99311	167.80832	6.97307	0.3651771	2.6040861	69	1	52 days	0.68	Williams	1999 QV ₁
1999 QB ₂	13.5	0.15	19990810	353.17200	43.56684	305.70295	6.75641	0.2340201	2.7966997	42	1	56 days	0.47	Williams	1999 QB ₂
1999 QD ₂	17.0	0.15	19990810	44.10202	122.63717	154.13632	23.28535	0.0606554	1.6858181	49	1	54 days	0.58	M-v 5 Williams	1999 QD ₂
1999 QH ₂	14.7	0.15	19990830	5.79773	33.38357	307.11871	0.44531	0.2485515	3.1659585	36	1	25 days	0.63	Williams	1999 QH ₂
1999 QJ ₂	14.4	0.15	19990810	34.97302	123.19394	164.67559	13.94065	0.2378482	2.6729885	54	1	55 days	0.63	Williams	1999 QJ ₂
1999 QL ₂	16.1	0.15	19990830	349.67184	174.84703	168.64621	11.35628	0.1767071	2.6450167	17	1	7 days	0.42	Williams	1999 QL ₂
1999 QM ₂	15.3	0.15	19990830	282.24695	81.57834	355.18209	4.57439	0.1602743	2.4427033	33	1	12 days	0.39	Williams	1999 QM ₂
1999 QO ₂	15.8	0.15	19990810	327.97007	48.18845	324.62102	10.59766	0.2172315	2.7396112	31	1	59 days	0.48	Williams	1999 QO ₂
1999 QP ₂	14.3	0.15	19990830	205.13786	195.94969	307.80302	8.75593	0.1289366	2.3635356	37	1	18 days	0.52	Williams	1999 QP ₂
1999 QQ ₂	14.4	0.15	19990810	313.83355	57.00808	345.11516	13.20111	0.2055014	2.5906175	175	1	60 days	0.36	M-v 5 Williams	1999 QQ ₂
1999 QR ₂	16.6	0.15	19990830	30.06498	143.25758	148.86314	18.78667	0.2736732	2.5666169	14	1	13 days	0.38	Williams	1999 QR ₂
1999 QS ₂	13.6	0.15	19990830	4.13085	216.61665	123.09746	2.32904	0.1846344	3.1705369	28	1	13 days	0.99	Williams	1999 QS ₂
1999 QV ₂	18.9	0.15	19990830	206.75234	335.86701	151.58807	8.35310	0.0462578	1.8268459	9	1	23 days	0.14	Williams	1999 QV ₂
1999 RA	15.1	0.15	19990810	348.21812	166.48459	166.25483	5.61525	0.2492904	2.3601227	70	1	118 days	0.49	M-v 4 Williams	1999 RA
1999 RD	15.7	0.15	19990830	76.86237	69.97072	158.05134	22.32943	0.2354503	2.2975303	24	1	13 days	0.63	Williams	1999 RD
1999 RE	15.7	0.15	19990830	19.72702	300.65163	23.91871	12.04061	0.3125544	2.6564242	16	1	10 days	0.42	Williams	1999 RE
1999 RG	15.7	0.15	19990830	321.56211	269.18904	113.82550	4.82973	0.2087280	2.2905255	20	1	18 days	0.39	Marsden	1999 RG
1999 RL	14.7	0.15	19990830	286.01531	357.18092	66.61779	3.27221	0.0780368	2.9088680	27	1	15 days	0.54	Williams	1999 RL
1999 RN	16.0	0.15	19990830	302.95308	69.69318	351.63881	3.72527	0.1219794	2.3358052	38	1	26 days	0.74	Williams	1999 RN

1999 RO	16.0	0.15	19990810	321.21954	235.01022	158.28659	16.27798	0.2259092	2.6571815	29	1	32 days	0.57	Williams	1999 RO
1999 RP	16.6	0.15	19990830	6.89303	266.85689	64.77716	3.72921	0.1993828	2.4859653	45	1	10 days	0.60	Williams	1999 RP
1999 RQ	15.6	0.15	19990830	0.93058	251.66190	90.58612	4.53665	0.0984937	2.7706916	22	1	8 days	0.51	Williams	1999 RQ
1999 RR	14.2	0.15	19990830	302.62644	337.02431	85.44281	7.00339	0.1867760	3.1453768	18	1	9 days	0.66	Williams	1999 RR
1999 RS	13.6	0.15	19990830	295.29076	283.29237	162.28733	9.75583	0.0701562	3.1778598	19	1	16 days	0.56	Williams	1999 RS
1999 RU	16.1	0.15	19990830	343.17099	210.19485	153.67179	4.82651	0.1869182	2.3213169	34	1	15 days	0.47	Williams	1999 RU
1999 RW	16.9	0.15	19990830	356.52964	29.05329	304.90676	7.07798	0.2339761	2.3945577	28	1	9 days	0.66	Williams	1999 RW
1999 RX	16.4	0.15	19990810	323.68536	98.80512	270.19492	3.58074	0.1646477	2.2912315	23	1	28 days	0.56	Williams	1999 RX
1999 RY	15.2	0.15	19990810	31.90857	74.24381	194.42050	4.40633	0.2350327	2.5971306	35	1	62 days	0.53	M-v 5 Williams	1999 RY
1999 RZ	16.1	0.15	19990830	2.53299	116.54015	226.08436	5.81715	0.0921176	2.7179988	17	1	14 days	0.66	Williams	1999 RZ
1999 RA ₁	15.3	0.15	19990830	124.87015	267.32355	306.48509	5.89544	0.0759452	2.3445079	32	1	10 days	0.52	Williams	1999 RA ₁
1999 RB ₁	16.2	0.15	19990830	67.48605	53.14578	204.97368	4.82985	0.1651730	2.2450493	26	1	10 days	0.51	Williams	1999 RB ₁
1999 RD ₁	15.9	0.15	19990830	336.18008	335.48337	40.34439	2.47716	0.1700636	2.2670247	65	1	36 days	0.43	Williams	1999 RD ₁
1999 RG ₁	14.4	0.15	19990830	267.23681	71.18500	29.56879	9.69420	0.2150859	2.6224830	19	1	8 days	0.47	Williams	1999 RG ₁
1999 RH ₁	13.4	0.15	19990830	289.18491	344.89971	80.39443	2.26811	0.0945812	2.2983837	46	1	9 days	0.50	Williams	1999 RH ₁
1999 RJ ₁	12.9	0.15	19990830	243.85972	56.04743	45.46069	9.35618	0.0639259	3.1869577	20	1	13 days	1.13	Williams	1999 RJ ₁
1999 RK ₁	17.4	0.15	19990830	337.67433	44.67229	358.98023	28.42748	0.2959533	2.2243960	10	1	9 days	0.36	Williams	1999 RK ₁
1999 RL ₁	17.6	0.15	19990830	357.98140	22.55185	342.83222	5.56962	0.3492486	2.4954640	10	1	9 days	0.69	Williams	1999 RL ₁
1999 RN ₁	15.9	0.15	19990830	314.03901	133.86162	279.25523	1.45881	0.2000905	2.4439992	27	1	12 days	0.58	Williams	1999 RN ₁
1999 RP ₁	14.0	0.15	19990830	128.79526	207.85217	352.73016	4.45433	0.0533028	2.6000273	31	1	8 days	0.71	Williams	1999 RP ₁
1999 RR ₁	15.5	0.15	19990830	92.27248	295.94804	308.82924	2.81561	0.1317030	2.2808797	19	1	8 days	0.46	Marsden	1999 RR ₁
1999 RS ₁	15.1	0.15	19990830	279.19612	116.55876	342.92115	4.46502	0.2300963	2.3406530	18	1	6 days	0.87	Williams	1999 RS ₁
1999 RU ₁	15.7	0.15	19990830	328.20772	265.78427	140.43517	0.57603	0.2912443	2.5936772	16	1	7 days	0.84	E Williams	1999 RU ₁
1999 RV ₁	15.6	0.15	19990830	331.90814	228.25566	171.44359	11.14409	0.2771169	2.8513085	17	1	9 days	0.78	Williams	1999 RV ₁
1999 RX ₁	15.5	0.15	19990830	13.77027	347.04163	347.27659	2.12085	0.2094530	2.4395851	23	1	41 days	0.65	Williams	1999 RX ₁
1999 RY ₁	13.9	0.15	19990830	22.24592	328.63312	355.63988	1.10001	0.2327036	3.1442625	18	1	6 days	0.46	Williams	1999 RY ₁
1999 RB ₂	16.9	0.15	19990830	148.90473	345.69646	208.28415	21.66623	0.0476559	1.9272703	16	1	12 days	0.69	Williams	1999 RB ₂
1999 RC ₂	16.5	0.15	19990830	18.54598	347.72682	330.98971	24.45601	0.1476563	1.6167422	32	1	7 days	0.44	Williams	1999 RC ₂
1999 RD ₂	12.1	0.15	19990830	281.89051	113.10242	23.51037	32.62747	0.3119148	2.7916944	17	1	12 days	0.38	Williams	1999 RD ₂
1999 RE ₂	14.6	0.15	19990830	337.80649	215.47588	192.53236	8.49350	0.2477213	2.3944483	13	1	8 days	0.55	Williams	1999 RE ₂
1999 RF ₂	18.4	0.15	19990830	27.88192	137.67677	167.75867	2.40820	0.1715606	2.2220219	9	1	13 days	0.12	Williams	1999 RF ₂
1999 RJ ₂	16.1	0.15	19990810	348.06176	191.08951	149.00922	9.40829	0.2585586	2.9871672	15	1	57 days	0.20	Williams	1999 RJ ₂
1999 RK ₂	16.6	0.15	19990830	322.95872	233.48686	149.25598	8.08239	0.2201871	2.5202889	11	1	13 days	0.13	Williams	1999 RK ₂
1999 RL ₂	14.5	0.15	19990830	64.10238	318.83430	294.73647	14.08211	0.1800742	2.6878066	21	1	12 days	1.12	Williams	1999 RL ₂
1999 RM ₂	14.1	0.15	19990830	267.71223	159.71558	278.23283	9.11380	0.0887317	2.9861829	17	1	10 days	0.73	Williams	1999 RM ₂
1999 RN ₂	14.0	0.15	19990830	147.96189	318.56594	227.48190	8.55749	0.0226141	2.9880990	25	1	10 days	0.52	Williams	1999 RN ₂
1999 RO ₂	15.7	0.15	19990830	37.85541	34.67291	254.67814	6.52728	0.1127047	2.3420201	20	1	10 days	0.62	Williams	1999 RO ₂
1999 RP ₂	15.9	0.15	19990810	6.91204	42.25359	283.96604	13.18699	0.2556265	2.4229882	24	1	62 days	0.46	M-v 4 Williams	1999 RP ₂
1999 RQ ₂	17.0	0.15	19990830	61.45443	72.86799	202.19502	21.13530	0.0706544	1.9138214	12	1	12 days	0.45	Williams	1999 RQ ₂
1999 RR ₂	12.8	0.15	19990830	295.77320	173.73515	259.45854	17.32452	0.1717458	3.1409992	17	1	16 days	0.23	Williams	1999 RR ₂
1999 RS ₂	15.7	0.15	19990830	12.15625	203.16050	116.00027	3.55124	0.2080332	2.4593532	25	1	10 days	0.38	Williams	1999 RS ₂
1999 RT ₂	15.9	0.15	19990830	111.18987	265.39010	320.36021	3.52464	0.1668751	2.3640591	11	1	2 days	0.45	E Williams	1999 RT ₂
1999 RU ₂	20.4	0.15	19990830	349.53877	202.74141	179.69727	5.46980	0.5627487	2.8268377	84	1	18 days	0.62	Williams	1999 RU ₂
1999 RV ₂	18.8	0.15	19990830	350.56283	42.84599	335.62403	4.86090	0.5097380	2.4411617	71	1	19 days	0.55	Marsden	1999 RV ₂
1999 RY ₂	14.0	0.15	19990830	52.60594	96.89479	179.44888	10.45750	0.2365217	3.3806221	22	1	11 days	0.53	Williams	1999 RY ₂
1999 RZ ₂	14.0	0.15	19990830	27.92598	353.78548	316.73570	0.90564	0.2850337	3.2705350	14	1	3 days	0.57	Williams	1999 RZ ₂
1999 RA ₃	14.9	0.15	19990830	309.42978	231.66542	191.19415	2.33654	0.1425500	2.4090345	16	1	10 days	0.65	Williams	1999 RA ₃
1999 RB ₃	14.5	0.15	19990830	146.55751	217.85943	352.56928	4.42167	0.0486499	2.2656572	20	1	8 days	1.11	E Williams	1999 RB ₃
1999 RC ₃	13.3	0.15	19990830	297.88453	82.42808	4.17896	11.19771	0.1889982	3.2403659	16	1	9 days	0.85	Williams	1999 RC ₃
1999 RD ₃	15.2	0.15	19990830	336.07685	181.73416	198.03916	2.16528	0.1074648	2.2359873	28	1	5 days	0.49	E Williams	1999 RD ₃
1999 RE ₃	16.6	0.15	19990830	7.02036	151.08232	182.79380	4.35957	0.3161370	2.5667122	46	1	10 days	0.56	Williams	1999 RE ₃
1999 RF ₃	15.9	0.15	19990830	359.39655	2.47239	348.19357	4.15259	0.1879338	2.2802472	26	1	7 days	0.62	Williams	1999 RF ₃
1999 RH ₃	16.4	0.15	19990830	340.83245	40.69400	320.15304	1.63220	0.2417132	2.3376497	24	1	10 days	0.37	Williams	1999 RH ₃

1999 RJ ₃	14.8	0.15	19990830	0.53668	234.82495	135.95075	2.64347	0.0739046	3.0715208	9	1	8 days	0.18		Williams	1999 RJ ₃
1999 RK ₃	15.8	0.15	19990830	41.24846	264.59387	47.73046	6.53769	0.1466970	2.4296796	9	1	7 days	0.23	E	Williams	1999 RK ₃
1999 RL ₃	13.4	0.15	19990830	317.99701	69.26225	36.14210	15.37058	0.0746472	2.5759863	18	1	8 days	0.21		Marsden	1999 RL ₃
1999 RM ₃	14.5	0.15	19990830	65.00407	358.59576	256.45702	3.96733	0.1155350	2.2829471	30	1	11 days	0.25		Williams	1999 RM ₃
1999 RN ₃	16.4	0.15	19990830	345.76294	141.53501	208.26556	4.79927	0.2468874	2.5268815	18	1	9 days	0.57		Williams	1999 RN ₃
1999 RP ₃	15.1	0.15	19990830	256.26177	237.93704	204.61234	5.32023	0.1373504	2.2964661	21	1	5 days	0.52		Williams	1999 RP ₃
1999 RS ₃	15.1	0.15	19990830	212.94504	264.09375	212.07638	5.96920	0.0663838	2.4071189	16	1	10 days	0.53		Williams	1999 RS ₃
1999 RU ₃	14.5	0.15	19990810	102.28281	12.97038	195.97934	7.00226	0.0913894	2.1950580	32	1	66 days	0.40	M-v 5	Williams	1999 RU ₃
1999 RV ₃	15.8	0.15	19990830	176.56822	313.00965	196.00363	6.49415	0.0885478	2.3409725	14	1	5 days	1.06	E	Williams	1999 RV ₃
1999 RW ₃	16.3	0.15	19990830	308.49619	129.14964	271.74746	4.85521	0.2097809	2.4459772	16	1	5 days	0.86		Williams	1999 RW ₃
1999 RY ₃	15.8	0.15	19990830	334.79688	74.00758	295.77369	5.38360	0.2590940	2.8860855	25	1	9 days	0.50		Williams	1999 RY ₃
1999 RB ₄	16.5	0.15	19990830	9.46013	131.51480	181.40015	4.58587	0.2326265	2.5481021	18	1	9 days	0.52		Williams	1999 RB ₄
1999 RD ₄	15.4	0.15	19990830	0.10475	161.16922	166.48957	9.21027	0.1599074	2.7456758	24	1	9 days	0.50		Williams	1999 RD ₄
1999 RE ₄	15.1	0.15	19990810	350.86424	166.23442	165.05183	13.98776	0.1767528	2.6142224	31	1	63 days	0.42	M-v 5	Williams	1999 RE ₄
1999 RF ₄	16.1	0.15	19990810	347.92867	23.29779	316.16511	13.66743	0.2614250	2.5370235	32	1	61 days	0.58	M-v 5	Williams	1999 RF ₄
1999 RH ₄	13.1	0.15	19990810	39.56690	345.69216	290.76871	8.57084	0.0563729	3.0606728	45	1	62 days	0.40	M-v 5	Williams	1999 RH ₄
1999 RJ ₄	16.7	0.15	19990830	317.12448	97.14579	283.50927	4.32825	0.1239118	2.1930521	23	1	8 days	0.69		Williams	1999 RJ ₄
1999 RK ₄	15.5	0.15	19990830	61.10949	296.59266	340.79873	4.93534	0.0462305	2.5330302	14	1	11 days	0.63	E	Williams	1999 RK ₄
1999 RW ₄	17.3	0.15	19990830	288.60347	75.08596	350.06391	11.35644	0.0730523	2.5693807	9	1	14 days	0.22		Williams	1999 RW ₄
1999 RY ₄	13.6	0.15	19990830	256.09586	117.45298	350.15647	26.64822	0.1570921	3.1499042	24	1	14 days	0.55		Williams	1999 RY ₄
1999 RR ₅	15.9	0.15	19990830	9.24430	347.53854	345.49030	8.73892	0.1144645	3.0297574	15	1	14 days	0.41		Williams	1999 RR ₅
1999 RT ₅	14.5	0.15	19990830	189.80491	356.78840	163.32258	2.33509	0.2893193	2.4799557	20	1	11 days	0.50	E	Williams	1999 RT ₅
1999 RD ₆	15.9	0.15	19990830	288.92667	268.06684	164.61937	6.31446	0.1415806	2.6961632	16	1	11 days	0.47		Williams	1999 RD ₆
1999 RS ₆	14.4	0.15	19990830	242.64452	316.31189	163.88666	9.94471	0.1791333	2.4001832	24	1	11 days	0.35		Williams	1999 RS ₆
1999 RY ₆	15.6	0.15	19990830	349.16699	194.84010	164.38019	11.49890	0.0613718	2.9834914	12	1	11 days	0.41		Williams	1999 RY ₆
1999 RZ ₆	14.3	0.15	19990830	37.72484	304.35220	359.42376	6.65859	0.1868745	2.9770988	18	1	18 days	0.43		Williams	1999 RZ ₆
1999 RK ₇	15.1	0.15	19990810	4.09502	318.02350	16.16574	2.07540	0.2444277	2.1751731	25	1	59 days	0.44		Williams	1999 RK ₇
1999 RX ₇	16.7	0.15	19990830	1.73752	344.43532	8.24437	6.42567	0.1549516	2.2462452	13	1	6 days	0.48		Williams	1999 RX ₇
1999 RA ₈	16.0	0.15	19990830	25.92403	158.73422	160.83001	4.20134	0.2009489	2.6924774	13	1	5 days	0.44	E	Williams	1999 RA ₈
1999 RB ₈	17.2	0.15	19990830	321.90486	35.77703	8.89101	8.90038	0.1142588	2.3589463	10	1	18 days	0.48		Williams	1999 RB ₈
1999 RC ₈	17.1	0.15	19990830	359.08882	158.85180	184.26779	2.23595	0.2115977	2.4415377	14	1	10 days	0.47		Williams	1999 RC ₈
1999 RK ₈	15.3	0.15	19990830	283.13940	88.80382	340.23164	7.30715	0.0749432	2.4290904	42	1	28 days	0.36		Williams	1999 RK ₈
1999 RB ₉	15.3	0.15	19990830	45.06076	305.31742	349.57953	6.53812	0.0734841	2.9439476	9	1	13 days	0.09		Williams	1999 RB ₉
1999 RE ₉	14.7	0.15	19990830	317.37483	232.46097	166.45279	6.45773	0.1174312	2.8064909	31	1	10 days	0.58		Williams	1999 RE ₉
1999 RF ₉	18.0	0.15	19990830	344.90593	212.14574	156.35264	1.12306	0.1939229	3.0834844	9	1	13 days	0.14		Williams	1999 RF ₉
1999 RH ₉	16.5	0.15	19990830	47.82141	124.21658	158.60356	2.09794	0.1692006	3.3560164	9	1	13 days	0.16		Williams	1999 RH ₉
1999 RN ₉	14.7	0.15	19990830	341.90861	204.08489	166.83795	23.45965	0.1417426	3.1199163	19	1	10 days	0.50		Williams	1999 RN ₉
1999 RP ₉	15.3	0.15	19990830	147.62615	34.55936	161.48755	3.44001	0.0613592	2.7185808	15	1	10 days	0.45	E	Williams	1999 RP ₉
1999 RS ₉	17.7	0.15	19990830	336.88584	216.66909	167.95283	15.88160	0.2835240	2.7710898	13	1	9 days	0.47		Williams	1999 RS ₉
1999 RW ₉	16.3	0.15	19990830	312.62252	245.49913	180.14165	5.52704	0.2278429	2.4408861	15	1	2 days	0.43	E	Williams	1999 RW ₉
1999 RA ₁₀	14.9	0.15	19990830	53.82208	114.48263	177.58031	0.53596	0.1288272	2.8540249	14	1	2 days	0.61	E	Williams	1999 RA ₁₀
1999 RB ₁₀	16.7	0.15	19990830	145.52481	129.93846	79.42929	0.02957	0.0669988	2.5052511	9	1	11 days	0.46	E	Williams	1999 RB ₁₀
1999 RE ₁₀	14.6	0.15	19990830	280.84634	298.14865	120.42555	5.98503	0.1348121	2.3554985	20	1	4 days	0.59	E	Williams	1999 RE ₁₀
1999 RG ₁₀	14.6	0.15	19990830	302.02042	85.22507	334.68976	22.36810	0.3241746	2.2595579	18	1	4 days	0.45		Williams	1999 RG ₁₀
1999 RH ₁₀	14.9	0.15	19990830	359.69503	303.00889	22.28347	3.45202	0.2004193	2.6428442	18	1	4 days	0.58		Williams	1999 RH ₁₀
1999 RK ₁₀	16.6	0.15	19990810	343.85034	189.27484	158.56039	1.98181	0.2395873	2.3394030	24	1	37 days	0.56		Williams	1999 RK ₁₀
1999 RN ₁₀	15.4	0.15	19990830	315.80835	66.58069	345.15389	0.64833	0.3549148	2.7947806	25	1	7 days	0.76		Williams	1999 RN ₁₀
1999 RU ₁₀	14.6	0.15	19990830	145.40214	210.14645	332.12760	21.11277	0.0672071	1.9304322	24	1	6 days	0.30		Williams	1999 RU ₁₀
1999 RC ₁₁	16.5	0.15	19990810	20.96524	246.34726	44.08751	2.56590	0.2220939	2.3774239	21	1	31 days	0.70		Williams	1999 RC ₁₁
1999 RE ₁₁	16.3	0.15	19990830	333.51153	301.16808	76.32856	2.26831	0.2686310	2.4528214	19	1	6 days	0.59		Williams	1999 RE ₁₁
1999 RJ ₁₁	16.1	0.15	19990830	297.04242	63.17136	342.55569	18.63273	0.1000908	1.9516926	21	1	6 days	0.49		Williams	1999 RJ ₁₁
1999 RL ₁₁	15.3	0.15	19990830	8.21239	168.16299	151.29536	12.22941	0.1883250	2.6164415	19	1	6 days	0.46		Williams	1999 RL ₁₁
1999 RQ ₁₁	15.4	0.15	19990830	55.12884	13.55156	245.73421	4.43893	0.1824573	2.5571852	22	1	9 days	0.51		Williams	1999 RQ ₁₁

1999 RR ₁₁	14.7	0.15	19990830	53.39369	70.96434	184.22094	8.70229	0.2344948	2.3787684	20	1	7 days	0.37	Williams	1999 RR ₁₁
1999 RS ₁₁	14.9	0.15	19990830	291.43757	102.10082	318.50665	4.64341	0.1580665	2.5312819	16	1	6 days	0.58	Williams	1999 RS ₁₁
1999 RT ₁₁	14.1	0.15	19990830	303.00356	103.10700	305.86364	2.73457	0.1652591	2.4847991	24	1	6 days	0.21	Williams	1999 RT ₁₁
1999 RU ₁₁	16.3	0.15	19990810	349.33838	250.72741	89.38010	0.74034	0.1354874	2.1638019	24	1	36 days	0.47	Williams	1999 RU ₁₁
1999 RV ₁₁	15.4	0.15	19990810	308.54223	72.83550	334.86724	22.36218	0.2613379	2.3242328	27	1	37 days	0.30	Williams	1999 RV ₁₁
1999 RY ₁₁	15.7	0.15	19990830	304.32656	53.31740	355.33543	1.85481	0.1767454	2.3571629	16	1	6 days	0.55	Williams	1999 RY ₁₁
1999 RZ ₁₁	16.6	0.15	19990830	352.58661	345.72348	357.06001	6.05166	0.1753014	2.3837376	14	1	7 days	0.39	Williams	1999 RZ ₁₁
1999 RB ₁₂	14.7	0.15	19990830	339.26695	189.15387	177.77898	7.03990	0.1551147	3.2114035	26	1	23 days	0.42	Williams	1999 RB ₁₂
1999 RD ₁₂	15.4	0.15	19990830	357.14140	176.83873	166.13668	15.50295	0.2421994	2.7729104	17	1	7 days	0.35	Williams	1999 RD ₁₂
1999 RG ₁₂	15.5	0.15	19990830	302.66341	88.63573	336.56948	16.41450	0.2582795	2.4165293	17	1	2 days	0.41	E Williams	1999 RG ₁₂
1999 RH ₁₂	14.4	0.15	19990830	13.64881	358.12700	320.36149	4.58192	0.1916331	2.6936997	21	1	7 days	0.45	Williams	1999 RH ₁₂
1999 RK ₁₂	14.2	0.15	19990830	344.48785	139.06612	217.73460	3.17322	0.0656659	2.7477630	18	1	7 days	0.39	Williams	1999 RK ₁₂
1999 RL ₁₂	15.7	0.15	19990830	343.93409	138.60141	223.58573	2.48610	0.1850616	2.3124110	26	1	9 days	0.26	Williams	1999 RL ₁₂
1999 RM ₁₂	15.4	0.15	19990830	185.48729	199.75836	315.40917	6.12777	0.0900521	2.2835517	24	1	9 days	0.53	Williams	1999 RM ₁₂
1999 RN ₁₂	15.8	0.15	19990830	334.12172	192.28808	182.01819	6.11433	0.1545982	2.3872621	20	1	9 days	0.41	Williams	1999 RN ₁₂
1999 RO ₁₂	14.0	0.15	19990830	295.57689	106.10312	308.76282	7.51528	0.0996693	3.1587316	17	1	7 days	0.53	Williams	1999 RO ₁₂
1999 RQ ₁₂	17.6	0.15	19990830	338.61358	119.89992	255.24534	2.31016	0.2596572	2.3679154	36	1	9 days	0.50	Williams	1999 RQ ₁₂
1999 RR ₁₂	15.4	0.15	19990830	311.13745	94.00549	309.86779	5.91283	0.1589048	2.4799407	21	1	9 days	0.48	Williams	1999 RR ₁₂
1999 RS ₁₂	15.4	0.15	19990830	340.09162	54.98900	309.37449	6.82141	0.1236711	2.3651863	27	1	23 days	0.35	Williams	1999 RS ₁₂
1999 RT ₁₂	14.5	0.15	19990830	124.56276	304.41077	262.90307	3.77729	0.0841214	2.2387541	23	1	7 days	0.30	Williams	1999 RT ₁₂
1999 RU ₁₂	12.1	0.15	19990830	12.47939	14.04163	308.69065	9.90116	0.1696452	5.1897103	17	1	7 days	0.45	E Williams	1999 RU ₁₂
1999 RV ₁₂	16.2	0.15	19990810	330.63081	168.56939	202.68588	5.45628	0.1676308	2.2220908	28	1	63 days	0.44	M-v 6 Williams	1999 RV ₁₂
1999 RW ₁₂	16.2	0.15	19990830	13.23063	150.16199	168.69581	30.21367	0.1777655	2.6768060	24	1	7 days	0.58	Williams	1999 RW ₁₂
1999 RY ₁₂	15.4	0.15	19990830	340.14696	66.86584	301.00435	4.16687	0.1761039	2.6489914	24	1	9 days	0.45	Williams	1999 RY ₁₂
1999 RZ ₁₂	13.5	0.15	19990830	327.50815	197.18630	180.29941	9.43292	0.0808686	2.9731006	25	1	9 days	0.47	Williams	1999 RZ ₁₂
1999 RA ₁₃	14.7	0.15	19990830	31.69390	358.32970	303.88177	4.58739	0.0910147	2.7544414	22	1	9 days	0.33	Williams	1999 RA ₁₃
1999 RB ₁₃	15.3	0.15	19990810	16.84162	148.37574	164.50532	14.25160	0.1088256	2.4080445	29	1	37 days	0.37	Williams	1999 RB ₁₃
1999 RC ₁₃	12.3	0.15	19990830	66.03865	92.84423	160.60234	16.05791	0.1795002	5.1688415	15	1	4 days	0.45	E Williams	1999 RC ₁₃
1999 RD ₁₃	16.9	0.15	19990830	338.95231	202.41152	164.01055	7.01798	0.1313874	2.3520592	20	1	4 days	0.74	Williams	1999 RD ₁₃
1999 RE ₁₃	16.6	0.15	19990830	337.15038	213.17597	163.83886	5.63565	0.2486826	2.6221071	19	1	4 days	0.51	Williams	1999 RE ₁₃
1999 RH ₁₃	14.8	0.15	19990830	19.57561	154.69832	163.18528	2.35199	0.0568504	2.8675917	24	1	9 days	0.54	E Williams	1999 RH ₁₃
1999 RJ ₁₃	15.3	0.15	19990830	333.32005	30.62797	342.59296	29.03929	0.1191272	2.5896719	21	1	7 days	0.39	Williams	1999 RJ ₁₃
1999 RL ₁₃	14.9	0.15	19990830	283.66566	93.30991	345.66091	1.99831	0.1961528	2.3419167	25	1	9 days	0.42	Williams	1999 RL ₁₃
1999 RN ₁₃	15.7	0.15	19990830	323.97953	250.32961	140.65172	1.07556	0.1930920	2.4199376	18	1	6 days	0.40	Williams	1999 RN ₁₃
1999 RO ₁₃	15.6	0.15	19990830	350.44489	212.34422	143.22890	2.71168	0.2531865	2.9961675	29	1	6 days	0.63	Williams	1999 RO ₁₃
1999 RS ₁₃	14.1	0.15	19990830	261.19087	311.13089	143.70226	13.84407	0.1543749	2.5855429	18	1	6 days	0.56	Williams	1999 RS ₁₃
1999 RT ₁₃	14.8	0.15	19990830	25.26351	307.38610	348.04559	28.28450	0.2530306	3.2855012	20	1	6 days	0.50	Williams	1999 RT ₁₃
1999 RU ₁₃	14.7	0.15	19990830	339.00529	338.85852	29.07678	3.67865	0.1564219	3.0294573	25	1	6 days	0.47	Williams	1999 RU ₁₃
1999 RV ₁₃	15.3	0.15	19990830	56.12945	157.20972	111.22992	3.20627	0.1418452	2.5784418	20	1	6 days	0.60	Williams	1999 RV ₁₃
1999 RW ₁₃	16.0	0.15	19990830	42.92369	170.50848	107.85885	2.64379	0.1923168	2.4268664	20	1	6 days	0.61	Williams	1999 RW ₁₃
1999 RY ₁₃	15.8	0.15	19990830	311.51733	267.97634	137.82898	3.02270	0.1849725	2.3946218	28	1	6 days	0.54	Williams	1999 RY ₁₃
1999 RZ ₁₃	17.3	0.15	19990830	343.57936	358.20935	4.98720	2.57622	0.1979533	2.2621144	18	1	6 days	0.66	Williams	1999 RZ ₁₃
1999 RA ₁₄	15.6	0.15	19990830	306.22974	31.36696	19.01290	2.31536	0.1700094	2.4341997	29	1	6 days	0.48	Williams	1999 RA ₁₄
1999 RB ₁₄	14.5	0.15	19990830	339.89536	23.82940	347.22724	15.05230	0.2297207	3.1255182	30	1	6 days	0.42	Williams	1999 RB ₁₄
1999 RF ₁₄	15.1	0.15	19990830	295.66798	90.79379	345.31513	20.74776	0.2836773	2.2951814	52	1	19 days	0.32	Williams	1999 RF ₁₄
1999 RG ₁₄	16.6	0.15	19990830	91.73771	79.87479	160.84669	25.59748	0.0620524	1.8556152	33	1	2 days	0.48	Williams	1999 RG ₁₄
1999 RJ ₁₄	14.1	0.15	19990830	20.59984	303.47499	4.34908	2.74280	0.2100518	2.5582619	40	1	10 days	1.24	Williams	1999 RJ ₁₄
1999 RL ₁₄	16.3	0.15	19990830	333.52697	211.11315	166.92914	3.57305	0.1778288	2.3442862	19	1	7 days	0.56	Williams	1999 RL ₁₄
1999 RN ₁₄	16.7	0.15	19990810	348.17547	163.76514	183.10291	2.44185	0.1208258	2.1267575	22	1	37 days	0.48	Williams	1999 RN ₁₄
1999 RO ₁₄	14.7	0.15	19990830	297.64931	226.96525	180.74115	4.09168	0.0431369	2.4259294	28	1	7 days	0.48	Williams	1999 RO ₁₄
1999 RP ₁₄	17.2	0.15	19990830	354.81139	4.79234	340.99440	18.06077	0.0482086	1.8755731	13	1	2 days	0.43	E Williams	1999 RP ₁₄
1999 RQ ₁₄	15.6	0.15	19990830	338.70712	41.02950	326.94795	3.60663	0.1280907	2.2948676	22	1	7 days	0.35	Williams	1999 RQ ₁₄
1999 RR ₁₄	13.6	0.15	19990830	285.16762	254.49374	179.67614	18.06289	0.1519095	3.1536658	29	1	9 days	0.53	Williams	1999 RR ₁₄

1999 RS ₁₄	15.9	0.15	19990830	14.53622	72.80005	245.28332	3.42008	0.2221759	2.5578886	28	1	23 days	0.37	Williams	1999 RS ₁₄
1999 RU ₁₄	13.2	0.15	19990830	112.11279	242.41163	341.39697	13.60482	0.0663469	3.0012405	19	1	7 days	0.25	E Williams	1999 RU ₁₄
1999 RV ₁₄	15.3	0.15	19990830	347.41975	150.93493	210.04710	0.83092	0.2008511	2.9090112	17	1	7 days	0.41	Williams	1999 RV ₁₄
1999 RW ₁₄	14.9	0.15	19990830	73.47875	65.55750	172.74614	3.51912	0.2646999	2.5784137	15	1	7 days	0.57	E Williams	1999 RW ₁₄
1999 RX ₁₄	13.3	0.15	19990830	102.51100	241.80030	345.96332	3.44589	0.1124812	2.9797839	136	1	7 days	0.43	E Williams	1999 RX ₁₄
1999 RY ₁₄	15.3	0.15	19990830	335.25750	218.82703	161.53427	5.46903	0.2190684	3.0730492	112	1	7 days	0.59	E Williams	1999 RY ₁₄
1999 RB ₁₅	17.1	0.15	19990830	325.24881	236.72425	155.71501	1.97487	0.2045257	2.2349343	126	1	7 days	0.51	Williams	1999 RB ₁₅
1999 RC ₁₅	17.0	0.15	19990830	339.52710	215.43745	163.53249	5.16892	0.2939021	2.5615073	76	1	7 days	0.67	E Williams	1999 RC ₁₅
1999 RD ₁₅	14.9	0.15	19990830	251.69638	128.09354	347.77899	11.19451	0.2583622	2.4726349	78	1	4 days	0.90	E Williams	1999 RD ₁₅
1999 RE ₁₅	16.1	0.15	19990830	347.14932	204.01070	159.94239	7.72946	0.2542738	2.9997466	49	1	7 days	0.62	Williams	1999 RE ₁₅
1999 RJ ₁₅	15.2	0.15	19990830	8.65707	308.57841	19.98796	4.09314	0.1155158	2.6099433	25	1	6 days	0.47	Williams	1999 RJ ₁₅
1999 RK ₁₅	15.0	0.15	19990830	3.29946	328.97556	5.72054	6.64457	0.1708314	2.6369827	24	1	6 days	0.41	Williams	1999 RK ₁₅
1999 RL ₁₅	15.2	0.15	19990830	114.62904	83.32199	136.55588	6.47559	0.0504437	2.3658011	24	1	6 days	0.50	Williams	1999 RL ₁₅
1999 RM ₁₅	15.6	0.15	19990830	321.66743	229.52804	156.71246	23.88838	0.0946466	1.9621520	64	1	28 days	0.41	Williams	1999 RM ₁₅
1999 RN ₁₅	15.0	0.15	19990830	322.86426	54.97566	345.73598	25.49811	0.2434760	3.1117214	122	1	7 days	0.47	Williams	1999 RN ₁₅
1999 RO ₁₅	13.2	0.15	19990830	14.04204	341.52070	345.99644	27.84034	0.0364673	3.2307899	128	1	3 days	0.49	E Williams	1999 RO ₁₅
1999 RR ₁₅	16.4	0.15	19990830	352.76069	5.84139	346.81013	15.15843	0.1989712	2.6165092	109	1	5 days	0.66	Williams	1999 RR ₁₅
1999 RS ₁₅	15.4	0.15	19990830	326.21660	21.90156	3.27233	1.39406	0.1285588	2.3015291	46	1	3 days	0.48	Williams	1999 RS ₁₅
1999 RT ₁₅	14.3	0.15	19990830	324.25945	39.56158	348.45029	8.21162	0.1169012	3.1630093	29	1	3 days	0.72	E Williams	1999 RT ₁₅
1999 RU ₁₅	16.1	0.15	19990830	326.51799	224.10314	168.31731	2.01354	0.2215160	2.2865210	125	1	7 days	0.36	E Williams	1999 RU ₁₅
1999 RW ₁₅	15.1	0.15	19990830	330.51819	35.76607	345.77451	3.15474	0.1520870	2.2805847	16	1	3 days	0.21	Williams	1999 RW ₁₅
1999 RX ₁₅	15.7	0.15	19990830	328.85294	225.01587	163.51653	3.50683	0.1996115	2.6921293	16	1	3 days	0.42	Williams	1999 RX ₁₅
1999 RY ₁₅	15.5	0.15	19990830	291.44842	205.98610	223.73429	2.02174	0.1603321	2.4181125	24	1	3 days	0.42	E Williams	1999 RY ₁₅
1999 RZ ₁₅	15.0	0.15	19990830	49.01738	78.86896	186.28955	5.30490	0.2732116	2.7624381	29	1	3 days	0.82	E Williams	1999 RZ ₁₅
1999 RA ₁₆	15.2	0.15	19990830	321.62423	68.15107	333.28951	6.25831	0.2313827	2.3930947	26	1	3 days	0.22	Williams	1999 RA ₁₆
1999 RB ₁₆	16.5	0.15	19990830	23.49572	127.73611	181.90291	4.89430	0.1638294	2.3824754	24	1	3 days	0.42	Williams	1999 RB ₁₆
1999 RC ₁₆	15.1	0.15	19990830	292.40453	245.66384	196.08497	3.64092	0.2648501	2.6575358	24	1	3 days	0.48	E Williams	1999 RC ₁₆
1999 RD ₁₆	14.2	0.15	19990830	269.95282	287.98858	169.09201	31.20276	0.2098279	2.7446958	34	1	23 days	0.52	Williams	1999 RD ₁₆
1999 RE ₁₆	12.2	0.15	19990830	95.97642	273.81789	328.22020	5.51894	0.0589108	3.1443171	60	1	7 days	0.32	E Williams	1999 RE ₁₆
1999 RF ₁₆	14.8	0.15	19990830	18.90349	343.00190	337.53396	10.79154	0.1108481	3.0769064	32	1	7 days	0.59	E Williams	1999 RF ₁₆
1999 RG ₁₆	16.1	0.15	19990830	76.19134	68.94507	181.65499	5.59061	0.1434113	2.2239102	39	1	7 days	0.51	Williams	1999 RG ₁₆
1999 RH ₁₆	16.3	0.15	19990830	29.70959	146.15910	156.82319	1.51163	0.1477748	2.4680097	15	1	3 days	0.95	E Williams	1999 RH ₁₆
1999 RJ ₁₆	14.6	0.15	19990830	345.30937	209.67448	154.49062	1.23262	0.1723595	2.9296043	23	1	4 days	0.73	E Williams	1999 RJ ₁₆
1999 RK ₁₆	15.3	0.15	19990830	326.53429	56.08264	347.47344	4.48685	0.3122372	2.5737222	33	1	4 days	0.33	Williams	1999 RK ₁₆
1999 RL ₁₆	15.8	0.15	19990830	6.34315	344.62780	349.93908	2.61589	0.1408533	2.6933503	29	1	3 days	0.51	Williams	1999 RL ₁₆
1999 RM ₁₆	16.0	0.15	19990830	71.21256	89.52017	166.75855	1.93850	0.1374858	2.2494180	26	1	3 days	0.62	E Williams	1999 RM ₁₆
1999 RN ₁₆	16.5	0.15	19990830	345.07105	17.15031	348.20373	5.46457	0.2093103	2.5166154	16	1	7 days	0.47	Williams	1999 RN ₁₆
1999 RO ₁₆	16.5	0.15	19990830	327.20244	43.88072	346.93035	3.22104	0.1995798	2.4489869	26	1	7 days	0.49	E Williams	1999 RO ₁₆
1999 RR ₁₆	13.9	0.15	19990830	145.58642	28.26572	164.89890	17.16970	0.1033603	2.7482106	33	1	7 days	0.73	E Williams	1999 RR ₁₆
1999 RT ₁₆	15.7	0.15	19990830	11.72312	158.00965	167.09876	5.42491	0.1988462	2.4449568	32	1	7 days	0.37	Williams	1999 RT ₁₆
1999 RV ₁₆	16.0	0.15	19990830	338.74331	153.78853	220.75451	1.80474	0.1871163	2.3863298	37	1	7 days	0.37	Williams	1999 RV ₁₆
1999 RW ₁₆	14.7	0.15	19990830	327.98967	182.36950	208.13580	4.81869	0.1748496	3.2073592	28	1	10 days	0.54	Williams	1999 RW ₁₆
1999 RY ₁₆	14.4	0.15	19990830	349.20573	155.06129	202.22630	6.18885	0.0107645	3.0300701	27	1	23 days	0.67	Williams	1999 RY ₁₆
1999 RB ₁₇	15.7	0.15	19990830	313.11590	65.34599	338.11864	22.18814	0.1148377	2.6194657	27	1	10 days	0.52	Williams	1999 RB ₁₇
1999 RD ₁₇	15.4	0.15	19990830	23.88242	104.94477	202.94103	7.05938	0.2153161	2.8144748	35	1	9 days	0.60	Williams	1999 RD ₁₇
1999 RE ₁₇	15.5	0.15	19990830	321.78036	171.57094	224.84367	3.85738	0.1529835	2.3172029	14	1	3 days	0.31	Williams	1999 RE ₁₇
1999 RF ₁₇	15.5	0.15	19990830	29.31866	339.16440	327.94099	7.37050	0.1253902	2.3093063	27	1	10 days	0.31	Williams	1999 RF ₁₇
1999 RG ₁₇	16.0	0.15	19990830	6.89137	4.14965	330.83581	8.57223	0.1672041	2.5855930	17	1	7 days	0.47	Williams	1999 RG ₁₇
1999 RJ ₁₇	16.5	0.15	19990830	13.15835	141.49849	180.16464	9.70901	0.2338178	2.3819888	30	1	10 days	0.51	Williams	1999 RJ ₁₇
1999 RN ₁₇	17.2	0.15	19990830	18.74442	349.23195	325.66507	5.34714	0.2087667	2.3119835	26	1	10 days	0.57	Williams	1999 RN ₁₇
1999 RO ₁₇	14.9	0.15	19990830	215.99143	323.45720	179.64097	13.48361	0.2317101	2.5480198	25	1	10 days	0.55	Williams	1999 RO ₁₇
1999 RQ ₁₇	16.8	0.15	19990830	79.23455	315.24295	296.61186	2.17284	0.1176614	2.1781960	27	1	7 days	0.58	Williams	1999 RQ ₁₇
1999 RR ₁₇	14.8	0.15	19990830	152.04778	210.31554	336.65901	9.45719	0.1683314	2.7594425	23	1	7 days	0.59	Williams	1999 RR ₁₇

1999 RS ₁₇	15.7	0.15	19990830	0.66078	49.05161	293.51527	1.33174	0.2821727	2.9048343	24	1	11 days	0.59	Williams	1999 RS ₁₇
1999 RU ₁₇	17.4	0.15	19990830	38.78056	302.61096	341.17215	12.13991	0.2375839	2.3956546	30	1	7 days	0.53	Williams	1999 RU ₁₇
1999 RV ₁₇	14.7	0.15	19990830	28.92908	335.02949	335.36354	7.30836	0.1089852	3.1711938	34	1	7 days	0.54	Williams	1999 RV ₁₇
1999 RX ₁₇	16.1	0.15	19990830	296.91583	207.10603	223.93670	1.76885	0.2052573	2.3577227	36	1	7 days	0.58	Williams	1999 RX ₁₇
1999 RY ₁₇	15.4	0.15	19990830	341.11292	63.13333	311.50471	2.35884	0.2306042	2.5589290	37	1	7 days	0.43	Williams	1999 RY ₁₇
1999 RA ₁₈	14.0	0.15	19990830	137.95739	222.00885	344.56214	14.34425	0.0262978	3.2429106	27	1	13 days	0.44	Williams	1999 RA ₁₈
1999 RB ₁₈	14.5	0.15	19990830	216.86488	231.15755	259.08785	0.73445	0.0156071	2.9403542	31	1	12 days	0.51	Williams	1999 RB ₁₈
1999 RC ₁₈	16.3	0.15	19990830	325.88261	210.33214	184.57466	2.21770	0.2095627	2.4170130	28	1	10 days	0.39	Williams	1999 RC ₁₈
1999 RD ₁₈	16.4	0.15	19990830	335.90374	202.26200	173.67178	6.12841	0.1445162	2.2770974	28	1	10 days	0.38	Williams	1999 RD ₁₈
1999 RE ₁₈	15.0	0.15	19990830	58.45324	101.14742	171.25342	8.69454	0.1372196	2.7136659	27	1	12 days	0.46	Williams	1999 RE ₁₈
1999 RG ₁₈	14.3	0.15	19990810	324.96640	229.67244	153.94004	15.56494	0.1372514	2.6215741	27	1	32 days	0.65	Williams	1999 RG ₁₈
1999 RH ₁₈	16.6	0.15	19990830	350.29544	331.53605	27.41958	3.28701	0.2410727	2.3168116	17	1	6 days	0.35	Williams	1999 RH ₁₈
1999 RJ ₁₈	15.3	0.15	19990830	339.56044	261.32547	113.64481	3.31579	0.2073412	2.4314402	31	1	6 days	0.38	Williams	1999 RJ ₁₈
1999 RK ₁₈	15.8	0.15	19990830	34.98988	290.06853	1.15038	11.02107	0.2121912	2.3523207	31	1	6 days	0.38	Williams	1999 RK ₁₈
1999 RL ₁₈	14.7	0.15	19990830	166.48103	204.60148	336.71886	14.80608	0.0646556	2.6342566	26	1	12 days	0.63	Williams	1999 RL ₁₈
1999 RN ₁₈	15.0	0.15	19990830	352.99357	161.70695	193.97960	6.53993	0.1518930	2.3701649	31	1	7 days	0.34	Williams	1999 RN ₁₈
1999 RO ₁₈	14.6	0.15	19990830	12.74857	13.12411	317.21954	6.42801	0.1779359	3.0629714	26	1	14 days	0.42	Williams	1999 RO ₁₈
1999 RP ₁₈	13.0	0.15	19990830	304.49017	243.26316	176.82303	34.64568	0.1504953	3.3640640	27	1	3 days	0.82	E Williams	1999 RP ₁₈
1999 RR ₁₈	15.3	0.15	19990830	32.88244	115.06685	185.44212	5.04746	0.1649768	2.2447704	42	1	10 days	0.34	Williams	1999 RR ₁₈
1999 RS ₁₈	16.1	0.15	19990830	359.35602	171.55678	174.61967	15.55288	0.2141830	2.4108604	36	1	10 days	0.38	Williams	1999 RS ₁₈
1999 RT ₁₈	14.1	0.15	19990830	354.43943	18.13761	338.52059	8.36505	0.2838424	3.0277587	29	1	3 days	0.31	Williams	1999 RT ₁₈
1999 RU ₁₈	16.9	0.15	19990830	335.72706	132.29625	248.53684	1.12729	0.1933920	2.1746927	37	1	10 days	0.72	Williams	1999 RU ₁₈
1999 RV ₁₈	15.9	0.15	19990830	352.65282	193.67303	165.96954	4.65502	0.2837058	3.0274001	49	1	10 days	0.37	Williams	1999 RV ₁₈
1999 RX ₁₈	17.0	0.15	19990830	36.49184	283.97860	7.66919	2.05318	0.2063781	2.3127903	27	1	7 days	0.55	Williams	1999 RX ₁₈
1999 RY ₁₈	16.2	0.15	19990830	18.14241	333.22490	349.67591	19.09759	0.0842767	1.9086328	44	1	7 days	0.29	Williams	1999 RY ₁₈
1999 RA ₁₉	16.6	0.15	19990830	8.73139	149.76133	175.74771	4.47794	0.1727657	2.2609226	17	1	7 days	0.41	Williams	1999 RA ₁₉
1999 RB ₁₉	17.7	0.15	19990810	0.04984	79.39475	238.08182	4.65719	0.3202977	2.1539463	83	1	63 days	0.48	M-v 4 Williams	1999 RB ₁₉
1999 RC ₁₉	17.0	0.15	19990830	334.40280	234.70077	155.03849	2.32835	0.3121990	2.6426301	40	1	7 days	0.97	E Williams	1999 RC ₁₉
1999 RD ₁₉	15.5	0.15	19990830	4.14282	350.53107	347.22313	9.50826	0.0644841	2.6583096	75	1	5 days	0.79	E Williams	1999 RD ₁₉
1999 RH ₁₉	14.9	0.15	19990830	330.11352	41.79018	342.90212	12.07791	0.1484191	2.7905109	34	1	13 days	0.37	Williams	1999 RH ₁₉
1999 RJ ₁₉	15.7	0.15	19990830	53.54032	306.01887	338.26025	12.28088	0.0773668	2.6488171	17	1	7 days	0.72	Williams	1999 RJ ₁₉
1999 RK ₁₉	14.5	0.15	19990830	313.04592	77.14785	329.36043	9.56244	0.1390926	3.0707415	26	1	10 days	0.44	Williams	1999 RK ₁₉
1999 RM ₁₉	13.7	0.15	19990830	76.62142	76.63280	159.31461	10.59928	0.2383908	3.1854975	15	1	6 days	0.50	E Williams	1999 RM ₁₉
1999 RN ₁₉	13.7	0.15	19990830	273.43225	63.95323	13.97786	1.14267	0.0695705	3.1423997	56	1	3 days	0.54	E Williams	1999 RN ₁₉
1999 RP ₁₉	16.6	0.15	19990830	11.83935	165.74016	162.33880	2.79710	0.1862165	2.3812781	31	1	26 days	0.50	Williams	1999 RP ₁₉
1999 RQ ₁₉	13.3	0.15	19990830	165.39491	188.55112	354.45781	9.17421	0.0391145	3.2492631	19	1	11 days	0.66	Williams	1999 RQ ₁₉
1999 RR ₁₉	17.3	0.15	19990830	3.70857	174.59552	164.34002	4.88346	0.2139456	2.2901732	24	1	10 days	0.68	Williams	1999 RR ₁₉
1999 RS ₁₉	14.4	0.15	19990830	4.60704	175.09025	166.82860	9.90169	0.1354098	2.9751145	24	1	10 days	0.53	Williams	1999 RS ₁₉
1999 RT ₁₉	12.7	0.15	19990830	295.99374	72.16847	350.22174	16.35102	0.0840002	3.1704446	41	1	7 days	0.39	Williams	1999 RT ₁₉
1999 RV ₁₉	15.7	0.15	19990830	39.24058	302.27597	345.35858	13.48105	0.2306222	2.5468794	21	1	7 days	0.45	Williams	1999 RV ₁₉
1999 RY ₁₉	15.9	0.15	19990830	355.60622	51.24169	302.56900	3.34999	0.1649868	2.2868946	17	1	9 days	0.31	Williams	1999 RY ₁₉
1999 RJ ₂₀	14.0	0.15	19990830	251.24991	130.69002	339.97856	10.11454	0.0632261	2.9804222	28	1	9 days	0.47	Williams	1999 RJ ₂₀
1999 RK ₂₀	14.1	0.15	19990830	118.93710	254.20805	332.53018	7.36360	0.0769598	2.2868429	19	1	9 days	0.94	Williams	1999 RK ₂₀
1999 RL ₂₀	16.5	0.15	19990830	342.37473	198.07664	177.96178	24.31401	0.2017513	2.3615096	19	1	2 days	0.57	Williams	1999 RL ₂₀
1999 RN ₂₀	15.4	0.15	19990810	339.02040	198.62531	173.52101	27.09379	0.2689335	2.1518695	74	1	55 days	0.65	Williams	1999 RN ₂₀
1999 RR ₂₀	15.4	0.15	19990830	38.93063	119.23348	179.64319	22.02960	0.1658469	2.6607110	49	1	2 days	0.62	E Williams	1999 RR ₂₀
1999 RA ₂₁	16.5	0.15	19990830	334.23441	30.70569	348.72450	18.02062	0.0842181	1.9307909	47	1	2 days	0.54	E Williams	1999 RA ₂₁
1999 RC ₂₁	14.7	0.15	19990830	299.17837	247.51272	181.66624	18.90270	0.1271353	3.1535347	23	1	10 days	0.73	Williams	1999 RC ₂₁
1999 RF ₂₁	15.5	0.15	19990830	24.27976	182.97325	131.38813	2.90456	0.2086584	2.9074274	31	1	23 days	0.61	Williams	1999 RF ₂₁
1999 RH ₂₁	16.1	0.15	19990830	352.31067	354.75411	6.78857	8.31547	0.1994683	2.6505268	32	1	9 days	0.61	Williams	1999 RH ₂₁
1999 RJ ₂₁	14.8	0.15	19990830	27.62631	156.15582	166.24210	13.34523	0.0419318	2.5980069	38	1	23 days	0.60	Williams	1999 RJ ₂₁
1999 RK ₂₁	15.8	0.15	19990830	16.91765	300.21290	24.10542	2.76980	0.1673196	2.1553533	26	1	23 days	0.45	Williams	1999 RK ₂₁
1999 RM ₂₁	15.3	0.15	19990830	343.22758	221.31644	152.17055	5.44815	0.1273844	2.7291800	19	1	7 days	0.42	Williams	1999 RM ₂₁

1999 RN ₂₁	16.6	0.15	19990830	49.96046	210.22927	69.60956	2.01919	0.1942872	2.2078889	25	1	7 days	0.61	Williams	1999 RN ₂₁
1999 RO ₂₁	17.4	0.15	19990830	337.13236	28.18555	355.92481	25.21405	0.2231893	2.3306604	24	1	14 days	0.34	Williams	1999 RO ₂₁
1999 RP ₂₁	16.3	0.15	19990830	307.45504	309.06080	111.27453	2.26215	0.1659847	2.3848184	19	1	7 days	0.58	Williams	1999 RP ₂₁
1999 RQ ₂₁	16.6	0.15	19990830	332.37513	335.94202	56.58148	2.58251	0.2097275	2.6668950	13	1	7 days	0.45	Williams	1999 RQ ₂₁
1999 RR ₂₁	14.3	0.15	19990830	72.30854	156.09330	113.03539	2.56243	0.1162672	3.2586509	19	1	23 days	0.71	Williams	1999 RR ₂₁
1999 RS ₂₁	16.7	0.15	19990830	356.13808	204.85814	149.57977	5.33843	0.1242336	2.2371905	14	1	7 days	0.40	Williams	1999 RS ₂₁
1999 RT ₂₁	16.7	0.15	19990830	0.21373	249.89148	99.37680	2.27944	0.1953819	2.4141052	21	1	9 days	0.57	Williams	1999 RT ₂₁
1999 RU ₂₁	16.1	0.15	19990830	21.28954	315.10963	4.16996	11.99399	0.1933257	2.5847671	23	1	23 days	0.47	Williams	1999 RU ₂₁
1999 RV ₂₁	16.3	0.15	19990830	353.73017	207.77957	153.34855	5.95303	0.3128102	2.5791622	26	1	23 days	0.43	Williams	1999 RV ₂₁
1999 RW ₂₁	16.7	0.15	19990830	349.18727	233.02288	132.77727	3.27965	0.1781178	2.3484018	13	1	7 days	0.50	Williams	1999 RW ₂₁
1999 RX ₂₁	16.4	0.15	19990830	15.57929	313.57478	12.58855	6.61036	0.2288300	2.7288667	11	1	7 days	0.77	E Williams	1999 RX ₂₁
1999 RY ₂₁	15.2	0.15	19990830	41.02769	289.65845	11.78022	7.57429	0.1237787	2.5980866	23	1	7 days	0.57	E Williams	1999 RY ₂₁
1999 RZ ₂₁	17.5	0.15	19990830	350.77137	219.70821	144.17772	3.79119	0.2177277	2.3164491	11	1	7 days	0.44	Williams	1999 RZ ₂₁
1999 RA ₂₂	16.8	0.15	19990830	331.14722	17.93209	14.74131	5.12447	0.2024576	2.2538947	29	1	23 days	0.62	Williams	1999 RA ₂₂
1999 RC ₂₂	13.7	0.15	19990830	259.00444	305.80574	164.14886	9.97008	0.1243749	2.7674836	31	1	23 days	0.45	Williams	1999 RC ₂₂
1999 RD ₂₂	13.4	0.15	19990830	93.78846	154.27776	102.61571	2.29451	0.0460440	3.0394961	23	1	23 days	0.34	Williams	1999 RD ₂₂
1999 RE ₂₂	15.5	0.15	19990830	308.41110	262.12377	154.47256	4.60010	0.1184355	2.5681858	18	1	7 days	0.65	Williams	1999 RE ₂₂
1999 RF ₂₂	16.5	0.15	19990830	345.85416	14.60909	2.79236	3.03068	0.2720669	2.9672252	27	1	7 days	0.63	Williams	1999 RF ₂₂
1999 RG ₂₂	15.8	0.15	19990830	312.00788	75.16214	355.67951	22.40110	0.2988307	2.3393111	39	1	37 days	0.46	Williams	1999 RG ₂₂
1999 RH ₂₂	14.1	0.15	19990830	273.19808	284.04660	174.40322	10.78058	0.1361370	3.0478396	32	1	7 days	0.62	E Williams	1999 RH ₂₂
1999 RJ ₂₂	17.2	0.15	19990830	9.32698	189.87300	144.72873	0.80988	0.2313252	2.3882959	32	1	7 days	0.59	Williams	1999 RJ ₂₂
1999 RK ₂₂	14.4	0.15	19990830	264.82872	73.59853	44.08367	1.59703	0.2408528	3.0312787	13	1	7 days	0.51	E Williams	1999 RK ₂₂
1999 RL ₂₂	15.3	0.15	19990830	323.04465	35.46418	359.75656	7.82483	0.0802254	2.2728034	28	1	7 days	0.36	Williams	1999 RL ₂₂
1999 RQ ₂₂	15.7	0.15	19990830	343.73203	195.89470	179.49902	22.63216	0.2170313	2.2689958	14	1	2 days	0.39	Williams	1999 RQ ₂₂
1999 RS ₂₂	16.1	0.15	19990810	1.51789	10.01427	329.35929	5.17160	0.2216566	2.3446706	30	1	32 days	0.41	Williams	1999 RS ₂₂
1999 RY ₂₂	17.4	0.15	19990830	22.01440	150.89309	164.96992	2.66828	0.2334647	2.4118116	19	1	8 days	0.64	Williams	1999 RY ₂₂
1999 RZ ₂₂	15.3	0.15	19990830	334.89630	220.12892	163.66861	2.35648	0.0450008	2.8779167	20	1	8 days	0.69	E Williams	1999 RZ ₂₂
1999 RB ₂₃	14.1	0.15	19990830	321.72963	235.20363	175.43850	12.03093	0.1902927	3.0036181	28	1	7 days	0.39	Williams	1999 RB ₂₃
1999 RC ₂₃	15.4	0.15	19990830	2.73591	181.46036	168.59364	5.58788	0.1113215	2.5895053	28	1	23 days	0.46	Williams	1999 RC ₂₃
1999 RD ₂₃	15.7	0.15	19990830	109.85255	54.03763	174.40136	23.63792	0.1732241	2.3428822	13	1	7 days	0.48	Williams	1999 RD ₂₃
1999 RE ₂₃	15.3	0.15	19990810	345.56761	197.88435	167.66755	4.47031	0.0836382	2.5308116	20	1	60 days	0.72	M-v 5 Williams	1999 RE ₂₃
1999 RG ₂₃	16.3	0.15	19990830	0.27862	341.97353	11.51944	5.04101	0.1224974	2.6790673	19	1	23 days	0.69	Williams	1999 RG ₂₃
1999 RH ₂₃	14.0	0.15	19990830	337.28185	344.11963	38.15520	2.48901	0.0860835	2.8852628	27	1	23 days	0.38	Williams	1999 RH ₂₃
1999 RJ ₂₃	15.7	0.15	19990830	21.21754	287.22390	37.93764	3.19943	0.1434208	2.8055008	18	1	7 days	0.55	E Williams	1999 RJ ₂₃
1999 RK ₂₃	15.5	0.15	19990810	86.16916	67.19767	171.50811	23.68031	0.2148869	2.2936127	26	1	53 days	0.56	Williams	1999 RK ₂₃
1999 RL ₂₃	16.1	0.15	19990830	12.07468	302.30161	33.86130	4.03475	0.1608800	2.7696923	20	1	7 days	0.40	E Williams	1999 RL ₂₃
1999 RO ₂₃	15.5	0.15	19990830	292.81550	304.58842	131.33299	3.61705	0.1364160	2.5178491	24	1	9 days	0.56	Williams	1999 RO ₂₃
1999 RQ ₂₃	15.6	0.15	19990810	26.89224	160.20415	142.32986	4.61832	0.2119578	2.3929787	33	1	60 days	0.39	M-v 5 Williams	1999 RQ ₂₃
1999 RR ₂₃	15.3	0.15	19990830	280.96829	73.78208	16.04116	7.06688	0.1553798	2.3271570	25	1	23 days	0.43	Williams	1999 RR ₂₃
1999 RS ₂₃	16.0	0.15	19990830	336.49687	227.07394	158.85514	8.99183	0.1637562	2.7426037	19	1	23 days	0.61	Williams	1999 RS ₂₃
1999 RT ₂₃	15.5	0.15	19990830	339.13075	332.53159	46.42333	3.53705	0.1016153	2.6550907	23	1	7 days	0.54	Williams	1999 RT ₂₃
1999 RU ₂₃	17.0	0.15	19990830	325.49828	233.27131	166.07880	16.73583	0.2005921	1.9988916	18	1	7 days	0.40	Williams	1999 RU ₂₃
1999 RW ₂₃	16.0	0.15	19990830	343.62618	356.29052	19.83775	6.66569	0.2420650	2.3708833	27	1	9 days	0.47	Williams	1999 RW ₂₃
1999 RX ₂₃	16.2	0.15	19990830	36.23971	260.26300	33.89719	5.32334	0.2267842	2.2383026	31	1	23 days	0.61	Williams	1999 RX ₂₃
1999 RY ₂₃	15.1	0.15	19990830	60.22903	127.14801	155.15301	10.38239	0.1190623	3.0011292	20	1	9 days	0.62	Williams	1999 RY ₂₃
1999 RZ ₂₃	15.8	0.15	19990830	47.27757	147.59106	142.89382	6.64071	0.1442189	2.2560087	17	1	7 days	0.39	Williams	1999 RZ ₂₃
1999 RA ₂₄	16.8	0.15	19990830	341.03887	218.14798	168.89837	33.48163	0.3092535	2.5827595	22	1	23 days	0.45	Williams	1999 RA ₂₄
1999 RC ₂₄	16.2	0.15	19990830	357.91462	217.74134	134.71772	4.79162	0.1616141	2.1719747	21	1	9 days	0.64	Williams	1999 RC ₂₄
1999 RE ₂₄	16.2	0.15	19990830	299.66401	17.92797	47.10020	4.42874	0.1217383	2.2245949	26	1	23 days	0.59	Williams	1999 RE ₂₄
1999 RJ ₂₄	15.2	0.15	19990830	46.95505	263.37637	35.81172	0.94367	0.1183370	2.9724242	26	1	9 days	0.49	Williams	1999 RJ ₂₄
1999 RK ₂₄	15.3	0.15	19990830	11.79722	337.03895	359.71386	11.11116	0.1763868	2.6053950	22	1	7 days	0.52	Williams	1999 RK ₂₄
1999 RM ₂₄	14.2	0.15	19990830	282.97837	57.76002	35.65217	1.36904	0.1729651	2.6360468	22	1	7 days	0.61	E Williams	1999 RM ₂₄
1999 RO ₂₄	16.9	0.15	19990830	10.38178	328.78235	355.47437	12.84370	0.3696720	2.4390530	19	1	2 days	0.33	Williams	1999 RO ₂₄

1999 RP ₂₄	15.5	0.15	19990830	12.18808	228.72555	109.83165	0.41633	0.1003187	2.2669683	23	1	7 days	0.33	E	Williams	1999 RP ₂₄
1999 RV ₂₄	16.1	0.15	19990830	28.15097	137.52441	178.75875	26.44299	0.1039390	1.8824313	18	1	2 days	0.46		Williams	1999 RV ₂₄
1999 RB ₂₅	18.0	0.15	19990830	0.99086	4.77963	342.28946	7.57490	0.3000385	2.2157361	20	1	11 days	0.36		Williams	1999 RB ₂₅
1999 RN ₂₅	15.7	0.15	19990830	21.41142	318.24596	8.14536	6.57718	0.1276225	2.1696835	18	1	8 days	0.45		Williams	1999 RN ₂₅
1999 RP ₂₅	15.0	0.15	19990830	312.16714	79.33830	356.28965	20.15707	0.2807888	2.7452240	17	1	4 days	0.88	E	Williams	1999 RP ₂₅
1999 RU ₂₅	16.2	0.15	19990830	340.63306	46.36068	340.68698	3.54861	0.2438742	2.5565028	17	1	4 days	0.33		Williams	1999 RU ₂₅
1999 RX ₂₅	15.2	0.15	19990830	10.47624	325.36988	12.77670	4.78478	0.1641040	2.1514021	17	1	8 days	0.31		Williams	1999 RX ₂₅
1999 RC ₂₆	15.5	0.15	19990830	6.54873	206.86589	137.82527	3.46724	0.2141453	2.5400086	16	1	7 days	0.38		Williams	1999 RC ₂₆
1999 RG ₂₆	16.1	0.15	19990830	344.17595	355.10079	24.88381	4.44680	0.2731314	2.3016708	18	1	7 days	0.42		Williams	1999 RG ₂₆
1999 RJ ₂₆	15.6	0.15	19990830	36.01474	170.16780	134.90024	4.52954	0.1726951	2.3264897	22	1	23 days	0.49		Williams	1999 RJ ₂₆
1999 RN ₂₆	15.1	0.15	19990830	13.17661	318.56587	20.26607	9.66500	0.1973498	3.0083298	20	1	7 days	0.58		Williams	1999 RN ₂₆
1999 RO ₂₆	15.6	0.15	19990830	48.92409	270.31710	3.87934	22.34644	0.3102884	2.3742222	15	1	2 days	0.41		Williams	1999 RO ₂₆
1999 RP ₂₆	14.9	0.15	19990830	335.31118	14.83679	20.86003	5.66725	0.1680421	3.1391651	18	1	4 days	0.63	E	Williams	1999 RP ₂₆
1999 RQ ₂₆	13.2	0.15	19990830	188.47279	5.01492	172.04826	9.65508	0.0970774	3.0194750	14	1	7 days	0.43	E	Williams	1999 RQ ₂₆
1999 RU ₂₆	14.7	0.15	19990830	349.15820	210.79409	159.10736	5.47157	0.1057284	3.2047405	23	1	23 days	0.59		Williams	1999 RU ₂₆
1999 RA ₂₇	15.1	0.15	19990830	348.01353	206.97118	173.22352	30.70920	0.3001475	3.1141879	16	1	7 days	0.35		Williams	1999 RA ₂₇
1999 RE ₂₇	15.7	0.15	19990810	318.20014	229.32065	171.53824	23.13654	0.1091161	1.9706561	22	1	53 days	0.50		Williams	1999 RE ₂₇
1999 RF ₂₇	12.6	0.15	19990830	157.62068	60.19117	142.22730	8.17959	0.2681223	2.5803855	23	1	7 days	0.53		Williams	1999 RF ₂₇
1999 RG ₂₇	16.9	0.15	19990830	337.17354	24.07214	4.64133	22.71165	0.1746677	1.9099959	16	1	4 days	0.45		Williams	1999 RG ₂₇
1999 RH ₂₇	16.7	0.15	19990830	338.26814	95.34581	343.91547	4.39718	0.5768214	2.8854987	62	1	19 days	0.50		Marsden	1999 RH ₂₇
1999 RJ ₂₇	19.5	0.15	19990830	70.45832	64.17415	170.42079	25.73382	0.3516480	1.4777475	27	1	15 days	0.62		Williams	1999 RJ ₂₇
1999 RL ₂₇	12.4	0.15	19990830	72.38719	263.46492	32.49953	13.37804	0.1735652	2.6118045	12	1	16 days	0.35		Williams	1999 RL ₂₇
1999 RO ₂₇	14.0	0.15	19990830	347.64194	203.81359	163.37546	4.91397	0.1262871	3.1127570	24	1	7 days	0.93	E	Williams	1999 RO ₂₇
1999 RP ₂₇	15.8	0.15	19990830	11.78883	188.34176	141.44382	1.11179	0.1807400	2.1966898	33	1	23 days	0.57		Williams	1999 RP ₂₇
1999 RR ₂₇	14.9	0.15	19990830	335.46095	45.99265	350.82368	10.46813	0.3082978	3.0449780	37	1	8 days	0.46		Williams	1999 RR ₂₇
1999 RT ₂₇	15.2	0.15	19990830	288.35435	278.35000	162.52091	2.87023	0.1646143	2.3693738	36	1	23 days	0.80		Williams	1999 RT ₂₇
1999 RU ₂₇	13.2	0.15	19990830	285.98107	82.72141	356.76466	15.35090	0.1150386	3.2273438	41	1	23 days	0.89		Williams	1999 RU ₂₇
1999 RV ₂₇	14.0	0.15	19990810	330.67488	218.84090	172.84758	5.34381	0.2215265	3.0882980	41	1	60 days	0.57	M-v 6	Williams	1999 RV ₂₇
1999 RW ₂₇	13.0	0.15	19990830	336.80257	41.12079	21.70561	14.05611	0.2871027	2.6166622	10	1	9 days	0.34		Williams	1999 RW ₂₇
1999 RX ₂₇	14.6	0.15	19990830	14.34399	124.54352	200.64057	16.44343	0.2319274	3.0493786	49	1	11 days	0.41		Williams	1999 RX ₂₇
1999 RZ ₂₇	16.0	0.15	19990830	0.08680	52.45551	289.60411	3.92942	0.1053088	2.2747524	30	1	9 days	0.68		Williams	1999 RZ ₂₇
1999 RA ₂₈	14.4	0.15	19990830	58.78136	236.46890	37.07335	1.62798	0.1671883	3.0811524	23	1	8 days	0.56		Williams	1999 RA ₂₈
1999 RC ₂₈	13.6	0.15	19990830	10.30105	343.85493	9.38116	7.88709	0.3423533	2.6267304	11	1	11 days	0.39		Williams	1999 RC ₂₈
1999 RD ₂₈	15.1	0.15	19990830	26.60427	128.81969	167.30821	2.80831	0.2035607	2.2289498	26	1	11 days	0.40		Williams	1999 RD ₂₈
1999 RE ₂₈	16.2	0.15	19990830	341.90358	39.78063	348.12773	5.18506	0.3507010	2.5641831	33	1	27 days	0.53		Williams	1999 RE ₂₈
1999 RG ₂₈	16.6	0.15	19990830	345.01861	230.24569	123.83431	5.80332	0.1897000	2.3773251	30	1	3 days	0.66		Williams	1999 RG ₂₈
1999 RK ₂₈	18.5	0.15	19990830	352.39277	12.11080	346.42804	16.65167	0.3907187	2.4337046	147	1	8 days	0.51		Williams	1999 RK ₂₈
1999 RL ₂₈	16.1	0.15	19990830	55.41512	82.40889	173.04144	20.59014	0.4033587	2.3477868	27	1	3 days	0.66		Williams	1999 RL ₂₈
1999 RM ₂₈	17.0	0.15	19990830	299.20484	301.70218	136.20222	30.53233	0.3238311	1.8164741	19	1	17 days	0.54		Williams	1999 RM ₂₈
1999 RN ₂₈	21.3	0.15	19990830	1.83899	342.52950	346.21239	8.77422	0.4550095	2.1641801	54	1	9 days	0.74		Williams	1999 RN ₂₈
1999 RP ₂₈	22.6	0.15	19990830	11.72535	144.76071	174.25985	9.27700	0.2418205	1.4794635	34	1	8 days	0.67		Williams	1999 RP ₂₈
1999 RQ ₂₈	20.7	0.15	19990830	337.23727	269.57628	124.40117	3.53131	0.4214317	1.8973861	53	1	13 days	0.56		Williams	1999 RQ ₂₈
1999 RR ₂₈	18.8	0.15	19990830	316.42727	283.72450	178.88112	7.10465	0.6532922	1.8732203	61	1	13 days	0.47		Williams	1999 RR ₂₈
1999 RS ₂₈	15.3	0.15	19990830	336.00086	195.46657	193.13661	17.56676	0.2227058	3.1367842	22	1	9 days	0.48		Williams	1999 RS ₂₈
1999 RT ₂₈	15.3	0.15	19990830	341.52159	16.39712	8.19314	14.37148	0.1821800	2.5842069	13	1	10 days	0.61		Williams	1999 RT ₂₈
1999 RV ₂₈	13.6	0.15	19990830	40.06893	303.15967	338.29352	27.59916	0.1999883	2.3723664	15	1	7 days	0.25		Williams	1999 RV ₂₈
1999 RW ₂₈	15.1	0.15	19990830	37.29867	319.76960	344.07407	22.77185	0.0186419	2.5837140	15	1	7 days	0.39	E	Williams	1999 RW ₂₈
1999 RY ₂₈	17.1	0.15	19990810	39.41180	118.55810	161.95556	24.29776	0.1549962	1.9069037	61	1	54 days	0.50		Williams	1999 RY ₂₈
1999 RA ₂₉	16.6	0.15	19990830	323.36315	26.63530	353.18733	22.48592	0.0170372	1.8589394	59	1	7 days	0.39		Williams	1999 RA ₂₉
1999 RC ₂₉	14.9	0.15	19990830	339.60049	21.59253	353.27239	28.51157	0.1397173	3.1817991	13	1	7 days	0.96	E	Williams	1999 RC ₂₉
1999 RG ₂₉	15.2	0.15	19990830	317.37074	227.47880	160.35785	25.23963	0.2519288	2.1463943	19	1	5 days	0.35		Williams	1999 RG ₂₉
1999 RH ₂₉	14.8	0.15	19990830	13.80793	133.37593	153.23301	28.03176	0.3681569	3.1243003	18	1	5 days	0.55		Williams	1999 RH ₂₉
1999 RL ₂₉	16.3	0.15	19990830	5.32192	148.27543	169.49095	22.61760	0.0875418	1.9163816	22	1	6 days	0.37		Williams	1999 RL ₂₉

1999 RM ₂₉	15.8	0.15	19990830	341.72335	192.54242	158.85767	26.31932	0.2132686	2.3021422	17	1	5 days	0.64	Williams	1999 RM ₂₉
1999 RP ₂₉	15.9	0.15	19990830	131.86288	238.44979	319.23862	19.29794	0.0818524	1.9545336	35	1	7 days	0.50	Williams	1999 RP ₂₉
1999 RQ ₂₉	16.2	0.15	19990830	357.19728	25.09374	316.59997	17.99252	0.0681686	1.9562690	23	1	10 days	0.71	Williams	1999 RQ ₂₉
1999 RS ₂₉	16.2	0.15	19990810	307.59112	84.85626	327.04636	22.41170	0.2376371	2.3347969	32	1	41 days	0.65	Williams	1999 RS ₂₉
1999 RT ₂₉	15.8	0.15	19990830	17.91741	126.80801	184.30254	16.66569	0.2238812	2.5848809	36	1	9 days	0.43	Williams	1999 RT ₂₉
1999 RU ₂₉	16.7	0.15	19990810	14.30239	135.27435	178.09309	22.63551	0.0782035	1.9179218	39	1	34 days	0.40	Williams	1999 RU ₂₉
1999 RW ₂₉	14.4	0.15	19990810	6.11613	2.45670	322.34044	16.07030	0.2983957	2.6740916	31	1	68 days	0.29	M-v 4 Williams	1999 RW ₂₉
1999 RC ₃₀	14.9	0.15	19990830	55.75204	303.59876	324.91857	27.57220	0.1685319	2.6499970	16	1	11 days	0.65	Williams	1999 RC ₃₀
1999 RD ₃₀	15.6	0.15	19990830	26.65580	328.24988	332.42220	17.24558	0.2495843	2.7670830	32	1	5 days	0.50	Williams	1999 RD ₃₀
1999 RE ₃₀	16.3	0.15	19990830	340.28415	191.89621	183.91394	17.96071	0.2295008	2.6734462	25	1	13 days	0.53	Williams	1999 RE ₃₀
1999 RG ₃₀	13.9	0.15	19990830	30.69078	346.89128	329.83369	22.03372	0.0457808	2.5873023	13	1	8 days	0.45	Williams	1999 RG ₃₀
1999 RH ₃₀	16.1	0.15	19990830	326.64843	60.19048	328.31645	22.63057	0.0863358	1.9330154	22	1	10 days	0.42	Williams	1999 RH ₃₀
1999 RJ ₃₀	15.4	0.15	19990830	347.76359	50.62068	325.64109	21.01273	0.3007261	3.0097056	15	1	10 days	0.41	Williams	1999 RJ ₃₀
1999 RL ₃₀	15.8	0.15	19990830	280.10563	98.84870	339.47219	19.75681	0.0961498	1.9145855	26	1	10 days	0.45	Williams	1999 RL ₃₀
1999 RN ₃₀	15.6	0.15	19990830	57.48085	95.54848	187.13306	21.30285	0.0843703	1.9140496	27	1	10 days	0.43	Williams	1999 RN ₃₀
1999 RP ₃₀	15.5	0.15	19990830	35.04604	318.53659	342.55246	22.84348	0.2141744	2.4338908	17	1	10 days	0.40	Williams	1999 RP ₃₀
1999 RR ₃₀	16.1	0.15	19990830	335.87618	61.80235	333.04734	23.54331	0.2703959	2.2840497	29	1	6 days	0.28	Williams	1999 RR ₃₀
1999 RZ ₃₀	15.3	0.15	19990830	125.49383	255.96610	333.44095	17.93979	0.0597804	1.9257211	19	1	10 days	0.28	Williams	1999 RZ ₃₀
1999 RD ₃₁	15.7	0.15	19990830	316.67148	57.57932	357.26883	24.34865	0.0825691	1.9520499	19	1	10 days	0.39	Williams	1999 RD ₃₁
1999 RJ ₃₁	13.3	0.15	19990830	88.35182	241.43506	342.96802	12.11719	0.2653919	2.4893920	18	1	5 days	0.58	E Williams	1999 RJ ₃₁
1999 RK ₃₁	15.8	0.15	19990830	349.83640	10.03783	1.39446	4.78148	0.1651675	2.3622200	9	1	8 days	0.58	Williams	1999 RK ₃₁
1999 RL ₃₁	14.3	0.15	19990810	328.74863	25.57860	5.30754	7.56217	0.1442908	2.2553082	12	1	30 days	0.27	Williams	1999 RL ₃₁
1999 RM ₃₁	14.5	0.15	19990830	331.33776	28.68890	6.83583	15.13808	0.0986720	2.7013009	26	1	7 days	0.59	Williams	1999 RM ₃₁
1999 RO ₃₁	16.2	0.15	19990830	347.03986	239.44440	122.33031	6.08069	0.1736753	2.7723774	20	1	8 days	0.46	Williams	1999 RO ₃₁
1999 RP ₃₁	14.7	0.15	19990830	34.60615	289.53095	12.29375	2.04489	0.0627294	2.9041567	19	1	7 days	0.32	E Williams	1999 RP ₃₁
1999 RQ ₃₁	17.8	0.15	19990830	3.35741	214.32481	140.61163	4.93050	0.2524920	2.3560719	12	1	8 days	0.29	Williams	1999 RQ ₃₁
1999 RS ₃₁	14.6	0.15	19990830	16.07612	147.27673	187.43165	4.63589	0.0921937	2.7733831	25	1	7 days	0.55	E Williams	1999 RS ₃₁
1999 RT ₃₁	16.3	0.15	19990830	49.36589	24.44386	262.82275	0.31713	0.1431240	2.4366997	19	1	10 days	0.45	Marsden	1999 RT ₃₁
1999 RU ₃₁	15.6	0.15	19990830	245.82319	255.17158	219.99238	7.99820	0.0078518	2.4102578	28	1	10 days	0.51	E Williams	1999 RU ₃₁
1999 RV ₃₁	13.0	0.15	19990830	169.88864	166.04091	8.59484	3.09797	0.1190708	2.7484227	29	1	7 days	0.74	E Williams	1999 RV ₃₁
1999 RY ₃₁	16.3	0.15	19990830	57.07360	209.06325	58.85150	7.92352	0.2885213	2.1851093	37	1	3 days	0.60	Williams	1999 RY ₃₁
1999 RZ ₃₁	23.8	0.15	19990810	353.65494	179.90735	163.33496	2.97111	0.6030866	2.5956069	42	1	14 days	0.67	M-v 7 Williams	1999 RZ ₃₁
1999 RA ₃₂	21.4	0.15	19990830	152.39452	8.93144	167.84462	10.49252	0.0904602	1.0257218	54	1	7 days	0.57	Williams	1999 RA ₃₂
1999 RB ₃₂	20.1	0.15	19990830	352.54176	39.30789	330.27979	3.93465	0.5703871	2.4157863	175	1	16 days	0.89	Marsden	1999 RB ₃₂
1999 RC ₃₂	18.7	0.15	19990830	323.38749	82.65931	352.51989	30.97327	0.4320525	1.8395939	86	1	16 days	0.56	Williams	1999 RC ₃₂
1999 RD ₃₂	16.7	0.15	19990830	16.68653	294.68521	315.01583	6.63415	0.7780524	2.6148983	135	1	16 days	0.77	Williams	1999 RD ₃₂
1999 RF ₃₂	14.7	0.15	19990830	308.08934	244.85021	167.68126	12.35341	0.1692320	2.5628989	42	1	7 days	0.42	Williams	1999 RF ₃₂
1999 RH ₃₂	14.3	0.15	19990830	334.81353	211.07344	169.36623	9.64916	0.1676663	2.8042587	31	1	23 days	0.38	Williams	1999 RH ₃₂
1999 RJ ₃₂	12.8	0.15	19990810	354.67846	0.48916	357.15703	8.13936	0.0812960	3.1673871	34	1	62 days	0.41	M-v 5 Williams	1999 RJ ₃₂
1999 RK ₃₂	17.1	0.15	19990830	350.15937	193.51176	172.36232	5.66539	0.2342536	2.2976776	25	1	7 days	0.70	E Williams	1999 RK ₃₂
1999 RL ₃₂	14.2	0.15	19990830	344.58813	36.20211	342.18246	1.90491	0.1820566	3.0641759	17	1	5 days	0.61	E Williams	1999 RL ₃₂
1999 RM ₃₂	16.0	0.15	19990830	339.09965	23.38579	356.42705	6.89699	0.1218366	2.3577227	31	1	23 days	0.60	Williams	1999 RM ₃₂
1999 RP ₃₂	16.1	0.15	19990830	13.67536	331.63762	354.31112	2.21226	0.2013384	2.2007257	29	1	9 days	0.46	Williams	1999 RP ₃₂
1999 RQ ₃₂	15.0	0.15	19990830	6.48417	354.94654	359.62424	5.08481	0.1150366	2.5587796	31	1	12 days	1.18	Williams	1999 RQ ₃₂
1999 RR ₃₂	17.6	0.15	19990830	354.24395	210.68329	143.44341	1.53856	0.1742340	2.1585190	11	1	4 days	0.54	Marsden	1999 RR ₃₂
1999 RS ₃₂	16.3	0.15	19990830	15.52470	359.86311	339.10997	6.29504	0.1417469	2.2690473	14	1	8 days	0.72	Williams	1999 RS ₃₂
1999 RT ₃₂	15.4	0.15	19990830	171.78713	85.00664	89.57627	8.36381	0.0534795	2.4611586	13	1	4 days	0.33	Williams	1999 RT ₃₂
1999 RU ₃₂	15.1	0.15	19990830	202.92069	336.91805	176.56634	3.54300	0.0544426	2.7602710	19	1	11 days	0.69	E Williams	1999 RU ₃₂
1999 RV ₃₂	16.1	0.15	19990830	19.55320	300.15389	17.85148	2.65351	0.2036163	2.6703563	26	1	8 days	1.35	E Williams	1999 RV ₃₂
1999 RW ₃₂	13.3	0.15	19990830	325.94340	111.85225	309.14811	8.54804	0.0974234	3.0367582	16	1	8 days	0.43	Williams	1999 RW ₃₂
1999 RX ₃₂	12.8	0.15	19990810	267.79529	309.81306	124.65651	3.26421	0.0681018	2.9235403	28	1	37 days	0.52	Williams	1999 RX ₃₂
1999 RY ₃₂	15.3	0.15	19990830	314.11696	105.48480	298.93599	8.19503	0.1159158	2.5320846	33	1	10 days	0.66	Williams	1999 RY ₃₂
1999 RZ ₃₂	14.3	0.15	19990830	15.82419	319.31154	17.99510	3.51492	0.1845860	3.2004437	48	1	14 days	0.53	Williams	1999 RZ ₃₂

1999 RA ₃₃	14.6	0.15	19990830	6.22274	322.90140	29.85196	1.14779	0.1571290	2.4649316	16	1	10 days	0.55	E	Williams	1999 RA ₃₃
1999 RB ₃₃	14.3	0.15	19990830	332.64850	226.82995	153.59480	6.77860	0.1876602	2.3205171	16	1	4 days	0.36		Williams	1999 RB ₃₃
1999 RC ₃₃	12.7	0.15	19990830	117.29747	53.48499	154.95331	13.17140	0.1966299	2.6197014	28	1	6 days	0.65		Williams	1999 RC ₃₃
1999 RD ₃₃	15.4	0.15	19990830	330.08116	58.81018	323.97983	7.44041	0.2237186	3.0368969	20	1	9 days	0.76		Williams	1999 RD ₃₃
1999 RE ₃₃	14.6	0.15	19990830	284.79145	60.55138	16.81314	3.64973	0.1601947	3.1122574	40	1	7 days	0.56		Marsden	1999 RE ₃₃
1999 RF ₃₃	14.1	0.15	19990830	353.41177	174.99692	172.09041	1.36973	0.1963597	3.1454082	35	1	26 days	0.40		Williams	1999 RF ₃₃
1999 RG ₃₃	12.2	0.15	19990830	12.96301	274.45483	23.79283	35.06803	0.7773576	9.7004621	81	1	15 days	0.38		Williams	1999 RG ₃₃
1999 RH ₃₃	19.5	0.15	19990830	187.79651	351.36640	168.46101	11.06640	0.1720720	1.5519939	18	1	16 days	0.91		Williams	1999 RH ₃₃
1999 RJ ₃₃	22.2	0.15	19990810	321.63192	27.11170	343.24849	18.54393	0.1884708	1.2535889	29	1	16 days	0.61	M-v 7	Williams	1999 RJ ₃₃
1999 RK ₃₃	22.2	0.15	19990830	351.58804	51.47655	321.23406	2.98615	0.5965476	2.5154049	66	1	10 days	0.77		Williams	1999 RK ₃₃
1999 RL ₃₃	15.0	0.15	19990830	275.03116	107.43162	329.39973	5.14526	0.1295604	2.2803876	28	1	11 days	0.70		Williams	1999 RL ₃₃
1999 RM ₃₃	13.6	0.15	19990830	356.07116	305.90799	42.56104	2.50320	0.2478582	3.0310935	16	1	4 days	0.41		Williams	1999 RM ₃₃
1999 RN ₃₃	15.4	0.15	19990830	342.99365	17.50083	349.38968	7.15351	0.1506715	2.9412955	9	1	6 days	0.35		Williams	1999 RN ₃₃
1999 RO ₃₃	17.1	0.15	19990830	5.59957	297.36510	37.79903	0.93090	0.1657839	2.1027589	12	1	10 days	0.78		Williams	1999 RO ₃₃
1999 RP ₃₃	15.5	0.15	19990830	300.57189	50.57435	8.02424	7.03388	0.0942017	2.3895204	28	1	27 days	0.76		Williams	1999 RP ₃₃
1999 RQ ₃₃	15.0	0.15	19990830	291.40378	283.27439	161.43580	8.00679	0.2190003	2.6882041	28	1	27 days	0.64		Williams	1999 RQ ₃₃
1999 RR ₃₃	15.6	0.15	19990830	276.95760	73.86417	18.16109	5.57263	0.1224626	2.4247603	19	1	14 days	0.44		Williams	1999 RR ₃₃
1999 RS ₃₃	14.4	0.15	19990830	7.34904	282.65538	41.63030	4.91610	0.2006342	2.2530068	16	1	14 days	0.48		Williams	1999 RS ₃₃
1999 RU ₃₃	15.4	0.15	19990830	94.89410	255.32379	354.62405	11.78631	0.0652456	2.9678033	15	1	10 days	0.63		Williams	1999 RU ₃₃
1999 RV ₃₃	14.5	0.15	19990830	254.44987	102.96891	3.42789	1.45447	0.0799263	2.9349550	29	1	10 days	0.70	E	Williams	1999 RV ₃₃
1999 RW ₃₃	15.2	0.15	19990830	300.35160	261.91136	175.48947	11.23172	0.1609839	2.6383394	16	1	7 days	0.91		Williams	1999 RW ₃₃
1999 RX ₃₃	16.0	0.15	19990830	39.11343	78.17046	187.77603	22.85922	0.2587745	2.3369336	14	1	7 days	0.57		Williams	1999 RX ₃₃
1999 RY ₃₃	14.9	0.15	19990810	16.31768	97.51755	191.43027	24.50750	0.3334190	3.1852904	14	1	36 days	0.42		Williams	1999 RY ₃₃
1999 RZ ₃₃	16.1	0.15	19990810	325.59383	174.48730	187.55732	22.45022	0.0579641	1.9289607	15	1	36 days	0.40		Williams	1999 RZ ₃₃
1999 RA ₃₄	15.6	0.15	19990810	14.27574	117.53310	191.10932	22.23969	0.1004653	1.9254387	38	1	89 days	0.41	M-v 4	Williams	1999 RA ₃₄
1999 RB ₃₄	15.4	0.15	19990810	15.40290	103.68928	184.49296	27.74675	0.3859364	2.6286870	29	1	51 days	0.35		Williams	1999 RB ₃₄
1999 RC ₃₄	14.8	0.15	19990830	4.32421	150.87672	196.94364	2.73315	0.0722019	2.5567185	33	1	11 days	0.51		Williams	1999 RC ₃₄
1999 RK ₃₄	15.3	0.15	19990830	14.54710	149.89692	185.21766	6.53853	0.1747683	2.4405805	12	1	6 days	0.46		Williams	1999 RK ₃₄
1999 RL ₃₄	13.3	0.15	19990830	269.98943	284.30800	188.09070	11.78788	0.1598884	2.6267716	10	1	9 days	0.43		Williams	1999 RL ₃₄
1999 RM ₃₄	15.4	0.15	19990830	355.19251	357.87805	6.55583	7.14142	0.1320477	2.2380958	10	1	8 days	0.57		Williams	1999 RM ₃₄
1999 RN ₃₄	13.7	0.15	19990830	357.64097	149.23048	218.52148	0.84372	0.1408161	2.9245664	11	1	4 days	0.55	E	Williams	1999 RN ₃₄
1999 RO ₃₄	13.2	0.15	19990830	77.09324	103.83337	176.55577	9.06564	0.0394458	3.0945236	18	1	7 days	0.53	E	Williams	1999 RO ₃₄
1999 RQ ₃₄	15.3	0.15	19990830	296.33695	265.87885	167.04538	4.97842	0.1100027	2.2844183	12	1	4 days	1.29		Williams	1999 RQ ₃₄
1999 RR ₃₄	16.4	0.15	19990830	333.94796	215.20303	176.92938	3.81820	0.2533034	2.3347423	26	1	11 days	0.63		Williams	1999 RR ₃₄
1999 RS ₃₄	14.5	0.15	19990830	242.83121	112.71325	33.05730	13.68448	0.1557220	2.7976168	13	1	9 days	0.29		Williams	1999 RS ₃₄
1999 RT ₃₄	16.3	0.15	19990830	53.66302	203.59677	84.75711	3.34527	0.2371566	2.3558075	11	1	4 days	0.47	E	Williams	1999 RT ₃₄
1999 RU ₃₄	14.4	0.15	19990830	334.86665	207.62261	193.05016	9.91323	0.1040140	3.0213199	11	1	5 days	0.16		Williams	1999 RU ₃₄
1999 RV ₃₄	16.8	0.15	19990830	29.98919	307.69672	6.95252	4.11187	0.2405203	2.4090867	13	1	4 days	0.23		Williams	1999 RV ₃₄
1999 RX ₃₄	14.0	0.15	19990830	356.85702	304.60969	83.96464	2.25510	0.0861605	2.4313876	8	1	2 days	1.44	E	Williams	1999 RX ₃₄
1999 RY ₃₄	13.5	0.15	19990830	296.48507	25.59906	71.98664	2.60140	0.0721575	2.3662055	10	1	11 days	0.20	E	Williams	1999 RY ₃₄
1999 RZ ₃₄	13.9	0.15	19990830	26.79091	313.48212	35.00962	22.54899	0.1440593	2.4515991	15	1	11 days	0.35		Williams	1999 RZ ₃₄
1999 RA ₃₅	15.2	0.15	19990810	355.48671	48.90399	285.96338	12.01228	0.2076226	2.5704098	26	1	66 days	0.51	M-v 5	Williams	1999 RA ₃₅
1999 RB ₃₅	14.9	0.15	19990810	286.12773	136.32714	291.28211	21.26685	0.0404247	2.6498855	36	1	65 days	0.73	M-v 5	Williams	1999 RB ₃₅
1999 RE ₃₅	15.2	0.15	19990830	330.62196	307.06921	61.40030	3.38789	0.0130458	2.6660569	17	1	9 days	0.32	E	Marsden	1999 RE ₃₅
1999 RJ ₃₅	14.3	0.15	19990830	52.36597	316.76629	320.96360	14.58181	0.2594535	2.5838825	16	1	6 days	0.51		Williams	1999 RJ ₃₅
1999 RK ₃₅			19990830	177.55080	246.34194	296.40994	11.79174	0.0652329	2.7536766	9	1	2 days	1.17	E	Williams	1999 RK ₃₅
1999 RM ₃₅	13.3	0.15	19990830	77.65706	81.42804	192.29715	3.02663	0.1064079	3.0337808	16	1	10 days	0.60	E	Williams	1999 RM ₃₅
1999 RP ₃₅	16.3	0.15	19990830	342.87450	19.35195	6.44549	5.99668	0.2727815	2.5282593	21	1	8 days	0.48		Williams	1999 RP ₃₅
1999 RQ ₃₅	13.8	0.15	19990830	293.72175	66.01192	15.86738	3.00735	0.1409817	2.8997138	14	1	8 days	0.34		Williams	1999 RQ ₃₅
1999 RR ₃₅	13.7	0.15	19990830	70.93939	259.31194	22.63105	3.81155	0.0599915	2.7734338	16	1	8 days	0.60	E	Williams	1999 RR ₃₅
1999 RS ₃₅	15.0	0.15	19990830	51.23175	152.58484	134.31927	1.93168	0.1777435	2.3976449	18	1	24 days	0.57		Williams	1999 RS ₃₅
1999 RT ₃₅	15.2	0.15	19990830	12.35201	333.08877	6.77490	8.43158	0.1208911	2.3563794	12	1	8 days	0.40		Williams	1999 RT ₃₅
1999 RU ₃₅	15.3	0.15	19990830	30.49920	338.83014	340.53601	6.68761	0.0827274	2.3873320	12	1	8 days	0.59		Marsden	1999 RU ₃₅

1999 RV ₃₅	15.1	0.15	19990830	206.36521	328.28247	200.36609	1.46334	0.0651553	2.9281782	10	1	3 days	0.68	E	Williams	1999 RV ₃₅
1999 RW ₃₅	14.9	0.15	19990919	22.64973	338.78137	8.72982	2.14973	0.0779651	2.8478858	19	1	13 days	0.33		Williams	1999 RW ₃₅
1999 RX ₃₅	15.0	0.15	19990830	358.91974	214.10823	160.41808	10.93555	0.2210228	3.9176671	10	1	10 days	0.41		Williams	1999 RX ₃₅
1999 RY ₃₅	15.5	0.15	19990830	39.86599	303.84318	331.76309	6.11097	0.1107283	2.3640931	10	1	36 days	0.39		Williams	1999 RY ₃₅
1999 RZ ₃₅	16.3	0.15	19990830	332.47019	353.04034	40.36049	8.08066	0.1318290	2.4077913	6	1	4 days	0.25	E	Williams	1999 RZ ₃₅
1999 RA ₃₆	15.4	0.15	19990830	184.15825	0.06413	167.78629	2.48053	0.1874740	2.2003257	24	1	7 days	0.69		Williams	1999 RA ₃₆
1999 RB ₃₆	17.1	0.15	19990830	36.72993	235.72717	59.10402	1.19400	0.1806013	2.1673067	9	1	3 days	1.35	E	Williams	1999 RB ₃₆
1999 RC ₃₆	12.3	0.15	19990830	26.35863	335.91516	11.39096	11.99523	0.2284321	3.9431126	17	1	3 days	0.52	E	Williams	1999 RC ₃₆
1999 RD ₃₆	17.3	0.15	19990830	343.68062	193.68280	180.33855	7.23188	0.3702401	2.6175902	33	1	12 days	0.45		Marsden	1999 RD ₃₆
1999 RF ₃₆	14.5	0.15	19990830	43.04712	294.88908	39.73529	7.50410	0.0592614	2.2030938	14	1	6 days	0.57		Williams	1999 RF ₃₆
1999 RH ₃₆	13.1	0.15	19990830	19.40770	320.00809	43.53789	11.82278	0.1907119	3.1712791	9	1	11 days	0.54		Williams	1999 RH ₃₆
1999 RJ ₃₆	11.8	0.15	19990830	250.81945	102.51062	55.44565	11.62703	0.1136973	3.1298066	7	1	2 days	0.36	E	Williams	1999 RJ ₃₆
1999 RL ₃₆	12.7	0.15	19990830	290.75169	254.89003	200.77175	2.34318	0.2104282	3.0324611	14	1	7 days	1.09	E	Williams	1999 RL ₃₆
1999 RM ₃₆	13.3	0.15	19990830	353.88512	199.82242	166.44816	17.78832	0.1789051	2.4977432	11	1	2 days	0.55	E	Williams	1999 RM ₃₆
1999 RN ₃₆	12.6	0.15	19990830	11.29638	149.81866	217.21303	12.75682	0.2111405	2.6365719	9	1	3 days	0.11		Williams	1999 RN ₃₆
1999 RO ₃₆	20.9	0.15	19990830	353.06111	196.96727	168.27381	3.30523	0.4890310	2.4009227	81	1	8 days	0.64		Williams	1999 RO ₃₆
1999 RP ₃₆	19.0	0.15	19990830	346.47467	321.42218	58.04589	5.47662	0.4159576	2.2236093	63	1	11 days	0.39		Williams	1999 RP ₃₆
1999 RQ ₃₆	21.0	0.15	19990810	277.87039	64.63491	2.26884	5.98591	0.2065424	1.1342393	173	1	13 days	0.56	M-v 5	Williams	1999 RQ ₃₆
1999 RR ₃₆	13.6	0.15	19990830	310.77923	59.92472	0.72777	1.69521	0.0526951	2.9455853	9	1	4 days	0.66	E	Williams	1999 RR ₃₆
1999 RS ₃₆	15.1	0.15	19990830	305.85144	241.95577	189.34802	5.23988	0.1838887	2.3597939	15	1	8 days	0.70		Williams	1999 RS ₃₆
1999 RT ₃₆	15.0	0.15	19990830	317.04078	64.75143	0.30217	12.65945	0.2405100	2.6102518	13	1	8 days	0.77		Williams	1999 RT ₃₆
1999 RU ₃₆	16.2	0.15	19990830	304.36464	260.79380	154.09628	13.19514	0.1051538	2.8670987	9	1	6 days	0.40		Williams	1999 RU ₃₆
1999 RV ₃₆	17.2	0.15	19990830	350.97890	339.69761	18.02499	6.60543	0.1413995	2.3255656	17	1	9 days	0.46		Williams	1999 RV ₃₆
1999 RW ₃₆	16.8	0.15	19990830	20.08585	200.76665	109.11215	2.77163	0.1942938	2.2614466	27	1	11 days	0.46		Williams	1999 RW ₃₆
1999 RY ₃₆	15.9	0.15	19990830	15.72994	115.34352	220.12383	1.13894	0.2559711	2.9678082	9	1	5 days	0.15		Marsden	1999 RY ₃₆
1999 RZ ₃₆	12.6	0.15	19990810	32.43288	333.68399	324.99562	9.51598	0.0485943	3.0716688	25	1	37 days	0.47		Williams	1999 RZ ₃₆
1999 RA ₃₇	16.4	0.15	19990830	357.70201	1.57376	346.78946	1.81619	0.1837651	2.4272760	37	1	14 days	0.52		Williams	1999 RA ₃₇
1999 RB ₃₇	14.0	0.15	19990830	346.41929	16.21992	346.68353	5.46029	0.0907243	2.7689172	31	1	11 days	0.40		Williams	1999 RB ₃₇
1999 RC ₃₇	15.9	0.15	19990830	20.12731	310.08738	3.61150	4.29432	0.2447464	2.5514249	29	1	23 days	0.51		Williams	1999 RC ₃₇
1999 RF ₃₇	14.5	0.15	19990830	193.49306	14.07670	161.89263	7.51083	0.1897030	2.5298010	48	1	11 days	1.14		Williams	1999 RF ₃₇
1999 RJ ₃₇	15.2	0.15	19990810	359.66365	122.15361	201.53809	14.61771	0.3246425	2.5382467	42	1	87 days	0.33	M-v 4	Williams	1999 RJ ₃₇
1999 RK ₃₇	13.0	0.15	19990830	306.36447	47.88704	329.54428	25.19573	0.0833255	1.9186530	15	1	3 days	0.28		Williams	1999 RK ₃₇
1999 RN ₃₇	15.6	0.15	19990830	344.70757	2.00007	350.48883	28.82622	0.2061747	2.2084087	11	1	3 days	0.46		Williams	1999 RN ₃₇
1999 RO ₃₇	17.0	0.15	19990830	321.06743	269.59447	143.95661	19.34036	0.3026303	1.9458988	13	1	3 days	0.41		Williams	1999 RO ₃₇
1999 RR ₃₇	17.8	0.15	19990830	314.83860	48.63832	354.98288	1.79654	0.1299297	2.4425247	11	1	14 days	0.19		Williams	1999 RR ₃₇
1999 RS ₃₇	15.6	0.15	19990830	333.36802	104.97431	265.76496	12.34849	0.1585814	2.5516643	23	1	3 days	0.64		Williams	1999 RS ₃₇
1999 RT ₃₇	15.2	0.15	19990830	24.57831	317.93789	4.78109	6.59786	0.1353336	2.4113171	19	1	7 days	0.80		Williams	1999 RT ₃₇
1999 RV ₃₇	15.1	0.15	19990830	33.82143	118.06380	189.66617	4.01091	0.2137078	2.5736430	11	1	8 days	0.54		Williams	1999 RV ₃₇
1999 RW ₃₇	14.8	0.15	19990830	14.55472	150.71727	187.96246	9.79493	0.2265082	2.7089854	7	1	2 days	0.29	E	Williams	1999 RW ₃₇
1999 RX ₃₇	13.1	0.15	19990830	61.14543	116.63557	187.91316	10.24300	0.0258206	3.1901299	7	1	2 days	0.41	E	Williams	1999 RX ₃₇
1999 RY ₃₇	15.4	0.15	19990830	326.50375	33.95938	9.98617	4.77868	0.1414761	2.2455836	10	1	10 days	0.40		Williams	1999 RY ₃₇
1999 RZ ₃₇	15.4	0.15	19990830	13.18712	156.01198	182.40923	4.38433	0.2551118	2.7389046	7	1	2 days	0.37		Williams	1999 RZ ₃₇
1999 RA ₃₈	15.1	0.15	19990830	16.34729	290.89431	44.55938	2.45178	0.2002174	2.4864100	9	1	9 days	0.48	E	Williams	1999 RA ₃₈
1999 RC ₃₈	12.6	0.15	19990830	263.37139	290.26586	190.41562	13.72531	0.1515112	2.6373382	12	1	8 days	0.51		Williams	1999 RC ₃₈
1999 RD ₃₈	14.5	0.15	19990830	330.69022	214.04250	185.91549	14.15420	0.0944208	2.6407116	13	1	10 days	0.43		Williams	1999 RD ₃₈
1999 RF ₃₈	14.9	0.15	19990830	340.28977	29.60539	8.84380	15.37994	0.2907336	2.9248751	9	1	3 days	0.62	E	Williams	1999 RF ₃₈
1999 RG ₃₈	14.4	0.15	19990830	354.17468	355.37380	16.48280	4.49682	0.0988528	2.6709530	7	1	2 days	0.63	E	Williams	1999 RG ₃₈
1999 RH ₃₈	15.2	0.15	19990830	321.12044	33.20942	18.64686	6.11192	0.1527269	2.2471296	7	1	2 days	0.48	E	Williams	1999 RH ₃₈
1999 RM ₃₈	13.3	0.15	19990830	49.54676	109.39253	195.82451	8.72782	0.1392219	3.2773872	15	1	13 days	0.42		Williams	1999 RM ₃₈
1999 RN ₃₈	14.5	0.15	19990830	14.58751	216.81324	123.24873	1.52132	0.1527373	2.3207432	9	1	9 days	0.13		Williams	1999 RN ₃₈
1999 RO ₃₈	15.2	0.15	19990830	327.85902	222.21164	186.07823	5.91717	0.2145215	2.2982042	9	1	3 days	0.75	E	Williams	1999 RO ₃₈
1999 RP ₃₈	15.6	0.15	19990830	358.53119	119.02924	239.27969	4.66993	0.1602300	2.3332502	24	1	11 days	0.22		Williams	1999 RP ₃₈
1999 RQ ₃₈	16.9	0.15	19990830	39.40688	228.51706	63.96747	7.19799	0.1571646	2.2881326	10	1	3 days	0.54		Williams	1999 RQ ₃₈

1999 RS ₃₈	14.2	0.15	19990830	12.46243	176.19570	190.99070	1.86350	0.1739645	2.4676116	9	1	10 days	0.71	Williams	1999 RS ₃₈
1999 RT ₃₈	14.8	0.15	19990830	342.21098	350.47395	54.02544	4.05064	0.1339749	2.1235049	12	1	9 days	0.65	Williams	1999 RT ₃₈
1999 RU ₃₈	12.9	0.15	19990830	297.52068	254.04469	163.56564	9.21637	0.1886666	2.6054064	21	1	8 days	0.58	Williams	1999 RU ₃₈
1999 RW ₃₈	16.1	0.15	19990830	58.80833	175.75169	98.93085	6.60102	0.0744862	2.2393086	15	1	11 days	0.76	Williams	1999 RW ₃₈
1999 RX ₃₈	15.8	0.15	19990830	13.50561	278.16590	45.01589	7.04423	0.1269326	2.3148220	8	1	6 days	0.27	Williams	1999 RX ₃₈
1999 RZ ₃₈	15.2	0.15	19990830	293.56117	345.55601	91.78905	7.03163	0.2496639	2.5332290	10	1	6 days	0.49	Williams	1999 RZ ₃₈
1999 RA ₃₉	14.8	0.15	19990830	271.06206	317.72198	148.76206	24.19162	0.2315446	2.3152185	11	1	6 days	0.38	Williams	1999 RA ₃₉
1999 RB ₃₉	16.1	0.15	19990830	11.29806	321.20508	356.15500	4.64680	0.2542022	2.6133048	33	1	9 days	1.17	Williams	1999 RB ₃₉
1999 RG ₃₉	15.9	0.15	19990830	338.31695	77.13899	323.54035	12.00450	0.2762741	2.6648483	12	1	12 days	0.79	Williams	1999 RG ₃₉
1999 RO ₃₉	15.5	0.15	19990810	345.23856	336.91910	25.39685	6.69718	0.1712800	2.2272175	25	1	68 days	0.50	M-v 5 Williams	1999 RO ₃₉
1999 RP ₃₉	13.9	0.15	19990830	355.54539	328.06583	32.30450	8.04300	0.2027810	3.1751937	32	1	17 days	0.53	Williams	1999 RP ₃₉
1999 RQ ₃₉	15.2	0.15	19990830	47.94354	62.82336	211.45224	11.74895	0.1209706	2.7378924	17	1	7 days	0.40	Williams	1999 RQ ₃₉
1999 RR ₃₉	16.1	0.15	19990830	358.73878	110.03808	226.05336	7.38405	0.1512033	2.4649121	32	1	7 days	0.54	Williams	1999 RR ₃₉
1999 RT ₃₉	14.2	0.15	19990830	53.68186	31.46513	243.03039	9.30368	0.0667991	2.9995661	25	1	7 days	0.50	Williams	1999 RT ₃₉
1999 RU ₃₉	14.8	0.15	19990810	332.99411	105.31064	265.71177	6.37778	0.2434225	2.3590591	37	1	91 days	0.40	M-v 4 Williams	1999 RU ₃₉
1999 RG ₄₀	16.8	0.15	19990830	11.55389	24.61164	300.76450	1.97388	0.1881121	2.3363663	38	1	12 days	0.58	Williams	1999 RG ₄₀
1999 RH ₄₀	16.0	0.15	19990830	23.74828	20.65080	285.79635	8.02197	0.1446059	2.4394416	26	1	12 days	0.38	Williams	1999 RH ₄₀
1999 RJ ₄₀	14.3	0.15	19990830	309.28994	152.75063	243.66560	8.38918	0.0801415	3.0617109	25	1	12 days	0.39	Williams	1999 RJ ₄₀
1999 RK ₄₀	14.5	0.15	19990810	125.53198	49.24150	167.03899	11.65505	0.0261209	2.4337174	28	1	33 days	0.83	Williams	1999 RK ₄₀
1999 RN ₄₀	15.3	0.15	19990830	13.83339	150.85722	174.01778	16.46233	0.2002300	2.6798431	23	1	14 days	0.49	Williams	1999 RN ₄₀
1999 RO ₄₀	16.5	0.15	19990830	24.18217	129.63352	172.63984	11.75002	0.2750252	2.5007736	13	1	11 days	0.30	Williams	1999 RO ₄₀
1999 RP ₄₀	15.1	0.15	19990830	253.61404	293.15893	164.83267	22.38156	0.0321171	2.6577448	15	1	7 days	0.46	Williams	1999 RP ₄₀
1999 RQ ₄₀	17.1	0.15	19990830	302.46718	233.29887	176.22764	2.20151	0.0790803	2.1467204	15	1	12 days	0.90	Williams	1999 RQ ₄₀
1999 RH ₄₁	13.1	0.15	19990830	27.04504	165.28002	156.28586	24.65802	0.1098332	2.7985867	16	1	6 days	0.33	Williams	1999 RH ₄₁
1999 RQ ₄₁	15.7	0.15	19990830	6.26406	298.19233	36.91559	2.25576	0.1248749	2.9245078	28	1	7 days	0.58	Williams	1999 RQ ₄₁
1999 RS ₄₁	17.2	0.15	19990919	76.77486	106.81459	167.96057	22.59072	0.0881955	1.9048548	19	1	7 days	0.41	Williams	1999 RS ₄₁
1999 RU ₄₁	15.4	0.15	19990830	0.25719	183.19555	175.82905	5.00734	0.2611720	2.6604773	10	1	4 days	0.81	E Williams	1999 RU ₄₁
1999 RV ₄₁	13.9	0.15	19990830	333.32193	359.24162	44.38704	2.07243	0.1879400	3.0278146	13	1	12 days	0.60	E Williams	1999 RV ₄₁
1999 RX ₄₁	14.0	0.15	19990830	97.15283	264.69301	349.18870	13.85716	0.0862912	2.6121849	21	1	16 days	0.72	Williams	1999 RX ₄₁
1999 RY ₄₁	13.7	0.15	19990810	344.59824	169.96164	217.41664	6.19582	0.3413907	3.9655233	48	1	63 days	0.50	M-v 5 Williams	1999 RY ₄₁
1999 RA ₄₂	14.5	0.15	19990830	58.33425	64.03597	214.99991	5.35245	0.1967009	2.6137173	8	1	2 days	1.27	E Williams	1999 RA ₄₂
1999 RF ₄₂	15.9	0.15	19990830	334.21218	79.92258	334.44814	3.69760	0.1264727	2.5889892	9	1	8 days	0.41	Williams	1999 RF ₄₂
1999 RG ₄₂	15.0	0.15	19990830	301.88741	359.67119	79.74813	5.71222	0.0869507	2.9949138	16	1	6 days	0.42	E Williams	1999 RG ₄₂
1999 RH ₄₂	13.7	0.15	19990830	345.55325	93.70325	5.24115	9.63725	0.1350921	3.3065618	13	1	8 days	0.40	Williams	1999 RH ₄₂
1999 RJ ₄₂	12.3	0.15	19990830	357.47779	144.05344	241.46969	8.34300	0.1697173	2.7925513	17	1	18 days	0.37	Williams	1999 RJ ₄₂
1999 RK ₄₂	14.4	0.15	19990830	315.88992	239.16615	208.26155	22.50119	0.1982596	2.2957347	10	1	9 days	0.81	Williams	1999 RK ₄₂
1999 RL ₄₂	13.7	0.15	19990830	29.81913	309.12943	41.47072	4.59553	0.1497066	2.6201642	11	1	10 days	0.58	Williams	1999 RL ₄₂
1999 RM ₄₂	14.2	0.15	19990830	36.17227	274.58280	50.61115	12.34766	0.1509988	2.7608993	9	1	2 days	0.83	E Williams	1999 RM ₄₂
1999 RN ₄₂	13.2	0.15	19990919	250.66744	80.13530	60.38050	11.55262	0.0977770	2.8368493	11	1	9 days	0.92	Williams	1999 RN ₄₂
1999 RO ₄₂	15.6	0.15	19990830	29.44150	197.28267	115.12667	5.40249	0.2891281	2.2364970	9	1	2 days	0.34	E Williams	1999 RO ₄₂
1999 RP ₄₂	15.1	0.15	19990830	338.21670	351.41228	53.44121	9.33776	0.2582863	2.5830670	10	1	2 days	0.74	E Williams	1999 RP ₄₂
1999 RQ ₄₂	13.6	0.15	19990919	311.38958	272.14580	173.04825	12.71231	0.1677654	2.5630347	9	1	9 days	0.82	Williams	1999 RQ ₄₂
1999 RR ₄₂	13.4	0.15	19990830	1.70745	212.44344	163.61592	10.06779	0.1090656	3.0631308	16	1	32 days	0.62	Williams	1999 RR ₄₂
1999 RT ₄₂	13.0	0.15	19990810	17.35443	354.06923	309.21428	18.00306	0.0942820	2.3380218	26	1	66 days	0.44	M-v 4 Williams	1999 RT ₄₂
1999 RW ₄₂	11.9	0.15	19990810	315.83695	260.57459	136.62351	8.08910	0.2219894	3.9789682	26	1	40 days	0.45	Williams	1999 RW ₄₂
1999 RX ₄₂	13.4	0.15	19990830	12.46230	148.31380	179.77246	13.06868	0.2616130	2.4519277	19	1	10 days	0.24	Williams	1999 RX ₄₂
1999 RY ₄₂	14.6	0.15	19990830	358.96585	174.51847	165.79137	13.45495	0.1826630	2.5737180	26	1	26 days	0.53	Williams	1999 RY ₄₂
1999 RG ₄₃	15.6	0.15	19990830	63.68843	109.66641	160.42460	7.92733	0.1451229	2.3718752	15	1	14 days	0.65	Williams	1999 RG ₄₃
1999 RH ₄₃	15.4	0.15	19990830	23.92631	313.84581	358.14963	6.03423	0.1326495	2.3639221	30	1	9 days	0.56	Williams	1999 RH ₄₃
1999 RJ ₄₃	17.2	0.15	19990830	355.29282	353.11984	11.49358	7.64286	0.0983831	2.4386200	13	1	6 days	0.99	Williams	1999 RJ ₄₃
1999 RL ₄₃	14.7	0.15	19990830	289.60646	203.27069	235.07361	8.32795	0.0594540	2.9800111	19	1	14 days	0.54	Williams	1999 RL ₄₃
1999 RM ₄₃	14.6	0.15	19990919	130.17422	31.61023	198.08756	3.43598	0.2045708	2.6108614	17	1	9 days	0.41	Williams	1999 RM ₄₃
1999 RQ ₄₃	15.6	0.15	19990830	19.41871	134.07661	184.78884	4.18800	0.3009303	2.1411913	13	1	10 days	0.39	Williams	1999 RQ ₄₃

1999 RS ₄₃	15.2	0.15	19990830	12.25734	180.74129	182.33564	4.41874	0.1749456	2.2102154	16	1	10 days	0.69		Williams	1999 RS ₄₃
1999 RT ₄₃	14.0	0.15	19990830	305.08310	333.60858	130.30455	2.43660	0.1537684	2.8190338	11	1	5 days	1.02	E	Williams	1999 RT ₄₃
1999 RU ₄₃	12.4	0.15	19990830	65.18609	261.52350	40.12261	22.75314	0.2080066	2.5215130	6	1	4 days	0.15		Williams	1999 RU ₄₃
1999 RV ₄₃	14.5	0.15	19990830	15.20689	177.34222	170.87256	10.13099	0.2340236	2.8780803	9	1	2 days	1.28		Williams	1999 RV ₄₃
1999 RW ₄₃	13.9	0.15	19990830	295.27114	295.44179	173.63442	10.87983	0.2247992	3.0162557	13	1	2 days	0.59	E	Williams	1999 RW ₄₃
1999 RX ₄₃	13.9	0.15	19990830	357.23890	218.40456	161.65758	7.94262	0.2129974	3.1983064	9	1	2 days	1.43	E	Williams	1999 RX ₄₃
1999 RA ₄₄	14.4	0.15	19990919	331.16620	16.27155	53.83685	7.05586	0.0932982	2.4960408	12	1	7 days	0.67	E	Williams	1999 RA ₄₄
1999 RC ₄₄	13.4	0.15	19990919	16.19619	325.54763	45.35391	11.84710	0.1906738	2.6917664	11	1	7 days	0.39		Williams	1999 RC ₄₄
1999 RD ₄₄	14.5	0.15	19990830	144.54381	218.95646	358.48194	14.77481	0.0315929	2.5843960	13	1	5 days	0.56	E	Williams	1999 RD ₄₄
1999 RE ₄₄	15.4	0.15	19990830	21.52830	22.43272	303.72728	2.43074	0.2322099	2.8480377	16	1	5 days	0.42		Williams	1999 RE ₄₄
1999 RF ₄₄	15.7	0.15	19990830	323.53701	267.89491	138.24701	15.53996	0.1363797	2.6298694	12	1	7 days	0.23		Williams	1999 RF ₄₄
1999 RG ₄₄	15.7	0.15	19990830	7.71377	187.79489	141.36180	10.26901	0.2519595	3.0809896	22	1	38 days	0.58		Williams	1999 RG ₄₄
1999 RH ₄₄	15.4	0.15	19990830	354.10290	324.75055	29.15788	7.25587	0.1441152	2.4386364	18	1	10 days	0.31		Williams	1999 RH ₄₄
1999 RK ₄₄	14.2	0.15	19990830	289.32503	257.24944	191.72803	5.82628	0.2379227	2.8112512	19	1	13 days	0.64		Marsden	1999 RK ₄₄
1999 RL ₄₄	15.9	0.15	19990830	349.86571	22.99713	348.02246	13.90865	0.3054329	2.6103287	11	1	9 days	0.23		Williams	1999 RL ₄₄
1999 RM ₄₄	14.0	0.15	19990830	1.22699	149.86665	196.16107	17.83217	0.2316217	2.5937576	14	1	10 days	0.16		Williams	1999 RM ₄₄
1999 RQ ₄₄	14.5	0.15	19990830	327.93290	215.39818	178.81452	9.54324	0.0641093	2.7420785	16	1	9 days	0.63		Williams	1999 RQ ₄₄
1999 RS ₄₄	14.6	0.15	19990830	338.51654	349.13758	54.72167	6.30871	0.2556318	2.4807546	10	1	2 days	0.49	E	Williams	1999 RS ₄₄
1999 RU ₄₄	13.9	0.15	19990830	0.54180	162.32465	173.02270	13.49224	0.1935670	2.5703203	24	1	12 days	0.40		Williams	1999 RU ₄₄
1999 RW ₄₄	17.1	0.15	19990830	349.09830	144.26893	214.35359	4.75248	0.1854656	2.2674956	22	1	11 days	0.56		Williams	1999 RW ₄₄
1999 RZ ₄₄	15.6	0.15	19990830	344.37353	164.02339	196.04417	1.45379	0.2342767	2.4154633	30	1	26 days	0.59		Williams	1999 RZ ₄₄
1999 RC ₄₅	16.3	0.15	19990830	310.91869	260.75362	148.58070	9.16527	0.1760462	2.3888522	39	1	6 days	0.49		Williams	1999 RC ₄₅
1999 RG ₄₅	12.6	0.15	19990830	34.78604	318.98841	329.39301	6.77035	0.1762598	3.2121971	25	1	11 days	0.34		Williams	1999 RG ₄₅
1999 RJ ₄₅	15.1	0.15	19990810	349.66644	241.78712	126.41022	15.23005	0.4436319	2.8621775	80	1	66 days	0.57	M-v 5	Williams	1999 RJ ₄₅
1999 RK ₄₅	19.8	0.15	19990830	320.63626	4.08432	119.97825	5.86833	0.7711790	1.5904217	74	1	8 days	0.71		Williams	1999 RK ₄₅
1999 RL ₄₅	18.9	0.15	19990830	320.91847	234.27760	172.41957	21.90775	0.3658953	1.7917669	37	1	3 days	0.51		Williams	1999 RL ₄₅
1999 RM ₄₅	19.7	0.15	19990830	25.25636	87.85462	163.53899	11.04936	0.6511921	1.7031241	37	1	6 days	0.42		Williams	1999 RM ₄₅
1999 RN ₄₅	18.1	0.15	19990830	341.18759	220.85357	169.38870	24.63160	0.2757643	1.7610814	38	1	6 days	0.42		Williams	1999 RN ₄₅
1999 RO ₄₅	15.3	0.15	19990830	185.00233	288.00484	242.75983	8.04615	0.0586605	3.0941289	12	1	12 days	0.61		Williams	1999 RO ₄₅
1999 RQ ₄₅	15.7	0.15	19990810	348.13859	180.34246	177.06901	6.71531	0.1392611	2.3229279	33	1	55 days	0.60		Williams	1999 RQ ₄₅
1999 RR ₄₅	16.7	0.15	19990830	190.80772	174.65631	349.19504	5.84063	0.1206206	2.3749871	14	1	12 days	0.36		Williams	1999 RR ₄₅
1999 RS ₄₅	16.8	0.15	19990830	334.22830	43.38495	348.52568	5.78388	0.2420706	2.7012124	16	1	9 days	0.37		Williams	1999 RS ₄₅
1999 RW ₄₅	15.5	0.15	19990830	351.46725	296.71972	67.37924	1.49857	0.3125176	3.1780390	22	1	7 days	0.39		Williams	1999 RW ₄₅
1999 RZ ₄₅	15.6	0.15	19990830	54.39566	58.78731	193.08074	4.78480	0.1761966	2.2748089	20	1	4 days	0.70		Williams	1999 RZ ₄₅
1999 RA ₄₆	14.4	0.15	19990810	319.73790	209.30567	161.38535	13.98334	0.1864648	2.5319205	28	1	62 days	0.36	M-v 4	Williams	1999 RA ₄₆
1999 RQ ₄₆	15.8	0.15	19990830	355.40794	5.32839	323.89768	8.92900	0.2427342	2.3399111	12	1	6 days	0.54		Williams	1999 RQ ₄₆
1999 RH ₄₇	13.5	0.15	19990810	321.87497	225.45940	135.83796	12.91594	0.1101500	3.1663177	19	1	60 days	0.48	M-v 5	Williams	1999 RH ₄₇
1999 RS ₄₇	15.3	0.15	19990810	21.97899	128.38457	154.47609	7.46483	0.1974587	2.3167329	23	1	116 days	0.72	M-v 4	Williams	1999 RS ₄₇
1999 RH ₄₈	15.4	0.15	19990830	30.20568	93.51452	185.67236	4.35934	0.1933415	2.5412317	13	1	4 days	0.34		Williams	1999 RH ₄₈
1999 RJ ₄₈	14.3	0.15	19990810	338.70527	144.27886	199.56031	3.87480	0.1187660	3.0313210	16	1	27 days	0.36		Williams	1999 RJ ₄₈
1999 RR ₄₈	15.8	0.15	19990830	7.59432	334.22069	334.96510	8.72394	0.2490424	2.5938214	11	1	8 days	0.55		Williams	1999 RR ₄₈
1999 RS ₄₈	14.3	0.15	19990830	68.83927	335.92218	242.10250	1.10257	0.2763165	2.8745650	9	1	8 days	0.51	E	Williams	1999 RS ₄₈
1999 RV ₄₈	16.0	0.15	19990830	338.91297	105.52603	249.40993	1.64859	0.1845445	2.2588851	11	1	4 days	1.09	E	Williams	1999 RV ₄₈
1999 RE ₄₉	14.2	0.15	19990830	63.93908	276.33352	329.72027	12.59019	0.0977735	3.2143833	13	1	7 days	0.76	E	Williams	1999 RE ₄₉
1999 RG ₄₉	15.0	0.15	19990830	354.27704	223.05196	111.84332	3.25244	0.2367539	2.4994553	13	1	6 days	0.53	E	Williams	1999 RG ₄₉
1999 RP ₄₉	14.4	0.15	19990830	335.09898	18.28778	353.70977	3.89893	0.3170180	3.0816596	15	1	7 days	0.52		Williams	1999 RP ₄₉
1999 RG ₅₀	16.3	0.15	19990810	356.75810	56.11226	268.46291	2.32007	0.2067892	2.4059303	17	1	28 days	0.61		Williams	1999 RG ₅₀
1999 RH ₅₀	16.8	0.15	19990830	353.61499	35.72120	302.91740	3.57406	0.2644412	2.4813425	15	1	5 days	0.94	E	Williams	1999 RH ₅₀
1999 RA ₅₁	14.2	0.15	19990830	264.32683	97.16016	337.00397	5.81945	0.1141630	2.4666440	13	1	11 days	0.67		Williams	1999 RA ₅₁
1999 RC ₅₁	15.2	0.15	19990810	357.94834	173.43619	149.36135	16.01457	0.1963683	2.5717429	31	1	62 days	0.48	M-v 4	Williams	1999 RC ₅₁
1999 RE ₅₁	15.3	0.15	19990810	0.97564	165.74496	151.59960	7.76985	0.2378019	2.4585021	28	1	67 days	0.58	M-v 4	Williams	1999 RE ₅₁
1999 RO ₅₁	15.9	0.15	19990830	16.45857	105.36943	198.53555	3.98872	0.1923534	2.5676574	17	1	7 days	0.63		Williams	1999 RO ₅₁
1999 RR ₅₁	16.5	0.15	19990830	345.06173	174.54402	175.81742	9.07858	0.1782603	2.3076664	17	1	3 days	0.67		Williams	1999 RR ₅₁

1999 RX ₅₁	15.6	0.15	19990830	15.06015	127.62073	173.73252	3.34726	0.2633823	2.9063277	17	1	5 days	0.60		Williams	1999 RX ₅₁
1999 RK ₅₂	15.9	0.15	19990830	3.28467	265.27070	58.34480	3.03641	0.2042592	2.3649415	13	1	8 days	0.61	E	Williams	1999 RK ₅₂
1999 RH ₅₃	14.7	0.15	19990810	294.98969	227.84506	176.54011	6.58725	0.1412430	2.4327440	17	1	32 days	0.50		Williams	1999 RH ₅₃
1999 RK ₅₃	14.7	0.15	19990830	271.24305	241.95858	182.54420	7.17520	0.0484503	2.3092158	12	1	3 days	0.42	E	Williams	1999 RK ₅₃
1999 RA ₅₄	16.9	0.15	19990830	359.53225	342.76533	348.30822	4.73398	0.2523885	2.3658992	13	1	7 days	0.46	E	Williams	1999 RA ₅₄
1999 RN ₅₄	16.2	0.15	19990830	343.47214	1.31361	353.47253	3.88265	0.1887617	2.3258666	16	1	7 days	0.51	E	Williams	1999 RN ₅₄
1999 RT ₅₄	16.1	0.15	19990810	33.11523	88.31369	188.92179	0.82528	0.1758735	2.3911898	21	1	33 days	0.44		Williams	1999 RT ₅₄
1999 RW ₅₄	14.3	0.15	19990830	334.11320	191.51811	179.77312	6.65308	0.2072151	2.5498271	15	1	5 days	0.77		Williams	1999 RW ₅₄
1999 RN ₅₅	15.5	0.15	19990830	32.77186	274.81807	16.53319	2.59003	0.0920025	2.4274912	10	1	7 days	0.51	E	Williams	1999 RN ₅₅
1999 RP ₅₅	14.8	0.15	19990830	266.83202	309.80112	131.13768	4.76695	0.1538048	2.2776589	13	1	7 days	0.69	E	Williams	1999 RP ₅₅
1999 RQ ₅₅	18.0	0.15	19990830	342.22463	18.73157	349.67315	5.38115	0.3269723	2.2587237	10	1	7 days	0.54	E	Williams	1999 RQ ₅₅
1999 RR ₅₅	14.2	0.15	19990830	323.15224	19.60037	348.43319	7.84784	0.0223242	3.0414085	11	1	7 days	0.63	E	Williams	1999 RR ₅₅
1999 RT ₅₅	15.2	0.15	19990830	359.39657	192.70302	140.30775	5.41185	0.2691630	2.5561272	13	1	7 days	0.48	E	Williams	1999 RT ₅₅
1999 RU ₅₅	14.9	0.15	19990810	51.92264	105.39668	146.60102	21.99854	0.1997271	2.4105802	24	1	62 days	0.59	M-v	Williams	1999 RU ₅₅
1999 RJ ₅₆	14.8	0.15	19990830	10.75938	176.54385	141.40789	10.47462	0.1027862	3.0046959	12	1	7 days	0.72	E	Williams	1999 RJ ₅₆
1999 RV ₅₆	16.0	0.15	19990830	22.80625	132.42312	166.93506	13.34433	0.2043879	2.5417888	13	1	4 days	0.44	E	Williams	1999 RV ₅₆
1999 RR ₅₈	16.4	0.15	19990830	8.68153	132.23006	187.61866	5.42381	0.2770346	2.9656053	12	1	4 days	1.00	E	Williams	1999 RR ₅₈
1999 RB ₅₉	14.2	0.15	19990830	182.57629	342.43128	172.14106	9.24824	0.1596011	2.6937772	13	1	4 days	0.61	E	Williams	1999 RB ₅₉
1999 RJ ₆₀	15.2	0.15	19990830	312.15775	255.31041	130.77484	1.08235	0.1227262	2.4987337	13	1	12 days	0.33		Williams	1999 RJ ₆₀
1999 RE ₆₁	16.8	0.15	19990830	2.66084	58.52686	272.62492	4.37947	0.1112962	2.2841245	16	1	9 days	0.72		Williams	1999 RE ₆₁
1999 RL ₆₁	14.7	0.15	19990810	22.60540	195.53748	103.21825	2.25843	0.1198183	3.2302354	11	1	32 days	0.57		Williams	1999 RL ₆₁
1999 RZ ₆₁	18.0	0.15	19990830	21.94309	118.63444	177.88053	9.85682	0.2715384	2.2635262	11	1	4 days	1.00	E	Williams	1999 RZ ₆₁
1999 RW ₆₂	16.7	0.15	19990830	341.70084	171.53406	188.22887	5.95997	0.1107404	2.3271365	12	1	4 days	0.48	E	Williams	1999 RW ₆₂
1999 RV ₆₃	16.4	0.15	19990810	21.12262	314.09521	338.03420	7.58928	0.2687802	2.3580066	19	1	33 days	0.44		Williams	1999 RV ₆₃
1999 RY ₆₃	16.0	0.15	19990810	55.95790	251.63990	7.42483	2.66986	0.1427224	2.2770012	16	1	33 days	0.62		Williams	1999 RY ₆₃
1999 RU ₆₅	15.6	0.15	19990830	248.67821	223.11321	237.33383	3.12957	0.0857255	2.2384963	13	1	4 days	0.39	E	Williams	1999 RU ₆₅
1999 RY ₆₅	17.3	0.15	19990830	39.80449	69.52603	220.02546	2.51622	0.1266518	2.3305323	10	1	4 days	0.79	E	Williams	1999 RY ₆₅
1999 RB ₆₆	13.6	0.15	19990830	178.50552	209.31661	312.83228	1.12831	0.2988363	2.9203043	9	1	4 days	0.33	E	Williams	1999 RB ₆₆
1999 RK ₆₇	16.5	0.15	19990830	3.67581	162.23899	171.46300	10.19353	0.2175837	2.3912538	23	1	9 days	0.51		Williams	1999 RK ₆₇
1999 RS ₆₇	16.0	0.15	19990830	24.25383	10.50084	300.58928	5.96230	0.1111886	2.3973520	22	1	9 days	0.45		Williams	1999 RS ₆₇
1999 RT ₆₇	15.1	0.15	19990830	316.62047	67.76066	331.32591	21.19274	0.1437906	3.2025349	24	1	9 days	0.93		Williams	1999 RT ₆₇
1999 RY ₆₇	14.7	0.15	19990830	195.54353	178.31441	332.03040	10.66359	0.1340403	2.6975009	13	1	4 days	0.43	E	Williams	1999 RY ₆₇
1999 RC ₇₀	16.3	0.15	19990830	30.40240	129.10116	167.06466	7.35405	0.2070121	2.3381072	21	1	11 days	0.46		Williams	1999 RC ₇₀
1999 RE ₇₀	15.4	0.15	19990830	338.25364	30.70146	347.55667	0.19808	0.2369478	3.1494616	18	1	7 days	0.57		Williams	1999 RE ₇₀
1999 RO ₇₀	16.3	0.15	19990830	5.73524	55.06967	278.94043	4.03689	0.2103128	2.5786189	23	1	9 days	0.51		Williams	1999 RO ₇₀
1999 RX ₇₀	16.8	0.15	19990830	326.30110	217.27457	174.35749	6.85301	0.1898614	2.5342029	33	1	9 days	0.61		Williams	1999 RX ₇₀
1999 RZ ₇₀	16.9	0.15	19990830	34.21465	124.20746	171.15209	5.62621	0.1655927	2.3001110	33	1	7 days	0.61		Williams	1999 RZ ₇₀
1999 RA ₇₁	15.7	0.15	19990830	335.07462	54.52949	323.83842	0.75233	0.1779843	2.5304061	40	1	28 days	0.45		Williams	1999 RA ₇₁
1999 RG ₇₁	12.8	0.15	19990830	202.03420	153.29900	352.46544	10.93174	0.1054032	2.9508750	27	1	7 days	0.38		Williams	1999 RG ₇₁
1999 RH ₇₁	16.2	0.15	19990830	346.75632	336.83283	24.44955	1.73605	0.1869550	2.3873638	30	1	7 days	0.35		Williams	1999 RH ₇₁
1999 RJ ₇₁	15.2	0.15	19990830	329.09659	268.54409	121.24784	2.60370	0.2078725	3.0643518	29	1	6 days	0.52		Williams	1999 RJ ₇₁
1999 RN ₇₁	14.7	0.15	19990830	226.91682	326.93033	153.00872	8.33679	0.0534909	2.2976515	28	1	6 days	0.57		Williams	1999 RN ₇₁
1999 RS ₇₁	15.6	0.15	19990830	355.60630	343.09057	4.97744	4.93214	0.1795304	2.4504612	24	1	6 days	0.50		Williams	1999 RS ₇₁
1999 RR ₇₁	15.0	0.15	19990830	333.05444	31.84682	353.28126	15.37989	0.2286274	3.0574156	20	1	6 days	0.42		Williams	1999 RR ₇₁
1999 RU ₇₁	16.3	0.15	19990830	14.95701	264.89516	55.70996	2.41963	0.1581640	2.5809633	22	1	7 days	0.46		Williams	1999 RU ₇₁
1999 RY ₇₁	14.4	0.15	19990810	332.60484	8.54554	2.01892	9.66377	0.0862992	2.9900710	21	1	32 days	0.45		Williams	1999 RY ₇₁
1999 RZ ₇₁	16.5	0.15	19990830	357.55529	329.34198	14.69291	4.86378	0.1932276	2.4260973	24	1	7 days	0.48		Williams	1999 RZ ₇₁
1999 RE ₇₂	16.2	0.15	19990830	1.63708	198.03690	141.82941	7.23866	0.1322245	2.2461447	46	1	7 days	0.38		Williams	1999 RE ₇₂
1999 RF ₇₂	15.3	0.15	19990830	338.71826	237.63060	134.97725	5.83337	0.1774677	2.3782476	39	1	7 days	0.26		Williams	1999 RF ₇₂
1999 RG ₇₂	15.7	0.15	19990830	332.24639	247.25977	126.92049	4.36315	0.0649453	2.5721914	22	1	6 days	0.65		Williams	1999 RG ₇₂
1999 RL ₇₂	15.1	0.15	19990830	315.64764	25.19753	11.06374	8.20835	0.1000970	2.7560060	40	1	6 days	0.57		Williams	1999 RL ₇₂
1999 RM ₇₂	16.2	0.15	19990830	48.42569	244.08893	36.72790	3.06435	0.1374112	2.3169145	23	1	6 days	0.60		Williams	1999 RM ₇₂
1999 RN ₇₂	11.9	0.15	19990830	64.88490	119.22978	158.54043	21.39070	0.0331534	5.1436008	35	1	7 days	0.64	E	Williams	1999 RN ₇₂

1999 RO ₇₂	13.9	0.15	19990830	56.02256	167.31288	113.16847	3.17369	0.0767931	2.9233068	39	1	7 days	0.40		Williams	1999 RO ₇₂
1999 RA ₇₃	15.8	0.15	19990830	232.80066	188.01308	289.93302	1.49411	0.0741934	2.2165900	50	1	7 days	0.63	E	Williams	1999 RA ₇₃
1999 RD ₇₃	17.3	0.15	19990830	346.43481	103.75331	261.33011	1.19584	0.2447356	2.4197017	49	1	7 days	0.48		Williams	1999 RD ₇₃
1999 RH ₇₃	17.3	0.15	19990830	346.24716	111.40462	257.14147	3.35059	0.2822794	2.5566266	14	1	11 days	0.59		Williams	1999 RH ₇₃
1999 RK ₇₃	15.5	0.15	19990830	66.57991	14.65521	257.80405	4.32046	0.0639640	2.5672265	11	1	11 days	0.62		Williams	1999 RK ₇₃
1999 RL ₇₃	15.3	0.15	19990810	334.19672	54.02813	330.12476	11.08815	0.3003364	2.5836062	25	1	62 days	0.43	M-v 4	Williams	1999 RL ₇₃
1999 RO ₇₃	14.9	0.15	19990830	285.39077	250.90396	188.35870	12.50396	0.1582183	2.5598379	25	1	10 days	0.37		Williams	1999 RO ₇₃
1999 RR ₇₃	14.8	0.15	19990830	319.73191	219.04990	176.98388	10.87530	0.1217757	2.9903997	11	1	11 days	0.68		Williams	1999 RR ₇₃
1999 RS ₇₃	16.6	0.15	19990830	51.43020	299.26965	338.92502	10.92327	0.1570355	2.6605770	20	1	7 days	0.53		Williams	1999 RS ₇₃
1999 RT ₇₃	15.4	0.15	19990830	67.22676	82.01486	177.79425	7.44135	0.1632942	2.6782920	20	1	11 days	0.45		Williams	1999 RT ₇₃
1999 RU ₇₃	14.6	0.15	19990830	119.77082	24.34676	199.45170	2.42408	0.0193308	2.5333079	27	1	11 days	0.85	E	Williams	1999 RU ₇₃
1999 RA ₇₄	14.4	0.15	19990830	283.43375	94.00364	351.91130	22.85408	0.2005771	3.0745835	12	1	7 days	0.55	E	Williams	1999 RA ₇₄
1999 RD ₇₄	17.1	0.15	19990830	327.06900	236.82735	151.39852	6.65801	0.1487474	2.2931176	18	1	7 days	0.87		Williams	1999 RD ₇₄
1999 RN ₇₄	16.0	0.15	19990830	12.39335	192.36172	135.26384	5.53340	0.1274912	2.4771712	19	1	6 days	0.50		Williams	1999 RN ₇₄
1999 RQ ₇₄	15.2	0.15	19990830	308.24512	40.77158	5.99106	11.82491	0.1097259	2.9480721	16	1	4 days	0.86	E	Williams	1999 RQ ₇₄
1999 RR ₇₄	15.1	0.15	19990810	296.96198	289.20067	127.49800	5.39574	0.1507125	2.4052766	48	1	33 days	0.38		Williams	1999 RR ₇₄
1999 RB ₇₅	15.8	0.15	19990830	348.87177	348.82026	14.36309	5.39674	0.2180430	3.0358137	13	1	4 days	0.88	E	Williams	1999 RB ₇₅
1999 RH ₇₅	16.8	0.15	19990830	288.32103	102.30409	330.65840	0.72199	0.1358217	2.3723926	9	1	10 days	0.60	E	Williams	1999 RH ₇₅
1999 RJ ₇₅	14.5	0.15	19990830	18.67770	338.27210	344.54886	5.83302	0.1306404	3.0748940	12	1	11 days	0.38		Williams	1999 RJ ₇₅
1999 RN ₇₅	14.7	0.15	19990830	36.31397	343.22766	325.44183	2.31255	0.0220868	2.6592432	12	1	11 days	0.47		Williams	1999 RN ₇₅
1999 RQ ₇₅	16.2	0.15	19990830	0.46984	51.66275	292.49856	3.15260	0.1648215	2.2821233	28	1	23 days	0.55		Williams	1999 RQ ₇₅
1999 RU ₇₅	16.1	0.15	19990830	297.58240	201.68644	219.60507	4.80610	0.1065206	2.3899371	17	1	12 days	0.47		Williams	1999 RU ₇₅
1999 RV ₇₅	14.6	0.15	19990830	305.68879	228.75859	187.38214	14.69701	0.1373525	2.5820110	18	1	11 days	0.33		Williams	1999 RV ₇₅
1999 RZ ₇₅	15.1	0.15	19990830	8.68523	147.74873	189.57670	10.04459	0.1218957	2.9681627	20	1	10 days	0.45		Williams	1999 RZ ₇₅
1999 RR ₇₆	15.0	0.15	19990830	239.03801	294.81590	183.76237	7.65170	0.0926766	2.7756237	24	1	7 days	0.92	E	Williams	1999 RR ₇₆
1999 RJ ₇₆	16.0	0.15	19990830	84.68816	74.94350	172.50915	7.03628	0.1243243	2.2450291	28	1	8 days	0.51	E	Williams	1999 RJ ₇₆
1999 RK ₇₆	14.9	0.15	19990830	107.31354	48.12820	176.67649	5.43792	0.1528093	2.5580191	12	1	11 days	0.38		Williams	1999 RK ₇₆
1999 RL ₇₆	15.2	0.15	19990830	173.20961	357.46048	175.51882	5.21536	0.0799239	2.2767648	32	1	11 days	0.48		Williams	1999 RL ₇₆
1999 RM ₇₆	16.2	0.15	19990830	348.24628	193.35386	171.34907	5.51801	0.2596692	2.3872660	34	1	8 days	0.33		Williams	1999 RM ₇₆
1999 RN ₇₆	17.4	0.15	19990830	1.03604	174.42905	169.64003	12.24662	0.1904823	2.6373211	10	1	10 days	0.50		Williams	1999 RN ₇₆
1999 RO ₇₆	16.4	0.15	19990830	327.67879	227.52340	158.80710	2.40397	0.1067468	2.6500357	10	1	10 days	0.40	E	Williams	1999 RO ₇₆
1999 RA ₇₇	13.8	0.15	19990830	327.85139	300.79670	103.79750	4.59951	0.2840185	3.9550977	16	1	6 days	0.65	E	Williams	1999 RA ₇₇
1999 RH ₇₈	17.0	0.15	19990830	313.71460	220.29500	191.34442	6.45216	0.2350372	2.4660015	11	1	2 days	0.44	E	Williams	1999 RH ₇₈
1999 RV ₇₈	15.8	0.15	19990830	328.06696	59.87713	330.24588	12.95499	0.1823696	2.6746252	24	1	23 days	0.51		Williams	1999 RV ₇₈
1999 RS ₇₉	16.8	0.15	19990830	326.56687	211.19286	174.82562	7.15821	0.1194403	2.3888441	17	1	10 days	0.69		Williams	1999 RS ₇₉
1999 RV ₇₉	17.3	0.15	19990830	323.09643	53.67043	344.21288	6.84283	0.2025411	2.3340628	20	1	14 days	0.47		Williams	1999 RV ₇₉
1999 RC ₈₀	18.8	0.15	19990830	10.35864	336.27149	350.16737	4.31198	0.2224479	2.1904499	13	1	10 days	0.33		Williams	1999 RC ₈₀
1999 RD ₈₀	14.2	0.15	19990830	298.29475	253.93922	177.10095	8.52513	0.1960864	3.1314096	12	1	11 days	0.39		Williams	1999 RD ₈₀
1999 RW ₈₀	14.7	0.15	19990830	27.65478	352.99088	320.65034	8.99171	0.0939734	3.1015646	13	1	11 days	0.61		Williams	1999 RW ₈₀
1999 RD ₈₁	16.8	0.15	19990830	9.27001	312.58611	19.10099	5.46387	0.2054039	2.5110899	11	1	4 days	0.59	E	Williams	1999 RD ₈₁
1999 RE ₈₁	16.3	0.15	19990830	345.54456	218.80249	148.78103	5.54350	0.1731318	2.5340484	21	1	7 days	0.71	E	Williams	1999 RE ₈₁
1999 RF ₈₁	15.4	0.15	19990810	49.67394	147.76630	127.37474	2.97244	0.1589586	2.2800609	24	1	33 days	0.34		Williams	1999 RF ₈₁
1999 RH ₈₁	16.5	0.15	19990830	352.76412	188.44063	169.33388	12.05502	0.1785686	2.8860345	14	1	11 days	0.49		Williams	1999 RH ₈₁
1999 RJ ₈₁	16.4	0.15	19990830	33.70270	310.08786	354.43241	5.16032	0.1157296	2.3842634	13	1	11 days	0.45		Williams	1999 RJ ₈₁
1999 RK ₈₁	15.6	0.15	19990830	335.05332	204.29590	172.01017	2.90646	0.0776965	2.5244898	18	1	12 days	0.63		Williams	1999 RK ₈₁
1999 RL ₈₁	15.8	0.15	19990830	337.98327	201.24092	174.77600	6.71568	0.1404040	2.4970344	23	1	11 days	0.53		Williams	1999 RL ₈₁
1999 RM ₈₁	15.5	0.15	19990830	27.68522	327.42863	346.65257	9.36555	0.1042734	2.6644425	22	1	7 days	0.39		Williams	1999 RM ₈₁
1999 RN ₈₁	16.7	0.15	19990830	13.98855	343.92650	341.47271	3.30456	0.1963940	2.5305251	41	1	7 days	0.45		Williams	1999 RN ₈₁
1999 RO ₈₁	13.6	0.15	19990830	158.05023	259.14294	291.10389	1.29791	0.0324083	3.1551609	27	1	7 days	0.59	E	Williams	1999 RO ₈₁
1999 RQ ₈₁	13.9	0.15	19990830	352.02751	151.60789	207.64996	3.71480	0.1658757	2.7925439	24	1	7 days	0.56	E	Williams	1999 RQ ₈₁
1999 RS ₈₁	16.7	0.15	19990830	13.15551	350.30899	336.18421	7.05047	0.1830531	2.2065937	27	1	23 days	0.72		Williams	1999 RS ₈₁
1999 RT ₈₁	15.9	0.15	19990830	326.93674	61.49691	337.75638	9.12867	0.2317019	2.5781371	28	1	23 days	0.49		Williams	1999 RT ₈₁
1999 RU ₈₁	15.1	0.15	19990830	331.53129	203.67258	187.70144	7.38308	0.2132109	2.7164648	17	1	7 days	0.34		Williams	1999 RU ₈₁

1999 RV ₈₁	13.7	0.15	19990830	334.88498	163.92404	219.48363	3.90398	0.1474967	3.2126554	25	1	7 days	0.44		Williams	1999 RV ₈₁
1999 RX ₈₁	15.8	0.15	19990830	342.56553	148.67106	227.90062	2.98779	0.2436012	2.7001956	21	1	7 days	0.60	E	Williams	1999 RX ₈₁
1999 RA ₈₂	16.3	0.15	19990830	40.11024	335.26818	317.52008	4.37607	0.1687524	2.1873793	11	1	9 days	0.46		Williams	1999 RA ₈₂
1999 RF ₈₂	14.9	0.15	19990830	337.45865	88.82741	292.36573	4.37059	0.1702844	3.1459595	14	1	11 days	0.38		Williams	1999 RF ₈₂
1999 RK ₈₂	14.4	0.15	19990830	33.70206	110.36081	187.01047	11.53860	0.2116111	2.5227268	14	1	9 days	0.33		Williams	1999 RK ₈₂
1999 RW ₈₂	15.9	0.15	19990830	338.33063	39.62896	346.09384	8.52189	0.2692911	2.7289710	19	1	7 days	0.45		Williams	1999 RW ₈₂
1999 RA ₈₃	15.7	0.15	19990830	20.54887	350.65641	325.54604	1.64604	0.2000109	2.3983544	19	1	7 days	0.20		Williams	1999 RA ₈₃
1999 RH ₈₃	15.8	0.15	19990830	315.74509	248.86289	162.88174	13.65313	0.2032854	2.5813417	24	1	9 days	0.56	E	Williams	1999 RH ₈₃
1999 RJ ₈₃	15.9	0.15	19990830	8.03599	298.12755	34.29744	2.63424	0.2273950	2.3702529	18	1	7 days	0.34		Williams	1999 RJ ₈₃
1999 RT ₈₃	15.7	0.15	19990830	198.62668	24.97194	128.62893	6.11457	0.0910563	2.2100063	12	1	8 days	0.55	E	Williams	1999 RT ₈₃
1999 RB ₈₄	13.6	0.15	19990830	162.11802	187.97410	359.33647	10.63985	0.0754524	2.9432769	30	1	23 days	0.82		Williams	1999 RB ₈₄
1999 RC ₈₄	15.4	0.15	19990830	344.69259	234.41355	135.03329	1.74505	0.1413168	2.5594360	28	1	23 days	0.66		Williams	1999 RC ₈₄
1999 RE ₈₄	16.1	0.15	19990830	302.68012	71.91884	3.28750	3.49341	0.2563357	2.5346315	21	1	8 days	0.70	E	Williams	1999 RE ₈₄
1999 RF ₈₄	17.7	0.15	19990830	22.66405	127.91836	181.05718	1.01546	0.2462591	2.3246157	13	1	7 days	0.68	E	Williams	1999 RF ₈₄
1999 RG ₈₅	16.9	0.15	19990830	13.54012	305.10354	19.85298	1.72044	0.2423729	2.5420147	17	1	8 days	0.62		Williams	1999 RG ₈₅
1999 RZ ₈₅	15.9	0.15	19990830	310.89527	270.48034	143.09816	6.32924	0.1489994	2.4726506	17	1	23 days	0.43		Williams	1999 RZ ₈₅
1999 RB ₈₆	16.3	0.15	19990830	9.50141	237.14510	100.12387	3.90109	0.1265285	2.5747803	12	1	9 days	0.63	E	Williams	1999 RB ₈₆
1999 RS ₈₆	16.0	0.15	19990830	5.60761	325.81364	11.68375	6.38029	0.2802790	2.5646069	26	1	23 days	0.41		Williams	1999 RS ₈₆
1999 RT ₈₆	14.7	0.15	19990810	348.37109	246.97173	114.43399	3.34233	0.1054988	2.8613440	28	1	33 days	0.78		Williams	1999 RT ₈₆
1999 RA ₈₇	14.6	0.15	19990830	19.92957	279.75716	41.18485	1.83981	0.1985314	2.8792649	13	1	9 days	0.33	E	Williams	1999 RA ₈₇
1999 RF ₈₇	16.4	0.15	19990830	338.99025	30.24426	352.85751	12.68078	0.2270269	2.5785781	20	1	25 days	0.53		Williams	1999 RF ₈₇
1999 RT ₈₇	15.4	0.15	19990830	336.10474	227.33029	155.77553	5.09389	0.1433331	2.5301960	17	1	9 days	0.40		Williams	1999 RT ₈₇
1999 RG ₈₈	16.6	0.15	19990830	339.30259	197.05750	180.03768	3.33311	0.0999176	2.2769358	20	1	9 days	0.60		Williams	1999 RG ₈₈
1999 RV ₈₈	16.6	0.15	19990830	30.20270	343.09144	317.51926	2.80735	0.2661487	2.4056705	13	1	2 days	0.53	E	Williams	1999 RV ₈₈
1999 RX ₈₈	14.8	0.15	19990830	287.79545	160.95668	284.44163	1.48945	0.1701615	2.3771352	12	1	9 days	0.54		Williams	1999 RX ₈₈
1999 RB ₈₉	13.4	0.15	19990830	287.28365	266.93404	183.01640	14.16726	0.1803025	2.9152581	13	1	8 days	0.33		Williams	1999 RB ₈₉
1999 RL ₈₉	15.2	0.15	19990830	170.30732	179.93830	4.11093	2.51916	0.1122232	2.4410988	19	1	10 days	0.45		Williams	1999 RL ₈₉
1999 RT ₉₁	16.5	0.15	19990830	325.91309	52.09571	351.33733	2.08090	0.2176174	2.2450024	20	1	12 days	0.52		Williams	1999 RT ₉₁
1999 RW ₉₁	17.0	0.15	19990830	14.07725	130.95764	195.23551	0.45778	0.2869499	2.5819562	14	1	8 days	0.59	E	Williams	1999 RW ₉₁
1999 RC ₉₂	15.4	0.15	19990810	339.45490	26.96274	353.06734	6.21610	0.2629380	2.5375979	19	1	55 days	0.41		Williams	1999 RC ₉₂
1999 RD ₉₂	13.7	0.15	19990830	125.15400	232.09067	354.07677	17.43121	0.1076832	3.1578400	13	1	2 days	0.47	E	Williams	1999 RD ₉₂
1999 RE ₉₂	14.4	0.15	19990830	319.53587	219.21080	187.06663	8.05452	0.1097268	2.7393418	13	1	2 days	0.26	E	Williams	1999 RE ₉₂
1999 RF ₉₂	14.0	0.15	19990810	321.85778	225.71427	183.03032	12.34720	0.1978281	3.0313243	23	1	57 days	0.50		Williams	1999 RF ₉₂
1999 RL ₉₂	15.0	0.15	19990830	14.39658	151.77805	186.38523	1.68549	0.1539961	2.9768322	18	1	11 days	0.33		Williams	1999 RL ₉₂
1999 RD ₉₄	13.3	0.15	19990830	59.93480	124.04410	150.95598	8.77712	0.1966619	2.5698373	13	1	9 days	0.23	E	Williams	1999 RD ₉₄
1999 RD ₉₅	13.6	0.15	19990830	294.13883	91.83735	340.84860	3.73786	0.0698496	2.6960084	13	1	2 days	0.53	E	Williams	1999 RD ₉₅
1999 RH ₉₅	18.1	0.15	19990830	3.56324	170.09555	173.86867	2.29014	0.2820684	2.2146380	17	1	4 days	0.54	E	Williams	1999 RH ₉₅
1999 RR ₉₅	16.0	0.15	19990830	357.00018	286.47045	70.66796	3.25769	0.2275726	2.3787691	13	1	9 days	0.40	E	Williams	1999 RR ₉₅
1999 RX ₉₅	14.4	0.15	19990830	351.73243	204.52404	162.92556	14.60400	0.1648305	2.5549035	13	1	9 days	0.25	E	Williams	1999 RX ₉₅
1999 RY ₉₅	14.1	0.15	19990830	15.19928	233.74788	103.13590	4.85591	0.1738123	3.2321733	13	1	9 days	0.44	E	Williams	1999 RY ₉₅
1999 RD ₉₆	15.9	0.15	19990830	343.64780	3.56949	12.01659	14.33355	0.0842311	2.3538220	12	1	7 days	0.56	E	Williams	1999 RD ₉₆
1999 RF ₉₆	16.3	0.15	19990830	17.26091	231.64558	99.52584	2.67073	0.1858554	2.5239106	13	1	2 days	0.36	E	Williams	1999 RF ₉₆
1999 RM ₉₆	14.3	0.15	19990830	353.01570	268.05274	102.93876	2.27573	0.1920906	3.1553392	13	1	7 days	0.69	E	Williams	1999 RM ₉₆
1999 RQ ₉₆	16.3	0.15	19990830	354.02399	34.51602	320.77751	3.40523	0.1859167	2.2885248	17	1	7 days	0.58		Williams	1999 RQ ₉₆
1999 RT ₉₆	15.7	0.15	19990830	294.59841	74.53430	342.01770	6.09904	0.0183439	2.3310897	16	1	7 days	0.50	E	Williams	1999 RT ₉₆
1999 RU ₉₆	14.5	0.15	19990830	246.07867	90.06610	25.41076	3.63839	0.1220799	2.6623399	15	1	7 days	0.32		Williams	1999 RU ₉₆
1999 RV ₉₆	15.2	0.15	19990830	317.58923	267.77248	131.20925	3.08683	0.0856069	2.7220542	24	1	23 days	0.61		Williams	1999 RV ₉₆
1999 RF ₉₇	16.5	0.15	19990830	324.59350	356.68956	42.18862	1.71422	0.1898519	2.3659033	16	1	18 days	0.77		Williams	1999 RF ₉₇
1999 RR ₉₇	16.9	0.15	19990830	23.31427	117.47953	199.88873	0.43456	0.2093272	2.4235824	12	1	8 days	0.51	E	Williams	1999 RR ₉₇
1999 RQ ₉₈	16.1	0.15	19990830	359.33052	188.52630	170.75167	9.49687	0.2941425	2.8988920	9	1	7 days	0.65	E	Williams	1999 RQ ₉₈
1999 RT ₉₈	16.2	0.15	19990830	23.17046	172.63605	141.86353	6.05804	0.3124890	2.7182907	11	1	14 days	0.85		Williams	1999 RT ₉₈
1999 RW ₉₈	13.4	0.15	19990830	342.74619	212.65468	180.56148	24.80888	0.2138986	3.1556362	11	1	14 days	0.26		Williams	1999 RW ₉₈
1999 RX ₉₈	14.5	0.15	19990830	340.62412	221.35271	169.50434	13.61244	0.2176011	2.4538526	14	1	14 days	0.40		Williams	1999 RX ₉₈

1999 RZ ₉₈	12.2	0.15	19990830	261.48789	93.12790	20.88447	23.48156	0.0519607	3.2456362	11	1	2 days	0.93	E	Williams	1999 RZ ₉₈	
1999 RB ₉₉	14.4	0.15	19990830	3.05753	196.17548	168.62964	12.60248	0.1508568	3.1872853	14	1	14 days	0.62		Williams	1999 RB ₉₉	
1999 RD ₉₉	15.4	0.15	19990830	296.36081	288.22264	167.92759	10.73146	0.2380099	2.2768124	16	1	2 days	0.50	E	Williams	1999 RD ₉₉	
1999 RT ₁₀₀	12.9	0.15	19990810	14.70739	29.01136	279.27418	10.24799	0.1506179	3.2349873	29	1	69 days	0.41	M-v	4	Williams	1999 RT ₁₀₀
1999 RW ₁₀₀	13.3	0.15	19990810	4.80363	40.18309	279.40344	11.33710	0.3109061	3.0981685	22	1	66 days	0.47	M-v	4	Williams	1999 RW ₁₀₀
1999 RZ ₁₀₀	13.4	0.15	19990830	1.73105	91.88236	236.65052	14.62757	0.0999597	3.1387931	11	1	8 days	0.51		Williams	1999 RZ ₁₀₀	
1999 RA ₁₀₁	14.1	0.15	19990830	24.71506	95.43758	186.04889	21.25443	0.3235935	3.2183767	14	1	11 days	0.41		Williams	1999 RA ₁₀₁	
1999 RQ ₁₀₁	15.6	0.15	19990810	330.03932	136.62732	238.51344	10.99810	0.2085927	2.6172514	19	1	56 days	0.48		Williams	1999 RQ ₁₀₁	
1999 RV ₁₀₁	17.1	0.15	19990830	331.73539	149.25065	233.03498	3.91300	0.2412421	2.3558126	15	1	9 days	0.64		Williams	1999 RV ₁₀₁	
1999 RC ₁₀₂	13.6	0.15	19990830	218.87068	297.90168	188.36974	23.07733	0.1062642	3.1779961	17	1	12 days	0.50		Williams	1999 RC ₁₀₂	
1999 RF ₁₀₂	12.8	0.15	19990830	260.82390	158.03814	293.30800	14.22985	0.1065336	3.0230193	24	1	18 days	0.41		Williams	1999 RF ₁₀₂	
1999 RJ ₁₀₂	14.0	0.15	19990830	124.55826	356.50156	206.31025	13.09123	0.0904253	2.9670384	14	1	9 days	0.53		Williams	1999 RJ ₁₀₂	
1999 RK ₁₀₂	14.7	0.15	19990810	0.91920	30.56831	298.06106	11.86910	0.1643718	2.7170726	29	1	58 days	0.58		Williams	1999 RK ₁₀₂	
1999 RM ₁₀₂	15.2	0.15	19990830	66.82111	15.98022	223.00949	7.88278	0.2687387	2.4587834	19	1	6 days	0.51	E	Williams	1999 RM ₁₀₂	
1999 RN ₁₀₂	14.8	0.15	19990810	353.05736	105.97455	236.33458	7.02291	0.2712836	2.6890797	24	1	66 days	0.31	M-v	4	Williams	1999 RN ₁₀₂
1999 RQ ₁₀₂	14.7	0.15	19990830	331.39170	65.08686	307.89073	12.65974	0.0774662	2.6639817	19	1	12 days	0.49		Williams	1999 RQ ₁₀₂	
1999 RR ₁₀₂	13.6	0.15	19990830	70.18594	342.79665	282.74717	8.88005	0.0353712	2.9455859	20	1	6 days	0.78	E	Williams	1999 RR ₁₀₂	
1999 RS ₁₀₂	13.8	0.15	19990810	350.58770	76.82914	269.77296	8.90588	0.0906369	3.0921058	26	1	66 days	0.50	M-v	4	Williams	1999 RS ₁₀₂
1999 RT ₁₀₂	14.2	0.15	19990830	44.53709	37.22059	241.78163	6.87327	0.1675372	2.2417075	31	1	8 days	0.51	E	Williams	1999 RT ₁₀₂	
1999 RV ₁₀₂	14.6	0.15	19990810	357.37616	58.98646	279.47672	7.69288	0.2496359	3.0759023	32	1	66 days	0.43	M-v	4	Williams	1999 RV ₁₀₂
1999 RY ₁₀₂	14.4	0.15	19990830	5.38513	142.76604	187.75751	12.73882	0.2020226	2.7123148	21	1	6 days	0.42	E	Williams	1999 RY ₁₀₂	
1999 RZ ₁₀₂	15.3	0.15	19990810	323.89241	89.52020	298.26972	7.28044	0.2318786	2.3573042	27	1	37 days	0.47		Williams	1999 RZ ₁₀₂	
1999 RA ₁₀₃	13.0	0.15	19990830	351.87037	98.91143	251.54426	6.79608	0.1056048	3.2354735	26	1	9 days	0.33		Williams	1999 RA ₁₀₃	
1999 RB ₁₀₃	13.8	0.15	19990810	335.75435	157.65073	214.59368	15.95617	0.2344708	3.0430235	17	1	36 days	0.29		Williams	1999 RB ₁₀₃	
1999 RD ₁₀₃	15.2	0.15	19990830	358.19522	130.31622	211.82739	12.45516	0.2183087	2.6377834	12	1	8 days	0.33		Williams	1999 RD ₁₀₃	
1999 RE ₁₀₃	15.0	0.15	19990830	347.76414	62.97438	305.15938	14.34605	0.3509987	2.9604729	15	1	8 days	0.49		Williams	1999 RE ₁₀₃	
1999 RF ₁₀₃	15.6	0.15	19990830	356.20212	52.01998	295.93266	11.46766	0.2706243	2.5511048	14	1	8 days	0.61	E	Williams	1999 RF ₁₀₃	
1999 RG ₁₀₃	14.1	0.15	19990810	335.30301	150.41830	218.72198	12.71916	0.1776938	2.5526126	20	1	56 days	0.38		Williams	1999 RG ₁₀₃	
1999 RH ₁₀₃	14.3	0.15	19990810	319.68475	179.72496	214.66628	12.22472	0.2194167	2.4307371	15	1	36 days	0.40		Williams	1999 RH ₁₀₃	
1999 RM ₁₀₃	14.7	0.15	19990830	335.83521	82.92000	288.75126	6.29787	0.1166505	2.3656709	21	1	6 days	0.51	E	Williams	1999 RM ₁₀₃	
1999 RO ₁₀₃	14.6	0.15	19990830	33.84374	101.07255	200.14192	10.43828	0.0826375	2.9795995	29	1	9 days	0.41		Williams	1999 RO ₁₀₃	
1999 RP ₁₀₃	14.8	0.15	19990830	193.04808	319.02813	190.12923	13.18077	0.0395012	2.8583757	23	1	9 days	0.63		Williams	1999 RP ₁₀₃	
1999 RQ ₁₀₃	14.7	0.15	19990830	352.64621	50.94264	298.65005	6.15047	0.1282086	2.3260761	17	1	6 days	0.48		Williams	1999 RQ ₁₀₃	
1999 RT ₁₀₃	14.6	0.15	19990810	329.19945	199.83416	185.78845	13.39910	0.2481957	2.5748851	36	1	64 days	0.42	M-v	6	Williams	1999 RT ₁₀₃
1999 RX ₁₀₃	14.8	0.15	19990830	334.98133	187.22500	187.87965	15.25876	0.1088942	2.5654885	12	1	8 days	0.47		Williams	1999 RX ₁₀₃	
1999 RZ ₁₀₃	13.3	0.15	19990830	359.93598	74.58731	270.31070	8.82554	0.1100111	3.0249129	16	1	11 days	0.39		Williams	1999 RZ ₁₀₃	
1999 RG ₁₀₄	16.3	0.15	19990830	347.18811	131.73919	238.87791	4.15673	0.3048581	2.5688727	27	1	12 days	0.46		Williams	1999 RG ₁₀₄	
1999 RK ₁₀₄	12.8	0.15	19990830	18.19341	34.39148	281.00870	12.04278	0.1685227	2.6719272	15	1	8 days	0.20	E	Williams	1999 RK ₁₀₄	
1999 RN ₁₀₄	13.8	0.15	19990830	89.96370	303.25279	300.86526	12.35228	0.0822549	2.8862231	14	1	11 days	0.49		Williams	1999 RN ₁₀₄	
1999 RQ ₁₀₄	13.5	0.15	19990830	348.41909	150.62094	205.20041	10.41436	0.0478895	3.1155346	19	1	11 days	0.49		Williams	1999 RQ ₁₀₄	
1999 RW ₁₀₄	16.5	0.15	19990830	0.25992	58.94124	282.53760	5.08296	0.2697862	2.6655799	17	1	25 days	0.40		Williams	1999 RW ₁₀₄	
1999 RX ₁₀₄	15.3	0.15	19990830	357.66195	37.44993	307.53117	12.67300	0.1934894	2.5348147	13	1	11 days	0.38		Williams	1999 RX ₁₀₄	
1999 RO ₁₀₅	14.9	0.15	19990830	125.82687	333.88079	255.36916	5.50544	0.0701137	2.3684875	14	1	10 days	0.35		Williams	1999 RO ₁₀₅	
1999 RT ₁₀₅	13.8	0.15	19990810	24.70146	356.83689	323.71600	14.64349	0.0659626	3.0505211	24	1	57 days	0.51		Williams	1999 RT ₁₀₅	
1999 RU ₁₀₅	14.3	0.15	19990830	318.05623	116.98290	285.03983	12.93527	0.1009650	2.5960334	15	1	10 days	0.31		Williams	1999 RU ₁₀₅	
1999 RV ₁₀₅	14.5	0.15	19990830	336.04169	157.76184	224.79096	14.34256	0.1357733	2.6564381	15	1	10 days	0.33		Williams	1999 RV ₁₀₅	
1999 RW ₁₀₅	16.8	0.15	19990830	356.46386	47.17588	308.64129	11.93983	0.2872100	2.6063616	13	1	10 days	0.60		Williams	1999 RW ₁₀₅	
1999 RY ₁₀₅	12.2	0.15	19990830	189.30478	240.17417	288.30121	14.26651	0.0332569	3.1644724	13	1	10 days	0.34		Williams	1999 RY ₁₀₅	
1999 RC ₁₀₆	15.3	0.15	19990830	47.36054	359.60561	282.18026	5.08748	0.1956149	2.2122297	25	1	8 days	0.48	E	Williams	1999 RC ₁₀₆	
1999 RE ₁₀₆	14.9	0.15	19990810	345.36357	157.52804	205.31345	8.59524	0.1669665	2.8052315	35	1	55 days	0.44		Williams	1999 RE ₁₀₆	
1999 RO ₁₀₆	14.4	0.15	19990830	49.75352	358.10172	299.01194	8.07433	0.0848180	3.0946478	19	1	13 days	0.41		Williams	1999 RO ₁₀₆	
1999 RU ₁₀₆	14.5	0.15	19990830	52.16795	329.34194	316.74776	13.93096	0.1816744	2.6389320	14	1	10 days	0.38		Williams	1999 RU ₁₀₆	
1999 RO ₁₀₇	13.7	0.15	19990830	325.35676	150.09757	247.82143	8.64380	0.0627255	3.1842821	17	1	10 days	0.91	E	Williams	1999 RO ₁₀₇	

1999 RY ₁₀₇	14.6	0.15	19990830	329.69711	146.52202	238.89436	5.68767	0.1254804	2.9892134	15	1	12 days	0.40	Williams	1999 RY ₁₀₇
1999 RC ₁₀₈	13.0	0.15	19990830	324.55162	171.43682	219.83888	9.97965	0.0876678	3.0675108	13	1	10 days	0.45	Williams	1999 RC ₁₀₈
1999 RD ₁₀₈	14.6	0.15	19990830	60.62106	58.39460	207.75709	10.96767	0.1934460	2.4860681	12	1	10 days	0.47	Williams	1999 RD ₁₀₈
1999 RM ₁₀₈	13.2	0.15	19990830	67.51620	356.69814	283.36528	8.80681	0.0357799	2.9848133	12	1	10 days	0.49	Williams	1999 RM ₁₀₈
1999 RP ₁₀₈	14.5	0.15	19990830	320.57785	99.74110	299.09688	8.64922	0.1051992	3.0196181	16	1	9 days	0.38	Williams	1999 RP ₁₀₈
1999 RX ₁₀₈	14.6	0.15	19990830	7.61928	111.40195	233.32340	11.45888	0.1420451	2.6422710	13	1	10 days	0.40	Williams	1999 RX ₁₀₈
1999 RZ ₁₀₈	17.0	0.15	19990830	340.97874	142.48138	238.11535	4.72586	0.2086774	2.3001837	14	1	10 days	1.12	E Williams	1999 RZ ₁₀₈
1999 RD ₁₀₉	16.3	0.15	19990810	1.23571	157.19619	191.54231	8.00030	0.3053827	2.7546885	17	1	57 days	0.63	Williams	1999 RD ₁₀₉
1999 RH ₁₀₉	14.6	0.15	19990830	11.85540	123.52817	219.08173	8.85228	0.0983258	3.0763441	13	1	10 days	0.32	Williams	1999 RH ₁₀₉
1999 RJ ₁₀₉	14.8	0.15	19990810	1.85887	12.23478	329.33972	9.06238	0.1968049	2.3625607	25	1	62 days	0.39	M-v 5 Williams	1999 RJ ₁₀₉
1999 RL ₁₀₉	13.6	0.15	19990830	252.37607	272.33045	215.66828	11.04980	0.2154920	3.0687197	14	1	10 days	0.36	Williams	1999 RL ₁₀₉
1999 RM ₁₀₉	15.4	0.15	19990830	155.79918	287.12629	270.07884	5.49222	0.0911053	2.3667740	12	1	10 days	0.50	Williams	1999 RM ₁₀₉
1999 RN ₁₀₉	16.2	0.15	19990830	343.07227	71.27111	304.33155	5.64952	0.1221717	2.2894133	19	1	10 days	0.35	Williams	1999 RN ₁₀₉
1999 RO ₁₀₉	15.1	0.15	19990830	19.80878	358.03218	331.21483	12.77656	0.1575589	2.6181936	18	1	10 days	0.30	E Williams	1999 RO ₁₀₉
1999 RQ ₁₀₉	14.5	0.15	19990830	4.94524	30.84697	318.56473	12.13576	0.2482414	2.6033751	15	1	10 days	0.19	Williams	1999 RQ ₁₀₉
1999 RR ₁₀₉	14.8	0.15	19990810	336.39798	52.81102	334.89096	10.59476	0.1843935	2.7522593	28	1	57 days	0.31	Williams	1999 RR ₁₀₉
1999 RS ₁₀₉	16.8	0.15	19990830	10.76434	38.13132	301.68908	4.78004	0.1818571	2.2745431	18	1	10 days	0.41	Williams	1999 RS ₁₀₉
1999 RU ₁₀₉	16.4	0.15	19990830	322.06700	178.77916	226.61195	5.93701	0.1168451	2.3680984	14	1	10 days	0.44	E Williams	1999 RU ₁₀₉
1999 RV ₁₀₉	15.3	0.15	19990830	87.66249	308.24244	313.34381	5.94469	0.1018318	2.4175512	25	1	14 days	0.37	Williams	1999 RV ₁₀₉
1999 RY ₁₀₉	14.1	0.15	19990830	352.23975	75.41717	301.86575	9.65265	0.1086645	3.1769067	12	1	10 days	0.43	Williams	1999 RY ₁₀₉
1999 RZ ₁₀₉	16.0	0.15	19990830	356.17653	94.17982	270.25931	6.41378	0.1379877	2.2031503	15	1	10 days	0.43	Williams	1999 RZ ₁₀₉
1999 RC ₁₁₀	15.6	0.15	19990830	350.09832	56.49734	321.31525	10.52798	0.2002862	2.6468309	14	1	10 days	0.61	Williams	1999 RC ₁₁₀
1999 RF ₁₁₀	13.6	0.15	19990830	298.57514	142.61157	298.01653	8.34412	0.0927823	3.0191780	15	1	10 days	0.35	Williams	1999 RF ₁₁₀
1999 RG ₁₁₀	13.8	0.15	19990830	307.61416	123.69643	312.65089	9.24134	0.1451944	3.0691507	12	1	10 days	0.41	Williams	1999 RG ₁₁₀
1999 RH ₁₁₀	13.5	0.15	19990830	291.97881	199.54738	253.69367	9.06309	0.1435374	2.9746757	14	1	10 days	0.44	Williams	1999 RH ₁₁₀
1999 RM ₁₁₀	15.6	0.15	19990830	347.05187	69.36225	317.07164	13.51358	0.2599089	2.6512176	13	1	13 days	0.31	Williams	1999 RM ₁₁₀
1999 RP ₁₁₀	13.9	0.15	19990830	310.82328	117.78134	314.38311	9.76328	0.1097902	3.0129017	13	1	10 days	0.52	Williams	1999 RP ₁₁₀
1999 RR ₁₁₀	15.7	0.15	19990830	1.13223	68.95144	294.87994	6.57772	0.1375337	2.3418176	13	1	10 days	0.44	Williams	1999 RR ₁₁₀
1999 RW ₁₁₀	14.3	0.15	19990830	76.80425	296.98063	340.95735	10.72104	0.1525350	2.5851226	17	1	10 days	0.56	Williams	1999 RW ₁₁₀
1999 RX ₁₁₀	13.9	0.15	19990830	63.81316	5.66527	295.20781	5.80765	0.0605845	2.5164862	19	1	10 days	0.35	Williams	1999 RX ₁₁₀
1999 RZ ₁₁₀	14.9	0.15	19990830	6.96069	26.51164	333.45583	8.28769	0.1291456	2.6142844	14	1	10 days	0.58	Williams	1999 RZ ₁₁₀
1999 RB ₁₁₁	14.4	0.15	19990830	205.03064	294.36240	222.58545	7.83682	0.0989728	2.4018552	16	1	10 days	0.40	Williams	1999 RB ₁₁₁
1999 RE ₁₁₁	13.9	0.15	19990830	318.33017	86.70577	342.97361	16.15136	0.2058046	3.1464835	13	1	10 days	0.32	Williams	1999 RE ₁₁₁
1999 RR ₁₁₃	13.3	0.15	19990830	315.43740	102.03843	303.42451	13.44549	0.2034750	2.5525954	24	1	11 days	0.22	Williams	1999 RR ₁₁₃
1999 RB ₁₁₄	16.3	0.15	19990830	62.16624	332.46248	292.21745	7.51282	0.1310592	2.2503873	21	1	6 days	0.65	Williams	1999 RB ₁₁₄
1999 RC ₁₁₄	13.7	0.15	19990830	35.51137	49.83862	252.06693	7.67597	0.0606809	3.0473435	24	1	5 days	0.52	Williams	1999 RC ₁₁₄
1999 RY ₁₁₄	15.4	0.15	19990830	277.06241	223.13021	216.76468	5.65909	0.1259213	2.2054851	32	1	9 days	0.57	Williams	1999 RY ₁₁₄
1999 RZ ₁₁₄	17.2	0.15	19990830	340.55777	109.49736	259.97253	4.26253	0.1747870	2.2969103	25	1	9 days	0.59	Williams	1999 RZ ₁₁₄
1999 RM ₁₁₅	15.5	0.15	19990810	14.91730	158.72383	149.66834	11.26724	0.1163007	2.5812169	31	1	37 days	0.72	Williams	1999 RM ₁₁₅
1999 RR ₁₁₅	15.2	0.15	19990810	331.61249	210.77985	150.19369	2.10640	0.1304954	2.4213751	27	1	37 days	0.45	Williams	1999 RR ₁₁₅
1999 RS ₁₁₅	14.8	0.15	19990830	32.04062	130.45552	156.44104	6.22101	0.1521003	2.2469126	21	1	10 days	0.35	Williams	1999 RS ₁₁₅
1999 RX ₁₁₅	15.9	0.15	19990810	3.81189	149.56649	163.66072	4.15588	0.1910177	2.2854705	32	1	54 days	0.46	Williams	1999 RX ₁₁₅
1999 RW ₁₁₆	15.2	0.15	19990810	18.00398	129.70594	154.90540	8.33917	0.2731282	2.7294470	22	1	60 days	0.47	M-v 5 Williams	1999 RW ₁₁₆
1999 RX ₁₁₆	14.9	0.15	19990810	340.64976	194.36280	151.93845	14.30366	0.1884934	2.5442001	37	1	67 days	0.50	M-v 4 Williams	1999 RX ₁₁₆
1999 RT ₁₁₇	14.1	0.15	19990830	336.20732	78.79241	282.03021	13.40301	0.1404486	2.6844135	17	1	7 days	0.37	E Williams	1999 RT ₁₁₇
1999 RV ₁₁₇	15.6	0.15	19990830	341.93671	162.31576	191.09805	14.34002	0.1671390	2.4739597	12	1	3 days	0.41	E Williams	1999 RV ₁₁₇
1999 RA ₁₁₈	15.7	0.15	19990810	348.96277	51.06271	284.56108	6.24872	0.1487213	2.2812807	25	1	63 days	0.55	M-v 5 Williams	1999 RA ₁₁₈
1999 RZ ₁₁₈	16.3	0.15	19990830	356.01915	134.18024	200.51080	12.12945	0.1376583	2.3666429	14	1	7 days	0.23	Williams	1999 RZ ₁₁₈
1999 RA ₁₁₉	17.2	0.15	19990830	336.37125	168.81030	201.81095	10.82297	0.2573510	2.3325071	12	1	7 days	0.59	E Williams	1999 RA ₁₁₉
1999 RB ₁₁₉	13.7	0.15	19990830	19.09790	12.00663	291.66728	16.27857	0.1769308	3.0422812	18	1	11 days	0.45	Williams	1999 RB ₁₁₉
1999 RL ₁₁₉	14.5	0.15	19990810	324.18877	65.24211	314.06911	14.05482	0.2335773	2.7143259	27	1	81 days	0.49	M-v 4 Williams	1999 RL ₁₁₉
1999 RH ₁₂₀	16.4	0.15	19990830	354.27038	167.24615	172.88002	2.68818	0.2215432	2.3186986	18	1	7 days	0.40	Williams	1999 RH ₁₂₀
1999 RN ₁₂₀	16.0	0.15	19990830	330.34941	194.29513	174.24509	7.90710	0.1345146	2.3694031	11	1	7 days	0.67	E Williams	1999 RN ₁₂₀

1999 RP ₁₂₀	14.9	0.15	19990810	346.87671	24.97320	320.75004	13.21357	0.2502040	2.6597250	21	1	33 days	0.33	Williams	1999 RP ₁₂₀
1999 RS ₁₂₀	14.2	0.15	19990830	15.77370	44.50416	264.07801	4.36743	0.1592933	2.3885555	18	1	8 days	0.28	Williams	1999 RS ₁₂₀
1999 RV ₁₂₀	13.7	0.15	19990810	353.05920	161.21326	172.01308	13.54571	0.2043633	2.4031944	20	1	117 days	0.56	M-v 5 Williams	1999 RV ₁₂₀
1999 RT ₁₂₂	14.8	0.15	19990830	13.78932	264.86801	59.16466	4.12012	0.0912532	2.6523165	22	1	6 days	0.36	Williams	1999 RT ₁₂₂
1999 RU ₁₂₂	16.1	0.15	19990830	346.63668	215.38159	148.09314	13.05297	0.2597458	2.5358005	44	1	6 days	0.54	Williams	1999 RU ₁₂₂
1999 RV ₁₂₂	14.4	0.15	19990830	13.66704	206.55302	117.14743	6.00924	0.1253589	3.0352017	26	1	6 days	0.69	Williams	1999 RV ₁₂₂
1999 RH ₁₂₃	13.1	0.15	19990830	216.24443	212.22699	282.19389	8.10188	0.0314027	3.0819594	16	1	8 days	0.36	Williams	1999 RH ₁₂₃
1999 RK ₁₂₃	15.6	0.15	19990830	310.02295	167.19503	240.01702	6.14073	0.1162472	2.2886365	19	1	8 days	0.39	Williams	1999 RK ₁₂₃
1999 RN ₁₂₃	14.1	0.15	19990810	331.76418	70.24878	308.83798	10.99386	0.0768022	2.9430769	26	1	55 days	0.58	Williams	1999 RN ₁₂₃
1999 RQ ₁₂₃	15.7	0.15	19990830	345.92071	151.46718	223.57534	8.16810	0.3253348	2.7206646	26	1	11 days	0.35	Williams	1999 RQ ₁₂₃
1999 RR ₁₂₃	13.0	0.15	19990830	183.46373	299.74861	229.17715	10.80067	0.0766984	3.1643007	32	1	11 days	0.35	Williams	1999 RR ₁₂₃
1999 RU ₁₂₃	15.1	0.15	19990830	61.00199	78.12035	190.47712	7.73357	0.1728907	2.7990548	28	1	7 days	0.52	E Williams	1999 RU ₁₂₃
1999 RW ₁₂₃	14.9	0.15	19990830	338.98498	242.87140	128.60172	0.59578	0.0764407	2.7819612	27	1	15 days	0.46	Williams	1999 RW ₁₂₃
1999 RX ₁₂₃	15.3	0.15	19990830	84.19768	89.37527	169.41108	8.78388	0.0412639	2.7944373	18	1	13 days	0.42	Williams	1999 RX ₁₂₃
1999 RY ₁₂₃	14.3	0.15	19990830	39.14258	5.80173	301.78893	13.53386	0.0808445	2.7517252	13	1	9 days	0.47	Williams	1999 RY ₁₂₃
1999 RA ₁₂₄	14.1	0.15	19990830	2.07617	66.00124	279.71101	6.17448	0.2244187	2.7765115	17	1	8 days	0.24	Williams	1999 RA ₁₂₄
1999 RD ₁₂₄	16.1	0.15	19990830	46.83832	108.66348	177.94102	2.17012	0.1529474	2.4581612	23	1	7 days	0.58	E Williams	1999 RD ₁₂₄
1999 RE ₁₂₄	14.8	0.15	19990830	2.86500	151.61314	194.54005	14.51710	0.0998997	2.6144318	19	1	8 days	0.30	Williams	1999 RE ₁₂₄
1999 RG ₁₂₄	14.4	0.15	19990830	352.41920	55.66519	306.46534	8.96673	0.1341141	2.5819705	18	1	8 days	0.35	Williams	1999 RG ₁₂₄
1999 RH ₁₂₄	14.0	0.15	19990830	19.57890	12.20128	312.88992	16.48787	0.2178018	3.2029919	12	1	9 days	0.32	Williams	1999 RH ₁₂₄
1999 RI ₁₂₄	13.6	0.15	19990830	342.49905	51.08959	327.93526	12.42322	0.2017312	2.6462221	22	1	8 days	0.36	Williams	1999 RI ₁₂₄
1999 RO ₁₂₄	14.3	0.15	19990830	330.03563	187.12194	206.88130	11.50219	0.1612044	2.7610618	17	1	8 days	0.53	Williams	1999 RO ₁₂₄
1999 RQ ₁₂₄	15.3	0.15	19990830	358.09483	38.23026	318.88744	12.22687	0.1715546	2.6620516	13	1	9 days	0.53	Williams	1999 RQ ₁₂₄
1999 RK ₁₂₆	15.1	0.15	19990830	293.65233	163.13813	262.58078	3.78671	0.2256427	2.5588752	16	1	9 days	0.59	Williams	1999 RK ₁₂₆
1999 RN ₁₂₆	15.3	0.15	19990830	305.25884	200.93300	213.11072	4.92407	0.2426080	2.6033302	16	1	9 days	0.63	Williams	1999 RN ₁₂₆
1999 RQ ₁₂₉	15.3	0.15	19990830	226.83084	327.48959	143.93971	7.40241	0.1096495	2.3234997	16	1	9 days	0.53	Williams	1999 RQ ₁₂₉
1999 RW ₁₂₉	16.9	0.15	19990810	16.86260	158.17534	142.51210	5.39936	0.1724263	2.1674652	27	1	37 days	0.46	Williams	1999 RW ₁₂₉
1999 RY ₁₂₉	14.2	0.15	19990810	348.79904	259.94037	83.16071	2.31739	0.1682211	3.1186580	21	1	36 days	0.50	Williams	1999 RY ₁₂₉
1999 RZ ₁₂₉	15.5	0.15	19990830	329.71026	279.09805	125.13730	4.01195	0.4268027	2.9973226	17	1	6 days	0.41	Williams	1999 RZ ₁₂₉
1999 RD ₁₃₀	14.5	0.15	19990810	340.85917	16.82407	335.78984	11.24624	0.1279200	3.0384365	20	1	36 days	0.54	Williams	1999 RD ₁₃₀
1999 RO ₁₃₀	15.4	0.15	19990810	8.64991	352.90275	322.02278	5.79061	0.1325196	2.3373075	21	1	37 days	0.44	Williams	1999 RO ₁₃₀
1999 RS ₁₃₀	15.0	0.15	19990810	348.34896	151.34742	193.79049	3.99480	0.2294104	2.6137920	21	1	86 days	0.42	M-v 6 Williams	1999 RS ₁₃₀
1999 RD ₁₃₁	15.9	0.15	19990830	22.86608	66.45931	238.32696	5.70018	0.1303072	2.4017213	14	1	6 days	0.53	Williams	1999 RD ₁₃₁
1999 RF ₁₃₁	15.2	0.15	19990830	2.47488	121.52355	208.97149	8.38236	0.1649646	2.7638005	21	1	6 days	0.42	Williams	1999 RF ₁₃₁
1999 RM ₁₃₁	16.9	0.15	19990830	335.13043	136.42185	237.62982	6.37192	0.2098374	2.2074197	21	1	10 days	0.54	Williams	1999 RM ₁₃₁
1999 RN ₁₃₁	15.5	0.15	19990830	73.12167	33.41843	215.42342	9.81828	0.1174398	2.5872997	17	1	6 days	0.49	E Williams	1999 RN ₁₃₁
1999 RX ₁₃₁	16.2	0.15	19990830	10.63808	60.85744	260.63622	5.09494	0.1370234	2.3829643	17	1	6 days	0.62	E Williams	1999 RX ₁₃₁
1999 RJ ₁₃₂	15.4	0.15	19990830	338.03591	70.90994	295.41805	6.58145	0.1765263	2.7154368	16	1	9 days	0.51	Williams	1999 RJ ₁₃₂
1999 RB ₁₃₃	14.4	0.15	19990830	295.36386	201.03207	232.06574	6.21116	0.2783898	2.6173607	17	1	6 days	0.25	Williams	1999 RB ₁₃₃
1999 RD ₁₃₃	15.6	0.15	19990830	333.41854	70.97234	309.62613	14.04833	0.2457977	3.1170318	15	1	6 days	0.62	E Williams	1999 RD ₁₃₃
1999 RE ₁₃₃	16.1	0.15	19990830	41.48352	6.74596	266.11283	5.77849	0.2342980	2.3331697	23	1	10 days	0.60	Williams	1999 RE ₁₃₃
1999 RG ₁₃₃	13.8	0.15	19990830	159.02792	297.19370	237.83300	7.67222	0.0609875	3.1832333	17	1	10 days	0.91	Williams	1999 RG ₁₃₃
1999 RK ₁₃₃	14.7	0.15	19990830	4.60193	141.55109	189.14317	16.52228	0.1147073	3.1698875	16	1	10 days	0.46	Williams	1999 RK ₁₃₃
1999 RM ₁₃₃	14.3	0.15	19990830	308.02118	175.43877	222.26440	8.99812	0.0860177	2.9728317	20	1	10 days	0.51	Williams	1999 RM ₁₃₃
1999 RN ₁₃₃	15.5	0.15	19990830	28.63414	104.41607	191.35550	12.45490	0.1851488	2.5785287	20	1	10 days	0.49	Williams	1999 RN ₁₃₃
1999 RO ₁₃₃	13.5	0.15	19990830	27.94251	25.83439	269.94723	6.98860	0.1970977	2.7960479	25	1	10 days	0.33	Williams	1999 RO ₁₃₃
1999 RQ ₁₃₃	16.0	0.15	19990830	33.63539	40.32718	251.62018	5.90756	0.1551963	2.4300731	20	1	10 days	0.52	Williams	1999 RQ ₁₃₃
1999 RT ₁₃₃	14.0	0.15	19990830	16.93149	61.05982	254.51664	5.32534	0.1250402	2.3720901	25	1	10 days	0.34	Williams	1999 RT ₁₃₃
1999 RU ₁₃₃	14.6	0.15	19990830	248.60836	246.40480	209.11702	8.48527	0.0642997	2.7283604	16	1	10 days	0.69	Williams	1999 RU ₁₃₃
1999 RW ₁₃₃	15.6	0.15	19990830	12.20470	96.98122	223.27946	5.40284	0.1384216	2.3119823	16	1	6 days	0.26	Williams	1999 RW ₁₃₃
1999 RX ₁₃₃	17.1	0.15	19990830	353.31742	146.69595	199.26194	7.43034	0.1734678	2.3425587	16	1	6 days	0.35	Williams	1999 RX ₁₃₃
1999 RY ₁₃₃	13.6	0.15	19990830	272.68952	237.56039	191.82170	12.38161	0.0499690	3.0129954	12	1	8 days	0.50	Marsden	1999 RY ₁₃₃
1999 RB ₁₃₄	15.2	0.15	19990830	218.72601	245.12545	242.69504	5.94097	0.1411735	2.3713449	13	1	6 days	0.57	E Williams	1999 RB ₁₃₄

1999 RD ₁₃₄	13.8	0.15	19990830	16.11629	30.80538	285.94163	6.63501	0.1099747	2.7568423	16	1	6 days	0.21	Williams	1999 RD ₁₃₄
1999 RR ₁₃₄	14.9	0.15	19990810	347.19121	31.48924	315.33438	7.90111	0.1598999	3.0896364	26	1	38 days	0.48	Williams	1999 RR ₁₃₄
1999 RJ ₁₃₅	16.4	0.15	19990810	12.30124	329.16471	339.82932	2.76140	0.1696019	2.3119490	26	1	37 days	0.62	Williams	1999 RJ ₁₃₅
1999 RO ₁₃₅	15.3	0.15	19990830	350.70224	2.10136	346.25159	13.22917	0.1913446	2.5553461	18	1	6 days	0.44	Williams	1999 RO ₁₃₅
1999 RQ ₁₃₅	15.6	0.15	19990830	62.08557	205.48584	46.99348	2.51036	0.1770978	2.2818809	18	1	6 days	0.51	Williams	1999 RQ ₁₃₅
1999 RH ₁₃₇	14.3	0.15	19990830	28.82477	135.05388	164.42769	15.27791	0.1199888	2.6061441	18	1	8 days	0.25	Williams	1999 RH ₁₃₇
1999 RJ ₁₃₇	14.9	0.15	19990830	31.34280	111.76999	189.20697	2.50808	0.0579080	2.7936830	17	1	8 days	0.43	Williams	1999 RJ ₁₃₇
1999 RT ₁₃₇	12.9	0.15	19990810	299.07664	67.87141	333.84137	9.04862	0.0874232	2.9921873	21	1	37 days	0.41	Williams	1999 RT ₁₃₇
1999 RM ₁₃₈	17.5	0.15	19990830	357.71220	218.37550	125.57901	5.15308	0.2531018	2.5316920	17	1	6 days	0.60	Williams	1999 RM ₁₃₈
1999 RN ₁₃₈	15.1	0.15	19990810	45.68902	345.82302	289.91362	12.78291	0.2139956	2.4697950	28	1	58 days	0.41	Williams	1999 RN ₁₃₈
1999 RO ₁₃₈	15.8	0.15	19990830	2.76742	83.58475	261.44552	11.44268	0.1924212	2.6102580	13	1	9 days	0.46	Williams	1999 RO ₁₃₈
1999 RQ ₁₃₈	14.5	0.15	19990830	307.41426	235.44730	171.62031	14.48187	0.0563448	3.2064176	20	1	12 days	0.66	Williams	1999 RQ ₁₃₈
1999 RR ₁₃₈	14.9	0.15	19990830	324.79327	89.43111	310.50339	14.53623	0.1317848	2.5520220	10	1	9 days	0.53	Williams	1999 RR ₁₃₈
1999 RH ₁₃₉	16.9	0.15	19990810	359.96222	158.30771	165.81812	2.37112	0.2291523	2.3530135	28	1	37 days	0.47	Williams	1999 RH ₁₃₉
1999 RF ₁₄₀	16.6	0.15	19990830	4.43141	96.86923	234.47592	5.46692	0.1541027	2.3719421	16	1	10 days	0.55	Williams	1999 RF ₁₄₀
1999 RG ₁₄₀	14.9	0.15	19990830	76.97796	319.94621	269.83970	5.88861	0.2681190	2.5832808	12	1	6 days	0.51	E Williams	1999 RG ₁₄₀
1999 RG ₁₄₃	15.5	0.15	19990830	39.91748	126.94444	178.14496	12.79992	0.1396560	2.8002268	23	1	9 days	0.43	Williams	1999 RG ₁₄₃
1999 RQ ₁₄₃	16.1	0.15	19990830	317.45971	225.35379	180.43688	11.36113	0.1135395	2.6467209	18	1	9 days	0.45	Williams	1999 RQ ₁₄₃
1999 RH ₁₄₄	15.2	0.15	19990830	19.04602	119.59976	200.96078	9.91913	0.0930006	3.0164725	17	1	9 days	0.54	Williams	1999 RH ₁₄₄
1999 RJ ₁₄₄	16.6	0.15	19990830	349.56724	74.50173	281.77651	5.13943	0.1215949	2.4201060	16	1	6 days	0.50	Williams	1999 RJ ₁₄₄
1999 RL ₁₄₄	16.4	0.15	19990830	28.52760	37.67908	261.78461	4.93999	0.1852176	2.2701976	21	1	9 days	0.56	Williams	1999 RL ₁₄₄
1999 RO ₁₄₄	14.1	0.15	19990830	170.89841	332.79167	194.90879	13.51502	0.1194929	2.6598265	33	1	9 days	0.59	Williams	1999 RO ₁₄₄
1999 RU ₁₄₄	16.2	0.15	19990830	5.35628	141.65155	185.14911	14.88543	0.3204880	3.1429660	13	1	6 days	0.92	Williams	1999 RU ₁₄₄
1999 RB ₁₄₅	12.4	0.15	19990830	288.61238	110.77258	323.98901	21.73906	0.2065860	3.1046458	16	1	6 days	0.26	Williams	1999 RB ₁₄₅
1999 RD ₁₄₅	15.7	0.15	19990830	41.86573	50.25731	223.79349	5.25031	0.2335614	2.2289022	21	1	10 days	0.49	Williams	1999 RD ₁₄₅
1999 RE ₁₄₅	16.5	0.15	19990830	300.88456	143.83960	268.88144	5.51777	0.1402725	2.3868419	12	1	6 days	0.63	E Williams	1999 RE ₁₄₅
1999 RP ₁₄₅	12.4	0.15	19990830	27.81615	340.33085	322.76469	13.87448	0.1161216	3.2198659	18	1	9 days	0.26	Williams	1999 RP ₁₄₅
1999 RG ₁₄₆	12.6	0.15	19990830	43.34481	322.77391	323.83039	10.46960	0.0978320	3.0017200	18	1	9 days	0.35	Williams	1999 RG ₁₄₆
1999 RW ₁₄₆	15.5	0.15	19990830	78.21164	354.16747	255.11310	5.55385	0.0987711	2.4510419	17	1	9 days	0.64	Williams	1999 RW ₁₄₆
1999 RD ₁₄₇	14.6	0.15	19990830	52.67212	334.41664	305.44010	10.22077	0.0788784	2.9763694	13	1	6 days	0.43	E Williams	1999 RD ₁₄₇
1999 RG ₁₄₇	14.1	0.15	19990830	327.76840	91.25973	288.20865	8.27034	0.1122913	3.0975718	20	1	9 days	0.62	Williams	1999 RG ₁₄₇
1999 RR ₁₄₇	14.9	0.15	19990830	5.63356	101.24560	232.27743	5.22260	0.0863060	2.7517245	20	1	9 days	0.64	Williams	1999 RR ₁₄₇
1999 RW ₁₄₇	15.8	0.15	19990830	337.79537	180.48077	194.10045	7.88454	0.2235797	2.7723361	17	1	7 days	0.53	Williams	1999 RW ₁₄₇
1999 RA ₁₄₉	15.2	0.15	19990830	349.42272	85.95444	266.81877	0.48296	0.1983273	2.4016777	24	1	19 days	0.56	Williams	1999 RA ₁₄₉
1999 RE ₁₅₀	16.4	0.15	19990810	341.91044	15.07060	341.00808	5.37539	0.1859070	2.2523882	21	1	38 days	0.64	Williams	1999 RE ₁₅₀
1999 RW ₁₅₀	16.3	0.15	19990830	38.55565	284.39092	1.08546	6.16035	0.1424990	2.2486538	16	1	6 days	0.62	Williams	1999 RW ₁₅₀
1999 RA ₁₅₁	16.5	0.15	19990830	345.97961	231.26245	130.39585	5.19035	0.2862297	2.5476677	10	1	6 days	0.78	E Williams	1999 RA ₁₅₁
1999 RB ₁₅₁	13.9	0.15	19990810	267.25500	314.84197	124.68241	6.76919	0.1249387	3.1487742	21	1	36 days	0.52	Williams	1999 RB ₁₅₁
1999 RF ₁₅₁	14.8	0.15	19990810	353.08386	192.34834	147.61208	14.73891	0.1095089	2.6123523	21	1	36 days	0.51	Williams	1999 RF ₁₅₁
1999 RH ₁₅₁	13.5	0.15	19990810	50.95235	278.14936	356.91794	10.17655	0.0672355	3.0785479	21	1	36 days	0.42	Williams	1999 RH ₁₅₁
1999 RV ₁₅₂	14.9	0.15	19990830	354.33128	163.53598	184.34823	10.32216	0.1423572	2.9937032	17	1	7 days	0.52	Williams	1999 RV ₁₅₂
1999 RY ₁₅₂	15.1	0.15	19990830	338.99798	71.35060	297.49649	5.13865	0.1603031	2.3720084	18	1	7 days	0.27	Williams	1999 RY ₁₅₂
1999 RC ₁₅₃	15.4	0.15	19990830	41.75317	317.84274	320.37918	10.41252	0.2261882	3.1387883	17	1	7 days	0.49	Williams	1999 RC ₁₅₃
1999 RH ₁₅₃	15.9	0.15	19990830	49.75269	358.45356	277.87855	4.61531	0.1508135	2.2171950	22	1	9 days	0.31	Williams	1999 RH ₁₅₃
1999 RN ₁₅₃	17.0	0.15	19990830	332.36963	170.41726	208.16550	6.72227	0.1573613	2.2627700	16	1	6 days	0.49	Williams	1999 RN ₁₅₃
1999 RP ₁₅₃	16.2	0.15	19990830	333.66169	197.03424	189.48195	10.26761	0.2744868	2.4346137	17	1	6 days	0.45	Williams	1999 RP ₁₅₃
1999 RZ ₁₅₃	15.6	0.15	19990830	357.21846	23.03059	321.61753	9.40471	0.0742176	2.6470934	17	1	7 days	0.50	Williams	1999 RZ ₁₅₃
1999 RC ₁₅₄	14.5	0.15	19990830	184.88733	198.31652	319.46204	8.78035	0.0189152	2.9939689	21	1	23 days	0.35	Williams	1999 RC ₁₅₄
1999 RH ₁₅₄	16.5	0.15	19990830	347.23012	37.61186	321.31204	5.23197	0.1706699	2.4104541	17	1	9 days	0.39	Williams	1999 RH ₁₅₄
1999 RN ₁₅₄	16.8	0.15	19990830	295.17882	90.98071	324.44203	5.96982	0.0902780	2.2791794	17	1	9 days	0.58	Williams	1999 RN ₁₅₄
1999 RS ₁₅₄	14.5	0.15	19990830	277.00202	144.20726	285.71968	2.57908	0.0437551	3.2083049	16	1	9 days	0.46	Williams	1999 RS ₁₅₄
1999 RE ₁₅₅	15.9	0.15	19990830	21.24639	98.85515	217.67829	4.21812	0.0892528	2.6084876	18	1	7 days	0.60	Williams	1999 RE ₁₅₅
1999 RG ₁₅₅	17.0	0.15	19990830	14.45628	4.75653	316.99593	6.24726	0.1526160	2.2579331	17	1	7 days	0.60	Williams	1999 RG ₁₅₅

1999 RJ ₁₅₅	15.2	0.15	19990830	339.45060	106.78956	260.57019	4.08199	0.0974585	2.7035125	21	1	9 days	0.50	Williams	1999 RJ ₁₅₅
1999 RK ₁₅₅	13.1	0.15	19990810	161.03789	223.44369	314.48612	8.78886	0.0376450	3.0685037	31	1	37 days	0.42	Williams	1999 RK ₁₅₅
1999 RO ₁₅₅	14.0	0.15	19990830	351.92744	36.63486	317.87340	10.02075	0.1123494	2.9752904	24	1	23 days	0.34	Williams	1999 RO ₁₅₅
1999 RQ ₁₅₅	16.8	0.15	19990830	341.54642	134.82894	235.01564	3.76992	0.1946632	2.3467879	21	1	9 days	0.49	Williams	1999 RQ ₁₅₅
1999 RW ₁₅₅	14.6	0.15	19990830	33.88837	116.27296	187.99565	11.68895	0.0753504	3.0053945	22	1	9 days	0.33	Williams	1999 RW ₁₅₅
1999 RY ₁₅₅	16.4	0.15	19990830	349.84075	50.64544	306.26679	4.23039	0.1979629	2.2151179	22	1	9 days	0.33	Williams	1999 RY ₁₅₅
1999 RA ₁₅₆	15.7	0.15	19990830	41.41950	38.73590	247.69599	3.45144	0.1669783	2.2900437	31	1	23 days	0.58	Williams	1999 RA ₁₅₆
1999 RB ₁₅₆	16.5	0.15	19990830	333.68054	115.55352	270.45975	3.56455	0.2486293	2.5671850	19	1	9 days	0.90	Williams	1999 RB ₁₅₆
1999 RC ₁₅₆	16.7	0.15	19990830	14.68906	9.25637	304.67526	4.72269	0.3007273	2.5753043	31	1	23 days	0.58	Williams	1999 RC ₁₅₆
1999 RD ₁₅₆	14.5	0.15	19990830	8.25835	66.01171	265.73061	3.63517	0.1549463	3.1507324	18	1	7 days	0.29	Williams	1999 RD ₁₅₆
1999 RO ₁₅₇	16.1	0.15	19990830	330.39891	265.91169	129.94340	6.47496	0.3415636	2.6609395	18	1	6 days	0.63	Williams	1999 RO ₁₅₇
1999 RR ₁₅₇	14.5	0.15	19990830	347.99722	347.65181	9.38696	8.61444	0.2265601	2.8283354	13	1	6 days	0.46	E Williams	1999 RR ₁₅₇
1999 RT ₁₅₇	14.6	0.15	19990830	316.69970	294.18924	107.11082	6.01605	0.1958993	3.2385762	11	1	6 days	0.61	E Williams	1999 RT ₁₅₇
1999 RU ₁₅₇	17.4	0.15	19990830	343.73556	242.85223	126.50112	5.50907	0.2929992	2.5413811	17	1	6 days	0.68	Williams	1999 RU ₁₅₇
1999 RX ₁₅₇	14.9	0.15	19990830	37.48359	289.57774	358.07398	15.70991	0.1720485	3.0664594	13	1	6 days	0.70	E Williams	1999 RX ₁₅₇
1999 RZ ₁₅₇	16.1	0.15	19990830	327.35747	332.27034	51.99264	3.37428	0.1634083	2.3054400	18	1	6 days	0.44	Williams	1999 RZ ₁₅₇
1999 RB ₁₅₈	12.7	0.15	19990830	28.52025	309.00383	356.09869	15.58002	0.1023559	3.1573995	18	1	6 days	0.27	Williams	1999 RB ₁₅₈
1999 RE ₁₅₈	14.3	0.15	19990830	318.71257	320.66602	84.64150	2.50796	0.2458508	3.2718829	20	1	9 days	1.14	Williams	1999 RE ₁₅₈
1999 RF ₁₅₈	15.9	0.15	19990830	336.82571	270.14714	100.79457	2.98859	0.1346153	2.8569854	18	1	6 days	0.57	Williams	1999 RF ₁₅₈
1999 RJ ₁₅₈	17.0	0.15	19990830	24.93487	286.28406	18.54577	2.80264	0.1748266	2.3720116	17	1	6 days	0.47	Williams	1999 RJ ₁₅₈
1999 RK ₁₅₈	14.8	0.15	19990830	95.99802	117.79744	115.34363	3.36891	0.1092420	2.8777661	16	1	6 days	0.53	Williams	1999 RK ₁₅₈
1999 RL ₁₅₈	14.5	0.15	19990830	328.12936	240.12948	134.62091	2.58952	0.0228221	2.9430139	18	1	6 days	0.47	Williams	1999 RL ₁₅₈
1999 RN ₁₅₈	14.8	0.15	19990830	23.58063	158.58463	156.33130	10.64141	0.0621753	3.0621446	18	1	6 days	0.63	E Williams	1999 RN ₁₅₈
1999 RP ₁₅₈	15.4	0.15	19990830	319.92694	257.42197	131.56711	2.42626	0.0908456	2.8731633	16	1	6 days	0.68	Williams	1999 RP ₁₅₈
1999 RR ₁₅₈	13.8	0.15	19990830	28.74977	305.30056	348.08381	14.90822	0.2561573	3.2136706	18	1	7 days	0.46	Williams	1999 RR ₁₅₈
1999 RB ₁₅₉	16.1	0.15	19990830	358.24833	201.46311	142.05718	4.68219	0.1092329	2.4916046	20	1	6 days	0.73	Williams	1999 RB ₁₅₉
1999 RC ₁₅₉	14.6	0.15	19990830	172.39056	16.45968	152.84562	9.32856	0.0674892	2.7397314	21	1	6 days	0.58	Williams	1999 RC ₁₅₉
1999 RF ₁₅₉	12.6	0.15	19990830	191.52363	162.09636	350.03201	20.71728	0.1110877	3.1189672	18	1	6 days	0.50	Williams	1999 RF ₁₅₉
1999 RM ₁₅₉	16.1	0.15	19990830	336.79747	240.92915	137.22397	4.92677	0.2458693	2.3588221	18	1	6 days	0.67	Williams	1999 RM ₁₅₉
1999 RP ₁₅₉	14.7	0.15	19990830	357.96715	240.52416	103.09371	3.12197	0.0935866	2.9257084	23	1	6 days	0.49	Williams	1999 RP ₁₅₉
1999 RQ ₁₅₉	16.7	0.15	19990830	351.74169	251.97013	102.00499	2.95250	0.2429078	2.5375597	17	1	6 days	0.53	Williams	1999 RQ ₁₅₉
1999 RT ₁₅₉	14.0	0.15	19990830	8.24423	194.70707	135.65036	7.71727	0.1157547	3.1067280	17	1	6 days	0.27	Williams	1999 RT ₁₅₉
1999 RV ₁₅₉	14.3	0.15	19990830	323.80707	19.96625	2.48520	11.47311	0.0820365	2.8851732	18	1	6 days	0.41	Williams	1999 RV ₁₅₉
1999 RY ₁₅₉	15.1	0.15	19990810	312.29574	259.09737	138.07708	7.56825	0.1557944	2.4250710	25	1	32 days	0.45	Williams	1999 RY ₁₅₉
1999 RC ₁₆₀	15.1	0.15	19990830	337.76242	13.65336	1.41005	14.86167	0.2334837	2.8075018	27	1	6 days	0.56	Williams	1999 RC ₁₆₀
1999 RF ₁₆₀	15.0	0.15	19990830	343.48837	311.45032	56.26836	4.88766	0.2354723	2.6715944	21	1	6 days	0.38	Williams	1999 RF ₁₆₀
1999 RG ₁₆₀	13.9	0.15	19990830	134.27525	95.80042	106.21307	6.17141	0.0731658	2.2284094	13	1	6 days	0.55	E Williams	1999 RG ₁₆₀
1999 RJ ₁₆₀	16.3	0.15	19990830	332.06930	275.30395	107.53393	5.06887	0.2048634	2.4277924	20	1	6 days	0.71	Williams	1999 RJ ₁₆₀
1999 RN ₁₆₀	13.7	0.15	19990830	316.79415	24.62627	16.13935	8.31884	0.1734013	2.7710656	12	1	6 days	0.40	E Williams	1999 RN ₁₆₀
1999 RO ₁₆₀	13.3	0.15	19990830	11.68270	312.38243	16.55029	8.94963	0.0566084	2.9839544	10	1	6 days	0.39	E Williams	1999 RO ₁₆₀
1999 RP ₁₆₀	16.7	0.15	19990830	22.75635	167.59686	143.74287	6.92784	0.1388081	2.2617384	19	1	7 days	0.58	Williams	1999 RP ₁₆₀
1999 RR ₁₆₀	14.7	0.15	19990810	318.71213	257.89393	127.40414	6.13140	0.0799128	2.7650319	24	1	32 days	0.44	Williams	1999 RR ₁₆₀
1999 RT ₁₆₀	15.4	0.15	19990830	247.34224	326.96590	132.04632	5.99234	0.0383239	2.2894996	25	1	6 days	0.49	Williams	1999 RT ₁₆₀
1999 RZ ₁₆₀	15.9	0.15	19990830	4.35898	187.23108	163.09963	2.24475	0.1170225	2.8738871	18	1	8 days	0.67	Williams	1999 RZ ₁₆₀
1999 RA ₁₆₁	17.0	0.15	19990830	46.55784	293.63830	2.60526	6.33677	0.1235338	2.3634456	14	1	9 days	0.47	Williams	1999 RA ₁₆₁
1999 RN ₁₆₁	16.8	0.15	19990830	351.76609	169.36338	178.32032	4.87754	0.1174492	2.1830954	16	1	9 days	0.72	Williams	1999 RN ₁₆₁
1999 RN ₁₆₂	13.4	0.15	19990830	322.25529	26.69655	27.06333	14.34620	0.1455061	2.8511369	21	1	7 days	0.82	Williams	1999 RN ₁₆₂
1999 RQ ₁₆₂	16.3	0.15	19990830	313.75049	108.61722	299.70439	4.83395	0.1582312	2.2576664	17	1	12 days	0.49	Williams	1999 RQ ₁₆₂
1999 RR ₁₆₂	14.8	0.15	19990830	13.80978	352.01858	333.35488	13.23785	0.2023866	2.5411796	19	1	25 days	0.35	Williams	1999 RR ₁₆₂
1999 RS ₁₆₂	14.7	0.15	19990830	30.39050	339.05976	321.50328	9.14462	0.2216539	2.7814490	20	1	12 days	0.41	Williams	1999 RS ₁₆₂
1999 RT ₁₆₂	16.7	0.15	19990830	10.70609	52.05931	276.99009	3.78336	0.1985983	2.2827450	19	1	6 days	0.36	Williams	1999 RT ₁₆₂
1999 RC ₁₆₃	15.1	0.15	19990830	340.85205	41.24580	331.16255	11.53149	0.1990024	2.6680619	22	1	9 days	0.66	Williams	1999 RC ₁₆₃
1999 RD ₁₆₃	14.8	0.15	19990830	340.88400	73.43743	295.60273	4.48790	0.1313238	2.7547156	22	1	9 days	0.48	Williams	1999 RD ₁₆₃

1999 RG ₁₆₃	13.6	0.15	19990830	273.35190	257.71284	185.04561	10.12374	0.1032816	2.9723101	18	1	7 days	0.55	Williams	1999 RG ₁₆₃
1999 RO ₁₆₃	15.5	0.15	19990830	51.80670	23.26414	246.78174	3.03261	0.2133320	2.6033195	22	1	9 days	0.60	Williams	1999 RO ₁₆₃
1999 RO ₁₆₄	16.2	0.15	19990830	64.12551	299.15891	329.35302	6.53935	0.1080310	2.2266167	22	1	7 days	0.40	Williams	1999 RO ₁₆₄
1999 RP ₁₆₄	17.7	0.15	19990830	351.32322	151.84595	206.98207	2.52431	0.2702419	2.5900311	21	1	7 days	0.49	Williams	1999 RP ₁₆₄
1999 RV ₁₆₄	15.2	0.15	19990830	217.75404	185.30259	310.84455	5.28138	0.1175618	2.2494110	22	1	7 days	0.55	Williams	1999 RV ₁₆₄
1999 RW ₁₆₄	15.8	0.15	19990830	50.30020	327.17398	318.03430	6.05283	0.1074255	2.3829080	22	1	7 days	0.39	Williams	1999 RW ₁₆₄
1999 RZ ₁₆₄	15.6	0.15	19990830	293.54993	86.28552	335.94431	13.50759	0.0785519	2.6084439	15	1	7 days	0.52	Williams	1999 RZ ₁₆₄
1999 RC ₁₆₅	17.2	0.15	19990830	342.14022	160.55345	205.80371	3.76167	0.1041368	2.1727145	25	1	10 days	0.72	Williams	1999 RC ₁₆₅
1999 RG ₁₆₅	13.3	0.15	19990830	79.21557	276.01616	338.00570	14.41964	0.1266566	3.1212989	22	1	10 days	0.46	Williams	1999 RG ₁₆₅
1999 RL ₁₆₅	15.2	0.15	19990830	276.98351	116.82851	339.15527	13.20183	0.2257785	2.6154292	18	1	7 days	0.69	Williams	1999 RL ₁₆₅
1999 RP ₁₆₅	15.4	0.15	19990830	13.87024	342.89932	342.81262	5.02968	0.1753733	3.2183291	21	1	13 days	0.38	Williams	1999 RP ₁₆₅
1999 RR ₁₆₅	13.6	0.15	19990830	1.15669	6.10696	339.28445	5.07299	0.0541865	3.0190774	24	1	11 days	0.42	Williams	1999 RR ₁₆₅
1999 RS ₁₆₅	15.5	0.15	19990830	268.88480	284.95850	172.98018	1.83763	0.1869015	2.3521745	21	1	12 days	0.41	Williams	1999 RS ₁₆₅
1999 RU ₁₆₅	15.5	0.15	19990830	285.28413	93.95247	349.58444	8.98899	0.2095431	2.4597335	20	1	11 days	0.95	E Williams	1999 RU ₁₆₅
1999 RV ₁₆₅	12.1	0.15	19990830	52.91908	121.01697	161.23513	7.62767	0.1167357	5.1802195	16	1	7 days	0.50	E Williams	1999 RV ₁₆₅
1999 RY ₁₆₅	15.1	0.15	19990830	19.89413	314.38080	359.67540	3.93328	0.1996368	2.7920480	18	1	7 days	0.58	Williams	1999 RY ₁₆₅
1999 RF ₁₆₆	15.9	0.15	19990830	276.91944	284.69861	153.11316	9.25267	0.1037531	2.4231535	20	1	3 days	0.57	Williams	1999 RF ₁₆₆
1999 RG ₁₆₆	15.2	0.15	19990830	304.05071	257.54633	157.95127	13.47871	0.1547508	2.7754933	17	1	6 days	0.55	Williams	1999 RG ₁₆₆
1999 RX ₁₆₆	16.3	0.15	19990830	329.89044	249.22988	145.67664	13.76631	0.2884056	2.5806221	16	1	6 days	0.44	Williams	1999 RX ₁₆₆
1999 RH ₁₆₇	14.2	0.15	19990830	229.37198	53.03075	69.37423	5.75043	0.0949922	2.5531579	12	1	6 days	0.63	E Williams	1999 RH ₁₆₇
1999 RH ₁₆₇	16.5	0.15	19990830	343.15867	328.85603	44.80166	3.53788	0.3125787	2.3818908	21	1	6 days	0.51	Williams	1999 RH ₁₆₇
1999 RN ₁₆₇	13.8	0.15	19990810	287.08936	282.49446	142.26089	11.79658	0.0937737	3.0524212	19	1	32 days	0.67	Williams	1999 RN ₁₆₇
1999 RO ₁₆₇	13.2	0.15	19990830	316.30587	19.11077	17.43593	9.34172	0.1016302	2.9637392	12	1	6 days	0.35	E Williams	1999 RO ₁₆₇
1999 RQ ₁₆₇	15.1	0.15	19990810	298.94751	38.87479	20.50767	5.83838	0.1902259	2.3319662	20	1	32 days	0.43	Williams	1999 RQ ₁₆₇
1999 RU ₁₆₇	15.9	0.15	19990830	29.26109	304.11942	1.71062	7.08701	0.1242141	2.3166866	18	1	7 days	0.57	Williams	1999 RU ₁₆₇
1999 RA ₁₆₈	15.1	0.15	19990810	331.54066	11.01623	4.13960	4.96463	0.1671530	2.2848509	21	1	33 days	0.33	Williams	1999 RA ₁₆₈
1999 RC ₁₆₈	14.1	0.15	19990830	359.60941	255.89542	90.15737	1.93704	0.1633083	3.2865809	18	1	7 days	0.37	Williams	1999 RC ₁₆₈
1999 RD ₁₆₈	16.7	0.15	19990830	26.35882	229.83591	77.33319	1.17224	0.1582741	2.1226759	18	1	7 days	0.51	Williams	1999 RD ₁₆₈
1999 RE ₁₆₈	15.4	0.15	19990830	341.30941	7.19582	3.42429	2.92117	0.1701454	2.5282874	18	1	7 days	0.38	Williams	1999 RE ₁₆₈
1999 RF ₁₆₈	16.2	0.15	19990830	34.30793	163.34574	134.10061	1.58432	0.1582367	2.2360557	18	1	7 days	0.96	E Williams	1999 RF ₁₆₈
1999 RH ₁₆₈	14.7	0.15	19990830	313.94485	19.00217	24.62436	1.46509	0.1255578	2.9817978	19	1	11 days	0.57	Williams	1999 RH ₁₆₈
1999 RK ₁₆₈	14.4	0.15	19990830	357.75223	343.39701	4.95956	4.65745	0.1700823	2.7159670	18	1	7 days	0.35	Williams	1999 RK ₁₆₈
1999 RM ₁₆₈	15.2	0.15	19990830	38.26451	117.73438	169.69381	6.57126	0.2269114	3.0710926	20	1	12 days	0.44	Williams	1999 RM ₁₆₈
1999 RN ₁₆₈	14.2	0.15	19990830	296.06116	77.87318	347.99499	14.18959	0.1410281	2.8567087	22	1	14 days	0.48	Williams	1999 RN ₁₆₈
1999 RO ₁₆₈	14.3	0.15	19990830	3.05855	353.10353	350.35952	1.81028	0.0112002	2.8898857	24	1	13 days	0.46	E Williams	1999 RO ₁₆₈
1999 RP ₁₆₈	16.7	0.15	19990830	5.76238	347.33575	349.54605	6.50098	0.1341595	2.3394611	21	1	11 days	0.51	Williams	1999 RP ₁₆₈
1999 RQ ₁₆₈	14.7	0.15	19990830	121.45821	214.81293	354.16981	3.63208	0.1921065	2.5753507	17	1	10 days	0.50	Williams	1999 RQ ₁₆₈
1999 RR ₁₆₈	14.3	0.15	19990830	318.81562	240.81835	170.75630	10.99328	0.2658757	2.4272833	20	1	10 days	0.35	Williams	1999 RR ₁₆₈
1999 RS ₁₆₈	17.1	0.15	19990830	353.51808	183.93142	170.28246	6.40460	0.2665097	2.2634093	24	1	26 days	0.33	Williams	1999 RS ₁₆₈
1999 RT ₁₆₈	16.6	0.15	19990830	57.33340	105.46103	169.75766	1.85383	0.1270410	2.4103600	19	1	12 days	1.08	E Williams	1999 RT ₁₆₈
1999 RW ₁₆₈	14.2	0.15	19990830	273.21742	103.58747	342.93004	12.27397	0.0993036	3.2102218	17	1	7 days	0.49	Williams	1999 RW ₁₆₈
1999 RX ₁₆₈	15.9	0.15	19990830	294.05635	82.47601	334.02490	3.98358	0.0326369	2.6034457	16	1	7 days	0.64	Williams	1999 RX ₁₆₈
1999 RZ ₁₆₈	15.4	0.15	19990830	349.94597	25.06997	333.56875	2.27441	0.1526422	2.2762878	18	1	7 days	0.39	Williams	1999 RZ ₁₆₈
1999 RC ₁₆₉	16.0	0.15	19990830	10.06424	145.63447	184.25163	2.69765	0.1936645	2.4054367	18	1	7 days	0.55	Williams	1999 RC ₁₆₉
1999 RD ₁₆₉	15.9	0.15	19990830	341.88244	62.86865	314.32874	2.27642	0.2858332	2.5557581	18	1	7 days	0.48	Williams	1999 RD ₁₆₉
1999 RG ₁₆₉	14.7	0.15	19990830	287.94011	105.17251	330.17488	8.15935	0.1388386	2.7978576	22	1	10 days	0.44	Williams	1999 RG ₁₆₉
1999 RH ₁₆₉	15.5	0.15	19990830	36.70986	107.23509	190.84255	5.23982	0.1355412	2.2874090	22	1	10 days	0.35	Williams	1999 RH ₁₆₉
1999 RS ₁₆₉	16.3	0.15	19990830	354.20580	99.76879	255.50116	2.71657	0.2149764	2.6913189	21	1	10 days	0.62	Williams	1999 RS ₁₆₉
1999 RV ₁₆₉	16.9	0.15	19990830	330.96895	92.74071	297.16126	2.25319	0.2139179	2.2865224	22	1	10 days	0.43	Williams	1999 RV ₁₆₉
1999 RW ₁₆₉	17.3	0.15	19990830	0.03390	64.96836	280.55191	1.77283	0.2127733	2.3873222	20	1	10 days	0.71	Williams	1999 RW ₁₆₉
1999 RX ₁₆₉	15.7	0.15	19990830	81.90214	273.59825	337.02050	4.83240	0.1199283	2.1268252	18	1	7 days	0.41	Williams	1999 RX ₁₆₉
1999 RZ ₁₆₉	16.8	0.15	19990830	47.54830	27.62905	259.82830	1.27072	0.1223407	2.2776255	16	1	7 days	0.59	Williams	1999 RZ ₁₆₉
1999 RD ₁₇₀	15.7	0.15	19990830	296.58900	224.20132	202.70457	1.94615	0.1467258	2.6679679	18	1	7 days	0.63	Williams	1999 RD ₁₇₀

1999 RG ₁₇₀	15.0	0.15	19990830	0.90200	103.50693	243.19587	0.98849	0.1585445	3.2150817	18	1	7 days	0.49	Williams	1999 RG ₁₇₀
1999 RH ₁₇₀	15.8	0.15	19990830	32.85920	321.56527	336.59349	3.33253	0.1880924	2.2048799	18	1	7 days	0.37	Williams	1999 RH ₁₇₀
1999 RJ ₁₇₀	16.8	0.15	19990830	349.20193	19.32454	341.65121	2.07104	0.1812451	2.2816243	18	1	7 days	0.43	Williams	1999 RJ ₁₇₀
1999 RL ₁₇₀	15.2	0.15	19990830	130.63284	216.60499	350.47927	10.60574	0.1343445	2.5458274	26	1	14 days	0.56	Williams	1999 RL ₁₇₀
1999 RM ₁₇₀	15.6	0.15	19990830	302.21755	259.55830	169.40608	2.92980	0.2198076	2.5629582	28	1	7 days	0.50	Williams	1999 RM ₁₇₀
1999 RN ₁₇₀	18.1	0.15	19990830	16.60489	144.02428	173.69179	2.13200	0.2279046	2.2664220	15	1	12 days	0.47	Williams	1999 RN ₁₇₀
1999 RO ₁₇₀	14.6	0.15	19990830	244.68246	302.36609	172.19565	6.04224	0.1079433	2.7792514	29	1	12 days	1.08	E Williams	1999 RO ₁₇₀
1999 RQ ₁₇₀	15.2	0.15	19990830	266.99252	108.57280	349.20331	5.37167	0.1662986	2.3463398	24	1	12 days	0.57	Williams	1999 RQ ₁₇₀
1999 RS ₁₇₀	17.6	0.15	19990830	4.00090	174.64475	161.83981	3.48430	0.2572521	2.3942532	20	1	10 days	0.54	Williams	1999 RS ₁₇₀
1999 RT ₁₇₀	15.4	0.15	19990830	268.98711	290.24426	163.30526	5.78792	0.1452440	2.2956813	21	1	7 days	0.31	Williams	1999 RT ₁₇₀
1999 RU ₁₇₀	16.7	0.15	19990830	8.17251	339.77390	352.43699	4.40268	0.1769987	2.2159910	20	1	7 days	0.36	Williams	1999 RU ₁₇₀
1999 RV ₁₇₀	16.0	0.15	19990830	253.36727	298.16387	162.34284	1.95768	0.0718497	2.2150198	18	1	10 days	0.52	Williams	1999 RV ₁₇₀
1999 RZ ₁₇₀	13.7	0.15	19990830	197.00441	136.27273	16.84461	3.16263	0.0915409	2.8716398	16	1	7 days	0.47	Williams	1999 RZ ₁₇₀
1999 RJ ₁₇₁	15.9	0.15	19990830	28.86656	287.42121	20.39570	2.78172	0.1381489	2.4161698	18	1	7 days	0.50	Williams	1999 RJ ₁₇₁
1999 RL ₁₇₁	15.3	0.15	19990830	138.80974	207.70591	355.95172	14.57470	0.0441951	2.5629377	16	1	7 days	0.52	Williams	1999 RL ₁₇₁
1999 RQ ₁₇₁	15.6	0.15	19990830	6.52484	173.78775	161.36196	13.59961	0.2066310	2.6913929	18	1	7 days	0.37	Williams	1999 RQ ₁₇₁
1999 RX ₁₇₁	15.5	0.15	19990830	0.36812	315.47447	27.72568	2.66700	0.1338124	2.1944225	18	1	7 days	0.36	Williams	1999 RX ₁₇₁
1999 RG ₁₇₂	13.6	0.15	19990830	323.31743	287.18373	101.84251	3.74086	0.0973578	2.7770638	17	1	6 days	0.31	Williams	1999 RG ₁₇₂
1999 RK ₁₇₂	15.0	0.15	19990830	266.87042	307.47234	148.64961	12.82158	0.1469593	3.0029187	18	1	6 days	0.64	Williams	1999 RK ₁₇₂
1999 RM ₁₇₂	13.8	0.15	19990830	329.71171	255.42603	138.11123	6.21815	0.2485786	2.5596079	18	1	6 days	0.34	Williams	1999 RM ₁₇₂
1999 RV ₁₇₂	16.2	0.15	19990830	352.32970	330.95955	24.31695	8.54391	0.1989305	2.8896948	10	1	6 days	0.56	E Williams	1999 RV ₁₇₂
1999 RY ₁₇₂	14.7	0.15	19990830	295.29684	262.19200	150.40856	20.69487	0.0250611	2.6183373	11	1	6 days	0.54	E Williams	1999 RY ₁₇₂
1999 RA ₁₇₃	13.1	0.15	19990830	5.36170	200.26337	139.07245	15.70895	0.0461693	3.0963556	11	1	6 days	0.83	E Williams	1999 RA ₁₇₃
1999 RC ₁₇₃	14.5	0.15	19990830	38.30627	242.45137	52.32664	7.03329	0.1304687	2.4610207	11	1	6 days	0.44	E Williams	1999 RC ₁₇₃
1999 RF ₁₇₃	17.2	0.15	19990830	6.85855	261.17579	73.45627	5.79466	0.1452207	2.3566176	10	1	6 days	0.62	E Williams	1999 RF ₁₇₃
1999 RL ₁₇₃	14.9	0.15	19990830	174.21455	100.23572	71.22835	6.13926	0.0503910	2.7942446	15	1	6 days	0.61	Williams	1999 RL ₁₇₃
1999 RQ ₁₇₃	14.7	0.15	19990830	48.26487	204.71683	75.87244	4.99116	0.1758952	3.0149411	12	1	6 days	0.68	E Williams	1999 RQ ₁₇₃
1999 RR ₁₇₃	13.2	0.15	19990830	342.42591	228.39298	141.28910	11.46031	0.1409469	3.0220102	12	1	6 days	0.22	E Williams	1999 RR ₁₇₃
1999 RH ₁₇₄	15.1	0.15	19990830	71.65463	241.46133	24.09624	3.47670	0.0825665	2.5948159	18	1	7 days	0.50	Williams	1999 RH ₁₇₄
1999 RJ ₁₇₄	15.1	0.15	19990830	61.66070	279.10700	358.32539	13.95008	0.0682393	2.6195074	18	1	7 days	0.54	Williams	1999 RJ ₁₇₄
1999 RK ₁₇₄	14.1	0.15	19990830	319.50866	26.37565	21.82362	3.94962	0.2257322	3.1856657	18	1	7 days	0.28	Williams	1999 RK ₁₇₄
1999 RP ₁₇₄	13.8	0.15	19990830	114.01330	135.17938	87.27342	2.79144	0.1220902	3.0320452	18	1	7 days	0.54	Williams	1999 RP ₁₇₄
1999 RQ ₁₇₄	17.1	0.15	19990830	7.22975	327.85003	4.08848	5.61654	0.2312402	2.2655215	18	1	7 days	0.61	Williams	1999 RQ ₁₇₄
1999 RU ₁₇₄	14.4	0.15	19990830	290.70316	281.68438	161.70229	13.60291	0.2240420	2.7879168	18	1	7 days	0.43	Williams	1999 RU ₁₇₄
1999 RV ₁₇₄	16.5	0.15	19990830	307.35739	253.28789	158.32862	7.45627	0.1217664	2.3499495	14	1	5 days	0.76	Williams	1999 RV ₁₇₄
1999 RY ₁₇₄	15.7	0.15	19990830	285.62875	71.83421	6.06217	3.13400	0.1462889	2.3382378	21	1	7 days	0.45	E Williams	1999 RY ₁₇₄
1999 RA ₁₇₅	15.7	0.15	19990830	57.15125	120.87143	146.33207	2.74309	0.2055078	2.3983946	18	1	7 days	0.46	Williams	1999 RA ₁₇₅
1999 RD ₁₇₅	15.1	0.15	19990830	337.53274	17.39239	4.66317	4.37106	0.2044863	3.2285495	19	1	7 days	0.57	E Williams	1999 RD ₁₇₅
1999 RF ₁₇₅	14.9	0.15	19990830	277.41155	92.95445	0.73168	4.06007	0.1908972	2.9976363	17	1	7 days	0.56	E Williams	1999 RF ₁₇₅
1999 RG ₁₇₅	16.0	0.15	19990830	343.06363	14.90078	354.76347	5.40795	0.1458348	2.4614039	20	1	14 days	0.44	Williams	1999 RG ₁₇₅
1999 RH ₁₇₅	15.3	0.15	19990830	241.38506	120.78652	355.77282	6.90485	0.1015334	2.2936189	19	1	14 days	0.45	Williams	1999 RH ₁₇₅
1999 RL ₁₇₅	14.9	0.15	19990830	320.58542	126.16908	275.65096	1.21459	0.1610428	3.0493071	18	1	7 days	0.75	Williams	1999 RL ₁₇₅
1999 RN ₁₇₅	14.2	0.15	19990830	227.63582	323.42298	175.43576	10.30633	0.2465795	2.3461777	26	1	5 days	0.47	E Williams	1999 RN ₁₇₅
1999 RO ₁₇₅	15.9	0.15	19990830	304.48531	72.99174	342.89091	5.65142	0.1111705	2.7282057	17	1	7 days	0.55	Williams	1999 RO ₁₇₅
1999 RQ ₁₇₅	15.6	0.15	19990830	78.12719	82.55871	178.54935	7.49989	0.0846672	2.5356890	13	1	5 days	0.50	E Williams	1999 RQ ₁₇₅
1999 RV ₁₇₅	15.0	0.15	19990830	23.59081	113.87453	189.33592	4.45847	0.2916345	2.5422100	18	1	7 days	0.44	Williams	1999 RV ₁₇₅
1999 RB ₁₇₆	16.7	0.15	19990830	337.05722	43.06945	339.24575	10.99530	0.1979645	2.5910480	15	1	5 days	0.73	Williams	1999 RB ₁₇₆
1999 RD ₁₇₆	16.4	0.15	19990919	40.27253	235.58937	72.42206	2.75893	0.1925154	2.3105198	24	1	8 days	1.01	Williams	1999 RD ₁₇₆
1999 RF ₁₇₆	14.7	0.15	19990830	27.35883	136.40377	185.01646	11.31836	0.0183364	2.5985137	18	1	7 days	0.67	Williams	1999 RF ₁₇₆
1999 RG ₁₇₆	15.7	0.15	19990830	12.09708	21.19751	306.64591	2.15236	0.1914613	2.1424086	18	1	7 days	0.18	Williams	1999 RG ₁₇₆
1999 RO ₁₇₆	15.3	0.15	19990830	37.57690	121.36499	179.13221	15.50960	0.1424833	2.6501442	17	1	7 days	0.66	Williams	1999 RO ₁₇₆
1999 RR ₁₇₆	16.6	0.15	19990830	333.52965	189.22802	193.78386	4.08434	0.1364532	2.5229249	18	1	7 days	0.55	Williams	1999 RR ₁₇₆
1999 RZ ₁₇₆	15.6	0.15	19990810	3.90973	353.12330	339.60632	5.26099	0.1886923	2.2727968	25	1	33 days	0.38	Williams	1999 RZ ₁₇₆

1999 RE ₁₇₇	17.1	0.15	19990830	336.01243	41.61028	340.03595	1.63261	0.1829137	2.3455243	18	1	7 days	0.52		Williams	1999 RE ₁₇₇
1999 RF ₁₇₇	15.7	0.15	19990830	73.21272	80.51520	177.75035	5.40907	0.1544201	2.3985606	18	1	7 days	0.57	E	Williams	1999 RF ₁₇₇
1999 RJ ₁₇₇	14.1	0.15	19990830	16.79441	335.77201	355.03862	11.43086	0.0722763	3.0349515	20	1	8 days	0.64		Williams	1999 RJ ₁₇₇
1999 RL ₁₇₇	15.3	0.15	19990830	16.60845	161.42591	164.71611	6.01713	0.1329689	2.5526233	18	1	7 days	0.34		Williams	1999 RL ₁₇₇
1999 RO ₁₇₇	15.8	0.15	19990830	336.86032	214.90094	164.89938	4.94335	0.1653744	2.4465900	21	1	8 days	0.62		Williams	1999 RO ₁₇₇
1999 RR ₁₇₇	16.1	0.15	19990830	25.20449	182.06545	131.44421	2.00605	0.1446397	2.5867724	18	1	7 days	0.54		Williams	1999 RR ₁₇₇
1999 RT ₁₇₇	14.6	0.15	19990830	250.76974	104.65640	9.01372	4.08465	0.1579242	2.3248788	18	1	7 days	0.50		Williams	1999 RT ₁₇₇
1999 RV ₁₇₇	12.5	0.15	19990830	254.44548	309.12344	164.33575	15.07658	0.1721381	3.1759278	13	1	5 days	0.30	E	Williams	1999 RV ₁₇₇
1999 RA ₁₇₈	15.9	0.15	19990830	20.47257	155.13457	160.53245	9.23617	0.1970046	2.3752931	13	1	5 days	0.62	E	Williams	1999 RA ₁₇₈
1999 RC ₁₇₈	16.3	0.15	19990830	332.03577	277.95971	111.50406	2.51758	0.2103865	2.6117464	13	1	5 days	0.56	E	Williams	1999 RC ₁₇₈
1999 RG ₁₇₈	16.8	0.15	19990830	1.59461	192.54383	150.88383	7.06730	0.1680588	2.4337868	13	1	5 days	0.36	E	Williams	1999 RG ₁₇₈
1999 RH ₁₇₈	17.3	0.15	19990830	47.62055	134.99299	149.39904	5.53845	0.1488405	2.2515529	13	1	5 days	0.72	E	Williams	1999 RH ₁₇₈
1999 RK ₁₇₈	12.8	0.15	19990830	203.37740	345.78974	162.98979	19.17292	0.0491330	3.1682862	13	1	5 days	0.60	E	Williams	1999 RK ₁₇₈
1999 RM ₁₇₈	16.6	0.15	19990830	354.23485	199.78624	154.09484	7.23527	0.1665711	2.3184961	13	1	5 days	0.46	E	Williams	1999 RM ₁₇₈
1999 RN ₁₇₈	15.5	0.15	19990830	347.28183	224.99527	149.48104	5.28784	0.3885875	2.6768802	13	1	5 days	0.41		Williams	1999 RN ₁₇₈
1999 RS ₁₇₈	15.8	0.15	19990830	343.87743	216.75087	153.29865	11.88389	0.2027800	2.6484831	13	1	6 days	0.54	E	Williams	1999 RS ₁₇₈
1999 RU ₁₇₈	15.4	0.15	19990830	28.32391	154.47850	147.36820	8.77730	0.2160290	2.5273308	13	1	6 days	0.30	E	Williams	1999 RU ₁₇₈
1999 RC ₁₇₉	14.7	0.15	19990830	263.72218	53.16874	44.16494	5.20905	0.1301436	2.3919322	11	1	6 days	0.36	E	Williams	1999 RC ₁₇₉
1999 RE ₁₇₉	15.4	0.15	19990830	334.47404	321.98885	56.57200	4.71057	0.1189971	2.6111398	12	1	6 days	0.58	E	Williams	1999 RE ₁₇₉
1999 RG ₁₇₉	17.4	0.15	19990830	345.49471	303.23399	62.70577	4.12661	0.1831350	2.3167552	11	1	6 days	0.70	E	Williams	1999 RG ₁₇₉
1999 RM ₁₇₉	16.2	0.15	19990830	340.07672	320.94884	49.15687	4.85918	0.1267508	2.2299611	11	1	3 days	0.36	E	Williams	1999 RM ₁₇₉
1999 RN ₁₇₉	16.2	0.15	19990830	301.17448	333.22395	89.96662	5.08313	0.1738044	2.3743654	12	1	6 days	0.65	E	Williams	1999 RN ₁₇₉
1999 RO ₁₇₉	14.8	0.15	19990830	355.58526	326.21241	24.82436	7.17222	0.2101116	2.4531394	11	1	3 days	0.26	E	Williams	1999 RO ₁₇₉
1999 RP ₁₇₉	17.2	0.15	19990830	9.86766	174.59153	153.10639	15.29434	0.2649379	2.6707899	12	1	6 days	0.68	E	Williams	1999 RP ₁₇₉
1999 RV ₁₇₉	15.7	0.15	19990830	2.07266	233.71861	108.67425	5.67359	0.1336019	2.4021016	12	1	6 days	0.52	E	Williams	1999 RV ₁₇₉
1999 RW ₁₇₉	15.7	0.15	19990830	7.49342	194.58801	140.22306	10.72925	0.1656035	2.4512565	12	1	6 days	0.43	E	Williams	1999 RW ₁₇₉
1999 RC ₁₈₀	15.8	0.15	19990830	18.03920	293.49993	20.45006	12.16360	0.2402436	2.6963534	10	1	6 days	0.55	E	Williams	1999 RC ₁₈₀
1999 RW ₁₈₀	16.0	0.15	19990830	17.97163	269.68403	49.06367	3.32388	0.1987033	2.3622244	13	1	9 days	0.35	E	Williams	1999 RW ₁₈₀
1999 RX ₁₈₀	14.8	0.15	19990830	25.57150	229.45803	88.63416	3.16056	0.0900395	2.9669962	12	1	5 days	0.65	E	Williams	1999 RX ₁₈₀
1999 RY ₁₈₀	13.0	0.15	19990830	29.90000	304.63744	359.03851	19.01181	0.2054376	3.2265777	10	1	2 days	0.25	E	Williams	1999 RY ₁₈₀
1999 RA ₁₈₁	15.6	0.15	19990830	37.66888	142.32926	146.59260	6.91742	0.2344268	2.5740675	12	1	5 days	0.41	E	Williams	1999 RA ₁₈₁
1999 RC ₁₈₁	15.5	0.15	19990830	285.70851	319.97767	110.95793	2.38388	0.0767351	2.2632589	18	1	7 days	0.63		Williams	1999 RC ₁₈₁
1999 RG ₁₈₁	15.5	0.15	19990830	356.68999	193.38541	159.83625	10.58618	0.3111286	2.7392732	15	1	9 days	0.60		Williams	1999 RG ₁₈₁
1999 RK ₁₈₁	15.4	0.15	19990830	289.46264	63.10046	10.19235	5.35310	0.1216486	2.4320793	13	1	5 days	0.44	E	Williams	1999 RK ₁₈₁
1999 RL ₁₈₁	17.5	0.15	19990830	352.70287	194.87024	161.75397	6.34510	0.1680619	2.1694134	13	1	5 days	0.60	E	Williams	1999 RL ₁₈₁
1999 RM ₁₈₁	15.8	0.15	19990830	81.45972	114.14871	137.15855	1.76888	0.1401442	2.2140963	18	1	5 days	0.26	E	Williams	1999 RM ₁₈₁
1999 RT ₁₈₁	14.9	0.15	19990830	23.65137	166.70587	153.39847	4.73525	0.1239264	2.7884878	13	1	9 days	0.42	E	Williams	1999 RT ₁₈₁
1999 RY ₁₈₁	16.5	0.15	19990830	26.31483	145.83547	158.55189	2.41570	0.2430138	2.3209057	17	1	7 days	0.60		Williams	1999 RY ₁₈₁
1999 RF ₁₈₂	16.3	0.15	19990830	23.22358	320.20368	349.61573	3.48948	0.2327508	2.3303630	13	1	5 days	0.35	E	Williams	1999 RF ₁₈₂
1999 RH ₁₈₂	14.8	0.15	19990830	345.52881	195.02822	173.50672	11.43933	0.0965446	2.9711152	13	1	5 days	0.56	E	Williams	1999 RH ₁₈₂
1999 RK ₁₈₂	15.1	0.15	19990830	36.56953	131.26593	170.43775	4.53520	0.1326544	2.2748508	13	1	5 days	0.33	E	Williams	1999 RK ₁₈₂
1999 RU ₁₈₂	17.1	0.15	19990830	330.85944	41.49884	347.21864	7.64602	0.1554255	2.3398461	10	1	5 days	0.40		Williams	1999 RU ₁₈₂
1999 RV ₁₈₂	15.8	0.15	19990830	173.74455	201.75086	335.36761	2.01968	0.1407433	2.3928194	14	1	10 days	0.68		Williams	1999 RV ₁₈₂
1999 RW ₁₈₂	16.9	0.15	19990830	25.86342	330.15877	341.07751	1.58527	0.1989464	2.5757456	19	1	9 days	0.53		Williams	1999 RW ₁₈₂
1999 RX ₁₈₂	15.4	0.15	19990830	303.70090	238.34639	187.32900	2.90789	0.1715398	2.5844321	28	1	12 days	0.60		Williams	1999 RX ₁₈₂
1999 RA ₁₈₃	13.9	0.15	19990830	29.89457	312.84372	357.55687	16.41864	0.1642563	3.2284217	13	1	5 days	0.44	E	Williams	1999 RA ₁₈₃
1999 RB ₁₈₃	15.8	0.15	19990830	314.01028	257.85105	167.63349	5.66622	0.2834818	2.6122828	13	1	5 days	0.49	E	Williams	1999 RB ₁₈₃
1999 RH ₁₈₃	14.6	0.15	19990830	279.11878	290.10736	167.64161	12.36320	0.2110350	2.9348654	13	1	5 days	0.59	E	Williams	1999 RH ₁₈₃
1999 RO ₁₈₃	15.8	0.15	19990830	286.71750	87.45870	2.21828	9.90960	0.2295608	2.5567859	13	1	9 days	0.50	E	Williams	1999 RO ₁₈₃
1999 RP ₁₈₃	12.9	0.15	19990830	234.13370	328.43616	166.76820	19.09919	0.2073349	3.1644795	13	1	5 days	0.52	E	Williams	1999 RP ₁₈₃
1999 RT ₁₈₃	13.2	0.15	19990830	212.39854	148.56369	3.54910	14.94986	0.2769345	2.3363268	13	1	5 days	0.39	E	Williams	1999 RT ₁₈₃
1999 RE ₁₈₄	16.7	0.15	19990830	5.31119	187.68115	153.05894	8.06954	0.1226135	2.2567811	13	1	9 days	0.68	E	Williams	1999 RE ₁₈₄
1999 RF ₁₈₄	14.9	0.15	19990830	309.93088	358.80786	61.74468	3.25842	0.2168715	2.3833649	13	1	5 days	0.28	E	Williams	1999 RF ₁₈₄

1999 RP ₁₈₅	15.7	0.15	19990830	284.50803	133.59278	305.17387	1.52264	0.1576089	2.3913194	11	1	9 days	0.39	Williams	1999 RP ₁₈₅
1999 RQ ₁₈₅	15.6	0.15	19990830	326.43257	180.98279	204.36665	1.62509	0.0895514	2.7223921	18	1	11 days	0.53	Williams	1999 RQ ₁₈₅
1999 RR ₁₈₅	16.7	0.15	19990830	8.56977	348.38288	345.06223	6.43227	0.1316759	2.4029424	21	1	13 days	0.41	Williams	1999 RR ₁₈₅
1999 RY ₁₈₅	16.7	0.15	19990830	3.71657	331.99817	5.04505	1.99547	0.1915591	2.5960778	20	1	5 days	0.54	E Williams	1999 RY ₁₈₅
1999 RD ₁₈₆	16.3	0.15	19990830	228.27314	344.59455	139.60063	3.07198	0.1075048	2.2178414	11	1	5 days	0.48	E Williams	1999 RD ₁₈₆
1999 RE ₁₈₆	16.3	0.15	19990830	308.65863	263.38625	152.15397	8.47204	0.2091392	2.6203265	10	1	6 days	0.91	E Williams	1999 RE ₁₈₆
1999 RJ ₁₈₆	16.7	0.15	19990830	335.24295	263.98564	111.67047	5.46198	0.1639710	2.2063658	9	1	6 days	0.50	E Williams	1999 RJ ₁₈₆
1999 RQ ₁₈₆	14.5	0.15	19990830	288.09468	76.07643	349.16278	8.91521	0.0513116	3.0242027	16	1	13 days	0.53	Williams	1999 RQ ₁₈₆
1999 RU ₁₈₆	14.2	0.15	19990830	306.59263	206.93690	196.73469	1.40392	0.0289216	2.8274435	20	1	11 days	0.72	Williams	1999 RU ₁₈₆
1999 RB ₁₈₇	15.7	0.15	19990830	358.11059	153.44971	196.27928	0.36681	0.2805169	2.9587220	22	1	12 days	0.54	Williams	1999 RB ₁₈₇
1999 RC ₁₈₇	17.1	0.15	19990830	1.30678	355.45211	347.85938	5.01666	0.2047717	2.4198267	12	1	5 days	0.84	E Williams	1999 RC ₁₈₇
1999 RD ₁₈₇	16.1	0.15	19990830	357.84114	356.19758	353.34103	1.76689	0.1500298	2.5528748	20	1	14 days	0.39	Williams	1999 RD ₁₈₇
1999 RG ₁₈₇	15.0	0.15	19990830	229.43681	124.07426	9.68601	6.57410	0.2338711	2.3040259	12	1	5 days	0.64	E Williams	1999 RG ₁₈₇
1999 RJ ₁₈₇	15.3	0.15	19990830	22.15479	209.01034	108.06101	6.87377	0.1223598	2.7620040	11	1	6 days	0.51	E Williams	1999 RJ ₁₈₇
1999 RR ₁₈₇	14.9	0.15	19990830	4.09413	289.80743	52.75635	2.49568	0.0890835	2.9108142	11	1	5 days	0.64	E Williams	1999 RR ₁₈₇
1999 RS ₁₈₇	15.2	0.15	19990830	283.60769	69.26359	6.46682	9.50340	0.1051082	2.7474948	11	1	5 days	0.53	E Williams	1999 RS ₁₈₇
1999 RX ₁₈₇	14.0	0.15	19990830	229.18680	209.79265	288.21716	1.10586	0.2073330	2.7944916	15	1	7 days	0.67	E Williams	1999 RX ₁₈₇
1999 RD ₁₈₈	15.5	0.15	19990830	339.14895	258.29862	114.82994	3.01579	0.1048443	2.8544941	12	1	5 days	0.70	E Williams	1999 RD ₁₈₈
1999 RV ₁₈₈	15.9	0.15	19990830	294.57444	265.38161	165.59172	13.75924	0.1490005	2.5211684	12	1	5 days	0.32	E Williams	1999 RV ₁₈₈
1999 RE ₁₈₉	16.7	0.15	19990830	13.62126	115.89146	209.28292	0.87719	0.2597929	2.8411441	12	1	5 days	0.52	E Williams	1999 RE ₁₈₉
1999 RL ₁₈₉	16.2	0.15	19990830	43.69443	307.74122	354.66455	17.11190	0.0678594	2.7324374	12	1	7 days	0.83	E Williams	1999 RL ₁₈₉
1999 RV ₁₈₉	16.4	0.15	19990830	332.14775	263.65991	128.51600	6.67210	0.2977434	2.6829892	9	1	6 days	1.24	E Williams	1999 RV ₁₈₉
1999 RX ₁₈₉	17.7	0.15	19990830	26.85809	286.95088	16.53721	5.08280	0.1860942	2.1686960	10	1	4 days	0.56	E Williams	1999 RX ₁₈₉
1999 RE ₁₉₀	13.0	0.15	19990830	265.57788	233.50262	234.88927	7.18871	0.2121914	2.5412579	17	1	8 days	0.39	Williams	1999 RE ₁₉₀
1999 RF ₁₉₀	16.7	0.15	19990830	304.23144	66.01493	0.18084	5.41505	0.2011914	2.3027576	12	1	4 days	0.91	E Williams	1999 RF ₁₉₀
1999 RK ₁₉₀	15.4	0.15	19990830	242.27242	126.73871	339.57814	5.31439	0.0516108	2.2134403	33	1	5 days	0.35	E Williams	1999 RK ₁₉₀
1999 RO ₁₉₀	15.4	0.15	19990830	331.97436	28.93582	13.08900	6.46545	0.1413547	2.4578897	26	1	20 days	0.32	Williams	1999 RO ₁₉₀
1999 RP ₁₉₀	15.9	0.15	19990830	310.69828	25.99158	26.30371	4.48460	0.1929339	2.6368779	45	1	6 days	0.58	Williams	1999 RP ₁₉₀
1999 RQ ₁₉₀	14.9	0.15	19990830	341.02730	172.54902	202.10591	11.29758	0.1437547	3.0445373	21	1	12 days	0.66	Williams	1999 RQ ₁₉₀
1999 RS ₁₉₀	16.7	0.15	19990830	27.37306	31.07839	273.76296	1.51187	0.2022382	2.2646917	14	1	4 days	0.69	E Williams	1999 RS ₁₉₀
1999 RN ₁₉₁	16.1	0.15	19990830	0.31850	227.96701	112.86047	3.22170	0.2432901	2.3783910	22	1	6 days	0.35	E Williams	1999 RN ₁₉₁
1999 RQ ₁₉₁	16.6	0.15	19990830	23.96331	319.08127	350.78490	2.49974	0.1977754	2.5389798	13	1	11 days	0.55	Williams	1999 RQ ₁₉₁
1999 RW ₁₉₁	16.3	0.15	19990830	300.56121	88.58060	343.69192	3.48251	0.2342680	2.5777930	21	1	12 days	0.51	Williams	1999 RW ₁₉₁
1999 RA ₁₉₂	13.5	0.15	19990830	92.83224	292.15388	332.05765	12.71696	0.1379666	2.5620782	14	1	7 days	0.49	Williams	1999 RA ₁₉₂
1999 RF ₁₉₂	13.7	0.15	19990830	343.61426	346.49717	16.28160	9.92014	0.1590881	3.0296479	22	1	7 days	0.40	E Williams	1999 RF ₁₉₂
1999 RR ₁₉₂	13.1	0.15	19990830	154.46908	136.23745	44.95853	1.58695	0.2235125	3.0084708	23	1	7 days	0.86	E Williams	1999 RR ₁₉₂
1999 RU ₁₉₂	18.0	0.15	19990830	340.89443	249.56425	156.93372	6.74283	0.3313897	2.6566912	11	1	4 days	0.26	Williams	1999 RU ₁₉₂
1999 RG ₁₉₃	13.0	0.15	19990830	49.96656	184.24521	108.23000	10.74866	0.1623374	3.2860112	13	1	3 days	0.45	E Williams	1999 RG ₁₉₃
1999 RK ₁₉₃	14.5	0.15	19990830	27.59503	223.19202	95.85176	14.21615	0.1687249	3.0280290	12	1	3 days	0.66	E Williams	1999 RK ₁₉₃
1999 RL ₁₉₃	15.6	0.15	19990830	24.47043	151.10025	180.41415	11.34721	0.1033522	3.1113846	16	1	11 days	0.85	Williams	1999 RL ₁₉₃
1999 RM ₁₉₃	17.0	0.15	19990830	335.65136	217.75463	174.66991	5.76988	0.2121742	2.3504177	14	1	8 days	0.41	Williams	1999 RM ₁₉₃
1999 RT ₁₉₃	16.2	0.15	19990830	10.62709	14.27247	318.11581	6.99973	0.1947407	2.6180477	11	1	9 days	0.69	E Williams	1999 RT ₁₉₃
1999 RX ₁₉₃	15.3	0.15	19990830	12.99283	4.40878	323.45105	6.85267	0.2046376	2.2933485	12	1	9 days	0.25	E Williams	1999 RX ₁₉₃
1999 RA ₁₉₄	14.2	0.15	19990830	342.43608	112.75235	264.35587	3.74602	0.1629760	3.0675641	11	1	9 days	0.43	E Williams	1999 RA ₁₉₄
1999 RB ₁₉₄	15.2	0.15	19990830	316.00800	136.25204	278.07697	3.34561	0.1979107	2.5584684	12	1	9 days	0.51	E Williams	1999 RB ₁₉₄
1999 RC ₁₉₄	15.4	0.15	19990830	59.27705	62.78110	219.38211	5.38881	0.0909490	2.3696912	11	1	9 days	0.30	E Williams	1999 RC ₁₉₄
1999 RD ₁₉₄	15.1	0.15	19990830	94.85079	23.94452	218.75248	5.19273	0.1210126	2.2370528	11	1	9 days	0.39	E Williams	1999 RD ₁₉₄
1999 RE ₁₉₄	14.1	0.15	19990830	35.67945	11.51424	296.57530	4.76752	0.1234402	2.9936476	11	1	9 days	0.33	E Williams	1999 RE ₁₉₄
1999 RK ₁₉₄	15.0	0.15	19990830	335.55224	171.65591	221.64224	3.75966	0.2723974	2.6740650	12	1	9 days	0.31	E Williams	1999 RK ₁₉₄
1999 RN ₁₉₄	15.8	0.15	19990830	298.61540	185.41985	251.50708	3.47847	0.2001337	2.3650915	11	1	9 days	0.78	E Williams	1999 RN ₁₉₄
1999 RO ₁₉₄	13.6	0.15	19990830	15.44293	119.57053	215.07997	3.25702	0.1285741	2.8186005	11	1	9 days	0.27	E Williams	1999 RO ₁₉₄
1999 RQ ₁₉₄	13.0	0.15	19990830	328.05048	64.22755	343.38825	16.05290	0.2480550	2.9794424	16	1	11 days	0.46	E Williams	1999 RQ ₁₉₄
1999 RR ₁₉₄	15.3	0.15	19990830	14.97496	53.29317	275.83106	3.41783	0.2133602	2.4190149	15	1	11 days	0.88	E Williams	1999 RR ₁₉₄

1999 RS ₁₉₄	13.1	0.15	19990830	357.39902	123.31558	234.17190	4.92872	0.1624161	3.1362154	10	1	9 days	0.29	E	Williams	1999 RS ₁₉₄	
1999 RD ₁₉₅	14.0	0.15	19990830	2.35496	75.10581	264.65881	7.81225	0.1645284	2.7713149	14	1	10 days	0.62	E	Williams	1999 RD ₁₉₅	
1999 RT ₁₉₅	15.3	0.15	19990830	7.52376	23.66046	305.74443	13.06359	0.1541871	2.6135500	11	1	10 days	0.49		Williams	1999 RT ₁₉₅	
1999 RG ₁₉₇	15.2	0.15	19990830	8.30224	142.70488	198.24021	12.52104	0.0883500	2.4675905	16	1	10 days	0.42	E	Williams	1999 RG ₁₉₇	
1999 RJ ₁₉₇	13.7	0.15	19990830	319.69668	82.04757	313.68739	7.98297	0.0160196	2.9944247	13	1	10 days	0.29		Williams	1999 RJ ₁₉₇	
1999 RO ₁₉₇	14.9	0.15	19990810	271.84886	150.59228	296.09783	6.00073	0.0809052	2.2752622	18	1	57 days	0.37		Williams	1999 RO ₁₉₇	
1999 RR ₁₉₇	15.0	0.15	19990830	206.41209	213.44643	292.32038	6.23761	0.0895857	2.3237416	13	1	8 days	0.72	E	Williams	1999 RR ₁₉₇	
1999 RX ₁₉₇	12.9	0.15	19990830	325.10772	132.64659	261.13239	8.23161	0.0955681	3.1647826	16	1	14 days	0.35		Williams	1999 RX ₁₉₇	
1999 RB ₁₉₈	16.0	0.15	19990830	15.60452	14.81308	319.27140	6.56015	0.0964925	2.2561982	15	1	10 days	0.60	E	Williams	1999 RB ₁₉₈	
1999 RC ₁₉₈	12.1	0.15	19990810	299.50876	106.89501	333.37561	14.31163	0.2150243	3.1290515	18	1	57 days	0.35		Williams	1999 RC ₁₉₈	
1999 RK ₁₉₈	15.8	0.15	19990830	338.85353	100.61155	269.51899	9.04607	0.2135718	3.0155191	12	1	8 days	0.59	E	Williams	1999 RK ₁₉₈	
1999 RR ₁₉₈	14.2	0.15	19990830	350.22847	159.90412	202.77472	4.79238	0.2116681	2.3884719	12	1	7 days	0.28	E	Williams	1999 RR ₁₉₈	
1999 RG ₂₁₃	15.3	0.15	19990830	239.40287	115.69581	0.52871	1.38934	0.0283532	2.8135843	12	1	4 days	0.15	E	Williams	1999 RG ₂₁₃	
1999 RH ₂₁₃	16.0	0.15	19990830	274.62454	105.67003	345.67059	1.50879	0.1109590	2.9267792	11	1	3 days	0.40	E	Williams	1999 RH ₂₁₃	
1999 RJ ₂₁₃	17.4	0.15	19990830	68.17253	290.97176	338.55139	0.82764	0.1221166	2.4163084	14	1	3 days	0.42	E	Williams	1999 RJ ₂₁₃	
1999 RK ₂₁₃	16.9	0.15	19990830	259.31044	105.42031	355.60346	5.23464	0.0802285	2.3617684	10	1	2 days	0.28	E	Williams	1999 RK ₂₁₃	
1999 RN ₂₁₃	16.1	0.15	19990830	352.15656	8.51589	355.00744	18.24561	0.2027664	3.0846732	14	1	5 days	0.24		Williams	1999 RN ₂₁₃	
1999 RP ₂₁₃	16.1	0.15	19990919	299.80144	131.15946	323.95845	6.77031	0.2627746	2.3794214	12	1	6 days	0.24		Williams	1999 RP ₂₁₃	
1999 RD ₂₁₄	16.5	0.15	19990830	1.36661	143.91779	206.11387	1.42549	0.1013941	2.8489125	19	1	17 days	0.73		Williams	1999 RD ₂₁₄	
1999 RE ₂₁₄	16.5	0.15	19990830	62.31355	96.79653	191.03244	2.88411	0.0238641	2.8088088	14	1	12 days	0.73	E	Williams	1999 RE ₂₁₄	
1999 RF ₂₁₄	17.0	0.15	19990830	40.59012	88.51141	215.65207	1.05792	0.0848057	2.6474598	17	1	17 days	0.62		Williams	1999 RF ₂₁₄	
1999 RJ ₂₁₄	16.5	0.15	19990830	4.57979	311.76421	18.34976	6.26200	0.3104079	2.5741308	35	1	5 days	0.53		Williams	1999 RJ ₂₁₄	
1999 SB	17.2	0.15	19990919	348.00219	341.58313	45.94413	6.15753	0.3178890	2.6298958	6	1	5 days	0.10		Marsden	1999 SB	
1999 SE	14.1	0.15	19990919	326.37221	228.56341	195.37489	13.79128	0.2248217	3.2168203	11	1	5 days	0.46		Williams	1999 SE	
1999 SG	14.5	0.15	19990830	257.82988	112.04614	8.19294	5.33153	0.1162978	2.3024607	16	1	40 days	0.73		Williams	1999 SG	
1999 SL	14.1	0.15	19990919	344.68122	9.87746	30.73673	8.74799	0.2316087	2.8286805	8	1	5 days	0.37		Williams	1999 SL	
1999 SF ₁	17.7	0.15	19990919	357.45397	274.21382	90.21559	2.85131	0.1874066	2.4304944	8	1	3 days	0.36		Marsden	1999 SF ₁	
1999 SH ₁	15.0	0.15	19990830	347.89505	174.20665	191.65915	9.33795	0.2405720	2.4684005	12	1	6 days	0.44	E	Williams	1999 SH ₁	
1999 SL ₁	16.8	0.15	19990919	347.91028	240.12081	143.13844	15.67265	0.2209855	2.6389426	8	1	4 days	0.24		Williams	1999 SL ₁	
1999 SM ₁	14.3	0.15	19990919	14.80921	93.08072	275.42568	1.12215	0.2106909	2.2780551	6	1	6 days	0.43	E	Williams	1999 SM ₁	
1999 SN ₁	12.7	0.15	19990919	51.42583	284.65568	39.01939	13.31092	0.2734016	3.3387423	8	1	6 days	0.79		Williams	1999 SN ₁	
1999 SQ ₁	16.2	0.15	19990919	11.92509	337.19196	14.11691	2.50683	0.2342360	2.6329306	9	1	5 days	0.21		Williams	1999 SQ ₁	
1999 SJ ₂	14.8	0.15	19990830	339.33272	37.71260	353.95817	13.63097	0.2754017	2.5399571	17	1	41 days	0.42		Williams	1999 SJ ₂	
1999 SK ₂	16.6	0.15	19990919	67.93020	230.32215	357.00031	5.09136	0.4938760	2.4801387	23	1	5 days	0.49		Williams	1999 SK ₂	
1999 SL ₂	18.6	0.15	19990919	305.28132	71.52635	3.34544	4.19218	0.2454042	2.1893036	14	1	5 days	0.83		Williams	1999 SL ₂	
1999 SN ₂	16.9	0.15	19990919	237.54528	299.72464	183.67737	5.99879	0.0425508	2.8034719	12	1	5 days	0.66	E	Williams	1999 SN ₂	
1999 SU ₂	14.7	0.15	19990919	359.15992	179.21488	195.72016	5.11019	0.1618658	3.1863752	11	1	3 days	0.29	E	Williams	1999 SU ₂	
2027 P-L	15.4	0.15	19990810	72.61728	110.20603	281.01120	1.50992	0.2087409	2.4319375	48	3	1960–1998	0.66	M-v	3	Williams	33323 2027 P-L
2040 P-L	16.8	0.15	19990810	357.80282	343.03112	1.03512	4.81974	0.2441723	2.1944167	28	3	1960–1999	0.76	M-v	5	Williams	22700 2040 P-L
2041 P-L	14.6	0.15	19990810	50.11147	287.06256	0.64498	14.80142	0.0518920	2.6667830	39	3	1960–1999	0.81	M-v	4	Williams	22432 2041 P-L
2053 P-L	14.2	0.15	19990810	83.97740	359.38489	223.80683	3.14384	0.1544853	2.6802980	81	3	1960–1999	0.74	M-v	3	Williams	35742 2053 P-L
2085 P-L	14.2	0.15	19990810	209.50117	191.74662	278.91167	1.00029	0.0271711	2.9032918	33	4	1960–1999	0.53	M-v	1	Williams	32785 2085 P-L
2103 P-L	14.1	0.15	19990810	138.46944	353.85909	218.33635	3.02401	0.1387128	2.6588414	44	9	1960–1999	0.98	M-v	2	Williams	32343 2103 P-L
2113 P-L	15.1	0.15	19990810	323.91006	166.18404	222.45383	3.52797	0.0891936	2.6626621	32	4	1960–1999	0.88	M-v	4	Williams	23539 2113 P-L
2155 P-L	14.2	0.15	19990810	29.27334	34.10407	300.57463	0.87509	0.1815473	3.1257967	16	3	1960–1997	0.68	M-v	5	Williams	34263 2155 P-L
2156 P-L	14.1	0.15	19990810	36.04513	167.50562	193.80192	12.73791	0.1472965	3.1074561	20	2	1960–1993	1.02	M-v	6	Williams	34263 2156 P-L
2234 P-L	17.4	0.15	19990810	78.37651	20.90093	3.82096	7.03350	0.1447434	2.2849347	21	2	1960–1998	0.31	M-v	4	Williams	34264 2234 P-L
2506 P-L	15.1	0.15	19990810	7.18622	315.80730	7.51895	11.99268	0.2081297	2.6644449	51	5	1960–1999	0.88	M-v	2	Williams	22086 2506 P-L
2508 P-L	15.1	0.15	19990810	333.60565	351.01707	10.19556	6.37744	0.2501766	2.3312579	30	5	1951–1999	0.77	M-v	2	Williams	35742 2508 P-L
2514 P-L	15.6	0.15	19990810	13.23994	322.48954	9.02839	11.89010	0.1818964	2.6591119	26	3	1960–1999	0.89	M-v	4	Williams	22700 2514 P-L
2549 P-L	13.9	0.15	19990810	336.74300	284.20512	167.69110	2.13762	0.0343637	2.8315647	69	3	1960–1998	0.67	M-v	2	Williams	34337 2549 P-L
2565 P-L	15.0	0.15	19990810	127.19021	297.86710	23.71281	4.83114	0.0227611	2.4339488	44	2	1960–1998	0.69	M-v	5	Williams	33053 2565 P-L
2574 P-L	13.4	0.15	19990810	249.28318	92.52090	13.05481	22.29274	0.0832701	3.1561991	32	5	1960–1999	0.79	M-v	1	Williams	29141 2574 P-L

2581 P-L	14.8	0.15	19990810	342.73734	259.91785	95.86367	3.16423	0.0739201	2.8866678	40	4	1960-1999	0.77	M-v	2	Williams	32343	2581 P-L
2591 P-L	14.3	0.15	19990810	73.38684	231.72582	179.99705	4.88511	0.1251299	2.7996397	21	2	1960-1998	0.65	M-v	5	Williams	33534	2591 P-L
2602 P-L	14.9	0.15	19990810	15.07060	8.79602	62.31123	2.85533	0.1934152	3.0958343	20	2	1960-1998	0.79	M-v	5	Williams	33053	2602 P-L
2622 P-L	13.6	0.15	19990810	211.01707	336.02524	152.79108	1.55596	0.1565606	3.1757792	15	3	1960-1995	0.47	M-v	5	Williams	26414	2622 P-L
2626 P-L	14.0	0.15	19990810	287.30508	78.09879	154.03632	1.92724	0.0968605	3.0088701	30	5	1954-1997	0.71	M-v	1	Williams	33383	2626 P-L
2635 P-L	15.0	0.15	19990810	188.09988	72.55007	190.19719	3.15649	0.1615887	2.2799776	47	4	1960-1998	0.64	M-v	2	Williams	33129	2635 P-L
2647 P-L	15.1	0.15	19990810	150.37435	28.39388	16.97703	1.50658	0.1782983	2.3956857	16	3	1960-1999	0.64	M-v	4	Williams	34337	2647 P-L
2650 P-L	16.9	0.15	19990810	70.96008	221.81507	166.50282	1.76731	0.1908105	2.2870671	33	2	1960-1998	0.69	M-v	5	Williams	33129	2650 P-L
2654 P-L	15.0	0.15	19990810	30.14575	307.05598	140.05489	1.63233	0.1717343	3.0694826	32	3	1960-1998	0.57	M-v	3	Williams	34616	2654 P-L
2664 P-L	14.9	0.15	19990810	22.21586	46.67841	5.02678	8.15801	0.0919845	3.0887428	26	2	1960-1998	0.59	M-v	5	Williams	33129	2664 P-L
2674 P-L	15.4	0.15	19990810	178.41011	217.01526	60.44994	1.74839	0.0744487	2.5992662	23	3	1960-1998	0.76	M-v	4	Williams	33129	2674 P-L
2688 P-L	15.3	0.15	19990810	190.96848	196.48938	126.05957	1.63420	0.1024349	3.0137375	18	4	1960-1999	0.58	M-v	2	Williams	34616	2688 P-L
2698 P-L	15.8	0.15	19990810	272.62253	277.85929	6.05777	7.63713	0.0688959	2.2466806	21	4	1960-1999	0.65	M-v	2	Williams	34059	2698 P-L
2722 P-L	14.7	0.15	19990810	53.39487	67.99574	181.49557	14.97973	0.1549842	2.6782776	47	3	1960-1999	0.72	M-v	2	Williams	35742	2722 P-L
2727 P-L	15.4	0.15	19990810	120.12441	189.04102	21.14005	4.93631	0.1453937	2.3330630	60	3	1960-1999	0.65	M-v	3	Williams	32091	2727 P-L
2733 P-L	15.0	0.15	19990810	218.70046	307.79379	109.14983	2.87638	0.1232735	2.5190719	17	3	1960-1998	0.83	M-v	4	Williams	32728	2733 P-L
2740 P-L	15.3	0.15	19990810	301.10417	244.42038	165.42584	5.46049	0.1062045	2.6656011	44	3	1960-1999	0.86	M-v	5	Williams	22700	2740 P-L
2796 P-L	16.0	0.15	19990810	49.71162	247.31234	141.38099	3.27958	0.2242637	2.6177910	24	4	1960-1998	0.90	M-v	2	Williams	32785	2796 P-L
2849 P-L	17.6	0.15	19990810	320.13769	336.46323	1.38189	1.35389	0.2149872	2.3427504	23	2	1960-1996	0.43	M-v	4	Williams	34264	2849 P-L
3021 P-L	12.7	0.15	19990810	167.16732	245.88996	301.41489	12.25194	0.0929099	3.1549772	49	4	1960-1999	0.87	M-v	1	Williams	34564	3021 P-L
3045 P-L	13.1	0.15	19990810	55.79531	337.43063	332.81173	12.72815	0.1604101	2.6472394	49	5	1960-1999	0.70	M-v	2	Williams	35479	3045 P-L
3090 P-L	13.1	0.15	19990810	280.88752	198.06729	231.49114	14.20751	0.2318851	3.1633637	50	3	1960-1999	0.61	M-v	3	Williams	35479	3090 P-L
3541 P-L	12.7	0.15	19990810	33.98954	34.57928	307.37568	8.42179	0.2996173	3.1047846	13	5	1960-1999	0.60	M-v	3	Williams	29668	3541 P-L
4004 P-L	14.2	0.15	19990810	51.76547	328.35360	342.35947	5.32957	0.0240782	2.6533167	41	7	1960-1999	0.80	M-v	1	Williams	31824	4004 P-L
4013 P-L	14.8	0.15	19990810	114.04309	135.85917	205.69495	7.33518	0.2442867	2.8006371	22	3	1960-1998	0.60	M-v	4	Williams	33588	4013 P-L
4033 P-L	15.4	0.15	19990810	158.98577	86.94761	317.27698	1.59964	0.2043706	2.3916018	36	2	1960-1998	0.52	M-v	4	Williams	31160	4033 P-L
4037 P-L	14.3	0.15	19990810	282.45756	97.30735	358.02848	6.85071	0.0865634	2.3198096	18	4	1960-1999	0.59	M-v	4	Williams	28892	4037 P-L
4052 P-L	13.5	0.15	19990810	262.22827	176.11808	212.88691	8.02518	0.1021662	2.9213723	34	3	1960-1998	0.81	M-v	4	Williams	32728	4052 P-L
4053 P-L	14.4	0.15	19990810	57.44636	60.90753	214.87645	6.35225	0.1102304	2.4817441	97	4	1960-1999	0.65	M-v	1	Williams	32343	4053 P-L
4055 P-L	14.7	0.15	19990810	159.35456	240.83044	324.07833	3.07919	0.1206170	2.3210411	20	4	1960-1999	0.57	M-v	3	Williams	28319	4055 P-L
4061 P-L	13.9	0.15	19990810	37.54435	55.31647	238.58678	4.78429	0.1441961	3.1544457	43	3	1960-1999	0.71	M-v	3	Williams	32729	4061 P-L
4071 P-L	14.9	0.15	19990810	4.81553	109.33103	199.32089	5.42876	0.1006565	2.3369311	46	3	1960-1999	0.57	M-v	3	Williams	35742	4071 P-L
4087 P-L	14.9	0.15	19990810	198.43337	155.38499	2.94362	2.02925	0.1133029	2.4818396	53	7	1960-1999	0.67	M-v	1	Williams	31436	4087 P-L
4088 P-L	15.4	0.15	19990810	68.10435	149.93754	312.62399	2.69981	0.1997788	2.5769502	44	3	1960-1999	0.64	M-v	2	Williams	34337	4088 P-L
4105 P-L	15.6	0.15	19990810	48.10188	205.01394	229.13646	4.03039	0.2463482	2.6053331	26	3	1960-1998	0.48	M-v	3	Williams	33588	4105 P-L
4112 P-L	14.3	0.15	19990810	273.18269	128.41963	342.21893	1.91301	0.0431547	2.6469494	30	6	1960-1998	0.76	M-v	2	Williams	33324	4112 P-L
4115 P-L	14.9	0.15	19990810	24.76607	168.85620	223.45211	1.06027	0.0992240	2.6266341	26	4	1960-1998	0.65	M-v	2	Williams	32785	4115 P-L
4157 P-L	15.2	0.15	19990810	8.86151	186.81415	304.91533	2.17961	0.1578000	2.2738994	32	3	1960-1998	0.82	M-v	5	Williams	34337	4157 P-L
4189 P-L	15.3	0.15	19990810	69.12523	183.79939	281.85047	4.14057	0.1868095	2.5730768	29	3	1960-1999	0.68	M-v	4	Williams	34337	4189 P-L
4202 P-L	13.8	0.15	19990810	275.55893	78.71796	338.55422	8.71138	0.0636063	2.6726146	39	3	1960-1999	0.47	M-v	2	Williams	35671	4202 P-L
4214 P-L	14.4	0.15	19990810	241.48608	255.47153	232.02606	4.61900	0.0759487	3.1471900	21	4	1960-1999	0.69	M-v	2	Williams	35047	4214 P-L
4226 P-L	15.0	0.15	19990810	30.39351	237.04211	264.56726	1.70946	0.1258500	2.4037665	22	3	1960-1999	0.55	M-v	4	Williams	34060	4226 P-L
4275 P-L	16.7	0.15	19990810	243.61143	186.49533	192.16528	12.54096	0.2334004	2.5243909	21	3	1960-1996	0.56	M-v	3	Williams	35743	4275 P-L
4525 P-L	13.6	0.15	19990810	43.15607	183.13084	206.86871	1.16809	0.1885787	3.0839718	51	3	1960-1998	0.70	M-v	3	Williams	33784	4525 P-L
4529 P-L	14.3	0.15	19990810	325.00239	331.48717	358.17731	4.72729	0.1294469	3.1844802	17	4	1960-1998	0.62	M-v	2	Williams	22694	4529 P-L
4555 P-L	15.7	0.15	19990810	169.79696	182.09980	168.08742	2.45260	0.2199043	2.4018061	19	4	1960-1999	0.53	M-v	2	Williams	34616	4555 P-L
4624 P-L	14.2	0.15	19990810	303.91333	284.15198	147.80836	4.08867	0.1748716	3.1422219	30	5	1955-1999	0.41	M-v	1	Williams	30095	4624 P-L
4625 P-L	15.2	0.15	19990810	216.08174	191.46745	33.87102	2.22794	0.0922483	2.2875896	38	4	1960-1998	0.62	M-v	3	Williams	33129	4625 P-L
4631 P-L	14.5	0.15	19990810	143.15749	180.34837	13.88441	7.21722	0.0472588	3.3294530	84	6	1955-1999	0.61	M-v	2	Williams	32091	4631 P-L
4636 P-L	13.7	0.15	19990810	208.89139	130.89668	13.26091	14.09846	0.0710757	3.1533562	32	3	1960-1999	0.72	M-v	5	Williams	22701	4636 P-L
4644 P-L	14.5	0.15	19990810	90.28185	286.70645	187.00097	4.97672	0.0033835	2.7438301	19	2	1960-1999	0.67	M-v	6	Williams	34565	4644 P-L
4648 P-L	15.2	0.15	19990810	184.51108	97.58486	186.79252	0.94874	0.1762149	2.4149155	35	3	1960-1998	0.63	M-v	4	Williams	34060	4648 P-L
4649 P-L	13.6	0.15	19990810	86.26340	256.48870	183.74242	10.84076	0.0266682	3.0099430	39	3	1960-1999	0.69	M-v	3	Williams	34616	4649 P-L

4652 P-L	12.1	0.15	19990810	212.13518	123.07378	349.51382	6.67796	0.1298809	4.0045783	27	5	1960-1999	0.61	M-v	1	Williams	35479	4652 P-L
4654 P-L	15.7	0.15	19990810	264.76971	343.99719	310.36154	1.33865	0.2494570	2.5385696	23	3	1960-1999	0.51	M-v	4	Williams	34060	4654 P-L
4659 P-L	14.5	0.15	19990810	61.68701	210.84131	183.22521	9.42213	0.1413639	3.0671455	26	3	1960-1998	0.62	M-v	3	Williams	34338	4659 P-L
4661 P-L	14.2	0.15	19990810	270.39045	16.69949	54.33964	2.70871	0.0419202	2.8845081	49	5	1960-1999	0.73	M-v	1	Williams	30474	4661 P-L
4664 P-L	13.8	0.15	19990810	92.83154	343.57240	11.77776	9.46529	0.1742489	2.8101628	41	3	1960-1999	0.63	M-v	4	Williams	33784	4664 P-L
4695 P-L	15.2	0.15	19990810	144.50174	182.25004	3.85085	6.28525	0.0401493	2.3324739	64	4	1960-1999	0.65	M-v	2	Williams	32343	4695 P-L
4730 P-L	15.2	0.15	19990810	17.09194	290.46479	26.41158	4.76124	0.0846955	2.6640842	34	4	1960-1999	0.74	M-v	1	Williams	32091	4730 P-L
4764 P-L	14.2	0.15	19990810	144.85725	44.99631	152.21345	2.24528	0.0324709	2.8830641	41	4	1960-1999	0.65	M-v	2	Williams	29668	4764 P-L
4770 P-L	14.2	0.15	19990810	141.63784	252.49837	17.85135	9.40657	0.0950478	3.0851012	14	2	1960-1998	0.69	M-v	5	Williams	33325	4770 P-L
4780 P-L	13.7	0.15	19990810	220.28246	305.92131	185.51835	5.30692	0.1305724	3.1606875	53	3	1960-1999	0.59	M-v	4	Williams	30474	4780 P-L
4800 P-L	15.7	0.15	19990810	197.07568	155.97522	155.69686	2.44960	0.2118077	2.4010000	16	2	1960-1997	0.58	M-v	4	Williams	30681	4800 P-L
4809 P-L	16.9	0.15	19990810	274.91027	6.23417	42.49066	3.18248	0.1636947	2.3400997	16	2	1960-1996	0.47	M-v	4	Williams	34265	4809 P-L
4812 P-L	15.2	0.15	19990810	51.41367	349.83032	59.85739	0.85826	0.2124567	3.0759121	38	3	1960-1999	0.64	M-v	2	Williams	34338	4812 P-L
4861 P-L	15.9	0.15	19990810	264.28537	268.97761	181.05372	22.17201	0.1293164	1.9821830	47	3	1960-1999	0.62	M-v	2	Williams	34565	4861 P-L
4905 P-L	15.9	0.15	19990810	5.61469	123.07411	353.34108	2.13677	0.1450520	2.4277985	26	3	1960-1998	0.46	M-v	5	Williams	34266	4905 P-L
5016 P-L	15.6	0.15	19990810	115.82480	205.33594	14.50517	4.92787	0.1077399	2.1993670	82	5	1960-1999	0.84	M-v	2	Williams	35743	5016 P-L
5552 P-L	15.4	0.15	19990810	77.75275	354.25949	23.55967	7.96476	0.1968606	2.6053323	15	2	1960-1998	0.66	M-v	5	Williams	33325	5552 P-L
5578 P-L	15.0	0.15	19990810	41.67638	75.61829	191.04893	8.22839	0.2066734	2.6709626	31	3	1960-1999	0.78	M-v	3	Williams	32729	5578 P-L
6035 P-L	14.4	0.15	19990810	45.73701	300.02016	359.57081	11.30739	0.1909710	2.6525035	36	6	1960-1999	0.90	M-v	1	Williams	32091	6035 P-L
6070 P-L	14.6	0.15	19990810	67.49299	90.94964	328.65810	2.25468	0.0967992	2.7936775	18	2	1960-1998	0.55	M-v	6	Williams	33535	6070 P-L
6106 P-L	15.1	0.15	19990810	53.26637	55.06370	324.47691	2.51635	0.0810312	2.6149573	36	4	1960-1998	0.77	M-v	2	Williams	32785	6106 P-L
6110 P-L	16.2	0.15	19990810	59.33090	47.89355	349.65932	5.08720	0.1618640	2.2867756	27	2	1960-1998	0.60	M-v	5	Williams	32730	6110 P-L
6184 P-L	15.8	0.15	19990810	89.92153	174.00681	205.02126	5.88284	0.1088232	2.2796862	21	3	1960-1998	0.57	M-v	3	Williams	33383	6184 P-L
6202 P-L	15.0	0.15	19990810	39.74565	140.76878	235.31561	4.44747	0.1965117	3.0894953	19	2	1960-1998	0.84	M-v	5	Williams	33055	6202 P-L
6232 P-L	14.7	0.15	19990810	14.45042	229.77945	227.70760	4.80395	0.1675042	3.0693307	24	4	1960-1999	0.40	M-v	1	Williams	35049	6232 P-L
6276 P-L	15.6	0.15	19990810	22.58359	202.93324	205.50501	1.00781	0.2138036	3.0940214	17	2	1960-1998	0.44	M-v	5	Williams	33055	6276 P-L
6309 P-L	15.1	0.15	19990810	219.67086	101.86095	192.45632	6.97444	0.1551515	2.5650458	23	4	1960-1996	0.75	M-v	2	Williams	32730	6309 P-L
6319 P-L	14.9	0.15	19990810	121.35651	114.03112	263.20471	2.32827	0.1070311	2.1455833	34	2	1960-1998	0.60	M-v	4	Williams	33535	6319 P-L
6328 P-L	14.5	0.15	19990810	282.07296	180.89419	9.29363	3.04259	0.0908626	2.5912695	49	4	1960-1998	0.69	M-v	2	Williams	33383	6328 P-L
6335 P-L	13.6	0.15	19990810	146.92602	60.34561	180.06872	0.90762	0.1320633	3.1157742	37	3	1960-1998	0.80	M-v	4	Williams	33129	6335 P-L
6529 P-L	14.4	0.15	19990810	51.74921	203.20069	126.50262	2.23429	0.1562591	3.1075950	18	2	1960-1998	0.51	M-v	4	Williams	32730	6529 P-L
6538 P-L	13.8	0.15	19990810	26.17395	321.44883	118.85940	1.83889	0.1902536	3.0769598	49	3	1960-1999	0.79	M-v	3	Williams	34338	6538 P-L
6539 P-L	14.1	0.15	19990810	35.04128	119.03748	170.47753	7.77822	0.0669479	2.6677351	60	3	1960-1999	0.49	M-v	3	Williams	35743	6539 P-L
6577 P-L	13.8	0.15	19990810	152.14566	179.60628	126.15471	1.86518	0.1507171	2.7952322	24	3	1960-1998	0.66	M-v	5	Williams	33589	6577 P-L
6602 P-L	15.9	0.15	19990810	338.41798	2.61258	11.69160	6.56704	0.1374015	2.1931562	43	3	1960-1999	0.75	M-v	4	Williams	22701	6602 P-L
6606 P-L	15.0	0.15	19990810	209.50619	105.08124	29.04295	6.64542	0.0431111	2.3281474	45	3	1960-1999	0.70	M-v	4	Williams	32343	6606 P-L
6623 P-L	15.2	0.15	19990810	103.25991	58.87217	10.67097	6.16194	0.0734464	2.4000246	21	3	1960-1999	0.83	M-v	5	Williams	33996	6623 P-L
6625 P-L	14.7	0.15	19990810	169.24923	148.76653	135.98291	2.63325	0.1206223	2.4229183	19	4	1960-1998	0.73	M-v	2	Williams	33129	6625 P-L
6636 P-L	13.8	0.15	19990810	176.59943	47.35173	116.40274	3.76494	0.0175877	2.8810746	67	5	1960-1999	0.54	M-v	1	Williams	32343	6636 P-L
6637 P-L	15.5	0.15	19990810	340.73146	321.90559	157.73679	4.79875	0.1117274	2.2858406	36	4	1960-1998	0.60	M-v	2	Williams	33129	6637 P-L
6653 P-L	14.9	0.15	19990810	274.52596	285.43368	131.86687	3.60431	0.0879463	2.6717964	27	6	1960-1999	0.75	M-v	1	Williams	35050	6653 P-L
6680 P-L	15.3	0.15	19990810	237.25757	256.90375	183.86588	6.26525	0.0635196	2.3386658	30	2	1960-1998	0.86	M-v	5	Williams	32730	6680 P-L
6691 P-L	15.4	0.15	19990810	30.86914	144.27420	15.25119	6.23189	0.0957299	2.3899725	33	3	1960-1999	0.76	M-v	4	Williams	34338	6691 P-L
6703 P-L	15.2	0.15	19990810	235.62035	307.06895	168.37779	4.09465	0.0226777	2.6583418	31	5	1960-1999	0.57	M-v	1	Williams	29141	6703 P-L
6704 P-L	15.5	0.15	19990810	258.71427	151.97453	132.24504	1.25981	0.2030039	2.3830636	22	3	1960-1999	0.53	M-v	3	Williams	33736	6704 P-L
6705 P-L	15.7	0.15	19990810	205.56740	76.39828	22.89170	7.21211	0.1664410	2.3480925	31	2	1960-1998	0.68	M-v	4	Williams	34617	6705 P-L
6763 P-L	16.3	0.15	19990810	68.77801	199.91681	179.87443	6.95683	0.1892144	2.2883101	18	2	1960-1998	0.70	M-v	4	Williams	32731	6763 P-L
6772 P-L	15.7	0.15	19990810	193.77618	354.38076	168.21155	2.40613	0.1208696	2.4789158	19	3	1960-1999	0.55	M-v	6	Williams	30095	6772 P-L
6774 P-L	15.7	0.15	19990810	222.87961	281.86436	13.21303	13.50833	0.1568897	2.5618351	15	2	1960-1993	0.35	M-v	4	Williams	32731	6774 P-L
6791 P-L	14.4	0.15	19990810	120.65470	197.09854	17.84192	13.05809	0.1495498	2.6590645	20	3	1960-1999	0.62	M-v	5	Williams	26185	6791 P-L
6799 P-L	16.5	0.15	19990810	179.76919	296.20283	123.36950	2.25037	0.1878495	2.5376740	19	3	1960-1998	0.54	M-v	4	Williams	34267	6799 P-L
6818 P-L	14.6	0.15	19990810	98.51180	234.09390	70.33054	3.50680	0.1961680	2.6204917	37	2	1960-1998	0.78	M-v	4	Williams	33129	6818 P-L
7066 P-L	12.3	0.15	19990810	167.22904	109.74590	205.20051	11.73623	0.1602670	3.0274614	22	4	1960-1998	0.67	M-v	3	Williams	33589	7066 P-L

7569 P-L	15.2	0.15	19990810	277.76379	32.86466	38.98694	4.17352	0.1093575	2.3292567	45	3	1960-1999	0.50	M-v	5	Williams	35743	7569 P-L
7590 P-L	16.3	0.15	19990810	326.27087	11.55224	35.17828	6.96672	0.2914110	2.6559584	23	3	1960-1999	0.93	M-v	4	Williams	22701	7590 P-L
7606 P-L	16.8	0.15	19990810	7.22588	249.44462	83.43219	3.04382	0.2615259	2.3235318	9	3	1960-1999	0.76	M-v	5	Williams	16242	7606 P-L
9056 P-L	16.0	0.15	19990810	11.09366	320.39564	353.13861	5.86558	0.1543664	2.1971500	40	3	1960-1999	0.59	M-v	4	Williams	31409	9056 P-L
9093 P-L	15.7	0.15	19990810	102.36577	353.02885	343.00209	2.13416	0.2009885	2.4328330	39	2	1960-1998	0.74	M-v	4	Williams	33055	9093 P-L
9099 P-L	13.7	0.15	19990810	28.90720	124.42202	185.08634	12.73292	0.1090053	3.1430869	45	4	1960-1999	0.83	M-v	1	Williams	16036	9099 P-L
9518 P-L	14.9	0.15	19990810	151.42827	258.55988	12.73290	2.42554	0.1668559	2.4329818	42	3	1960-1998	0.64	M-v	3	Williams	33129	9518 P-L
9547 P-L	14.5	0.15	19990810	330.53888	164.98334	189.91633	7.56057	0.2124748	2.4866932	33	3	1960-1999	0.65	M-v	3	Williams	35743	9547 P-L
9548 P-L	15.7	0.15	19990810	139.99444	157.92651	161.65870	4.33240	0.2386941	3.0338174	16	3	1960-1997	0.66	M-v	4	Williams	34268	9548 P-L
9606 P-L	14.8	0.15	19990810	38.47153	311.84486	60.75997	2.72510	0.1982806	3.0921761	21	3	1960-1998	0.81	M-v	3	Williams	32731	9606 P-L
9609 P-L	15.5	0.15	19990810	67.66922	122.62930	187.91260	3.36124	0.1840001	2.1802800	26	2	1960-1998	0.77	M-v	5	Williams	34617	9609 P-L
1051 T-1	12.6	0.15	19990810	211.19194	141.70700	357.56130	10.52836	0.0552664	2.9939865	39	6	1963-1999	0.71	M-v	2	Williams	35743	1051 T-1
1056 T-1	14.6	0.15	19990810	199.24527	217.34818	346.26105	11.57136	0.1337298	2.6466490	25	4	1971-1998	0.82	M-v	3	Williams	34617	1056 T-1
1064 T-1	16.2	0.15	19990810	235.24963	217.32704	354.29370	4.41517	0.0853968	2.1951207	26	3	1971-1998	0.58	M-v	4	Williams	32786	1064 T-1
1068 T-1	14.1	0.15	19990810	117.84548	131.98885	210.56231	9.83766	0.2842979	2.6076775	10	3	1971-1997	0.73	M-v	4	Williams	33997	1068 T-1
1101 T-1	14.3	0.15	19990810	197.01291	232.48879	278.78390	3.58356	0.0448611	2.6811861	18	3	1971-1999	0.74	M-v	4	Williams	23533	1101 T-1
1149 T-1	15.2	0.15	19990810	86.18160	18.53006	187.93202	5.02307	0.0991671	2.7278695	24	2	1971-1998	0.68	M-v	5	Williams	34338	1149 T-1
1182 T-1	13.3	0.15	19990810	319.11262	208.26422	188.63449	12.98389	0.1637364	2.6675166	69	3	1971-1999	0.62	M-v	3	Williams	35124	1182 T-1
1211 T-1	16.1	0.15	19990810	165.38809	18.86048	269.86294	1.71526	0.1622233	2.3847951	20	4	1971-1998	0.47	M-v	2	Williams	34268	1211 T-1
1220 T-1	14.3	0.15	19990810	208.74402	219.18105	289.62949	1.45877	0.1435061	2.4281899	39	6	1971-1999	0.78	M-v	2	Williams	28892	1220 T-1
1222 T-1	14.6	0.15	19990810	19.27450	354.82967	347.17974	11.28995	0.2339107	2.4389716	25	4	1971-1999	0.77	M-v	3	Williams	29668	1222 T-1
1238 T-1	14.8	0.15	19990810	170.79353	341.74883	340.08868	1.58611	0.0696015	2.8671439	33	4	1971-1999	0.70	M-v	2	Williams	33998	1238 T-1
1285 T-1	15.7	0.15	19990810	265.01701	173.79877	277.55154	1.43339	0.1061536	2.4260967	55	3	1971-1999	0.59	M-v	4	Williams	29321	1285 T-1
1290 T-1	15.2	0.15	19990810	298.55501	282.19340	195.11725	6.18445	0.0670034	2.3949231	32	3	1971-1998	0.95	M-v	4	Williams	32786	1290 T-1
2024 T-1	15.1	0.15	19990810	327.25935	205.27980	182.09467	12.91383	0.1223142	2.6706299	23	3	1971-1999	0.53	M-v	4	Williams	33998	2024 T-1
2117 T-1	15.5	0.15	19990810	84.50231	216.70190	19.24646	3.39452	0.1214461	2.2595439	30	3	1971-1999	0.72	M-v	6	Williams	34566	2117 T-1
2127 T-1	14.9	0.15	19990810	212.96035	256.51266	106.64036	1.44759	0.0904537	2.1354769	52	6	1971-1999	0.69	M-v	2	Williams	34617	2127 T-1
2153 T-1	13.9	0.15	19990810	78.49532	210.19121	130.79716	3.03995	0.0830966	2.9305660	45	2	1971-1998	0.76	M-v	4	Williams	33056	2153 T-1
2208 T-1	14.8	0.15	19990810	91.63673	232.58840	14.73434	8.47199	0.1888092	2.4549137	74	3	1971-1999	0.73	M-v	3	Williams	32343	2208 T-1
2287 T-1	14.2	0.15	19990810	146.68440	187.89880	163.20779	6.18277	0.1112080	2.3525489	22	2	1971-1998	0.87	M-v	4	Williams	33736	2287 T-1
2307 T-1	14.7	0.15	19990810	345.28658	102.73722	18.60726	6.56391	0.1056700	2.5873457	35	3	1971-1998	0.95	M-v	3	Williams	33326	2307 T-1
2312 T-1	14.2	0.15	19990810	77.58946	10.86335	36.14007	2.56288	0.0505472	2.8661518	35	5	1949-1998	1.03	M-v	1	Williams	33589	2312 T-1
3074 T-1	14.8	0.15	19990810	357.24982	159.02701	359.67782	5.34940	0.1323864	3.2020537	29	4	1971-1999	0.85	M-v	4	Williams	33784	3074 T-1
3119 T-1	15.5	0.15	19990810	255.03784	260.88689	251.87909	1.55445	0.1075667	2.4018786	32	4	1971-1998	0.69	M-v	2	Williams	34617	3119 T-1
3163 T-1	12.0	0.15	19990810	332.92469	345.84631	12.44927	3.20548	0.1275722	5.2586679	20	3	1971-1999	0.47	M-v	3	Williams	19879	3163 T-1
3219 T-1	15.4	0.15	19990810	80.92860	272.24661	331.25561	3.63908	0.1277358	2.2609217	50	4	1971-1999	0.68	M-v	1	Williams	31825	3219 T-1
3222 T-1	14.9	0.15	19990810	306.30914	82.44455	231.14617	1.59927	0.2086097	2.1282195	38	4	1971-1999	0.77	M-v	3	Williams	34617	3222 T-1
3243 T-1	15.3	0.15	19990810	355.09776	347.90783	357.79406	3.92078	0.1423078	2.2504422	60	4	1971-1999	0.84	M-v	3	Williams	35743	3243 T-1
3290 T-1	14.8	0.15	19990810	187.80669	272.36938	353.86530	6.24471	0.0905568	2.3825640	38	3	1971-1998	0.81	M-v	3	Williams	33384	3290 T-1
3314 T-1	14.4	0.15	19990810	169.26371	55.23458	194.93937	12.70428	0.1466054	2.6426905	45	2	1971-1998	0.78	M-v	4	Williams	33129	3314 T-1
3329 T-1	13.6	0.15	19990810	30.09746	119.20037	195.91138	9.97593	0.0520379	3.0171389	36	4	1971-1999	0.83	M-v	1	Williams	32786	3329 T-1
4105 T-1	13.4	0.15	19990810	258.17363	134.72190	147.72190	1.29586	0.1605562	3.2165415	25	5	1971-1999	0.73	M-v	1	Williams	34269	4105 T-1
4109 T-1	12.9	0.15	19990810	281.70091	219.23440	79.76985	2.13592	0.1831398	3.1729529	28	4	1971-1999	0.89	M-v	1	Williams	34617	4109 T-1
4193 T-1	14.4	0.15	19990810	325.62247	301.73778	116.03484	3.09890	0.2059506	2.4053931	25	4	1971-1999	0.83	M-v	2	Williams	22432	4193 T-1
4265 T-1	15.4	0.15	19990810	219.11060	8.09411	99.84772	2.50620	0.1055975	2.2466316	74	3	1971-1999	0.76	M-v	2	Williams	35480	4265 T-1
4273 T-1	15.0	0.15	19990810	315.19516	312.47741	135.64457	5.69293	0.1142584	2.9399433	21	3	1971-1998	0.74	M-v	4	Williams	34269	4273 T-1
4290 T-1	12.1	0.15	19990810	156.64264	222.09853	24.00062	12.49748	0.1272446	3.3652825	53	3	1971-1998	0.71	M-v	3	Williams	34338	4290 T-1
4841 T-1	13.9	0.15	19990810	108.40067	295.21443	20.27346	13.27683	0.1786207	2.6427004	38	2	1971-1998	0.67	M-v	4	Williams	34617	4841 T-1
1005 T-2	13.7	0.15	19990810	308.99662	171.05388	207.63688	2.19357	0.0968728	3.0277315	38	3	1973-1999	0.74	M-v	5	Williams	35743	1005 T-2
1038 T-2	17.2	0.15	19990810	319.57746	183.86509	210.94903	1.58767	0.1441425	2.1946626	21	3	1960-1999	0.91	M-v	5	Williams	16242	1038 T-2
1059 T-2	14.4	0.15	19990810	66.52280	52.16042	209.43017	3.86001	0.0427514	2.4089732	77	3	1973-1999	0.69	M-v	2	Williams	32092	1059 T-2
1070 T-2	14.8	0.15	19990810	46.92557	81.67710	187.65732	5.82537	0.0939105	2.4125698	53	4	1973-1999	0.83	M-v	1	Williams	32092	1070 T-2
1101 T-2	13.5	0.15	19990810	294.52716	91.16309	334.30184	1.26200	0.0668695	3.0008835	40	5	1973-1999	0.83	M-v	1	Williams	35743	1101 T-2

1102 T-2	14.7	0.15	19990810	115.50509	79.17539	198.87782	1.59163	0.0753827	2.9506060	34	3	1973-1998	0.96	M-v	4	Williams	32786	1102 T-2
1104 T-2	14.9	0.15	19990810	121.31522	60.72136	13.33535	3.27824	0.1213246	2.2831174	50	3	1973-1999	0.86	M-v	2	Williams	35125	1104 T-2
1107 T-2	14.3	0.15	19990810	280.62606	33.92714	276.91108	2.21116	0.1830354	2.7493416	33	4	1973-1999	0.90	M-v	3	Williams	34617	1107 T-2
1108 T-2	14.7	0.15	19990810	34.54618	313.39124	353.24364	6.35836	0.1308629	2.3966805	69	3	1973-1999	0.86	M-v	4	Williams	32092	1108 T-2
1131 T-2	16.6	0.15	19990810	100.16952	306.67047	311.34440	1.92924	0.1745466	2.3828415	26	3	1973-1998	0.72	M-v	4	Williams	34270	1131 T-2
1142 T-2	14.5	0.15	19990810	144.04364	271.87182	274.73545	1.34094	0.1509288	2.4110421	66	4	1973-1999	0.74	M-v	2	Williams	32343	1142 T-2
1152 T-2	14.5	0.15	19990810	22.74988	275.59302	13.48006	4.88710	0.1949056	2.4092615	48	4	1973-1999	0.94	M-v	2	Williams	31825	1152 T-2
1158 T-2	15.8	0.15	19990810	312.20694	188.62457	224.14702	1.68424	0.2053231	2.3987162	42	5	1973-1999	0.69	M-v	2	Williams	32343	1158 T-2
1175 T-2	15.4	0.15	19990810	109.20699	337.03582	226.36984	0.80765	0.1353956	2.4192394	55	4	1973-1999	0.78	M-v	2	Williams	35743	1175 T-2
1236 T-2	15.0	0.15	19990810	331.66798	17.71841	347.34208	1.79834	0.1406359	2.4072927	58	4	1973-1999	0.92	M-v	3	Williams	32731	1236 T-2
1242 T-2	14.2	0.15	19990810	186.14810	33.81657	184.14159	13.87841	0.1953096	2.6057675	39	3	1973-1998	0.88	M-v	5	Williams	33384	1242 T-2
1260 T-2	14.6	0.15	19990810	248.18227	303.80294	179.70119	7.86921	0.1176864	2.6549015	32	4	1960-1999	0.99	M-v	3	Williams	30474	1260 T-2
1262 T-2	15.9	0.15	19990810	87.54156	229.68311	7.75920	5.07223	0.1586208	2.1988336	29	3	1960-1999	0.78	M-v	5	Williams	15078	1262 T-2
1265 T-2	14.9	0.15	19990810	16.71329	285.76192	206.11500	1.41509	0.1268434	2.5453560	26	3	1973-1998	0.77	M-v	5	Williams	33589	1265 T-2
1277 T-2	14.3	0.15	19990810	244.92092	204.17379	162.40061	1.56684	0.1944531	3.1223621	47	5	1973-1999	0.67	M-v	1	Williams	34617	1277 T-2
1282 T-2	13.3	0.15	19990810	131.60224	124.10247	251.53444	1.15286	0.0762956	2.8447655	56	3	1973-1999	0.86	M-v	4	Williams	34060	1282 T-2
1320 T-2	14.7	0.15	19990810	85.90592	317.00565	358.90974	9.80471	0.0984866	2.9420181	33	3	1973-1998	0.96	M-v	3	Williams	33589	1320 T-2
1343 T-2	15.1	0.15	19990810	269.39329	184.69920	357.00085	2.99405	0.0999275	2.3378764	32	2	1973-1998	0.96	M-v	6	Williams	33384	1343 T-2
1348 T-2	14.5	0.15	19990810	308.24075	297.27020	189.84491	4.51920	0.1748623	2.3592663	26	2	1973-1997	1.02	M-v	6	Williams	32732	1348 T-2
1350 T-2	14.7	0.15	19990810	26.33096	67.98242	217.71799	1.58281	0.1386422	3.0352127	35	5	1973-1999	0.90	M-v	1	Williams	32732	1350 T-2
2028 T-2	14.9	0.15	19990810	321.24308	223.76833	1.06756	6.82249	0.0702039	2.8025569	31	4	1973-1999	0.81	M-v	3	Williams	34271	2028 T-2
2056 T-2	15.3	0.15	19990810	213.69954	6.02563	351.11357	4.66011	0.0749497	2.2686369	43	4	1973-1999	0.84	M-v	2	Williams	34617	2056 T-2
2090 T-2	16.9	0.15	19990810	196.21321	357.58640	357.09434	4.36086	0.1639493	2.2785653	33	3	1973-1997	0.70	M-v	3	Williams	30776	2090 T-2
2148 T-2	14.4	0.15	19990810	65.11606	193.78238	188.62243	11.81945	0.1918851	2.5875547	46	2	1973-1999	0.79	M-v	3	Williams	34618	2148 T-2
2162 T-2	15.8	0.15	19990810	106.05318	85.17615	193.12312	4.45175	0.0786817	2.6297764	24	3	1973-1998	0.88	M-v	5	Williams	32733	2162 T-2
2176 T-2	14.3	0.15	19990810	328.99224	338.44089	2.86489	13.84589	0.1148387	2.6914849	41	3	1973-1998	0.98	M-v	4	Williams	34271	2176 T-2
2184 T-2	16.3	0.15	19990810	72.96073	283.93343	31.88897	2.59884	0.2183228	2.3648814	36	2	1973-1995	1.12	M-v	5	Williams	32733	2184 T-2
2197 T-2	15.1	0.15	19990810	149.41348	252.94428	17.34620	4.07181	0.2662315	2.5820139	22	2	1973-1998	0.99	M-v	5	Williams	33058	2197 T-2
2204 T-2	14.3	0.15	19990810	96.19362	24.10006	38.73440	1.24616	0.1442286	2.8481000	43	3	1973-1999	0.82	M-v	2	Williams	34338	2204 T-2
2245 T-2	15.5	0.15	19990810	88.48896	93.09054	186.29419	2.44661	0.1746617	2.3788187	27	2	1973-1998	0.82	M-v	5	Williams	33130	2245 T-2
2304 T-2	14.5	0.15	19990810	277.48909	25.42185	43.64663	2.69732	0.0873146	3.0224763	35	4	1973-1999	0.79	M-v	3	Williams	29669	2304 T-2
2330 T-2	14.9	0.15	19990810	60.44564	112.19070	4.53058	4.50870	0.0707167	2.5250484	27	3	1973-1999	0.96	M-v	5	Williams	34060	2330 T-2
2638 T-2	11.2	0.15	19990810	325.37294	41.11214	52.69211	2.33094	0.0306425	5.1952259	30	2	1973-1999	1.11	M-v	4	Williams	34272	2638 T-2
3013 T-2	13.9	0.15	19990810	329.12875	259.72815	161.83527	4.38595	0.0701393	2.6323231	46	4	1973-1999	0.97	M-v	2	Williams	32786	3013 T-2
3024 T-2	15.2	0.15	19990810	256.20779	83.00514	7.98774	22.11282	0.0312800	2.6623035	24	5	1960-1999	0.71	M-v	1	Williams	29142	3024 T-2
3044 T-2	13.3	0.15	19990810	59.06544	341.19530	123.51856	2.74165	0.0931429	3.2387623	59	3	1973-1999	0.94	M-v	4	Williams	34339	3044 T-2
3071 T-2	14.3	0.15	19990810	208.80985	240.75818	47.42990	5.27136	0.0818619	2.5360682	21	2	1973-1998	0.77	M-v	6	Williams	33535	3071 T-2
3072 T-2	13.4	0.15	19990810	179.58683	240.13089	83.72586	3.20002	0.0693677	2.8378295	43	6	1973-1999	0.86	M-v	2	Williams	35743	3072 T-2
3152 T-2	15.6	0.15	19990810	75.60229	147.51267	23.47675	6.35981	0.0655585	2.2480331	25	3	1973-1999	1.00	M-v	5	Williams	35053	3152 T-2
3161 T-2	15.1	0.15	19990810	106.73346	269.41624	75.01713	3.43703	0.1917312	2.5725422	45	4	1973-1998	0.70	M-v	2	Williams	34339	3161 T-2
3162 T-2	13.6	0.15	19990810	85.79222	215.25777	169.08481	13.84238	0.1827740	2.5688582	32	3	1973-1999	0.74	M-v	3	Williams	35673	3162 T-2
3176 T-2	15.1	0.15	19990810	183.11391	103.89596	25.92654	4.16539	0.0588105	2.4251251	65	5	1973-1999	0.79	M-v	2	Williams	35480	3176 T-2
3200 T-2	14.6	0.15	19990810	71.30002	241.55480	109.56433	3.40566	0.0955326	2.9220138	42	2	1973-1998	0.95	M-v	5	Williams	33130	3200 T-2
3211 T-2	13.5	0.15	19990810	352.81934	131.38610	72.73996	2.67173	0.1536541	3.1823197	45	5	1973-1999	0.95	M-v	2	Williams	34618	3211 T-2
3222 T-2	15.8	0.15	19990810	119.37110	319.80432	30.90891	3.33915	0.1433996	2.3226715	48	4	1973-1998	0.74	M-v	2	Williams	34618	3222 T-2
3288 T-2	14.1	0.15	19990810	342.51332	159.91499	68.58418	2.06677	0.1410674	3.1613610	51	4	1973-1999	0.82	M-v	1	Williams	34618	3288 T-2
3289 T-2	13.2	0.15	19990810	260.03966	299.53284	169.29549	9.77721	0.0217194	2.9923581	46	8	1973-1999	0.92	M-v	1	Williams	32344	3289 T-2
3305 T-2	15.2	0.15	19990810	83.08582	201.70891	48.77960	3.21786	0.1417097	2.4008422	69	3	1973-1999	0.74	M-v	3	Williams	35743	3305 T-2
3353 T-2	13.9	0.15	19990810	239.62515	288.62680	26.48211	5.21577	0.1985710	3.1787118	28	4	1973-1996	0.65	M-v	2	Williams	30286	3353 T-2
3372 T-2	14.1	0.15	19990810	271.78153	328.25717	144.48363	6.57226	0.1809321	2.6489314	30	6	1973-1999	0.95	M-v	1	Williams	33536	3372 T-2
4081 T-2	15.4	0.15	19990810	128.79513	284.76372	31.76015	6.39592	0.1994932	2.5718651	32	3	1973-1998	0.81	M-v	3	Williams	33384	4081 T-2
4089 T-2	16.5	0.15	19990810	121.31222	246.47537	136.15517	3.65048	0.2139819	2.5458800	22	3	1973-1999	0.84	M-v	4	Williams	34272	4089 T-2
4092 T-2	14.9	0.15	19990810	67.75510	348.71869	20.65526	8.93375	0.2919605	2.9104412	62	3	1973-1998	0.66	M-v	3	Williams	34339	4092 T-2

4120 T-2	15.5	0.15	19990810	203.96096	257.95368	134.84914	3.93517	0.1511071	2.2581770	26	2	1973-1997	1.01	M-v	5	Williams	31132	4120 T-2
4128 T-2	16.2	0.15	19990810	289.32700	221.36484	127.73306	3.71996	0.1930513	2.4425583	26	3	1973-1998	0.83	M-v	4	Williams	31269	4128 T-2
4194 T-2	14.3	0.15	19990810	273.42508	123.48517	146.21097	3.78943	0.1245594	2.7966351	26	2	1973-1996	1.05	M-v	5	Williams	30467	4194 T-2
4209 T-2	13.9	0.15	19990810	55.71592	178.90094	43.30858	5.85713	0.1136010	3.0831050	26	2	1973-1998	0.83	M-v	5	Williams	32734	4209 T-2
4215 T-2	15.5	0.15	19990810	72.47798	349.28215	71.28646	2.32390	0.1283254	2.5591357	25	2	1973-1998	0.92	M-v	6	Williams	33536	4215 T-2
4223 T-2	15.2	0.15	19990810	122.53026	13.31927	171.85303	11.32034	0.1255105	2.4284296	48	3	1973-1999	0.78	M-v	3	Williams	32093	4223 T-2
4231 T-2	15.0	0.15	19990810	87.53848	323.55434	30.03170	7.37785	0.1341771	2.3411876	30	3	1973-1998	0.77	M-v	3	Williams	34618	4231 T-2
4249 T-2	16.1	0.15	19990810	232.36855	314.91858	20.79432	8.53549	0.1318030	2.2670585	32	2	1973-1997	0.78	M-v	5	Williams	34273	4249 T-2
4261 T-2	14.5	0.15	19990810	277.67237	14.44590	49.74696	4.91718	0.0560262	2.6731967	28	3	1973-1999	0.74	M-v	3	Williams	24120	4261 T-2
4297 T-2	12.9	0.15	19990810	292.49693	57.47550	76.09017	3.43091	0.0376874	3.3822651	39	3	1973-1998	0.80	M-v	4	Williams	34061	4297 T-2
4306 T-2	14.4	0.15	19990810	34.63562	296.89045	18.48863	9.60330	0.2172851	2.3898209	71	4	1973-1999	0.81	M-v	2	Williams	32093	4306 T-2
5049 T-2	15.3	0.15	19990810	296.56099	282.98167	280.98142	8.25549	0.1045042	2.3060942	36	4	1973-1998	0.81	M-v	3	Williams	33589	5049 T-2
5124 T-2	14.0	0.15	19990810	126.35094	323.22478	236.76605	11.90905	0.1188591	2.6797713	59	4	1973-1999	0.78	M-v	3	Williams	35743	5124 T-2
5141 T-2	12.5	0.15	19990810	15.61544	22.02937	301.46292	9.50365	0.0946237	3.0152423	44	8	1955-1999	0.84	M-v	2	Williams	28620	5141 T-2
5161 T-2	13.7	0.15	19990810	280.73291	87.51164	338.42531	12.28107	0.1705045	2.6784124	38	3	1973-1999	0.61	M-v	2	Williams	16038	5161 T-2
5205 T-2	14.9	0.15	19990810	269.49256	216.78163	294.24201	5.79610	0.0343313	2.3595586	23	3	1973-1998	1.04	M-v	4	Williams	34569	5205 T-2
1014 T-3	16.1	0.15	19990810	69.90099	7.98658	346.97091	11.58865	0.1900291	2.6176736	37	3	1977-1998	0.82	M-v	4	Williams	33384	1014 T-3
1036 T-3	13.8	0.15	19990810	333.48185	124.18166	334.05130	9.11461	0.1943400	3.0658420	30	3	1977-1998	0.87	M-v	4	Williams	32787	1036 T-3
1061 T-3	14.3	0.15	19990810	44.04239	172.48814	247.33131	9.69290	0.0587520	2.9888350	18	2	1977-1999	0.84	M-v	4	Williams	34274	1061 T-3
1068 T-3	13.3	0.15	19990810	268.02177	114.90837	2.76820	21.80391	0.1919164	3.1356691	19	3	1977-1999	0.72	M-v	3	Williams	27928	1068 T-3
1071 T-3	14.2	0.15	19990810	12.98421	0.16907	324.90274	5.94879	0.1478649	2.3856132	57	4	1977-1999	0.60	M-v	2	Williams	35743	1071 T-3
1083 T-3	15.6	0.15	19990810	114.21127	86.43311	319.33892	5.09725	0.1735917	2.5480071	28	4	1977-1999	0.81	M-v	2	Williams	34061	1083 T-3
1090 T-3	16.1	0.15	19990810	103.32668	330.55222	355.67780	13.08082	0.1658661	2.6080449	36	2	1977-1998	0.82	M-v	4	Williams	33328	1090 T-3
1107 T-3	13.0	0.15	19990810	217.51266	66.62025	241.49758	13.00517	0.1519197	2.8865386	41	4	1977-1999	0.87	M-v	3	Williams	34061	1107 T-3
1135 T-3	14.5	0.15	19990810	91.12293	298.68338	320.11685	6.21621	0.0806227	2.3822424	38	5	1958-1999	0.56	M-v	1	Williams	35480	1135 T-3
1157 T-3	13.9	0.15	19990810	80.50351	119.96610	264.37860	8.79224	0.0958304	2.9857187	33	2	1977-1998	0.88	M-v	5	Williams	33536	1157 T-3
1158 T-3	13.2	0.15	19990810	172.92562	327.12888	259.67673	10.01094	0.1064061	3.0689723	28	2	1977-1998	0.86	M-v	5	Williams	33384	1158 T-3
1168 T-3	14.6	0.15	19990810	328.58708	49.73765	355.94272	13.32869	0.1623551	2.6853425	35	3	1977-1999	0.81	M-v	4	Williams	18134	1168 T-3
1177 T-3	12.6	0.15	19990810	216.67723	244.14437	284.69284	7.53673	0.1633298	3.1304023	34	3	1977-1999	0.83	M-v	4	Williams	32787	1177 T-3
1222 T-3	13.5	0.15	19990810	290.40578	72.65407	329.32766	5.94871	0.1556716	3.1748361	26	3	1977-1999	0.86	M-v	3	Williams	35404	1222 T-3
2031 T-3	15.3	0.15	19990810	130.03366	163.10381	321.00747	4.34849	0.0236991	2.2103217	37	4	1977-1999	0.80	M-v	2	Williams	35743	2031 T-3
2035 T-3	11.6	0.15	19990810	359.44170	340.41895	337.78306	6.56782	0.1475237	5.1451208	52	4	1977-1999	0.81	M-v	2	Williams	35480	2035 T-3
2053 T-3	14.5	0.15	19990810	7.88297	61.88102	272.55967	4.03229	0.1531571	3.1310840	26	3	1977-1999	0.79	M-v	4	Williams	22491	2053 T-3
2065 T-3	16.1	0.15	19990810	9.48498	355.82597	329.80282	4.59863	0.0145779	2.1592983	37	3	1977-1999	0.86	M-v	4	Williams	32293	2065 T-3
2140 T-3	11.7	0.15	19990810	344.61737	112.01273	218.45355	16.59264	0.0962860	5.1763698	39	4	1977-1999	0.80	M-v	2	Williams	35743	2140 T-3
2189 T-3	14.9	0.15	19990810	97.66356	121.86642	247.28717	3.07269	0.1989046	2.5835094	38	2	1977-1998	0.85	M-v	5	Williams	34061	2189 T-3
2203 T-3	13.6	0.15	19990810	216.31890	272.50165	215.22372	11.93296	0.1010637	3.1686998	28	3	1960-1999	1.01	M-v	5	Williams	22702	2203 T-3
2239 T-3	14.1	0.15	19990810	232.19895	190.58649	322.99909	5.00468	0.1137444	2.6792859	22	2	1977-1994	0.90	M-v	5	Williams	24405	2239 T-3
2330 T-3	15.4	0.15	19990810	0.72726	53.11072	448.95018	1.44782	0.2112691	2.4051776	36	2	1977-1999	0.70	M-v	4	Williams	35673	2330 T-3
2367 T-3	15.5	0.15	19990810	15.91472	240.71285	254.27705	4.61608	0.1025643	2.2826799	31	3	1977-1999	0.81	M-v	4	Williams	33785	2367 T-3
2382 T-3	14.6	0.15	19990810	87.62823	272.79993	311.27504	2.37097	0.0594129	2.7375956	35	3	1977-1999	0.89	M-v	4	Williams	33061	2382 T-3
2390 T-3	13.6	0.15	19990810	107.51771	224.11010	14.52286	7.61395	0.0690819	2.3876640	79	8	1972-1999	0.71	M-v	1	Williams	32093	2390 T-3
2466 T-3	13.3	0.15	19990810	112.68902	352.84934	3.99916	9.77369	0.0994400	2.9736435	26	2	1977-1998	0.83	M-v	4	Williams	34275	2466 T-3
2676 T-3	15.0	0.15	19990810	170.27513	39.88556	212.13575	3.98969	0.1155792	2.3261822	58	4	1977-1998	0.85	M-v	3	Williams	32787	2676 T-3
3093 T-3	14.7	0.15	19990810	346.81531	156.11645	195.11211	5.88953	0.1398291	2.3914087	54	3	1977-1999	0.85	M-v	4	Williams	32735	3093 T-3
3102 T-3	16.1	0.15	19990810	338.73400	262.67303	111.85042	2.35809	0.1826595	2.3835409	38	3	1977-1999	0.90	M-v	4	Williams	29130	3102 T-3
3105 T-3	14.8	0.15	19990810	349.60689	172.52418	170.90004	2.71295	0.1809442	2.3917277	76	5	1977-1999	0.71	M-v	2	Williams	35743	3105 T-3
3135 T-3	14.1	0.15	19990810	231.52736	262.58104	185.82370	3.42594	0.0605044	2.7385084	54	4	1977-1999	0.77	M-v	1	Williams	32344	3135 T-3
3150 T-3	14.5	0.15	19990810	256.95243	255.86504	126.78854	1.32558	0.0824307	2.7755313	46	5	1977-1998	0.82	M-v	2	Williams	32787	3150 T-3
3164 T-3	13.7	0.15	19990810	347.46633	189.68591	196.17633	12.97734	0.1124946	2.6802766	40	5	1977-1999	0.83	M-v	2	Williams	32344	3164 T-3
3166 T-3	15.3	0.15	19990810	226.41301	305.62780	179.43413	2.45195	0.1593687	2.4002771	46	3	1977-1999	0.61	M-v	4	Williams	22702	3166 T-3
3168 T-3	16.6	0.15	19990810	107.96833	329.57633	28.00712	4.57773	0.2164887	2.2989494	42	3	1977-1998	0.81	M-v	3	Williams	33328	3168 T-3
3192 T-3	15.5	0.15	19990810	56.92046	293.33626	166.12571	3.91454	0.2400034	2.2887177	30	2	1977-1999	0.88	M-v	4	Williams	34275	3192 T-3

3195 T-3	14.9	0.15	19990810	122.89823	79.90326	188.59242	11.18277	0.1673706	2.6426088	25	3	1977-1998	0.99	M-v	5	Williams	33061	3195 T-3
3261 T-3	14.0	0.15	19990810	144.76932	199.83943	71.94360	1.29975	0.0699363	3.0354005	41	3	1977-1998	0.84	M-v	3	Williams	33130	3261 T-3
3283 T-3	15.5	0.15	19990810	263.97973	309.43531	169.63189	3.57773	0.0361124	2.6744547	20	3	1977-1997	0.65	M-v	4	Williams	34275	3283 T-3
3382 T-3	15.1	0.15	19990810	170.33731	75.02441	192.67444	6.21844	0.1203910	2.3133295	38	4	1977-1998	0.74	M-v	5	Williams	33061	3382 T-3
3417 T-3	13.9	0.15	19990810	9.08087	106.44689	24.96576	16.31964	0.1206166	2.5674519	46	3	1977-1998	0.71	M-v	3	Williams	33537	3417 T-3
3465 T-3	13.8	0.15	19990810	80.23462	294.61428	22.62144	11.03808	0.1448571	3.0494054	20	2	1977-1993	0.75	M-v	5	Williams	32294	3465 T-3
3468 T-3	15.0	0.15	19990810	78.22897	193.02982	49.90415	2.03847	0.1413368	2.3991617	73	4	1977-1999	0.70	M-v	1	Williams	32344	3468 T-3
3477 T-3	14.3	0.15	19990810	176.07618	207.58461	44.99789	4.08617	0.0430981	3.0211147	24	2	1977-1998	1.02	M-v	6	Williams	33061	3477 T-3
3479 T-3	15.7	0.15	19990810	79.55413	198.89060	189.55416	4.10393	0.2861348	2.5899446	25	2	1977-1998	0.86	M-v	4	Williams	34276	3479 T-3
3487 T-3	14.1	0.15	19990810	257.42709	66.44756	13.40817	3.63393	0.0877038	2.7207339	34	4	1977-1999	0.82	M-v	2	Williams	26186	3487 T-3
3517 T-3	14.5	0.15	19990810	44.40782	353.10119	34.41617	2.05488	0.1102223	2.6204293	43	3	1977-1998	0.84	M-v	4	Williams	33130	3517 T-3
3535 T-3	14.6	0.15	19990810	291.48151	37.86374	24.48445	2.42364	0.1879788	2.3923510	42	5	1955-1999	0.79	M-v	2	Williams	32093	3535 T-3
4039 T-3	15.4	0.15	19990810	79.49429	148.64167	120.17204	2.63048	0.0989657	2.1460492	45	3	1977-1999	0.68	M-v	3	Williams	32093	4039 T-3
4049 T-3	15.2	0.15	19990810	23.08509	42.93797	59.75283	7.05303	0.2965831	2.6014452	39	2	1977-1999	0.80	M-v	4	Williams	33785	4049 T-3
4050 T-3	14.6	0.15	19990810	94.78738	284.67845	135.64002	5.07764	0.1449054	2.5537209	55	3	1971-1999	0.66	M-v	3	Williams	34061	4050 T-3
4074 T-3	15.0	0.15	19990810	150.13658	91.48537	96.03281	3.31116	0.0834766	2.3979085	53	5	1977-1999	0.76	M-v	2	Williams	32344	4074 T-3
4079 T-3	14.5	0.15	19990810	274.33033	142.82320	38.11436	10.79631	0.0412579	2.9948122	28	2	1977-1998	0.74	M-v	5	Williams	34276	4079 T-3
4094 T-3	14.8	0.15	19990810	201.56025	281.21445	60.68684	4.95069	0.0731141	2.5162315	49	5	1977-1999	0.92	M-v	4	Williams	34061	4094 T-3
4137 T-3	15.0	0.15	19990810	230.69939	241.35930	101.08121	4.11376	0.1889805	2.8372720	22	2	1977-1998	0.74	M-v	5	Williams	33062	4137 T-3
4138 T-3	13.4	0.15	19990810	309.89809	11.03118	35.09713	19.17338	0.1769511	3.1422578	24	3	1977-1999	0.60	M-v	4	Williams	31411	4138 T-3
4205 T-3	14.0	0.15	19990810	140.81120	218.32163	97.95269	3.56164	0.2107020	2.5779194	46	4	1977-1998	0.69	M-v	1	Williams	34339	4205 T-3
4208 T-3	14.4	0.15	19990810	142.84321	318.35165	56.34807	6.44528	0.2020289	2.5418047	25	3	1977-1999	0.78	M-v	4	Williams	33999	4208 T-3
4217 T-3	14.9	0.15	19990810	112.51402	30.68573	52.43409	6.60188	0.0570737	2.2492442	34	3	1977-1999	0.77	M-v	3	Williams	34339	4217 T-3
4221 T-3	13.5	0.15	19990810	149.88869	349.27845	177.05073	9.31444	0.1432572	2.7460026	47	3	1977-1999	0.72	M-v	3	Williams	35743	4221 T-3
4268 T-3	15.8	0.15	19990810	56.27520	64.15155	65.69290	7.73008	0.1758923	2.2643224	33	3	1977-1999	0.67	M-v	4	Williams	34276	4268 T-3
4297 T-3	15.1	0.15	19990810	91.06873	288.94740	169.11389	6.44391	0.1277435	2.2594546	34	2	1977-1999	0.76	M-v	4	Williams	34618	4297 T-3
4304 T-3	14.5	0.15	19990810	208.34118	16.51720	118.08826	4.48497	0.0269616	2.7121842	39	5	1977-1999	0.81	M-v	1	Williams	32093	4304 T-3
4317 T-3	12.2	0.15	19990810	348.39343	167.77484	171.40077	9.55526	0.1037798	5.1559980	29	5	1977-1999	0.97	M-v	1	Williams	23351	4317 T-3
4388 T-3	15.1	0.15	19990810	5.20140	204.91128	140.16128	6.16583	0.1468520	2.6932260	22	4	1977-1999	0.82	M-v	2	Williams	29315	4388 T-3
5030 T-3	13.3	0.15	19990810	27.08818	175.08889	150.12930	11.80099	0.1969570	3.1070091	34	4	1971-1999	0.95	M-v	2	Williams	34000	5030 T-3
5048 T-3	12.9	0.15	19990810	82.77312	75.07792	55.06174	14.98599	0.1279341	3.3853367	62	3	1977-1999	0.85	M-v	4	Williams	35055	5048 T-3
5082 T-3	15.4	0.15	19990810	91.49849	247.30076	108.31147	5.57293	0.1486727	2.3124206	31	3	1977-1998	0.88	M-v	3	Williams	34061	5082 T-3
5083 T-3	15.7	0.15	19990810	68.40932	351.18846	129.92456	7.41585	0.0857668	2.2557090	28	2	1977-1999	0.67	M-v	5	Williams	34061	5083 T-3
5130 T-3	15.2	0.15	19990810	45.10279	356.29465	92.73522	8.31734	0.1225636	2.2942159	28	2	1977-1998	0.86	M-v	5	Williams	34339	5130 T-3

1992 UR₂ = 1992 WG₉ (A. Doppler)
 1993 MT = 1993 OE₁₀ (A. Doppler)
 1994 HB₁ = 1994 JY₁ (A. Doppler)
 1994 PQ₁₈ = 1994 RJ₁₉ (A. Doppler)
 1994 UW₂ = 1994 WO₁₃ (A. Doppler)
 1998 EZ₁ = 1998 FF₇₆ (A. Doppler)
 1998 FQ₉₄ = 1998 EH₁₃ = 1998 ET₂₁ (A. Doppler)
 1998 HM₁₀₂ = 1998 KF₄ (S. Nakano)
 1998 KQ₃₂ = 1998 HA₁₅₁ (S. Nakano)
 1998 RU₂₂ = 1998 VP₁ (S. Nakano)
 1998 SW₁₄₄ = 1998 UX₄₀ (S. Nakano)
 1998 UP₁₇ = 1998 UH₁₈ (S. Nakano)
 1998 UF₃₁ = 1998 UH₃₂ (S. Nakano)
 1998 UL₃₈ = 1998 VD₈ (S. Nakano)
 1998 VR₄₃ = 1999 AV₂₃ (S. Nakano)
 1998 WY₁₇ = 1999 BG₂₆ (S. Nakano)
 1998 XL₄ = 1998 QZ₁₀₅ (S. Nakano)
 1998 XW₄₉ = 1999 BH₁₇ (A. Doppler)

1998 XZ₄₉ = 1999 BG₁₇ (A. Doppler)
 1998 XR₅₁ = 1999 BT₁₇ (A. Doppler)
 1998 XB₅₂ = 1999 BS₁₇ (A. Doppler)
 1998 XS₇₆ = 1999 BO₂₁ (A. Doppler)
 1999 AO₂₄ = 1999 CE₉₈ = 1999 DK₈ (S. Nakano)
 1999 AW₂₄ = 1999 CR₄₇ (S. Nakano)
 1999 BT₁₁ = 1999 EX₃ (S. Nakano)
 1999 CC₁₄₇ = 1999 FF₁₁ (S. Nakano)
 1999 FG₁₈ = 1999 FL₂₃ (S. Nakano)
 1999 GR₇ = 1999 FP₂₇ (S. Nakano)
 1999 JJ₃₅ = 1999 KQ₁₈ (S. Nakano)
 1999 JD₆₀ = 1999 KQ₁₁ (S. Nakano)
 1999 JS₆₃ = 1999 LA₁₉ (M. E. Sansaturio)
 1999 JR₆₄ = 1999 LN₁₇ (S. Nakano)
 1999 JA₈₀ = 1999 LT₁₁ (S. Nakano)
 1999 JL₁₂₂ = 1999 LJ₁₇ (S. Nakano)
 1999 JK₁₂₃ = 1999 LV₁₇ (S. Nakano)

1999 KK₁₄ = 1999 LP₂₃ (S. Nakano)
 1999 LK₁₄ = 1999 NK₄₅ (A. Doppler, S. Nakano)

NEW NAMES OF MINOR PLANETS

(3643) Tienchanglin = 1978 UN₂

Discovered 1978 Oct. 29 at the Purple Mountain Observatory.

Chang-lin Tien (b.1935) was the seventh chancellor of the University of California at Berkeley, serving from 1990 to 1997, and is now the Nippon Electric Company distinguished professor of engineering there. His professional work is mainly in energy, environment and high-tech areas.

(3650) Kunming = 1978 UO₂

Discovered 1978 Oct. 30 at the Purple Mountain Observatory.

Kunming, the capital of Yunnan province, is one of the hub cities in southwestern China. It enjoys a reputation as “The City of Eternal Spring”.

(3704) Gaoshiqi = 1981 YX₁

Discovered 1981 Dec. 20 at the Purple Mountain Observatory.

Gao Shi-Qi (1905–1988) is considered the founder of science popularization in China. His contraction of encephalitis during a scientific experiment at the University of Chicago in 1928 caused paralysis of his whole body.

(3729) Yangzhou = 1983 VP₇

Discovered 1983 Nov. 1 at the Purple Mountain Observatory.

Situated between the Yangtze and Huai rivers, Yangzhou is the location of China’s earliest canal, dating back to 486 B.C. During the Tang dynasty it was China’s busiest metropolis and an important port on the Oriental Sea Silk Road.

(4291) Kodaihasu = 1989 VH

Discovered 1989 Nov. 2 by M. Arai and H. Mori at Yorii.

Kodaihasu, Japanese for “ancient lotus”, refers to preserved lotus seeds, perhaps 2500–3000 years old, found in 1971 in the ground at Kemigawa, Chiba prefecture, where they started to grow.

(4388) Jürgenstock = 1964 VE

Discovered 1964 Nov. 3 at the Goethe Link Observatory, Indiana University.

The German-Venezuelan astronomer Jürgen Stock (b.1923), renowned as a developer of observatories and their sites, has served as director of the Cerro Tololo Interamerican Observatory and the Venezuelan National Observatory.

(5644) Maureenbell = 1990 QG₂

Discovered 1990 Aug. 22 by H. E. Holt at Palomar.

Maureen E. Ockert-Bell (b.1961), an image-processing specialist at Cornell University, has published results on the physical and optical properties of the Saturnian, Uranian and Jovian ring systems, on the physical and radiative properties of dust in Mars’ atmosphere, and on clouds in Earth’s atmosphere.

(5833) Peterson = 1991 PQ

Discovered 1991 Aug. 5 by H. E. Holt at Palomar.

Colin A. Peterson (b.1977), a research support specialist at Cornell University, and responsible for designing sequences for the NEAR spacecraft Multi-Spectral Imager and Near-Infrared Spectrometer team, has developed innovative methods for obtaining spectral maps of (433) Eros. The name was suggested by J. Veverka.

(5919) Patrickmartin = 1991 PW₁₂

Discovered 1991 Aug. 5 by H. E. Holt at Palomar.

Patrick Martin (b.1967), a research associate at Cornell University, works on the analysis and interpretation of data acquired by the Near Infrared Spectrometer instrument on the NEAR mission to (433) Eros. The name was suggested by B. E. Clark.

(6043) Aurochs = 1991 RK₂

Discovered 1991 Sept. 9 by S. Otomo at Kiyosato.

Modern cattle are believed to have descended from the Aurochs, *Bos primigenius*, the wild ox of Europe, often depicted in cave paintings. Hunted to extinction, the last known member was recorded in Poland in 1627. The name is sometimes wrongly applied to the European bison.

(6071) Sakitama = 1992 AS₁

Discovered 1992 Jan. 4 by T. Hioki and S. Hayakawa at Okutama.

Sakitama, a region of Gyoda city and from which Saitama prefecture takes its name, is known for its burial mounds, constructed from clay and rocks between the fourth and seventh centuries.

(6102) Visby = 1993 FQ₂₅

Discovered 1993 Mar. 21 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Visby is a city, still surrounded by a medieval wall, on the Swedish island of Gotland.

(6163) Reimers = 1977 FT

Discovered 1977 Mar. 16 by H.-E. Schuster at La Silla.

Dieter Reimers (b.1943), director of the Hamburg Observatory, is well known for his work on white dwarfs and on mass loss from cool giant stars. He was instrumental in using Schmidt telescopes for wide-field quasar surveys.

(6198) Shirakawa = 1992 AF₁

Discovered 1992 Jan. 10 by T. Hioki and S. Hayakawa at Okutama.

Shirakawa is a city in Fukushima prefecture, 180 km north of Tokyo.

(6273) Kiruna = 1992 ER₃₁

Discovered 1992 Mar. 1 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

North of the Arctic Circle in the province of Norrbotten, Kiruna is the northernmost city in Sweden, known for its iron-ore mining since the late-nineteenth century.

(6590) Barolo = 1985 TA₂

Discovered 1985 Oct. 15 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Barolo, in the Langhe district of the Italian region of Piedmont, is known for some of the world’s finest wines. The name was suggested by V. Zappalá.

(6654) Luleå = 1992 DT₆

Discovered 1992 Feb. 29 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Luleå, a center of the steel industry on the northwestern coast of the Gulf of Bothnia and capital of the Swedish province of Norrbotten, dates back to the fourteenth century as a center for trade between the inland Samis and the population of southern Sweden.

(6690) Messick = 1981 SY₁

Discovered 1981 Sept. 25 by B. A. Skiff at the Anderson Mesa Station of the Lowell Observatory.

Hank H. Messick (b.1955) first taught the discoverer the constellations.

(6739) Tärendö = 1993 FU₃₈

Discovered 1993 Mar. 19 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Archaeological remains show that Tärendö, a small community just north of the Arctic Circle in the Swedish province of Norrbotten, has been populated since the Stone Age. In its wooded surroundings, annual midsummer festivities draw thousands of visitors, who celebrate *joie de vivre*.

(6786) Doudantsutsuji = 1991 DT

Discovered 1991 Feb. 21 by S. Inoda and T. Urata at the Karasuyama Astronomical Observatory.

Doudantsutsuji is the Japanese name for *Enkianthus perulatus*, an ericaceous deciduous shrub. Expressed in Kanji characters, the name also means “the stars of the whole sky”.

(6795) Örnköldsvik = 1993 FZ₁₂

Discovered 1993 Mar. 17 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

On the western coast of the Gulf of Bothnia in the Swedish province of Ångermanland, Örnköldsvik is an important center dominated by forestry-related industry. It is the hometown of one of Sweden’s most skillful ice-hockey teams, MoDo, where many world-famous players have their roots.

(6796) Sundsvall = 1993 FH₂₄

Discovered 1993 Mar. 21 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

On the western coast of the Gulf of Bothnia, Sundsvall has developed from a center for trade to a center for the Swedish forestry industry. City privileges were granted in 1621 by king Gustav II Adolf, and the city was destroyed by Russian troops in 1721.

(6797) Östersund = 1993 FG₂₅

Discovered 1993 Mar. 21 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

The provincial capital of Jämtland in northern Sweden, Östersund is on the shores of lake Storsjön in which, legend says, there resides a large monster. Although sightings are claimed quite regularly, the monster of lake Storsjön, like that of Loch Ness, remains a mystery.

(6827) Wombat = 1990 SN₄

Discovered 1990 Sept. 27 by T. Urata at the Nihondaira Observatory.

Three species of this marsupial inhabit Australia and Tasmania. The common wombat is the most widespread. The southern hairy-nosed wombat is restricted to arid regions. The northern hairy-nosed wombat is apparently on the brink of extinction.

(6847) Kunz-Hallstein = 1977 RL

Discovered 1977 Sept. 5 by H.-E. Schuster at La Silla.

The German lawyer Hans Peter Kunz-Hallstein (b. 1939) has been legal advisor for the European Southern Observatory for more than 20 years. A highlight of his work was the negotiations with the Chilean government over the interpretation, modification and amendment of the ESO-Chile agreement of 1963.

(6910) Ikeguchi = 1991 FJ

Discovered 1991 Mar. 17 by S. Otomo and O. Muramatsu at Kiyosato.

Kunio Ikeguchi (b. 1953) is a member of the Yonago Astronomy Club who popularizes astronomy in Tottori. The name was suggested by H. Abe.

(6922) Yasushi = 1993 KY₁

Discovered 1993 May 27 by S. Otomo at Kiyosato.

Yasushi Sato (b. 1957) is a member of the Matsue Astronomy Club who popularizes astronomy in Shimane. The name was suggested by H. Abe.

(7222) Alikperov = 1981 TJ₃

Discovered 1981 Oct. 7 by T. M. Smirnova at the Crimean Astrophysical Observatory.

Vagit Yusupovich Alikperov (b. 1950) is known for his development of economical foundations and organizational principles for oil companies. His ideas were used by Lukoil, one of the largest international oil companies. He is also an active sponsor of science and culture in Russia.

(7248) Älvsjö = 1992 EV₂₁

Discovered 1992 Mar. 1 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Älvsjö, now a residential suburb of Stockholm, is the location of the battle of Brännkyrka (1518), in which the young king-to-be Gustaf Vasa participated. More than a thousand lives were lost, and many streets of Älvsjö bear the names of men killed in the battle.

(7269) Alprokhorov = 1975 VK₂

Discovered 1975 Nov. 2 by T. M. Smirnova at the Crimean Astrophysical Observatory.

Aleksandr Mikhajlovich Prokhorov (b. 1916), renowned for fundamental research in quantum electronics that led to the creation of masers and lasers, was the 1964 recipient (with N. G. Basov and C. H. Townes) of the Nobel prize for physics and is honorary director of the Russian Academy of Sciences’ General Physics Institute.

(7393) Luginbuhl = 1984 SL₃

Discovered 1984 Sept. 28 by B. A. Skiff at the Anderson Mesa Station of the Lowell Observatory.

Christian B. Luginbuhl (b. 1955), of the U.S. Naval Observatory’s Flagstaff Station, is largely responsible for the enactment and continued enforcement of ordinances preserving the dark skies of northern Arizona. With the discoverer, he co-authored the *Observing Handbook and Catalogue of Deep-Sky Objects*.

(7429) Hoshikawa = 1992 YB₁

Discovered 1992 Dec. 24 by T. Hioki and S. Hayakawa at Okutama.

Hoshikawa, or “Star River”, flows between Kumagaya and Gyoda, in Saitama prefecture. There are many carp in the river, and on its banks events such as the Uchiwa Fan Festival and Daruma Ichi Market are held.

(7519) Paulcook = 1989 UN₃

Discovered 1989 Oct. 31 by B. G. W. Manning at Stakenbridge.

In the face of extreme physical problems resulting from an accident at age 12, Paul A. Cook (b. 1981) has shown remarkable determination to use his mental powers to study astronomy. He has learned how to use a computer by special means and has produced some extremely good graphics for the discoverer.

(7863) Turnbull = 1981 VK

Discovered 1981 Nov. 2 by B. A. Skiff at the Anderson Mesa Station of the Lowell Observatory.

Margaret A. (“Maggie”) Turnbull (b.1975), a graduate student in astronomy, has among her goals the study of the nature of life and intelligence as part of the universe.

(8040) Utsumikazuhiko = 1993 SY₃

Discovered 1993 Sept. 16 by K. Endate and K. Watanabe at Kitami.

Kazuhiko Utsumi (b.1937), made the first identification of many of the spectral lines and determined element abundances for carbon stars. At Hiroshima University he has taught astronomy and astrophysics to more than 30 000 students. The name was suggested by Y. Yamada.

(8147) Colemanhawkins = 1984 SU₃

Discovered 1984 Sept. 28 by B. A. Skiff at the Anderson Mesa Station of the Lowell Observatory.

Coleman Hawkins (1904–1969) was the first to bring the tenor saxophone to prominence as a solo instrument, helping transform it into the symbol of jazz itself. His famous 1939 rendition of “Body and Soul” includes notes “outside the galaxy of his time”. The name was suggested by Jane Ira Bloom.

(8340) Mumma = 1985 TS₁

Discovered 1985 Oct. 15 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

A researcher at NASA’s Goddard Space Flight Center, Michael J. Mumma (b.1941) has identified H₂O, CH₃OH, CH₄, C₂H₂ and C₂H₆ in the infrared spectra of comets, and his work on comets as x-ray objects has helped provide a new probe for the solar wind.

(8371) Goven = 1991 TJ₁₄

Discovered 1991 Oct. 2 by C. P. de Saint-Aignan at Palomar.

The village of Goven in Brittany is the home of the Bernardinis, who were an extraordinary host family for the discoverer during his year-long stay there. Jean-Paul Bernardini served as a navigator in the French Marine during the 1960s, frequently practising the dying art of celestial navigation.

(8405) Asbolus = 1995 GO

Discovered 1995 Apr. 5 by Spacewatch.

The “black one”, Asbolus was the centaur who supposedly made forecasts from the flight formations of birds. He caused the battle between the centaurs and Heracles and thus was indirectly responsible for the deaths of Pholus and Chiron.

(8411) Celso = 1996 TO

Discovered 1996 Oct. 3 at Farra d’Isonzo.

Celso Macor (1925–1998), a poet in the Italian region of Friuli, gave voice to the little things that form our everyday lives.

(8564) Anomalocaris = 1995 UL₃

Discovered 1995 Oct. 17 by Y. Shimizu and T. Urata at the Nachi-Katsuura Observatory.

Anomalocaris, a large carnivorous arthropod, was one of the many uniquely shaped multicellular creatures that appeared during the Cambrian explosion. The fossil was first discovered in the Burgess Shale in the Canadian Rocky Mountains. The name was suggested by I. Makino.

(8743) Kèneke = 1998 EH₁₂

Discovered 1998 Mar. 1 by E. W. Elst at the European Southern Observatory.

Kèneke is Flemish for “small child”, and it is only from her photographs that the discoverer knows and remembers his elder sister, Virginia Margaretha Anna Elst (1930–1935), who died from meningitis before he was born.

(8924) Iruma = 1996 XA₃₂

Discovered 1996 Dec. 14 by N. Sato at Chichibu.

The Iruma area of Saitama prefecture, mentioned in such traditional literary works as *Manyōshū*, has the first tea museum in Japan.

(8933) Kurobe = 1997 AU₆

Discovered 1997 Jan. 6 by N. Sato at Chichibu.

The Kurobe ravine, in Toyama prefecture, is the largest and deepest in Japan, inaccessible for six months each year because of snowfall. An arch-type dam there is one of the largest of its kind in the world.

(8994) Kashkashian = 1980 VG

Discovered 1980 Nov. 6 by B. A. Skiff at the Anderson Mesa Station of the Lowell Observatory.

The classical violinist Kim Kashkashian is known for her particular empathy with the works of composers of the late-twentieth century.

(9082) Leonardmartin = 1994 VR₆

Discovered 1994 Nov. 4 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

Leonard J. Martin, planetary astronomer and cartographer at the Lowell Observatory, contributed to maps of the lunar surface prepared in support of the Apollo missions. He also developed a particular interest in seasonal changes in the ice caps, albedo features, clouds and global dust storms on Mars.

(9266) Holger = 1978 RD₁₀

Discovered 1978 Sept. 2 by C.-I. Lagerkvist at the European Southern Observatory.

Holger Pedersen (b.1946), astronomer at the European Southern Observatory, works on γ -ray bursts but has a deep interest in meteorites and minor planets. The discoverer very much appreciates his willingness to make early observations of comet P/1996 R2.

(9267) Lokrume = 1978 RL₁₀

Discovered 1978 Sept. 2 by C.-I. Lagerkvist at the European Southern Observatory.

The church in the small parish of Lokrume, on the Swedish island of Gotland, was inaugurated in 1277. The remains of one of the oldest medieval estates on the island are still visible in the village. Nearby is a meadow, typical of the island.

(9521) Martinhoffmann = 1980 FS₁

Discovered 1980 Mar. 16 by C.-I. Lagerkvist at the European Southern Observatory.

Martin Hoffmann (b.1949) is a German astronomer who has made observations of variable stars and minor planets, including lightcurve studies and spectroscopic investigations. In recent years he has been much involved with the observations from ODAS, the O.C.A.- DLR Asteroid Survey. The name was suggested by G. Hahn.

(9631) Hubertreeves = 1993 SL₆

Discovered 1993 Sept. 17 by E. W. Elst at the European Southern Observatory.

Hubert Reeves, a professional astronomer at the French CNRS, has become known worldwide for his popularization of astronomy through his many books and lectures on radio and television.

(9769) Nautilus = 1993 DG₂

Discovered 1993 Feb. 24 by A. Natori and T. Urata at the JCPM Yakiimo Station.

U.S. inventor Robert Fulton built a sailing ship/submarine called Nautilus in 1800. Jules Verne also used the name for the submarine in his 1869 novel *Vingt mille lieues sous les mers*. In 1955 the U.S.S. Nautilus became the world's first nuclear-powered submarine.

(9770) Discovery = 1993 EE

Discovered 1993 Mar. 1 by T. Urata at the Nihondaira Observatory.

Discovery was the name of the spaceship in Arthur Clarke's novel and Stanley Kubrick's movie *2001: A Space Odyssey*. It is also the name of one of NASA's Space Shuttles.

(9777) Enterprise = 1994 OB

Discovered 1994 July 31 by Y. Shimizu and T. Urata at the Nachi-Katsuura Observatory.

The U.S.S. Enterprise was the spaceship that appeared (originally in 1966) in the popular science fiction television and movie series *Star Trek*. It was also the name of the first Space Shuttle Orbiter.

(10039) Keet Seel = 1984 LK

Discovered 1984 June 2 by B. A. Skiff at the Anderson Mesa Station of the Lowell Observatory.

Keet Seel is a well-preserved prehistoric cliff-dwelling, occupied by ancestors of the modern Hopi people. The site is in what is now the Navajo National Monument in northern Arizona, and the name is apparently from a Navajo phrase meaning "houses that have been left behind". The name was suggested by M. T. Gibson.

(10120) Ypres = 1992 YH₂

Discovered 1992 Dec. 18 by E. W. Elst at Caussols.

With Bruges and Ghent, Ypres virtually controlled Flanders in the thirteenth century. During the Middle Ages, it became a major cloth-weaving city. Within the bulge of the British lines during World War I, Ypres was completely destroyed, subsequently to be rebuilt in its original style.

(10173) Hanzelkazikmund = 1995 HA

Discovered 1995 Apr. 21 by P. Pravec and L. Šarounová at Ondřejov.

Czech globetrotters Jiří Hanzelka (b. 1920) and Miroslav Zikmund (b. 1919) visited 83 countries on five continents by car during 1947–1950 and truck during 1959–1964. A museum containing items collected and a rich archive of about 150 000 photographs has recently opened in Zlín. The name was suggested by J. Grygar.

(10199) Chariklo = 1997 CU₂₆

Discovered 1997 Feb. 15 by Spacewatch.

Chariklo, sometimes described as a sea nymph, sometimes as a female centaur, was the wife of Chiron. Together they are said to have had as many as five children, and she is also sometimes said to have been the mother of Tiresias, the famous seer.

(10201) Korado = 1997 NL₆

Discovered 1997 July 12 at Farra d'Isonzo.

Korado Korlević (b. 1958) leads the team of amateur astronomers at the Višňjan Observatory in Croatia and has been enthusiastically involved with observations of minor planets, comets and meteors. This program was recently credited with the discovery of comet P/1999 DN₃. He also teaches astronomical classes each summer.

(10207) Comeniana = 1997 QA

Discovered 1997 Aug. 16 by L. Kornoš and P. Kolény at Modra.

Bratislava's Comenius University (Universitas Comeniana in Latin), the leading institution of higher learning in the Slovak Republic, was founded in 1919, and the Institute of Astronomy, one of the university's first institutes, was established in 1943. The observatory in Modra also belongs to the university.

(10331) Peterbluhm = 1991 GM₁₀

Discovered 1991 Apr. 9 by F. Börngen at Tautenburg.

Computer specialist Peter Bluhm (1942–1997) was known for his efforts in electronic communication among amateur astronomers in Germany since the early 1980s. In 1987 he founded the first Astronomical Bulletin Board System in Dahlenburg. The name was suggested by A. Doppler.

(10581) Jeníkhollan = 1995 OD₁

Discovered 1995 July 30 by P. Pravec at Ondřejov.

Jan (Jeník) Hollan (b. 1955), an astronomer and environmentalist at the Brno Observatory, has deeply influenced many students and observers, including the discoverer. Sometimes in unorthodox ways, he makes a point of teaching his students to examine the most substantial points.

(10634) Pepibican = 1998 GM₁

Discovered 1998 Apr. 8 by L. Šarounová at Ondřejov.

Josef ("Pepi") Bican (b. 1913), proclaimed the century's best center-forward by the International Federation of Soccer Historians and Statisticians, represented Austria in 19 and Czechoslovakia in 14 international matches and scored more than 5000 goals in his career. After retirement he developed an interest in astronomy.

(10727) Akitsushima = 1987 DN

Discovered 1987 Feb. 25 by T. Nijima and T. Urata at Ojima.

Akitsushima is an old name for Japan, used by the first emperor Jinmu, looking from the top of a mountain, to describe the form of the country.

(10924) Mariagriffin = 1998 BU₂₅

Discovered 1998 Jan. 29 by I. P. Griffin at Cocoa.

Maria Griffin (b. 1962) is the wife of the discoverer.

(10931) Ceccano = 1998 DA

Discovered 1998 Feb. 16 by G. Masi at Ceccano.

Ceccano, where the discovery observations of this minor planet were made, is a small city, some 90 km southeast of Rome.

(10932) Rebentrost = 1998 DL₁

Discovered 1998 Feb. 18 by G. Lehmann at Drebach.

David Rebentrost (1614–1703) worked in Drebach as a vicar, doctor and herbalist. The garden he designed for his vicarage received wide fame. As a reward for curing elector Johann Georg II, he was invited to pick some plants from the elector's garden. The rare species of crocus he selected continues to grow only in Drebach.

(11039) Raynal = 1989 GH₂

Discovered 1989 Apr. 3 by E. W. Elst at the European Southern Observatory.

Guillaume-Thomas Raynal (1713–1796) wrote a six-volume history of the European colonies in India and America. His condemnation of the efforts of the colonists resulted in his condemnation by the Catholic church. In the French revolution he was elected to the States general, but he refused to serve, because he opposed violence.

(11051) Racine = 1990 VH₁₂

Discovered 1990 Nov. 15 by E. W. Elst at the European Southern Observatory.

The dramatic poet Jean-Baptiste Racine (1639–1699) was the uncontested master of French classicism. The unforgettable characters of his plays suffer from feelings of incompleteness in a world of passionate self-interest. The name was suggested by R. Josse.

(11118) Modra = 1996 PK

Discovered 1996 Aug. 9 by A. Galád and D. Kalmančok at Modra.

Fortuitously coded 118, the observing site of the Institute of Astronomy at Comenius University where this minor planet was discovered is located in the small historical town of Modra, 30 km northeast of Bratislava.

EPHEMERIDES

141P/Machholz 2		Elements <i>MPC</i> 35815							
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 09 19		16 55.37	−11 04.9	1.276	1.457	78.4	42.5	17.4	20.5
1999 09 29		17 07.65	−11 21.4	1.261	1.345	71.9	45.1	16.4	20.4
1999 10 09		17 23.50	−11 37.2	1.231	1.232	66.1	47.9	15.2	20.2
1999 10 19		17 42.93	−11 49.0	1.182	1.121	61.2	51.2	13.9	20.0
1999 10 29		18 06.01	−11 53.9	1.114	1.013	57.1	55.4	12.4	19.8
1999 11 08		18 32.88	−11 50.3	1.026	0.915	53.9	61.1	10.9	19.5
1999 11 18		19 03.78	−11 39.3	0.919	0.832	51.5	68.5	9.4	19.3
1999 11 28		19 38.99	−11 27.3	0.796	0.774	50.0	77.9	8.2	19.2
1999 12 08		20 19.49	−11 28.9	0.664	0.749	49.5	88.1	7.3	19.1
1999 12 18		21 08.24	−12 03.7	0.535	0.764	50.4	97.0	7.1	19.0
1999 12 28		22 12.22	−13 21.4	0.421	0.814	54.5	100.7	7.4	18.8
2000 01 07		23 42.09	−14 40.9	0.342	0.892	64.6	95.1	8.2	18.3
2000 01 17		01 36.00	−13 51.8	0.319	0.987	81.3	80.1	9.3	17.8
2000 01 27		03 21.35	−10 11.0	0.362	1.093	97.5	63.3	11.0	17.7
2000 02 06		04 36.26	−05 59.8	0.454	1.203	107.5	51.4	12.7	18.1
2000 02 16		05 27.01	−02 37.4	0.578	1.316	111.7	44.2	14.4	18.6
2000 02 26		06 03.66	−00 06.4	0.722	1.428	112.2	39.9	15.9	19.1
2000 03 07		06 32.39	+01 45.1	0.881	1.540	110.4	37.2	17.4	19.7
2000 03 17		06 56.59	+03 06.1	1.054	1.649	107.2	35.2	18.6	20.1
2000 03 27		07 17.99	+04 02.6	1.236	1.757	103.2	33.6	19.8	20.6
2000 04 06		07 37.60	+04 39.2	1.428	1.862	98.6	32.1	20.9	21.0
2000 04 16		07 55.99	+04 58.6	1.626	1.964	93.6	30.7		21.3
2000 04 26		08 13.48	+05 03.4	1.830	2.064	88.4	29.2		21.7
2000 05 06		08 30.27	+04 55.7	2.036	2.161	83.1	27.6		21.9
2000 05 16		08 46.50	+04 37.0	2.245	2.256	77.7	26.0		22.2
2000 05 26		09 02.24	+04 08.8	2.452	2.349	72.1	24.2		22.4

P/1999 RO₂₈ (LONEOS)

		Elements <i>MPC</i> 35814							
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 09 19		00 18.55	−18 58.0	0.248	1.241	160.8	15.4		18.3
1999 09 29		00 51.63	−21 39.4	0.248	1.231	155.0	20.2		18.4
1999 10 09		01 21.97	−22 39.7	0.261	1.233	150.6	23.4		18.6
1999 10 19		01 47.02	−21 55.2	0.285	1.247	148.2	24.9		18.9
1999 10 29		02 06.45	−19 46.2	0.320	1.274	147.0	25.2		19.2
1999 11 08		02 21.28	−16 40.3	0.366	1.311	146.2	24.9		19.6
1999 11 18		02 33.29	−13 01.3	0.424	1.357	144.9	24.8		19.9
1999 11 28		02 44.03	−09 10.1	0.494	1.412	142.5	25.2		20.4

1999 12 08	02 54.52	−05 21.5	0.579	1.472	139.0	26.0	20.8
1999 12 18	03 05.47	−01 44.6	0.678	1.538	134.6	27.1	21.3
1999 12 28	03 17.22	+01 35.0	0.792	1.608	129.6	28.1	21.8
2000 01 07	03 29.85	+04 35.3	0.919	1.681	124.1	29.0	22.2
2000 01 17	03 43.39	+07 16.1	1.060	1.756	118.4	29.5	22.6
2000 01 27	03 57.76	+09 37.8	1.213	1.832	112.6	29.7	23.0

C/1999 S3 (LINEAR)

		Elements <i>MPC</i> 35815							
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 09 19		01 41.16	+42 23.9	1.229	2.015	128.6	23.0	13.5	
1999 09 29		01 01.17	+50 01.1	1.172	1.982	131.3	22.3	13.3	
1999 10 09		00 03.79	+55 50.1	1.166	1.956	129.1	23.4	13.2	
1999 10 19		22 56.98	+58 36.1	1.207	1.938	122.9	25.6	13.3	
1999 10 29		21 57.43	+58 33.6	1.285	1.927	115.0	27.9	13.4	
1999 11 08		21 14.89	+57 03.1	1.386	1.925	107.0	29.5	13.6	
1999 11 18		20 48.32	+55 16.5	1.500	1.930	99.7	30.3	13.7	
1999 11 28		20 33.18	+53 51.2	1.617	1.943	93.4	30.5	13.9	
1999 12 08		20 25.66	+53 01.1	1.732	1.964	88.1	30.1	14.1	
1999 12 18		20 23.21	+52 50.3	1.839	1.992	84.0	29.4	14.3	
1999 12 28		20 24.15	+53 18.3	1.937	2.028	80.8	28.6	14.5	

142P/Ge-Wang

		Elements <i>MPC</i> 35815							
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 09 19		02 21.24	+06 16.1	1.738	2.589	139.9	14.5	15.9	19.1
1999 09 29		02 19.58	+04 58.1	1.694	2.610	150.0	11.1	15.9	18.9
1999 10 09		02 15.96	+03 34.8	1.672	2.633	160.0	7.5	15.9	18.8
1999 10 19		02 11.00	+02 13.2	1.675	2.657	168.0	4.5	16.0	18.6
1999 10 29		02 05.55	+01 00.6	1.705	2.684	167.7	4.5	16.1	18.7
1999 11 08		02 00.45	+00 03.2	1.761	2.712	159.5	7.3	16.2	18.9
1999 11 18		01 56.48	−00 34.9	1.843	2.741	149.5	10.5	16.4	19.2
1999 11 28		01 54.19	−00 52.2	1.948	2.773	139.4	13.4	16.6	19.4
1999 12 08		01 53.84	−00 49.8	2.071	2.805	129.7	15.7	16.8	19.7
1999 12 18		01 55.53	−00 29.8	2.211	2.839	120.4	17.4	17.0	19.9
1999 12 28		01 59.18	+00 04.8	2.363	2.873	111.5	18.6	17.2	20.1
2000 01 07		02 04.61	+00 50.8	2.525	2.909	103.1	19.2	17.5	20.3
2000 01 17		02 11.63	+01 45.4	2.692	2.946	95.0	19.4	17.7	20.5
2000 01 27		02 20.02	+02 46.0	2.863	2.984	87.4	19.2	17.9	20.6
2000 02 06		02 29.57	+03 50.2	3.034	3.023	80.0	18.7	18.1	20.8
2000 02 16		02 40.11	+04 56.1	3.204	3.062	72.9	18.0	18.3	20.9
2000 02 26		02 51.48	+06 02.1	3.371	3.103	66.0	16.9	18.5	21.0
2000 03 07		03 03.52	+07 06.8	3.533	3.143	59.3	15.7	18.7	21.1
2000 03 17		03 16.14	+08 09.0	3.687	3.185	52.7	14.4	18.9	21.2
2000 03 27		03 29.19	+09 07.7	3.833	3.227	46.4	12.9	19.0	21.2
2000 04 06		03 42.61	+10 02.1	3.970	3.269	40.2	11.4	19.2	21.3
2000 04 16		03 56.28	+10 51.5	4.095	3.312	34.1	9.8	19.4	21.3

C/1999 S2 (McNaught-Watson)

		Elements <i>MPC</i> 35815							
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 09 19		03 13.71	−63 46.3	7.620	7.976	107.2	6.9	15.4	
1999 09 29		03 08.10	−64 12.3	7.597	7.945	106.8	6.9	15.4	
1999 10 09		03 00.94	−64 28.2	7.583	7.914	105.8	7.0	15.4	
1999 10 19		02 52.60	−64 31.7	7.579	7.884	104.2	7.0	15.4	
1999 10 29		02 43.62	−64 21.0	7.584	7.854	102.2	7.1	15.4	
1999 11 08		02 34.57	−63 55.3	7.597	7.824	99.6	7.2	15.3	

1999 SEPT. 28

M.P.C. 36131

1999 11 18	02 26.04	−63 14.3	7.617	7.795	96.7	7.2	15.3
1999 11 28	02 18.54	−62 18.9	7.644	7.766	93.4	7.3	15.3
1999 12 08	02 12.43	−61 10.6	7.677	7.738	89.9	7.3	15.3
1999 12 18	02 07.92	−59 51.4	7.713	7.710	86.2	7.3	15.3
1999 12 28	02 05.07	−58 23.4	7.752	7.682	82.3	7.3	15.3

P/1997 V1 (Larsen)			Elements MPC 31205					
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1 m_2
1999 09 19		08 07.47	+10 49.3	5.301	4.787	54.5	9.8	19.4
1999 09 29		08 14.00	+10 07.3	5.195	4.814	62.4	10.6	19.4
1999 10 09		08 19.62	+09 25.4	5.079	4.840	70.6	11.2	19.4
1999 10 19		08 24.20	+08 44.5	4.955	4.866	79.1	11.6	19.3
1999 10 29		08 27.65	+08 05.4	4.826	4.892	87.9	11.7	19.3
1999 11 08		08 29.87	+07 29.3	4.696	4.918	97.1	11.5	19.3
1999 11 18		08 30.75	+06 57.1	4.570	4.943	106.6	11.1	19.2
1999 11 28		08 30.28	+06 30.0	4.451	4.969	116.4	10.2	19.2
1999 12 08		08 28.44	+06 08.9	4.345	4.994	126.5	9.1	19.2
1999 12 18		08 25.31	+05 54.7	4.257	5.020	136.8	7.7	19.2
1999 12 28		08 21.07	+05 47.9	4.191	5.045	147.1	6.1	19.1
2000 01 07		08 15.97	+05 48.6	4.151	5.070	156.8	4.4	19.1
2000 01 17		08 10.36	+05 56.4	4.140	5.095	164.4	3.0	19.2
2000 01 27		08 04.64	+06 10.5	4.160	5.119	165.5	2.8	19.2
2000 02 06		07 59.22	+06 29.5	4.211	5.144	159.0	3.9	19.2
2000 02 16		07 54.47	+06 51.8	4.291	5.168	149.7	5.5	19.3
2000 02 26		07 50.68	+07 15.7	4.398	5.192	139.6	7.1	19.4
2000 03 07		07 48.07	+07 39.8	4.528	5.216	129.5	8.4	19.5
2000 03 17		07 46.76	+08 02.5	4.677	5.240	119.6	9.5	19.5
2000 03 27		07 46.75	+08 22.7	4.839	5.264	109.9	10.3	19.6
2000 04 06		07 48.02	+08 39.6	5.011	5.287	100.6	10.7	19.7
2000 04 16		07 50.47	+08 52.7	5.187	5.310	91.6	10.9	19.8

P/1993 K2 (Helin-Lawrence)			Elements MPC 34423					
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1 m_2
1999 10 19		08 16.09	+23 00.1	5.440	5.429	84.1	10.5	19.9 22.5
1999 10 29		08 19.28	+23 02.8	5.264	5.414	93.4	10.6	19.8 22.4
1999 11 08		08 21.29	+23 09.9	5.090	5.399	102.9	10.3	19.8 22.4
1999 11 18		08 21.99	+23 22.0	4.922	5.383	112.9	9.7	19.7 22.3
1999 11 28		08 21.32	+23 38.9	4.764	5.368	123.1	8.9	19.6 22.1
1999 12 08		08 19.27	+24 00.3	4.623	5.351	133.8	7.6	19.5 22.0
1999 12 18		08 15.87	+24 25.4	4.502	5.335	144.7	6.1	19.4 21.9
1999 12 28		08 11.29	+24 52.9	4.406	5.319	155.8	4.3	19.4 21.7
2000 01 07		08 05.76	+25 21.0	4.340	5.302	166.8	2.4	19.3 21.6
2000 01 17		07 59.67	+25 48.1	4.304	5.285	174.9	1.0	19.3 21.4
2000 01 27		07 53.42	+26 12.3	4.301	5.267	167.8	2.3	19.3 21.5
2000 02 06		07 47.47	+26 32.5	4.329	5.250	156.9	4.2	19.3 21.7
2000 02 16		07 42.25	+26 47.8	4.386	5.232	145.8	6.1	19.3 21.8
2000 02 26		07 38.09	+26 58.1	4.468	5.214	134.9	7.7	19.3 21.9
2000 03 07		07 35.25	+27 03.5	4.571	5.195	124.3	9.1	19.4 22.0
2000 03 17		07 33.86	+27 04.6	4.691	5.177	114.0	10.1	19.4 22.1
2000 03 27		07 33.95	+27 01.7	4.822	5.158	104.2	10.8	19.5 22.2
2000 04 06		07 35.49	+26 55.3	4.959	5.139	94.7	11.2	19.5 22.2
2000 04 16		07 38.39	+26 45.8	5.098	5.120	85.6	11.3	19.6 22.3
2000 04 26		07 42.53	+26 33.4	5.234	5.100	76.8	11.1	19.6 22.3
2000 05 06		07 47.78	+26 18.3	5.365	5.081	68.4	10.6	19.6 22.3

2000 05 16	07 53.99	+26 00.7	5.487	5.061	60.2	10.0	19.7 22.4
2000 05 26	08 01.03	+25 40.4	5.597	5.040	52.2	9.1	19.7 22.4
2000 06 05	08 08.77	+25 17.8	5.693	5.020	44.5	8.1	19.7 22.3
2000 06 15	08 17.10	+24 52.7	5.774	4.999	36.9	7.0	19.7 22.3

87P/Bus			Elements MPC 29882					
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1 m_2
1999 10 29		07 44.35	+18 24.0	3.077	3.400	100.4	16.7	22.5
1999 11 08		07 48.01	+18 06.6	2.902	3.365	109.5	16.1	22.3
1999 11 18		07 49.73	+17 53.7	2.734	3.329	119.1	15.0	22.1
1999 11 28		07 49.32	+17 46.5	2.579	3.293	129.3	13.4	21.9
1999 12 08		07 46.67	+17 45.7	2.440	3.257	140.0	11.2	21.7
1999 12 18		07 41.80	+17 51.4	2.323	3.220	151.2	8.5	21.5
1999 12 28		07 35.01	+18 03.1	2.231	3.184	162.9	5.2	21.2
2000 01 07		07 26.79	+18 19.5	2.167	3.147	174.2	1.8	20.9
2000 01 17		07 17.92	+18 38.6	2.134	3.110	171.5	2.7	20.9
2000 01 27		07 09.36	+18 58.6	2.130	3.073	159.8	6.4	21.0 21.1
2000 02 06		07 01.97	+19 17.9	2.154	3.036	148.0	9.9	20.9 21.2
2000 02 16		06 56.53	+19 35.4	2.203	2.998	136.6	13.1	20.8 21.4
2000 02 26		06 53.50	+19 50.5	2.271	2.961	125.8	15.7	20.8 21.5
2000 03 07		06 53.08	+20 02.6	2.353	2.924	115.7	17.8	20.7 21.6
2000 03 17		06 55.28	+20 11.4	2.446	2.887	106.2	19.3	20.7 21.7
2000 03 27		06 59.94	+20 16.2	2.544	2.850	97.4	20.3	20.6 21.8
2000 04 06		07 06.84	+20 16.3	2.644	2.813	89.2	20.8	20.5 21.9
2000 04 16		07 15.73	+20 11.1	2.743	2.777	81.4	20.9	20.5 21.9
2000 04 26		07 26.35	+19 59.7	2.838	2.740	74.2	20.7	20.4 22.0
2000 05 06		07 38.46	+19 41.6	2.928	2.705	67.3	20.1	20.3 22.0
2000 05 16		07 51.83	+19 16.0	3.011	2.669	60.9	19.3	20.3 22.0
2000 05 26		08 06.28	+18 42.5	3.087	2.634	54.7	18.3	20.2 22.0
2000 06 05		08 21.62	+18 00.7	3.153	2.600	48.8	17.1	20.1 22.0
2000 06 15		08 37.71	+17 10.4	3.211	2.566	43.2	15.7	20.0 21.9
2000 06 25		08 54.42	+16 11.5	3.259	2.533	37.8	14.2	19.9 21.9
2000 07 05		09 11.64	+15 04.0	3.298	2.501	32.5	12.6	19.7 21.8

128P/Shoemaker-Holt 1			Elements MPC 30632					
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1 m_2
1999 10 29		12 03.85	−02 58.8	5.334	4.535	33.1	6.9	18.7 21.4
1999 11 08		12 12.15	−03 52.4	5.263	4.560	40.9	8.2	18.7 21.5
1999 11 18		12 19.91	−04 42.8	5.176	4.586	48.8	9.3	18.7 21.5
1999 11 28		12 27.03	−05 29.3	5.075	4.611	57.0	10.3	18.7 21.5
1999 12 08		12 33.39	−06 11.0	4.960	4.637	65.4	11.1	18.6 21.5
1999 12 18		12 38.86	−06 47.1	4.836	4.662	74.0	11.7	18.6 21.5
1999 12 28		12 43.33	−07 17.0	4.704	4.687	83.0	12.0	18.6 21.4
2000 01 07		12 46.68	−07 39.8	4.569	4.712	92.3	12.0	18.5 21.4
2000 01 17		12 48.77	−07 54.7	4.435	4.736	101.9	11.7	18.5 21.3
2000 01 27		12 49.54	−08 01.0	4.306	4.761	111.8	11.1	18.4 21.2
2000 02 06		12 48.94	−07 58.5	4.187	4.785	122.1	10.1	18.4 21.2
2000 02 16		12 46.99	−07 46.9	4.083	4.809	132.7	8.7	18.4 21.1
2000 02 26		12 43.80	−07 26.6	3.999	4.832	143.6	7.0	18.4 20.9
2000 03 07		12 39.58	−06 58.6	3.940	4.856	154.8	5.0	18.3 20.8
2000 03 17		12 34.60	−06 24.4	3.908	4.879	166.0	2.8	18.3 20.7
2000 03 27		12 29.24	−05 46.4	3.906	4.902	176.6	0.7	18.4 20.5
2000 04 06		12 23.89	−05 07.0	3.935	4.925	170.7	1.9	18.4 20.7
2000 04 16		12 18.94	−04 28.9	3.994	4.948	159.7	4.0	18.5 20.8

2000 04 26	12 14.72	-03 54.7	4.082	4.970	148.8	6.0	18.5	21.0
2000 05 06	12 11.48	-03 26.1	4.195	4.993	138.2	7.7	18.6	21.2
2000 05 16	12 09.37	-03 04.7	4.330	5.015	127.9	9.2	18.7	21.3
2000 05 26	12 08.47	-02 51.2	4.481	5.036	118.0	10.2	18.8	21.4
2000 06 05	12 08.78	-02 45.6	4.644	5.058	108.5	11.0	18.9	21.5
2000 06 15	12 10.26	-02 48.0	4.816	5.079	99.3	11.4	19.0	21.6
2000 06 25	12 12.81	-02 57.7	4.991	5.100	90.4	11.5	19.1	21.7
2000 07 05	12 16.35	-03 14.3	5.167	5.121	81.8	11.3	19.2	21.8
2000 07 15	12 20.77	-03 37.0	5.339	5.142	73.4	10.9	19.2	21.9
2000 07 25	12 25.96	-04 04.9	5.505	5.162	65.2	10.3	19.3	21.9
2000 08 04	12 31.81	-04 37.5	5.661	5.182	57.2	9.5	19.4	22.0
2000 08 14	12 38.25	-05 14.0	5.805	5.202	49.3	8.5	19.5	22.0
2000 08 24	12 45.16	-05 53.6	5.935	5.222	41.6	7.4	19.5	22.0
2000 09 03	12 52.48	-06 35.7	6.049	5.241	33.8	6.2	19.6	22.0

28P/Neujmin 1

Elements MPC 34424

Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 11 08		12 23.76	-06 46.0	9.072	8.305	37.2	4.1		21.8
1999 11 18		12 27.49	-07 16.5	8.918	8.264	46.1	4.9		21.8
1999 11 28		12 30.83	-07 45.1	8.744	8.222	55.3	5.7		21.7
1999 12 08		12 33.69	-08 11.4	8.556	8.181	64.6	6.2		21.7
1999 12 18		12 35.98	-08 34.8	8.355	8.139	74.0	6.7		21.7
1999 12 28		12 37.61	-08 54.7	8.146	8.097	83.7	6.9		21.6
2000 01 07		12 38.52	-09 10.6	7.934	8.054	93.5	7.0		21.5
2000 01 17		12 38.64	-09 21.9	7.723	8.012	103.6	6.9		21.5
2000 01 27		12 37.93	-09 28.3	7.520	7.969	113.8	6.5		21.4
2000 02 06		12 36.39	-09 29.4	7.328	7.925	124.3	5.9		21.3
2000 02 16		12 34.04	-09 25.1	7.154	7.882	134.8	5.1		21.2
2000 02 26		12 30.97	-09 15.6	7.001	7.838	145.5	4.1		21.1
2000 03 07		12 27.28	-09 01.1	6.875	7.793	156.3	2.9		20.9
2000 03 17		12 23.14	-08 42.3	6.777	7.749	166.7	1.7		20.8
2000 03 27		12 18.75	-08 20.3	6.710	7.704	174.1	0.8		20.7
2000 04 06		12 14.32	-07 56.3	6.676	7.659	168.4	1.5		20.7
2000 04 16		12 10.09	-07 31.6	6.672	7.613	158.2	2.8		20.8
2000 04 26		12 06.24	-07 07.7	6.697	7.567	147.7	4.1		20.9
2000 05 06		12 02.96	-06 45.8	6.749	7.521	137.3	5.2		21.0
2000 05 16		12 00.38	-06 27.3	6.822	7.474	127.0	6.2		21.0
2000 05 26		11 58.59	-06 12.9	6.913	7.428	116.9	7.0		21.1
2000 06 05		11 57.64	-06 03.2	7.017	7.380	107.1	7.5		21.1
2000 06 15		11 57.53	-05 58.8	7.129	7.333	97.6	7.9		21.2
2000 06 25		11 58.26	-05 59.7	7.245	7.285	88.3	8.0		21.2
2000 07 05		11 59.78	-06 05.9	7.359	7.237	79.2	7.9		21.2
2000 07 15		12 02.05	-06 17.2	7.468	7.188	70.3	7.6		21.2
2000 07 25		12 04.99	-06 33.5	7.567	7.139	61.5	7.2		21.2
2000 08 04		12 08.54	-06 54.3	7.654	7.090	53.0	6.6		21.2
2000 08 14		12 12.63	-07 19.3	7.726	7.040	44.6	5.8		21.1
2000 08 24		12 17.18	-07 48.1	7.780	6.990	36.3	4.9		21.1

C/1999 L3 (LINEAR)

Elements MPC 35208

Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 11 08		12 26.11	-09 07.0	2.829	2.108	35.9	16.0	15.5	
1999 11 18		12 25.80	-08 39.3	2.631	2.072	46.1	20.1	15.3	
1999 11 28		12 23.67	-07 58.1	2.407	2.042	56.9	23.9	15.0	
1999 12 08		12 18.84	-06 55.5	2.161	2.019	68.4	27.0	14.7	

1999 12 18	12 09.93	-05 19.1	1.900	2.003	81.2	29.1	14.4
1999 12 28	11 54.80	-02 49.0	1.636	1.993	95.9	29.4	14.1
2000 01 07	11 30.07	+01 05.1	1.386	1.991	113.3	27.0	13.7
2000 01 17	10 50.94	+06 58.7	1.178	1.996	134.8	20.5	13.4
2000 01 27	09 53.37	+14 48.2	1.052	2.009	160.8	9.3	13.1
2000 02 06	08 41.55	+22 31.2	1.051	2.028	169.5	5.1	13.2
2000 02 16	07 32.38	+27 28.1	1.175	2.054	143.5	16.6	13.5
2000 02 26	06 40.05	+29 35.3	1.388	2.087	121.8	23.8	13.9
2000 03 07	06 05.60	+30 14.9	1.649	2.125	104.4	26.9	14.4
2000 03 17	05 44.29	+30 22.8	1.930	2.169	89.9	27.3	14.8
2000 03 27	05 31.63	+30 22.7	2.213	2.219	77.3	26.0	15.2
2000 04 06	05 24.61	+30 23.0	2.487	2.272	66.0	23.7	15.5
2000 04 16	05 21.32	+30 26.2	2.745	2.330	55.6	20.8	15.9
2000 04 26	05 20.53	+30 32.6	2.982	2.392	45.8	17.6	16.2
2000 05 06	05 21.43	+30 42.1	3.193	2.457	36.5	14.2	16.4

OPPOSITION DATA

Planet	Opposition	α_{2000}	δ_{2000}	V	$\dot{\alpha}$	$\dot{\delta}$	ϕ_{MIN}	MPC
(11612)	1999 08 28.0	22 24.68	-17 29.8	17.8	-0.89	- 3.0	2.5/25.8	35861
1998 JX ₂	1999 08 28.0	22 24.72	-06 30.2	17.0	-0.70	- 8.1	1.1/29.2	36083
(11544)	1999 08 28.0	22 24.99	+05 22.4	16.2	-0.88	- 5.5	6.4/01.9	35844
2622 P-L	1999 08 28.0	22 25.01	-09 58.0	18.5	-0.71	- 4.4	0.0/28.1	36120
1999 NT ₅₆	1999 08 28.1	22 25.12	+14 03.5	17.7	-0.77	- 4.3	10.3/05.6	36092
(11712)	1999 08 28.1	22 25.18	-15 34.0	17.4	-0.89	- 5.0	2.1/26.4	35888
1994 CB ₁₇	1999 08 28.1	22 25.23	-14 17.5	19.3	-0.92	- 5.7	1.5/26.8	34505
1999 NV ₅₆	1999 08 28.1	22 25.28	+08 23.3	18.0	-0.80	- 1.9	7.9/02.6	36092
(8864)	1999 08 28.1	22 25.37	+03 21.3	16.1	-0.83	- 4.4	5.4/01.3	35675
1999 RN ₁₀₂	1999 08 28.1	22 25.38	+05 16.6	16.7	-0.68	- 4.5	7.2/02.3	36110
1996 TS ₁₈	1999 08 28.1	22 25.40	-11 39.4	18.4	-0.96	- 5.0	0.7/27.7	36074
1998 FG ₁₀₇	1999 08 28.2	22 25.36	+01 58.2	16.9	-0.89	- 3.4	5.4/31.7	35970
1998 HC ₁₂₉	1999 08 28.2	22 25.38	-10 56.0	18.1	-1.03	- 2.9	0.4/27.9	35990
1986 QY ₂	1999 08 28.2	22 25.56	-13 17.8	15.2	-0.60	-15.7	1.5/26.8	36063
1988 RJ ₃	1999 08 28.2	22 25.67	-11 43.6	17.1	-0.94	- 3.7	0.8/27.7	36064
1998 KC ₄	1999 08 28.2	22 25.73	-26 43.5	16.9	-0.82	- 3.9	5.3/22.9	36083
1981 ET ₃₁	1999 08 28.3	22 25.84	-03 47.5	17.8	-0.74	- 6.7	1.8/30.3	27304
1994 SC ₅	1999 08 28.3	22 25.90	-11 45.8	19.8	-0.74	- 4.1	0.5/27.7	35691
1991 SD ₁	1999 08 28.3	22 25.92	-18 11.6	17.6	-0.83	- 9.5	2.9/25.4	36067
1999 MV ₁	1999 08 28.3	22 26.07	-13 54.3	16.3	-0.47	- 4.0	2.5/26.9	36088
1999 RD ₁₀₂	1999 08 28.3	22 26.09	+08 12.7	17.3	-0.76	- 4.2	5.9/03.4	36043
1999 RE ₁₀₂	1999 08 28.4	22 26.11	+08 39.7	16.7	-0.66	- 8.1	6.1/04.3	36043
1998 HD ₄₀	1999 08 28.4	22 26.12	-23 06.6	18.6	-0.94	- 3.2	4.4/24.6	32328
1996 XP ₂₉	1999 08 28.4	22 26.14	-09 54.5	17.6	-0.82	- 6.2	0.0/28.4	36075
1998 FH ₆₁	1999 08 28.4	22 26.15	-04 34.2	18.1	-0.85	- 6.6	1.9/30.1	35960
1991 GW	1999 08 28.4	22 26.16	-22 50.1	18.2	-1.06	- 3.5	4.9/24.8	36066
1998 KC ₃₂	1999 08 28.4	22 26.46	-15 50.5	17.8	-0.94	- 5.8	2.2/26.6	35996
1996 XJ ₁	1999 08 28.5	22 26.55	-17 21.2	16.1	-0.83	- 5.2	3.6/26.1	36075
(8847)	1999 08 28.5	22 26.62	-07 54.1	17.2	-0.80	- 4.9	0.6/29.1	31910
1998 BK ₄	1999 08 28.5	22 26.62	-14 18.1	19.9	-0.98	- 6.5	1.6/27.1	31797
1998 MY ₁	1999 08 28.5	22 26.80	+07 57.8	18.7	-0.81	- 5.2	5.6/03.4	36084
1998 KC ₅	1999 08 28.6	22 26.88	-11 06.1	16.3	-0.77	- 5.6	0.5/28.2	36083
(8952)	1999 08 28.6	22 26.92	-13 35.9	17.4	-0.89	- 4.7	1.4/27.5	31935

1996 XY ₂₈	1999 08 28.6	22 27.01	-12 43.9	18.1	-0.92	- 5.2	1.0/27.7	36075
1998 EP ₂	1999 08 28.6	22 27.10	-11 31.1	19.1	-0.94	- 4.7	0.6/28.1	32316
(11540)	1999 08 28.6	22 27.10	-16 27.3	16.1	-0.86	- 6.9	3.2/26.5	35843
1998 FR ₆₁	1999 08 28.6	22 27.10	-08 16.3	17.9	-0.88	- 4.6	0.5/29.1	35960
1994 PW ₂₉	1999 08 28.6	22 27.23	-01 18.9	17.6	-0.71	- 7.8	2.9/31.6	36071
1994 PK ₃	1999 08 28.7	22 27.31	-09 09.2	17.8	-0.80	- 4.2	0.2/28.9	36071
1998 MH ₃	1999 08 28.7	22 27.46	+34 23.8	18.7	-0.86	- 3.5	14.4/16.3	32285
1994 PO ₂₅	1999 08 28.7	22 27.53	-14 05.5	18.1	-0.81	- 4.3	1.5/27.4	36071
(11679)	1999 08 28.7	22 27.59	-04 58.2	17.7	-1.00	- 6.4	1.9/30.2	35878
(9094)	1999 08 28.8	22 27.59	-14 18.6	17.3	-0.80	- 5.3	1.6/27.3	36061
1994 PP ₃₄	1999 08 28.8	22 27.63	-07 52.9	18.0	-0.80	- 4.3	0.6/29.4	24570
(8920)	1999 08 28.8	22 27.65	-14 30.5	18.0	-0.95	- 6.1	1.7/27.3	36060
1981 EK ₂₀	1999 08 28.8	22 27.67	-18 49.4	17.7	-1.06	0.0	3.7/26.6	36062
1993 BF ₃	1999 08 28.8	22 27.84	-09 18.2	17.7	-0.92	- 3.8	0.1/29.0	36068
1999 RX ₁₄₅	1999 08 28.9	22 27.97	-02 40.6	17.3	-0.92	- 4.8	3.1/31.0	36047
1981 EG ₁₈	1999 08 28.9	22 27.97	-11 27.8	17.4	-1.03	- 2.7	0.8/28.4	36062
(11634)	1999 08 28.9	22 28.02	+07 44.1	17.6	-0.92	- 4.9	6.9/03.3	35867
1998 HW ₁₂₅	1999 08 28.9	22 28.20	-19 11.5	18.3	-0.95	- 7.2	3.3/25.9	36083
(8759)	1999 08 28.9	22 28.29	-31 05.2	16.1	-1.09	+ 1.9	9.5/23.6	31701
(8861)	1999 08 28.9	22 28.30	+05 22.2	18.0	-0.81	- 6.0	4.4/03.0	31914
1981 EY ₁₃	1999 08 29.0	22 28.35	+01 33.7	17.9	-0.71	- 5.9	3.7/01.8	36062
1996 WC ₂	1999 08 29.0	22 28.38	-24 03.6	17.8	-0.98	- 5.1	5.5/24.5	36075
1996 XC ₁₈	1999 08 29.0	22 28.43	-23 56.0	17.9	-0.98	- 4.1	5.3/24.8	36075
1998 FT ₈	1999 08 29.0	22 28.54	-24 14.5	18.0	-1.00	- 1.7	5.2/25.1	36079
(8990)	1999 08 29.0	22 28.68	-14 36.5	17.6	-0.71	- 5.7	1.4/27.4	32172
1999 QD ₂	1999 08 29.1	22 28.66	-10 48.4	17.1	-0.81	-37.0	0.6/28.5	36094
1998 KS ₃₉	1999 08 29.1	22 28.85	-09 02.1	17.5	-0.79	- 5.4	0.2/29.3	36084
(8315)	1999 08 29.1	22 28.94	-25 06.1	15.9	-0.98	- 5.9	7.2/24.3	35675
3105 T-3	1999 08 29.1	22 29.02	-07 56.2	16.3	-0.78	- 6.9	0.7/29.7	36124
1998 HC ₉₆	1999 08 29.2	22 29.03	-02 21.3	17.3	-0.87	- 9.2	2.9/31.6	35986
(11365)	1999 08 29.2	22 29.29	-03 39.2	16.4	-0.96	- 5.9	2.7/31.0	35581
6589 P-L	1999 08 29.2	22 29.30	-19 02.6	17.8	-0.94	- 2.4	3.2/26.5	36051
1997 AE ₁	1999 08 29.2	22 29.40	+01 23.5	18.2	-0.90	- 2.4	3.5/01.4	35934
1981 ET ₃₃	1999 08 29.2	22 29.43	-06 03.3	18.0	-0.78	- 3.6	1.2/30.3	35909
1998 KN ₃₂	1999 08 29.3	22 29.39	-15 01.9	18.0	-0.96	- 5.5	1.9/27.6	36084
1996 VU ₈	1999 08 29.3	22 29.56	-00 01.2	17.3	-0.91	- 7.4	4.0/01.4	36074
1997 CD ₂₆	1999 08 29.3	22 29.77	-14 51.9	19.1	-0.73	- 7.4	1.7/27.5	32058
1994 CL ₁₈	1999 08 29.3	22 29.78	-17 16.0	17.6	-0.89	- 8.4	3.2/26.7	36070
1989 WR	1999 08 29.4	22 29.73	-22 01.0	15.8	-1.02	- 1.0	6.4/26.0	36065
1981 EM ₁₄	1999 08 29.4	22 29.91	+02 01.8	18.1	-0.82	- 6.1	4.1/02.2	36062
1993 FF ₂₀	1999 08 29.4	22 29.92	-16 27.0	18.2	-0.83	- 5.7	2.2/27.2	29103
1998 FP ₇₆	1999 08 29.4	22 30.00	-13 01.0	18.0	-0.93	- 7.4	1.4/28.3	35965
1998 FV ₈₃	1999 08 29.4	22 30.00	-12 51.6	17.8	-0.97	- 7.2	1.4/28.4	35967
5124 T-2	1999 08 29.4	22 30.14	+09 32.4	18.2	-0.81	- 5.2	6.0/04.9	36124
1991 RB ₁₉	1999 08 29.5	22 30.14	-09 05.6	16.8	-1.04	- 0.1	0.1/29.6	36066
1994 EW ₇	1999 08 29.5	22 30.21	-22 45.1	17.8	-0.88	-10.7	4.0/24.7	36070
1997 AB ₁	1999 08 29.5	22 30.26	-18 03.4	16.9	-0.92	- 6.9	4.2/26.7	35934
(11548)	1999 08 29.5	22 30.28	+20 38.9	17.5	-1.09	+ 0.6	9.7/06.4	35845
1998 FJ ₁₀₅	1999 08 29.5	22 30.32	+05 04.2	17.5	-0.79	- 6.4	5.3/03.5	36081
1998 FM ₁₂₂	1999 08 29.5	22 30.36	-02 17.5	17.6	-0.81	- 7.3	2.8/31.9	35975
1993 FT ₁₄	1999 08 29.5	22 30.37	-12 55.3	18.2	-0.85	- 6.4	1.1/28.4	36069

1998 HQ ₁₃₆	1999 08 29.5	22 30.39	-18 03.7	20.0	-1.00	- 4.0	3.1/27.1	32331
1999 RD ₁₄₆	1999 08 29.6	22 30.48	-03 12.5	17.2	-0.78	- 7.1	2.4/31.7	36047
1998 GV ₈	1999 08 29.6	22 30.86	-23 34.9	17.5	-0.84	- 7.7	4.7/24.8	36081
1999 RS ₁₄₄	1999 08 29.7	22 30.84	+03 57.1	17.3	-0.79	- 3.3	4.2/02.8	36047
(8663)	1999 08 29.7	22 31.05	-17 55.9	17.2	-0.98	- 6.8	3.2/27.0	31678
1997 GX ₇	1999 08 29.7	22 31.19	-12 25.6	18.0	-0.75	- 4.8	0.9/28.8	36077
1992 DM ₇	1999 08 29.7	22 31.26	-11 15.3	17.5	-0.77	- 5.3	0.6/29.2	36067
1995 UZ ₄₅	1999 08 29.7	22 31.26	+01 14.1	18.7	-0.76	- 6.1	3.1/02.3	36072
(9113)	1999 08 29.8	22 31.18	-02 26.2	17.6	-0.77	- 5.6	2.2/01.0	36061
1997 EO ₇	1999 08 29.8	22 31.25	-07 35.1	16.4	-0.85	- 1.3	0.6/30.3	36077
1999 RS ₁₀₂	1999 08 29.8	22 31.25	+04 39.6	17.8	-0.77	- 3.1	4.6/03.2	36110
1999 NY ₅₆	1999 08 29.8	22 31.28	+09 22.7	17.5	-0.75	- 5.7	7.4/05.3	36021
1994 PM ₂₀	1999 08 29.8	22 31.30	-08 23.1	17.9	-0.77	- 5.2	0.3/30.1	35920
1998 KF ₅₁	1999 08 29.9	22 31.55	+10 41.8	17.9	-0.81	- 6.9	6.4/05.9	35999
1998 FK ₄₄	1999 08 29.9	22 31.64	-13 41.6	16.6	-0.85	- 2.2	1.9/28.7	35957
(11660)	1999 08 29.9	22 31.75	-11 20.5	17.0	-0.89	- 6.9	0.8/29.3	35873
1999 NA ₅₇	1999 08 30.0	22 31.94	+13 55.5	17.9	-0.83	- 5.8	8.6/07.3	36021
(8572)	1999 08 30.0	22 32.08	-02 10.9	15.9	-0.72	- 9.1	3.6/01.6	35413
1981 EM ₁₆	1999 08 30.0	22 32.10	-07 25.7	19.0	-0.84	- 1.8	0.6/30.5	26918
1118 T-3	1999 08 30.0	22 32.10	-01 36.4	18.5	-0.78	- 2.7	2.2/01.3	36055
1998 FM ₁₂₆	1999 08 30.0	22 32.15	-04 55.4	18.3	-0.95	- 7.3	1.6/31.4	36081
1981 EC ₃₀	1999 08 30.1	22 32.29	-02 54.0	18.4	-0.91	- 0.2	1.9/31.7	35909
1995 UM ₁₆	1999 08 30.1	22 32.31	-06 18.0	20.0	-0.78	- 6.2	1.0/31.1	29305
1996 XX ₂₂	1999 08 30.1	22 32.40	-08 57.9	18.5	-0.86	- 8.3	0.1/30.2	35697
1998 KK ₈	1999 08 30.1	22 32.44	+02 35.1	17.4	-0.71	- 6.8	3.8/03.3	35994
(8686)	1999 08 30.1	22 32.47	-14 05.7	16.3	-0.88	- 9.8	2.1/28.4	36060
1999 NO ₂	1999 08 30.1	22 32.55	+05 21.0	17.8	-0.92	- 2.1	7.4/03.4	36089
1992 SA ₄	1999 08 30.1	22 32.70	-09 34.2	17.5	-0.89	- 8.3	0.2/30.1	36068
1999 NC ₅₇	1999 08 30.1	22 32.71	+07 52.2	16.6	-0.78	- 3.1	5.7/04.5	36021
1998 JW	1999 08 30.2	22 32.72	+08 40.2	17.8	-0.77	- 6.7	6.3/05.5	36083
1999 NB ₅₇	1999 08 30.2	22 32.75	+10 54.8	17.6	-0.91	- 2.9	7.4/05.1	36092
1994 AE ₃	1999 08 30.2	22 32.75	-08 51.2	19.0	-0.97	- 4.7	0.1/30.3	32051
1995 NE	1999 08 30.2	22 32.81	-04 40.6	18.5	-0.92	- 8.5	1.8/31.7	36072
(8289)	1999 08 30.2	22 32.90	-04 15.2	16.2	-1.00	- 5.6	2.2/31.7	35675
1995 WQ ₃	1999 08 30.3	22 33.10	-13 51.9	18.0	-0.79	- 4.6	1.4/28.8	32946
1998 FA ₇₃	1999 08 30.3	22 33.16	-19 03.2	18.2	-1.05	- 3.2	3.9/27.5	35964
1988 SA ₃	1999 08 30.3	22 33.23	-21 18.9	19.8	-0.57	- 1.3	2.2/26.5	15561
1992 OJ ₁	1999 08 30.3	22 33.33	+07 44.4	15.9	-1.47	+ 6.0	7.8/02.3	36068
1993 FZ ₄₆	1999 08 30.5	22 34.02	-12 01.3	19.4	-0.87	- 4.1	1.0/29.7	28887
1981 EJ ₄₅	1999 08 30.5	22 34.08	-02 02.9	18.1	-0.77	- 3.6	2.5/01.7	35909
(8565)	1999 08 30.6	22 34.16	-00 50.7	16.2	-0.72	- 8.3	3.1/02.5	31511
1979 QR ₂	1999 08 30.6	22 34.34	-08 54.1	17.7	-0.80	- 4.4	0.0/30.7	36062
1995 SO ₂	1999 08 30.6	22 34.45	+00 23.2	17.3	-0.67	- 5.5	4.7/02.9	36072
(8881)	1999 08 30.6	22 34.53	-07 19.4	17.0	-0.79	- 6.6	0.6/31.2	31918
1999 RB ₁₃₈	1999 08 30.7	22 34.57	-10 58.8	16.9	-0.76	- 4.2	0.6/30.1	36046
1998 FQ ₁₃₃	1999 08 30.7	22 34.66	-07 20.8	16.2	-0.95	- 1.6	0.8/31.2	35976
1997 EM ₂₅	1999 08 30.7	22 34.89	-15 49.0	17.6	-0.78	-10.9	2.4/28.2	36077
1997 AG ₇	1999 08 30.8	22 34.84	-05 34.1	19.5	-0.93	- 6.4	1.3/31.9	30690
1998 FH ₁₁₇	1999 08 30.8	22 34.89	-04 46.3	17.9	-0.90	- 4.0	1.5/01.1	36081
(11596)	1999 08 30.8	22 34.93	+10 48.4	16.4	-0.60	-19.8	8.4/09.1	35857
1997 AC ₃	1999 08 30.8	22 34.97	-05 31.6	17.2	-0.91	- 1.8	1.1/31.8	35935

1998 FU ₉₀	1999 08 30.8	22 35.28	-19 46.1	17.9	-0.98	- 2.9	3.8/27.8	35968
1998 HY ₁₂₇	1999 08 30.9	22 35.20	-15 07.1	17.6	-0.97	- 3.3	2.6/29.1	35990
1994 AJ ₃	1999 08 30.9	22 35.25	-08 24.6	18.9	-0.58	- 4.1	0.1/31.1	36070
1999 PX	1999 08 30.9	22 35.61	-09 45.0	17.8	-0.94	- 9.3	0.4/30.7	36093
1991 VA ₃	1999 08 31.0	22 35.73	+14 38.2	15.5	-0.81	- 2.2	10.5/07.6	36067
1998 FA ₁₁₄	1999 08 31.0	22 35.86	+00 21.5	17.5	-0.88	- 4.8	3.2/02.9	35971
1993 FZ ₂₆	1999 08 31.0	22 35.88	-03 09.6	17.4	-0.79	- 5.4	2.0/01.9	36069
(8639)	1999 08 31.0	22 35.95	+01 28.8	17.2	-0.97	- 4.6	4.6/03.1	36060
1059 T-2	1999 08 31.0	22 35.98	-03 13.6	17.2	-0.88	- 6.5	2.2/02.0	36122
(8720)	1999 08 31.1	22 36.26	-16 09.0	17.5	-0.78	- 4.2	2.3/28.9	31692
1990 QD ₇	1999 08 31.1	22 36.28	-09 15.9	17.7	-0.74	- 7.5	0.2/31.0	36065
(11616)	1999 08 31.2	22 36.41	-15 32.5	16.8	-0.65	- 7.3	1.8/28.8	35862
(11493)	1999 08 31.2	22 36.47	-08 30.7	17.2	-0.90	- 6.6	0.1/31.3	35831
1981 EL ₄₁	1999 08 31.2	22 36.55	-16 50.7	19.3	-0.85	- 2.0	2.5/28.9	24239
1997 AZ ₅	1999 08 31.2	22 36.64	+01 07.6	17.6	-0.98	- 4.1	4.1/03.1	35936
2174 T-3	1999 08 31.2	22 36.73	-21 28.6	18.1	-0.99	- 2.0	4.2/27.7	26193
9586 P-L	1999 08 31.3	22 36.82	-12 15.2	18.1	-0.70	- 5.3	0.9/30.2	29649
1998 FP ₁₁	1999 08 31.3	22 36.87	-06 51.7	17.8	-0.87	- 7.6	0.7/32.0	36079
1993 FO ₄	1999 08 31.4	22 37.09	-03 56.8	18.0	-0.78	- 8.2	1.5/02.0	32306
1981 ES ₃₉	1999 08 31.4	22 37.15	-06 50.5	20.2	-0.78	- 4.4	0.6/01.0	22430
1998 KV ₇	1999 08 31.4	22 37.16	-09 21.5	17.6	-0.76	- 5.5	0.2/31.2	36084
(11263)	1999 08 31.4	22 37.16	+27 06.9	16.5	-1.25	+ 3.4	14.6/12.3	35557
1998 FZ ₄₇	1999 08 31.5	22 37.48	-09 23.5	17.7	-1.03	- 3.5	0.3/31.3	36079
1999 RV ₁₂	1999 08 31.5	22 37.48	-00 01.1	17.7	-0.80	- 8.2	4.2/03.5	36097
(8950)	1999 08 31.5	22 37.55	-20 09.0	16.3	-0.81	- 3.4	3.3/28.0	31934
2203 T-3	1999 08 31.5	22 37.59	+06 01.4	18.6	-0.68	- 5.4	3.9/05.6	36124
1981 ER ₂₃	1999 08 31.5	22 37.61	-11 22.5	19.4	-0.88	- 5.5	0.9/30.7	22074
(8627)	1999 08 31.5	22 37.77	-07 42.2	17.0	-0.86	- 4.7	0.4/31.9	31670
1998 FP ₆₅	1999 08 31.6	22 37.80	+02 19.2	17.3	-0.77	- 7.0	4.0/04.4	36080
1984 EU ₁	1999 08 31.6	22 37.97	-08 11.8	17.7	-1.00	- 4.5	0.2/31.8	36063
1996 VG ₁₁	1999 08 31.6	22 37.99	-08 57.2	18.2	-1.02	- 3.5	0.1/31.6	36074
1999 RV ₁₀₂	1999 08 31.6	22 38.00	+04 12.7	17.5	-0.77	- 2.0	5.2/04.6	36110
1996 VC ₃₄	1999 08 31.6	22 38.01	-23 43.4	18.2	-0.95	- 3.4	7.4/27.1	36074
1998 HX ₁₂₇	1999 08 31.7	22 38.18	-12 00.5	18.2	-0.89	- 3.0	1.3/30.7	35990
1998 FK ₃₂	1999 08 31.7	22 38.21	-04 31.3	17.2	-0.97	- 6.3	1.7/02.0	35955
1998 HD ₁₀₃	1999 08 31.7	22 38.22	-06 22.2	18.8	-0.90	- 5.1	0.7/01.4	32021
1998 FY ₃₁	1999 08 31.7	22 38.28	-04 30.0	18.1	-0.94	- 7.2	1.6/02.1	35955
1997 CP ₁₉	1999 08 31.7	22 38.37	-15 42.4	16.8	-0.81	-10.4	2.5/29.2	36076
1998 FZ ₉₉	1999 08 31.8	22 38.53	-04 15.0	16.8	-1.03	- 2.2	1.8/02.0	35968
1996 XD ₂₂	1999 08 31.8	22 38.72	-02 14.4	18.5	-0.88	- 2.9	2.0/02.7	35933
(11522)	1999 08 31.9	22 38.82	+03 06.0	16.8	-0.90	- 6.1	4.7/04.7	35838
1998 SD ₂	1999 08 31.9	22 38.86	+03 51.0	17.0	-0.65	- 7.2	3.2/05.4	36085
1996 TD ₂₁	1999 08 31.9	22 39.12	-11 20.2	18.3	-0.98	- 5.1	1.1/31.1	36074
1999 RG ₁₄₈	1999 08 31.9	22 39.27	-03 45.4	17.8	-1.01	- 4.2	1.9/02.4	36047
1991 EX ₂	1999 09 01.0	22 39.18	-10 43.0	17.4	-1.09	- 1.8	0.9/31.4	36066
1996 XS ₂₃	1999 09 01.0	22 39.21	-57 29.3	17.7	-1.79	+ 1.8	19.6/13.0	32246
1999 RO ₆₃	1999 09 01.0	22 39.27	-05 00.1	16.6	-0.84	- 6.0	1.3/02.0	36041
1998 FX ₁₂₅	1999 09 01.0	22 39.46	+01 08.3	17.8	-0.99	- 4.4	3.8/03.9	35976
1994 JS ₁	1999 09 01.0	22 39.48	-03 22.6	19.0	-0.80	- 9.2	1.4/02.9	32051
1992 RU	1999 09 01.0	22 39.51	-09 40.2	16.2	-0.73	- 8.8	0.6/31.6	35916
(8307)	1999 09 01.1	22 39.64	-14 45.3	17.4	-1.09	- 2.8	2.9/30.4	36060

(11101)	1999 09 01.1	22 39.86	+02 24.4	17.9	-0.77	- 8.7	3.5/05.1	35237
1996 XC ₁₂	1999 09 01.1	22 39.87	-01 16.8	18.7	-0.97	- 2.7	3.0/03.2	35933
(9003)	1999 09 01.2	22 40.00	-13 20.7	16.2	-0.79	- 6.5	1.7/30.6	36060
1996 XU	1999 09 01.2	22 40.22	+00 19.9	17.4	-0.90	- 5.4	3.9/04.0	36075
(11765)	1999 09 01.2	22 40.25	-05 44.4	17.4	-0.98	- 4.5	1.0/02.1	35901
1998 KF ₁₀	1999 09 01.2	22 40.28	-05 54.1	17.6	-0.78	- 7.0	0.9/02.1	35995
1998 FS ₁₅	1999 09 01.2	22 40.29	+06 37.3	18.0	-0.74	-10.4	5.6/07.1	36079
(11521)	1999 09 01.3	22 40.29	-10 30.2	17.7	-0.74	- 4.9	0.6/31.6	35838
1998 HY ₆	1999 09 01.3	22 40.50	-18 19.4	18.5	-0.98	- 4.7	3.6/29.4	36081
1998 HC ₁₁₈	1999 09 01.3	22 40.57	-14 31.8	16.9	-0.79	- 9.1	2.2/30.2	35989
1999 RP ₁₂	1999 09 01.3	22 40.59	-01 26.1	17.4	-0.76	- 9.9	2.3/03.9	36031
(11446)	1999 09 01.4	22 40.73	-07 04.1	16.1	-0.76	- 4.8	0.5/01.8	35818
5366 T-2	1999 09 01.4	22 40.99	+03 45.1	18.4	-0.76	- 4.2	3.7/05.4	36054
1973 UK ₅	1999 09 01.4	22 41.07	-13 24.4	17.6	-0.96	- 5.2	1.9/30.9	36061
1999 NZ ₅₆	1999 09 01.5	22 41.03	+13 35.8	17.1	-0.63	-10.0	9.3/10.7	36092
1999 ND ₅₇	1999 09 01.5	22 41.12	+10 16.8	17.5	-0.82	- 4.8	6.6/07.8	36021
1998 HH ₂₀	1999 09 01.5	22 41.23	+07 29.7	19.1	-0.81	- 9.5	5.4/07.4	32326
1997 BT ₂	1999 09 01.5	22 41.34	-04 33.5	18.4	-1.00	- 1.5	1.3/02.6	35938
1993 BT ₂	1999 09 01.5	22 41.35	-06 48.7	17.4	-0.87	- 3.9	0.4/02.0	36068
1999 NH ₅₇	1999 09 01.5	22 41.39	+12 22.6	17.7	-0.89	- 1.1	8.7/07.7	36092
1998 FL ₁₁₆	1999 09 01.6	22 41.41	-06 02.3	18.1	-1.04	- 4.5	0.9/02.3	35974
1996 VT ₂	1999 09 01.6	22 41.53	-05 50.0	18.5	-0.94	- 5.9	0.9/02.4	36074
1977 RG ₁₉	1999 09 01.6	22 41.56	-06 30.3	18.0	-1.03	- 5.1	0.8/02.0	36061
(11699)	1999 09 01.6	22 41.72	-02 26.8	16.2	-0.96	- 4.0	2.2/03.4	35884
(11473)	1999 09 01.7	22 41.75	-12 14.6	15.2	-1.01	+ 2.7	1.9/31.8	35825
1999 NP ₂	1999 09 01.7	22 41.77	-00 16.2	16.3	-0.75	- 8.8	3.9/04.6	36008
(11677)	1999 09 01.7	22 41.79	-12 38.7	16.6	-0.86	-10.2	2.0/31.2	35878
9056 P-L	1999 09 01.7	22 41.85	-11 46.4	17.3	-1.06	- 0.5	1.8/31.8	36122
1998 FC ₉	1999 09 01.8	22 42.17	-06 48.9	17.3	-0.91	- 8.9	0.6/02.3	36079
1998 FT ₆₃	1999 09 01.8	22 42.25	-10 37.2	19.4	-0.93	- 6.5	0.8/01.1	32067
(11456)	1999 09 01.8	22 42.37	-04 28.0	17.8	-0.77	- 4.0	1.2/03.0	35821
1998 HP ₁₄₇	1999 09 01.8	22 42.42	-17 15.0	17.7	-0.80	- 6.5	3.1/29.8	36083
1994 PY ₁₇	1999 09 01.8	22 42.46	-06 10.8	17.9	-0.77	- 5.1	0.7/02.5	36071
1981 EA ₁₈	1999 09 01.9	22 42.54	-04 38.9	18.5	-0.69	- 7.3	1.0/03.2	35908
1998 BC ₈	1999 09 01.9	22 42.57	-08 33.4	18.9	-1.00	- 4.7	9.2/22.0	34216
(8275)	1999 09 01.9	22 42.61	-14 59.2	17.2	-1.03	- 6.4	2.7/30.8	36060
1999 PF ₄	1999 09 01.9	22 42.69	-08 17.0	18.6	-0.81	- 4.3	8.4/13.0	36025
1994 BH ₁	1999 09 01.9	22 42.72	-09 09.4	17.6	-1.04	- 2.6	0.4/01.7	36070
1996 XL ₁₄	1999 09 01.9	22 42.81	-16 25.7	19.0	-0.87	- 5.7	2.9/30.3	32954
1995 UM ₃	1999 09 02.0	22 42.94	-13 33.6	17.7	-0.91	- 2.9	2.0/31.4	35925
1993 CS ₁	1999 09 02.0	22 42.96	-11 02.5	18.3	-0.89	- 4.9	0.9/01.1	35917
1998 FS ₄₉	1999 09 02.0	22 43.00	-09 57.4	18.5	-0.95	- 4.6	0.7/01.5	35957
(11449)	1999 09 02.0	22 43.04	-07 03.1	17.0	-0.79	- 4.5	0.3/02.4	35819
1993 FO ₂₁	1999 09 02.0	22 43.07	-12 10.3	18.0	-0.89	- 3.4	1.4/31.9	36069
1990 OZ	1999 09 02.0	22 43.19	+00 29.4	17.2	-0.73	-10.6	3.2/05.3	36065
1998 JU	1999 09 02.0	22 43.23	-09 39.7	18.9	-0.98	- 5.1	0.6/01.6	36083
1998 FL ₄₄	1999 09 02.1	22 43.17	-19 34.1	17.3	-1.10	+ 0.9	4.6/30.4	36079
1999 NF ₅₇	1999 09 02.1	22 43.28	+11 30.1	17.7	-0.84	- 6.0	7.0/09.1	36092
1998 DW ₂₅	1999 09 02.1	22 43.38	-11 32.7	20.3	-0.96	- 5.2	1.3/01.1	31409
(8968)	1999 09 02.1	22 43.58	+02 03.4	16.4	-0.69	- 7.4	3.5/05.8	31939
1998 KR ₄₂	1999 09 02.2	22 43.89	+02 05.5	18.3	-0.75	- 8.0	3.1/05.9	36084

1998 HQ ₁₈	1999 09 02.3	22 44.04	-00 09.0	18.1	-0.87	- 6.4	3.0/04.9	36081	1998 FF ₄₇	1999 09 03.7	22 49.17	-13 23.1	19.4	-1.01	- 1.7	2.0/02.2	32319
(11593)	1999 09 02.4	22 44.35	-10 12.9	17.1	-0.97	- 7.0	0.9/01.7	35856	1997 EN ₂	1999 09 03.7	22 49.23	-06 27.1	18.2	-0.68	- 6.5	0.3/04.1	35940
1981 ET ₅	1999 09 02.4	22 44.36	+07 16.5	17.8	-0.78	- 7.7	5.7/07.9	36062	(8483)	1999 09 03.7	22 49.26	-21 03.9	16.9	-1.00	- 3.5	5.6/30.7	31492
1985 CV ₁	1999 09 02.5	22 44.69	-10 35.0	18.0	-0.71	- 4.1	0.7/01.7	30468	1991 GA ₂	1999 09 03.7	22 49.32	+12 15.3	15.8	-0.56	-22.6	8.2/13.4	35914
1998 HO ₁₄₅	1999 09 02.5	22 44.81	-09 44.9	18.7	-0.85	- 6.5	0.6/02.0	36083	1998 EP ₃	1999 09 03.7	22 49.37	-16 12.3	16.2	-1.00	0.0	3.7/01.6	36078
(11701)	1999 09 02.6	22 45.15	+00 57.6	16.4	-0.85	- 4.0	3.5/05.4	35885	(8893)	1999 09 03.8	22 49.45	-25 23.4	16.7	-0.70	-20.3	7.4/26.8	31921
1997 AC ₇	1999 09 02.6	22 45.26	-15 34.8	17.6	-0.78	- 8.3	2.4/30.9	36076	(9247)	1999 09 03.8	22 49.63	+22 20.7	17.0	-0.69	- 7.2	8.1/15.8	32434
1978 VW ₈	1999 09 02.7	22 45.41	-11 59.4	17.2	-0.77	- 4.8	1.3/01.4	36062	1995 QG	1999 09 03.9	22 49.68	+00 34.0	18.2	-1.02	- 0.2	3.0/05.9	36072
(11466)	1999 09 02.7	22 45.62	+04 57.9	15.7	-0.71	+ 2.0	7.8/07.0	35823	1991 TH ₃	1999 09 03.9	22 49.73	+04 39.5	17.6	-0.79	- 7.3	5.4/08.0	36067
1998 HX ₉₁	1999 09 02.7	22 45.66	-06 23.7	16.9	-0.84	- 8.0	0.6/03.3	35985	1999 RM ₁₅₄	1999 09 03.9	22 49.98	-04 20.9	17.5	-0.93	- 5.1	1.3/04.9	36048
1996 XL ₁₉	1999 09 02.7	22 45.77	-07 17.8	18.2	-0.95	- 5.4	0.2/03.0	30786	1994 PX ₁₁	1999 09 04.1	22 50.45	-06 13.2	17.3	-0.79	- 4.5	0.4/04.5	36071
1993 NZ ₁	1999 09 02.8	22 45.71	+03 49.0	16.9	-0.81	- 2.5	3.8/06.3	36069	(11707)	1999 09 04.1	22 50.48	-03 00.8	15.9	-0.97	- 2.8	2.2/05.4	35887
(11658)	1999 09 02.8	22 45.82	-04 45.1	17.6	-0.66	- 9.1	0.8/04.0	35873	1978 SX ₇	1999 09 04.1	22 50.51	-07 31.0	17.0	-0.98	- 3.4	0.1/04.1	36061
1999 RB ₁₅₃	1999 09 02.8	22 45.88	+00 23.0	17.1	-0.83	- 8.3	3.7/05.7	36047	1992 PO ₂	1999 09 04.1	22 50.83	+02 20.6	16.2	-0.79	- 8.2	4.5/07.6	36068
5134 T-2	1999 09 02.8	22 46.07	-01 37.7	18.6	-0.94	- 1.4	2.5/04.6	36054	1998 HQ ₂₂	1999 09 04.2	22 51.09	-13 44.2	18.3	-0.95	- 5.6	2.7/02.3	36082
(8710)	1999 09 02.8	22 46.09	-32 20.3	18.0	-0.96	- 4.4	8.0/25.9	31689	(11688)	1999 09 04.2	22 51.13	-07 05.4	17.0	-1.00	- 3.9	0.1/04.3	35881
1990 SX ₈	1999 09 02.9	22 46.10	-03 53.9	16.6	-0.73	-10.3	1.2/04.4	36065	1998 GH ₁	1999 09 04.2	22 51.17	-20 23.5	18.4	-0.92	- 2.9	4.7/31.4	35977
1994 AG ₁	1999 09 02.9	22 46.12	-07 53.5	18.5	-0.89	- 7.2	0.0/02.9	36070	1981 EN ₃₃	1999 09 04.4	22 51.67	-04 24.4	20.6	-1.02	- 4.7	1.1/05.3	26921
(8818)	1999 09 02.9	22 46.16	-10 38.3	16.8	-0.81	- 5.2	1.0/02.0	31903	1996 UZ	1999 09 04.4	22 51.80	-01 12.5	17.5	-0.93	- 6.6	2.3/06.4	36074
1998 HZ ₃₈	1999 09 02.9	22 46.17	+09 35.7	17.8	-0.76	- 9.0	6.4/09.5	35981	1994 TF ₁	1999 09 04.4	22 51.86	-21 13.5	17.1	-0.82	- 3.5	4.8/31.0	36071
1981 EU ₂	1999 09 02.9	22 46.22	+00 25.4	18.2	-0.86	- 1.4	2.8/05.3	35907	1998 FW ₇₇	1999 09 04.4	22 51.87	-20 31.1	18.1	-0.94	- 3.7	4.8/31.5	36080
3535 T-3	1999 09 02.9	22 46.32	-11 09.5	17.0	-0.97	- 4.9	1.4/01.9	36125	3093 T-3	1999 09 04.4	22 51.88	-00 33.5	16.7	-0.78	- 8.6	2.9/06.9	36124
1991 RC ₆	1999 09 02.9	22 46.35	-27 49.2	16.5	-1.13	+ 2.0	9.1/28.8	31954	1997 AV ₂	1999 09 04.6	22 52.38	-11 43.6	19.8	-0.81	- 4.9	1.2/03.2	29320
(11651)	1999 09 02.9	22 46.39	-05 58.7	17.2	-0.78	- 5.7	0.6/03.6	35871	1981 EP ₂₃	1999 09 04.6	22 52.42	-13 57.9	19.6	-0.88	- 1.2	2.0/02.7	26919
1994 CN ₈	1999 09 02.9	22 46.39	-10 36.9	16.2	-0.92	- 7.0	1.3/02.1	36070	1998 OM ₁₂	1999 09 04.6	22 52.56	-14 40.2	18.5	-0.51	- 2.4	1.4/02.1	36085
(8981)	1999 09 02.9	22 46.41	-19 33.3	16.8	-0.74	- 6.5	3.5/29.9	35414	1998 HN ₅₁	1999 09 04.6	22 52.58	-05 23.0	17.5	-0.89	- 7.8	0.7/05.3	35982
1991 UQ ₂	1999 09 02.9	22 46.47	-35 39.4	16.7	-1.01	+ 3.0	14.4/25.3	35684	1999 PR ₁	1999 09 04.6	22 52.63	-09 16.2	17.3	-0.92	- 4.5	0.9/04.1	36024
1999 QG	1999 09 03.0	22 46.44	-31 02.6	17.7	-0.95	- 4.1	7.4/26.1	36094	1981 ER ₁₂	1999 09 04.7	22 52.65	-06 33.4	18.8	-0.83	- 2.1	0.2/04.9	26917
6688 P-L	1999 09 03.0	22 46.48	-11 22.2	18.2	-0.81	- 2.4	1.3/01.9	36051	1989 XW ₁	1999 09 04.7	22 52.72	-05 04.6	17.2	-0.70	- 7.7	0.7/05.5	35912
1998 FZ ₁₅	1999 09 03.0	22 46.78	+20 43.9	17.0	-0.77	- 8.8	10.0/14.5	36079	1999 RM ₁	1999 09 04.7	22 52.85	-07 55.5	18.0	-0.93	- 7.5	0.3/04.5	36028
(11469)	1999 09 03.0	22 46.87	-06 45.4	17.1	-0.92	- 6.4	0.5/03.4	35824	1998 HW ₁₁₉	1999 09 04.7	22 52.86	-13 34.1	18.1	-0.88	- 7.9	2.3/02.6	36083
2825 P-L	1999 09 03.1	22 46.80	-06 46.3	19.3	-0.71	- 4.5	0.3/03.4	29948	1999 RB	1999 09 04.7	22 52.90	-07 54.4	17.1	-0.73	- 9.5	0.3/04.5	36027
1998 FY ₉₉	1999 09 03.1	22 46.80	-03 51.1	16.8	-1.04	- 2.7	1.5/04.2	36080	1996 XN ₅	1999 09 04.8	22 52.94	-12 55.2	18.2	-0.97	- 5.8	2.2/03.0	35932
1341 T-2	1999 09 03.1	22 46.92	-09 28.0	18.4	-0.87	- 4.2	0.6/02.6	26185	1999 RG ₁₅₄	1999 09 04.8	22 52.94	-02 37.3	17.7	-0.80	- 5.7	1.5/06.3	36047
1981 EK ₂₈	1999 09 03.2	22 47.29	-13 22.1	20.9	-1.02	- 1.3	1.9/01.7	26920	1998 FV ₇₀	1999 09 04.8	22 52.98	-06 29.9	18.0	-0.91	- 6.8	0.2/05.0	35964
1994 PH ₂₆	1999 09 03.2	22 47.31	-11 57.9	17.7	-0.80	- 4.5	1.4/01.9	35921	1998 EQ ₁₀	1999 09 04.8	22 53.03	-17 19.9	16.6	-0.88	- 4.4	5.0/01.6	32316
1991 VN ₃	1999 09 03.2	22 47.51	-21 06.5	17.2	-0.99	- 5.3	5.7/29.9	35914	1997 EA	1999 09 04.8	22 53.33	-10 19.7	18.6	-0.74	- 7.0	0.9/03.8	35940
1998 KB ₃₄	1999 09 03.3	22 47.71	-06 26.3	17.9	-0.72	- 5.7	0.4/03.8	35997	1998 JN ₁	1999 09 04.8	22 53.38	-29 39.4	18.4	-1.09	- 2.3	7.8/29.1	36083
1999 RL ₁₀₃	1999 09 03.3	22 47.78	+04 16.8	17.0	-0.87	- 5.6	5.0/07.3	36043	1997 XH	1999 09 04.9	22 53.31	-02 46.6	17.1	-1.06	- 3.8	1.8/06.1	35945
1998 KN ₄₅	1999 09 03.3	22 47.80	-10 57.0	18.1	-0.73	- 4.4	1.0/02.3	35998	1996 VH ₁₆	1999 09 04.9	22 53.57	-28 11.4	18.9	-1.07	- 1.5	9.6/29.9	28604
1988 RJ ₆	1999 09 03.3	22 47.88	-05 20.7	17.0	-0.97	- 2.3	1.1/04.0	36064	1998 FQ ₇₂	1999 09 04.9	22 53.59	-12 36.2	16.0	-0.87	- 3.2	2.7/03.3	36080
1992 DT ₂	1999 09 03.3	22 47.93	-09 11.4	18.9	-0.76	- 5.5	0.5/02.9	35914	1996 XD ₃₂	1999 09 05.0	22 53.70	-31 20.8	18.4	-0.93	- 4.2	7.5/27.8	32312
1995 SM ₁₅	1999 09 03.4	22 48.00	-10 23.7	17.6	-1.00	- 1.4	1.1/02.7	35923	1997 AB ₅	1999 09 05.0	22 53.77	-16 10.3	17.8	-1.01	- 4.1	3.4/02.3	36075
1994 EC ₅	1999 09 03.4	22 48.07	-08 46.2	16.9	-1.00	- 2.4	0.5/03.1	36070	1993 FQ ₄₃	1999 09 05.0	22 53.80	-10 30.1	17.6	-0.94	- 4.2	1.4/04.0	36069
1978 VT ₄	1999 09 03.5	22 48.27	-09 34.1	18.3	-0.75	- 4.3	0.6/02.9	36061	1991 VT	1999 09 05.0	22 53.87	-37 47.4	16.4	-0.98	- 2.6	12.8/24.6	31956
(11681)	1999 09 03.5	22 48.30	-06 34.7	17.1	-1.02	- 5.3	0.4/03.8	35879	1999 RH ₁₄	1999 09 05.0	22 54.00	-08 43.3	17.5	-0.69	- 8.9	0.6/04.4	36032
1992 UN ₅	1999 09 03.5	22 48.32	-35 57.8	17.7	-0.77	- 2.5	6.7/24.3	30658	1998 FK ₁	1999 09 05.1	22 54.25	-07 32.5	18.7	-1.05	- 3.9	0.2/05.0	35951
1998 ED	1999 09 03.5	22 48.38	-30 25.8	16.7	-1.10	+ 1.6	10.1/28.7	32315	(11555)	1999 09 05.1	22 54.28	-11 34.9	17.4	-0.77	- 8.8	1.4/03.5	35846
(9030)	1999 09 03.5	22 48.50	-13 15.1	18.3	-0.50	- 3.0	1.0/01.6	32181	1997 AE ₅	1999 09 05.1	22 54.30	+08 44.9	16.4	-1.08	+ 2.0	7.1/09.0	35936
4695 P-L	1999 09 03.6	22 48.93	-12 19.8	18.1	-1.03	- 3.2	1.9/02.3	36121	1995 UC	1999 09 05.1	22 54.35	-21 11.5	18.3	-1.05	- 0.3	5.1/01.4	36072
(11525)	1999 09 03.6	22 48.96	-13 16.8	16.4	-0.75	- 9.6	2.5/01.6	35839	1998 HF ₃	1999 09 05.1	22 54.37	+04 13.7	17.7	-0.66	- 9.0	3.8/09.5	36081

1992 KJ	1999 09 05.2	22 54.42	-03 31.3	16.8	-0.96	- 7.6	1.4/06.3	35915	(11501)	1999 09 06.4	22 59.12	-03 16.8	16.5	-0.87	- 7.7	1.5/07.6	35833
(11533)	1999 09 05.2	22 54.47	-14 36.2	17.0	-0.73	- 7.0	2.4/02.5	35841	1981 EP ₁₂	1999 09 06.4	22 59.12	+03 46.0	17.0	-0.95	- 5.3	4.4/09.7	36062
1983 RL ₃	1999 09 05.2	22 54.65	-01 36.8	16.3	-0.95	- 3.7	2.7/06.8	36063	1999 PC ₂	1999 09 06.5	22 59.11	-10 25.8	18.3	-0.94	- 8.3	1.7/05.2	36025
1993 FM ₅	1999 09 05.2	22 54.73	-10 18.9	18.0	-0.84	- 5.7	1.3/04.2	36069	1998 FV ₇₇	1999 09 06.5	22 59.34	-00 54.9	16.6	-0.65	-13.4	2.2/08.8	35966
1998 HW ₄₄	1999 09 05.2	22 54.79	-10 31.8	17.0	-0.92	- 3.9	1.5/04.2	35981	1998 FD ₇₃	1999 09 06.5	22 59.36	-12 25.5	19.5	-0.79	- 5.0	1.7/04.6	36080
1999 RK ₁₄	1999 09 05.3	22 54.87	-05 49.0	16.9	-0.77	- 9.8	0.4/05.7	36032	1999 RY ₂₇	1999 09 06.5	22 59.40	-10 33.7	16.5	-1.00	- 1.5	1.4/05.5	36035
1998 FT ₅₉	1999 09 05.3	22 55.05	-05 32.3	18.0	-0.86	- 8.7	0.5/05.8	36080	(11695)	1999 09 06.5	22 59.42	-14 55.5	17.8	-1.07	- 3.8	3.3/04.1	35883
1999 MC ₂	1999 09 05.3	22 55.15	-21 40.7	17.5	-0.51	- 9.0	8.0/30.3	36088	1999 PZ ₁	1999 09 06.6	22 59.47	-09 04.7	18.0	-0.88	- 9.1	1.0/05.7	36024
1998 HR ₈₄	1999 09 05.4	22 55.28	+08 32.6	17.8	-0.75	- 9.5	5.4/11.3	35984	1992 WJ	1999 09 06.6	22 59.55	-09 32.7	17.7	-0.95	- 5.1	1.1/05.7	36068
(11626)	1999 09 05.4	22 55.34	-12 41.7	17.1	-1.04	- 4.1	2.4/03.8	35865	1999 PB ₂	1999 09 06.6	22 59.59	-09 01.9	17.9	-0.87	- 4.5	0.9/05.8	36024
1994 PA ₂₅	1999 09 05.4	22 55.48	-08 59.0	18.5	-0.81	- 4.2	0.7/04.8	35920	1998 DF ₉	1999 09 06.6	22 59.76	-15 59.8	18.8	-1.03	- 5.7	3.8/03.7	32315
(11777)	1999 09 05.5	22 55.73	-08 56.9	18.0	-0.95	- 4.1	0.9/04.9	35904	1996 WF	1999 09 06.6	22 59.77	-09 01.5	18.2	-0.99	- 5.2	1.2/05.9	35931
1999 PA ₂	1999 09 05.5	22 55.75	-08 52.8	18.0	-1.05	- 4.5	0.9/05.0	36024	1995 SW ₂₅	1999 09 06.6	22 59.80	-07 52.7	17.7	-0.86	- 3.2	0.7/06.2	36072
1998 FM ₁₂₁	1999 09 05.5	22 55.75	+02 02.2	16.2	-0.76	- 5.3	4.4/08.6	36081	1995 XX	1999 09 06.7	23 00.05	-18 22.8	17.4	-0.83	- 2.6	3.7/03.1	36073
1994 LF ₁	1999 09 05.5	22 55.78	+45 07.3	18.3	-0.83	- 7.8	17.2/27.0	24395	2065 T-3	1999 09 06.7	23 00.21	-04 01.5	18.2	-1.06	- 3.6	1.0/07.5	36124
1998 FQ ₄₉	1999 09 05.5	22 55.81	-06 11.7	15.6	-0.84	- 3.6	0.3/05.8	36079	1998 HT ₁₃	1999 09 06.7	23 00.22	-05 49.1	17.4	-0.96	- 2.5	9.9/27.0	35978
2304 T-2	1999 09 05.6	22 55.86	-10 43.2	18.5	-0.78	- 4.3	1.2/04.4	36123	1996 TR ₂₉	1999 09 06.7	23 00.23	+00 43.8	18.2	-0.93	- 7.5	3.0/09.1	35930
1998 HF ₁₀₃	1999 09 05.6	22 55.91	-10 42.1	19.1	-0.94	- 5.3	1.3/04.4	36083	1998 FP ₇₂	1999 09 06.8	23 00.17	-06 04.4	18.6	-0.99	- 5.1	9.4/18.0	36080
(11520)	1999 09 05.6	22 56.00	-12 41.1	17.5	-1.04	- 4.0	2.3/03.9	35838	(10511)	1999 09 06.8	23 00.26	-10 48.9	16.1	-0.94	- 1.6	1.7/05.6	35676
(11484)	1999 09 05.6	22 56.04	-07 34.0	17.1	-0.87	- 4.2	0.3/05.4	35828	4261 T-2	1999 09 06.8	23 00.28	-14 20.1	18.0	-0.88	- 4.4	2.8/04.3	36124
1978 UA ₅	1999 09 05.6	22 56.07	-07 49.4	17.7	-0.95	- 3.8	0.5/05.4	35905	1993 OH ₅	1999 09 06.8	23 00.30	-06 52.4	17.8	-0.74	- 4.8	0.2/06.7	36069
1991 XG ₁	1999 09 05.7	22 56.23	-42 31.8	18.0	-0.62	- 3.0	6.6/22.5	35287	1998 FF ₆₆	1999 09 06.8	23 00.35	-09 23.4	17.7	-0.92	- 4.0	1.1/05.9	36080
1998 HX ₈₉	1999 09 05.7	22 56.61	-11 15.7	17.6	-1.04	- 4.2	2.0/04.5	36082	1997 AV ₄	1999 09 06.8	23 00.39	-12 33.7	17.3	-0.77	- 6.8	2.0/04.7	35935
1997 CN ₁	1999 09 05.8	22 56.64	-13 54.0	18.8	-0.91	- 4.8	2.4/03.6	35939	1997 BR ₈	1999 09 06.8	23 00.57	-23 53.3	17.2	-0.76	-10.2	6.9/31.1	36076
1998 FP ₇₉	1999 09 05.8	22 56.68	-20 01.8	16.6	-0.94	- 4.0	5.6/01.7	32324	1994 PV ₁₈	1999 09 06.9	23 00.54	-04 14.8	18.4	-0.80	- 4.3	0.7/07.6	35919
2117 T-1	1999 09 05.8	22 56.73	-10 42.0	18.1	-1.02	- 4.5	1.6/04.7	36122	1998 JS ₂	1999 09 06.9	23 00.56	-18 17.5	19.6	-0.92	- 5.9	3.8/03.0	32331
1995 WV ₃	1999 09 05.8	22 56.94	+17 29.2	17.9	-0.80	- 2.3	6.1/13.8	36073	(11665)	1999 09 06.9	23 00.83	+10 54.6	19.6	-0.65	- 5.6	4.1/13.3	35875
1998 JK	1999 09 05.8	22 56.97	-12 21.4	17.7	-0.94	- 5.4	2.0/04.1	36083	(11628)	1999 09 06.9	23 00.86	-18 41.7	16.1	-1.03	- 3.9	5.4/03.3	35866
1998 FS ₁₁₅	1999 09 05.9	22 57.14	-13 43.2	18.2	-1.04	- 0.6	2.6/04.1	35973	(8969)	1999 09 06.9	23 00.91	-06 36.4	16.8	-0.90	- 6.1	9.7/18.0	31939
1998 FJ ₄₂	1999 09 05.9	22 57.19	-02 51.1	18.8	-0.94	- 5.8	1.3/07.2	35956	1999 PV ₂	1999 09 07.0	23 00.88	-05 17.4	19.1	-1.02	- 2.1	0.3/07.3	36025
1997 ER ₂₆	1999 09 05.9	22 57.32	-06 24.7	16.8	-0.72	- 5.5	0.1/06.1	35941	(11281)	1999 09 07.0	23 00.99	-13 16.7	15.9	-0.88	- 4.3	3.5/04.8	35561
1988 RZ ₁₀	1999 09 05.9	22 57.33	-07 47.9	18.5	-0.72	- 5.9	0.4/05.6	35912	1995 SD ₄₄	1999 09 07.0	23 01.15	-03 18.9	18.5	-0.83	- 5.7	1.0/08.0	35924
1998 HW ₁₄₀	1999 09 06.0	22 57.45	-19 56.4	19.0	-0.81	- 4.2	4.0/01.8	32273	1999 NT ₄	1999 09 07.0	23 01.16	-05 52.3	16.9	-0.95	- 4.7	0.2/07.2	36009
1981 EE ₃₉	1999 09 06.0	22 57.66	-05 48.8	18.5	-0.71	- 6.9	0.3/06.4	35909	1996 XV ₁₈	1999 09 07.0	23 01.19	-01 12.1	18.3	-0.84	- 6.2	1.8/08.7	36075
1988 DX ₁	1999 09 06.0	22 57.68	+07 04.7	17.9	-0.83	- 4.4	4.7/10.6	32218	1997 CK ₂₂	1999 09 07.0	23 01.21	-11 54.6	18.2	-0.77	- 8.9	1.8/05.0	36076
1979 QM ₃	1999 09 06.1	22 57.72	-09 22.5	17.8	-0.86	- 9.4	1.2/05.2	36062	(11486)	1999 09 07.1	23 01.39	-10 02.6	16.9	-0.94	- 6.1	1.6/05.9	35829
1995 SO ₅	1999 09 06.1	22 58.05	-34 55.2	16.8	-1.02	+ 0.5	12.7/28.7	36072	1996 VT ₅	1999 09 07.1	23 01.59	-20 22.8	16.9	-0.95	- 6.7	5.8/02.4	36074
1995 SM ₁	1999 09 06.2	22 58.01	-08 41.0	18.6	-0.84	- 5.3	0.8/05.5	35923	1988 PQ	1999 09 07.2	23 01.85	-00 25.5	17.6	-0.94	- 4.0	2.6/09.0	35910
4661 P-L	1999 09 06.2	22 58.06	-10 54.0	18.1	-0.80	- 4.6	1.4/04.8	36121	1998 HP ₂₄	1999 09 07.2	23 01.88	-36 58.1	16.9	-0.88	- 1.8	10.7/27.4	32327
(11510)	1999 09 06.2	22 58.30	+00 01.3	17.0	-0.71	- 8.7	1.9/08.7	35835	(9072)	1999 09 07.3	23 02.38	+14 41.5	16.0	-0.80	- 1.9	6.2/14.1	32190
1998 FW ₆₇	1999 09 06.2	22 58.41	-06 23.4	18.2	-0.88	- 7.3	0.1/06.4	35963	1994 JR	1999 09 07.4	23 02.33	-31 59.5	17.2	-0.94	- 4.3	9.3/29.7	32307
2581 P-L	1999 09 06.2	22 58.42	-11 35.4	18.3	-0.79	- 5.3	1.7/04.6	36120	1999 RT ₁₀₃	1999 09 07.4	23 02.33	+03 36.6	16.6	-0.62	-13.6	4.2/11.4	36110
1998 FT ₁₁₇	1999 09 06.2	22 58.44	-03 17.6	18.9	-0.99	- 5.2	1.2/07.3	35974	1995 UF ₆	1999 09 07.4	23 02.38	-29 22.7	16.3	-0.98	- 0.3	9.9/31.5	36072
1997 AV ₁	1999 09 06.3	22 58.38	-00 08.0	16.6	-0.99	- 2.0	2.8/08.1	36075	(11778)	1999 09 07.5	23 02.71	-14 14.6	17.6	-1.03	- 5.8	3.4/05.0	35904
1992 RS ₅	1999 09 06.3	22 58.43	-12 35.9	18.2	-1.01	- 4.3	2.5/04.5	36068	1997 AB ₄	1999 09 07.5	23 02.72	-03 47.3	17.3	-0.94	- 3.7	1.1/08.2	35935
1995 YN	1999 09 06.3	22 58.62	-28 29.5	16.5	-0.78	- 6.1	6.6/29.2	26907	1995 YF ₇	1999 09 07.5	23 02.76	-08 36.5	18.3	-0.69	- 6.9	1.1/06.6	35928
(8820)	1999 09 06.3	22 58.70	-13 48.0	16.2	-0.92	- 6.3	3.0/04.0	31904	1999 QQ ₂	1999 09 07.5	23 03.00	-06 24.8	16.6	-1.11	+ 1.4	0.1/07.5	36094
1994 PG ₃₅	1999 09 06.3	22 58.77	-04 50.8	17.8	-0.79	- 4.9	0.6/06.9	35921	1998 KF ₅₄	1999 09 07.5	23 03.05	-23 00.8	17.5	-0.69	- 7.1	5.0/01.3	32336
(10339)	1999 09 06.4	22 58.81	-05 04.1	17.3	-0.88	- 5.6	0.5/06.9	36061	1992 RK ₂	1999 09 07.5	23 03.09	-03 24.7	18.0	-0.97	- 5.6	1.1/08.4	36068
(8853)	1999 09 06.4	22 59.01	-15 33.2	17.4	-1.02	- 4.8	3.5/03.7	31912	1992 WD ₁	1999 09 07.6	23 03.23	-11 55.9	17.3	-0.90	- 6.7	2.6/05.7	36068
1998 MS ₇	1999 09 06.4	22 59.09	-16 46.1	21.1	-0.68	- 8.3	3.2/02.6	32688	1998 KW ₄₆	1999 09 07.7	23 03.48	+12 30.5	16.8	-0.73	- 5.0	5.9/14.3	36084

1996 UN	1999 09 07.7	23 03.51	-01 13.5	18.4	-0.94	- 7.6	1.8/09.3	36074
1994 PN ₂₂	1999 09 07.7	23 03.53	-06 44.3	17.4	-0.80	- 4.4	0.2/07.5	35920
(8880)	1999 09 07.7	23 03.56	-13 09.0	17.0	-0.85	- 4.0	2.5/05.5	31918
1992 WV ₁	1999 09 07.7	23 03.76	-12 51.6	18.2	-0.97	- 5.5	2.8/05.6	35917
1142 T-2	1999 09 07.7	23 03.81	-03 50.5	18.0	-0.91	- 5.6	0.7/08.5	36123
1998 FF ₆₀	1999 09 07.8	23 03.86	-05 48.2	18.9	-0.90	- 6.7	0.1/07.9	35960
(11644)	1999 09 07.8	23 03.92	-15 10.9	18.0	-0.70	- 5.6	2.2/04.7	35870
1996 VL ₃₀	1999 09 07.8	23 04.01	+07 09.5	16.6	-0.86	- 5.9	6.5/12.0	36074
1998 HV ₉₀	1999 09 07.8	23 04.05	-18 36.4	18.5	-0.95	- 5.1	4.5/03.9	32081
1998 HZ ₃₁	1999 09 07.8	23 04.11	+04 51.6	17.3	-0.91	- 6.4	4.0/11.5	36082
1999 RR ₁₅₉	1999 09 07.9	23 04.12	-12 07.7	17.0	-1.06	+ 1.5	2.7/06.4	36048
1998 DC ₃₄	1999 09 07.9	23 04.19	-07 43.8	18.3	-0.97	- 4.7	0.7/07.4	35947
1994 PL ₂₂	1999 09 07.9	23 04.21	-06 07.1	17.7	-0.77	- 5.6	0.0/07.9	36071
1999 RT	1999 09 07.9	23 04.21	-19 09.1	16.7	-0.81	- 7.4	4.3/03.2	36028
1994 VK	1999 09 07.9	23 04.28	-10 26.7	18.3	-0.77	- 3.5	1.3/06.5	36071
1996 TP ₃₅	1999 09 07.9	23 04.29	-08 03.4	18.4	-0.92	- 8.8	0.8/07.2	36074
1999 RV ₁₀₃	1999 09 07.9	23 04.30	+04 49.8	16.5	-0.94	- 4.7	4.5/11.4	36044
1998 KF ₄₉	1999 09 07.9	23 04.54	-14 32.8	18.3	-0.81	- 6.3	2.7/05.1	36084
(11470)	1999 09 07.9	23 04.54	-06 31.3	16.1	-0.72	- 9.3	0.3/07.8	35824
1998 HP ₁₉	1999 09 08.0	23 04.64	-13 20.7	17.3	-1.06	+ 0.8	3.2/06.2	35979
1999 RQ ₁₅	1999 09 08.1	23 04.87	-07 01.3	17.9	-1.75	+ 8.4	0.6/08.0	36032
1996 XG ₅	1999 09 08.1	23 04.90	-11 44.8	18.1	-0.96	- 5.5	2.3/06.3	36075
1996 XL ₃₃	1999 09 08.1	23 04.98	-20 38.9	18.7	-0.91	- 4.9	4.5/03.3	36075
1992 ED ₈	1999 09 08.1	23 05.01	-05 45.7	17.8	-0.79	- 4.5	0.0/08.2	36067
1998 FY ₁₂₂	1999 09 08.2	23 05.27	+03 13.7	18.4	-0.75	-10.3	2.9/12.0	35976
1996 TM ₉	1999 09 08.2	23 05.30	-06 20.2	17.9	-0.99	- 5.6	0.2/08.1	36074
1993 FU ₂₃	1999 09 08.2	23 05.32	+00 48.4	19.3	-0.77	- 6.5	2.1/10.5	35687
1995 UU ₃	1999 09 08.2	23 05.36	-10 56.0	17.8	-0.90	- 4.4	1.8/06.6	36072
1998 JY ₁	1999 09 08.2	23 05.45	+02 08.4	16.4	-0.89	- 2.9	3.2/10.6	35992
1999 RW ₂₉	1999 09 08.2	23 05.48	+10 22.1	16.2	-1.16	+ 6.7	8.2/12.0	36102
1998 EJ ₁₁	1999 09 08.2	23 05.49	-16 09.8	17.8	-0.92	- 7.5	4.3/04.8	35950
1990 TJ ₁₅	1999 09 08.2	23 05.51	+04 02.4	15.8	-0.89	- 1.6	4.0/11.1	35914
1997 EJ	1999 09 08.2	23 05.54	-12 41.1	17.1	-0.85	- 2.4	2.1/06.2	35940
1998 HU ₃₃	1999 09 08.2	23 05.61	-08 59.7	18.1	-0.92	- 3.7	1.1/07.3	35981
(9352)	1999 09 08.3	23 05.67	-03 19.5	16.9	-0.81	- 6.1	0.8/09.2	32618
1996 VX ₁₅	1999 09 08.3	23 05.94	-03 58.0	17.5	-0.91	- 6.3	0.6/09.0	36074
(11580)	1999 09 08.3	23 06.00	-01 39.0	17.8	-0.89	- 6.3	1.4/09.7	35853
1998 FC ₇₄	1999 09 08.4	23 06.03	-13 02.9	15.9	-0.90	- 7.2	3.5/06.0	35964
1995 VC ₁	1999 09 08.4	23 06.20	-25 49.6	16.5	-1.06	- 1.5	8.0/02.3	36073
1996 YN ₂	1999 09 08.4	23 06.34	-00 23.6	17.2	-0.91	- 5.6	2.4/10.2	36075
1998 KE ₁₁	1999 09 08.5	23 06.32	-10 07.6	18.5	-0.67	- 8.7	1.3/06.9	35995
(8732)	1999 09 08.5	23 06.57	-10 27.5	16.2	-0.89	- 8.2	2.0/06.9	31694
(8736)	1999 09 08.6	23 06.67	-05 37.3	14.1	-0.65	- 7.2	0.0/08.6	31695
1994 PO ₁₈	1999 09 08.6	23 06.79	-06 19.5	18.0	-0.77	- 5.6	0.2/08.4	36071
1998 HA ₈₀	1999 09 08.6	23 06.87	-09 33.3	19.7	-1.00	- 4.6	1.4/07.5	32328
1989 SF ₄	1999 09 08.6	23 06.97	-19 59.8	17.8	-0.87	- 2.3	4.7/04.3	36065
1998 FB ₁₁₇	1999 09 08.7	23 07.05	-00 21.7	17.3	-1.02	- 5.0	2.3/10.3	35974
2243 T-2	1999 09 08.7	23 07.11	-05 27.7	18.0	-0.90	- 6.7	0.1/08.8	36053
(8631)	1999 09 08.7	23 07.13	-00 28.4	17.2	-0.87	- 9.0	2.2/10.5	31671
1998 HB ₃₀	1999 09 08.7	23 07.16	-13 44.0	16.8	-0.92	- 5.2	4.0/06.1	36082
1999 NS ₄	1999 09 08.7	23 07.35	-07 21.7	16.9	-0.83	- 7.1	0.8/08.2	36089

1994 PF ₂₀	1999 09 08.7	23 07.35	-05 04.6	17.9	-0.93	- 1.8	0.2/08.9	36071
(8859)	1999 09 08.7	23 07.44	+00 40.0	16.0	-0.92	- 3.4	2.6/10.7	31913
1998 KL ₁	1999 09 08.8	23 07.59	-08 49.2	17.7	-0.86	- 4.6	1.1/07.8	35994
1998 EP ₁₁	1999 09 08.8	23 07.63	-15 26.8	17.6	-1.09	- 1.1	3.6/06.3	36078
5141 T-2	1999 09 08.8	23 07.72	+06 21.2	16.3	-0.83	- 2.5	4.1/12.6	36124
1998 FW ₁₀₂	1999 09 08.8	23 07.74	+03 50.1	17.5	-0.95	- 6.1	3.6/12.0	35969
1998 GG ₁	1999 09 08.8	23 07.79	+04 26.5	19.0	-0.78	- 7.0	3.4/12.4	35977
1999 RP ₂	1999 09 08.9	23 07.91	+22 40.0	17.8	-0.94	+ 0.8	14.0/18.7	36095
1997 AA ₂	1999 09 08.9	23 08.11	-08 43.2	17.7	-0.84	- 4.6	1.0/08.0	36075
1998 EX ₂	1999 09 09.0	23 08.10	+03 24.5	18.8	-0.74	- 9.1	3.1/12.3	35948
1998 FX ₁₁₄	1999 09 09.0	23 08.11	+11 26.9	17.9	-0.83	- 7.2	5.9/15.2	35972
1986 TR	1999 09 09.0	23 08.39	+16 52.0	15.3	-0.64	- 4.3	10.8/17.9	36063
3166 T-3	1999 09 09.1	23 08.74	-04 31.1	18.6	-0.90	- 6.6	0.3/09.5	36124
3468 T-3	1999 09 09.2	23 08.82	-08 54.1	17.9	-0.95	- 5.3	1.3/08.1	36125
(11720)	1999 09 09.2	23 08.83	-07 55.5	17.5	-0.82	- 7.3	0.9/08.4	35890
1988 RU ₉	1999 09 09.2	23 08.98	-04 49.3	17.1	-0.66	- 9.3	0.2/09.5	35911
1991 VO ₇	1999 09 09.2	23 09.10	-07 24.3	19.6	-0.84	- 5.8	0.6/08.6	35684
1998 FR ₆₅	1999 09 09.2	23 09.20	-01 18.7	17.4	-1.01	- 5.5	1.7/10.6	35962
1998 HX ₃₆	1999 09 09.3	23 09.38	+02 54.2	16.5	-0.70	- 8.3	3.4/12.5	36082
1981 EV ₁₄	1999 09 09.3	23 09.49	-00 08.5	19.1	-0.76	- 4.0	1.5/11.1	29608
1989 SP ₁₁	1999 09 09.3	23 09.52	-04 25.6	16.4	-0.78	- 4.6	0.4/09.7	36065
1998 FU ₂₀	1999 09 09.3	23 09.54	-09 02.4	17.6	-0.91	- 8.2	1.5/08.2	35953
1998 FO ₅₇	1999 09 09.3	23 09.61	-07 10.3	19.3	-1.06	- 3.8	0.6/08.9	32321
1997 AP ₂	1999 09 09.4	23 09.61	-09 44.3	17.9	-0.84	- 6.8	1.5/08.0	35934
1997 AZ ₂	1999 09 09.4	23 09.63	+01 21.5	15.6	-1.06	+ 3.3	3.6/10.9	35934
1981 EC ₃₂	1999 09 09.4	23 09.70	+08 15.8	18.2	-0.75	- 4.4	4.2/14.1	26921
1999 RB ₃₅	1999 09 09.4	23 09.74	+27 39.6	18.9	-1.03	+ 0.4	11.5/19.9	36103
(11721)	1999 09 09.5	23 10.11	+01 03.4	16.3	-0.68	- 9.6	2.5/12.0	35890
1994 RH ₁₇	1999 09 09.5	23 10.19	-04 24.2	18.3	-0.79	- 4.6	0.3/09.9	35921
1997 CV ₁₅	1999 09 09.5	23 10.25	-03 25.0	18.4	-0.86	- 3.6	0.7/10.2	36076
1998 FZ ₆₈	1999 09 09.5	23 10.27	+03 42.6	17.3	-0.77	- 9.1	3.4/12.9	36080
1997 GK ₃₃	1999 09 09.6	23 10.31	+01 37.4	17.0	-0.71	- 6.8	2.2/12.0	35943
1998 KP ₃₇	1999 09 09.6	23 10.46	-05 52.1	18.1	-0.82	- 7.1	0.2/09.5	35997
1981 EF ₁₅	1999 09 09.6	23 10.49	+00 06.8	18.6	-0.82	- 2.4	1.7/11.3	30779
(8775)	1999 09 09.6	23 10.52	+08 21.7	17.3	-0.85	- 6.4	5.8/14.4	36060
1997 BN ₉	1999 09 09.7	23 10.69	+03 33.9	17.9	-0.71	- 7.2	2.8/12.9	36076
1998 GT ₈	1999 09 09.7	23 10.76	-44 32.2	17.0	-1.15	- 1.0	15.0/26.3	32325
1999 RE ₁₂₃	1999 09 09.7	23 10.86	+05 05.3	16.7	-0.97	- 4.5	4.1/13.0	36045
1998 HB ₁₄₈	1999 09 09.7	23 10.94	-05 56.8	17.9	-0.73	- 5.0	0.2/09.5	35991
1997 CG ₁	1999 09 09.8	23 10.99	-16 01.2	17.2	-0.86	- 6.3	4.1/06.1	36076
1998 HF ₉₄	1999 09 09.8	23 11.18	-12 46.6	20.1	-0.88	- 4.0	2.1/07.5	32017
1996 AG ₇	1999 09 09.8	23 11.23	-13 07.6	17.3	-0.73	- 4.8	3.1/07.2	36073
1993 LR ₁	1999 09 09.8	23 11.26	+10 26.1	18.7	-0.86	- 3.1	4.5/14.8	36069
4730 P-L	1999 09 09.8	23 11.39	-10 57.3	18.2	-0.89	- 3.5	2.2/08.1	36121
(8790)	1999 09 09.9	23 11.35	-11 38.9	17.2	-0.83	- 5.5	2.4/07.8	36060
1998 HD ₁₂₉	1999 09 09.9	23 11.42	-09 50.1	16.9	-1.12	+ 1.9	2.1/08.9	35991
(11645)	1999 09 10.0	23 11.68	-19 38.2	15.8	-0.70	-11.7	6.0/04.1	35870
1999 NG ₆₄	1999 09 10.0	23 11.68	+01 41.8	18.8	-0.74	- 8.4	2.1/12.5	36022
1999 OS	1999 09 10.0	23 11.70	-04 04.5	16.3	-0.81	- 6.9	0.5/10.4	36023
1999 RG ₁₂₃	1999 09 10.0	23 11.77	+06 56.8	17.8	-0.89	- 6.0	5.0/14.0	36045
(11260)	1999 09 10.0	23 11.90	-07 05.8	16.7	-0.93	- 5.2	0.8/09.4	35556

1978 RA ₁₀	1999 09 10.0	23 12.01	-05 47.7	17.3	-1.00	- 5.3	0.3/09.9	36061	1998 HE ₂₉	1999 09 10.8	23 14.91	-09 33.8	18.6	-1.03	- 3.1	1.8/09.5	35981
1994 GW ₁₀	1999 09 10.0	23 12.02	-17 41.2	18.5	-0.94	- 4.8	4.0/06.1	36071	1995 RJ	1999 09 10.8	23 14.91	-22 09.4	17.3	-0.74	- 6.4	7.8/04.6	36072
(11639)	1999 09 10.0	23 12.05	-12 03.8	16.7	-0.78	- 6.8	2.5/07.7	35868	1998 HW ₁₃	1999 09 10.8	23 14.96	-04 53.7	16.0	-1.11	+ 2.2	0.0/10.9	35979
1998 EA ₁₂	1999 09 10.1	23 12.04	-11 16.8	18.6	-0.95	- 5.8	2.2/08.2	36078	1998 HR ₁₃₆	1999 09 10.9	23 14.92	-04 09.2	18.6	-0.86	- 7.0	0.2/11.1	36083
1999 RK ₇₁	1999 09 10.1	23 12.13	-08 14.9	18.6	-0.85	- 4.0	1.1/09.1	36042	1999 RW ₁₇	1999 09 10.9	23 15.07	-01 58.9	18.3	-0.99	- 5.0	1.3/12.0	36033
4780 P-L	1999 09 10.1	23 12.14	-02 38.6	18.5	-0.69	- 5.5	0.7/11.0	36121	1999 RS ₄	1999 09 10.9	23 15.08	-05 13.4	16.6	-0.75	- 4.7	0.1/10.8	36030
1998 FW ₆₆	1999 09 10.1	23 12.29	-14 52.9	18.0	-0.92	- 2.1	3.7/07.3	35962	1994 EP	1999 09 11.0	23 15.35	-13 14.6	17.9	-0.93	- 5.1	3.0/08.3	36070
1995 UK ₄₅	1999 09 10.1	23 12.30	-03 11.6	17.6	-0.86	- 5.0	0.7/10.8	35925	1998 KN ₁₀	1999 09 11.0	23 15.36	+05 41.5	19.0	-0.72	-10.6	3.7/15.1	36084
1995 VH ₁₁	1999 09 10.1	23 12.37	-08 31.0	18.6	-0.79	- 6.6	1.3/09.0	35926	6636 P-L	1999 09 11.0	23 15.40	-09 34.8	17.8	-0.77	- 5.6	1.5/09.4	36121
1981 EG ₄₇	1999 09 10.1	23 12.39	-00 39.6	19.0	-0.85	- 5.7	1.5/11.6	31711	(11724)	1999 09 11.0	23 15.48	-10 35.2	17.4	-0.97	- 6.6	2.3/09.2	35891
1997 EG ₁₆	1999 09 10.1	23 12.43	-04 13.5	20.7	-0.76	- 5.2	0.3/10.5	35941	(11368)	1999 09 11.0	23 15.54	-15 29.3	16.7	-0.76	- 7.7	3.7/07.2	35582
(11605)	1999 09 10.1	23 12.43	+17 34.5	16.9	-0.75	- 8.3	9.1/19.3	35860	1997 AD ₄	1999 09 11.0	23 15.57	-02 21.6	18.6	-0.89	- 4.4	0.8/11.8	35935
1998 GZ	1999 09 10.1	23 12.47	-14 09.7	18.4	-1.04	- 3.7	3.6/07.5	36081	1998 CZ ₁	1999 09 11.0	23 15.58	-26 09.4	17.9	-0.89	- 5.5	7.3/03.7	32315
1998 FE ₁₂₅	1999 09 10.2	23 12.48	-04 18.1	17.5	-0.77	- 9.6	0.3/10.5	36081	1999 RT ₁₆₅	1999 09 11.0	23 15.69	-04 06.3	17.8	-0.76	- 4.3	0.2/11.3	36048
1999 RX ₁₆	1999 09 10.2	23 12.57	-00 13.7	17.0	-0.69	- 8.6	2.3/12.0	36033	1990 EZ ₂	1999 09 11.1	23 15.80	-01 18.6	17.8	-0.65	- 5.6	0.9/12.4	36065
1999 RG ₁₆₄	1999 09 10.2	23 12.66	-02 45.3	18.4	-0.82	- 6.3	0.9/11.0	36048	2740 P-L	1999 09 11.1	23 15.82	-05 10.3	18.2	-0.78	- 7.6	0.2/11.0	36120
1998 FM ₂₉	1999 09 10.2	23 12.75	-00 13.5	17.5	-0.75	-12.9	1.8/12.2	35954	1997 DR	1999 09 11.1	23 15.82	-08 04.0	17.9	-0.83	- 4.4	1.1/10.1	36076
1997 CB ₁₀	1999 09 10.3	23 12.86	-04 30.9	18.6	-0.90	- 5.2	0.2/10.5	35939	1998 KN ₃₄	1999 09 11.1	23 15.89	-36 12.3	19.1	-0.86	- 2.7	8.7/31.3	32278
1981 EV ₂₁	1999 09 10.3	23 12.88	-07 51.8	18.6	-0.87	- 2.0	0.9/09.5	35908	1999 RY ₃₈	1999 09 11.1	23 16.03	-17 04.3	17.4	-0.77	- 8.1	4.5/06.6	36039
1998 HC ₂₂	1999 09 10.3	23 13.00	+01 06.8	18.7	-0.88	- 7.3	2.2/12.4	36082	2506 P-L	1999 09 11.1	23 16.07	-13 48.0	17.4	-1.06	+ 2.2	4.1/09.0	36119
1998 HA	1999 09 10.3	23 13.03	-28 39.0	19.0	-1.03	- 1.9	8.0/03.2	32326	1990 WU ₁	1999 09 11.2	23 16.03	-00 28.1	16.8	-0.66	- 9.8	1.7/12.8	36066
1998 HX ₁₁₂	1999 09 10.3	23 13.06	-03 44.8	18.3	-0.79	- 9.4	0.4/10.8	35988	1998 LL ₂	1999 09 11.2	23 16.07	-12 16.2	17.5	-0.71	- 7.2	2.2/08.5	36001
(8549)	1999 09 10.4	23 13.13	-02 46.9	16.6	-0.89	- 6.6	0.9/11.1	31507	1995 UC ₄₇	1999 09 11.2	23 16.12	-13 44.2	16.4	-0.89	- 1.7	4.5/08.5	36073
(11597)	1999 09 10.4	23 13.14	+24 38.9	17.2	-1.23	- 0.2	10.7/19.5	35857	1998 FU ₁₁₀	1999 09 11.2	23 16.25	+02 25.6	18.3	-1.02	- 4.0	2.8/13.4	32002
(9315)	1999 09 10.4	23 13.20	-05 41.4	15.8	-0.90	- 3.6	0.3/10.2	32609	1999 QT ₂	1999 09 11.2	23 16.29	-09 40.4	17.5	-0.78	- 8.7	2.1/09.5	36026
1981 EG ₉	1999 09 10.4	23 13.21	+00 39.8	19.5	-0.72	- 4.6	1.5/12.3	29910	(11459)	1999 09 11.3	23 16.45	+01 47.6	18.3	-1.01	- 5.6	2.4/13.3	35821
1998 FN ₇₁	1999 09 10.4	23 13.24	-13 16.8	18.7	-1.01	- 3.0	2.8/08.0	32323	(8731)	1999 09 11.3	23 16.51	-19 53.3	16.6	-0.97	- 3.8	6.9/06.5	36060
(11648)	1999 09 10.4	23 13.32	-09 16.5	17.0	-0.78	- 5.4	1.4/09.0	35871	1992 RT ₅	1999 09 11.3	23 16.63	-10 55.6	17.9	-1.10	- 0.7	2.9/09.8	35916
1998 HQ ₆₈	1999 09 10.4	23 13.43	+07 02.1	16.7	-0.84	- 6.6	5.3/14.6	35984	(8664)	1999 09 11.3	23 16.69	-10 04.4	17.0	-0.87	- 8.5	2.1/09.5	31678
1405 T-2	1999 09 10.4	23 13.54	-05 09.0	18.4	-0.94	- 5.4	0.1/10.4	36052	1982 JY ₁	1999 09 11.3	23 16.71	-14 04.0	18.3	-0.76	- 4.9	2.8/08.2	32739
1997 CC ₂₆	1999 09 10.4	23 13.55	-08 49.8	17.8	-0.96	- 4.6	1.6/09.3	35940	4061 P-L	1999 09 11.3	23 16.77	+02 48.6	17.8	-0.73	- 5.3	2.4/14.0	36120
(11278)	1999 09 10.5	23 13.54	-14 12.4	16.5	-0.99	- 3.5	4.4/07.7	35560	1998 FS ₇₅	1999 09 11.4	23 16.71	-16 56.8	16.3	-0.92	- 3.5	5.6/07.6	36080
(11575)	1999 09 10.5	23 13.55	+07 29.6	15.8	-0.86	- 5.8	5.8/14.8	35851	1997 CX ₂₂	1999 09 11.4	23 16.83	-05 39.5	18.6	-0.88	- 5.5	0.4/11.1	35940
1998 FL ₃₀	1999 09 10.5	23 13.70	-01 51.4	17.6	-0.90	- 6.6	1.2/11.6	35955	1998 FK ₇₉	1999 09 11.4	23 16.92	-02 00.4	17.9	-0.75	-10.6	0.9/12.4	35967
1999 RW ₄₁	1999 09 10.5	23 13.70	-07 01.8	16.9	-0.82	- 4.4	0.7/09.9	36040	1999 RR ₇₅	1999 09 11.4	23 17.07	+04 17.5	17.7	-0.96	- 6.3	3.6/14.4	36042
(11499)	1999 09 10.5	23 13.87	-03 44.4	15.8	-0.77	- 8.3	0.6/11.0	35832	1996 TF ₁₈	1999 09 11.4	23 17.08	-11 32.2	19.6	-1.02	- 4.1	2.6/09.4	32311
1999 RK ₁₇	1999 09 10.5	23 13.90	+00 10.0	18.2	-0.92	- 6.2	2.1/12.2	36033	1998 FU ₁₀₂	1999 09 11.4	23 17.12	+06 19.1	17.9	-0.95	- 5.8	4.2/15.1	35969
7569 P-L	1999 09 10.6	23 13.88	-11 25.1	17.8	-0.99	- 4.7	2.6/08.6	36122	1998 HH ₅₁	1999 09 11.5	23 17.11	-11 40.9	17.9	-0.98	- 5.7	2.6/09.3	36082
1997 BV ₅	1999 09 10.6	23 14.06	-05 01.3	18.2	-0.88	- 5.6	0.0/10.6	35938	2027 T-2	1999 09 11.5	23 17.24	-03 03.5	18.4	-0.95	- 5.1	0.6/12.0	36052
1998 DE ₃₆	1999 09 10.6	23 14.06	-10 45.6	18.6	-1.04	- 4.1	2.3/09.0	35948	1998 FC ₃	1999 09 11.6	23 17.44	-12 33.9	19.5	-0.95	- 5.3	2.6/09.1	36079
1999 RU ₁₆	1999 09 10.6	23 14.23	-03 04.6	17.1	-0.80	- 5.0	0.6/11.3	36032	1990 RD ₅	1999 09 11.6	23 17.50	+02 22.8	16.9	-0.80	- 5.6	2.4/13.9	36065
(8923)	1999 09 10.7	23 14.20	-03 21.8	17.8	-0.89	- 6.1	0.5/11.2	31928	1998 HS ₆₀	1999 09 11.6	23 17.52	-03 15.3	16.6	-1.01	- 5.1	0.5/12.0	36082
(11754)	1999 09 10.7	23 14.31	-04 22.9	17.3	-0.78	- 5.3	0.2/10.9	35898	1999 RF ₁₈	1999 09 11.6	23 17.57	-03 39.9	18.5	-0.83	- 4.8	0.3/11.9	36033
1997 BX	1999 09 10.7	23 14.42	-10 13.7	17.3	-0.90	- 7.0	2.2/09.0	36076	1995 OA ₄	1999 09 11.6	23 17.59	-02 56.5	19.9	-0.91	- 5.2	0.5/12.1	35923
1998 FM ₇₆	1999 09 10.7	23 14.43	-12 55.3	18.4	-0.96	- 6.0	2.9/08.2	35965	1995 UL ₉	1999 09 11.6	23 17.72	-06 24.2	19.2	-0.97	- 2.8	0.8/11.1	27919
1999 RD ₇₂	1999 09 10.7	23 14.48	-12 12.0	17.9	-0.85	- 4.5	3.1/08.4	36042	(8789)	1999 09 11.6	23 17.80	-05 40.2	16.7	-0.75	- 4.3	0.4/11.3	35675
3219 T-1	1999 09 10.7	23 14.65	-02 50.1	17.9	-1.02	- 4.6	0.8/11.4	36122	(11623)	1999 09 11.7	23 18.01	-12 15.8	17.5	-1.08	- 3.7	3.0/09.5	35864
1998 EB ₁₀	1999 09 10.8	23 14.62	+03 41.7	15.9	-0.91	- 3.7	4.3/13.5	35949	1991 TF ₁₄	1999 09 11.7	23 18.04	-10 47.8	17.2	-0.94	- 3.8	2.4/09.8	36067
1998 HN ₁₄₈	1999 09 10.8	23 14.63	-04 45.9	17.7	-0.76	- 5.6	0.0/10.9	35991	1981 DS ₃	1999 09 11.7	23 18.22	+08 43.9	18.8	-0.81	- 2.9	4.1/16.0	30779
1999 RT ₁₇	1999 09 10.8	23 14.71	-02 29.3	18.1	-0.89	- 7.8	0.9/11.6	36033	2617 P-L	1999 09 11.8	23 18.15	-05 33.3	18.4	-0.85	- 7.2	0.5/11.4	36050
1999 RL ₇₃	1999 09 10.8	23 14.78	+03 40.7	16.8	-1.06	+ 4.7	4.4/12.6	36108	1996 NA	1999 09 11.8	23 18.16	-48 14.5	17.7	-1.13	- 6.9	19.2/23.0	35696

1998 FH ₁₁₅	1999 09 11.8	23 18.17 +07 50.8 14.8	-0.83 - 3.4	6.4/15.7	36081	1996 XF ₁₉	1999 09 13.2	23 23.21 +04 31.5 16.4	-0.86 - 6.3	3.9/16.0	36075
1997 HO ₁₁	1999 09 11.8	23 18.53 -08 53.6 18.8	-0.76 - 3.7	1.3/10.5	36077	1994 HA	1999 09 13.2	23 23.48 +08 42.3 16.8	-0.76 -10.8	4.5/18.2	36071
1988 DE ₃	1999 09 11.9	23 18.63 +10 39.1 17.8	-0.92 - 2.6	5.4/16.5	35910	1994 LH	1999 09 13.2	23 23.55 -14 36.6 18.8	-0.81 - 8.0	3.5/09.5	36071
1986 PY	1999 09 11.9	23 18.78 -12 32.0 15.6	-0.48 -13.5	4.2/08.4	36063	1998 HQ ₁₂	1999 09 13.3	23 23.66 -12 22.9 18.4	-0.84 - 9.7	2.9/10.2	36081
1999 RQ ₁₆₅	1999 09 12.0	23 18.98 -02 53.1 18.3	-0.83 - 5.8	0.6/12.5	36048	(8553)	1999 09 13.3	23 23.67 -14 24.8 16.1	-1.01 - 3.8	4.7/10.2	31508
1998 GW ₁₀	1999 09 12.0	23 19.12 -13 47.3 17.7	-1.08 - 2.8	4.0/09.4	35977	1988 RM ₈	1999 09 13.3	23 23.81 -07 42.6 16.5	-0.95 - 1.3	1.9/12.3	35911
1997 EH ₁₅	1999 09 12.0	23 19.22 -10 28.4 19.4	-0.85 - 1.4	1.7/10.3	30473	1998 FO ₄₂	1999 09 13.3	23 23.82 +00 00.2 19.1	-0.96 - 7.3	1.5/14.6	36079
1994 TZ	1999 09 12.0	23 19.24 -02 26.7 17.0	-0.69 - 7.3	0.6/12.8	35922	1994 VN	1999 09 13.3	23 23.88 -08 13.0 18.2	-0.77 - 3.9	1.2/12.0	36071
1985 CY ₁	1999 09 12.1	23 19.26 -07 01.0 19.8	-0.67 - 6.4	0.6/11.2	26924	4304 T-3	1999 09 13.3	23 23.93 -09 48.1 18.2	-0.81 - 6.1	2.0/11.4	36125
1998 FZ ₉₇	1999 09 12.1	23 19.27 +06 24.0 15.5	-0.80 - 7.4	4.5/16.0	36080	(11588)	1999 09 13.4	23 23.91 -10 26.5 17.8	-0.70 - 6.3	2.2/11.1	35855
1998 FB ₁₁	1999 09 12.1	23 19.33 -05 40.2 18.2	-0.78 - 7.1	0.4/11.7	35952	1998 HU ₁₉	1999 09 13.4	23 24.16 +09 56.0 18.7	-0.83 -14.8	4.7/19.0	35980
1998 HB ₆	1999 09 12.1	23 19.43 -12 15.0 18.8	-0.85 - 5.5	2.9/09.6	35977	1997 AH ₄	1999 09 13.4	23 24.27 -02 07.6 18.1	-0.95 - 5.1	0.7/14.0	35935
1997 GB ₃₅	1999 09 12.1	23 19.45 -11 42.4 17.3	-0.85 - 1.7	2.2/10.0	36077	1999 RJ ₁₀₄	1999 09 13.5	23 24.59 +06 47.8 16.8	-0.95 - 2.8	4.9/17.0	36044
1995 XQ ₄	1999 09 12.1	23 19.46 -11 38.4 18.5	-0.78 - 6.4	2.6/09.6	35927	1996 TF	1999 09 13.5	23 24.59 +02 53.7 17.3	-0.94 - 5.6	3.3/15.7	35930
(8488)	1999 09 12.1	23 19.51 -13 47.1 16.8	-0.96 - 5.5	4.1/09.2	31493	1182 T-1	1999 09 13.6	23 24.76 +03 25.2 16.1	-0.70 -11.4	2.7/16.5	36122
1998 FN ₄₃	1999 09 12.2	23 19.65 -06 42.9 16.0	-1.04 + 1.3	1.3/11.6	36079	1998 FJ ₇₉	1999 09 13.6	23 24.84 -07 24.6 17.3	-0.82 - 9.1	1.4/12.4	35967
1998 FC ₁₁₈	1999 09 12.2	23 19.83 +08 54.4 16.1	-0.82 - 6.5	6.4/16.9	36081	1998 FG ₁₁	1999 09 13.6	23 24.87 -25 25.9 16.4	-1.09 + 0.9	8.7/07.9	36079
1992 PM ₂	1999 09 12.2	23 19.84 +06 00.1 16.5	-0.84 - 6.8	4.9/15.9	35915	1998 HW ₁₁₈	1999 09 13.6	23 24.90 -16 57.3 17.0	-0.67 - 8.7	4.9/08.6	36083
1998 KL	1999 09 12.3	23 20.06 -02 14.9 16.3	-0.86 - 9.2	0.9/13.0	35993	1981 EG ₃	1999 09 13.7	23 24.97 +10 31.0 17.7	-0.77 - 4.2	4.4/18.6	35907
(11554)	1999 09 12.3	23 20.07 -15 37.1 17.5	-0.47 - 4.0	2.0/08.1	35846	(11441)	1999 09 13.7	23 24.99 +13 17.4 15.5	-0.77 - 8.8	7.0/20.0	35817
1997 CS	1999 09 12.4	23 20.42 -04 12.3 16.8	-0.84 - 2.5	0.0/12.4	36076	1998 KT ₅₁	1999 09 13.7	23 25.13 -03 45.6 18.1	-0.76 - 8.6	0.0/13.7	35999
1994 AC ₁₃	1999 09 12.4	23 20.70 -07 55.4 21.1	-0.95 - 5.4	1.3/11.3	32456	1989 TY	1999 09 13.7	23 25.13 +00 44.2 18.3	-0.84 - 2.8	1.4/15.1	36065
1999 RL ₆	1999 09 12.5	23 20.69 -04 38.5 17.7	-0.93 - 3.4	0.2/12.4	36030	1993 GR	1999 09 13.7	23 25.33 -09 08.3 17.5	-0.83 - 4.3	1.6/12.1	36069
1997 EU ₁₆	1999 09 12.5	23 20.85 -04 47.5 17.8	-0.74 - 4.3	0.2/12.4	36077	1998 FZ ₇₀	1999 09 13.7	23 25.40 -15 38.8 17.6	-1.05 - 0.7	4.2/10.6	36080
5178 T-2	1999 09 12.5	23 20.87 +09 23.5 17.5	-0.74 - 5.1	4.1/17.3	36054	1998 HZ ₉₆	1999 09 13.8	23 25.35 -26 27.4 17.6	-1.02 - 0.9	8.2/07.1	36082
1998 DJ ₂₀	1999 09 12.5	23 20.90 -05 55.5 17.0	-1.07 - 2.6	0.8/12.1	36078	1998 FW ₆₃	1999 09 13.8	23 25.38 -08 13.9 18.8	-0.91 - 6.5	1.6/12.3	35961
1998 HM ₁₂₁	1999 09 12.5	23 20.93 -11 33.2 17.8	-0.79 - 6.5	2.6/10.0	36083	1996 EQ ₂	1999 09 13.8	23 25.46 +08 30.3 15.6	-0.64 -10.8	4.1/18.7	36074
1992 YP ₂	1999 09 12.5	23 21.00 -20 09.6 18.4	-0.93 - 5.8	5.9/07.1	36068	1998 MZ ₈	1999 09 13.8	23 25.48 -02 53.8 18.1	-0.70 - 7.2	0.2/14.1	36001
1998 KE ₅₁	1999 09 12.5	23 21.02 +07 45.2 18.3	-0.76 - 8.2	3.7/17.0	35999	(11453)	1999 09 13.8	23 25.51 +10 24.2 16.9	-0.92 - 2.7	5.7/18.2	35820
1998 FZ ₁₀₃	1999 09 12.5	23 21.09 +01 38.7 18.4	-0.88 - 4.0	2.0/14.4	35970	1998 HJ ₃₃	1999 09 13.8	23 25.62 -02 33.2 18.7	-0.92 - 5.2	0.4/14.2	36082
1998 HN ₂₃	1999 09 12.5	23 21.10 -29 35.3 18.2	-1.00 - 2.1	9.2/04.6	32077	(8995)	1999 09 13.8	23 25.67 -00 00.1 15.7	-1.07 + 0.1	1.5/14.8	32173
1998 FV ₄₀	1999 09 12.6	23 21.07 -07 28.2 18.6	-0.94 - 5.4	1.2/11.6	36079	1999 NH ₆₄	1999 09 13.8	23 25.68 +04 55.8 17.7	-0.81 - 8.9	3.9/17.0	36092
(11439)	1999 09 12.6	23 21.27 -12 18.1 17.3	-0.87 - 5.5	2.7/10.0	35816	1998 KU ₅₁	1999 09 13.9	23 25.71 -14 50.0 17.5	-0.71 - 7.6	3.6/09.8	36084
1998 ED ₁₄	1999 09 12.7	23 21.46 -11 40.1 17.2	-0.91 - 4.5	3.0/10.4	35951	1981 EE ₄₆	1999 09 13.9	23 25.78 +01 28.3 17.8	-0.79 - 3.5	1.8/15.6	36063
1997 EH ₄₆	1999 09 12.7	23 21.48 +09 33.8 15.3	-1.05 + 7.9	7.6/15.4	35942	1998 FD ₁₁₀	1999 09 13.9	23 25.80 +07 43.1 18.4	-0.93 - 4.3	4.5/17.6	32686
1999 JD ₁₃	1999 09 12.8	23 21.77 +05 36.3 18.3	-0.92 -10.1	4.5/17.0	36087	1999 PA ₄	1999 09 13.9	23 25.81 -06 39.5 17.8	-0.80 - 3.0	0.9/13.0	36025
(8975)	1999 09 12.8	23 21.80 -07 24.1 18.7	-0.94 - 5.0	1.1/11.8	31940	1999 RE ₁₇₀	1999 09 13.9	23 25.98 -02 17.5 17.9	-0.88 - 7.2	0.5/14.4	36048
1999 RK ₉	1999 09 12.8	23 21.82 -04 25.3 16.3	-0.97 - 3.6	0.2/12.7	36030	1998 EV ₁₂	1999 09 14.0	23 26.25 -08 23.4 18.1	-0.91 - 6.4	1.8/12.5	35950
1981 EO ₃₀	1999 09 12.9	23 22.50 -02 12.1 18.0	-0.78 -10.1	0.6/13.7	36063	1994 CX ₁₂	1999 09 14.0	23 26.49 -09 13.9 17.5	-0.96 - 4.8	2.1/12.4	36070
1988 CW ₂	1999 09 13.0	23 22.52 -06 07.1 17.5	-0.85 - 5.6	0.7/12.3	36064	(11582)	1999 09 14.1	23 26.50 -02 21.5 17.6	-0.79 - 4.9	0.4/14.5	35854
1998 KL ₅₅	1999 09 13.0	23 22.53 +03 29.4 17.4	-0.70 - 7.1	2.3/15.8	36084	1996 XF ₂₃	1999 09 14.1	23 26.65 -10 20.9 18.2	-0.87 - 8.6	2.6/11.8	35933
1999 PT ₄	1999 09 13.0	23 22.59 +00 52.5 17.0	-0.91 - 5.7	1.9/14.6	36026	1988 RP ₄	1999 09 14.1	23 26.71 -00 30.2 16.3	-1.00 - 3.4	1.3/15.1	36064
(8602)	1999 09 13.0	23 22.62 -05 13.3 16.4	-1.03 - 2.9	0.4/12.7	36060	4631 P-L	1999 09 14.1	23 26.73 -09 06.8 17.5	-1.03 - 3.2	2.1/12.6	36120
(8752)	1999 09 13.0	23 22.86 -05 48.2 17.3	-1.00 - 4.9	0.7/12.5	36060	1991 RN ₂₇	1999 09 14.1	23 26.76 +02 17.1 16.3	-1.03 - 1.0	2.1/15.8	36067
(8704)	1999 09 13.1	23 22.83 +02 47.1 16.0	-0.95 - 3.5	3.5/15.1	31688	1996 XB ₆	1999 09 14.2	23 26.87 -26 16.4 18.2	-0.93 - 4.9	7.6/06.4	36075
(11662)	1999 09 13.1	23 22.88 -11 22.1 17.9	-0.78 - 4.2	2.2/10.7	35874	(11624)	1999 09 14.2	23 26.92 -04 56.6 15.6	-0.84 - 7.0	0.7/13.8	35864
(11529)	1999 09 13.1	23 22.94 -11 06.7 17.3	-0.89 - 5.7	2.6/10.8	35840	1988 RT ₃	1999 09 14.2	23 26.95 -05 15.2 17.1	-0.87 - 3.2	0.8/13.7	35911
(11570)	1999 09 13.1	23 22.99 -15 21.5 17.0	-0.72 - 7.3	3.5/09.0	35850	1998 KK ₅₈	1999 09 14.2	23 26.97 -03 53.4 18.8	-0.81 - 4.6	0.1/14.1	36000
1998 KW ₉	1999 09 13.1	23 23.16 +11 09.1 16.5	-0.79 - 3.0	5.4/18.2	35995	1991 FF	1999 09 14.2	23 27.05 +03 35.0 18.0	-0.84 - 1.2	2.0/16.4	36066
1998 FB ₇₉	1999 09 13.1	23 23.19 -10 23.5 17.3	-0.69 -11.8	2.5/10.7	35966	1998 FZ ₁₁₃	1999 09 14.2	23 27.10 +09 53.1 16.0	-0.80 - 7.3	6.0/19.2	35971
1981 DS ₂	1999 09 13.1	23 23.23 +13 05.4 16.8	-0.93 - 2.9	6.5/18.6	35907	1996 XO ₁	1999 09 14.2	23 27.16 +05 07.8 17.5	-0.93 - 4.9	3.2/17.0	35932

1998 FM ₁₂	1999 09 14.3	23 27.25	-05 07.2	16.5	-0.79	- 7.7	0.7/13.8	36079	1998 HP ₈₃	1999 09 15.4	23 31.47	-14 15.9	17.8	-0.99	- 5.5	4.3/11.9	36082
1999 PX ₁	1999 09 14.3	23 27.29	-15 22.9	16.8	-0.67	- 8.9	5.0/09.8	36093	(11715)	1999 09 15.5	23 31.48	-03 21.9	16.1	-0.89	- 7.2	0.1/15.4	35889
1998 CK ₁	1999 09 14.3	23 27.34	-14 45.9	18.0	-0.97	- 5.9	4.3/10.8	36078	1995 UG ₁	1999 09 15.5	23 31.70	-08 33.0	18.8	-1.02	- 0.2	2.3/14.1	35925
1988 BM ₄	1999 09 14.3	23 27.52	+03 55.2	17.2	-0.86	- 5.6	2.8/16.8	35910	(9090)	1999 09 15.6	23 31.81	-26 07.0	16.5	-0.92	- 3.3	7.7/07.8	32194
1998 HV ₆	1999 09 14.3	23 27.52	+03 32.5	18.3	-0.84	- 6.7	2.3/17.0	35978	1997 CK ₁₂	1999 09 15.6	23 31.88	-02 21.1	18.8	-0.94	- 5.0	0.3/15.8	36076
(8888)	1999 09 14.3	23 27.53	-19 04.6	17.9	-0.79	- 7.4	4.7/08.7	31920	1999 RU ₁₉	1999 09 15.6	23 31.91	-03 11.0	17.3	-1.00	- 6.4	0.1/15.6	36034
(11608)	1999 09 14.3	23 27.54	+14 21.1	16.7	-0.93	- 0.9	7.5/19.7	35860	1998 KH ₅₅	1999 09 15.6	23 31.97	-19 47.6	17.3	-0.71	- 8.0	5.1/09.3	32336
4764 P-L	1999 09 14.4	23 27.61	-04 40.6	18.1	-0.77	- 5.6	0.4/14.0	36121	1998 KE ₃₀	1999 09 15.7	23 32.26	+07 35.4	17.6	-0.80	- 5.7	3.7/19.4	36084
4861 P-L	1999 09 14.4	23 27.72	+04 01.5	17.7	-0.85	-22.1	3.1/17.6	36121	2053 T-3	1999 09 15.7	23 32.37	+03 58.2	18.0	-0.75	- 4.5	2.4/18.1	36124
1981 DD ₂	1999 09 14.5	23 27.96	+08 33.6	19.2	-0.75	- 4.4	3.4/18.6	26914	1988 RZ ₅	1999 09 15.7	23 32.41	-03 10.7	16.1	-0.83	- 7.8	0.1/15.7	36064
1998 FD ₆₆	1999 09 14.5	23 27.97	+01 50.7	17.0	-0.84	- 8.5	2.0/16.4	35962	1981 ER ₄₁	1999 09 15.7	23 32.46	-09 56.9	19.3	-1.05	+ 1.2	2.2/14.0	26922
(8748)	1999 09 14.5	23 28.03	+06 41.1	16.2	-0.89	- 5.7	4.2/17.9	31698	1998 FM ₆₈	1999 09 15.7	23 32.53	+02 34.7	18.2	-0.85	- 7.8	2.0/17.7	35963
1996 UK ₄	1999 09 14.5	23 28.05	-09 22.0	18.0	-0.99	- 4.1	2.9/12.8	35931	1998 FW ₅₃	1999 09 15.7	23 32.55	+01 13.9	18.5	-0.92	- 5.8	1.6/17.2	35958
1998 KP ₈	1999 09 14.5	23 28.18	-12 13.2	16.3	-0.70	- 9.4	3.5/11.2	35994	1998 EW ₂	1999 09 15.8	23 32.73	-11 58.0	17.6	-1.01	- 1.4	3.5/13.3	35948
1998 GE ₇	1999 09 14.6	23 28.23	-29 14.4	17.1	-0.90	- 4.4	9.4/05.7	32325	(11438)	1999 09 15.8	23 32.75	+00 24.6	15.0	-0.84	- 8.2	1.6/17.0	35816
1995 UE ₈	1999 09 14.6	23 28.40	-13 31.9	18.2	-0.87	- 3.2	3.2/11.5	36072	1994 QQ	1999 09 15.8	23 32.79	+00 19.0	17.3	-0.88	- 2.4	1.0/17.0	36071
1981 EM ₃₅	1999 09 14.6	23 28.43	-05 39.5	18.0	-1.07	- 2.8	1.0/14.0	35909	1998 FV ₁₀	1999 09 15.8	23 32.79	-00 03.2	16.9	-0.92	- 5.7	1.3/17.0	35952
1981 EC ₁₅	1999 09 14.6	23 28.51	-01 16.6	20.1	-0.89	- 4.2	0.6/15.3	22429	1999 QG ₂	1999 09 15.8	23 32.89	-18 20.2	18.2	-0.95	- 6.2	6.9/11.0	36026
(11505)	1999 09 14.6	23 28.51	-02 41.2	17.0	-0.70	- 4.0	0.2/14.9	35834	1990 QQ ₄	1999 09 15.9	23 32.94	-10 52.0	16.6	-0.92	- 2.6	2.9/13.5	36065
1999 RW ₁₈	1999 09 14.6	23 28.52	-04 17.5	16.8	-1.06	- 3.5	0.4/14.4	36034	1970 JB	1999 09 15.9	23 33.25	+29 40.1	18.4	-1.10	- 2.9	10.1/27.5	35414
(8764)	1999 09 14.7	23 28.89	-02 01.7	18.0	-0.95	- 5.0	0.5/15.2	36060	(9057)	1999 09 15.9	23 33.26	-06 33.7	16.1	-0.73	- 4.7	1.3/14.8	32186
(11458)	1999 09 14.7	23 28.93	+02 21.8	16.6	-0.86	- 1.9	2.0/16.5	35821	1998 FR ₃₀	1999 09 15.9	23 33.29	-00 30.4	16.3	-0.86	- 6.8	1.0/17.0	35955
4074 T-3	1999 09 14.7	23 28.93	-09 01.1	18.3	-0.91	- 6.0	2.0/12.9	36125	(8466)	1999 09 15.9	23 33.29	-04 16.9	16.5	-0.74	- 6.7	0.6/15.5	31488
(11577)	1999 09 14.8	23 28.94	-11 08.5	16.7	-0.91	- 5.1	3.2/12.3	35852	1998 KP ₅₃	1999 09 16.0	23 33.28	-13 26.7	19.0	-0.71	- 6.4	3.0/12.3	32336
1988 PR	1999 09 14.8	23 28.97	-03 32.2	17.3	-0.84	- 9.2	0.1/14.7	36064	1988 RO ₆	1999 09 16.0	23 33.37	-02 13.5	16.1	-1.01	- 1.8	0.3/16.2	35911
1993 DE ₁	1999 09 14.8	23 29.13	+10 31.3	17.5	-0.89	- 3.6	4.3/19.3	36069	2041 P-L	1999 09 16.0	23 33.41	-07 02.0	17.9	-1.04	- 0.2	1.5/15.0	36119
1999 PB ₄	1999 09 14.8	23 29.17	-08 16.9	17.8	-0.71	- 5.2	1.8/13.2	36025	1998 DG ₂₀	1999 09 16.0	23 33.60	-17 44.4	17.3	-0.90	- 5.7	5.5/11.1	36078
1983 RL	1999 09 14.8	23 29.38	+09 03.5	15.5	-1.76	+12.8	7.2/16.1	36063	1990 TT ₁	1999 09 16.1	23 33.66	+05 06.6	17.7	-0.79	- 5.3	3.2/18.8	34833
(11552)	1999 09 14.9	23 29.30	-13 40.3	16.8	-0.49	- 4.9	2.1/11.0	35846	1998 HT ₂₃	1999 09 16.1	23 33.72	-08 27.0	17.4	-1.12	+ 2.2	2.5/14.8	36082
1981 DY ₂	1999 09 14.9	23 29.44	+09 32.8	17.7	-1.24	+ 3.0	5.1/17.7	35907	6606 P-L	1999 09 16.1	23 33.80	-10 29.1	18.0	-1.02	- 3.6	3.0/13.9	36121
6012 P-L	1999 09 14.9	23 29.62	+01 55.6	19.1	-0.72	- 4.9	1.5/16.7	24585	(8878)	1999 09 16.1	23 33.83	-08 38.2	17.0	-0.78	- 6.4	2.0/14.2	31918
1998 GE ₉	1999 09 14.9	23 29.64	-12 10.0	16.8	-0.75	-10.8	3.1/11.6	36081	1992 DU ₇	1999 09 16.1	23 33.86	-06 03.5	17.5	-0.79	- 4.4	1.1/15.1	36067
1997 AT ₂₀	1999 09 15.0	23 29.74	+03 39.0	17.4	-0.87	- 4.2	2.7/17.2	35938	1998 DB ₃₅	1999 09 16.1	23 34.00	-06 18.9	17.9	-0.96	- 4.4	1.4/15.1	35948
1999 RZ ₁₂₃	1999 09 15.0	23 29.97	+16 41.2	18.2	-0.84	- 4.5	5.8/22.0	36045	(11513)	1999 09 16.2	23 34.15	+02 58.7	17.2	-0.69	- 5.5	1.6/18.3	35836
1996 BJ ₂	1999 09 15.0	23 30.03	+08 35.8	16.8	-0.80	- 3.1	3.6/18.9	35928	1998 HC ₉₅	1999 09 16.2	23 34.22	-09 32.4	17.7	-0.98	- 6.5	2.8/14.1	35986
1981 EJ ₉	1999 09 15.1	23 30.03	+01 05.9	19.8	-0.88	- 4.6	1.4/16.5	28611	1998 EC ₉	1999 09 16.2	23 34.22	-14 37.4	17.4	-0.93	- 5.0	4.6/12.5	35949
1998 FW ₁₅	1999 09 15.1	23 30.12	-20 24.9	18.6	-1.00	- 3.8	5.9/09.8	36079	(8796)	1999 09 16.2	23 34.28	+00 22.5	18.0	-0.95	- 6.9	1.3/17.3	31898
1999 RO ₁₉	1999 09 15.1	23 30.28	-04 07.6	16.9	-0.85	- 3.9	0.4/14.9	36034	1999 RO ₈₂	1999 09 16.3	23 34.31	+03 52.1	18.1	-1.02	- 3.6	2.6/18.3	36042
1998 FJ ₆₇	1999 09 15.1	23 30.29	-10 05.4	17.2	-0.99	- 6.5	3.0/12.9	35963	1998 HS ₃₂	1999 09 16.3	23 34.34	-00 57.5	16.7	-0.80	- 6.6	0.8/17.0	35981
1993 FV ₁₁	1999 09 15.1	23 30.39	-09 29.2	17.0	-0.87	- 6.2	2.3/13.1	36069	1998 FX ₄₇	1999 09 16.3	23 34.35	+03 17.8	16.3	-0.77	- 9.2	2.7/18.6	36079
(8816)	1999 09 15.1	23 30.40	-07 02.5	15.6	-0.90	- 3.7	1.8/14.0	31903	2727 P-L	1999 09 16.3	23 34.38	-07 04.1	18.7	-0.99	- 4.4	1.6/15.0	36120
1999 RB ₁₂₄	1999 09 15.2	23 30.49	+08 44.6	16.8	-0.90	-10.0	5.0/19.7	36045	1101 T-1	1999 09 16.3	23 34.50	+03 09.1	18.0	-0.84	- 5.0	2.0/18.3	36122
1998 ED ₁₂	1999 09 15.2	23 30.53	-13 32.9	17.9	-1.04	- 3.0	4.4/12.3	35950	1955 RE ₁	1999 09 16.3	23 34.52	+07 38.7	15.2	-0.93	+ 1.0	5.5/19.2	36061
(11436)	1999 09 15.2	23 30.62	+11 03.2	16.3	-0.90	- 8.2	6.3/20.4	35816	1998 KZ ₈	1999 09 16.3	23 34.67	-29 39.8	16.7	-0.90	- 5.7	9.6/06.2	36084
(11598)	1999 09 15.3	23 30.71	-06 59.4	18.6	-0.92	- 6.6	1.3/14.0	35858	1998 FD ₁₀₄	1999 09 16.3	23 34.68	+12 00.6	18.0	-0.76	-10.9	5.0/22.3	36080
9099 P-L	1999 09 15.3	23 30.98	+01 19.0	17.6	-0.66	- 8.8	1.4/17.1	36122	(11682)	1999 09 16.4	23 34.71	-08 17.1	17.1	-0.93	- 5.5	2.1/14.7	35879
1995 YU ₃	1999 09 15.3	23 31.05	-23 00.6	20.9	-1.22	-11.3	9.2/08.3	26907	1998 HV ₁₄₃	1999 09 16.4	23 34.90	-12 20.9	17.1	-1.01	- 1.9	4.2/13.7	35991
1981 EU ₁₂	1999 09 15.4	23 31.16	+00 53.5	20.0	-0.84	- 5.9	1.2/16.8	26917	1987 SE ₃	1999 09 16.4	23 34.92	-11 04.6	16.9	-0.88	- 5.9	3.1/13.7	36064
1997 GP ₃₅	1999 09 15.4	23 31.27	+00 46.1	18.5	-0.71	- 5.6	1.1/16.8	36077	1997 EK	1999 09 16.4	23 34.95	-09 16.6	17.4	-0.88	- 2.1	2.0/14.5	36076
1995 VK ₁	1999 09 15.4	23 31.36	-02 11.9	17.2	-0.84	- 4.7	0.3/15.8	35926	1999 RF	1999 09 16.4	23 35.05	-02 03.2	16.4	-0.63	-14.6	10.7/28.0	36027
1981 EP ₃₈	1999 09 15.4	23 31.43	+02 55.9	17.9	-0.68	- 8.1	1.9/17.7	36063	(9141)	1999 09 16.4	23 35.06	-23 08.4	17.4	-0.79	- 3.8	5.9/09.6	32206

(11585)	1999 09 16.5	23 35.19	-04 15.9	16.7	-0.76	- 5.9	0.5/16.0	35854	3243 T-1	1999 09 17.7	23 39.64	-02 44.7	16.6	-0.98	- 2.7	0.3/17.6	36122
1998 JH ₄	1999 09 16.5	23 35.21	-09 15.7	18.7	-0.83	- 5.2	2.3/14.4	35993	(8810)	1999 09 17.8	23 39.74	-08 09.6	17.0	-0.77	- 4.6	2.0/15.8	31901
1990 RC ₂	1999 09 16.5	23 35.33	+00 35.7	17.0	-0.78	- 6.8	1.1/17.7	36065	1992 UD ₂	1999 09 17.8	23 39.74	-53 05.6	16.7	-1.75	+ 9.1	24.0/02.0	36068
1998 FK ₁₁₅	1999 09 16.6	23 35.38	+09 52.4	16.0	-0.84	- 6.4	5.8/21.0	35973	4138 T-3	1999 09 17.8	23 39.88	-26 06.9	17.5	-0.99	+ 0.2	7.9/10.6	36125
4053 P-L	1999 09 16.6	23 35.48	+04 58.3	17.4	-0.83	- 8.0	2.9/19.3	36120	1998 HF ₅₁	1999 09 17.8	23 39.89	-08 27.1	17.3	-0.96	- 4.8	2.5/15.9	36082
1995 UH ₆	1999 09 16.6	23 35.62	-10 43.3	17.1	-0.89	- 3.3	2.9/14.2	36072	(8644)	1999 09 17.8	23 40.00	-05 58.7	15.6	-0.99	- 2.2	1.8/16.8	35675
(8725)	1999 09 16.6	23 35.73	-08 06.5	16.1	-0.96	- 6.2	2.6/14.9	36060	1988 CG ₂	1999 09 17.8	23 40.06	-19 22.0	18.4	-0.79	- 7.0	5.0/11.7	36064
1996 YL ₂	1999 09 16.7	23 35.93	-14 52.9	17.7	-0.91	- 6.0	4.4/12.7	36075	1999 RK ₂₇	1999 09 17.9	23 40.08	-05 12.0	16.6	-0.73	- 9.9	1.3/16.8	36035
1285 T-1	1999 09 16.7	23 35.96	-00 00.7	18.6	-0.91	- 5.7	1.0/17.6	36122	1986 GD	1999 09 17.9	23 40.13	-11 56.6	18.0	-0.94	- 4.3	3.1/14.8	36063
(8707)	1999 09 16.7	23 35.97	-03 24.6	16.3	-0.92	- 5.7	0.3/16.5	31689	1996 WX	1999 09 17.9	23 40.17	-13 04.2	18.7	-1.05	- 4.1	4.5/14.6	36075
1998 FT ₅₇	1999 09 16.7	23 36.04	+05 30.5	17.0	-0.80	- 9.4	3.4/19.8	35959	(8977)	1999 09 17.9	23 40.21	-06 09.8	17.9	-0.98	- 7.1	1.6/16.6	31941
(8922)	1999 09 16.7	23 36.11	-08 14.9	16.7	-1.01	- 4.5	2.2/15.1	36060	1043 T-2	1999 09 17.9	23 40.22	+00 37.8	18.8	-0.94	- 5.4	1.0/18.8	36052
(8909)	1999 09 16.8	23 36.15	-14 28.1	16.0	-0.81	- 4.5	4.5/12.9	31925	1998 KF ₃₄	1999 09 17.9	23 40.39	-01 44.3	19.8	-0.81	- 6.8	0.1/18.1	32334
(8996)	1999 09 16.8	23 36.42	+03 55.4	18.6	-0.71	- 6.2	1.9/19.2	32173	1998 JB ₄	1999 09 18.0	23 40.61	+09 38.4	17.8	-0.77	- 8.4	3.7/22.4	36083
1994 CA ₁₇	1999 09 16.8	23 36.51	-07 18.4	18.5	-0.93	- 6.2	1.8/15.3	24112	1998 FK ₄₇	1999 09 18.0	23 40.65	-01 29.0	16.5	-1.06	- 1.5	0.3/18.2	35957
(11731)	1999 09 16.9	23 36.57	-05 32.3	17.1	-0.72	- 5.0	0.9/15.9	35893	1991 RP ₁	1999 09 18.0	23 40.73	+01 12.0	15.9	-1.15	+ 2.0	1.4/18.8	36066
(11632)	1999 09 16.9	23 36.60	-06 26.6	15.5	-0.78	- 7.2	1.8/15.6	35867	1995 SU ₁₅	1999 09 18.0	23 40.79	-01 14.8	18.5	-0.88	- 6.0	0.3/18.4	36072
(8616)	1999 09 16.9	23 36.78	+00 03.6	15.9	-0.73	- 9.7	1.2/17.9	31667	1998 KR ₅₅	1999 09 18.1	23 40.87	-05 40.8	18.5	-0.71	- 7.5	1.1/16.8	36084
1997 CX ₂	1999 09 16.9	23 36.83	-02 35.4	17.4	-0.89	- 3.2	8.8/28.0	35939	(11325)	1999 09 18.1	23 40.92	+00 13.4	18.1	-0.85	- 5.9	0.9/18.9	35572
1998 DB	1999 09 16.9	23 36.87	-06 20.2	18.5	-0.99	- 6.5	1.5/15.8	35946	1998 HB ₁₄	1999 09 18.1	23 41.03	-22 31.6	17.6	-0.97	- 5.1	7.2/11.3	32326
1998 FM ₁₀₃	1999 09 17.0	23 36.95	+03 05.9	18.2	-0.95	- 5.3	2.2/18.8	35969	(8592)	1999 09 18.2	23 41.21	-01 10.3	17.2	-1.06	- 3.8	0.3/18.5	31518
1983 YK	1999 09 17.0	23 36.95	-05 39.2	17.3	-0.66	- 6.7	0.9/15.9	36063	(8494)	1999 09 18.2	23 41.25	-09 20.7	16.9	-0.75	- 9.9	2.7/15.5	31494
1997 ED ₅	1999 09 17.0	23 36.96	-01 28.9	18.8	-0.84	- 7.5	0.4/17.4	36076	1998 FG ₅₆	1999 09 18.2	23 41.47	-05 43.1	16.8	-0.75	- 9.7	1.5/16.9	35958
1998 DV ₂₃	1999 09 17.0	23 37.01	-11 02.7	18.6	-1.02	- 3.1	3.2/14.6	35947	1998 KS ₆	1999 09 18.2	23 41.48	-09 16.5	18.9	-0.93	- 6.4	2.6/15.9	36084
1988 RM ₃	1999 09 17.1	23 37.35	-03 16.5	16.3	-1.06	+ 0.2	0.4/16.9	36064	(11576)	1999 09 18.3	23 41.53	-02 39.9	16.1	-1.07	- 1.6	0.3/18.1	35852
1998 HL ₁₂₀	1999 09 17.1	23 37.43	-16 36.9	17.3	-0.82	- 8.2	4.6/12.0	36083	(11659)	1999 09 18.3	23 41.65	+02 18.0	17.1	-0.79	- 5.7	1.4/19.8	35873
1998 KS ₄₇	1999 09 17.1	23 37.55	-05 37.9	18.2	-0.81	- 6.5	1.0/16.1	36084	(11476)	1999 09 18.3	23 41.65	-02 38.2	17.4	-0.93	- 7.2	0.3/18.1	35826
1991 LZ	1999 09 17.2	23 37.56	+06 44.2	17.0	-0.86	-10.5	3.3/20.6	36066	1996 XW ₁₉	1999 09 18.3	23 41.70	+10 44.4	17.1	-0.94	- 5.9	4.9/22.5	36075
1998 JH ₃	1999 09 17.2	23 37.61	-21 31.1	16.4	-0.87	- 5.6	7.7/10.4	36083	(11479)	1999 09 18.3	23 41.73	-02 34.1	16.7	-0.72	- 5.3	0.2/18.2	35827
(9078)	1999 09 17.2	23 37.63	-01 37.3	16.2	-0.80	- 4.6	0.3/17.5	36060	1998 FH ₇₅	1999 09 18.4	23 41.98	-02 44.8	16.1	-0.88	- 7.6	0.4/18.2	36080
(8479)	1999 09 17.2	23 37.79	-02 39.9	16.4	-0.92	- 6.6	0.1/17.2	35413	1998 MG ₁	1999 09 18.4	23 42.01	-02 05.6	18.1	-0.77	- 6.7	0.0/18.4	36001
1998 KK ₅₅	1999 09 17.3	23 38.23	-00 01.4	17.3	-0.74	- 8.6	0.8/18.2	36000	1998 DE ₁₆	1999 09 18.4	23 42.03	-05 51.1	18.5	-0.92	- 7.6	1.6/17.1	36078
1999 QA ₂	1999 09 17.4	23 38.28	-18 54.4	17.9	-0.71	- 8.1	5.7/11.0	36026	5167 T-3	1999 09 18.5	23 42.21	-11 43.4	18.0	-0.69	- 6.9	3.0/14.9	36055
(11590)	1999 09 17.4	23 38.36	-05 23.9	16.3	-0.73	- 5.1	1.1/16.4	35855	(8830)	1999 09 18.5	23 42.23	-14 42.4	15.0	-0.84	- 1.0	4.9/14.7	36060
(11452)	1999 09 17.4	23 38.50	+14 58.4	16.1	-0.85	- 6.7	7.8/23.9	35820	1998 KA ₅₄	1999 09 18.5	23 42.40	+11 07.8	17.2	-0.79	- 9.2	4.3/23.4	36084
1998 FS ₆₂	1999 09 17.4	23 38.54	+02 24.2	18.5	-0.85	- 8.2	1.7/19.1	35961	1994 PQ ₁₀	1999 09 18.5	23 42.42	-05 04.3	17.7	-0.77	- 5.9	1.0/17.5	35919
5163 T-2	1999 09 17.4	23 38.60	+11 07.7	18.5	-0.77	- 3.6	3.6/21.9	36054	1994 AN ₂	1999 09 18.5	23 42.59	+07 47.0	17.6	-1.00	- 4.3	3.7/21.6	36070
1981 EH ₁₇	1999 09 17.5	23 38.60	+01 18.0	17.7	-0.69	- 7.4	1.1/18.8	36062	1993 OF ₉	1999 09 18.6	23 42.69	+10 12.7	16.8	-0.80	- 3.5	3.6/22.6	35917
(11451)	1999 09 17.5	23 38.60	-02 00.9	17.7	-0.79	- 4.6	0.1/17.6	35820	1071 T-3	1999 09 18.6	23 42.72	+04 45.0	16.3	-0.98	- 2.5	3.0/20.6	36124
1996 XU ₁₉	1999 09 17.5	23 38.62	-00 18.9	18.2	-0.91	- 6.0	0.7/18.2	35933	1995 QY ₃	1999 09 18.6	23 42.80	+06 28.1	17.6	-0.88	- 6.7	3.1/21.5	36072
1998 FE ₂	1999 09 17.5	23 38.69	-09 33.4	17.6	-0.89	- 5.6	2.7/15.2	36078	3329 T-1	1999 09 18.7	23 42.93	+03 39.2	17.5	-0.69	- 7.8	1.7/20.7	36122
(11535)	1999 09 17.5	23 38.75	-02 42.2	17.6	-0.76	- 5.6	0.1/17.4	35842	2113 P-L	1999 09 18.7	23 42.95	+02 50.0	18.1	-0.80	- 6.4	1.7/20.3	36119
(11693)	1999 09 17.5	23 38.86	-02 37.1	17.2	-0.93	- 5.2	0.1/17.5	35883	(8833)	1999 09 18.7	23 43.05	+07 58.5	17.2	-0.74	- 7.5	3.1/22.3	31907
(11726)	1999 09 17.5	23 38.98	-08 32.7	17.1	-0.71	- 6.7	1.9/15.4	35892	1998 FB ₁₀	1999 09 18.7	23 43.14	+04 25.4	17.2	-0.81	- 8.4	2.4/21.0	36079
(11530)	1999 09 17.6	23 39.16	+01 36.0	17.3	-0.76	- 7.0	1.3/19.0	35840	1997 YS ₁₁	1999 09 18.7	23 43.15	-13 27.5	16.9	-0.92	- 6.6	5.0/14.9	36077
1999 PU ₄	1999 09 17.6	23 39.34	-10 00.2	17.7	-0.89	- 8.1	3.3/15.0	36026	1998 KV ₃₃	1999 09 18.8	23 43.60	-03 04.3	18.9	-0.76	- 4.9	0.4/18.4	35997
1998 HD ₈₈	1999 09 17.6	23 39.38	+06 57.0	18.4	-0.94	- 7.2	3.4/20.8	35984	1998 KX	1999 09 18.8	23 43.70	-12 30.2	18.9	-0.85	- 6.4	3.5/15.2	36083
4616 T-2	1999 09 17.7	23 39.32	-02 53.6	17.9	-0.69	- 7.8	0.2/17.5	32787	1998 FW ₁₄	1999 09 18.9	23 43.67	+04 08.9	17.4	-0.84	- 9.0	2.4/21.0	35952
1262 T-2	1999 09 17.7	23 39.46	-04 34.7	18.4	-1.08	- 4.1	1.0/17.0	36123	1998 HX ₉₉	1999 09 18.9	23 43.67	-04 33.8	17.7	-0.93	- 7.9	1.0/18.0	36082
1995 YV ₂₂	1999 09 17.7	23 39.56	-03 13.0	19.1	-0.72	- 5.0	0.3/17.4	36073	1995 TY ₂	1999 09 18.9	23 43.80	-07 23.4	18.4	-1.06	+ 2.0	2.7/17.6	35925
1051 T-1	1999 09 17.7	23 39.56	-03 13.9	16.8	-0.85	- 2.4	0.3/17.4	36122	1998 FS ₆₃	1999 09 18.9	23 44.04	-12 11.9	16.4	-1.07	- 0.1	5.3/16.2	35961

(8873)	1999 09 19.0	23 44.01 -12 11.9 16.3	-0.89 - 4.1	5.0/15.6	31916	1998 FF ₆₃	1999 09 20.4	23 49.33 +00 44.8 18.5	-0.78 -11.1	0.7/21.2	35961
1998 FR ₁₀₃	1999 09 19.0	23 44.18 +04 27.7 17.9	-0.99 - 5.4	2.5/21.0	36080	1998 FQ ₅₈	1999 09 20.4	23 49.38 -01 39.0 18.3	-0.87 - 6.6	0.2/20.3	35959
1997 AB ₆	1999 09 19.0	23 44.20 +04 20.5 17.4	-0.98 - 5.4	2.4/20.9	36075	1999 RT ₁	1999 09 20.4	23 49.44 +02 18.6 15.8	-1.16 + 3.5	1.6/21.3	36028
(11547)	1999 09 19.0	23 44.30 +02 06.6 17.0	-0.92 - 4.8	1.8/20.3	35844	(11539)	1999 09 20.5	23 49.45 +11 25.1 16.4	-0.90 - 5.4	5.8/24.7	35843
1997 GW ₂₉	1999 09 19.1	23 44.41 -11 47.5 16.8	-0.70 - 8.3	3.4/15.3	36077	(11696)	1999 09 20.5	23 49.47 -07 07.7 17.9	-1.00 - 5.8	2.2/18.6	35884
1998 FA ₇₈	1999 09 19.1	23 44.46 -08 58.0 18.2	-0.82 - 7.4	2.6/16.6	35966	1114 T-2	1999 09 20.5	23 49.50 -00 24.3 18.5	-0.84 - 5.2	0.3/20.8	36052
(11532)	1999 09 19.1	23 44.50 -06 53.8 17.5	-0.80 - 4.7	1.7/17.4	35841	(9219)	1999 09 20.5	23 49.75 -11 24.6 16.8	-0.67 - 6.3	2.5/16.9	32428
1996 VV ₁₈	1999 09 19.2	23 44.72 -04 10.7 18.5	-0.99 - 5.1	1.0/18.4	36074	3116 T-2	1999 09 20.6	23 49.89 -04 41.3 18.3	-0.90 - 6.5	1.5/19.4	36053
1992 SJ ₁	1999 09 19.2	23 44.86 -14 08.9 16.4	-0.84 - 5.2	6.1/14.9	36068	(11571)	1999 09 20.6	23 50.08 -04 21.7 17.0	-0.74 - 6.0	1.2/19.5	35850
(11763)	1999 09 19.2	23 44.94 -01 11.6 17.7	-0.77 - 5.8	0.1/19.4	35901	2024 T-1	1999 09 20.6	23 50.13 +00 49.8 17.8	-0.70 -11.6	0.7/21.4	36122
1997 ED ₂₅	1999 09 19.2	23 45.12 -12 59.8 18.3	-0.81 - 5.1	4.0/15.5	34201	(11687)	1999 09 20.6	23 50.15 +01 07.2 16.7	-0.87 - 5.9	0.9/22.0	35881
(11614)	1999 09 19.3	23 45.16 -22 06.7 17.1	-0.78 - 4.8	7.1/11.9	35862	1999 PR ₃	1999 09 20.7	23 50.21 -08 27.1 17.1	-0.91 - 3.6	3.0/18.5	36025
1992 SY ₁₂	1999 09 19.3	23 45.17 -05 36.0 15.7	-1.13 + 2.2	2.0/18.4	35916	1998 HC ₁₀₀	1999 09 20.7	23 50.22 -06 54.8 18.0	-0.86 - 6.5	2.0/18.8	35987
1998 FG ₈₀	1999 09 19.3	23 45.19 -08 18.7 19.0	-0.96 - 5.8	2.5/17.2	35967	1997 FC	1999 09 20.7	23 50.41 -14 24.4 17.3	-0.72 - 6.5	3.9/16.0	36077
1996 XY ₁₇	1999 09 19.3	23 45.28 +09 54.8 17.0	-0.93 - 6.5	5.1/23.2	35933	1998 FG ₅₈	1999 09 20.8	23 50.58 -01 58.5 16.8	-1.04 - 1.7	0.4/20.6	35959
1999 OX ₁	1999 09 19.3	23 45.34 +08 33.8 17.0	-1.00 - 1.4	4.9/22.3	36092	1999 RE ₁	1999 09 20.8	23 50.79 +19 33.3 17.4	-0.97 - 2.5	6.9/27.5	36028
1998 HQ ₁₂₄	1999 09 19.4	23 45.43 -10 35.9 17.9	-0.90 - 7.2	3.5/16.3	36083	1978 VF ₆	1999 09 20.8	23 50.80 +07 55.7 19.3	-0.92 - 6.3	3.2/23.8	16422
4200 T-2	1999 09 19.4	23 45.55 -07 53.7 18.2	-0.80 - 5.9	3.0/17.3	36054	3021 P-L	1999 09 20.8	23 50.81 +15 26.2 17.8	-0.77 - 3.1	4.4/26.4	36120
1997 BA ₃	1999 09 19.5	23 45.82 -00 26.8 17.3	-0.95 - 5.2	0.4/19.9	36076	1999 RV ₄₂	1999 09 20.8	23 50.88 -05 47.0 17.8	-1.03 - 4.2	2.0/19.5	36040
1992 SG ₁₃	1999 09 19.5	23 45.87 -07 13.5 15.9	-0.92 + 0.5	3.1/18.0	36068	1998 KA ₅₅	1999 09 20.9	23 50.86 -12 37.4 16.9	-0.71 - 7.2	3.8/16.7	36084
1998 HO ₃	1999 09 19.5	23 45.94 +04 55.1 17.9	-0.74 -11.6	2.3/22.1	35707	2071 P-L	1999 09 20.9	23 51.06 +01 34.7 18.2	-0.81 - 6.2	1.0/22.0	36049
1998 HL ₈₆	1999 09 19.5	23 46.11 -09 56.6 17.6	-1.03 - 1.5	3.7/17.2	35984	1998 KW ₄₈	1999 09 20.9	23 51.12 -21 24.2 18.3	-0.86 - 4.5	6.4/14.1	32335
1998 FL ₇₄	1999 09 19.6	23 46.30 +00 01.0 17.4	-1.06 - 2.6	0.7/20.1	35964	1998 KG ₃₈	1999 09 20.9	23 51.20 -01 17.8 16.4	-0.77 - 6.4	0.1/20.9	36084
1998 FA ₁₀₂	1999 09 19.6	23 46.36 +04 33.1 18.5	-0.98 - 4.4	2.2/21.5	35968	(9336)	1999 09 21.0	23 51.37 -00 14.9 18.1	-0.98 - 6.1	0.3/21.3	32614
1999 RN ₈₄	1999 09 19.6	23 46.42 +03 58.5 16.0	-0.93 - 6.7	2.5/22.0	36042	(8929)	1999 09 21.0	23 51.40 -12 37.8 16.6	-0.91 - 6.1	5.0/17.1	36060
1996 DQ ₁	1999 09 19.6	23 46.50 -02 01.7 17.9	-0.79 - 3.5	0.2/19.5	36074	(11764)	1999 09 21.0	23 51.45 -04 15.7 16.5	-1.05 - 3.4	1.5/20.1	35901
(8417)	1999 09 19.7	23 46.61 +11 09.0 16.0	-0.96 - 7.1	5.7/24.1	31369	(11560)	1999 09 21.0	23 51.45 -00 06.2 17.5	-0.84 - 4.8	0.3/21.3	35848
1998 FA ₅₄	1999 09 19.7	23 46.64 +02 06.5 18.8	-0.93 - 6.3	1.3/20.9	35958	(11312)	1999 09 21.0	23 51.50 -02 28.7 17.1	-0.95 - 5.8	0.6/20.6	35568
1998 CB ₄	1999 09 19.7	23 46.65 -04 23.5 18.2	-1.02 - 5.8	1.2/18.8	35946	1998 HO ₄₅	1999 09 21.0	23 51.58 +02 57.7 16.6	-0.92 - 4.0	1.5/22.3	36082
1998 MG ₃₈	1999 09 19.7	23 46.66 +17 15.3 18.9	-0.85 - 6.5	5.6/26.5	36085	(11549)	1999 09 21.1	23 51.66 +18 48.3 16.2	-0.90 - 5.3	6.7/28.0	35845
1998 HD ₉₇	1999 09 19.7	23 46.75 -06 35.4 17.8	-0.86 - 4.6	1.8/18.1	35986	1999 RV ₂₇	1999 09 21.1	23 51.66 -01 42.2 16.9	-0.69 - 7.3	0.3/20.8	36101
3024 T-2	1999 09 19.7	23 46.88 -11 14.1 18.8	-1.15 + 1.5	3.5/17.4	36123	1038 T-2	1999 09 21.1	23 51.75 +01 04.0 18.6	-0.89 - 7.0	0.9/21.8	36122
1999 RQ ₂₇	1999 09 19.8	23 47.24 -02 04.6 17.6	-0.81 - 2.2	0.2/19.7	36035	1998 MN ₄	1999 09 21.2	23 51.91 -19 36.4 19.0	-0.74 - 7.8	5.1/14.2	36084
1999 OV ₁	1999 09 19.9	23 47.21 +07 08.0 16.4	-0.98 - 2.6	4.0/22.4	36023	1995 UY ₁	1999 09 21.2	23 51.99 +03 58.4 17.7	-0.88 - 4.2	1.6/22.8	36072
(8257)	1999 09 19.9	23 47.22 -13 54.1 16.5	-1.06 - 3.9	5.3/16.2	31209	1998 FS ₇₇	1999 09 21.2	23 52.08 -04 03.0 17.5	-0.80 - 8.7	1.1/20.1	35966
(11730)	1999 09 19.9	23 47.34 -04 58.9 17.8	-0.88 - 7.3	1.3/18.7	35893	2574 P-L	1999 09 21.2	23 52.17 -12 29.6 18.1	-0.94 - 0.1	3.4/18.0	36119
1990 SU ₁₅	1999 09 19.9	23 47.50 -00 17.7 16.1	-0.64 -12.9	0.4/20.4	36066	(11516)	1999 09 21.2	23 52.18 -10 06.1 16.7	-1.05 - 2.6	3.9/18.7	35837
1998 GK ₁	1999 09 19.9	23 47.58 +05 51.6 16.1	-0.99 - 1.9	3.0/22.1	36081	3195 T-1	1999 09 21.2	23 52.22 +02 25.5 16.9	-1.05 - 3.7	1.4/22.0	36052
(8862)	1999 09 20.0	23 47.71 -02 56.6 14.6	-0.70 - 9.2	0.7/19.4	31914	1991 NB ₁	1999 09 21.3	23 52.60 +13 06.8 16.0	-0.79 - 8.8	6.1/26.8	36066
1998 KP ₆	1999 09 20.1	23 47.99 +05 45.3 17.6	-0.77 - 7.5	2.4/22.7	35994	1981 ED ₁₆	1999 09 21.3	23 52.64 +05 37.2 18.8	-0.97 - 6.3	2.3/23.5	32298
1998 JF ₃	1999 09 20.1	23 48.08 -02 30.5 17.0	-0.79 - 9.6	0.5/19.7	35992	1998 FH ₁₂₃	1999 09 21.4	23 52.78 +02 05.4 20.0	-0.87 - 5.6	0.9/22.4	32262
1990 RN ₈	1999 09 20.1	23 48.12 -02 05.3 17.2	-0.79 - 6.6	0.3/19.9	35913	1998 FH ₄₂	1999 09 21.4	23 52.83 +04 16.9 17.6	-1.05 - 1.7	2.1/22.9	36079
1994 CK ₁₀	1999 09 20.2	23 48.66 -08 20.9 17.8	-0.95 - 6.3	2.9/18.0	36070	5016 P-L	1999 09 21.4	23 52.87 -03 31.6 18.3	-1.06 - 4.3	1.1/20.7	36121
(11491)	1999 09 20.3	23 48.74 +02 15.3 16.3	-0.86 - 5.3	1.6/21.5	35830	1990 TT ₁₀	1999 09 21.5	23 52.94 -00 05.8 17.4	-0.86 - 3.2	0.3/21.7	36066
1994 AT	1999 09 20.3	23 48.78 -03 56.3 17.9	-0.98 - 6.5	1.2/19.5	35918	(11434)	1999 09 21.5	23 53.12 +02 25.0 15.1	-0.96 + 1.0	1.5/22.4	35815
1998 FZ ₄	1999 09 20.3	23 48.86 -10 11.4 18.8	-0.92 - 6.4	3.2/17.4	36079	(11646)	1999 09 21.5	23 53.15 -03 36.1 17.3	-0.86 - 5.2	1.1/20.6	35870
1985 UJ ₃	1999 09 20.3	23 48.97 -04 07.0 15.5	-0.78 - 5.3	1.5/19.4	36063	(8617)	1999 09 21.5	23 53.18 +06 10.7 15.5	-0.86 - 2.8	3.4/23.7	31667
(8470)	1999 09 20.4	23 49.04 -08 29.5 15.2	-0.96 - 1.5	3.7/18.3	31489	1998 JA ₃	1999 09 21.5	23 53.21 -15 18.9 17.9	-0.93 - 6.0	5.3/16.7	32331
1998 FS ₆₅	1999 09 20.4	23 49.10 +03 00.1 18.4	-0.95 - 6.5	1.5/21.8	35962	1998 FF ₄	1999 09 21.6	23 53.45 -11 16.5 18.1	-0.90 - 7.4	3.9/18.0	32316
1994 PA ₁₄	1999 09 20.4	23 49.19 -00 04.3 18.3	-0.77 - 5.6	0.4/20.8	36071	(11257)	1999 09 21.6	23 53.57 -03 28.2 16.4	-0.84 - 8.7	1.2/20.7	35556
1996 TS ₂₅	1999 09 20.4	23 49.23 -09 50.1 19.3	-1.02 - 4.1	3.2/17.8	32311	(9035)	1999 09 21.6	23 53.63 +08 26.0 15.3	-0.58 -10.5	4.0/25.4	32182

(11772)	1999 09 21.7	23 53.83	-05 00.3	18.1	-0.80	- 6.4	1.3/20.3	35903	1997 AR ₁₆	1999 09 23.0	23 58.68	+00 03.4	17.3	-0.88	- 1.6	0.1/23.1	35937
1997 EL ₂₈	1999 09 21.7	23 54.01	-02 41.3	17.5	-0.96	- 0.4	0.8/21.2	35941	1994 VD ₇	1999 09 23.2	23 59.34	+25 36.2	16.8	-0.71	- 7.6	7.5/03.9	36071
4636 P-L	1999 09 21.7	23 54.01	-07 05.0	18.4	-0.83	- 1.9	1.8/19.8	36120	(8852)	1999 09 23.2	23 59.44	-04 35.1	15.3	-0.95	- 2.5	2.2/22.0	31912
(11437)	1999 09 21.7	23 54.13	+02 41.3	15.6	-1.95	+11.5	1.9/22.0	35816	1998 FX ₁₀₈	1999 09 23.3	23 59.59	+08 36.6	17.8	-0.91	- 7.5	3.4/26.3	35970
1998 HM ₂₂	1999 09 21.8	23 54.02	-01 55.3	19.4	-0.92	- 6.9	0.5/21.4	35707	1997 CF ₂₂	1999 09 23.3	23 59.67	-03 25.8	17.5	-0.76	- 7.0	1.1/22.2	36076
1997 GJ ₈	1999 09 21.8	23 54.19	+10 13.8	17.6	-0.71	- 6.5	3.2/25.8	36077	1999 RG ₃	1999 09 23.3	23 59.68	-00 08.2	17.3	-0.76	- 5.8	0.0/23.3	36029
1998 HZ ₉₁	1999 09 21.8	23 54.22	-03 49.7	18.4	-0.91	- 6.6	1.1/20.8	36082	1995 SL ₃₅	1999 09 23.4	00 00.03	-15 25.1	18.3	-1.18	+ 1.8	5.6/19.7	36072
4170 T-3	1999 09 21.8	23 54.24	-08 03.1	17.9	-0.92	- 6.8	2.9/19.3	36055	1998 FD ₁₁₆	1999 09 23.4	00 00.12	+05 54.1	16.5	-0.99	- 3.3	2.4/25.3	35973
1993 RA ₈	1999 09 21.9	23 54.43	+02 13.8	17.0	-0.65	- 6.4	0.8/22.9	36070	(11508)	1999 09 23.5	00 00.21	-16 22.4	17.3	-0.83	- 4.5	4.9/18.0	35835
1999 RN ₃₅	1999 09 21.9	23 54.54	+00 21.8	17.1	-0.77	-10.5	0.4/22.3	36038	1995 SS ₃₀	1999 09 23.5	00 00.29	+03 36.1	19.2	-1.04	- 2.6	1.3/24.5	29624
1992 UA ₆	1999 09 22.0	23 54.83	+05 00.4	16.4	-0.90	- 5.3	2.4/23.8	36068	1998 HE ₈	1999 09 23.5	00 00.35	+06 08.8	17.2	-0.84	- 8.3	2.2/25.7	36081
1158 T-2	1999 09 22.0	23 55.04	+02 00.5	17.6	-0.86	- 6.4	1.1/22.9	36123	1998 FH ₂	1999 09 23.5	00 00.37	+10 40.6	18.3	-1.21	- 0.6	3.7/26.3	36079
1998 HX ₉₃	1999 09 22.0	23 55.05	+09 48.1	18.0	-0.87	- 7.6	3.8/25.7	36082	1999 RO ₃₂	1999 09 23.5	00 00.52	+00 39.7	17.0	-0.94	- 1.3	0.2/23.8	36037
1996 XJ ₁₈	1999 09 22.0	23 55.08	-15 47.7	20.7	-0.78	- 6.6	4.7/16.7	30786	1997 AQ ₂₂	1999 09 23.6	00 00.58	-11 16.4	18.0	-0.78	- 5.9	3.3/19.7	36076
1991 TV ₁	1999 09 22.0	23 55.08	-17 40.0	15.4	-0.87	+ 0.3	8.9/16.8	36067	1997 CT ₁₉	1999 09 23.6	00 00.59	+02 33.0	17.6	-0.92	- 6.3	1.0/24.4	36076
(11496)	1999 09 22.1	23 55.23	-15 03.8	17.5	-0.80	- 8.1	5.0/16.9	35831	1999 RJ ₁₀₉	1999 09 23.6	00 00.65	+11 20.9	16.5	-1.05	+ 0.5	5.6/27.0	36111
(9112)	1999 09 22.1	23 55.27	-04 53.8	17.3	-0.74	- 4.9	1.3/20.7	36061	1995 WS ₃	1999 09 23.6	00 00.86	+06 05.7	16.8	-0.77	- 3.7	2.9/25.7	36073
1993 FP ₂₆	1999 09 22.1	23 55.30	+02 59.5	19.1	-0.87	- 5.0	1.1/23.3	29918	1997 CR ₁₉	1999 09 23.7	00 00.91	-04 09.9	17.0	-0.88	- 3.4	1.4/22.4	36076
1999 RR ₃₈	1999 09 22.1	23 55.42	-00 35.8	18.0	-0.83	- 5.8	0.0/22.1	36039	1998 KJ ₁	1999 09 23.7	00 01.00	+01 37.9	18.9	-0.85	- 5.8	0.5/24.2	36083
1981 EJ ₁₂	1999 09 22.1	23 55.49	+05 40.6	19.8	-0.74	- 4.7	1.7/24.3	26917	1998 JE ₄	1999 09 23.7	00 01.06	+17 19.5	18.5	-0.80	- 7.7	5.5/30.3	35993
1999 RW ₁	1999 09 22.2	23 55.47	-01 03.0	16.5	-0.81	- 3.8	0.2/22.0	36028	1998 HL ₁₄₉	1999 09 23.8	00 01.23	-05 10.5	18.0	-0.91	- 4.0	1.8/22.2	35992
(11531)	1999 09 22.2	23 55.60	-04 20.1	16.9	-0.77	- 5.3	1.3/20.9	35841	1999 RJ ₃₂	1999 09 23.8	00 01.40	+00 57.9	16.6	-0.82	- 2.4	0.3/24.1	36102
1997 BU ₈	1999 09 22.2	23 55.75	-01 38.7	18.1	-0.82	- 6.1	0.4/21.9	36076	1998 HT ₁₄	1999 09 23.8	00 01.61	-03 59.1	17.8	-0.81	- 7.0	1.9/22.5	35979
1981 EB ₁₆	1999 09 22.2	23 55.78	+06 49.8	18.8	-0.97	- 6.1	2.9/24.6	26918	6326 P-L	1999 09 23.9	00 01.61	+01 42.6	18.1	-0.74	- 5.0	0.5/24.4	36051
1992 YM ₂	1999 09 22.2	23 55.78	-16 11.0	16.8	-0.90	- 4.8	6.5/17.0	36068	1977 DL ₄	1999 09 23.9	00 01.63	+00 42.3	18.6	-0.89	- 4.6	0.2/24.1	36061
6703 P-L	1999 09 22.3	23 55.84	-01 42.7	18.6	-0.80	- 6.8	0.4/21.9	36121	1995 XJ	1999 09 23.9	00 01.92	-17 56.5	17.9	-0.85	- 4.3	6.3/17.8	36073
1998 FK ₄₆	1999 09 22.3	23 55.91	-01 39.2	18.4	-1.01	- 5.4	0.5/21.9	35957	1998 FD ₆₂	1999 09 23.9	00 01.99	+02 42.7	17.4	-1.02	- 3.3	1.0/24.7	35960
1977 DA ₄	1999 09 22.3	23 55.91	-05 41.1	17.1	-0.80	- 4.7	1.7/20.6	35905	1998 HL ₅₂	1999 09 24.0	00 02.07	-23 23.7	17.2	-0.98	- 1.9	8.4/16.7	35983
1997 AD	1999 09 22.3	23 56.22	+17 56.8	17.8	-0.93	- 3.8	5.8/28.4	35934	1988 NY	1999 09 24.0	00 02.14	-39 57.4	18.7	-0.95	- 4.6	15.9/07.9	25648
(8951)	1999 09 22.4	23 56.31	-12 16.1	16.2	-0.82	- 2.7	3.6/18.7	31935	1998 FF ₁₀	1999 09 24.0	00 02.24	+03 56.6	18.5	-0.93	- 8.2	1.3/25.3	35951
1220 T-1	1999 09 22.4	23 56.41	+01 58.9	17.8	-0.91	- 5.7	0.8/23.2	36122	(11492)	1999 09 24.0	00 02.27	+00 29.3	15.4	-0.77	- 7.1	0.1/24.2	35830
1998 HR ₁₄₉	1999 09 22.4	23 56.61	-01 16.0	18.8	-0.88	- 4.6	0.3/22.2	36083	1994 BW	1999 09 24.0	00 02.31	-12 35.2	18.4	-0.93	- 6.2	4.8/19.9	36070
1999 RD ₃₄	1999 09 22.5	23 56.63	-00 52.8	17.5	-0.79	- 3.7	0.2/22.4	36037	1996 AE ₁	1999 09 24.1	00 02.41	+23 04.5	17.5	-0.81	- 3.0	6.3/02.0	36073
1999 RL ₃₅	1999 09 22.5	23 56.77	+01 17.2	17.9	-0.78	- 5.2	0.6/23.1	36038	(11563)	1999 09 24.1	00 02.67	+00 05.2	16.6	-0.73	- 9.2	0.1/24.1	35848
1998 FN ₁₂₂	1999 09 22.5	23 56.80	+01 58.9	18.4	-0.86	- 7.9	0.8/23.4	35975	1998 KH ₅₈	1999 09 24.3	00 03.19	-18 28.6	19.1	-0.94	+ 0.1	6.1/19.1	36000
1998 FO ₆₁	1999 09 22.5	23 56.83	+02 50.5	18.3	-0.90	- 6.9	1.2/23.6	36080	1998 FV ₁₅	1999 09 24.3	00 03.21	-00 31.0	16.3	-1.03	- 2.5	0.4/24.1	36079
1998 JE ₂	1999 09 22.6	23 57.03	-03 37.9	18.5	-0.89	- 6.6	1.1/21.5	36083	1997 AW ₁₃	1999 09 24.5	00 03.82	+10 31.3	17.7	-0.94	- 2.4	3.2/27.6	35937
1998 FM ₅₄	1999 09 22.6	23 57.27	+01 22.7	16.0	-0.97	- 2.0	0.8/23.2	36079	1997 AY ₁₇	1999 09 24.5	00 03.89	-02 00.0	17.5	-1.01	- 4.5	1.1/23.8	35937
1981 EO ₁₃	1999 09 22.7	23 57.49	+05 18.7	17.9	-1.02	- 4.6	2.2/24.5	36062	4340 T-3	1999 09 24.5	00 04.09	-12 20.9	17.0	-0.96	- 2.3	5.8/20.8	34277
1998 JL ₁	1999 09 22.7	23 57.53	-01 29.3	19.2	-0.94	- 5.1	0.4/22.4	36083	1997 CH ₂₂	1999 09 24.6	00 04.24	+03 30.2	19.8	-0.88	- 4.8	1.0/25.6	29667
1994 EB ₂	1999 09 22.7	23 57.61	-25 03.6	18.0	-0.88	- 8.7	7.4/13.4	36070	1992 GC ₅	1999 09 24.6	00 04.41	-03 03.0	18.0	-0.75	- 4.6	1.0/23.5	36067
1998 KC ₈	1999 09 22.8	23 57.95	+10 05.9	18.0	-0.94	- 6.2	4.0/26.3	32687	(11617)	1999 09 24.6	00 04.46	-03 15.4	16.1	-0.88	- 1.6	1.2/23.6	35863
1992 EP ₁₁	1999 09 22.8	23 58.01	-02 55.2	18.4	-0.77	- 5.8	0.9/22.0	36067	(8688)	1999 09 24.7	00 04.44	-04 20.0	16.1	-0.80	- 8.5	2.3/23.0	36060
1999 RL ₂₁	1999 09 22.9	23 57.97	-05 22.5	16.8	-0.74	- 6.7	2.6/21.1	36034	1981 EF ₄₄	1999 09 24.7	00 04.47	+03 53.1	18.7	-0.78	- 4.0	1.0/25.8	26923
1996 XD ₁₉	1999 09 22.9	23 57.99	+04 38.9	17.4	-0.87	- 6.8	1.6/24.5	36075	(11664)	1999 09 24.7	00 04.86	-03 10.3	17.8	-0.71	- 4.8	1.0/23.5	35874
1990 BO	1999 09 22.9	23 58.23	+22 31.9	15.7	-0.86	- 1.4	7.2/30.3	36065	(11690)	1999 09 24.7	00 04.87	-01 08.0	17.1	-1.04	- 3.5	0.7/24.3	35882
4893 P-L	1999 09 22.9	23 58.39	-01 52.3	18.3	-0.80	- 4.5	0.5/22.4	36050	(9106)	1999 09 24.8	00 04.82	-07 55.9	16.5	-0.93	- 4.3	3.2/22.2	32198
(11661)	1999 09 23.0	23 58.52	-01 27.4	16.8	-0.93	- 2.1	0.5/22.7	35874	1079 T-3	1999 09 24.8	00 04.93	+18 56.2	17.7	-0.80	- 7.8	6.7/01.9	36055
(11652)	1999 09 23.0	23 58.55	-04 32.7	17.3	-0.73	- 4.8	1.2/21.6	35871	1994 AG ₁₀	1999 09 24.8	00 04.94	+00 22.5	19.4	-0.96	- 5.3	0.1/24.8	36070
6791 P-L	1999 09 23.0	23 58.58	-07 43.8	18.5	-0.96	- 2.1	2.4/20.9	36121	(11503)	1999 09 24.8	00 05.16	+05 41.6	16.5	-0.99	- 4.6	2.0/26.5	35834
1998 FQ ₂₇	1999 09 23.0	23 58.66	+05 23.2	17.5	-0.94	- 5.1	2.0/24.8	35954	1999 RK ₈₈	1999 09 24.8	00 05.19	+01 59.8	18.1	-0.78	- 5.0	0.5/25.4	36042

1998 DP ₁₃	1999 09 24.8	00 05.22 +22 34.6 18.6	-1.38 + 1.8	8.0/30.7	35947
(11534)	1999 09 24.9	00 05.28 +01 32.9 16.8	-0.77 - 5.5	0.3/25.3	35841
1996 XC	1999 09 25.0	00 05.58 -11 49.9 17.1	-0.93 - 5.3	4.8/21.1	36075
1998 KY ₅₄	1999 09 25.0	00 05.62 -29 25.0 18.4	-0.87 - 4.3	9.0/14.2	36084
1992 EA ₈	1999 09 25.0	00 05.63 +01 09.5 17.2	-0.78 - 5.6	0.2/25.2	25650
1981 EL ₁₂	1999 09 25.0	00 05.64 +07 04.3 19.2	-1.00 - 5.4	2.6/27.0	22270
4218 P-L	1999 09 25.0	00 05.64 +06 43.3 18.0	-0.91 - 4.9	2.1/27.0	34265
1991 GS ₆	1999 09 25.0	00 05.70 -07 29.1 16.4	-1.13 - 1.2	3.5/22.9	32223
1981 EJ ₂₇	1999 09 25.0	00 05.96 +02 00.0 19.3	-0.99 - 6.4	0.5/25.5	26920
1998 EQ ₂	1999 09 25.1	00 05.92 -01 15.1 18.9	-1.03 - 3.8	0.7/24.6	35705
1998 FC ₁₂₇	1999 09 25.1	00 05.94 -11 39.2 17.7	-1.01 - 3.4	5.1/21.5	35976
1992 OB ₃	1999 09 25.1	00 06.00 +10 24.0 17.8	-1.03 - 4.8	4.0/28.2	36068
1992 RZ ₃	1999 09 25.1	00 06.12 +01 10.1 17.8	-0.96 - 6.6	0.2/25.3	36068
1998 HO ₄₉	1999 09 25.2	00 06.47 -07 44.0 18.0	-0.87 - 7.4	2.9/22.4	35982
1981 TK	1999 09 25.2	00 06.48 -08 15.4 15.2	-1.75 +13.8	4.8/24.4	36063
1999 RB ₂₄	1999 09 25.2	00 06.66 -05 09.1 16.0	-0.99 - 1.1	2.8/23.7	36035
1101 T-2	1999 09 25.3	00 06.68 +01 42.2 17.3	-0.77 - 4.6	0.3/25.6	36122
1999 RQ ₂₃	1999 09 25.3	00 06.75 -05 21.2 17.6	-0.83 - 7.7	2.7/23.2	36100
1995 VU ₁₁	1999 09 25.3	00 06.77 -03 28.4 18.3	-0.77 - 7.3	1.7/23.9	35926
1984 DZ	1999 09 25.3	00 06.89 +04 58.2 17.6	-1.07 - 3.6	1.6/27.0	36063
1999 RF ₂₃	1999 09 25.3	00 06.97 -02 20.3 17.1	-0.79 - 7.4	1.4/24.3	36034
1981 EJ ₂₉	1999 09 25.3	00 06.98 +04 50.3 18.7	-0.70 - 7.4	1.2/26.9	32211
(11727)	1999 09 25.3	00 06.98 +03 10.4 16.7	-0.93 - 5.2	1.0/26.2	35892
1999 RP ₄₃	1999 09 25.4	00 06.94 -00 17.4 16.7	-0.68 - 8.7	0.3/25.0	36040
1998 FG ₆₅	1999 09 25.4	00 06.95 +04 31.0 18.7	-0.81 - 8.8	1.3/27.0	36080
1981 DN ₂	1999 09 25.4	00 07.24 +15 07.3 17.8	-0.73 - 6.4	4.8/30.7	36062
1998 FR ₄₇	1999 09 25.4	00 07.37 +08 32.4 14.6	-1.01 + 1.1	4.3/27.5	36079
1981 EB ₃₁	1999 09 25.5	00 07.44 -01 51.9 18.2	-0.71 - 6.1	0.7/24.6	36063
(11518)	1999 09 25.5	00 07.51 +00 26.4 18.2	-0.70 - 4.4	0.1/25.4	35837
1998 FU ₂₂	1999 09 25.5	00 07.57 -00 46.5 16.6	-0.92 - 7.9	0.7/25.0	35953
1998 JH ₁	1999 09 25.6	00 07.70 +14 58.1 17.7	-0.89 - 6.5	5.2/30.5	35992
1998 EF ₆	1999 09 25.6	00 07.87 +27 53.6 18.5	-1.28 - 1.1	9.6/04.0	35436
1998 KZ ₅₄	1999 09 25.6	00 07.87 -00 11.5 17.1	-0.69 - 8.2	0.3/25.3	36084
1998 KZ ₄₆	1999 09 25.6	00 07.90 +25 44.6 16.2	-0.84 - 5.7	9.5/05.0	36084
1981 EO ₃	1999 09 25.7	00 08.34 +20 43.0 17.4	-1.12 0.0	8.1/01.6	35907
1998 FN ₅₈	1999 09 25.8	00 08.41 -00 16.4 17.7	-0.96 - 4.2	0.5/25.4	36079
1998 HR ₁₉	1999 09 25.8	00 08.46 +01 38.4 17.7	-1.04 - 2.9	0.3/26.0	35980
1996 UB ₁	1999 09 25.8	00 08.83 -08 39.1 16.5	-1.04 - 2.7	4.6/23.1	36074
1995 YL	1999 09 25.9	00 08.87 +13 26.4 17.5	-0.85 - 4.8	4.3/30.0	35927
1998 DT ₉	1999 09 25.9	00 08.90 +02 22.8 16.6	-0.99 - 4.7	0.7/26.4	36078
(11478)	1999 09 25.9	00 08.95 -10 32.2 17.4	-0.79 - 8.8	3.6/21.7	35827
1998 KY ₃₄	1999 09 25.9	00 08.98 -00 39.7 18.3	-0.76 - 6.8	0.6/25.4	35997
1999 RF ₃₄	1999 09 25.9	00 09.07 +00 27.7 17.7	-0.75 - 5.1	0.2/25.8	36037
1999 RO ₃₉	1999 09 25.9	00 09.11 -05 34.0 16.8	-1.04 0.0	3.4/24.3	36105
1996 VG ₆	1999 09 26.0	00 09.12 -11 21.0 19.0	-0.98 - 4.3	4.7/22.2	35931
1997 EL ₅₅	1999 09 26.0	00 09.17 +02 16.9 16.4	-0.80 - 4.8	0.4/26.4	35942
1998 HD ₁₂₃	1999 09 26.0	00 09.22 -05 04.0 18.0	-0.95 - 7.9	2.3/24.0	35989
(8797)	1999 09 26.0	00 09.22 +00 38.4 17.7	-0.76 - 4.9	0.1/25.9	31898
1998 HT	1999 09 26.0	00 09.28 -05 13.1 17.4	-0.77 - 7.1	2.6/23.9	36081
1999 RE ₂₃	1999 09 26.0	00 09.34 -01 07.3 17.9	-0.80 - 7.7	0.8/25.3	36100
(9444)	1999 09 26.0	00 09.39 -02 31.6 17.6	-0.72 - 4.6	1.0/24.9	32640

(11495)	1999 09 26.0	00 09.51 +02 54.7 16.1	-0.81 - 5.8	0.9/26.7	35831
1994 TD	1999 09 26.1	00 09.54 +00 40.2 17.9	-0.72 - 6.1	0.1/26.0	36071
(11566)	1999 09 26.1	00 09.58 -04 29.5 17.9	-0.90 - 2.8	2.0/24.5	35849
1994 BX	1999 09 26.1	00 09.60 -12 03.9 18.6	-0.97 - 4.7	4.7/22.0	36070
(11481)	1999 09 26.1	00 09.64 +10 18.2 16.4	-0.82 - 7.2	3.4/29.4	35827
1998 EM ₁₀	1999 09 26.1	00 09.68 -01 15.5 18.3	-1.05 - 3.8	0.9/25.5	35949
1999 RO ₁₉₃	1999 09 26.1	00 09.78 +05 39.6 14.9	-1.06 + 1.2	1.9/27.3	36049
2737 P-L	1999 09 26.1	00 09.83 -05 02.3 18.6	-0.90 - 4.2	2.6/24.3	36050
1981 ER ₃₅	1999 09 26.2	00 09.92 +14 33.1 18.0	-0.81 - 3.8	4.6/30.7	36063
1993 OY ₉	1999 09 26.2	00 10.16 +15 21.2 17.1	-0.83 - 3.3	4.6/30.9	35918
1998 FJ ₁₀₉	1999 09 26.2	00 10.27 +06 36.9 18.3	-1.04 - 3.3	2.2/27.9	35971
1994 WU ₇	1999 09 26.3	00 10.48 -05 07.6 17.9	-0.69 - 6.1	1.9/24.2	35923
1998 FO ₃₂	1999 09 26.3	00 10.48 +06 57.8 16.6	-1.08 - 1.0	2.4/28.0	35956
4087 P-L	1999 09 26.3	00 10.63 +01 08.7 18.3	-0.91 - 5.1	0.0/26.4	36120
1998 KQ ₃₈	1999 09 26.4	00 10.59 -00 34.7 18.2	-0.95 - 5.2	0.6/25.9	35997
3305 T-2	1999 09 26.4	00 10.59 -03 09.1 18.2	-0.95 - 4.9	1.6/25.1	36123
3102 T-3	1999 09 26.4	00 10.64 -03 48.1 17.7	-0.82 - 5.9	2.3/24.8	36124
1994 XY ₄	1999 09 26.4	00 10.77 -54 52.9 16.7	-1.38 + 2.6	26.9/07.0	31277
1995 GC ₃	1999 09 26.4	00 10.85 -10 39.5 17.8	-0.97 - 1.0	6.2/23.2	33249
1999 RM ₉₈	1999 09 26.4	00 10.98 +00 14.4 18.0	-0.82 - 7.0	0.4/26.2	36043
1998 BH ₂₆	1999 09 26.5	00 10.94 +05 03.0 17.2	-1.15 + 0.1	1.5/27.5	36078
(8781)	1999 09 26.5	00 11.07 -00 19.3 18.3	-0.90 - 6.6	0.5/26.0	31895
1994 PO ₃₀	1999 09 26.5	00 11.08 +04 13.0 17.1	-0.74 - 7.0	1.1/27.6	36071
1998 HR ₉₄	1999 09 26.5	00 11.09 +12 28.9 17.0	-0.78 - 9.4	3.8/30.8	35985
1998 FX ₁₁₅	1999 09 26.5	00 11.13 +10 03.4 18.7	-1.05 - 5.4	3.4/29.3	36081
1981 EF ₂₁	1999 09 26.5	00 11.28 -02 12.2 19.7	-0.80 - 8.3	1.1/25.4	25972
1995 SY ₁₄	1999 09 26.5	00 11.30 +02 46.1 19.4	-0.89 - 5.8	0.6/27.1	32463
1999 RN ₃₂	1999 09 26.6	00 11.35 -00 08.1 17.0	-0.67 - 7.7	0.4/26.1	36037
1993 HY ₅	1999 09 26.6	00 11.41 -09 14.2 16.7	-0.81 -25.2	4.4/22.0	35917
1998 HN ₈	1999 09 26.6	00 11.46 -04 01.0 17.7	-0.89 - 6.6	2.0/24.9	35978
1997 BY ₄	1999 09 26.6	00 11.63 -18 58.0 16.1	-0.98 - 1.9	9.3/20.3	36076
1995 UF ₂₄	1999 09 26.7	00 11.78 +05 04.9 17.9	-0.85 - 5.3	1.5/28.0	36072
1996 XH ₁₉	1999 09 26.7	00 11.95 -23 59.4 18.0	-0.88 - 4.4	7.7/18.1	36075
1990 SO ₈	1999 09 26.7	00 12.00 -06 42.9 17.7	-0.76 - 7.1	3.3/23.9	35914
1992 YA ₁	1999 09 26.8	00 12.22 +00 26.1 16.7	-0.86 - 7.3	0.4/26.6	36068
4220 T-3	1999 09 26.8	00 12.43 -18 59.0 18.0	-0.98 + 0.4	6.2/21.1	29131
(8924)	1999 09 26.9	00 12.39 +04 04.2 17.6	-0.94 - 6.1	1.0/27.8	31929
6772 P-L	1999 09 26.9	00 12.61 +00 18.2 19.2	-0.87 - 6.5	0.4/26.6	36121
1988 RD	1999 09 26.9	00 12.62 -01 49.0 13.5	-1.69 +13.3	1.7/26.7	36064
1996 RG ₁	1999 09 26.9	00 12.67 -00 04.1 15.5	-1.05 - 0.8	0.7/26.6	36074
1998 HF ₉₉	1999 09 26.9	00 12.71 +02 09.9 17.8	-0.85 - 8.4	0.3/27.3	36082
1998 FW ₂₀	1999 09 27.0	00 12.75 -03 20.8 17.7	-0.97 - 6.1	1.8/25.5	35953
1994 PK ₂₀	1999 09 27.0	00 12.76 +00 34.4 17.3	-0.78 - 5.7	0.3/26.7	36071
(9081)	1999 09 27.0	00 12.85 +14 42.3 18.7	-0.76 - 5.5	4.0/01.7	32192
1998 FA ₃₃	1999 09 27.0	00 12.87 -00 35.6 18.0	-0.91 - 7.1	0.7/26.4	36079
1991 FH	1999 09 27.0	00 13.06 +12 06.2 17.8	-0.66 - 7.8	2.6/01.1	36066
1997 GW ₃₀	1999 09 27.1	00 13.24 +01 39.1 18.0	-0.72 - 4.8	0.1/27.2	36077
1991 GM ₉	1999 09 27.1	00 13.34 -01 03.9 18.0	-0.69 - 4.7	0.6/26.3	36066
1996 TD ₇	1999 09 27.1	00 13.48 -04 35.8 18.4	-1.03 - 4.0	2.3/25.4	36074
3144 T-2	1999 09 27.3	00 13.97 -03 23.5 18.5	-0.80 - 6.7	2.3/25.7	36053
1977 ER ₅	1999 09 27.3	00 14.05 +02 53.3 17.1	-0.78 - 5.1	0.5/27.8	36061

1997 EK ₅₄	1999 09 27.4	00 14.19 +00 07.7 16.8	-0.73 - 4.3	0.4/26.9	35942	1999 RC	1999 09 28.9	00 19.85 +12 34.4 16.2	-1.12 + 1.4	4.6/01.6	36027
1992 HD ₅	1999 09 27.4	00 14.35 -19 17.4 16.1	-0.96 + 1.2	7.3/21.8	36067	1997 BZ	1999 09 29.0	00 20.13 +18 41.4 17.7	-0.92 - 4.2	5.3/04.6	35938
(11654)	1999 09 27.4	00 14.42 -06 37.9 16.9	-0.80 - 7.4	3.5/24.6	35872	1994 PJ ₂₀	1999 09 29.0	00 20.19 +03 50.3 17.5	-0.80 - 5.2	0.5/29.6	36071
1981 EH ₂₇	1999 09 27.4	00 14.59 +04 11.5 18.7	-1.02 - 1.7	0.9/28.2	36062	1998 FT ₇₀	1999 09 29.0	00 20.34 -00 35.2 18.5	-0.90 - 4.6	0.9/28.2	36080
1997 CS ₂₈	1999 09 27.5	00 14.73 -05 04.1 17.8	-0.86 - 5.0	2.5/25.4	36076	1994 EO ₁	1999 09 29.1	00 20.36 -06 12.0 16.8	-1.04 - 3.1	3.0/26.7	23345
1997 BU ₄	1999 09 27.5	00 14.91 -12 20.2 18.5	-0.75 - 7.5	4.2/22.5	36076	1998 FG ₇₁	1999 09 29.1	00 20.52 +04 27.7 18.5	-1.04 - 4.1	0.8/29.8	32323
(11599)	1999 09 27.6	00 15.26 -01 34.7 16.4	-0.92 - 4.1	1.4/26.7	35858	1999 RC ₄₂	1999 09 29.2	00 20.88 +07 35.8 16.4	-0.96 - 3.6	2.2/30.9	36040
1997 CH ₁	1999 09 27.7	00 15.27 +08 38.2 17.4	-0.85 - 4.6	2.3/30.0	35939	1998 HV ₁₃₇	1999 09 29.2	00 20.90 +03 08.9 16.8	-1.04 - 1.6	0.4/29.5	36083
(11442)	1999 09 27.7	00 15.30 -06 52.8 16.7	-1.02 - 4.0	3.7/25.2	35817	1992 DP ₁₃	1999 09 29.2	00 21.01 -08 18.9 19.1	-0.77 - 6.9	3.2/25.5	36067
1990 EP ₂	1999 09 27.7	00 15.39 +09 31.8 18.6	-0.89 - 6.8	2.7/30.4	32221	1998 HW ₄₅	1999 09 29.2	00 21.05 +00 39.7 18.5	-0.92 - 4.6	0.6/28.8	36082
1997 AW ₆	1999 09 27.7	00 15.51 +02 59.6 17.1	-0.92 - 3.6	0.5/28.2	36076	(8447)	1999 09 29.3	00 21.04 -00 26.0 16.4	-1.07 - 2.2	1.2/28.6	31483
1998 HH ₉₃	1999 09 27.8	00 15.64 +02 27.1 16.0	-1.02 - 4.9	0.3/28.0	36082	1997 CL ₁₃	1999 09 29.3	00 21.08 -08 23.4 17.9	-0.83 - 7.9	3.8/25.5	29927
1991 GJ ₈	1999 09 27.8	00 15.75 -02 04.4 18.3	-1.06 - 2.8	1.5/26.8	36066	1998 HR ₂₇	1999 09 29.3	00 21.10 +07 55.8 17.0	-0.93 - 3.9	2.8/01.1	35981
(11711)	1999 09 27.8	00 15.89 +07 37.1 16.3	-0.91 - 6.0	2.5/29.8	35888	1981 EM ₂₈	1999 09 29.3	00 21.35 +09 38.7 19.3	-1.04 + 0.4	2.3/01.3	26920
1997 AB ₂	1999 09 27.9	00 16.08 -24 09.3 17.7	-0.87 - 5.1	8.9/18.7	36075	1997 JG ₁₆	1999 09 29.4	00 21.72 -24 07.6 17.6	-0.89 - 1.9	7.9/20.6	34873
1981 DL ₂	1999 09 27.9	00 16.29 +13 00.9 18.4	-1.08 - 3.7	4.5/01.4	36062	2040 P-L	1999 09 29.4	00 21.78 +03 29.5 17.2	-0.95 + 0.6	0.6/29.8	36119
1998 HX ₁₂₄	1999 09 28.0	00 16.45 -05 56.9 17.9	-0.81 - 9.9	2.7/25.2	35990	1988 RW ₁₀	1999 09 29.5	00 21.80 +02 46.2 18.0	-0.76 - 4.7	0.1/29.7	36064
1998 FH ₁₁	1999 09 28.0	00 16.57 -10 33.8 18.5	-0.90 - 7.4	4.4/23.9	36079	1995 WM ₆	1999 09 29.6	00 22.13 +03 27.2 17.0	-0.83 - 6.5	0.3/30.0	36073
1988 VH ₂	1999 09 28.0	00 16.63 -19 11.5 15.8	-0.89 - 1.3	10.2/21.4	36064	1994 PC ₇	1999 09 29.7	00 22.44 -07 08.0 17.5	-0.76 - 7.0	2.9/26.3	36071
(8819)	1999 09 28.1	00 16.76 +00 22.6 16.1	-0.69 - 9.9	0.5/27.6	36060	1999 RZ ₄₁	1999 09 29.7	00 22.46 +06 28.4 16.9	-0.68 - 7.0	1.2/01.2	36040
(11714)	1999 09 28.1	00 16.84 +01 17.2 16.0	-0.78 - 7.1	0.2/28.0	35888	1998 FP ₉₃	1999 09 29.8	00 22.91 -13 59.3 18.6	-0.94 - 6.0	6.2/24.5	36080
1997 AZ ₃	1999 09 28.1	00 16.88 -18 56.2 17.4	-0.81 - 7.5	6.8/20.5	36075	1993 PK ₇	1999 09 29.8	00 23.07 +02 08.3 17.2	-0.74 - 4.8	0.1/29.7	36070
1998 FN ₇₀	1999 09 28.1	00 16.90 -04 28.0 17.0	-1.00 - 1.8	2.8/26.4	36080	1981 EL ₂₀	1999 09 29.9	00 23.15 +08 54.6 17.9	-0.85 - 2.5	2.1/02.0	36062
1998 KV ₄₇	1999 09 28.1	00 17.06 +07 04.2 16.9	-0.88 - 7.8	2.0/30.0	36084	1985 RW	1999 09 29.9	00 23.19 +33 01.4 18.3	-1.03 -10.9	12.8/12.4	36063
(8918)	1999 09 28.2	00 17.21 +02 07.7 17.0	-1.03 - 3.9	0.1/28.3	31927	1994 XM	1999 09 29.9	00 23.27 +01 16.7 17.5	-0.77 - 4.6	0.4/29.5	36071
1995 SR ₁₃	1999 09 28.2	00 17.25 +02 29.7 19.1	-0.92 - 5.1	0.2/28.4	34859	1991 GC ₇	1999 09 29.9	00 23.28 -01 10.4 17.8	-1.02 - 4.4	1.4/28.8	36066
1978 VB ₃	1999 09 28.3	00 17.68 -16 56.8 16.4	-0.85 - 1.8	6.1/22.5	27302	1998 HV ₁₄₈	1999 09 29.9	00 23.34 -00 37.2 17.3	-0.80 - 3.8	1.2/28.9	36083
1984 JE	1999 09 28.4	00 18.00 -03 23.8 16.6	-1.08 - 3.3	2.0/26.9	35909	1998 FT ₇₉	1999 09 29.9	00 23.37 -00 19.1 17.4	-0.75 -11.2	1.0/28.9	32324
1998 FS ₁₂₁	1999 09 28.4	00 18.09 +04 45.9 16.9	-1.04 - 5.3	1.2/29.3	36081	1981 DD ₁	1999 09 29.9	00 23.43 +18 55.0 18.0	-1.09 - 0.5	6.2/04.4	35906
1993 FX ₅₀	1999 09 28.4	00 18.15 +03 47.0 18.0	-0.78 - 7.0	0.6/29.1	36069	1975 SX	1999 09 29.9	00 23.44 +03 11.2 17.7	-0.70 - 5.1	0.2/30.2	36061
1992 AE ₁	1999 09 28.4	00 18.17 -15 22.8 17.5	-0.84 - 5.2	5.3/22.5	36067	1108 T-2	1999 09 30.0	00 23.56 +05 34.8 17.0	-1.02 - 2.7	1.3/30.9	36123
1990 EC ₁	1999 09 28.5	00 18.10 +07 24.1 19.0	-0.84 - 9.0	1.8/30.4	32301	1981 EW ₁₀	1999 09 30.0	00 23.70 +11 41.1 20.2	-1.04 - 4.7	3.4/02.8	26916
1997 AJ ₁₃	1999 09 28.5	00 18.11 +06 37.8 17.0	-1.04 - 2.0	1.9/29.8	36076	1998 HH ₁₄	1999 09 30.0	00 23.80 -06 23.6 18.5	-0.97 - 7.0	3.5/27.1	36081
(11636)	1999 09 28.5	00 18.13 -08 54.6 18.1	-0.84 - 6.8	4.0/24.8	35868	2610 T-3	1999 09 30.0	00 23.94 +05 16.7 18.4	-0.94 - 5.6	0.9/30.9	22088
(9365)	1999 09 28.5	00 18.21 +06 20.6 17.5	-1.01 - 4.8	1.7/29.9	32621	6602 P-L	1999 09 30.1	00 24.07 +01 09.5 17.2	-1.08 - 0.6	0.7/29.8	36121
1998 KF ₅₃	1999 09 28.5	00 18.23 -10 18.4 18.1	-0.79 - 7.2	3.8/24.2	35999	1998 OB	1999 09 30.1	00 24.17 -00 57.3 19.6	-0.68 - 7.9	1.2/28.9	32973
1997 HX ₆	1999 09 28.5	00 18.32 -01 38.4 18.4	-0.74 - 4.8	1.0/27.3	35943	1994 SE ₅	1999 09 30.2	00 24.27 +01 20.0 20.1	-0.79 - 4.5	0.4/29.8	33488
1992 SX ₁	1999 09 28.5	00 18.40 -00 02.1 17.4	-0.95 - 5.7	0.9/27.9	36068	(11528)	1999 09 30.2	00 24.45 -17 58.3 15.4	-0.72 - 9.1	8.3/22.0	35840
(8900)	1999 09 28.5	00 18.41 +14 10.2 15.5	-0.79 - 8.9	4.9/03.1	31923	1988 VL ₂	1999 09 30.2	00 24.61 +16 47.9 16.2	-0.86 - 8.3	5.3/05.3	36064
1995 VG	1999 09 28.5	00 18.45 +05 17.1 16.6	-0.82 - 5.2	1.1/29.7	36073	1998 ET ₁₁	1999 09 30.2	00 24.65 -02 32.2 16.2	-1.09 - 0.2	2.5/29.0	35950
1990 UG ₅	1999 09 28.6	00 18.51 +01 46.3 18.1	-0.70 - 9.5	0.1/28.5	36066	1998 DC ₃₀	1999 09 30.3	00 24.61 +02 24.7 18.0	-0.92 -11.1	0.1/30.2	35947
1994 WB ₃	1999 09 28.6	00 18.54 -01 58.3 17.3	-0.75 - 5.2	1.4/27.3	35922	1998 DT ₃₄	1999 09 30.3	00 24.80 +00 33.8 16.2	-1.06 - 1.6	1.0/29.8	36078
(9040)	1999 09 28.6	00 18.54 +01 13.0 17.4	-0.74 - 4.8	0.2/28.4	32183	2390 T-3	1999 09 30.5	00 25.37 +00 46.6 16.6	-1.02 - 3.0	0.7/30.0	36124
1997 FU	1999 09 28.6	00 18.85 -17 33.8 16.0	-1.04 - 0.5	7.7/23.0	36077	1997 BS ₃	1999 09 30.5	00 25.49 -09 09.7 18.0	-0.84 - 6.5	3.9/26.5	36076
1993 FQ ₂₁	1999 09 28.7	00 18.90 +02 40.3 18.0	-0.85 - 4.5	0.2/28.9	36069	1999 RY ₄₁	1999 09 30.5	00 25.68 +08 04.3 17.1	-0.59 - 6.3	1.8/02.5	36105
1994 AC	1999 09 28.7	00 18.90 +08 20.8 16.4	-0.95 - 6.8	2.8/30.8	36070	1981 ET ₂₃	1999 09 30.5	00 25.71 +02 55.4 16.1	-1.03 + 0.6	0.1/30.6	36062
1988 BJ ₅	1999 09 28.7	00 18.97 +22 10.0 17.4	-0.88 - 4.4	6.4/05.6	36064	(8884)	1999 09 30.5	00 25.71 +15 05.2 16.4	-1.01 - 4.8	5.1/04.4	31919
1996 XN ₃₂	1999 09 28.7	00 19.10 -10 59.5 19.3	-0.96 - 4.5	5.1/24.6	31980	1990 WP ₁	1999 09 30.6	00 25.76 -16 17.8 17.1	-0.79 - 4.4	7.4/24.0	32222
1998 KZ ₅₉	1999 09 28.7	00 19.26 -06 40.8 18.3	-0.79 -10.0	2.9/25.6	36001	1997 EN ₃₂	1999 09 30.6	00 25.92 +02 52.6 18.1	-0.88 - 3.9	0.0/30.7	35942
1997 GY ₂₆	1999 09 28.8	00 19.19 +00 59.2 19.1	-0.72 - 4.8	0.3/28.4	30474	1998 KH ₃₀	1999 09 30.6	00 26.03 +15 48.4 18.1	-0.98 - 5.6	4.8/04.9	35996
1993 FN	1999 09 28.9	00 19.83 +01 43.8 18.4	-1.02 - 2.5	0.1/28.8	36069	(11603)	1999 09 30.7	00 26.08 +01 13.3 16.6	-1.13 + 1.4	0.7/30.3	35859

1991 LV ₂	1999 09 30.7	00 26.47 -04 23.2 16.8	-0.87 - 5.3	3.3/28.5	36066
1989 YY	1999 09 30.8	00 26.53 -02 05.5 18.6	-0.91 - 6.0	1.6/29.2	36065
1995 VP	1999 09 30.9	00 26.90 +11 57.3 16.9	-0.80 - 5.8	2.8/04.0	36073
1998 JZ	1999 09 30.9	00 26.94 -12 11.7 18.8	-0.97 - 1.6	5.3/26.7	32085
(9464)	1999 09 30.9	00 27.00 -13 56.7 15.3	-0.71 - 3.4	7.6/25.2	32645
1998 FL ₇₉	1999 09 30.9	00 27.21 -04 12.2 18.3	-0.87 - 7.9	2.7/28.6	35967
(11723)	1999 10 01.0	00 27.23 -03 50.7 17.5	-0.92 - 6.5	2.3/28.8	35891
(9257)	1999 10 01.0	00 27.25 +02 24.2 16.6	-0.70 - 7.9	0.2/30.8	35414
1994 PC ₃₇	1999 10 01.1	00 27.58 +07 06.0 17.5	-0.83 - 4.9	1.4/02.5	36071
4300 T-1	1999 10 01.1	00 27.73 -01 07.9 20.1	-0.89 - 6.2	1.4/29.8	32092
1994 SH ₉	1999 10 01.1	00 27.86 +01 40.7 17.6	-0.80 - 4.4	0.4/30.8	35922
1998 FR ₁₁₃	1999 10 01.1	00 27.86 +12 58.1 17.9	-0.93 - 7.5	3.8/04.6	36081
(8509)	1999 10 01.2	00 27.86 +00 54.7 16.7	-1.03 - 4.1	0.8/30.6	31498
1992 SO	1999 10 01.2	00 28.06 +13 08.5 16.4	-0.86 - 8.3	4.5/04.9	36068
1995 XU ₁	1999 10 01.2	00 28.25 +02 59.4 16.7	-0.86 - 7.0	0.0/01.3	36073
1991 FT ₂	1999 10 01.3	00 28.28 +02 46.8 17.2	-1.04 - 4.1	0.1/01.2	36066
1991 UD ₃	1999 10 01.3	00 28.60 +08 07.7 16.8	-0.80 - 9.2	2.1/03.2	36067
1981 EO ₃₅	1999 10 01.4	00 28.68 +14 04.8 17.2	-0.91 - 6.7	5.0/05.2	36063
1995 XC ₅	1999 10 01.4	00 28.80 +02 17.3 17.6	-0.77 - 7.2	0.3/01.2	35927
1993 FZ ₄₁	1999 10 01.4	00 28.85 +03 31.4 17.7	-1.02 - 1.4	0.1/01.6	36069
1998 KW ₅₀	1999 10 01.4	00 29.00 -06 16.1 18.3	-0.82 - 7.5	3.1/28.2	35999
1995 UR ₈	1999 10 01.4	00 29.00 -01 10.8 17.8	-0.93 - 2.3	1.9/30.3	36072
2514 P-L	1999 10 01.5	00 29.03 +02 37.1 17.9	-1.06 + 0.9	0.2/01.4	36119
1996 EG	1999 10 01.5	00 29.04 +07 45.6 17.1	-0.68 - 7.7	1.5/03.2	35928
1998 KF ₃₆	1999 10 01.5	00 29.08 +07 13.5 17.2	-0.84 - 4.9	1.5/02.9	32033
(8757)	1999 10 01.5	00 29.13 -00 00.1 17.5	-1.01 - 5.8	1.2/30.6	31700
1998 KC ₉	1999 10 01.5	00 29.31 +01 17.0 17.8	-0.68 -10.1	0.6/30.9	35995
1993 DJ ₁	1999 10 01.5	00 29.37 -14 12.0 16.9	-0.79 - 8.4	6.0/25.2	36069
1999 RE ₃₄	1999 10 01.6	00 29.69 +05 11.6 18.1	-1.01 - 4.9	0.7/02.3	36037
1998 JO ₂	1999 10 01.6	00 29.70 -14 02.3 18.1	-1.00 - 4.3	6.5/26.3	36083
1998 DB ₃₆	1999 10 01.7	00 29.95 +03 38.3 16.1	-1.20 + 0.6	11.2/22.0	36078
2129 P-L	1999 10 01.7	00 30.07 +05 27.9 18.1	-0.85 - 7.8	0.8/02.6	29321
1993 SG ₅	1999 10 01.8	00 30.19 +00 52.9 17.9	-0.72 - 4.9	0.6/01.0	36070
(8783)	1999 10 01.8	00 30.33 +04 06.4 17.4	-0.91 - 7.9	0.3/02.1	31895
1995 WF ₁₃	1999 10 01.8	00 30.35 +01 46.6 20.3	-0.79 - 7.1	0.5/01.4	35927
1999 RH ₂₆	1999 10 01.9	00 30.45 -06 09.8 17.3	-0.74 -11.7	3.5/28.3	36035
1999 RP ₃₄	1999 10 01.9	00 30.48 +00 49.8 17.1	-0.77 - 5.6	0.8/01.1	36037
1996 DE ₂	1999 10 02.0	00 30.80 -00 49.1 18.8	-0.74 - 5.5	1.4/30.6	27457
1993 QQ ₄	1999 10 02.0	00 30.81 +01 59.1 18.0	-0.70 - 4.9	0.4/01.6	36070
1998 FG ₁₀₄	1999 10 02.0	00 30.82 +15 24.6 18.6	-1.09 - 3.5	4.7/05.6	35970
1981 EA ₄	1999 10 02.0	00 30.93 +10 41.5 19.2	-0.93 - 8.4	2.9/04.6	26915
3240 T-2	1999 10 02.0	00 31.06 +00 15.4 17.5	-0.77 - 5.0	1.1/01.0	36053
1998 EY ₁₁	1999 10 02.0	00 31.08 +00 18.7 16.7	-1.10 - 1.5	1.3/01.3	35950
1995 SS ₅₂	1999 10 02.1	00 31.38 +02 56.3 19.0	-0.91 - 4.3	0.2/02.0	36072
1999 RO ₃₅	1999 10 02.2	00 31.51 +00 53.9 16.6	-0.72 - 3.9	1.3/01.4	36038
(11489)	1999 10 02.2	00 31.60 +05 22.7 15.6	-1.03 - 1.4	0.9/02.8	35829
(11524)	1999 10 02.2	00 31.63 +15 58.5 17.3	-1.04 - 3.1	4.6/05.9	35839
(9378)	1999 10 02.2	00 31.70 +01 39.3 17.9	-0.70 - 4.9	0.5/01.7	36061
1993 FQ ₂₀	1999 10 02.2	00 31.75 -02 46.9 17.0	-0.87 - 6.9	2.3/30.2	35917
7590 P-L	1999 10 02.2	00 31.75 -03 45.7 18.1	-0.94 - 0.7	3.4/30.2	36122
1993 PB ₇	1999 10 02.2	00 31.86 +03 13.6 17.4	-0.73 - 4.8	0.1/02.2	36070

1995 YB ₁	1999 10 02.3	00 31.96 -04 43.7 17.8	-0.71 - 5.0	2.2/29.6	36073
1998 FY ₁₄	1999 10 02.3	00 32.11 +07 14.8 16.9	-1.09 - 0.5	1.5/03.4	36079
1991 FJ ₂	1999 10 02.3	00 32.17 +03 17.8 17.9	-0.95 - 7.5	0.1/02.3	36066
1982 VD ₅	1999 10 02.3	00 32.25 +07 35.2 17.2	-0.92 - 7.5	1.8/03.8	36063
(11635)	1999 10 02.4	00 32.43 +07 36.2 16.8	-0.94 - 7.9	1.6/03.8	35867
(8840)	1999 10 02.4	00 32.46 -03 51.2 16.6	-0.99 - 4.9	2.9/30.2	36060
1998 HG ₂₃	1999 10 02.4	00 32.52 -01 42.9 17.9	-1.01 - 5.6	2.4/30.9	36082
(8831)	1999 10 02.5	00 32.77 -00 44.3 16.4	-0.83 - 6.5	1.7/01.1	31906
(11704)	1999 10 02.5	00 32.78 +03 04.5 17.1	-1.05 - 2.0	0.2/02.4	35886
1996 XH ₂₆	1999 10 02.5	00 32.81 +03 45.6 18.0	-0.93 - 6.3	0.1/02.6	36075
1993 EL	1999 10 02.5	00 32.84 -19 45.1 20.4	-0.81 - 4.4	5.8/24.7	32306
2103 P-L	1999 10 02.6	00 33.19 +05 57.4 18.1	-0.82 - 6.1	0.7/03.5	36119
(8750)	1999 10 02.6	00 33.23 +04 15.4 16.8	-0.87 - 7.8	0.3/02.9	31699
1999 OJ ₂	1999 10 02.6	00 33.32 +22 37.0 16.8	-0.88 - 6.2	6.1/09.3	36023
1997 CL ₁	1999 10 02.7	00 33.54 -02 38.9 18.0	-0.93 - 5.5	2.4/30.8	35939
1998 FF ₆₇	1999 10 02.7	00 33.58 -01 26.0 18.5	-0.91 - 6.4	1.8/01.1	36080
1998 LU	1999 10 02.8	00 33.75 +09 25.6 17.5	-0.86 - 6.2	2.0/04.7	36084
1981 QR ₂	1999 10 02.8	00 33.99 +06 54.4 16.6	-1.00 - 3.7	1.5/03.8	36063
(11627)	1999 10 02.8	00 34.06 +12 06.0 16.8	-0.98 - 6.3	3.3/05.6	35865
1994 GE	1999 10 02.9	00 34.10 -07 31.1 18.5	-0.95 - 4.3	4.0/29.5	31964
1981 EM ₉	1999 10 02.9	00 34.10 +13 01.4 19.0	-0.99 - 6.9	3.9/06.0	26916
1992 UX	1999 10 02.9	00 34.10 -10 24.8 16.3	-0.98 - 2.4	6.4/28.8	36068
1991 VT ₃	1999 10 02.9	00 34.26 +22 05.9 15.9	-0.74 -10.3	7.5/10.4	36067
2315 T-3	1999 10 02.9	00 34.32 +05 48.4 17.5	-0.88 - 6.8	0.9/03.7	29669
1998 KD ₅₁	1999 10 02.9	00 34.36 -08 21.4 16.9	-0.80 - 6.1	3.8/28.9	36084
4214 P-L	1999 10 02.9	00 34.38 +08 31.0 18.9	-0.72 - 5.5	1.4/04.6	36120
(11640)	1999 10 03.0	00 34.42 +13 48.5 16.9	-0.94 - 4.4	4.4/06.2	35869
(8949)	1999 10 03.0	00 34.59 +01 32.2 17.2	-0.82 - 6.5	0.8/02.3	31934
1990 GD	1999 10 03.1	00 34.79 +08 10.5 17.7	-1.00 - 3.4	1.6/04.4	35913
1994 CG ₁₂	1999 10 03.1	00 35.05 -00 57.6 17.4	-0.96 - 4.8	1.8/01.7	36070
1997 BG ₁	1999 10 03.1	00 35.06 -04 25.0 18.6	-0.80 - 6.3	2.3/30.4	30473
1998 FK ₆₃	1999 10 03.2	00 35.37 +00 41.2 17.8	-0.95 - 4.9	1.1/02.3	36080
4236 T-3	1999 10 03.2	00 35.41 -04 43.1 17.7	-0.75 - 3.8	2.3/30.5	34276
1998 HY ₈	1999 10 03.3	00 35.55 -04 33.2 17.7	-0.87 - 5.4	3.2/30.6	35978
4821 P-L	1999 10 03.3	00 35.58 -00 50.2 18.8	-0.81 - 6.3	1.8/01.8	26423
1978 VX ₄	1999 10 03.3	00 35.59 -03 55.3 16.9	-0.94 - 3.7	3.6/01.0	36061
1995 UQ ₄₄	1999 10 03.3	00 35.60 +00 02.0 16.3	-1.10 + 1.2	1.6/02.4	36072
1995 WF ₅	1999 10 03.3	00 35.80 -01 10.2 16.9	-0.82 - 7.0	1.9/01.7	36073
4624 P-L	1999 10 03.3	00 35.85 -00 38.1 18.0	-0.73 - 5.9	1.5/01.8	36120
1998 HM ₁₁	1999 10 03.4	00 36.15 -09 30.4 18.2	-0.95 - 5.9	4.6/29.2	36081
(8974)	1999 10 03.4	00 36.17 +02 40.9 17.1	-1.01 - 5.9	0.5/03.1	31940
1982 UA ₆	1999 10 03.5	00 36.30 +08 27.5 16.1	-0.80 - 1.4	2.3/04.9	36063
(11435)	1999 10 03.5	00 36.34 +06 05.7 15.5	-0.80 - 6.1	1.0/04.3	35815
1998 FK ₁₀₆	1999 10 03.5	00 36.57 +11 25.5 17.7	-0.90 - 8.8	2.9/06.2	36081
1992 EO	1999 10 03.6	00 36.55 +03 45.2 16.4	-0.91 - 1.7	0.1/03.5	35915
1990 UO ₄	1999 10 03.6	00 36.63 +03 32.0 17.0	-0.71 -10.6	0.1/03.5	36066
1992 RW ₂	1999 10 03.6	00 36.72 +12 51.7 17.1	-1.04 - 3.1	4.1/06.3	36068
1993 DD ₂	1999 10 03.6	00 36.81 +01 42.1 15.5	-1.08 0.0	0.9/03.1	36069
1987 XC	1999 10 03.6	00 36.91 -24 50.0 15.8	-1.12 + 7.2	14.3/27.8	36064
1997 HV ₈	1999 10 03.7	00 37.01 +01 40.3 19.4	-0.74 - 4.5	0.6/03.0	36077
1998 JQ ₁	1999 10 03.7	00 37.16 +11 32.6 18.4	-0.89 - 9.4	2.7/06.4	35992

1993 FF ₁₆	1999 10 03.8	00 37.50 -03 18.3 17.4	-0.87 - 3.7	2.6/01.6	36069
1991 PL ₂	1999 10 03.8	00 37.56 +08 15.7 17.9	-0.99 - 4.4	1.7/05.1	36066
1995 WP ₁₇	1999 10 03.8	00 37.62 +02 44.7 16.5	-0.87 - 1.4	0.7/03.5	36073
1989 YA ₅	1999 10 03.9	00 37.71 +32 57.5 17.9	-0.87 - 2.5	7.3/14.0	32512
1999 RD ₃₇	1999 10 03.9	00 37.84 +01 48.4 15.5	-0.92 - 2.9	1.0/03.3	36039
1993 QH ₈	1999 10 04.0	00 38.04 -00 03.6 17.7	-0.74 - 4.4	1.2/02.7	35918
1981 EF ₁₆	1999 10 04.0	00 38.20 +06 39.6 16.8	-0.71 -12.3	1.1/05.0	36062
1994 VM ₁	1999 10 04.0	00 38.21 +02 46.3 16.3	-0.73 - 6.8	0.5/03.6	36071
1998 HR ₂₃	1999 10 04.0	00 38.39 +05 20.8 19.5	-0.89 - 6.2	0.4/04.5	35980
1999 RZ ₁	1999 10 04.1	00 38.37 +04 19.1 16.9	-0.85 - 4.6	0.1/04.2	36029
4388 T-3	1999 10 04.1	00 38.61 -04 38.1 17.9	-0.77 - 6.9	3.4/01.1	36125
1999 RX ₃₁	1999 10 04.1	00 38.62 -02 07.1 17.1	-1.72 + 9.8	3.4/03.4	36036
1999 RA ₂	1999 10 04.1	00 38.65 +01 29.0 17.0	-0.83 - 8.4	1.3/03.2	36029
1997 GO ₆	1999 10 04.1	00 38.70 +04 02.6 18.7	-0.73 - 4.6	0.0/04.1	32314
1995 YU ₉	1999 10 04.1	00 38.75 +19 37.1 18.0	-0.82 - 4.2	5.0/09.4	36073
1995 SP ₈	1999 10 04.2	00 38.92 +00 47.7 17.9	-0.85 - 8.1	1.2/03.1	36072
1981 EY ₃₉	1999 10 04.2	00 39.03 +04 11.3 19.2	-0.97 - 6.7	0.0/04.3	32043
(8416)	1999 10 04.2	00 39.14 +01 40.9 15.5	-0.93 - 8.5	1.2/03.4	35675
1991 GH ₁₁	1999 10 04.2	00 39.14 +01 32.9 18.8	-0.73 - 5.0	0.7/03.4	32743
1998 FX ₃₉	1999 10 04.3	00 39.09 +07 27.1 16.8	-0.86 - 8.2	1.3/05.4	36079
1997 BP ₅	1999 10 04.3	00 39.15 +00 08.8 18.1	-0.89 - 7.1	1.7/03.0	36076
(11444)	1999 10 04.3	00 39.18 +03 50.9 15.8	-0.75 - 8.8	0.2/04.2	35818
1978 VP ₉	1999 10 04.4	00 39.65 +13 31.4 17.3	-0.87 - 8.8	3.9/07.7	36062
1977 QW	1999 10 04.4	00 39.82 +10 28.5 16.7	-0.88 - 3.0	2.1/06.4	36061
1998 FW ₃₀	1999 10 04.5	00 39.88 -01 13.3 17.5	-0.90 - 8.9	2.2/02.6	35955
(11497)	1999 10 04.5	00 39.92 +26 30.9 16.6	-1.00 - 3.2	7.2/11.7	35832
1992 HG	1999 10 04.5	00 40.09 +09 43.8 16.2	-0.71 - 7.1	1.7/06.5	36067
(11364)	1999 10 04.5	00 40.09 -03 11.7 17.5	-0.87 - 5.3	2.8/02.2	35581
1996 BU ₃	1999 10 04.6	00 40.25 -22 31.3 17.7	-0.70 - 5.8	7.0/24.4	36073
1998 HF ₁₂₁	1999 10 04.6	00 40.26 -06 25.9 17.6	-0.92 - 6.6	4.0/01.1	36083
1998 FB ₅	1999 10 04.6	00 40.34 +08 16.9 17.5	-0.88 -23.1	1.6/06.3	35951
1990 QY ₅	1999 10 04.7	00 40.55 +21 05.4 16.6	-1.05 + 0.4	7.1/09.3	35913
1999 RM	1999 10 04.7	00 40.93 -00 40.1 17.4	-0.70 - 7.7	1.7/03.0	36027
1985 DA	1999 10 04.7	00 40.95 -20 56.0 18.4	-0.95 -17.2	10.4/24.1	36063
(8883)	1999 10 04.7	00 40.97 +00 03.4 16.9	-0.97 - 5.4	1.8/03.5	31919
1998 DB ₂₄	1999 10 04.8	00 40.96 +36 36.4 17.3	-1.47 0.0	14.4/14.6	36078
1068 T-3	1999 10 04.8	00 41.09 +10 47.4 17.7	-0.98 - 0.1	1.9/06.5	36124
1998 HL ₅₁	1999 10 04.8	00 41.11 -01 41.1 18.6	-0.99 - 5.4	2.2/03.0	36082
1135 T-3	1999 10 04.8	00 41.35 +13 35.0 17.6	-1.00 - 4.4	3.4/07.7	36124
4217 T-1	1999 10 04.9	00 41.33 -00 45.3 19.1	-0.92 - 5.7	1.8/03.3	30095
1998 JE	1999 10 04.9	00 41.33 -03 18.4 16.8	-0.92 - 5.5	3.3/02.5	32331
1977 QN ₂	1999 10 04.9	00 41.56 +09 09.3 16.3	-0.92 - 4.9	2.3/07.0	36061
1998 HO ₃₅	1999 10 04.9	00 41.62 -00 26.5 17.6	-0.92 - 6.6	1.8/03.4	36082
1994 PH ₃₀	1999 10 05.0	00 41.99 +03 07.8 17.3	-0.76 - 7.8	0.4/04.6	35691
1993 EP	1999 10 05.1	00 42.09 +14 58.7 17.3	-1.00 - 2.2	3.4/08.1	36069
3138 T-3	1999 10 05.1	00 42.18 +04 52.4 19.5	-0.91 - 6.8	0.1/05.2	32294
1995 UM ₅₀	1999 10 05.2	00 42.77 +05 23.6 20.8	-0.90 - 4.2	0.3/05.5	31107
1998 FC ₆₅	1999 10 05.2	00 42.80 +04 58.2 18.1	-0.92 - 8.5	0.1/05.4	35706
1981 EW ₃₇	1999 10 05.2	00 42.81 +11 41.6 19.9	-0.90 - 5.0	2.5/07.6	26922
1988 FE ₃	1999 10 05.3	00 42.76 +06 35.7 18.1	-0.80 - 5.3	0.6/06.0	33221
1998 FD ₁₅	1999 10 05.3	00 42.79 +06 15.3 17.4	-0.95 - 7.0	0.6/05.8	36079

1981 UL ₂₉	1999 10 05.4	00 43.18 +14 47.8 17.0	-0.65 -13.4	4.0/09.6	36063
1994 PK ₄	1999 10 05.4	00 43.47 +07 06.3 18.6	-0.84 - 4.7	0.7/06.3	30662
1978 VD ₅	1999 10 05.5	00 43.61 +04 24.6 18.0	-0.75 - 5.1	0.1/05.4	27118
1998 FW ₃₉	1999 10 05.5	00 43.64 +08 34.2 18.0	-0.94 - 9.2	1.7/07.0	32258
1991 US ₃	1999 10 05.5	00 43.64 -21 35.1 16.1	-1.03 + 1.8	11.1/28.5	36067
(8603)	1999 10 05.5	00 43.68 +04 12.7 15.8	-0.87 - 9.2	0.2/05.4	31520
(8964)	1999 10 05.5	00 43.73 -01 07.7 17.1	-0.93 - 8.3	2.5/03.6	36060
1998 FJ ₇₂	1999 10 05.6	00 44.11 +04 24.6 16.7	-0.88 - 8.7	0.2/05.6	35706
1996 VX ₂₉	1999 10 05.7	00 44.19 -04 41.4 17.0	-1.06 - 4.0	3.9/03.0	36074
1997 EK ₆	1999 10 05.7	00 44.32 -25 26.4 16.7	-0.93 - 0.4	12.7/25.9	36077
1998 FQ ₆₄	1999 10 05.8	00 44.79 +03 57.6 16.6	-1.06 - 2.5	0.4/05.6	36080
1992 WS ₃	1999 10 05.8	00 44.86 +08 19.9 16.9	-0.99 - 5.3	1.4/06.9	36068
1997 AK ₂₂	1999 10 05.9	00 44.99 -15 17.9 19.3	-0.81 - 5.2	6.0/29.1	35698
1994 WO ₄	1999 10 05.9	00 45.28 -03 42.4 18.7	-0.71 - 6.1	2.9/03.0	26567
(11716)	1999 10 06.0	00 45.42 +07 36.5 17.2	-0.90 - 4.1	1.1/07.0	35889
1260 T-2	1999 10 06.0	00 45.43 +02 04.7 18.1	-0.80 - 8.0	0.9/05.1	36123
(11546)	1999 10 06.0	00 45.44 +12 14.4 16.1	-0.97 - 4.7	3.3/08.3	35844
1990 UD ₃	1999 10 06.0	00 45.56 +14 42.8 15.6	-0.60 - 9.8	4.4/10.0	36066
(11482)	1999 10 06.1	00 45.95 +22 22.0 16.6	-1.01 - 2.0	6.3/11.3	35828
1996 TG ₆	1999 10 06.1	00 45.98 +08 55.3 17.7	-1.04 - 4.3	1.5/07.3	35930
1998 KJ ₄₈	1999 10 06.2	00 46.19 +00 36.2 17.6	-0.73 - 6.2	1.4/04.8	36084
1997 CR	1999 10 06.2	00 46.20 -15 08.6 16.5	-0.72 - 7.9	7.9/28.7	36076
1978 TH ₇	1999 10 06.2	00 46.27 -06 34.5 16.2	-0.71 - 7.2	3.9/02.1	36061
1994 PE ₃	1999 10 06.2	00 46.38 -06 05.3 19.0	-0.76 - 7.8	3.5/02.4	32308
5049 T-3	1999 10 06.2	00 46.39 -09 50.1 18.9	-0.78 - 6.3	7.0/01.1	34000
3248 T-1	1999 10 06.3	00 46.45 +04 29.3 20.0	-0.93 - 8.2	0.2/06.2	35051
1996 XL ₁	1999 10 06.4	00 46.92 -09 40.1 17.0	-0.96 - 4.5	6.1/01.8	36075
1998 KL ₃₅	1999 10 06.5	00 47.24 -05 24.5 17.2	-1.00 - 4.1	4.5/03.4	36084
1993 NS ₁	1999 10 06.5	00 47.31 -10 49.2 16.2	-0.70 - 5.4	6.3/30.9	24232
1998 HY ₁₄₈	1999 10 06.5	00 47.42 -14 35.2 17.3	-1.00 - 1.0	6.8/01.1	32331
4908 P-L	1999 10 06.5	00 47.47 +00 29.3 19.7	-0.76 - 6.2	1.4/05.0	34266
1994 CY ₁	1999 10 06.6	00 47.51 +19 07.9 17.1	-1.02 - 5.0	5.2/11.0	35919
(8776)	1999 10 06.6	00 47.59 +10 51.2 17.3	-0.89 - 5.3	2.0/08.5	31705
2208 T-1	1999 10 06.6	00 47.81 +04 38.4 18.1	-1.02 - 3.1	0.2/06.5	36122
1998 KM ₉	1999 10 06.6	00 47.85 -06 03.5 18.6	-0.88 - 7.5	4.2/02.9	35995
1986 QX ₁	1999 10 06.6	00 47.87 +04 29.8 16.3	-1.06 - 4.6	0.3/06.5	36063
1994 PA ₁₀	1999 10 06.7	00 48.04 -03 19.3 18.7	-0.78 - 7.0	2.8/03.9	32052
(8973)	1999 10 06.7	00 48.06 +01 33.4 18.3	-0.96 - 4.6	1.2/05.7	31940
1989 SB ₁	1999 10 06.8	00 48.47 +09 10.8 16.6	-1.09 - 3.2	1.6/08.0	35912
1991 TC ₂	1999 10 06.8	00 48.56 -13 10.1 16.7	-1.93 +11.1	9.8/04.8	36067
1996 YJ	1999 10 06.8	00 48.62 +18 37.1 16.3	-0.92 - 5.6	6.1/11.3	36075
1998 HA ₁₄₈	1999 10 06.8	00 48.64 +10 14.6 16.9	-0.99 - 7.6	2.1/08.5	32331
1998 PO ₁	1999 10 06.9	00 48.64 +29 06.7 16.6	-0.93 - 5.2	8.7/15.3	36085
1977 PB	1999 10 06.9	00 48.95 -13 30.4 17.6	-0.81 - 6.4	6.0/30.6	36061
1981 EB ₁₈	1999 10 07.0	00 48.95 +03 13.6 19.2	-0.84 - 6.6	0.6/06.3	31946
1995 WN ₃₃	1999 10 07.0	00 48.98 +10 26.8 17.5	-0.80 - 9.9	1.8/08.9	36073
4122 T-3	1999 10 07.0	00 49.07 -00 42.7 19.3	-0.95 - 5.7	2.4/05.2	29131
1993 FX ₃₁	1999 10 07.0	00 49.07 -01 44.8 16.0	-0.82 - 5.4	2.6/04.8	26173
1994 PO ₁₆	1999 10 07.0	00 49.15 +14 11.7 18.1	-0.87 - 4.2	2.8/09.9	36071
1987 DM ₆	1999 10 07.0	00 49.27 +05 09.4 17.0	-0.94 - 8.0	0.1/07.0	36064
1989 TP ₇	1999 10 07.0	00 49.30 -02 36.6 18.0	-0.94 - 7.5	3.0/04.5	36065

1991 GR ₇	1999 10 07.0	00 49.37 +10 52.3 17.7	-0.95	- 7.9	2.1/08.9	35683	1994 XM ₂	1999 10 08.6	00 54.87 -07 12.2 16.8	-0.77	- 3.5	4.0/04.5	35923
1989 AZ ₅	1999 10 07.1	00 49.29 -02 20.8 18.3	-0.90	- 5.9	2.7/04.6	29656	1998 FZ ₇₃	1999 10 08.6	00 54.97 +07 52.3 17.8	-0.94	- 6.3	0.7/09.3	36080
1994 CU ₁₀	1999 10 07.1	00 49.59 -05 32.4 17.7	-0.92	- 7.0	4.3/03.6	36070	1998 FT ₆₁	1999 10 08.6	00 55.01 +08 08.7 18.1	-0.95	- 6.3	0.8/09.4	36080
1996 WA	1999 10 07.1	00 49.61 +02 26.6 16.6	-1.05	- 3.6	1.3/06.4	36075	1981 EZ ₄	1999 10 08.6	00 55.07 +20 35.3 19.2	-0.97	- 3.9	5.1/13.2	26915
1991 GW ₈	1999 10 07.1	00 49.62 +07 32.1 19.7	-0.98	- 6.0	0.8/07.9	32047	1986 CB	1999 10 08.6	00 55.08 -39 06.3 15.2	-0.57	-13.7	20.1/22.0	36063
1998 FO ₂	1999 10 07.1	00 49.69 +15 39.4 18.3	-1.84	+ 6.8	5.1/08.6	36079	1998 FC ₁₄₄	1999 10 08.7	00 55.30 +12 18.4 17.3	-0.89	- 7.5	2.4/10.9	36081
1996 WA ₁	1999 10 07.2	00 49.72 +10 07.2 17.5	-0.99	- 6.0	1.9/08.7	36075	1995 YC ₁	1999 10 08.7	00 55.48 -21 13.6 17.7	-0.77	- 3.8	8.2/29.4	36073
1976 QK ₁	1999 10 07.2	00 49.93 +05 56.2 16.1	-0.85	- 7.2	0.3/07.5	36061	1991 VT ₅	1999 10 08.7	00 55.54 -01 50.0 17.7	-0.80	- 7.6	2.9/06.1	36067
1998 KL ₃₇	1999 10 07.3	00 50.08 +07 51.8 16.7	-0.89	- 9.1	1.0/08.2	36084	1992 PA ₂	1999 10 08.8	00 55.61 +18 47.7 16.6	-0.95	- 3.7	6.5/12.9	36068
1994 PG ₂₂	1999 10 07.3	00 50.15 +17 18.1 17.6	-0.95	- 2.4	3.8/10.9	35920	1998 KL ₃₁	1999 10 08.8	00 55.70 -17 08.2 17.4	-0.91	- 2.3	7.6/01.9	36084
1998 HS ₂₃	1999 10 07.3	00 50.30 +04 00.3 17.2	-0.96	- 6.1	0.6/06.9	36082	1981 EQ ₃₉	1999 10 08.9	00 56.12 +06 29.8 20.2	-0.75	- 4.7	0.1/09.1	29910
(8948)	1999 10 07.3	00 50.38 +08 55.8 15.8	-0.84	- 5.1	1.7/08.5	36060	1993 CK ₁	1999 10 08.9	00 56.21 +02 19.2 17.6	-0.94	- 3.2	1.2/07.9	36069
1981 EK ₂₇	1999 10 07.4	00 50.39 +09 15.8 16.8	-1.08	- 3.0	1.7/08.5	36063	1997 BO ₃	1999 10 08.9	00 56.21 +00 00.4 17.1	-0.90	- 5.0	2.1/07.1	36076
1982 BU	1999 10 07.5	00 50.78 -42 40.3 17.2	-1.09	- 2.6	17.2/22.0	32299	(9010)	1999 10 09.0	00 56.55 +05 16.2 16.8	-1.00	- 5.2	0.3/08.8	32176
(8672)	1999 10 07.5	00 50.99 +00 13.3 17.3	-0.90	- 6.4	2.0/05.9	31680	1998 HX ₇₈	1999 10 09.0	00 56.69 +13 38.7 17.4	-0.91	- 7.2	3.0/11.6	36082
1998 MY ₂₉	1999 10 07.5	00 51.03 +26 17.9 16.9	-0.84	- 5.2	6.0/14.9	36002	1998 HH ₈₇	1999 10 09.1	00 56.62 +13 24.6 17.3	-0.86	- 7.6	3.1/11.6	35984
1981 EF ₄₅	1999 10 07.5	00 51.04 +03 26.6 19.7	-0.75	- 4.3	0.5/06.9	21968	1997 JB ₁₃	1999 10 09.1	00 56.91 +05 00.8 19.4	-0.71	- 4.6	0.3/08.8	32753
1998 HX	1999 10 07.6	00 51.24 -02 43.9 16.7	-0.91	- 5.8	3.3/05.0	32075	1994 PR ₂₇	1999 10 09.2	00 56.98 +06 48.6 17.2	-0.88	- 3.8	0.2/09.4	36071
1982 US ₁	1999 10 07.6	00 51.29 +00 46.2 16.3	-1.00	- 5.3	1.7/06.2	31782	1996 VU ₁₇	1999 10 09.2	00 57.41 +03 07.8 17.9	-1.01	- 5.8	1.3/08.4	35931
1998 BQ ₁₈	1999 10 07.7	00 51.50 -03 41.7 18.8	-0.90	- 7.2	3.3/04.7	35704	1998 EU ₁₂	1999 10 09.3	00 57.40 +05 30.7 17.5	-1.08	- 3.3	0.3/09.1	32316
1998 FJ ₁₁₄	1999 10 07.7	00 51.54 +15 33.0 17.4	-0.96	- 7.3	4.0/11.1	35972	1994 EJ ₇	1999 10 09.3	00 57.40 -06 41.7 16.0	-0.93	- 3.9	6.0/05.4	36070
1999 RJ ₄₄	1999 10 07.7	00 51.65 +00 10.9 18.4	-0.71	- 4.5	1.5/06.0	36041	(8987)	1999 10 09.3	00 57.52 +02 40.8 17.5	-0.89	- 4.2	1.3/08.3	32171
1996 XC ₁	1999 10 07.7	00 51.74 +05 49.0 16.8	-0.93	- 7.1	0.1/07.8	36075	1998 KA ₁₀	1999 10 09.3	00 57.71 -02 21.7 15.9	-0.82	- 7.6	4.0/06.5	36084
1998 LB ₃	1999 10 07.7	00 51.79 +06 24.4 16.7	-0.75	- 9.5	0.3/08.1	36084	1995 FM ₁₁	1999 10 09.3	00 57.78 +04 43.8 17.9	-0.97	- 8.6	0.6/08.9	36072
1997 EK ₈	1999 10 07.7	00 51.82 +07 25.3 17.5	-0.98	- 4.4	0.8/08.3	36077	1998 EB ₈	1999 10 09.4	00 57.83 +03 58.2 18.6	-1.02	- 5.8	0.9/08.8	32061
(11631)	1999 10 07.7	00 51.84 +17 23.3 16.6	-0.95	- 6.0	5.1/12.0	35866	1998 MK ₄	1999 10 09.4	00 57.97 -13 44.0 16.6	-0.68	- 8.0	5.4/02.1	36084
1989 NH ₁	1999 10 07.7	00 51.86 -06 47.0 16.0	-0.94	- 5.9	5.8/03.9	36064	1998 KO ₄₆	1999 10 09.5	00 58.07 -02 51.7 17.9	-0.85	- 5.7	3.1/06.6	36084
1998 HE ₂₁	1999 10 07.8	00 51.98 +03 43.2 18.5	-0.93	- 7.8	0.7/07.2	34916	1989 XD ₁	1999 10 09.5	00 58.10 -01 36.8 16.5	-0.81	- 8.1	3.8/06.8	36065
1998 FF ₃₄	1999 10 07.8	00 52.16 +08 29.5 17.0	-0.98	- 6.0	1.2/08.8	35956	(8997)	1999 10 09.5	00 58.26 +13 19.2 18.3	-0.91	- 5.3	2.4/12.0	32173
1990 RA ₃	1999 10 07.8	00 52.23 +06 55.5 16.7	-0.83	- 5.7	0.5/08.3	36065	1981 EF ₆	1999 10 09.5	00 58.41 +21 16.4 19.1	-0.86	- 3.8	4.8/14.4	26915
1997 HE ₁₄	1999 10 07.8	00 52.23 +07 28.1 16.4	-0.80	- 4.8	0.7/08.5	36077	1998 HU ₁₁₇	1999 10 09.6	00 58.68 -04 02.3 18.7	-0.97	- 5.8	3.8/06.5	32083
1998 KX ₃₇	1999 10 07.9	00 52.25 -09 27.9 18.3	-0.85	- 3.8	4.8/03.3	36084	1988 DG ₂	1999 10 09.6	00 58.80 -08 45.7 18.7	-0.82	- 6.9	5.4/04.5	36064
1981 EP ₂	1999 10 07.9	00 52.36 +14 08.4 16.7	-0.69	-10.1	2.8/11.2	36062	(9097)	1999 10 09.6	00 58.83 +03 16.9 18.1	-0.72	- 4.6	0.8/08.7	32196
1998 FC ₁₁	1999 10 07.9	00 52.37 -10 20.3 20.3	-0.97	- 2.2	5.0/03.4	32317	1990 VU ₈	1999 10 09.7	00 58.94 -09 09.4 16.8	-0.78	- 6.0	5.6/04.5	36066
1999 RR ₉₈	1999 10 07.9	00 52.41 -04 34.8 16.0	-0.65	-13.9	4.5/03.8	36043	1981 EW ₄₆	1999 10 09.7	00 59.01 +05 53.2 18.4	-0.80	- 4.6	0.1/09.6	26923
1992 GM ₂	1999 10 08.0	00 52.67 +07 34.9 17.1	-1.04	- 6.3	0.8/08.6	36067	1995 FA ₁	1999 10 09.7	00 59.14 +07 26.5 17.7	-1.02	- 7.2	0.4/10.1	36072
1995 SH ₂₆	1999 10 08.0	00 52.83 +06 47.6 17.6	-0.92	- 4.9	0.4/08.4	36072	(8772)	1999 10 09.7	00 59.16 +00 16.7 15.8	-0.92	- 3.3	2.9/08.0	31704
1998 EV ₈	1999 10 08.0	00 53.05 -32 58.2 18.5	-1.34	+ 5.2	12.4/29.9	32316	1998 FX ₄₉	1999 10 09.8	00 59.20 +07 12.9 19.5	-1.06	- 5.9	0.4/10.1	32320
1979 MM ₃	1999 10 08.1	00 53.31 -23 03.5 17.9	-0.77	- 5.2	10.0/27.4	36062	1995 UB ₃₂	1999 10 09.8	00 59.24 -00 56.4 18.2	-0.83	- 5.0	3.2/07.5	26570
1998 AV ₉	1999 10 08.2	00 53.41 +06 35.3 17.6	-1.02	- 6.2	0.4/08.5	35945	(9032)	1999 10 09.8	00 59.27 -03 01.2 17.6	-0.96	- 6.0	3.5/06.9	36060
1998 FJ ₁₀₃	1999 10 08.2	00 53.47 +10 57.4 17.1	-0.87	- 9.8	2.0/10.1	36080	1981 EX ₄₀	1999 10 09.8	00 59.31 +14 37.7 19.0	-0.89	- 2.1	2.7/12.2	26922
1993 CJ ₁	1999 10 08.2	00 53.48 -05 47.2 17.0	-0.80	- 9.0	3.8/04.1	36069	1997 AP ₄	1999 10 09.8	00 59.32 +06 26.7 17.2	-0.92	- 6.3	0.0/09.9	31422
1998 KQ ₃₁	1999 10 08.2	00 53.56 +07 19.2 17.2	-0.83	- 9.1	0.7/08.8	36084	1998 KR ₃₃	1999 10 09.8	00 59.59 +02 31.3 20.1	-1.01	- 5.5	1.4/08.7	32688
1997 EA ₃₆	1999 10 08.3	00 53.77 +01 59.2 18.5	-0.88	- 5.8	1.3/07.1	30094	1991 GJ ₁₀	1999 10 09.9	00 59.88 -00 40.5 17.5	-0.80	- 2.5	2.0/07.9	36066
(9180)	1999 10 08.3	00 53.79 +15 07.3 17.1	-0.69	- 7.7	2.5/11.7	32419	1998 KB ₅₁	1999 10 09.9	00 59.94 +02 16.7 17.4	-0.83	- 8.2	1.4/08.6	36084
1998 FX ₆₉	1999 10 08.3	00 53.96 -00 30.6 17.4	-0.90	- 6.3	2.4/06.4	36080	1997 FQ ₄	1999 10 10.0	00 59.92 +11 22.4 17.6	-0.74	- 5.2	1.4/11.7	36077
7606 P-L	1999 10 08.4	00 54.30 -01 07.0 18.0	-0.87	- 3.4	3.6/06.4	36122	1993 KW ₁	1999 10 10.0	01 00.03 +16 36.2 16.9	-0.93	-20.8	4.3/14.2	36069
(9506)	1999 10 08.4	00 54.32 +17 44.3 17.4	-0.82	- 4.1	3.6/12.3	36061	1993 FB ₈	1999 10 10.0	01 00.16 +00 35.7 17.7	-0.86	- 4.3	2.0/08.3	36069
1996 AR ₁	1999 10 08.5	00 54.54 +20 24.3 17.1	-0.84	- 3.6	4.6/13.2	36073	1979 MF ₅	1999 10 10.0	01 00.29 +15 53.8 18.1	-0.83	- 5.1	3.2/13.2	30778
1998 HD ₁₄₉	1999 10 08.5	00 54.79 +07 10.8 18.3	-0.89	- 6.0	0.5/09.0	32331	1997 AC ₁₃	1999 10 10.1	01 00.31 +12 33.7 17.0	-0.98	- 5.5	2.6/12.0	36076
1981 EG ₃₁	1999 10 08.5	00 54.84 +10 53.1 17.5	-0.92	- 4.3	2.1/10.1	36063	1993 FS ₂₂	1999 10 10.1	01 00.68 +10 05.2 17.9	-0.87	- 6.3	1.4/11.4	36069

1995 KO ₁	1999 10 10.1	01 00.73 -35 19.6 18.3	-0.99 - 3.2	16.0/25.3	36072	(11483)	1999 10 11.9	01 07.13 +05 09.0 16.6	-0.84 - 6.5	0.8/11.3	35828
1998 HN ₁₁₉	1999 10 10.2	01 00.70 +02 43.4 17.4	-0.77 -10.2	1.4/08.9	35989	1998 FC ₁₁₇	1999 10 12.0	01 07.35 +13 52.7 16.6	-0.90 - 9.0	2.9/14.3	35974
(11506)	1999 10 10.2	01 00.73 +18 39.6 18.0	-0.96 - 5.7	4.5/14.1	35834	1998 DC ₁₄	1999 10 12.0	01 07.54 +05 06.2 18.9	-0.97 - 7.2	0.8/11.4	32060
1998 HA ₆	1999 10 10.2	01 00.80 -02 32.7 19.2	-1.05 - 3.8	3.4/07.7	32484	1993 FN ₂₈	1999 10 12.1	01 07.74 +11 18.8 19.2	-0.90 - 4.6	1.2/13.4	29662
1997 ER ₃₁	1999 10 10.2	01 00.83 +06 15.7 18.0	-0.76 - 4.4	0.1/10.2	35941	1998 FZ ₂₉	1999 10 12.1	01 07.96 +09 12.4 17.7	-0.97 - 8.4	0.8/12.8	32318
1998 HT ₁₀₇	1999 10 10.2	01 00.88 -04 31.6 17.8	-1.02 - 3.7	4.5/07.1	36083	1994 DS	1999 10 12.1	01 08.03 +02 00.0 16.5	-1.03 - 3.9	2.3/10.7	36070
1998 FH ₄₁	1999 10 10.3	01 01.41 +06 01.8 18.2	-0.95 - 6.9	0.2/10.2	32258	1997 GT ₃₄	1999 10 12.2	01 08.05 +05 54.8 19.1	-0.75 - 4.5	0.4/11.8	32253
(8991)	1999 10 10.4	01 01.44 +17 14.4 17.4	-0.85 - 5.1	3.1/13.9	32172	1998 FA ₃	1999 10 12.2	01 08.21 +01 58.7 19.7	-0.86 - 6.6	1.7/10.6	32062
1999 RH ₃₅	1999 10 10.4	01 01.51 +03 59.2 16.1	-0.91 - 7.7	1.2/09.6	36038	(8692)	1999 10 12.2	01 08.30 +13 05.2 16.3	-0.91 - 8.3	2.4/14.2	31685
1993 FL ₄	1999 10 10.4	01 01.53 +03 07.7 16.3	-0.87 - 6.1	1.3/09.3	36069	(11709)	1999 10 12.2	01 08.30 +06 50.4 17.8	-0.85 - 6.5	0.1/12.1	35887
1994 BY	1999 10 10.4	01 01.57 +03 14.2 16.8	-1.06 - 4.1	1.3/09.5	36070	1168 T-3	1999 10 12.4	01 09.19 +18 21.5 17.3	-1.10 + 1.3	4.6/15.1	36124
4082 T-3	1999 10 10.4	01 01.57 +01 40.8 17.6	-0.77 - 8.6	1.5/08.7	30683	(8407)	1999 10 12.5	01 09.15 -04 10.5 17.4	-0.94 - 6.4	4.3/08.9	31367
1997 FU ₂	1999 10 10.4	01 01.58 +12 37.2 17.3	-0.90 - 1.6	2.0/12.2	30766	6035 P-L	1999 10 12.5	01 09.58 +14 45.0 17.5	-1.06 - 1.4	2.8/14.6	36121
1998 FG ₇₅	1999 10 10.4	01 01.82 +05 13.2 16.7	-0.85 - 9.3	0.6/10.0	35965	1983 AA	1999 10 12.5	01 09.61 +50 29.7 17.7	-1.43 - 0.3	16.1/26.2	36063
(8903)	1999 10 10.5	01 01.82 +08 19.5 15.8	-0.70 -13.1	0.7/11.2	31924	1995 VL	1999 10 12.6	01 09.65 -10 12.6 16.8	-1.00 + 1.0	7.5/08.3	32309
1982 VY ₃	1999 10 10.5	01 01.92 -03 10.7 16.7	-1.03 - 3.7	3.9/07.8	36063	1980 FV ₂	1999 10 12.6	01 09.69 +16 23.6 16.4	-1.05 - 1.6	3.3/15.1	36062
1994 JU ₈	1999 10 10.5	01 02.06 +21 32.3 17.2	-0.84 -11.0	5.3/16.2	36071	1978 ST ₇	1999 10 12.6	01 09.72 +16 54.2 16.6	-1.05 - 3.9	4.0/15.4	36061
1981 EL ₁₃	1999 10 10.6	01 02.17 +07 58.9 17.9	-0.70 - 8.4	0.5/11.1	36062	1992 RD ₃	1999 10 12.6	01 09.79 +16 34.6 16.4	-1.01 - 2.9	4.5/15.3	36068
1991 UE ₂	1999 10 10.6	01 02.20 +03 12.9 16.3	-0.92 - 4.2	1.3/09.6	36067	(8860)	1999 10 12.6	01 09.90 +09 11.8 15.8	-1.11 + 0.2	0.7/13.1	31913
1997 EX ₇	1999 10 10.6	01 02.27 +09 53.3 17.3	-0.93 - 3.4	1.4/11.6	35941	1998 HS ₄₂	1999 10 12.7	01 09.88 -01 42.3 18.3	-0.82 - 6.5	2.9/09.8	36082
1995 QC ₁₀	1999 10 10.7	01 02.55 +11 53.6 18.0	-0.88 - 8.4	2.1/12.5	36072	1981 EX ₃₂	1999 10 12.7	01 09.95 +12 19.9 17.7	-0.86 - 8.3	1.8/14.4	36063
1994 VS ₁	1999 10 10.7	01 02.81 +03 15.8 16.8	-0.83 - 3.0	1.2/09.7	35922	1981 EF ₁₄	1999 10 12.7	01 09.96 +11 43.2 18.4	-1.00 - 6.6	1.6/14.1	31946
1999 RL ₃₈	1999 10 10.7	01 02.86 +01 05.4 17.3	-0.88 - 6.9	2.4/09.0	36039	1992 SA ₁₇	1999 10 12.8	01 10.40 +08 01.2 17.6	-0.97 - 6.3	0.2/13.0	35916
1998 HT ₁₅₀	1999 10 10.9	01 03.27 -01 31.2 18.2	-0.99 - 6.5	3.3/08.4	36083	(11514)	1999 10 12.8	01 10.44 +02 40.5 16.5	-0.71 - 7.1	1.4/11.2	35836
1993 BA	1999 10 10.9	01 03.31 -18 38.7 16.2	-0.86 - 4.5	9.1/02.5	36068	1993 DM	1999 10 12.8	01 10.45 +14 23.7 17.5	-0.90 - 5.6	2.3/15.0	36069
1995 VG ₁₁	1999 10 11.0	01 03.72 -04 40.6 19.1	-0.91 - 3.5	3.7/07.6	26407	1991 CM	1999 10 12.8	01 10.65 -16 04.6 17.4	-0.72 - 4.8	6.4/04.9	36066
(9101)	1999 10 11.0	01 03.80 +03 17.6 18.1	-0.98 - 5.9	1.4/10.0	32197	1994 EL	1999 10 12.9	01 10.60 +08 16.2 19.2	-0.95 - 6.6	0.3/13.1	34853
1996 BP ₃	1999 10 11.0	01 03.92 +14 51.1 17.0	-0.90 - 2.1	2.7/13.4	35928	1998 FL ₇₈	1999 10 12.9	01 10.60 +00 47.5 17.0	-1.01 - 5.8	2.8/10.9	32324
1998 KN ₆₀	1999 10 11.1	01 03.96 -17 29.2 18.4	-0.91 - 4.2	8.2/03.3	32755	1998 KD ₄₄	1999 10 12.9	01 10.76 +15 08.0 18.4	-0.91 - 7.0	2.7/15.4	35998
1994 JB	1999 10 11.1	01 04.06 +02 24.8 17.9	-0.93 - 4.5	1.7/09.8	32307	3109 T-2	1999 10 13.0	01 11.29 -01 30.2 20.8	-0.72 - 7.6	3.0/09.9	33130
1998 KM ₅₄	1999 10 11.2	01 04.35 -10 50.5 19.6	-0.86 - 5.0	5.7/05.6	32336	1994 FY	1999 10 13.0	01 11.42 -01 11.6 17.2	-1.07 - 1.9	3.2/10.8	36070
1287 T-1	1999 10 11.2	01 04.55 +07 57.2 17.9	-0.97 - 7.0	0.4/11.6	32092	1042 T-2	1999 10 13.1	01 11.36 +08 31.4 17.1	-0.84 - 6.1	0.4/13.4	32092
1981 EG ₁₂	1999 10 11.2	01 04.61 +11 24.1 18.4	-0.84 - 7.4	1.4/12.8	32298	1995 TZ ₁	1999 10 13.1	01 11.55 +02 17.6 19.0	-0.93 - 3.4	1.7/11.6	35924
1998 MS ₂₉	1999 10 11.3	01 04.85 -02 41.4 17.9	-0.73 - 4.6	2.6/08.2	36001	1979 MM ₇	1999 10 13.2	01 11.77 +03 37.2 19.1	-1.00 - 7.3	1.6/12.0	30779
1998 OH ₆	1999 10 11.3	01 04.88 +02 02.5 17.4	-0.70 - 5.6	1.3/09.7	36085	(9459)	1999 10 13.2	01 11.85 +15 05.6 17.0	-1.04 - 5.3	2.7/15.5	36061
1993 RC ₄	1999 10 11.4	01 05.17 +12 23.6 18.0	-0.74 - 4.1	1.4/13.2	35688	(8611)	1999 10 13.2	01 11.91 +07 33.5 15.3	-0.95 - 3.5	0.0/13.2	31666
1996 BE ₁	1999 10 11.4	01 05.38 -00 46.4 17.5	-0.84 - 4.2	2.7/09.1	36073	2058 P-L	1999 10 13.2	01 12.07 +11 18.6 17.4	-0.87 - 5.4	1.3/14.4	29668
(9306)	1999 10 11.5	01 05.47 +07 31.1 16.1	-0.82 - 4.5	0.2/11.7	32607	1998 KW ₃₃	1999 10 13.3	01 12.13 +06 11.5 17.4	-0.86 - 5.5	0.6/12.9	32755
1998 KE ₄₀	1999 10 11.5	01 05.51 -01 34.6 16.3	-0.93 - 6.8	3.7/08.8	35998	(11579)	1999 10 13.3	01 12.40 +08 29.7 16.5	-0.81 -11.3	0.3/13.7	35853
1998 FL ₇₆	1999 10 11.5	01 05.55 -01 44.8 17.8	-1.01 - 4.2	3.3/09.0	36080	(8474)	1999 10 13.3	01 12.51 -02 38.9 16.6	-0.98 - 6.6	4.2/10.3	31490
1989 YG ₅	1999 10 11.5	01 05.78 -14 39.2 17.5	-0.75 - 3.0	5.4/04.6	36065	1990 RT ₂	1999 10 13.4	01 12.49 +17 37.5 15.8	-1.07 + 0.8	4.2/15.9	36065
1998 FQ ₁₄	1999 10 11.5	01 05.83 +08 51.1 17.9	-0.86 - 8.4	0.7/12.2	35437	1998 HK ₃₃	1999 10 13.4	01 12.54 +12 00.7 17.2	-1.08 - 2.5	1.9/14.6	32327
1988 RM ₇	1999 10 11.5	01 05.85 +09 15.1 18.1	-0.80 - 4.9	0.7/12.3	32045	1981 EO ₄₃	1999 10 13.4	01 12.54 +10 42.4 20.4	-0.80 - 3.9	0.9/14.4	26923
4004 P-L	1999 10 11.6	01 05.94 +12 35.5 17.6	-0.92 - 3.8	2.0/13.3	36120	1991 WD	1999 10 13.4	01 12.84 -14 58.4 17.6	-0.94 - 3.6	7.6/06.2	36067
4030 T-3	1999 10 11.6	01 06.06 +00 30.5 18.4	-0.83 - 5.9	2.3/09.6	27929	3770 T-1	1999 10 13.5	01 13.02 +06 08.2 19.0	-0.94 - 8.4	0.6/13.0	32092
1995 YJ ₁	1999 10 11.7	01 06.44 +02 17.9 16.3	-0.79 - 5.2	1.7/10.2	36073	(9028)	1999 10 13.5	01 13.11 -00 09.9 15.9	-0.91 - 5.6	3.3/11.1	32180
4315 P-L	1999 10 11.7	01 06.51 +07 36.9 18.2	-0.80 - 5.4	8.0/32.0	30466	1998 FW ₉	1999 10 13.6	01 13.30 +05 55.1 19.0	-0.89 -11.0	0.7/13.0	32316
1991 GW ₁	1999 10 11.8	01 06.71 +20 54.1 17.5	-0.93 -13.0	4.5/17.0	35420	4060 P-L	1999 10 13.6	01 13.41 +09 35.0 18.0	-0.86 - 5.6	0.6/14.2	22086
1996 WE ₃	1999 10 11.8	01 06.73 +13 24.7 17.8	-0.95 - 7.9	2.4/13.9	36075	1989 TN ₁₆	1999 10 13.6	01 13.51 +07 06.3 17.5	-0.98 - 7.1	0.3/13.5	32659
1998 HS ₉₆	1999 10 11.8	01 06.98 +04 41.4 17.5	-0.86 - 8.0	0.9/11.1	36082	1987 QW ₂	1999 10 13.6	01 13.52 +06 58.4 16.8	-0.77 - 4.2	0.2/13.4	36064
1998 HM ₁₁₇	1999 10 11.9	01 07.02 +00 38.5 18.7	-0.90 - 7.9	2.4/09.8	32755	2416 T-3	1999 10 13.6	01 13.64 +10 20.9 16.3	-0.97 - 6.0	1.0/14.5	35125

4626 P-L	1999 10 13.7	01 13.62 +07 17.3	17.2 -0.83 - 4.3	0.2/13.6	35671	1998 HG ₄₀	1999 10 15.5	01 20.62 +04 53.3	18.7 -1.07 - 4.6	1.4/14.6	36082
1999 QZ ₁	1999 10 13.7	01 13.66 +06 44.7	18.1 -0.80 - 6.8	0.4/13.4	36026	1998 KM ₄₁	1999 10 15.6	01 20.68 +00 18.6	18.4 -1.06 - 3.2	3.2/13.4	32688
(9067)	1999 10 13.7	01 13.78 +07 59.5	15.7 -0.94 - 2.2	0.1/13.8	32189	(9222)	1999 10 15.6	01 20.68 -16 47.9	17.0 -0.74 - 3.0	6.2/07.5	32428
1998 EE ₁₀	1999 10 13.7	01 13.90 +07 22.8	16.7 -1.07 - 3.7	0.2/13.7	32316	1996 YC ₁	1999 10 15.6	01 20.78 +18 22.3	18.5 -0.93 - 5.9	3.2/18.7	29141
1995 BL	1999 10 13.7	01 13.95 +44 40.0	17.0 -1.54 + 0.6	16.9/24.8	35294	1995 SC ₂	1999 10 15.6	01 20.89 -00 07.6	16.7 -0.81 - 8.4	3.7/12.7	32309
1997 ED ₈	1999 10 13.7	01 13.97 +09 16.4	19.3 -0.91 - 4.4	0.5/14.2	32252	1998 DN ₂₃	1999 10 15.7	01 21.14 +07 18.5	20.0 -0.95 - 6.5	0.4/15.4	32060
1997 AG	1999 10 13.9	01 14.32 +15 08.0	16.9 -1.00 - 4.7	3.1/16.0	36075	1503 T-2	1999 10 15.7	01 21.28 +09 36.4	18.7 -0.92 - 6.8	0.4/16.1	29668
1990 TZ ₁	1999 10 13.9	01 14.65 +11 55.3	16.6 -0.85 - 5.3	1.5/15.2	36066	(8753)	1999 10 15.8	01 21.61 +05 46.2	18.1 -0.96 - 6.6	1.0/15.0	31699
1997 HO ₁	1999 10 13.9	01 14.71 +08 59.5	17.5 -0.86 - 5.7	0.4/14.3	30672	1997 FW ₁	1999 10 15.9	01 21.81 +02 38.0	17.2 -0.90 - 1.7	1.9/14.3	36077
1992 LF	1999 10 14.0	01 14.97 -15 27.9	16.0 -0.65 - 8.5	7.6/05.0	36068	1992 WX	1999 10 16.0	01 22.34 -03 08.0	15.3 -0.84 - 5.7	5.6/12.4	36068
2649 P-L	1999 10 14.1	01 15.09 +05 06.7	17.6 -0.79 - 8.0	0.9/13.2	23680	3270 T-2	1999 10 16.0	01 22.40 +03 58.8	17.6 -0.97 - 4.9	1.7/14.7	31436
3289 T-2	1999 10 14.1	01 15.34 +00 12.8	17.4 -0.72 - 7.0	2.4/11.5	36123	4055 P-L	1999 10 16.0	01 22.42 +13 17.8	18.0 -1.00 - 5.2	1.6/17.4	36120
1989 SL ₁₂	1999 10 14.1	01 15.35 +09 19.7	17.2 -0.83 - 4.8	0.5/14.6	28884	1177 T-3	1999 10 16.0	01 22.45 +19 48.7	17.7 -0.77 - 4.5	2.9/19.6	36124
1999 RR ₃₁	1999 10 14.2	01 15.62 +07 25.8	16.8 -1.08 - 1.4	0.3/14.1	36036	1992 HD ₇	1999 10 16.1	01 22.46 -07 03.9	18.7 -0.72 - 5.0	4.0/11.0	36067
1988 UP	1999 10 14.2	01 15.66 +04 08.7	16.6 -0.77 - 4.2	1.3/13.1	36064	1985 RA ₄	1999 10 16.1	01 22.50 +15 34.4	17.3 -0.94 - 3.1	2.4/18.1	36063
1998 HJ ₅₁	1999 10 14.2	01 15.74 -05 39.8	16.5 -0.90 - 4.1	6.1/10.2	35982	1998 FH ₆₅	1999 10 16.1	01 22.74 +09 44.3	17.7 -0.98 - 6.7	0.4/16.5	32322
1997 AF ₇	1999 10 14.3	01 16.19 +02 21.6	18.7 -0.92 - 6.5	2.0/12.6	29634	(9073)	1999 10 16.1	01 22.75 -04 12.8	17.0 -0.96 - 5.9	5.5/12.2	32190
(8652)	1999 10 14.4	01 16.23 +11 25.1	16.8 -0.95 - 5.6	1.3/15.4	31676	2092 T-2	1999 10 16.1	01 22.86 +05 40.9	18.7 -0.83 - 6.7	1.0/15.2	26423
1998 HB ₃₈	1999 10 14.4	01 16.35 +12 16.3	18.5 -0.93 - 5.6	1.4/15.7	32328	1998 FV ₈	1999 10 16.2	01 23.20 +05 03.2	18.4 -0.97 - 5.1	1.4/15.2	35705
1991 PY ₁	1999 10 14.4	01 16.56 -05 24.6	17.8 -0.91 - 5.3	5.3/10.4	36066	1984 UN ₂	1999 10 16.4	01 23.75 +08 32.5	17.1 -0.80 - 5.3	0.1/16.4	30685
3372 T-2	1999 10 14.5	01 16.57 -01 13.8	17.5 -0.84 - 6.7	3.3/11.5	36123	2097 T-2	1999 10 16.4	01 23.95 +15 31.2	18.6 -1.04 - 3.3	2.5/18.3	31436
1990 WZ	1999 10 14.5	01 16.65 +05 33.6	17.5 -0.76 - 8.1	0.9/13.7	36066	1998 HO ₄₃	1999 10 16.5	01 23.98 +04 17.0	17.1 -0.89 - 8.7	1.8/15.0	32328
4039 T-3	1999 10 14.5	01 16.77 +03 00.9	17.8 -1.03 - 6.3	2.1/13.0	36125	(9014)	1999 10 16.6	01 24.60 -07 27.8	15.8 -1.03 - 0.9	7.7/12.3	36060
1986 VW	1999 10 14.5	01 16.88 +09 58.2	15.7 -1.11 - 0.4	1.0/15.0	36063	1994 CL ₁₄	1999 10 16.7	01 24.79 -02 12.7	16.4 -0.93 - 4.7	5.0/13.4	36070
1996 YX	1999 10 14.6	01 17.11 +21 26.2	16.9 -0.97 - 6.4	5.6/18.9	35934	1996 AL ₃	1999 10 16.7	01 24.82 +04 55.4	17.6 -0.78 - 4.6	1.2/15.5	32243
1997 FN	1999 10 14.7	01 17.32 -06 46.1	16.6 -0.87 - 1.4	5.0/10.5	36077	(11174)	1999 10 16.7	01 24.91 +03 37.1	17.7 -1.03 - 5.2	2.2/15.2	35256
1996 XJ ₁₅	1999 10 14.7	01 17.39 -04 13.5	17.2 -0.94 - 3.9	5.2/11.2	36075	1979 MP ₈	1999 10 16.7	01 24.97 +15 15.2	19.2 -0.94 - 5.8	2.1/18.7	35906
1998 HT ₄₂	1999 10 14.7	01 17.47 +05 43.6	17.1 -0.92 - 7.6	1.0/14.0	36082	2665 P-L	1999 10 16.7	01 25.09 +04 31.9	18.2 -0.82 - 7.4	2.0/15.4	31436
1998 KC ₅₆	1999 10 14.7	01 17.57 -02 36.2	16.2 -0.82 -11.8	4.3/10.8	36000	1998 KZ ₃₈	1999 10 16.7	01 25.14 +27 20.8	17.5 -0.93 - 7.5	6.1/23.2	35337
1981 ET ₃₅	1999 10 14.7	01 17.65 +15 01.6	19.9 -0.74 - 6.7	2.0/17.1	26921	1988 VC ₂	1999 10 16.8	01 25.11 +04 30.5	16.5 -0.82 - 2.2	1.6/15.6	36064
1988 VX ₂	1999 10 14.8	01 17.65 +16 07.7	16.7 -0.71 - 8.2	2.3/17.6	36064	1987 BR ₁	1999 10 16.8	01 25.21 +15 53.6	16.6 -0.99 - 6.4	3.0/18.9	35417
1999 RW ₃₄	1999 10 14.8	01 17.72 +04 44.2	16.7 -0.72 -10.0	1.6/13.6	36038	1992 ER ₈	1999 10 16.8	01 25.21 +05 31.4	16.4 -0.84 - 4.1	1.1/15.8	36067
(8905)	1999 10 14.8	01 17.79 -01 39.6	15.8 -0.87 - 1.1	4.8/12.2	36060	1995 TB ₈	1999 10 16.8	01 25.32 +11 05.9	17.8 -0.88 - 5.5	0.7/17.5	35693
1997 GX ₃	1999 10 14.9	01 18.20 +07 00.9	17.5 -0.89 - 1.8	0.4/14.6	35942	(9041)	1999 10 16.9	01 25.53 +11 10.1	17.4 -1.00 - 7.2	0.9/17.6	32183
1977 TD	1999 10 15.0	01 18.43 -52 08.2	18.2 -1.52 + 2.8	25.0/27.0	31271	1997 BP ₁	1999 10 16.9	01 25.89 +08 25.6	16.1 -0.91 - 3.5	12.2/27.0	29636
1998 KU ₆₀	1999 10 15.1	01 18.98 -03 03.7	17.8 -0.80 - 7.9	3.7/11.3	32755	1995 UX ₂	1999 10 17.0	01 25.87 +06 28.1	17.9 -0.87 - 2.0	0.7/16.3	29946
1996 AL	1999 10 15.1	01 19.03 -16 15.7	18.0 -0.79 - 4.2	6.9/06.9	36073	(9056)	1999 10 17.0	01 25.91 +10 21.9	16.4 -0.82 - 5.8	0.4/17.4	32186
1991 EM	1999 10 15.1	01 19.08 +38 27.2	18.0 -0.88 - 4.8	8.6/26.6	36066	1998 FG ₇₇	1999 10 17.0	01 26.09 -02 33.5	16.4 -1.00 - 2.1	5.2/14.0	35966
1998 FD ₆₁	1999 10 15.1	01 19.09 +06 01.2	17.8 -0.98 - 8.2	0.9/14.4	35960	1998 GD ₉	1999 10 17.0	01 26.13 -11 23.3	16.7 -0.82 - 7.4	7.8/10.3	32325
1998 QN ₇	1999 10 15.2	01 19.13 +31 55.5	17.1 -0.89 - 1.9	6.5/22.8	36085	1990 EM ₁	1999 10 17.1	01 26.42 +14 24.0	16.6 -0.88 - 8.3	2.2/18.9	35418
1981 EE ₁₃	1999 10 15.2	01 19.17 +19 32.5	18.3 -1.00 - 4.1	4.1/18.6	36062	1992 EX ₁₀	1999 10 17.2	01 26.62 +13 44.4	18.7 -0.88 - 3.4	1.5/18.6	34841
1998 KS ₃₅	1999 10 15.2	01 19.25 +07 03.5	17.8 -0.98 - 5.8	0.5/14.8	32522	1995 WB	1999 10 17.3	01 27.19 +04 39.6	16.7 -0.87 - 5.1	1.7/16.0	36073
1995 SJ ₁	1999 10 15.2	01 19.27 +12 43.4	17.4 -0.95 - 2.6	2.0/16.4	36072	1997 GX ₁₈	1999 10 17.3	01 27.34 +11 45.6	19.0 -0.91 - 5.6	1.0/18.2	30094
1992 JU ₂	1999 10 15.3	01 19.55 +10 34.5	15.6 -0.80 -10.9	1.1/16.1	36067	1997 GB ₂₃	1999 10 17.4	01 27.38 +02 58.7	18.2 -0.95 - 4.1	2.4/15.6	36077
1998 HO ₁₁₇	1999 10 15.3	01 19.56 -07 32.7	16.1 -0.91 - 2.4	7.9/10.7	36083	1981 EB ₂₉	1999 10 17.4	01 27.55 +04 50.8	19.7 -0.84 - 8.2	1.4/16.0	26920
1998 KY ₆	1999 10 15.3	01 19.61 +15 18.6	19.9 -0.89 - 8.3	2.2/17.6	32333	2664 T-3	1999 10 17.4	01 27.71 +11 34.7	17.6 -0.99 - 4.2	1.0/18.2	29949
1998 FF ₁₆	1999 10 15.3	01 19.62 +05 33.2	17.9 -0.94 - 6.4	1.1/14.5	36079	1987 DD ₆	1999 10 17.5	01 27.89 +03 46.6	18.2 -0.94 - 6.7	2.0/15.9	32300
1981 EO ₁₉	1999 10 15.3	01 19.76 +03 43.6	17.8 -0.73 - 7.4	1.5/13.8	29609	1966 PL	1999 10 17.6	01 28.38 -04 08.1	17.1 -0.93 - 5.4	5.3/13.7	36061
1994 YG	1999 10 15.4	01 19.94 +08 07.3	17.3 -0.80 - 4.3	0.1/15.3	24915	1998 KB ₅₅	1999 10 17.6	01 28.45 -00 50.8	16.5 -0.75 - 8.2	3.9/14.2	36084
1998 HT ₁₄₉	1999 10 15.5	01 20.59 +01 51.0	17.9 -0.95 - 1.6	2.4/13.8	32522	1971 FB	1999 10 17.6	01 28.50 -03 34.2	17.9 -0.86 -15.2	4.4/12.8	22482
1998 HS ₁₀₆	1999 10 15.5	01 20.60 -06 44.8	18.5 -0.95 - 4.6	5.5/11.1	32329	1975 SZ ₁	1999 10 17.7	01 28.54 +06 02.9	17.5 -0.88 - 7.5	1.5/16.7	29131

1981 EQ ₃₈	1999 10 17.7	01 28.73 +02 39.0 20.8	-0.81 - 9.1	2.1/15.5	26922	1991 VL ₆	1999 10 19.9	01 36.74 +09 58.5 16.9	-0.73 -13.3	0.0/19.9	36067
1990 HJ	1999 10 17.8	01 29.19 +06 16.0 17.2	-0.98 - 4.4	1.1/17.0	35681	(9034)	1999 10 20.0	01 37.14 +00 21.2 16.6	-0.81 - 7.4	3.4/16.9	32182
1991 JC	1999 10 17.9	01 29.30 +04 47.0 18.1	-1.01 - 4.7	1.7/16.6	32302	1997 AB ₁₈	1999 10 20.0	01 37.28 +17 41.3 16.7	-1.06 - 2.7	3.1/22.0	35937
1992 RS ₃	1999 10 17.9	01 29.39 +09 26.8 17.0	-0.97 - 7.2	0.0/18.0	32305	1994 NW ₁	1999 10 20.0	01 37.51 +00 22.2 18.5	-0.86 - 5.2	2.9/17.2	32307
2190 P-L	1999 10 17.9	01 29.43 +09 47.2 19.4	-0.74 - 5.5	0.1/18.1	27116	1995 WF ₃	1999 10 20.1	01 37.75 -00 53.5 17.1	-1.00 - 2.0	3.9/17.2	30093
1997 AF ₃	1999 10 18.0	01 29.57 +07 35.3 16.4	-1.03 - 3.7	0.7/17.5	34871	1989 TY ₄	1999 10 20.1	01 37.80 +02 45.7 18.1	-0.97 - 7.7	3.0/17.9	32045
1998 KO ₄₂	1999 10 18.0	01 29.82 -09 15.2 19.1	-0.98 - 1.8	6.2/13.1	32334	1995 DB ₃	1999 10 20.1	01 37.81 +21 43.5 17.8	-0.97 -19.7	5.1/24.6	25433
1981 EA ₁₉	1999 10 18.1	01 30.03 +10 57.5 17.1	-0.93 - 3.7	0.7/18.6	26188	1994 EA ₂	1999 10 20.2	01 37.95 +04 53.4 18.4	-1.02 - 9.4	2.0/18.6	26174
1995 SK ₃	1999 10 18.1	01 30.07 +03 26.4 17.9	-0.95 - 4.8	2.2/16.4	36072	1998 FC ₅₉	1999 10 20.2	01 38.03 +01 24.5 16.0	-0.87 - 8.9	4.0/17.4	36079
3854 T-3	1999 10 18.2	01 30.35 +06 11.9 18.3	-0.74 - 4.6	0.9/17.2	25085	(8574)	1999 10 20.2	01 38.17 +12 20.2 15.8	-0.96 - 6.5	1.1/20.9	31514
1998 EA ₉	1999 10 18.2	01 30.35 -06 01.3 18.2	-0.92 - 4.3	5.4/13.8	32316	1981 ES ₂₇	1999 10 20.3	01 38.27 +15 00.1 20.3	-1.11 - 3.5	1.7/21.6	23132
1977 RK	1999 10 18.2	01 30.43 -10 57.3 17.1	-1.55 + 5.5	9.6/14.9	36061	(8856)	1999 10 20.3	01 38.41 +05 47.1 17.6	-0.97 - 5.2	1.8/19.1	31912
1998 GO ₁	1999 10 18.2	01 30.52 -02 59.9 18.4	-0.93 - 6.9	4.4/14.4	35977	1991 GF ₉	1999 10 20.3	01 38.41 +05 49.5 18.4	-0.95 - 7.1	1.7/19.0	32047
1994 PQ ₁₁	1999 10 18.3	01 30.73 +14 52.8 17.4	-0.88 - 4.7	1.7/19.9	32747	1996 XX ₃₁	1999 10 20.3	01 38.56 +24 45.5 16.3	-1.19 - 1.7	5.6/24.2	35698
1995 WK ₇	1999 10 18.3	01 30.78 +02 11.6 16.3	-0.88 - 3.3	2.5/16.3	35927	1998 HL ₈₄	1999 10 20.3	01 38.59 +05 17.0 18.3	-0.89 - 7.8	1.9/18.8	32521
(11586)	1999 10 18.3	01 30.81 +13 55.7 16.1	-0.73 - 8.6	1.5/19.9	35855	1989 YB ₆	1999 10 20.5	01 39.30 -10 40.7 18.6	-0.71 - 3.9	5.1/13.9	26757
1995 KM ₁	1999 10 18.3	01 30.89 +01 28.2 17.8	-0.99 - 5.3	3.5/16.1	31789	1998 KZ ₂₆	1999 10 20.5	01 39.30 +04 33.8 18.1	-1.03 - 0.2	2.4/19.2	32333
1985 VE	1999 10 18.3	01 31.06 +04 01.2 17.0	-0.93 - 7.3	2.1/16.7	32299	1993 FS ₂₄	1999 10 20.5	01 39.35 +14 32.8 18.3	-0.93 - 3.9	1.4/21.8	29137
1998 HH ₁₁₄	1999 10 18.4	01 31.06 -02 07.7 17.4	-0.93 - 6.0	4.5/14.9	36083	1988 VG ₄	1999 10 20.6	01 39.69 +19 53.7 15.6	-0.78 - 5.2	3.3/23.7	35680
(11618)	1999 10 18.4	01 31.15 -01 00.4 17.0	-0.68 - 8.8	3.2/14.7	35863	1993 ES	1999 10 20.7	01 39.73 +18 27.0 17.3	-0.96 - 2.6	2.4/22.9	36069
1995 WD ₃₂	1999 10 18.5	01 31.42 +04 19.5 18.7	-0.78 - 5.0	1.6/16.9	32750	1995 WB ₅	1999 10 20.7	01 40.03 +27 02.7 16.9	-0.85 - 9.5	6.4/26.8	32518
1993 RC	1999 10 18.5	01 31.50 +01 56.3 18.1	-0.67 - 9.2	2.3/15.8	30782	1995 SS ₅	1999 10 20.8	01 40.28 +10 41.2 17.9	-0.83 -11.1	0.1/20.9	36072
1995 WN ₅	1999 10 18.5	01 31.71 +02 17.3 16.2	-0.88 - 3.3	2.5/16.5	36073	1998 FM ₇₀	1999 10 20.8	01 40.48 +08 16.7 16.5	-0.99 - 3.8	1.0/20.3	32323
1997 GZ ₇	1999 10 18.5	01 31.79 +02 33.3 18.3	-0.86 - 1.0	2.1/16.7	30094	(11326)	1999 10 20.9	01 40.76 +21 28.5 16.8	-0.98 - 4.0	4.8/24.1	35572
1998 FS ₁₁₈	1999 10 18.5	01 31.85 +20 12.2 16.5	-1.15 - 0.4	4.4/22.0	36081	1981 EG ₆	1999 10 20.9	01 40.80 +21 09.8 20.9	-0.91 - 4.6	3.5/24.1	30779
1995 SK ₂	1999 10 18.5	01 31.86 +13 27.0 16.8	-0.96 - 3.7	1.8/19.7	36072	(11187)	1999 10 20.9	01 40.86 +04 04.7 17.7	-0.88 - 5.3	2.3/19.1	35260
1991 TE ₁	1999 10 18.6	01 31.82 -14 35.3 16.8	-0.96 - 2.2	8.7/11.4	36067	1979 MM ₄	1999 10 21.0	01 40.93 +10 04.9 18.6	-1.02 - 7.2	0.2/20.9	32298
1998 KW ₄₇	1999 10 18.6	01 31.88 +09 51.8 17.0	-0.89 - 6.2	0.1/18.7	32522	1981 EA ₃₈	1999 10 21.1	01 41.31 +18 10.3 21.4	-0.81 - 3.9	2.1/23.4	30780
1997 AC ₁	1999 10 18.6	01 32.04 +08 17.6 17.3	-0.96 - 4.3	0.5/18.3	32312	2712 P-L	1999 10 21.1	01 41.34 +05 32.1 17.6	-0.87 - 4.8	1.7/19.7	23531
(11573)	1999 10 18.7	01 32.27 +13 27.5 16.2	-0.80 - 4.2	1.4/19.9	35851	1981 EV ₄	1999 10 21.2	01 41.70 +19 33.0 20.2	-1.05 - 5.9	3.3/23.8	26915
1999 RC ₃₅	1999 10 18.9	01 33.00 +09 01.0 15.7	-0.92 - 1.1	0.2/18.7	36038	1998 KM ₃₅	1999 10 21.3	01 41.98 -06 40.5 18.7	-0.93 - 0.7	5.3/17.0	36084
(8896)	1999 10 18.9	01 33.01 -00 34.0 17.1	-1.00 - 3.4	3.9/16.1	36060	1988 BY ₂	1999 10 21.3	01 42.00 +25 25.2 17.3	-0.99 - 3.1	4.9/25.5	36064
1998 FS ₆₈	1999 10 18.9	01 33.20 +13 54.4 17.0	-1.00 - 7.1	1.7/20.2	36080	(8476)	1999 10 21.3	01 42.05 +05 57.0 16.5	-1.03 - 5.5	2.1/20.0	31490
1988 AX ₁	1999 10 18.9	01 33.32 +32 37.5 17.0	-1.06 - 2.8	8.5/25.7	21971	1998 FQ ₅	1999 10 21.3	01 42.22 +05 23.8 18.1	-1.10 - 1.2	2.0/20.1	35951
1994 PW ₂₀	1999 10 19.0	01 33.53 +13 58.3 17.1	-0.89 - 4.0	1.4/20.3	36071	1991 FP	1999 10 21.4	01 42.33 +04 00.6 18.1	-0.67 - 6.3	1.6/19.2	35683
(8761)	1999 10 19.0	01 33.70 +13 53.0 16.7	-1.00 - 6.9	1.6/20.3	31701	(9346)	1999 10 21.4	01 42.43 +03 56.7 16.1	-0.89 - 4.6	3.1/19.5	36061
1998 KT ₃₆	1999 10 19.1	01 33.90 +14 51.6 17.9	-1.00 - 6.7	1.9/20.7	36084	4037 P-L	1999 10 21.4	01 42.73 +17 29.1 16.8	-1.10 - 2.3	2.9/23.2	36120
1995 KJ ₃	1999 10 19.1	01 34.11 +08 14.5 18.7	-1.06 - 5.8	0.6/18.7	35693	1998 HO ₂₇	1999 10 21.5	01 42.87 -00 38.9 16.1	-0.95 - 3.8	4.8/18.4	32327
1994 LC	1999 10 19.2	01 34.11 -05 36.5 18.6	-0.87 - 5.2	4.9/14.6	36071	1981 EU ₃₈	1999 10 21.5	01 43.08 +10 20.2 17.8	-0.99 - 7.0	0.1/21.5	32299
2558 P-L	1999 10 19.2	01 34.11 +10 48.2 16.4	-0.84 - 2.7	0.3/19.5	27732	1998 HT ₁₄₇	1999 10 21.6	01 43.12 +01 33.4 18.5	-0.80 - 9.4	3.1/18.6	34918
1998 JA ₂	1999 10 19.2	01 34.25 +08 14.5 18.3	-0.97 - 4.5	0.6/18.8	32028	1998 HQ ₁₉	1999 10 21.6	01 43.23 +11 21.5 16.4	-0.89 -10.7	11.5/11.0	35980
(9098)	1999 10 19.3	01 34.47 +07 51.5 16.0	-0.85 - 3.6	0.7/18.7	32196	1996 YF ₁	1999 10 21.6	01 43.25 -01 46.4 20.9	-1.12 - 4.5	4.5/18.2	29667
1994 AM ₃	1999 10 19.3	01 34.57 +14 58.1 16.9	-1.13 - 3.2	2.0/20.7	36070	1981 EY ₆	1999 10 21.6	01 43.30 +29 02.8 18.0	-0.90 - 3.4	6.7/27.3	26916
5030 T-3	1999 10 19.3	01 34.72 -05 53.0 17.1	-0.72 - 6.2	5.3/14.2	36125	1971 UT ₁	1999 10 21.6	01 43.30 +08 18.4 16.3	-0.75 - 5.1	0.9/20.9	35056
1998 KM ₈	1999 10 19.5	01 35.44 +07 24.1 17.6	-0.79 - 7.7	0.8/18.7	32277	(9250)	1999 10 21.6	01 43.35 -00 40.3 18.4	-0.68 - 7.1	2.8/17.9	32435
1990 QE ₆	1999 10 19.5	01 35.44 +31 04.3 18.0	-1.28 + 0.8	8.1/25.0	36065	1989 GJ ₄	1999 10 21.6	01 43.51 +13 44.6 17.4	-0.90 - 6.2	1.0/22.6	36064
1998 HW ₁₀₁	1999 10 19.5	01 35.45 +08 37.8 17.6	-1.11 - 3.0	0.5/19.2	36083	1991 NU ₃	1999 10 21.6	01 43.52 +22 32.9 15.7	-0.91 - 5.7	5.4/25.4	35420
1995 XH	1999 10 19.5	01 35.56 +06 20.7 16.1	-0.88 - 3.2	1.3/18.6	29665	1995 YP	1999 10 21.7	01 43.79 +05 30.6 16.9	-0.82 - 4.5	1.7/20.2	32310
1997 CB ₂₂	1999 10 19.5	01 35.64 +16 51.9 16.7	-0.91 - 3.4	2.2/21.6	36076	1993 FX ₃₇	1999 10 21.8	01 43.85 +09 25.1 15.7	-0.90 - 3.9	0.5/21.4	23527
1984 SC ₆	1999 10 19.7	01 36.14 +03 51.3 17.0	-0.98 - 4.5	2.6/18.0	36063	1997 EQ ₁₁	1999 10 21.8	01 43.87 -04 43.8 19.3	-0.68 - 7.9	3.8/16.5	30085
1998 HH ₁₂₅	1999 10 19.8	01 36.60 -01 59.1 18.5	-0.95 - 7.6	4.6/16.1	32330	1998 HZ ₁₁₄	1999 10 21.8	01 43.95 -08 40.4 18.0	-0.93 - 4.6	7.2/16.2	32329

4359 T-3	1999 10 21.8	01 43.97 +02 19.6 18.2	-0.91 - 2.7	3.1/19.6	27929	1981 EG ₈	1999 10 23.6	01 50.83 +16 34.4 20.8	-0.91 - 5.1	1.5/25.1	26916
1998 KX ₄₇	1999 10 21.8	01 44.02 -00 18.3 17.5	-1.02 - 2.7	4.2/19.0	36084	(11504)	1999 10 23.6	01 50.84 +25 15.6 15.9	-1.09 - 2.0	6.6/27.0	35834
1982 UW ₁	1999 10 21.8	01 44.11 +07 59.5 16.1	-0.71 - 7.8	0.9/20.9	36063	1981 EM ₇	1999 10 23.6	01 50.89 +13 30.4 16.6	-0.89 - 7.6	0.8/24.3	32298
1998 HB ₄₅	1999 10 21.9	01 44.45 +13 13.0 17.5	-1.12 - 3.6	1.0/22.6	32521	1994 PN ₅	1999 10 23.6	01 50.94 +07 09.5 17.8	-0.84 - 5.3	1.5/22.4	29920
1996 AX	1999 10 21.9	01 44.46 +01 27.6 17.5	-0.83 - 4.2	3.2/19.2	26748	4220 T-1	1999 10 23.6	01 50.98 +03 37.8 17.0	-0.74 - 7.0	2.4/21.2	30466
1171 T-2	1999 10 21.9	01 44.62 +18 34.8 18.2	-0.91 - 2.3	2.4/24.1	31269	1990 DU ₄	1999 10 23.6	01 51.01 +09 24.8 16.3	-0.94 - 6.9	0.9/23.1	29096
(11541)	1999 10 22.0	01 44.66 +18 53.7 16.1	-0.89 - 9.9	3.6/24.7	35843	1997 HS ₃	1999 10 23.6	01 51.04 +06 42.3 19.5	-0.80 - 5.0	1.5/22.3	30474
1993 OR ₉	1999 10 22.0	01 44.79 +07 25.7 18.0	-0.80 - 4.9	1.1/21.0	32306	1995 UB ₁₅	1999 10 23.6	01 51.07 +13 11.9 19.1	-0.96 - 3.9	0.6/24.2	32749
1986 WZ	1999 10 22.1	01 45.09 +14 27.4 16.3	-0.85 - 5.7	1.4/23.2	20924	1989 SC	1999 10 23.6	01 51.10 +19 25.4 16.9	-1.21 - 3.4	3.5/25.8	36064
9509 P-L	1999 10 22.3	01 45.74 +04 10.0 17.2	-0.81 - 9.8	2.6/20.1	32092	1998 KM ₄₆	1999 10 23.6	01 51.12 +07 35.3 16.7	-0.90 - 8.9	1.6/22.5	32335
1997 AM ₄	1999 10 22.3	01 45.98 -10 45.2 17.9	-0.84 - 4.8	7.2/15.8	36075	1981 EL ₂₃	1999 10 23.7	01 51.08 +06 30.9 18.1	-0.88 - 6.2	2.0/22.2	26919
(9071)	1999 10 22.3	01 45.99 +09 02.6 17.7	-0.80 - 5.0	0.6/21.8	32190	(9077)	1999 10 23.7	01 51.32 -03 45.2 15.8	-0.73 - 9.2	6.1/18.4	32191
4854 T-1	1999 10 22.3	01 46.10 +10 00.9 17.4	-0.90 - 1.6	0.3/22.1	28620	2814 P-L	1999 10 23.7	01 51.34 +15 58.4 19.9	-0.83 - 3.0	1.3/25.3	33324
1995 WE ₂₇	1999 10 22.4	01 46.16 +32 56.2 18.2	-0.88 - 4.2	6.3/29.6	32749	1998 KW ₅₄	1999 10 23.7	01 51.44 +01 46.3 16.8	-0.71 - 9.4	3.2/20.5	32283
1990 QX ₅	1999 10 22.4	01 46.16 +33 05.9 16.1	-1.05 + 1.6	10.6/28.1	25649	1995 VU ₁	1999 10 23.7	01 51.46 -04 26.4 16.7	-0.94 - 1.6	5.2/19.7	36073
(8689)	1999 10 22.4	01 46.21 +07 11.3 16.7	-1.00 - 4.5	1.8/21.4	31684	1998 HM ₂₆	1999 10 23.8	01 51.61 +06 01.1 16.9	-0.83 - 7.3	2.3/22.2	32327
1998 HR ₁₈	1999 10 22.4	01 46.25 +15 50.6 19.3	-1.04 - 4.5	1.8/23.8	32326	1995 VJ	1999 10 23.8	01 51.63 +10 13.4 17.7	-0.95 - 3.7	0.5/23.5	30473
1997 BU ₂	1999 10 22.4	01 46.32 +00 08.8 19.6	-0.89 - 4.9	3.4/19.3	32250	1996 FM ₅	1999 10 23.9	01 52.25 +16 56.2 16.9	-0.83 - 1.8	1.6/25.4	32751
1995 UV ₈	1999 10 22.4	01 46.38 +06 46.7 15.4	-0.92 - 3.5	1.9/21.3	26746	1988 EY ₁	1999 10 24.0	01 52.28 +19 46.8 16.8	-1.04 - 1.1	2.8/26.0	36064
1998 KU ₅₅	1999 10 22.4	01 46.42 -03 58.9 16.0	-0.80 - 6.1	6.4/17.7	36084	6193 P-L	1999 10 24.0	01 52.38 +04 54.2 19.1	-0.79 - 9.9	2.4/21.8	29321
1981 ES ₁₆	1999 10 22.5	01 46.53 +15 54.1 19.8	-0.93 - 4.9	1.6/23.9	29093	(9227)	1999 10 24.0	01 52.42 +16 08.8 17.3	-0.81 - 3.8	1.4/25.4	32430
1998 DD ₁₈	1999 10 22.5	01 46.57 -00 21.5 18.3	-0.96 - 6.1	5.0/19.3	32753	(9467)	1999 10 24.1	01 52.91 +09 16.9 17.3	-0.77 - 6.0	0.7/23.5	32645
1997 BF ₃	1999 10 22.5	01 46.95 -01 32.4 16.5	-0.80 - 5.5	6.4/18.7	36076	1993 FW ₃₇	1999 10 24.1	01 52.92 +03 32.3 17.9	-0.82 - 8.0	2.6/21.6	32306
1982 JD ₂	1999 10 22.6	01 46.99 +03 31.7 18.1	-1.04 - 5.3	3.0/20.6	36063	1996 YG ₁	1999 10 24.2	01 52.95 -05 34.4 18.4	-1.00 - 1.3	6.2/20.0	36075
2054 P-L	1999 10 22.6	01 47.14 +13 33.5 17.8	-0.96 - 7.1	0.9/23.4	30285	1994 PB ₁₄	1999 10 24.2	01 53.05 +06 08.7 17.1	-0.83 - 6.1	1.8/22.6	29663
1998 HH ₅₅	1999 10 22.6	01 47.30 +11 39.5 18.2	-0.98 - 6.0	0.2/22.9	35983	1992 EV ₃₂	1999 10 24.2	01 53.12 +11 30.0 17.3	-0.82 - 6.2	0.0/24.2	29916
1990 RD ₆	1999 10 22.7	01 47.32 +27 24.8 17.7	-1.10 - 2.0	5.9/27.2	36065	1998 KG ₂	1999 10 24.2	01 53.32 +27 09.8 19.3	-0.94 - 7.9	4.7/29.4	32275
1994 PO	1999 10 22.7	01 47.42 +30 41.4 17.4	-1.04 - 3.4	6.4/28.4	36071	1997 GT ₃₂	1999 10 24.3	01 53.34 +13 08.1 16.8	-0.85 - 4.2	0.5/24.7	36077
(8807)	1999 10 22.7	01 47.44 +06 05.2 16.5	-0.97 - 3.9	2.2/21.4	31900	(8669)	1999 10 24.3	01 53.67 +04 27.7 16.7	-0.90 - 7.4	2.8/22.2	31679
1997 FB ₄	1999 10 22.7	01 47.59 +14 21.6 18.2	-0.90 - 1.9	1.0/23.6	36077	1973 AW ₃	1999 10 24.4	01 53.72 +04 04.3 15.9	-0.89 - 2.7	2.5/22.4	36061
1988 XB ₂	1999 10 22.8	01 47.64 +15 06.0 16.0	-0.96 - 3.1	1.9/23.9	36064	1173 T-2	1999 10 24.4	01 53.85 +19 47.3 18.7	-0.93 - 1.8	2.7/26.5	22701
1996 CK ₂	1999 10 22.8	01 47.70 +16 26.7 17.1	-0.89 - 1.8	1.6/24.2	36074	1971 UN ₁	1999 10 24.4	01 53.89 +10 43.7 15.9	-0.76 - 4.8	0.4/24.2	27453
1981 DG ₂	1999 10 22.8	01 47.97 +14 27.8 16.7	-0.75 - 8.2	1.1/24.0	36062	1998 KW ₄	1999 10 24.4	01 53.98 +12 02.3 19.1	-0.97 - 7.2	0.1/24.6	32031
1990 OS ₄	1999 10 22.8	01 48.02 +31 11.3 17.1	-0.96 - 7.0	6.9/29.5	36065	1996 YF	1999 10 24.4	01 54.05 +02 46.2 16.1	-1.04 - 2.9	4.1/22.2	32312
1998 HH ₁₄₇	1999 10 22.9	01 48.12 -00 00.5 18.4	-0.96 - 6.4	4.4/19.7	32755	(9394)	1999 10 24.4	01 54.07 +15 22.3 17.4	-0.90 - 4.1	1.2/25.5	32628
2239 T-3	1999 10 22.9	01 48.16 +18 48.3 17.9	-0.93 - 4.2	2.5/25.1	36124	1998 FF ₅₇	1999 10 24.5	01 54.31 +09 30.8 18.4	-1.02 - 6.3	0.9/23.9	36079
1992 PT ₁	1999 10 23.0	01 48.40 +00 22.7 19.5	-1.02 - 6.5	4.2/20.0	31382	(9100)	1999 10 24.5	01 54.44 -00 12.8 17.3	-0.95 - 3.9	4.0/21.3	32196
1998 QZ ₈₅	1999 10 23.0	01 48.40 +55 49.9 19.0	-1.40 - 0.6	10.8/06.6	35712	(8897)	1999 10 24.7	01 55.26 +08 39.7 16.6	-0.88 - 8.5	1.3/23.8	31922
(8837)	1999 10 23.0	01 48.51 +04 12.8 18.2	-0.98 - 7.0	2.6/21.0	31908	1998 HV ₁₀₁	1999 10 24.8	01 55.28 +19 19.7 18.9	-0.92 - 6.3	2.7/27.1	32522
(11649)	1999 10 23.1	01 48.80 +19 25.8 16.1	-1.05 - 3.1	3.8/25.3	35871	1978 UJ ₅	1999 10 24.8	01 55.51 +15 22.6 17.3	-0.97 - 5.1	1.6/25.9	28086
1992 SY ₁₇	1999 10 23.1	01 48.83 +19 55.9 16.4	-0.97 - 11.7	3.9/27.0	32745	5078 T-3	1999 10 24.9	01 55.71 +01 10.2 17.0	-0.82 - 1.9	3.2/22.1	30294
1981 EH ₁₉	1999 10 23.1	01 48.89 +14 03.2 18.4	-1.07 - 4.5	1.1/23.9	36062	1998 HY ₃₁	1999 10 24.9	01 55.82 +14 20.5 18.1	-1.03 - 6.8	1.0/25.7	32327
1988 CX ₄	1999 10 23.1	01 49.10 +07 11.1 18.3	-0.81 - 7.9	1.4/21.9	15889	1998 KH ₃₄	1999 10 24.9	01 56.05 +03 42.5 18.8	-0.97 - 5.6	3.0/22.7	32334
(9093)	1999 10 23.2	01 49.26 +19 28.7 16.7	-0.84 - 10.5	2.9/26.1	32195	4266 T-1	1999 10 25.0	01 56.45 +08 14.9 20.1	-0.94 - 5.4	1.2/24.1	32092
1998 OX ₅	1999 10 23.3	01 49.69 +29 19.7 17.6	-0.93 - 5.5	5.8/29.0	32489	1993 FZ ₂₁	1999 10 25.1	01 56.62 +14 34.8 18.1	-0.96 - 4.1	0.9/25.9	36069
1998 HK ₄₅	1999 10 23.4	01 49.99 +18 20.3 17.2	-1.14 - 1.6	2.8/25.1	36082	1997 CK ₂₉	1999 10 25.1	01 56.68 +14 03.8 16.2	-1.01 - 4.9	1.0/25.7	29948
(8738)	1999 10 23.4	01 50.00 +10 29.5 15.5	-0.85 - 4.6	0.4/23.2	31696	1989 TW	1999 10 25.1	01 56.70 +21 50.8 16.2	-0.97 - 6.4	4.8/28.2	36065
1310 T-2	1999 10 23.5	01 50.50 +10 06.1 16.5	-0.92 - 3.3	0.6/23.2	29321	5727 T-3	1999 10 25.1	01 56.81 -02 47.3 18.9	-0.94 - 1.5	4.6/21.5	34000
1981 EA ₃₂	1999 10 23.5	01 50.53 +18 56.1 18.5	-0.77 - 8.0	2.6/26.1	26921	1990 KR	1999 10 25.1	01 56.83 +02 57.0 18.3	-0.86 - 7.9	3.0/22.4	32301
(8604)	1999 10 23.5	01 50.58 +02 21.3 15.2	-0.77 - 6.7	4.7/20.7	31664	1991 JD	1999 10 25.2	01 56.85 +11 12.4 17.6	-1.05 - 4.3	0.3/25.0	36066
1996 XE ₃₁	1999 10 23.6	01 50.71 +27 00.6 17.9	-0.99 - 6.6	5.2/28.5	32751	(8925)	1999 10 25.2	01 57.13 +13 21.1 17.1	-1.02 - 6.3	0.5/25.7	31929

2091 P-L	1999 10 25.4	01 57.78 +16 20.7 17.4	-0.93 - 7.1	1.9/26.7	32091
3105 T-1	1999 10 25.5	01 57.91 +15 06.0 18.0	-0.98 - 4.9	1.1/26.3	32343
1991 FN ₂	1999 10 25.5	01 58.15 +07 16.2 17.6	-0.78 - 5.0	1.5/24.1	32513
1992 OM ₆	1999 10 25.5	01 58.27 +06 41.2 17.8	-1.00 - 6.6	2.3/24.1	34498
1998 DB ₃₄	1999 10 25.5	01 58.33 +05 11.3 18.5	-0.98 - 5.8	2.3/23.7	36078
1998 FL ₄₉	1999 10 25.6	01 58.52 +15 00.1 17.2	-1.09 - 5.1	1.2/26.4	32065
1997 AG ₁₃	1999 10 25.6	01 58.75 +04 37.8 17.2	-1.04 - 3.2	2.9/23.8	35936
(11507)	1999 10 25.7	01 58.70 +26 44.2 16.4	-0.84 -11.7	6.1/31.1	35835
1998 HG ₁₂₅	1999 10 25.7	01 58.74 -01 16.2 17.7	-0.82 - 8.9	4.7/21.4	35990
1988 TS ₁	1999 10 25.7	01 58.98 +10 25.2 16.4	-0.76 - 4.8	0.7/25.3	25212
1980 FZ ₂	1999 10 25.8	01 59.19 -00 51.3 18.0	-0.70 - 7.0	3.7/21.7	36062
1989 WS ₂	1999 10 25.8	01 59.34 -03 04.8 16.1	-0.97 - 3.6	7.1/21.7	36065
1995 XK ₁	1999 10 25.9	01 59.61 +30 59.4 16.9	-0.86 - 8.0	7.9/01.4	35297
1994 PC ₂₉	1999 10 25.9	01 59.68 -00 40.4 18.1	-0.83 - 4.8	4.4/22.3	36071
(9339)	1999 10 26.0	01 59.96 +11 17.0 18.5	-0.74 - 4.1	0.2/25.8	32615
(8935)	1999 10 26.1	02 00.49 +07 10.5 16.4	-0.87 - 7.8	2.5/24.6	31931
1992 YJ ₂	1999 10 26.1	02 00.51 -01 05.9 16.3	-0.97 - 1.8	6.1/22.8	32305
1998 OP ₁₂	1999 10 26.1	02 00.62 +10 30.7 19.8	-0.76 - 4.0	0.4/25.7	32757
1998 JQ ₂	1999 10 26.2	02 00.73 +00 14.5 17.5	-0.83 - 6.1	4.6/22.7	35708
1997 EQ ₃₀	1999 10 26.3	02 01.08 -05 04.3 18.5	-0.86 - 3.2	5.3/21.6	36077
1979 QM ₁	1999 10 26.3	02 01.22 +11 45.8 16.8	-0.84 - 4.9	0.2/26.2	32298
(9192)	1999 10 26.3	02 01.42 +22 29.4 17.6	-0.93 - 4.9	3.2/29.3	32422
(9029)	1999 10 26.4	02 01.50 -16 06.4 18.3	-0.88 - 2.6	9.0/18.5	32180
1991 RQ ₄	1999 10 26.4	02 01.54 +19 10.5 17.4	-0.98 - 4.5	2.7/28.3	29915
1997 CP ₁₃	1999 10 26.4	02 01.72 +14 31.1 18.1	-0.98 - 5.0	0.8/27.0	32313
(8885)	1999 10 26.5	02 01.81 -04 12.1 16.9	-0.86 - 8.5	6.5/21.2	31919
1993 KT ₁	1999 10 26.5	02 01.95 -29 10.6 16.6	-1.52 + 8.8	19.6/20.7	36069
1981 EQ ₃₀	1999 10 26.6	02 02.12 +25 44.4 17.3	-1.21 - 0.4	5.5/29.8	36063
1992 EM ₈	1999 10 26.6	02 02.21 -00 08.0 17.2	-0.85 - 3.5	4.9/23.2	36067
1998 LA	1999 10 26.6	02 02.38 +04 26.1 19.1	-0.89 - 4.6	2.5/24.5	32755
(9004)	1999 10 26.6	02 02.46 -00 01.1 17.2	-0.69 - 8.5	3.5/22.5	32175
1998 FF ₉	1999 10 26.6	02 02.52 +06 46.8 17.1	-0.99 - 3.6	2.4/25.2	32063
1994 PK ₅	1999 10 26.8	02 02.91 +26 47.3 16.9	-1.00 - 3.2	5.0/30.7	36071
(8671)	1999 10 26.8	02 03.08 +18 00.7 16.9	-0.97 - 6.6	2.3/28.5	31680
3164 T-3	1999 10 26.8	02 03.27 +06 04.8 16.6	-0.76 -10.6	2.4/24.7	36124
1997 AV	1999 10 27.0	02 03.72 +20 19.0 16.8	-1.05 - 4.4	3.5/29.1	35934
1995 UV ₁₆	1999 10 27.0	02 03.96 +05 21.4 18.4	-0.96 - 3.1	2.6/25.2	32309
4306 T-2	1999 10 27.0	02 04.01 +17 40.7 16.7	-1.19 - 0.6	2.2/28.2	36124
1992 WC ₉	1999 10 27.1	02 04.39 +06 50.7 16.5	-1.07 - 1.6	2.5/25.8	36068
1991 UA	1999 10 27.2	02 04.44 +15 06.1 16.5	-0.70 - 3.1	0.8/27.9	32514
1981 EN ₁₃	1999 10 27.2	02 04.75 +18 29.9 16.8	-1.04 - 6.8	2.3/28.9	27303
1976 DC	1999 10 27.3	02 04.81 +48 46.7 19.8	-1.49 - 1.5	11.8/05.7	29092
1997 AO ₁₇	1999 10 27.3	02 04.81 -04 13.0 19.3	-1.01 - 3.3	6.4/22.8	30786
1994 EQ ₁	1999 10 27.3	02 04.90 +08 01.0 16.3	-0.97 - 7.1	2.0/26.0	29662
1989 CP ₂	1999 10 27.3	02 05.18 +24 44.1 18.5	-0.96 - 6.2	3.9/31.0	32219
1998 MR ₁₆	1999 10 27.4	02 05.32 +27 32.8 20.1	-0.87 - 3.9	4.8/31.7	32973
1988 PW ₂	1999 10 27.5	02 05.72 +03 02.6 18.0	-0.75 - 6.4	2.9/24.6	33475
1992 UY	1999 10 27.5	02 05.98 +04 53.1 16.0	-0.79 - 9.1	3.8/25.0	36068
1990 VF ₈	1999 10 27.5	02 06.02 +15 13.4 15.9	-1.01 - 0.6	1.0/28.2	36066
1131 T-2	1999 10 27.6	02 05.98 +16 01.3 20.0	-1.01 - 5.2	1.2/28.5	36123
1998 HG ₁₂₁	1999 10 27.6	02 06.05 +00 57.7 16.5	-0.91 - 5.0	5.1/24.4	36083

1992 DH ₃	1999 10 27.6	02 06.13 +21 19.8 19.6	-0.89 - 3.5	2.5/30.0	30471
1988 VY ₂	1999 10 27.7	02 06.56 +01 52.9 14.8	-0.86 - 0.7	3.5/25.1	36064
1995 QZ ₄	1999 10 27.7	02 06.77 +22 14.0 20.4	-1.07 - 6.1	3.4/30.4	25733
1998 HO ₃₃	1999 10 27.7	02 06.80 +10 48.1 16.2	-0.84 -20.9	0.8/27.0	36082
1981 DX ₂	1999 10 27.8	02 07.18 +22 28.6 18.9	-0.82 - 5.4	2.8/30.8	26755
1992 UU ₅	1999 10 27.9	02 07.30 +08 12.2 15.7	-0.93 - 2.3	2.4/26.8	29661
1991 RA ₄	1999 10 27.9	02 07.33 +12 53.6 18.2	-0.90 - 7.6	0.0/27.9	35062
1997 CK ₁	1999 10 27.9	02 07.50 +06 45.6 19.1	-0.91 - 4.2	1.9/26.3	32251
1997 GP ₃₃	1999 10 27.9	02 07.55 +10 32.5 18.1	-0.86 - 5.7	0.9/27.3	29935
1991 VE ₃	1999 10 28.1	02 08.12 +02 34.3 15.6	-0.78 - 3.8	5.3/25.2	36067
1995 WG ₂	1999 10 28.1	02 08.28 +22 17.1 16.5	-0.89 - 7.5	3.1/31.0	34860
1998 GF	1999 10 28.2	02 08.73 +12 05.3 16.5	-1.74 + 8.1	0.4/28.2	32006
1990 ES ₄	1999 10 28.3	02 08.84 +14 41.3 18.5	-0.97 - 5.4	0.6/28.8	32221
1997 CC ₂₀	1999 10 28.3	02 09.10 +06 37.9 18.7	-0.85 - 4.5	2.0/26.6	32520
1981 EE ₇	1999 10 28.4	02 09.05 +23 40.3 18.9	-1.11 - 5.3	3.9/31.3	31708
1998 JL ₄	1999 10 28.4	02 09.08 +08 40.4 20.3	-0.98 - 6.2	1.6/27.2	32755
1981 DN ₁	1999 10 28.4	02 09.42 +32 45.5 16.5	-1.02 - 4.5	8.6/03.5	35906
1991 VD ₁	1999 10 28.4	02 09.46 +14 20.9 15.9	-1.21 + 2.9	0.5/28.7	36067
1992 BT ₂	1999 10 28.5	02 09.43 -08 57.5 16.1	-0.82 - 6.4	8.2/21.4	36067
2155 P-L	1999 10 28.5	02 09.69 +14 31.7 17.8	-0.82 - 4.3	0.5/29.0	36119
1992 SB ₁₃	1999 10 28.5	02 09.81 +11 37.4 15.9	-1.07 - 3.7	0.6/28.2	28848
1998 FY ₃₅	1999 10 28.6	02 09.85 +17 13.2 17.7	-1.18 - 3.3	1.7/29.6	36079
1992 ES ₆	1999 10 28.6	02 10.07 -00 32.0 16.7	-0.84 - 3.4	5.9/24.9	36067
(9226)	1999 10 28.7	02 10.21 +07 49.9 16.8	-0.84 - 4.2	1.8/27.3	32429
1998 HQ ₁₀₀	1999 10 28.7	02 10.22 +09 15.7 17.5	-1.07 - 4.6	1.6/27.7	32021
1991 PL ₁₃	1999 10 28.7	02 10.64 +15 35.0 17.1	-0.98 - 5.7	1.0/29.5	32303
(8904)	1999 10 28.8	02 10.69 +07 57.9 14.9	-0.89 - 1.6	2.5/27.6	31924
1994 CJ ₁₆	1999 10 28.9	02 11.30 +04 29.6 17.4	-0.99 - 5.0	3.3/26.7	35690
1996 BV ₁	1999 10 29.0	02 11.45 +26 53.8 17.9	-1.05 - 2.4	4.8/32.0	36073
1994 UJ ₂	1999 10 29.0	02 11.53 +03 36.5 16.0	-0.97 + 1.4	3.7/27.0	35692
1995 WM ₃	1999 10 29.0	02 11.62 +11 43.1 18.2	-0.93 - 4.1	0.6/28.7	32054
1978 RT ₆	1999 10 29.1	02 12.07 +05 18.9 18.5	-0.99 - 6.6	3.1/27.0	32041
(11511)	1999 10 29.2	02 12.40 +35 16.4 15.9	-0.95 - 5.5	8.9/05.1	35836
1989 CR	1999 10 29.2	02 12.42 -24 12.4 19.0	-0.94 - 1.4	10.6/19.0	32219
1985 RP	1999 10 29.2	02 12.51 -00 39.5 16.0	-0.70 - 9.1	7.2/24.5	36063
1994 CO ₁	1999 10 29.2	02 12.58 +09 54.8 18.6	-0.99 - 6.3	1.3/28.4	32307
(8928)	1999 10 29.2	02 12.60 +10 24.6 16.1	-1.01 - 2.4	1.3/28.6	31929
1993 TN ₂₄	1999 10 29.4	02 12.91 +10 44.3 18.4	-0.74 - 3.8	0.7/28.7	32935
1983 TX	1999 10 29.4	02 12.99 +06 54.6 16.1	-0.74 - 7.6	2.2/27.4	27931
1981 EO	1999 10 29.5	02 13.46 +31 57.3 18.4	-1.14 - 1.6	5.8/03.2	27302
1998 FO ₆₈	1999 10 29.5	02 13.52 +16 33.4 17.3	-1.04 - 5.1	1.2/30.4	32323
2613 P-L	1999 10 29.5	02 13.60 +10 33.0 18.9	-0.76 - 5.7	1.0/28.7	32785
1977 QF ₁	1999 10 29.6	02 13.74 +30 12.8 15.7	-1.17 - 0.2	6.7/02.6	36061
1993 FX ₄₀	1999 10 29.6	02 13.95 +01 49.8 18.0	-0.81 - 7.7	3.8/26.1	29317
1998 DZ ₁₃	1999 10 29.6	02 14.00 +10 44.6 18.7	-1.05 - 5.0	1.1/29.0	32315
1981 RF ₂	1999 10 29.7	02 14.37 +26 21.3 16.9	-0.79 - 6.5	3.5/02.8	36063
1998 FQ ₁₂₁	1999 10 29.7	02 14.40 +13 41.2 17.0	-1.05 - 5.5	0.1/29.8	35707
3197 T-3	1999 10 29.8	02 14.90 +10 36.0 16.1	-0.82 - 3.0	1.1/29.1	32344
1995 UQ ₁₆	1999 10 29.9	02 14.90 +07 13.4 17.5	-0.95 - 3.5	2.2/28.3	32309
1998 BK ₂₆	1999 10 29.9	02 14.92 +04 46.0 18.3	-1.00 - 6.5	3.5/27.6	32314
(8670)	1999 10 29.9	02 15.13 +16 07.9 16.8	-1.02 - 5.3	0.9/30.6	31680

1993 FV ₈₀	1999 10 29.9	02 15.25 +12 46.6 17.3	-0.94 - 3.5	0.3/29.8	31962
1997 AJ ₁	1999 10 30.0	02 15.30 +18 38.9 17.5	-1.06 - 4.5	1.9/31.3	32519
1981 EK ₃₅	1999 10 30.0	02 15.38 +14 48.1 17.5	-0.83 - 4.4	0.4/30.4	30287
1230 T-1	1999 10 30.0	02 15.45 +17 16.0 18.3	-1.08 - 5.1	1.4/31.0	32092
1997 CR ₂₁	1999 10 30.1	02 15.92 +10 12.5 18.4	-0.97 - 4.9	1.2/29.3	29667
1975 TU ₃	1999 10 30.1	02 16.05 +10 52.5 15.9	-1.15 - 0.2	1.2/29.6	36061
1998 FB ₄₉	1999 10 30.2	02 16.03 +17 31.2 17.3	-1.11 - 5.3	1.7/31.2	32065
1990 KD	1999 10 30.3	02 16.43 -07 25.0 18.5	-0.96 - 1.9	7.1/25.3	36065
1978 XW	1999 10 30.3	02 16.75 +10 49.1 17.1	-0.83 - 4.0	1.0/29.6	32509
1998 KP ₅₄	1999 10 30.3	02 16.76 -08 11.1 17.4	-0.91 - 0.5	8.1/25.3	36084
1993 XQ ₁	1999 10 30.3	02 16.79 +12 47.2 16.3	-1.02 - 6.7	0.4/30.1	32051
1998 HO ₁₀₂	1999 10 30.5	02 17.18 +13 40.2 19.2	-1.01 - 6.9	0.0/30.5	35988
1980 TK ₆	1999 10 30.5	02 17.24 +15 28.1 16.2	-0.89 - 8.7	0.7/31.0	32042
(9132)	1999 10 30.5	02 17.50 +09 54.1 17.5	-0.78 - 3.8	1.1/29.5	32204
1993 TL ₁₈	1999 10 30.6	02 18.00 +13 14.8 17.1	-0.80 - 2.8	0.2/30.6	35689
1997 FZ ₃	1999 10 30.7	02 18.05 +12 49.5 17.4	-0.83 - 4.8	0.3/30.5	30461
1996 YR	1999 10 30.7	02 18.06 -00 39.1 17.3	-0.97 - 1.4	7.3/27.3	35698
1998 HH ₈₀	1999 10 30.7	02 18.33 +17 33.4 15.7	-1.11 - 0.6	1.9/01.0	36082
1977 JA	1999 10 30.9	02 18.83 +27 34.8 19.8	-1.03 -12.1	4.5/04.4	31943
1997 BF ₁	1999 10 31.0	02 19.42 +22 50.6 19.4	-1.08 - 4.8	3.3/02.3	30690
1996 YO ₁	1999 10 31.1	02 19.63 +16 04.2 18.0	-0.98 - 5.2	0.7/31.7	32312
1981 KJ	1999 10 31.1	02 19.66 +14 30.2 16.7	-0.93 - 0.4	0.2/31.3	30893
1995 OD	1999 10 31.2	02 19.95 +16 16.8 18.0	-1.04 - 5.0	1.0/01.0	32052
1996 XG ₁₉	1999 10 31.2	02 20.33 +08 27.0 17.1	-1.02 - 6.0	2.3/29.8	28873
4112 P-L	1999 10 31.2	02 20.37 +16 41.7 17.6	-0.93 - 4.2	1.0/32.0	36120
1474 T-2	1999 10 31.3	02 20.41 +14 37.4 17.7	-1.07 - 6.9	10.9/21.0	32092
1998 HL ₈₀	1999 10 31.3	02 20.48 +14 20.7 18.7	-1.00 - 7.0	0.1/31.4	32016
1997 AM ₅	1999 10 31.4	02 20.82 +16 09.1 16.8	-1.08 - 3.7	0.8/31.9	32312
1991 VE ₂	1999 10 31.5	02 21.13 +18 46.3 15.8	-0.85 -11.9	1.8/02.1	36067
1991 PW ₁₁	1999 10 31.5	02 21.30 +07 55.2 17.6	-0.93 - 7.2	2.3/29.8	32743
2806 P-L	1999 10 31.5	02 21.53 +21 03.0 19.3	-1.11 - 1.1	3.1/02.2	25969
1998 HJ ₁₂₄	1999 10 31.6	02 21.60 +06 04.7 19.5	-0.94 - 6.4	2.6/29.5	32330
1998 MF ₃₂	1999 10 31.7	02 22.16 -00 53.0 16.6	-0.88 - 2.4	5.1/28.0	35709
3092 P-L	1999 10 31.8	02 22.25 +26 11.2 18.6	-1.01 - 5.6	4.2/04.2	17974
1997 JE ₁₀	1999 10 31.8	02 22.28 +02 32.1 16.9	-0.86 - 1.5	3.6/29.0	30903
1991 VB ₅	1999 10 31.8	02 22.41 +03 52.2 16.2	-0.78 -11.9	4.1/28.4	35684
1998 HH ₁₄₈	1999 10 31.8	02 22.42 +15 02.6 19.3	-1.03 - 4.8	8.9/21.0	32331
(11475)	1999 10 31.8	02 22.58 +10 29.4 16.0	-1.16 - 0.4	1.6/31.1	35826
1994 CM ₁₁	1999 10 31.8	02 22.72 +14 05.9 18.2	-1.02 - 4.4	8.6/21.0	36070
1998 HE ₃₈	1999 10 31.9	02 22.75 +16 04.4 17.2	-1.02 - 6.8	0.7/01.4	32328
1995 SM ₃	1999 11 01.0	02 23.06 +26 22.7 17.4	-1.14 - 2.1	4.9/03.8	29664
1992 SQ ₂₃	1999 11 01.0	02 23.13 +14 44.9 15.8	-0.96 -11.4	0.2/01.2	36068
(9446)	1999 11 01.0	02 23.14 +12 26.4 18.3	-0.76 - 4.0	0.5/31.5	32640
1995 UP ₇	1999 11 01.0	02 23.29 +07 31.3 15.7	-0.86 - 6.7	2.7/30.1	31008
1992 RH ₇	1999 11 01.1	02 23.53 +14 44.8 16.6	-1.12 - 2.5	0.2/01.2	30290
1995 OA	1999 11 01.1	02 23.81 +24 11.0 16.4	-1.01 - 6.8	4.3/04.0	36072
1995 SX ₂	1999 11 01.2	02 24.00 +13 51.0 16.8	-1.05 - 3.0	0.2/01.1	32052
1981 EQ ₇	1999 11 01.3	02 24.26 +27 14.0 19.3	-0.89 - 4.0	4.0/04.9	26916
5332 T-2	1999 11 01.3	02 24.27 +19 43.6 18.4	-0.81 - 7.1	1.7/02.9	20517
1996 YY	1999 11 01.3	02 24.36 +28 42.5 18.0	-1.00 - 5.4	4.3/05.4	32312
(9109)	1999 11 01.3	02 24.47 +01 31.9 16.5	-0.91 - 6.2	5.6/28.8	32198

1998 NF	1999 11 01.3	02 24.50 +10 40.2 18.5	-0.99 - 3.9	1.3/31.5	33078
1997 GH ₂₇	1999 11 01.3	02 24.55 +16 05.7 17.2	-1.02 - 3.4	0.7/01.8	32314
1981 EV ₁₈	1999 11 01.3	02 24.58 +13 04.1 18.7	-0.79 - 5.1	0.4/01.0	29940
(9347)	1999 11 01.4	02 24.59 +09 25.8 17.3	-0.97 - 4.3	1.7/31.2	32617
1998 FL ₆₆	1999 11 01.4	02 24.72 +14 48.0 17.2	-1.06 - 4.9	0.2/01.5	35706
1998 HB ₉₉	1999 11 01.4	02 24.75 +11 01.0 19.1	-0.98 - 7.7	1.3/31.5	34917
(8812)	1999 11 01.4	02 24.80 +15 25.7 15.9	-1.05 - 1.2	0.5/01.7	31902
1998 HQ ₁₁₇	1999 11 01.4	02 24.86 +05 16.0 19.1	-1.04 - 5.2	3.5/30.2	32329
3283 T-3	1999 11 01.5	02 25.05 +09 53.6 18.9	-0.87 - 5.3	1.6/31.3	36125
3033 T-1	1999 11 01.5	02 25.21 +20 44.7 16.9	-1.09 - 2.7	2.5/03.0	32343
1102 T-3	1999 11 01.5	02 25.23 +22 42.3 18.1	-0.80 - 6.2	2.4/04.0	35480
1981 EN ₇	1999 11 01.5	02 25.31 +28 57.2 17.4	-0.95 - 3.0	4.9/05.4	36062
1993 OK ₉	1999 11 01.5	02 25.32 +09 39.2 17.5	-0.83 - 4.1	1.5/31.3	32746
(9327)	1999 11 01.5	02 25.44 +08 09.8 17.6	-0.84 - 3.2	1.8/31.0	32612
1995 RK	1999 11 01.5	02 25.45 +19 04.0 17.8	-0.99 - 7.2	1.8/02.9	32052
1994 PA ₄	1999 11 01.6	02 25.49 +10 23.6 18.7	-0.86 - 5.5	1.5/31.5	31239
1991 PL ₅	1999 11 01.6	02 25.60 +16 33.7 18.0	-1.02 - 5.1	0.8/02.2	32303
1998 QN ₁₈	1999 11 01.7	02 25.78 +28 52.4 17.8	-0.93 - 2.7	4.3/05.5	35710
1997 JF ₁₂	1999 11 01.7	02 25.86 +13 53.4 19.0	-0.80 - 4.2	0.2/01.6	32753
1998 HQ ₂₃	1999 11 01.7	02 25.88 +21 28.4 18.1	-0.95 -14.4	2.5/04.1	32327
1996 VN ₆	1999 11 01.7	02 25.91 +38 16.4 17.6	-1.29 0.0	9.7/07.5	32245
3086 T-2	1999 11 01.7	02 26.16 +11 28.1 17.0	-0.95 - 2.8	1.1/01.1	35672
1990 SN ₈	1999 11 01.8	02 26.43 +11 59.8 17.4	-0.94 - 3.2	0.9/01.2	29611
3123 T-3	1999 11 01.8	02 26.46 +08 45.6 18.3	-0.75 - 5.5	1.7/31.2	24238
1994 RN ₇	1999 11 01.9	02 26.56 +19 06.9 18.6	-0.92 - 3.7	1.6/03.1	24233
1981 EO ₃₈	1999 11 01.9	02 26.68 +04 22.3 17.2	-0.84 - 8.8	3.8/29.9	32213
1998 ER ₁₄	1999 11 01.9	02 26.70 +06 37.7 17.1	-1.12 - 3.0	3.6/31.2	32316
1980 FH ₅	1999 11 01.9	02 26.86 +33 32.7 16.3	-1.21 + 1.4	8.1/05.8	36062
3045 P-L	1999 11 01.9	02 26.93 +34 48.4 16.8	-1.13 - 2.8	7.2/07.4	36120
1997 AD ₁₃	1999 11 02.0	02 27.00 -01 04.8 17.7	-0.90 - 2.6	4.5/29.2	36076
1988 RS ₃	1999 11 02.0	02 27.15 +09 37.4 16.4	-0.89 - 5.1	2.5/31.8	36064
(8530)	1999 11 02.0	02 27.41 +12 04.6 15.8	-1.14 - 2.5	1.1/01.6	31503
1981 EZ ₃₂	1999 11 02.1	02 27.55 +07 27.6 18.4	-0.77 - 6.8	2.3/31.1	22271
1998 HT ₉₅	1999 11 02.1	02 27.55 +08 28.4 17.1	-0.99 - 4.1	2.3/31.7	32521
1994 CV ₉	1999 11 02.1	02 27.58 +03 26.9 18.3	-0.98 - 5.1	4.2/30.3	32307
1998 FB ₆	1999 11 02.1	02 27.73 +08 20.5 19.0	-1.04 - 5.6	2.4/31.6	35705
1988 SN ₁	1999 11 02.1	02 27.79 +00 18.8 17.2	-1.00 - 2.8	6.2/29.9	36064
1997 AH ₁	1999 11 02.2	02 27.85 +02 43.8 18.5	-0.94 - 3.1	4.0/30.4	30786
(9228)	1999 11 02.2	02 28.02 +15 49.9 16.5	-0.85 - 2.5	0.4/02.6	32430
1986 PJ ₁	1999 11 02.3	02 28.16 +07 31.5 18.7	-0.96 - 4.4	2.4/31.6	32740
1995 UB ₂₁	1999 11 02.3	02 28.25 +12 20.1 18.4	-0.93 - 7.3	0.8/01.7	32309
(8855)	1999 11 02.3	02 28.28 +10 21.9 18.4	-0.99 - 6.6	1.5/01.2	31912
1994 WU	1999 11 02.3	02 28.55 +25 01.0 17.7	-0.80 - 5.8	2.7/05.4	35692
1992 PE ₃	1999 11 02.4	02 28.57 +18 34.3 15.8	-0.94 - 9.4	1.9/03.6	36068
1996 ED ₉	1999 11 02.4	02 28.58 -04 07.4 18.3	-0.73 - 5.1	5.7/28.0	36074
1992 QW	1999 11 02.4	02 28.58 +22 04.3 16.8	-1.17 - 1.6	3.6/04.1	35686
1995 SL ₃	1999 11 02.4	02 28.71 +15 12.8 18.7	-1.01 - 5.2	0.2/02.6	32053
1998 QC ₇	1999 11 02.4	02 28.76 -01 24.8 18.1	-0.77 - 4.2	4.8/29.1	32529
1995 VM	1999 11 02.4	02 28.84 +05 03.9 17.1	-1.00 - 0.6	3.1/31.4	26423
1998 FT ₆₅	1999 11 02.5	02 28.90 +22 57.4 17.8	-1.20 - 3.4	3.4/04.4	32322
1990 VS ₅	1999 11 02.5	02 29.14 -01 56.1 16.1	-0.90 - 1.1	6.7/29.6	34286